

## STEELWORK NOTES

### GENERAL

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ICON WATER "SD SERIES" DRAWINGS THAT RELATE TO THE SUPPLY AND/OR FABRICATION AND/OR INSTALLATION OF STEELWORK.
- 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.
- SETTING-OUT DIMENSIONS AND SIZES OF STRUCTURAL MEMBERS SHALL NOT BE OBTAINED BY SCALING DRAWINGS. SETTING-OUT DIMENSIONS AND ALL RELEVANT SITE DIMENSIONS SHALL BE CHECKED BY THE CONSTRUCTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- ALL MATERIALS, FABRICATION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS/NZS 1554, AS 4100, ICON WATER SPECIFICATION STD-SPE-S-001 AND THE ICON WATER APPROVED PRODUCTS LIST.
- SHOP DRAWINGS SHALL BE PREPARED BY THE CONSTRUCTOR FOR ALL STRUCTURAL STEELWORK AND SHALL BE SUBMITTED TO THE ICON WATER REPRESENTATIVE AT LEAST TEN (10) WORKING DAYS PRIOR TO FABRICATION FOR A GENERAL REVIEW. SUCH A GENERAL REVIEW DOES NOT INCLUDE CHECKING OF DIMENSIONS.
- ALL SHOP DRAWINGS SHALL SPECIFICALLY STATE:
  - THE GRADE OF SANDBLASTING
  - PAINT BRAND, TYPE AND FILM THICKNESS
  - WELD CATEGORY
- ALL CONNECTION AND STIFFENER PLATES SHALL BE 10 mm THICK UNLESS NOTED OTHERWISE.
- THE CONSTRUCTOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL ELEMENTS, WHETHER OR NOT THESE ARE DETAILED ON THE DRAWINGS.
- ALL SURFACES SHALL BE FREE OF BURRS AND SHARP EDGES. ALL CUT-EDGES SHALL BE ROUNDED TO A 2 mm RADIUS.
- DURING TRANSPORT, OFF-LOADING, STORAGE AND ERECTION, ALL COATINGS SHALL BE PROTECTED FROM DAMAGE AND DETERIORATION.
- DURING CONSTRUCTION, ALL STRUCTURES SHALL BE MAINTAINED IN A SAFE AND STABLE CONDITION AND NO PART SHALL BE OVER-STRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE CONSTRUCTOR AS REQUIRED TO KEEP THE WORKS STABLE AT ALL TIMES. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ANY TEMPORARY WORKS.
- THE FABRICATION AND ERECTION OF ALL STRUCTURAL STEELWORK SHALL BE SUPERVISED BY AN ENGINEER EXPERIENCED IN SUCH SUPERVISION TO ENSURE THAT ALL REQUIREMENTS OF THE DESIGN ARE MET.

### WELDING

- UNLESS NOTED OTHERWISE, ALL WELDS SHALL BE CATEGORY SP TO AS/NZS 1554 WITH 100% OF ALL WELDS REQUIRING A VISUAL INSPECTION AND 10% OF ALL WELDS REQUIRING ULTRASONIC TESTING.
- ALL FILLET WELDS SHALL BE 6 mm CONTINUOUS FILLET WELDS UNLESS NOTED OTHERWISE.
- ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS.
- WELDING ELECTRODES SHALL BE E48XX/W50X TO AS/NZS 1553 UNLESS NOTED OTHERWISE.
- ALL STAINLESS STEEL WELDS SHALL BE PICKLED AND PASSIVATED IN ACCORDANCE WITH ASTM A380 AFTER FABRICATION AND PRIOR TO INSTALLATION.

### CORROSION PROTECTION AND COATINGS

- WHERE CARBON STEEL ITEMS HAVE BEEN INDICATED AS "GALVANISED", "GALV", "HDG" OR HOT DIP GALVANISED", SUCH ITEMS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS/NZS 4680 AFTER FABRICATION. THE USE OF "COLD GALVANISING" IS PROHIBITED UNLESS WRITTEN APPROVAL IS PROVIDED BY THE ICON WATER REPRESENTATIVE.
- HOT DIP GALVANISED STRUCTURES SHALL BE FREE OF EXCESSIVE BUILD-UP OF GALVANISING AND SHALL BE FREE OF SHARP FORMATIONS. THE GALVANISING THICKNESS SHALL BE UNIFORM. STEELWORK TO BE GALVANISED SHALL HAVE DRAIN HOLES AND BREATHER HOLES TO ALLOW ACCESS AND EGRESS OF MOLTEN ZINC ALLOY AND AIR. ALL HOLES SHALL BE HERMETICALLY SEALED BY RUBBER STOPPER.
- ALL STEELWORK COATINGS, INCLUDING REPAIR OR TOUCH-UP COATINGS, SHALL BE IN ACCORDANCE WITH WSA 201 AS AMENDED BY ICON WATER SPECIFICATION STD-SPE-G-005.
- ALL STAINLESS STEEL THREADED FASTENERS SHALL BE COATED WITH AN APPROVED NICKEL-BASED ANTI-SIEZE COMPOUND PRIOR TO ASSEMBLY (TO PREVENT GALLING). ALTERNATIVELY, MOLYBDENUM COATED BOLTS AND NUTS MAY BE USED.
- STAINLESS STEEL ITEM FINISH SHALL BE SUCH THAT FORMS GRAIN MARKS IN THE DIRECTION OF FALL/SLOPE.
- INSULATING MATERIAL SHALL BE PLACED BETWEEN ALL DISSIMILAR METALS (INCLUDING BOLTED JOINTS). FOR EXAMPLE, NEOPRENE RUBBER STRIPS, NON-FIBRE TYPE INSULATING WASHERS, SLEEVES AND FERRULES, "DENSO" TAPE etc.

### BOLTING, BASE PLATES AND CHEMICAL ANCHORS


- GRADE 316 STAINLESS STEEL BOLTS, STUDS AND ANCHORS SHALL BE USED FOR ENVIRONMENTS DEEMED TO BE "HIGH", "IMMERSION" OR "EXTREME" IN ACCORDANCE WITH TABLE 2.1 OF WSA 201. OTHERWISE, HOT-DIPPED GALVANISED BOLTS, STUDS AND ANCHORS MAY BE USED.
- BLACK BOLTS SHALL ONLY BE INSTALLED WHEN REPLACING EXISTING LIKE-FOR-LIKE ITEMS. THE EXISTING CORROSION PREVENTION SYSTEM SHALL BE MADE GOOD.
- ZINC-COATED BOLTS AND NUTS SHALL NOT BE USED FOR STRUCTURAL STEELWORK AND SHALL ONLY BE LIMITED TO INDOOR ENVIRONMENTS FOR APPLICATIONS DEEMED TO BE NON-STRUCTURAL.
- ALL BOLTS, WASHERS AND NUTS SHALL BE ISO METRIC COARSE PITCH SERIES STRUCTURAL GRADE: A4-70 FOR 316 STAINLESS STEEL; PROPERTY CLASS 8.8 (WITH CLASS 8 NUTS) FOR HOT DIP GALVANISED STEEL (TO AS/NZS 1214 AND AS/NZS 1252) UNLESS OTHERWISE NOTED.
- A HARDENED AND TEMPERED STRUCTURAL WASHER (TO AS/NZS 1252) SHALL BE PROVIDED UNDER EVERY NUT. A WASHER SHALL ALSO BE PROVIDED UNDER EACH BOLT HEAD WHEN A PROTECTIVE SURFACE COATING (OTHER THAN GALVANISING) HAS BEEN PROVIDED ON THE BOLTED MEMBER OR BOLTED COMPONENT.
- THE BOLTING CATEGORY SHALL BE 8.8/S (SNUG TIGHT) AS PER AS 4100 UNLESS NOTED OTHERWISE.
- EACH CONNECTION SHALL HAVE A MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
- COMMERCIAL GRADE BOLTS AND NUTS CONFORMING TO AS 1110, AS 1111 AND AS 1112 SHALL NOT BE USED FOR STRUCTURAL STEEL BOLTING.
- GRADE 8.8 BOLTS SHALL NOT BE WELDED UNDER ANY CIRCUMSTANCES.
- CLEARANCE HOLES FOR STRUCTURAL BOLTING PURPOSES SHALL HAVE A 2 mm DIAMETRAL CLEARANCE WITH THE EXCEPTION OF HOLDING DOWN AND ANCHOR BOLTS WHICH SHALL HAVE A 4 mm DIAMETRAL CLEARANCE. BOLTS LARGER THAN 24 mm TO HAVE 3 mm DIAMETRAL CLEARANCE.
- HOLD DOWN ANCHOR BOLT HOLES MUST BE LESS THAN 6 mm GREATER THAN BOLT SIZE. 4 mm PLATE WASHER IS TO BE INSTALLED UNDER ALL ANCHOR BOLTS.
- UNLESS NOTED OTHERWISE (e.g. DAVIT BASE HOLD DOWN BOLTS) ALL BOLTS SHALL EXTEND A MINIMUM OF TWO THREADS PAST THE NUT BUT NO MORE THAN FIVE FULL THREADS PAST THE NUT.
- ALL BASE PLATES SHALL HAVE A MINIMUM OF 20 mm OF HIGH STRENGTH NON-SHRINK GROUT PROVIDED BETWEEN THE UNDERSIDE OF THE BASE PLATE AND THE CONCRETE. THE GROUT SHALL BE INSTALLED SO THAT AIR-POCKETS AND VOIDS DO NOT OCCUR.
- ALL STRUCTURAL BOLTS, NUTS AND WASHERS MUST BE ACCOMPANIED WITH COMPLIANCE CERTIFICATES TO SHOW THAT THEY ARE IN ACCORDANCE WITH AS/NZS 1252 AND AS/NZS 4291. SUCH CERTIFICATES SHALL BE ISSUED BY A NATA CERTIFIED TESTING AGENCY.
- IF NOT SPECIFICALLY STATED ON THE DRAWINGS, REFER TO THE ICON WATER APPROVED PRODUCTS LIST FOR ACCEPTABLE CHEMICAL ANCHOR MAKES AND PART NUMBERS. ALL CHEMICAL ANCHORS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WELDING AND HOT WORK ON INSTALLED CHEMICAL ANCHORS ARE NOT ALLOWED.

### PLATFORMS, WALKWAYS, STAIRWAYS, LADDERS AND HANDRAILS

- ALL STEELWORK RELATING TO FIXED PLATFORMS, WALKWAYS, STAIRWAYS AND LADDERS SHALL BE IN ACCORDANCE WITH AS 1657 AS AMENDED/SUPPLEMENTED BY ICON WATER SPECIFICATIONS STD-SPE-G-008 AND 009.
- ALL HANDRAILS SHALL BE FULLY WELDED "MONOWILLS" TUBULAR HANDRAIL AND STANCHION SYSTEMS OR APPROVED EQUIVALENT. THE INSTALLATION OF ON-SITE CLAMP OR BOLT-TOGETHER HANDRAIL SYSTEMS IS PROHIBITED UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ICON WATER REPRESENTATIVE OR SUCH SYSTEMS ARE CURRENTLY LISTED IN THE ICON WATER APPROVED PRODUCTS LIST.
- UNLESS NOTED OTHERWISE, STRUCTURAL STEEL GRATING SHALL BE WEBFORGE PATTERN C, BANDED ALL-ROUND.

### APPROVED STRUCTURAL STEEL PRODUCTS

- UNLESS NOTED OTHERWISE, STRUCTURAL STEEL PLATE, BAR, ROD AND SECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN STANDARDS:
  - PLATE: GRADE 250 TO AS 3678
  - HOT ROLLED SECTIONS: 300 PLUS TO AS 3679
  - FLAT BARS AND RODS: GRADE 300 TO AS 3679
- STAINLESS STEEL GRADE 316L TO ASTM: A480/M, A167, A176 ABD A666 PLATE, HOT ROLLED SECTIONS, FLAT BAR AND ROD SHALL BE USED FOR ENVIRONMENTS DEEMED TO BE "HIGH", "IMMERSION" OR "EXTREME" IN ACCORDANCE WITH TABLE 2.1 OF WSA 201. DESIGN AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH AS/NZS 4673 AND EUROCODE3: EN1993-1-4.

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**ALUMINIUM WORK NOTES**

**GENERAL**

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ICON WATER "SD SERIES" DRAWINGS THAT RELATE TO THE SUPPLY AND/OR FABRICATION AND/OR INSTALLATION OF ALUMINIUM WORK.
2. UNLESS NOTED OTHERWISE, ALL DIMENSIONS ARE STATED IN MILLIMETRES.
3. MEMBER OR COMPONENT SIZES SHALL NOT BE OBTAINED BY SCALING DRAWINGS. ALL RELEVANT DIMENSIONS SHALL BE CHECKED BY THE FABRICATOR AND/OR CONSTRUCTOR PRIOR TO THE COMMENCEMENT OF FABRICATION AND CONSTRUCTION ACTIVITIES.
4. ALL MATERIALS, FABRICATION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS/NZS 1665, ICON WATER SPECIFICATION STD-SPE-S-001, THE ICON WATER APPROVED PRODUCTS LIST AND EITHER AS/NZS 1664.1 OR AS/NZS 1664.2.
5. ALL SURFACES SHALL BE FREE OF BURRS AND SHARP EDGES. ALL CUT-EDGES SHALL BE ROUNDED TO A 2 mm RADIUS.
6. WHEN TREADPLATE (AKA "CHEQUERPLATE") IS SPECIFIED FOR ACCESS HATCHES, ALL TREADS UNDER THE HATCH COVER HINGES, FIXING PLATES AND THE LIKE SHALL BE GROUND FLUSH. INSULATING MATERIAL SHALL BE INSTALLED BETWEEN ANY ALUMINIUM AND STEEL COMPONENT.

**WELDING**

7. ALL WELDS SHALL BE IN ACCORDANCE WITH AS/NZS 1665.
8. ALL FILLET WELDS SHALL BE 6 mm CONTINUOUS FILLET WELDS UNLESS NOTED OTHERWISE.
9. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS.

**CORROSION PROTECTION AND COATINGS**

10. ALUMINIUM COMPONENTS AND FABRICATIONS SHALL NOT BE PAINTED UNLESS NOTED OTHERWISE ON THE PROJECT SPECIFIC DESIGN DRAWINGS.
11. INSULATING MATERIAL SHALL BE PLACED BETWEEN ALL DISSIMILAR METALS (INCLUDING BOLTED JOINTS). FOR EXAMPLE, NEOPRENE RUBBER STRIPS, NON-FIBRE TYPE INSULATING WASHERS, SLEEVES AND FERRULES, "DENSO" TAPE etc.

**BOLTING**

12. GRADE 316 STAINLESS STEEL (i.e. A4-70) BOLTS, NUTS, STUDS AND ANCHORS SHALL BE USED FOR ALL APPLICATIONS. ALL BOLTS AND NUTS SHALL BE ISO METRIC COARSE PITCH SERIES.
13. ALL STAINLESS STEEL THREADED FASTENERS SHALL BE COATED WITH AN APPROVED NICKEL-BASED ANTI-SEIZE COMPOUND PRIOR TO ASSEMBLY (TO PREVENT GALLING). ALTERNATIVELY, MOLYBDENUM COATED BOLTS AND NUTS MAY BE USED.

**PLATFORMS, WALKWAYS, STAIRWAYS, LADDERS AND HANDRAILS**

14. ALL ALUMINIUM WORK RELATING TO FIXED PLATFORMS, WALKWAYS, STAIRWAYS AND LADDERS SHALL BE IN ACCORDANCE WITH AS 1657 AS AMENDED/SUPPLEMENTED BY ICON WATER SPECIFICATIONS STD-SPE-G-008 AND 009.
15. UNLESS NOTED OTHERWISE, ALUMINIUM GRATING SHALL BE WEBFORGE PATTERN C, BANDED ALL-ROUND.

**APPROVED ALUMINIUM PRODUCTS**

16. UNLESS NOTED OTHERWISE, ALUMINIUM PLATE, BAR, ROD, GRATING AND SECTIONS SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND SHALL BE OF THE FOLLOWING GRADES:
  - FLAT PLATES (MILL FINISH): ALUMINIUM ALLOY 5083-H116
  - FLAT BAR (MILL FINISH): ALUMINIUM ALLOY 6060-T5 AND 6063-T6
  - TREADPLATE (5 BAR PATTERN): ALUMINIUM ALLOY 5052-H114
  - EXTRUDED SECTIONS (MILL FINISH): ALUMINIUM ALLOY 6060-T5, 6063-T6 OR 6082-T5
  - GRATING: ALUMINIUM ALLOY 6063-T6

DAM	✗	RES	✗	SPS	✗
BWS	✗	WAT	✗	STP	✗
WTP	✗	SEW	✗		
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STANDARD DRAWING  
ALUMINIUM WORK  
NOTES

DRAWING STATUS	
Current	
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A1	ISSUE A

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