EC BUILDING 2 STEEL COLUMN SCHEDULE	
REFERENCE	SIZE
C1	UC305x305x118
C2	UC356x368x129
C3	SHS200x200x10

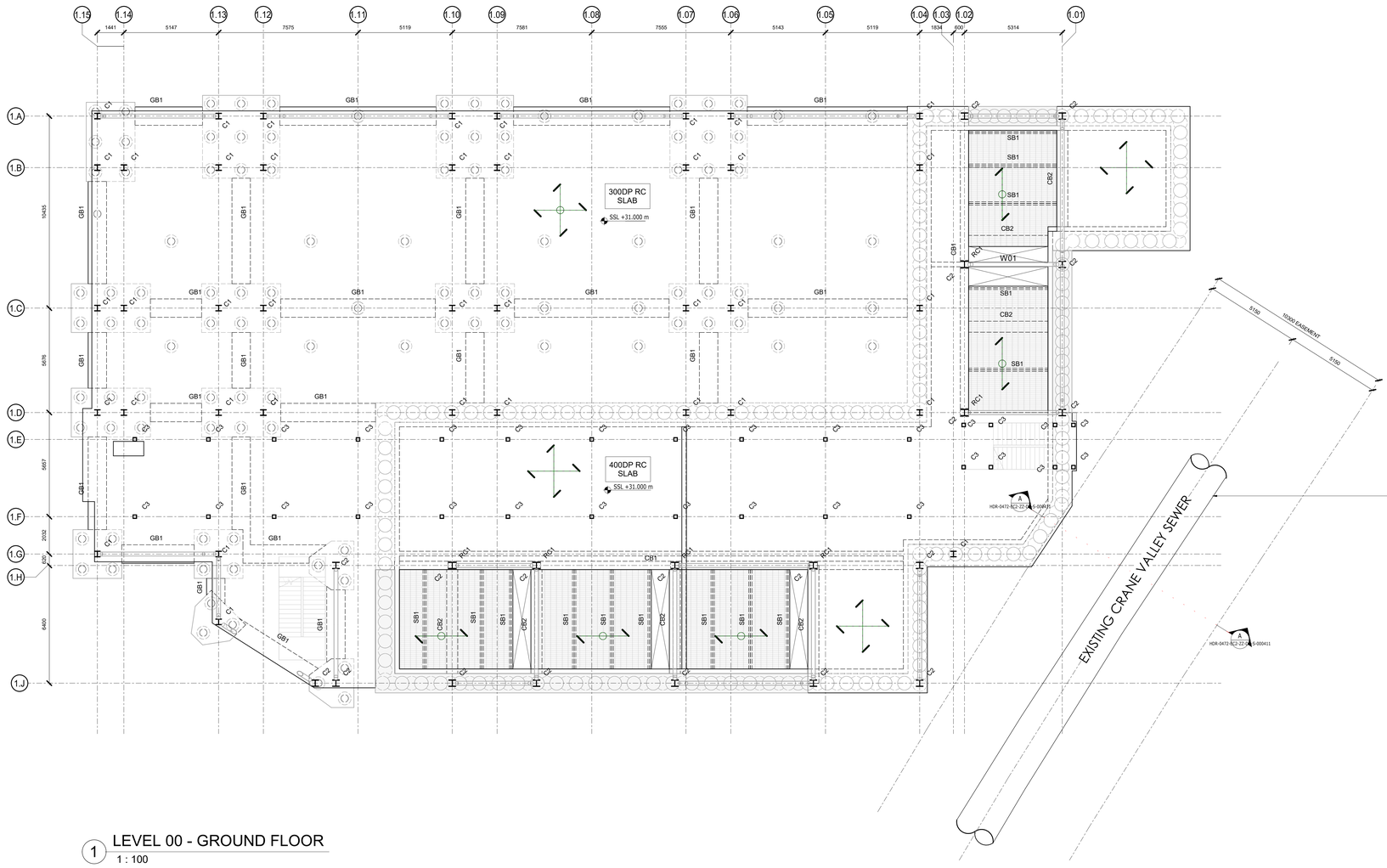
EC BUILDING 2 - CAPPING BEAM SCHEDULE	
REFERENCE	SIZE
CB1	1050x1100DP CAPPING BEAM
CB2	1050x1500DP CAPPING BEAM
CB3	1300x1100DP CAPPING BEAM

EC BUILDING 2 - RC WALL SCHEDULE		
REFERENCE	SIZE	REMARKS
W01	250thk. RC WALL	WATERPROOF CONCRETE

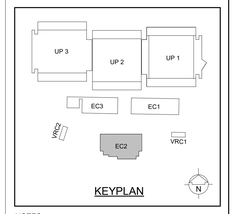
EC BUILDING 2 STEEL BEAM SCHEDULE	
REFERENCE	SIZE
SB1	UB406x178x60
SB2	UB305x165x40
SB3	UB533x210x82
SB4	UB610x229x101
SB5	UB762x267x134

EC BUILDING 2 - GROUND BEAM SCHEDULE	
REFERENCE	SIZE
GB1	1000x1000mm RC BEAM
GB2	800x800mm RC BEAM

EC BUILDING 2 - PILECAP SCHEDULE	
REFERENCE	SIZE
PC01	2650x2430x1500DP
PC02	4500x4200x1500DP
PC03	4300x2650x1500DP
PC04	2650x2650x1500DP



1 LEVEL 00 - GROUND FLOOR
1 : 100



KEYPLAN

NOTES:

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SLAB SCHEDULE	
GR	DENOTES SPAN DIRECTION OF 50mm THK. OPEN STEEL GRATING PANELS. ALLOW FOR LK20BP PANELS BY LIONWELD KENNEDY - 50x5 MAIN BARS, GALVANISED, MAXIMUM SPAN 2.5m
	DENOTES 300mm THK. SUSPENDED RC SLAB
	DENOTES 400mm THK. SUSPENDED WATERPROOF RC SLAB

ALL GROUND FLOOR SLABS TO BE CAST ON VAPOUR RESISTANT GAS MEMBRANE ON 50mm LEAN MIX CONCRETE LAYER ON MIN. 300mm WELL COMPACTED HARDCORE SUB-BASE

Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY
Suitability: S3

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Knollys House
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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: EC BUILDING 2
LEVEL 00 - GROUND FLOOR
GENERAL ARRANGEMENT

HDR Project Number:	10274713		
Model Name:	HDR-0472-EC2-ZZ-M3-S-000001		
Drawn: EC	Chkd/Appd: AS/DC	Date: 23/09/22	Scale @ A0: 1:100
Drawing Number: HDR-0472-EC2-00-DR-S-200201			Revision: P01

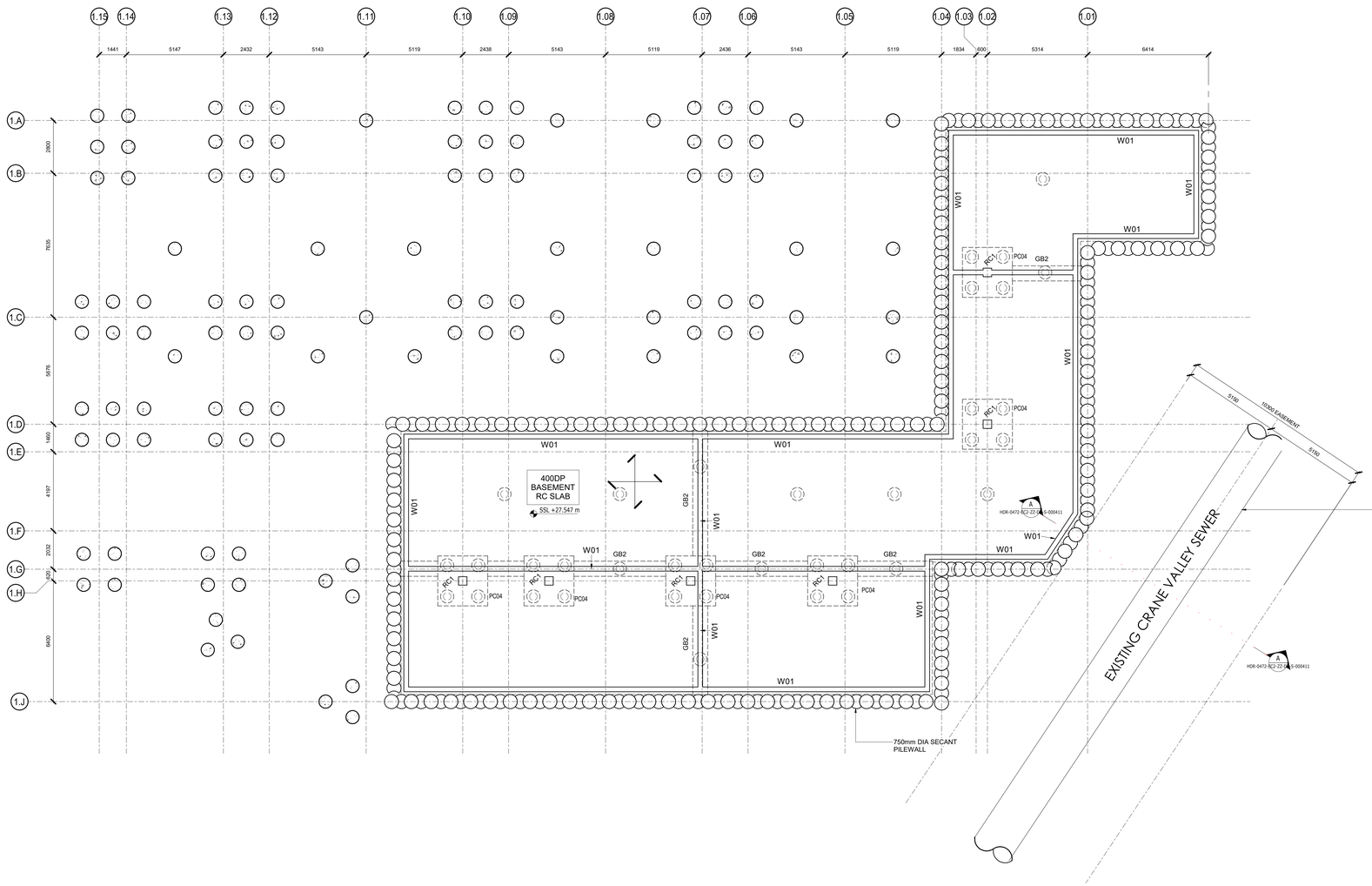
5 cm 4 3 2 1 0
0 1 2 3 4 5 cm
Plot Check

EC BUILDING 2 RC COLUMN SCHEDULE	
REFERENCE	SIZE
RC1	450 x 450mm

EC BUILDING 2 - RC WALL SCHEDULE		
REFERENCE	SIZE	REMARKS
W01	250thk. RC WALL	WATERPROOF CONCRETE

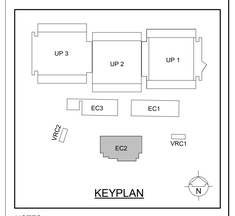
EC BUILDING 2 - GROUND BEAM SCHEDULE	
REFERENCE	SIZE
GB1	1000x1000mm RC BEAM
GB2	800x800mm RC BEAM

EC BUILDING 2 - PILECAP SCHEDULE	
REFERENCE	SIZE
PC01	2650x2430x1500DP
PC02	4500x4200x1500DP
PC03	4300x2650x1500DP
PC04	2650x2650x1500DP



EXISTING CRANE VALLEY SEWER.
INTERNAL DIA. APPROX. 2134mm.
LOCATION OF THE SEWER SHOWN
AS PER INFOTEC SURVEY
DRAWINGS: INF-3973-D01, D02 & D03.

1 CABLE CHAMBER
1 : 100



KEYPLAN

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SLAB SCHEDULE
DENOTES 400mm THK. SUSPENDED WATERPROOF RC SLAB
ALL GROUND FLOOR SLABS TO BE CAST ON VAPOUR RESISTANT GAS MEMBRANE ON 50mm LEAN MIX CONCRETE LAYER ON MIN. 300mm WELL COMPACTED HARDCORE SUB-BASE

Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY
Suitability: S3

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Client: SWEET PROJECTS
Architect: NWA
Project: UNION PARK
Title: EC BUILDING 2
CABLE CHAMBER
GENERAL ARRANGEMENT

HDR Project Number:			
10274713			
Model Name: HDR-0472-EC2-ZZ-M3-S-000001			
Drawn: EC	Chkd/Appd: AS/JB	Date: 23/09/22	Scale @ A0: 1:100
Drawing Number: HDR-0472-EC2-B1-DR-S-160211			Revision: P01

5 cm 4 3 2 1 0
0 1 2 3 4 5 cm
Plot Check

FOR PILE SCHEDULE REFER TO DRAWING (HDR-0472-EC2-F2-DR-S-170701)

EC BUILDING 2 RC COLUMN SCHEDULE	
REFERENCE	SIZE
RC1	450 x 450mm

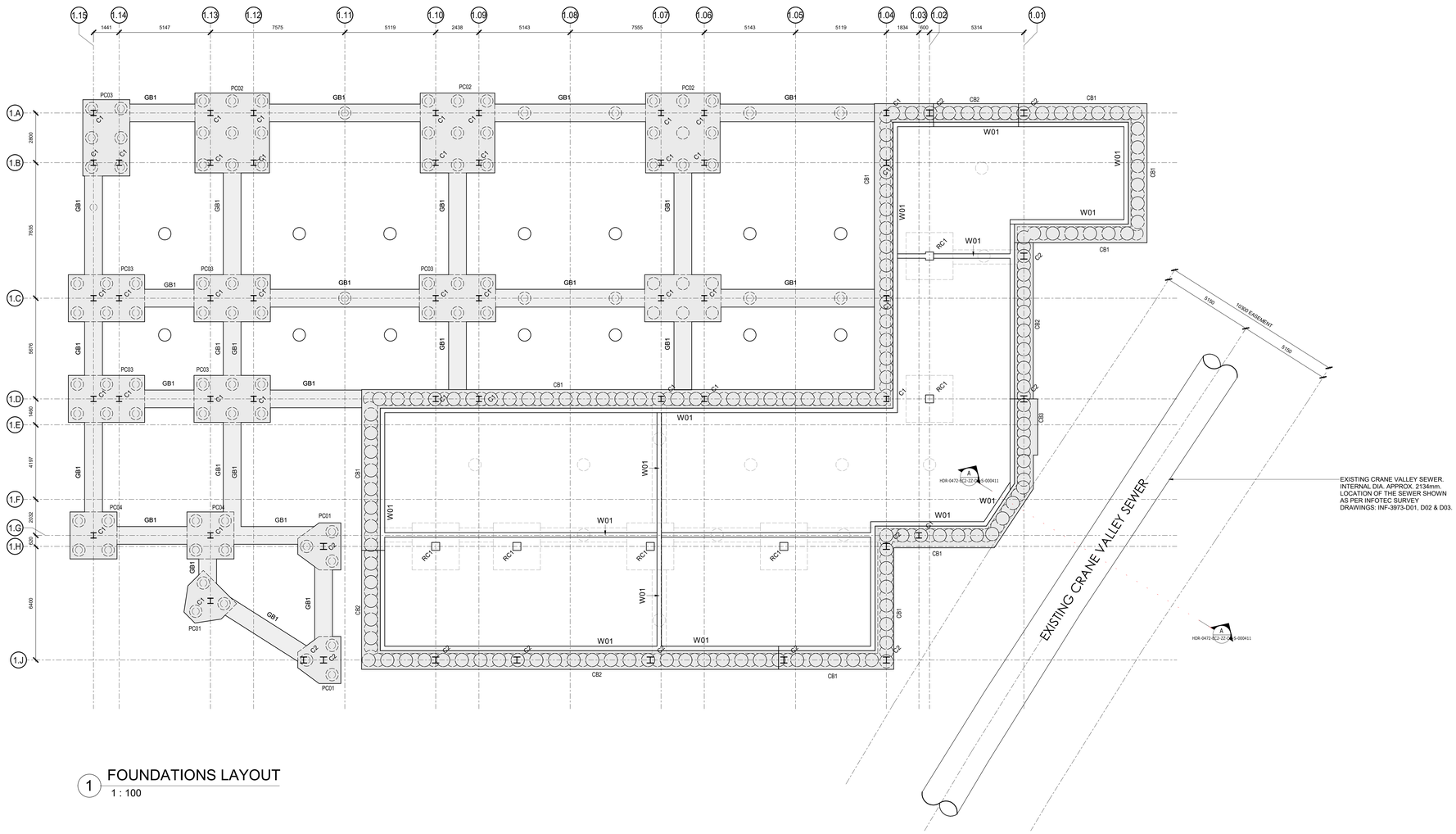
EC BUILDING 2 STEEL COLUMN SCHEDULE	
REFERENCE	SIZE
C1	UC305x305x118
C2	UC356x368x129
C3	SHS200x200x10

EC BUILDING 2 - CAPPING BEAM SCHEDULE	
REFERENCE	SIZE
CB1	1050x1100DP CAPPING BEAM
CB2	1050x1500DP CAPPING BEAM
CB3	1300x1100DP CAPPING BEAM

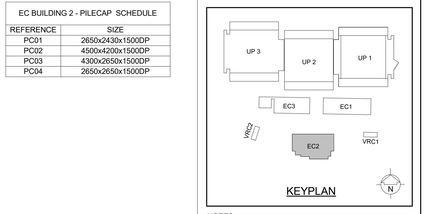
EC BUILDING 2 - RC WALL SCHEDULE		
REFERENCE	SIZE	REMARKS
W01	250thk. RC WALL	WATERPROOF CONCRETE

EC BUILDING 2 - GROUND BEAM SCHEDULE	
REFERENCE	SIZE
GB1	1000x1000mm RC BEAM
GB2	800x800mm RC BEAM

EC BUILDING 2 - PILECAP SCHEDULE	
REFERENCE	SIZE
PC01	2650x2430x1500DP
PC02	4500x4200x1500DP
PC03	4300x2650x1500DP
PC04	2650x2650x1500DP



1 FOUNDATIONS LAYOUT
1 : 100



KEYPLAN

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Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY — Suitability: S3

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Client: SWEET PROJECTS

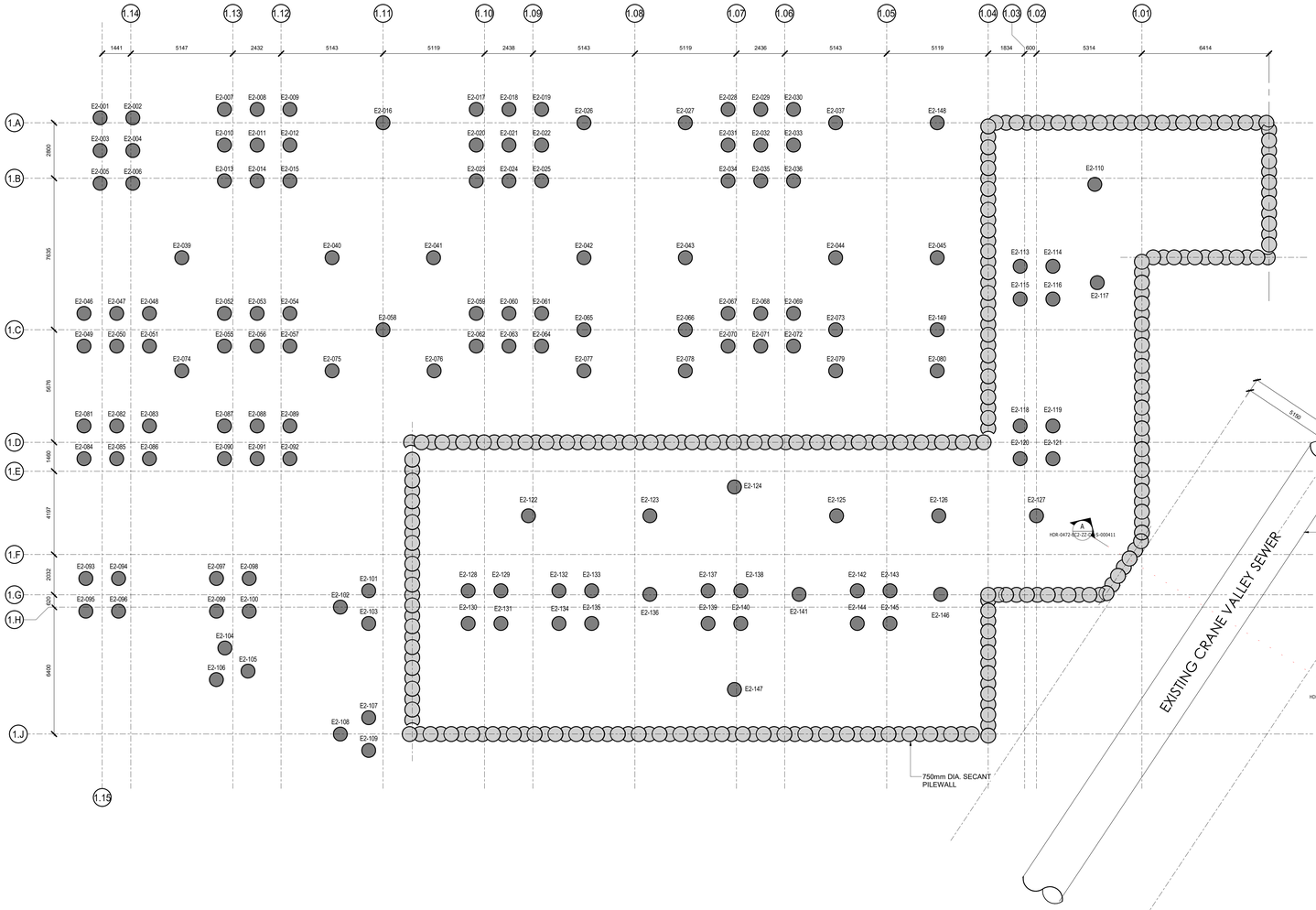
Architect: NWA

Project: UNION PARK

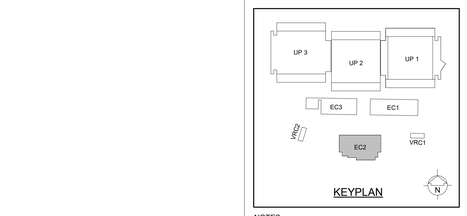
Title: EC BUILDING 2
LEVEL F1
FOUNDATIONS
GENERAL ARRANGEMENT

HDR Project Number: 10274713			
Model Name: HDR-0472-EC2-ZZ-M3-S-000001			
Drawn: EC	Chkd/Appd: AS/JB	Date: 31/07/20	Scale @ A0: 1:100
Drawing Number: HDR-0472-EC2-F1-DR-S-170202			Revision: P01

5 cm 4 3 2 1 0
0 1 2 3 4 5 cm
Plot Check



1 PILING LAYOUT
1 : 100



KEYPLAN

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Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY
Suitability: S3

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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title:
EC BUILDING 2
LEVEL F2 - FOUNDATIONS
PILING LAYOUT
GENERAL ARRANGEMENT

HDR Project Number: 10274713
Model Name: HDR-0472-EC2-ZZ-M3-S-000001

Drawn:	Chkd/Appd:	Date:	Scale @ A0:
EC	AS/JB	23/09/22	1:100

Drawing Number: HDR-0472-EC2-F2-DR-S-170201
Revision: P01

5 cm
4
3
2
1
0
0 1 2 3 4 5 cm
Plot Check

PILE SCHEDULE E2										
PILE REF.	PILE DIA. (mm)	PERMANENT LOAD (KN)	VARIABLE LOAD (KN)	WIND LOAD (KN)	WATER UPLIFT (KN)	LATERAL LOAD (KN)	CUT OFF LEVEL (mm AOD)	EASTINGS (mm)	NORTHINGS (mm)
E2-001	400/700	400	800	+/-200		50	29275	510419697	179227831
E2-002	400/700	400	800	+/-200		50	29275	510421347	179227860
E2-003	400/700	400	800	+/-200		50	29275	510419726	179226182
E2-004	400/700	400	800	+/-200		50	29275	510421375	179226210
E2-005	400/700	400	800	+/-200		50	29275	510419754	179224532
E2-006	400/700	400	800	+/-200		50	29275	510421404	179224560
E2-007	400/700	400	800	+/-200		50	29275	510425957	179228364
E2-008	400/700	400	800	+/-200		50	29275	510427606	179228393
E2-009	400/700	400	800	+/-200		50	29275	510429256	179228421
E2-010	400/700	400	800	+/-200		50	29275	510425988	179226564
E2-011	400/700	400	800	+/-200		50	29275	510427638	179226593
E2-012	400/700	400	800	+/-200		50	29275	510429287	179226621
E2-013	400/700	400	800	+/-200		50	29275	510426019	179224765
E2-014	400/700	400	800	+/-200		50	29275	510427669	179224793
E2-015	400/700	400	800	+/-200		50	29275	510429318	179224822
E2-016	400/700	200	400	0		50	29775	510433967	179227828
E2-017	400/700	400	800	+/-200		50	29275	510438655	179228584
E2-018	400/700	400	800	+/-200		50	29275	510440305	179228612
E2-019	400/700	400	800	+/-200		50	29275	510441954	179228641
E2-020	400/700	400	800	+/-200		50	29275	510438686	179226784
E2-021	400/700	400	800	+/-200		50	29275	510440336	179226812
E2-022	400/700	400	800	+/-200		50	29275	510441985	179226841
E2-023	400/700	400	800	+/-200		50	29275	510438717	179224984
E2-024	400/700	400	800	+/-200		50	29275	510440367	179225013
E2-025	400/700	400	800	+/-200		50	29275	510442017	179225041
E2-026	400/700	200	400	0		50	29775	510444096	179228003
E2-027	400/700	200	400	0		50	29775	510449210	179228091
E2-028	400/700	400	800	+/-200		50	29275	510451351	179228803
E2-029	400/700	400	800	+/-200		50	29275	510453001	179228831
E2-030	400/700	400	800	+/-200		50	29275	510454651	179228860
E2-031	400/700	400	800	+/-200		50	29275	510451383	179227003
E2-032	400/700	400	800	+/-200		50	29275	510453032	179227032
E2-033	400/700	400	800	+/-200		50	29275	510454682	179227060
E2-034	400/700	400	800	+/-200		50	29275	510451414	179225204
E2-035	400/700	400	800	+/-200		50	29275	510453063	179225232
E2-036	400/700	400	800	+/-200		50	29275	510454713	179225261
E2-037	400/700	200	400	0		50	29775	510456787	179228222
E2-039	400/700	200	400	0		50	30775	510423938	179220852
E2-040	400/700	200	400	0		50	30775	510431515	179220983
E2-041	400/700	200	400	0		50	30775	510436630	179221071
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E2-043	400/700	200	400	0		50	30775	510449328	179221291
E2-044	400/700	200	400	0		50	30775	510456905	179221421
E2-045	400/700	200	400	0		50	30775	510462024	179221510
E2-046	400/700	400	800	+/-200		50	29275	510419054	179217958
E2-047	400/700	400	800	+/-200		50	29275	510420704	179217987
E2-048	400/700	400	800	+/-200		50	29275	510422353	179218015
E2-049	400/700	400	800	+/-200		50	29275	510419082	179216309
E2-050	400/700	400	800	+/-200		50	29275	510420732	179216337
E2-051	400/700	400	800	+/-200		50	29275	510422382	179216366
E2-052	400/700	300	900	0		50	29275	510426134	179218081
E2-053	400/700	300	900	0		50	29275	510427784	179218109
E2-054	400/700	300	900	0		50	29275	510429434	179218138
E2-055	400/700	300	800	0		50	29275	510426163	179216431
E2-056	400/700	300	900	0		50	29275	510427813	179216460
E2-057	400/700	300	900	0		50	29275	510429462	179216488
E2-058	400/700	200	400	0		50	29775	510434147	179217394
E2-059	400/700	400	500	0		50	29275	510438833	179218300
E2-060	400/700	300	900	0		50	29275	510440482	179218329
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E2-062	400/700	300	900	0		50	29275	510438861	179216650
E2-063	400/700	300	900	0		50	29275	510440511	179216679
E2-064	400/700	300	900	0		50	29275	510442161	179216707
E2-065	400/700	200	400	0		50	29775	510444276	179217569
E2-066	400/700	200	400	0		50	29775	510449391	179217658
E2-067	400/700	300	900	0		50	29275	510451529	179218520
E2-068	400/700	300	900	0		50	29275	510453179	179218548
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E2-073	400/700	200	400	0		50	29775	510456968	179217788
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E2-076	400/700	200	400	0		50	30775	510436758	179215367
E2-077	400/700	200	400	0		50	30775	510444312	179215498
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E2-080	400/700	200	400	0		50	30775	510462123	179215806
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E2-082	400/700	500	700	0		50	29275	510420802	179212312
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E2-084	400/700	500	700	0		50	29275	510419180	179210634
E2-085	400/700	500	700	0		50	29275	510420830	179210662
E2-086	400/700	500	700	0		50	29275	510422480	179210691
E2-087	400/700	500	700	0		50	29275	510426232	179212406
E2-088	400/700	500	700	0		50	29275	510427882	179212434
E2-089	400/700	500	700	0		50	29275	510429532	179212463
E2-090	400/700	500	700	0		50	29275	510426261	179210756
E2-091	400/700	500	700	0		50	29275	510427911	179210785
E2-092	400/700	500	700	0		50	29275	510429560	179210813
E2-093	400/700	600	700	+/-300		50	29275	510419378	179204597
E2-094	400/700	600	700	+/-300		50	29275	510421028	179204626
E2-095	400/700	600	700	+/-300		50	29275	510419407	179202948
E2-096	400/700	600	700	+/-300		50	29275	510421056	179202976
E2-097	400/700	600	700	+/-300		50	29275	510425965	179204711
E2-098	400/700	600	700	+/-300		50	29275	510427615	179204740
E2-099	400/700	600	700	+/-300		50	29275	510425994	179203061
E2-100	400/700	600	700	+/-300		50	29275	510427644	179203090
E2-101	400/700	600	700	+/-300		50	29275	510433651	179204224
E2-102	400/700	600	700	+/-300		50	29275	510432235	179203375
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E2-104	400/700	600	700	+/-300		50	29275	510426449	179201214
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E2-107	400/700	600	700	+/-300		50	29275	510433761	179197825
E2-108	400/700	600	700	+/-300		50	29275	510432346	179196975
E2-109	400/700	600	700	+/-300		50	29275	510433790	179196175
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E2-114	400/700	400	300	100		50	25722	510467864	179221176
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E2-116	400/700	400	300	100		50	25722	510467892	179219527
E2-117	400/700	300	200	0	350	50	26875	510470117	179220390
E2-118	400/700	400	300	100		50	25722	510466353	179213099
E2-119	400/700	400	300	100		50	25722	510468003	179213128
E2-120	400/700	400	300	100		50	25722	510466382	179211449
E2-121	400/700	400	300	100		50	25722	510468032	179211478
E2-122	400/700	300	200	0	350	15	27275	510441641	179208142
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E2-128	400/700	600	700	+/-200		50	25722	510438668	179204311
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E2-131	400/700	600	700	+/-200		50	25722	510440347	179202690
E2-132	400/700	600	700	+/-200		50	25722	510443244	179204390
E2-133	400/700	600	700	+/-200		50	25722	510444893	179204418
E2-134	400/700	600	700	+/-200		50	25722	510443272	179202740
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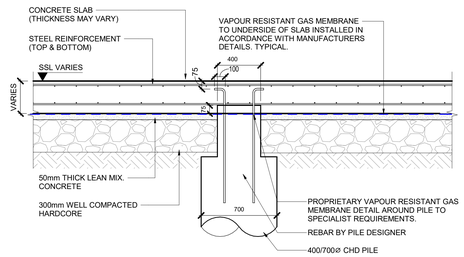
E2-147	400/700	300	200	0	350	50	26875	510452177	179199568
E2-148	400/700	200	400	0		50	29775	510461907	179228311
E2-149	400/700	200	400	0		50	29775	510462087	179217877

SECANT WALL LOAD

PERMANENT = 500kN/m
VARIABLE = 700kN/m
WIND = +/-200kN/m
LATERAL = 50kN/m



400/700ø CHD PILE TO SLAB CONNECTION DETAIL (TYPICAL)
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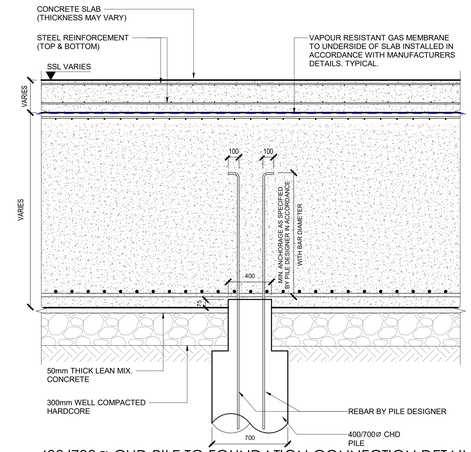
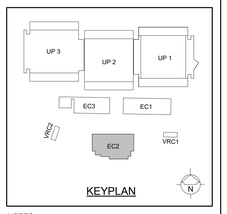


400/700ø CHD PILE TO FOUNDATION CONNECTION DETAIL (TYPICAL)
1:20



NOTES:

1. THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION OR INSTALLATION PURPOSES UNLESS EXPRESSLY STATED.
2. DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSIONS.
3. ALL DIMENSIONS MUST BE VERIFIED ON SITE BEFORE COMPLETING SHOP DRAWINGS OR SETTING OUT THE WORKS.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SCOPE OF WORKS AS PREPARED BY HDR.
5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND STRUCTURAL ENGINEER'S DRAWINGS AND ASSOCIATED HDR DRAWINGS.

Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY
Suitability: S3

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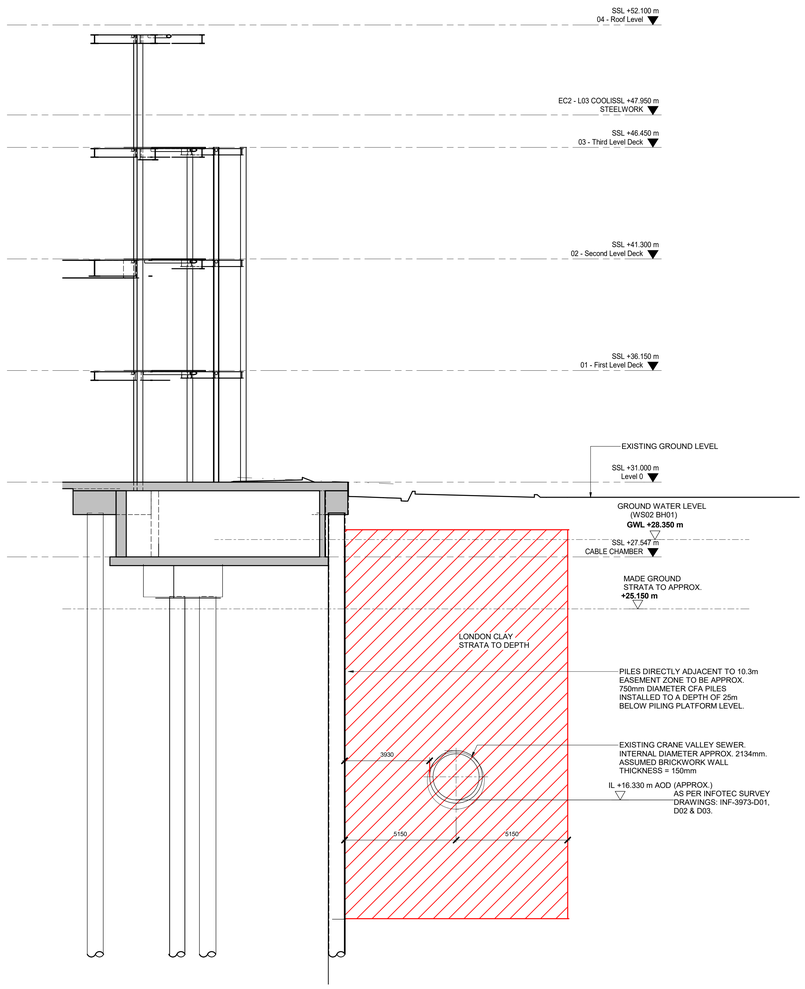
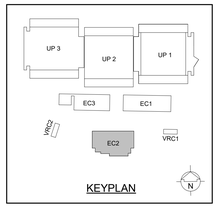
Client: SWEET PROJECTS
Architect: NWA
Project: UNION PARK
Title: EC BUILDING 2
LEVEL 2 - FOUNDATIONS
PILING SCHEDULE

HDR Project Number: 10274713
Model Name: HDR-0472-EC2-ZZ-M3-S-000001
Drawn: EC | Chkd/Appd: AS/JB | Date: 23/09/22 | Scale @ A0: N/A
Drawing Number: HDR-0472-EC2-F2-DR-S-170701
Revision: P01

5 cm
4
3
2
1
0
0 1 2 3 4 5 cm
Plot Check



A SECTION
1 : 100



KEYPLAN

NOTES:

1. THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION OR INSTALLATION PURPOSES UNLESS EXPRESSLY STATED.
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Rev	Description	Date
P01	PRELIMINARY	23.09.22

Drawing Status: PRELIMINARY
Suitability: S3

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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: EC BUILDING 2
SECTIONS THROUGH SEWER

HDR Project Number:	10274713		
Model Name:	HDR-0472-EC2-ZZ-M3-S-000001		
Drawn: EC	Chkd/Appd: AS/JB	Date: 23/09/22	Scale @ A0: 1:100
Drawing Number: HDR-0472-EC2-ZZ-DR-S-000411			Revision: P01

5 cm
4
3
2
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0
0 1 2 3 4 5 cm
Plot Check

APPENDIX 2: PILING CONTRACTOR METHOD STATEMENT

SITE SPECIFIC METHOD STATEMENT

FOR

PILING WORKS TO BLOCK EC2

Bulls Bridge, Hayes

Client – Sweet Projects Holdings Ltd

Date	Author	Checked by	Revision
30.09.2022	**ANDREW PREECE**		

Purpose and Scope

Scope of works

RB have won the piling works on the Sweet Projects site, EC2, Bulls Bridge, Hayes.

RB will install 149 CHD (400/700mm) (Continual Helical Piles) for the commercial development being constructed on the EC2, Bulls Bridge site, on Bulls Bridge, Hayes.

This method statement should be read in conjunction with Roger Bullivant standard method statements for CHD work.

Please note that this work does not cover any piling to the Visitors reception Centre No 2 located adjacent to the EC2 site as due to site constraints it is unlikely to be piled

GEN-TMS 1301 Sonic Integrity Testing
GEN-TMS 1318 Static Load Test
GEN-TMS 1321 Clearing concrete, grout pipes and blockages
PGI-PMS 1303 CHD Piling
PGI-PMS 1306 Rigging and De-rigging the Mast for 7003-6
PGI-PMS 1313 Loading and Unloading Rigs
PGI-PMS 1316 Unloading Piling Materials
PGI-PMS 1317 Preparation of the Pile Head for Static Load Testing (Wet Cast Pile)

1.0 Health and Safety Controls

Piling works

- All piling works will be undertaken in line with company procedures listed above.
- Prior to mobilisation of the piling equipment, the principle contractor will be issued with the details of the machine and any ancillary equipment to be used. Specifically, the maximum bearing pressures will be given so that the piling platform can be designed and built.
- All personnel associated with the piling works and any others on site affected by the piling works will be briefed on the method statements and risk assessments and a briefing sheet signed to show receipt and understanding of the briefing.
- All personnel will undertake the site briefing.
- All personnel will have proof of training and competency at the induction and available for inspection throughout the contract.
- All certification for the machine and any lifting apparatus will be given up for inspection.
- All personnel will be issued and wear appropriate P.P.E in line with company instructions. Task specific P.P.E will be issued and worn as the need arises as identified by the risk assessment.

- Prior to the rig arriving on site, a platform certificate will be issued in line with the company work instruction document Working Platform and FPS Certificate (GEN-WID 1044)
- Prior to work starting, the area for piling will be inspected for buried and overhead services. The principle contractor will be asked for service drawings and details of known services, an RB permit to dig (GEN-SFD 1042) will be issued and will run parallel to any permit issued by the principle contractor.
- The boom pump will be placed at the furthest possible place away from the railway, so that if the boom pump was to topple, it would not do so onto the railway.
- All site access and egress arrangements along with traffic routes will be made known by the principle contractor, so that site deliveries of plant and materials can be arranged.
- Specific details of the piling operation can be found in the company standard method statements detailed above.
- Details of the rig orientation from the line standard are detailed.

2.0 Pre-work inspections.

- All plant will be pre-inspected daily by a competent person and details sent to the office. Any immediate problems are telephoned directly to the Plant Manager or hire company.
- **L**ifting **O**perations and **L**ifting **E**quipment **R**egulations 1998**:**
- **P**rovision and **U**se of **W**ork **E**quipment **R**egulations 1998:
- The MEWP will be a standard machine without the safety crush bar in the basket, there is a negligible risk that the operator could be crushed.
- The MEWP and all lifting equipment are tested every six months and a thorough examination certificate issued. Pre-inspection is completed before each use and record weekly in the inspection register. Plant used for lifting is inspected yearly by a qualified insurance inspector and a Thorough Examination certificate issued. All certificates are held by the site supervisor.
- All plant will come under the PUWER regs. No certifications are required, but the service history is available when requested.

3.0 Fabricating of Steel

- The cages will be made off site by Sub-Contractor steel fixers and delivered to site.
- The banksman will place a shackle and 2 leg 10mm chain sling on to the arm of the excavator and instruct the machine operator to lower the chains over a bundle of steel, the chains will be wrapped around the steel the banksman will instruct the machine operator to place a bundle of steel reinforcement on to the cage stands. (A safety line will need to be used if moving long steel). Once the single use slings have been removed from the steel, they must be destroyed by cutting in half and putting in the general waste skip.
- The steel fixer will remove the required number of bars from the bundle and feed a helical around them, they will then tie the bars to the helical using tie wire in line with the specification and schedule.

- The site supervisor will inform the steel fixer where to place the lifting point on the cages, the steel fixer will ensure that the designated lifting point is tied correctly and then highlighted for the banksman using marker spray.
- When completed they will remove the cage from the stands and place it on the floor.
- If making heavy cages, chains will be fitted to the excavator and attached to the cage and the cage will be moved off the stands by the machine operator instructed by the banksman and placed in the designated area.
- When moving cages around site 2x flat sling will be threaded through the cages and attached to the 2 leg 10mm chain sling. A guide rope will be attached to one end and the banksman will instruct the excavator operator to move to the designated area. The fabricated cages will then be lowered on to bearers and the flat slings removed.

4.0 Storage of Equipment

- The piling rig will be banked into a designated area to park, he will level the rig, lower the auger on to the ground and then lowered the foot on to the piling mat. The rig operator will turn off the rig and remove the keys and tablet; he will then lock all the doors on the rig making sure everything is safe then turn off the mobiliser lever.
- The pump operator when finished will be assisted by the banksman and place all the metal work on the concrete pump, they will then place all the remote controls, tools, chains and equipment in the container and close and lock the door.

5.0 Factors to be considered.

5.1 Ground conditions

All platforms will be designed using information supplied by RB. All platforms will be at least 2m larger than the footprint on the planned building so that the piling rig can access from any side of the pile position. Platforms will regularly be inspected and returned to their designed state by the principle contractor.
Areas for storage and plant assembly will also be subject to inspection to prevent any unplanned incidents. No storage or assembly will take place in the area deemed by NWR as on or near the line. All platforms should be designed and constructed with suitable drainage to prevent flooding or the platform surface being obscured by lying water.

5.2 Limitations to movement (lateral, heave or settlement), these being specified at an early stage, together with any noise and/or vibration limits, as these will have an ultimate bearing on the method selected. It is noted that the effects of vibration are particularly important where driven, displacement or vibratory piling techniques are being proposed.

The method being proposed is a displacement rather than replacement method for environmental reasons. The piling solution and ground conditions indicate that there will be no ill effects to the railway infrastructure or the permanent way.
All works will be undertaken in daylight hours and noise will only be normal in respect of the piling operation.

Vibration will be monitored if there is any suspicion that there may be damage to the rail infrastructure.

5.3 The effect of ground displacement and/or soil loosening

The piling method has been identified as compatible with the ground conditions shown up by the site investigation and will have a minimal affect on ground conditions in relation to heave or loosening, the contrary is expected, and the ground should tighten as a result of the piling operation.

5.4The frequency and speed of trains can in certain situations are considered to be a factor. This can also include standing trains adjacent to the works, for example in sidings or platforms.

All works deemed on or near the line by NWR will be done under their control. Suitable time will be given so that a safe system of work can be established, implemented, and briefed. Any work that may impinge or have an impact on the railway will be done under the control of NWR, notice of the works will be given in suitable time so that train drivers can be warned of the piling working near the line at the given location.
The nearest structure to the work location is the underbridge on Bognor Rd Chichester ELR: TBH2 27m 44ch.

6.0 Environmental Controls

Noise
All piling works will be done in normal working hours (08.00 – 18.00), any works done out Side these hours will be authorised by the principle contractor.
P.P.E will be issued and worn by all working in the vicinity of the machine in line with the Warning signs posted on the machine.

Vibration
Vibration can be monitored if requested, if vibration is causing or suspected of causing damage to the railway or infrastructure, work will stop until a seismograph is on site to measure the levels of vibration from the piling operation.

Refuelling and storage of fuel
All fuel will be stored in double bunded bowsers with the bund capable of storing 125% of the bowser capacity, the bund is enclosed so rainwater will not be able to collect.
All fuel stored on site will be stored at least 10m from any drain and 50m from any open Hole.
All refuelling of plant will be done using a pump, with spill kits at the point of refuelling, no pouring from buckets or containers will be permitted.

Spoil and muck away
This method of piling has been selected because it does not generate spoil, the ground

been identified as contaminated so the risk of contaminated spoil being moved on and off site has been negated.

Contaminated Spoil

Although the piling method does not generate spoil, all personnel will wear P.P.E at all times, no consumption of food will be done on site and the need for washing of hands must be emphasised.

7.0 Method and/or Process

Specific details of the piling process are detailed in the company method statements for CHD Piling listed

GEN-TMS 1301 Sonic Integrity Testing
GEN-TMS 1318 Static Load Test
GEN-TMS 1321 Clearing concrete, grout pipes and blockages
PGI-PMS 1303 CHD Piling
PGI-PMS 1306 Rigging and De-rigging the Mast for 7003-6
PGI-PMS 1313 Loading and Unloading Rigs
PGI-PMS 1316 Unloading Piling Materials
PGI-PMS 1317 Preparation of the Pile Head for Static Load Testing (Wet Cast Pile)

APPENDIX 3: EXTENT OF SURVEY AND LIMITATIONS

EXTENT OF SURVEY AND LIMITATIONS

This report is for your sole use, and consequently no responsibility whatsoever is undertaken or accepted to any third party for the whole or any part of its contents. Paragon accept no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned or a third party with whom an agreement has not been executed. Should any third party which to use or rely upon the contents of the report, written approval must be sought from Paragon, a charge may be levied against such approval.

The report has been designed to address potential source, pathway and receptor pollutant linkages associated with the proposed development, by means of intrusive investigation. The content and findings of the report are based on data obtained by employing site assessment methods and techniques, considered appropriate to the site as far as can be interpreted from desk-based materials and a visual walkover of the site. Such techniques and methods are subject to limitations and constraints set out in the report. The findings and opinions are relevant at the time of writing, and should not be relied upon at a substantially later date as site conditions can changes. For example, seasonal groundwater levels, natural degradation of contaminants etc.

No liability can be accepted for the conditions that have not been revealed by the exploratory hole locations, or those which occur between each location. Whilst every effort will be made to interpolate the conditions between exploratory locations, such information is only indicative and liability cannot be accepted for its accuracy. By their nature, exploratory holes provide a relatively small and localised snapshot of the ground conditions relative to the size of the site.

Specific comment is made regarding the site's status under Part 2A of the Environmental Protection Act (EPA) 1990, which provides a statutory definition of Contaminated Land and as revised under The Contaminated Land (England) (Amendment) Regulations 2012. Unless specifically stated as relating to this definition, references to 'contamination' and 'contaminants' relate in general terms to the presence of potentially hazardous substances in, on or under the site.

The opinions given within this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. If additional information or data becomes available which may affect the opinions expressed in this report, Paragon reserves the right to review such information and, if warranted, to modify the opinions accordingly. Paragon reserves the right to charge additional fees for; un-anticipated second opinion reviewing of previous reports.

Paragon has prepared this report with reasonable skill, care and diligence. The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources. We cannot provide guarantees or warranties for the accuracy of third-party data, which is reviewed in good faith and assumed to be representative and accurate.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. No liability can be accepted for the effects of any future changes to such guidelines and legislation. In the event that guidance / legislation changes it may be necessary for Paragon to update or modify reports. The risk assessment is completed in line with the relevant land use agreed for the site and the time of completing the works. Changes to site conditions or land use may require a reassessment.

DEFINITIONS

For the avoidance of doubt, Paragon Building Consultancy Limited (Paragon) has prepared the following alphabetical list of definitions and reservations to aid the client in understanding the content of our advice and or written reports(s):

Accuracy	Level of agreement between true value and observed value.
ACM's	Asbestos Containing Materials
Conceptual Site Model	Textual and or schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the base of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. **Note 1:** The conceptual exposure model is initially derived from the information obtained by the preliminary investigation. This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of the field investigation can provide additional data that can be used to further refine the conceptual model.
Contamination	Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. **Note 1:** There is no assumption in this definition that harm results from the presence of the contamination. **Note 2:** Naturally enhanced concentrations of harmful substances can fall within this definition of contamination. **Note 3:** Contamination may relate to soils, groundwater or ground gas.
Controlled Water	Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters. **Note 1:** See Section 104 of The Water Resources Act 1991.
Enquiries	Any enquiries undertaken by Paragon of local authorities and statutory undertakers are made verbally in respect of environmental issues. Local searches are not undertaken and no responsibility is accepted for any inaccurate information provided. It is further assumed unless otherwise stated that all necessary licences, permits etc. either run with the property or are transferable to a new occupier as appropriate.
Harm	Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case humans, including property.
Hazard	Inherently dangerous quality of a substance, procedure or event.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
Precision	Level of agreement within a series of measurements of a parameter.
Receptor	Persons, living organisms, ecological systems, controlled water, atmosphere, structures and utilities that could be adversely affected by the contaminant(s).

Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk Assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
Soil	Upper layer of the earth's crust composed of mineral parts, organic substance, water, air and living matter. **Note 1:** In general accordance with BS 10175:2001 the term soil has the meaning ascribed to it through general use in civil engineering and includes topsoil and subsoil; deposits such as clays, silt, sand, gravel, cobbles, boulders and organic deposits such as peat; and material of natural or human origin (e.g. fills and deposited wastes). The term embraces all components of soil, including mineral matter, organic matter, soil gas and moisture, and living organisms.
Source	Location from which contamination is, or was, derived. **Note 1:** This could be the location of the highest soil or groundwater concentration of the contaminant(s).
Uncertainty	Parameter, associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the measurement.

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