

<u>ADDENDUM</u>	NO. 01
<u>CONTRACT NUMBER:</u>	JW13897
<u>CONTRACT TITLE:</u>	JW13897 NORTHERN WASTEWATER TREATMENT WORKS: EXPANSION OF CAPACITY UNIT 5 – INSTALLATION OF MECHANICAL AND ELECTRICAL EQUIPMENT.
<u>SUBJECT</u>	ADDENDUM 1
<u>DATE</u>	05 SEPTEMBER 2025
<u>SENDER</u>	THAPELO TEANE, 011 688 6615 thapelo.teane@jwater.co.za NTHABISENG MATABANE, 011 688 1512 nthabiseng.matabane@jwater.co.za

Tenderers are required to incorporate the following documents into the tender document and return the Addendum:

1. **Extension of the closing date from 12 September 2025 to 03 October 2025 at 10:30am.**

2. **Volume 1 Tender and Contract Section C2 Pricing Data**

2.1 **Section C2.2 Bill of Quantities**

Find attached hereto the updated Bill of Quantities to be included in Section C2.2 of Volume 1.

3. **Volume 2A Tender and Contract Section C3 Scope of Work**

3.1 **Specification PS9.10 Section 10 – Mechanical Equipment for Ferric Storage and Dosing**

- **Specification PS9.10.1 on Page C3.61**

Replace the words “Existing Ferric storage and dosing layout – Drawing Number JW13897-CE-211” with “Existing Ferric storage and dosing layout – Drawing Number K4834-052.”

Directors:

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Mr Kgaile Mogoye, Mr Molate Mashifane, Ms Pamela Mabece, Mr Collen Sambo, Mr Makoko Makgonye, Ms Thabiso Kutumela,
Mr Kefiloe Mokoena

Ms Kethabile Mabe (Company Secretary),

Johannesburg Water SOC Ltd

Registration Number: 2000/029271/30

3.2 Portion 3: Particulars of Required Electrical Work

- **Specification PSY3.20 on Page C3.99**

Replace the words “...equipment as per the T2.2 Returnable documentation must be completed and submitted with the tender (returnable documents).” with “...equipment as per the form T2.3.3 JW 6.5 Returnable Annexure C: Acknowledgement of JW Technical Specifications (returnable documents).”

4. Volume 4 Tender Drawings

4.1 Portion 2 Particulars of Required Mechanical Work

- **Drawing References on Page C3.47 and 3.48**

Missing Drawings listed are distributed with this addendum.

Documents distributed with the Addendum no 1 (per email):

- **Bill of Quantities (To be returned)**
- **Technical Data Sheet - JW13898-E-007-1 MV Switchgear (Not to be returned)**
- **Drawings**
 - K4834-052 – Northern Wastewater Treatment Works Unit 5 Phase 1: Dosing Plant and Reactor Substation.
 - ING0645D-5E2-SM01 – Single Line Diagram
 - 303000141/12/073 – Hypochlorite Pump Station Bund and Pumps.
 - 303000141/12/081 – Effluent Pump Station Concrete and Building Layout.
 - 303000141/12/111 – Primary Sedimentation Tanks Sheet 1 of 2
 - 303000141/12/112 – Primary Sedimentation Tanks Sheet 2 of 2
 - 303000141/12/141 – Fermentation Thickener
 - 303000141/12/150 – Elutriation Pump Station
 - 303000141/12/154 – Mixing Tank
 - 303000141/12/157 – Extension to Existing Elutriation Pump Station
 - 303000141/12/171 – Fermentation Terrace Elutriation Effluent and Thickened Sludge Pipes

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- 303000141/12/201 – Balancing Tank General Arrangement and Concrete Layout Sheet 1 of 5
- 303000141/12/203 – Balancing Tank General Arrangement and Concrete Layout Sheet 3 of 5
- 303000141/12-303 - Reactor Details of Internal Walls (Sheet 1 of 3) and Recycle A Pumpstation Plans, Elevations, Sections and Details
- 303000141/12-304 - Reactor Details of Internal Walls (Sheet 2 of 3)
- 303000141/12-305 - Reactor Details of Internal Walls (Sheet 3 of 3) and Recycle B Pumpstation Plans, Elevations, Sections and Details
- 303000141/12-306 - Reactor Platforms and Bridges Handrail Layout and Details
- 303000141/12-307 - Reactor Floor Slab Layout and Details
- 303000141/12-309 - Reactor Platform and Bridges Layout and Details
- 303000141/12-312 - Reactor Archimedes Screw Pumpstation Layout and Plans
- 303000141/12-313 - Reactor Archimedes Screw Pumpstation Concrete Details and Sections
- 303000141/12-401 - Clarifier Terrace, Clarifier General Arrangement and Concrete Details Sheet 1 of 2
- 303000141/12-413 - Clarifier Terrace, Clarifier General Arrangement and Concrete Details Sheet 2 of 2
- 303000141/12-434 - Clarifier Terrace Feed Pipes Longitudinal Sections
- 303000141/12-473 - Disinfection Contact Tank Layout of Steel Pipes Plan and Long Sections
- 303000141/12-485 - Effluent Pumpstation for Head of Works Concrete Layout Plan, Sections and Elevations
- 303000141/12-508 - Waste Sludge Thickener Concrete General Arrangement Sheet 1 of 2
- 303000141/12-509 - Waste Sludge Thickener Concrete Layout and Details Sheet 2 of 2
- 303000141/12-160 – Head of Works Elutriation Pump Station Mechanical General Arrangement
- 303000141/12-161 – Head of Works Modifications to Existing Elutriation Pumpstation Mechanical General Arrangement
- 303000141/12-162 – WAS Terrace, Waste Activated Sludge Pump Station Modification to Pipework

Yours faithfully

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Itshuteng Tabe

Acting General Manager: Supply Chain Management

Addendum Received

Name of Tenderer:.....

Signatory:.....

Signature:.....

Date:.....

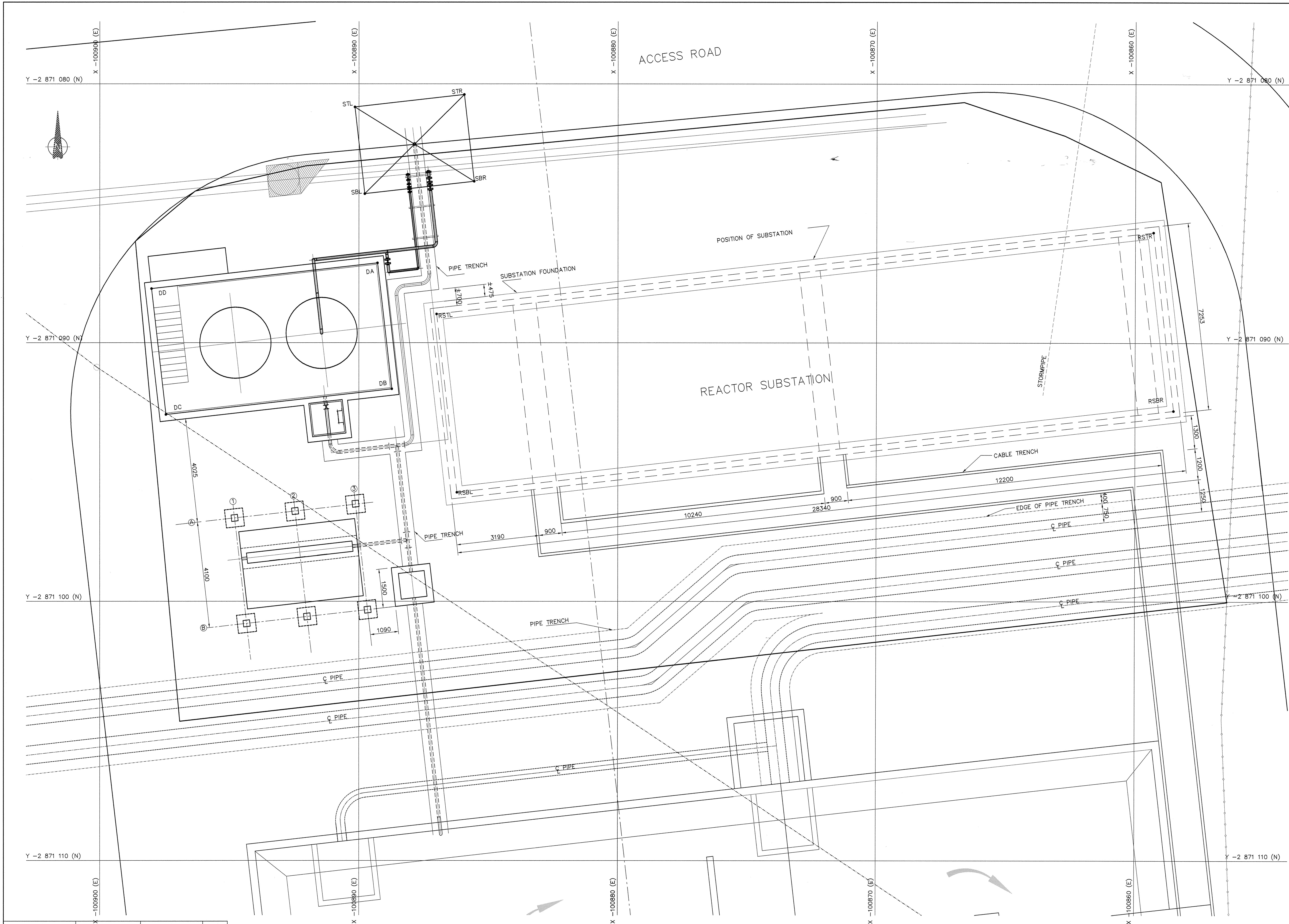
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Johannesburg Water SOC Ltd

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SETTING OUT COORDINATE TABLE		
REF. I.D	Y COORDINATES	X COORDINATES
STL	-100890.1579	-2871080.8932
STR	-100885.9352	-2871080.4120
SBL	-100889.7761	-2871084.2443
SBR	-100885.5534	-2871083.7632
DA	-100889.2849	-2871086.9167
DB	-100888.7302	-2871091.7852
DC	-100897.4488	-2871092.7785
DD	-100898.0035	-2871087.9100
RSTL	-100887.0027	-2871088.8903
RSTR	-100859.3019	-2871085.7342
RSBL	-100886.2170	-2871095.7857
RSBR	-100858.5162	-2871092.6296

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		SURVEYED	DESIGNED	DRAWN	CHECKED	SERVICES CHECKED	GEOTECHNICAL INVESTIGATION	SERVITUDES	APPROVED
Knight Piésold CONSULTING									
APPROVED K. GEORGA Pr. Eng. No. 850039 DATE 16-08-2006		APPROVED Pr. Eng. No. DATE	APPROVED Pr. Eng. No. DATE						

DESIGNED	DRAWN	CHECKED	SERVICES CHECKED	GEOTECHNICAL INVESTIGATION	SERVITUDES	APPROVED

JOHANNESBURG WATER (PTY) LTD		TRADUNA HOUSE	58 FREDERICK STREET	MARSHALLTOWN	2107	TEL: (011) 688-1400	FAX: (011) 688-1529
Johannesburg Water							

CITY OF JOHANNESBURG		NORTHERN WASTEWATER TREATMENT WORKS		UNIT 5 – PHASE 1		DOSING PLANT AND REACTOR SUBSTATION		LAYOUT	

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
		AS BUILT	GPK	10.10.09	K 4834-052
					FILE No
					Z

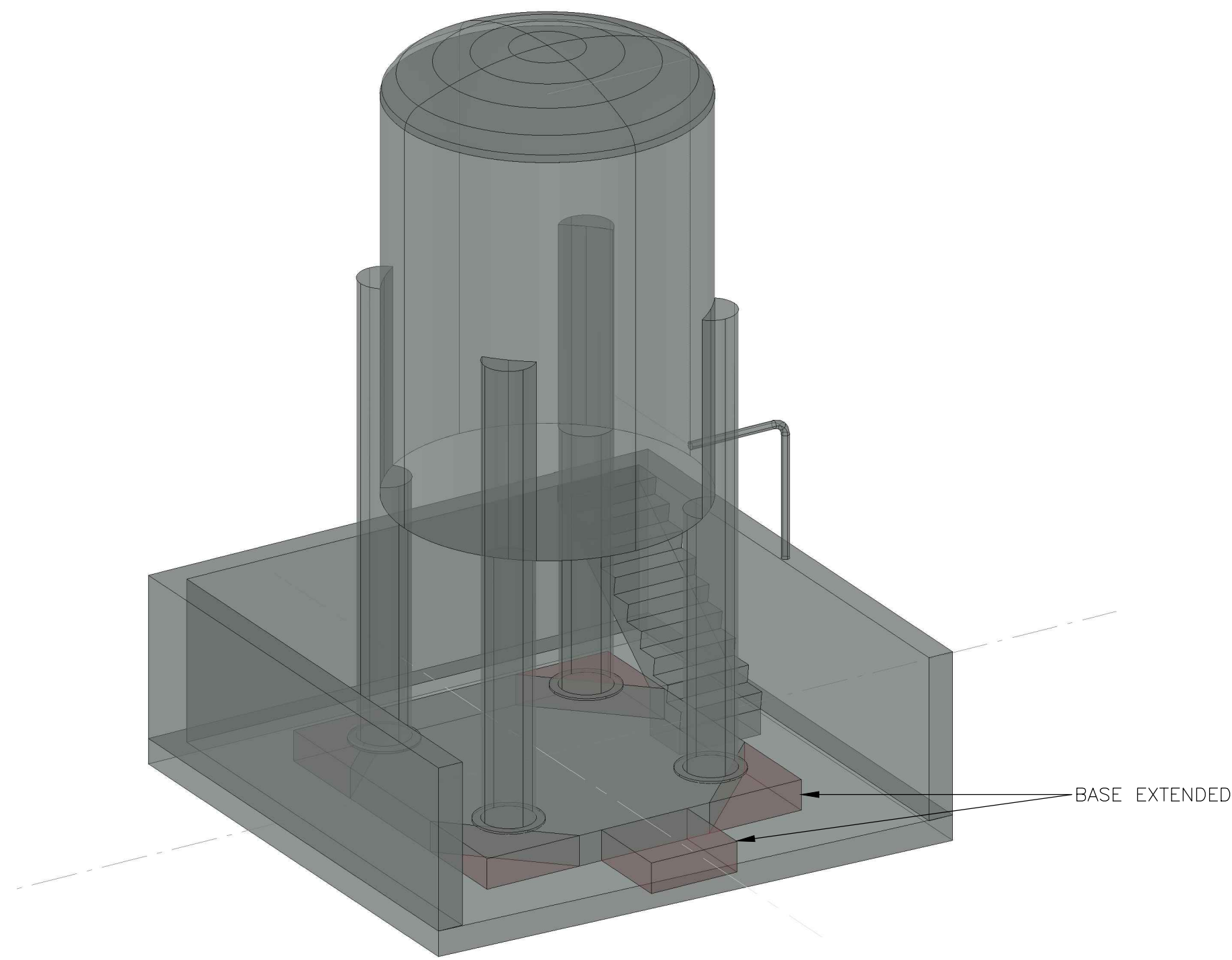
NORTHERN WASTEWATER TREATMENT WORKS

DRAWING NUMBER 30300141	TITLE	
001-020	GENERAL	
001	LIST OF DRAWINGS	
003	GENERAL CONSTRUCTION NOTES	
006	SITE PLAN	
007	PROJECT NOTICE BOARDS	
021-029	PROCESS AND INSTRUMENTATION DRAWINGS	
021	LEGEND	ALL DISCIPLINES
022	PRIMARY SEDIMENTATION TANKS	PROCESS AND INSTRUMENTATION DIAGRAM
023	SLUDGE FERMANTATION PLANT	PROCESS AND INSTRUMENTATION DIAGRAM
024	WASTE SLUDGE THICKENERS	PROCESS AND INSTRUMENTATION DIAGRAM
025	BALANCING TANK	PROCESS AND INSTRUMENTATION DIAGRAM
026	REACTOR 2	PROCESS AND INSTRUMENTATION DIAGRAM
027	FERROUS AND FERRIC DOSING PLANTS	PROCESS AND INSTRUMENTATION DIAGRAM
028	DISINFECTION DOSING PLANT	PROCESS AND INSTRUMENTATION DIAGRAM
029	ONLINE MONITORING OF FINAL AND REACTOR EFFLUENT	PROCESS AND INSTRUMENTATION DIAGRAM
038	SLUDGE FERMANTATION – ODOUR CONTROL PLANT	PROCESS AND INSTRUMENTATION DIAGRAM
041-080	LAYOUTS	
041	SITE	GENERAL ARRANGEMENT
042	CROSS – SECTIONS A TO C THROUGH PLANT	
043	LONGITUDINAL SECTIONS D TO F THROUGH PLANT	
044	GENERAL ARRANGEMENT WITH OLD UNITS 2 AND 3 UNDERLAY	
046	PRIMARY SEDIMENTATION TANKS	LAYOUT
047	FERMENTATION TERRACE	LAYOUT
048	CLARIFIERS & WASTE ACTIVATED PUMPSTATION	LAYOUT
049	WASTE ACTIVATED SLUDGE THICKENERS	LAYOUT
050	DISINFECTION TERRACE	LAYOUT
051	BALANCING TANK	LAYOUT
052	REACTOR SUBSTATION AND CABLE TRENCH	LAYOUT
061-080	ARCHITECTURAL	
63	REACTOR SUBSTATION	PLANS, SECTIONS & ELEVATIONS
64	REACTOR SUBSTATION	SECTIONS & DETAILS
70	BUILDINGS	CABLE TRENCH DETAILS
72	BUILDINGS	FINISHING SCHEDULE AND DOOR AND WINDOW SCHEDULE
73	HYPOCHLORITE PUMPSTATION – BUND & PUMPS	PLAN AND SECTIONS
78	ELUTRATION PUMP STATION	CONCRETE LAYOUT AND ARCHITECTURAL DETAILS
81	EFFLUENT PUMP STATION – CONCRETE AND BUILDING LAYOUT	PLANS, SECTIONS & ELEVATIONS
82	EXISTING MAIN INTAKE SUBSTATION – ADDITIONAL ROOM FOR NEW GENERATOR	PLANS, SECTIONS & ELEVATIONS
83	EXISTING MAIN INTAKE SUBSTATION – HEAD OF WORKS NETWORK BUILDING	ARCHITECTURAL DETAILS
	BUILDINGS STRUCTURAL	
84	EXISTING MAIN INTAKE SUBSTATION – ADDITIONAL ROOM FOR NEW GENERATOR	REINFORCEMENT DETAILS
85	EXISTING MAIN INTAKE SUBSTATION – ADDITIONAL ROOM FOR NEW GENERATOR	BENDING SCHEDULE
86	EXISTING MAIN INTAKE SUBSTATION – NETWORK BUILDING	REINFORCEMENT DETAILS AND BENDING SCHEDULE
111-130	PRIMARY SEDIMENTATION TANKS – STRUCTURAL	
111	PRIMARY SEDIMENTATION TANKS – SHEET 1 OF 2	CONCRETE LAYOUT & DETAILS
112	PRIMARY SEDIMENTATION TANKS – SHEET 2 OF 2	CONCRETE LAYOUT & DETAILS
113	PRIMARY SEDIMENTATION TANKS – CENTRAL FEED WALL AND FLOOR	REINFORCEMENT DETAILS
114	PRIMARY SEDIMENTATION TANKS – EXTERNAL WALL	REINFORCEMENT DETAILS
115	PRIMARY SEDIMENTATION TANKS – CENTRAL FEED	REINFORCEMENT DETAILS
116	PRIMARY SEDIMENTATION TANKS	BENDING SCHEDULE
117	PST TERRACE – GENERAL LAYOUT	PITS AND MANHOLES
130-140	PRIMARY SEDIMENTATION TANKS – PIPEWORK	
131	PST TERRACE	
132	PST – INLET LAYOUT	GENERAL PIPE ARRANGEMENT
133	PST – SLUDGE AND SOLID LAYOUT	PLAN AND LONG SECTIONS
134	PST TERRACE – OUTLET PIPE – LAYOUT	PLAN AND LONG SECTIONS
135	PST STEEL PIPE	DETAILS
141-170	FERMENTATION TERRACE – STRUCTURAL	
141	FERMENTATION THICKENER	GA AND CONCRETE DETAILS
142	FERMENTATION THICKENER – SHEET 1 OF 4	REINFORCEMENT DETAILS
143	FERMENTATION THICKENER – SHEET 2 OF 4	REINFORCEMENT DETAILS
144	FERMENTATION THICKENER – SHEET 3 OF 4	REINFORCEMENT DETAILS
145	FERMENTATION THICKENER – SHEET 4 OF 4	BENDING SCHEDULE
150	ELUTRATION PUMPSTATION	CONCRETE LAYOUT AND DETAILS
154	MIXING TANK	CONCRETE LAYOUT AND DETAILS
155	MIXING TANK	REINFORCEMENT DETAILS
156	MIXING TANK	BENDING SCHEDULE
157	EXTENSION TO EXISTING ELUTRATION PUMP STATION	CONCRETE LAYOUT AND DETAILS
158	ELUTRATION PUMPSTATION – SHEET 1 OF 5	REINFORCEMENT DETAILS
159	ELUTRATION PUMPSTATION – SHEET 2 OF 5	REINFORCEMENT DETAILS
160	ELUTRATION PUMPSTATION – SHEET 3 OF 5	REINFORCEMENT DETAILS
161	ELUTRATION PUMPSTATION – SHEET 4 OF 5	REINFORCEMENT DETAILS
162	ELUTRATION PUMPSTATION	BENDING SCHEDULE
163	ELUTRATION PUMPSTATION – SHEET 5 OF 5	REINFORCEMENT DETAILS
164	EXTENSION TO EXISTING ELUTRATION PUMPSTATION	REINFORCEMENT DETAILS
165	EXTENSION TO EXISTING ELUTRATION PUMPSTATION	BENDING SCHEDULE
167	CHAMBER FV 5	FLOOR AND WALLS – REINFORCEMENT DETAILS
168	CHAMBER FV 5	REINFORCEMENT BENDING SCHEDULES

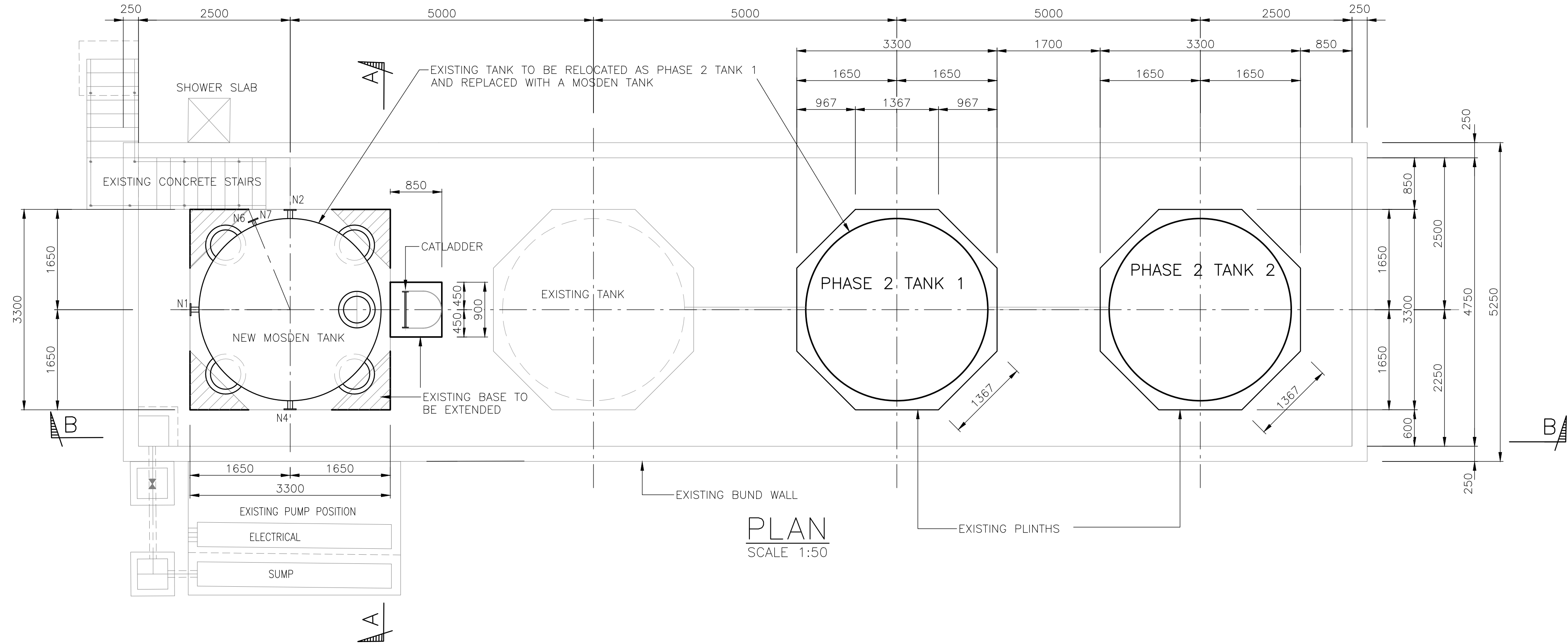
DRAWING NUMBER 30300141	TITLE	
171-200	FERMENTATION TERRACE – PIPEWORK	
171	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES	LAYOUT PLAN
172	FERMENTATION TERRACE – ODOUR CONTROL	PIPEWORK LAYOUT
173	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 1 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
174	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 2 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
175	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 3 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
176	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 4 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
177	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 5 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
178	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES – SHEET 6 OF 6	PLAN, LONGITUDINAL SECTIONS & MATERIAL LIST
180	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES	DETAILS
181	FERMENTATION TERRACE – ELUTRATION EFFLUENT & THICKENED SLUDGE PIPES	DETAILS
201-250	BALANCING TANK – STRUCTURAL	
201	BALANCING TANK – SHEET 1 OF 5	G.A AND CONC LAYOUT
202	BALANCING TANK – SHEET 2 OF 5	G.A AND CONC LAYOUT
203	BALANCING TANK – SHEET 3 OF 5	G.A AND CONC LAYOUT
204	BALANCING TANK – SHEET 4 OF 5	G.A AND CONC LAYOUT
205	BALANCING TANK – SHEET 5 OF 5	G.A AND CONC LAYOUT
206	BALANCING TANK – SHEET 1 OF 11	REINFORCEMENT DETAILS
207	BALANCING TANK – SHEET 2 OF 11	REINFORCEMENT DETAILS
208	BALANCING TANK – SHEET 3 OF 11	REINFORCEMENT DETAILS
209	BALANCING TANK – SHEET 4 OF 11	REINFORCEMENT DETAILS
210	BALANCING TANK – SHEET 5 OF 11	REINFORCEMENT DETAILS
211	BALANCING TANK – SHEET 6 OF 11	REINFORCEMENT DETAILS
212	BALANCING TANK – SHEET 7 OF 11	REINFORCEMENT DETAILS
213	BALANCING TANK – SHEET 8 OF 11	REINFORCEMENT DETAILS
214	BALANCING TANK – SHEET 9 OF 11	REINFORCEMENT DETAILS
215	BALANCING TANK – SHEET 10 OF 11	REINFORCEMENT DETAILS
216	BALANCING TANK – SHEET 11 OF 11	REINFORCEMENT DETAILS
219	BALANCING TANK – PLATFORMS AND BRIDGE SUPPORTS – SHEET 1 OF 3	REINFORCEMENT DETAILS
220	BALANCING TANK – PLATFORMS AND BRIDGE SUPPORTS – SHEET 2 OF 3	REINFORCEMENT DETAILS
221	BALANCING TANK – LAYOUT OF NOVA DELTA FRICTION BEARINGS	LAYOUT
223	BALANCING TANK	BENDING SCHEDULE
224	BALANCING TANK	BENDING SCHEDULE
225	BALANCING TANK	BENDING SCHEDULE
226	BALANCING TANK – PLATFORMS AND BRIDGE SUPPORTS – SHEET 3 OF 3	REINFORCEMENT DETAILS
227	BMS AND BV3	REINFORCEMENT DETAILS
228	CHANNEL	REINFORCEMENT DETAILS
229	CHANNEL	REINFORCEMENT DETAILS
230	BT2A	REINFORCEMENT DETAILS
251-280	BALANCING TANK – PIPEWORK AND CHANNELS	
251	BALANCING TANK – UNDERFLOOR DRAINAGE	SECTIONS AND DETAILS
252	BALANCING TANK – GENERAL PIPE ARRANGEMENT	PIPE PITS DETAILS
254	BALANCING TANK – INLET, OUTLET AND OVERFLOW LAYOUT	GENERAL PIPE ARRANGEMENTS PLAN AND SECTIONS
256	BALANCING TANK	STEEL PIPE DETAILS
258	BALANCING TANK OVER FLOW CHAMBER	CONCRETE DETAILS
259	BALANCING TANK OVER FLOW CHAMBER	REINFORCEMENT DETAILS AND BENDING SCHEDULE
301-400	REACTOR – STRUCTURAL	
301	REACTOR	GENERAL ARRANGEMENT
303	REACTOR – DETAILS OF INTERNAL WALLS SHEET 1 OF 3 AND RECYCLE A PUMPSTATION	PLANS, ELEVATION, SECTIONS AND DETAILS
304	REACTOR – DETAILS OF INTERNAL WALLS SHEET 2 OF 3	PLANS, ELEVATION, SECTIONS AND DETAILS
305	REACTOR – DETAILS OF INTERNAL WALLS SHEET 3 OF 3 AND RECYCLE B PUMPSTATION	PLANS, ELEVATION, SECTIONS AND DETAILS
306	REACTOR – PLATFORMS AND BRIDGES	HANDRIAL LAYOUT AND DETAILS
307	REACTOR – FLOOR SLAB	LAYOUT AND DETAILS
308	REACTOR – UNDER-FLOOR DRAINAGE	LAYOUT AND DETAILS
309	REACTOR – PLATFORM AND BRIDGES	LAYOUT AND DETAILS
310	REACTOR – EXTERNAL WALLS	CHANNELS AND DETAILS
311	REACTOR – CABLE TRENCHES	LAYOUT, SECTIONS AND DETAILS
312	REACTOR – ARCHIMEDES SCREW PUMPSTATION	LAYOUT PLANS
313	REACTOR – ARCHIMEDES SCREW PUMPSTATION	CONCRETE DETAILS AND SECTIONS
315	REACTOR – ARCHIMEDES SCREW PUMPSTATION – SHEET 1 OF 4	REINFORCEMENT DETAILS
316	REACTOR – ARCHIMEDES SCREW PUMPSTATION – SHEET 2 OF 4	REINFORCEMENT DETAILS
317	REACTOR – ARCHIMEDES SCREW PUMPSTATION – SHEET 3 OF 4	REINFORCEMENT SCHEDULE
318	REACTOR – ARCHIMEDES SCREW PUMPSTATION – SHEET 4 OF 4	REINFORCEMENT SCHEDULE
319	SCREW PUMPSTATION – CRAWL BEAMS	STEELWORK DETAILS
320	REACTOR – AERATOR & MIXER PLATFORM	DETAILS & LEVELS
321	REACTOR – EXTERNAL WALLS PANELS P1 TO P7	REINFORCEMENT DETAILS
322	REACTOR – PERIMETER AND TRENCH WALLS PANELS P8 TO P14	REINFORCEMENT DETAILS
323	REACTOR – CONCRETE UPSTANDS UNDER BRIDGES ON EASTERN WALL AND CHANNELS	LAYOUT AND DETAILS
324	REACTOR – PERIMETER AND TRENCH WALLS PANELS P15 AND P17	REINFORCEMENT DETAILS
325	REACTOR – PERIMETER AND TRENCH WALLS PANELS P21 AND P16	REINFORCEMENT DETAILS
326	REACTOR – PERIMETER AND TRENCH WALLS PANELS P1 TO P7	BENDING SCHEDULES
327	REACTOR – PERIMETER AND TRENCH WALLS PANELS P8 TO P14	BENDING SCHEDULES
328	REACTOR – AERATORS CABLE TRENCH LAYOUT	KEY PLAN & DETAILS
329	REACTOR – PERIMETER AND TRENCH WALLS PANELS P24 AND P23	REINFORCEMENT DETAILS
330	REACTOR – PERIMETER AND TRENCH WALLS PANEL P19	REINFORCEMENT DETAILS
331	REACTOR – INTERNAL WALLS PANELS A TO G	REINFORCEMENT DETAILS
332	REACTOR – INTERNAL WALLS	REINFORCEMENT DETAILS
333	REACTOR – INTERNAL WALLS PANELS Q, R, S, T, V, AND W	REINFORCEMENT DETAILS
334	REACTOR – MIXER CABLE TRENCH LAYOUT	KEY PLAN & DETAILS
335	REACTOR – INTERNAL WALLS PANELS A TO G	BENDING SCHEDULE
336	REACTOR – INTERNAL WALLS PH, PL, PK, OL, PM, PN, PP / PU	BENDING SCHEDULE
337	REACTOR – INTERNAL WALLS	BENDING SCHEDULE
341	REACTOR – FLOOR SLAB	DETAILS
343	REACTOR – AERATORS – PLATFORMS, COLUMNS AND BASES	REINFORCEMENT DETAILS
344	REACTOR – MIXERS – PLATFORMS, COLUMNS AND BASES	REINFORCEMENT SCHEDULES

DRAWING NUMBER 30300141	TITLE	
	REACTOR – STRUCTURAL (CONTINUED)	
345	REACTOR – AERATORS – BASES, COLUMNS AND PLATFORMS	BENDING SCHEDULE
346	REACTOR – MIXERS – BASES, COLUMNS AND PLATFORMS	BENDING SCHEDULE
347	REACTOR TERRACE – WALKWAY STAIRS	REINFORCEMENT DETAILS
348	REACTOR TERRACE – WALKWAY STAIRS	REINFORCEMENT SCHEDULE
351	REACTOR – RECYCLE PUMPSTATION A STRUCTURE	REINFORCEMENT DETAILS
352	REACTOR – RECYCLE PUMPSTATION B STRUCTURE	REINFORCEMENT DETAILS
353	REACTOR – RECYCLE PUMPSTATION A STRUCTURE	REINFORCEMENT SCHEDULE
354	REACTOR – RECYCLE PUMPSTATION B STRUCTURE	REINFORCEMENT SCHEDULE
355	REACTOR – AERATORS & MIXER PLATFORM	DRAINAGE DETAILS
356	REACTOR – PERIMETER AND TRENCH WALLS PANELS P18 AND P25	REINFORCEMENT DETAILS
357	REACTOR – PERIMETER AND TRENCH WALLS PANELS P22 AND P27	REINFORCEMENT DETAILS
358	REACTOR – ARCHIMEDES SCREW PUMPSTATION	STAIRS & RAILING DETAILS
359	REACTOR – PERIMETER AND TRENCH WALLS PANELS P15 ,P16, P17 AND P21	BENDING SCHEDULE
360	REACTOR – PERIMETER AND TRENCH WALLS PANELS P19 ,P20 AND P26	BENDING SCHEDULE
361	REACTOR – PERIMETER AND TRENCH WALLS PANELS P22 ,P23, P24 AND P27	BENDING SCHEDULE
362	REACTOR – PERIMETER AND TRENCH WALLS PANELS P18 AND P25	BENDING SCHEDULE
363	REACTOR – PERIMETER AND TRENCH WALLS PANELS P26 AND P20	REINFORCEMENT DETAILS
364	REACTOR – INLETS AND SUMP	REINFORCEMENT LAYOUT
365	REACTOR – INLETS AND SUMPS	REINFORCEMENT BENDING SCHEDULES
368	REACTOR – BRIDGE SUPPORT STRUCTURES BSS1 AND BSS2	REINFORCEMENT DETAILS
369	REACTOR – BRIDGE SUPPORT STRUCTURES BSS1 AND BSS2	BENDING SCHEDULE
370	REACTOR – PERIMETER AND TRENCH WALLS PANELS P28	REINFORCEMENT DETAILS
371	REACTOR – WALKWAY BRIDGES B5 TO B1	REINFORCEMENT DETAILS
372	REACTOR – WALKWAY BRIDGES B6 TO B9	REINFORCEMENT DETAILS
373	REACTOR – WALKWAY BRIDGES B5 TO B1	REINFORCEMENT BENDING SCHEDULES
374	REACTOR – WALKWAY BRIDGES B6 TO B9	REINFORCEMENT BENDING SCHEDULES
383	REACTOR – SETTLED SEWAGE FROM BALANCING TANK	PLAN, LONGSECTION AND MATERIAL LIST
385	REACTOR – VALVE AND METER BOXES RB3 AND RB4	CONCRETE DETAILS
386	REACTOR – VALVE AND METER BOXES RB3 AND RB4	REINFORCEMENT DETAILS
397	REACTOR – VALVE AND METER BOXES	REINFORCEMENT SCHEDULE
398	FLOOR SLAB	REINFORCEMENT DETAILS
401-430	CLARIFIERS – STRUCTURAL	
401	CLARIFIER – SHEET 1 OF 2	GA AND CONCRETE DETAILS
406	CLARIFIERS – FLOW DIVIDER	CONCRETE DETAILS
407	CLARIFIER – FLOW DIVIDER	REINFORCEMENT DETAILS
408	CLARIFIER – FLOW DIVIDER	REINFORCEMENT DETAILS
409	CLARIFIER – PITS AND MANHOLES	CONCRETE DETAILS
410	JUNCTION BOX RASB2A	REINFORCEMENT DETAILS
411	CLARIFIER – FLOW DIVIDER AND JUNCTION BOXES	BENDING SCHEDULE
412	CLARIFIER – EFFLUENT TO FLUME JUNCTION BOX EAB2 (EXISTING)	CONCRETE DETAILS (FOR INFORMATION ONLY)
413	CLARIFIER – SHEET 2 OF 2	GA AND CONCRETE DETAILS
414	CLARIFIER – MAIN OUTER WALL	REINFORCEMENT DETAILS
415	CLARIFIER – FLOOR SEGMENTS AND DETAILS	REINFORCEMENT DETAILS
416	CLARIFIER – CENTRAL FEED – SHEET 1 OF 2	CONCRETE DETAILS
417	CLARIFIER – CENTRAL FEED – SHEET 2 OF 2	REINFORCEMENT DETAILS
418	CLARIFIER	
422	CLARIFIER TERRACE –RETURN ACTIVATED SLUDGE PIPELINE –RASB JUNCTION BOXES 2A & 2B	CONCRETE DETAILS
423	CLARIFIER – RETURN ACTIVATED SLUDGE PIPELINE – RASB 2B	REINFORCEMENT DETAILS
424	CLARIFIER – RASB 2B JUNCTION BOX 1	BENDING SCHEDULE RP1–RP4
425	CLARIFIER – EFFLUENT TO FLUME RASB2 JUNCTION BOX 2	REINFORCEMENT DETAILS
426	CLARIFIER – RASB 2A JUNCTION BOX 2	BENDING SCHEDULE RP5–RP8
427	CLARIFIERS	GENERAL DETAILS
428	JUNCTION BOX RASB2B	REINFORCEMENT DETAILS
431-450	CLARIFIERS – PIPEWORK	
431	CLARIFIER TERRACE – PIPEWORK	GENERAL ARRANGEMENT
432	CLARIFIER TERRACE – EFFLUENT PIPELINE	LONGITUDINAL SECTION
433	REACTOR AND CLARIFIER TERRACE – WASTE ACTIVATED SLUDGE PIPELINE	LONGITUDINAL SECTION
434	CLARIFIER TERRACE – FEED PIPES	LONGITUDINAL SECTION
435	CLARIFIER TERRACE – RETURN ACTIVATED SLUDGE STEEL PIPING	MISCELLANEOUS SECTIONS
436	CLARIFIER TERRACE – RETURN ACTIVATED SLUDGE PIPE	LONGITUDINAL SECTION
437	CLARIFIER TERRACE – INLET AND OUTLET PIPING	STEEL PIPES DETAILS
438	CLARIFIER TERRACE – WASTE ACTIVATED SLUDGE FLUME	CONCRETE AND PIPE DETAILS
451-470	EFFLUENT DISPOSAL – STRUCTURAL	
451	CHLORINE CONTACT TANK – SHEET 1 OF 3	GENERAL ARRANGEMENT
452	CHLORINE CONTACT TANK – SHEET 2 OF 3	CONCRETE DETAIL
453	CHLORINE CONTACT TANK – SHEET 3 OF 3	CONCRETE DETAIL
461	CHLORINE CONTACT TANK – SHEET 1 OF 7	REINFORCEMENT
462	CHLORINE CONTACT TANK – SHEET 2 OF 7	REINFORCEMENT
463	CHLORINE CONTACT TANK – SHEET 3 OF 7	REINFORCEMENT
464	CHLORINE CONTACT TANK – SHEET 4 OF 7	REINFORCEMENT
465	CHLORINE CONTACT TANK – SHEET 5 OF 7	REINFORCEMENT
466	CHLORINE CONTACT TANK – SHEET 6 OF 7	REINFORCEMENT
467	CHLORINE CONTACT TANK – SHEET 7 OF 7	BENDING SCHEDULE

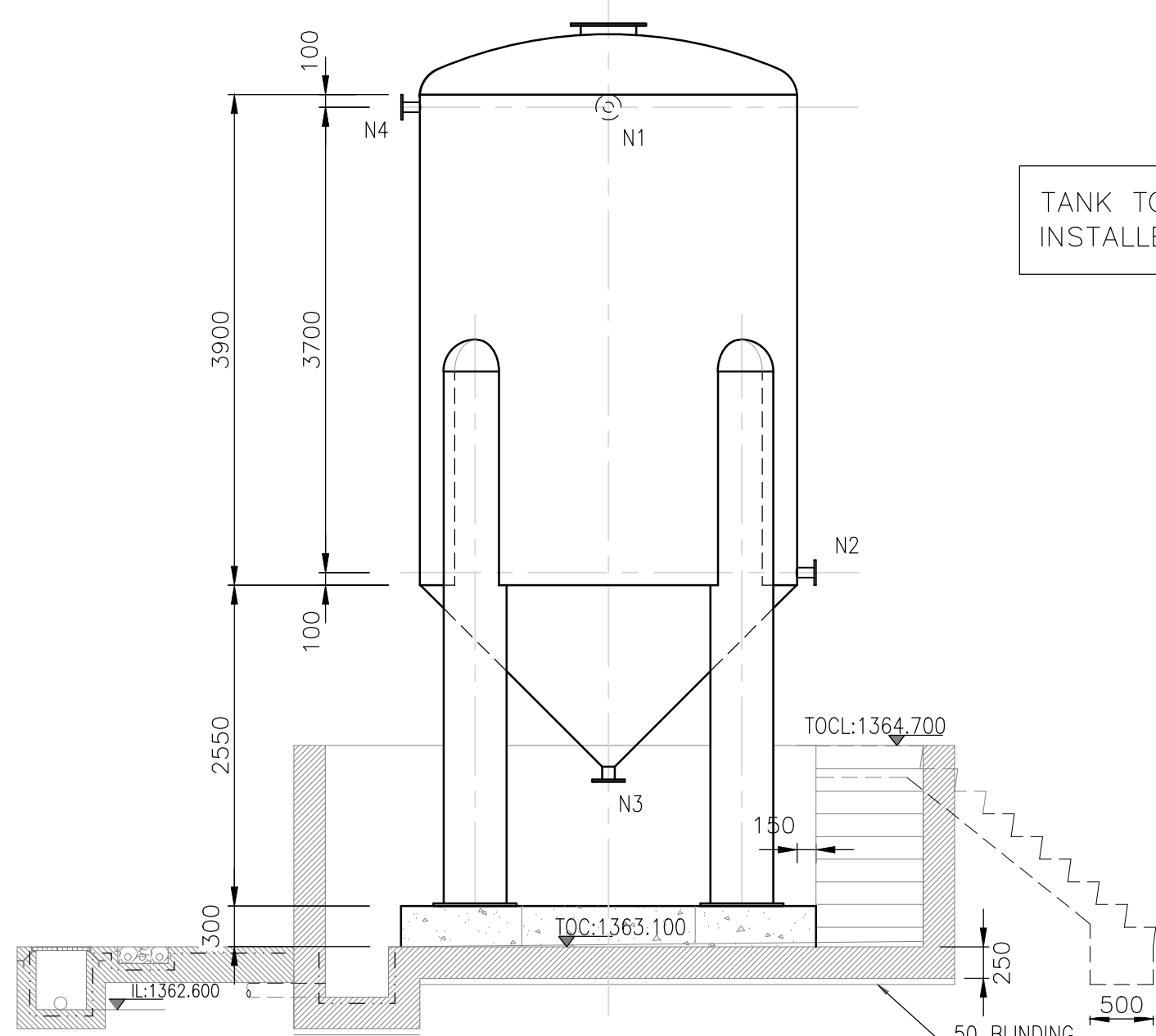
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471-480	EFFLUENT DISPOSAL – PIPEWORK	
473	DISINFECTION CONTACT TANK – LAYOUT OF STEEL PIPES	PLAN AND LONGITUDINAL SECTIONS
474	DISINFECTION CONTACT TANK – STEEL PIPES	DETAILS
480	DISINFECTION CONTACT TANK – UNDERFLOOR DRAINAGE	LAYOUT & DETAIL
481-490	EFFLUENT PUMP STATION	
481	EFFLUENT PUMPSTATION – SHEET 1 OF 4	REINFORCEMENT DETAILS
482	EFFLUENT PUMPSTATION – SHEET 2 OF 4	REINFORCEMENT DETAILS
483	EFFLUENT PUMPSTATION – SHEET 3 OF 4	REINFORCEMENT DETAILS
484	EFFLUENT PUMPSTATION – SHEET 4 OF 4	BENDING SCHEDULE
485	EFFLUENT PUMPSTATION	CONCRETE LAYOUT AND DETAILS
491-520	WASTE SLUDGE TREATMENT – STRUCTURAL	
508	WASTE SLUDGE THICKENER – SHEET 1 OF 2	CONCRETE GENERAL ARRANGEMENT
509	WASTE SLUDGE THICKENER – SHEET 2 OF 2	CONCRETE LAYOUT & DETAILS
510	WASTE SLUDGE THICKENER	REINFORCEMENT DETAILS – MAIN OUTER WALL
511	WASTE SLUDGE THICKENER	REINFORCEMENT DETAILS – FLOOR SEGMENTS AND DETAILS
512	WASTE SLUDGE THICKENER	REINFORCEMENT DETAILS – CENTRAL FEED
513	WASTE SLUDGE THICKENER	BENDING SCHEDULE
521-540	WASTE SLUDGE TREATMENT – PIPEWORK	
521	WASTE ACTIVATED SLUDGE TERRACE	GA OF PIPEWORK
522	WASTE ACTIVATED SLUDGE	LONG SECTIONS
524	WASTE ACTIVATED SLUDGE TERRACE	STEEL PIPE DETAILS
541-579	ROADS AND PAVING	
544	ROAD 5	PLAN AND SECTIONS
552	TERRACE LAYOUT	PST TERRACE
553	TERRACE LAYOUT	BALANCING TANK AND ELUTRIFICATION TERRACE
554	TERRACE LAYOUT	REACTOR 2 TERRACE
555	TERRACE LAYOUT	CLARIFIER 2 TERRACE
556	TERRACE LAYOUT	CHLORINE DISINFECTION & WST TERRACE
557	TERRACE LAYOUT	CHLORINE DISINFECTION TERRACE – PLAN AND SECTIONS
561	STORMWATER	PLAN AND LONGITUDINAL SECTIONS
591-630	SERVICES	
591	REACTOR SUBSTATION – WEST PAVING AREA	PAVING LEVELS AND RETAINING WALL DETAILS
598	CABLE DUCT	DETAILS
597	DIESEL BULK TANK– ADMIN	LAYOUT AND DETAILS
598	DIESEL BULK TANK– MAIN INTAKE SWITCHROOM	LAYOUT AND DETAILS
600	SMALL SERVICES	SITE LAYOUT
602	SMALL SERVICES – SHEET 1 OF 2	TYPICAL DETAILS
603	SMALL SERVICES – SHEET 2 OF 2	TYPICAL DETAILS
631-650	STANDARD/TYPICAL DETAILS	
632	EXPANSION JOINTS IN STRUCTURES	DETAILS
633	REACTOR – EXPANSION JOINT	DETAILS
635	CATLADDER DETAILS	DETAILS
636	FLUME GUAGE PLATES	MISCELLANEOUS DETAILS
637	PIPE BEDDING	DETAILS
638	HANDRAILS	STANDARD DETAILS
640	TYPICAL ROAD DETAILS	STANDARD DETAILS
642	STORMWATER – TYPICAL DETAILS – SHEET 1 OF 2	DETAILS
643	STORMWATER – TYPICAL DETAILS – SHEET 2 OF 2	DETAILS
645	ROADS – GUARDRAIL	LAYOUT AND DETAILS
651-709	OTHER CIVIL DETAILS	
651	BULK EARTHWORKS – FILL	PLAN
656	BULK EXCAVATION – CUT	PLAN
672	CABLE DUCTS	SEDIMENTATION AND BALANCING TANK
673	CABLE DUCTS	REACTOR
674	CABLE DUCTS	CLARIFIERS
801-820	REACTOR SUBSTATION	
801	REACTOR SUBSTATION	FOUNDATION & GROUND FLOOR PLAN
802	REACTOR SUBSTATION	SECTION A-A & EAVES BEAM PLAN
810	REACTOR SUBSTATION	FOUNDATION & COLUMN REINFORCEMENT
811	REACTOR SUBSTATION	GROUND FLOOR BOLLARD EDGE THICKENING, EAVES BEAM & ROOF SLAB REINFORCEMENT
820	REACTOR SUBSTATION	REINFORCEMENT SCHEDULES
900-906	FERMENTATION TERRACE – STRUCTURAL (CONTINUED)	
900	CHAMBER FV 6	REINFORCEMENT LAYOUT AND DETAILS
901	CHAMBER FV 6	REINFORCEMENT BENDING SCHEDULES
902	CHAMBER FV 7	REINFORCEMENT LAYOUT AND DETAILS
903	CHAMBER FV 7	REINFORCEMENT BENDING SCHEDULES
904	CHAMBER FV 8	REINFORCEMENT LAYOUT AND DETAILS
905	CHAMBER FV 8	REINFORCEMENT LAYOUT AND DETAILS
906	CHAMBER FV 9	REINFORCEMENT LAYOUT AND DETAILS
920	PRIMARY SEDIMENTATION TANKS – STRUCTURAL (CONTINUED)	
920	PIT PJB3	REINFORCEMENT LAYOUT AND DETAILS
921-922	SERVICES (CONTINUED)	
921	6 000 LITER DIESEL BULK TANK – MAIN INTAKE SWMTHROOM	REINFORCEMENT LAYOUT AND DETAILS
922	10 000 LITER DIESEL BULK TANK – MAIN INTAKE SWITCHROOM	REINFORCEMENT LAYOUT AND DETAILS
923-928	CLARIFIERS – STRUCTURAL (CONTINUED)	
923	PIT RASB 2/3	REINFORCEMENT LAYOUT AND DETAILS
924	PIT RASB 2/1	REINFORCEMENT LAYOUT AND DETAILS
925	PIT RASB 2/2	REINFORCEMENT LAYOUT AND DETAILS
926	PIT CEB 2/1 , CEB 2/2 & CEB 2/3	REINFORCEMENT LAYOUT AND DETAILS
927-935	STANDARD/TYPICAL DETAILS (CONTINUED)	
927	MANHOLE 1	REINFORCEMENT
930	CHAMBER'S SWA 8 & 8-1 TYPE 1	REINFORCEMENT LAYOUT AND DETAILS
931	CHAMBER'S SWA 8-2 & 8-3 TYPE 1	REINFORCEMENT LAYOUT AND DETAILS
932	CHAMBER'S SWA 8-4 & 8-5 TYPE 1	REINFORCEMENT LAYOUT AND DETAILS
933	CHAMBER'S SWA 3-1 & 3-2 TYPE 1	REINFORCEMENT LAYOUT AND DETAILS
934	CHAMBER'S SWA 3-3 & 3-4 TYPE 1	REINFORCEMENT LAYOUT AND DETAILS
935	NON-STANDARD DETAILS-HANDRAILS	



3-D VIEW OF MOSDEN TANK



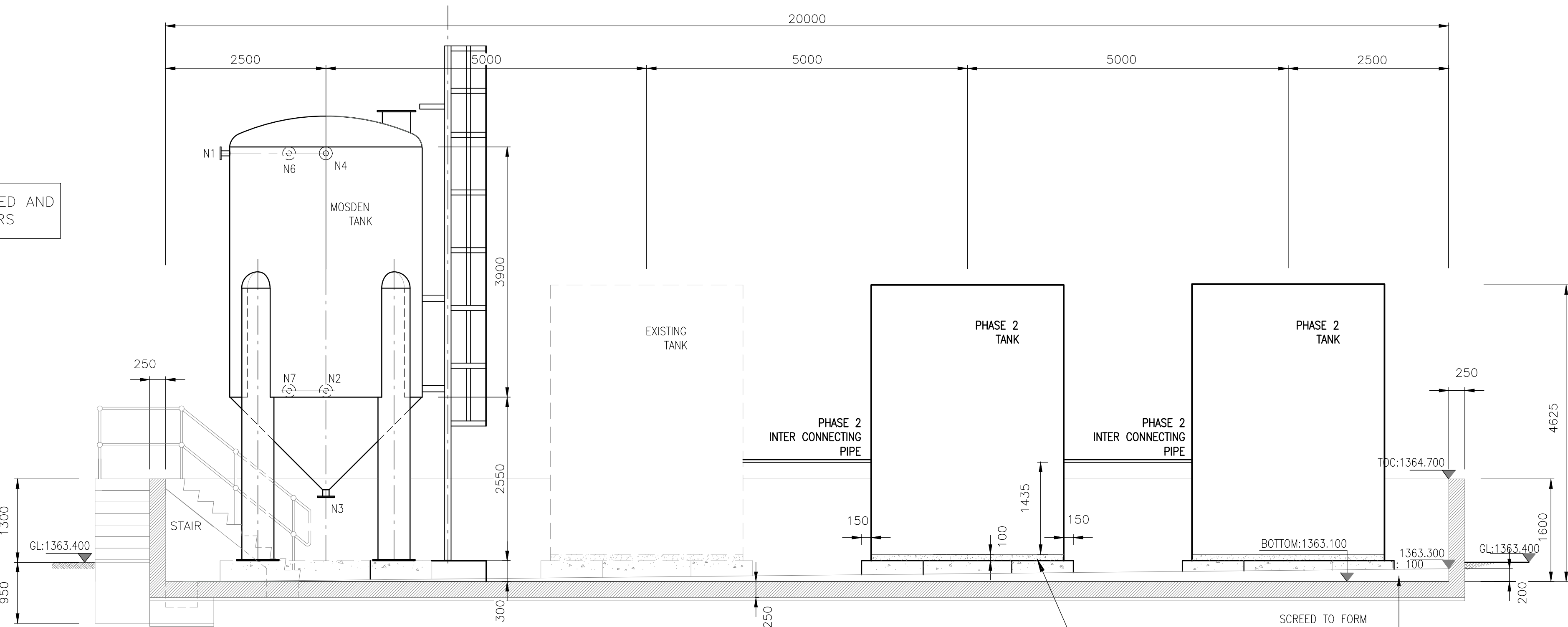
PLAN
SCALE 1:50



SECTION A-A

SCALE 1:50

TANK TO BE SUPPLIED AND
INSTALLED BY OTHERS



SECTION B-B

SCALE 1:50

NOTES

- CONCRETE QUALITY AT 28 DAYS
25 MPa
- CLEAR COVER TO REINFORCEMENT:
STAIRS 30mm
WALLS 30mm
SLABS 50mm
- ALL REINFORCING TO BE APPROVED BY THE ENGINEER
PRIOR TO POURING CONCRETE.

CONCRETE

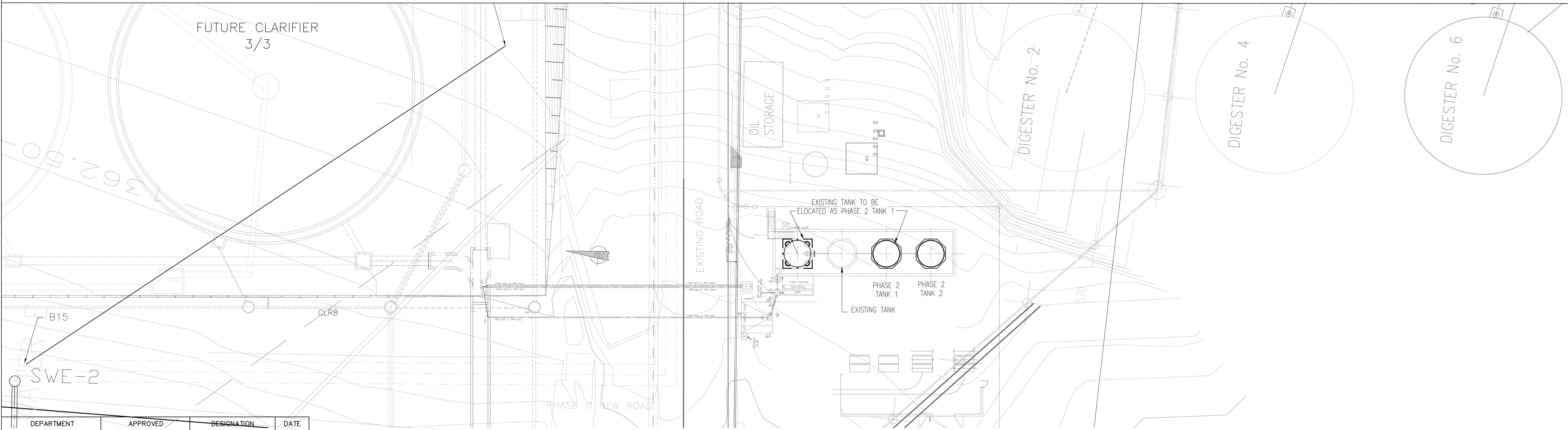
ALL STRUCTURAL CONCRETE TO BE GRADE 25/19.
50mm THICK BINDING LAYER IN GRADE 15/26,5 CONCRETE
CONCRETE SLAB FINISH TO BE STEEL FLOATED

FORMWORK

ALL EXPOSED SURFACES TO BE SMOOTH
COVERED SURFACES TO BE ROUGH FORMWORK.

BRICKWORK

ALL CHAMBER BRICK SKINS TO BE NFP STOCK BRICKS. MINIMUM
CRUSHING STRENGTH 7MPa.
BRICK REINFORCEMENT TO SUIT 220mm OR 110mm THICK BRICKWORK, TO BE
PROVIDED EVERY 5th COURSE



SITE PLAN

SCALE 1:200

POINT NAME	Y-COORDS	X-COORDS
HYPOCHLORIDE SETTING OUT		
HPSBRC	100 955.069	2 871 481.961
HPSBLC	100 960.285	2 871 482.555
HPSTLC	100 962.605	2 871 462.187
HPSTRC	100 957.388	2 871 461.593

HPSBRC HYDRAULIC PUMP STATION – BOTTOM RIGHT CORNER

HPSBLC HYDRAULIC PUMP STATION – BOTTOM LEFT CORNER

HPSTLC HYDRAULIC PUMP STATION – TOP LEFT CORNER

HPSTRC HYDRAULIC PUMP STATION – TOP RIGHT CORNER

CONSULTING ENGINEERS



P.O. BOX 221
RYVONDA
2100
TEL: 011-406 7111
FAX: 011-406 7100
EMAIL: enquiries@kpi.co.za



WSP Group Africa (Pty) Ltd
Industrial Division
33 Soane Street, Bryanston, 2191
Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com

SURVEYED

DESIGNED S V

DRAWN J vd W

CHECKED K M

SERVICES CHECKED

GEOTECHNICAL INVESTIGATION

SERVITUDES

APPROVED S. JKSAT

Pr. Eng. No. 202001279

DATE 30-06-2022

JOHANNESBURG WATER SOC LTD



17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS

UNIT 5 – PHASE 2

EXISTING HYDROCHLORITE PUMP STATION – BUND AND PUMPS

SHOWING PHASE 2 TANKS

PLAN AND SECTIONS

DESIGN
MANAGER

SCALE

AMENDMENTS

APPROVED

DATE

DRAWING No.

DATE

AS SHOWN

0

APPROVED FOR CONSTRUCTION

K M

01/07/22

JW NUMBER

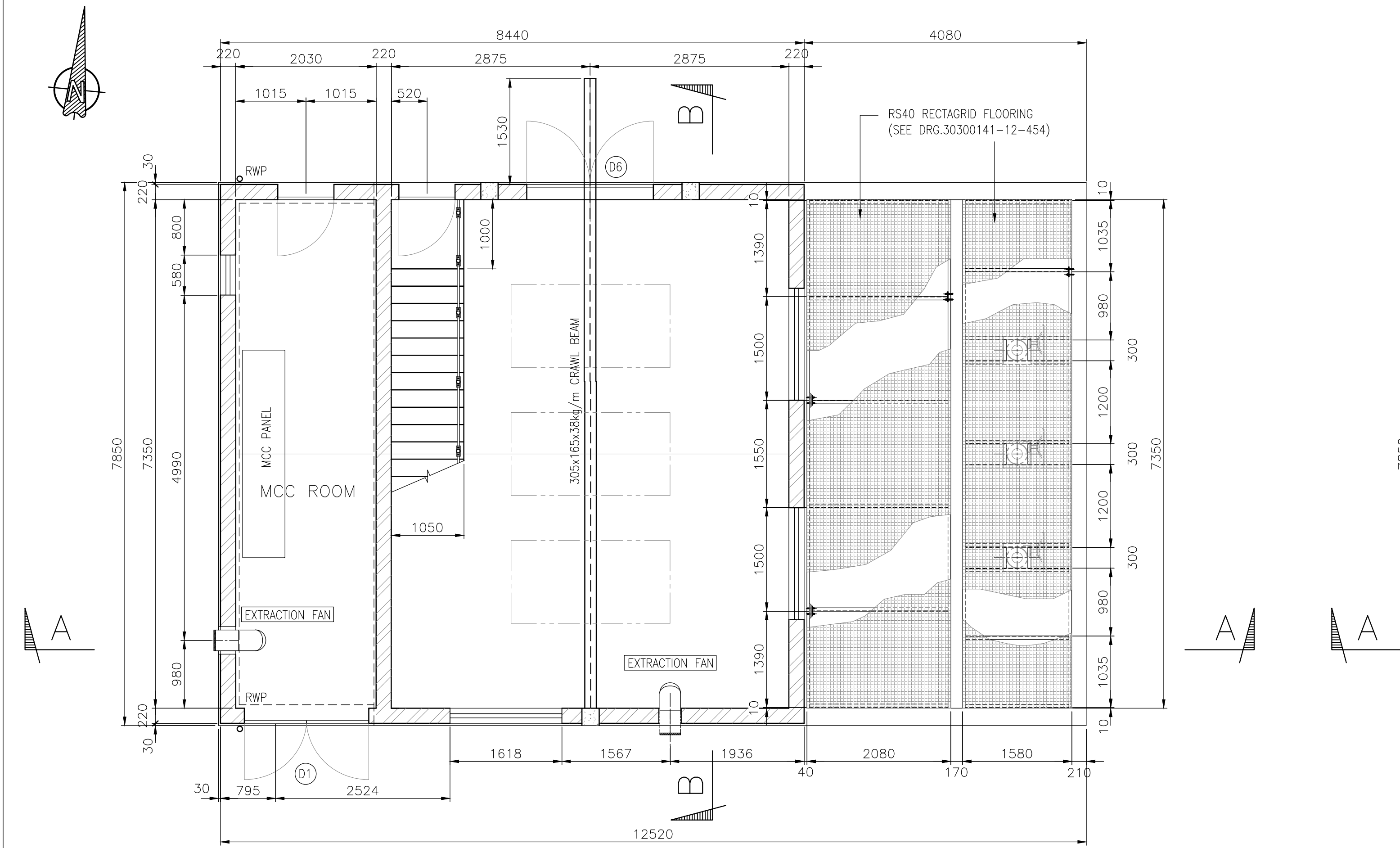
JW 13896-CE-073

CONSULTANT'S NUMBER

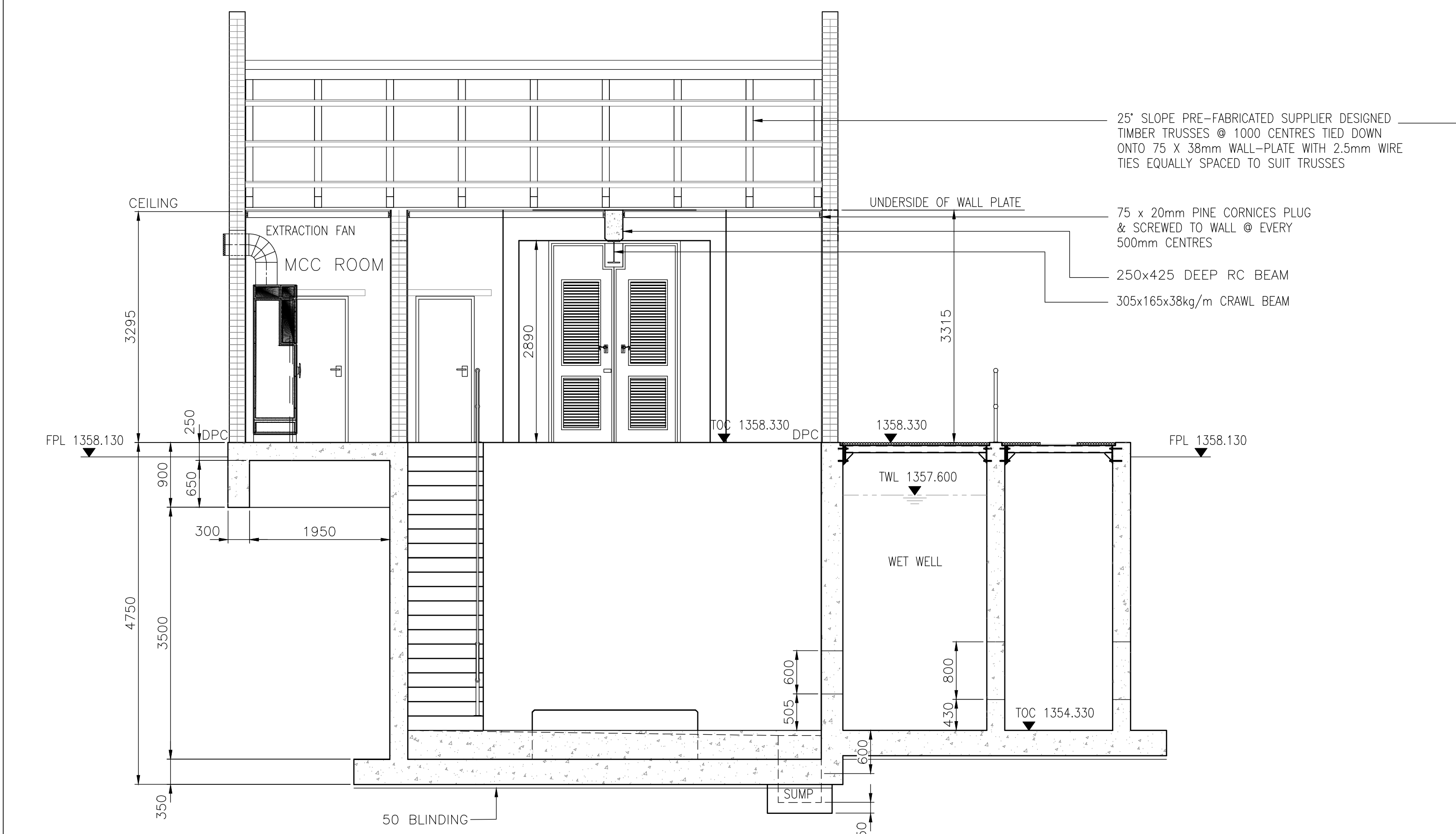
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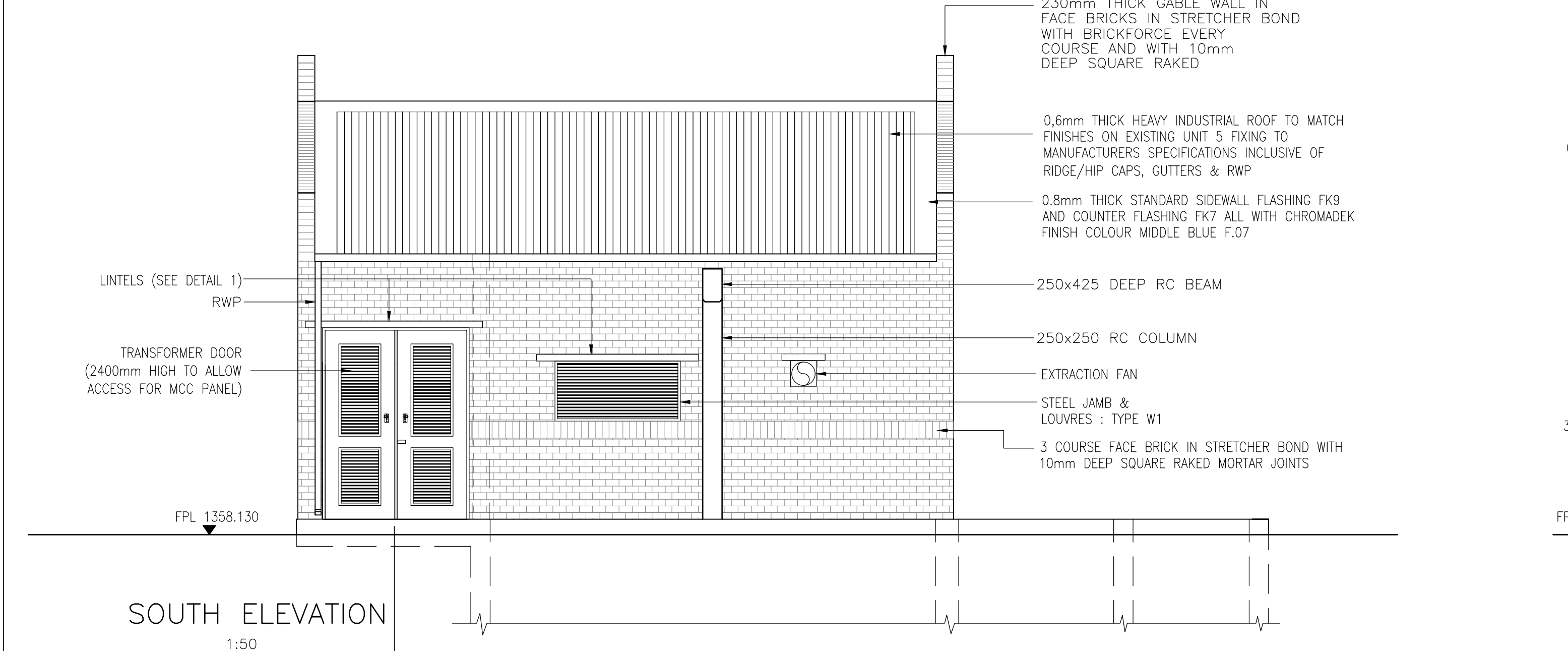
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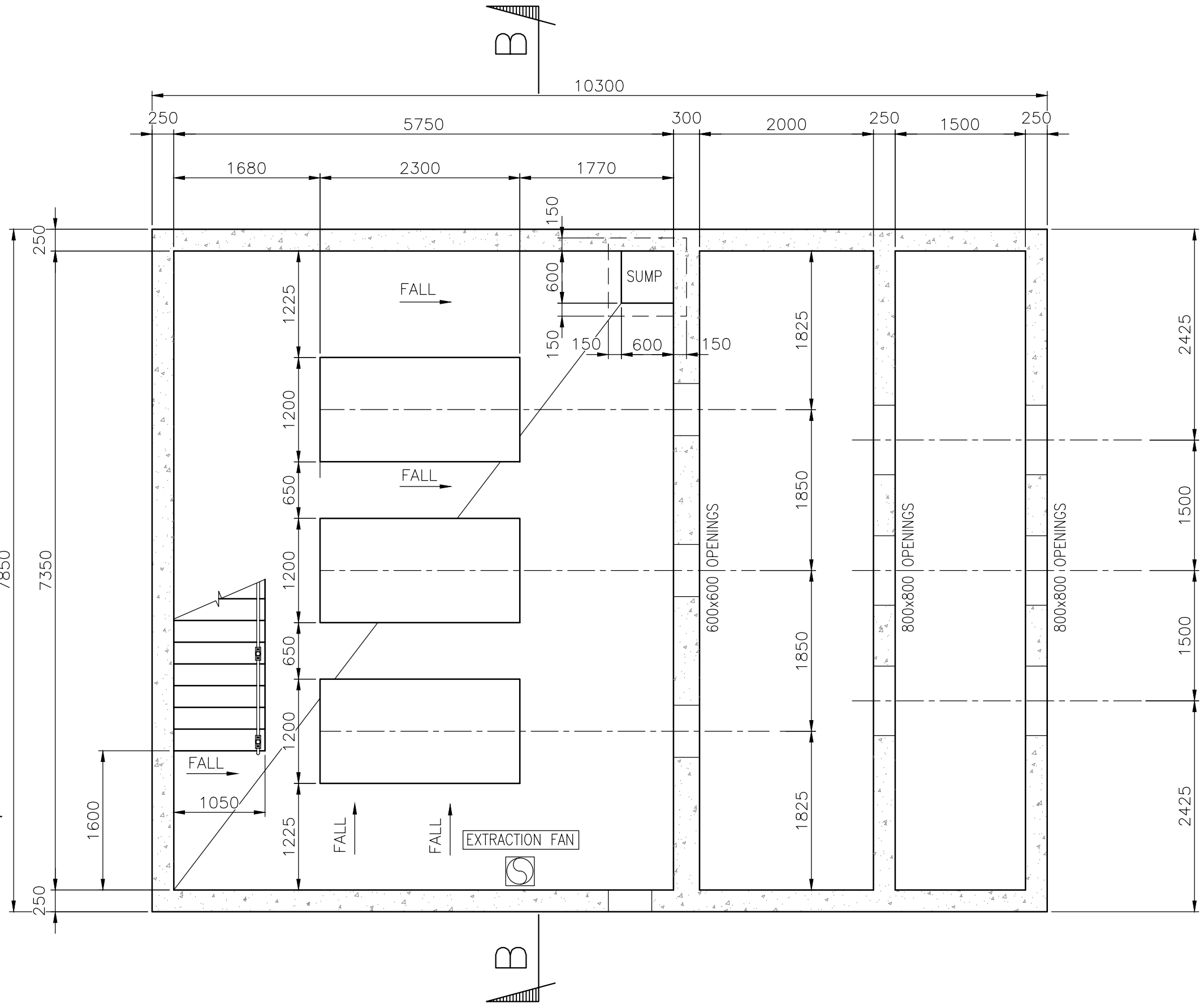
GROUND FLOOR PLAN
1:50



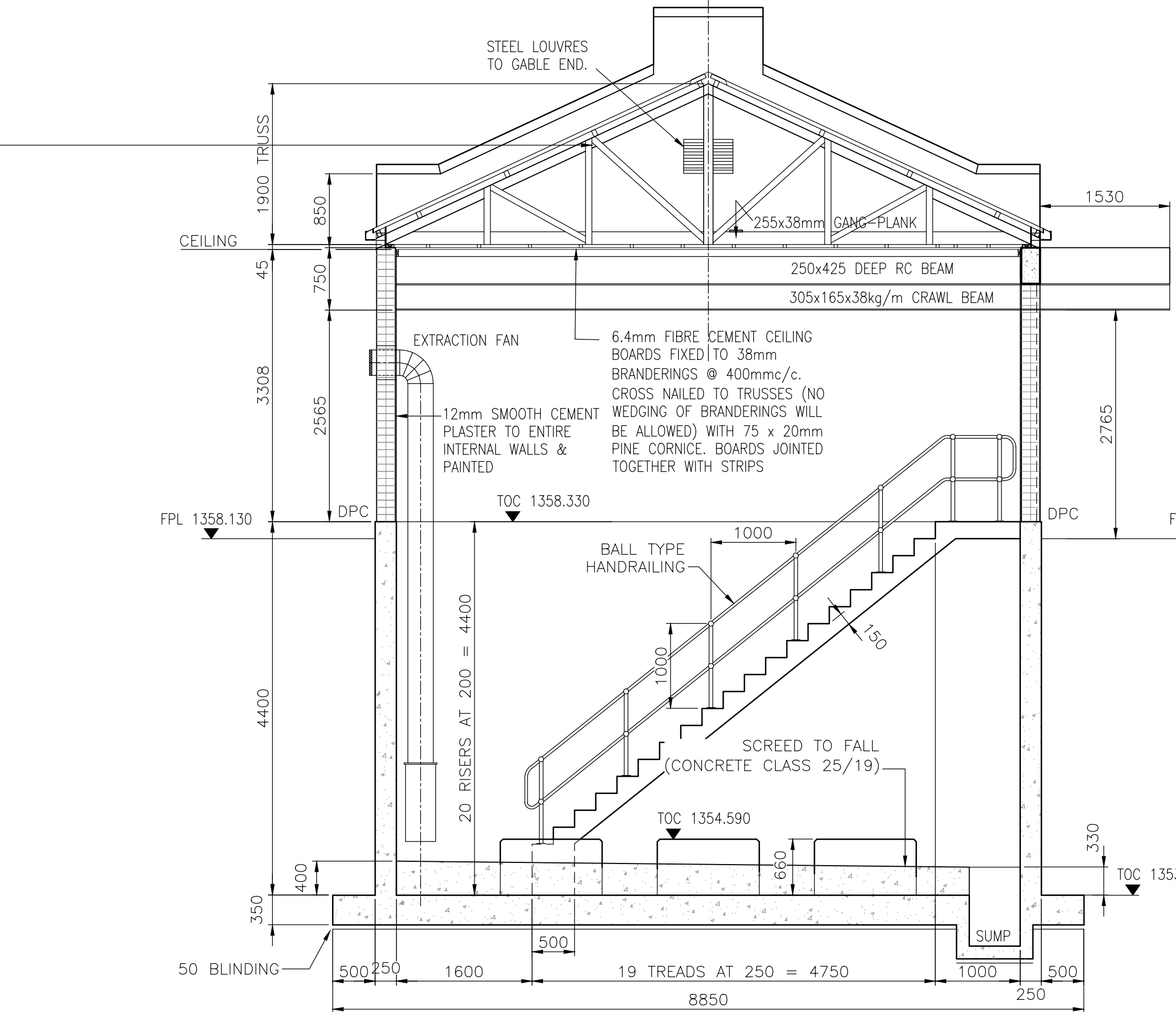
SECTION A-A
1:50



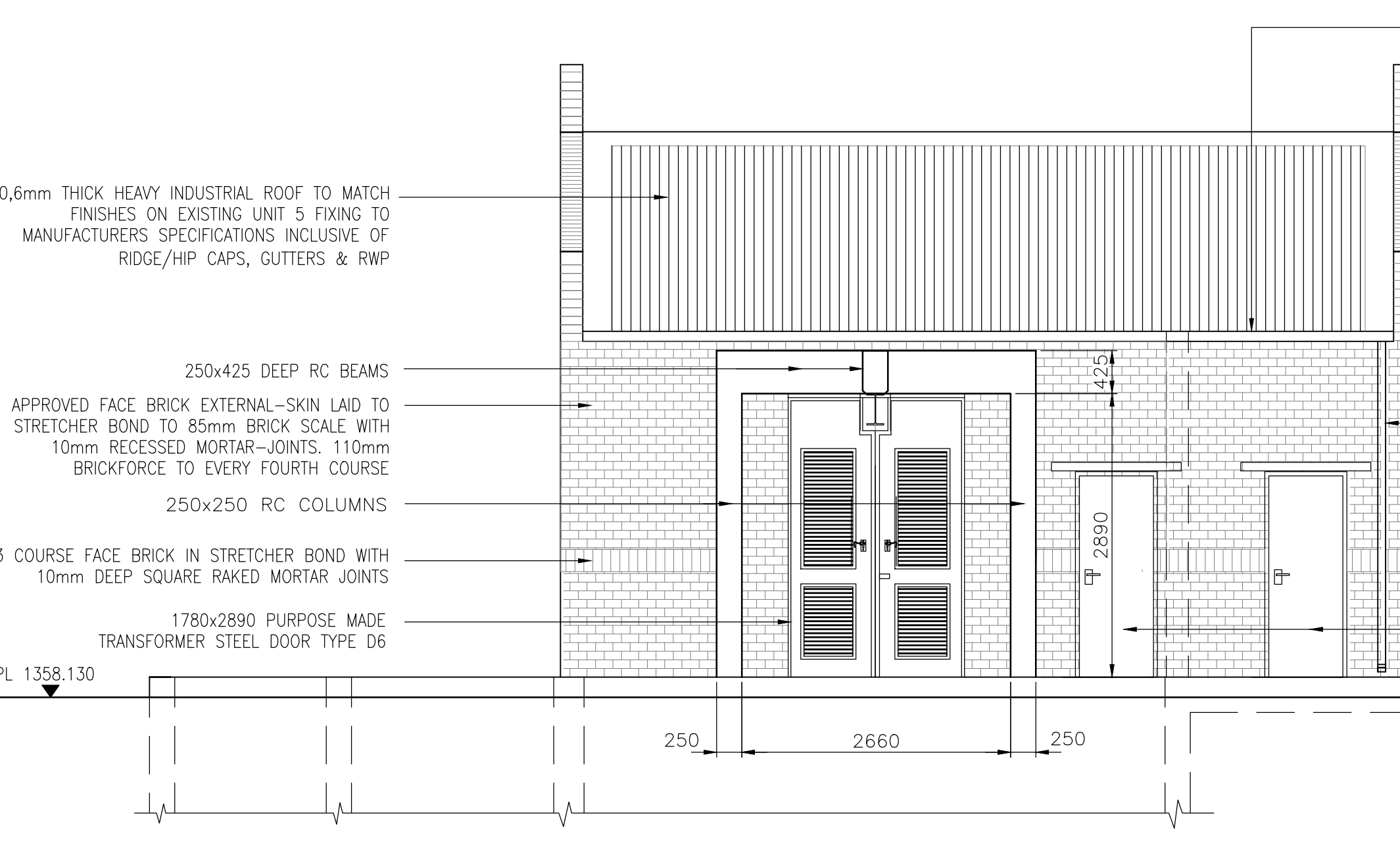
SOUTH ELEVATION
1:50



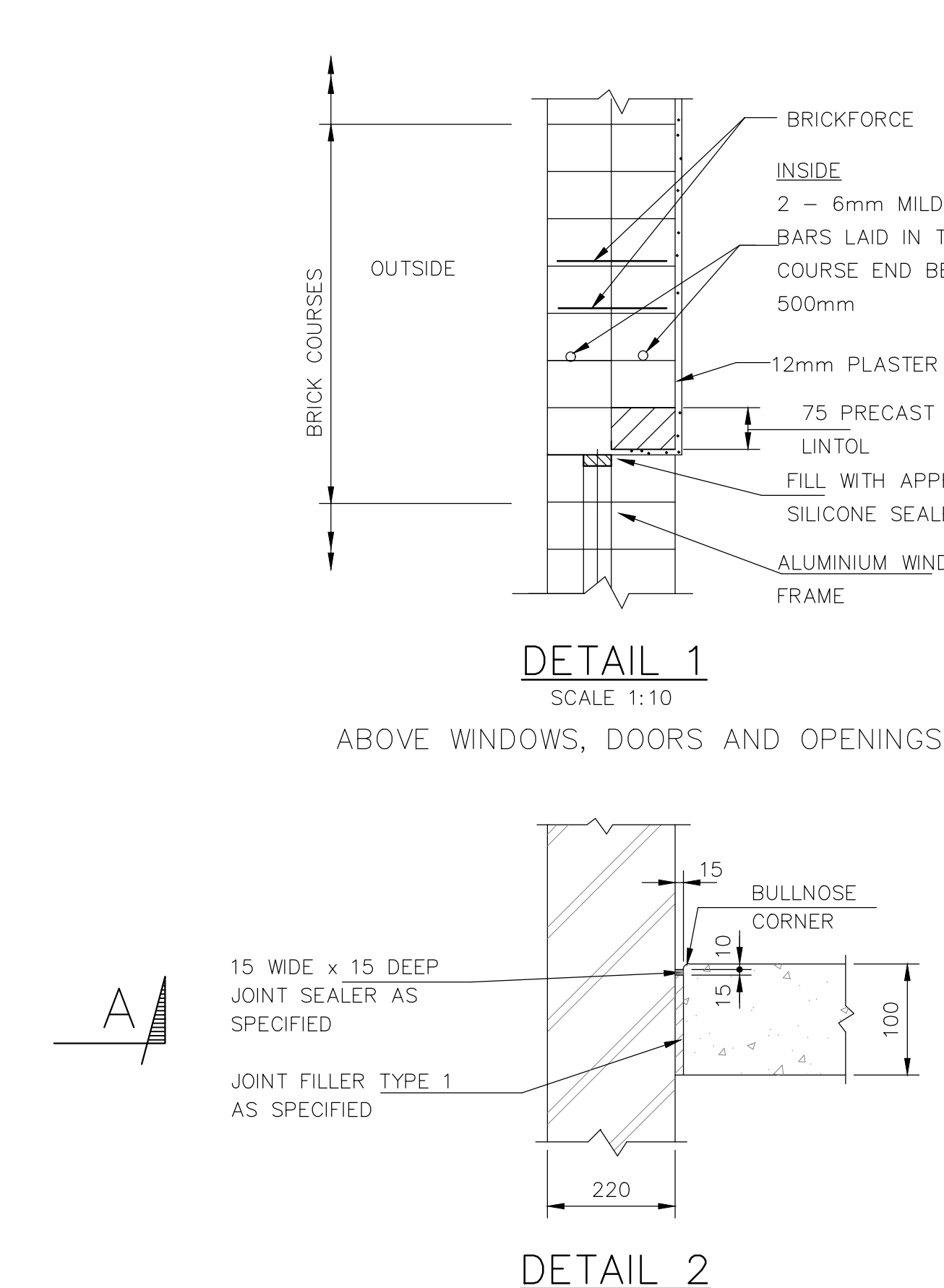
BASEMENT PLAN
1:50



SECTION B-B
1:50



NORTH ELEVATION
1:50



DETAIL 1
SCALE 1:10

ABOVE WINDOWS, DOORS AND OPENINGS

DETAIL 2
SCALE 1:10

FLOOR TO WALL JOINT

CONCRETE
ALL STRUCTURAL CONCRETE TO BE GRADE 25/19. ALL STRUCTURAL CONCRETE WATER RETAINING STRUCTURES TO BE GRADE 35/19 MASS CONCRETE TO BE GRADE 15/26.5 50mm THICK BLINDING LAYER IN GRADE 15/19 CONCRETE

FORMWORK
ALL EXPOSED SURFACES TO BE SMOOTH COVERED SURFACES TO BE ROUGH FORMWORK.

BRICKWORK
INNER FACES OF BRICK WALLS TO BE SET BACK 12mm FROM INNER FACES OF COLUMNS TO ALLOW FOR ONE COAT OF PLASTER. BRICKWORK FRAMING INTO COLUMNS TO BE SECURED TO COLUMN FACES WITH WALL ANCHORS, FIXED STRICTLY IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. BRICK REINFORCEMENT TO SUIT 230mm THICK BRICKWORK, TO BE PROVIDED EVERY 5th COURSE AND ON TOP OF THE FIRST COURSE OVER ALL DOOR AND WINDOW OPENINGS. DAMPROOF COURSE AS SPECIFIED TO BE PROVIDED UNDER WALLS AT 150mm ABOVE SURROUNDING PAVING LEVEL AND UNDER WINDOW CILLS. ALL EXTERNAL FACES TO MATCH EXISTING BRICKWORK ON UNIT 3. LOCATIONS OF THE TWO COLOURS ARE SHOWN ON ELEVATIONS. ALL INTERNAL BRICK SINKS TO BE WFP STOCK BRICKS. MINIMUM CRUSHING STRENGTH 7MPa. WINDOW AND DOOR LINTELS TO BE FORMED USING PRECAST CONCRETE LINTELS 110mm WIDE x 75mm THICK, INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. END BEARING 230mm MINIMUM AND PROPS AT 1200mm CENTRES. 2 LAYERS OF BRICKFORCE (TO SUIT 230) TO BE INSTALLED IN THE TWO COURSES 150mm ABOVE WINDOW FRAME

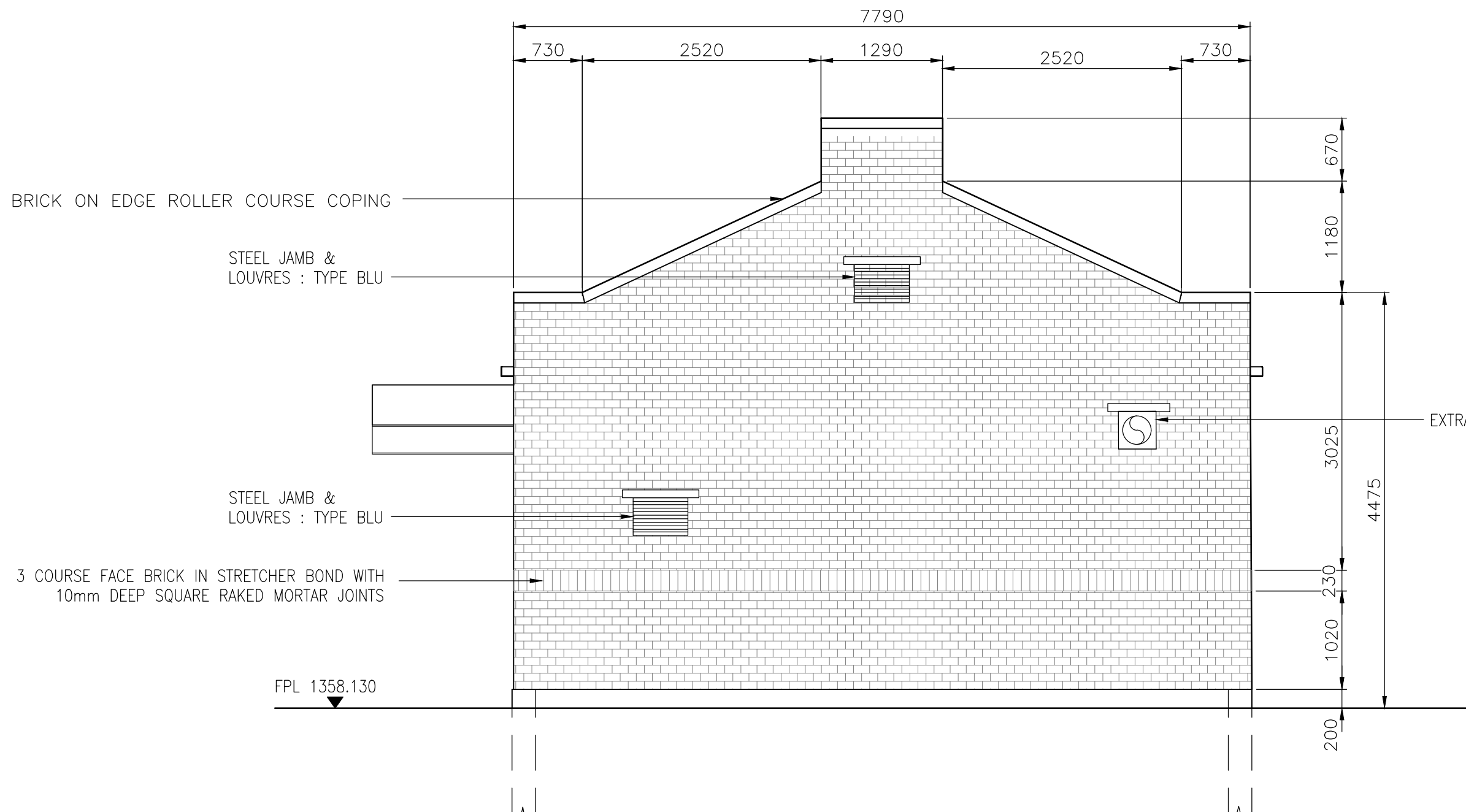
ELECTRICAL
ELECTRICAL INSTALLATION – ALL CONDUITS AND FITTINGS TO BE SURFACE MOUNTED EXCEPT IN PLASTERED WALLS. REFER TO BUILDING WORK SPECIFICATION FOR ALL OTHER DETAILS FINISHES – SEE FINISHING SCHEDULE

WATERPROOFING ON CONCRETE ROOFS TO BE POLYESTER REINFORCED WATERPROOFING SYSTEM AS APPROVED BY THE ENGINEER, LAID ON A SCREED TO FALLS INDICATED ON ROOF PLAN.

HANDRAILING TO BE IN 3CR12, WITH PLATFORM MOUNTED STANDARDS, UNLESS OTHERWISE STATED, ALL AS SPECIFIED.

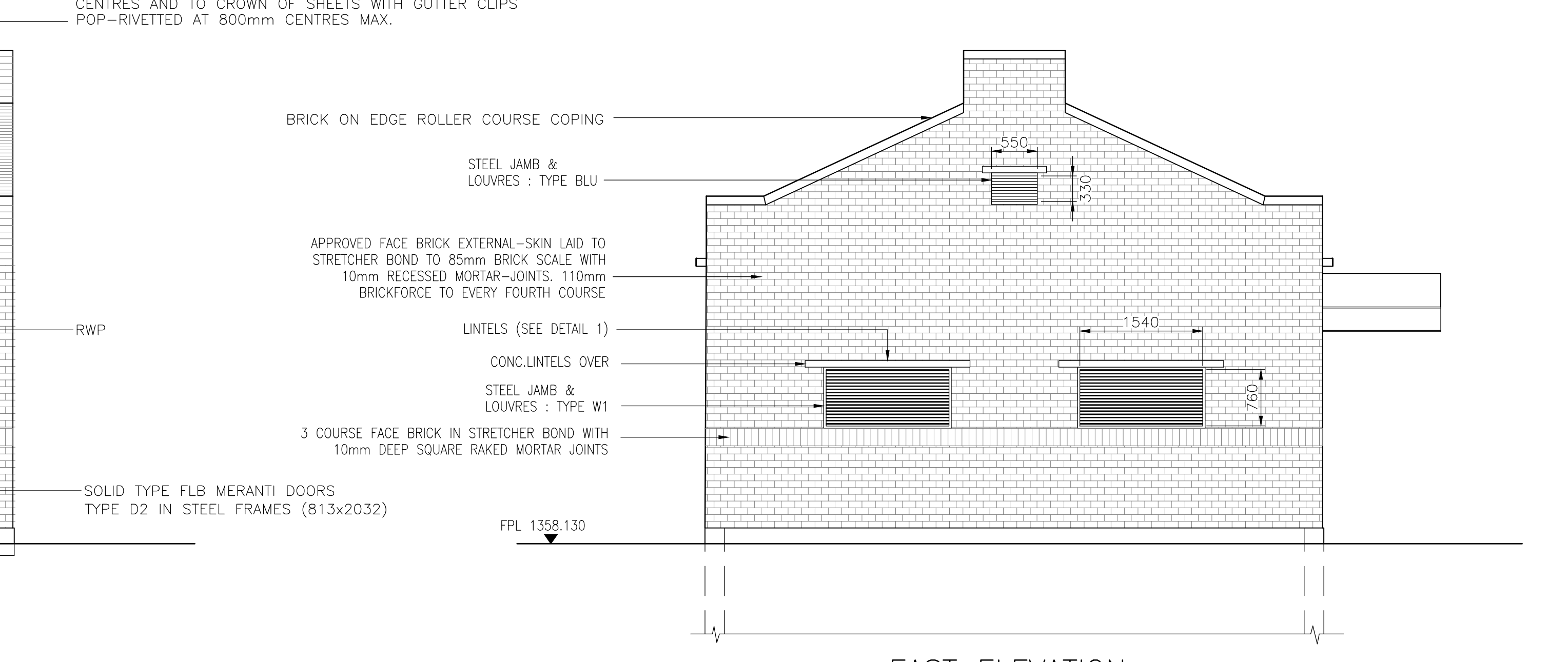
ALL PIPES TO BE SUPPLIED BY CIVIL CONTRACTOR TO 300mm OUTSIDE BUILDING ALL PIPES WITH PUMPSTATION TO BE SUPPLIED BY MECH. CONT.

FOR CONCRETE DETAILS SEE
DRG.30300141-12-468



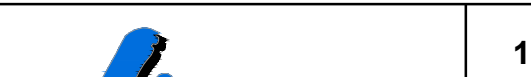
WEST ELEVATION
1:50

125x100 OGEE PROFILE GUTTERING WITH 100x75 RECTANGULAR DOWNPIPES COLOR MIDDLE BLUE F.07. GUTTER SECURED TO TROUGH OF SHEETS WITH 6mm VERANDA BOLTS AT 203mm CENTRES AND TO CROWN OF SHEETS WITH GUTTER CLIPS POP-RIVETTED AT 800mm CENTRES MAX.



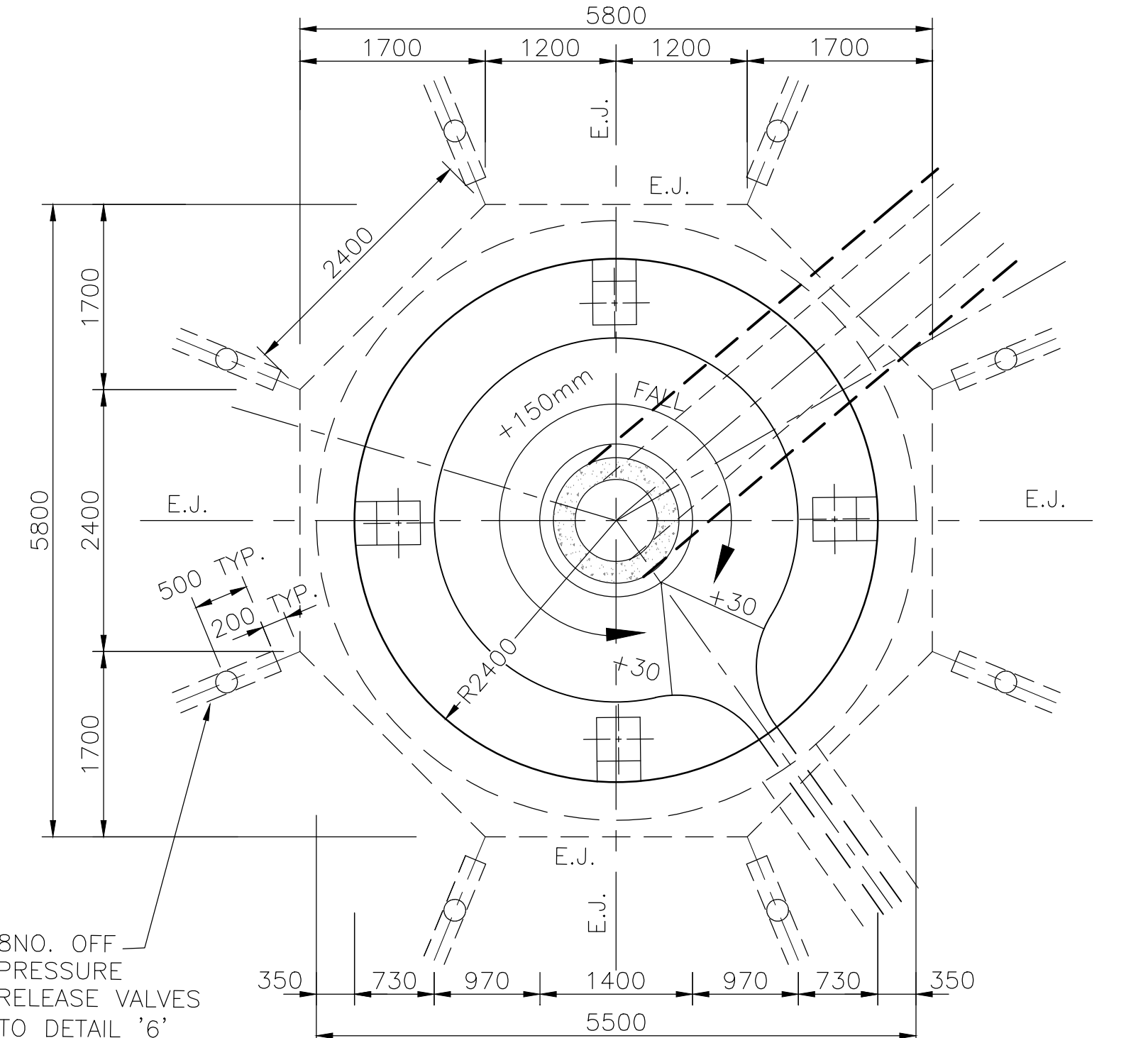
EAST ELEVATION
1:50

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		JOHANNESBURG WATER SOC LTD	
 Knight Piésold CONSULTING P.O. BOX 221 RYONDA 2128 TEL: 011-800 7111 FAX: 011-800 7100 EMAIL: enquiry@kpi.co.za	 WSP Group Africa (Pty) Ltd Industrial Division Building C, Kynegadse 33 Soane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	SURVEYED DESIGNED	S J
		DRAWN	J VD W
		CHECKED	K M
		SERVICES CHECKED	
		GEOTECHNICAL INVESTIGATION SERVITUDES	
APPROVED S. JKSAT Pr. Eng. No. 202001279 DATE 30-06-2022		 Johannesburg Water	
		17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	

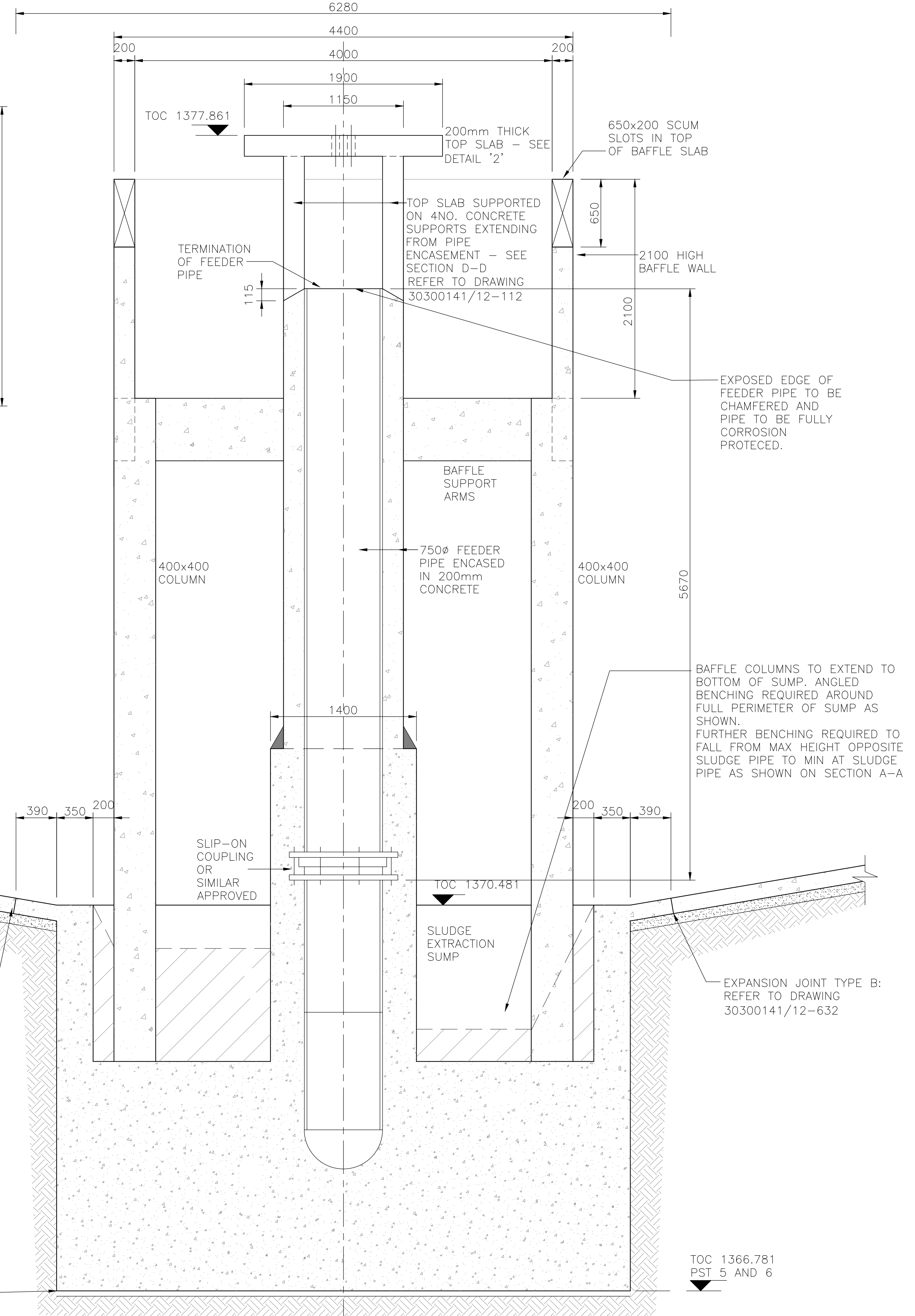
CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 – PHASE 2
EFFLUENT PUMP STATION FOR HEAD OF WORKS
ARCHITECTURAL LAYOUT AND DETAILS
PLAN, SECTIONS AND ELEVATIONS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
	0	APPROVED FOR CONSTRUCTION	K M	01/07/22	JW NUMBER JW 13896-CE-081 CONSULTANT'S NUMBER 30300141-12-081 FILE No
	AS SHOWN				
DATE					0

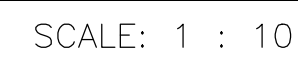


SECTIONAL PLAN 1-1

SCALE: 1 : 50



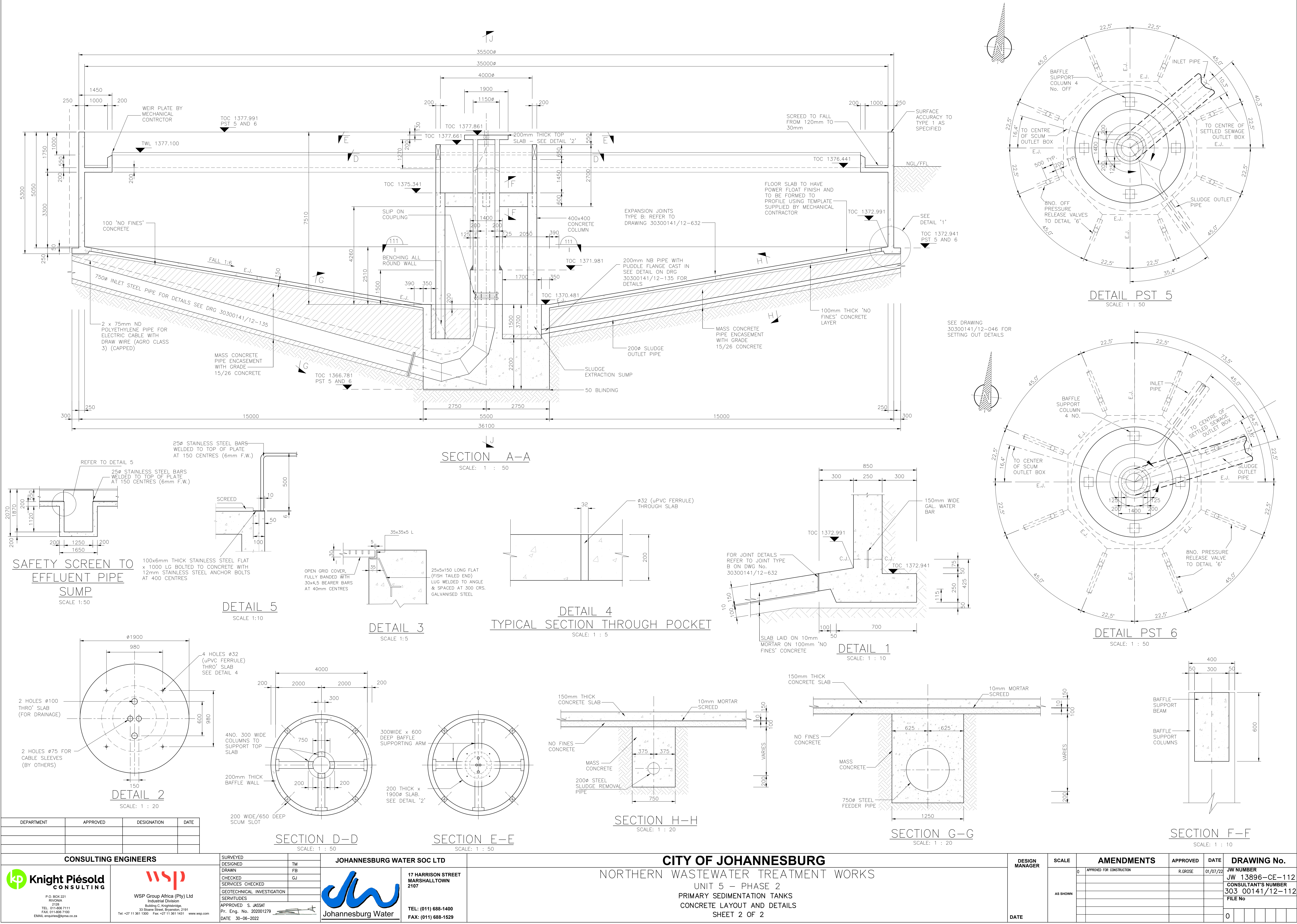
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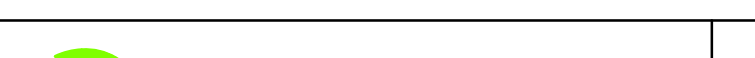
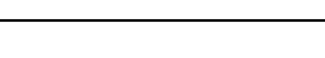
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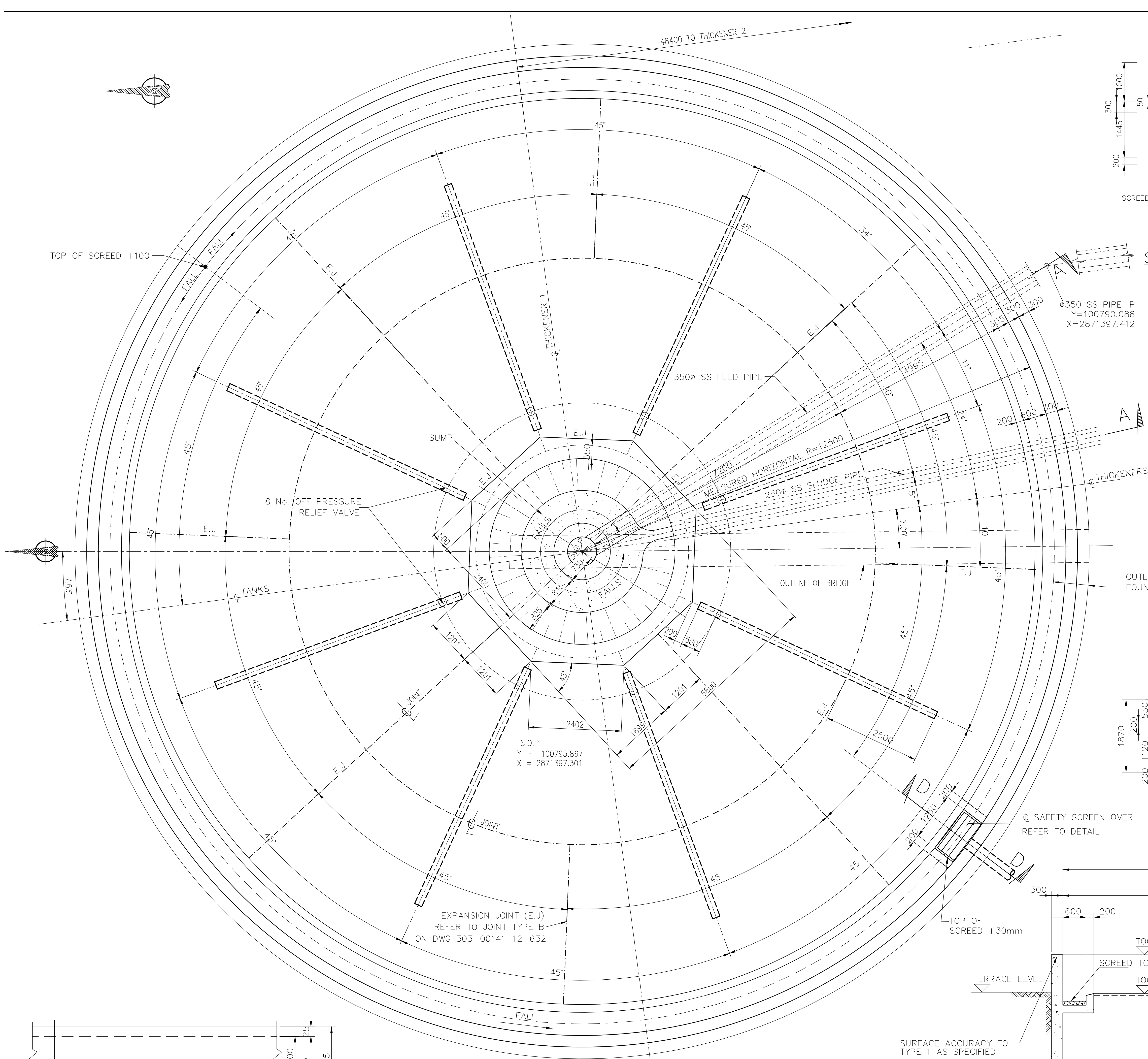


DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.				
	AS SHOWN	0	APPROVED FOR CONSTRUCTION	R.GROSE	01/07/22	JW NUMBER			
						JW 13896-CE-111			
						CONSULTANT'S NUMBER			
						303 00141/12-111			
						FILE No			
DATE					0				



DEPARTMENT	APPROVED	DESIGNATION	DATE

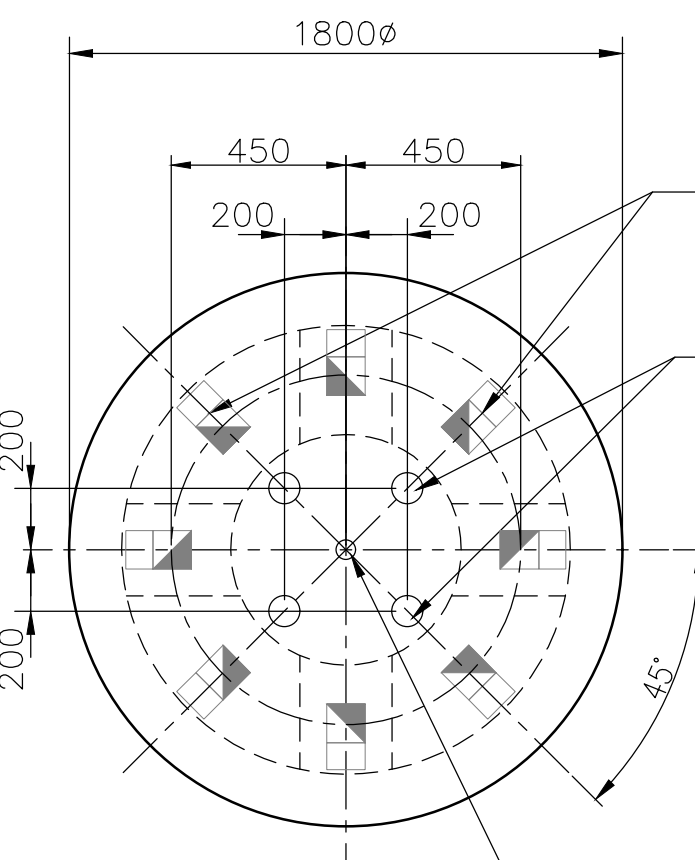
CONSULTING ENGINEERS				SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG				DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.	
 P.O. BOX 221 RIVONIA 2120 TEL: 011-800 7111 FAX: 011-800 7100 EMAIL: enquiry@kpi.co.za	 WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge 33 Soane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	NORTHERN WASTEWATER TREATMENT WORKS UNIT 5 – PHASE 2 PRIMARY SEDIMENTATION TANKS CONCRETE LAYOUT AND DETAILS SHEET 2 OF 2				0		JW NUMBER									
								APPROVED FOR CONSTRUCTION		R.GROSE									
DATE 30-06-2022								0											



SECTION D-D
SCALE 1 : 50

SECTIONAL PLAN C-C
SCALE 1 : 25

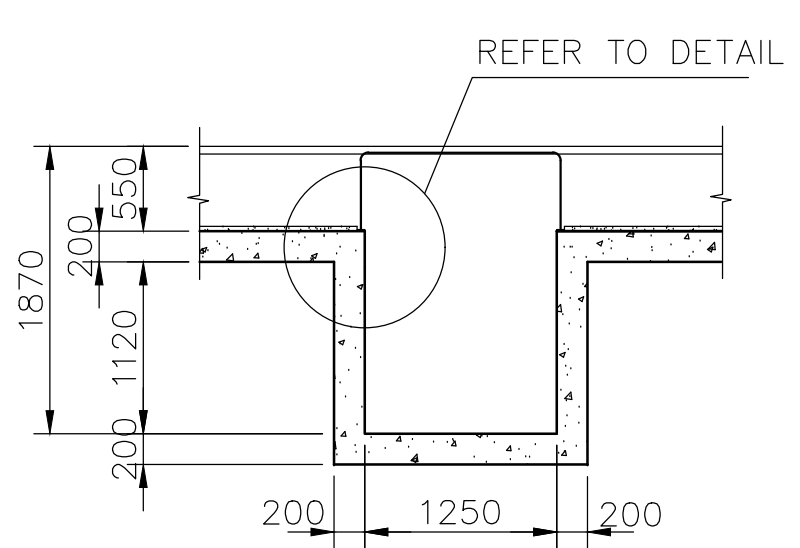
DETAIL 1
SCALE 1:10



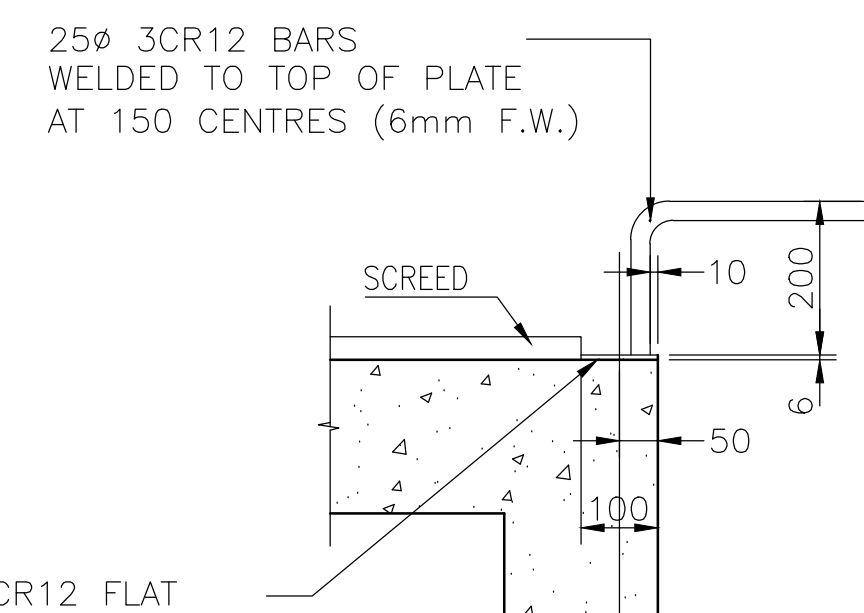
PLAN VIEW B-B
SCALE 1 : 25

SECTION E-E ("SOFT" FOUNDATION ±500kPa)
SCALE 1:10

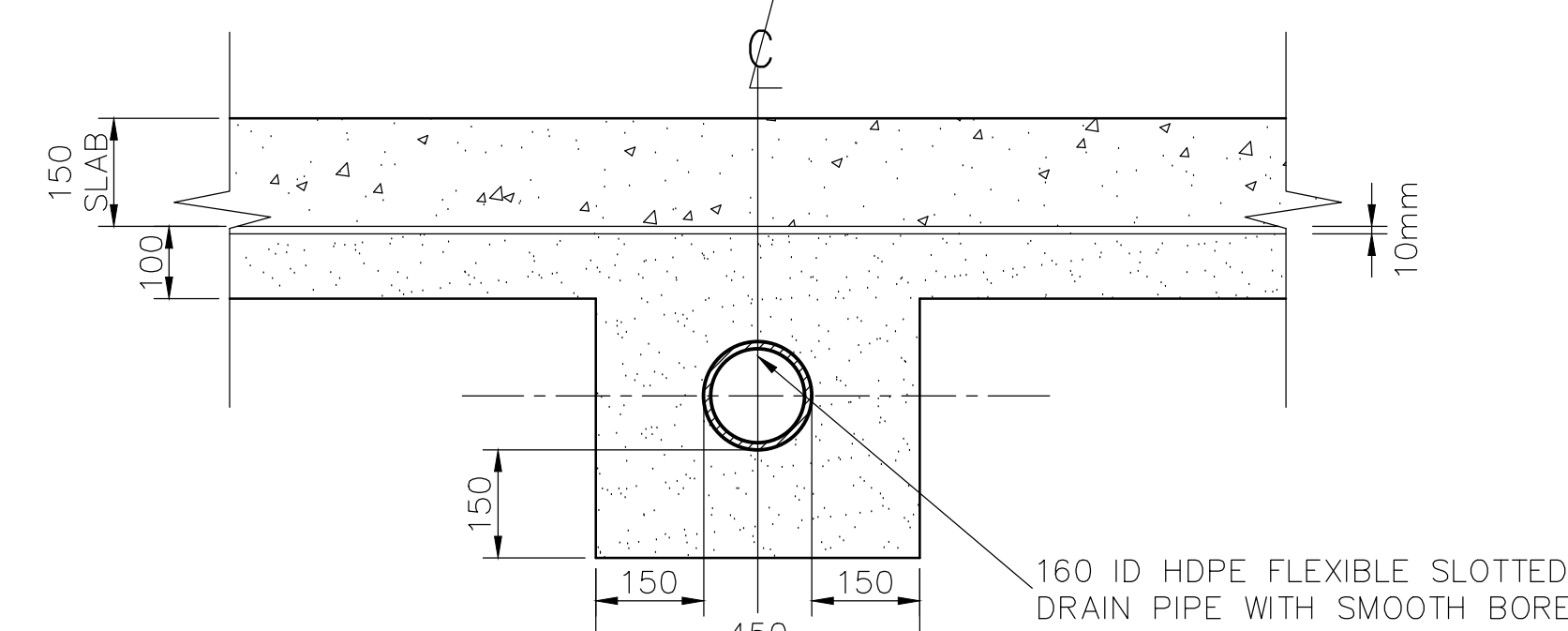
TYPICAL DETAIL OF POCKETS
SCALE 1 : 10



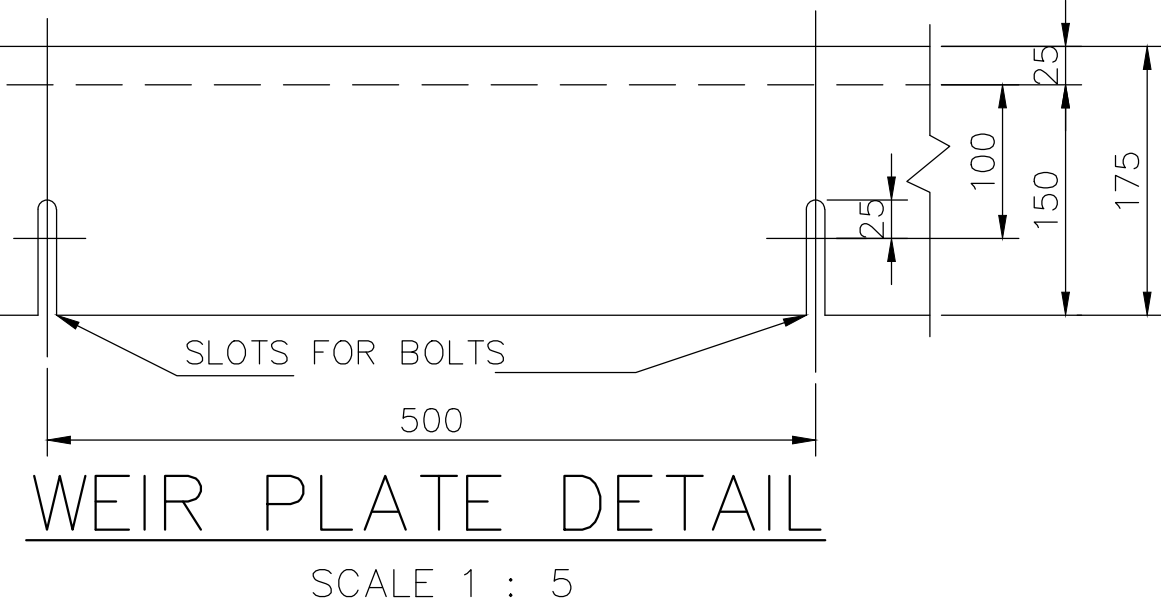
SAFETY SCREEN
SCALE 1:50



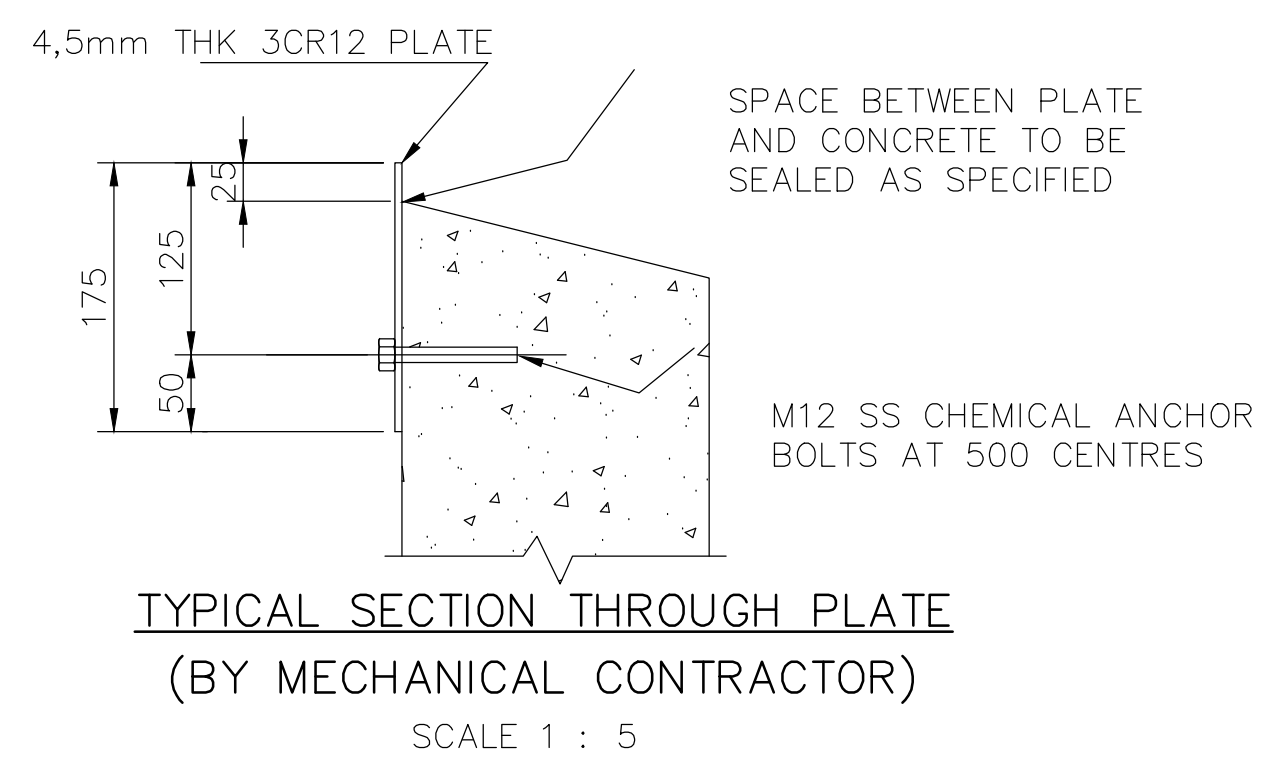
DETAIL 2
SCALE 1:10



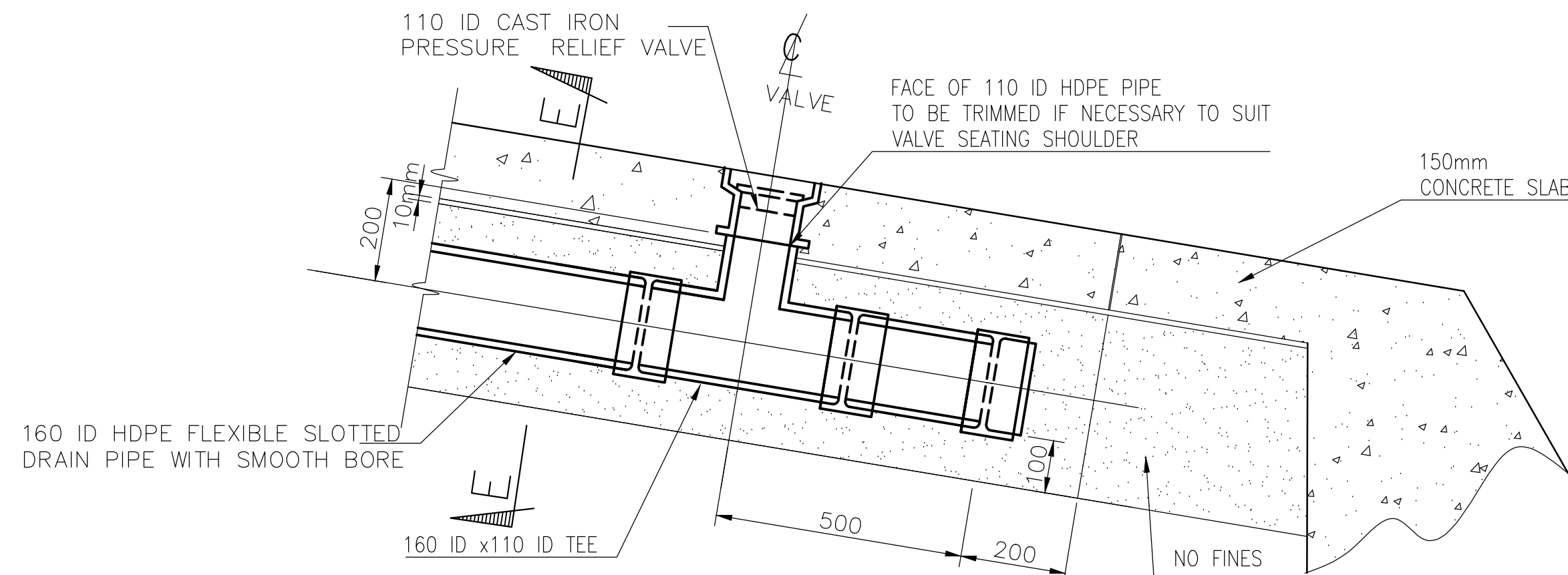
SECTION E-E (ROCK EXCAVATION)
SCALE 1:10



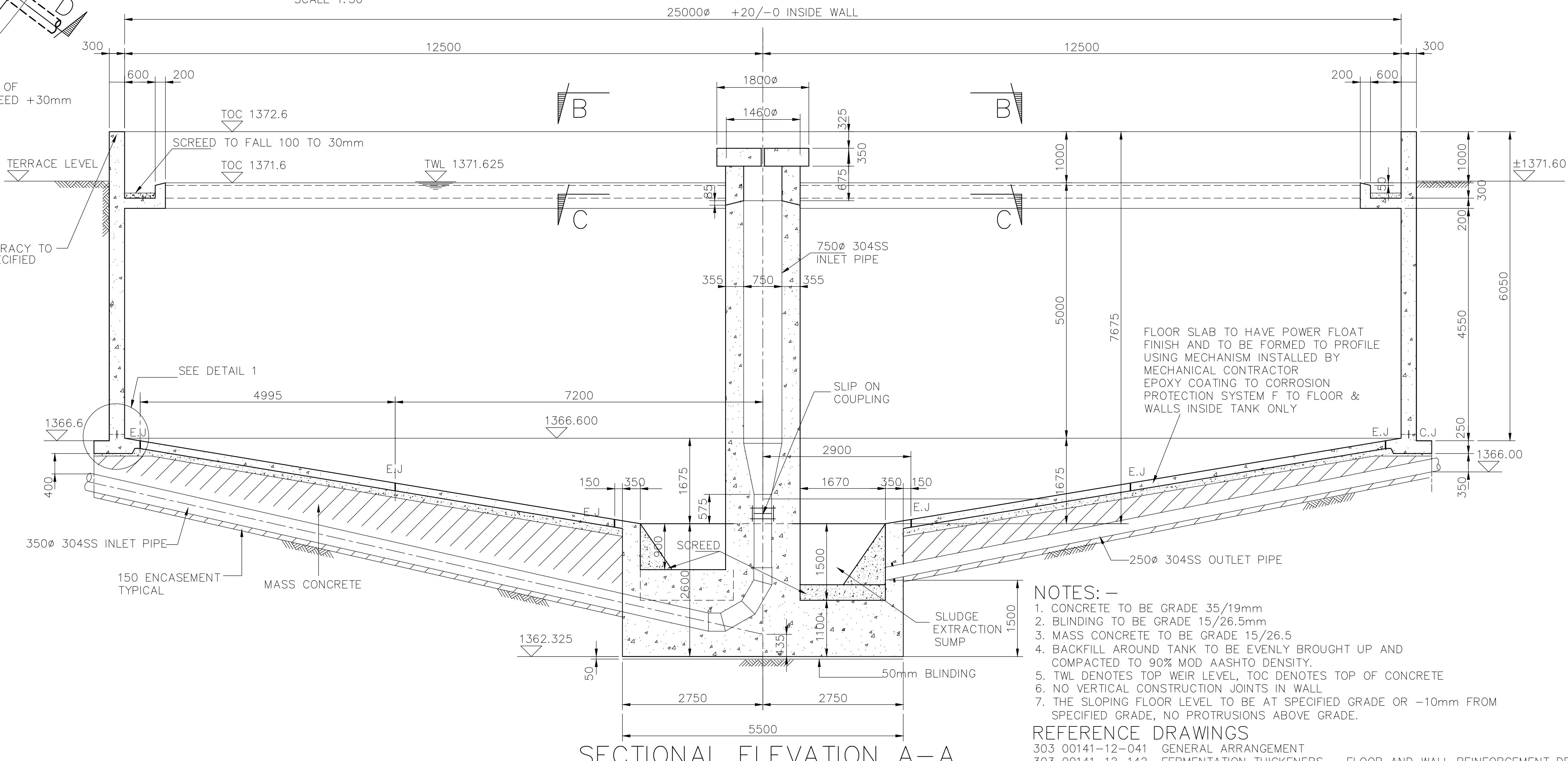
WEIR PLATE DETAIL
SCALE 1 : 5



TYPICAL SECTION THROUGH PLATE
(BY MECHANICAL CONTRACTOR)
SCALE 1 : 5



PRESSURE RELIEF VALVE DETAIL
SCALE NTS



SECTIONAL ELEVATION A-A
SCALE 1 : 50

- NOTES:—
1. CONCRETE TO BE GRADE 35/19mm
 2. BLINDING TO BE GRADE 15/26.5mm
 3. MASS CONCRETE TO BE GRADE 15/26.5
 4. BACKFILL AROUND TANK TO BE EVENLY BROUGHT UP AND COMPACTED TO 90% MOD AASHTO DENSITY.
 5. TWL DENOTES TOP WEIR LEVEL, TOC DENOTES TOP OF CONCRETE
 6. NO VERTICAL CONSTRUCTION JOINTS IN WALL
 7. THE SLOPING FLOOR LEVEL TO BE AT SPECIFIED GRADE OR -10mm FROM SPECIFIED GRADE, NO PROTRUSIONS ABOVE GRADE.
- REFERENCE DRAWINGS
- 303 00141-12-041 GENERAL ARRANGEMENT
 - 303 00141-12-142 FERMENTATION THICKENERS - FLOOR AND WALL REINFORCEMENT DETAILS
 - 303 00141-12-144 FERMENTATION THICKENERS - CENTRAL FEED - REINFORCEMENT DETAILS

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

P.O. BOX 221
RIVONIA
2120
TEL: 011-806 7111
FAX: 011-806 7100
EMAIL: enquiries@kpi.co.za

WSP
WSP Group Africa (Pty) Ltd
Industrial Division
Building C, Kingsbridge
33 Soane Street, Bryanston, 2191
Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com

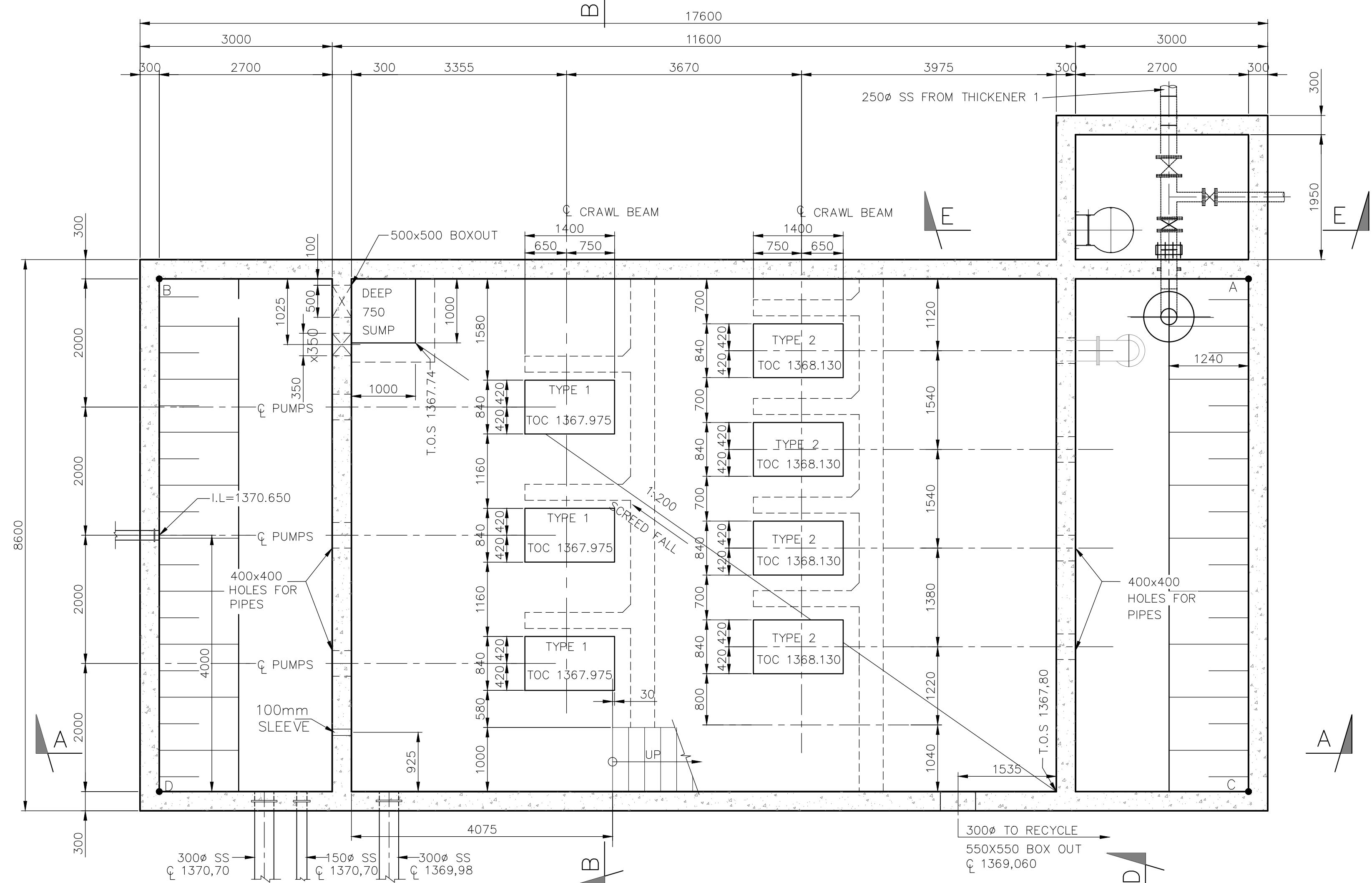
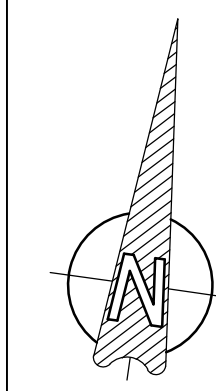
SURVEYED		G K
DESIGNED		J V D W
DRAWN		A M
CHECKED		A M
SERVICES CHECKED		
GEOTECHNICAL INVESTIGATION		
SERVICES		
APPROVED	S. J. S. S. S.	
Pr. Eng. No.	202001279	
DATE	30-06-2022	

JOHANNESBURG WATER SOC LTD

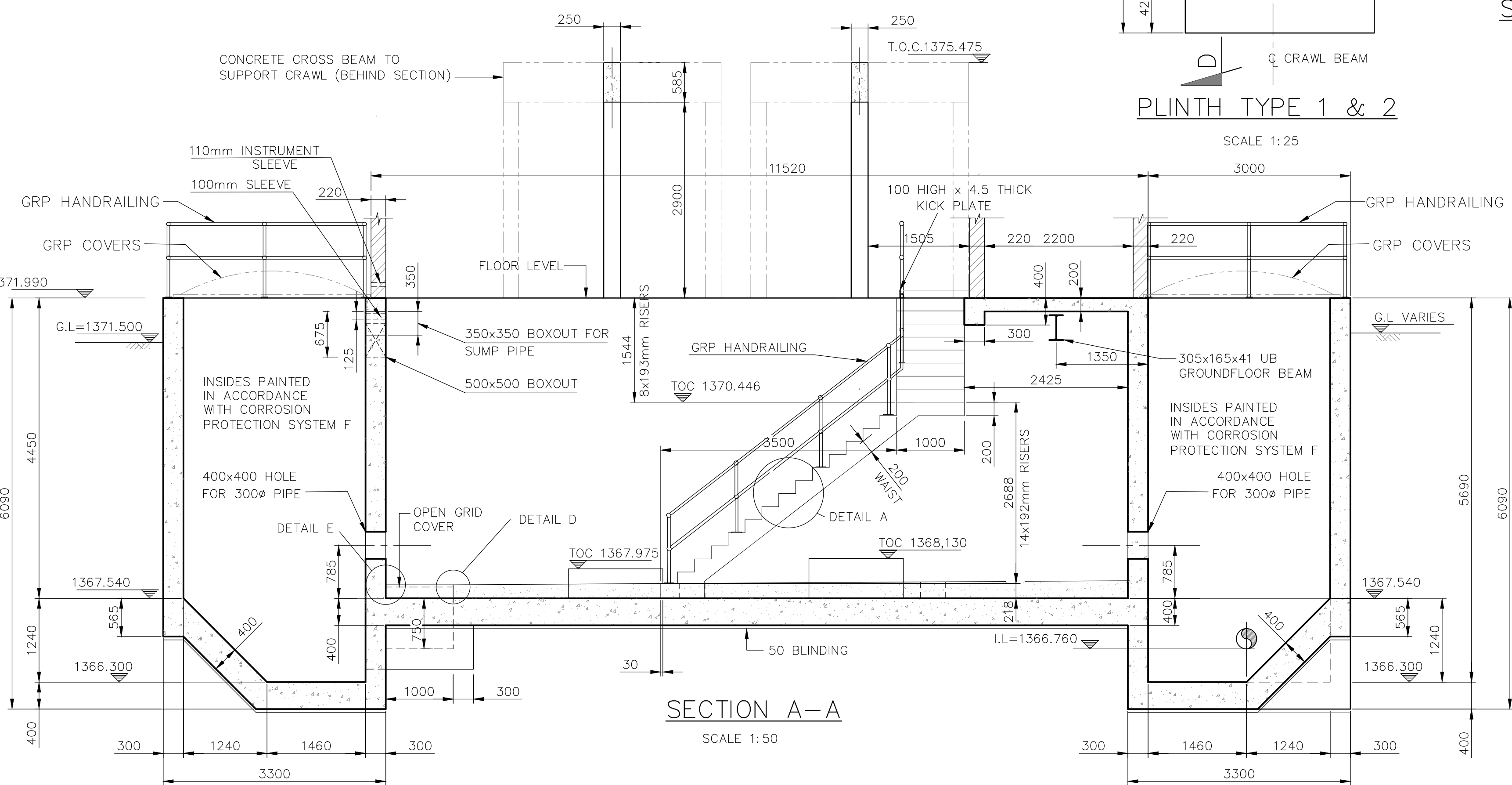
17 HARRISON STREET
MARSHALLTOWN
2107
TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 - PHASE 2
FERMENTATION THICKENER 1
GENERAL ARRANGEMENT
CONCRETE DETAILS

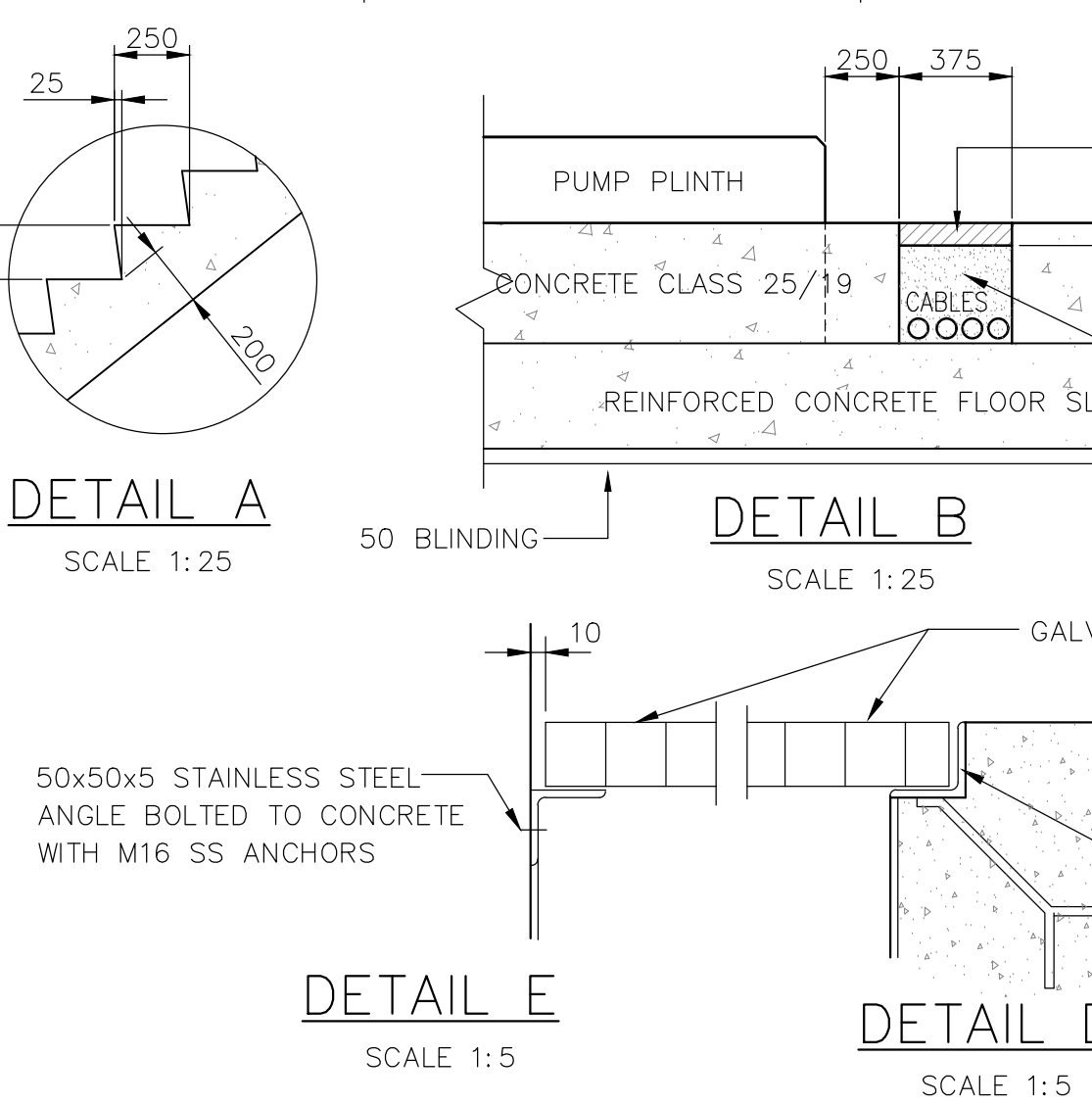
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	1:50 & AS SHOWN				
DATE					0



BASEMENT PLAN
SCALE 1:50



SECTION A-A
SCALE 1:50



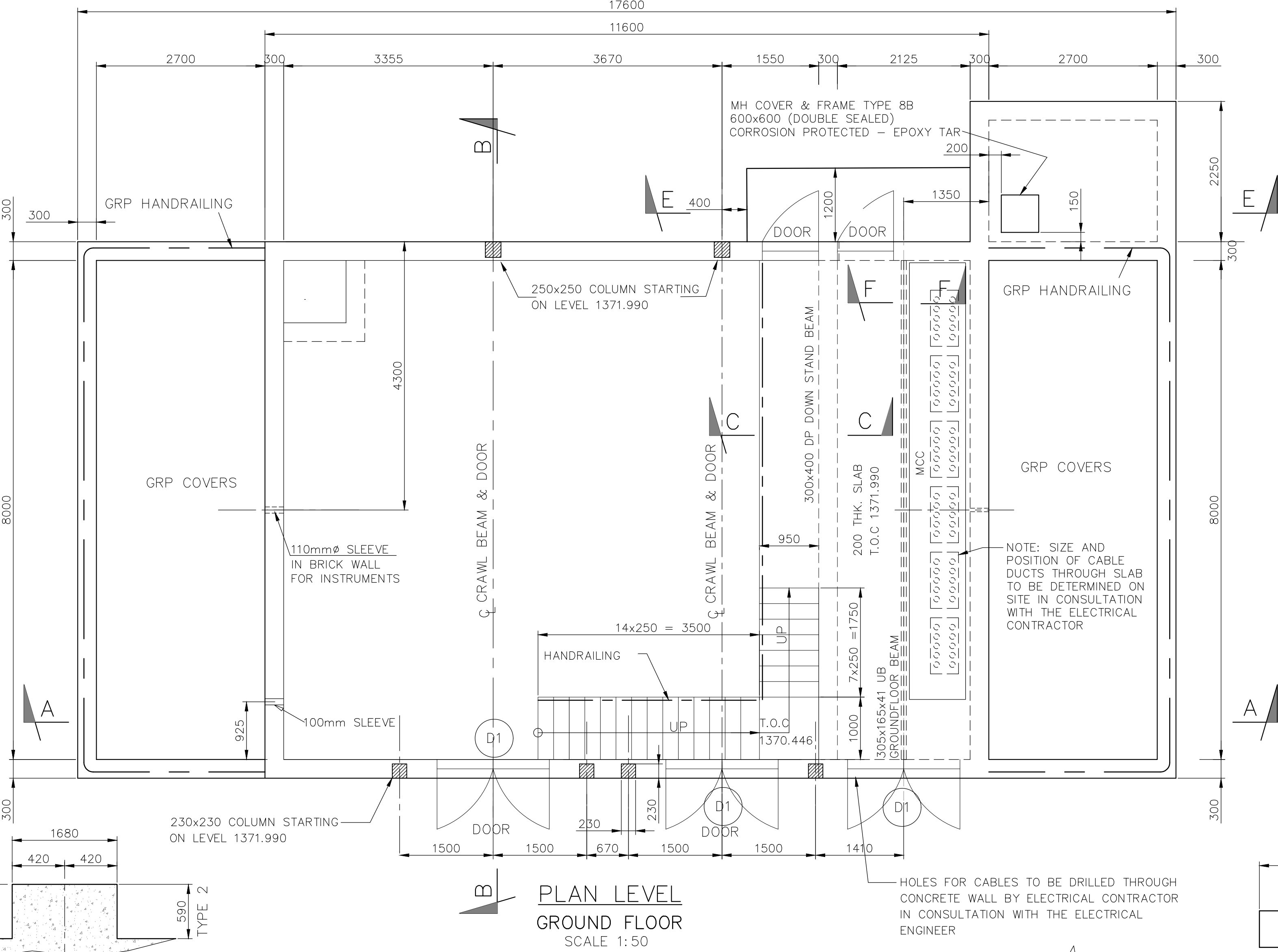
DEPARTMENT	APPROVED	DESIGNATION	DATE

P.O. BOX 221
RIVONIA
2129
TEL: 011-800-7111
FAX: 011-800-7100
EMAIL: enquiry@kpi.co.za

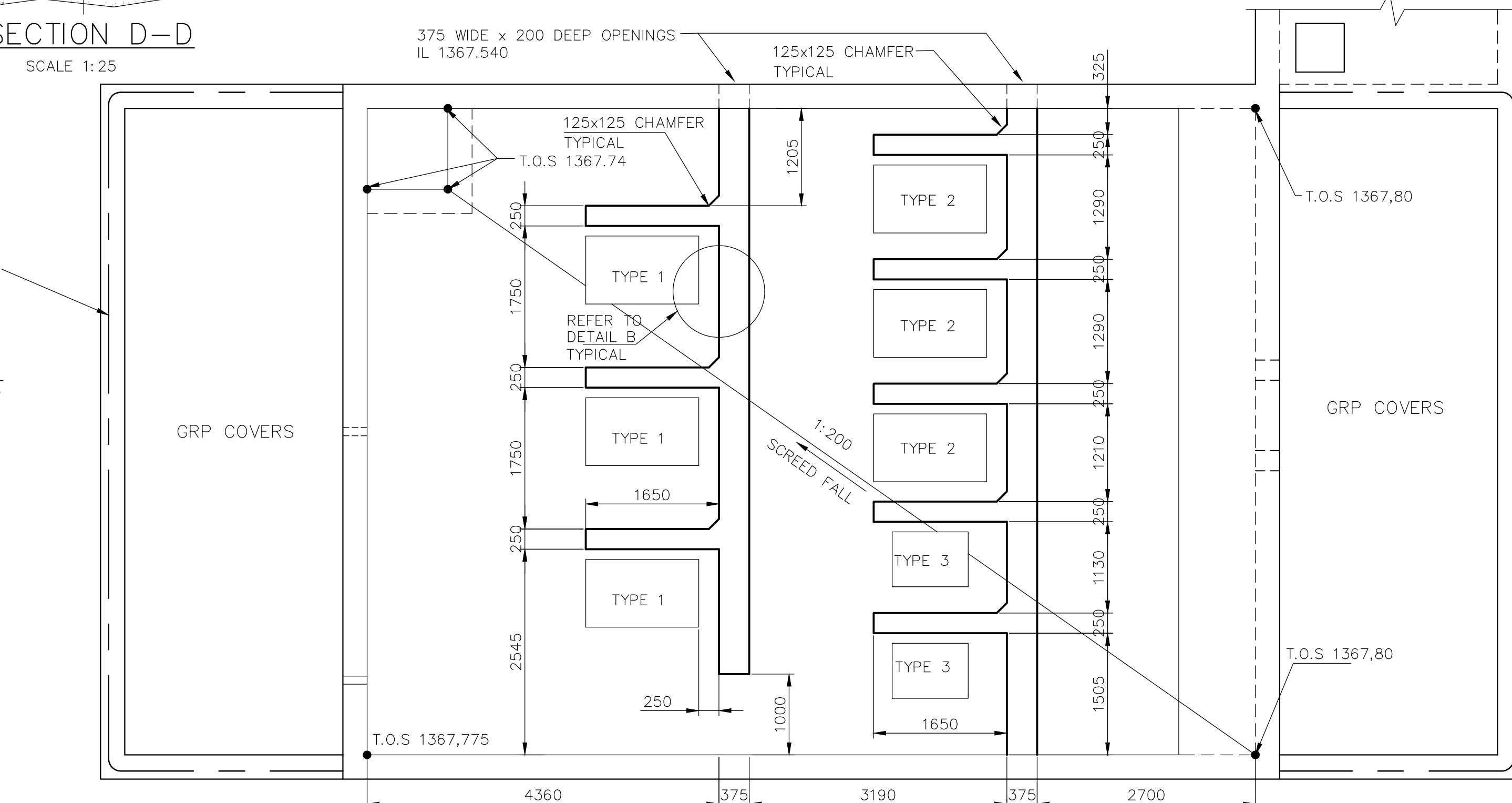
WSP Group Africa (Pty) Ltd
Industrial Division
Building C, Kingstonside,
33 Soane Street, Bryanston, 2011
Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com

JOHANNESBURG WATER SOC LTD
17 HARRISON STREET
MARSHALLTOWN
2107
TEL: (011) 688-1400
FAX: (011) 688-1529

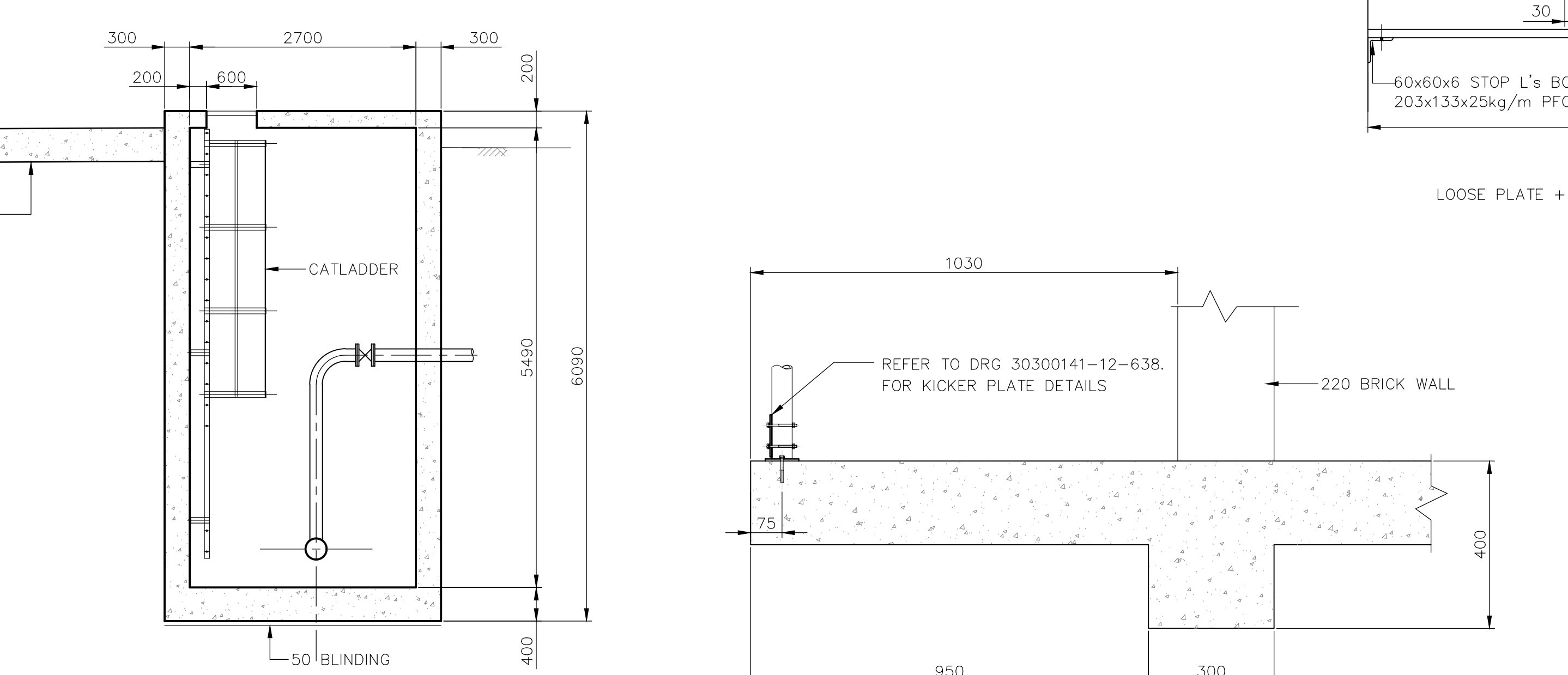
CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 – PHASE 2
FERMENTATION TERRACE
ELUTRIATION PUMPSTATION
CONCRETE DETAILS



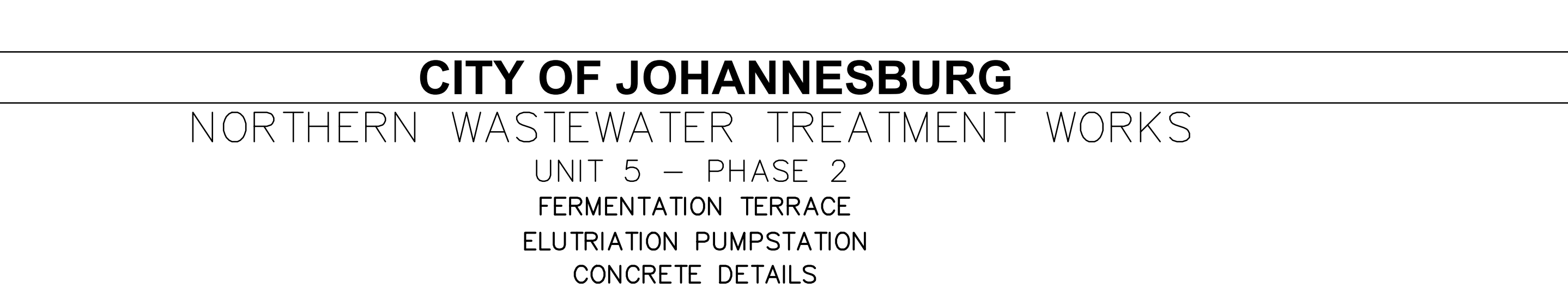
PLAN LEVEL
GROUND FLOOR
SCALE 1:50



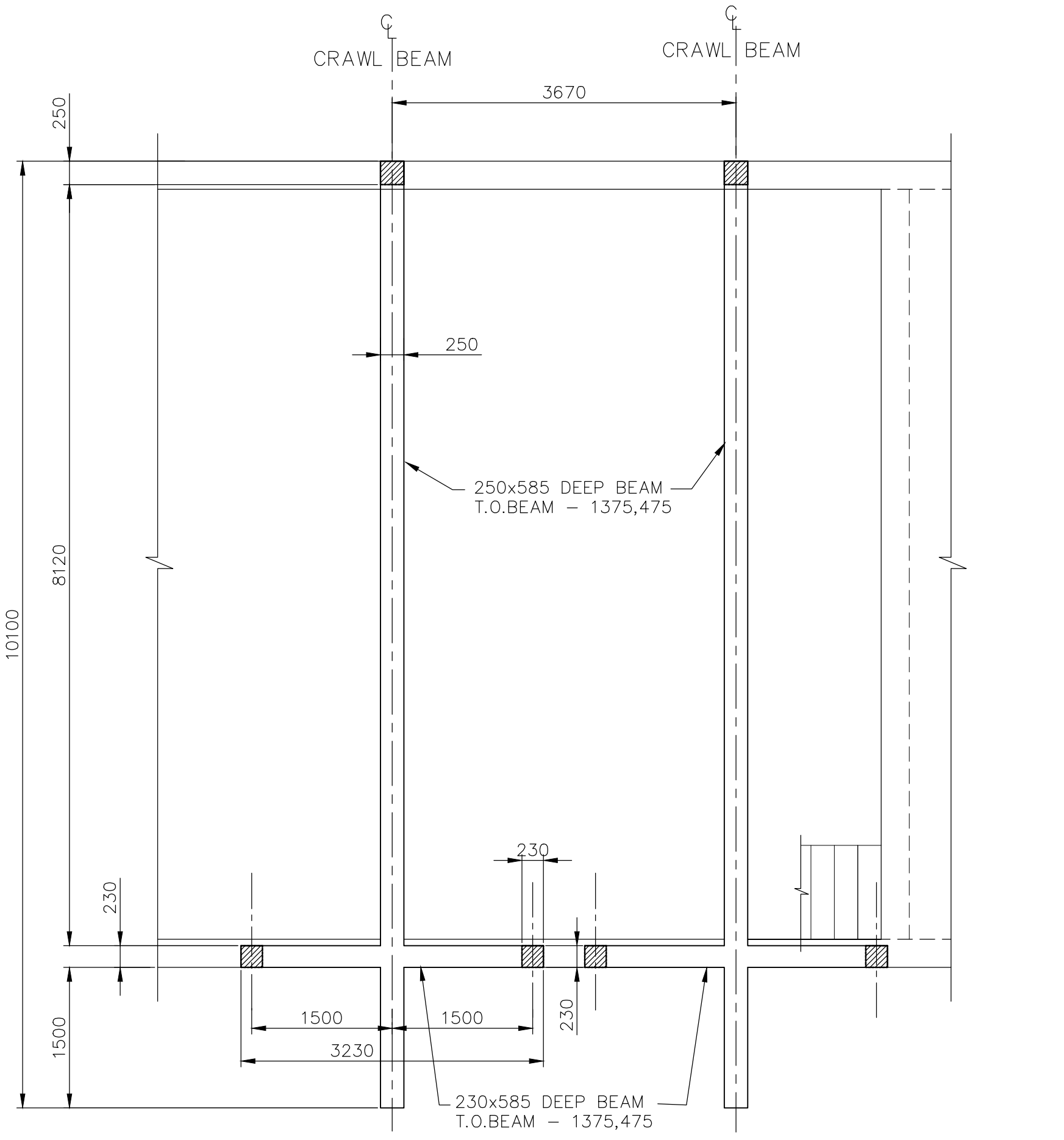
SECTION D-D
SCALE 1:25



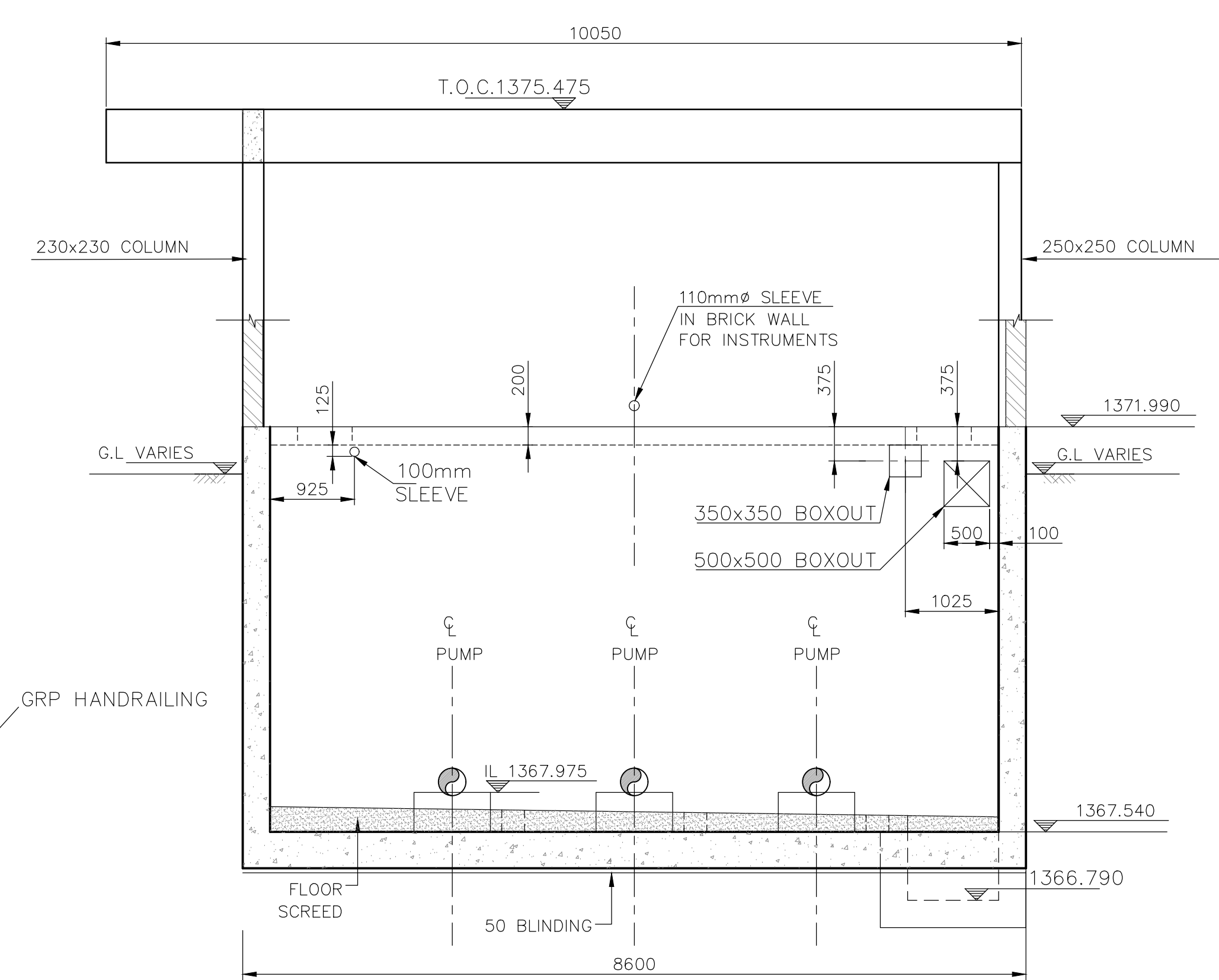
PLAN LEVEL
SHOWING BASEMENT FLOOR SCREED CABLE TRENCHES
SCALE 1:50



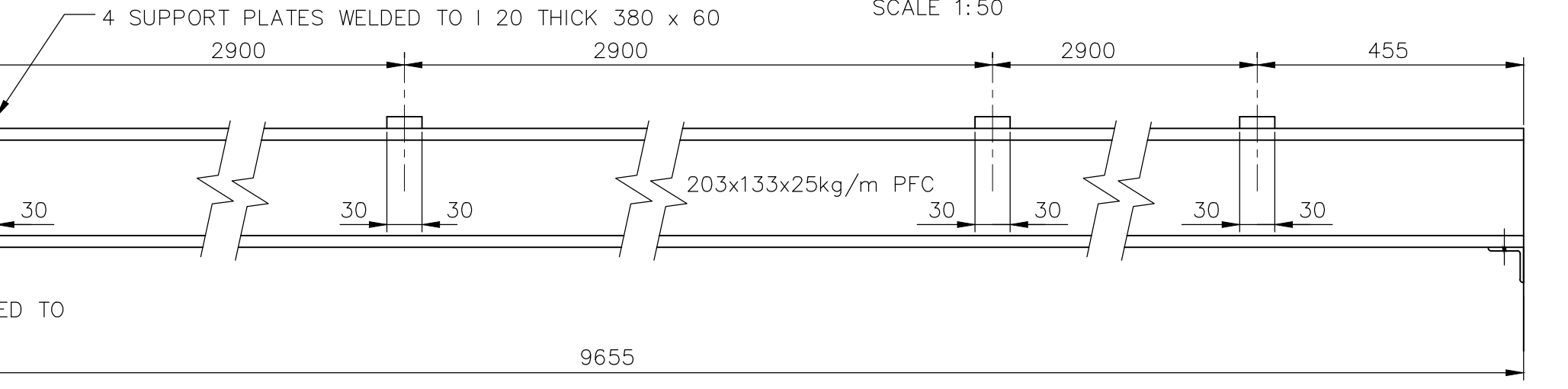
SECTION E-E
SCALE 1:50



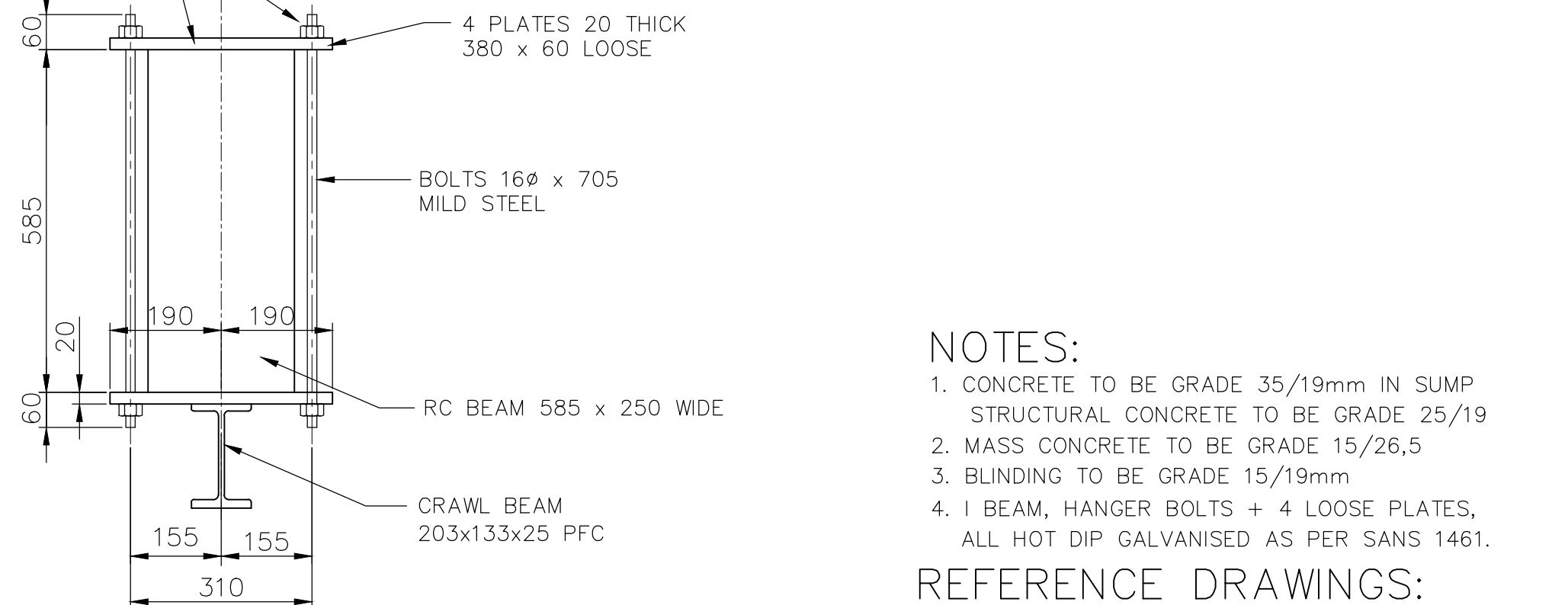
PLAN ON CONCRETE CRAWL BEAMS
SCALE 1:50



SECTION B-B
SCALE 1:50



CRAWL BEAM 1000 kg
SCALE 1:10
2No OFF



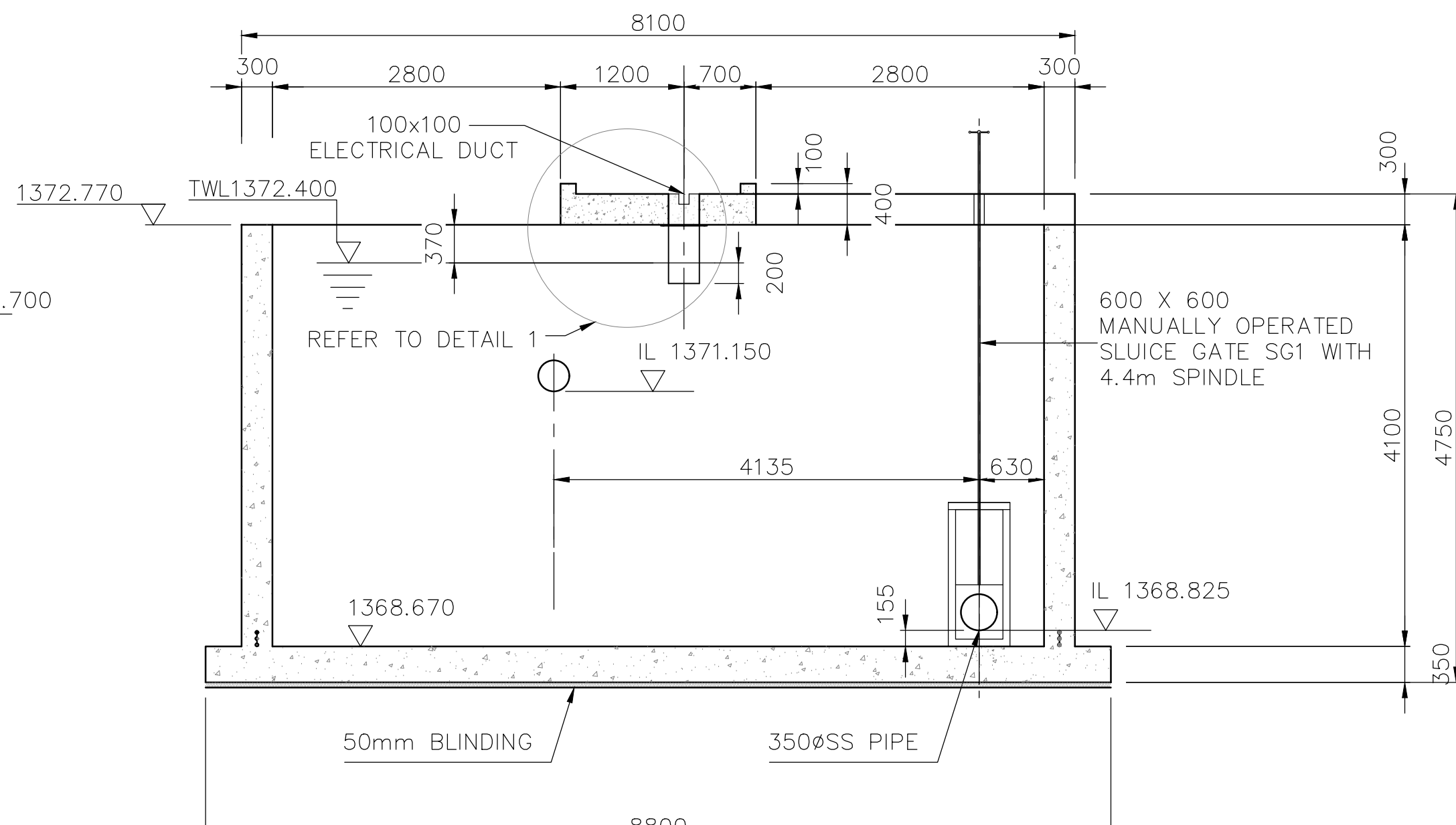
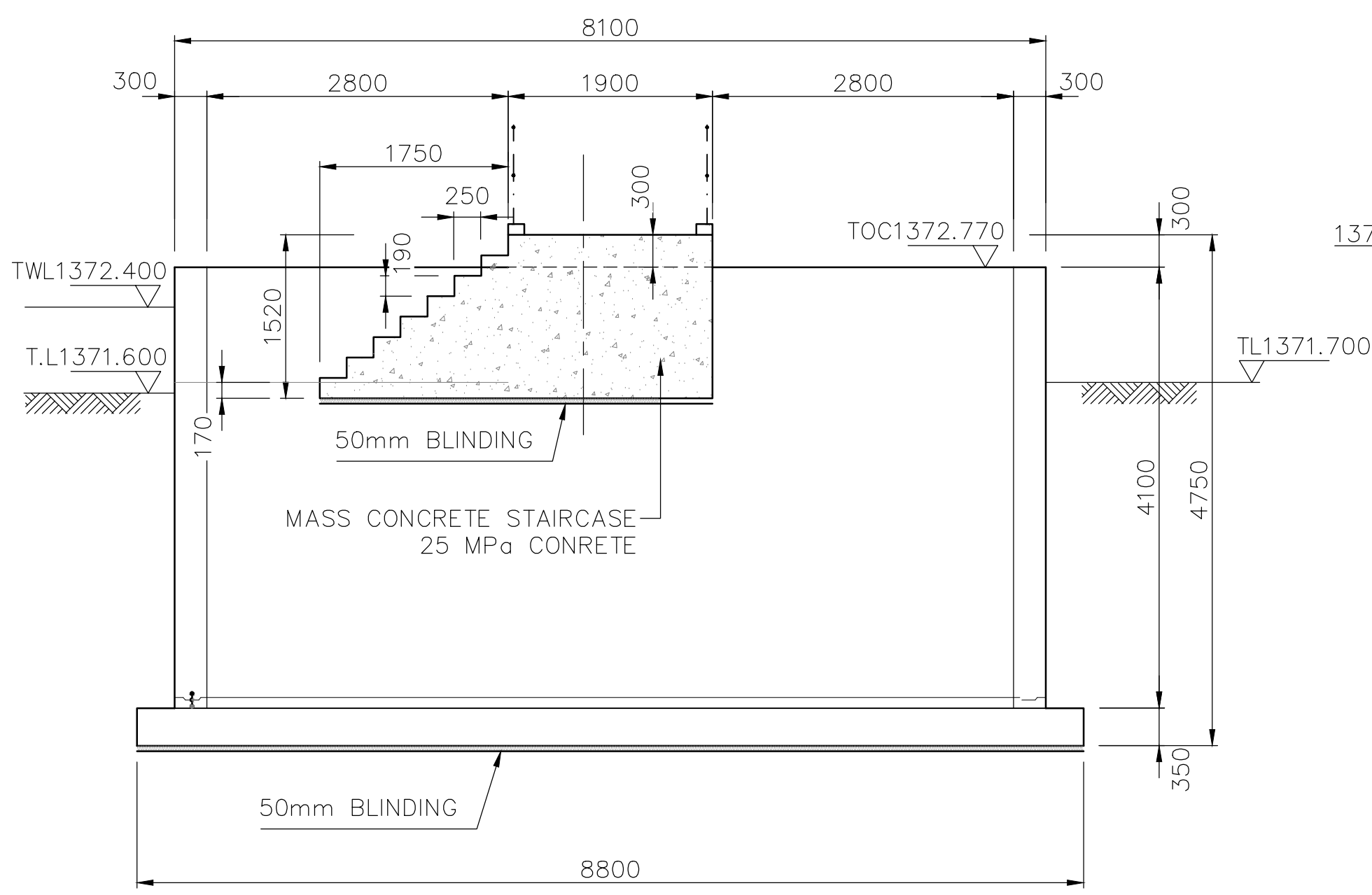
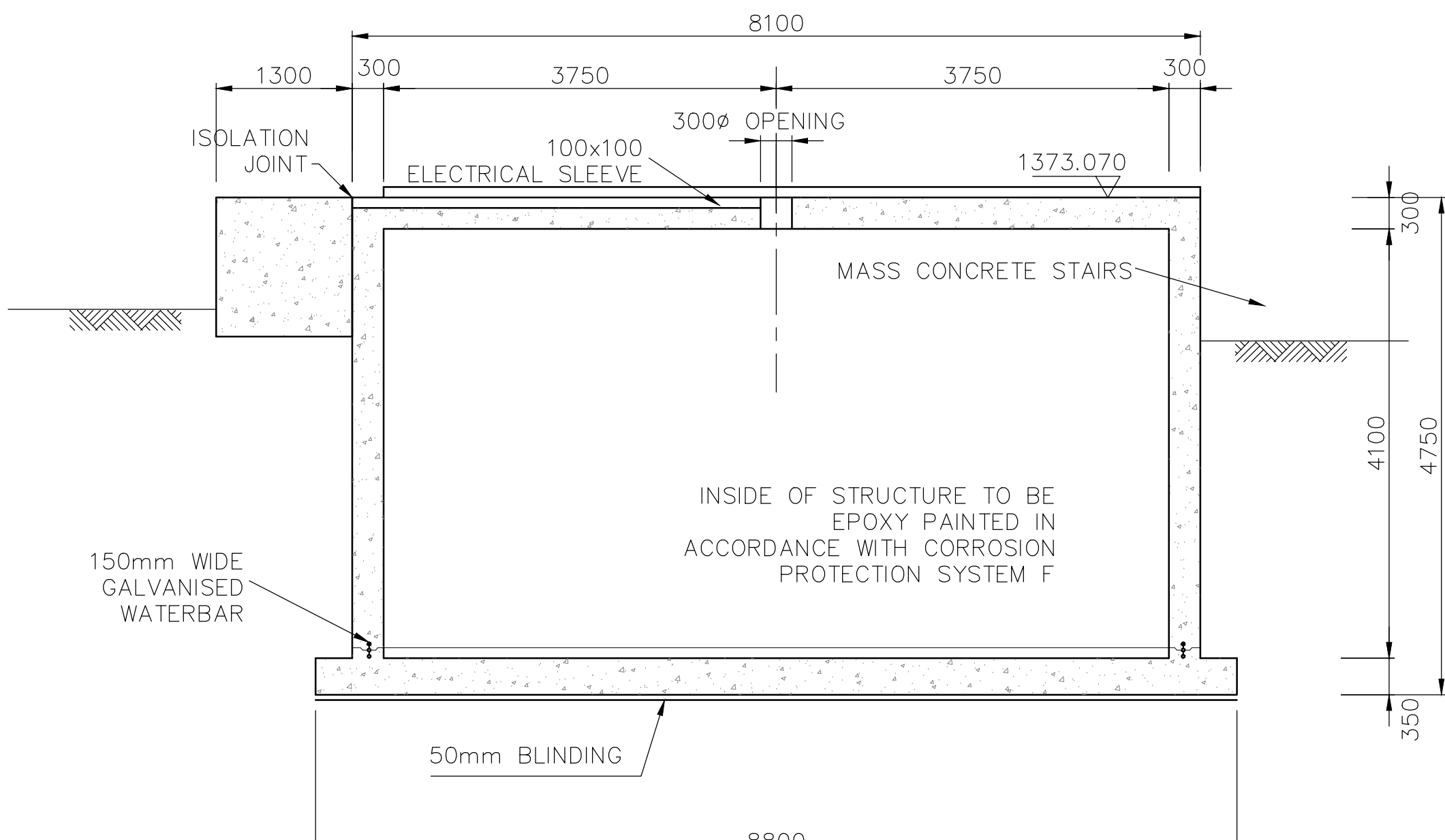
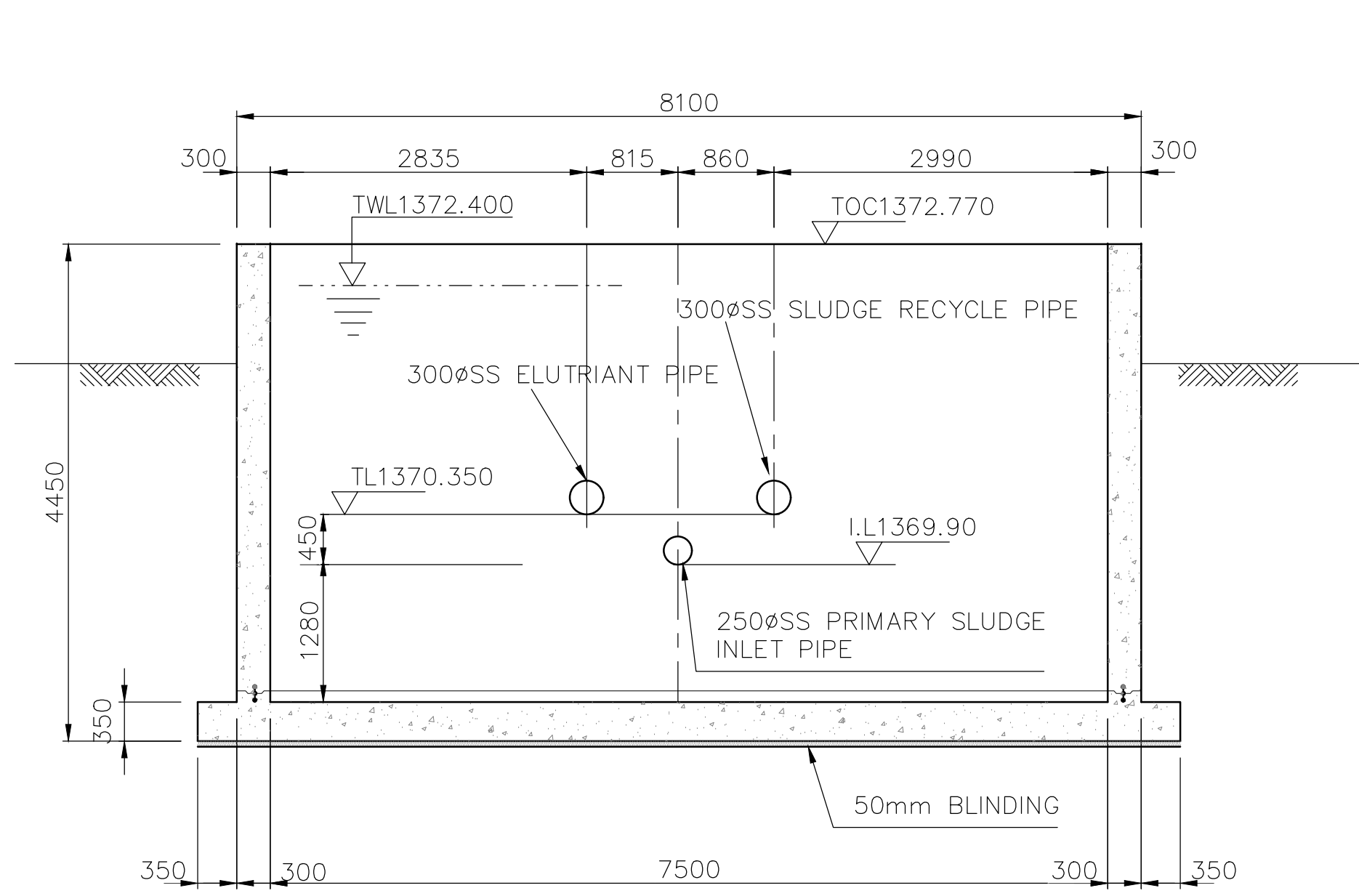
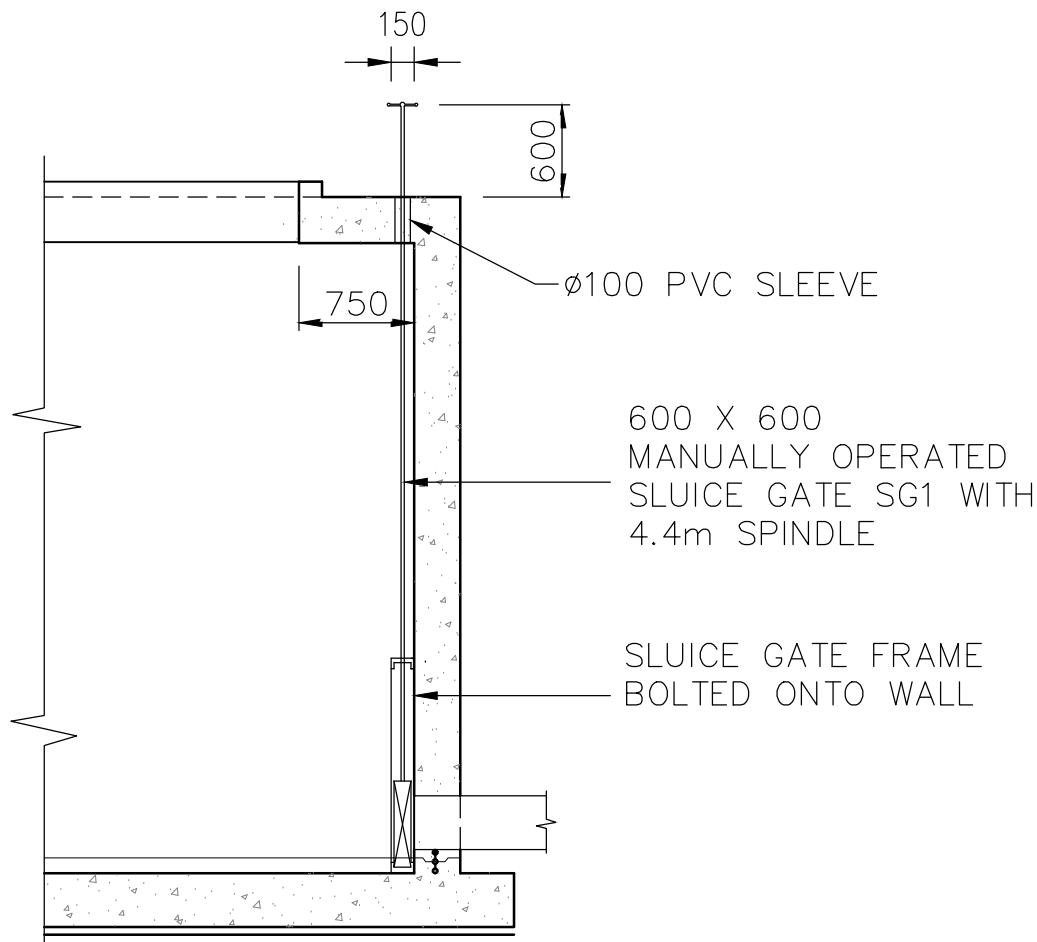
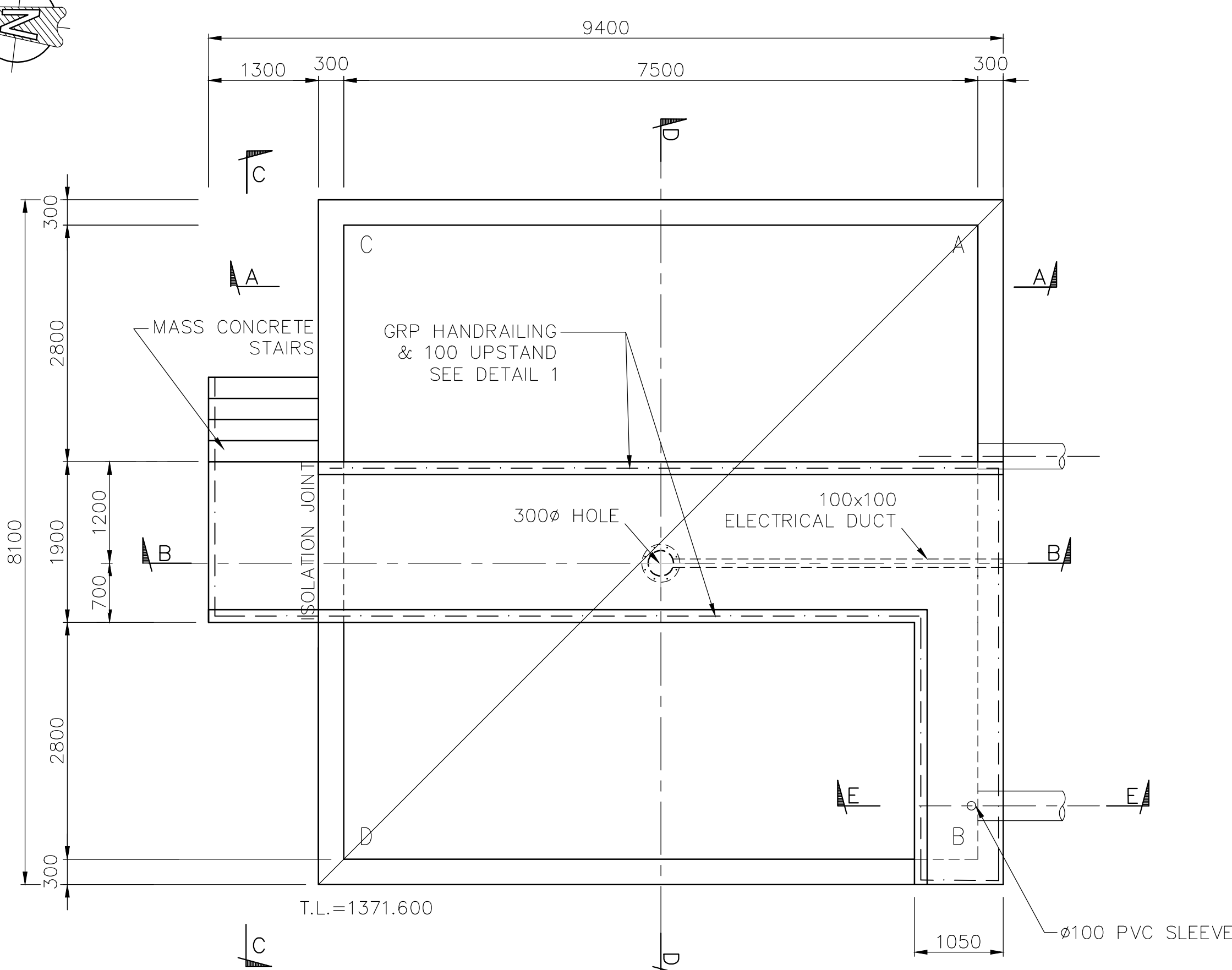
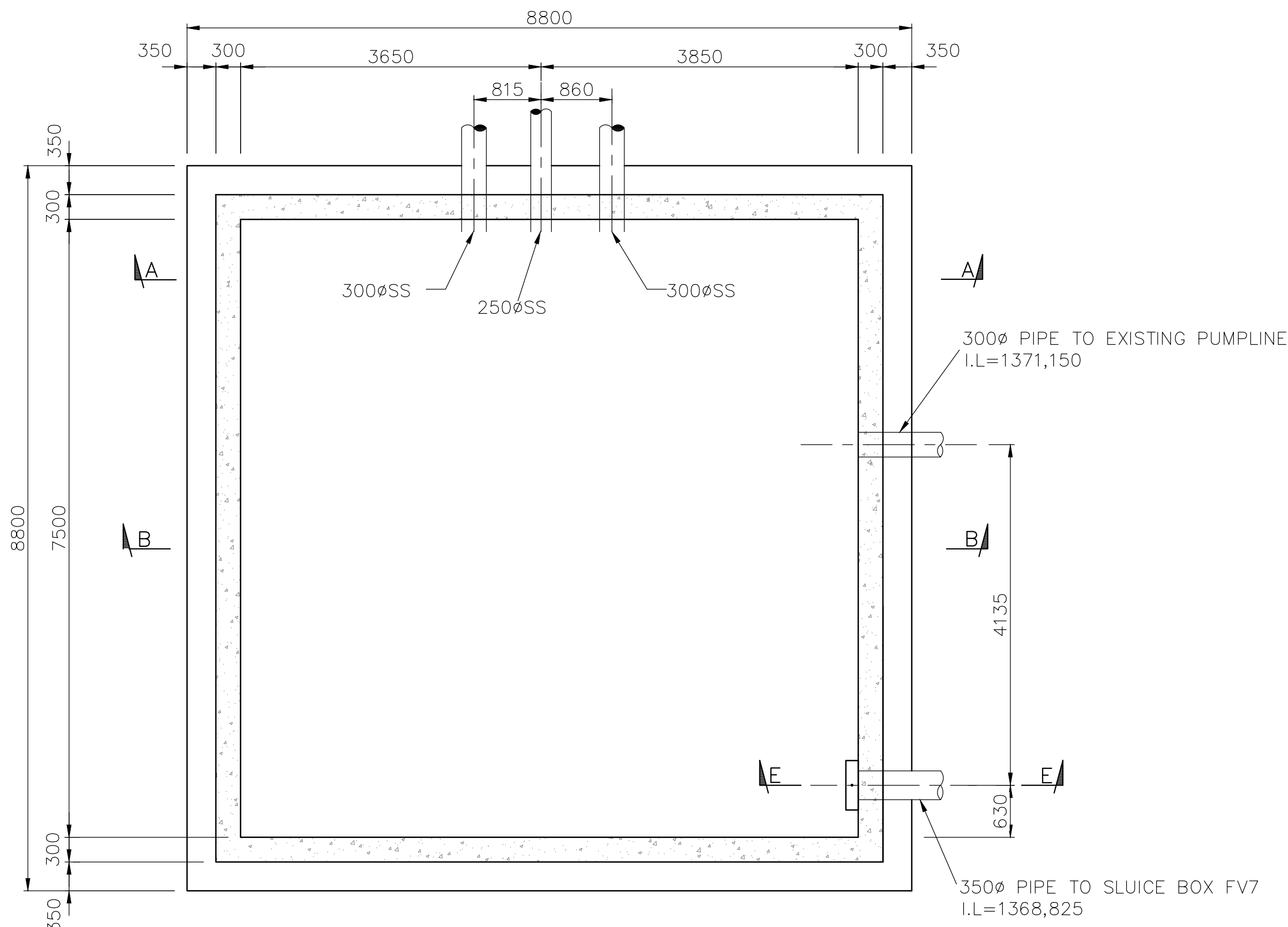
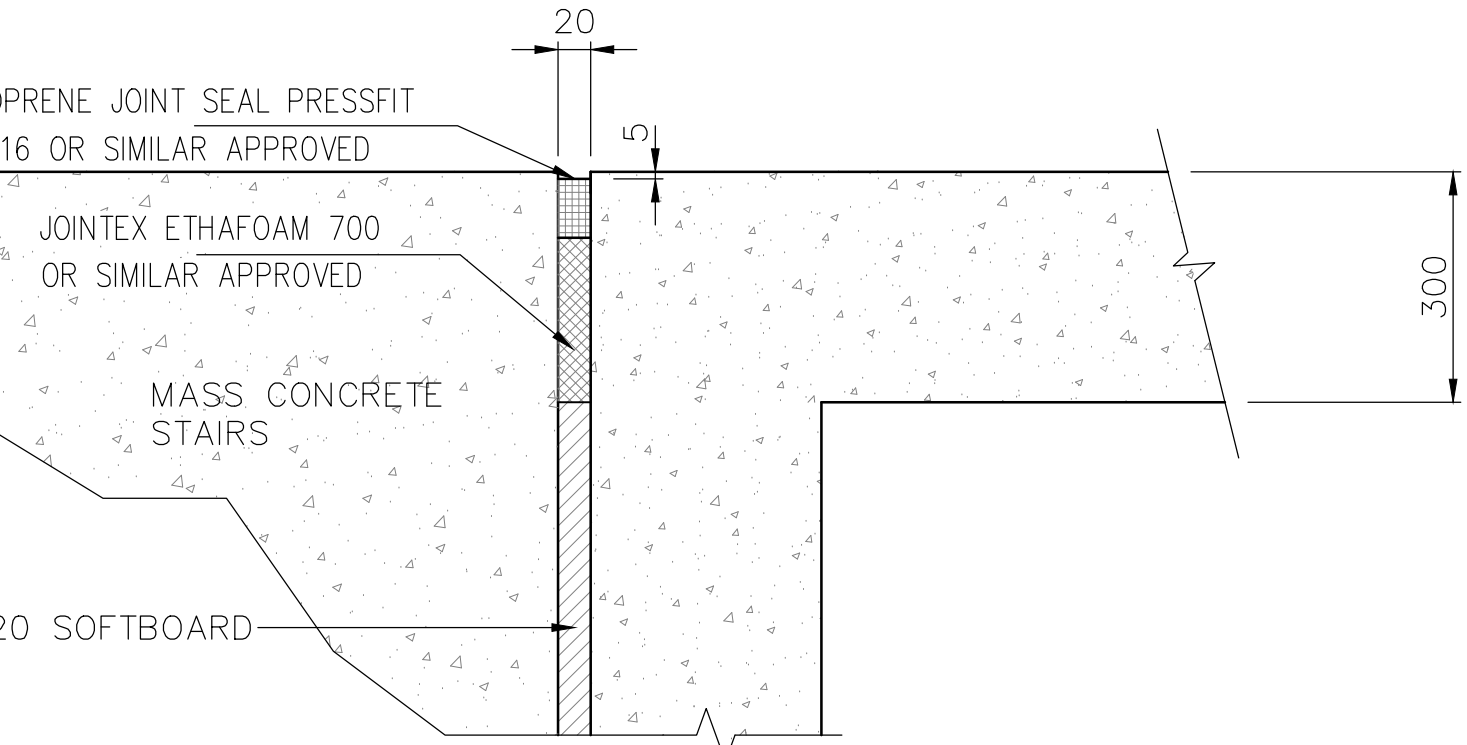
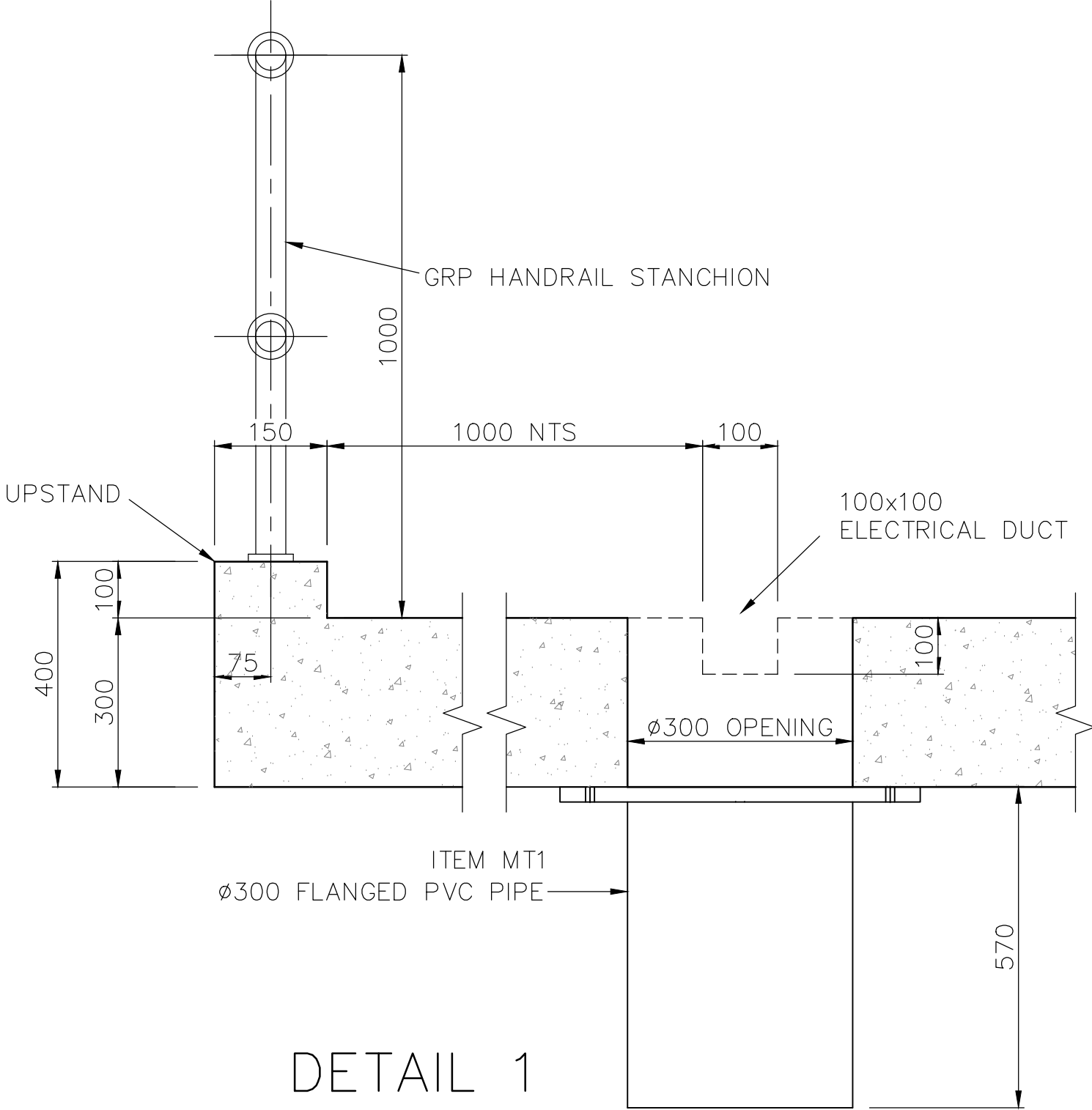
CRAWL BEAM SUSPENSION
SCALE 1:10
2No OFF

NOTES:
1. CONCRETE TO BE GRADE 35/19mm IN SUMP
STRUCTURAL CONCRETE TO BE GRADE 25/19
2. MASS CONCRETE TO BE GRADE 15/26.5
3. BLINDING TO BE GRADE 15/19mm
4. 1 BEAM, HANGER BOLTS + 4 LOOSE PLATES,
ALL HOT DIP GALVANISED AS PER SANS 1461.
REFERENCE DRAWINGS:
30300141-12-078 FERMENTATION TERRACE
ELUTRIATION PUMPSTATION
ARCHITECTURAL DETAILS
30300141-12-047 FERMENTATION TERRACE - LAYOUT
30300141-12-041 SITE LAYOUT

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
	0	APPROVED FOR CONSTRUCTION	K M	01/07/22	JW NUMBER JW 13896-CE-150 CONSULTANT'S NUMBER 30300141-12-150 FILE No
	AS SHOWN				
DATE					0

POINT NAME	Y CO-ORDINATE	X CO-ORDINATE
A	100779.840	2871407.858
B	100787.274	2871408.854
C	100780.836	2871400.424
D	100788.269	2871401.420

- NOTES:
1. CONCRETE TO BE GRADE 35/19.
 2. TOLERANCES TO BE IN ACCORDANCE WITH SABS 1200G CLASS 1.
 3. COVER TO REINFORCEMENT: 50mm.
 4. AN ALLOWABLE FOUNDATION BEARING PRESSURE OF 200kPa ON COMPETENT SOIL IS ASSUMED UNLESS ADVISED DIFFERENTLY
 5. ALL DIMENSIONS TO BE CONFIRMED ON SITE.

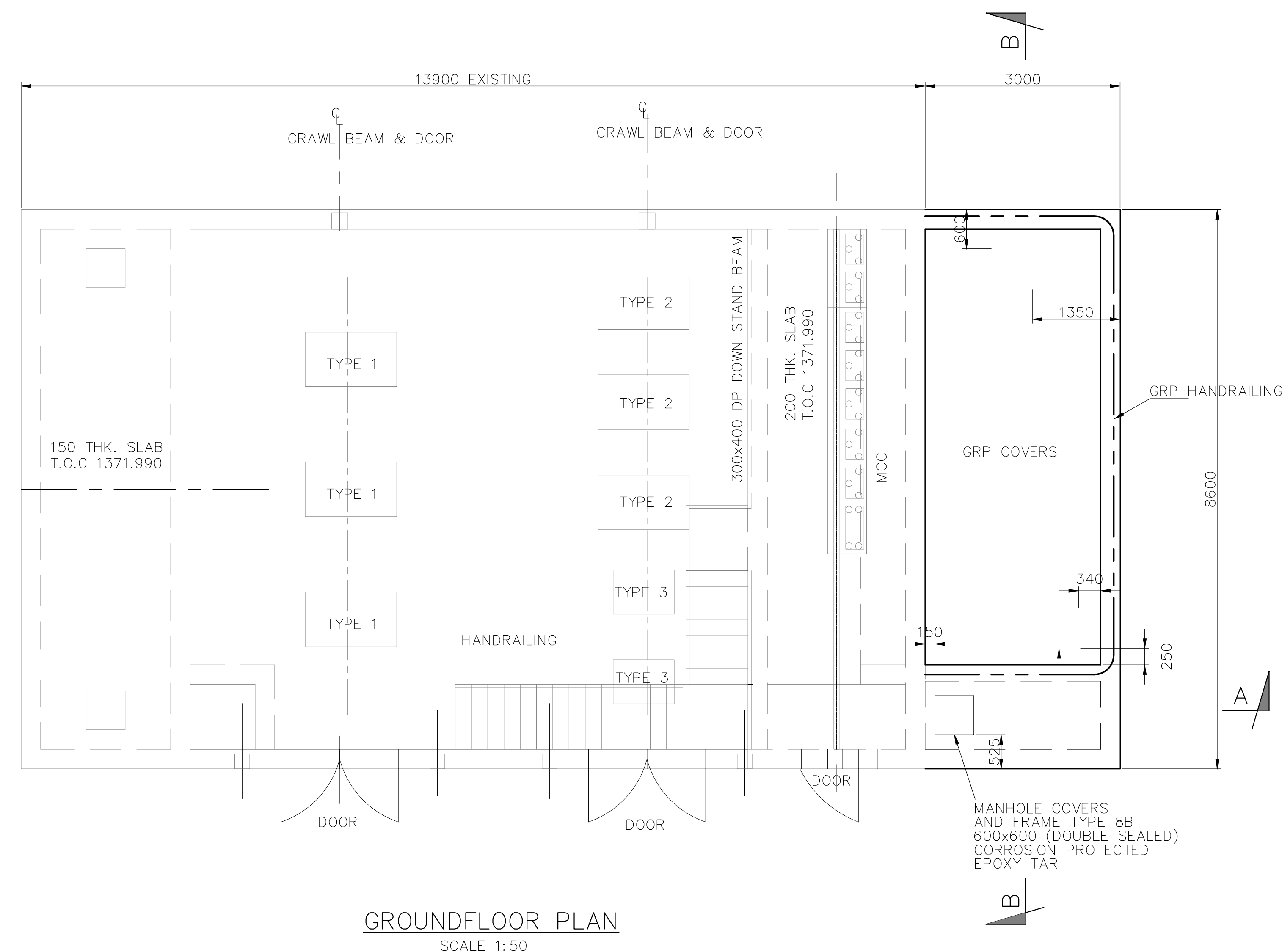
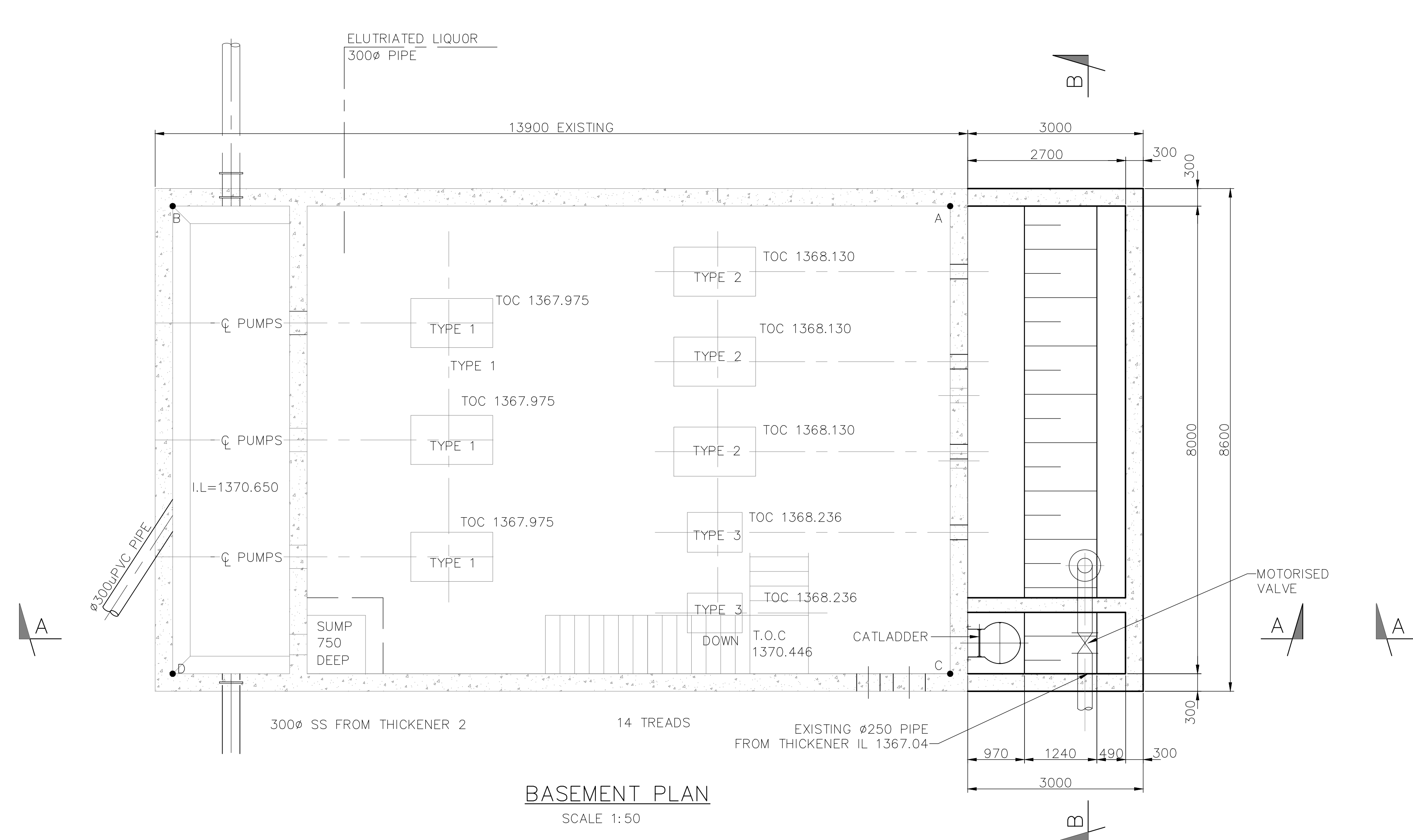


MATERIAL LIST

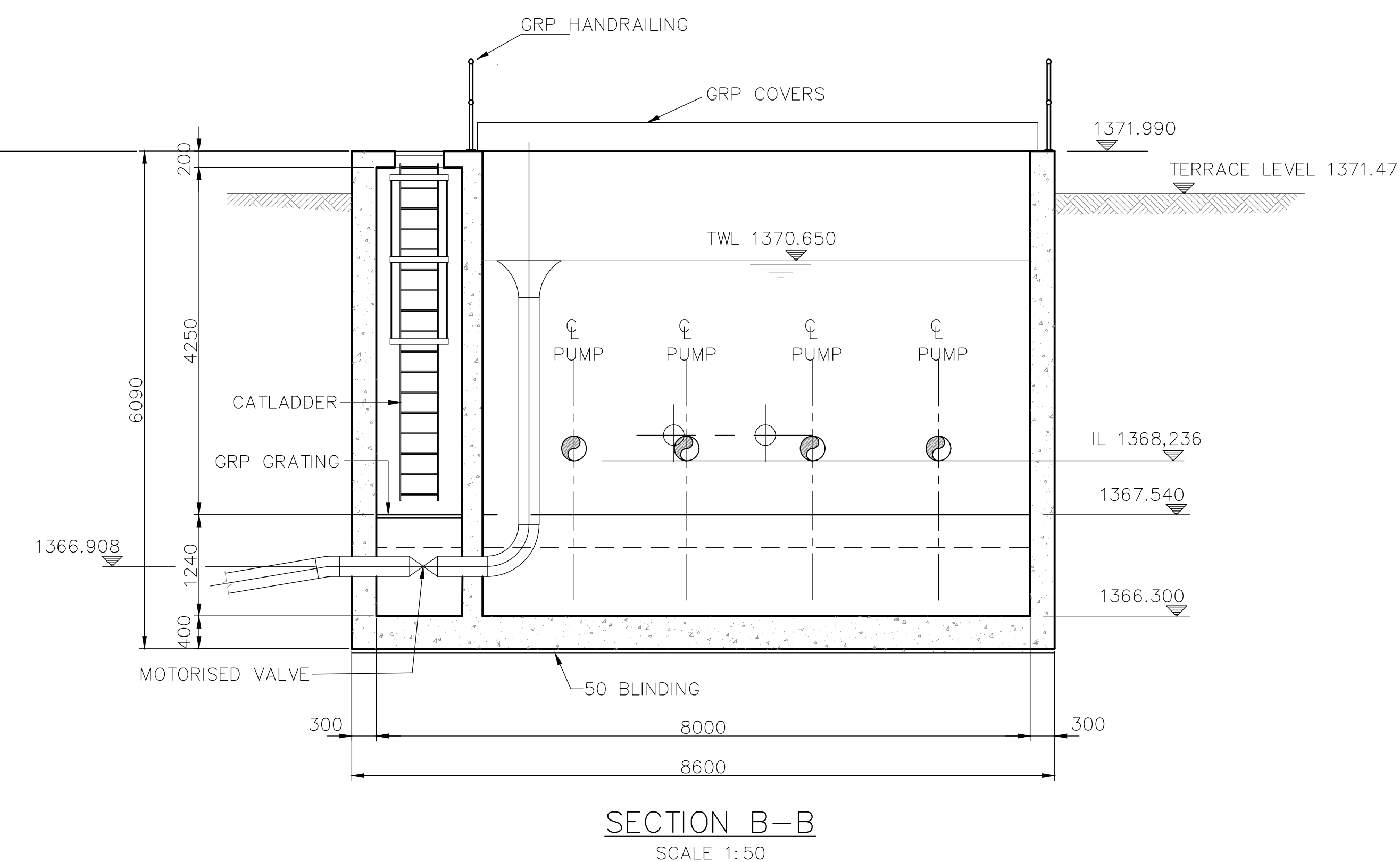
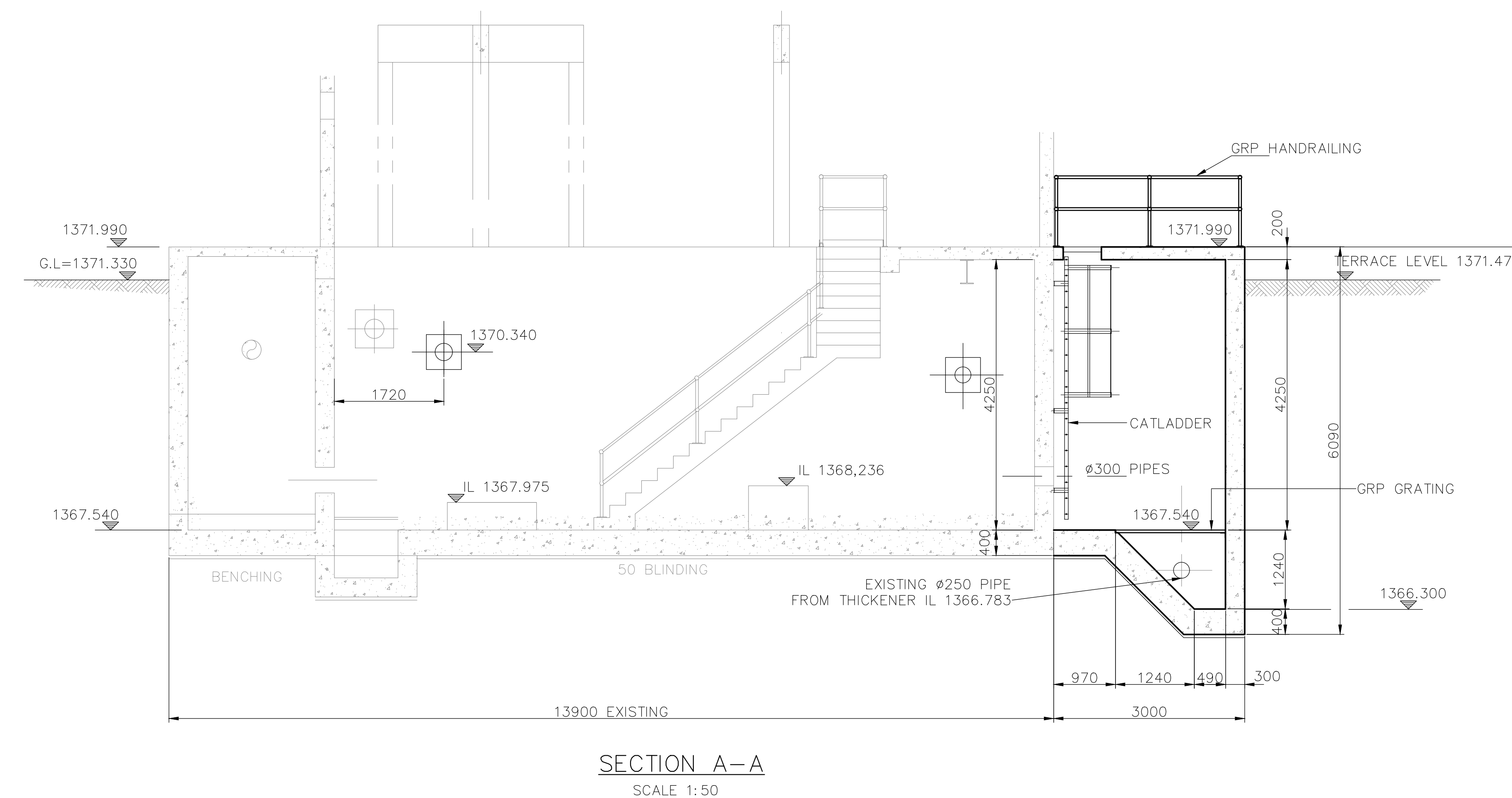
ITEM No	SIZE	QTY	MATL	LENGTH	DESCRIPTION
MT1	300ND	1	uPVC	570mm	PIPE FLANGED ONE END, PIPE CUT IN HALF ALONG Y AXIS
SG1	600x600	1	SS316L	-	SLUICE GATE WITH HAND WHEEL

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG		DESIGN MANAGER		SCALE		AMENDMENTS		APPROVED		DATE		DRAWING No.	
		DESIGNED				NORTHERN WASTEWATER TREATMENT WORKS		AS SHOWN		0		APPROVED FOR CONSTRUCTION		K M		01/07/22		JW NUMBER	
P.O. BOX 221 RIVONIA 2106 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpi.co.za		DRAWN		17 HARRISON STREET MARSHALLTOWN 2107		UNIT 5 – PHASE 2												CONSULTANT'S NUMBER	
WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge 33 Soane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com		CHECKED		TEL: (011) 688-1400 FAX: (011) 688-1529		FERMENTATION TERRACE												30300141-12-154	
		SERVICES CHECKED				MIXING TANK												FILE No	
		GEOTECHNICAL INVESTIGATION				CONCRETE LAYOUT AND DETAILS												0	
		SERVITUDES																	
		APPROVED S. KASAT																	
		Pr. Eng. No. 202001279																	
		DATE 30-06-2022																	



POINT NAME	Y CO-ORDINATE	X CO-ORDINATE
A	100793.797	2871417.402
B	100806.979	2871419.168
C	100792.721	2871425.330
D	100805.918	2871427.097



NOTE:
CORROSION PROTECTION :-
I BEAM, HANGER BOLTS + 4 LOOSE PLATES,
ALL HOT DIP GALVANISED AS SABS 1461.

NOTES:

1. CONCRETE TO BE GRADE 35/19mm IN SUMP
STRUCTURAL CONCRETE TO BE GRADE 25/19
2. MASS CONCRETE TO BE GRADE 15/26,5
3. BLINDING TO BE GRADE 15/19mm

REFERENCE DRAWINGS:

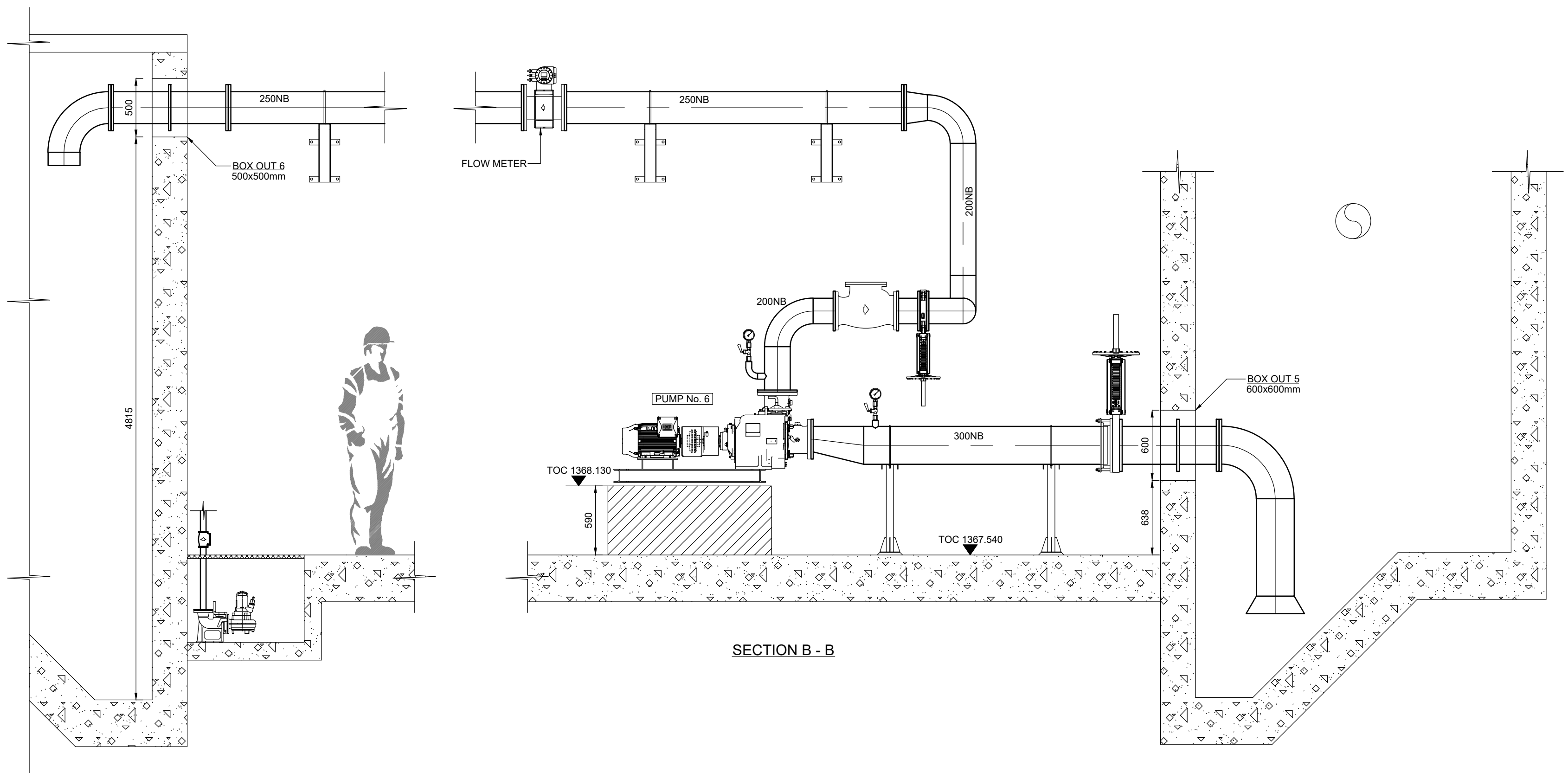
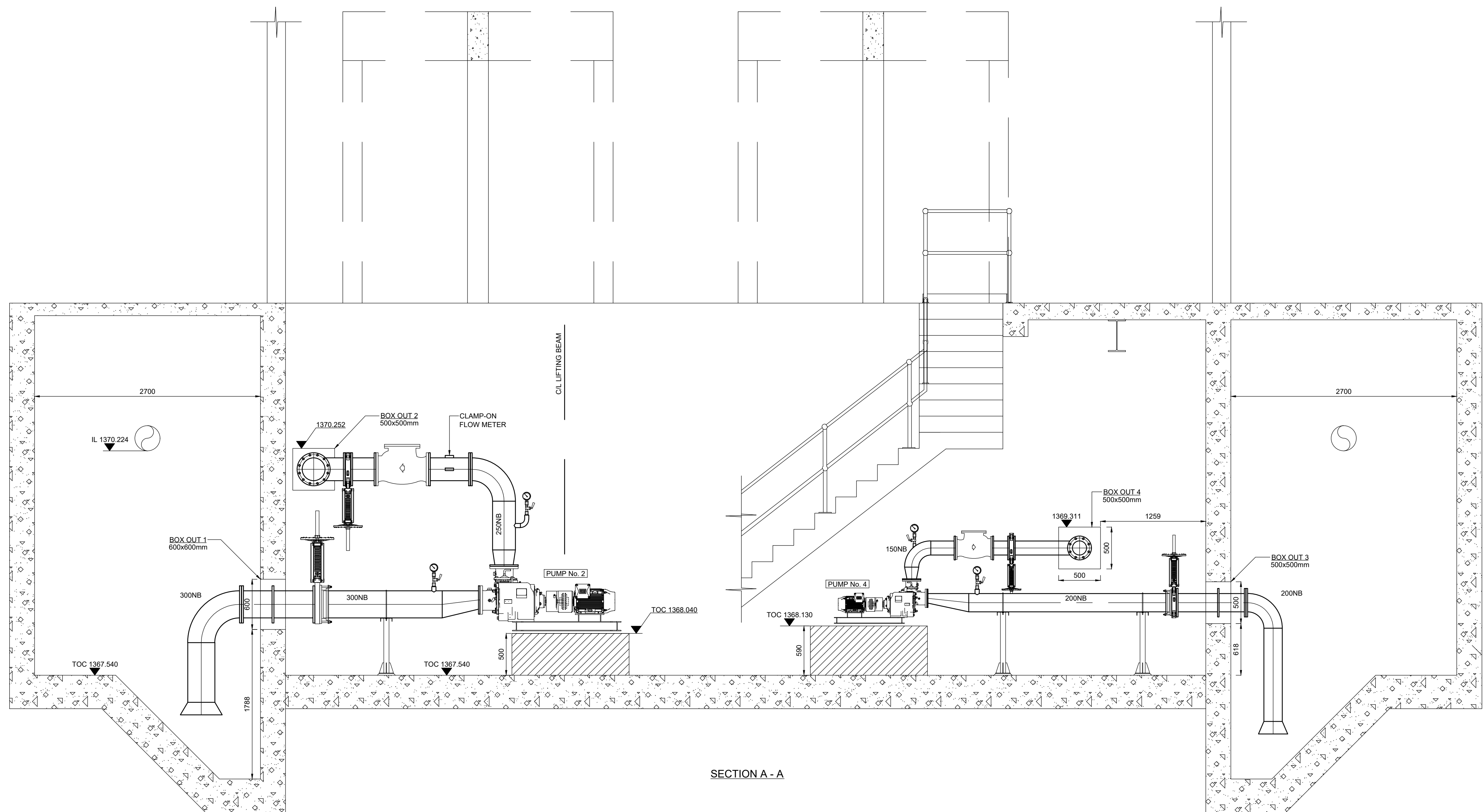
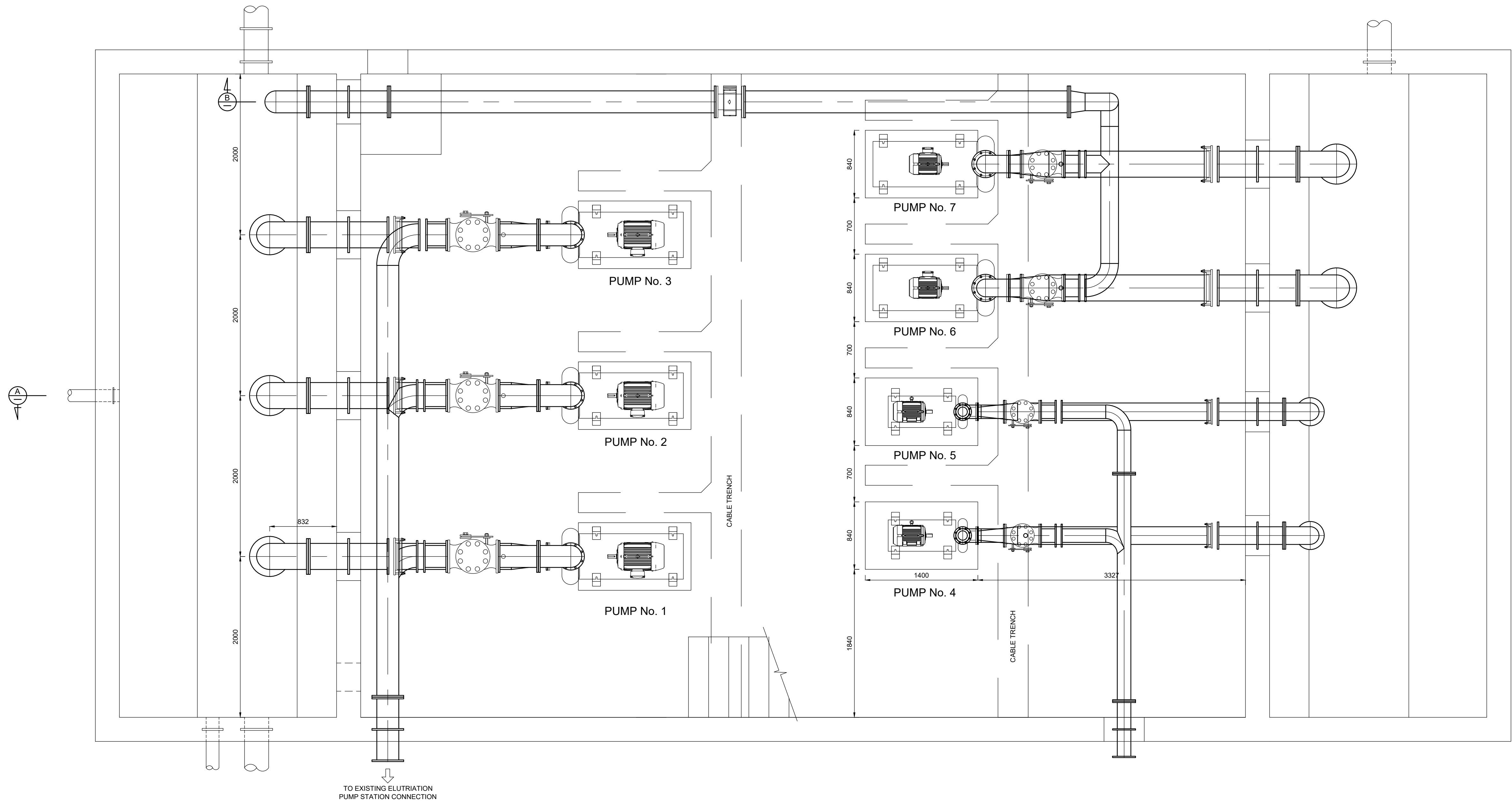
30300141-12-084 FERMENTATION TERRACE
- ELUTRIATION PUMPSTATION
ARCHITECTURAL DETAILS

30300141-12-047 FERMENTATION TERRACE - LAYOUT

30300141-12-041 SITE LAYOUT

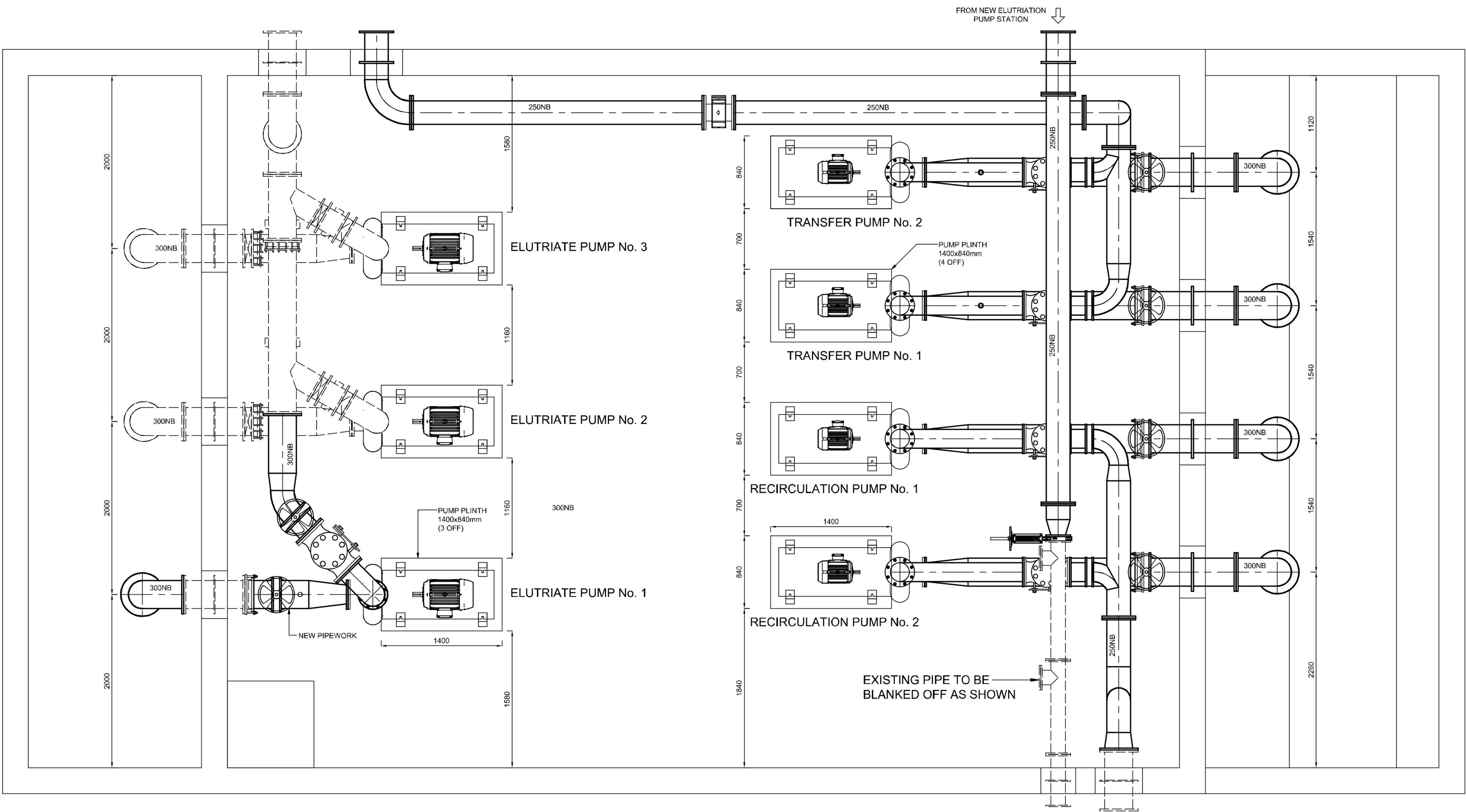
 Knight Piésold CONSULTING P.O. BOX 221 RIVONIA 2129 TEL: 011-806 1111 FAX: 011-806 1100 EMAIL: enquiries@kpnca.co.za		 WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsmeadows 33 Soane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	SURVEYED DESIGNED DRAWN CHECKED SERVICES CHECKED GEOTECHNICAL INVESTIGATION SERVITUDES S J J VD W K M APPROVED Pr. Eng. No. DATE S. JASSAT 202001279 30-06-2022 	JOHANNESBURG WATER SOC LTD  17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	CITY OF JOHANNESBURG NORTHERN WASTEWATER TREATMENT WORKS UNIT 5 – PHASE 2 FERMENTATION TERRACE EXTENSION TO EXISTING ELUTRIATION PUMPSTATION CONCRETE DETAILS	DESIGN MANAGER DATE	SCALE AS SHOWN	<table><thead><tr><th colspan="2">AMENDMENTS</th><th>APPROVED</th><th>DATE</th><th>DRAWING No.</th></tr></thead><tbody><tr><td>0</td><td>APPROVED FOR CONSTRUCTION</td><td>K M</td><td>01/07/22</td><td>JW NUMBER JW 13896–CE–157 CONSULTANT'S NUMBER 30300141–12–157 FILE No</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></t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- MECHANICAL NOTE:
- 1) TOLERANCES - DIMENSIONS UP TO 1000mm = ± 1 mm
- DIMENSIONS OVER 1000mm = ± 3 mm
- HOLE CENTRES = ± 0.5 mm
- ANGULAR TOLERANCES = ± 30 minutes
 - 2) WELDING - ALL WELDS MUST BE CONTINUOUS, SMOOTH & FREE FROM SLAG, SPATTER etc.
 - 3) GENERAL - ALL EDGES, CORNERS, HOLES, etc. TO BE GROUND SMOOTH & ROUNDED.

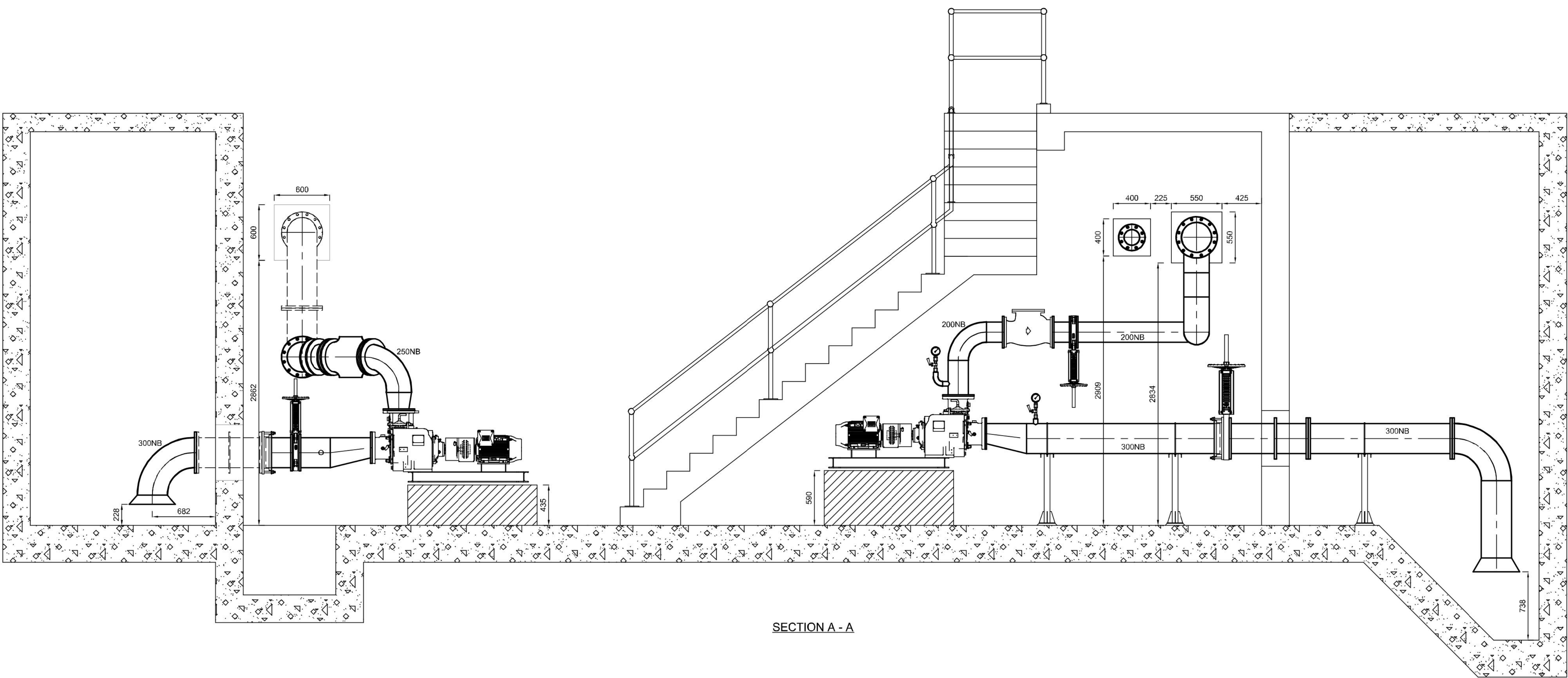


DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG		DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
 P.O. BOX 221 RYCINA 2128 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpi.co.za	 WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge 33 Sloane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	NORTHERN WASTEWATER TREATMENT WORKS UNIT 5 – PHASE 2 HEAD OF WORKS ELUTRIATION PUMPSTATION MECHANICS GENERAL ARRANGEMENT							
SURVEYED		DESIGNED				1:30	T	APPROVED FOR TENDER	J R	20/05/19	JW NUMBER JW 13896-CE-160
DRAWN		J VD W									CONSULTANT'S NUMBER 30300141-12-160
CHECKED		SERVICES CHECKED									FILE No
GEOTECHNICAL INVESTIGATION											
SERVITUDES											
APPROVED		DATE									

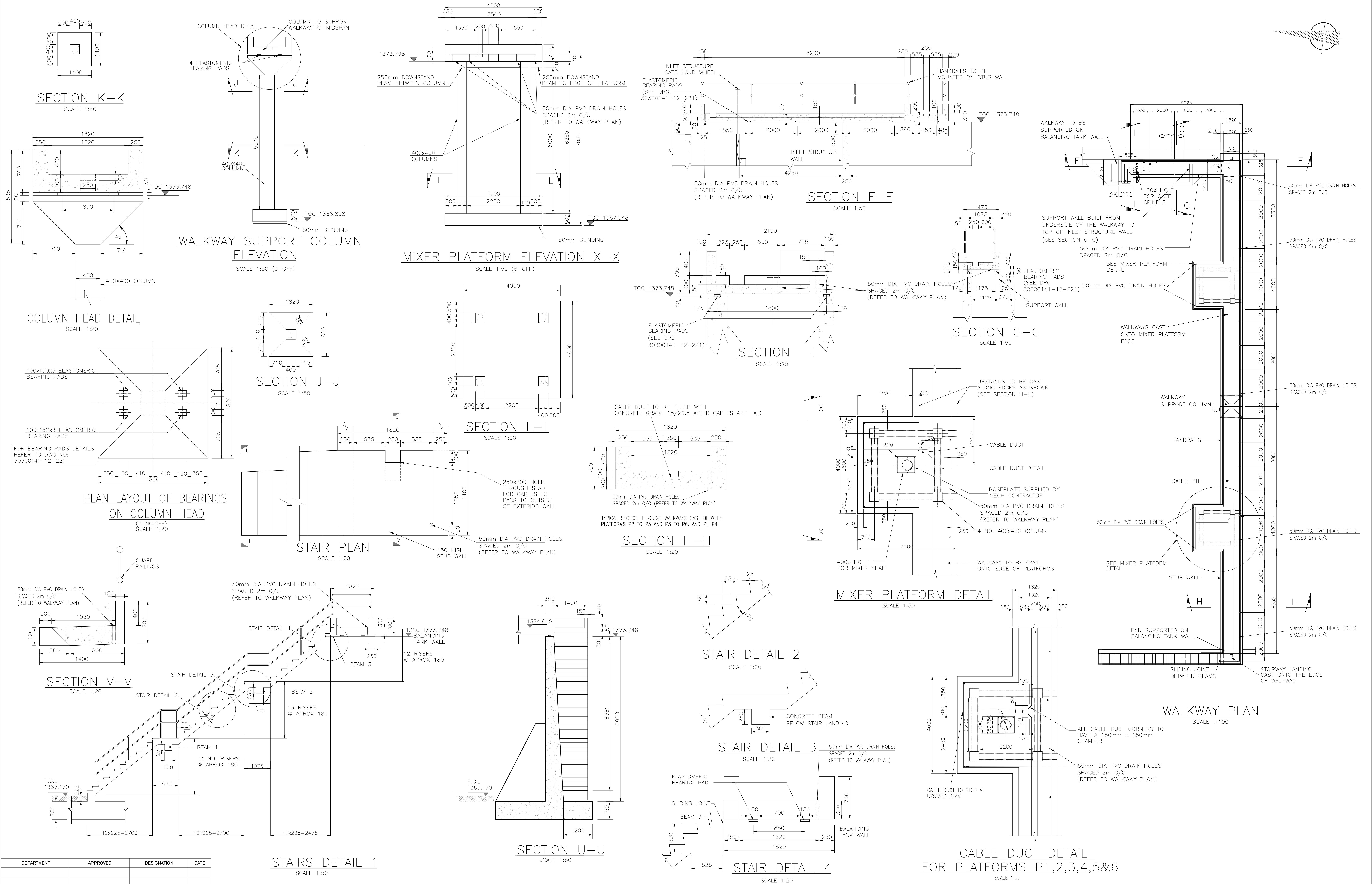


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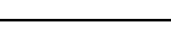
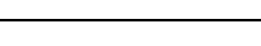


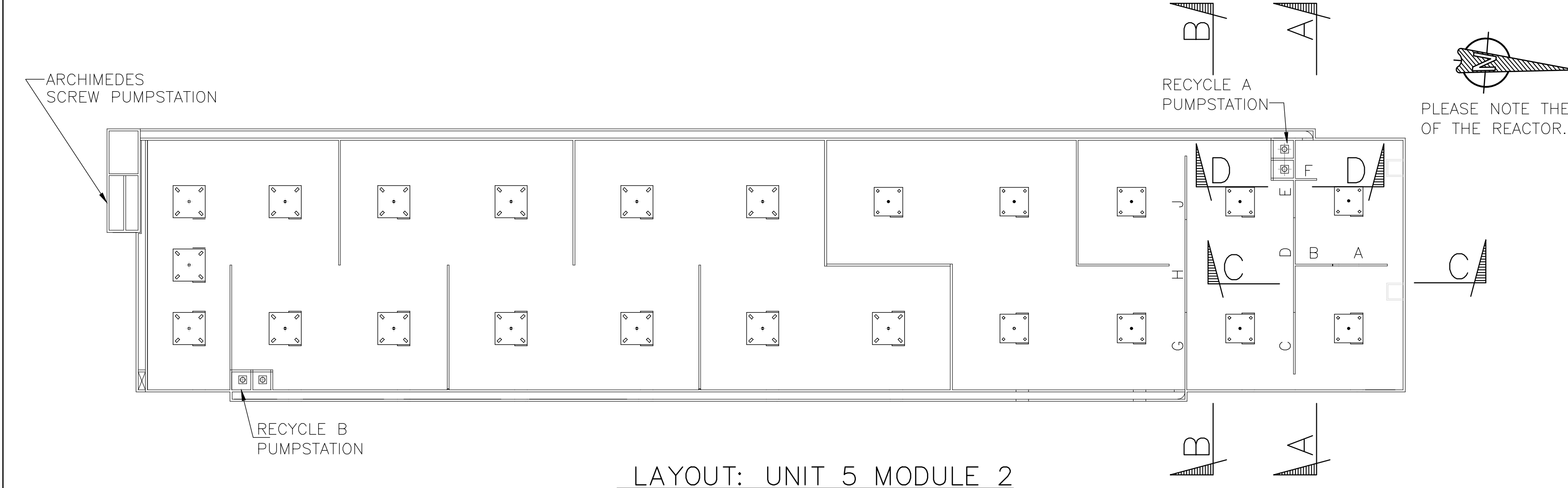
DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG				DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.	
				NORTHERN WASTEWATER TREATMENT WORKS										
P.O. BOX 321 RYVONIA 2126 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpsns.co.za		17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529		UNIT 5 – PHASE 2 HEAD OF WORKS MODIFICATIONS TO EXISTING ELUTRIATION PUMPSTATION MECHANICS GENERAL ARRANGEMENT				DATE	1:25	T	APPROVED FOR TENDER	J R	20/05/19	JW NUMBER JW 13896-CE-161 CONSULTANT'S NUMBER 30300141-12-161 FILE No



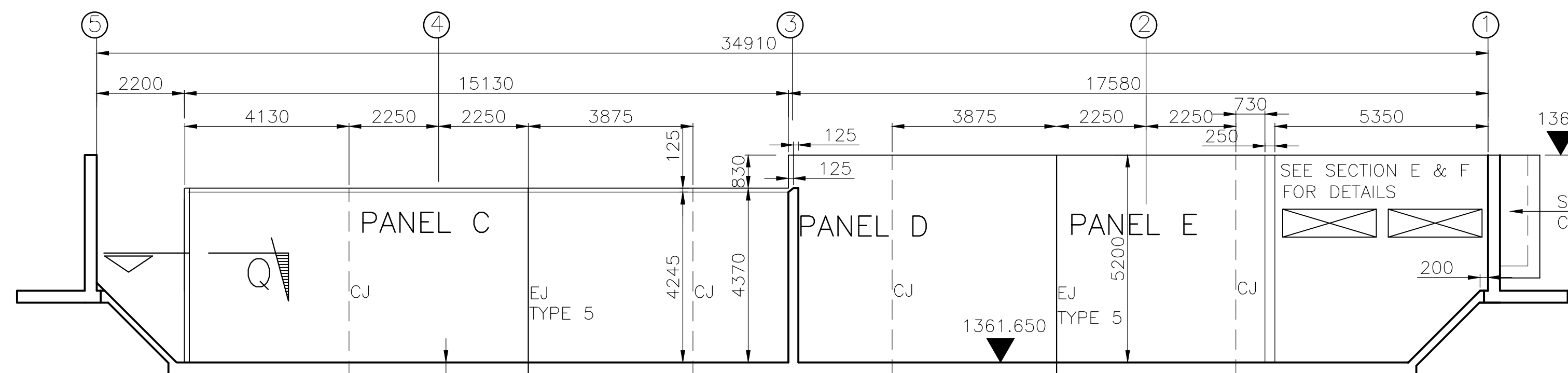
DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS				SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG				DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
 Knight Piésold CONSULTING	 WSP Group Africa (Pty) Ltd P.O. BOX 221 RYONDA 2128 TEL: 011-806 7111 FAX: 011-806 7180 EMAIL: enquiry@kpi.co.za	 Johannesburg Water	DESIGNED S V DRAWN J vrd W CHECKED K M SERVICES CHECKED GEOTECHNICAL INVESTIGATION SERVITUDES	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	NORTHERN WASTEWATER TREATMENT WORKS UNIT 5 – PHASE 2 BALANCING TANK GENERAL ARRANGEMENT AND CONCRETE LAYOUT SHEET 3 OF 5				0	APPROVED FOR CONSTRUCTION	KM			01/07/22	JW NUMBER JW 13896-CE-203 CONSULTANT'S NUMBER 30300141-12-203 FILE No																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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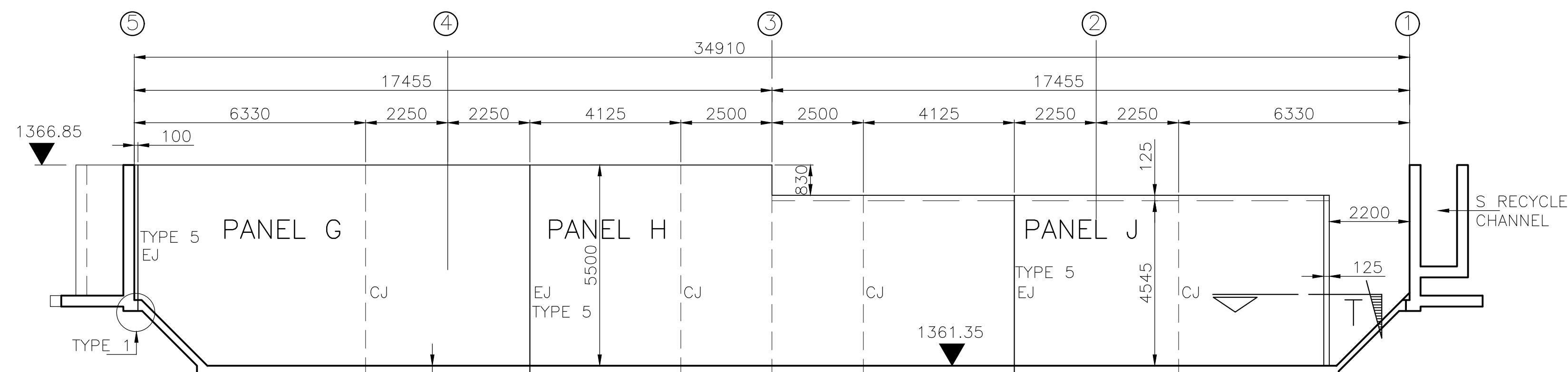
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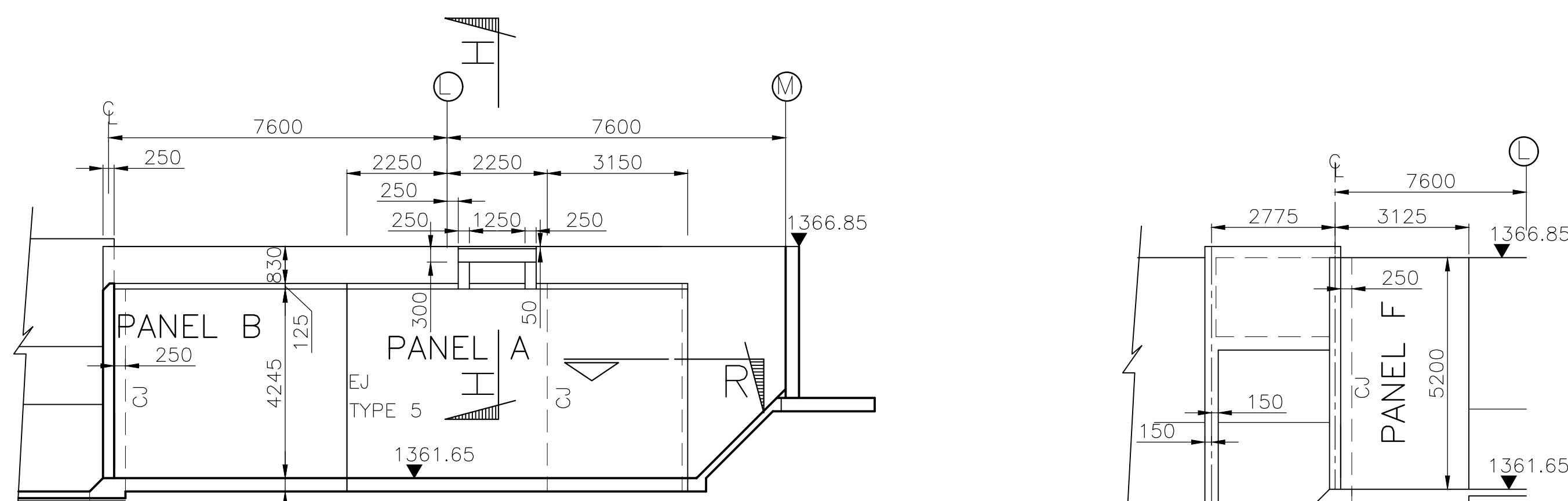
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SECTION B-B

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SECTION C-C

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SECTION D-D

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SECTION Q-Q

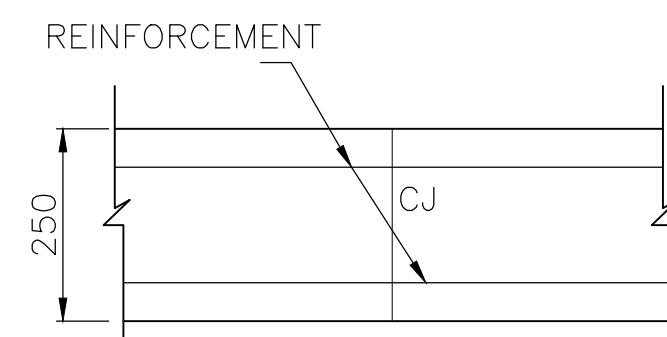
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SECTION R-R

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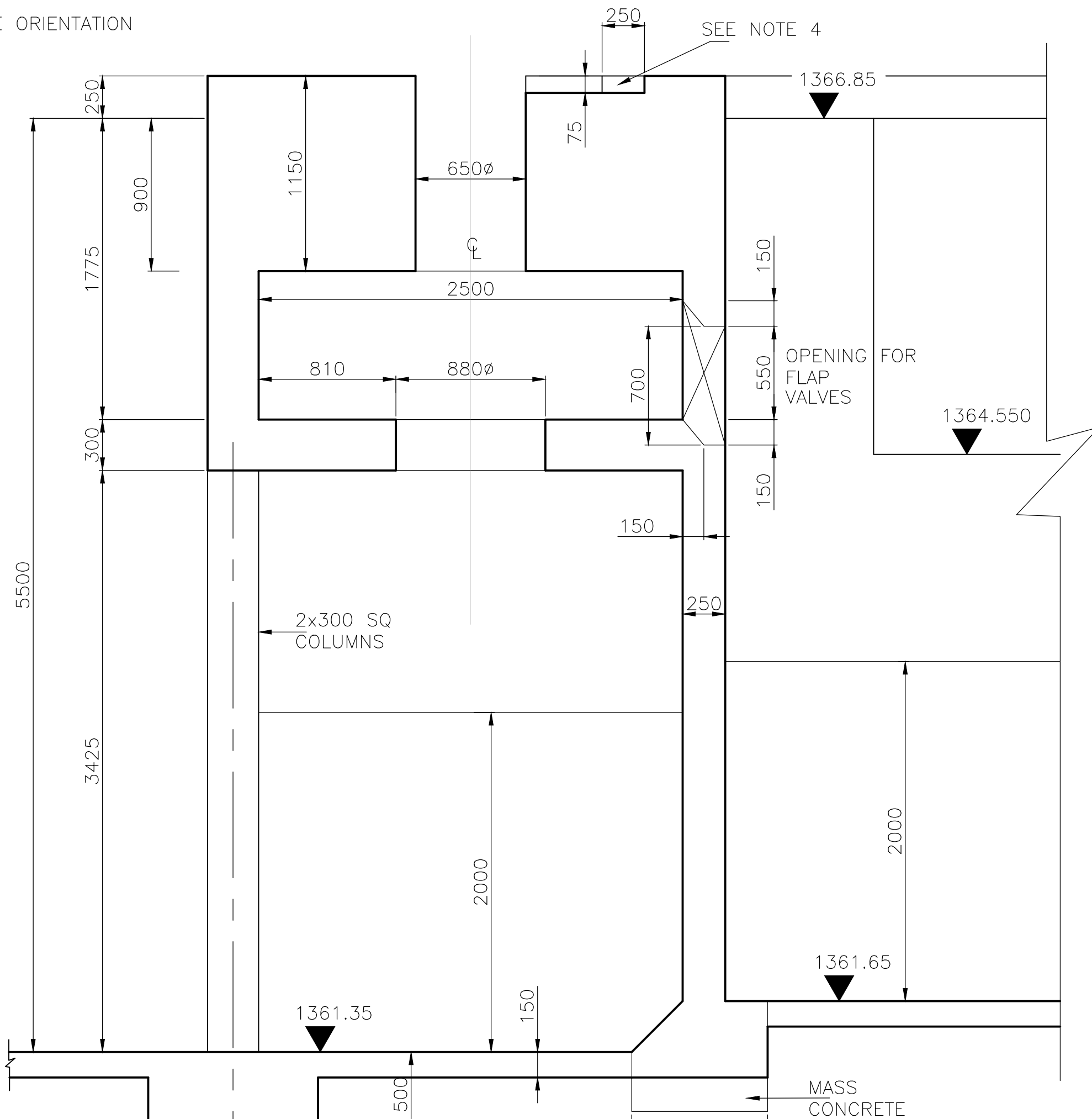
SECTION T-T

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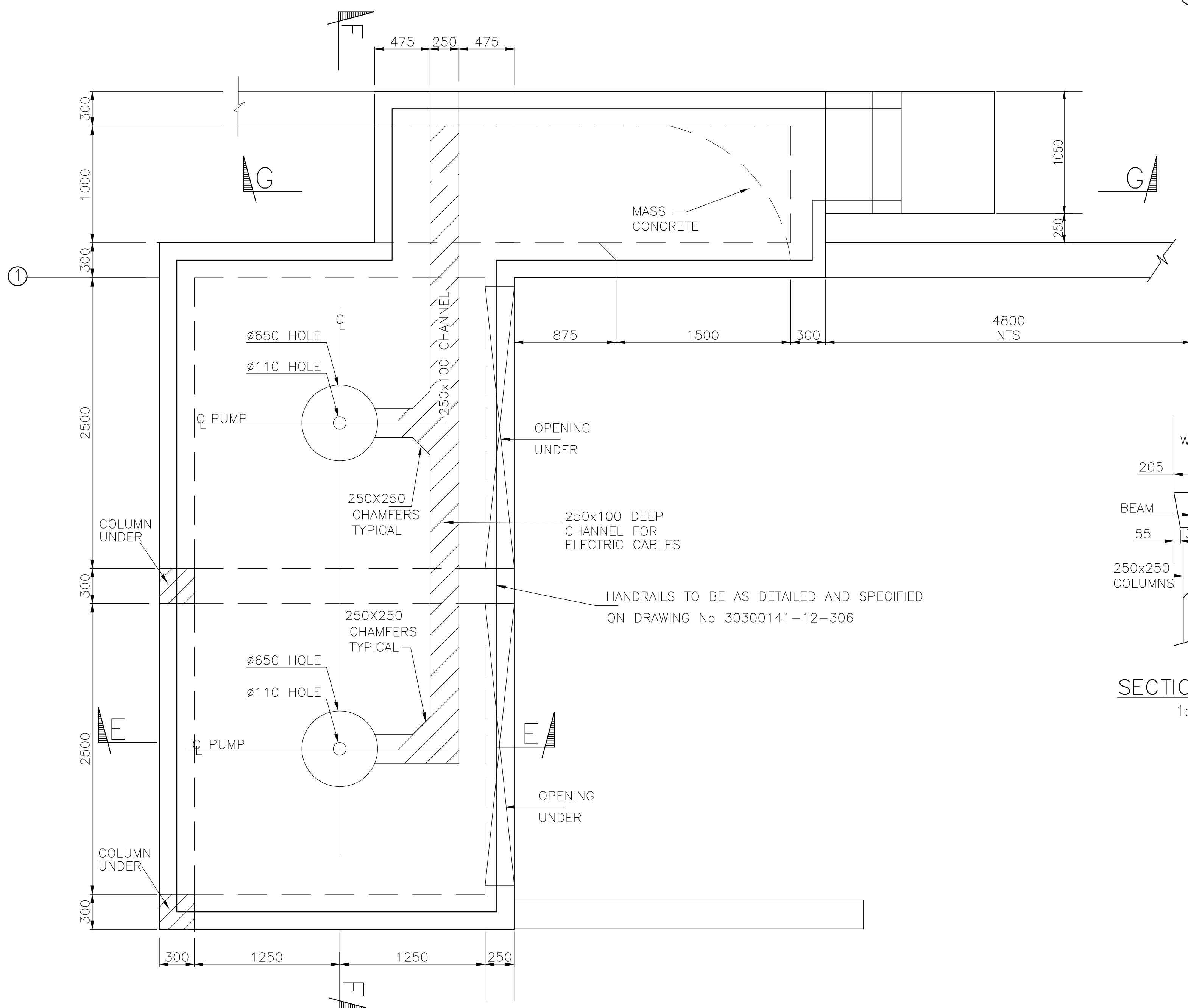
CONTRACTION JOINT DETAIL

1:10



SECTION E-E

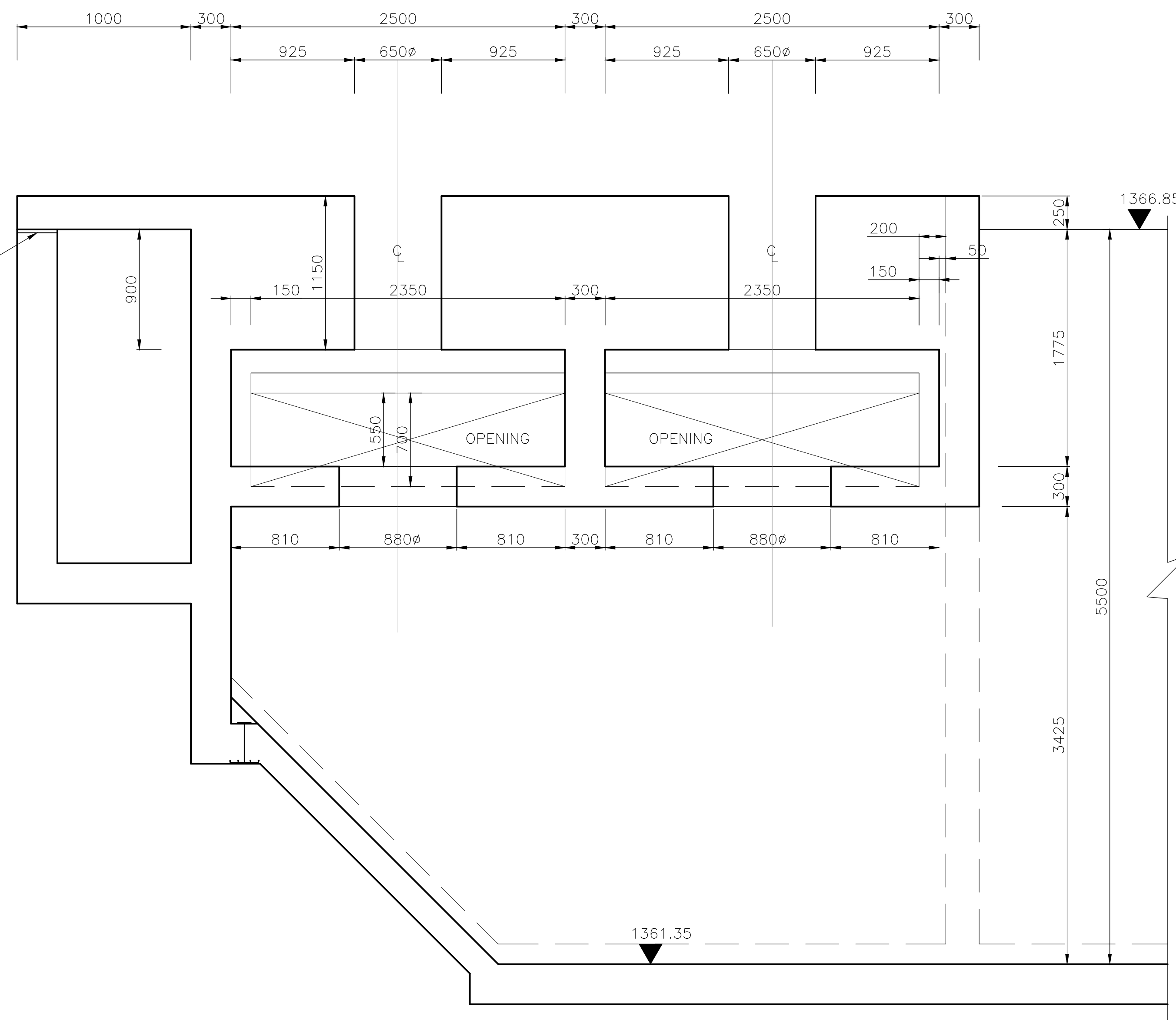
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PLAN OF RECYCLE A PUMPSTATION

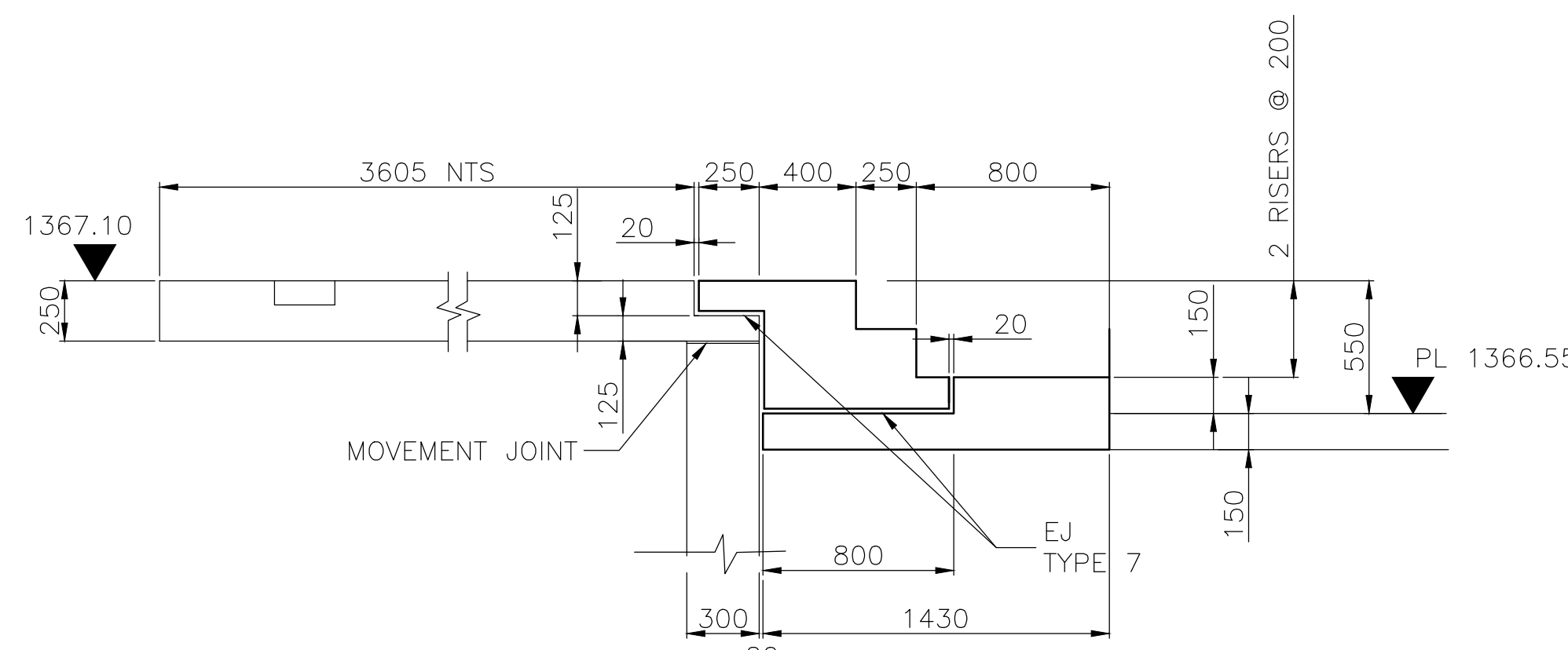
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5 PLY MALTHOID MOVEMENT JOINT



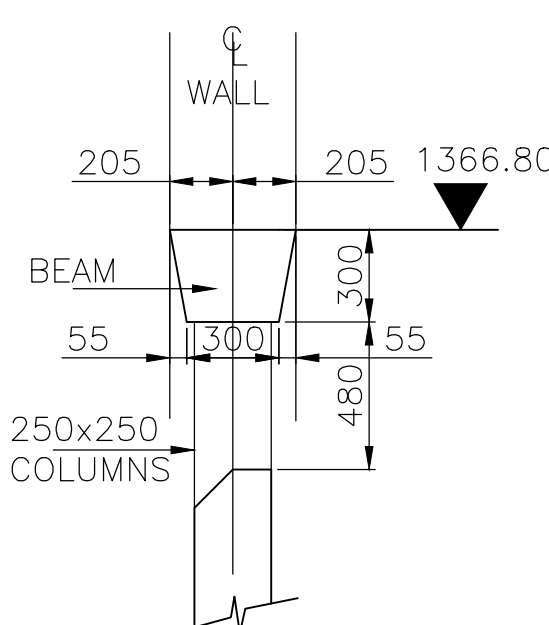
SECTION F-F

1:25



SECTION G-G

1:25



SECTION H-H

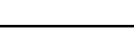
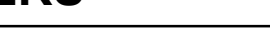
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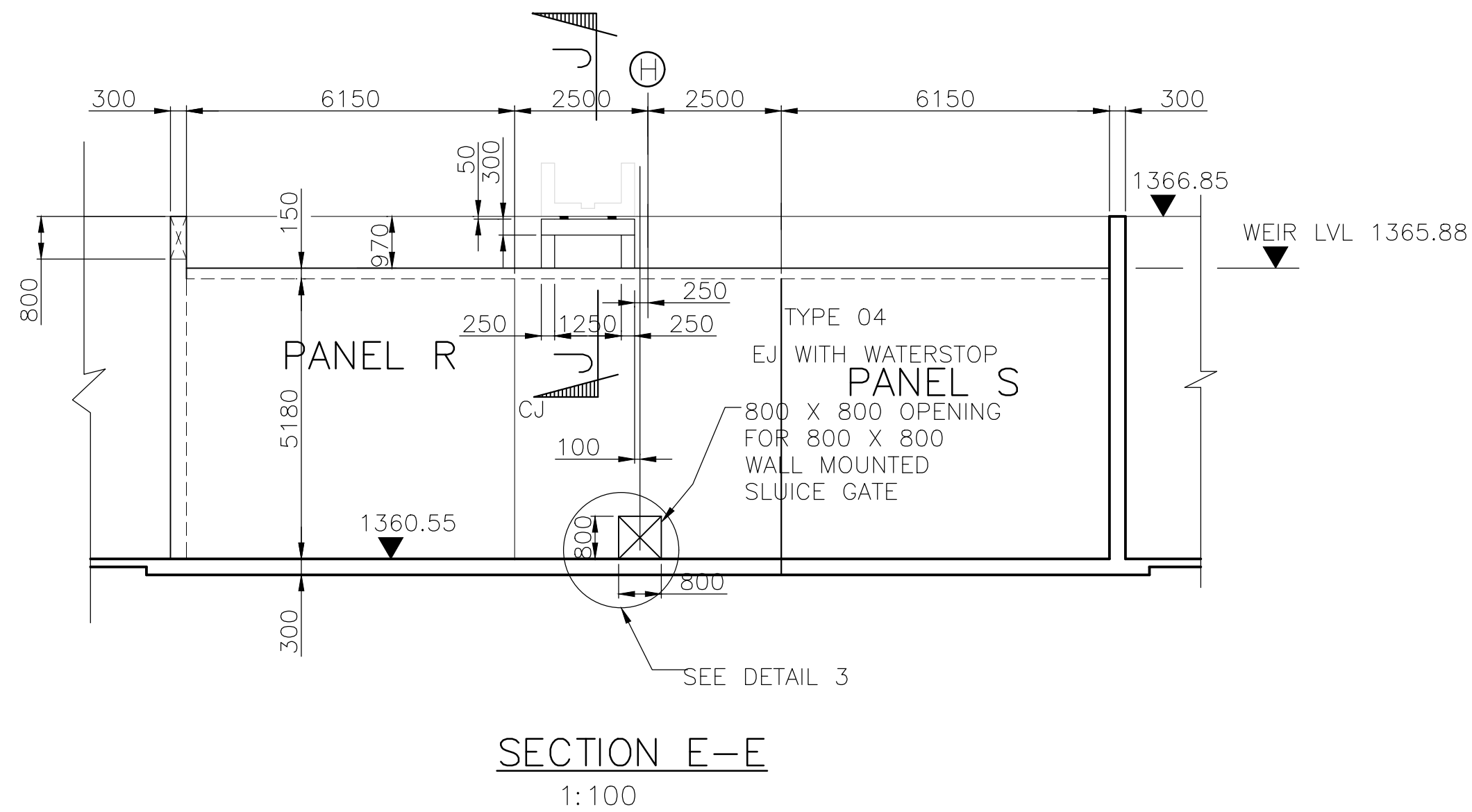
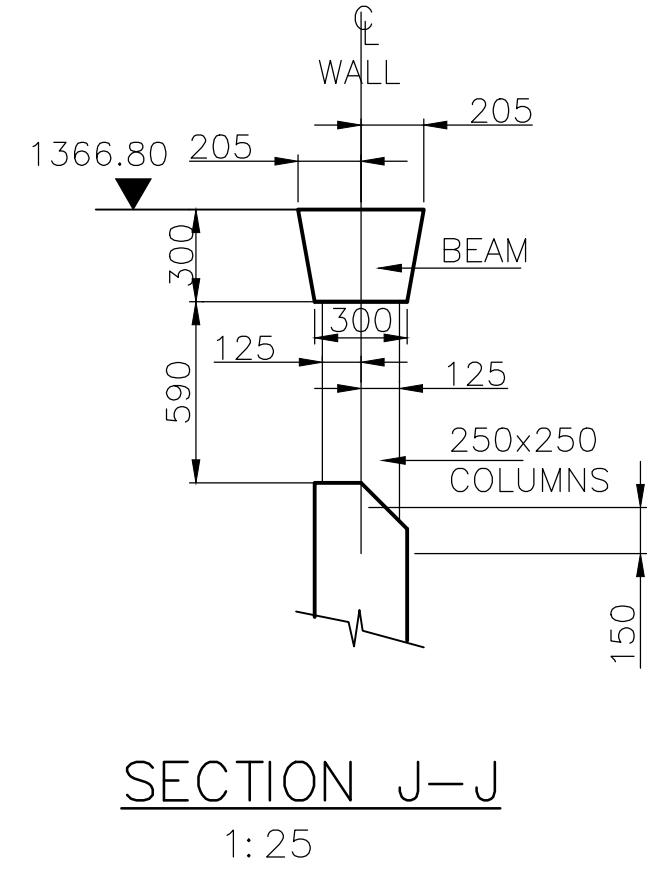
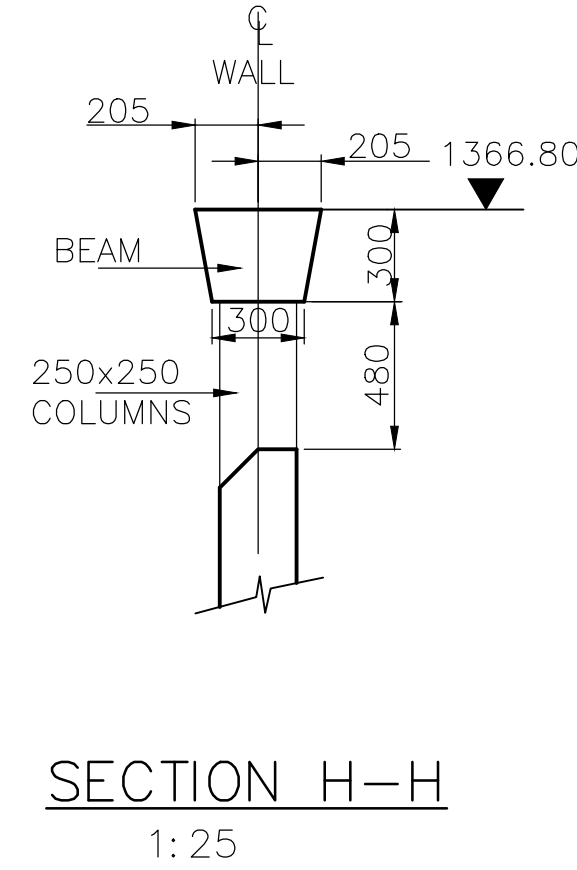
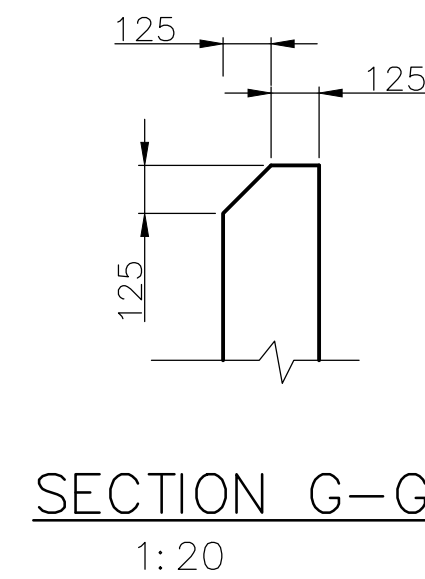
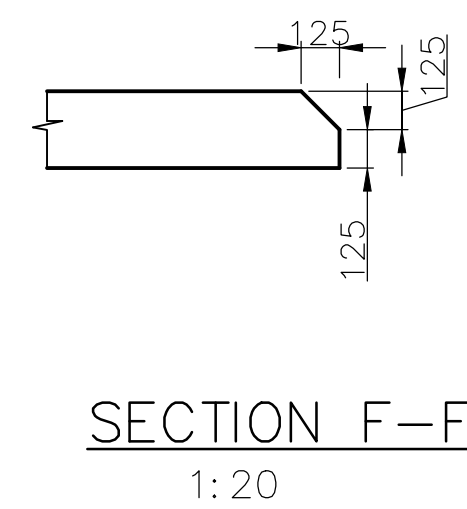
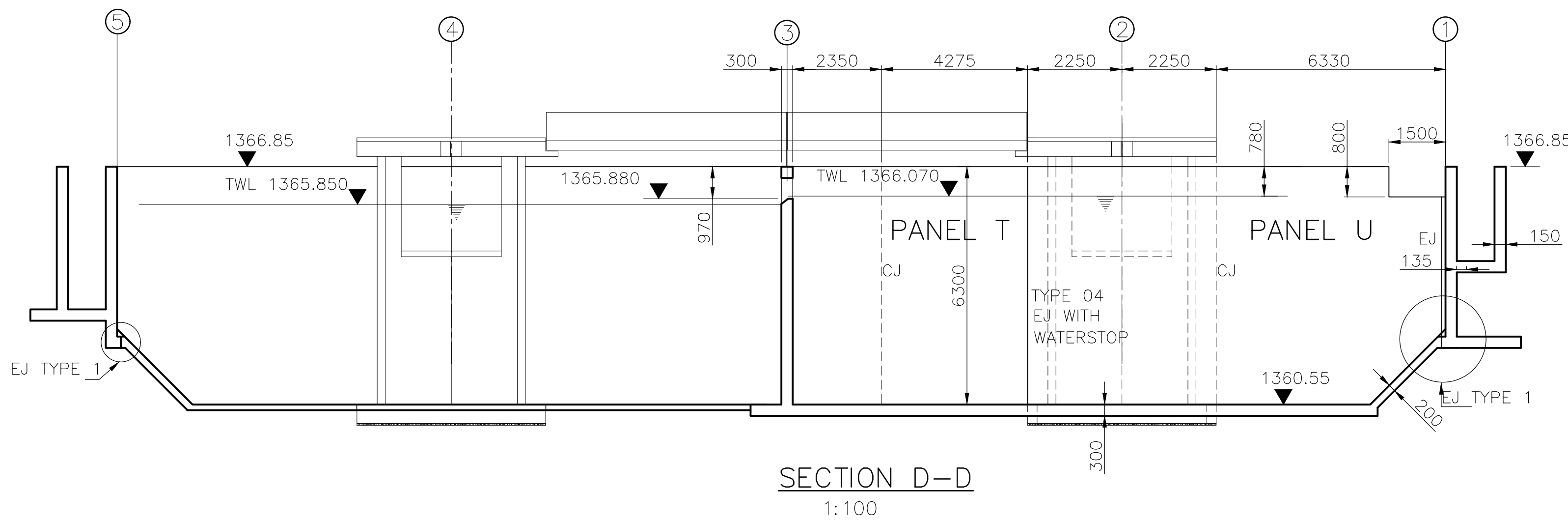
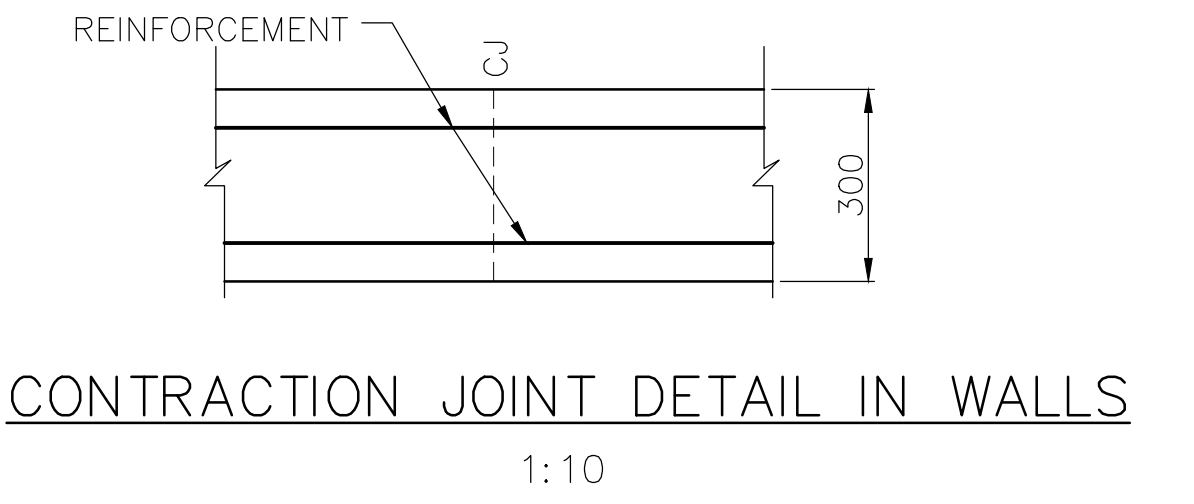
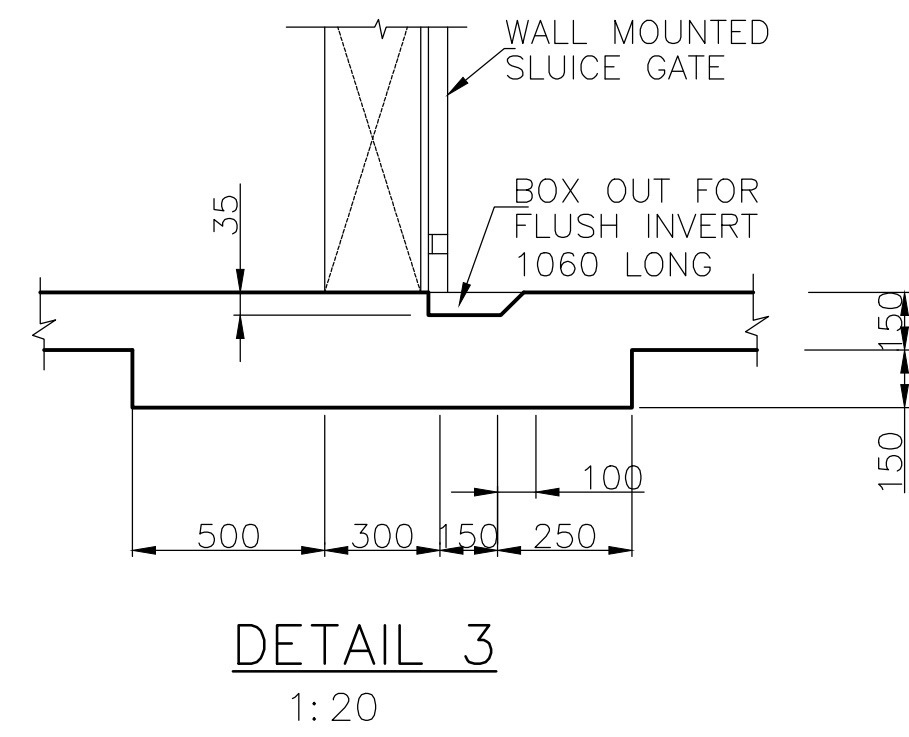
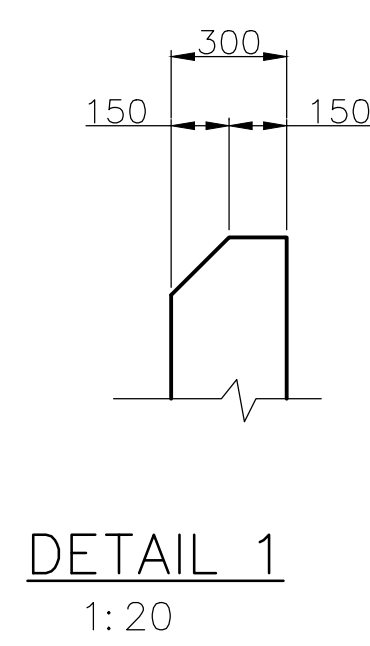
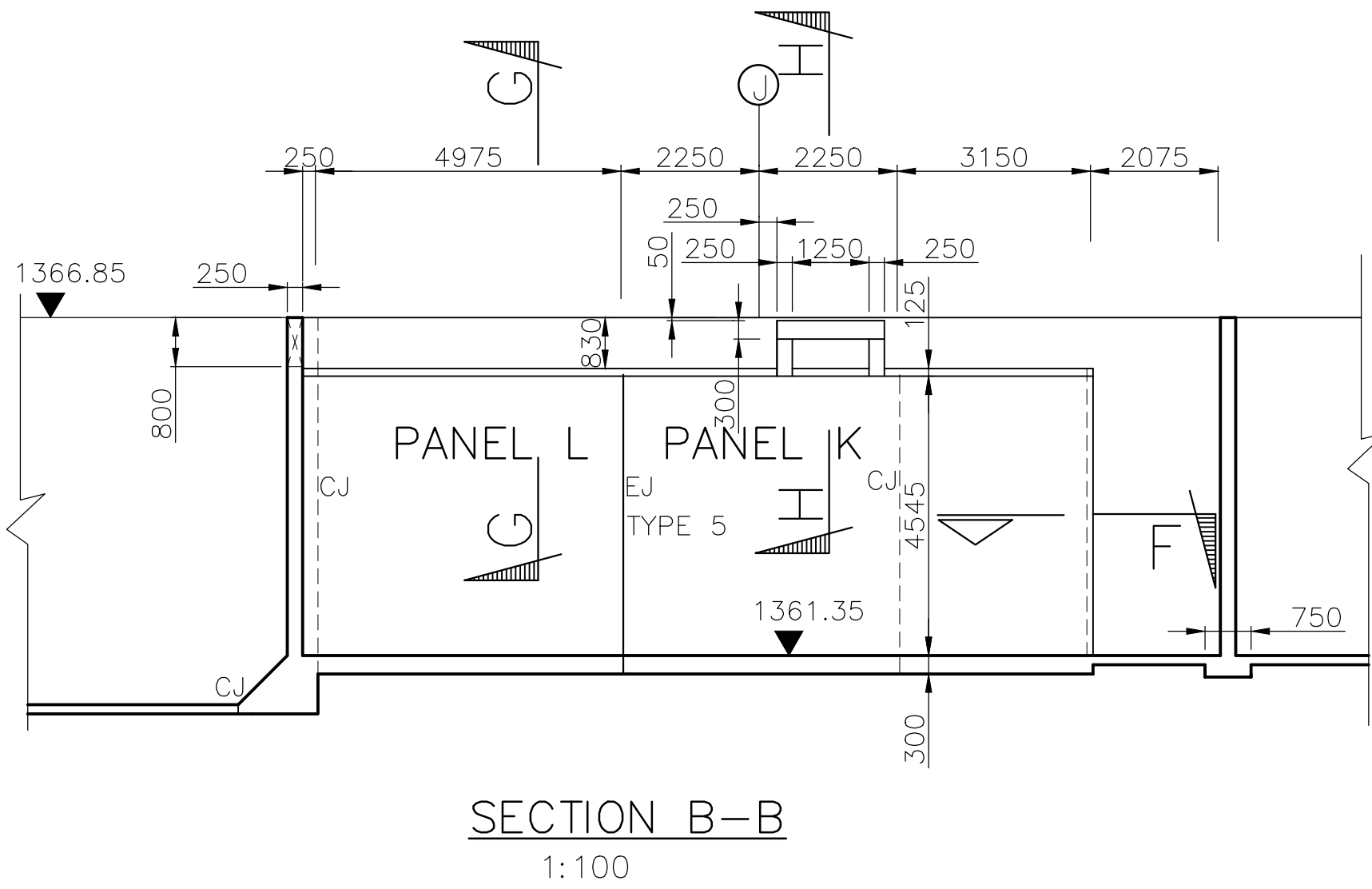
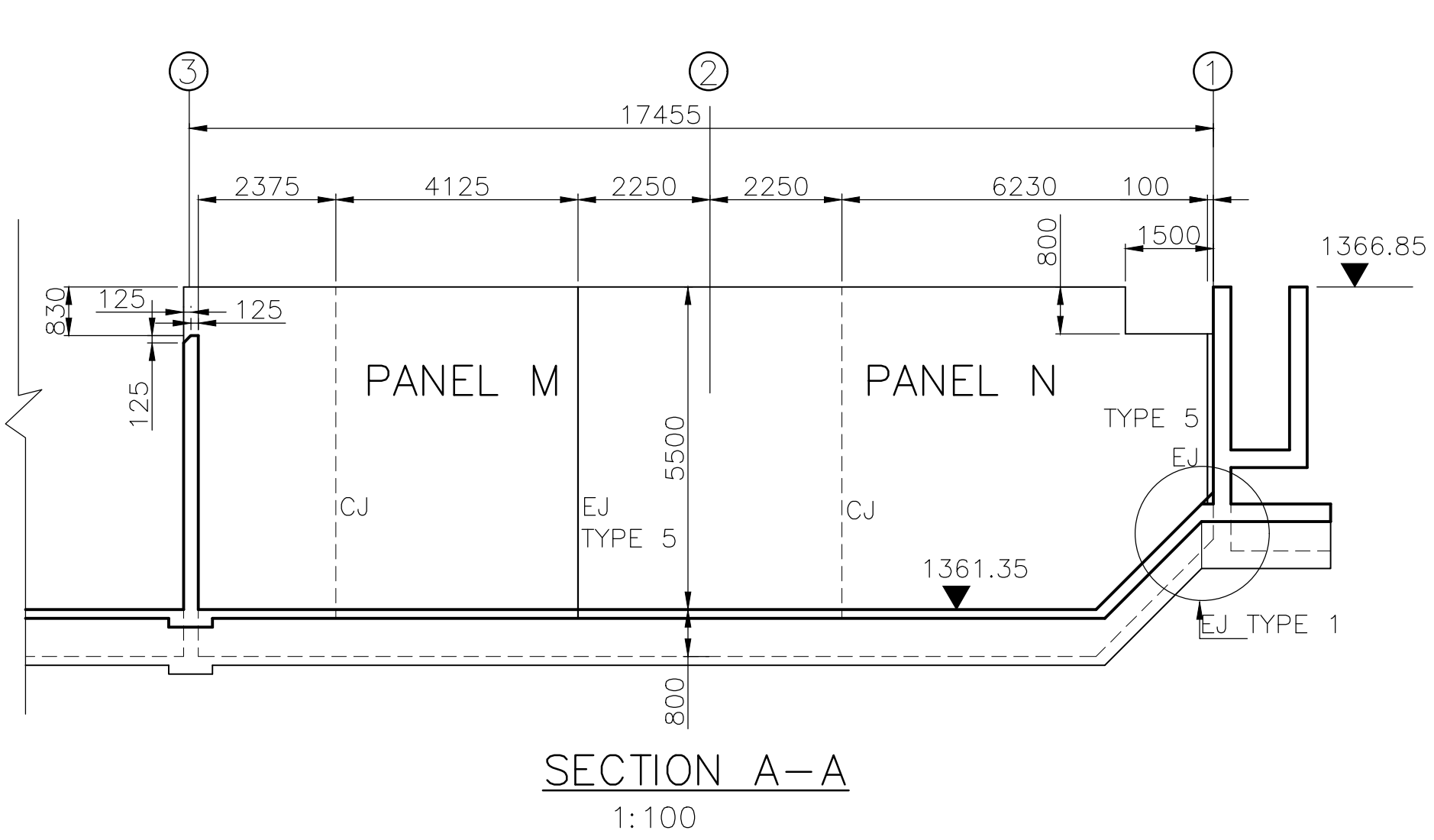
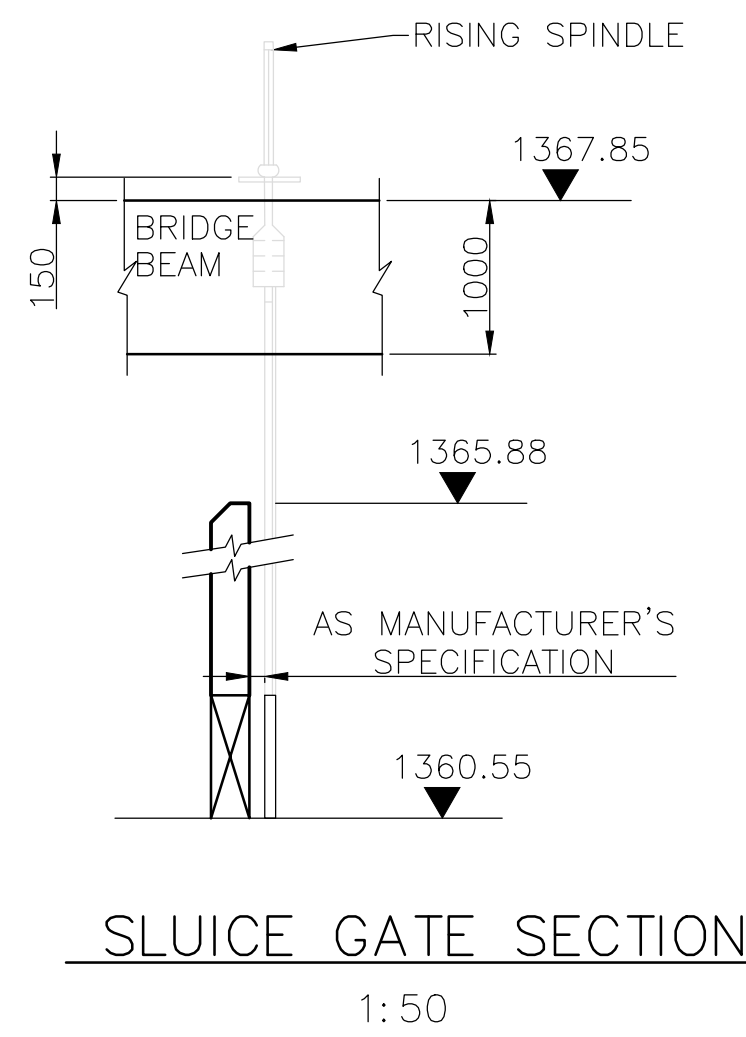
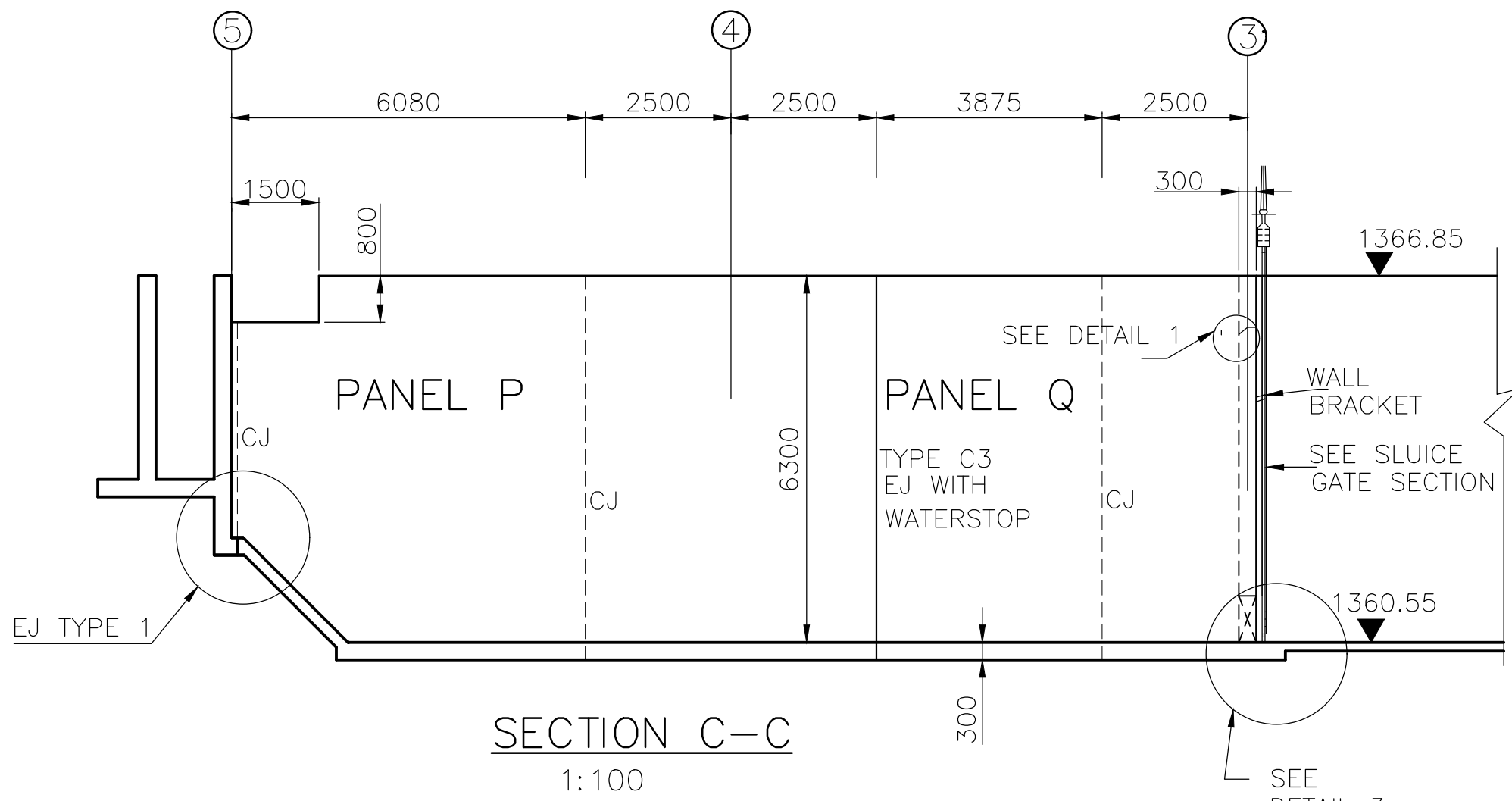
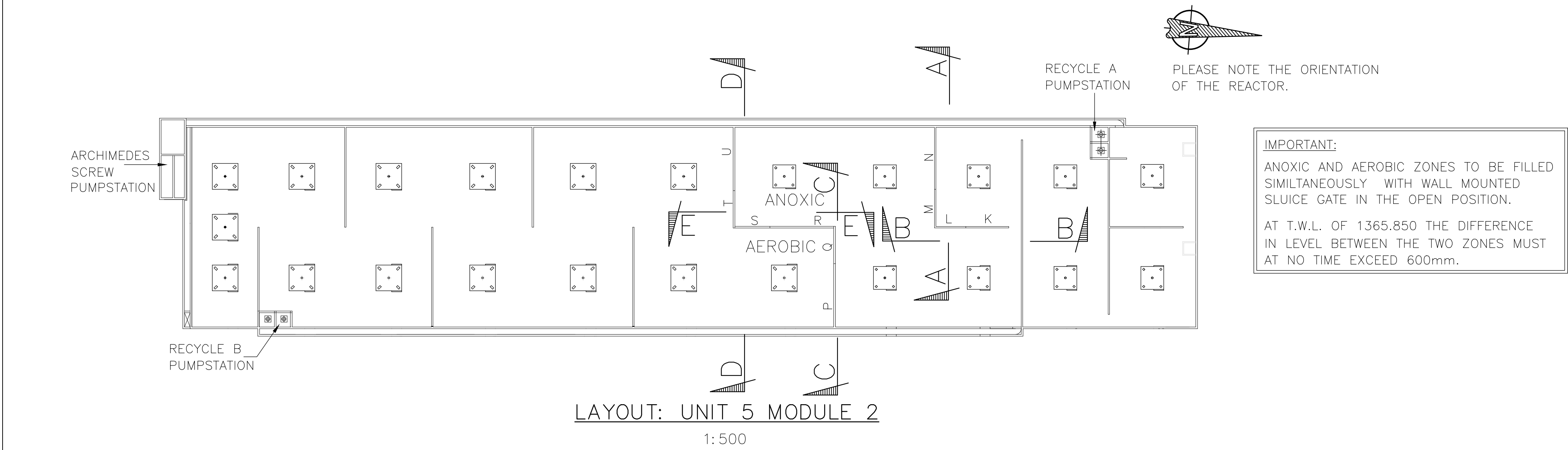
NOTES:

1. ALL STRUCTURAL CONCRETE GRADE 35/19
2. ALL EXPOSED CONCRETE CORNERS TO HAVE 20mm CHAMFERS.
3. TOP OF PUMPSTATION TO HAVE WOOD FLOAT FINISH
TOP OF WALLS TO HAVE STEEL FLOAT FINISH
TOP OF STAIRS TO HAVE WOOD FLOAT FINISH
4. INFILL TO CABLE CHANNEL TO BE 4:1 SAND:CEMENT MIX
5. HANDRAILS TO BE AS DETAILED AND SPECIFIED ON DRAWING No. 30300141-12-306
6. MOTORS AND EQUIPMENT, USE DUROGROUT AS SPECIFIED BY MANUFACTURER'S

FOR DETAILS OF WALL FOUNDATION SEE DRG No. 30300141-12-307
FOR DETAILS OF EXPANSION JOINTS SEE DRG No. 30300141-12-633
FOR WALL AND COLUMN FOUNDATION DETAILS SEE DRG No. 30300141-12-307

DEPARTMENT	APPROVED	DESIGNATION	DATE

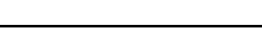
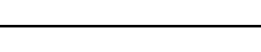
CONSULTING ENGINEERS		JOHANNESBURG WATER SOC LTD	
 Knight Piésold CONSULTING P.O. BOX 221 RIVONIA 2129 TEL: 011-406 7111 FAX: 011-406 7100 EMAIL: enquiries@kpi.co.za	 WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge 33 Soane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	SURVEYED	
		DESIGNED	G K
		DRAWN	J VD W
		CHECKED	K M
		SERVICES CHECKED	
		GEOTECHNICAL INVESTIGATION	
		SERVICES	
		APPROVED S. JASSAT	
		Pr. Eng. No. 202001279	
		DATE 30-06-2022	
		 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107
			TEL: (011) 688-1400 FAX: (011) 688-1529

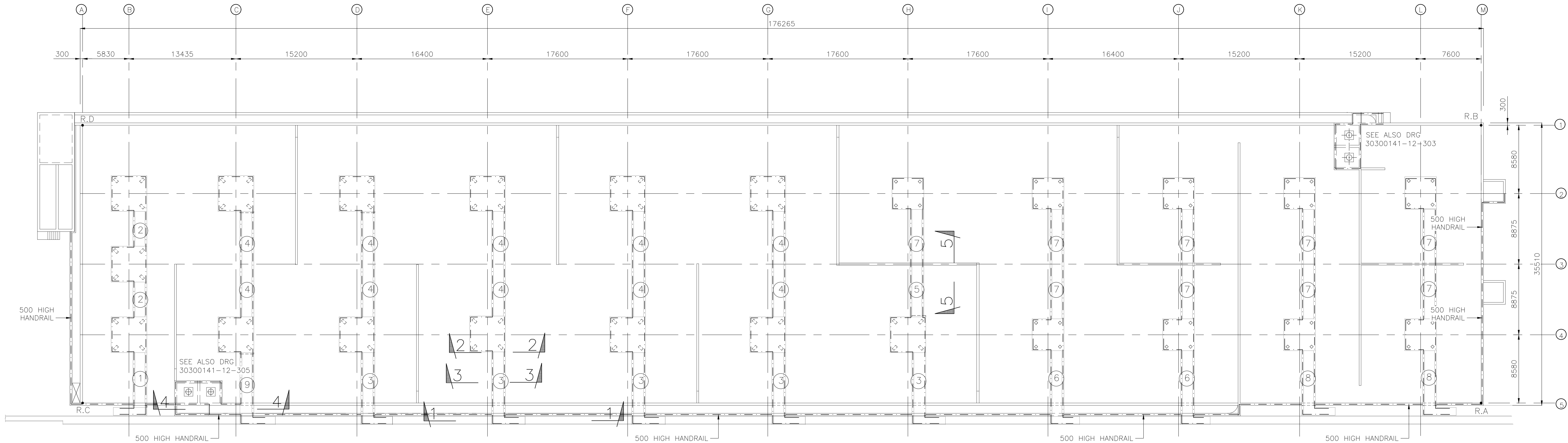


- NOTES**
- ALL STRUCTURAL CONCRETE GRADE 35/19
 - ALL EXPOSED CONCRETE CORNERS TO HAVE 20mm CHAMFERS.
 - TOP OF WALLS TO HAVE STEEL FLOAT FINISH
 - WATERSTOPS TO BE 200mm WIDE PVC BY MANUFACTURER APPROVED BY ENGINEER
 - PVC WATER STOPS TO BE WELDED/MOULDED AT ALL JOINTS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS TO FORM CONTINUOUS SEALS TO ALL EXPANSION JOINTS.

FOR DETAILS OF EXPANSION JOINTS SEE DRG No. 30300141-12-633
FOR WALL FOUNDATIONS SEE DRG No. 30300141-12-307

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS										SURVEYED										JOHANNESBURG WATER SOC LTD										CITY OF JOHANNESBURG										DESIGN MANAGER										SCALE										AMENDMENTS										APPROVED										DATE										DRAWING No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
 Knight Piésold CONSULTING P.O. BOX 221 RIVONIA 2129 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpi.co.za										 WSP WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge, 33 Soane Street, Bryanston, 2091 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com										 Johannesburg Water 17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529										NORTHERN WASTEWATER TREATMENT WORKS UNIT 5 – PHASE 2 REACTOR DETAILS OF INTERNAL WALLS (SHEET 2 OF 3)										DATE										AS SHOWN										0										APPROVED FOR CONSTRUCTION										K M										01/07/22										JW 13896-CE-304 CONSULTANT'S NUMBER 30300141-12-304 FILE 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PLAN LAYOUT
1:200

COORDINATES

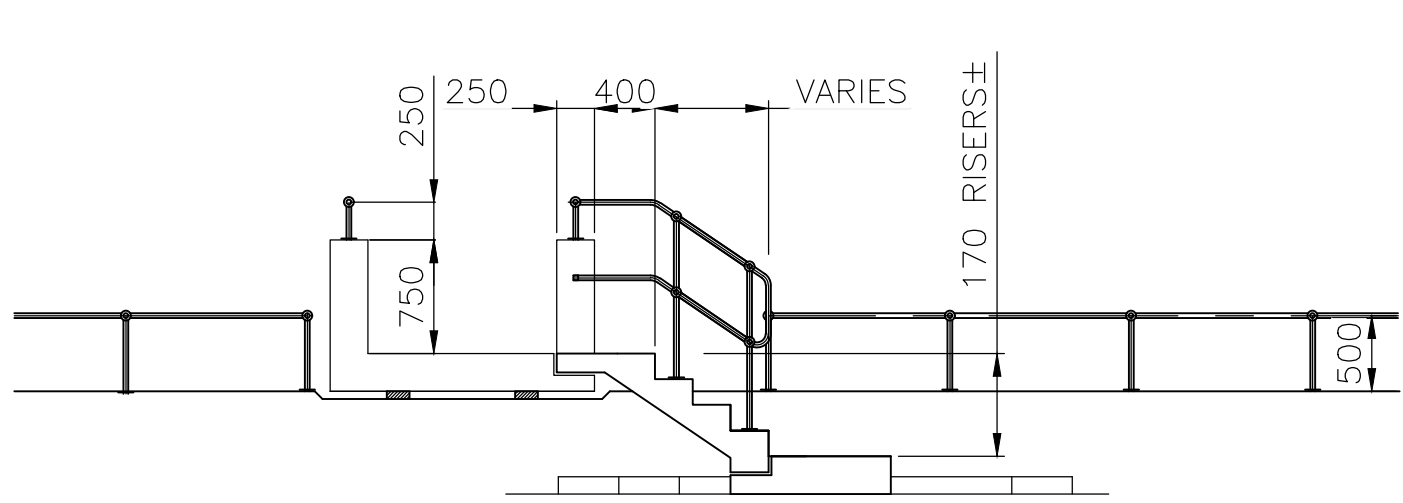
POINT NAME	Y-COORDS	X-COORDS
REACTOR 2		
R.A	100909.449	2871111.396
R.B	100944.135	2871115.348
R.C	100889.563	2871285.932
R.D	100924.249	2871289.884

NOTES

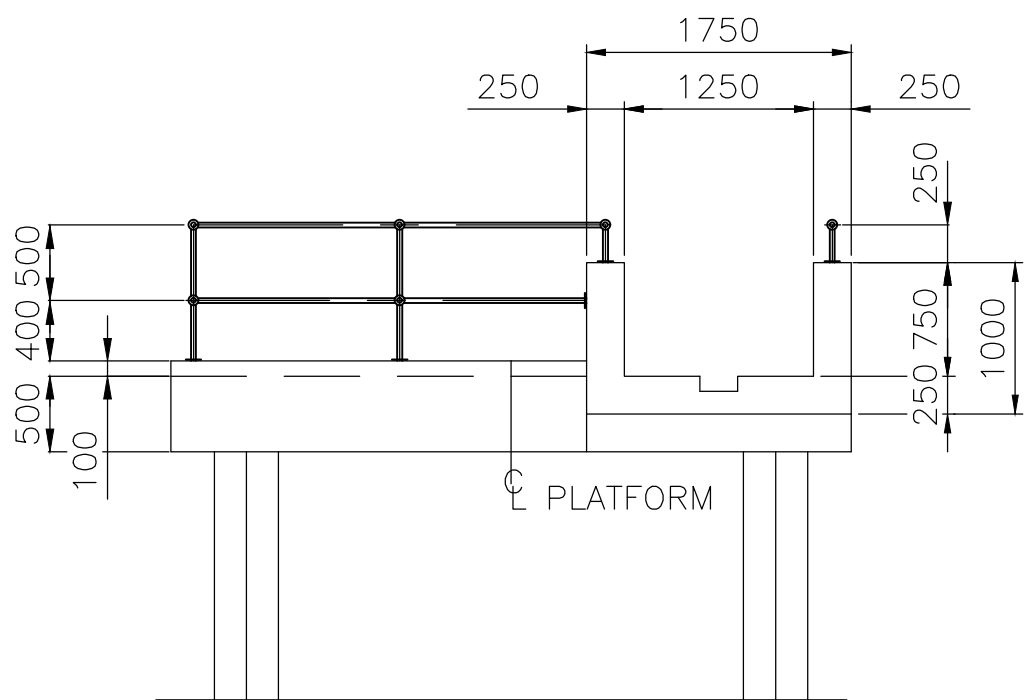
1. ALL HAND AND KNEE RAILING TO BE 32 DIA. OF 3CR12 STEEL
2. ALL STANCHIONS TO BE OF 3CR12 STEEL
3. H.D. BOLTS TO BE STAINLESS STEEL
4. STRUCTURE TO BE CHECKED ON SITE BEFORE ORDERING HANDRAILING MATERIALS

LEGEND

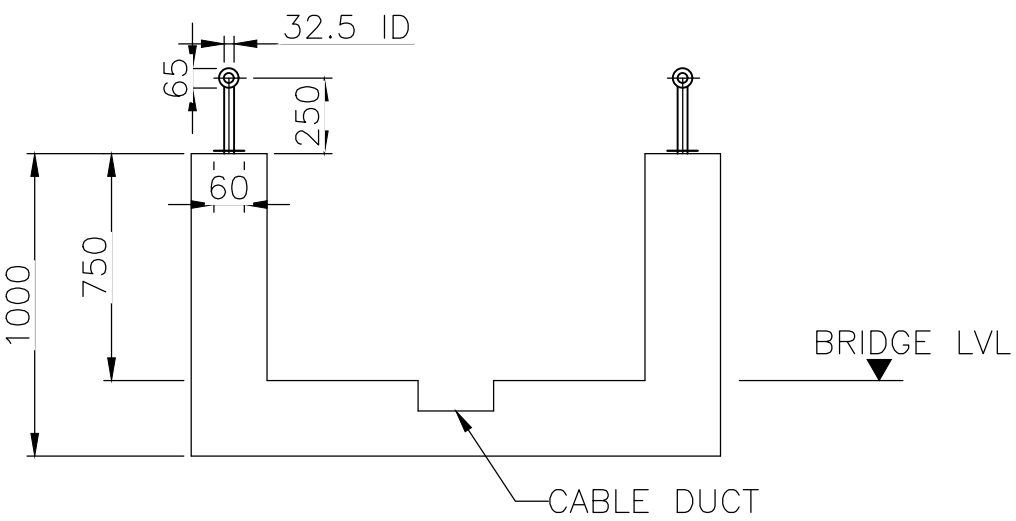
--- HAND/KNEE RAILING



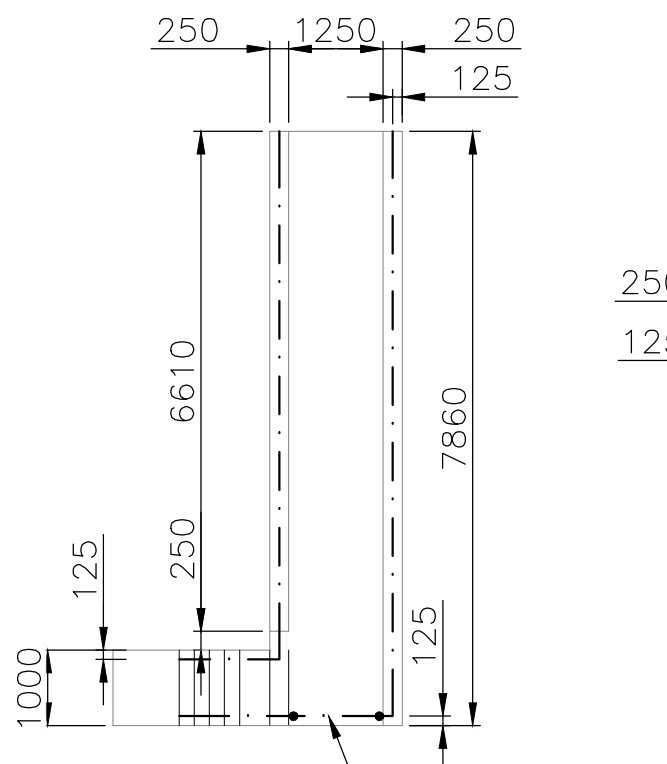
SECTION 1-1
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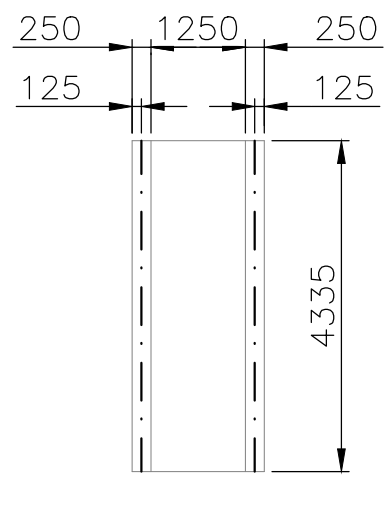
SECTION 2-2
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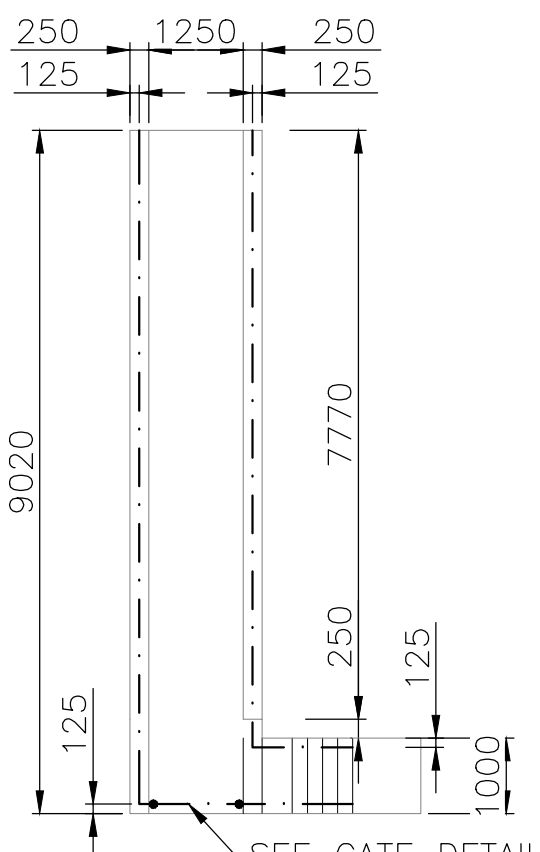
SECTION 3-3
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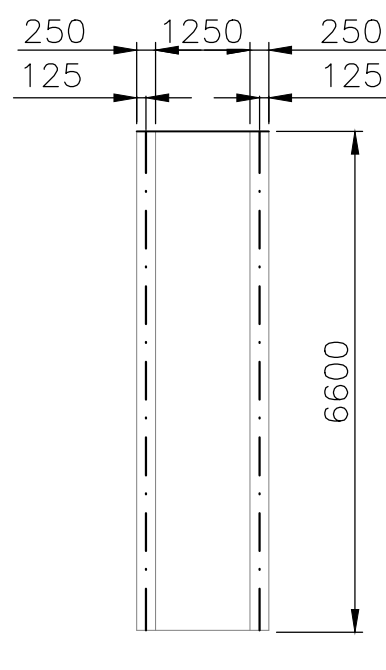
BRIDGE 1
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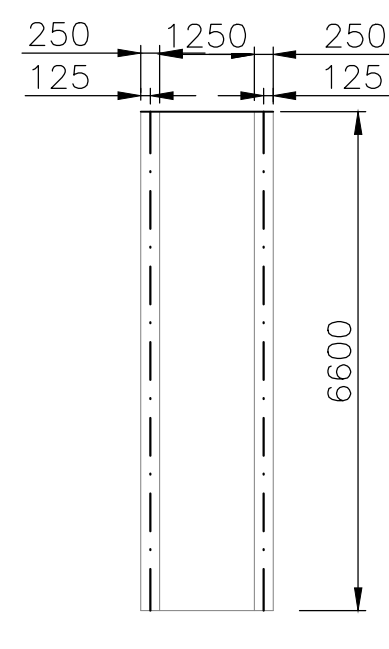
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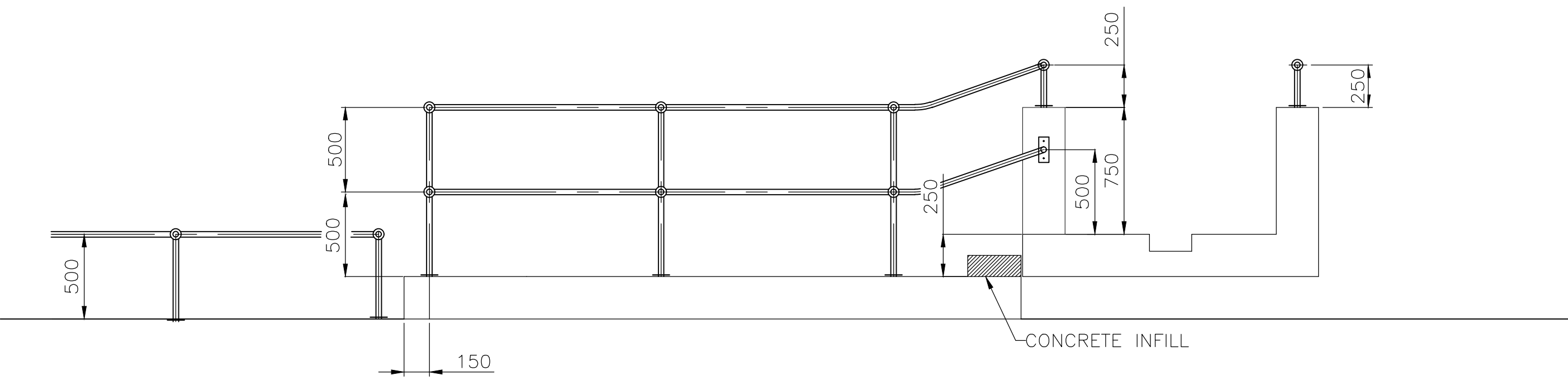
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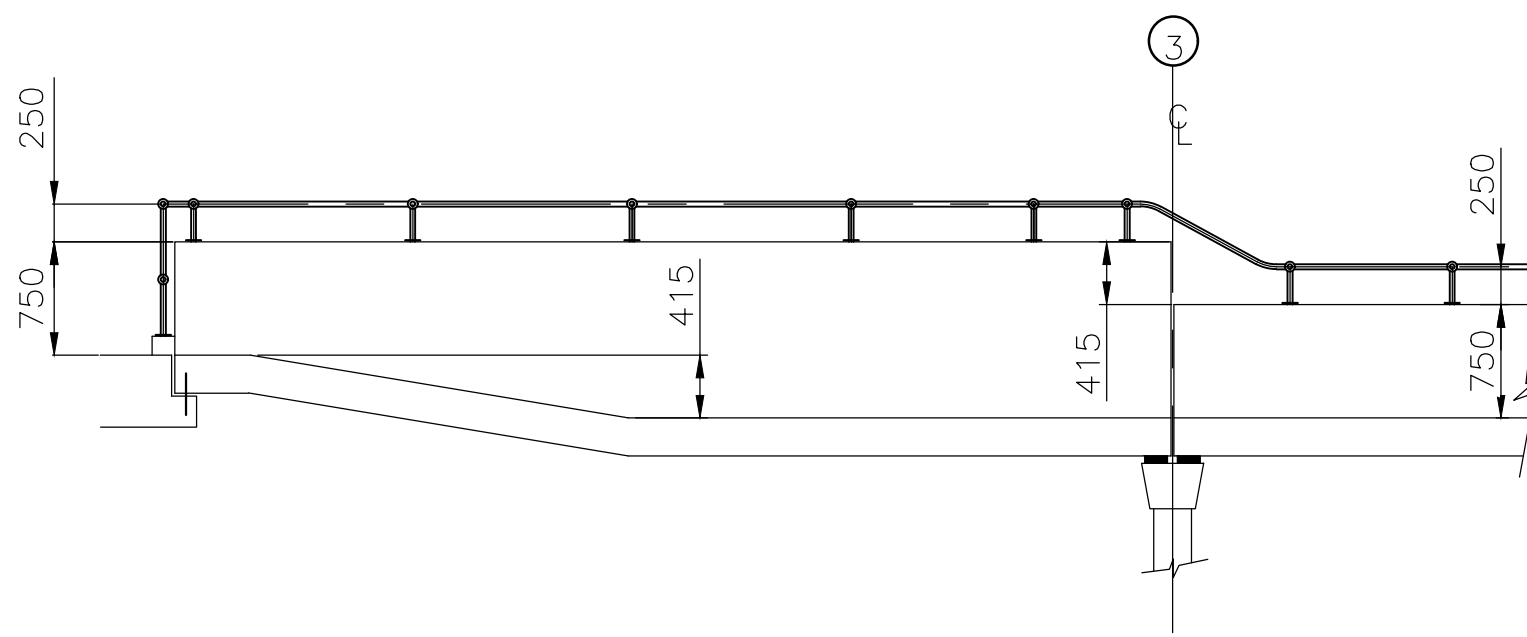
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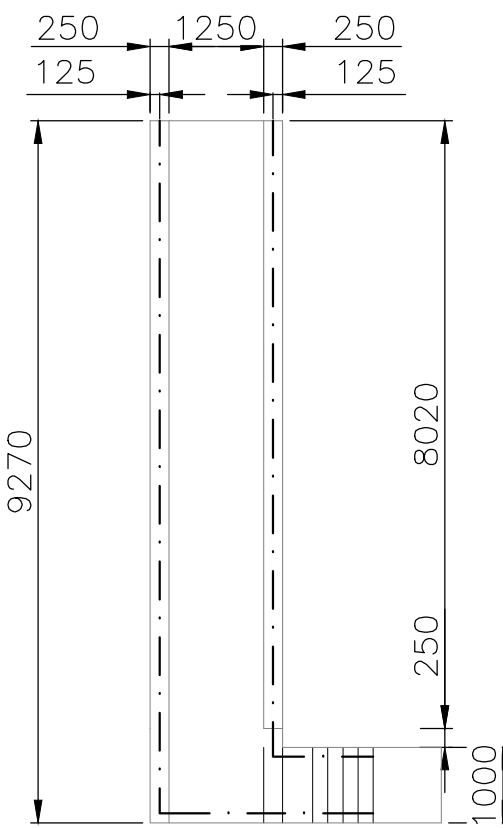
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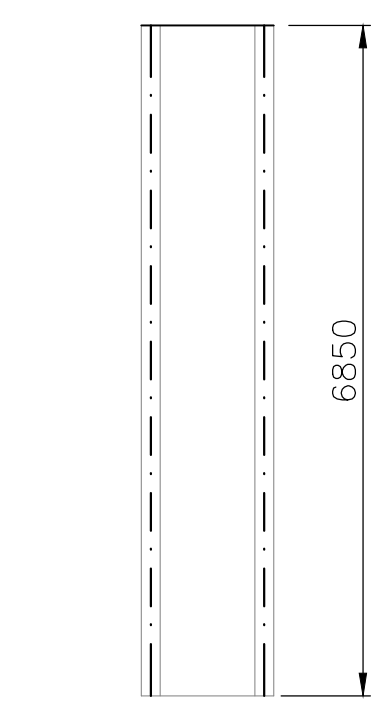
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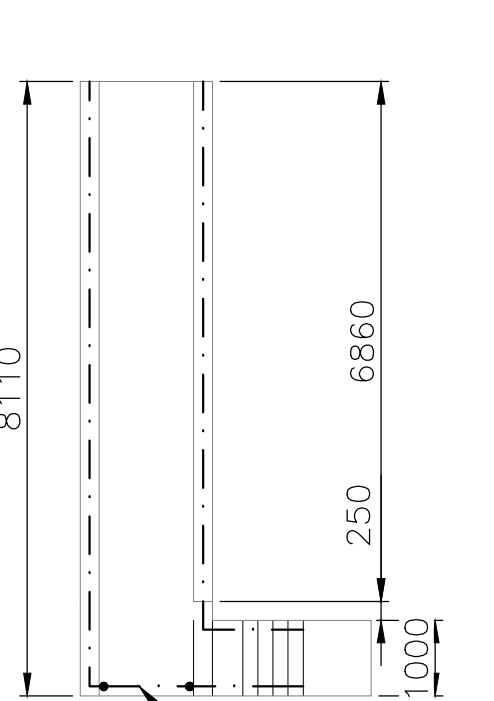
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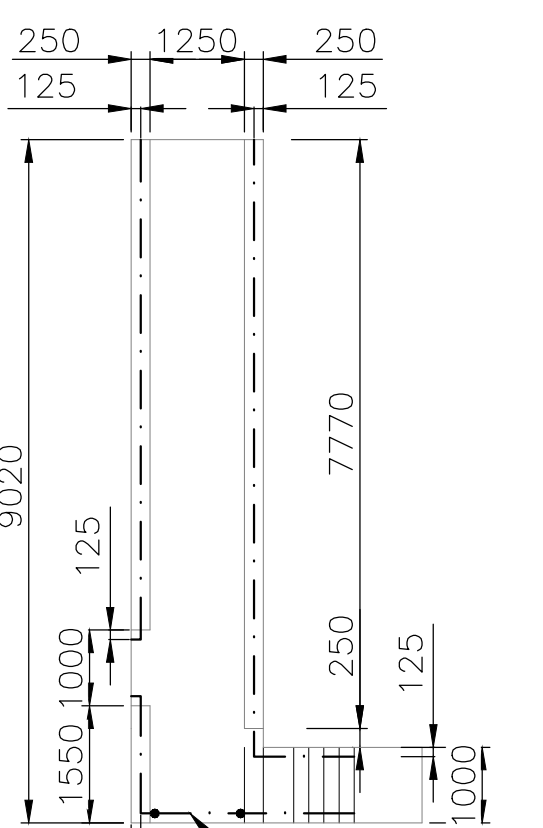
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BRIDGE 7
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BRIDGE 8
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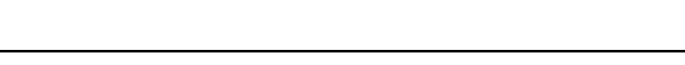


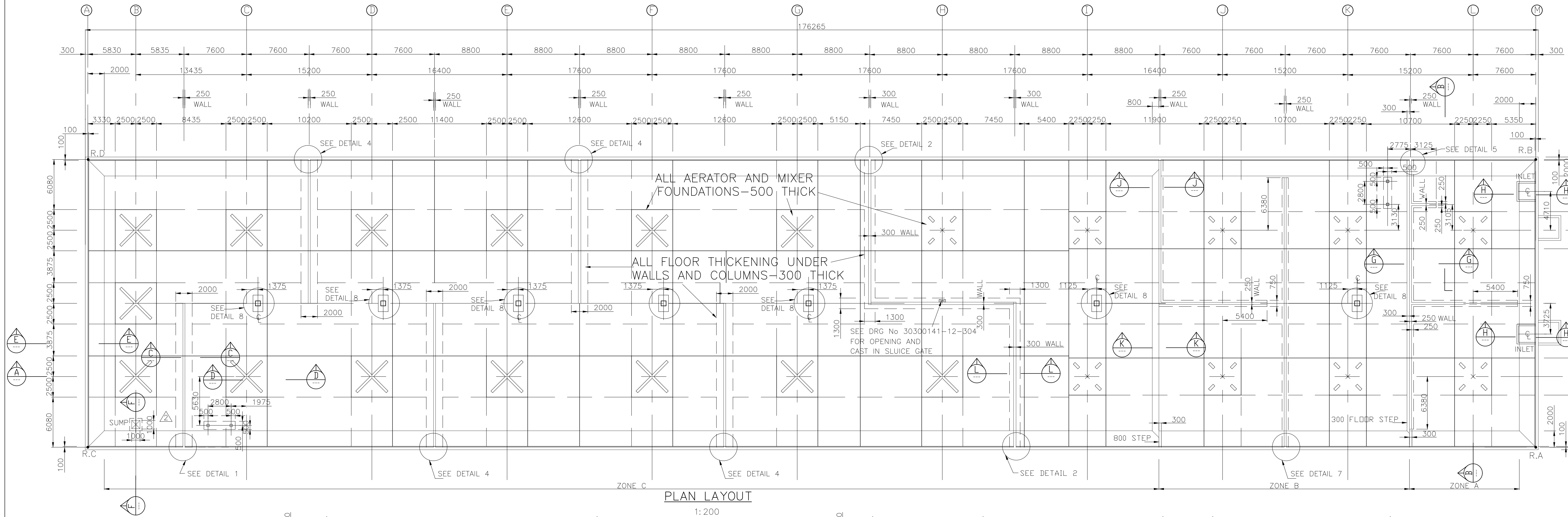
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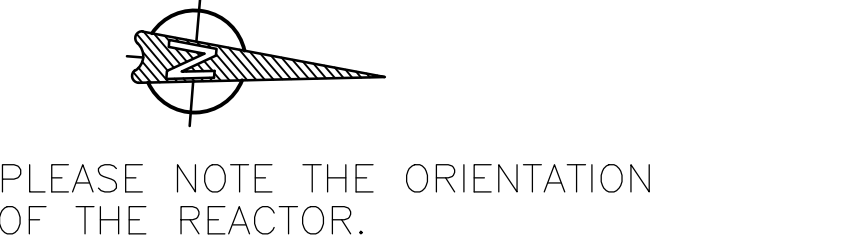
REFER TO DRAWING No. 30300141-12-638 - FOR GATE DETAILS

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG				DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.			
 Knight Piésold CONSULTING	 WSP Group Africa (Pty) Ltd Industrial Division Building C, Knightbridge 33 Sloane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com	DESIGNED	G K	 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529	NORTHERN WASTEWATER TREATMENT WORKS				DATE	AS SHOWN	0	APPROVED FOR CONSTRUCTION	K M	01/07/22	JW NUMBER JW 13896-CE-306 CONSULTANT'S NUMBER 30300141-12-306 FILE No		
		DRAWN	J V D W			UNIT 5 – PHASE 2												
		CHECKED	K M			REACTOR												
		SERVICES CHECKED				PLATFORMS AND BRIDGES												
		GEOTECHNICAL INVESTIGATION				HANDRAIL LAYOUT AND DETAILS												
P.O. BOX 321 RYVONIA 2126 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiry@kpi-ps.co.za		SERVITUDES		APPROVED S. JASSAT Building C, Knightbridge Pr. Eng. No. 202001279 DATE 30-06-2022										0				



- NOTES**
1. BLINDING AND MASS FILL CONCRETE GRADE 15/19 BLINDING CONCRETE TO BE MINIMUM 50 THICK
 2. STRUCTURAL CONCRETE GRADE 35/19
 3. ALL EXPOSED CORNERS TO HAVE 20mm CHAMFERS
 4. TOP OF FLOOR AND PLINTHS TO HAVE STEEL FLOAT FINISH
 5. EXPANSION JOINTS INDICATED EJ
 6. CONTRACTION JOINTS INDICATED CJ
 7. INTERNAL WALL FOUNDATION THICKENING INDICATED
 8. FOR DETAILS OF ALL EXPANSION JOINTS SEE DRG 30300141-12-633
 9. SCREED TO BE 3:1 SAND:CEMENT.
 10. ALL INTERNAL WALLS TO HAVE A THICKENED SLAB OF 300mm BELOW THEM EXCEPT AT SLOPING EXTERNAL WALL WHERE SLAB IS 200mm THICK



CONTRACTION JOINT DETAIL IN FLOORS

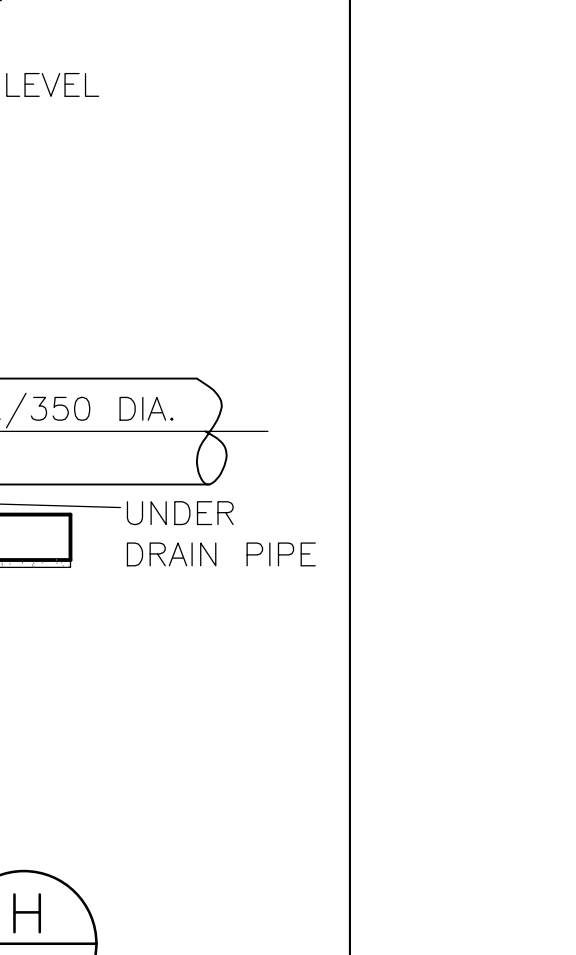
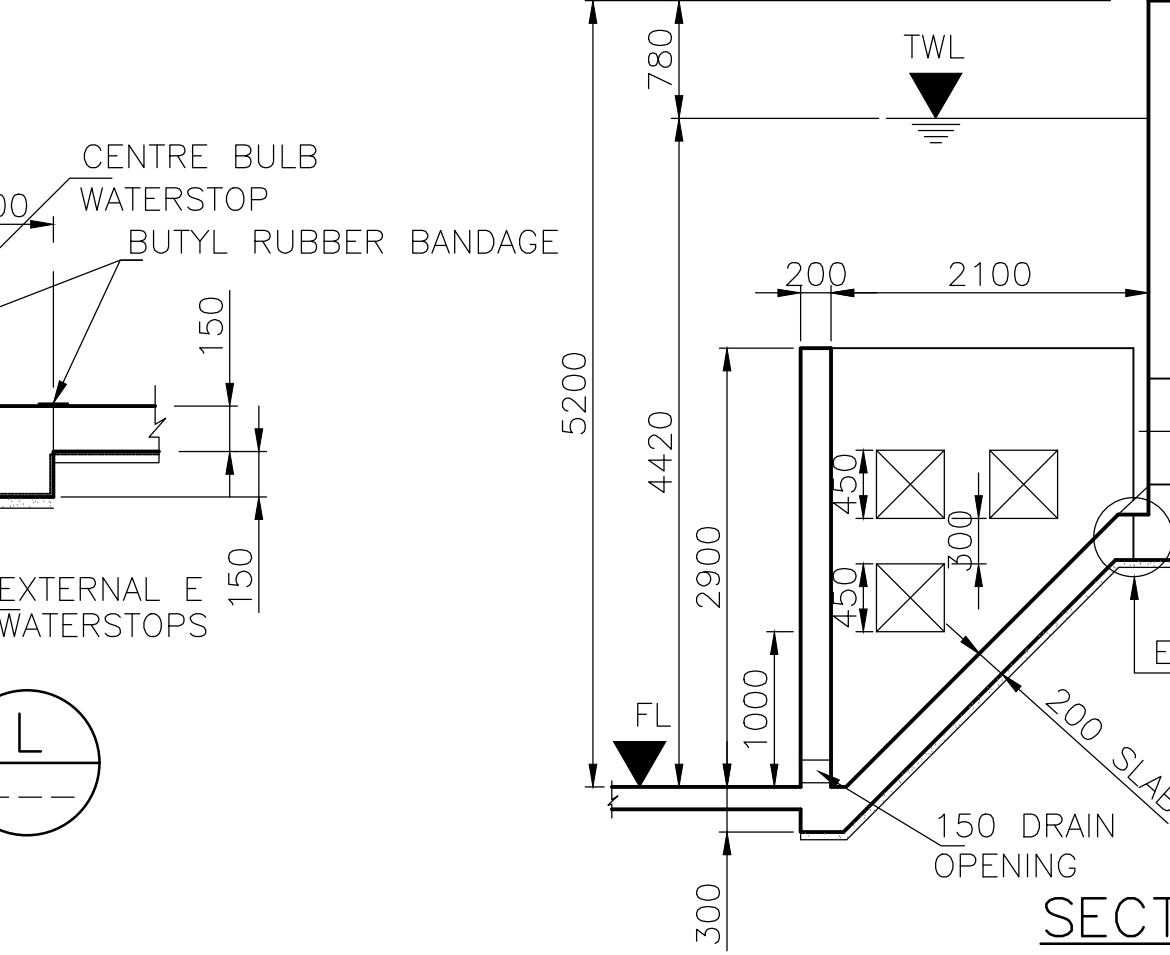
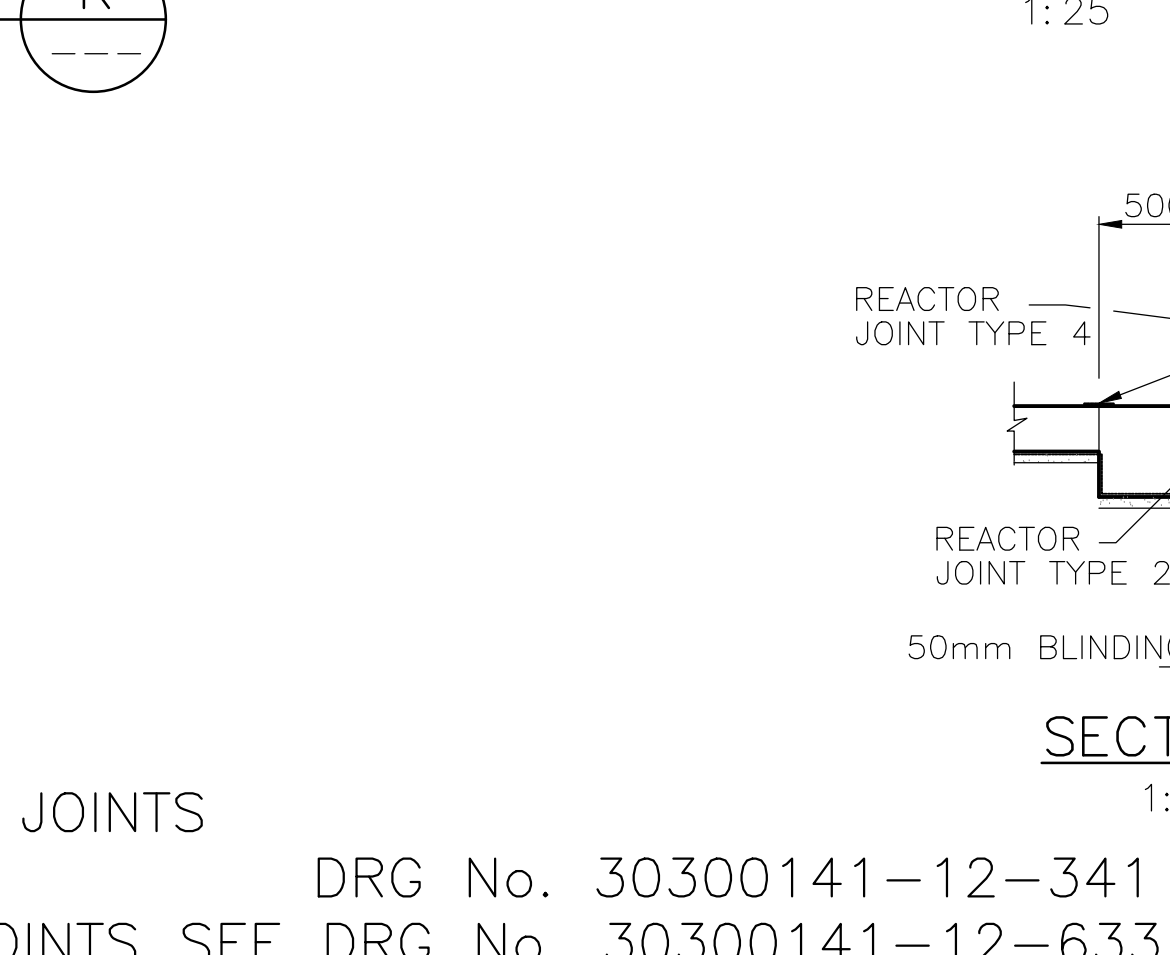
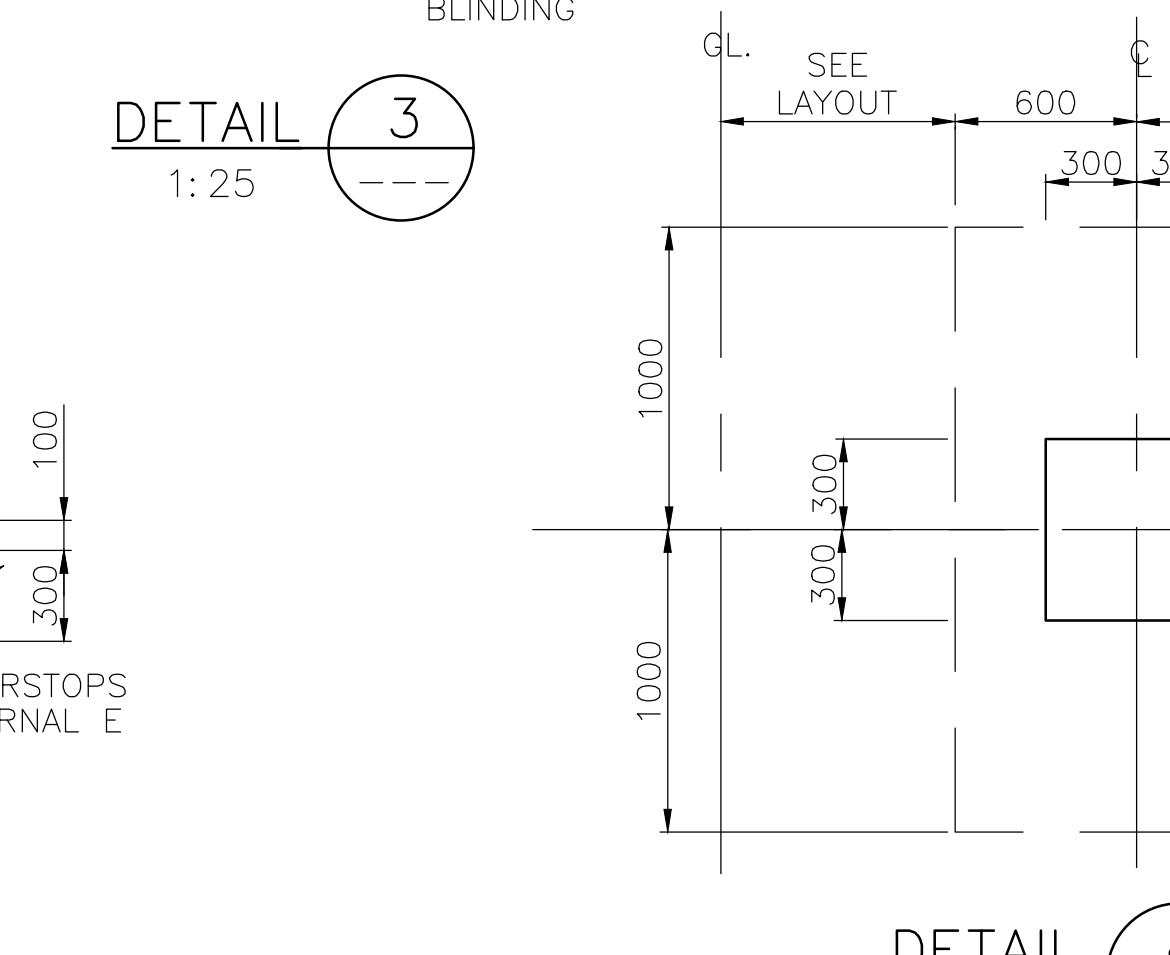
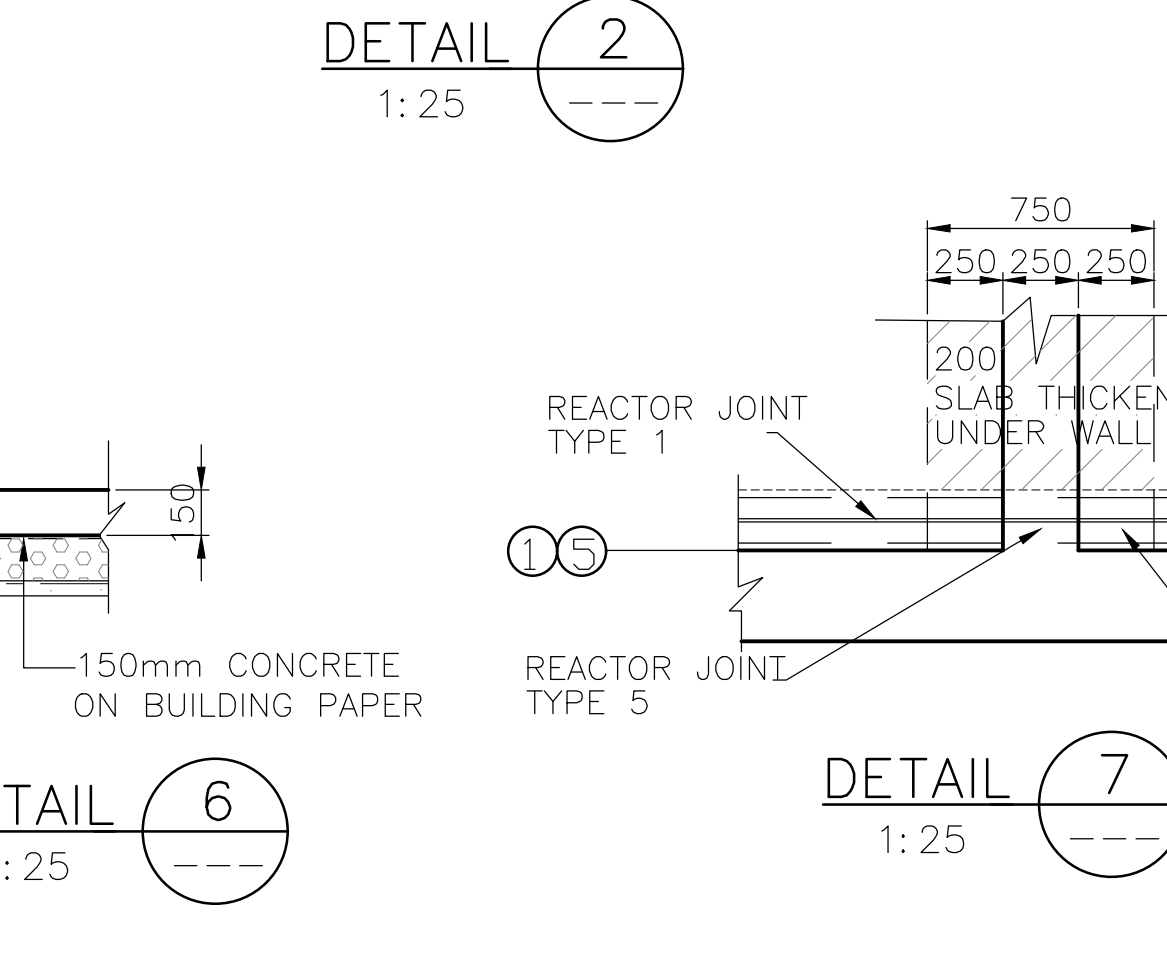
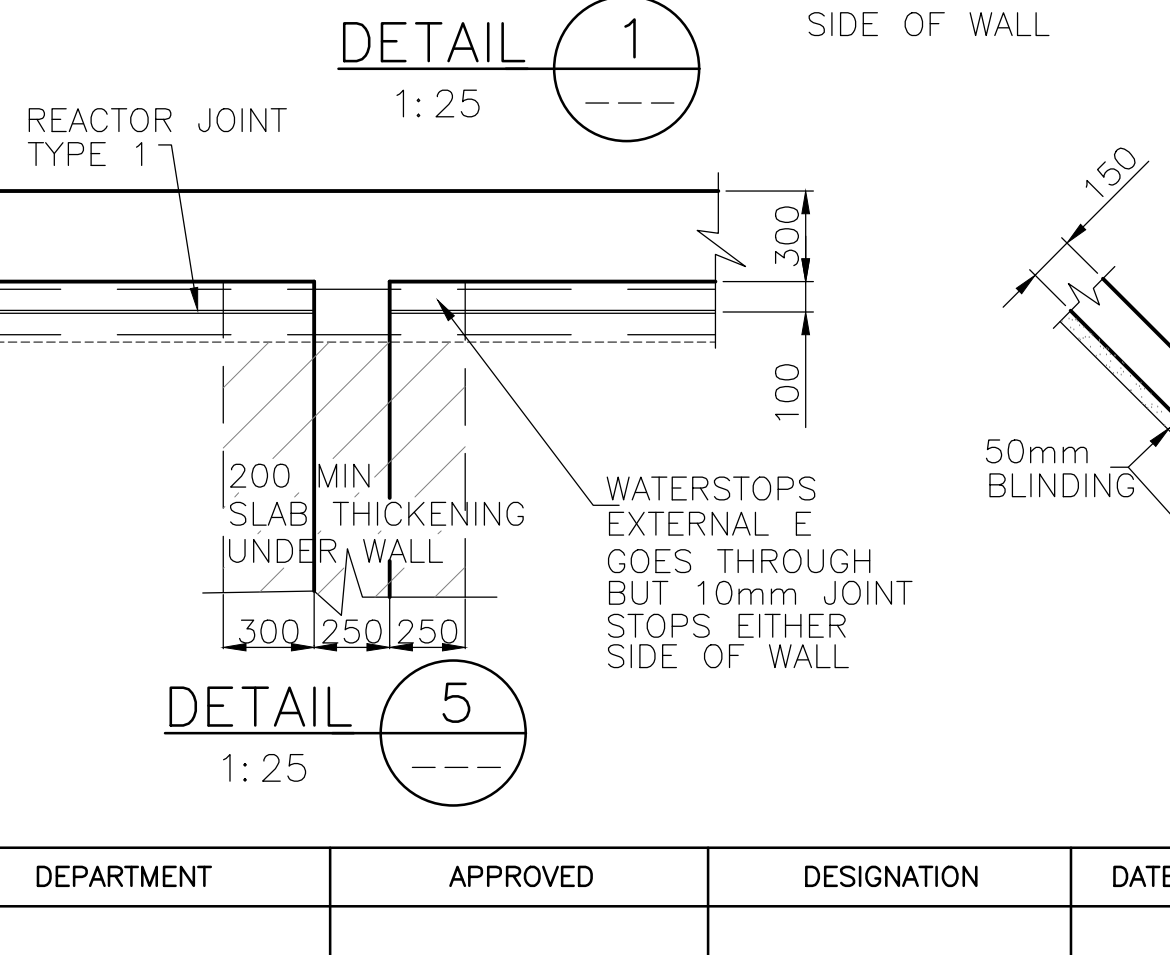
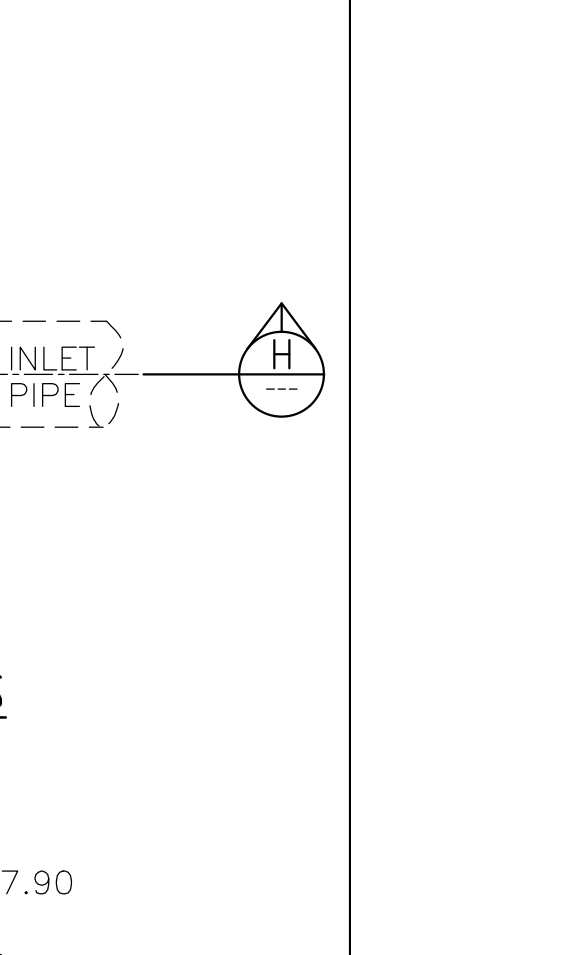
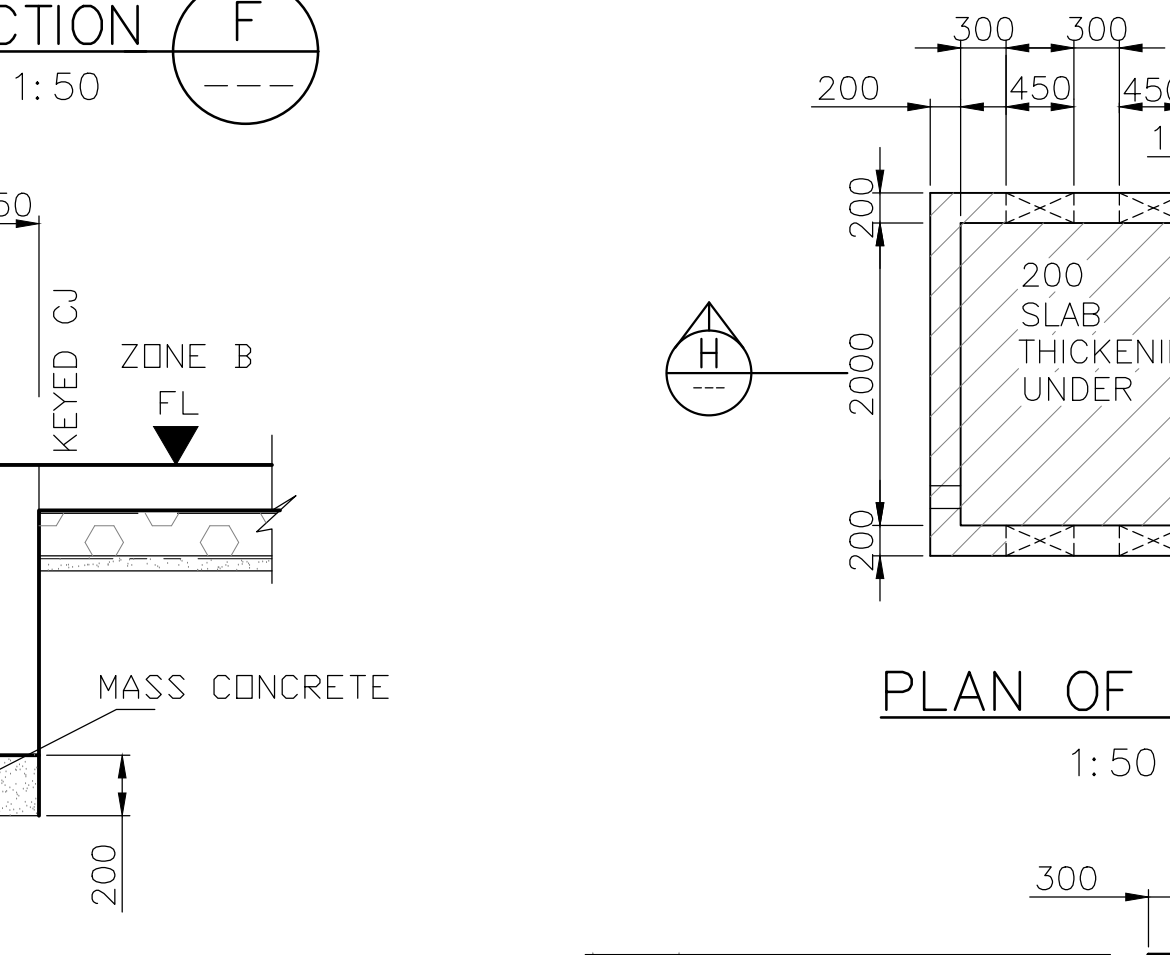
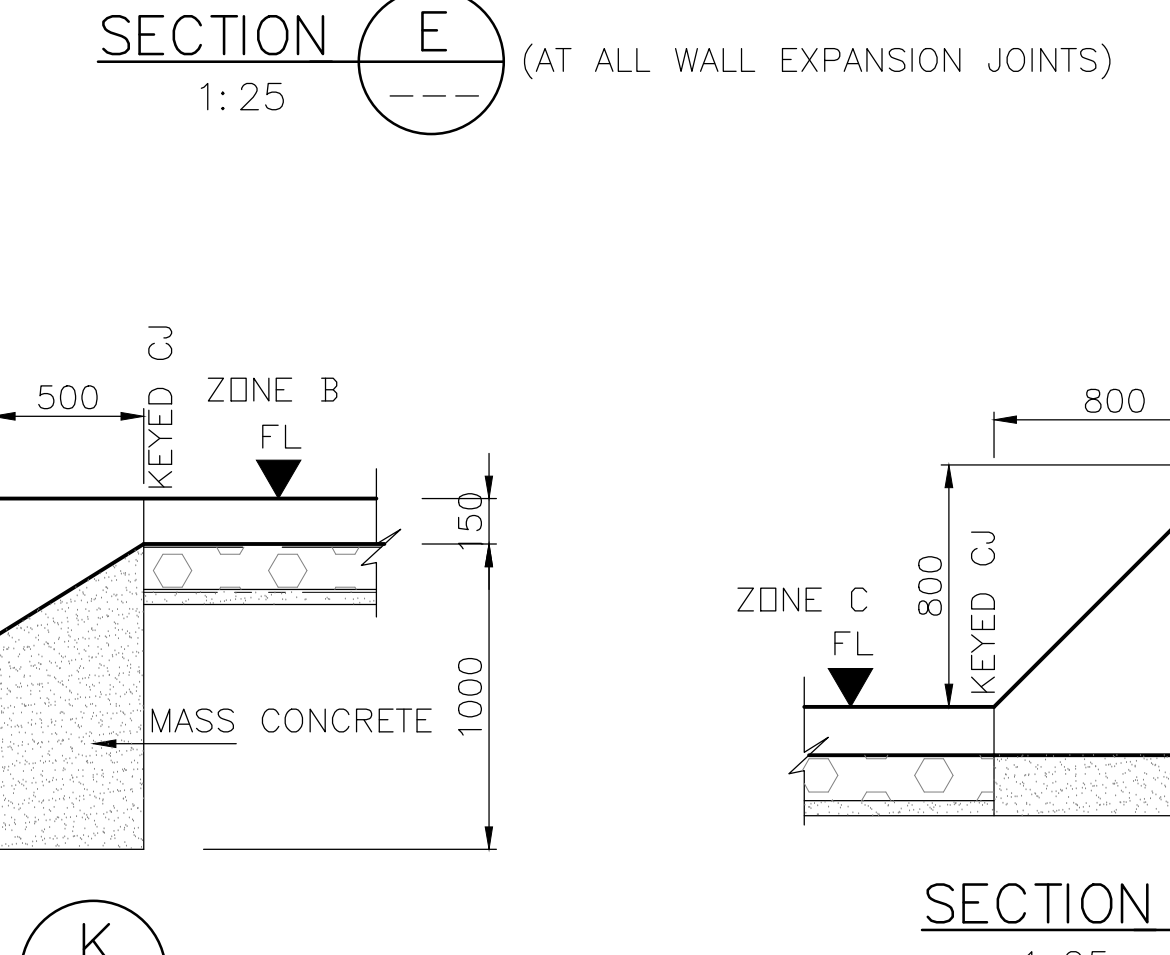
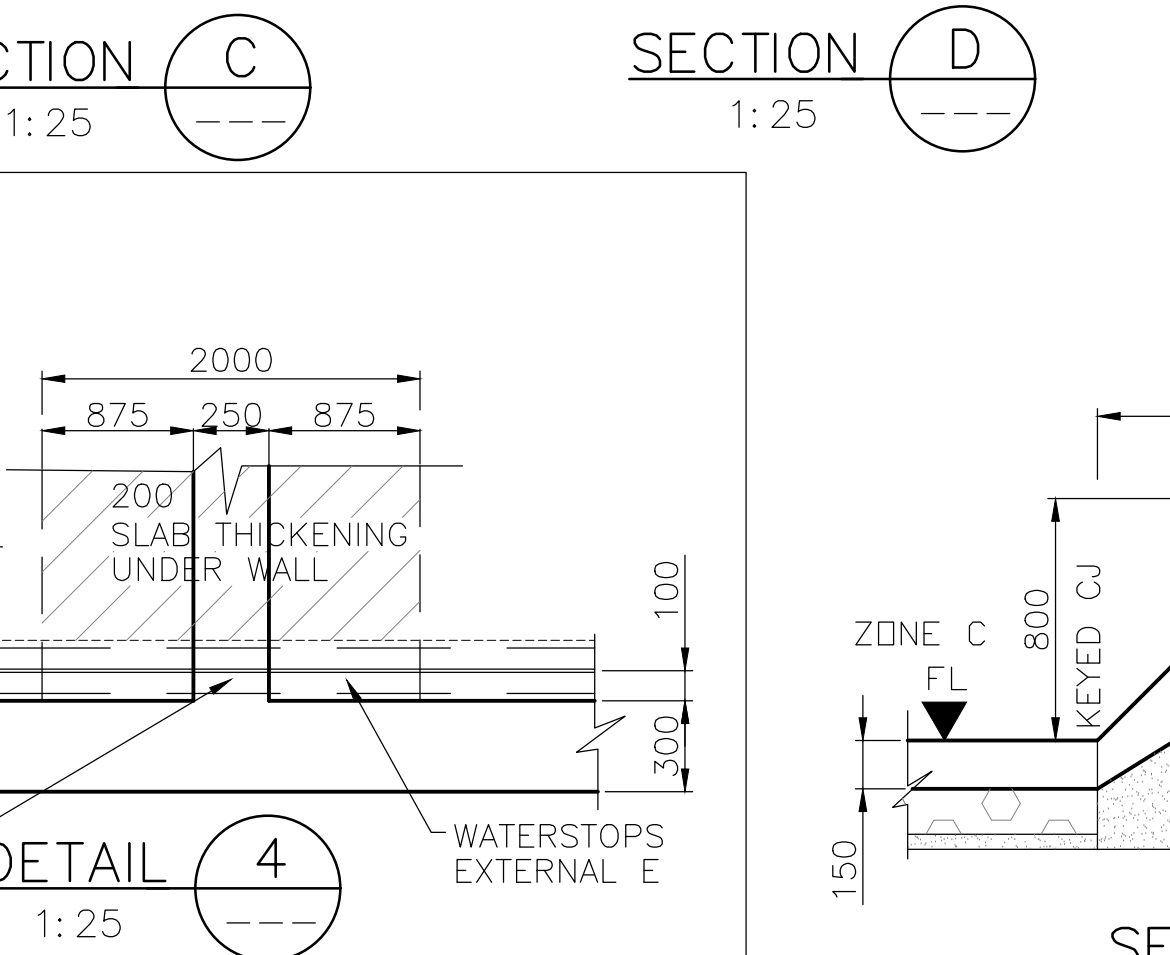
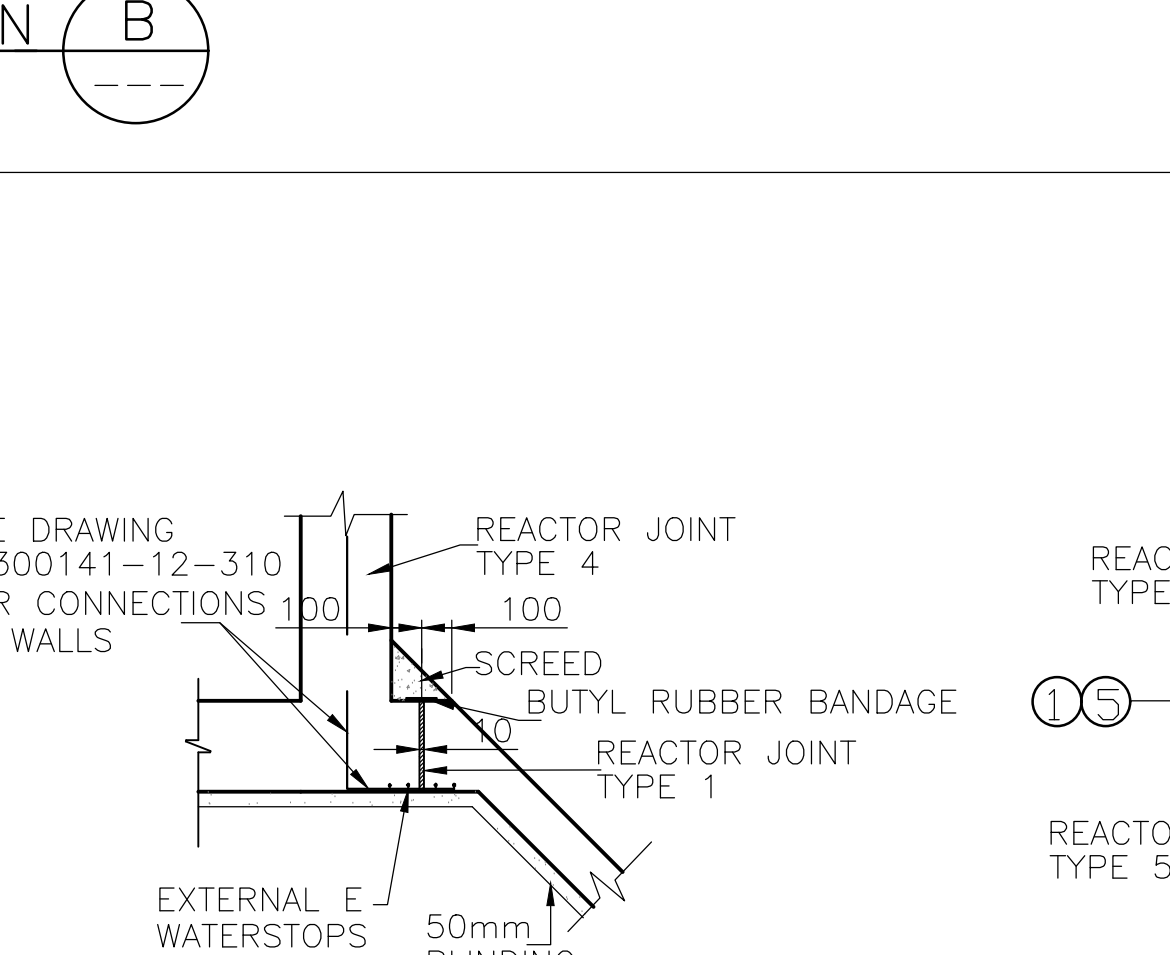
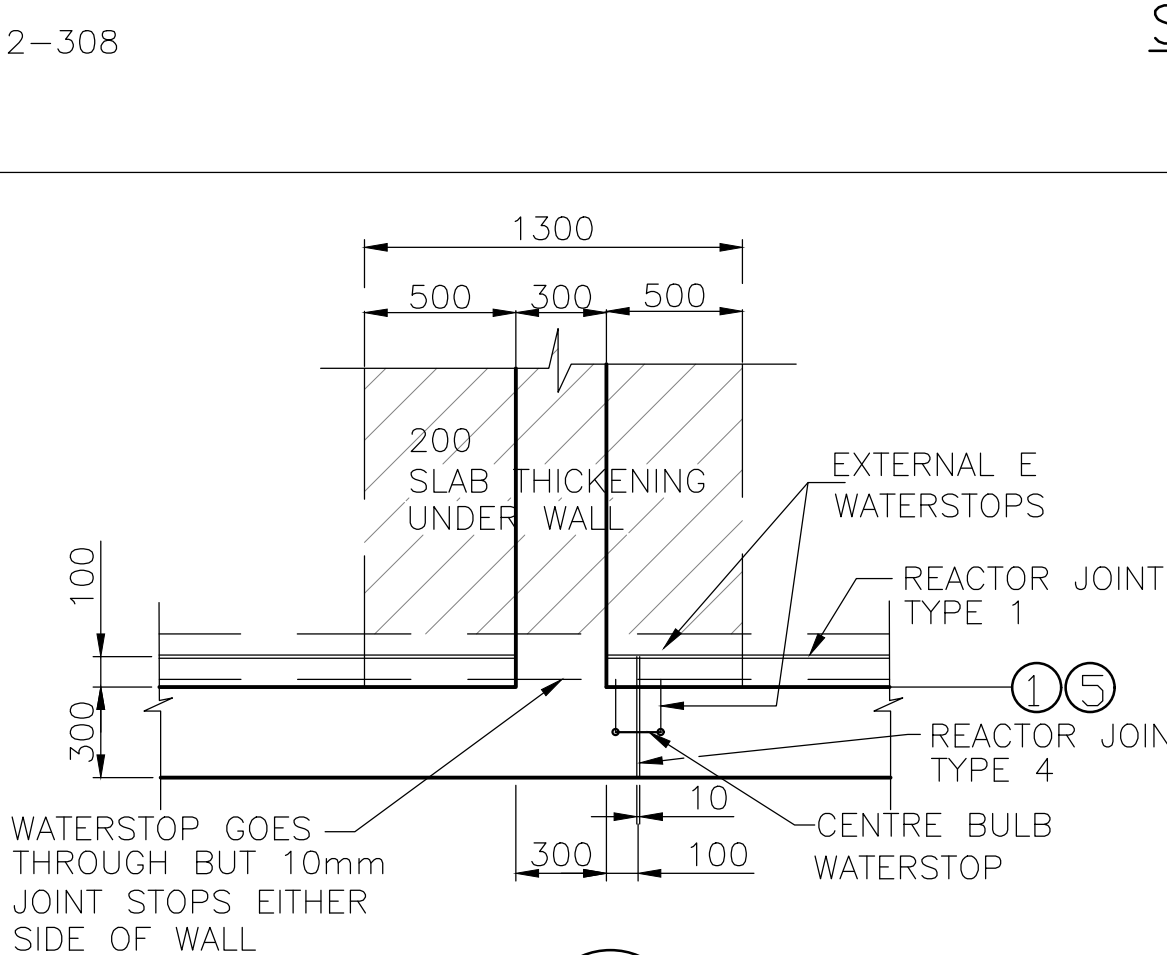
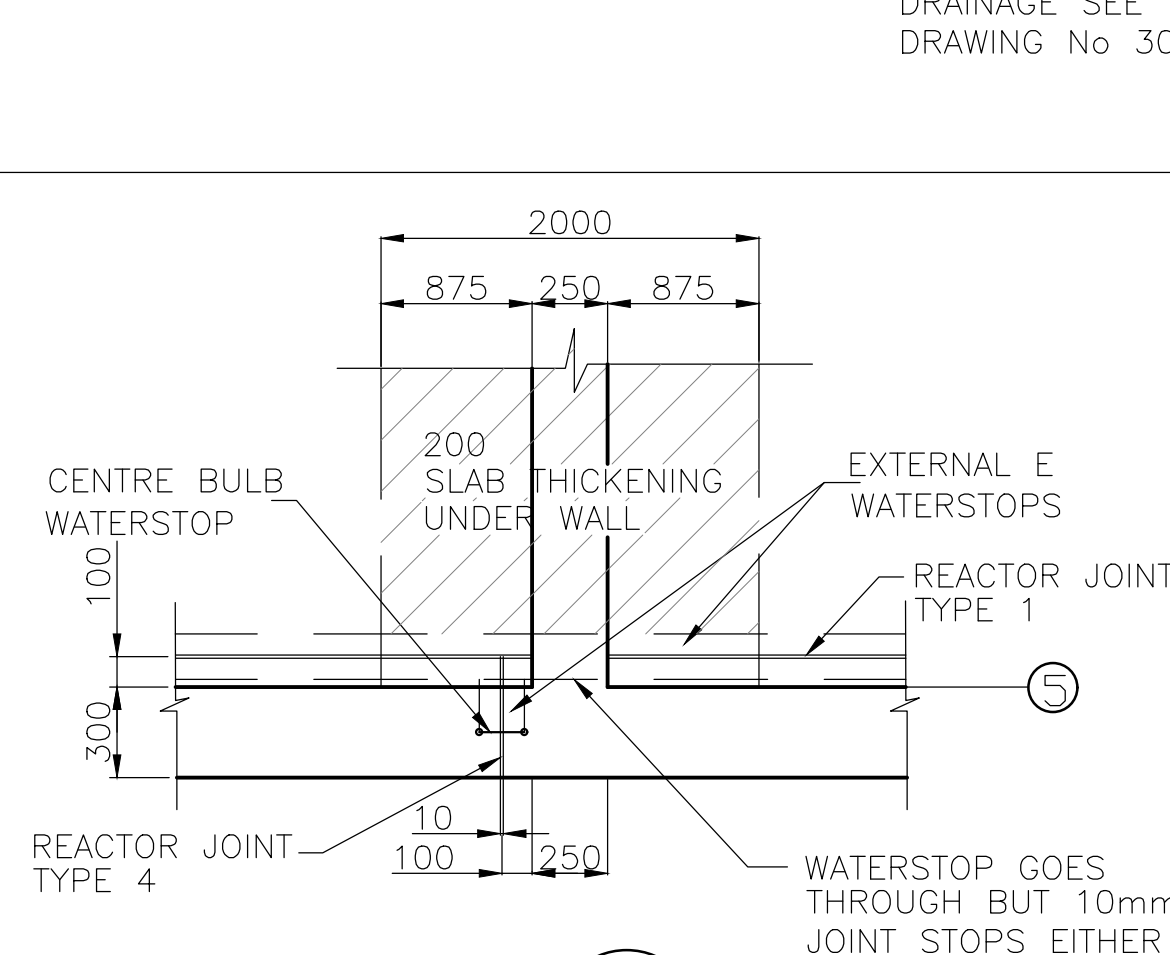
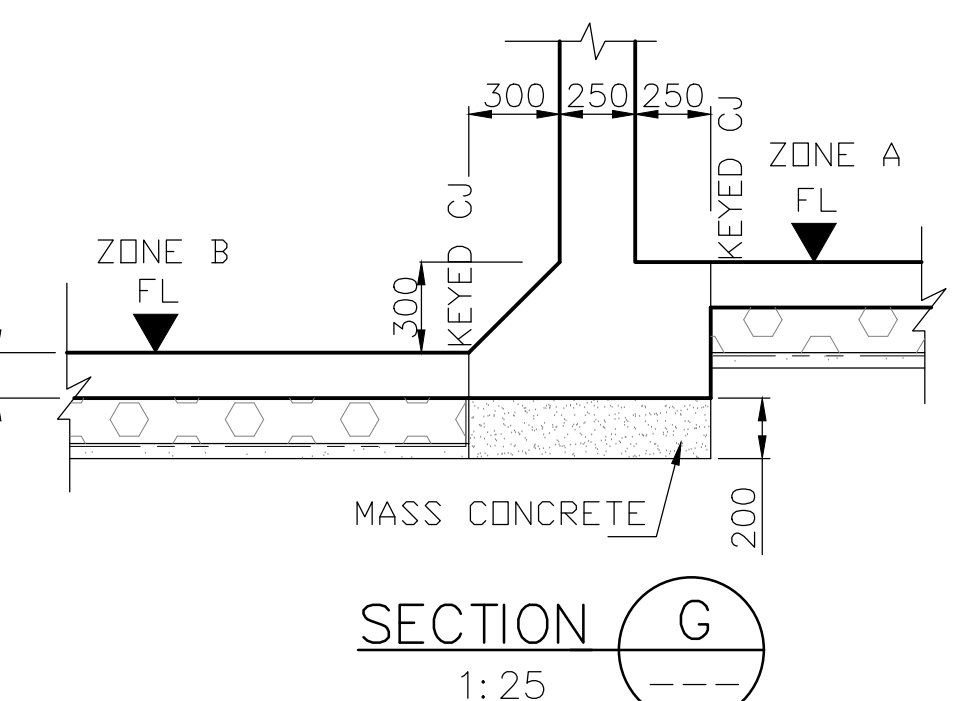
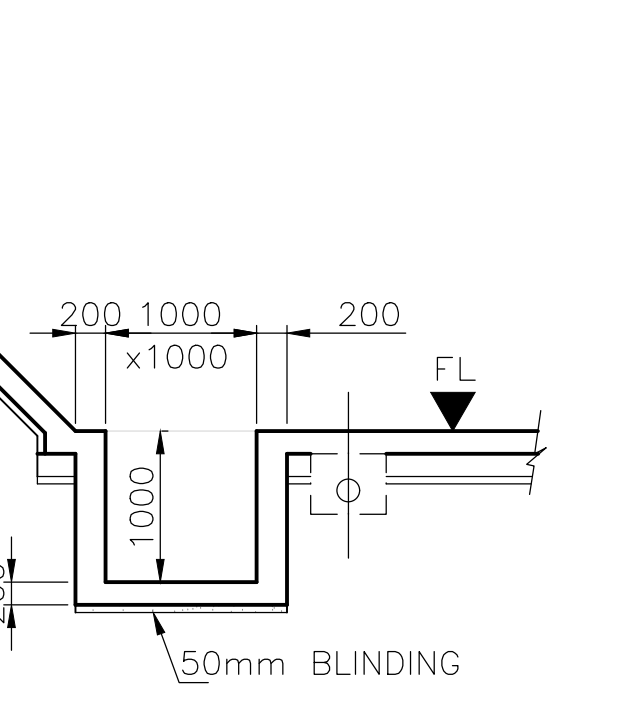
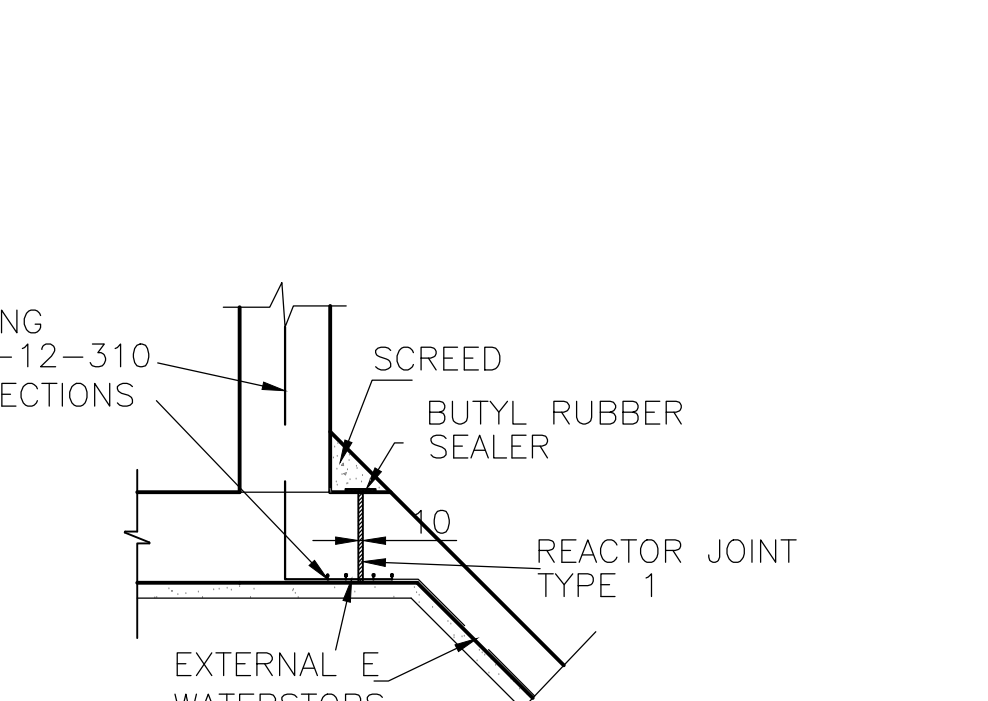
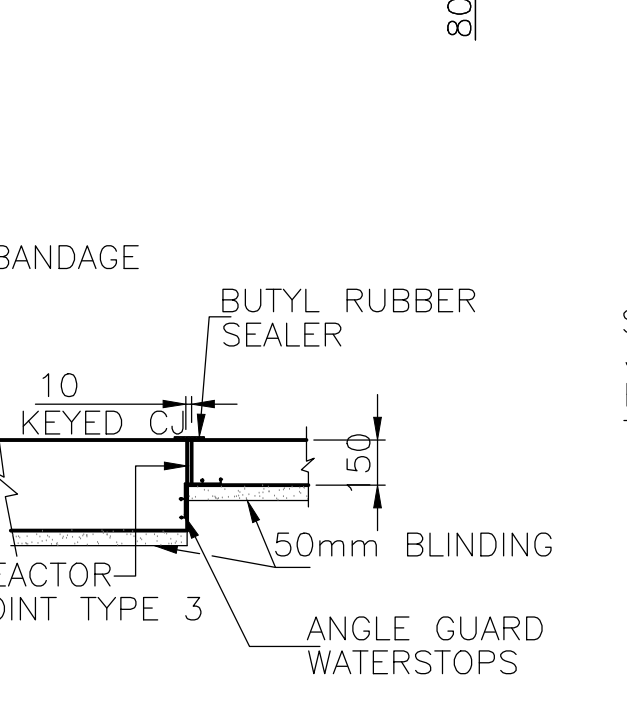
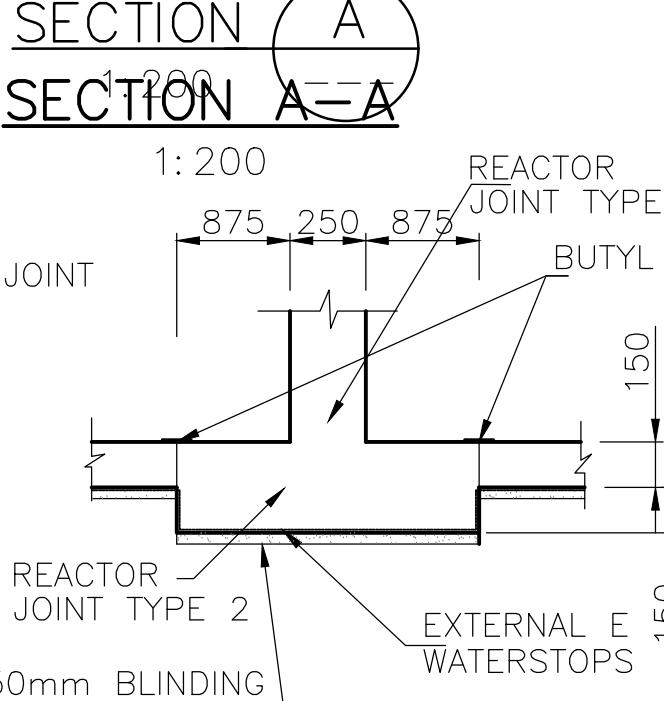
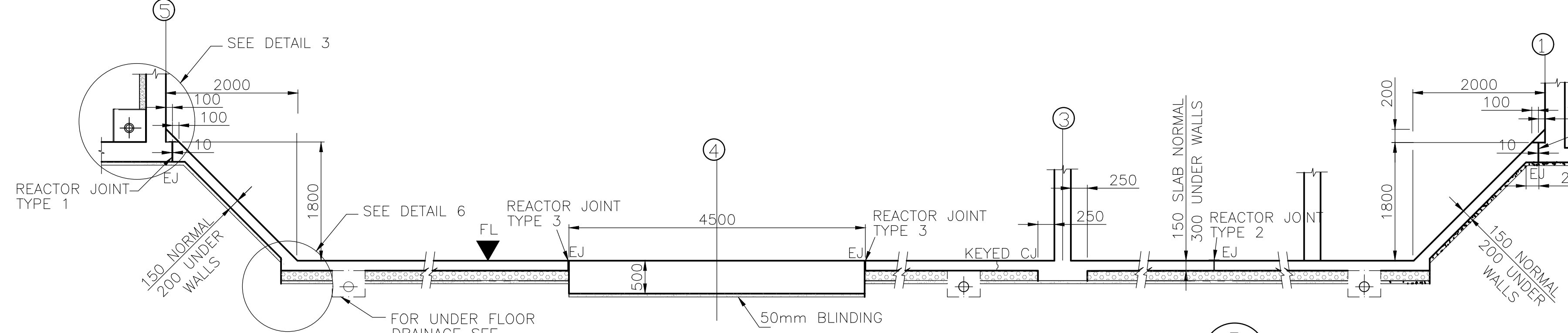
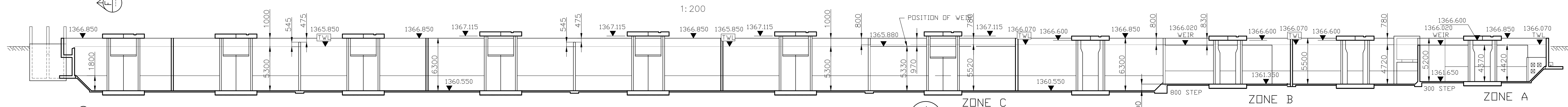
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FLOOR LEVELS

ZONE	FLOOR SLAB LEVEL (FL)
A	1361.65
B	1361.35
C	1360.55

COORDINATES

POINT NAME	Y-COORDS	X-COORDS
REACTOR 2		
R.A	100909.449	2871111.396
R.B	100944.135	2871115.348
R.C	100889.563	2871285.932
R.D	100924.249	2871289.884



DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

Knight Piésold CONSULTING

P.O. BOX 321
RIVONIA
2191
TEL: 011-806 7111
FAX: 011-806 7102
EMAIL: enquiries@kps.co.za

WSP Group Africa (Pty) Ltd
Industrial Division
Building C, Knightbridge
33 Stearns Street, Devonshire 2191
Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com

JOHANNESBURG WATER SOC LTD

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS

UNIT 5 – PHASE 2
REACTOR
FLOORSLAB
LAYOUT AND DETAILS

DESIGN MANAGER

SCALE

AMENDMENTS

APPROVED

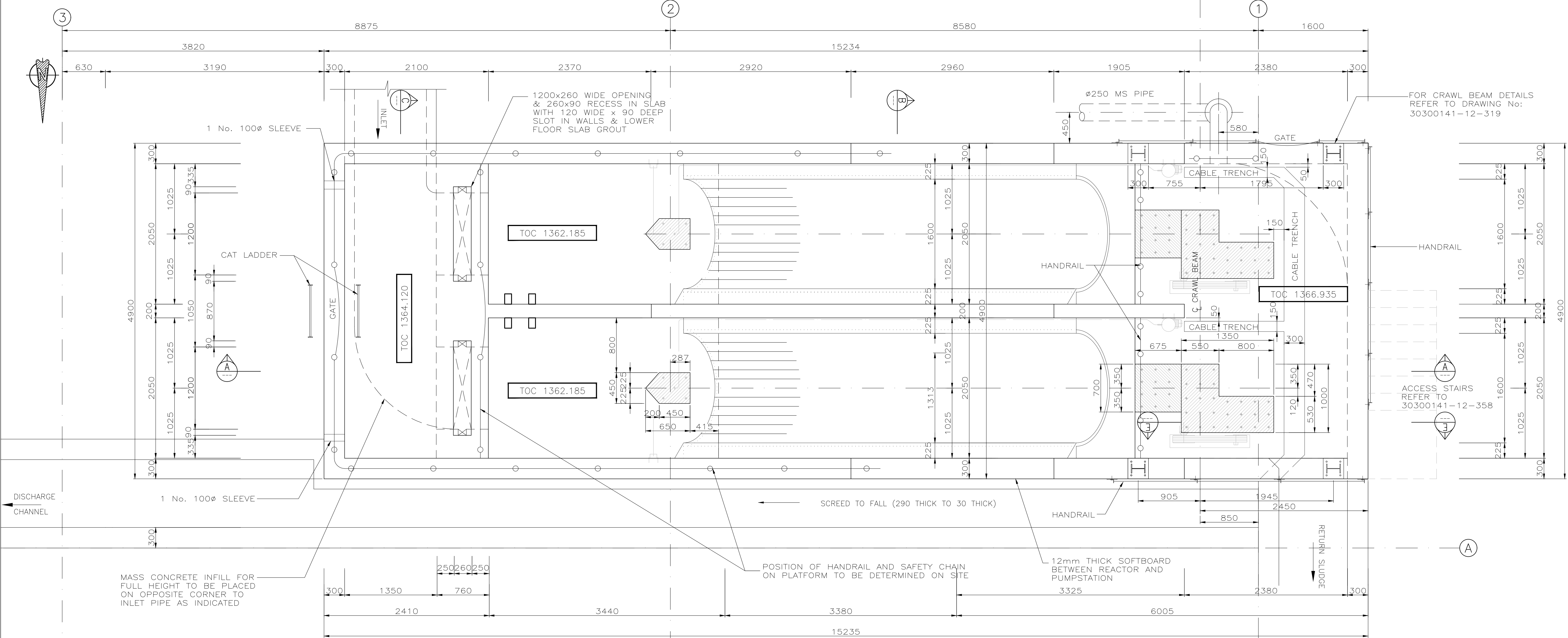
DATE

DRAWING No.

JW NUMBER

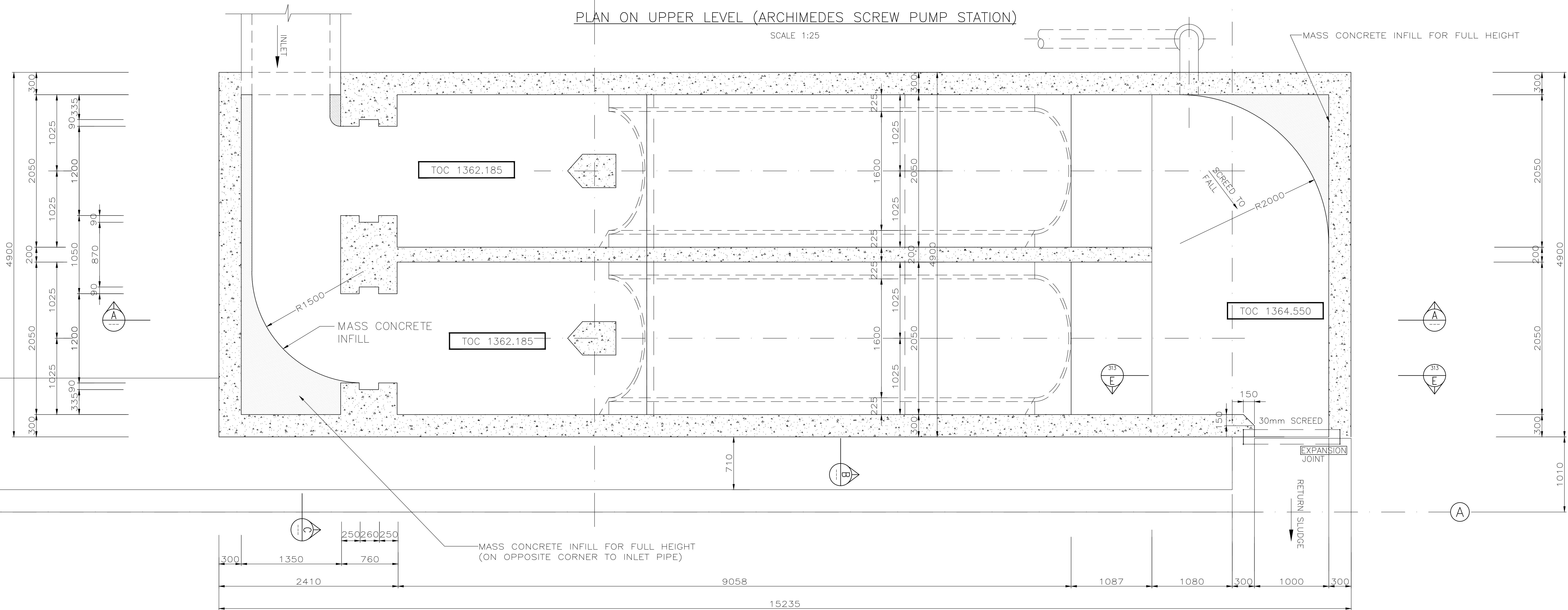
CONSULTANT'S NUMBER

FILE No



PLAN ON UPPER LEVEL (ARCHIMEDES SCREW PUMP STATION)

SCALE 1:25



PLAN ON LOWER LEVEL - SECTION F-F (ARCHIMEDES SCREW PUMP STATION)

SCALE 1:25

NOTES:-

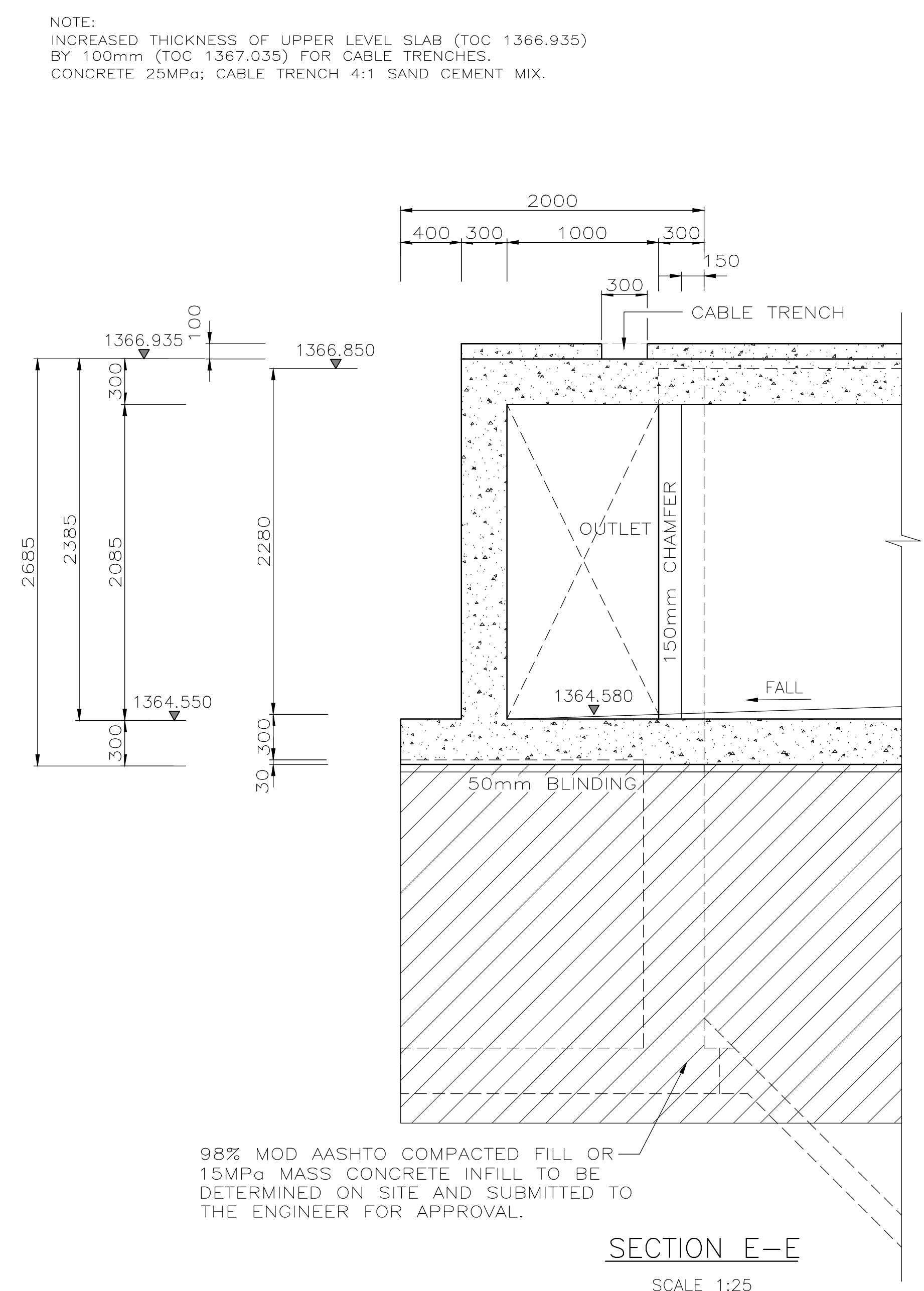
1. ARCHIMEDES SCREW PUMPSTATION TO BE CONSTRUCTED BEFORE THE ADJACENT BIOREACTOR.
2. STRUCTURAL CONCRETE TO BE GRADE 35/19
3. MASS CONCRETE TO BE GRADE 15/26.5
4. GROUTING UNDER BEARING AND GEARBOX BASEPLATE TO BE "DUROGROUT" OR SIMILAR AND APPROVED.
5. INLET PIPE, CONCRETE INFILL AND ACCESS STAIR ARE HANDED ACCORDING TO THE BIOREACTOR FOR WHICH THIS DRAWING IS USED. SEE RELEVANT NOTES.
6. THE SCREED(1:3 CEMENT/SAND) LINING THE SCREW TROUGH SHALL BE LAID AS SPECIFIED IN CLAUSE PS05.51.9 BUT THE FINISHING OFF SHALL BE DONE BY MEANS OF TEMPLATES ATTACHED TO THE INSTALLED SCREW. THE SCREEDING OPERATION MUST BE SUPERVISED BY THE SUPPLIER OF THE EQUIPMENT WITH WHOM PRIOR ARRANGEMENTS SHALL BE MADE.
7. THE FOUNDATION MATERIAL SHALL HAVE A BEARING VALUE OF AT LEAST 200KPa. (TO BE APPROVED BY THE ENGINEER AT THE PUMPSTATION), BACKFILLING OVER RETAINING WALL FOUNDATION TO BE REPLACED WITH MASS CONCRETE IF NECESSARY.
8. 1 No. PUMPSTATION REQUIRED (NUMBERED ACCORDING TO THE BIOREACTOR IT SERVES).
9. HOLES FOR H.D. BOLTS FOR CRAWL BEAM SUPPORT STRUCTURE TO BE DRILLED.
10. INCREASED THICKNESS OF UPPER LEVEL SLAB (TOC 1366.935) BY 100mm (TOC 1367.035) FOR CABLE TRENCHES. CONCRETE 25MPa; CABLE TRENCH 4:1 SAND CEMENT MIX.
11. CABLE TRENCHES 100mm DEEP.

REFERENCE DRAWINGS:

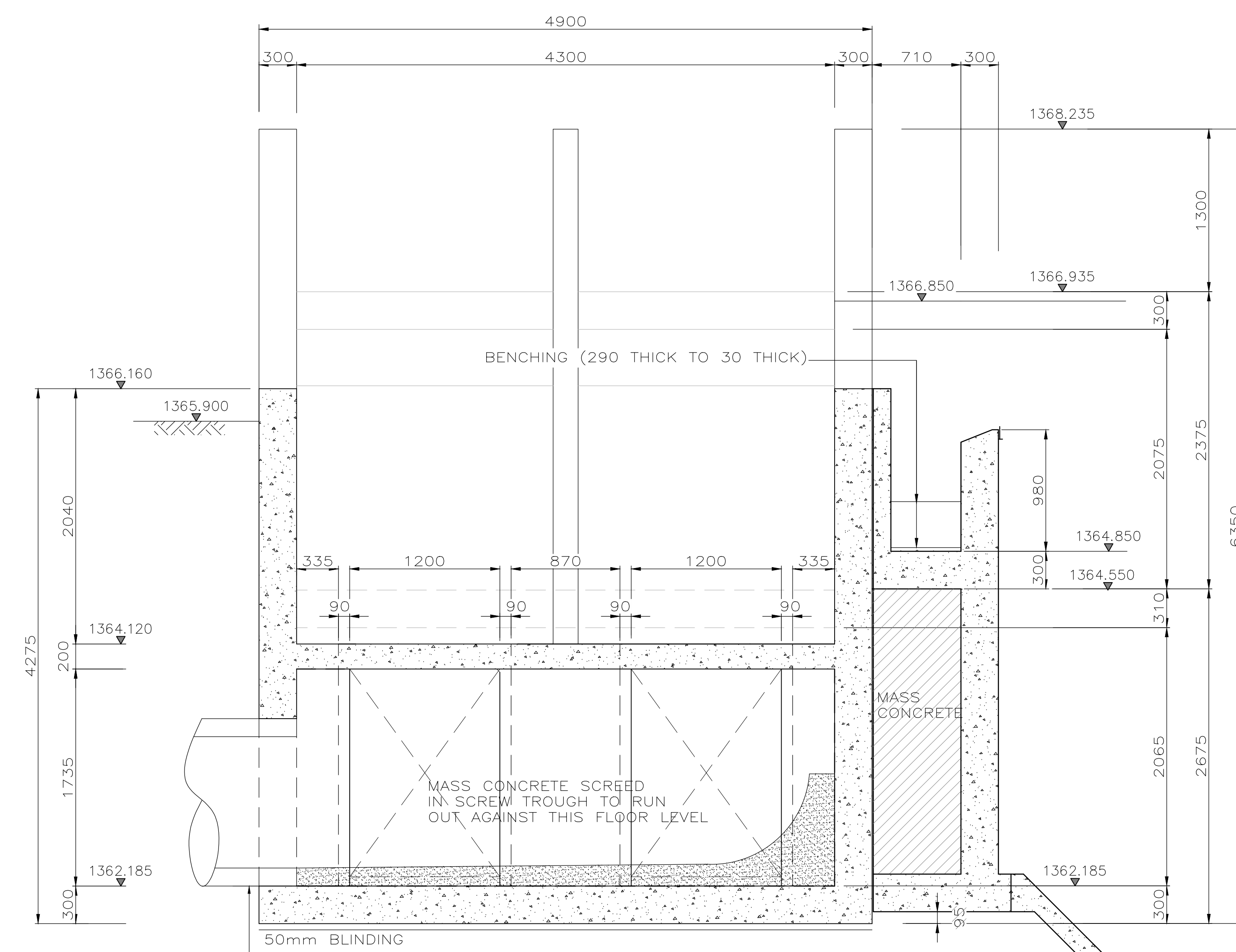
- 30300141-12-313 ARCHIMEDES SCREW PUMP STATION - SECTIONS
30300141-12-358 ARCHIMEDES SCREW PUMP STATION - HANDRAIL AND STAIRCASE DETAIL
30300141-12-319 ARCHIMEDES SCREW PUMP STATION - CRAWL BEAM DETAILS

DEPARTMENT	APPROVED	DESIGNATION	DATE

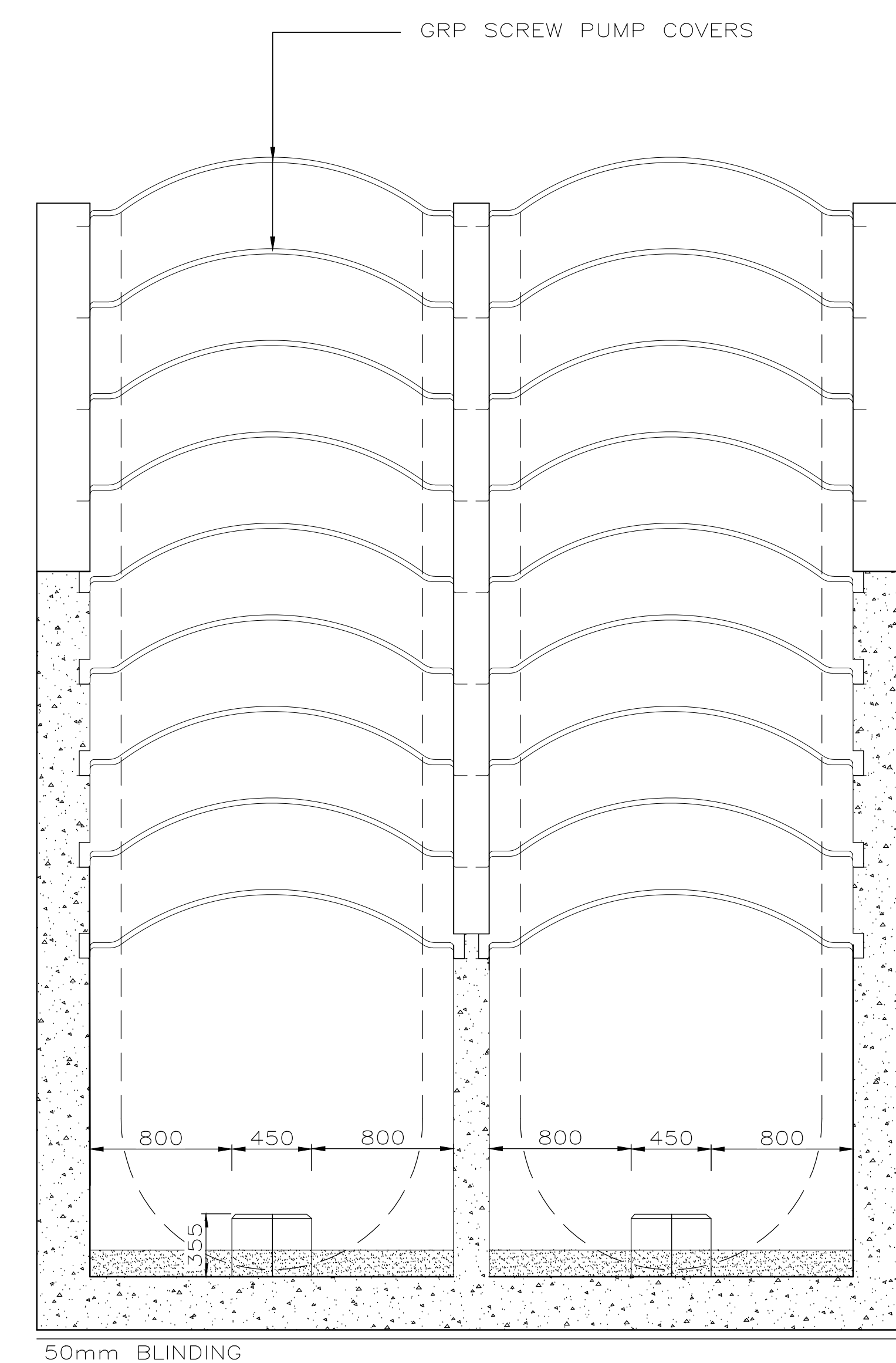
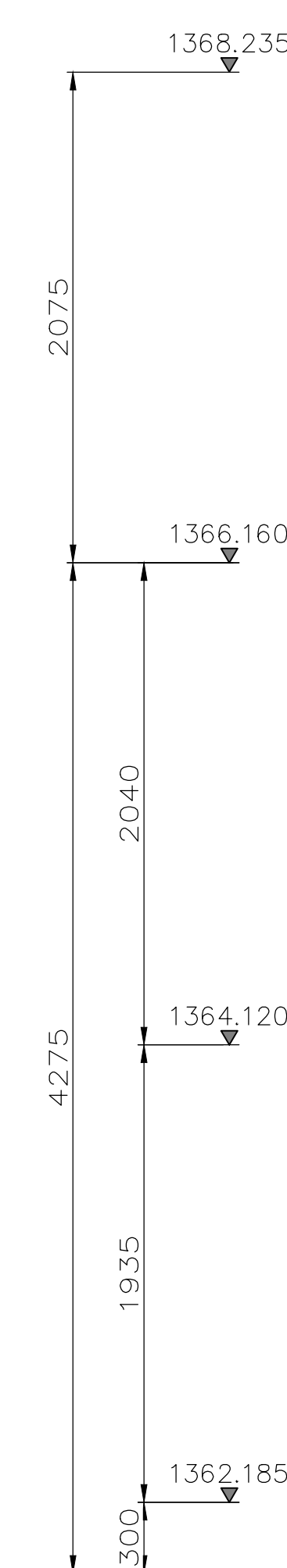
CONSULTING ENGINEERS		SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG										DESIGN	SCALE	AMENDMENTS			APPROVED	DATE	DRAWING No.						
 Knight Piésold CONSULTING	 WSP	DESIGNED		G K		 Johannesburg Water	NORTHERN WASTEWATER TREATMENT WORKS										MANAGER	0	APPROVED FOR CONSTRUCTION			K M	01/07/22	JW NUMBER JW 13896-CE-312 CONSULTANT'S NUMBER 30300141-12-312 FILE No					
		DRAWN		J V D W																									
		CHECKED		K M																									
		SERVICES CHECKED																											
		GEOTECHNICAL INVESTIGATION																											
P.O. BOX 321 RYONIA 2198 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpsa.co.za		WSP Group Africa (Pty) Ltd Industrial Division 2109 Building C, Knightbridge 33 Square Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com		17 HARRISON STREET MARSHALLTOWN 2107		REACTOR ARCHIMEDES SCREW PUMP STATION LAYOUT PLANS										DATE	1:25							0					
APPROVED S. JASSAT Pr. Eng. No. 202001279 DATE 30-06-2022		TEL: (011) 688-1400 FAX: (011) 688-1529																											



SECTION E-E
SCALE 1:25



SECTION C-C
SCALE 1:25



SECTION D-D
SCALE 1:25

SURVEYED	
DESIGNED	G K
DRAWN	J V D W
CHECKED	K M
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVICES	
APPROVED S. JASSAT	
Pr. Eng. No. 202001279	

JOHANNESBURG WATER SOC LTD	
 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-4520

CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 – PHASE 2
REACTOR
ARCHIMEDES SCREW PUMP STATION
CONCRETE DETAILS AND SECTIONS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.	
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DATE					0	

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SCALE: 1:50

 Knight Piésold CONSULTING		CONSULTING ENGINEERS
P.O. BOX 221 RIVONDA 2198 TEL. 011-406 7111 FAX: 011-406 7100 EMAIL: enquiries@kps.co.za		 WSP Group Africa (Pty) Ltd Industrial Division Bulawayo City Engineering 33 Shashe Street, Bulawayo, 2191 Tel: +27 31 381 1300 Fax: +27 31 361 1431 www.wsp.co.za

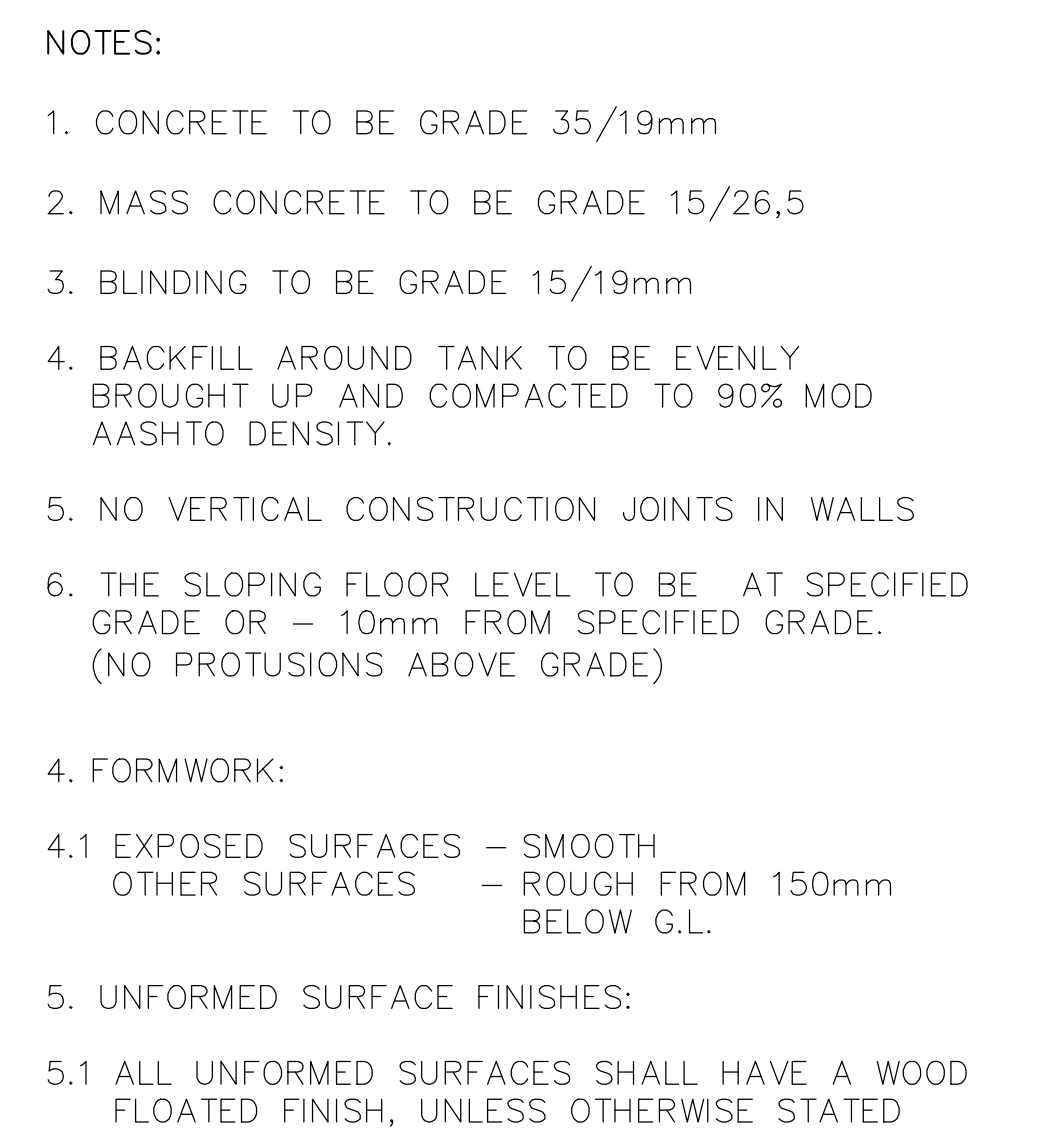
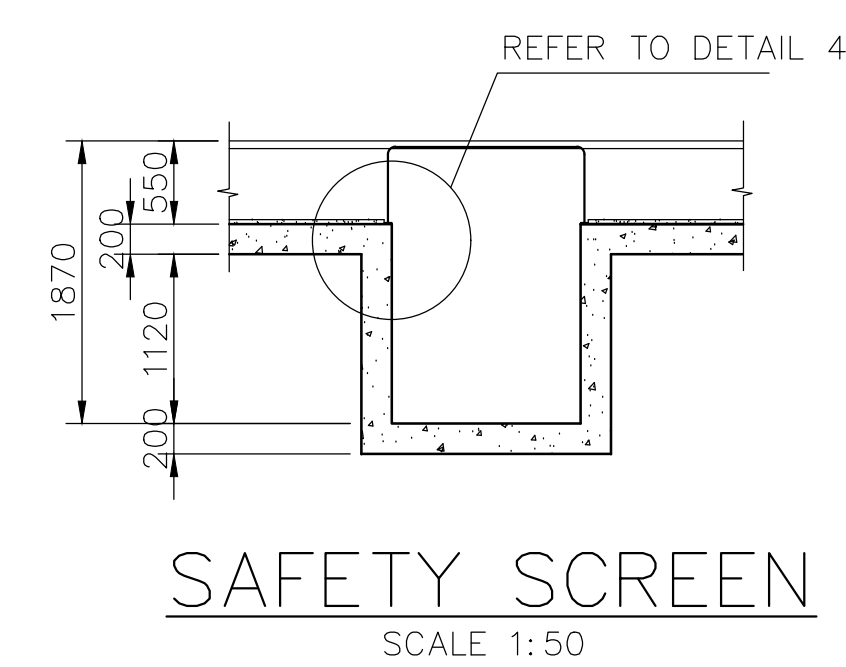
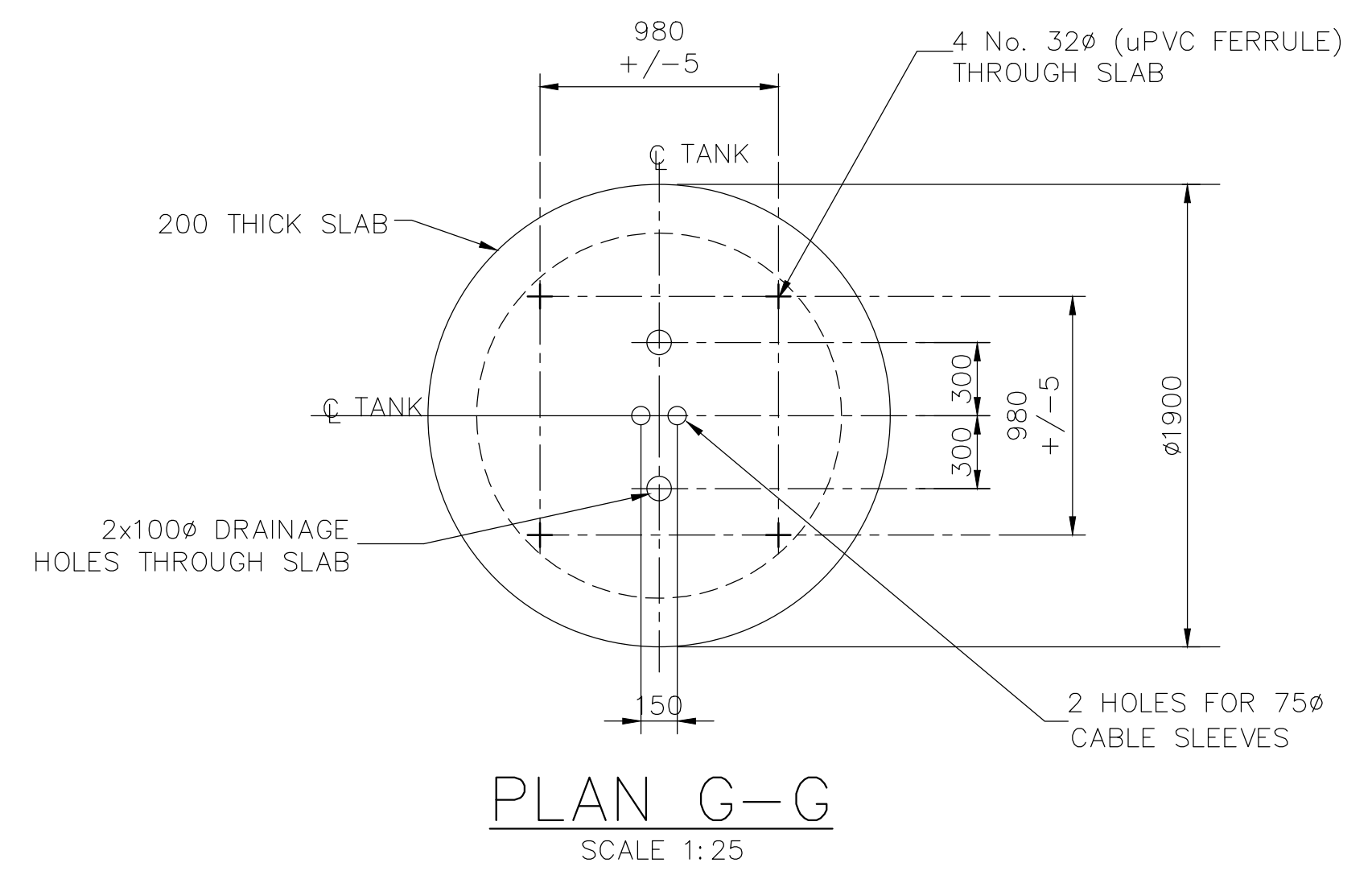
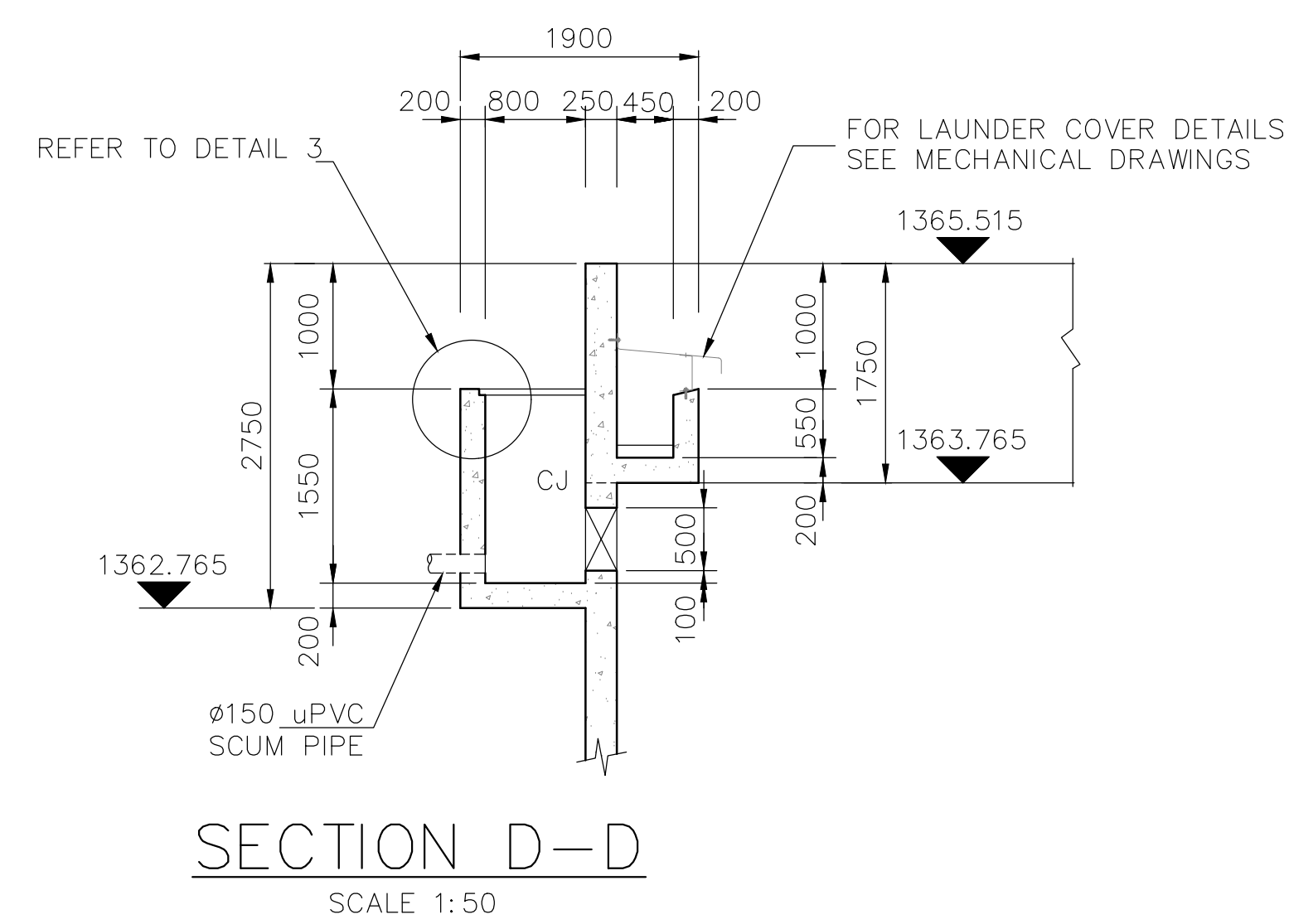
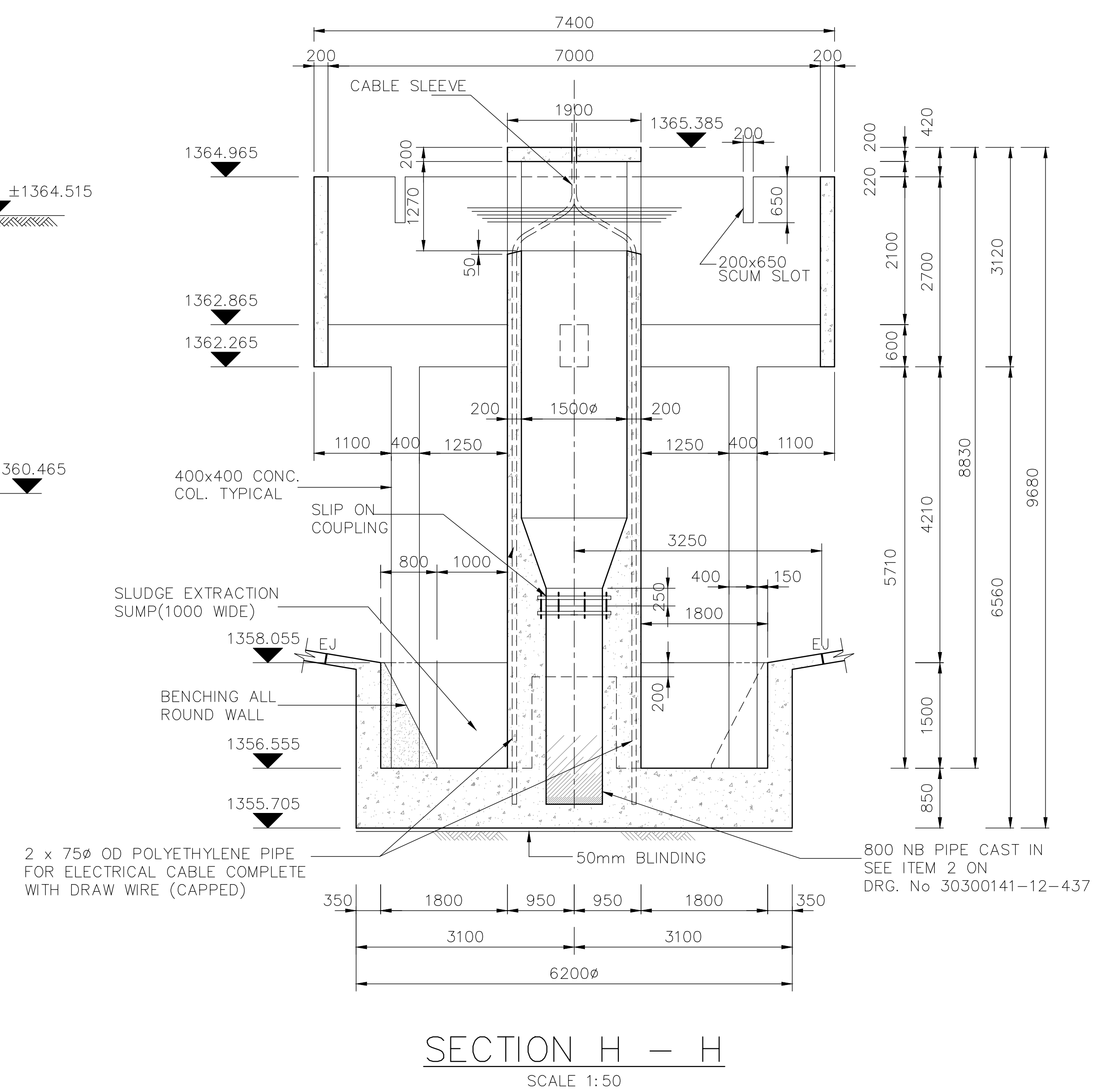
JOHANNESBURG WATER

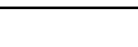


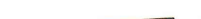
Johannesburg Water

GENERAL ARRANGEMENT AND CONCRETE DETAILS SHEET 1 OF 2

DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.			
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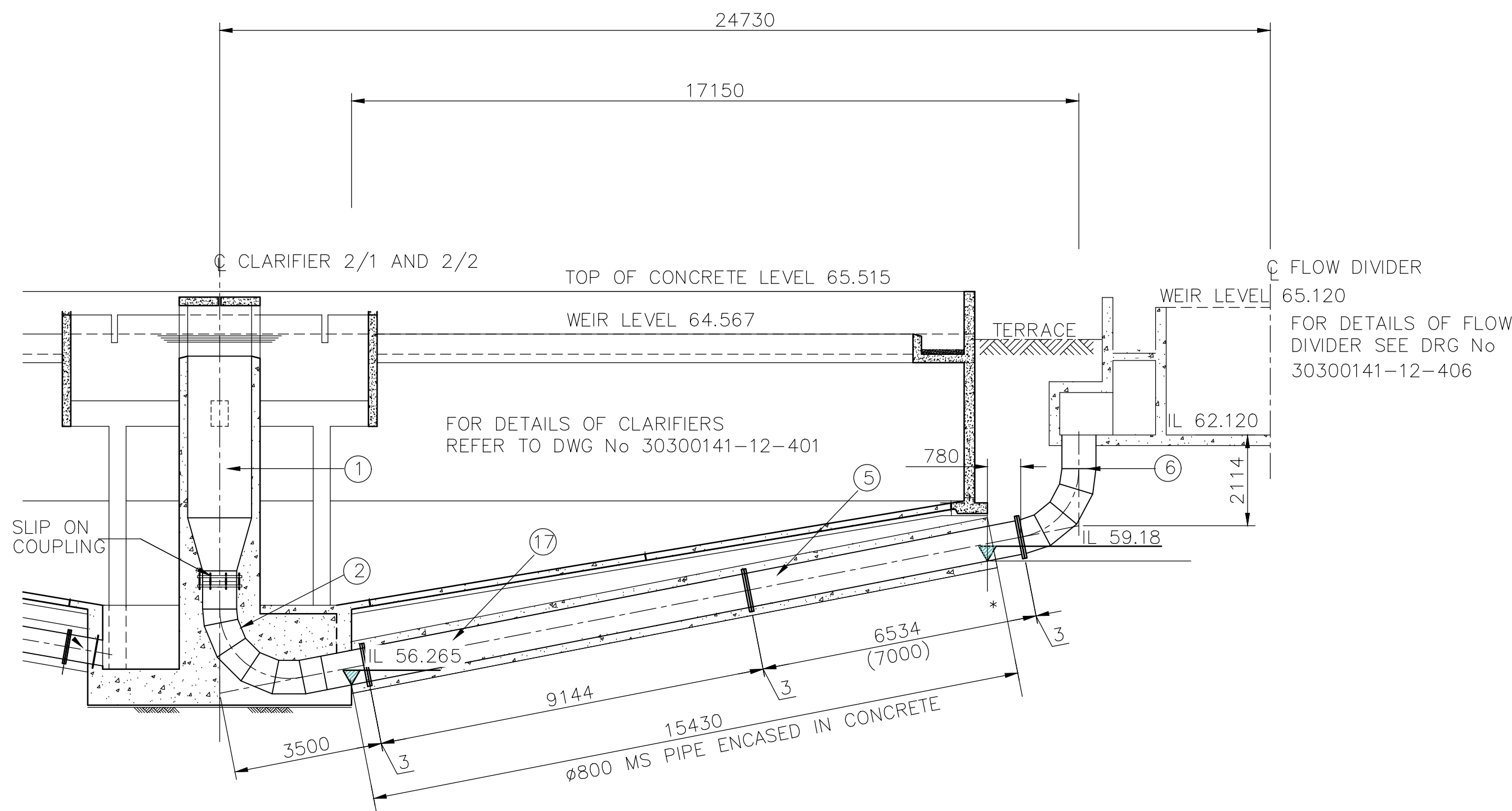
 Knight Piésold CONSULTING		 WSP	
P.O. BOX 221 RYONGA 2129 TEL 011-400 7111 FAX 011-400 7100 EMAIL enquiries@kpsa.co.za		WSP Group Africa (Pty) Ltd Industrial Division Building C, Kogelberg, 33 Stearns Street, Bryanston, 2091 Tel: +27 11 361 1350 Fax: +27 11 361 1431 www.wsp.co.za	

SURVEYED	
DESIGNED	T M
DRAWN	J V D W
CHECKED	K M
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED S. JASSAT	
Pr. Eng. No. 202001279	
DATE 30-06-2022	

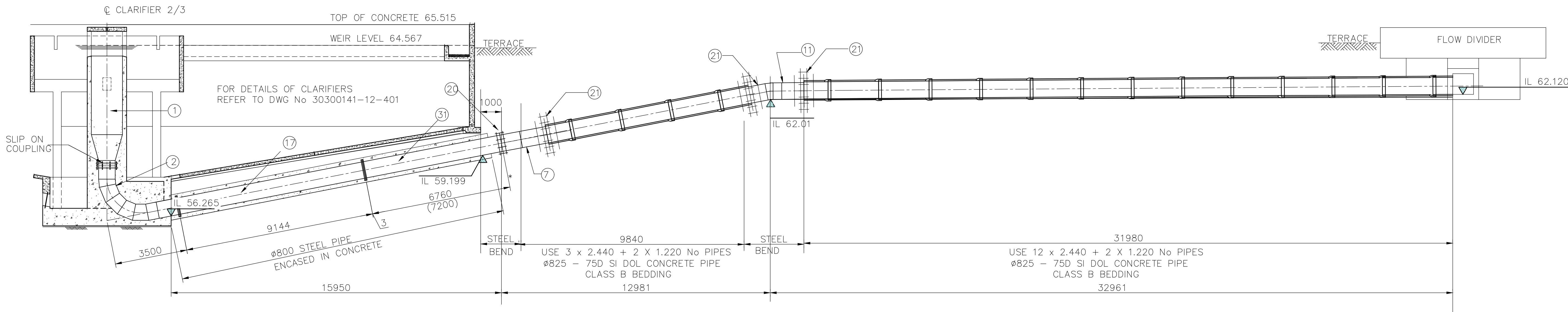
JOHANNESBURG WATER SOC LTD	
 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529

CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 – PHASE 2
CLARIFIER TERRACE
CLARIFIER
GENERAL ARRANGEMENT AND CONCRETE DETAILS SHEET 2 OF 2

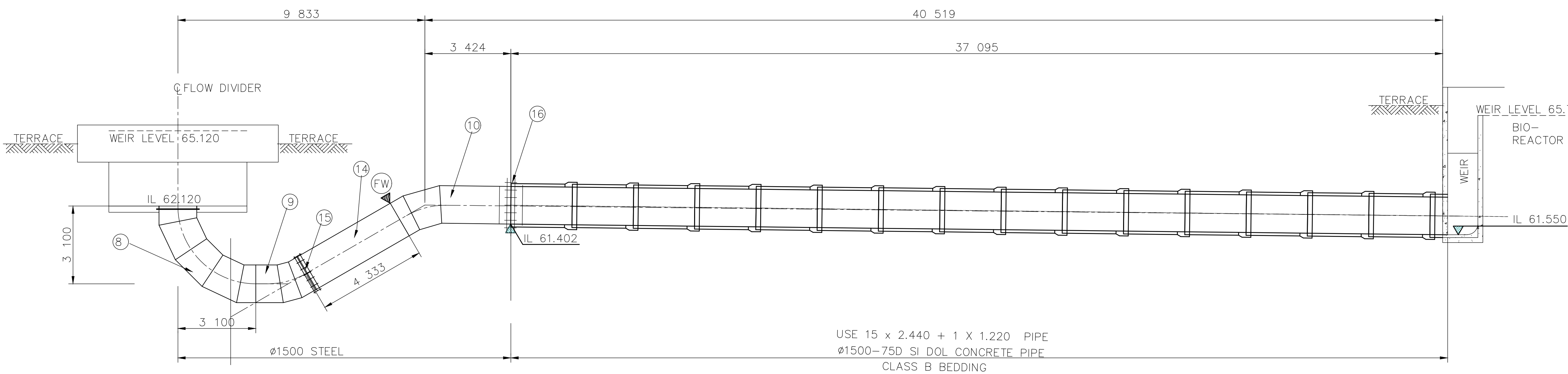
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AS SHOWN					
DATE					0



FEED FROM FLOW DIVIDER TO CLARIFIERS 2/1 AND 2/2
SCALE 1:100



FEED FROM FLOW DIVIDER TO CLARIFIER 2/3
SCALE 1:100



FEED FROM REACTOR 2 TO CLARIFIER FLOW DIVIDER
SCALE 1:100

NOTES

- ALL FLANGES TO SANS 1123 TABLE 1000/3 RAISED FACE, MATERIAL TO BS 4360 GRADE 43A - BOLT HOLES TO STRADDLE CENTRELINES.
- * DENOTES PIPE CLOSER - PIPE SPECIALS TO BE SUPPLIED CUT TO THE DIMENSION QUOTED IN BRACKETS AND THE CUT TO SUIT ON SITE.
- ALL PIPE FITTINGS TO BE INTERNALLY AND EXTERNALLY LINED TO SYSTEM 'C1' (COAL TAR EPOXY)- EXCEPT WHERE NOTED. ALL PIPE FITTINGS ENCASED IN CONCRETE COATED TO SYSTEM A PRIMER ONLY. SEE SPECIFICATION FOR CORROSION PROTECTION DETAILS.
- ALL PIPE SPECIALS TO BE PERMANENTLY MARKED WITH DRAWING NUMBER/MATERIAL LIST ITEM NUMBER 434/9
- ALL PIPE TO SANS 719 GRADE 'B' - WALL THICKNESS AS FOLLOWS:

NOMINAL BORE	MIN WALL THICKNESS
200 - 375	4mm
400 - 550	5mm
600 - 700	6mm
750 - 900	8mm
950 - 1550	10mm
1800	14mm
- (FW) DENOTES FIELD WELD - PIPE PROTECTION TO BE RE-INSTATED AFTER WELDING.

REFERENCE DRAWINGS

30300141-12-431 - CLARIFIER TERRACE - PIPEWORK - GENERAL ARRANGEMENT
30300141-12-437 - CLARIFIERS - INLET AND OUTLET PIPING- STEEL PIPE DETAILS

DEPARTMENT	APPROVED	DESIGNATION	DATE

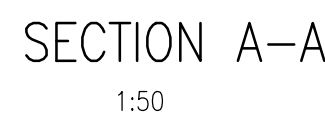
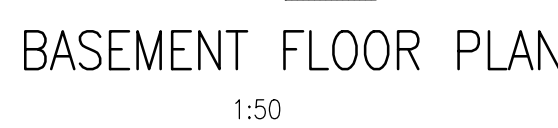
CONSULTING ENGINEERS	
P.O. BOX 321 RYONGA 2108 TEL: 011-806 7111 FAX: 011-806 7100 EMAIL: enquiries@kpi.co.za	WSP Group Africa (Pty) Ltd Industrial Division Building C, Kingsbridge 33 Sloane Street, Bryanston, 2191 Tel: +27 11 361 1300 Fax: +27 11 361 1431 www.wsp.com

SURVEYED	
DESIGNED	G K
DRAWN	J VD W
CHECKED	A M
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED S. JASSAT	
Pr. Eng. No. 202001279	
DATE 30-06-2022	

JOHANNESBURG WATER SOC LTD	
17 HARRISON STREET MARSHALLTOWN 2107	TEL: (011) 688-1400 FAX: (011) 688-1529

CITY OF JOHANNESBURG	
NORTHERN WASTEWATER TREATMENT WORKS	
UNIT 5 - PHASE 2	
CLARIFIER TERRACE	
FEED PIPES	
LONGITUDINAL SECTIONS	

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
	0	APPROVED FOR CONSTRUCTION	K M	01/07/22	JW NUMBER JW 13896
	AS SHOWN				CONSULTANT'S NUMBER 303 00141-12-434
					FILE No
					0



(TYPICAL CABLE TRENCH)

CONSULTING ENGINEERS

WSP Group Africa (Pty) Ltd
Industrial Division
Building C, Knightsbridge,
33 Sloane Street, Bryanston, 2191
t 361 1300 Fax: +27 11 361 1431 ww



JOHANNESBURG WATER SOC LTD



17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400

CITY OF JOHANNESBURG
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 5 – PHASE 2
EFFLUENT PUMP STATION FOR HEAD OF WORKS
CONCRETE LAYOUT
PLAN, SECTIONS AND ELEVATIONS



SCALE 1:10

2No OFF



DETAIL 4



DETAIL 5



1:25

FOR ARCHITECTURAL DETAILS SEE
DRG.30300141-12-081

DRAWING No.

JW NUMBER

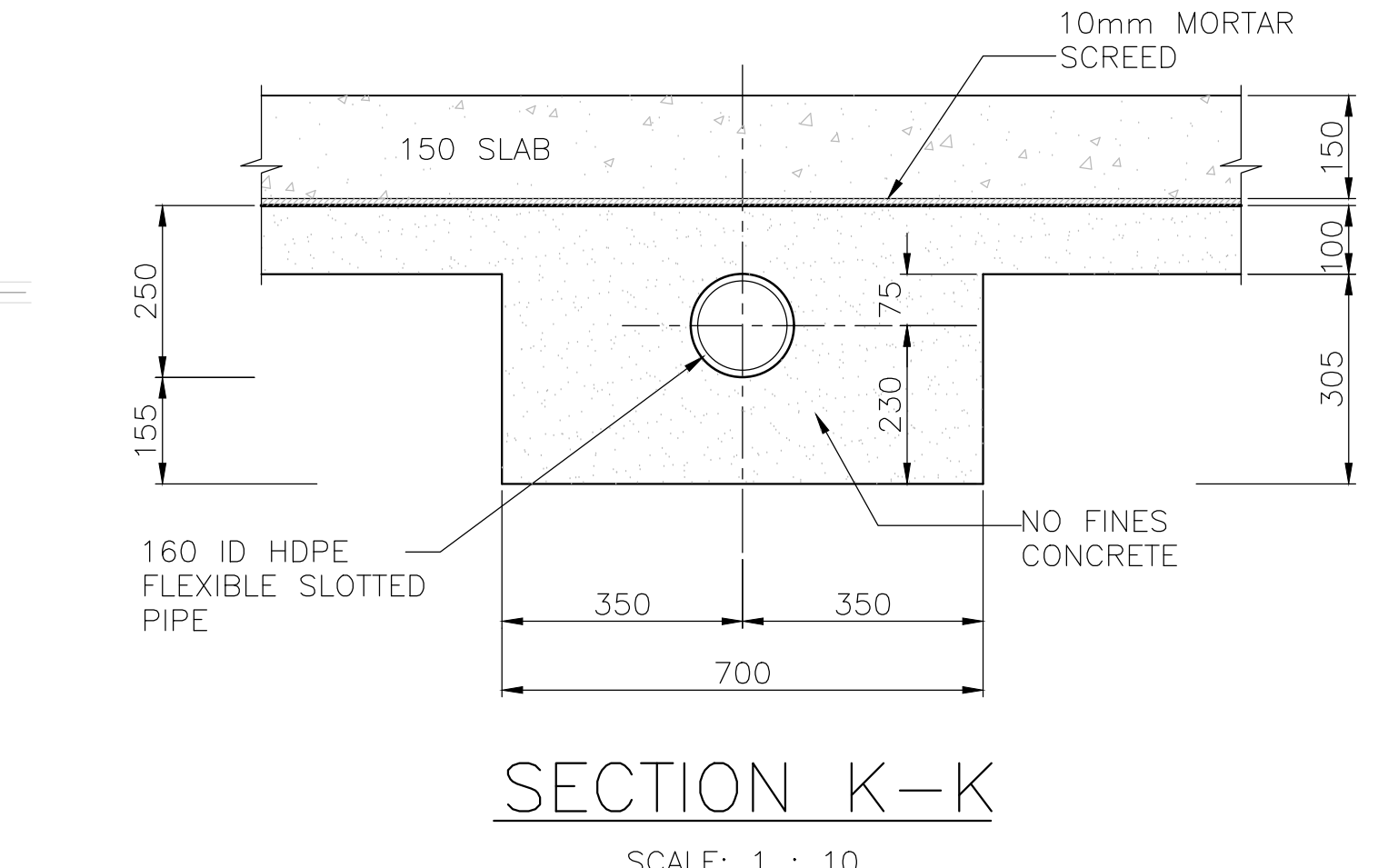
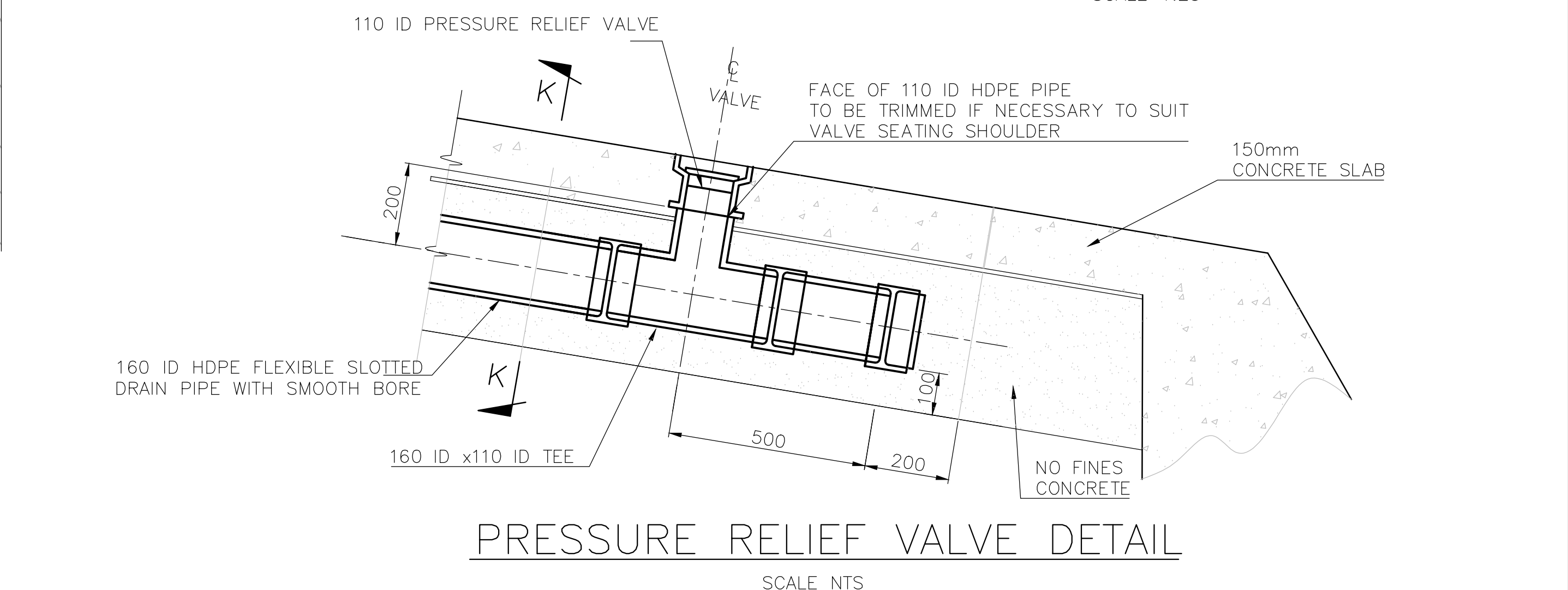
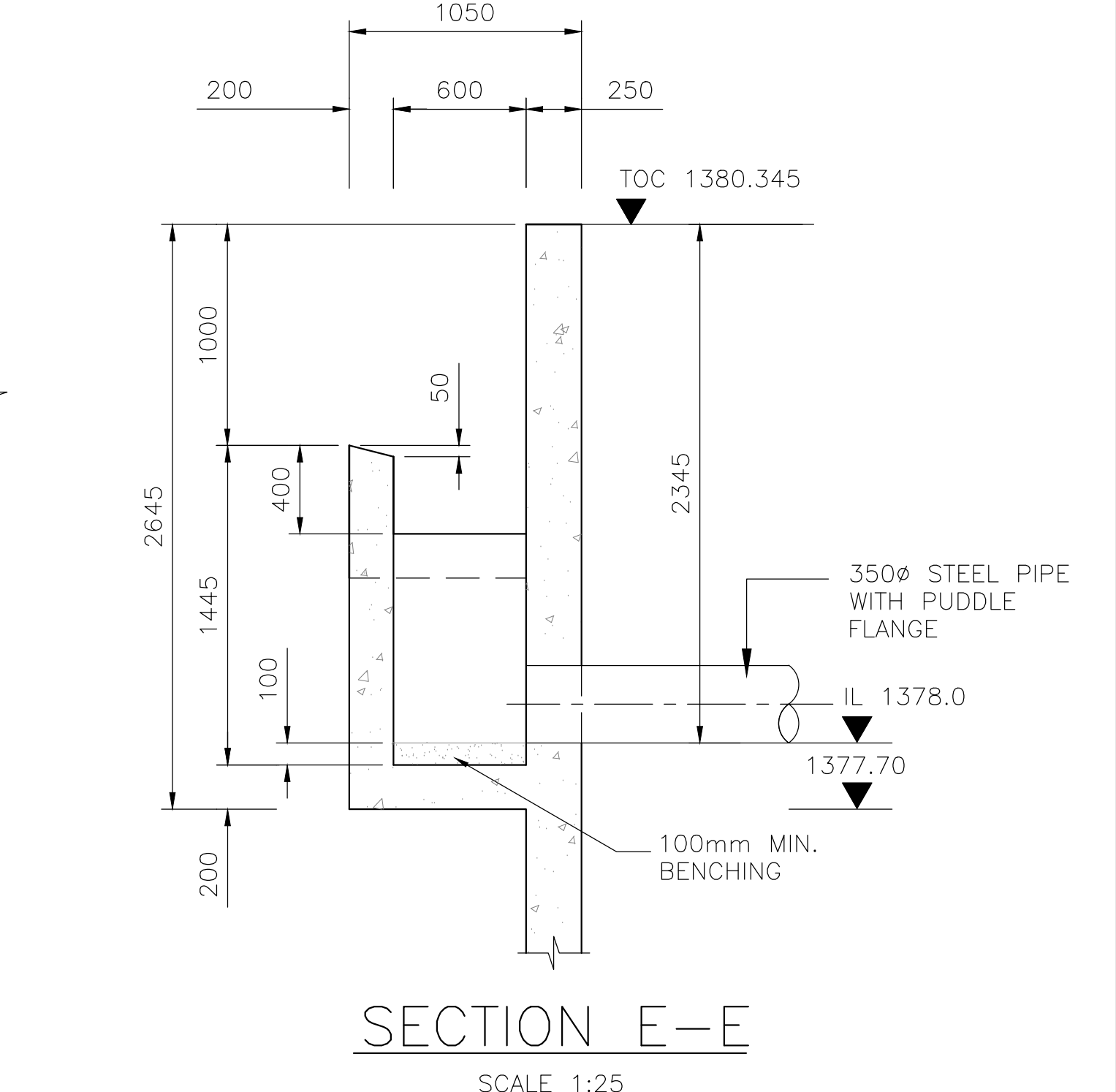
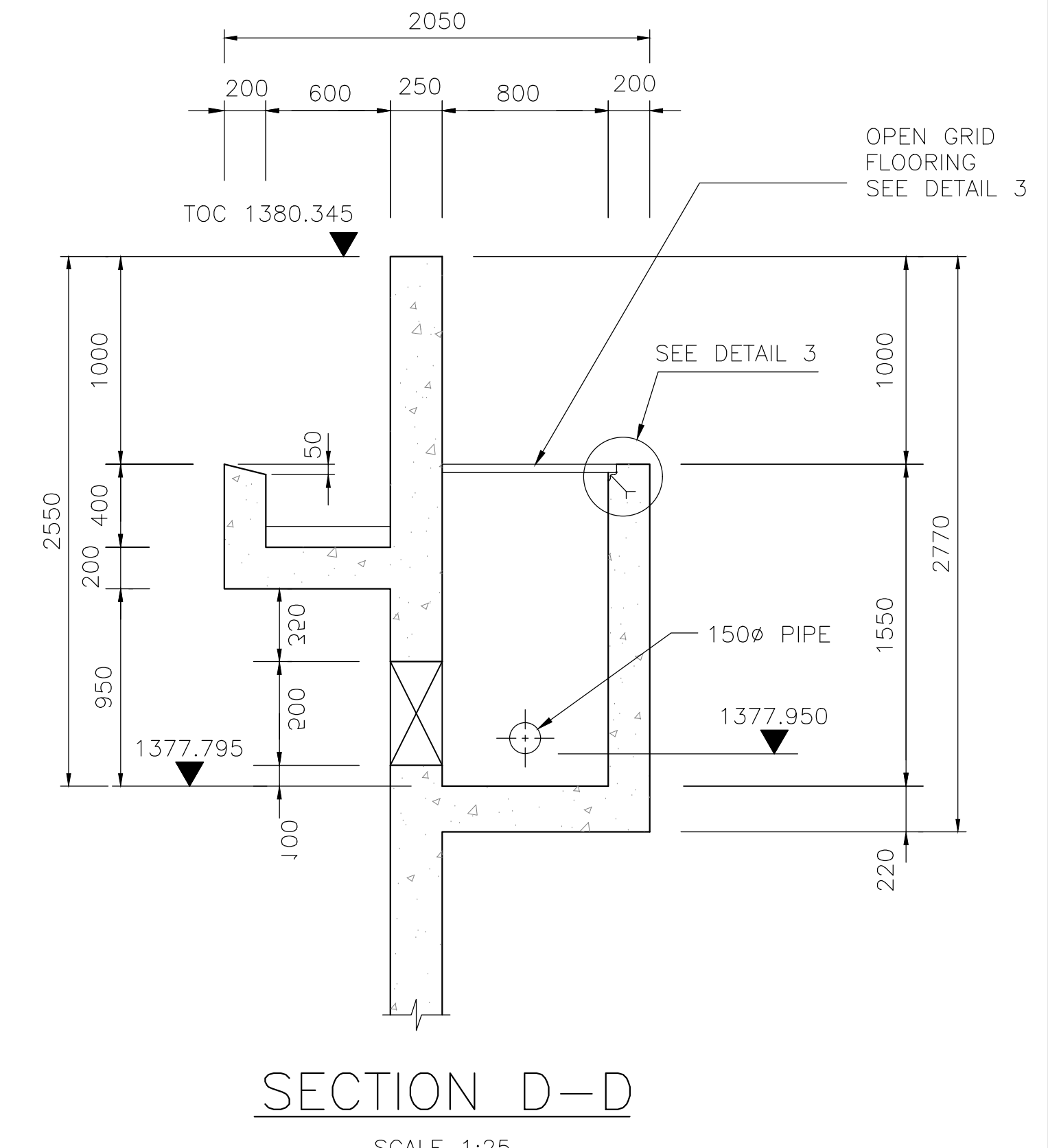
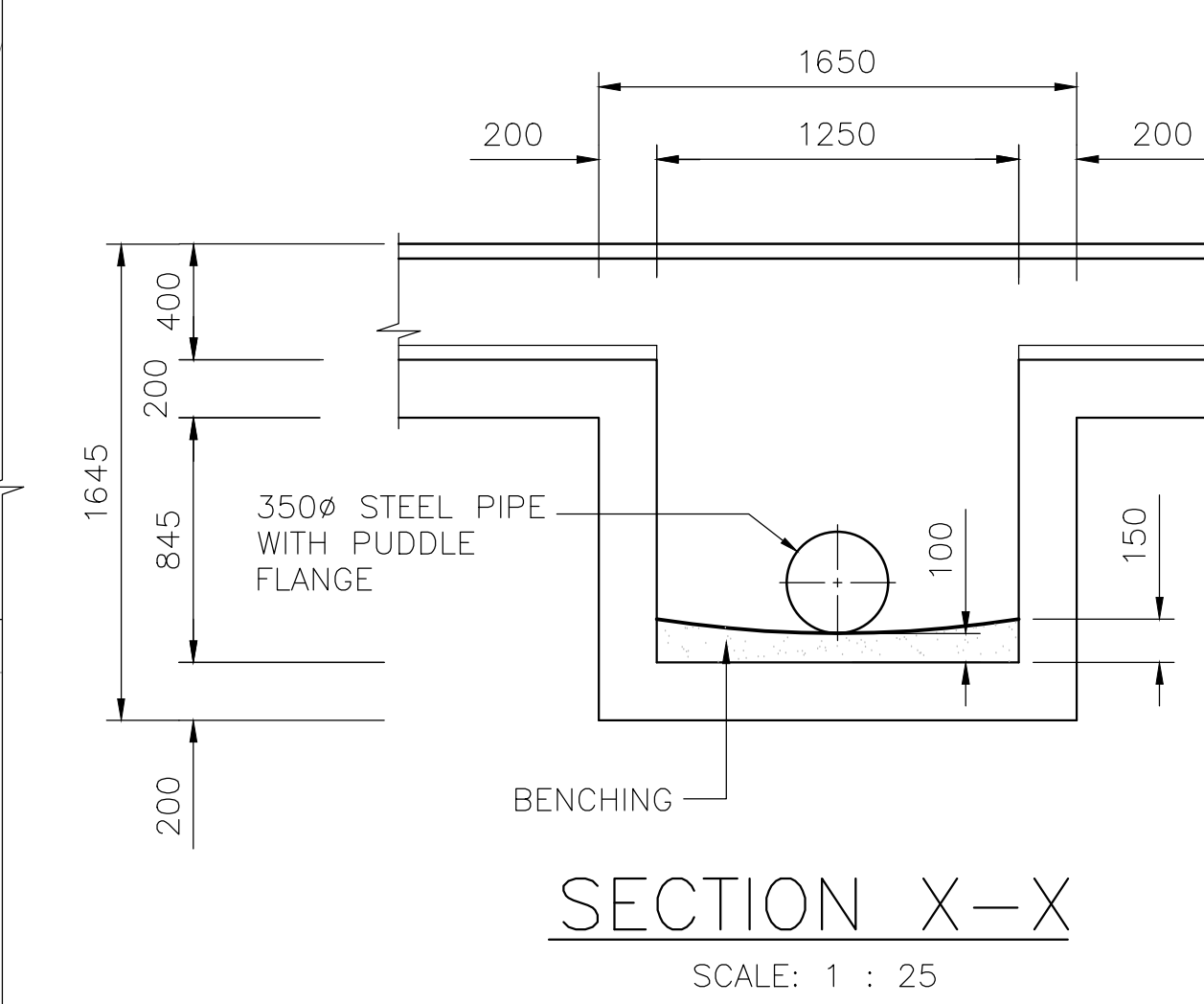
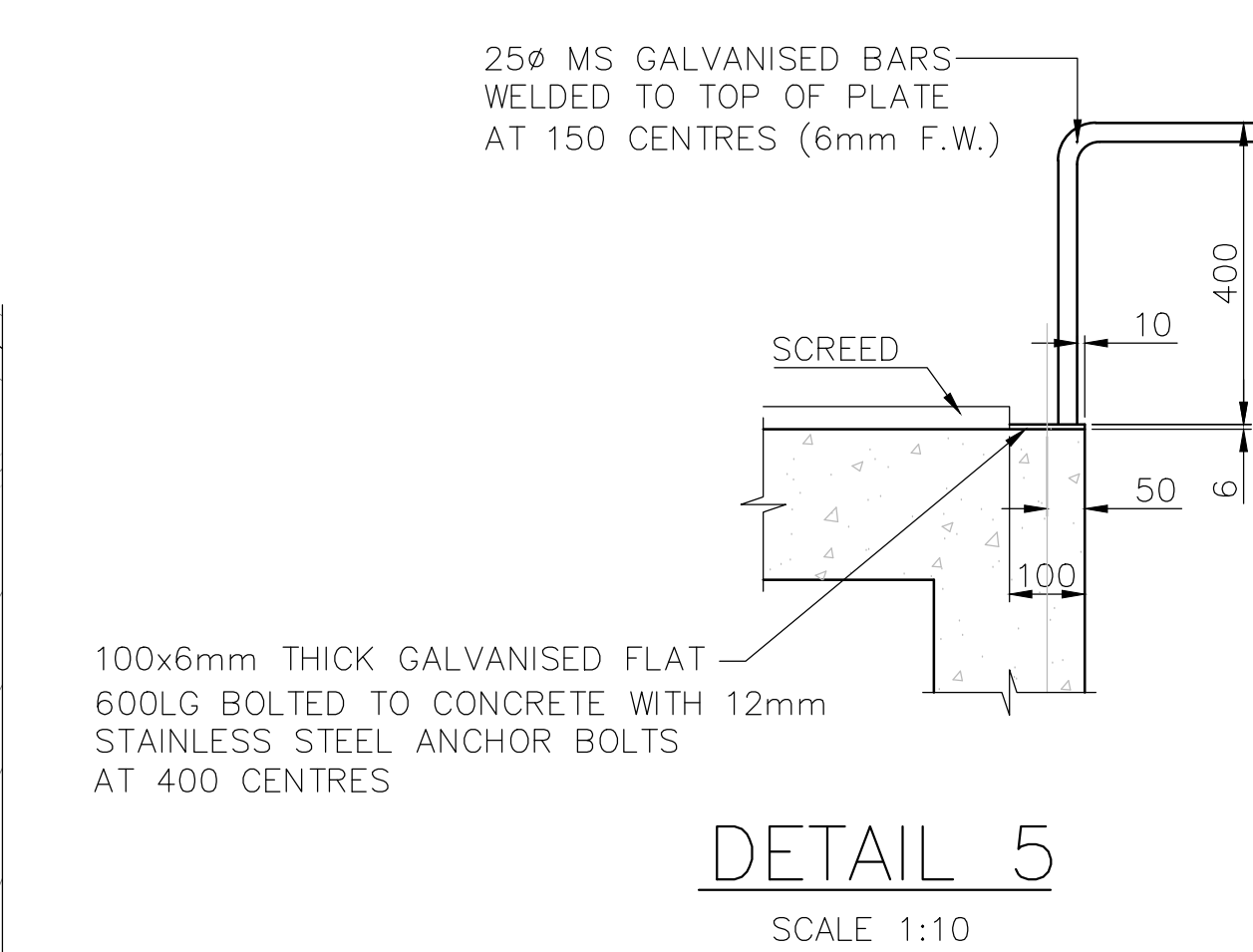
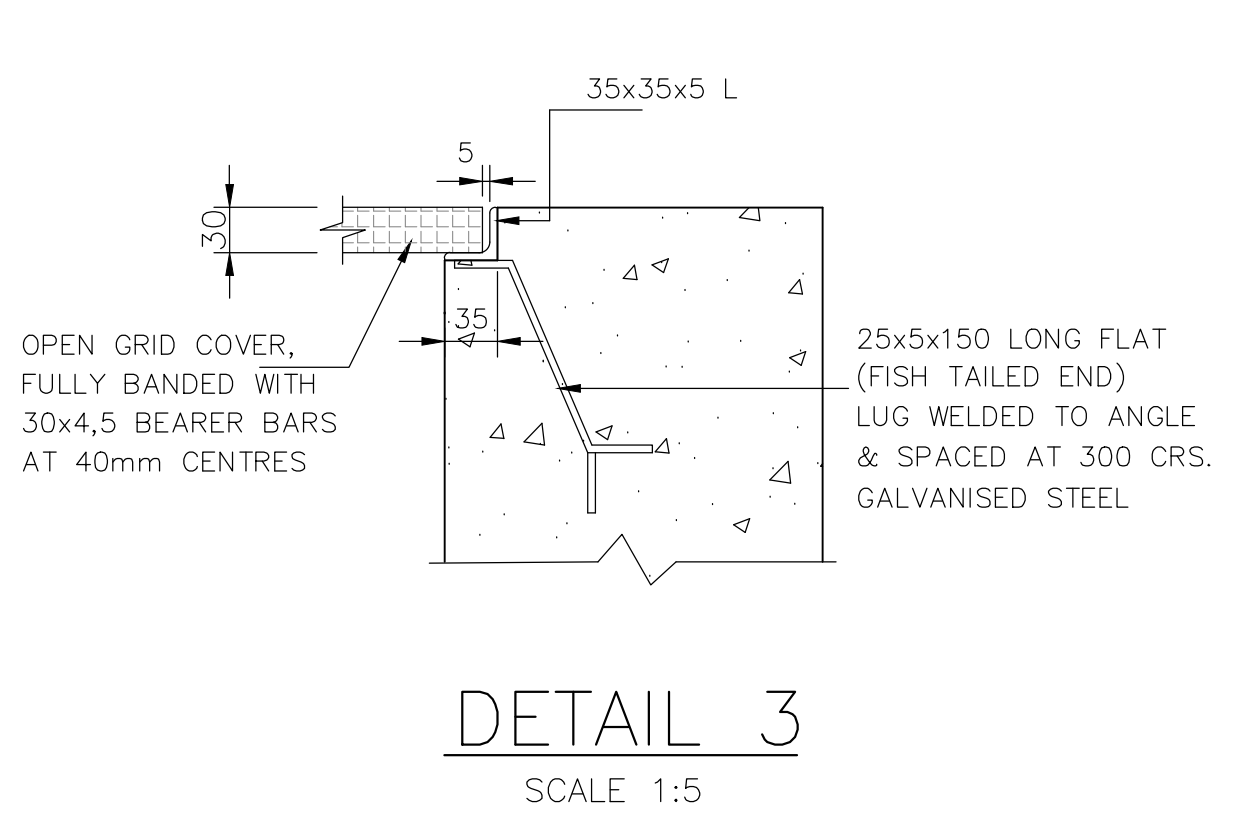
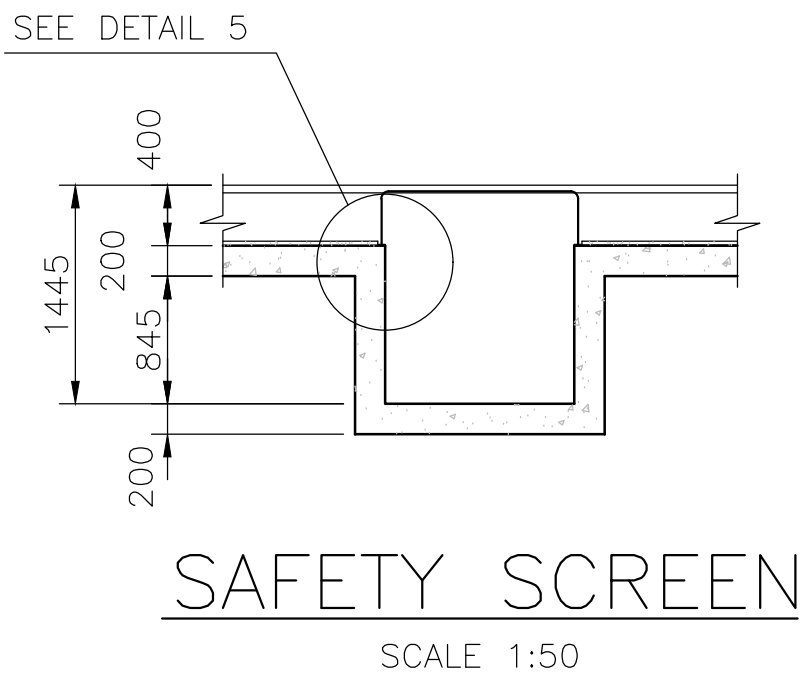
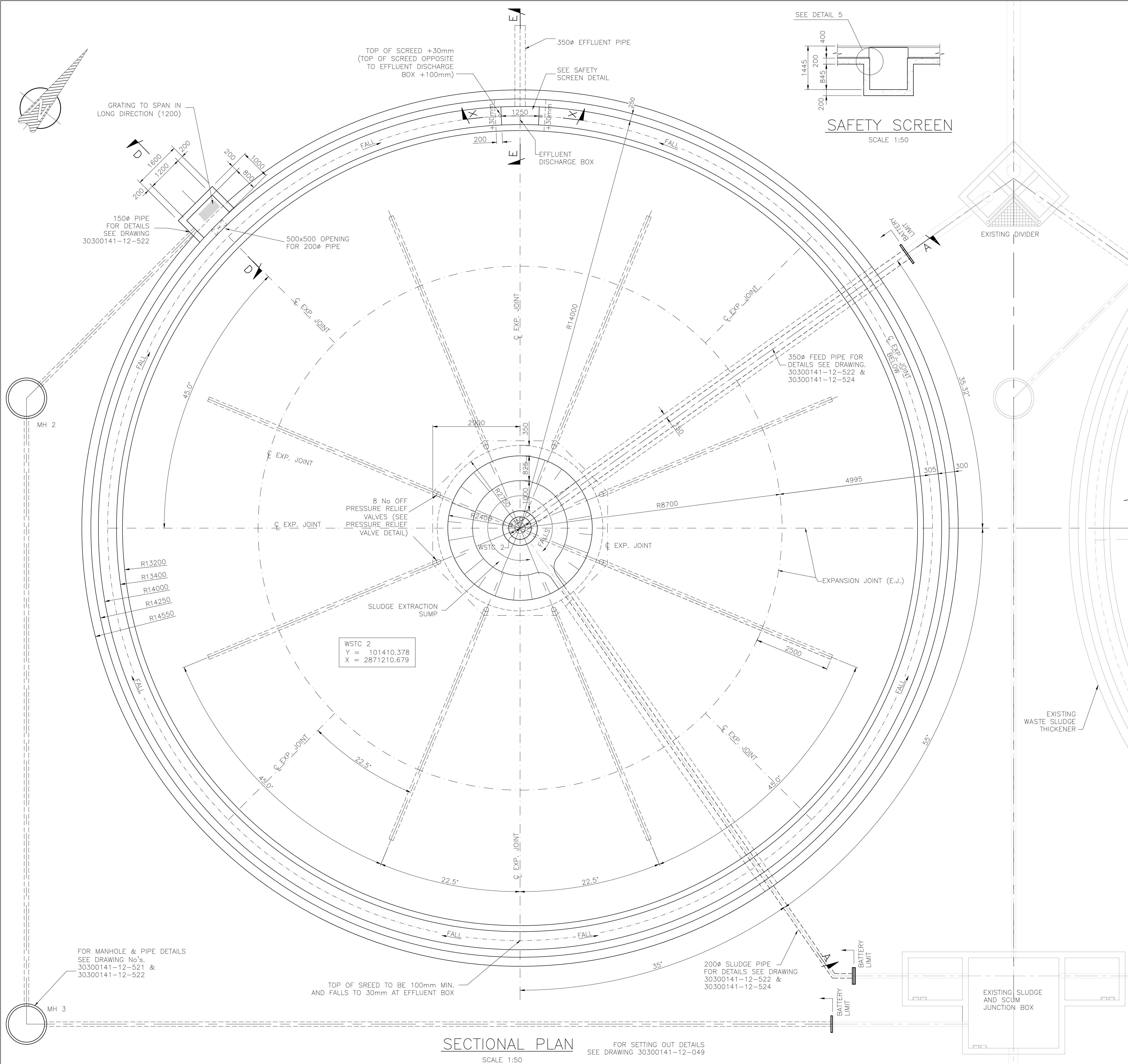
JW 13896-CE-485
CONSULTANT'S NUMBER

CONSULTANT'S NUMBER
30300141-12-485

FILE No

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P:\303-00141\12\A\DRAWINGS\KP\BAW1500 NW Unit 5 Mod 2\6 Construction\02 Civil Drawings\30300141-12-485 Rev0.dwg Jun 27, 2022 - 10:49am



- NOTES:**
- THIS DRAWING TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND THE GENERAL CONDITIONS OF CONTRACT.
 - ALL DIMENSIONS TO BE CHECKED ON SITE.
 - CONCRETE:
 - STRUCTURAL CONCRETE CLASS 35/26.5mm MAX WATER/CEMENT RATIO 0.55
 - MASS CONCRETE CLASS 15/26.5
 - BLINDING CONCRETE CLASS 15/26.5mm
 - MINIMUM COVER TO REINFORCEMENT 40mm.
 - FORMWORK:
 - EXPOSED SURFACES - SMOOTH OTHER OTHER SURFACES - ROUGH FROM 150mm BELOW G.L.
 - UNFORMED SURFACE FINISHES:
 - ALL UNFORMED SURFACES SHALL HAVE A WOOD FLOATED FINISH, UNLESS OTHERWISE STATED

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		SURVEYED		JOHANNESBURG WATER SOC LTD		CITY OF JOHANNESBURG		DESIGN MANAGER		SCALE		AMENDMENTS		APPROVED		DATE		DRAWING No.	
		DESIGNED G K				NORTHERN WASTEWATER TREATMENT WORKS				0		APPROVED FOR CONSTRUCTION		R.GROSE		01/07/22		JW NUMBER	
		DRAWN J VD W		17 HARRISON STREET MARSHALLTOWN 2107		UNIT 5 - PHASE 2				AS SHOWN								CONSULTANT'S NUMBER	
		CHECKED K M				WASTE SLUDGE THICKENER												303 00141/12-508	
		SERVICES CHECKED		TEL: (011) 688-1400		CONCRETE GENERAL ARRANGEMENT												FILE No	
		GEOTECHNICAL INVESTIGATION		FAX: (011) 688-1529		SHEET 1 OF 2													
		SERVITUDES																	
		APPROVED S. JASSAT																	
		Pr. Eng. No. 202001279																	
		DATE 30-06-2022																	

[illegible]

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.1		<u>SECTION 1 : PRELIMINARY AND GENERAL (MECHANICAL WORKS)</u>				
1.1.1		<u>BILL 1.1 - FIXED CHARGE ITEMS</u>				
		Contractual Requirements, sureties, insurance etc	Sum	1		
		Establishment of Facilities on the Site :				
	PS 4.7	Facilities for Engineer				
1.1.2	PS 4.7	a. Nameboards as per Drg. No. 30300141/007	No	2		
	PS 4.9	Facilities for Contractor				
1.1.3		a. Offices and storage sheds	Sum	1		
1.1.4		b. Workshops	Sum	1		
1.1.5		c. Laboratories	Sum	1		
1.1.6	PS 4.16	d. Living accommodation	Sum	1		
1.1.7	PS 4.10	e. Ablution and latrine facilities	Sum	1		
1.1.8		f. Tools and equipment	Sum	1		
1.1.9		g. Water supplies, electric power and ' communications	Sum	1		
1.1.10		h. Dealing with water	Sum	1		
1.1.11		i. Access	Sum	1		
		j. Plant	Sum	1		
1.1.12		1. Craneage	Sum	1		
1.1.13		2. Other Plant (designate)	Sum	1		
1.1.14		Other fixed charge obligations	Sum	1		
1.1.15		Removal of Engineer's and Contractor's Site Establishment on completion	Sum	1		
1.1.16	PS 5	Quality Control Plan	Sum	1		
1.1.17	PS 7	Compliance with the Occupational Health and Safety Act and Specification	Sum	1		
1.1.18	PS 8	Compliance with the Environmental Management Plan	Sum	1		
1.1.19	PS 5	Liaison with Authorities, opportunities to, and co operate with others on site	Sum	1		
1.2		<u>BILL 1.2 - TIME-RELATED CHARGES</u>				
1.2.1		Contractual Requirements, sureties, insurance etc	Sum	1		
		Operation and Maintenance of Facilities on Site, for Duration of Construction, except where otherwise stated:				
		Facilities for Engineer				
1.2.2	PS 4.7	a. Nameboards (2 off)	Sum	1		
	PS 4.7	Facilities for Contractor				
1.2.3	PS 4.9	a. Offices and storage sheds	Sum	1		
1.2.4		b. Workshops	Sum	1		
1.2.5		c. Laboratories	Sum	1		
1.2.6		d. Living accommodation	Sum	1		
1.2.7		e. Ablution and latrine facilities	Sum	1		
1.2.8		f. Tools and equipment	Sum	1		
1.2.9		g. Water supplies, electric power and ' communications	Sum	1		
1.2.10		i. Dealing with water	Sum	1		
1.2.11		j. Access	Sum	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
		k. Plant	Sum	1		
1.2.12		1. Craneage	Sum	1		
1.2.13		2. Other Plant (designate)	Sum	1		
1.2.14	PS 5	Supervision for Duration of Construction	Sum	1		
1.2.15	PS 5	Company and Head Office Overhead Costs for the Duration of the Contract	Sum	1		
1.2.16	PS 5	Planning and programming	Sum	1		
1.2.17	PS 5	Quality Control Plan & Compliance thereof	Sum	1		
1.2.18	PS 7	Compliance with the Occupational Health and Safety Act and Specification	Sum	1		
1.2.19	PS 8	Compliance with the Environmental Management Plan	Sum	1		
1.2.20	PS 5	Liaison with Authorities, opportunities to and co operate with others on site	Sum	1		
1.3		BILL 1.3 - OTHER GENERAL ITEMS				
1.3.1	PS 6.5	Compulsory postponement of the issuing of Certificate of Completion	Rate/day	60		
1.3.2	PS 5.7.3	Servicing visits during maintenance period (Provisional)	No	4		
1.3.3	PS 6.8	Provision of complete Operation Manual as specified	Sum	1		
1.3.4						
1.3.5	PS 6.9.3	Workmen's Compensation ACT (application)	Sum	1		
1.3.6	PS 9.1	Maintenance of the complete mechanical works supplied under this contract	Rate/month	12		
1.3.7	PS 5.7	Training of operating and maintenance staff	Sum	1		
1.4		BILL 1.4 - PROVISIONAL SUMS				
		For work to be executed by Contractor and valued in terms of the "Valuation of Variations" clause in the Conditions of Contract				
1.4.1	PS 6.13	Employment of CLO	PC sum	24	15000.00	360,000.00
1.4.2		Overheads, Charges and profit on items 1.4.1 above	%			
1.4.3	PS 6.2	Armed Security	PC Sum	1		300,000.00
1.4.2		Overheads, Charges and profit on items 1.4.3 above	%			
		For work to be done by as instructed by the engineer.				
1.4.3	PS 6.7	Tools and Spares	ProvSum	1		350,000.00
1.4.4	PS 4.8	Facilities for the Engineer	ProvSum	1		250,000.00
1.4.5	PS 5.7	Control tests by the Engineer	ProvSum	1		125,000.00
1.4.6	PS 4.8	Time related cost for the facilities for the Engineer	ProvSum	1		150,000.00
1.4.7	PS 6.4	Additional meetings	ProvSum	1		60,000.00
1.4.8		Training of local labour	Prov.Sum	1		125,000.00
1.4.9		Surveys	Prov.Sum	1		125,000.00
1.4.10		Overheads, Charges and profit on items 1.4.3 to 1.4.8 above	%		1185000.00	
1.5		BILL 1.5 - DAYWORK				
1.5.1		a) Foreman	hr	100		
1.5.2		b) Skilled	hr	150		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
1.5.3		c) Semi-skilled	hr	200		
1.5.4		d) Unskilled	hr	200		
1.5.5		e) Surveyor with transport, instruments and labour		50		
		Plant/Equipment				
1.5.6		a) Cranage (50 tons)	hr	80		
1.5.7		b) Front loader (CAT 930 [75 kW] or similar)	hr	50		
		c) Tip truck:				
1.5.8		1) 10m³	hr	50		
1.5.9		2) 6m³	hr	50		
		d) Backactor:				
1.5.10		1) 100 kW, 23 ton	hr	50		
1.5.11		2) TLB	hr	50		
		e) Compactors:				
1.5.12		1) Vibrating roller (Bomag 60 or similar)	hr	50		
1.5.13		2) Plate compactor	hr	50		
1.5.14		3) Rammer	hr	50		
1.5.15		f) Pneumatic Roller	hr	50		
1.5.16		g) Generator and Breaker	hr	50		
1.5.17		h) Other (Tenderer to specify).....	hr	75		
		Materials:				
1.5.18		a) Supplied by the Contractor under Dayworks	ProvSum	1	250000.00	250,000.00
1.5.19		b) Contractor's stated commission on the 1.4.23 provisional sum above	%	1		
1.6		BILL 1.6 - TEMPORARY WORKS				
1.6.1		Main Access Road to Works	Sum	1		
1.6.2		Dealing with Traffic	Sum	1		
		Existing Services				
1.6.3		c) Excavation by hand to expose existing services in all types of materials	m³	100		
1.7		BILL 1.7 FOREIGN EXCHANGE				
1.7.1	PS 6.6	In respect of the total value of imported content of goods used in the treatment works				
		Allow a Provisional Sum to cover variation in exchange rate prior to obtaining foward cover				
1.7.2	PS 6.6	Tenderer is to insert an amount = 10% of the above amount from Item 1.7.1	Sum	1		
1.7.3	PS 6.6	Allowance as a percentage of the PC value of Items under 1.7.2 for Contractor's cost and profit. Tenderer to insert sum rate and state percentage.	%			
		BILL 1.8 SMME'S				
1.8.1		Allowance for sourcing, appointing and handling work done by approved SMME'S. This must include Contractor's Overheads, Charges and profit.	Sum	1		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
1.9.1		BILL 1.9 EMPTYING OF WATER FROM STRUCTURES Allowance for emptying and disposing of water from all structures, tanks, chambers and sumps for mechanical and electrical equipment installation	Sum	1		
TOTAL CARRIED TO SUMMARY						
Employer:		Contractor:				
Witness:		Witness:				

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 2.1	PS 9.2.4	SECTION 2 : DESIGN, SUPPLY AND DELIVERY OF MECHANICAL EQUIPMENT FOR AERATORS. Design, Manufacture and Delivery of equipment for the mechanical aerators including baffles as required In accordance with the Specification and drawings				
M 2.1.1	PS 9.2.4	Zone 1 - 110 kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	3		
M 2.1.2	PS 9.2.4	Zone 2 - 110 kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	2		
M 2.1.2A	PS 9.2.4	Zone 2 - 90 kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	2		
M 2.1.3	PS 9.2.4	Zone 3 - 90 kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	2		
M 2.1.4	PS 9.2.4	Zone 3 - 75 kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	1		
M 2.1.5	PS 9.2.4	Zone 4 - 22kW mechanical surface aerators complete including aerator cone, drive shaft, slow speed coupling, gearbox, mounting plate, jacking screws, high speed coupling, baffles and electric motor in accordance with the specification and drawings.	No	3		
M 2.1.6	PS 9.2.4	Portable steel frame for maintenance of the aerators complete as specified	No	1		
M 2.1.7		Recommended spares	PC sum	1		650,000.00
M 2.1.8		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 2.2	PS 9.2.4	Installation, testing and commissioning of equipment for the Mechanical aerators In accordance with the Specification and drawings.				
M 2.2.1	PS 9.2.4	Complete 110 kW Aerators as supplied under item 2.1.1	No	3		
M 2.2.2	PS 9.2.4	Complete 110 kW Aerators as supplied under item 2.1.2	No	2		
M 2.2.3	PS 9.2.4	Complete 90 kW Aerators as supplied under item 2.1.2	No	2		
M 2.2.4	PS 9.2.4	Complete 90 kW Aerators as supplied under item 2.1.3	No	2		
M 2.2.5	PS 9.2.4	Complete 75 kW Aerators as supplied under item 2.1.4	No	1		
M 2.2.6	PS 9.2.4	Complete 22 kW Aerators as supplied under item 2.1.5	No	3		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
M 2.3		Cost for the conducting of insitu Oxygenation Efficiency tests as detailed in the general specification M06 - Mechanical Aeartion Equipment, if requested by the Engineer	PC sum	1		250,000.00
M 2.4		CIVIL WORKS				
M 2.4.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
2 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 3.1	PS 9.3.4	<u>SECTION 3 : DESIGN, SUPPLY, DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE MIXERS</u> Design, Manufacture and deliver Mechanical equipment for the Mixers In accordance with the Specification and drawings				
M 3.1.1	PS 9.3.4	Pre Anoxic Zone - 7.5 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor in accordance with the specification and drawings.	No	1		
M 3.1.2	PS 9.3.4	Anaerobic Zone - 7.5 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor in accordance with the specification and drawings.	No	4		
M 3.1.3	PS 9.3.4	Anoxic Zone - 11.0 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor in accordance with the specification and drawings.	No	4		
M 3.1.4	PS 9.3.4	Aeration Zone 3 - 15.0 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor in accordance with the specification and drawings.	No	1		
M 3.1.5	PS 9.3.4	Balancing Tank - 11.0 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor including computer simulation modelling of the mixer installation. in accordance with the specification and drawings.	No	6		
M 3.1.6	PS 9.3.4	Fermentation mixing Tank mixers - 7.5 kW mechanical surface mounted mixer complete including impellers, drive shaft, slow speed coupling, gearbox, mounting plate, high speed coupling and electric motor in accordance with the specification and drawings.	No	2		
M 3.1.7	PS 9.3.4	Portable steel frame for maintenance of the mixers complete as specified	No	1		
M 3.1.8		Recommended spares	PC sum	1		450,000.00
M 3.1.9		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatibility.	Sum	1		
M 3.2	PS 9.3.4	<u>SECTION 2 :INSTALL & COMMISSION OF THE MECHANICAL EQUIPMENT FOR THE MIXERS.</u> Installation, testing and commissioning of equipment for the Mechanical mixers In accordance with the Specification and drawings.				
M 3.2.1	PS 9.3.4	Complete 7.5 kW Mixers as supplied under item 3.1.1	No	1		
M 3.2.2	PS 9.3.4	Complete 7.5 kW Mixers as supplied under item 3.1.2	No	4		
M 3.2.3	PS 9.3.4	Complete 11 kW Mixers as supplied under item 3.1.3	No	4		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
M 3.2.4	PS 9.3.4	Complete 15 kW Mixers as supplied under item 3.1.4	No	1		
M 3.2.5	PS 9.3.4	Complete 11 kW Mixers as supplied under item 3.1.5	No	6		
M 3.2.6	PS 9.3.4	Complete 7,5 kW Mixers as supplied under item 3.1.6	No	6		
M 3.2.7	PS 9.3.4	Portable steel frame as supplied under item 3.1.7	No	1		
M 3.3		CIVIL WORKS				
M 3.3.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
3 TOTAL CARRIED TO SUMMARY						
Employer:			Contractor:			
Witness:			Witness:			

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 4.1	PS 9.4.4	<u>SECTION 4 : DESIGN, SUPPLY, DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE MLSS RECIRCULATION PUMPS</u> Design, Manufacture and deliver Mechanical equipment for the MLSS Recirculation Pumps In accordance with the Specification and drawings				
M 4.1.1	PS 9.4.4	Recycle "a" - Aerobic Zone 3 to Anoxic Zone - Recirculation Pump. in accordance with the specification and drawings.	No	2		
M 4.1.2	PS 9.4.4	Recycle "b" - Anaerobic Zone to Pre Anoxic Zone - Recirculation Pump. in accordance with the specification and drawings.	No	2		
M 4.1.3	PS 9.4.4	Flap gate acting as a non return valves to suit recycle :a: pumps	No	2		
M 4.1.4	PS 9.4.4	Flap gate acting as a non return valves to suit recycle "b" pumps	No	2		
M 4.1.5	PS 9.4.4	Crawl beam with "A" type frame supports for maintenance of recycle pumps "a" and "b" complete with chain operated block and tackle designed to suite the pumps offered	No	2		
M 4.1.6		Recommended spares	PC sum	1		200,000.00
M 4.1.7		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 4.2	PS 9.4.4	<u>SECTION 4 :INSTALL & COMMISSION OF THE MECHANICAL EQUIPMENT FOR THE MLSS RECIRCULATION PUMPS.</u> Installation, testing and commissioning of equipment for the Mechanical equipmen for the MLSS Recirculaton pumps In accordance with the Specification and drawings.				
M 4.2.1	PS 9.4.4	Complete Recirculation pumps as supplied under item 4.1.1	No	2		
M 4.2.2	PS 9.4.4	Complete Recirculation pumps as supplied under item 4.1.2	No	2		
M 4.2.3	PS 9.4.4	Complete non return valves as supplied under item 4.1.3	No	2		
M 4.2.4	PS 9.4.4	Complete Flap Gates as supplied under item 4.1.4	No	2		
M 4.2.5	PS 9.4.4	Complete lifting frames as supplied under item 4.1.5	No	2		
M 4.3		CIVIL WORKS				
M 4.3.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
4 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 5.1	PS 9.5.4	<u>SECTION 5 : DESIGN, SUPPLY, DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE RAS RECIRCULATION PUMPS</u> Design, Manufacture and deliver of the Mechanical equipment for the RAS Recirculation Pumps In accordance with the Specification and drawings				
M 5.1.1	PS 9.5.4	Recycle "S" - Return Sludge to Pre Anoxic Zone - Recirculation Archemidian Screw Pump Complete. in accordance with the specification and drawings.	No	2		
M 5.1.2		Recommended spares	PC sum	1		300,000.00
M 5.1.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 5.2	PS 9.5.4	<u>SECTION 5 :INSTALL & COMMISSION OF THE MECHANICAL EQUIPMENT FOR THE RAS RECIRCULATION PUMPS.</u> Installation, testing and commissioning of equipment for the Mechanical equipmen for the MLSS Recirculaton pumps In accordance with the Specification and drawings				
M 5.2.1	PS 9.5.4	Complete Recirculation pumps as supplied under item 5.1.1	No	2		
M 5.3		CIVIL WORKS				
M 5.3.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
M 5.4		MISCELLANEOUS ITEMS				
M 5.4.1		Supply and install the following items for GRP Screw Pump Covers 2.05 m wide x 7.43 m long Archimedes Screw GRP Cover Assemblies	No	2		
5 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
6		<u>SECTION 6 : DESIGN, SUPPLY, DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE PST's</u>				
M 6.1	PS 9.6.4	Design, Manufacture and deliver Mechanical equipment for PST's In accordance with the Specification and drawings				
M 6.1.1	PS 9.6.4	Complete mechanical equipment for PST's in accordance with the specification and drawings.	No	2		
M 6.1.2	PS 9.6.4	200mm Diameter electrically operated knife gate valves as specified in accordance with the specification and drawings.	No	2		
M 6.1.3		Recommended spares	PC sum	1		100,000.00
M 6.1.4		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
		<u>SECTION 6 : INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR THE PST's</u>				
M 6.2	PS 9.6.4	Installation, testing and commissioning of mechanical equipment for PST's in In accordance with the Specification and drawings				
M 6.2.1	PS 9.6.4	Complete mechanical equipment for PST's as supplied under item 6.1.1	No	2		
M 6.2.2	PS 9.6.4	200mm Diameter electrically operated knife gate valve as supplied under item 6.1.2	No	2		
M 6.3		CIVIL WORKS				
M 6.3.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
6 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
7		<u>SECTION 7 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE SST's</u>				
M 7.1	PS 9.7.4	Design, Manufacture and deliver Mechanical equipment for SST's in accordance with the Specification and drawings				
M 7.1.1	PS 9.7.4	Complete mechanical equipment for SST's in accordance with the specification and drawings.	No	2		
M 7.1.2		Recommended Spares	PC sum	1		100,000.00
M 7.1.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
		<u>SECTION 7 : INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR THE SST's</u>				
M 7.2	PS 9.7.4	Installation, testing and commissioning of mechanical equipment for SST's in accordance with the Specification and drawings				
M 7.2.1	PS 9.7.4	Complete mechanical equipment supplied under item 7.1.1	No	2		
M 7.3		CIVIL WORKS				
M 7.31		Grouting and screeding off all aspects of the mechanical installation	sum	1		
7 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
8		<u>SECTION 8 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE SLUDGE THICKENERS</u>				
M 8.1	PS 9.8.4	Design, Manufacture and deliver Mechanical equipment for sludge thickeners in accordance with the Specification and drawings				
M 8.1.1	PS 9.8.4	Complete mechanical equipment for the sludge thickeners in accordance with the specification and drawings.	No	1		
M 8.1.2		Recommended spares	PC sum	1		100,000.00
M 8.1.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 8.2		<u>SECTION 8 : INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR THE SLUDGE THICKENERS</u>				
M 8.2	PS 9.8.4	Installation, testing and commissioning of mechanical equipment for sludge thickeners in accordance with the Specification and drawings				
M 8.2.1	PS 9.8.4	Complete mechanical equipment supplied under item 8.1.1	No	1		
M 8.3		CIVIL WORKS Grouting and screeding off all aspects of the mechanical installation	sum	1		
8 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
9		<u>SECTION 9 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR THE VFA FERMENTERS</u>				
M 9.1	PS 9.9.4	Design, Manufacture and deliver Mechanical equipment for VFA Fermenters in accordance with the Specification and drawings				
M 9.1.1	PS 9.9.4	Complete mechanical equipment for the new VFA Fermenter in accordance with the specification and drawings	No	1		
M 9.1.2	PS 9.9.4	Complete mechanical equipment for the existing VFA Fermenter in accordance with the specifications and drawings	Sum	1		
M 9.1.3		Recommended spares	PC sum	1		100,000.00
M 9.1.4		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
		<u>SECTION 9 : INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR THE VFA FERMENTERS</u>				
M 9.2	PS 9.9.4	Installation, testing and commissioning of mechanical equipment for the VFA Fermenters in accordance with the Specification and drawings				
M 9.2.1	PS 9.9.4	Removal of mechanical equipment from the existing VFA Thickener and stacked on site to where indicated by the Engineer or the Plant Manager	No	1		
M 9.2.2	PS 9.9.4	Complete mechanical equipment for the VFA Fermenters supplied under Item 9.1.1	No	1		
M 9.2.3	PS 9.9.4	Complete mechanical equipment for the VFA fermenter supplied under item 9.1.2	No	1		
		CIVIL WORKS				
M 9.3		Grouting and screeding off all aspects of the mechanical installation	sum	1		
M 9.4		MISCELLANEOUS ITEMS				
		Supply and install the following items for the Elutriation Tanks				
M 9.4.1		3.0 m wide x 8.3 m long Elutriation tank GRP Cover Assemblies	No	2		
M 9.4.2		3.0 m wide x 8.7 m long extension of existing Elutriation tank GRP Cover Assemblies	No	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

[illegible]

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 10.1	PS 9.10.4	<u>SECTION 10 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR FERRIC DOSING</u> Design, Manufacture and deliver Mechanical equipment for Ferric dosing system. In accordance with the Specification and drawings				
M 10.1.1	PS 9.10.4	30 m³ storage tank complete manufactured in GRP	No	1		
M 10.1.2	PS 9.10.4	Ferric dosing pumps complete with FRP mounting stand. In accordance with the Specification and drawings.	No	1		
M 10.1.3	PS 9.10.4	Interconnecting pipework, fittings, valves and pipe supports from the storage tanks to the pumps.	sum	1		
M 10.1.4	PS 9.10.4	Dosing pipework from dosing pumps to a point 1.0m outside the bund wall including fittings, valves, pressure release valves, pulstaion dampers, back pressure valves and Calibration chambers In accordance with the Specification and drawings.	sum	1		
M 10.1.5	PS 9.10.4	Emergency eye and shower unit including all health and safety signage.	sum	1		
M 10.1.6		Recommended spares	PC sum	1		100,000.00
M 10.1.7		Provision for dosing pipework from dosing pump to reactor No 2	PC sum	1		150,000.00
M 10.1.8		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 10.2	PS 9.10.4	<u>SECTION 10: INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR FERRIC DOSING.</u> Instalation, testing and commissioning of mechanical equipment for Ferric dosing system In accordance with the Specification and drawings				
M 10.2.1	PS 9.10.4	Complete mechanical equipment as supplied under item 10.1.1	sum	1		
M 10.2.2	PS 9.10.4	Complete mechanical equipment as supplied under item 10.1.2	sum	1		
M 10.2.3	PS 9.10.4	Complete mechanical equipment as supplied under item 10.1.3	sum	1		
M 10.2.4	PS 9.10.4	Complete mechanical equipment as supplied under item 10.1.4	sum	1		
M 10.2.5	PS 9.10.4	Complete mechanical equipment as supplied under item 10.1.5	sum	1		
M 10.3		CIVIL WORKS Grouting and screeding off all aspects of the mechanical installation	sum	1		
10 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 11.1	PS 9.11.4	<u>SECTION 11 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR DISINFECTION DOSING</u> Design, Manufacture and delivery of mechanical equipment for disinfection dosing In accordance with the Specification and drawings				
M 11.1.1	PS 9.11.4	DBF Receiving tank 30m3 manufactured in GRP	No	1		
M 11.1.2	PS 9.11.4	DBF Storage tank 30m3 manufactured in GRP	No	1		
M 11.1.3	PS 9.11.4	Pipework, valves, fittings and supports from the tanker offloading point to the receiving tank and from the receiving tank to the storage tanks	Sum	1		
M 11.1.4	PS 9.11.4	Pipework, valves, fittings and supports from the storage tanks to the suction side of the dosing pump	Sum	1		
M 11.1.5	PS 9.11.4	Pipework, valves, fittings and supports for the dosing pump delivery up to 1.0m outside the bunded area	Sum	1		
M 11.1.6	PS 9.11.4	Dosing pump complete as specified - 0.23l/sec at 20m	No	1		
M 11.1.6		Provision for dosing pipework from dosing pump to connection with existing dosing line	PC sum	1		100,000.00
M 11.2	PS 9.11.4	<u>SECTION 11: INSTALLATION AND COMMISSIONING OF THE MECHANICAL EQUIPMENT FOR THE DISINFECTION DOSING.</u> Installation, testing and commissioning of mechanical equipment for the disinfection dosing system				
M 11.2.1	PS 9.11.4	Complete mechanical equipment as supplied under item 11.1.1	sum	1		
M 11.2.2	PS 9.11.4	Complete mechanical equipment as supplied under item 11.2.2	sum	1		
M 11.2.3	PS 9.11.4	Complete mechanical equipment as supplied under item 11.1.3	sum	1		
M 11.2.4	PS 9.11.4	Complete mechanical equipment as supplied under item 11.1.4	sum	1		
M 11.2.5	PS 9.11.4	Complete mechanical equipment as supplied under item 11.1.5	sum	1		
M 11.2.6	PS 9.11.4	Complete mechanical equipment as supplied under item 11.1.6	sum	1		
M 11.2.7	PS 9.11.4	Reposition the existing receiving tank including the necessary modification to the pipework and pipe supports	sum	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



TOTAL BROUGHT FORWARD						
M 11.3		CIVIL WORKS Grouting and screeding off all aspects of the mechanical installation	sum	1		
11 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
M 12		<u>SECTION 12 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR PUMP STATIONS</u> Design, Manufacture and deliver Mechanical equipment for Pump Stations In accordance with the Specification and drawings				
M 12.1	PS9.12.2	WAS/Scum Pump Station				
M 12.1.1	PS9.12.8	Additional centrifugal pumps complete with motor, base plate, coupling and coupling guard.	No	1		
M 12.1.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the additional pump.	sum	1		
M 12.1.3	PS9.12.8	Replacement of the existing centrifugal pumps complete with motor, base plate, coupling and coupling guard.	No	2		
M 12.1.4	PS9.12.8	Modifications to the suction and discharge pipe work, valves, fittings and pipe supports for the existing pumps.	sum	1		
M 12.1.5	PS9.12.8	Pump Station sump drainage pump complete with pipework, fittings, valves and supports.	No	1		
M 12.1.6		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 12.2	PS9.12.3	Final Effluent sample pump				
M 12.2.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	1		
M 12.2.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports.	sum	1		
M 12.2.3	PS9.12.8	50nb galvanised delivery pipe from sample pump to analysis building.	m	50		
M 12.3	PS9.12.4	Reactor No 2 sample pump				
M 12.3.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	1		
M 12.3.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports.	sum	1		
M 12.3.3	PS9.12.8	50nb galvanised delivery pipe from sample pump to analysis building.	m	100		
M 12.4	PS9.12.5	Reactor No 1 sample pump				
M 12.4.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	1		
M 12.4.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports.	sum	1		
M 12.4.3	PS9.12.8	50nb galvanised delivery pipe from sample pump to analysis building.	m	100		
12 TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
		<u>SECTION 12 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR PUMP STATIONS</u>				
	PS9.12.8	Existing VFA Pump Station				
		Design, Manufacture and deliver Mechanical equipment for Pump Stations				
		In accordance with the Specification and drawings				
M 12.5	PS9.12.8	VFA sludge transfer pumps				
M 12.5.1	PS9.12.8	Centrifugal pumps complete with motor, base plate, coupling and coupling guard.	No	2		
M 12.5.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the new pumps as shown on the drawings.	sum	1		
M 12.5.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 12.6	PS9.12.6b	Sump Drainage Pump				
M 12.6.1	PS9.12.8	Pump Station sump drainage pump complete with pipework, fittings, valves and supports.	No	1		
M 12.7	PS9.12.6c	Recycle Fermented Sludge Pumps				
M 12.7.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	2		
M 12.7.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports complete as shown on the drawings.	sum	1		
M 12.7.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 12.8	PS9.12.6d	Elutriant Pumps				
M 12.8.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	3		
M 12.8.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the new pump including modifications to the existing pipework to suit the replacement pumps.	sum	1		
M 12.8.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
12 TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
		SECTION 12 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR PUMP STATIONS				
	PS9.12.7	New VFA Pump Station				
		Design, Manufacture and deliver Mechanical equipment for Pump Stations In accordance with the Specification and drawings				
M 12.9	PS9.12.7a	VFA sludge transfer pumps				
M 12.9.1	PS9.12.8	Centrifugal pumps complete with motor, base plate, coupling and coupling guard.	No	2		
M 12.9.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the new pumps as shown on the drawings.	sum	1		
M 12.9.3		Inspection if civil works for the detailed design of the mechanical equipment to ensure compatability.	Sum	1		
M 12.10	PS9.12.7b	Sump Drainage Pump				
M 12.10.1	PS9.12.8	Pump Station sump drainage pump complete with pipework, fittings, valves and supports.	No	1		
M 12.11	PS9.12.7c	Recycle Fermented Sludge Pumps				
M 12.11.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	2		
M 12.11.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the new pumps as shown on the drawings.	sum	1		
M 12.12	PS9.12.7d	Thickened sludge Digester feed pumps				
M 12.12.1	PS9.12.8	Centrifugal self priming pump complete with motor, base plate, coupling and coupling guard.	No	3		
M 12.12.2	PS9.12.8	Suction and Discharge pipe work, valves, fittings and pipe supports for the new pumps as shown on the drawings.	sum	1		
M 12.13		Lifting Equipment				
M 12.13.1	PS9.12.8	2000kg block and tackle for the New FVA pump station	No	1		
M 12.14		Existing HOW - repairs to grit removal system				
M 12.14.1		PC Sum for replacement of blowers	PC Sum	1		500,000.00
M 12.14.2		Contractors Mark up on item 12.15.1	%age			
M 12.15		Recommended spares	PC sum	1		500,000.00
M 12.16		Provision for pipes, valves and fittings	PC sum	1		350,000.00
M 12.17		CIVIL WORKS Grouting and screeding off all aspects of the mechanical installation	sum	1		
12 TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
		SECTION 12 :INSTALLATION, TESTING AND COMMISSIONING OF MECHANICAL EQUIPMENT FOR PUMP STATIONS				
M 12.15	PS9.12.2	WAS/Scum Pump Station				
M 12.15.1	PS9.12.8	Equipment supplied under item 12.1.1	No	1		
M 12.15.2	PS9.12.8	Equipment supplied under item 12.1.2	No	1		
M 12.15.3	PS9.12.8	Equipment supplied under item 12.1.3	No	2		
M 12.15.4	PS9.12.8	Equipment supplied under item 12.1.4	sum	1		
M 12.15.5	PS9.12.8	Equipment supplied under item 12.1.5	sum	1		
M 12.16	PS9.12.3	Finel Effluent sample pump				
M 12.16.1	PS9.12.8	Equipment supplied under item 12.2.1	No	1		
M 12.16.2	PS9.12.8	Equipment supplied under item 12.2.2	No	1		
M 12.16.3	PS9.8.3.2.2	Equipment supplied under item 12.2.3	m	50		
M 12.17	PS9.12.4	Reactor No 2 sample pump				
M 12.17.1	PS9.12.8	Equipment supplied under item 12.3.1	No	1		
M 12.17.2	PS9.12.8	Equipment supplied under item 12.3.2	No	1		
M 12.17.3	PS9.12.8	Equipment supplied under item 12.3.3	m	100		
M 12.18	PS9.12.5	Reactor No 1 sample pump				
M 12.18.1	PS9.12.8	Equipment supplied under item 12.4.1	No	1		
M 12.18.2	PS9.12.8	Equipment supplied under item 12.4.2	No	1		
M 12.18.3	PS9.12.8	Equipment supplied under item 12.4.3	m	100		
	PS9.12.6	Existing VFA Pump Station				
M 12.19	PS9.12.6a	VFA sludge transfer pumps				
M 12.19.1	PS9.12.8	Equipment supplied under item 12.5.1	No	2		
M 12.19.2	PS9.12.8	Equipment supplied under item 12.5.2	No	1		
12 TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
		SECTION 12 :INSTALLATION, TESTING AND COMMISSIONING OF MECHANICAL EQUIPMENT FOR PUMP STATIONS				
M 12.20	PS9.12.6b	Sump Drainage Pump				
M 12.20.1	PS9.12.8	Equipment supplied under item 12.6.1	No	2		
M 12.21	PS9.12.6c	Recycle Fermented Sludge Pumps				
M 12.21.1	PS9.12.8	Equipment supplied under item 12.7.1	No	2		
M 12.21.2	PS9.12.8	Equipment supplied under item 12.7.2	No	1		
M 12.22	PS9.12.6d	Elutriant pumps				
M 12.22.1	PS9.12.8	Equipment supplied under item 12.8.1	No	2		
M 12.22.2	PS9.12.8	Equipment supplied under item 12.8.2	No	1		
	PS9.12.7	New VFA Pump Station				
M 12.23	PS9.12.7a	VFA sludge transfer pumps				
M 12.23.1	PS9.12.8	Equipment supplied under item 12.9.1	No	2		
M 12.23.2	PS9.12.8	Equipment supplied under item 12.9.2	No	1		
M 12.24	PS9.12.7b	Sump drainage pump				
M 12.24.1	PS9.12.8	Equipment supplied under item 12.10.1	No	1		
M 12.25	PS9.12.7c	Recycle Fermented sludge pumps				
M 12.25.1	PS9.12.8	Equipment supplied under item 12.11.1	No	2		
M 12.25.2	PS9.12.8	Equipment supplied under item 12.11.2	No	1		
M 12.26	PS9.12.7d	Thickened sludge digester feed pumps				
M 12.26.1	PS9.12.8	Equipment supplied under item 12.12.1	No	2		
M 12.26.2	PS9.12.8	Equipment supplied under item 12.12.2	No	1		
M 12.27		Lifting Equipment				
M 12.27.1	PS9.12.8	Equipment supplied under item 12.13.1	No	1		
M 12.28		CIVIL WORKS				
M 12.28.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
12 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
		<u>SECTION 13 : INSTALLATION, TESTING OF THE MECHANICAL EQUIPMENT FOR ODOUR CONTROL</u>				
M 13.2.3	PS 13.4	Equipment supplied under item 13.1.4	No	1		
M 13.2.4	PS 13.4	Equipment supplied under item 13.1.5	No	2		
M 13.2.5	PS 13.4	Equipment supplied under item 13.1.6	No	1		
M 13.2.6	PS 13.4	Equipment supplied under item 13.1.7	No	2		
M 13.2.7	PS 13.4	Equipment supplied under item 13.1.8	No	1		
M 13.2.8	PS 13.4	Equipment supplied under item 13.1.9	Sum	1		
M 13.2.10		Removal of existing covers from sludge transfer channels and delivery to on site storage as indicated by the Engineer or JW site management	Sum	1		
M 13.2.11		Removal of existing covers from mixing tank and delivery to on site storage as indicated by the Engineer or JW site management	Sum	1		
M 13.2.12		Removal of existing odour treatment plant and delivery to on site storage as indicated by the Engineer or JW site management	Sum	1		
M 13.2.13		Removal of existing odour collection pipework and fittings and delivery to on site storage as indicated by the Engineer or JW site management	Sum	1		
M 13.2.14		Provision for duct column supports	Kg	4000		
M 13.2.15		Performance and acceptance test for a 28 day period	Sum	1		
M 13.3		CIVIL WORKS				
M 13.3.1		Grouting and screeding off all aspects of the mechanical installation	sum	1		
M 13.4		Recommended spares	PC sum	1		300,000.00
13 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
13		<u>SECTION 13 : DESIGN, SUPPLY AND DELIVERY OF THE MECHANICAL EQUIPMENT FOR ODOUR CONTROL</u>				
M 13.1	PS 13.4	Design, Manufacture and deliver Mechanical equipment for Odour Control. In accordance with the Specification and drawings				
M 13.1.1	PS 13.4	Preparation of design and drawings for approval by the engineer	Sum	1		
M 13.1.2	PS 13.4	Complete Odour treatment plant In accordance with the Specification and drawings.	Sum	1		
M 13.1.3	PS 13.4	Overflow launder odour control covers manufactured in GRP complete with supports and anchors for the new VFA Fermenter In accordance with the Specification and drawings.	Sum	1		
M 13.1.4	PS 13.4	Overflow launder odour control covers manufactured in GRP complete with supports and anchors for the existing VFA Fermenter In accordance with the Specification and drawings.	Sum	1		
M 13.1.5	PS 13.4	New GRP covers to the existing and new mixing chamber In accordance with the Specification and drawings.	No	2		
M 13.1.6	PS 13.4	New GRP covers to the existing sludge transfer channels In accordance with the Specification and drawings.	No	1		
M 13.1.7	PS 13.4	New GRP covers to new sludge transfer sumps In accordance with the Specification and drawings.	No	2		
M 13.1.8	PS 13.4	New GRP covers to new sludge wasting sumps In accordance with the Specification and drawings.	No	1		
M 13.1.9	PS 13.4	Complete odour extraction ducting including fittings, air flow control valves, supports and anchors In accordance with the Specification and drawings.	Sum	1		
M 13.1.10	PS 13.4	Hand held H ₂ S analysers	No	2		
		<u>SECTION 13 : INSTALLATION, TESTING OF THE MECHANICAL EQUIPMENT FOR ODOUR CONTROL</u>				
M 13.2	PS 13.4	Installation Testing and commissioning of mechanical equipment for odour control In accordance with the Specification and drawings				
M 13.2.1	PS 13.4	Equipment supplied under item 13.1.2	No	1		
M 13.2.2	PS 13.4	Equipment supplied under item 13.1.3	No	1		
13 TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
14		<u>SECTION 14 : DESIGN, SUPPLY AND DELIVERY OF MECHANICAL EQUIPMENT H.O.W. (NORTH)</u>				
M 14.1	PS 9.14.4	Design, Manufacture and Delivery of screening equipment				
M 14.1.1		Trash Rake bar				
M 14.1.1.1	PS 9.14.4	Trash Rake bar screen - in accordance with the specification.	No	2		
M 14.1.1.2	PS 9.14.4	Trash Rake screening mechanism complete - in accordance with the specification and drawings.	No	1		
M 14.1.2.3	PS 9.14.4	Trash Rake screening mechanism monorail and support structure - in accordance with the specification and drawings.	Sum	1		
M 14.1.2.4	PS 9.14.4	Galvanised walk way and access stairs	kg	2500		
M 14.1.2	PS 9.14.4	Primary bar screens				
M 14.1.2.1	PS 9.14.4	Front Raked bar screen complete - in accordance with the specification and drawings.	No	4		
M 14.1.2.2	PS 9.14.4	Screenings chute extension from screen to existing hydro conveyor	No	4		
	PS 9.14.4	Design, Manufacture and Delivery of The Screenings handling Equipment				
M 14.1.3	PS 9.14.4	Primary screenings handling				
M 14.1.3.1	PS 9.14.4	PC sum for modifications to existing hydro-conveyor as approved by the engineer	PC sum	1		R 250,000.00
M 14.1.3.2	PS 9.14.4	Primary Screenings washer / press / compactor complete - in accordance with the specification and drawings.	No	1		
		<u>SECTION 14 : DESIGN, SUPPLY AND DELIVERY OF MECHANICAL EQUIPMENT UNIT SOUTH</u>				
M 14.2	PS 9.14.4	Design, Manufacture and Delivery of screening equipment				
M 14.2.1		Trash Rake bar				
M 14.2.1.1	PS 9.14.4	Trash Rake bar screen - in accordance with the specification and drawings.	No	3		
M 14.2.1.2	PS 9.14.4	Trash Rake screening mechanism complete - in accordance with the specification and drawings.	No	1		
M 14.2.1.3	PS 9.14.4	Trash Rake screening mechanism monorail and support structure - in accordance with the specification and drawings.	Sum	1		
M 14.2.1.4	PS 9.14.4	Galvanised walk way and access stairs	kg	1500		
M 14.2.1.5	PS 9.14.4	Local control panel for the proper operation of the trash rack screening mechanism included cabling from the panel to the screening mechanism, instrumentation, cable racking and all necessary supports to provide a fully operational system	sum	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
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TOTAL BROUGHT FORWARD						
M 14.2.2	PS 9.14.4	Primary bar screens				
M 14.2.2	PS 9.14.4	Front Raked bar screen complete - in accordance with the specification and drawings.	No	3		
14 TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT REFERENCE	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
BROUGHT FORWARD						
M 14.3		SECTION 14 : INSTALLATION TESTING AND COMMISSIONING OF MECHANICAL EQUIPMENT H.O.W. NORTH				
	PS 9.14.4	Installation, testing and commissioning of screening equipment				
M 14.3.1		Trash Rake bar				
M 14.3.1.1		Trash Rake bar screen - in accordance with the specification and drawings.	No	2		
M 14.3.1.2		Trash Rake screening mechanism complete - in accordance with the specification and drawings.	No	1		
M 14.3.1.3		Trash Rake screening mechanism monorail and support structure - in accordance with the specification and drawings.	Sum	1		
M 14.3.2	PS 9.14.4	Primary bar screens				
M 14.3.2.1		Front Raked bar screen complete - in accordance with the specification and drawings.	No	4		
M 14.3.2.2		Screenings chute extension from screen to existing hydro conveyor	No	4		
M 14.4	PS 9.14.4	SECTION 14 : INSTALLATION TESTING AND COMMISSIONING OF MECHANICAL EQUIPMENT H.O.W. SOUTH				
	PS 9.14.4	Installation, testing and commissioning of screening equipment				
M 14.4.1		Trash Rake bar				
M 14.4.1.1		Trash Rake bar screen - in accordance with the specification and drawings.	No	3		
M 14.4.1.2		Trash Rake screening mechanism complete - in accordance with the specification and drawings.	No	1		
		Trash Rake screening mechanism monorail and support structure - in accordance with the specification and drawings.	Sum	1		
M 14.4.2	PS 9.14.4	Primary bar screens				
M 14.4.2.1		Front Raked bar screen complete - in accordance with the specification and drawings.	No	3		
M 14.4.2.2		Screenings chute extension from screen to existing hydro conveyor	No	3		
14 TOTAL CARRIED TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



SECTION	DESCRIPTION	AMOUNT
BROUGHT FORWARD		
2	AERATORS	
3	MIXERS	
4	MLSS RECIRCULATION PUMPS	
5	RAS RECIRCULATION PUMPS	
6	PRIMARY SETTLEMENT TANKS	
7	SECONDARY SETTLEMENT TANKS	
8	SLUDGE THICKENERS	
9	VFA FERMENTERS	
10	FERRIC DOSING	
11	DISINFECTION DOSING	
12	PUMP STATIONS	
13	ODOUR CONTROL	
14	HEAD OF WORKS	
TOTAL CARRIED TO SUMMARY		

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.1		SUPPLY AND DELIVERY OF NEW MAJOR ELECTRICAL EQUIPMENT				
E 2.1.1		MV SWITCHGEAR AS PER DATASHEETS AND SPECIFICATION				
E 2.1.1.1	PSY2.1.7	Unit 5 Module 2 Bioreactor Substation 11kV Switchgear (Datasheet: JW13898-E-007-1)	Ea.	1		
E 2.1.1.2	PSY2.1.3	Unit 5 Main Intake Substation Incomer Extension to existing Switchgear Actom SBV4/800/25/Si (Datasheet: JW13898-E-007-2)	Ea.	1		
E 2.1.1.3	PSY2.1.7	Unit 5 Module 2 Substation Battery Tripping Unit	Ea.	1		
E 2.1.2		TRANSFORMER AS PER DATASHEETS AND SPECIFICATION				
E 2.1.2.1	PSY2.1.7	630kVA, Dual-Wound, 11-6.6/0.4 kV Step Down Transformer (Datasheet: JW13898-E-013-1)	Ea.	4		
E 2.1.2.2	PSY2.1.3	1600kVA, Dual-Wound, 0.4/6.6-11kV Step Up Transformer (Datasheet: JW13898-E-013-2)	Ea.	1		
E 2.1.2.3	PSY2.1.1	11kV, 20A, 3s Neutral Earthing Resistor for 1600kVA Step Up Transformer	Ea.	1		
E 2.1.3		GENERATORS AS PER DATASHEETS AND SPECIFICATION				
E 2.1.3.1	PSY2.1.3	1600kVA (Prime) Diesel Generator with bulk storage fuel system and all control and interface cables. (Datasheet: JW13898-E-010-1)	Ea.	1		
E 2.1.3.2	PSY2.1.4	315kVA (Prime) Diesel Generator with bulk storage fuel system and all control and interface cables. (Datasheet: JW13898-E-010-2)	Ea.	1		
E 2.1.3.3	PSY2.1.4	Admin Building Changeover Panel - Distribution Board (Datasheet: JW13898-E-007-1)	Ea.	1		
E 2.1.4	PSY2.1.7	BIOREACTOR MOTOR CONTROL CENTRE AS PER DATASHEETS AND SPECIFICATION				
E 2.1.4.1		New Unit 5 Module 2 Bioreactor Motor Control Centre (5E2-MCC-01) (Datasheet: JW13898-E-002-1)	Ea.	1		
E 2.1.4.2		Ventilation fan for the MCC Room (3-phase, 400V, 0.55kW, 2880rpm, with air quantity of 500l/s @ 200pa)	Ea.	2		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.1.5	PSY2.1.5	EQUIP EXISTING BALANCING TANK MOTOR CONTROL CENTRE				
E 2.1.5.1		Equip Existing Balancing Tank and PST MCC with 0.55kW PST Bridge Drive DOL Starter	Ea.	2		
E 2.1.5.2		Equip Existing Balancing Tank and PST MCC with 11kW DOL Starter	Ea.	6		
E 2.1.5.3		Equip Existing Balancing Tank and PST Instrument DB with 6A, 3Pole miniature circuit breaker Valve Feeder	Ea.	2		
E 2.1.6	PSY2.1.10	EQUIP EXISTING WST MOTOR CONTROL CENTRE				
E 2.1.6.1		Equip Existing WST MCC with Thickener Drive 0.55kW DOL Starter	Ea.	1		
E 2.1.6.2		Equip Existing WST Instrument DB with 6A, 3Pole miniature circuit breaker Valve Feeder	Ea.	1		
E 2.1.7	PSY2.1.8	EQUIP EXISTING HYPOCHLORITE MOTOR CONTROL CENTRE				
E 2.1.7.1		Equip Existing Hypochlorite MCC with 0.75kW VSD Starter	Ea.	1		
E 2.1.8	PSY2.1.11	EQUIP EXISTING WAS PUMPSTATION MOTOR CONTROL CENTRE				
E 2.1.8.1		Equip Existing WAS Pump station MCC with 22kW DOL Starter	Ea.	1		
E 2.1.9	PSY2.1.6	NEW AND EXSTING ELUTRIATION/FERMENTATION MOTOR CONTROL CENTRE				
E 2.1.9.1		Equip Existing Elutriation Pump station MCC with 18.5kW DOL Starter	Ea.	3		
E 2.1.9.2		Equip Existing Elutriation Pump station MCC with 5.5kW DOL Starter	Ea.	2		
E 2.1.9.3		Equip Existing Elutriation Pump station MCC with 11kW DOL Starter	Ea.	2		
E 2.1.9.4		Unit 5 New Fermentation Motor Control Centre (Datasheet: JW13898-E-002-1)	Ea.	1		
E 2.1.9.5		Ventilation fan for the MCC Room (3-phase, 400V, 0.55kW, 2880rpm, with air quantity of 500l/s @ 200pa)	Ea.	2		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.1.10	PSY2.1.14	SMALL POWER DISTRIBUTION BOARDS AS PER DATASHEETS AND SPECIFICATION				
E 2.1.10.1		Unit 5 Bioreactor 2 Substation SP&L DB (Datasheet: ING645D-WSP-E-002-2)	Ea.	2		
E 2.1.10.2		Unit 5 Elutriation Pump Station SP&L DB (Datasheet: JW13898-E-002-2)	Ea.	2		
E 2.1.11	PSY2.1.7	INSTRUMENT DISTRIBUTION BOARDS AS PER DATASHEETS AND SPECIFICATION				
E 2.1.11.1		Unit 5 Module 2 Instrument DB (Datasheet: JW13898-E-002-3)	Ea.	1		
E 2.1.11.2		Unit 5 Elutriation Instrument DB (Datasheet: JW13898-E-002-3)	Ea.	1		
E 2.1.12		EQUIPING EXISTING INSTRUMENT DISTRIBUTION BOARDS AS PER SPECIFICATION				
E 2.1.12.1	PSY2.1.15	Equipping the existing PST and Balancing Tank Instrument DB with 2A, 2-pole miniature circuit breakers	Ea.	5		
E 2.1.12.2	PSY2.1.18	Equipping the existing Hypochlorite Instrument DB with 2A, 2-pole miniature circuit breaker	Ea.	1		
E 2.1.12.3		Equipping the existing Unit 5 Bioreactor 1 Analyser Room Instrument DB with 2A, 2-pole miniature circuit breakers	Ea.	8		
E 2.1.12.3	PSY2.1.9	Equipping the existing Final Effluent Analyser Room Instrument DB with 2A, 2-pole miniature circuit breakers	Ea.	9		
E 2.1.13		ELECTRICAL ISOLATOR PUSHBUTTON STATION (LOCAL START/STOP) EQUIPMENT				
E 2.1.13.1		0.37kW to 30kW (DOL Motor Station) 63A Isolator	Ea.	60		
E 2.1.13.2		37kW to 75kW (DOL Motor Station) 160A Isolator	Ea.	4		
E 2.1.13.2.3		90kW to 110kW (Star-Delta Motor Station) 200A Isolator	Ea.	9		
E 2.2	PSY2.1.13	SUPPLY AND DELIVERY OF EARTHING AND LIGHTNING PROTECTION				
E 2.2.1		Earthing and Lightning Protection for Bioreactor Substation and MCC by specialist	Prov.	Sum		R 500,000.00
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.2.2		Earthing and Lightning Protection for New Elutriation Pump station and MCC Room by specialist	Prov.	Sum		R 150,000.00
E2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.3		SUPPLY AND DELIVERY OF SMALL POWER AND LIGHTING EQUIPMENT				
E 2.3.1	PSY2.1.12	AREA LIGHTING				
E 2.3.1.1		High mast pole - 20 meters tall, mid-hinged type, galvanised steel construction (including allowance for supply and installation of concrete plinths). Pole to be designed to support 8 off 400 W LED floodlights. Masts to include DB as per drawing ING0645D-5E2-SM04	Ea.	3		
E 2.3.1.2		400 W LED Floodlight (IP65 ingress protection, wide beam, hail proof, corrosion proof and vandal resistant) complete with mounting accessories, mounted on high mast poles	Ea.	24		
E 2.3.1.3		Provision to move existing Fermentation/Elutriation fixed approximately 25m High Mast	Ea.	1		
E 2.3.2	PSY2.1.12	LUMINAIRES				
E 2.3.2.1		2 x 58W industrial fluorescent with Polycarbonate diffuser and Electronic Control Gear, IP65 ingress protection complete with mounting accessories	Ea.	18		
E 2.3.2.2		2 x 58W industrial fluorescent with Polycarbonate diffuser and Electronic Control Gear and built in emergency back-up - 1hour with 100% light output, IP65 ingress protection complete with mounting accessories	Ea.	4		
E 2.3.2.3		80W High Pressure Sodium Bulk heads, IP65 ingress protection complete with mounting accessories	Ea.	6		
E 2.3.3		CONDUITS AND WIRING				
E 2.3.3.1		25 mm Bosal (Galvanised Steel) conduit (c/w with mounting saddles and mounting accessories for surface mounting)	Ea.	60		
E 2.3.3.2		40 mm Bosal (Galvanised Steel) conduit (c/w with mounting saddles and mounting accessories for surface mounting)	Ea.	20		
E 2.3.3.3		2-way conduit round boxes fitted with 5A socket outlet for luminaire plug tops	Ea.	0		
E 2.3.3.4		3-way conduit round boxes (Galvanised Steel) for 25mm conduit	Ea.	3		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.3.3.5		3-way conduit round boxes for (Galvanised Steel) for 40mm conduit	Ea.	0		
E 2.3.2.6		4mm² PVC wire to SANS 1411, installed in conduit	m	405		
E 2.3.2.7		2.5mm² PVC wire to SANS 1411, installed in conduit	m	550		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.3.4		SWITCHES AND SOCKET OUTLETS				
E 2.3.4.1		Surface Mounted 16 A industrial type switch socket outlet	Ea.	4		
E 2.3.4.2		Surface Mounted 63 A welding socket outlet, 5-pin round type, IP44	Ea.	3		
E 2.3.4.3		Surface Mounted 1-way industrial light switch	Ea.	0		
E 2.3.4.4		Surface Mounted 2-way industrial type light switch	Ea.	6		
E 2.3.4.5		Surface Mounted industrial type 16A double pole isolator	Ea.	0		
E 2.4	PSY2.1.15	SUPPLY AND DELIVERY OF XLPE INSULATED, PVC BEDDED, STEEL WIRE ARMoured, PVC SHEATHED 6.35/11kV CABLES TO SANS 1339 TYPE A				
	PSY2.1.7	BIOREACTOR PRIMARY MEDIUM VOLTAGE CABLE				
E 2.4.1		Cable from Bioreactor 1 Substation to Bioreactor 2 Substation				
E 2.4.1.1		Power cable 120mm² 3-Core XLPE Cable	m	300		
E 2.4.1.2		120mm² 3-Core Copper Cable terminations	Ea.	4		
E 2.4.1.3		Earth cable 95mm² Clear Insulated KWENA Cable	m	300		
E 2.4.1.4		95mm² Clear Insulated KWENA termination kit	Ea.	4		
		UPGRADE OF UNIT 5 MAIN INTAKE SUB FEEDER CABLES				
E 2.4.2	PSY2.1.1	Main Intake Sub to Unit 5 Intake Sub - Incomer CB2				
E 2.4.2.1		Power cable 150mm² 3-Core XLPE Cable	m	1000		
E 2.4.2.2		150mm² 3-Core Copper Cable terminations	Ea.	8		
E 2.4.2.3		150mm² 3-Core Copper Cable splice kits	Ea.	6		
E 2.4.2.4		Earth cable 95mm² Clear Insulated KWENA Cable	m	1000		
E 2.4.2.5		95mm² Clear Insulated KWENA termination kit	Ea.	8		
E 2.4.2.6		95mm² Clear Insulated KWENA splice kits	Ea.	6		
E 2.4.3	PSY2.1.1	Main Intake Sub to Unit 5 Intake Sub - Incomer CB6				
E 2.4.3.1		Power cable 150mm² 3-Core XLPE Cable	m	1000		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.4.3.2		150mm² 3-Core Copper Cable terminations	Ea.	8			
E 2.4.3.3		150mm² 3-Core Copper Cable splice kits	Ea.	14			
E 2.4.3.4		Earth cable	m	1000			
E 2.4.3.5		95mm² Clear Insulated KWENA Cable					
		95mm² Clear Insulated KWENA termination kit	Ea.	8			
E 2.4.3.6		95mm² Clear Insulated KWENA splice kits	Ea.	14			
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS					
E 2.4.4		Bioreactor 2 MV Switchgear to Unit 5 Transformer 1					
E 2.4.4.1		Power cable	m	25			
E 2.4.4.2		120mm² 3-Core XLPE Cable					
		120mm² 3-Core Copper Cable terminations	Ea.	2			
E 2.4.4.3		Earth cable	m	25			
E 2.4.4.4		95mm² Clear Insulated KWENA Cable					
		95mm² Clear Insulated KWENA termination kit	Ea.	2			
E 2.4.5		Bioreactor 2 MV Switchgear to Unit 5 Transformer 2					
E 2.4.5.1		Power cable	m	25			
E 2.4.5.2		120mm² 3-Core XLPE Cable					
		120mm² 3-Core Copper Cable terminations	Ea.	2			
E 2.4.5.3		Earth cable	m	25			
E 2.4.5.4		95mm² Clear Insulated KWENA Cable					
		95mm² Clear Insulated KWENA termination kit	Ea.	2			
E 2.4.6		Bioreactor 2 MV Switchgear to Unit 5 Transformer 3					
E 2.4.6.1		Power cable	m	25			
E 2.4.6.2		120mm² 3-Core XLPE Cable					
		120mm² 3-Core Copper Cable terminations	Ea.	2			
E 2.4.6.3		Earth cable	m	25			
E 2.4.6.4		95mm² Clear Insulated KWENA Cable					
		95mm² Clear Insulated KWENA termination kit	Ea.	2			
E 2.4.7	Bioreactor 2 MV Switchgear to Unit 5 Transformer 4						
E 2.4.7.1	Power cable	m	25				
E 2.4.7.2	120mm² 3-Core XLPE Cable						
	120mm² 3-Core Copper Cable terminations	Ea.	2				
E 2.4.7.3	Earth cable	m	25				
E 2.4.7.4	95mm² Clear Insulated KWENA Cable						
	95mm² Clear Insulated KWENA termination kit	Ea.	2				
E 2.5	SUPPLY AND DELIVERY LOW VOLTAGE RESIN ENCAPSULATED BUSBAR ACCORDING TO IEC60431 and IEC 60331-21						
E 2.5.1	PSY2.1.7	Bio-Reactor Busbar trunking from Transformer to MCC	Lot	1			
E 2.5.1.1		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 1 to Bio-Reactor 2 MCC1	Lot	1			
TOTAL CARRIED FORWARD							
Employer:		Contractor:					
Witness:		Witness:					

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.5.1.2	PSY2.1.15	1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 2 to Bio-Reactor 2 MCC2	Lot	1			
E 2.5.1.3		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 3 to Bio-Reactor 2 MCC3	Lot	1			
E 2.5.1.4		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 4 to Bio-Reactor 2 MCC4	Lot	1			
E2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS					
E 2.6		SUPPLY AND DELIVERY OF PVC INSULATED, PVC BEDDED, STEEL WIRE ARMoured, PVC SHEATHED 600/1000V FLAME RETARDANT (RED STRIPE) CABLES TO SANS 1507-3 AND SANS 60332					
		BALANCING TANK AND PST CABLES					
E 2.6.1		5M6ME07 - PST5 Bridge Drive					
E 2.6.1.1		Power cable					
E 2.6.1.2		2.5mm² 4-Core Copper Cable					m135
E 2.6.1.3		2.5mm² 4-Core Copper Cable terminations					Ea.4
E 2.6.1.4		Control Cable					
E 2.6.1.4		2.5mm² 12-Core Copper Cable					m130
E 2.6.1.4		2.5mm² 12-Core Copper Cable terminations					Ea.2
E 2.6.2		5M6ME08 - PST6 Bridge Drive					
E 2.6.2.1		Power cable					
E 2.6.2.2		2.5mm² 4-Core Copper Cable					m95
E 2.6.2.2		2.5mm² 4-Core Copper Cable terminations					Ea.4
E 2.6.2.3		Control Cable					
E 2.6.2.4		2.5mm² 12-Core Copper Cable					m90
E 2.6.2.4		2.5mm² 12-Core Copper Cable terminations					Ea.2
E 2.6.3		5M7ME10 - Balancing Tank 2 Mixer 1					
E 2.6.3.1		Power cable					
E 2.6.3.2		2.5mm² 4-Core Copper Cable					m145
E 2.6.3.2		2.5mm² 4-Core Copper Cable terminations					Ea.4
E 2.6.3.3		Control Cable					
E 2.6.3.3		2.5mm² 12-Core Copper Cable					m140
E 2.6.3.4		2.5mm² 12-Core Copper Cable terminations					Ea.2
E 2.6.4		5M7ME11 - Balancing Tank 2 Mixer 2					
E 2.6.4.1		Power cable					
E 2.6.4.2	2.5mm² 4-Core Copper Cable					m125	
E 2.6.4.2	2.5mm² 4-Core Copper Cable terminations					Ea.4	
E 2.6.4.3	Control Cable						
E 2.6.4.3	2.5mm² 12-Core Copper Cable					m120	
E 2.6.4.4	2.5mm² 12-Core Copper Cable terminations					Ea.2	
TOTAL CARRIED FORWARD							
Employer:		Contractor:					
Witness:		Witness:					

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.5		5M7ME12 - Balancing Tank 2 Mixer 3				
E 2.6.5.1		Power cable	m	125		
E 2.6.5.2		2.5mm² 4-Core Copper Cable	Ea.	4		
E 2.6.5.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.5.4		Control Cable	m	120		
E 2.6.5.5		2.5mm² 12-Core Copper Cable	Ea.	2		
E 2.6.5.6		2.5mm² 12-Core Copper Cable terminations				
E 2.6.6		5M7ME13 - Balancing Tank 2 Mixer 4				
E 2.6.6.1		Power cable	m	105		
E 2.6.6.2		6mm² 4-Core Copper Cable	Ea.	4		
E 2.6.6.3		6mm² 4-Core Copper Cable terminations				
E 2.6.6.4		Control Cable	m	100		
E 2.6.6.5		2.5mm² 12-Core Copper Cable	Ea.	2		
E 2.6.6.6		2.5mm² 12-Core Copper Cable terminations				
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.7		5M7ME14 - Balancing Tank 2 Mixer 5				
E 2.6.7.1		Power cable	m	105		
E 2.6.7.2		6mm² 4-Core Copper Cable	Ea.	4		
E 2.6.7.3		6mm² 4-Core Copper Cable terminations				
E 2.6.7.4		Control Cable	m	100		
E 2.6.7.5		2.5mm² 12-Core Copper Cable	Ea.	2		
E 2.6.7.6		2.5mm² 12-Core Copper Cable terminations				
E 2.6.8		5M7ME15 - Balancing Tank 2 Mixer 6				
E 2.6.8.1		Power cable	m	85		
E 2.6.8.2		6mm² 4-Core Copper Cable	Ea.	4		
E 2.6.8.3		6mm² 4-Core Copper Cable terminations				
E 2.6.8.4		Control Cable	m	80		
E 2.6.8.5		2.5mm² 12-Core Copper Cable	Ea.	2		
E 2.6.8.6		2.5mm² 12-Core Copper Cable terminations				
E 2.6.9		5M6ME09 - PST5 Underflow Valve				
E 2.6.9.1		Power cable	m	90		
E 2.6.9.2		2.5mm² 4-Core Copper Cable	Ea.	2		
E 2.6.9.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.10		5M6ME10 - PST6 Underflow Valve				
E 2.6.10.1		Power cable	m	90		
E 2.6.10.2		2.5mm² 4-Core Copper Cable	Ea.	2		
E 2.6.10.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.11		5M7ME16 - Balancing Tank 2 Outlet Sluice Gate				
E 2.6.11.1		Power cable	m	160		
E 2.6.11.2		2.5mm² 4-Core Copper Cable	Ea.	2		
E 2.6.11.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.12		5M7ME17 - Balancing Tank 2 Inlet Sluice Gate				
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.12.1	PSY2.1.6	Power cable	m	160		
E 2.6.12.2		2.5mm² 4-Core Copper Cable				
		2.5mm² 4-Core Copper Cable terminations	Ea.	2		
		ELUTRIATION CABLES				
E 2.6.13		5M8ME08 - Effluent Pump 01				
E 2.6.13.1		Power cable	m	40		
E 2.6.13.2		10mm² 4-Core Copper Cable				
		10mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.13.3		Control Cable	m	35		
E 2.6.13.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.14		5M8ME09 - Effluent Pump 02				
E 2.6.14.1		Power cable	m	40		
E 2.6.14.2		10mm² 4-Core Copper Cable				
		10mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.14.3		Control Cable	m	35		
E 2.6.14.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.15		5M8ME19 - Effluent Pump 03				
E 2.6.15.1		Power cable	m	35		
E 2.6.15.2		10mm² 4-Core Copper Cable				
		10mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.15.3		Control Cable	m	30		
E 2.6.15.4		2.5mm² 12-Core Copper Cable				
	2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.6.16	5M8ME05 - Sludge Recycle Pump 01					
E 2.6.16.1	Power cable	m	35			
E 2.6.16.2	2.5mm² 4-Core Copper Cable					
	2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.6.16.3	Control Cable	m	30			
E 2.6.16.4	2.5mm² 12-Core Copper Cable					
	2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.6.17	5M8ME06 - Sludge Recycle Pump 02					
E 2.6.17.1	Power cable	m	35			
E 2.6.17.2	2.5mm² 4-Core Copper Cable					
	2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.6.17.3	Control Cable	m	30			
E 2.6.17.4	2.5mm² 12-Core Copper Cable					
	2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.6.18	5M8ME07 - Transfer Pump 01					
E 2.6.18.1	Power cable	m	30			
	4mm² 4-Core Copper Cable					
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.18.2		4mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.18.3		Control Cable	m	25		
E 2.6.18.4		2.5mm ² 12-Core Copper Cable				
E 2.6.18.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.19		5M8ME08 - Transfer Pump 02				
E 2.6.19.1		Power cable	m	30		
E 2.6.19.2		4mm ² 4-Core Copper Cable				
E 2.6.19.2		4mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.19.3		Control Cable	m	25		
E 2.6.19.4		2.5mm ² 12-Core Copper Cable				
E 2.6.19.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.20		5M8ME17 - Thickener 2 Bridge Drive				
E 2.6.20.1		Power cable	m	60		
E 2.6.20.2		2.5mm ² 4-Core Copper Cable				
E 2.6.20.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.20.3		Control Cable	m	55		
E 2.6.20.4		2.5mm ² 12-Core Copper Cable				
E 2.6.20.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.21		5M8ME18 - Elutriation Mixer				
E 2.6.21.1		Power cable	m	40		
E 2.6.21.2		10mm ² 4-Core Copper Cable				
E 2.6.21.2		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.21.3		Control Cable	m	35		
E 2.6.21.4		2.5mm ² 12-Core Copper Cable				
E 2.6.21.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.22		5M8ME24 - Effluent Pump 04				
E 2.6.22.1		Power cable	m	40		
E 2.6.22.2		2.5mm ² 4-Core Copper Cable				
E 2.6.22.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.22.3		Control Cable	m	35		
E 2.6.22.4		2.5mm ² 12-Core Copper Cable				
E 2.6.22.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.23		5M8ME25 - Effluent Pump 05				
E 2.6.23.1		Power cable	m	40		
E 2.6.23.2		2.5mm ² 4-Core Copper Cable				
E 2.6.23.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.23.3		Control Cable	m	35		
E 2.6.23.4		2.5mm ² 12-Core Copper Cable				
E 2.6.23.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.24		5M8ME26 - Effluent Pump 06				
E 2.6.24.1		Power cable	m	35		
E 2.6.24.2		2.5mm ² 4-Core Copper Cable				
E 2.6.24.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.24.3		Control Cable	m	30		
E 2.6.24.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.25		5M8ME20 - Sludge Recycle Pump 03				
E 2.6.25.1		Power cable	m	30		
E 2.6.25.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.25.3		Control Cable	m	25		
E 2.6.25.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.26		5M8ME201- Sludge Recycle Pump 04				
E 2.6.26.1		Power cable	m	30		
E 2.6.26.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.26.3		Control Cable	m	25		
E 2.6.26.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.27		5M8ME22 - Transfer Pump 03				
E 2.6.27.1		Power cable	m	30		
E 2.6.27.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.27.3		Control Cable	m	25		
E 2.6.27.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.28		5M8ME23 - Transfer Pump 04				
E 2.6.28.1		Power cable	m	20		
E 2.6.28.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.28.3		Control Cable	m	15		
E 2.6.28.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.29		5M8ME28 - Sump Pump				
E 2.6.29.1		Power cable	m	25		
E 2.6.29.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.29.3		Control Cable	m	20		
E 2.6.29.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.30		5M8ME - Elutriation Instrument DB				
E 2.6.30.1		Power cable	m	20		
E 2.6.30.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.30.3		Earth cable	m	20		
E 2.6.30.4		16mm ² Clear Insulated KWENA Cable				
		16mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.6.31		5M8ME - Elutriation SP&L DB				
E 2.6.31.1		Power cable	m	20		
E 2.6.31.2		25mm ² 4-Core Copper Cable				
		25mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.31.3		Earth cable	m	20		
E 2.6.31.4		16mm ² Clear Insulated KWENA Cable				
		16mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.6.32		5M8MCC02 - Elutriation MCC Supply Cable				
E 2.6.32.1		Power cable	m	65		
E 2.6.32.2		95mm ² 4-Core Copper Cable				
		95mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.32.3		Earth cable	m	65		
E 2.6.32.4		95mm ² Clear Insulated KWENA Cable				
		95mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.6.33		5M8ME29 - Sludge Recirculation Valve				
E 2.6.33.1		Power cable	m	160		
E 2.6.33.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.34		5M8ME01 - Odour Control Recirculating Pump				
E 2.6.34.1		Power cable	m	105		
E 2.6.34.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.34.3		Control Cable	m	100		
E 2.6.34.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.35		5M8ME02 - Odour Control Effluent Pump				
E 2.6.35.1		Power cable	m	105		
E 2.6.35.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.35.3		Control Cable	m	100		
E 2.6.35.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.36		5M8ME03 - Odour Control Blower				
E 2.6.36.1		Power cable	m	105		
E 2.6.36.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.36.3		Control Cable	m	100		
E 2.6.36.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.37		5M8ME04 - Odour Control Nutrient solution Mixer				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.37.1	PSY2.1.7	Power cable	m	105		
E 2.6.37.2		2.5mm² 4-Core Copper Cable	Ea.	4		
E 2.6.37.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.37.4		Control Cable	m	100		
		2.5mm² 12-Core Copper Cable	Ea.	2		
		2.5mm² 12-Core Copper Cable terminations				
		MODULE 2 BIOREACTOR CABLES				
E 2.6.38		5M2ME01 - Mixer 1				
E 2.6.38.1		Power cable	m	95		
E 2.6.38.2		10mm² 4-Core Copper Cable	Ea.	4		
E 2.6.38.3		10mm² 4-Core Copper Cable terminations				
E 2.6.38.4		Control Cable	m	90		
		2.5mm² 12-Core Copper Cable	Ea.	2		
		2.5mm² 12-Core Copper Cable terminations				
E 2.6.39		5M2ME05 - Mixer 5				
E 2.6.39.1		Power cable	m	125		
E 2.6.39.2		10mm² 4-Core Copper Cable	Ea.	4		
E 2.6.39.3		10mm² 4-Core Copper Cable terminations				
E 2.6.39.4		Control Cable	m	120		
		2.5mm² 12-Core Copper Cable	Ea.	2		
	2.5mm² 12-Core Copper Cable terminations					
E 2.6.40	5M2ME09 - Mixer 9					
E 2.6.40.1	Power cable	m	160			
E 2.6.40.2	25mm² 4-Core Copper Cable	Ea.	2			
E 2.6.40.3	25mm² 4-Core Copper Cable terminations					
E 2.6.40.4	Power cable (from S/S Station to Motor)	m	5			
E 2.6.40.5	10mm² 4-Core Copper Cable	Ea.	2			
E 2.6.40.6	10mm² 4-Core Copper Cable terminations					
E 2.6.40.7	Control Cable	m	160			
E 2.6.40.8	2.5mm² 12-Core Copper Cable	Ea.	2			
E 2.6.40.9	2.5mm² 12-Core Copper Cable terminations					
E 2.6.41	5M2ME10 - Aerator 1					
E 2.6.41.1	Power cable	m	580			
E 2.6.41.2	150mm² 4-Core Aluminium Cable	Ea.	8			
E 2.6.41.3	150mm² 4-Core Aluminium Cable terminations					
E 2.6.41.4	Power cable (from S/S Station to Motor)	m	20			
E 2.6.41.5	95mm² 4-Core Aluminium Cable	Ea.	8			
E 2.6.41.6	95mm² 4-Core Aluminium Cable terminations					
E 2	SUPPLY AND DELIVERY OF ELECTRICAL WORKS					
E 2.6.41.7	Control Cable	m	145			
E 2.6.41.8	2.5mm² 19-Core Copper Cable	Ea.	2			
E 2.6.41.9	2.5mm² 19-Core Copper Cable terminations					
E 2.6.42	5M2ME14 - Aerator 5					
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.42.1		Power cable 95mm ² 4-Core Aluminium Cable	m	740		
E 2.6.42.2		95mm ² 4-Core Aluminium Cable terminations	Ea.	16		
E 2.6.42.3		Control Cable 2.5mm ² 19-Core Copper Cable	m	180		
E 2.6.42.4		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.6.43		5M2ME10 - Aerator 9				
E 2.6.43.1		Power cable 150mm ² 4-Core Aluminium Cable	m	860		
E 2.6.43.2		150mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.43.3		Power cable (from S/S Station to Motor) 95mm ² 4-Core Aluminium Cable	m	20		
E 2.6.43.4		95mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.43.5		Control Cable 2.5mm ² 19-Core Copper Cable	m	215		
E 2.6.43.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.6.44		5M2ME24 - Mixed Liquor Pump 1				
E 2.6.44.1		Power cable 2.5mm ² 4-Core Copper Cable	m	80		
E 2.6.44.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.44.3		Control Cable 2.5mm ² 12-Core Copper Cable	m	75		
E 2.6.44.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.45		5M2ME28 - Clarifier 1 Bridge Drive				
E 2.6.45.1		Power cable 2.5mm ² 4-Core Copper Cable	m	345		
E 2.6.45.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.45.3		Control Cable 2.5mm ² 12-Core Copper Cable	m	340		
E 2.6.45.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.46		5M2ME02 - Mixer 2				
E 2.6.46.1		Power cable 10mm ² 4-Core Copper Cable	m	80		
E 2.6.46.2		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.46.3		Control Cable 2.5mm ² 12-Core Copper Cable	m	75		
E 2.6.46.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.47		5M2ME02 - Mixer 6				
E 2.6.47.1		Power cable 10mm ² 4-Core Copper Cable	m	110		
E 2.6.47.2		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.47.3		Control Cable 2.5mm ² 12-Core Copper Cable	m	105		
E 2.6.47.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.48		5M2ME11 - Aerator 2				
E 2.6.48.1		Power cable	m	620		
E 2.6.48.2		120mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.6.48.3		120mm ² 4-Core Aluminium Cable terminations	m	20		
E 2.6.48.4		Power cable (from S/S Station to Motor)	Ea.	4		
E 2.6.48.5		95mm ² 4-Core Aluminium Cable	m	160		
E 2.6.48.6		95mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.49		5M2ME15 - Aerator 6				
E 2.6.49.1		Power cable	m	780		
E 2.6.49.2		150mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.6.49.3		150mm ² 4-Core Aluminium Cable terminations	m	20		
E 2.6.49.4		Power cable (from S/S Station to Motor)	Ea.	4		
E 2.6.49.5		95mm ² 4-Core Aluminium Cable	m	195		
E 2.6.49.6		95mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.50		5M2ME19 - Mixer 10				
E 2.6.50.1		Power cable	m	225		
E 2.6.50.2		70mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.6.50.3		70mm ² 4-Core Aluminium Cable terminations	m	5		
E 2.6.50.4		Power cable (from S/S Station to Motor)	Ea.	2		
E 2.6.50.5		25mm ² 4-Core Aluminium Cable	m	225		
E 2.6.50.6		25mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.51		5M2ME19 - Mixer 10				
E 2.6.51.1		Power cable	m	225		
E 2.6.51.2		70mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.6.51.3		70mm ² 4-Core Aluminium Cable terminations	m	5		
E 2.6.51.4		Power cable (from S/S Station to Motor)	Ea.	2		
E 2.6.51.5		25mm ² 4-Core Aluminium Cable	m	225		
E 2.6.51.6		25mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.52		5M2ME20 - Aerator 10				
E 2.6.52.1		Power cable	m	1000		
E 2.6.52.2		95mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.6.52.3		95mm ² 4-Core Aluminium Cable terminations	m	245		
E 2.6.52.4		Control Cable	Ea.	2		
E 2.6.52.5		2.5mm ² 19-Core Copper Cable				
E 2.6.52.6		2.5mm ² 19-Core Copper Cable terminations				
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.53		5M2ME23 - Aerator 13				
E 2.6.53.1		Power cable	m	240		
E 2.6.53.2		120mm ² 4-Core Aluminium Cable				
E 2.6.53.3		120mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.53.4		Power cable (from S/S Station to Motor)	m	5		
E 2.6.53.5		50mm ² 4-Core Aluminium Cable				
E 2.6.53.6		50mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.53.7		Control Cable	m	240		
E 2.6.53.8		2.5mm ² 12-Core Copper Cable				
E 2.6.53.9		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.54		5M2ME25 - Mixed Liquor Pump 2				
E 2.6.54.1		Power cable	m	85		
E 2.6.54.2		95mm ² 4-Core Aluminium Cable				
E 2.6.54.3		95mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.54.4		Control Cable	m	80		
E 2.6.54.5		2.5mm ² 19-Core Copper Cable				
E 2.6.54.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.6.55		5M2ME29 - Clarifier 2 Bridge Drive				
E 2.6.55.1		Power cable	m	365		
E 2.6.55.2		4mm ² 4-Core Copper Cable				
E 2.6.55.3		4mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.55.4		Control Cable	m	360		
E 2.6.55.5		2.5mm ² 12-Core Copper Cable				
E 2.6.55.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.56		5M2ME03 - Mixer 3				
E 2.6.56.1		Power cable	m	95		
E 2.6.56.2		10mm ² 4-Core Copper Cable				
E 2.6.56.3		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.56.4		Control Cable	m	90		
E 2.6.56.5		2.5mm ² 12-Core Copper Cable				
E 2.6.56.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.57		5M2ME07 - Mixer 7				
E 2.6.57.1		Power cable	m	135		
E 2.6.57.2		16mm ² 4-Core Copper Cable				
E 2.6.57.3		16mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.6.57.4		Control Cable	m	130		
E 2.6.57.5		2.5mm ² 12-Core Copper Cable				
E 2.6.57.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.58		5M2ME15 - Aerator 3				
E 2.6.58.1		Power cable	m	700		
E 2.6.58.2		150mm ² 4-Core Aluminium Cable				
E 2.6.58.3		150mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.58.4		Power cable (from S/S Station to Motor)	m	20		
E 2.6.58.5		95mm ² 4-Core Aluminium Cable				
E 2.6.58.6		95mm ² 4-Core Aluminium Cable terminations	Ea.	8		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.58.5		Control Cable	m	175		
E 2.6.58.6		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2		2.5mm ² 19-Core Copper Cable terminations				
		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.59		5M2ME21 - Aerator 11				
E 2.6.59.1		Power cable	m	260		
E 2.6.59.2		120mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.6.59.3		120mm ² 4-Core Aluminium Cable terminations				
E 2.6.59.4		Power cable (from S/S Station to Motor)	m	5		
E 2.6.59.5		50mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.6.59.6		50mm ² 4-Core Aluminium Cable terminations				
E 2.6.59.7		Control Cable	m	260		
E 2.6.59.8		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.6.59.9		2.5mm ² 19-Core Copper Cable terminations				
E 2.6.60		5M2ME26 - Mixed Liquor Pump 3				
E 2.6.60.1		Power cable	m	455		
E 2.6.60.2		70mm ² 4-Core Copper Cable	Ea.	6		
E 2.6.60.3		70mm ² 4-Core Copper Cable terminations				
E 2.6.60.4		Control Cable	m	225		
E 2.6.60.5		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.6.60.6		2.5mm ² 12-Core Copper Cable terminations				
E 2.6.61		5M2ME30 - Clarifier 3 Bridge Drive				
E 2.6.61.1		Power cable	m	385		
E 2.6.61.2		4mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.61.3		4mm ² 4-Core Copper Cable terminations				
E 2.6.61.4		Control Cable	m	380		
E 2.6.61.5		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.6.61.6		2.5mm ² 12-Core Copper Cable terminations				
E 2.6.62		5M2ME31 - Screw Pump 1				
E 2.6.62.1		Power cable	m	555		
E 2.6.62.2		70mm ² 4-Core Aluminium Cable	Ea.	6		
E 2.6.62.3		70mm ² 4-Core Aluminium Cable terminations				
E 2.6.62.4		Control Cable	m	275		
E 2.6.62.5		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.6.62.6		2.5mm ² 12-Core Copper Cable terminations				
E 2.6.63		5M2ME35 - Screw 1 Grease Pump				
E 2.6.63.1		Power cable	m	275		
E 2.6.63.2		10mm ² 3-Core Aluminium Cable	Ea.	2		
E 2.6.63.3		10mm ² 3-Core Aluminium Cable terminations				
E 2.6.63.4		Power cable	m	5		
E 2.6.63.5		4mm ² 3-Core Aluminium Cable	Ea.	2		
E 2.6.63.6		4mm ² 3-Core Aluminium Cable terminations				
E 2.6.64		5M2ME34 - Effluent Sample Pump 1				
E 2.6.64.1		Power cable	m	105		
E 2.6.64.2		4mm ² 4-Core Aluminium Cable				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.64.2		4mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.64.3		Control Cable	m	100		
E 2.6.64.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.65		5M1ME40 - Chemical Dosing Pump 3				
E 2.6.65.1		Power cable	m	280		
E 2.6.65.2		2.5mm ² 4-Core Aluminium Cable				
		2.5mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.65.3		Control Cable	m	275		
E 2.6.65.4		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.66		5M2ME04 - Mixer 4				
E 2.6.66.1		Power cable	m	110		
E 2.6.66.2		16mm ² 4-Core Copper Cable				
		16mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.66.3		Power cable (from S/S Station to Motor)	m	5		
E 2.6.66.4		6mm ² 4-Core Copper Cable				
		6mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.66.5		Control Cable	m	110		
E 2.6.66.6		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.67		5M2ME08 - Mixer 8				
E 2.6.67.1		Power cable	m	145		
E 2.6.67.2		25mm ² 4-Core Aluminium Cable				
		25mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.67.3		Power cable (from S/S Station to Motor)	m	5		
E 2.6.67.4		10mm ² 4-Core Aluminium Cable				
		10mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.67.5		Control Cable	m	140		
E 2.6.67.6		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.68		5M2ME13 - Aerator 4				
E 2.6.68.1		Power cable	m	800		
E 2.6.68.2		150mm ² 4-Core Aluminium Cable				
		150mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.68.3		Power cable (from S/S Station to Motor)	m	20		
E 2.6.68.4		95mm ² 4-Core Aluminium Cable				
		95mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.68.5		Control Cable	m	200		
E 2.6.68.6		2.5mm ² 19-Core Copper Cable				
		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.6.69		5M2ME13 - Aerator 8				
E 2.6.69.1		Power cable	m	960		
E 2.6.69.2		185mm ² 4-Core Aluminium Cable				
		185mm ² 4-Core Aluminium Cable terminations	Ea.	8		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.69.3		Power cable (from S/S Station to Motor)	m	20		
E 2.6.69.4		120mm ² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.6.69.5		Control Cable	m	235		
E 2.6.69.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.70		5M2ME22 - Aerator 12				
E 2.6.70.1		Power cable	m	255		
E 2.6.70.2		150mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.70.3		Power cable (from S/S Station to Motor)	m	20		
E 2.6.70.4		50mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.70.5		Control Cable	m	255		
E 2.6.70.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.6.71		5M2ME27 - Mixed Liquor Pump 4				
E 2.6.71.1		Power cable	m	460		
E 2.6.71.2		70mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.6.71.3		Power cable (from S/S Station to Motor)	m	5		
E 2.6.71.4		50mm ² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.6.71.5		Control Cable	m	230		
E 2.6.71.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.72		5M2ME32 - Screw Pump 2				
E 2.6.72.1		Power cable	m	555		
E 2.6.72.2		70mm ² 4-Core Aluminium Cable terminations	Ea.	6		
E 2.6.72.3		Control Cable	m	275		
E 2.6.72.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.6.73		5M2ME36 - Screw 2 Grease Pump				
E 2.6.73.1		Power cable	m	275		
E 2.6.73.2		10mm ² 3-Core Aluminium Cable terminations	Ea.	2		
E 2.6.73.3		Power cable	m	5		
E 2.6.73.4		4mm ² 3-Core Aluminium Cable terminations	Ea.	2		
E 2.6.74		5M2ME33 - WAS Flow Control Valve				
E 2.6.74.1		Power cable	m	100		
E 2.6.74.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.75		PLC80				
E 2.6.75.1		Power cable	m	20		
E 2.6.75.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.75.3		10mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.75.4		Power cable	m	20		
E 2.6.75.5		6mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.75.6		6mm ² Clear Insulated KWENA Cable termination	Ea.	2		
E2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.6.76		Instrument DB				
E 2.6.76.1		Power cable	m	20		
E 2.6.76.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.76.3		10mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.76.4		Earth cable	m	20		
E 2.6.76.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.76.6		10mm ² Clear Insulated KWENA Cable terminations	Ea.	2		
E 2.6.77		Bio-Reactor MCC SP&L DB				
E 2.6.77.1		Power cable	m	20		
E 2.6.77.2		16mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.77.3		16mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.77.4		Earth cable	m	20		
E 2.6.77.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.77.6		10mm ² Clear Insulated KWENA Cable terminations	Ea.	2		
E 2.6.78	PSY2.1.12	High Mast Light 01				
E 2.6.78.1		Power cable	m	120		
E 2.6.78.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.78.3		10mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.78.4		Earth cable	m	120		
E 2.6.78.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.78.6		10mm ² Clear Insulated KWENA Cable terminations	Ea.	2		
E 2.6.79	PSY2.1.12	High Mast Light 02				
E 2.6.79.1		Power cable	m	240		
E 2.6.79.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.79.3		10mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.79.4		Earth cable	m	240		
E 2.6.79.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.79.6		10mm ² Clear Insulated KWENA Cable terminations	Ea.	2		
E 2.6.80	PSY2.1.12	High Mast Light 03				
E 2.6.80.1		Power cable	m	360		
E 2.6.80.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.6.80.3		10mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.6.80.4		Earth cable	m	360		
E 2.6.80.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.6.80.6		10mm ² Clear Insulated KWENA Cable terminations	Ea.	2		
	PSY2.1.8	<u>HYPOCHLORITE CABLES</u>				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.6.81	PSY2.1.10	5M5ME03 - Chemical Dosing Pump3				
E 2.6.81.1		Power cable	m	50		
E 2.6.81.2		2.5mm² 4-Core Copper Cable	Ea.	2		
E 2.6.81.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.81.4		Control Cable	m	50		
E 2.6.81.4		2.5mm² 19-Core Copper Cable	Ea.	2		
E 2.6.81.4		2.5mm² 19-Core Copper Cable terminations				
E2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
		WASTE SLUDGE THICKENER				
E 2.6.82		5M9ME11 - WST2 Thickener Drive				
E 2.6.82.1		Power cable	m	305		
E 2.6.82.2		2.5mm² 4-Core Copper Cable	Ea.	4		
E 2.6.82.3		2.5mm² 4-Core Copper Cable terminations				
E 2.6.82.3		Control Cable	m	300		
E 2.6.82.4		2.5mm² 12-Core Copper Cable	Ea.	2		
E 2.6.82.4		2.5mm² 12-Core Copper Cable terminations				
E 2.6.83		5M9ME10 - WST2 Underflow Valve				
E 2.6.83.1		Power cable	m	300		
E 2.6.83.2	2.5mm² 4-Core Copper Cable	Ea.	2			
E 2.6.83.2	2.5mm² 4-Core Copper Cable terminations					
	WAS PUMPSTATION CABLES					
E 2.6.84	5M9ME09 - WAS Pump 3					
E 2.6.84.1	Power cable	m	45			
E 2.6.84.2	2.5mm² 4-Core Copper Cable	Ea.	4			
E 2.6.84.3	2.5mm² 4-Core Copper Cable terminations					
E 2.6.84.3	Control Cable	m	40			
E 2.6.84.4	2.5mm² 12-Core Copper Cable	Ea.	2			
E 2.6.84.4	2.5mm² 12-Core Copper Cable terminations					
E 2.6.85	VENTILATION FAN CABLES					
E 2.6.85	Ventilation Fan 01					
E 2.6.85.1	Power cable	m	20			
E 2.6.85.2	2.5mm² 4-Core Copper Cable	Ea.	4			
E 2.6.85.2	2.5mm² 4-Core Copper Cable terminations					
E 2.6.86	Ventilation Fan 02					
E 2.6.86.1	Power cable	m	20			
E 2.6.86.2	2.5mm² 4-Core Copper Cable	Ea.	4			
E 2.6.86.2	2.5mm² 4-Core Copper Cable terminations					
E 2.6.87	Ventilation Fan 03					
E 2.6.87.1	Power cable	m	30			
E 2.6.87.2	2.5mm² 4-Core Copper Cable	Ea.	4			
E 2.6.87.2	2.5mm² 4-Core Copper Cable terminations					
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.6.88	PSY2.1.16	Ventilation Fan 04					
E 2.6.88.1		Power cable	m	20			
E 2.6.88.2		2.5mm² 4-Core Copper Cable					
		2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS					
		SUPPLY AND DELIVERY OF ORANGE POWDER COATED 304 STAINLESS STEEL HEAVY DUTY CABLE LADDER, COMPLETE WITH UNISTRUT SUPPORT BRACKETS AND FIXING MATERIALS					
E 2.7							
E 2.7.1		1000mm wide cable ladder - straight	m	700			
E 2.7.2		1000mm wide cable ladder - elbow	Ea.	56			
E 2.7.3		1000mm wide cable ladder - dropper / riser	Ea.	11			
E 2.7.4		1000mm cable ladder covers	m	55			
E 2.7.5		800mm wide cable ladder - straight	m	20			
E 2.7.6		800mm wide cable ladder - elbow	Ea.	0			
E 2.7.7		800mm wide cable ladder - dropper / riser	Ea.	2			
E 2.7.8		800mm wide cable ladder covers	m	10			
E 2.7.9		600mm wide cable ladder - straight	m	300			
E 2.7.10		600mm wide cable ladder - elbow	Ea.	12			
E 2.7.11		600mm wide cable ladder - dropper / riser	Ea.	6			
E 2.7.12		600mm wide cable ladder covers	m	15			
E 2.7.13		200mm wide cable ladder - straight	m	30			
E 2.7.14		200mm wide cable ladder - elbow	Ea.	3			
E 2.7.15		200mm wide cable ladder - dropper / riser	Ea.	1			
E 2.7.16		200mm wide cable ladder covers	m	10			
E 2.7.17		150mm wide cable ladder - straight	m	20			
E 2.7.18		150mm wide cable ladder - elbow	Ea.	2			
E 2.7.19		150mm wide cable ladder - dropper / riser	Ea.	3			
E 2.7.20		150mm wide cable ladder covers	m	10			
TOTAL CARRIED FORWARD							
Employer:			Contractor:				
Witness:			Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2	PSY2.1.16	SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.8		ORANGE PIGMENTED GLASS REINFORCED POLYESTER CABLE LADDER, COMPLETE WITH 316 STAINLESS STEEL SUPPORT BRACKETS AND FIXING MATERIALS, MOUNTED ON BUILDING WALLS OR OTHER STEEL STRUCTURES				
E 2.8.1		150mm wide cable ladder - straight	m	10		
E 2.8.2		150mm wide cable ladder - elbow	Ea.	2		
E 2.8.3		150mm wide cable ladder - dropper / riser	Ea.	1		
E 2.8.4		150mm wide cable ladder covers	m	10		
E 2.9		SUPPLY AND DELIVERY OF TRENCH: EXCAVATION AND BACKFILLING OF CABLE TRENCHES, PIPE CROSSINGS AND ROAD CROSSINGS				
E 2.9.1		Trench and backfill 300mm wide x 500mm deep with one layer of protective tiles and warning tape as per Electrical Medium and Low Voltage Cable installation specification.	m	300		
E 2.9.2		Trench and backfill 150mm wide x 500mm deep with one layer of protective tiles and warning tape as per Electrical Medium and Low Voltage Cable installation specification..	m	320		
E 2.9.3		Excavate and backfill Road Crossings, including installation of sleeves. (Road Paving by others) as per Electrical Medium and Low Voltage Cable installation specification.	Ea.	2		
E 2.9.4		Cable Route Marker Posts as per specification.	Prov.	Sum		
E 2		SUPPLY AND DELIVERY OF ELECTRICAL WORKS				
E 2.1		SUNDRIES				
E 2.11.1		Substation signage as per the requirements of Electrical Machinery Regulation No.4 of the Occupational Health & Safety Act of SA	Prov.	Sum		
E 2.11.2		A0 Frames for mounting drawings in sub-station.	Ea.	1		
E 2.11		COMMISSIONING				
E 2.11.1		Commissioning Spares	Prov.	Sum		
E 2.11.2	Commissioning Assistance	Hours	40			
E 2.12	DOCUMENTATION CERTIFICATES, MANUALS AND QA					
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.12.1		Certificate of Compliance	Prov.	Sum		
E 2.12.2		QA documentation for all equipment supplied	Prov.	Sum		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.13		INSTALLATION, TESTING AND COMMISSIONING OF NEW MAJOR ELECTRICAL EQUIPMENT				
E 2.13.1		MV SWITCHGEAR AS PER DATASHEET				
E 2.13.1.1	PSY2.1.7	Unit 5 Module 2 Bioreactor Substation 11kV Switchgear (Datasheet: JW13898-E-007-1)	Ea.	1		
E 2.13.1.2	PSY2.1.3	Unit 5 Main Intake Substation Incomer Extension cubicle to existing Switchgear Actom SBV4/800/25/Si (Datasheet: JW13898-E-007-2)	Ea.	1		
E 2.13.1.3	PSY2.1.7	Unit 5 Module 2 Substation Battery Tripping Unit	Ea.	1		
E 2.13.2		TRANSFORMER AS PER DATASHEET				
E 2.13.2.1	PSY2.1.3	1600kVA, Dual-Wound, 0.4/6.6-11kV Step Up Transformer (Datasheet: JW13898-E-013-2)	Ea.	1		
E 2.13.2.2	PSY2.1.7	630kVA, Dual-Wound, 11-6.6/0.4 kV Step Down Transformer (Datasheet: JW13898-E-013-1)	Ea.	4		
E 2.13.2.3	PSY2.1.1	11kV, 20A, 3s Neutral Earthing Resistor for 1600kVA Step Up Transformer	Ea.	1		
E 2.13.3		GENERATORS AS PER DATASHEETS AND SPECIFICATION				
E 2.13.3.1	PSY2.1.2	1600kVA (Prime) Diesel Generator with bulk storage fuel system and all control and interface cables. (Datasheet: JW13898-E-010-1)	Ea.	1		
E 2.13.3.2	PSY2.1.4	315kVA (Prime) Diesel Generator with bulk storage fuel system and all control and interface cables. (Datasheet: JW13898-E-010-2)	Ea.	1		
E 2.13.3.1.2	PSY2.1.4	Admin Building Changeover Panel - Distribution Board (Datasheet: JW13898-E-007-1)	Ea.	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.13.4	PSY2.1.7	BIOREACTOR MOTOR CONTROL CENTRE AS PER DATASHEETS AND SPECIFICATION				
E 2.13.4.1		New Unit 5 Module 2 Bioreactor Motor Control Centre (5E2-MCC-01) (Datasheet: JW13898-E-002-1)	Ea.	1		
E 2.13.4.2		Ventilation fan for the MCC Room (3-phase, 400V, 0.55kW, 2880rpm, with air quantity of 500l/s @ 200pa)	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.13.5	PSY2.1.5	EQUIP EXISTING BALANCING TANK MOTOR CONTROL CENTRE				
E 2.13.5.1		Equip Existing Balancing Tank and PST MCC with 0.55kW PST Bridge Drive DOL Starter	Ea.	2		
E 2.13.5.2		Equip Existing Balancing Tank and PST MCC with 11kW DOL Starter	Ea.	6		
E 2.13.5.3		Equip Existing Balancing Tank and PST Instrument DB with 6A, 3Pole miniature circuit breaker Valve Feeder	Ea.	2		
E 2.13.6	PSY2.1.10	EQUIP EXISTING WST MOTOR CONTROL CENTRE				
E 2.13.6.1		Equip Existing WST MCC with Thickener Drive 0.55kW DOL Starter	Ea.	1		
E 2.13.6.2		Equip Existing WST Instrument DB with 6A, 3Pole miniature circuit breaker Valve Feeder	Ea.	1		
E 2.13.7	PSY2.1.8	EQUIP EXISTING HYPOCHLORITE MOTOR CONTROL CENTRE				
E 2.13.7.1		Equip Existing Hypochlorite MCC with 0.75kW VSD Starter	Ea.	1		
E 2.13.8	PSY2.1.11	EQUIP EXISTING WAS PUMPSTATION MOTOR CONTROL CENTRE				
E 2.13.8.1		Equip Existing WAS Pump station MCC with 22kW DOL Starter	Ea.	1		
E 2.13.9	PSY2.1.6	NEW AND EXSTING ELUTRIATION/FERMENTATION MOTOR CONTROL CENTRE				
E 2.13.9.1		Equip Existing Elutriation Pump station MCC with 18.5kW DOL Starter	Ea.	3		
E 2.13.9.2		Equip Existing Elutriation Pump station MCC with 5.5kW DOL Starter	Ea.	2		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.13.9.3	PSY2.1.14	Equip Existing Elutriation Pump station MCC with 11kW DOL Starter	Ea.	2		
E 2.13.9.4		Unit 5 New Fermentation Motor Control Centre (Datasheet: JW13898-E-002-1)	Ea.	1		
E 2.13.9.5		Ventilation fan for the MCC Room (3-phase, 400V, 0.55kW, 2880rpm, with air quantity of 500l/s @ 200pa)	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.13.10		SMALL POWER DISTRIBUTION BOARDS AS PER DATASHEET				
E 2.13.10.1		Unit 5 Module 2 SP&L DB (Datasheet: JW13898-E-002-2)	Ea.	1		
E 2.13.10.2		Unit 5 Elutriation Pump Station SP&L DB (Datasheet: JW13898-E-002-2)	Ea.	1		
E 2.13.11		INSTRUMENT DISTRIBUTION BOARDS AS PER DATASHEET				
E 2.13.11.1		Unit 5 Bioreactor 2 Instrument DB (Datasheet: JW13898-E-002-3)	Ea.	1		
E 2.13.11.2		Unit 5 Elutriation Pump Station Instrument DB (Datasheet: JW13898-E-002-3)	Ea.	1		
E 2.13.12	PSY2.1.7	EQUIPING EXISTING INSTRUMENT DISTRIBUTION BOARDS AS PER SPECIFICATION				
E 2.13.12.1		Equipping the existing PST and Balancing Tank Instrument DB with 2A, 2pole miniature circuit breakers	Ea.	5		
E 2.13.12.2		Equipping the existing Hypochlorite Instrument DB with 2A, 2pole miniature circuit breaker	Ea.	1		
E 2.13.12.3		Equipping the existing Unit 5 Bioreactor 1 Analyser Room Instrument DB with 2A, 2pole miniature circuit breakers	Ea.	8		
E 2.13.12.3		Equipping the existing Final Effluent Analyser Room Instrument DB with 2A, 2pole miniature circuit breakers	Ea.	9		
E 2.13.13		ELECTRICAL ISOLATOR PUSHBUTTON STATION (LOCAL START/STOP) EQUIPMENT				
E 2.13.13.1		0.37kW to 30kW (DOL Motor Station) 63A Isolator	Ea.	60		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.13.13.2	PSY2.1.13	37kW to 75kW (DOL Motor Station) 160A Isolator	Ea.	4		
E 2.13.13.3		90kW to 110kW (Star-Delta Motor Station) 200A Isolator	Ea.	9		
E 2.14		EARTHING AND LIGHTNING PROTECTION				
E 2.14.1		Earthing and Lightning Protection for Bioreactor Substation and MCC by specialist	Prov.	Sum	R	500,000.00
E 2.14.2		Earthing and Lightning Protection for New Elutriation Pump station and MCC Room by specialist	Prov.	Sum	R	150,000.00
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.15		INSTALLATION, TESTING AND COMMISSIONING OF SMALL POWER AND LIGHTING				
E 2.15.1	PSY2.1.12	AREA LIGHTING				
E 2.15.1.1		High mast pole - 20 meters tall, mid-hinged type, galvanised steel construction (including allowance for supply and installation of concrete plinths). Pole to be designed to support 8 off 400 W LED floodlights. Masts to include DB as per drawing ING0645D-5E2-SM04	Ea.	3		
E 2.15.1.2		400 W LED Floodlight (IP65 ingress protection, wide beam, hail proof, corrosion proof and vandal resistant) complete with mounting accessories, mounted on high mast poles	Ea.	24		
E 2.15.1.3		Provision to move existing Fermentation/Elutriation fixed approximately 25m High Mast	Ea.	1		
E 2.15.2		LUMINAIRES				
E 2.15.2.1		2 x 58W industrial fluorescent with Polycarbonate diffuser and Electronic Control Gear, IP65 ingress protection complete with mounting accessories	Ea.	18		
E 2.15.2.2		2 x 58W industrial fluorescent with Polycarbonate diffuser and Electronic Control Gear and built in emergency back-up - 1 hour with 100% light output, IP65 ingress protection complete with mounting accessories	Ea.	4		
E 2.15.2.3		80W High Pressure Sodium Bulk heads, IP65 ingress protection complete with mounting accessories	Ea.	6		
E 2.15.3		CONDUITS AND WIRING				
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.15.3.1		25 mm Bosal (Galvanised Steel) conduit (c/w with mounting saddles and mounting accessories for surface mounting)	Ea.	90		
E 2.15.3.2		40 mm Bosal (Galvanised Steel) conduit (c/w with mounting saddles and mounting accessories for surface mounting)	Ea.	30		
E 2.15.3.3		2-way conduit round boxes fitted with 5A socket outlet for luminaire plug tops	Ea.	0		
E 2.15.2.4		3-way conduit round boxes (Galvanised Steel) for 25mm conduit	Ea.	6		
E 2.15.3.5		3-way conduit round boxes for (Galvanised Steel) for 40mm conduit	Ea.	0		
E 2.15.3.6		4mm² PVC wire to SANS 1411, installed in conduit	m	420		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.15.3.7		2.5mm² PVC wire to SANS 1411, installed in conduit	m	600		
E 2.15.4		SWITCHES AND SOCKET OUTLETS				
E 2.15.4.1		Surface Mounted 16 A industrial type switch socket outlet	Ea.	6		
E 2.15.4.2		Surface Mounted 63 A welding socket outlet, 5-pin round type, IP44	Ea.	4		
E 2.15.4.3		Surface Mounted 1-way industrial light switch	Ea.	1		
E 2.15.4.4		Surface Mounted 2-way industrial type light switch	Ea.	6		
E 2.15.4.5		Surface Mounted industrial type 16A double pole isolator	Ea.	0		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.16	PSY2.1.15	INSTALLATION, TESTING AND COMMISSIONING OF XLPE INSULATED, PVC BEDDED, STEEL WIRE ARMoured, PVC SHEATHED 6.35/11kV CABLES TO SANS 1339 TYPE A				
	PSY2.1.7	BIOREACTOR PRIMARY MEDIUM VOLTAGE CABLE				
E 2.16.1		Cable from Bioreactor 1 Substation to Bioreactor 2 Substation				
E 2.16.1.1		Power cable 120mm² 3-Core XLPE Cable	m	300		
E 2.16.1.2		120mm² 3-Core Copper Cable terminations	Ea.	4		
E 2.16.1.3		Earth cable 95mm² Clear Insulated KWENA Cable	m	300		
E 2.16.1.4		95mm² Clear Insulated KWENA termination kit	Ea.	4		
TOTAL BROUGHT FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
	PSY2.1.1	UPGRADE OF UNIT 5 MAIN INTAKE SUB FEEDER CABLES				
E 2.16.2		Main Intake Sub to Unit 5 Intake Sub - Incomer CB2				
E 2.16.2.1		Power cable	m	1000		
E 2.16.2.2		150mm ² 3-Core XLPE Cable	Ea.	8		
E 2.16.2.3		150mm ² 3-Core Copper Cable terminations	Ea.	6		
E 2.16.2.4		150mm ² 3-Core Copper Cable splice kits	m	1000		
E 2.16.2.5		Earth cable	Ea.	8		
E 2.16.2.6		95mm ² Clear Insulated KWENA Cable	Ea.	6		
E 2.16.3		95mm ² Clear Insulated KWENA termination kit				
E 2.16.3.1		95mm ² Clear Insulated KWENA splice kits				
E 2.16.3.2		Main Intake Sub to Unit 5 Intake Sub - Incomer CB6				
E 2.16.3.3		Power cable	m	1000		
E 2.16.3.4		150mm ² 3-Core XLPE Cable	Ea.	8		
E 2.16.3.5		150mm ² 3-Core Copper Cable terminations	Ea.	14		
E 2.16.3.6		150mm ² 3-Core Copper Cable splice kits	m	1000		
E 2.16.4		Earth cable	Ea.	8		
E 2.16.4.1		95mm ² Clear Insulated KWENA Cable	Ea.	14		
E 2.16.4.2		95mm ² Clear Insulated KWENA termination kit				
E 2.16.4.3		Bioreactor 2 MV Switchgear to Unit 5 Transformer 1				
E 2.16.4.4		Power cable	m	25		
E 2.16.5		120mm ² 3-Core XLPE Cable	Ea.	2		
E 2.16.5.1		120mm ² 3-Core Copper Cable terminations	m	25		
E 2.16.5.2		Earth cable	Ea.	2		
E 2.16.5.3		95mm ² Clear Insulated KWENA Cable	m	25		
E 2.16.5.4		95mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.16.6		Bioreactor 2 MV Switchgear to Unit 5 Transformer 3				
E 2.16.6.1		Power cable	m	25		
E 2.16.6.2		120mm ² 3-Core XLPE Cable	Ea.	2		
E 2.16.6.3		120mm ² 3-Core Copper Cable terminations	m	25		
E 2.16.6.4		Earth cable	Ea.	2		
E 2.16.7		95mm ² Clear Insulated KWENA Cable				
E 2.16.7.1		95mm ² Clear Insulated KWENA termination kit				
E 2.16.7.2		Bioreactor 2 MV Switchgear to Unit 5 Transformer 4				
E 2.16.7.3		Power cable	m	25		
E 2.16.7.4		120mm ² 3-Core XLPE Cable				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.16.7.2	PSY2.1.3	120mm² 3-Core Copper Cable terminations	Ea.	2			
E 2.16.7.3		Earth cable	m	25			
E 2.16.7.4		95mm² Clear Insulated KWENA Cable					
		95mm² Clear Insulated KWENA termination kit	Ea.	2			
E 2.17		INSTALLATION, TESTING AND COMMISSIONING OFLOW VOLTAGE RESIN ENCAPSULATED BUSBAR ACCORDING TO IEC60431 and IEC 60331-21					
E 2.17.1		Bio-Reactor Busbar trunking from Transformer to MCC		Lot	1		
E 2.17.1.1		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 1 to Bio-Reactor 2 MCC1		Lot	1		
E 2.17.1.2		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 2 to Bio-Reactor 2 MCC2		Lot	1		
E 2.17.1.3		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 3 to Bio-Reactor 2 MCC3		Lot	1		
E 2.17.1.4		1600A, 3ph + N + E copper resin encapsulated busbar trunking system from Bio-Reactor 2 Transformer 4 to Bio-Reactor 2 MCC4		Lot	1		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS					
E 2.18		INSTALLATION, TESTING AND COMMISSIONING OF PVC INSULATED, PVC BEDDED, STEEL WIRE ARMOURED, PVC SHEATHED 600/1000V FLAME RETARDANT (RED STRIPE) CABLES TO SANS 1507-3 AND SANS 60332					
		BALANCING AND PRIMARY SETTLING TANK CABLES					
E 2.18.1		5M6ME07 - PST5 Bridge Drive					
E 2.18.1.1		Power cable		m	135		
E 2.18.1.2		2.5mm² 4-Core Copper Cable		Ea.	4		
E 2.18.1.3		2.5mm² 4-Core Copper Cable terminations					
E 2.18.1.4		Control Cable		m	130		
		2.5mm² 12-Core Copper Cable		Ea.	2		
E 2.18.2		2.5mm² 12-Core Copper Cable terminations					
E 2.18.2	5M6ME08 - PST6 Bridge Drive						
E 2.18.2.1	Power cable		m	95			
E 2.18.2.2	2.5mm² 4-Core Copper Cable		Ea.	4			
E 2.18.2.3	2.5mm² 4-Core Copper Cable terminations						
E 2.18.2.4	Control Cable		m	90			
	2.5mm² 12-Core Copper Cable		Ea.	2			
E 2.18.3	2.5mm² 12-Core Copper Cable terminations						
E 2.18.3	5M7ME10 - Balancing Tank 2 Mixer 1						
E 2.18.3.1	Power cable		m	145			
	2.5mm² 4-Core Copper Cable						
TOTAL CARRIED FORWARD							
Employer:		Contractor:					
Witness:		Witness:					

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.3.2		2.5mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.3.3		Control Cable	m	140		
E 2.18.3.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.4		5M7ME11 - Balancing Tank 2 Mixer 2				
E 2.18.4.1		Power cable	m	125		
E 2.18.4.2		2.5mm² 4-Core Copper Cable				
		2.5mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.4.3		Control Cable	m	120		
E 2.18.4.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.5		5M7ME12 - Balancing Tank 2 Mixer 3				
E 2.18.5.1		Power cable	m	125		
E 2.18.5.2		2.5mm² 4-Core Copper Cable				
		2.5mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.5.3		Control Cable	m	120		
E 2.18.5.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.6		5M7ME13 - Balancing Tank 2 Mixer 4				
E 2.18.6.1		Power cable	m	105		
E 2.18.6.2		6mm² 4-Core Copper Cable				
		6mm² 4-Core Copper Cable terminations	Ea.	4		
E2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.6.3		Control Cable	m	100		
E 2.18.6.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.7		5M7ME14 - Balancing Tank 2 Mixer 5				
E 2.18.7.1		Power cable	m	105		
E 2.18.7.2		6mm² 4-Core Copper Cable				
		6mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.7.3		Control Cable	m	100		
E 2.18.7.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.8		5M7ME15 - Balancing Tank 2 Mixer 6				
E 2.18.8.1		Power cable	m	85		
E 2.18.8.2		6mm² 4-Core Copper Cable				
		6mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.8.3		Control Cable	m	80		
E 2.18.8.4		2.5mm² 12-Core Copper Cable				
		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.9		5M6ME09 - PST5 Underflow Valve				
E 2.18.9.1		Power cable	m	90		
		2.5mm² 4-Core Copper Cable				
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.18.9.2	PSY2.1.6	2.5mm² 4-Core Copper Cable terminations	Ea.	2			
E 2.18.10		5M6ME10 - PST6 Underflow Valve					
E 2.18.10.1		Power cable	m	90			
E 2.18.10.2		2.5mm² 4-Core Copper Cable terminations	Ea.	2			
E 2.18.11		5M7ME16 - Balancing Tank 2 Outlet Sluice Gate					
E 2.18.11.1		Power cable	m	160			
E 2.18.11.2		2.5mm² 4-Core Copper Cable terminations	Ea.	2			
E 2.18.12		5M7ME17 - Balancing Tank 2 Inlet Sluice Gate					
E 2.18.12.1		Power cable	m	160			
E 2.18.12.2		2.5mm² 4-Core Copper Cable terminations	Ea.	2			
		ELUTRIATION CABLES					
E 2.18.13		5M8ME08 - Effluent Pump 01					
E 2.18.13.1		Power cable	m	40			
E 2.18.13.2		10mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.13.3		Control Cable	m	35			
E 2.18.13.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS					
E 2.18.14		5M8ME09 - Effluent Pump 02					
E 2.18.14.1		Power cable	m	40			
E 2.18.14.2		10mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.14.3		Control Cable	m	35			
E 2.18.14.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.18.15		5M8ME19 - Effluent Pump 03					
E 2.18.15.1		Power cable	m	35			
E 2.18.15.2		10mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.15.3		Control Cable	m	30			
E 2.18.15.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.18.16		5M8ME05 - Sludge Recycle Pump 01					
E 2.18.16.1		Power cable	m	35			
E 2.18.16.2		2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.16.3		Control Cable	m	30			
		2.5mm² 12-Core Copper Cable					
TOTAL CARRIED FORWARD							
Employer:		Contractor:					
Witness:		Witness:					

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.16.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.17		5M8ME06 - Sludge Recycle Pump 02				
E 2.18.17.1		Power cable	m	35		
E 2.18.17.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.17.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.17.4		Control Cable	m	30		
E 2.18.17.4		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.18		5M8ME07 - Transfer Pump 01				
E 2.18.18.1		Power cable	m	30		
E 2.18.18.2		4mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.18.3		4mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.18.4		Control Cable	m	25		
E 2.18.18.4		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.19		5M8ME08 - Transfer Pump 02				
E 2.18.19.1		Power cable	m	30		
E 2.18.19.2		4mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.19.3		4mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.19.4		Control Cable	m	25		
E 2.18.19.4		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.20		5M8ME17 - Thickener 2 Bridge Drive				
E 2.18.20.1		Power cable	m	60		
E 2.18.20.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.20.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.20.3		Control Cable	m	55		
E 2.18.20.4		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.21		5M8ME18 - Elutriation Mixer				
E 2.18.21.1		Power cable	m	40		
E 2.18.21.2		10mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.21.3		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.21.4		Control Cable	m	35		
E 2.18.21.4		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.22		5M8ME24 - Effluent Pump 04				
E 2.18.22.1		Power cable	m	40		
E 2.18.22.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.22.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.22.3		Control Cable	m	35		
E 2.18.22.3		2.5mm ² 12-Core Copper Cable	m	35		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.22.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.23		5M8ME25 - Effluent Pump 05				
E 2.18.23.1		Power cable	m	40		
E 2.18.23.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.23.3		Control Cable	m	35		
E 2.18.23.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.24		5M8ME26 - Effluent Pump 06				
E 2.18.24.1		Power cable	m	35		
E 2.18.24.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.24.3		Control Cable	m	30		
E 2.18.24.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.25		5M8ME20 - Sludge Recycle Pump 03				
E 2.18.25.1		Power cable	m	30		
E 2.18.25.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.25.3		Control Cable	m	25		
E 2.18.25.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.26		5M8ME201- Sludge Recycle Pump 04				
E 2.18.26.1		Power cable	m	30		
E 2.18.26.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.26.3		Control Cable	m	25		
E 2.18.26.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.27		5M8ME22 - Transfer Pump 03				
E 2.18.27.1		Power cable	m	30		
E 2.18.27.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.27.3		Control Cable	m	25		
E 2.18.27.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.28		5M8ME23 - Transfer Pump 04				
E 2.18.28.1		Power cable	m	20		
E 2.18.28.2		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.28.3		Control Cable	m	15		
E 2.18.28.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.29		5M8ME28 - Sump Pump				
E 2.18.29.1		Power cable	m	25		
E 2.18.29.2		2.5mm ² 4-Core Copper Cable				
E 2.18.29.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.29.4		Control Cable				
E 2.18.29.5		2.5mm ² 12-Core Copper Cable	m	20		
E 2.18.29.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.30		5M8ME - Elutriation Instrument DB				
E 2.18.30.1		Power cable	m	20		
E 2.18.30.2		2.5mm ² 4-Core Copper Cable				
E 2.18.30.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.30.4		Earth cable				
E 2.18.30.5		16mm ² Clear Insulated KWENA Cable	m	20		
E 2.18.30.6		16mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.18.31		5M8ME - Elutriation SP&L DB				
E 2.18.31.1		Power cable	m	20		
E 2.18.31.2		25mm ² 4-Core Copper Cable				
E 2.18.31.3		25mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.31.4		Earth cable				
E 2.18.31.5		16mm ² Clear Insulated KWENA Cable	m	20		
E 2.18.31.6		16mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.18.32		5M8MCC02 - Elutriation MCC Supply Cable				
E 2.18.32.1		Power cable	m	65		
E 2.18.32.2		95mm ² 4-Core Copper Cable				
E 2.18.32.3		95mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.32.4		Earth cable				
E 2.18.32.5		95mm ² Clear Insulated KWENA Cable	m	65		
E 2.18.32.6		95mm ² Clear Insulated KWENA termination kit	Ea.	2		
E 2.18.33		5M8ME29 - Sludge Recirculation Valve				
E 2.18.33.1		Power cable	m	160		
E 2.18.33.2		2.5mm ² 4-Core Copper Cable				
E 2.18.33.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.34		5M8ME18 - Sludge Recirculation Pump 5				
E 2.18.34.1		Power cable	m	30		
E 2.18.34.2		2.5mm ² 4-Core Copper Cable				
E 2.18.34.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.34.4		Control Cable				
E 2.18.34.5		2.5mm ² 12-Core Copper Cable	m	25		
E 2.18.34.6		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.35		5M8ME01 - Odour Control Recirculating Pump				
E 2.18.35.1		Power cable	m	105		
E 2.18.35.2		2.5mm ² 4-Core Copper Cable				
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.18.35.2	PSY2.1.7	2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.35.3		Control Cable	m	100			
E 2.18.35.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.18.36		5M8ME02 - Odour Control Effluent Pump					
E 2.18.36.1		Power cable	m	105			
E 2.18.36.2		2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.36.3		Control Cable	m	100			
E 2.18.36.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.18.37		5M8ME03 - Odour Control Blower					
E 2.18.37.1		Power cable	m	105			
E 2.18.37.2		2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.37.3		Control Cable	m	100			
E 2.18.37.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2.18.38		5M8ME04 - Odour Control Nutrient solution Mixer					
E 2.18.38.1		Power cable	m	105			
E 2.18.38.2		2.5mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.38.3		Control Cable	m	100			
E 2.18.38.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
		MODULE 2 BIOREACTOR LV CABLES					
E 2.18.39		5M2ME01 - Mixer 1					
E 2.18.39.1		Power cable	m	95			
E 2.18.39.2		10mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.39.3		Control Cable	m	90			
E 2.18.39.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS					
E 2.18.40		5M2ME05 - Mixer 5					
E 2.18.40.1		Power cable	m	125			
E 2.18.40.2		10mm² 4-Core Copper Cable terminations	Ea.	4			
E 2.18.40.3		Control Cable	m	120			
E 2.18.40.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2			
TOTAL CARRIED FORWARD							
Employer:		Contractor:					
Witness:		Witness:					

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.37		5M2ME09 - Mixer 9				
E 2.18.37.1		Power cable	m	160		
E 2.18.37.2		25mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.37.3		25mm ² 4-Core Copper Cable terminations				
E 2.18.37.4		Power cable (from S/S Station to Motor)	m	5		
E 2.18.37.5		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.37.6		10mm ² 4-Core Copper Cable terminations				
E 2.18.38		5M2ME10 - Aerator 1				
E 2.18.38.1		Control Cable	m	160		
E 2.18.38.2		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.38.3		2.5mm ² 12-Core Copper Cable terminations				
E 2.18.38.4		5M2ME10 - Aerator 1				
E 2.18.38.5		Power cable	m	580		
E 2.18.38.6		150mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.18.38.7		150mm ² 4-Core Aluminium Cable terminations				
E 2.18.38.8		Power cable (from S/S Station to Motor)	m	20		
E 2.18.38.9		95mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.18.38.10		95mm ² 4-Core Aluminium Cable terminations				
E 2.18.38.11		Control Cable	m	145		
E 2.18.38.12		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.38.13		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.39		5M2ME14 - Aerator 5				
E 2.18.39.1		Power cable	m	740		
E 2.18.39.2		95mm ² 4-Core Aluminium Cable	Ea.	16		
E 2.18.39.3		95mm ² 4-Core Aluminium Cable terminations				
E 2.18.39.4		Control Cable	m	180		
E 2.18.39.5		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.39.6		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.40		5M2ME10 - Aerator 9				
E 2.18.40.1		Power cable	m	860		
E 2.18.40.2		150mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.18.40.3		150mm ² 4-Core Aluminium Cable terminations				
E 2.18.40.4		Power cable (from S/S Station to Motor)	m	20		
E 2.18.40.5		95mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.18.40.6		95mm ² 4-Core Aluminium Cable terminations				
E 2.18.40.7		Control Cable	m	215		
E 2.18.40.8		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.40.9		2.5mm ² 19-Core Copper Cable terminations				
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.41		5M2ME24 - Mixed Liquor Pump 1				
E 2.18.41.1		Power cable	m	80		
E 2.18.41.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.41.3		2.5mm ² 4-Core Copper Cable terminations				
E 2.18.41.4		Control Cable	m	75		
E 2.18.41.5		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.41.6		2.5mm ² 12-Core Copper Cable terminations				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.42		5M2ME28 - Clarifier 1 Bridge Drive				
E 2.18.42.1		Power cable	m	345		
E 2.18.42.2		2.5mm ² 4-Core Copper Cable				
E 2.18.42.3		2.5mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.42.4		Control Cable	m	340		
E 2.18.42.4		2.5mm ² 12-Core Copper Cable				
E 2.18.42.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.43		5M2ME02 - Mixer 2				
E 2.18.43.1		Power cable	m	80		
E 2.18.43.2		10mm ² 4-Core Copper Cable				
E 2.18.43.2		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.43.3		Control Cable	m	75		
E 2.18.43.4		2.5mm ² 12-Core Copper Cable				
E 2.18.43.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.44		5M2ME02 - Mixer 6				
E 2.18.44.1		Power cable	m	110		
E 2.18.44.2		10mm ² 4-Core Copper Cable				
E 2.18.44.2		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.44.3		Control Cable	m	105		
E 2.18.44.4		2.5mm ² 12-Core Copper Cable				
E 2.18.44.4		2.5mm ² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.45		5M2ME11 - Aerator 2				
E 2.18.45.1		Power cable	m	620		
E 2.18.45.2		120mm ² 4-Core Aluminium Cable				
E 2.18.45.2		120mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.18.45.3		Power cable (from S/S Station to Motor)	m	20		
E 2.18.45.4		95mm ² 4-Core Aluminium Cable				
E 2.18.45.4		95mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.18.45.5		Control Cable	m	160		
E 2.18.45.6		2.5mm ² 19-Core Copper Cable				
E 2.18.45.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2.18.46		5M2ME15 - Aerator 6				
E 2.18.46.1		Power cable	m	780		
E 2.18.46.2		150mm ² 4-Core Aluminium Cable				
E 2.18.46.2		150mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.18.46.3		Power cable (from S/S Station to Motor)	m	20		
E 2.18.46.4		95mm ² 4-Core Aluminium Cable				
E 2.18.46.4		95mm ² 4-Core Aluminium Cable terminations	Ea.	4		
E 2.18.46.5		Control Cable	m	195		
E 2.18.46.6		2.5mm ² 19-Core Copper Cable				
E 2.18.46.6		2.5mm ² 19-Core Copper Cable terminations	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.47		5M2ME19 - Mixer 10				
E 2.18.47.1		Power cable	m	225		
E 2.18.47.2		70mm ² 4-Core Aluminium Cable				
E 2.18.47.2		70mm ² 4-Core Aluminium Cable terminations	Ea.	2		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.47.3		Power cable (from S/S Station to Motor)	m	5		
E 2.18.47.4		25mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.47.5		25mm ² 4-Core Aluminium Cable terminations				
E 2.18.47.6		Control Cable	m	225		
E 2.18.47.6		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.47.6		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.48		5M2ME19 - Mixer 10				
E 2.18.48.1		Power cable	m	225		
E 2.18.48.2		70mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.48.3		70mm ² 4-Core Aluminium Cable terminations				
E 2.18.48.3		Power cable (from S/S Station to Motor)	m	5		
E 2.18.48.4		25mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.48.5		25mm ² 4-Core Aluminium Cable terminations				
E 2.18.48.5		Control Cable	m	225		
E 2.18.48.6		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.48.6		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.49		5M2ME20 - Aerator 10				
E 2.18.49.1		Power cable	m	1000		
E 2.18.49.2		95mm ² 4-Core Aluminium Cable	Ea.	8		
E 2.18.49.3		95mm ² 4-Core Aluminium Cable terminations				
E 2.18.49.3		Control Cable	m	245		
E 2.18.49.4		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.49.4		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.50		5M2ME23 - Aerator 13				
E 2.18.50.1		Power cable	m	240		
E 2.18.50.2		120mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.50.3		120mm ² 4-Core Aluminium Cable terminations				
E 2.18.50.3		Power cable (from S/S Station to Motor)	m	5		
E 2.18.50.4		50mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.50.4		50mm ² 4-Core Aluminium Cable terminations				
E 2.18.50.5		Control Cable	m	240		
E 2.18.50.6		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.50.6		2.5mm ² 12-Core Copper Cable terminations				
E 2.18.51		5M2ME25 - Mixed Liquor Pump 2				
E 2.18.51.1		Power cable	m	85		
E 2.18.51.2		95mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.18.51.3		95mm ² 4-Core Aluminium Cable terminations				
E 2.18.51.3		Control Cable	m	80		
E 2.18.51.4		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.51.4		2.5mm ² 19-Core Copper Cable terminations				
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.52		5M2ME29 - Clarifier 2 Bridge Drive				
E 2.18.52.1		Power cable	m	365		
E 2.18.52.2		4mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.52.2		4mm ² 4-Core Copper Cable terminations				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.52.3		Control Cable	m	360		
E 2.18.52.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.53		5M2ME03 - Mixer 3				
E 2.18.53.1		Power cable	m	95		
E 2.18.53.2		10mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.53.3		Control Cable	m	90		
E 2.18.53.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.54		5M2ME07 - Mixer 7				
E 2.18.54.1		Power cable	m	135		
E 2.18.54.2		16mm² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.54.3		Control Cable	m	130		
E 2.18.54.4		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.55		5M2ME15 - Aerator 3				
E 2.18.55.1		Power cable	m	700		
E 2.18.55.2		150mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.55.3		Power cable (from S/S Station to Motor)	m	20		
E 2.18.55.4		95mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.55.5		Control Cable	m	175		
E 2.18.55.6		2.5mm² 19-Core Copper Cable terminations	Ea.	2		
E 2.18.56		5M2ME16 - Aerator 7				
E 2.18.56.1		Power cable	m	840		
E 2.18.56.2		150mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.56.3		Power cable (from S/S Station to Motor)	m	20		
E 2.18.56.4		95mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.56.5		Control Cable	m	210		
E 2.18.56.6		2.5mm² 19-Core Copper Cable terminations	Ea.	2		
E2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.57		5M2ME21 - Aerator 11				
E 2.18.57.1		Power cable	m	260		
E 2.18.57.2		120mm² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.18.57.3	Power cable (from S/S Station to Motor)	m	5			
E 2.18.57.4	50mm² 4-Core Aluminium Cable terminations	Ea.	2			
E 2.18.57.5	Control Cable	m	260			
E 2.18.57.6	2.5mm² 19-Core Copper Cable terminations	Ea.	2			
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.58		5M2ME26 - Mixed Liquor Pump 3				
E 2.18.58.1		Power cable	m	455		
E 2.18.58.2		70mm ² 4-Core Copper Cable	Ea.	6		
E 2.18.58.3		70mm ² 4-Core Copper Cable terminations				
E 2.18.58.4		Control Cable	m	225		
E 2.18.59		5M2ME30 - Clarifier 3 Bridge Drive				
E 2.18.59.1		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.59.2		2.5mm ² 12-Core Copper Cable terminations				
E 2.18.59.3		Power cable	m	385		
E 2.18.59.4		4mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.60		5M2ME31 - Screw Pump 1				
E 2.18.60.1		Power cable	m	555		
E 2.18.60.2		70mm ² 4-Core Aluminium Cable	Ea.	6		
E 2.18.60.3		70mm ² 4-Core Aluminium Cable terminations				
E 2.18.60.4		Control Cable	m	275		
E 2.18.61		5M2ME35 - Screw 1 Grease Pump				
E 2.18.61.1		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.61.2		2.5mm ² 12-Core Copper Cable terminations				
E 2.18.61.3		Power cable	m	275		
E 2.18.61.4		10mm ² 3-Core Aluminium Cable	Ea.	2		
E 2.18.62		5M2ME34 - Effluent Sample Pump 1				
E 2.18.62.1		Power cable	m	105		
E 2.18.62.2		4mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.18.62.3		4mm ² 4-Core Aluminium Cable terminations				
E 2.18.62.4		Control Cable	m	100		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.63		5M1ME40 - Chemical Dosing Pump 3				
E 2.18.63.1		Power cable	m	280		
E 2.18.63.2		2.5mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.18.63.3		2.5mm ² 4-Core Aluminium Cable terminations				
E 2.18.63.4		Control Cable	m	275		
E 2.18.63.5		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.63.6		2.5mm ² 12-Core Copper Cable terminations				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.64		5M2ME04 - Mixer 4				
E 2.18.64.1		Power cable	m	110		
E 2.18.64.2		16mm² 4-Core Copper Cable				
E 2.18.64.3		16mm² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.64.4		Power cable (from S/S Station to Motor)	m	5		
E 2.18.64.5		6mm² 4-Core Copper Cable				
E 2.18.64.6		6mm² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.64.7		Control Cable	m	110		
E 2.18.64.8		2.5mm² 12-Core Copper Cable				
E 2.18.64.9		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.65		5M2ME08 - Mixer 8				
E 2.18.65.1		Power cable	m	145		
E 2.18.65.2		25mm² 4-Core Aluminium Cable				
E 2.18.65.3		25mm² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.18.65.4		Power cable (from S/S Station to Motor)	m	5		
E 2.18.65.5		10mm² 4-Core Aluminium Cable				
E 2.18.65.6		10mm² 4-Core Aluminium Cable terminations	Ea.	2		
E 2.18.65.7		Control Cable	m	140		
E 2.18.65.8		2.5mm² 12-Core Copper Cable				
E 2.18.65.9		2.5mm² 12-Core Copper Cable terminations	Ea.	2		
E 2.18.66		5M2ME13 - Aerator 4				
E 2.18.66.1		Power cable	m	800		
E 2.18.66.2		150mm² 4-Core Aluminium Cable				
E 2.18.66.3		150mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.66.4		Power cable (from S/S Station to Motor)	m	20		
E 2.18.66.5		95mm² 4-Core Aluminium Cable				
E 2.18.66.6		95mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.66.7		Control Cable	m	200		
E 2.18.66.8		2.5mm² 19-Core Copper Cable				
E 2.18.66.9		2.5mm² 19-Core Copper Cable terminations	Ea.	2		
E 2.18.67		5M2ME13 - Aerator 8				
E 2.18.67.1		Power cable	m	960		
E 2.18.67.2		185mm² 4-Core Aluminium Cable				
E 2.18.67.3		185mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.67.4		Power cable (from S/S Station to Motor)	m	20		
E 2.18.67.5		120mm² 4-Core Aluminium Cable				
E 2.18.67.6		120mm² 4-Core Aluminium Cable terminations	Ea.	8		
E 2.18.67.7		Control Cable	m	235		
E 2.18.67.8		2.5mm² 19-Core Copper Cable				
E 2.18.67.9		2.5mm² 19-Core Copper Cable terminations	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.68		5M2ME22 - Aerator 12				
E 2.18.68.1		Power cable	m	255		
E 2.18.68.2		150mm² 4-Core Aluminium Cable				
E 2.18.68.3		150mm² 4-Core Aluminium Cable terminations	Ea.	4		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.68.3		Power cable (from S/S Station to Motor)	m	20		
E 2.18.68.4		50mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.18.68.5		50mm ² 4-Core Aluminium Cable terminations				
E 2.18.68.6		Control Cable	m	255		
E 2.18.68.7		2.5mm ² 19-Core Copper Cable	Ea.	2		
E 2.18.68.8		2.5mm ² 19-Core Copper Cable terminations				
E 2.18.69		5M2ME27 - Mixed Liquor Pump 4				
E 2.18.69.1		Power cable	m	460		
E 2.18.69.2		70mm ² 4-Core Aluminium Cable	Ea.	4		
E 2.18.69.3		70mm ² 4-Core Aluminium Cable terminations				
E 2.18.69.4		Power cable (from S/S Station to Motor)	m	5		
E 2.18.69.5		50mm ² 4-Core Aluminium Cable	Ea.	2		
E 2.18.69.6		50mm ² 4-Core Aluminium Cable terminations				
E 2.18.69.7		Control Cable	m	230		
E 2.18.69.8		2.5mm ² 12-Core Copper Cable	Ea.	2		
E 2.18.69.9		2.5mm ² 12-Core Copper Cable terminations				
E 2.18.70		5M2ME36 - Screw 2 Grease Pump				
E 2.18.70.1		Power cable	m	275		
E 2.18.70.2		10mm ² 3-Core Aluminium Cable	Ea.	2		
E 2.18.70.3		10mm ² 3-Core Aluminium Cable terminations				
E 2.18.70.4		Power cable	m	5		
E 2.18.70.5		4mm ² 3-Core Aluminium Cable	Ea.	2		
E 2.18.70.6		4mm ² 3-Core Aluminium Cable terminations				
E 2.18.71		5M2ME33 - WAS Flow Control Valve				
E 2.18.71.1		Power cable	m	100		
E 2.18.71.2		2.5mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.71.3		2.5mm ² 4-Core Copper Cable terminations				
E 2.18.72		PLC80				
E 2.18.72.1		Power cable	m	20		
E 2.18.72.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.72.3		10mm ² 4-Core Copper Cable terminations				
E 2.18.72.4		Power cable	m	20		
E 2.18.72.5		6mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.18.72.6		6mm ² Clear Insulated KWENA Cable termination				
E 2.18.73		Bioreactor Instrument DB				
E 2.18.73.1		Power cable	m	25		
E 2.18.73.2		10mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.73.3		10mm ² 4-Core Copper Cable terminations				
E 2.18.73.4		Earth cable	m	20		
E 2.18.73.5		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.18.73.6		10mm ² Clear Insulated KWENA Cable terminations				
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.18.74	PSY2.1.12	Bioreactor MCC Room SP&L DB				
E 2.18.74.1		Power cable	m	20		
E 2.18.74.2		16mm ² 4-Core Copper Cable	Ea.	2		
E 2.18.74.3		16mm ² 4-Core Copper Cable terminations	m	20		
E 2.18.74.4		10mm ² Clear Insulated KWENA Cable	Ea.	2		
E 2.18.75		High Mast Light 01				
E 2.18.75.1		Power cable	m	120		
E 2.18.75.2		10mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.75.3		10mm ² 4-Core Copper Cable terminations	m	120		
E 2.18.75.4		Earth cable	Ea.	2		
E 2.18.76	PSY2.1.12	High Mast Light 02				
E 2.18.76.1		Power cable	m	240		
E 2.18.76.2		10mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.76.3		10mm ² 4-Core Copper Cable terminations	m	240		
E 2.18.76.4		Earth cable	Ea.	2		
E 2.18.77	PSY2.1.12	High Mast Light 03				
E 2.18.77.1		Power cable	m	360		
E 2.18.77.2		10mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.77.3		10mm ² 4-Core Copper Cable terminations	m	360		
E 2.18.77.4		Earth cable	Ea.	2		
	PSY2.1.8	<u>HYPOCHLORITE CABLES</u>				
E 2.18.78	PSY2.1.10	5M5ME03 - Chemical Dosing Pump3				
E 2.18.78.1		Power cable	m	55		
E 2.18.78.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.78.3		2.5mm ² 4-Core Copper Cable terminations	m	50		
E 2.18.78.4		Control Cable	Ea.	2		
		2.5mm² 19-Core Copper Cable				
		2.5mm² 19-Core Copper Cable terminations				
		<u>WASTE SLUDGE THICKENER</u>				
E 2.18.79		5M9ME11 - WST2 Thickener Drive				
E 2.18.79.1		Power cable	m	305		
E 2.18.79.2		2.5mm ² 4-Core Copper Cable	Ea.	4		
E 2.18.79.3		2.5mm ² 4-Core Copper Cable terminations	m	300		
E 2.18.79.4		Control Cable	Ea.	2		
		2.5mm ² 12-Core Copper Cable				
		2.5mm ² 12-Core Copper Cable terminations				
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.18.80		5M9ME10 - WST2 Underflow Valve				
E 2.18.80.1		Power cable	m	305		
E 2.18.80.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
	PSY2.1.11	<u>WAS PUMPSTATION CABLES</u>				
E 2.18.81		5M9ME09 - WAS Pump 3				
E 2.18.81.1		Power cable	m	45		
E 2.18.81.2		10mm ² 4-Core Copper Cable				
E 2.18.81.3		10mm ² 4-Core Copper Cable terminations	Ea.	4		
E 2.18.81.4		Control Cable	m	40		
		10mm ² 12-Core Copper Cable				
		10mm ² 12-Core Copper Cable terminations	Ea.	2		
		<u>VENTILATION FAN CABLES</u>				
E 2.18.82		Ventilation Fan 01				
E 2.18.82.1		Power cable	m	20		
E 2.18.82.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.83		Ventilation Fan 02				
E 2.18.83.1		Power cable	m	20		
E 2.18.83.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.84		Ventilation Fan 03				
E 2.18.84.1		Power cable	m	30		
E 2.18.84.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2.18.85		Ventilation Fan 04				
E 2.18.85.1		Power cable	m	30		
E 2.18.85.2		2.5mm ² 4-Core Copper Cable				
		2.5mm ² 4-Core Copper Cable terminations	Ea.	2		
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.19	PSY2.1.16	INSTALLATION, TESTING AND COMMISSIONING OF ORANGE POWDER COATED 304 STAINLESS STEEL HEAVY DUTY CABLE LADDER, COMPLETE WITH UNISTRUT SUPPORT BRACKETS AND FIXING MATERIALS				
E 2.19.1		1000mm wide cable ladder - straight	m	700		
E 2.19.2		1000mm wide cable ladder - elbow	Ea.	56		
E 2.19.3		1000mm wide cable ladder - dropper / riser	Ea.	11		
E 2.19.4		1000mm cable ladder covers	m	55		
TOTAL CARRIED FORWARD						
Employer:		Contractor:				
Witness:		Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
TOTAL BROUGHT FORWARD							
E 2.19.4	PSY2.1.16	800mm wide cable ladder - straight	m	20			
E 2.19.5		800mm wide cable ladder - elbow	Ea.	0			
E 2.19.6		800mm wide cable ladder - dropper / riser	Ea.	2			
E 2.19.7		800mm wide cable ladder covers	m	10			
E 2.19.8		600mm wide cable ladder - straight	m	300			
E 2.19.9		600mm wide cable ladder - elbow	Ea.	12			
E 2.19.10		600mm wide cable ladder - dropper / riser	Ea.	6			
E 2.19.11		600mm wide cable ladder covers	m	15			
E 2.19.12		250mm wide cable ladder - straight	m	30			
E 2.19.13		250mm wide cable ladder - elbow	Ea.	3			
E 2.19.14		250mm wide cable ladder - dropper / riser	Ea.	1			
E 2.19.15		250mm wide cable ladder covers	m	10			
E 2.19.16		150mm wide cable ladder - straight	m	20			
E 2.19.17		150mm wide cable ladder - elbow	Ea.	2			
E 2.19.18		150mm wide cable ladder - dropper / riser	Ea.	3			
E 2.19.19		150mm wide cable ladder covers	m	10			
E 2.19.20		Scaffolding for cable installation in the Elutriation Pump Station and Balancing Tank	Days	10			
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS					
E 2.2		INSTALLATION, TESTING AND COMMISSIONING OF ORANGE PIGMENTED GLASS REINFORCED POLYESTER CABLE LADDER, COMPLETE WITH 316 STAINLESS STEEL SUPPORT BRACKETS AND FIXING MATERIALS, MOUNTED ON BUILDING WALLS OR OTHER STEEL STRUCTURES					
E 2.2.1		150mm wide cable ladder - straight	m	10			
E 2.19.20.2		150mm wide cable ladder - elbow	Ea.	2			
E 2.19.20.3		150mm wide cable ladder covers	Ea.	1			
TOTAL CARRIED FORWARD							
Employer:			Contractor:				
Witness:			Witness:				

ITEMNo.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
E 2.21		EXCAVATION AND BACKFILLING OF CABLE TRENCHES, PIPE CROSSINGS AND ROAD CROSSINGS	m	10		
E 2.21.1		Trench and backfill 300mm wide x 500mm deep with one layer of protective tiles and warning tape as per Electrical Medium and Low Voltage Cable installation specification.	m	300		
E 2.21.2		Trench and backfill 150mm wide x 500mm deep with one layer of protective tiles and warning tape as per Electrical Medium and Low Voltage Cable installation specification..	m	320		
E 2.21.3		Excavate and backfill Road Crossings, including installation of sleeves. (Road Paving by others) as per Electrical Medium and Low Voltage Cable installation specification.	Ea.	2		
E 2.21.4		Cable Route Marker Posts as per specification.	Sum			
E 2.19.20		Core drill through concrete slab for electrical cable openings	Ea	10		
E 2.22		SUNDRIES				
E 2.22.1		Substation signage as per the requirements of Electrical Machinery Regulation No.4 of the Occupational Health & Safety Act of SA	Sum			
E 2.22.2		A0 Frames for mounting drawings in substation.	Ea.	1		
E 2.23		COMMISSIONING				
E 2.23.1		Commissioning Spares	Sum			
E 2.23.2		Commissioning Assistance	Hours	40		
E 2.23.3		Maintenance Spares	Sum			R 100,000.00
E 2		INSTALLATION, TESTING AND COMMISSIONING OF ELECTRICAL WORKS				
E 2.24		DOCUMENTATION CERTIFICATES, MANUALS AND QA				
E 2.24.1		Certificate of Compliance	Sum			
E 2.24.2		QA documentation for all equipment supplied	Sum			
E 2.24.3		Training	Sum			
TOTAL SECTION 4 CARRIED FORWARD TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
C3		<u>INSTRUMENTATION AND CONTROL ENGINEERING REQUIREMENTS</u>				
C3.1		<u>PLC PANELS</u>				
C3.1.1	PSZ 3.2.1 & PSZ 3.7	New Unit 5 Bioreactor 2 PLC (NW0580BIO02)				
C 3.1.1.1		Design Panel Layout:	ea	1		
C 3.1.1.2		Hardware Supply:	Sum	1		
C 3.1.1.3		Panel Manufacture:	ea	1		
C 3.1.1.4		FAT:	ea	1		
C 3.1.1.5		Store and Deliver:	ea	1		
C 3.1.1.6		SAT:	ea	1		
C 3.1.1.7		Install:	ea	1		
C 3.1.1.8		Loop Checks:	Sum	1		
C 3.1.1.9		Commission:	Sum	1		
C3.1.2	PSZ 3.2.2	New Unit 5 Final Effluent PLC (NW0505EPS01)				
C 3.1.2.1		Design Panel Layout:	ea	1		
C 3.1.2.2		Hardware Supply:	Sum	1		
C 3.1.2.3		Panel Manufacture:	ea	1		
C 3.1.2.4		FAT:	ea	1		
C 3.1.2.5		Store and Deliver:	ea	1		
C 3.1.2.6		SAT:	ea	1		
C 3.1.2.7		Install:	ea	1		
C 3.1.2.8		Loop Checks:	Sum	1		
C 3.1.2.9		Commission:	Sum	1		
C3.1.3	PSZ 3.2.3 & PSZ 3.7	New Unit 5 Main Intake Substation PLC (NW0507MIS01)				
C 3.1.3.1		Design Panel Layout:	ea	1		
C 3.1.3.2		Hardware Supply:	Sum	1		
C 3.1.3.3		Panel Manufacture:	ea	1		
C 3.1.3.4		FAT:	ea	1		
C 3.1.3.5		Store and Deliver:	ea	1		
C 3.1.3.6		SAT:	ea	1		
C 3.1.3.7		Install:	ea	1		
C 3.1.3.8		Loop Checks:	Sum	1		
C 3.1.3.9		Commission:	Sum	1		
C3.1.4	PSZ 3.2.4 & PSZ 3.7	New Unit 5 Elutriation PLC (NW0508ELT01)				
C 3.1.4.1		Design Panel Layout:	ea	1		
C 3.1.4.2		Hardware Supply:	Sum	1		
C 3.1.4.3		Panel Manufacture:	ea	1		
C 3.1.4.4		FAT:	ea	1		
C 3.1.4.5		Store and Deliver:	ea	1		
C 3.1.4.6		SAT:	ea	1		
C 3.1.4.7		Install:	ea	1		
C 3.1.4.8		Loop Checks:	Sum	1		
C 3.1.4.9		Commission:	Sum	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C3.1.5	PSZ 3.2.5	New Unit 5 PST and Balancing Tank PLC (NW0501PST01)				
C 3.1.5.1		Design Panel Layout:	ea	1		
C 3.1.5.2		Hardware Supply:	Sum	1		
C 3.1.5.3		Panel Manufacture:	ea	1		
C 3.1.5.4		FAT:	ea	1		
C 3.1.5.5		Store and Deliver:	ea	1		
C 3.1.5.6		SAT:	ea	1		
C 3.1.5.7		Install:	ea	1		
C 3.1.5.8		Loop Checks:	Sum	1		
C 3.1.5.9		Commission:	Sum	1		
C3.1.6	PSZ 3.2.6	New Unit 5 WST PLC (NW0504WST01)				
C 3.1.6.1		Design Panel Layout:	ea	1		
C 3.1.6.2		Hardware Supply:	Sum	1		
C 3.1.6.3		Panel Manufacture:	ea	1		
C 3.1.6.4		FAT:	ea	1		
C 3.1.6.5		Store and Deliver:	ea	1		
C 3.1.6.6		SAT:	ea	1		
C 3.1.6.7		Install:	ea	1		
C 3.1.6.8		Loop Checks:	Sum	1		
C 3.1.6.9		Commission:	Sum	1		
C3.1.7	PSZ 3.2.7	New Unit 5 WAS Pump Station PLC (NW0503WPS01)				
C 3.1.7.1		Design Panel Layout:	ea	1		
C 3.1.7.2		Hardware Supply:	Sum	1		
C 3.1.7.3		Panel Manufacture:	ea	1		
C 3.1.7.4		FAT:	ea	1		
C 3.1.7.5		Store and Deliver:	ea	1		
C 3.1.7.6		SAT:	ea	1		
C 3.1.7.7		Install:	ea	1		
C 3.1.7.8		Loop Checks:	Sum	1		
C 3.1.7.9		Commission:	Sum	1		
C3.1.8	PSZ 3.2.8	New Unit 5 Hyphochlorite PLC (NW0506CHL01)				
C 3.1.8.1		Design Panel Layout:	ea	1		
C 3.1.8.2		Hardware Supply:	Sum	1		
C 3.1.8.3		Panel Manufacture:	ea	1		
C 3.1.8.4		FAT:	ea	1		
C 3.1.8.5		Store and Deliver:	ea	1		
C 3.1.8.6		SAT:	ea	1		
C 3.1.8.7		Install:	ea	1		
C 3.1.8.8		Loop Checks:	Sum	1		
C 3.1.8.9		Commission:	Sum	1		
C 3.1.8.10		Loop Checks:	Sum	1		
C 3.1.8.11		Commission:	ea	1		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C3.1.9	PSZ 3.2.9	Unit 5 Bioreactor 1 PLC (NW0502BIO01)				
C 3.1.9.1		Design Panel Layout:	ea	1		
C 3.1.9.2		Hardware Supply:	Sum	1		
C 3.1.9.3		Panel Manufacture:	ea	1		
C 3.1.9.4		FAT:	ea	1		
C 3.1.9.5		Store and Deliver:	ea	1		
C 3.1.9.6		SAT:	ea	1		
C 3.1.9.7		Install:	ea	1		
C 3.1.9.8		Loop Checks:	Sum	1		
C 3.1.9.9		Commission:	Sum	1		
C 3.1.9.10		Loop Checks:	Sum	1		
C 3.1.9.11		Commission:	ea	1		
C3.1.10	PSZ 3.2.10	Commissioning Spares				
C 3.1.10.1		Hardware Supply:	Sum	1		
C 3.1.10.2		Test:	Sum	1		
C 3.1.10.3		Store and Deliver:	Sum	1		
C3.1.11	PSZ 3.2.11	Maintenance Spares				
C 3.1.11.1		Hardware Supply:	Sum	1		
C 3.1.11.2		Store and Deliver:	Sum	1		
C3.2	PSZ 3.4	<u>INSTRUMENTS</u>				
C 3.2.1	PSZ 3.4 Item 1	Ultrasonic Level Meters				
C 3.2.1.1		Design Panel Layout:	ea	10		
C 3.2.1.2		Hardware Supply Per Panel:	ea	10		
C 3.2.1.3		IJB Panel Manufacture:	ea	10		
C 3.2.1.4		FAT:	ea	10		
C 3.2.1.5		Store and Deliver:	ea	10		
C 3.2.1.6		SAT:	ea	10		
C 3.2.1.7		Install:	ea	10		
C 3.2.1.8		Loop Checks:	ea	10		
C 3.2.1.9		Commission:	ea	10		
C 3.2.2	PSZ 3.4 Item 2	Clamp On Flow Meters				
C 3.2.2.1		Design Panel Layout:	ea	11		
C 3.2.2.2		Hardware Supply Per Panel:	ea	11		
C 3.2.2.3		IJB Panel Manufacture:	ea	11		
C 3.2.2.4		FAT:	ea	11		
C 3.2.2.5		Store and Deliver:	ea	11		
C 3.2.2.6		SAT:	ea	11		
C 3.2.2.7		Install:	ea	11		
C 3.2.2.8		Loop Checks:	ea	11		
C 3.2.2.9		Commission:	ea	11		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.2.3	PSZ 3.4 Item 3	Magnetic Flow Meters				
C 3.2.3.1		Design Panel Layout:	ea	3		
C 3.2.3.2		Hardware Supply Per Panel:	ea	3		
C 3.2.3.3		IJB Panel Manufacture:	ea	3		
C 3.2.3.4		FAT:	ea	3		
C 3.2.3.5		Store and Deliver:	ea	3		
C 3.2.3.6		SAT:	ea	3		
C 3.2.3.7		Install:	ea	3		
C 3.2.3.8		Loop Checks:	ea	3		
C 3.2.3.9		Commission:	ea	3		
C 3.2.4	PSZ 3.4 Item 4	Area Velocity Flow Meters				
C 3.2.4.1		Design Panel Layout:	ea	1		
C 3.2.4.2		Hardware Supply:	Sum	1		
C 3.2.4.3		IJB Panel Manufacture:	ea	1		
C 3.2.4.4		FAT:	ea	1		
C 3.2.4.5		Store and Deliver:	ea	1		
C 3.2.4.6		SAT:	ea	1		
C 3.2.4.7		Install:	ea	1		
C 3.2.4.8		Loop Checks:	ea	1		
C 3.2.4.9		Commission:	ea	1		
C 3.2.5	PSZ 3.4 Item 5	Gas Flow Meters NOT REQUIRED				
C 3.2.6	PSZ 3.4 Item 6	Mixed Liquor Suspended Solids Analysers				
C 3.2.6.1		Design Panel Layout:	ea	1		
C 3.2.6.2		Hardware Supply:	Sum	1		
C 3.2.6.3		IJB Panel Manufacture:	ea	1		
C 3.2.6.4		FAT:	ea	1		
C 3.2.6.5		Store and Deliver:	ea	1		
C 3.2.6.6		SAT:	ea	1		
C 3.2.6.7		Install:	ea	1		
C 3.2.6.8		Loop Checks:	ea	1		
C 3.2.6.9		Commission:	ea	1		
C 3.2.7	PSZ 3.4 Item 7	Dissolved Oxygen Analysers				
C 3.2.7.1		Design Panel Layout:	ea	3		
C 3.2.7.2		Hardware Supply Per Analyser:	ea	3		
C 3.2.7.3		IJB Panel Manufacture:	ea	3		
C 3.2.7.4		FAT:	ea	3		
C 3.2.7.5		Store and Deliver:	ea	3		
C 3.2.7.6		SAT:	ea	3		
C 3.2.7.7		Install:	ea	3		
C 3.2.7.8		Loop Checks:	ea	3		
C 3.2.7.9		Commission:	ea	3		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.2.8	PSZ 3.4 Item 8.1	Phosphate Analyser Single Stream				
C 3.2.8.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.8.2		FAT:	ea	1		
C 3.2.8.3		Store and Deliver:	ea	1		
C 3.2.8.4		SAT:	ea	1		
C 3.2.8.5		Install:	ea	1		
C 3.2.8.6		Loop Checks:	ea	1		
C 3.2.8.7		Commission:	ea	1		
C 3.2.9	PSZ 3.4 Item 8.2	Phosphate Analyser Dual Stream				
C 3.2.9.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.9.2		FAT:	ea	1		
C 3.2.9.3		Store and Deliver:	ea	1		
C 3.2.9.4		SAT:	ea	1		
C 3.2.9.5		Install:	ea	1		
C 3.2.9.6		Loop Checks:	ea	1		
C 3.2.9.7		Commission:	ea	1		
C 3.2.10	PSZ 3.4 Item 9.1	Ammonia Analyser Single Stream				
C 3.2.10.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.10.2		FAT:	ea	1		
C 3.2.10.3		Store and Deliver:	ea	1		
C 3.2.10.4		SAT:	ea	1		
C 3.2.10.5		Install:	ea	1		
C 3.2.10.6		Loop Checks:	ea	1		
C 3.2.10.7		Commission:	ea	1		
C 3.2.11	PSZ 3.4 Item 9.2	Ammonia Analyser Dual Stream				
C 3.2.11.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.11.2		FAT:	ea	1		
C 3.2.11.3		Store and Deliver:	ea	1		
C 3.2.11.4		SAT:	ea	1		
C 3.2.11.5		Install:	ea	1		
C 3.2.11.6		Loop Checks:	ea	1		
C 3.2.11.7		Commission:	ea	1		
C 3.2.12	PSZ 3.4 Item 10	COD Analyser				
C 3.2.12.1		Hardware Supply Per Analyser:	ea	3		
C 3.2.12.2		FAT:	ea	3		
C 3.2.12.3		Store and Deliver:	ea	3		
C 3.2.12.4		SAT:	ea	3		
C 3.2.12.5		Install:	ea	3		
C 3.2.12.6		Loop Checks:	ea	3		
C 3.2.12.7		Commission:	ea	3		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.2.13	PSZ 3.4 Item 11	pH Analyser				
C 3.2.13.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.13.2		FAT:	ea	1		
C 3.2.13.3		Store and Deliver:	ea	1		
C 3.2.13.4		SAT:	ea	1		
C 3.2.13.5		Install:	ea	1		
C 3.2.13.6		Loop Checks:	ea	1		
C 3.2.13.7		Commission:	ea	1		
C 3.2.14	PSZ 3.4 Item 12	Nitrate Analyser				
C 3.2.14.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.14.2		FAT:	ea	1		
C 3.2.14.3		Store and Deliver:	ea	1		
C 3.2.14.4		SAT:	ea	1		
C 3.2.14.5		Install:	ea	1		
C 3.2.14.6		Loop Checks:	ea	1		
C 3.2.14.7		Commission:	ea	1		
C 3.2.15	PSZ 3.4 Item 13	Conductivity Analyser				
C 3.2.15.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.15.2		FAT:	ea	1		
C 3.2.15.3		Store and Deliver:	ea	1		
C 3.2.15.4		SAT:	ea	1		
C 3.2.15.5		Install:	ea	1		
C 3.2.15.6		Loop Checks:	ea	1		
C 3.2.15.7		Commission:	ea	1		
C 3.2.16	PSZ 3.4 Item 14	Chlorine Analyser				
C 3.2.16.1		Hardware Supply Per Analyser:	ea	1		
C 3.2.16.2		FAT:	ea	1		
C 3.2.16.3		Store and Deliver:	ea	1		
C 3.2.16.4		SAT:	ea	1		
C 3.2.16.5		Install:	ea	1		
C 3.2.16.6		Loop Checks:	ea	1		
C 3.2.16.7		Commission:	ea	1		
C 3.2.17	PSZ 3.4 Item 15	Final Effluent Analyser Room IJB				
C 3.2.17.1		Design Panel Layout:	ea	1		
C 3.2.17.2		Hardware Supply Per IJB:	ea	1		
C 3.2.17.3		IJB Panel Manufacture:	ea	1		
C 3.2.17.4		Store and Deliver:	ea	1		
C 3.2.17.5		Install:	ea	1		
C 3.2.18	PSZ 3.4 Item 15	New Bio 1/Bio 2 Analyser Room IJB				
C 3.2.18.1		Design Panel Layout:	ea	1		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.2.18.2		Hardware Supply Per IJB:	ea	1		
C 3.2.18.3		IJB Panel Manufacture:	ea	1		
C 3.2.18.4		Store and Deliver:	ea	1		
C 3.2.18.5		Install:	ea	1		
C3.3	PSZ 3.5	<u>VALVE ICPs</u>				
C 3.3.1	PSZ 3.5 Item 1	Motorised Open-Close Valve ICPs				
C 3.3.1.1		Design Panel Layout:	ea	7		
C 3.3.1.2		Hardware Supply Per ICP:	ea	7		
C 3.3.1.3		ICP Panel Manufacture:	ea	7		
C 3.3.1.4		FAT:	ea	7		
C 3.3.1.5		Store and Deliver:	ea	7		
C 3.3.1.6		SAT:	ea	7		
C 3.3.1.7		Install:	ea	7		
C 3.3.1.8		Loop Checks:	ea	7		
C 3.3.1.9		Commission:	ea	7		
C 3.3.2	PSZ 3.5 Item 2	Motorised Modulating Valve ICPs				
C 3.3.2.1		Design Panel Layout:	ea	3		
C 3.3.2.2		Hardware Supply Per ICP:	ea	3		
C 3.3.2.3		ICP Panel Manufacture:	ea	3		
C 3.3.2.4		FAT:	ea	3		
C 3.3.2.5		Store and Deliver:	ea	3		
C 3.3.2.6		SAT:	ea	3		
C 3.3.2.7		Install:	ea	3		
C 3.3.2.8		Loop Checks:	ea	3		
C 3.3.2.9		Commission:	ea	3		
C 3.4	PSZ 3.6.1	<u>INSTRUMENT AND FIBRE OPTIC CABLES</u>				
C 3.4.1	PSZ 3.6.1	3core 2.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.1.1		Supply and Deliver:	m	4844		
C 3.4.1.2		Install:	m	4844		
C 3.4.1.3		Terminate (per cable):	ea	55		
C 3.4.2	PSZ 3.6.1	37core 1.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.2.1		Supply and Deliver:	m	590		
C 3.4.2.2		Install:	m	590		
C 3.4.2.3		Terminate (per cable):	ea	20		
C 3.4.3	PSZ 3.6.1	12core 1.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.3.1		Supply and Deliver:	m	1752		
C 3.4.3.2		Install:	m	1752		
C 3.4.3.3		Terminate (per cable):	ea	18		
TOTAL CARRIED FORWARD						
Employer:			Contractor:			
Witness:			Witness:			

ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.4.3	PSZ 3.6.1	7core 1.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.3.1		Supply and Deliver:	m	1660		
C 3.4.3.2		Install:	m	1660		
C 3.4.3.3		Terminate (per cable):	ea	11		
C 3.4.4	PSZ 3.6.1	4core 1.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.4.1		Supply and Deliver:	m	3054		
C 3.4.4.2		Install:	m	3054		
C 3.4.4.3		Terminate (per cable):	ea	34		
C 3.4.1.5	PSZ 3.6.1	3core 1.5mm² PVC PVC SWA PVC (Orange)				
C 3.4.1.5.1		Supply and Deliver:	m	640		
C 3.4.1.5.2		Install:	m	640		
C 3.4.1.5.3		Terminate (per cable):	ea	8		
C 3.4.1.6	PSZ 3.6.1	2pair 0.5mm² PVC PVC SWA PVC IOS (Orange)				
C 3.4.1.6.1		Supply and Deliver:	m	3277		
C 3.4.1.6.2		Install:	m	3277		
C 3.4.1.6.3		Terminate (per cable):	ea	45		
C 3.4.1.7	PSZ 3.6.1	4pair 0.5mm² PVC PVC SWA PVC IOS (Orange)				
C 3.4.1.7.1		Supply and Deliver:	m	597		
C 3.4.1.7.2		Install:	m	597		
C 3.4.1.7.3		Terminate (per cable):	ea	6		
C 3.4.1.8	PSZ 3.6.1	12pair 0.5mm² PVC PVC SWA PVC IOS (Orange)				
C 3.4.1.8.1		Supply and Deliver:	m	210		
C 3.4.1.8.2		Install:	m	210		
C 3.4.1.8.3		Terminate (per cable):	ea	5		
C 3.4.1.9	PSZ 3.6.1 & PSZ 3.6.3	CAT6 cable				
C 3.4.1.9.1		Supply and Deliver:	m	40		
C 3.4.1.9.2		Install:	m	40		
C 3.4.1.9.3		Terminate (per cable):	ea	4		
C 3.4.1.10	PSZ 3.8.1	2 tube microduct assembly (Orange)				
C 3.4.1.10.1		Supply and Deliver:	m	55		
C 3.4.1.10.2		Install:	m	55		
C 3.4.1.10.3		Connection:	ea	2		
C 3.4.1.11	PSZ 3.8.1	12 tube microduct assembly (Orange)				
C 3.4.1.11.1		Supply and Deliver:	m	45		
C 3.4.1.11.2		Install:	m	45		
C 3.4.1.11.3		Connection (per tube):	ea	1		
C 3.4.1.12	PSZ 3.8.1	6 pair single mode blown fibre				
C 3.4.1.12.1		Supply and Deliver:	m	726		
C 3.4.1.12.2		Install:	m	726		
C 3.4.1.12.4		Splice: (per bundle)	ea	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.5	PSZ 3.6	<u>INSTRUMENT CABLE RACK - LADDER TYPE</u>				
C 3.5.1	PSZ 3.6.1	500 mm Ladder				
C 3.5.1.1		Supply and Deliver:	m	460		
C 3.5.1.2		Install:	m	460		
C 3.5.2	PSZ 3.6.1	300 mm Ladder				
C 3.5.2.1		Supply:	m	592		
C 3.5.2.2		Install:	m	592		
	PSZ 3.6.1	200 mm Ladder				
		Supply:	m	25		
		Install:	m	25		
C 3.5.4	PSZ 3.6.2	Scaffolding:				
C 3.5.4.1		Balancing Tank	Days	4		
C 3.5.4.2		New Elutriation Pump Station	Days	4		
C 3.5.4.3		Existing Elutriation Pump Station	Days	4		
C 3.6	PSZ 3.6.1 & PSZ 3.8	<u>TRENCHES AND MANHOLES</u>				
C 3.6.1		Soil Trenches	m	284		
C 3.6.2		Under Road/Paving Trenches	m	365		
C 3.6.3		Road/Paving re-establishment	m	365		
C 3.6.4		Route Markers	ea	54		
C 3.6.5		Manholes	ea	17		
C 3.7	PSZ 3.7	<u>DATA COMMUNICATIONS AND NETWORKING</u>				
C 3.7.1		Supply and Deliver new LC connector patch panels	ea	2		
C 3.7.2		Install new LC connector patch panels	ea	2		
C 3.7.3		Test all Fibre Optic Cables and Patch Panels	Sum	1		
C 3.8	PSZ 3.9	<u>TRAINING</u>	Sum	1		
C 3.9	PSZ 3.10	<u>Analyser Rooms Fit-out</u>	Sum	1		
TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



ITEM No.	PAYM. REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
C 3.9.1	PSZ 3.10.1	Final Effluent Analyser Room Complete fit-out of analyser room with piping/tubing, valves, backboard, troughs, filtration, labelling, head pot, brackets and/or stands, power skirting with switched socket outlets and wiring to the electrical DB (distribution board) . This cost must exclude the supply and installation of an IJB, probes and analysers. Any instrument DB required will be supplied and installed by others.	Sum	1		
C 3.9.2	PSZ 3.10.2	Bioreactors 1 & 2 Effluent Analyser Room Complete fit-out of analyser room with piping/tubing, valves, backboard, troughs, filtration, labelling, head pot, brackets and/or stands, power skirting with switched socket outlets and wiring to the electrical DB (distribution board) . This cost must exclude the supply and installation of an IJB, probes and analysers. Any instrument DB required will be supplied and installed by others.	Sum	1		
TOTAL SECTION 3 CARRIED FORWARD TO SUMMARY						

Employer:		Contractor:	
Witness:		Witness:	



Contract JW13897
Northern Wastewater Treatment Works
Expansion of Capacity Unit 5 – Installation of
Mechanical and Electrical Equipment
Volume 1 Tender and Contract
Pricing Data



SCHEDULE	DESCRIPTION	AMOUNT
BROUGHT FORWARD		
1	Preliminary and General	
2	Mechanical Engineering Works	
3	Electrical Engineering Works	
4	Control and Instrumentation Engineering Works	
	<u>SUB TOTAL 1</u>	
	10 % Escalation	
	<u>SUB TOTAL 2</u>	
	12.5 % Contingency	
	<u>SUB TOTAL 3</u>	
	VAT @ 15%	
TOTAL CARRIED TO FORM OF OFFER		

Employer:		Contractor:	
Witness:		Witness:	