

GENERAL

- G1.

ALL WORKS MUST BE IN ACCORDANCE WITH SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL, AND SYDNEY WATER TECHNICAL SPECIFICATION – MECHANICAL UNO.
- G2.

ALL PIPES/FITTINGS/VALVES/OTHER PRODUCTS MUST BE IN ACCORDANCE WITH EPS 500 OR EPS 501 UNO.
- G3.

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE FOLLOWING:

A.

SEWERAGE CODE OF AUSTRALIA WSA 02-2002-2.2 SYDNEY WATER EDITION 1 – VERSION 3 – PART 3.

B.

WSA 201-2020 2.3 MANUAL FOR SELECTION AND APPLICATION OF PROTECTIVE COATINGS AND SYDNEY WATER SUPPLEMENT TO WSA 201.
- G4.

ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
- G5.

SETTING OUT DIMENSIONS AND SIZES OF STRUCTURAL MEMBERS MUST NOT BE OBTAINED BY SCALING THE DRAWINGS.
- G6.

WHERE PROPRIETARY PRODUCTS HAVE BEEN SPECIFIED, A SUITABLE EQUIVALENT MAY BE USED WHERE APPROVED BY SYDNEY WATER. PROPRIETARY PRODUCTS MUST BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- G7.

USE OF STANDARD DESIGNS MAY INTRODUCE UNINTENDED SAFETY RISKS FOR SITE SPECIFIC APPLICATION. THE USER MUST ADDRESS SAFETY RISKS THROUGH SITE SPECIFIC ASSESSMENT.
- G8.

THE USER IS RESPONSIBLE FOR DESIGN OF ANY TEMPORARY WORKS.
- G9.

MAINTENANCE HOLES MUST BE TESTED IN ACCORDANCE WITH SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- G10.

INSTALLATIONS SHOWN ARE NOT SUITABLE FOR INSTALLATION IN GROUND CONDITIONS WHERE THE EXPOSURE CLASSIFICATION SEVERITY EXCEEDS B1 OR IN CONTAMINATED SOIL CONDITIONS.

STRUCTURAL DESIGN BASIS

- SD1.

THE STRUCTURES WITHIN THIS DTC SET HAVE BEEN DESIGNED FOR THE FOLLOWING SOIL PROPERTIES. THE USER IS TO UNDERTAKE SPECIFIC DESIGN IF SOIL PROPERTIES DO NOT COMPLY WITH THESE ASSUMPTIONS.

SOIL PROPERTIES:

ϕ'

= 30° (LOWER BOUND FOR DESTABILIZING ULTIMATE ACTIONS)

DENSITY (γ)

= 20kN/m³ (UPPER BOUND FOR DESTABILIZING ULTIMATE ACTIONS)

COEFFICIENT OF EARTH PRESSURE AT REST K_0

= 0.5

MAX. COEFFICIENT OF ACTIVE EARTH PRESSURE FOR STABILIZING SERVICEABILITY ACTIONS K_a

= 0.2
- SD2.

THE STRUCTURES WITHIN THIS DTC SET HAVE BEEN DESIGNED FOR THE FOLLOWING LOADS. THE USER IS TO UNDERTAKE SPECIFIC DESIGN IF LOADS DO NOT COMPLY WITH THESE ASSUMPTIONS.

LIVE LOAD:

SUBJECT TO VEHICULAR TRAFFIC – SM1600 TO AS5100.2 AND CLASS D TO AS3996

NOT SUBJECT TO VEHICULAR TRAFFIC – CLASS B TO AS3996

GROUND WATER AT SURFACE
- SD3.

THE STRUCTURES WITHIN THIS DTC SET HAVE BEEN DESIGNED FOR THE FOLLOWING CONCRETE EXPOSURE CLASSIFICATIONS. THE USER IS TO UNDERTAKE SPECIFIC DESIGN IF CONCRETE EXPOSURE CLASSIFICATIONS DO NOT COMPLY WITH THESE ASSUMPTIONS.

CONCRETE EXPOSURE CLASSIFICATION:

DTC/2000 – C (AS3735) ≤ DN300, D (AS3735) – DN375, DN450

DTC/2201 – D (AS3735)

DTC/2202 – C (AS3735)

DTC/2203 – C (AS3735)
- SD4.

THE STRUCTURES WITHIN THIS DTC SET HAVE BEEN DESIGNED FOR THE FOLLOWING SEISMIC LOAD. THE USER IS TO UNDERTAKE SPECIFIC DESIGN IF SEISMIC LOADS DO NOT COMPLY WITH THESE ASSUMPTIONS.

SEISMIC LOAD:

ANNUAL PROBABILITY OF EXCEEDANCE 1/2500

SITE SUB-SOIL CLASS C_6 – SHALLOW SOIL SITE

FOUNDATION:

- F1.

GROUND CONDITIONS MUST BE VERIFIED BY A COMPETENT GEOTECHNICAL ENGINEER.
- F2.

FOUNDATION PREPARATION MUST BE IN ACCORDANCE WITH THE SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- F3.

THE BEARING STRATUM MUST BE NATURAL GROUND OR COMPACTED FILL. BEARING CAPACITY REQUIREMENTS WILL BE SATISFIED PROVIDED THE REQUIREMENTS OF TABLE F3 ARE MET.

TABLE F3: MINIMUM FOUNDATION CONDITIONS FOR MAINTENANCE HOLE SHAFT BASES

MATERIAL	MINIMUM STRENGTH/ DENSITY INDEX/ COMPACTION	MINIMUM EQUIVALENT DCP TESTING (NOTE i)	REQUIRED TEST DEPTH BELOW FOUNDATION LEVEL
STIFF CLAY	UNDRAINED SHEAR STRENGTH, S_u , NOT LESS THAN 75 kPa	DCP NOT LESS THAN 12 BLOWS/300mm	1.5m OR PRIOR REFUSAL
MEDIUM DENSE SAND	DENSITY INDEX NOT LESS THAN 60%	DCP NOT LESS THAN 8 BLOWS/300mm DCP NOT LESS THAN 12 BLOWS/300mm	0.0 TO 0.6m 0.6m TO 1.5m OR PRIOR REFUSAL
COMPACTED EXISTING FILL	-	DCP NOT LESS THAN 12 BLOWS/300mm	0.0 TO 1.5m

- i.

DCP – DYNAMIC CONE PENETRATION TEST AS PER AS1289

TESTS MUST BE CARRIED OUT WITHIN 0.5m OF THE CENTER OF THE MAINTENANCE HOLE BASE.
- ii.

COMPACT NEW FILL AS PER SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- F4.

ALL SOFT OR LOOSE MATERIAL NOT MEETING THE ABOVE REQUIREMENTS MUST BE EXCAVATED AND REPLACED WITH SELECT FILL. SELECT FILL MUST BE COMPACTED AS PER THE SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL
- F5.

ANY OVER-EXCAVATED ROCK OR CAVITIES MUST BE BACKFILLED WITH GRADE N20 MASS CONCRETE TO SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- F6.

FOR SHALLOW, VERTICALLY LOADED MAINTENANCE HOLE SHAFT FOOTINGS WITH MINIMUM EMBEDMENT 1m BELOW FINAL GRADE, THE ULTIMATE BEARING CAPACITY OF THE GROUND AT FOUNDATION LEVEL IS ASSUMED TO BE 500kPa. A GEOTECHNICAL STRENGTH REDUCTION FACTOR OF 0.4 MUST BE ADOPTED TO CALCULATE DESIGN GEOTECHNICAL STRENGTH.

CONCRETE

- C1.

CONCRETE DIMENSIONS SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- C2.

MINIMUM CLEAR COVER TO REINFORCEMENT MUST BE 70mm UNO.
- C3.

CONCRETE MUST BE SPECIAL CLASS S50 TO SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- C4.

CURING OF ALL CONCRETE MUST BE AS PER SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- C5.

CONCRETE MUST ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 32 MPa PRIOR TO BACKFILLING AND TESTING OF STRUCTURES. BACKFILL AS PER SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.

FORMWORK

- FW1.

FORMWORK AND CONCRETE FINISHES MUST BE IN ACCORDANCE WITH SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.
- FW2.

CONCRETE MUST ACHIEVE A MINIMUM COMPRESSIVE STRENGTH OF 25MPa PRIOR TO STRIPPING OF FORMWORK. STRIPPING OF FORMWORK MUST BE IN ACCORDANCE WITH SYDNEY WATER TECHNICAL SPECIFICATION – CIVIL.

REINFORCEMENT

- R1.

STEEL REINFORCING MATERIALS MUST BE TO AS/NZS4671.

SHAPE – D

STRENGTH GRADE = 500MPa

DUCTILITY CLASS – N
- R2.

REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY; IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- R3.

DESIGNATION OF REINFORCEMENT BARS IS AS IN EXAMPLE:

No. OF BARS IN A GROUP

17 N20 – 350 EF

NOMINAL BAR SIZE IN mm

BAR GRADE AND TYPE

LOCATION OR COMMENT

SPACING IN mm
- R4.

THE FOLLOWING ABBREVIATIONS APPLY TO THE LOCATION OF REINFORCEMENT:

EW EACH WAY

FF FAR FACE

CP CENTRALLY PLACED

EF EACH FACE

B BOTTOM


BB BOTTOM BOTTOM (LAID FIRST)

NF NEAR FACE

T TOP

TT TOP TOP (LAID LAST)
- R5.

EXTENT OF BARS SHOWN THUS:



TYPICAL BAR
- R6.

SPLICE REINFORCEMENT ONLY AT LOCATIONS SHOWN ON DRAWINGS. LAP LENGTHS TO COMPLY WITH THE FOLLOWING UNLESS NOTED OTHERWISE.

N12 – 450 LAP

N16 – 500 LAP

N20 – 650 LAP
- R7.

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, ARE PERMITTED WHERE WELDING WILL NOT IMPACT DUCTILITY OF REINFORCEMENT.

WELDING MUST BE IN ACCORDANCE WITH AS 1554.3.

LAP LENGTHS MUST NOT BE REDUCED DUE TO WELDING.

REFERENCE DRAWINGS

DTC/2200	DN1200 MAINTENANCE HOLES, CAST IN-SITU REINFORCED CONCRETE SEWERS ≤ DN450
DTC/2201	DN1800 MAINTENANCE HOLES, CAST IN-SITU REINFORCED CONCRETE SEWERS DN500 – DN750
DTC/2202	DN1200 MAINTENANCE HOLES, CAST IN-SITU PLAIN CONCRETE WALL, SEWERS ≤ DN450
DTC/2203	DN1050 MAINTENANCE HOLES, CAST IN-SITU PLAIN CONCRETE WALL, SEWERS ≤ DN300
DTC/2220	MAINTENANCE HOLES, DETAILS, SHEET 1
DTC/2221	MAINTENANCE HOLES, DETAILS, SHEET 2
DTC/2222	MAINTENANCE HOLES, DETAILS, SHEET 3
DTC/2223	DN1200 MAINTENANCE HOLES, ROOF SLAB DESIGN
DTC/2224	MAINTENANCE HOLE DETAILS, COVER AND SPACER DETAILS



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APPROVED

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ENGINEERING & TECHNICAL SUPPORT

D	GENERAL UPDATE	NS	31/07/24		
C	REVISED GENERAL, FOUNDATION AND REINFORCEMENT NOTES	RL	18/03/15		
B	GENERAL REVISION	RL	01/03/13		
A	ORIGINAL ISSUE	PJG	31/01/12		
LETTER	DETAILS OF ISSUE / AMENDMENT	APP'D	DATE		

DEEMED TO COMPLY DRAWINGS

MAINTENANCE HOLES - CAST IN-SITU
CONSTRUCTION NOTES

DTC

2000

ISSUE

DATE

D

31/07/24