A1

THIS DRAWING MAY ONLY BE USED IN THE COURSE OF AND FOR THE PURPOSE OF CREATING SYDNEY WATER ASSETS. USE THIS DRAWING WITH CARE. YOU ARE RESPONSIBLE TO APPLY THE WORK SHOWN IN THIS DRAWING CORRECTLY IN THE CIRCUMSTANCES OF YOUR PROJECT. YOU MUST ENSURE THE WORK IS FIT FOR PURPOSE AND WILL PERFORM ITS INTENDED FUNCTION AS REQUIRED.

GENERAL

G1. DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL SYDNEY WATER TECHNICAL SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO:
- ACP0002 STANDARD CHEMICAL DOSING UNIT SPECIFICATION
- D0000389 STANDARD SODIUM HYPOCHLORITE NETWORK RECHLORINATION PLANT STANDARD SPEC.
- TECHNICAL SPECIFICATION - PART 1 CIVIL WORKS
- TECHNICAL SPECIFICATION - PART 2 MECHANICAL WORKS
- TECHNICAL SPECIFICATION - PART 3 ELECTRICAL WORKS
- WSA-201 PROTECTIVE COATINGS (INCLUDING SYDNEY WATER SUPPLEMENT TO WSA-201)
- RELEVANT PROCESS & INSTRUMENTATION DIAGRAM (P&ID)

G2. SET OUT DIMENSIONS ARE INDICATIVE ONLY. FINAL SITE DESIGN TO BE UNDERTAKEN BY OTHERS.

G3. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT S.A.A. CODES AND WITH THE BYE-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES.

G4. DURING CONSTRUCTION THE STRUCTURE TO BE MAINTAINED IN A SAFE AND STABLE CONDITION AND NO PART TO BE OVERSTRESSED. TEMPORARY BRACING TO BE PROVIDED BY THE CONTRACTOR AS REQUIRED TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

G5. UNLESS NOTED OTHERWISE, ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.

G6. THE FOLLOWING DEFINITIONS APPLY.
- 'SUPERINTENDENT' IS DEFINED AS THE PRINCIPAL'S REPRESENTATIVE - 'EQUIVALENT PRODUCTS' PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED IN WRITING TO THE SUPERINTENDENT FOR THEIR REVIEW AND WRITTEN APPROVAL PRIOR TO INSTALLATION.
- 'SMDD'- STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289-2003 SECTION 5.1.1.
- 'MMDD'- MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289-2003 5.2.1

G7. THE FOLLOWING ABBREVIATION APPLY.

AHD - AUSTRALIAN HEIGHT DATUM	COS - CHECK ON SITE
DIA - DIAMETER	DN - NORMAL DIAMETER
DRG - DRAWING	FFL - FINISH FLOOR LEVEL
FSL - FINISH SURFACE LEVEL	HD GALV - HOT DIPPED GALVANISED
IL - INVERT LEVEL	NTS - NOT TO SCALE
RL - REDUCED LEVEL	TYP - TYPICAL
UNO - UNLESS NOTED OTHERWISE	

G8. WHERE PROPRIETARY ITEMS HAVE BEEN SPECIFIED, A SUITABLE EQUIVALENT MAY BE USED IF APPROVED BY THE SUPERINTENDENT.

FOUNDATIONS

F1. THE CONTRACTOR IS TO ENGAGE A QUALIFIED GEOTECHNICAL ENGINEER TO CONFIRM A MINIMUM 80kPa ALLOWABLE BEARING PRESSURE AT FOUNDATION LEVEL OF CDU INSTALLATION.

F2. SUB-GRADE PREPARATION
- REMOVE TOP SOIL AND ORGANIC MATERIAL TO A MINIMUM OF 300mm
- EXCAVATE TO REQUIRED LEVEL
- PROOF ROLL EXPOSED SUBGRADE
- REMOVE SOFT AND UNSUITABLE MATERIAL AND REPLACE WITH APPROVED GRANULAR MATERIAL
- COMPACT IN 200mm (LOOSE) LAYERS TO ACHIEVE MINIMUM 98% STANDARD MAXIMUM DRY DENSITY

F3. BLINDING CONCRETE TO BE PLACED ON THE SAME DAY AS THE FINAL EXCAVATION TO THE FOUNDATION DESIGN LEVEL. PROVIDE 50mm CONC BLINDING FOR ALL PITS.

F4. THE FOUNDATIONS HAVE BEEN DESIGNED FOR THE FOLLOWING ALLOWABLE BEARING PRESSURES.

ELEMENT	BEARING STRATA	ALLOWABLE BEARING PRESSURE
CDU/RCP	IN SITU SOIL	80 kPa
DELIVERY BUND	IN SITU SOIL	80 kPa

FOUNDING STRATA TO BE INSPECTED BY THE SUPERINTENDENT BEFORE COMPACTION & PRIOR TO PLACING BLINDING CONCRETE.

F5. ANY OVER-EXCAVATION OR CAVITIES OF FOUNDATIONS TO BE FILLED WITH BLINDING CONCRETE 10mPa.

F6. MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF OFF SITE IN ACCORDANCE WITH RELEVANT AUTHORITY REGULATIONS UNO.

F7. USE SUITABLE CONSTRUCTION TECHNIQUES AND EQUIPMENT FOR BACK FILLING ADJACENT TO STRUCTURES TO PREVENT OVERSTRESS AND DAMAGE. BACKFILL EVENLY TO AVOID DIFFERENTIAL SOIL PRESSURES ON STRUCTURES. BACKFILL AGAINST RETAINING WALLS ONLY AFTER THE SPECIFIED CONCRETE STRENGTH IS ACHIEVED AND PERMANENT SUPPORT INSTALLED WHERE APPLICABLE.

CDU/RCP FOUNDATION

FF1. GEOTECHNICAL INVESTIGATION TO BE UNDERTAKEN TO CONFIRM MATERIAL PROPERTIES ON SITE.

FF2. HOWEVER A MINIMUM OF 200mm CEMENT STABILISED ROAD BASE ON 5 TONNE PROOF ROLLED SUB BASE IS REQUIRED WITH 50mm OF PACKING SAND AND PLASTIC MEMBRANE DOUBLE LAPPED AND TAPPED AT JOINTS OVER THE BASE IS REQUIRED.

FF3. PROVISION IS TO BE MADE TO ENSURE BEDDING SAND REMAINS IN PLACE AFTER INSTALLATION OF UNIT. THIS CAN BE PROVIDED BY A FOOTPATH ALL AROUND THE UNIT OR OTHER MEANS.

FF4. MINIMUM ALLOWABLE BEARING PRESSURE, PROOF ROLLING AND ANY ADDITIONAL FOUNDATION PREPARATION TO BE UNDERTAKEN IN ACCORDANCE WITH FOUNDATION NOTES.

ELECTRICAL NOTES

E1. ELECTRICAL TEMPLATE DRAWINGS ARE TO BE MADE AVAILABLE TO EACH UNIT MANUFACTURER FOR USE / ADJUSTMENT AND APPROVAL.

E2. ELECTRICAL TEMPLATE DRAWINGS ARE AVAILABLE FOR EACH CDU, MgOH & RCP INSTALLATIONS.

E3. THE MANUFCTAURER IS TO SUBMIT DETAILED DESIGN OF ELECTRICAL INSTALLATION TO SYDNEY WATER REPRESENTATIVES FOR APPROVAL PRIOR TO COMMENCING INSTALLATION.

CONCRETE

C1. ALL WORKMANSHIP & MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT EDITIONS OFAS3600, AS1478, AS3582, AS3972 AND AS3735 & SYDNEY WATER TECHNICAL SPECIFICATION - PART 1 - CIVIL WORKS

C2. CONSTRUCTION TOLERANCES TO BE IN ACCORDANCE WITH AS3600.

C3. CONCRETE DIMENSIONS SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C4. THE FOLLOWING ABBREVIATIONS APPLY.

LV	LENGTH VARIES	CJ	CONSTRUCTION JOINT
EJ	EXPANSION JOINT	IJ	ISOLATION JOINT
SCJ	SAW CUT JOINT		
F'C	CONCRETE CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS		

C5. NO ADMIXTURES TO BE USED IN CONCRETE UNLESS APPROVED IN WRITING.

C6. ALL EXPOSED EDGES AND CORNERS TO BE PROVIDED WITH 25mm FILLETS OR CHAMFERS (EXCEPT AT ACCESS COVERS).

C7. NO HOLES, CHASES, EMBEDMENT OF PIPES OR CONDUITS OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS TO BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.

C8. FORM ALL CONSTRUCTION JOINTS AND USE ONLY WHERE SHOWN OR APPROVED BY THE SUPERINTENDENT. DETAILS OF CONSTRUCTION JOINTS TO BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL.

C9. HARDENED CONCRETE SURFACE AGAINST WHICH FRESH CONCRETE TO BE PLACED SHALL BE CLEAN, FREE FROM LAITANCE AND ROUGHENED TO EXPOSE AGGREGATE TO 5mm DEPTH. SATURATE CONCRETE AREA AND ANY EXPOSED REINFORCEMENT WITH WATER, REMOVE ANY EXCESS WATER OR DEBRIS. COAT EXISTING CONCRETE SURFACE WITH NEAT CEMENT SLURRY PRIOR TO PLACING NEW CONCRETE. CEMENT SLURRY SHALL BE APPLIED NOT MORE THAN 15MINUTES BEFORE PLACING FRESH CONCRETE.

C10. THE FINISHED CONCRETE TO BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE TO BE COMPACTED WITH MECHANICAL VIBRATORS.VIBRATORS SHALL NOT BE USED TO SPREAD CONCRETE.

C11. CURING OF ALL CONCRETE TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 7 DAYS FOR ALL S40 CLASS CONCRETE AND 4 DAYS FOR ALL OTHER CONCRETE ELEMENTS, APPROVED SPRAYED OR CURING COMPOUNDS MAY BE USED WHERE NO FLOOR FINISH IS PROPOSED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.

C12. CONSTRUCTION SUPPORT PROPPING TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING.

C13. CONCRETE EXPOSURE CLASSIFICATION: - DELIVERY BUND - B2 (AS3735)
- OTHERS STRUCTURES - B1 (AS3600)

C14. CONCRETE QUALITY SHALL BE IN ACCORDANCE WITH SPECIFICATION, CONCRETE CLASS SHALL BE AS FOLLOWS:

ELEMENT MAX	CONCRETE CLASS
FOOTPATH/PAVEMENT	N20
DELIVERY BUND	S40
BLINDING	N15
CONCRETE ENCASEMENT	N25

PROJECT CONTROL TESTING TO BE CARRIED OUT IN ACCORDANCE WITH AS3600 AND THE SPECIFICATION. REFER TO TECHNICAL SPECIFICATION.

C15. CONCRETE FINISH TO COMPLY WITH AS3610 AND CLAUSE C3.9 & C3.10 OF SWC TECHNICAL SPECIFICATIONS - CIVIL WORKS:
- FOOTPATH AND ALL AREAS SUBJECTED TO FOOT TRAFFIC, FINISH TO BE BROOMED AND STEEL TROWEL EDGED.
- BUND TO BE BROOMED.

C16. CLEAR COVER (mm) TO ALL REINFORCEMENT UNLESS OTHERWISE SHOWN SHALL BE AS FOLLOWS.

ELEMENT / SURFACE	CONCRETE COVER (mm)
FORMED EXTERNAL NOT IN CONTACT WITH GROUND	50
UNFORMED CAST AGAINST GROUND WITH 2 LAYERS OF 0.25mm PLASTIC DAMP PROOF MEMBRANE	60
ABOVE GROUND CONCRETE ENCASEMENT	25

SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS, SPACERS, LIGATURES OR TIES. DO NOT PLACE REINFORCEMENT AFTER CONCRETING HAS COMMENCED. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT.

C17. NO CONCRETE, MORTAR OR GROUT SHALL BE SUPPLIED BEFORE THE CONFORMANCE OF ALL CONSTITUENT MATERIALS IS VERIFIED BY TEST CERTIFICATES FROM NATA REGISTERED LABORATORY.

C18. ALKALI REACTIVE AGGREGATES SHALL NOT BE USED IN SPECIAL CLASS CONCRETE.

C19. COURSE AGGREGATE SHALL CONSIST OF DENSE MANUFACTURED OR NATURAL MATERIAL WITH A WATER ABSORPTION NOT EXCEEDING 2.5%.

C20. MANUFACTURED AGGREGATES WILL NEED TO BE DEMONSTRATED TO PROVIDE CHEMICAL INERTNESS AND PHYSICAL CHARACTERISTICS SUITABLE FOR THE CONCRETE PURPOSE.

C21. NATURAL MATERIAL MAY BE SOURCED FROM ALLUVIAL GRAVEL/ROCK OR QUARRIED ROCK. THE COARSE AGGREGATE MAY OR MAY NOT BE CRUSHED AND/OR SIEVED TO OBTAIN THE REQUIRED PARTICLE GRADING.

C22. ALL WATER USED FOR MIXING CONCRETE, GROUTS AND MORTAR SHALL CONFORM TO AS1379 SECTION 2.4.

C23. THE PROPORTION OF MISSHAPEN PARTICLES DETERMINED IN ACCORDANCE WITH AS1141, SECTION 14, USING A 2:1 RATIO AND SHALL NOT EXCEED 35 PERCENT.

C24. ONLY "FINE" GRADE FLY ASH IN ACCORDANCE WITH AS3582.1 AND REGISTERED WITH NSW GOVERNMENT CEMENT QUALITY ASSURANCE SCHEME SHALL BE USED.

C25. FINE AGGREGATES SHALL CONSIST OF CLEAN, HARD TOUGH, DURABLE, UNCOATED GRAINS, UNIFORM IN QUALITY, COMPRISING OF MATERIAL WHICH IS NOT LESS THAN 90% PASSING THE 4.75 MM SIEVE AND SHALL HAVE A RANGE OF SIZES DOWN TO MATERIAL PASSING 150 MICRON SIEVE WITH A WATER ABSORPTION NOT EXCEEDING 2.5%. IT SHALL COMPLY GENERALLY WITH THE REQUIREMENTS AND TOLERANCES AS DETAILED IN AS2758.1 FOR FINE AGGREGATES.

C26. TESTING FOR WATER TIGHTNESS TO BE IN ACCORDANCE WITH CLAUSE C3.20 OF SYDNEY WATER TECHNICAL SPECIFICATION PART 1 - CIVIL WORKS.

C27. CONCRETE TO BE COLOURED RED OXIDE AT FERROUS / FERRIC CHLORIDE CDU DELIVERY BUNDS, BUND WALLS TO BE PAINTED YELLOW.

PIPEWORK

P1. ALL PIPEWORK BETWEEN THE CDU AND CHEMICAL UNLOADING BUND, INCLUDING THE TANKER PUMP OUT POINT, SHALL BE uPVC TO ASTM D1785 SCHEDULE 80.

P2. CHEMICAL DOSING LINE FROM THE CDU TO THE DOSING LOCATION SHALL BE PE100 PN 16 SDR 11. DOSING LINE SHALL BE A PIPE IN PIPE ARRANGEMENT. THE SECONDARY CONTAINMENT PIPE SHALL BE DWV.

P3. SECONDARY CONTAINMENT PIPE SHALL BE SEALED AT THE CDU TERMINUS, WITH A NON-HARDENING FILLER (HENLEY COMPOUND OR APPROVED OTHER), TO PREVENT ODOURS FROM THE DOSING LOCATION ENTERING THE CDU BUILDING.

P4. DRAIN LINE FROM THE CHEMICAL UNLOADING BUND TO THE DOSING LOCATION SHALL BE uPVC AS1477 CLASS 18. DRAIN LINE TO BE FITTED WITH A FLAPPER VALVE AT THE DOSING LOCATION.

P5. SOLVENT CEMENT FOR ALL PVC JOINTING SHALL BE IN ACCORDANCE WITH SWC PROCEDURE 724-SOLVENT CEMENT WELDING.

P6. THE DESIGNER SHALL DETERMINE THE HYDROSTATIC TEST PRESSURE BASED ON SITE SPECIFIC ASSESSMENT AND REQUIREMENTS OF SYDNEY WATER MAINTENANCE RELATED CLAUSES FOR CAPITAL AND OPERATING PROJECTS. SYDNEY WATER SHALL APPROVE THE TEST PRESSURE PRIOR TO UNDERTAKING THE HYDROSTATIC TEST.

P7. ALL PIPE LAYING, TRENCHING AND BACKFILLING SHALL COMPLY WITH THE SEWERAGE CODE OF AUSTRALIA WSA-02-2002-2.2 SYDNEY WATER EDITION 1-VERSION 3 AND ASSOCIATED DRAWINGS.

P8. PLUMBING REQUIREMENTS TO COMPLY WITH AS/NZS3500.1 & NSW CODE OF PRACTICE FOR PLUMBING & DRAINAGE, INCLUSIVE OF MAKING APPLICATION TO SYDNEY WATER.

P9. WHERE PROPRIETARY ITEMS HAVE BEEN SPECIFIED. A SUITABLE EQUIVALENT MAY BE USED IF APPROVED BY THE SUPERINTENDENT.

P10. VALVES TO CLOSE ANTI-CLOCKWISE & TO HAVE NON-RISING SPINDLES. PROVIDE INDICATORS AT SURFACE LEVEL ADJACENT TO VALVE SPINDLE TO SHOW OPENING & CLOSING DIRECTIONS. VALVES TO HAVE A FULLY FLANGED BODY AT BOTH THE INLET & OUTLET. VALVES SHALL BE CAPABLE OF BEING OPERATED FROM THE SURFACE.

P11. MOTORISED VALVES TO FAIL CLOSE ON POWER FAILURE.

P12. PULSATION DAMPERS SHALL INCLUDE A SCHRADER VALVE FOR BLADDER AIR PRESSURISATION USING A NORMAL BIKE PUMP.

P13. FOR RECHLORINATION PLANT, ALL BALL VALVES SHALL HAVE A VENTED BALL TO PREVENT GAS ACCUMULATION.

REINFORCEMENT

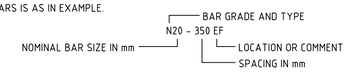
R1. STEEL REINFORCING MATERIALS TO AS/NZ4671. FABRIC TO COMPLY WITH AS/NZ4671 AND SHALL BE SUPPLIED IN FLAT SHEET.

R2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

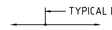
R3. ALL REINFORCEMENT SHALL BE INSPECTED BY THE SUPERINTENDENT PRIOR TO PLACING CONCRETE.

R4. REINFORCEMENT SYMBOLS:
- N - DENOTES GRADE 500N HIGH STRENGTH DEFORMED BARS TO AS1302.
- R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS1302.
- SL - DENOTES HARD-DAWN WIRE REINFORCING FABRIC TO AS1304.
- TM - DENOTES HARD-DAWN WIRE TRENCH MESH TO AS1304.
- B1 - DENOTES BOTTOM BARS LAID FIRST
- B2 - DENOTES BOTTOM BARS LAID SECOND
- T1 - DENOTES TOP BARS LAID FIRST
- T2 - DENOTES TOP BARS LAID SECOND
- EW - DENOTES EACH WAY
- EF - DENOTES EACH FACE
- NF - DENOTES NEAR FACE
- FF - DENOTES FAR FACE
- B - DENOTES BOTTOM
- T - DENOTES TOP
- CP - CENTRALLY PLACED
- LG - LONG
- LV - LENGTH VARIES

R5. DESIGNATION OF REINFORCEMENT BARS IS AS IN EXAMPLE.



R6. EXTENT OF BARS SHOWN THUS.



R7. JOGGLES TO BARS TO BE 1 BAR DIAMETER OVER A LENGTH OF 12 BAR DIAMETER UNLESS OTHERWISE NOTED.

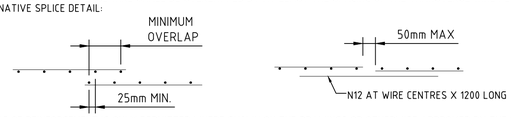
R8. SPLICE REINFORCEMENT ONLY AT LOCATION SHOWN ON DRAWINGS OR AS APPROVED BY SUPERINTENDENT. STAGGER LAPS WHERE POSSIBLE. LAPPED SPLICE LENGTHS TO COMPLY WITH AS3600. CLEAR SPACING BETWEEN LAPPED SPLICE BARS TO BE LESS THAN 3 TIMES BAR DIAMETER.

R9. MINIMUM LAP & COG LENGTHS SHALL BE AS TO AS3600 FOLLOWS UNLESS OTHERWISE NOTED

BAR DIAMETER	VERTICAL & BOTTOM BARS	TOP BARS (300mm OR MORE CONCRETE BELOW)	COG LENGTH
12	400	500	180
16	500	650	210
20	600	750	240
24	800	1000	280
28	1000	1250	320
32	1200	1500	360

DO NOT INTERPOLATE INTERMEDIATE VALUES OF SPLICE LENGTHS. USE LENGTHS FOR NEXT LARGER BAR. LAPPED SPLICE LENGTHS FOR BARS IN COLUMNS REFER TO AS3600 OR SUPERINTENDENT. EPOXY COATED BARS, BARS IN LIGHTWEIGHT CONCRETE AND SLIP FORMED CONCRETE WILL REQUIRE LONGER SPLICE LENGTHS. REFER TO AS3600 OR SUPERINTENDANT.

R10 SPLICES IN FABRIC:
THE OUTERMOST TRANSVERSE WIRE SHALL BE OVERLAPPED BY AT LEAST THE SPACING OF THE TRANSVERSE WIRE PLUS 25mm.
ALTERNATIVE SPLICE DETAIL:



R11. WELDING OF REINFORCEMENT IS ONLY PERMITTED WHERE SHOWN ON THE DRAWINGS OR OTHERWISE APPROVED BY THE SUPERINTENDENT. WHERE WELDING OF REINFORCEMENT IS APPROVED, IT SHALL BE CARRIED OUT IN ACCORDANCE WITH AS1554, PART3.

Sydney WATER

APPROVED SEP 2024

NORBERT SCHAEPER

ENGINEERING MODERNISATION MANAGER, WES

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ENGINEERING & TECHNICAL SUPPORT

LETTER	DETAILS OF AMENDMENT	APP'D	DATE
B	MODIFY P2 PIPEWORK PRESSURE AND MATERIAL REQUIREMENTS	NS	10/09/24
A	ORIGINAL ISSUE	KW	17/03/17

DEEMED TO COMPLY DRAWINGS

CHEMICAL DOSING & RECHLORINATION UNIT

GENERAL NOTES

DTC

7002