A1

GENERAL NOTES

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING:
-SEWERAGE CODE OF AUSTRALIA WSA 02-2002-2.2 SYDNEY WATER EDITION 1 -VERSION 3, PART 3
- SYDNEY WATER TECHNICAL SPECIFICATIONS PART 1 CIVIL WORKS, PART 2 MECHANICAL WORKS AND PART 3 ELECTRICAL WORKS
-WSAA MANUAL FOR SELECTION AND APPLICATION OF PROTECTIVE COATINGS WSA 201-2013-1.1 AND SYDNEY WATER SUPPLEMENT
-SYDNEY WATER LIST OF ACCEPTABLE PRODUCT SPECIFICATIONS.
-WSA 114-2002 INDUSTRY STANDARD FOR CONCRETE SPECIAL CLASS

G2. DIMENSIONS ARE IN MILLIMETRES U.N.O. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.

G3. STRUCTURAL CRITERIA
i) STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING LOADING CONDITIONS:-

STRUCTURE	LOADS
STORAGE TANK	ROOF SLAB CONCRETE ROOF- 5 kPa METAL ACCESS HATCHES - 2.5 kPa
	TANK SHAFT RINGS AND BASE INTERNAL HYDROSTATIC PRESSURE FLUID DENSITY (γ) = 15kN/m^3 EXTERNAL EARTH PRESSURE SOIL - ø' = 30°, DENSITY (γ) = 20kN/m^3, Ko = 0.5 EXTERNAL SURCHARGE LOAD 20 kPa GROUNDWATER TABLE AT SURFACE LEVEL

ii) CONCRETE EXPOSURE CLASSIFICATION - D (AS3735)

G4. THE USER SHALL BE RESPONSIBLE FOR THE DESIGN OF ANY TEMPORARY WORKS.

G5. WHERE PROPRIETARY ITEMS HAVE BEN SPECIFIED, A SUITABLE EQUIVALENT MAY BE USED IF APPROVED BY SYDNEY WATER. PROPRIETARY ITEMS SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

G6. THIS DESIGN IS NOT SUITABLE FOR UNSTABLE GROUND, CONTAMINATED GROUND OR MINE SUBSIDENCE AREAS

PIPEWORK

P1. PIPEWORK SHALL BE AS DETAILED AND THE FOLLOWING:
-PRESSURE PVC-U SERIES 1 PN18 SWJ IN ACCORDANCE WITH AS/NZS 1477.
-DWV PVC-U SN8 RRJ PIPE IN ACCORDANCE WITH AS/NZS1260.

P2. FLANGES SHALL BE IN ACCORDANCE WITH TABLE D AS 4087.

P3. FLANGE BOLTS SHALL BE COMMERCIAL GRADE GRADE 4.6 TO AS/NZS 1111, BOLTING CATEGORY 4.6/S SNUG TIGHTENED. ALL FASTENERS SHALL BE GALVANISED IN ACCORDANCE WITH AS 1214. PROVIDE 3mm EPDM GASKET TO WSA PS-109.

METALWORK

S1. STEEL FABRICATION SHALL BE IN ACCORDANCE WITH AS4100 AND AS/NZS1554.1.

S2. STRUCTURAL STEELWORK SHALL BE ONESTEEL -300 PLUS TO AS/NZS 3679.1 AND GRADE 250 TO AS/NZS 3678 FOR PLATES.

S3. ALL BOLTS SHALL BE COMMERCIAL GRADE 4.6 TO AS/NZS 1111, GALVANISED TO IN ACCORDANCE WITH AS1214. BOLTING CATEGORY 4.6/S SNUG TIGHTENED.

S4. NON-STAINLESS STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH THE WSSA MANUAL FOR SELECTION & APPLICATION OF PROTECTIVE COATINGS WSA 201 AND SYDNEY WATER'S SUPPLEMENT AND AS/NZS1216.

S5. DAMAGE TO GALVANIZING AFTER FABRICATION TO BE MADE GOOD IN ACCORDANCE WITH NATIONAL STANDARD WSA 201 AND SYDNEY WATERS SUPPLEMENT.

CONCRETE

C1. WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH AS3600 AND AS3735.

C2. EXPOSURE CLASSIFICATION C - AS3735

C3. FORMWORK THE DESIGN CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF FORMWORK AND FALSE WORK SHALL BE THE RESPONSIBILITY OF THE USER. DESIGN AND CONSTRUCTION OF FORMWORK SHALL BE IN ACCORDANCE WITH AS 3610. THE DESIGN SHALL ACHIEVE THE REQUIREMENTS OF AS3735 FOR FOR RIGID FORMWORK AND INTENSE COMPACTION. FORMWORK DESIGN SHALL TAKE INTO CONSIDERATION INTENSE COMPACTION AND VIBRATIONS LOADS.

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C4. STRUCTURAL CONCRETE FOR STORAGE TANKS TO BE GRADE SCC50 FOR PRECAST CONCRETE ELEMENTS (SHAFT RINGS AND ROOF SLAB) AND MIN GRADE SCC40 FOR INSITU CONCRETE ELEMENTS (BASE SLAB AND BENCHING) IN ACCORDANCE WITH WATER SERVICES ASSOCIATION WSA 114-2002, EXCEPT AS MODIFIED BELOW:

SECTION 4 - MIX DESIGN - SCC50
(FOR SW REFERNCE DESIGN ONLY - N/A FOR SUPPLIER LISTED PRODUCTS)

MINIMUM F'c AT 28 DAYS	50MPa
MINIMUM BINDER CONTENT	500 kg/m3
MAXIMUM 56 DAY DRYING SHRINKAGE STRAIN	600 X 10-6
MAXIMUM WATER: CEMENT RATIO	0.40
SLUMP	80 - 120mm

SECTION 4 - MIX DESIGN - SCC40

MINIMUM F'c AT 28 DAYS	40MPa
MINIMUM BINDER CONTENT	450 kg/m3
MAXIMUM 56 DAY DRYING SHRINKAGE STRAIN	600 X 10-6
MAXIMUM WATER: CEMENT RATIO	0.45
SLUMP	80 - 120mm

SECTION 6 - SUPPLEMENTARY CEMENTITIOUS MATERIAL
THE TOTAL AMOUNT OF SUPPLEMENTARY CEMENTITIOUS MATERIALS SHALL NOT BE MORE THAN 60% BY WEIGHT OF THE TOTAL CEMENT MATERIAL.

SECTION 6.2 - FLY ASH
THE MAXIMUM AMOUNT OF FLY ASH SHALL BE 25% BY WEIGHT OF THE TOTAL CEMENT MATERIAL.

SECTION 6.3 - SLAG
THE MAXIMUM AMOUNT OF SLAG SHALL BE MORE 50% BY WEIGHT OF THE TOTAL CEMENT MATERIAL.

SECTION 6.5 - AGGREGATES
THE MAXIMUM NOMINAL SIZE FOR AGGREGATE SHALL BE 20mm. RECYCLED OR SLAG PRODUCTS SHALL NOT BE USED AS AGGREGATE.

SECTION 6.7 - CHEMICAL ADMIXTURES
WHERE TWO OR MORE ADMIXTURES ARE PROPOSED FOR INCORPORATION INTO A CONCRETE MIX THE MANUFACTURERS SHALL CERTIFY THE COMPATIBILITY OF THE ADMIXTURES.

C5. BLINDING CONCRETE TO BE GRADE N15 TO AS 3972.

C6. DRY CAST MANUFACTURED PRECAST CONCRETE ELEMENTS SHALL NOT BE USED.

C7. STRUCTURAL CONCRETE FOR CONCRETE ELEMENTS OTHER THAN THE STORAGE TANKS SHALL BE GRADE N25 IN ACCORDANCE WITH AS1379. SLUMP SHALL BE IN THE RANGE 80 - 120mm. MAXIMUM NOMINAL AGGREGATE SIZE SHALL BE 20mm.

C8. CURING OF ALL CONCRETE TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 7 DAYS. POLYETHYLENE SHEETING OR WET HESSIAN MAY BE USED. POLYETHYLENE AND HESSIAN TO BE ADEQUATELY SECURED TO RESIST WIND AND TRAFFIC FORCES. ALTERNATIVE CURING MAY BE ACHIEVED BY APPLYING SIKA ANTISOL WB CURING COMPOUND OR APPROVED EQUIVALENT TO ALL SURFACES IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS FOR A PERIOD OF 14 DAYS.

C9. CONCRETE SHALL ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 80% DESIGN STRENGTH PRIOR TO BACKFILLING. BACKFILL SHALL BE PLACED AND COMPACTED EVENLY AROUND STRUCTURES IN LAYERS NOT EXCEEDING 300mm LOOSE THICKNESS. WHERE EXCAVATION SIZE DOES NOT FACILITATE COMPACTION BACKFILL USING A 20:1 STABILISED SAND TO WSA PS-352.

C10. SIZES OF CONCRETE MEMBERS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C11. CHAMFER 25mm FOR ALL EXPOSED CONCRETE EDGES AND 20mm FILLET FOR ALL RE-ENTRANT CORNERS SHALL BE PROVIDED U.N.O.

C12. SURFACE FINISHES SHALL BE IN ACCORDANCE WITH AS3610-1995 EXPOSED FORMED - CLASSS 2, CONCEALED FORMED - CLASS 3, UNFORMED - CLASS 4.

C13. CONCRETE CORING ON SITE IS TO BE LIMITED TO 300mm DIAMETER.

C14. A 250mm CLEARANCE IS TO BE MAINTAINED BETWEEN THE EDGE OF ANY CORED HOLE AND THE EDGE OF ANY JOINT.

REINFORCEMENT

R1. REINFORCEMENT BARS AND MESH SHALL COMPLY WITH AS/NZS 4671.

REINFORCING SYMBOLS:

N - DENOTES GRADE 500N DEFORMED BARS
R - DENOTES GRADE 250N ROUND BARS
SL - DENOTES GRADE 500L DEFORMED SQUARE FABRIC
RL - DENOTES GRADE 500L DEFORMED RECTANGULAR FABRIC

R2. CLEAR CONCRETE COVER SHALL BE AS FOLLOWS U.N.O:

PRECAST CONCRETE ELEMENTS - RIGID FORMWORK/INTENSE COMPACTION AS3735
45mm ALL SURFACES

CAST INSITU CONCRETE ELEMENTS - STANDARD FORMWORK/COMPACTION AS3735
60mm LIQUID RETAINING SURFACES
60mm SURFACES IN CONTACT WITH GROUND
50mm SURFACES IN CONTACT WITH GROUND PROTECTED BY BLINDING CONCRETE
50mm SURFACES ABOVE GROUND

R3. LOAD BEARING WELDED JOINTS FOR THE TRANSMISSION OF LOADS BETWEEN REINFORCEMENT IS NOT PERMITTED.
NON LOAD BEARING WELDED JOINTS (TACK WELDS) TO KEEP REINFORCEMENT IN POSITION DURING FABRICATION, TRANSPORT & CONCRETING, IS PERMITTED WHERE WELDING WILL NOT IMPACT DUCTILITY OF REINFORCEMENT.
WELDING SHALL BE IN ACCORDANCE WITH AS 1554.3.
LAP LENGTHS SHALL NOT BE REDUCED DUE TO WELDING.

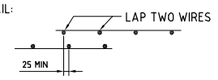
R4. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT.

R5. REINFORCEMENT IS SHOWN DIAGRAMATICALLY ON THE DRAWINGS AND THEREFORE DOES NOT DEPICT THE EXACT POSITION OF THE BARS.

R6. REINFORCEMENT ANCHORAGE COGS AND LAP LENGTHS SHALL BE AS FOLLOWS U.N.O.

BAR SIZE (GRADE 500N)	N12	N16	N20	N24	N28	N32	N36
ANCHORAGE & LAP LENGTH	400	600	800	1000	1200	1500	1800
COG LENGTH	200	250	300	350	400	450	450

R7. MESH LAP DETAIL:



R8. WHERE REINFORCEMENT IS LAPPED, THE LAPS SHALL BE STAGGERED AND NO MORE THAN 50% OF THE REINFORCEMENT SHALL BE LAPPED AT ANY ONE SECTION UNLESS OTHERWISE SPECIFIED.

R9. ALL HOOKS AND COGS SHALL BE IN ACCORDANCE WITH AS5100

R10. TT - DENOTES TOP LAYER LAID SECOND
T - DENOTES TOP LAYER LAID FIRST
BB - DENOTES BOTTOM LAYER LAID FIRST
B - DENOTES BOTTOM LAYER LAID SECOND
EF - DENOTES EACH FACE

R11. REINFORCEMENT SHALL BE SUPPORTED ON PLASTIC CHAIRS AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS.

R12. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF SYDNEY WATER.

EARTHWORKS AND BACKFILLING

EB1 EXCAVATED MATERIAL WITH A PLASTICITY INDEX LESS THAN 30 MAY BE USED AS BACKFILL MATERIAL. BACKFILL MATERIAL SHALL BE FREE OF ROCK, CEMENT LUMPS OR CLAY CLODS LARGER THAN 150mm IN SIZE AND FREE OF PLASTICS, METAL AND ORGANIC MATTER SUCH AS GRASS, ROOTS, BRUSH OR OTHER VEGETATION.

EB2. BACKFILLING AROUND STRUCTURES SHALL BE CARRIED OUT SIMULTANEOUSLY ON ALL SIDES. AT NO STAGE SHALL THE DIFFERENCE IN HEIGHT OF BACKFILL AGAINST THE WALLS BE MORE THAN 500mm.

EB3. COHESIVE BACKFILL MATERIALS SHALL BE COMPACTED TO A DRY DENSITY RATIO OF NOT LESS THAN 95% TESTED IN ACCORDANCE WITH AS1289.5.4.1 AND AS1289.5.11.

EB4 NON-COHESIVE GRANULAR BACKFILL MATERIALS SHALL BE COMPACTED TO A DENSITY INDEX OF NOT LESS THAN 70% TESTED IN ACCORDANCE WITH AS1289.5.4.1.

FOUNDATIONS

F1 TOPSOIL AND VEGETATION SHALL BE REMOVED BEFORE EXCAVATION.

F2. EXCAVATE TO THE GREATER OF EITHER 50mm BELOW THE REQUIRED LEVELS OF THE UNDERSIDE OF THE FOUNDATION SLABS OR AS REQUIRED TO REACH A SUITABLE FOUNDATION MATERIAL.

F3. AS SOON AS PRACTICABLE WITHIN 72 HOURS, THE EXPOSED FOUNDING LEVELS OF THE COMPACTED FOUNDATION SHALL BE SEALED WITH A 50mm THICK CONCRETE BLINDING LAYER.

F4. THE MINIMUM ALLOWABLE BEARING PRESSURE FOR THE STORAGE TANK FOUNDATION SHALL BE 200kPa.

F5. ANY OVER-EXCAVATION OR CAVITIES SHALL BE FILLED WITH GRADE N15 MASS CONCRETE.

F6. FOUNDING STRATA SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACING BLINDING CONCRETE.

LIFTING & HANDLING

LH1. MINIMUM COMPRESSIVE STRENGTH FOR LIFTING AND HANDLING SHALL BE 32Mpa.

LH2. DURING STORAGE, TRANSPORT AND HANDLING, SEGMENTS SHALL BE KEPT IN AN UPRIGHT POSITION.

LH3. SEGMENTS SHALL ONLY BE LIFTED BY THE LIFTING ANCHORS PROVIDED. LOAD DISTRIBUTION IS ACHEIVED BY VIA SPREADER BEAMS AND THE LOAD IS EVENLY SHARED BETWEEN ALL LIFTING POINTS

LH4. IT IS ASSUMED THE SURFACE OF THE MOULDS ARE OF OILED ROUGH STEEL OR VARNISHED TIMBER

LH5. LIFTING ANCHORS SHALL BE REID SWIFTLIFT SHORT FOOT ANCHORS OR APPROVED EQUIVALENT.

LH6. ESTIMATED MASS OF EACH UNIT IS BASED ON A CONCRETE DENSITY OF 2600 kg/m^3. THE ACTUAL MASS OF EACH UNIT SHALL BE VERIFIED BY THE FABRICATOR.

LH7. LIFTING ANGLE BETWEEN SLING AND HORIZONTAL LINE SHALL NOT BE LESS THAN 60°

LH8. DEFECTS ARISING FROM HANDLING, LIFTING AND TRANSPORTATION SHALL BE DETERMINED WITH AS/NZS 4058:2007.

LH9. LIFTING SHALL BE UNDERTAKEN AT NORMAL CRANE HOIST SPEEDS.

DRAWING INDEX:

SUPPORT DRAWINGS:

DTC/3300	ACCESS HATCHES & SAFETY GRILLES ARRANGEMENT - SHEET 1 OF 4
DTC/3301	ACCESS HATCHES & SAFETY GRILLES ARRANGEMENT - SHEET 2 OF 4
DTC/3302	ACCESS HATCHES & SAFETY GRILLES ARRANGEMENT - SHEET 3 OF 4
DTC/3303	ACCESS HATCHES & SAFETY GRILLES ARRANGEMENT - SHEET 4 OF 4
DTC/5000	INTRUDER RESISTANT PERIMETER BARRIER TYPE 1 CHAINLINK FABRIC SECURITY FENCE & GATES - SHEET 1 OF 2
DTC/5001	INTRUDER RESISTANT PERIMETER BARRIER TYPE 1 CHAINLINK FABRIC SECURITY FENCE & GATES - SHEET 2 OF 2

Sydney WATER

APPROVED

KEN WIGGINS

MANAGER E & ES

ENGINEERING & ENVIRONMENTAL SERVICES

LETTER	DETAILS OF ISSUE / AMENDMENT	APP'D	DATE
A	ORIGINAL ISSUE	KW	22/06/15

DEEMED TO COMPLY DRAWINGS

TEMPORARY SEWAGE PUMP- OUT INSTALLATIONS NOTES & DRAWING INDEX

DTC
6301

ISSUE	DATE
A	22/06/15

OPENED DATE :- Jun 22, 2015 - 2:46pm LOCATION PATH:- S:\ENGSERV\ESECPD\EC_CS\CS-11 Projects\079 - Project Lego\Drawings\TPO\ZOriginal Issue\DTC-6301.dwg