

### DESIGN ASSUMPTIONS MADE

- ANY UNIDENTIFIED DIMENSIONS FOR THE MAST ARM WERE SCALED FROM STANDARD DRAWING UMS 600/057. THESE DIMENSIONS WERE CONSIDERED SUFFICIENTLY ACCURATE FOR THE CALCULATIONS
- LUMINAIRE HEIGHT IS CONSIDERED TO BE 12.0m.

### FOOTING DETAILS

SOIL BEARING STRENGTH	DESCRIPTION	POOR	AVERAGE
	STRENGTH (kPa)	80-100	101-150
DESIGN JOINT USE MAST ARM REFER UMS 691 AND UMS 692 (BASED ON INGAL EPS DWGS GA1236 TO GA1238 AND GA2630 TO GA2632)	ULTIMATE MOMENT	119kNm MAX.	
	ULTIMATE SHEAR	14kN MAX.	
	ULTIMATE TORSION	58kNm MAX.	
FOOTING AND REINFORCING DIMENSIONS	'X' - PILE LENGTH	4000	3200
	'Y' - REINFORCING CAGE LENGTH	3800	3000

### GENERAL NOTES:

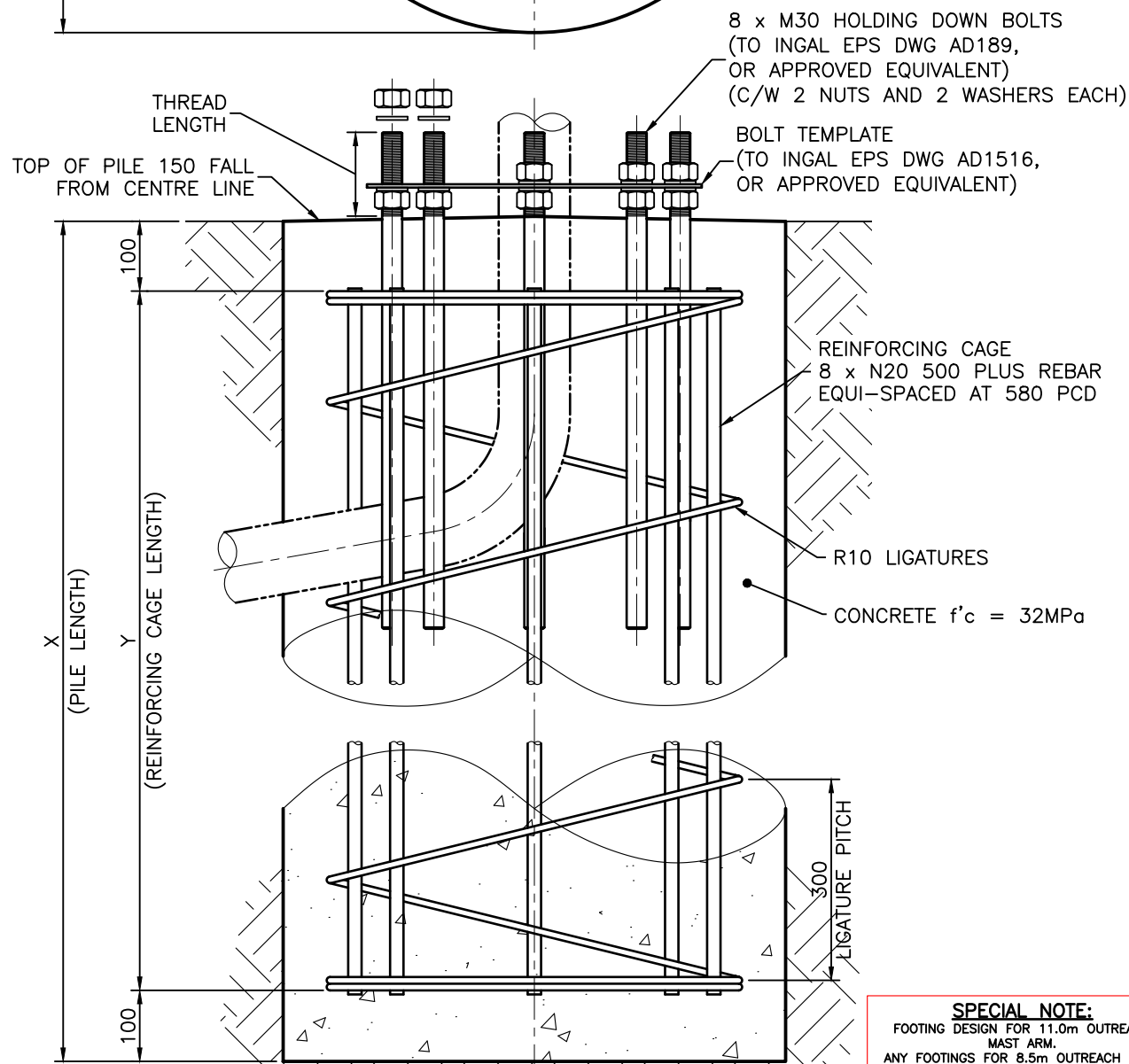
- G1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING NOTES ARE APPLICABLE TO ALL PILE FOOTINGS FOR THE JOINT USE MAST ARMS SHOWN IN UMS 600/056 AND UMS 600/057.
- G2. THE PILE FOUNDATION LENGTHS NOMINATED ARE BASED ON LIMIT STATE DESIGN LOADS.
- G3. THESE FOUNDATION DESIGNS HAVE BEEN DEVELOPED BASED ON BROMS' THEORY AND AS/NZS4676 STRUCTURAL DESIGN REQUIREMENTS FOR UTILITY SERVICES POLES; APPENDIX I: FOOTINGS AND FOUNDATIONS.
- G4. THESE FOUNDATION DESIGNS HAVE BEEN CREATED TO CONFORM TO THE FOLLOWING CODES: AS3600 CONCRETE STRUCTURES AND AS 2159 PILING - DESIGN AND INSTALLATION.
- G5. THE NOMINATED PILE LENGTHS ARE BASED ON FOUNDATION DEFORMATIONS OF APPROXIMATELY 12mm UNDER SERVICEABILITY LOADS - FOUNDATIONS WITH A MORE STRINGENT DEFLECTION LIMIT REQUIREMENT MUST BE SUBJECTED TO MORE RIGOROUS DESIGN.
- G6. IT IS RECOMMENDED WHERE A SOIL REPORT IS NOT AVAILABLE AND THE SOIL PROFILE AT A SITE IS NOT CLEARLY UNDERSTOOD THAT A FACTOR OF 1.3 BE APPLIED TO THE ULTIMATE LIMIT STATE LOADS IN SELECTING THE FINAL PILE LENGTH.
- G7. THE ONUS FOR THE SELECTION OF SITE SOIL CONDITIONS, THE PARTICULAR FOUNDATION AND ANY FURTHER ENGINEERING DESIGN, CALCULATIONS AND VERIFICATION FOR THE FOUNDATION IS UPON THE PURCHASER/CONTRACTOR.
- G8. THE SOIL TYPE SHOULD BE CHOSEN BASED ON WORST EXPECTED CONDITIONS FOR EACH SITE.
- G9. CASING OF PILES MAY BE REQUIRED DURING CONSTRUCTION OF PILES ON ALL SITES CONTAINING EITHER LOOSE SANDS OR SOFT CLAY AND ANY SITE THAT HAS EITHER A HIGH WATER TABLE OR WATER SEEPAGE.
- G10. THE LENGTH OF PILE SPECIFIED IS THE MINIMUM LENGTH OF THE PILE BELOW NATURAL GROUND LEVEL.
- G11. THE TOP OF THE PILE MUST COINCIDE WITH THE FINAL FINISHED SURFACE LEVEL OF THE SITE.
- G12. THESE FOUNDATION DESIGNS HAVE BEEN PREPARED BASED ON A DISTURBED SOIL DEPTH OF UP TO 200mm REFERENCE MUST BE MADE TO AN ENGINEER FOR ASSESSING SOIL STRENGTH WITH A DISTURBED SOIL LAYER GREATER THAN 200mm. SOIL TESTING AND CERTIFICATION BY SUITABLY QUALIFIED SOIL ENGINEER.
- G13. WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE CURRENT RELEVANT SAA CODES AND THE LOCAL STATUTORY AUTHORITIES REGULATIONS.
- G14. IF THE BASE OF THE EXCAVATION BECOMES WET PRIOR TO POURING CONCRETE THEN THE WATER AND ANY SOFTENED MATERIAL SHALL BE REMOVED PRIOR TO POURING THE FOUNDATION.
- G15. NO EXCAVATION, DEEPER THAN 600mm SHALL BE MADE WITHIN 3m OF THE EDGE OF THE PILE WITHOUT FIRST SEEKING APPROVAL FROM A SUITABLY QUALIFIED ENGINEER.

### CONCRETE NOTES:

- C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 (CURRENT EDITION AMENDMENTS)
- C2. FILLING OF THE PILES IS TO TAKE PLACE AS SOON AS POSSIBLE AFTER DRILLING- PILES ARE NOT TO BE LEFT OVERNIGHT BEFORE CONCRETING
- C3. ALL CONCRETE IS TO BE PLACED AND VIBRATED TO OPTIMUM COMPACTION
- C4. ALL CONCRETE IS TO HAVE A 28-DAY CHARACTERISTIC COMPRESSIVE STRENGTH ( $f'_c$ ) OF 32MPa (UNLESS OTHERWISE NOTED, REFER TO TABLE 1). THE MAXIMUM AGGREGATE SIZE SHALL BE 20mm- THE SLUMP SHALL BE 80mm- WATER IS NOT TO BE ADDED TO THE CONCRETE AFTER BATCHING, IF NECESSARY CHEMICAL ADDITIVES ARE TO BE USED TO ALTER THE CONSISTENCY OF THE CONCRETE, PROVIDED THEY DO NOT REDUCE THE SPECIFIED CONCRETE COMPRESSIVE STRENGTH.
- C5. CONCRETE SHALL BE CURED FOR A MINIMUM OF 7 DAYS PRIOR TO INSTALLING THE POLE ONTO THE FOUNDATION
- C6. ENSURE THAT THE SIDES OF EXCAVATION DO NOT FALL IN DURING PLACEMENT OF CONCRETE
- C7. BAR CHAIRS AND WAGON WHEELS ARE TO BE USED, AS REQUIRED, TO ACHIEVE ADEQUATE COVER

### STEEL NOTES:

- S1. COVER SHALL BE NO LESS THAN 65mm ALL AROUND. THIS COVER IS ADEQUATE FOR ALL SITUATIONS OTHER THAN EXPOSURE CLASSIFICATIONS C AND U AS DEFINED IN AS3600 (CLASS U APPLIES TO MEMBERS EXPOSED TO AGGRESSIVE SOILS AND CLASS C APPLIES TO MEMBERS EXPOSED TO WATER IN TIDAL OR SPLASH ZONES)
- S2. THE HOLD DOWN BOLT CAGE AND REINFORCING CAGE IS TO BE PLACED CENTRALLY WITHIN THE PILE AND A MAXIMUM OF 150mm ABOVE THE BASE OF THE PILE
- S3. LIGATURES SHALL BE PROVIDED AROUND THE OUTSIDE OF THE ENTIRE LENGTH OF THE LONGITUDINAL REINFORCEMENT AS FOLLOWS: FOR PILE DIAMETERS UP TO AND INCLUDING 600mm, AN R6 SPIRAL LIGATURE AT 200mm PITCH SHALL BE USED; FOR PILE DIAMETERS 750mm AND ABOVE, AN R10 SPIRAL LIGATURE AT 300mm PITCH SHALL BE USED; ALL SPIRAL LIGATURES SHALL HAVE 2 FULL TURNS AT THE TOP AND BOTTOM.
- S4. ALL STEEL BARS ARE TO BE 500PLUS REBAR AND ARE TO CONFORM TO THE REQUIREMENTS OF AS4671 STEEL REINFORCING MATERIALS.
- S5. SPIRAL OR HOOP LIGATURES ARE PERMITTED.
- S6. ALL NUTS AND WASHERS TO BE HOT DIPPED GALVANISED TO AS1214.
- S7. REINFORCING CAGE, WITH ATTACHED HOLDING DOWN BOLTS, TO BE CLEANED AND WELDING SLAG REMOVED PRIOR TO BEING HOT DIPPED GALVANISED TO AS4680.
- S8. THREADS SHOULD BE CLEAN AFTER GALVANISING AND BOLT TEMPLATE PLACED OVER THREADED ENDS TO ENSURE THE ACCURACY OF THE P.C.D. OF THE HOLDING DOWN BOLTS.



**SPECIAL NOTE:**  
FOOTING DESIGN FOR 11.0m OUTREACH MAST ARM.  
ANY FOOTINGS FOR 8.5m OUTREACH MAST ARMS INSTALLED PRIOR TO OCTOBER 2009 MUST NOT BE USED FOR STANDING 11.0m OUTREACH MAST ARMS.

ISSUE	AMENDMENT	DRAWN DATE	CHK'D DATE	APPR'D DATE
A	ORIGINAL ISSUE	May '09	IC 12/10	PC 01/11

DESIGN AUTHORISED FOR ISSUE			
DESIGN	Ingal EPS	DATE	Mar '07
DRAWN	DJL (CAB)	DATE	May '07
CHECKED	I. Condric	DATE	Dec '10
DRAWING FILENAME	UMS 600_064		
ASSOCIATED PLANS	UMS 600/056 & UMS 600/057		



**BRISBANE CITY COUNCIL STANDARD DRAWING**

8.5m & 11.0m JOINT USE MAST ARMS - FOOTING DETAILS AND NOTES

SCALE: NOT TO SCALE  
DWG No: **UMS 600/064**  
ORIGINAL SIZE: A3 REVISION: A