CONCRETE WORK NOTES

GENERAL

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ICON WATER "SD SERIES" DRAWINGS THAT RELATE TO THE SUPPLY OF CONCRETE AND THE CONSTRUCTION OF CONCRETE STRUCTURES.
2. UNLESS NOTED OTHERWISE, ALL:
   - DIMENSIONS ARE STATED IN MILLIMETRES.
   - REDUCED LEVELS ARE STATED IN METRES REFERENCING AUSTRALIAN HEIGHT DATUM (AHD).
   - COORDINATES ARE STATED IN METRES REFERENCING THE ACT STANDARD GRID.
3. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING DRAWINGS. ALL RELEVANT DIMENSIONS SHALL BE CHECKED BY THE CONSTRUCTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
4. UNLESS NOTED OTHERWISE, THE CONCRETE DIMENSIONS SHOWN DO NOT INCLUDE THE THICKNESS OF ANY APPLIED SURFACE COATINGS / FINISHES.
5. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS 1379, AS 1478, AS 2159, AS 3582, AS 3600, AS 3610, AS 3972, AS 3735, AS 5100.5 AND ICON WATER SPECIFICATION STD-SPE-C-003.
6. CONSTRUCTION TOLERANCES AND SURFACE FINISHES SHALL BE IN ACCORDANCE WITH AS 3610 AND ICON WATER SPECIFICATION STD-SPE-C-003.
7. NO ADMIXTURES ARE TO BE USED UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE ICON WATER REPRESENTATIVE.
8. UNLESS NOTED OTHERWISE, ALL EXPOSED EDGES AND CORNERS SHALL BE PROVIDED WITH 25 mm FILLETS OR CHAMFERS (EXCEPT AT ACCESS COVERS).
9. NO HOLES, CHASES, EMBEDMENT OF PIPES OR CONDUITS OTHER THAN THOSE SHOWN ON EITHER THE ICON WATER "SD SERIES" DRAWINGS OR PROJECT SPECIFIC DRAWINGS ARE ALLOWED IN CONCRETE MEMBERS OR STRUCTURES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ICON WATER REPRESENTATIVE.
10. CONSTRUCTION JOINTS SHALL ONLY BE FORMED WHERE SPECIFICALLY SHOWN ON THE ICON WATER "SD SERIES" DRAWINGS OR PROJECT SPECIFIC DRAWINGS.
11. ANY HARDENED CONCRETE SURFACE AGAINST WHICH FRESH CONCRETE IS TO BE PLACED SHALL BE CLEAN, FREE FROM LAITANCE AND ROUGHENED TO EXPOSE AGGREGATE TO A DEPTH OF 5 mm. COAT THE EXISTING CONCRETE SURFACE WITH NEAT CEMENT SLURRY PRIOR TO PLACING NEW CONCRETE CEMENT SLURRY. THE NEAT CEMENT SLURRY COATING SHALL BE APPLIED NO MORE THAN 15 MINUTES PRIOR TO PLACING THE NEW (FRESH) CONCRETE.
12. FINISHED CONCRETE SHALL BE A DENSE, HOMOGENEOUS MASS WHICH SHALL COMPLETELY FILL THE FORMWORK, THOROUGHLY EMBED THE REINFORCEMENT AND BE FREE OF STONE POCKETS.
13. MECHANICAL COMPACTORS SHALL ONLY BE USED FOR COMPACTION PURPOSES AND NOT FOR THE SPREADING OF CONCRETE.
14. CURING OF ALL CONCRETE SHALL BE ACHIEVED BY KEEPING ALL SURFACES THOROUGHLY WET FOR A PERIOD OF 7 DAYS. CURING COMPOUNDS MAY BE USED WHERE NO FLOOR FINISH IS PROPOSED IF PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE ICON WATER REPRESENTATIVE. POLYETHYLENE SHEETING OR WET HESSIAN MAY BE USED ON THE CONDITION THAT IT IS PROTECTED FROM WIND AND TRAFFIC.
15. THE DESIGN, CONSTRUCTION AND PERFORMANCE OF ALL FORMWORK AND FALSEWORK SHALL BE CERTIFIED BY A SUITABLY QUALIFIED AND COMPETENT STRUCTURAL ENGINEEER.
16. CONSTRUCTION SUPPORT PROPPING SHALL BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE AND UNDUE EARLY AGE CONCRETE DEFLECTION DUE TO CONSTRUCTION LOADING.
17. CONCRETE QUALITY CONTROL TESTING SHALL BE IN ACCORDANCE WITH ICON WATER SPECIFICATION STD-SPE-C-003 AND THE PROJECT SPECIFIC DOCUMENTATION.
18. NO CONCRETE, MORTAR OR GROUT SHALL BE SUPPLIED/DELIVERED BEFORE THE CONFORMANCE OF ALL CONSTITUENT MATERIALS IS VERIFIED BY TEST CERTIFICATES FROM A NATA REGISTERED LABORATORY AND THE ICON WATER REPRESENTATIVE HAS PROVIDED APPROVAL.
19. ALL WATER USED FOR MIXING CONCRETE, GROUT AND MORTAR SHALL MEET THE REQUIREMENTS OF AS 1379 SECTION 2.4.
20. CONCRETE ENCASEMENT OF A MINIMUM OF 100 mm COVER SHALL BE PROVIDED ON BOTH SIDES OF PUDDLE/THRUST FLANGES WHEN PIPEWORK IS EMBEDDED THROUGH CONCRETE STRUCTURES UNLESS NOTED OTHERWISE ON THE PROJECT SPECIFIC DRAWINGS.

PROTECTION AND COATINGS

21. PROTECTIVE COATINGS SHALL BE IN ACCORDANCE WITH WSA 201 AS AMENDED/SUPPLEMENTED BY ICON WATER SPECIFICATION STD-SPE-G-005.

REINFORCEMENT

22. ALL REINFORCEMENT SHALL BE SECURED IN POSITION TO PREVENT DISPLACEMENT DURING POURING AND OTHER CONSTRUCTION ACTIVITIES AND IT SHALL BE PLACED SUCH THAT THE PROJECT SPECIFIC CONCRETE COVER REQUIREMENT IS MET. APPROVED CHAIRS, SPACERS, LIGATURES AND TIES SHALL BE USED TO ACHIEVE THIS.
23. ALL STEEL REINFORCING MATERIALS (INCLUDING FABRIC) SHALL COMPLY WITH THE REQUIREMENTS OF AS/NZS 4671.
24. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY IN THE DRAWINGS AND NOT NECESSARILY SHOWN IN TRUE PROJECTION.
25. ALL COG LENGTHS AND HOOK DIAMETERS SHALL BE IN ACCORDANCE WITH AS 3600 UNLESS NOTED OTHERWISE.
26. ALL REINFORCEMENT SHALL BE INSPECTED AND APPROVED BY THE ICON WATER REPRESENTATIVE PRIOR TO PLACING CONCRETE.
27. SPLICE REINFORCEMENT ONLY AT LOCATIONS SHOWN ON THE PROJECT SPECIFIC DRAWINGS OR AS APPROVED BY THE ICON WATER REPRESENTATIVE. STAGGER LAPS WHERE POSSIBLE. LAP SPLICE LENGTHS SHALL COMPLY WITH AS 3600. THE CLEAR SPACING BETWEEN LAPPED BARS SHALL BE LESS THAN 3 x BAR DIAMETER.
28. JOGGLE TO BARS TO BE 1 BAR DIAMETER OVER A LENGTH OF 12 BAR DIAMETERS UNLESS NOTED OTHERWISE.
29. WELDING OF REINFORCEMENT IS ONLY PERMITTED WHERE SHOWN ON THE PROJECT SPECIFIC DRAWINGS OR OTHERWISE AS APPROVED BY THE ICON WATER REPRESENTATIVE. WHERE WELDING OF REINFORCEMENT IS APPROVED, IT SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1554 PART 3.
30. REFER TO THE PROJECT SPECIFIC DRAWINGS FOR ELECTRICAL BONDING REQUIREMENTS.
31. THE USE OF PROPRIETARY REBAR COUPLERS IS ONLY PERMITTED UPON APPROVAL OF ICON REPRESENTATIVE.

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A	INITIAL ISSUE	15/06/2018	M. Matusiak	K. Danenbergsons	D. Eager

ASSET AREA APPLICABILITY					
DAM	X	RES	X	SPS	X
BWS	X	WAT	X	STP	X
WTP	X	SEW	X		
WPS	X	REC	X		

STANDARD DRAWING
CONCRETE WORK
NOTES

DRAWING STATUS: Current

SD-9300-D

A1

ISSUE: A

TABLE 1 : SOIL CLASSIFICATION VERSUS BEARING CAPACTIES FOR THRUST BLOCK AND ANCHOR BLOCK DESIGN

SOIL CLASSIFICATION (NOTE 4)		FIELD IDENTIFICATION TEST (NOTE 6)	QUALITY DESCRIPTOR (NOTE 3)	AHBP kPa (NOTE 1)
CLAY SOILS	VERY SOFT	EASY PENETRATED 40 mm WITH FIST	POOR	< 50 (NOTE 2)
	SOFT	EASILY PENETRATED 40 mm WITH THUMB	POOR	< 50 (NOTE 2)
	FIRM	MODERATE EFFORT NEEDED TO PENETRATE 30 mm WITH THUMB	POOR	< 50 (NOTE 2)
	STIFF	READILY INDENTED WITH THUMB BUT PENETRATED ONLY WITH GREAT EFFORT	POOR / MEDIUM	50
	VERY STIFF	READILY INDENTED WITH THUMBNAIL	MEDIUM	100
	HARD	INDENTED WITH DIFFICULTY BY THUMBNAIL	SOUND	200
SANDS	LOOSE CLEAN SAND	TAKES FOOTPRINT MORE THAN 10 mm DEEP	POOR	< 50 (NOTE 2)
	MEDIUM-DENSE CLEAN SAND	TAKES FOOTPRINT 3 mm TO 10 mm DEEP	POOR / MEDIUM	50
	DENSE CLEAN SAND OR GRAVEL	TAKES FOOTPRINT LESS THAN 3 mm DEEP	MEDIUM	100
ROCK	BROKEN OR DECOMPOSED ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAK IN ROCK) SPACED AT LESS THAN 300 mm APART	MEDIUM	100
	SOUND ROCK	NOT DIGGABLE WITH PICK. HAMMER BLOW "RINGS" JOINTS (BREAK IN ROCK) SPACED MORE THAN 300 mm APART	SOUND	≥200
UNCOMPACTED FILL DOMESTIC REFUSE		OBSERVATION AND KNOWLEDGE OF THE SITE HISTORY	POOR	< 50 (NOTE 2)

NOTES :

1. "AHBP" = ALLOWABLE HORIZONTAL BEARING PRESSURE FOR :
   - A. 10 mm MOVEMENT.
   - B. CENTRE OF THRUST 800 mm BELOW THE NATURAL SURFACE LEVEL.
   - C. HIGH WATER TABLE.
2. WHEN THE AHBP < 50 kPa, A SPECIAL GEOTECHNICAL ASSESSMENT IS REQUIRED FOR THE DESIGN OF ANCHORS AND THRUST BLOCKS.
3. THE "QUALITY DESCRIPTORS" USED CORRESPOND TO TRANSPORT CANBERRA AND COMMUNITY SERVICES (TCCS) CONVENTIONS. TCCS USE THE FOLLOWING DEFINITIONS:

   POOR: SOFT CLAY, SILT, POORLY COMPACTED SOILS, LOCATIONS WHICH MAY BE SATURATED FOR PART OF THE YEAR.

   MEDIUM: COMPACTED MEDIUM PLASTICITY CLAY, WELL BONDED SANDY SOIL, BONDED SAND AND GRAVEL WITH REASONABLE SURFACE WATER DRAINAGE.

   SOUND: HARD LOW PLASTICITY CLAY, WELL COMPACTED ROCKY SOIL, WELL BONDED SAND AND GRAVEL WITH GOOD SURFACE AND SUBSURFACE WATER DRAINAGE.

   TECHNICAL NOTE : THESE VALUES ARE A GUIDE ONLY - SOIL CONDITIONS FOR EACH FOOTING ARE TO BE ASSESSED BY SUITABLY QUALIFIED PERSONNEL.
4. THE "SOIL CLASSIFICATIONS" USED ARE AS PER WSAA DRAWING WAT-1200.
5. WHEN DESIGNING FOR BUILDING FOOTINGS AND BURIED MAINTENANCE STRUCTURES SUCH AS WET WELLS, VALVE CHAMBERS, STORAGE TANKS AND THE LIKE, A DETAILED GEOTECHNICAL INVESTIGATION SHALL ALWAYS BE CONDUCTED AND THE DESIGN SHALL BE PROVIDED BY A SUITABLY COMPETENT CIVIL/STRUCTURAL ENGINEER HOLDING CHARTERED (CPENG.) STATUS WITH ENGINEERS AUSTRALIA OR REGISTERED (RPENG.) STATUS WITH PROFESSIONALS AUSTRALIA.
6. THE FIELD IDENTIFICATION TEST DETAILS PROVIDED ON TABLE 1 ARE BASED ON THE FOLLOWING TESTING GUIDANCE :

PREPARING THE TEST AREA :
CONDUCT ALL NATIVE SOIL IDENTIFICATION TESTS ON A FRESHLY EXPOSED, DAMP, HAND-TRIMMED AREA OF THE TRENCH WALL IN THE PIPE EMBEDMENT ZONE. TAKE CARE THAT THE SOIL IN THE EXPOSED TEST AREA IS NOT COMPACTED OR LOOSENED DURING TRENCH EXCAVATION. IF THE SOIL IN THE TRENCH FLOOR AND WALL IS VERY DRY AT THE TIME THE TRENCH IS OPENED, THEN DRENCH THE TEST AREA AND ALLOW TIME FOR THE WATER TO BE ABSORBED BY THE SOIL BEFORE IT IS TRIMMED AND TESTED.

IDENTIFYING CLAY SOILS :
A LUMP OF CLAY SOIL WILL BE DIFFICULT TO BREAK WHEN DRY. IT WILL BE STICKY AND NEED SOME EFFORT TO MOULD WITH THE FINGERS WHEN WET. CLAY WILL NOT WASH OFF EASILY. INDIVIDUAL CLAY PARTICLES ARE HARD TO SEE.

TESTING CLAY SOILS :
CLAY SOILS ARE BEST TESTED IN THE WALL OF THE TRENCH. THE FIST, THE THUMB OR THE THUMBNAIL ARE USED TO DETERMINE THE CONSISTENCY (STRENGTH) OF THE CLAY (REFER TABLE 1).

IDENTIFYING CLEAN SAND SOILS :
THE INDIVIDUAL GRAINS OF SAND WILL BE VISIBLE TO THE EYE. A LUMP OF CLEAN SAND, IF IT CAN BE PICKED UP AT ALL, WILL CRUMBLE WITH VERY LITTLE EFFORT. CLEAN SAND WASHES OFF EASILY.

TESTING CLEAN SAND SOILS :
CLEAN SAND SOILS ARE BEST TESTED IN THE FLOOR OF THE TRENCH BY PUSHING WITH THE WHOLE BODY WEIGHT ON ONE FOOT. THE DEPTH OF THE DEPRESSION LEFT BY THE FLAT SOLE OF THE BOOT IS RELATED TO THE DENSITY OF THE SAND (REFER TABLE 1) TAKE CARE TO ENSURE THAT THE SAND IN THE TRENCH FLOOR WAS NOT COMPACTED OR LOOSENED DURING THE EXCAVATION OF THE TRENCH OR THE TRIMMING OF THE TEST AREA .

TESTING ROCK :
THE RECOMMENDED FIELD IDENTIFICATION TESTS FOR ROCK RELY ON OBSERVING THE EASE WITH WHICH THE ROCK CAN BE DUG WITH A PICK, AND ESTIMATING THE SPACING OF THE JOINTS IN THE ROCK. (JOINTS ARE COMMONLY CALLED CRACKS OR BREAKS). THE SPACING BETWEEN JOINTS IS IMPORTANT BECAUSE THE ALLOWABLE BEARING PRESSURE ON ROCK IS USUALLY CONTROLLED BY THE JOINTS IN IT, RATHER THAN THE INHERENT STRENGTH OF A FRAGMENT OF ROCK. JOINTS MAY BE TIGHTLY CLOSED (LIKE HAIRLINE CRACKS), BUT CAN ALSO BE OPEN (VOID SPACE) OR FILLED WITH SOFT CLAY OR OTHER SOIL.

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DAM	X	RES	X	SPS	X
BWS	X	WAT	X	STP	X
WTP	X	SEW	X		
WPS	X	REC	X		

ASSET AREA APPLICABILITY

STANDARD DRAWING
CIVIL WORKS
SOIL CLASSIFICATION
GUIDELINES

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ISSUE A