

**SAFETY IN DESIGN NOTES**  
 THE DESIGNER SAFETY REPORT PREPARED BY AUSGRID DESIGNERS IS INTENDED TO MEET THE REQUIREMENTS OF THE SAFE WORK AUSTRALIA CODE OF PRACTICE JULY 2012 AND THE APPLICABLE NSW WHS 2011 REGULATIONS FOR DESIGNER SAFETY REPORT - 295.

S1. DESIGNER SAFETY REPORT - CIVIL/STRUCTURAL WORKS - TRIM REFERENCE D15/41538  
 THIS DESIGNER SAFETY REPORT CONSIDERS CIVIL/STRUCTURAL DESIGN ISSUES ONLY AND DOES NOT ADDRESS ELECTRICAL, EARTHING ETC WHICH SHOULD BE ADDRESSED BY THE RELEVANT DESIGNER.

S2. STANDARD INDUSTRY HAZARDS & RISKS WILL STILL EXIST WITH THESE DESIGNS BUT MAY NOT BE NOTED IN THE DESIGNER SAFETY REPORT. THE REPORT INCLUDES ONLY UNUSUAL OR ATYPICAL RISKS ASSOCIATED WITH THE DESIGN.

S3. ALL WORK TO BE UNDERTAKEN IN ACCORDANCE WITH WHS LEGISLATION, WORKCOVER REQUIREMENTS, AUSGRID'S ELECTRICAL SAFETY RULES, BE SAFE PROCEDURES, NETWORK STANDARDS AND ALL OTHER SAFETY PLANS/PROCEDURES AND SWMS.

S4. REFER TO AUSGRID'S ASBESTOS REGISTER PRIOR TO COMMENCING WORK.

S5. LEAD PAINT MAY BE PRESENT AT EXISTING INSTALLATION.

S6. MAINTAIN EARTHING GRID AT ALL TIMES. MAKING AND BREAKING OF EARTHING CONNECTIONS WILL BE BY AUSGRID ONLY.

S7. WARNING! CABLE LOCATIONS SHOWN ON THIS DRAWING ARE INCOMPLETE AND FOR DESIGN PURPOSES ONLY. COMPLY WITH AUSGRID NETWORK STANDARDS AND UNDERTAKE A SERVICES SEARCH PRIOR TO CONSTRUCTION.

S8. CERTIFICATION OF THE COMPLETED WORKS IS REQUIRED IN WRITING FROM THE AUSGRID DESIGN ENGINEER UNLESS OTHERWISE ADVISED IN WRITING BY DEVELOPMENT SERVICES - CIVIL & BUILDING SECTION. CERTIFICATION SHALL BE OBTAINED TO ENSURE COMPLIANCE WITH WHS & SAFETY IN DESIGN LEGISLATION AND NS 261 CERTIFICATION CANNOT BE PROVIDED UNLESS THERE IS COMPLIANCE WITH THE NOMINATED INSPECTIONS. REFER TO INSPECTION & CERTIFICATION NOTES. FOOTINGS TO BE INSPECTED BEFORE PLACING CONCRETE.

S9. IF SIGN IS TO BE INSTALLED WITHIN 3m OF AN EARTHING SYSTEM, CONSULT WITH AUSGRID EARTHING FOR ADDITIONAL EARTHING REQUIREMENTS.

**GENERAL NOTES**

G1. STABILITY OF THE BUILDINGS, TRANSFORMERS & OTHER EQUIPMENT & FOUNDATIONS DURING CONSTRUCTION & THE CONSEQUENCES OF EXCAVATION IN THE VICINITY OF ADJACENT STRUCTURES ARE THE BUILDER'S RESPONSIBILITY.

G2. ALL PROPRIETARY ITEMS ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

G3. ALL WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE CURRENT STANDARDS AUSTRALIA CODES AND BUILDING CODE OF AUSTRALIA.

G4. DO NOT SCALE DRAWING ALL DIMENSIONS ARE IN MILLIMETRES.

G5. ALL LEVELS ARE IN METRES ON AUSTRALIAN HEIGHT DATUM UNLESS NOTED OTHERWISE.

G6. ELECTRICAL SAFETY SHALL BE IN ACCORDANCE WITH AUSGRID'S ELECTRICAL SAFETY RULES, NS WHS AND AS REQUIRED BY AUSGRID SUPERINTENDENT. THE GEOTECH SHALL CONFIRM THAT THE FOUNDATION MATERIAL HAS THE MINIMUM BEARING CAPACITY AND A CERTIFICATE IS TO BE PRODUCED TO AUSGRID SUPERINTENDENT PRIOR TO PLACING CONCRETE FOUNDATIONS. ALL FOUNDATIONS SHALL BE CERTIFIED THAT THEY HAVE BEEN FOUNDED IN ACCORDANCE WITH THE DRAWINGS.

G7. HANDLE & DISPOSE OF ALL CONTAMINATED MATERIAL IN ACCORDANCE WITH RELEVANT O.H.S. ACTS & REGULATIONS AND EPA REQUIREMENTS.

G8. IN CASE OF DOUBT - ASK

**DESIGN CRITERIA**  
 25 YEAR DESIGN LIFE  
 IMPORTANCE LEVEL 1 TO AS11700  
 WIND RETURN PERIOD - 50 YEARS  
 $V_{10} = 39 \text{ ms}^{-1}$

**FOUNDATIONS**

F1. GROUND IS ASSUMED TO BE MEDIUM DENSE, WELL GRADED SAND ( $\phi$  30%), OR SOFT CLAY ( $c_u=20kPa$ ) OR BETTER.

F2. FOOTING EXCAVATIONS SHALL BE CLEANED TO REMOVE ALL LOOSE OR SOFTENED MATERIAL PRIOR TO PLACING OF CONCRETE.

F3. CONCRETE SHOULD BE PLACED AS SOON AS POSSIBLE AFTER EXCAVATION. IF EXCAVATIONS ARE LIKELY TO REMAIN OPEN FOR MORE THAN 24 HOURS A BLINDING LAYER OF CONCRETE SHALL BE PLACED TO PROTECT THE FOUNDATION BASE.

F4. THE FOOTINGS/PILES TO BE LOCATED CENTRAL UNDER POSTS UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSPECTION & CERTIFICATION SERVICES BY A PRACTISING GEOTECHNICAL ENGINEER DURING THE WORKS. THE GEOTECH SHALL CONFIRM THAT THE FOUNDATION MATERIAL HAS THE MINIMUM BEARING CAPACITY AND A CERTIFICATE IS TO BE PRODUCED TO AUSGRID SUPERINTENDENT PRIOR TO PLACING CONCRETE FOUNDATIONS. ALL FOUNDATIONS SHALL BE CERTIFIED THAT THEY HAVE BEEN FOUNDED IN ACCORDANCE WITH THE DRAWINGS.

**STRUCTURAL STEELWORK NOTES**

**GENERAL**

S1. FABRICATE & ERECT ALL STRUCTURAL STEELWORK IN ACCORDANCE WITH AS 4100, AS 1554, AS 11013 & THE SPECIFICATION.

S2. SHOP DETAILS SHALL BE SUBMITTED FOR APPROVAL 7 DAYS SHALL BE ALLOWED FOR APPROVAL. APPROVAL SHALL BE OBTAINED BEFORE FABRICATION COMMENCES.

S3. QUALIFICATIONS OF WELDING PROCEDURE AND PERSONNEL SHALL CONFORM TO SECTION 4 OF AS 1554.1. NON-DESTRUCTIVE TESTING OF WELDS SHALL INCLUDE 100% VISUAL INSPECTIONS AND ADDITIONAL TESTING AS SHOWN ON THE DRAWING. WELDING PROCEDURES SHALL BE SUBMITTED AND APPROVAL OBTAINED BEFORE FABRICATION COMMENCES. **HOLD POINT** ALL WELDS SHALL BE INSPECTED BY A QUALIFIED WELDING INSPECTOR IN ACCORDANCE WITH AS 1554 AND AN INSPECTION REPORT SHALL BE SUBMITTED TO THE AUSGRID SUPERINTENDENT AS EACH WELD IS COMPLETED. ANY UNSATISFACTORY WELDS SHALL BE RECTIFIED, RE-INSPECTED AND RE-REPORTED. A WELDING CERTIFICATE OF CONFORMANCE SHALL ALSO BE SUBMITTED AT COMPLETION OF WELDING.

S4. VERIFY ALL SETTING OUT DIMENSIONS BEFORE STARTING WORK.

S5. DO NOT OBTAIN DIMENSIONS BY SCALING THE STRUCTURAL ELEMENTS.

S6. IMMEDIATELY BEFORE ASSEMBLY, MATING SURFACES, CREVICES & AREAS PRONE TO THE RETENTION OF MOISTURE TO BE COATED WITH 'DOW CORNING' SILICONE SEALANT 780 OR EQUIVALENT.

S7. WHERE QUANTITIES ARE STATED, THEY ARE FOR ONE COMPLETE STRUCTURE.

S8. PROVIDE TEMPORARY BRACING TO MAINTAIN STABILITY OF STEELWORK DURING CONSTRUCTION.

**MATERIALS**

S9. UNLESS OTHERWISE NOTED STRUCTURAL STEEL TO BE USED IN ACCORDANCE WITH:  
 AS 1163 HOLLOW SECTIONS - GRADE 350  
 AS 1594 HOT ROLLED FLATS - GRADE 300  
 AS 3678 HOT ROLLED SLABS - GRADE 300  
 AS 3679 HOT ROLLED STRUCTURAL SECTIONS - GRADE 300  
 UNLESS NOTED OTHERWISE USE:  
 (a) 10mm THICK GUSSET, FIN & END PLATES WELDED ALL ROUND.  
 (b) ALL FILLET WELDS TO BE 6mm CONTINUOUS, CATEGORY GP.  
 (c) ALL BUTT WELDS SHALL BE FULL PENETRATION, CATEGORY SP.  
 (d) ALL BOLTS TO BE 20mm DIAMETER.  
 (e) ALL BOLTS GRADE 8.8/5 TO AS 1252 (INCLUDING PURLIN/GIRT BOLTS).  
 (f) ALL HOLDING DOWN BOLTS ARE TO BE GRADE 4.6/5 TO AS 1111.  
 (g) ALL BOLTS AND HOLDING DOWN BOLTS TO BE HOT DIP GALVANISED TO AS 1214.  
 (h) ALL CONNECTIONS TO HAVE A MINIMUM OF 2 BOLTS.  
 (i) ALL HOLLOW SECTIONS SHALL BE GRADE E350 UNO.  
 (j) ALL WELDING SHALL COMPLY WITH SAA STRUCTURAL STEEL WELDING CODE AS 1554 UNLESS OTHERWISE SPECIFIED.  
 (k) ALL COMPOUND MEMBERS, BASE PLATES, CAP PLATES, END PLATES, GUSSET PLATES, FIN PLATES, STIFFENERS, BATTEN PLATES & LACINGS INCLUDING OTHER FITMENTS SHALL BE 6mm CONTINUOUS FILLET WELDED TO THEIR RESPECTIVE MEMBERS UNLESS OTHERWISE SPECIFIED. IF COMMERCIAL CLASS BOLTS ARE SPECIFIED, THEY SHALL BE HEXAGON HEAD.

S11. WELDS ARE TO BE GROUND FLUSH WHERE SURFACE IS TO BE TRAFFICABLE.

S12. CHIP ALL WELDS FREE OF SLAG.

S13. CONTRACTOR IS TO CONFIRM WITH SUPERINTENDENT WHERE EXPOSED WELDS ARE TO BE GROUND FLUSH.

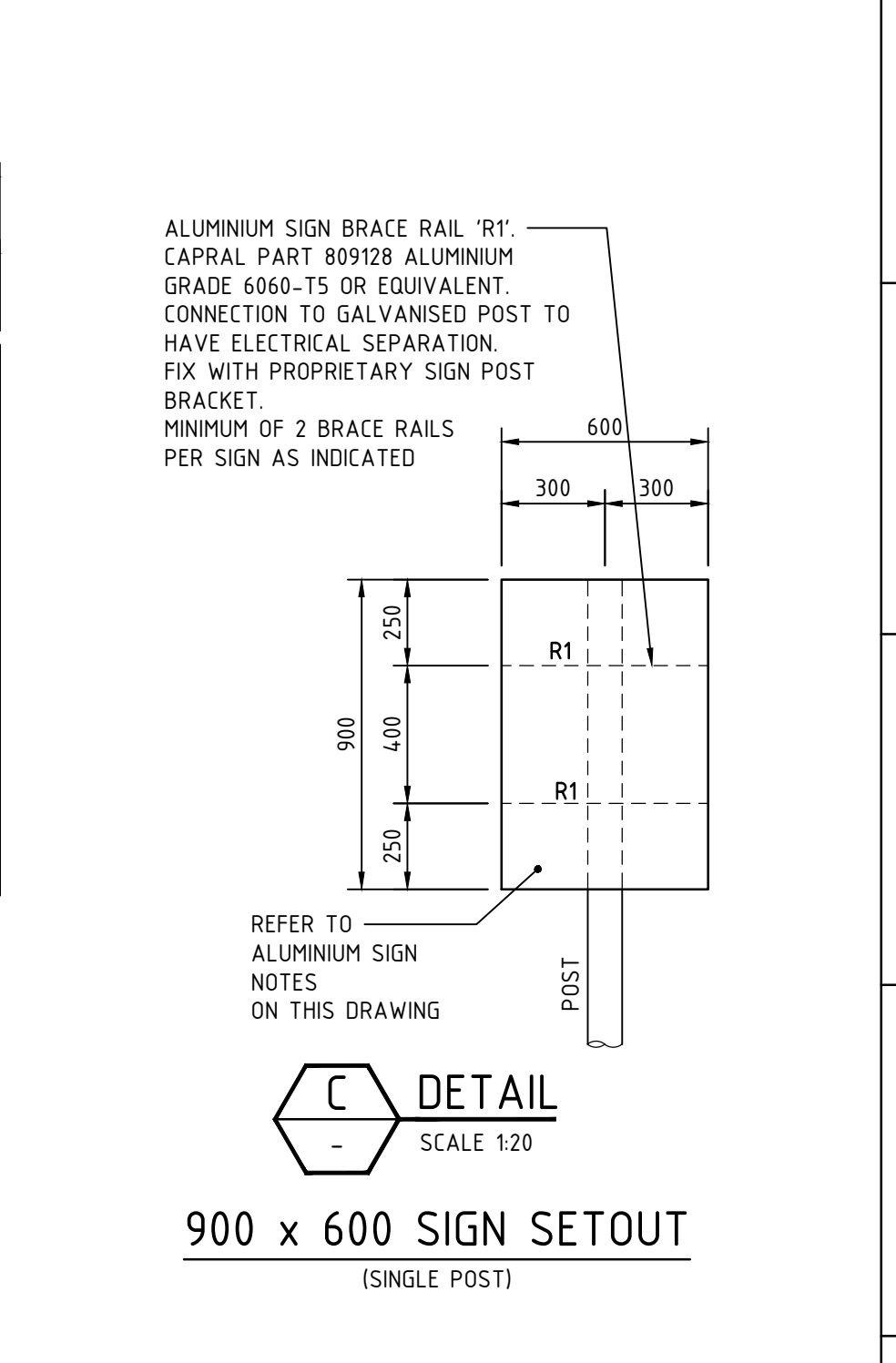
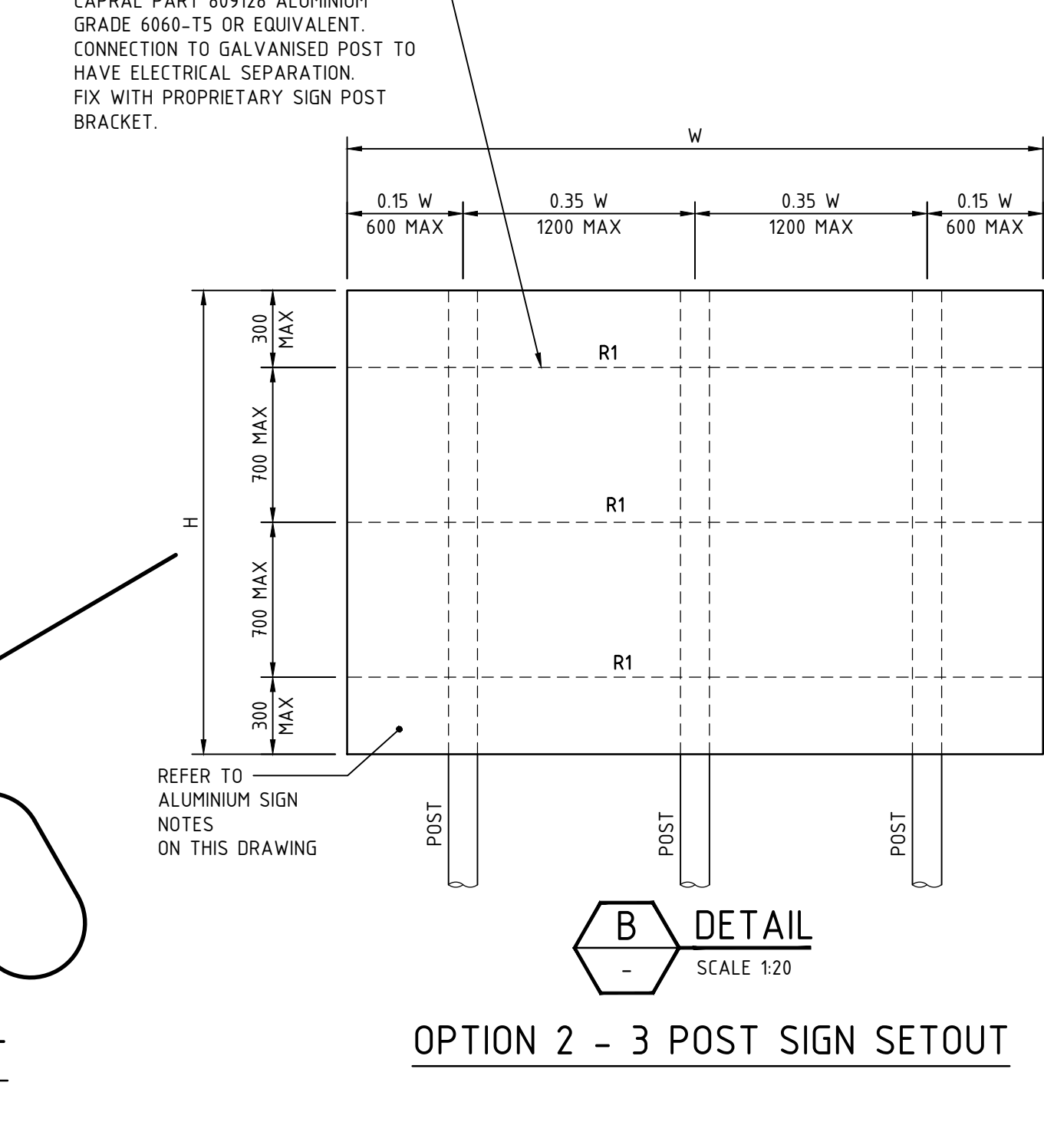
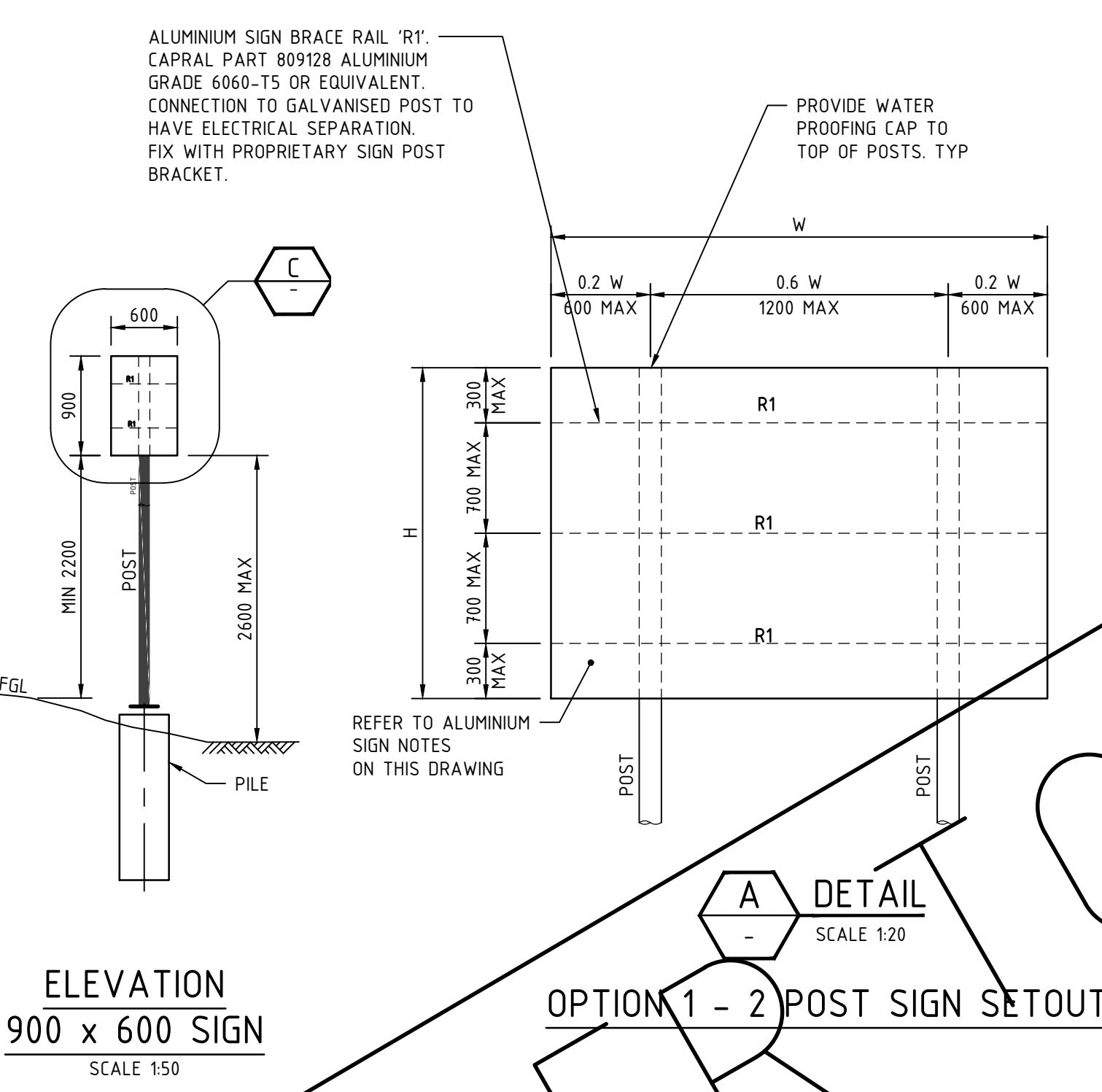
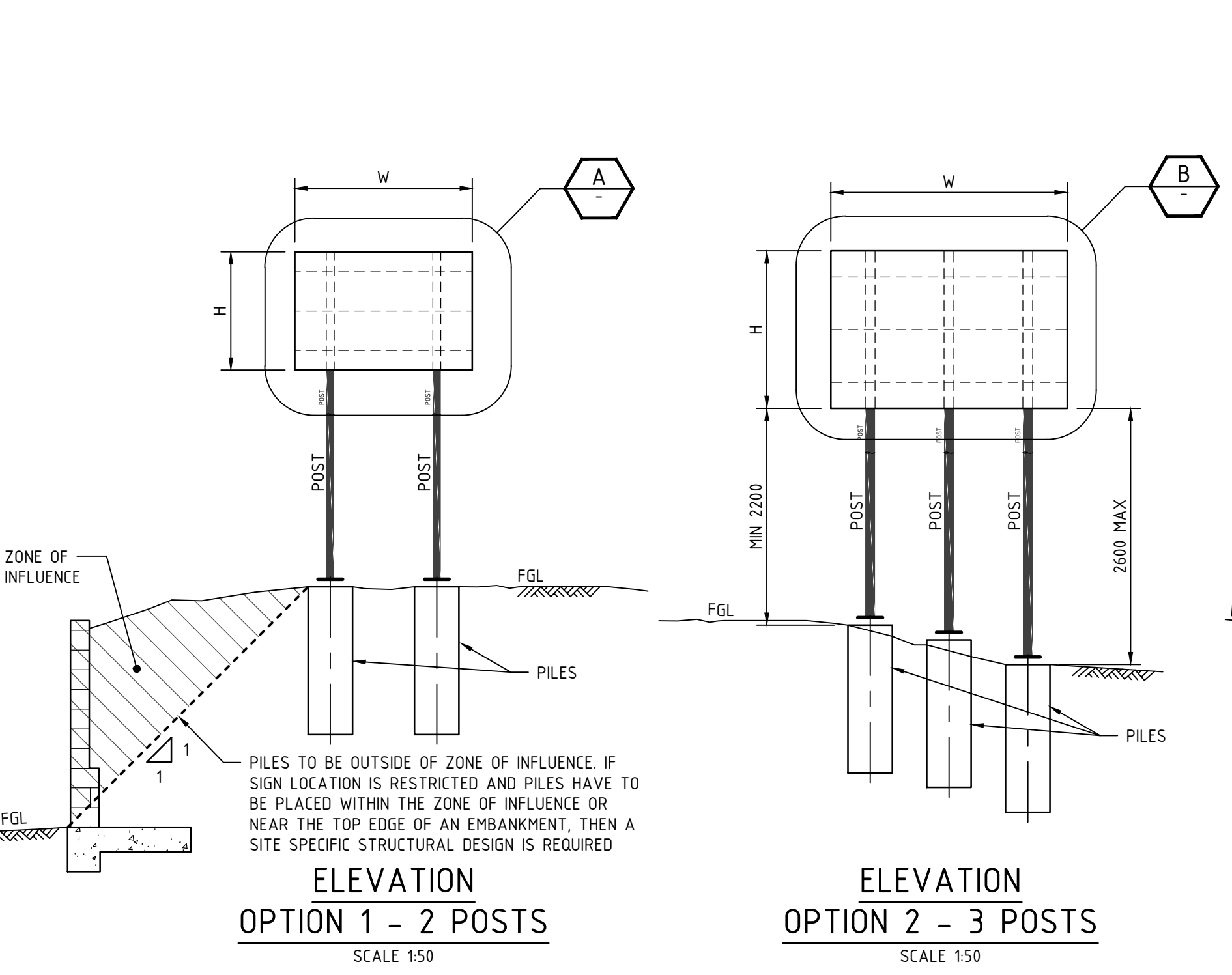
S14. DO NOT GROUT UNDER BASE PLATES UNTIL ELECTRICAL EQUIPMENT ERECTION IS COMPLETE.

S15. AUSGRID MEMBER TAGGING SYSTEM IS TO BE INCLUDED ON SHOP DRAWINGS FOR CHECKING PURPOSES.

**FINISHES**

S17. ALL STEELWORK IS TO BE HOT DIP GALVANISED TO AS 4680 AFTER FABRICATION. ALL SECTIONS SEALED WITH END OR BASE PLATES TO BE PROVIDED WITH 25mm DIA VENT HOLE EACH END IN AN INCONSPICUOUS LOCATION.

S18. WELDS & AREAS WHERE GALVANISING HAS BEEN DAMAGED TO BE TREATED WITH ZINCFIX OR EQUIVALENT APPROVED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



**GENERAL SIGN STRUCTURAL SCHEDULE**

SIGN AREA (H x W) m <sup>2</sup>	MAX HEIGHT (H) m	POSTS	PILES	PAD FOOTING OPTION	BASE PLATE		HD BOLT SPEC
					A mm	T mm	
2.25	1.5	2 x 80 NB HEAVY C250	φ300 x 1600 DEEP	1.8 x 1.0 x 0.6 DEEP	100	20	*
2.7	1.8	2 x 100 NB HEAVY C250	φ450 x 2000 DEEP	1.8 x 1.2 x 0.5 DEEP	125	24	**
3.0	1.8	3 x 80 NB HEAVY C250	φ300 x 1600 DEEP	3.0 x 1.0 x 0.5 DEEP	100	20	*
6.0	2.0	3 x 100 NB HEAVY C250	φ450 x 2000 DEEP	3.0 x 1.5 x 0.5 DEEP	125	24	**
8.0	2.0	3 x 125 NB HEAVY C250	φ450 x 2200 DEEP	3.0 x 1.6 x 0.6 DEEP	175	24	**

\* M20 HIT-V-F 250 EMBEDMENT HILTI RE 500  
 \*\* M24 HIT-V-F 300 EMBEDMENT HILTI RE 500

**SPECIFIC WATER CROSSING SIGNS STRUCTURAL SCHEDULE**

REFER TO AS6947

SIGN AREA (H x W) m <sup>2</sup>	HEIGHT (H) m	WIDTH (W) m	POSTS	PILES	PAD FOOTING OPTION	SLOTTED HOLES IN BASE PLATE mm	T mm	HD BOLT SPEC
# 5.1	1.8	2.8	3 x 100 NB HEAVY C250	φ450 x 2000 DEEP	3.0 x 1.8 x 0.5 DEEP	250 - 350 PCD, φ28 WIDE	24	**
# 8.9	2.25	3.5	3 x 125 NB HEAVY C250	φ450 x 2200 DEEP	3.0 x 1.6 x 0.6 DEEP	250 - 350 PCD, φ28 WIDE	24	**

\* WITH COMPLEMENTARY FLOODING SIGN ATTACHED  
 \*\* M24 HIT-V-F 300 EMBEDMENT HILTI RE 500

**CONCRETE NOTES:**

C1. ALL CONCRETE MUST BE IN ACCORDANCE WITH THE CURRENT AS CODE 3600. ALL CONCRETE TO BE MANUFACTURED AND SUPPLIED IN QUALITY CONTROLLED CERTIFIED PLANT, IN ACCORDANCE WITH AS 1579. NO SITE MIXING PERMITTED. CONCRETE TESTS AS REQUIRED BY AS 1579 - CERTIFICATES TO BE PROVIDED AS FOLLOWS:

ITEM	REQUIREMENT
- SLUMP	- AS PER CODE
- 7 DAY STRENGTH	- IF REQUIRED
- 28 DAY CHARACTERISTIC STRENGTH	- FIRST TRUCK, 3rd TRUCK AND EVERY 5th TRUCK FOLLOWING BUT NOT LESS THAN CODE
- FLEXURAL STRENGTH	- FOR PAVING SLABS WHERE FLEXURAL STRENGTH IS SPECIFIED
- CHLORINE & SULPHATE CONTENT	- AS PER CODE
- DRYING SHRINKAGE	- AS PER CODE
- AIR CONTENT	- NOT REQUIRED

C2. CONCRETE QUALITY WATER/CEMENT RATIO SHALL NOT BE GREATER THAN 0.45. NO WATER TO BE ADDED ON SITE.

ELEMENT	MAX. MAX. SIZE	SLUMP	CHARACTERISTIC STRENGTH F <sub>c</sub> (AS 3600) AT 28 DAYS	MAXIMUM SHRINKAGE STRAIN
PILES	20 mm	80 mm	32 MPa	0.200

C3. CLEAR CONCRETE COVER IN mm TO REINFORCEMENT UNLESS NOTED OTHERWISE.

ELEMENT	FORMED & SHUTTERED	FORMED & EXPOSED	AGAINST EARTH
PILES	40 mm	45 mm	65 mm

**CONCRETE NOTES CONTINUED:**

C4. ALL REINFORCEMENT TO BE ACCURATELY PLACED IN POSITION SHOWN & TIED & ADEQUATELY SUPPORTED TO GIVE SPECIFIED COVER.

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

C11. DEPTH OF BEAM IS GIVEN FIRST & INCLUDES SLAB THICKNESS.

C12. CONDUITS PIPES ETC MUST NOT BE PLACED IN CONCRETE COVER & NO HOLES OR CRACKS OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE ALLOWED UNLESS APPROVED IN WRITING BY THE AUSGRID STRUCTURAL ENGINEER.

C13. ALL TIE RODS WHERE NOT SHOWN ON THE DRAWING SHALL BE N12-200. PROVIDE N12 TIES AS REQUIRED TO SUPPORT REINFORCEMENT BARS IF STANDARD BAR CHAIRS ARE IN ADEQUATE HEIGHT.

C14. ALL BAR CHAIRS TO BE PLASTIC OR CONCRETE TYPE UNLESS NOTED OTHERWISE. STEEL BAR CHAIRS PERMITTED IN SWIRTYARD FOOTINGS ONLY.

C15. CONCRETE ELEMENTS SHALL BE FINISHED IN ACCORDANCE WITH AS 3610 AS FOLLOWS (OTHERWISE AS ON DWG):

ITEM	FORMED SURFACE FINISH (AS 3610)	UNFORMED SURFACE FLATNESS (TOLERANCE CLASS)	UNFORMED SURFACE FINISH METHOD
FOOTINGS	CLASS 4	C	WOOD FLOAT

C16. UNFORMED SURFACE FLATNESS TOLERANCE SCHEDULE.

TOLERANCE CLASS	MEASUREMENT	MAXIMUM DEVIATION
A	3 m STRAIGHT EDGE	3 mm
B	3 m STRAIGHT EDGE	6 mm
C	600 mm STRAIGHT EDGE	6 mm

C17. UNFORMED ELEMENTS IN CONTACT WITH THE GROUND (EXCEPT FOR FOOTINGS) SHALL BE SEPARATED WITH A POLYMER FILM UNDERLAY TO AS2870 MINIMUM THICKNESS 200 MICRONS.

C18. EXTERNAL EMBEDDED ITEMS SHALL BE PLACED SO THAT THEY ARE NOT WITHIN THE ZONE OF CONCRETE COVER REQUIRED TO PROTECT THE REINFORCEMENT.

C19. THE EXPOSED EDGE OF THE CONCRETE SHALL BE FINISHED WITH A 10mm RADIUS CORNER UNO.

**ALUMINIUM SIGN NOTES**

A1. SIGN DESIGN AND CONTENT TO BE IN ACCORDANCE WITH RMS STANDARDS AS FOUND AT [HTTP://WWW.RMS.NSW.GOV.AU/CGIBIN/INDEX.CGI?ACTION=SEARCHWATERWAYSIGNSFOR](http://www.rms.nsw.gov.au/cgibin/index.cgi?action=searchwaterwaysignsform)

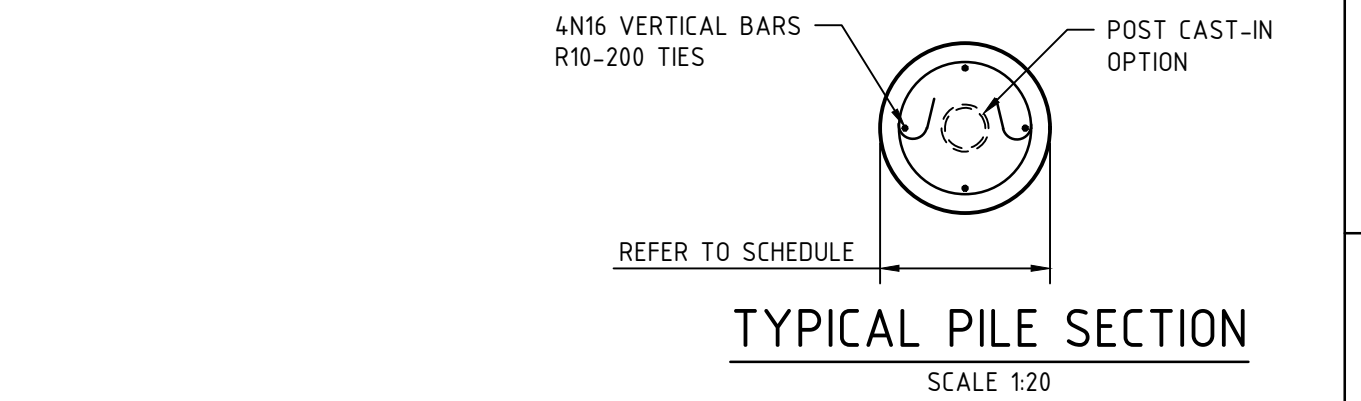
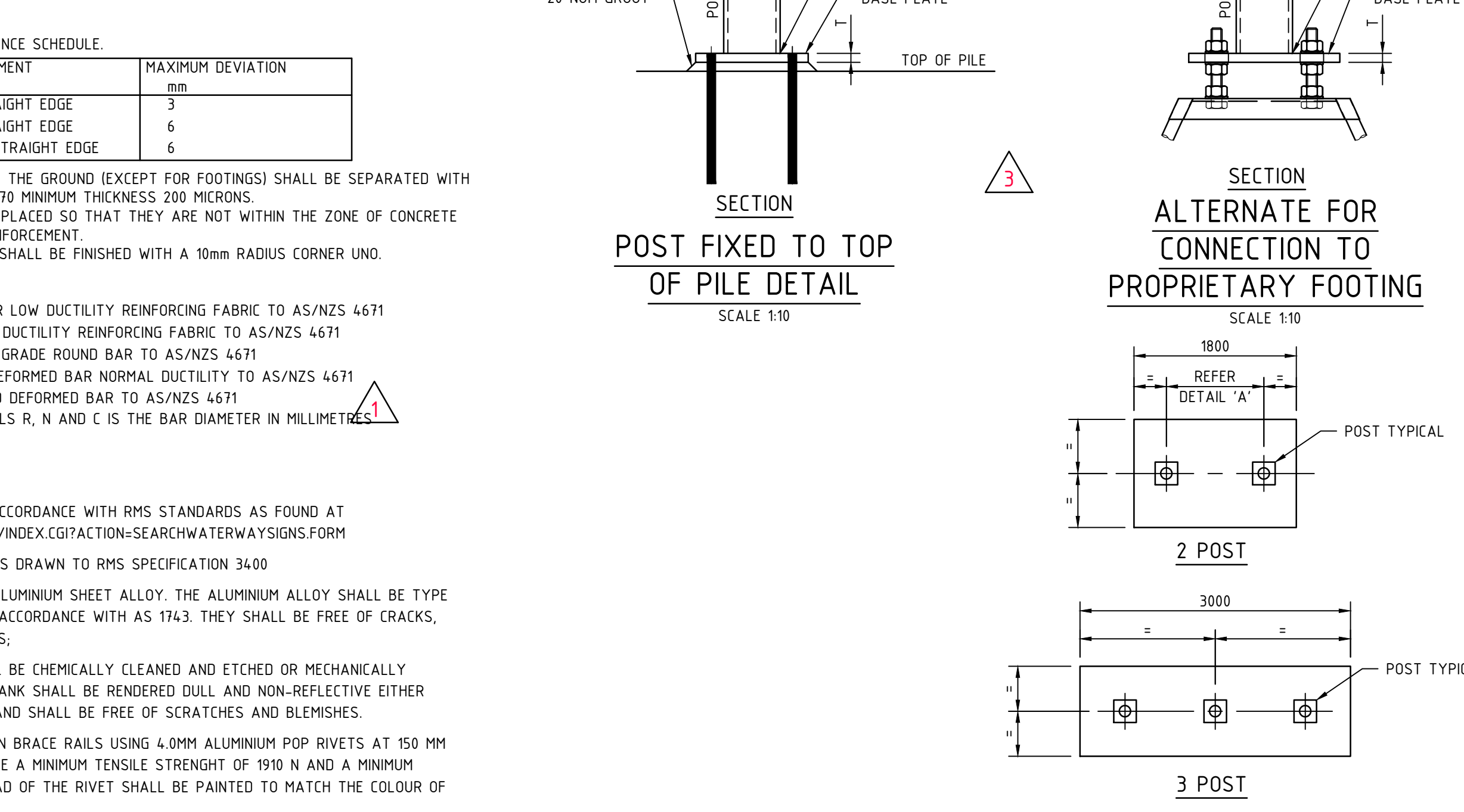
A2. THE ATTENTION OF THE CONTRACTOR IS DRAWN TO RMS SPECIFICATION 3400

A3. SIGN BLANKS SHALL BE 16MM THICK ALUMINIUM SHEET ALLOY. THE ALUMINIUM ALLOY SHALL BE TYPE 5251 OR 5052, TEMPER H38 OR H36 IN ACCORDANCE WITH AS 1743. THEY SHALL BE FREE OF CRACKS, TEARS AND OTHER SURFACE BLEMISHES.

A4. THE FACE OF EACH SIGN BLANK SHALL BE CHEMICALLY CLEANED AND ETCHED OR MECHANICALLY ABRASDED. THE BACK OF EACH SIGN BLANK SHALL BE RENDERED DULL AND NON-REFLECTIVE EITHER BY MECHANICAL OR CHEMICAL MEANS AND SHALL BE FREE OF SCRATCHES AND BLEMISHES.

A5. THE SIGN SHALL BE FIXED TO THE SIGN BRACE RAILS USING 4.0MM ALUMINIUM POP RIVETS AT 150 MM MAXIMUM CENTRES. RIVET SHALL HAVE A MINIMUM TENSILE STRENGTH OF 1910 N AND A MINIMUM SHEAR STRENGTH OF 1320 N. THE HEAD OF THE RIVET SHALL BE PAINTED TO MATCH THE COLOUR OF THE SIGN AT THE SPECIFIC LOCATION.

A6. APPROVED ANTI-GRAFFITI FILM SHALL BE PROVIDED IF REQUIRED BY AUSGRID



**EARTHING REVIEW TRIM REF D18/436932**  
**ELECTRICAL REVIEW TRIM REF D18/446035**

**AMENDMENTS**

AMD	DATE	DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
2	27.06.18	ISSUED FOR CONSTRUCTION. DETAIL A, B AND C REVISED	JA	DS	PL	KG
3	23.10.18	ISSUED FOR CONSTRUCTION. MEMBER SCHEDULES AND DETAILS REVISED	JA	DS	PL	KG
4	02.03.20	DRAWING SUPERSEDED	JA	DS	PL	KG

SCALE	AS SHOWN
DESIGNED	DAVID STANBURY
DRAWN	BRUCE BARTLEY
CHECKED	PAUL LOVARINI
APPROVED	KATINA GALLEN
DATE	03-08-15
TRIM REF	2015/21013/1
PROJECT NUMBER	1900002969

570 George Street SYDNEY NSW 2000

SUBMARINE CABLE SIGN SIGNAGE SUPPORTS	237976
BI-DIRECTIONAL SIGN SUPPORT STRUCTURAL DETAILS	238007
ASSOCIATED DRAWINGS	

**STANDARD CONSTRUCTIONS SIGNAGE SUPPORTS STRUCTURAL DETAILS**

DRAWING No	237975	SHEET	1	AMD	4	SIZE	B1
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