

Growth, Prosperity, Community.

DECISION NOTICE - DA 2017/03

Application:	Port Application (Operational Works) for GAWB APLNG FLNE raw water supply project				
Applicant Name and address:	Mr Jason Nichols Gladstone Area Water Board PO Box 466 GLADSTONE QLD 4680				
Owner:	Gladstone Ports Corporation Limited				
Subject Land:	Part of Lot 502 on SP252988 and part of Lot 1 on SP266154				
Location:	Barge Landing Road Fisherman's Landing GLADSTONE				
Present Zoning	Strategic Port Land				
Proposed Use:	Permanent raw water pipeline				
Application Received:	30 March 2017				

This development application was assessed on: 20 April 2017

1. **Details Of The Approval**

Development Permit:

Permanent buried raw water pipeline (approx.. 315m) and above ground metering assembly to accommodate the Australia Pacific LNG (Shared Facilities) Pty Ltd (APLNG) Fisherman's Landing Northern Expansion (FLNE) site.

2. **Assessment Manager's Conditions**

In general the facilities are in compliance with the requirements of Gladstone Ports Corporation. It is to be noted that the following conditions will be complied with in the granting of this Development Application.

GENERAL

- 1. The proposed development must be carried out generally in accordance with the plans as lodged with the application except where modified by conditions of this permit.
- 2. Unless otherwise stated, all conditions must be completed prior to the commencement of the use.

- 3. Where additional "approval" is required under these conditions by the Gladstone Ports Corporation for drawings or documentation, the proponent must submit for review, amend to the satisfaction of, and obtain written acceptance from the Gladstone Ports Corporation. Only in this manner can compliance with the condition be achieved.
- 4. All other relevant regulatory approvals must be obtained before commencement of works or operation of the facility.
- 5. The proponent must inform the GPC of completion of works within 14 days of practical completion and undertake a site inspection with GPC. The proponent must also certify that the development is constructed as per design and provide RPEQ certification that the development has been constructed in accordance with the approved plans.
- 6. The proponent must at its cost and expense, keep and maintain the subject area, including existing services, in a state that is satisfactory to the Port.

ENGINEERING

- 7. The proponent must supply the Port with "As Constructed" plans in both hard copy (2 of) and electronic (CAD format) which illustrates all infrastructure on Port land which is associated with the activity (e.g. detailed positions of underground services).
- 8. Final approval for the pipeline alignment is to be provided for the corner proposed adjacent to Barge Landing Road, the approval will be discussed with the applicant and GPC as part of onsite inspections. The corner must be kept as tight as possible to reduce potential impacts to future use of the land.
- 9. The proponent is required to apply for and obtain from GPC a Permit to Dig/Excavate prior to commencing works.
- 10. The permit holder must obtain approval for disposal of excavated material on GPC land from GPC prior to works commencing.
- 11. The proponent is to notify GPC of damage/wear and tear caused to any port roads and associated infrastructure during the construction and operational phases e.g. damage to signage and pavement as a result of this activity. GPC will undertake necessary repairs at the expense of the proponent.
- 12. The holder must provide to GPC for approval a Construction Traffic Management Plan (CTMP) prior to initiation of works which includes appropriate communication with other port users including MAC Ramp users potentially affected by the construction activities.
- 13.Any site lighting used during construction should not impact on the visibility of Navigational Aids utilised for the primary shipping channels nor illuminate a landward glare beyond the site boundary. Lighting will be continually reviewed during construction and operations with respect to navigation and will be revised as required in response to negative impacts as they arise.

ENVIRONMENT

14. Prior to works commencing on site, a Construction Environmental Management Plan (CEMP) specific to this application and its associated works, is to be submitted to GPC for approval. Furthermore, GPC will require no less than 10 business days to initially assess the CEMP. Should further information be required to be provided for the assessment of the CEMP, GPC will require a further 5 business days to complete the information request response.

- 15. Prior to the initiation of works the proponent must provide evidence via a geotechnical report that Acid Sulphate Soils or Potential Acid Sulphate Soils are not present within the proposed excavation areas. Alternatively the proponent must prepare an Acid Sulphate Soil Management Plan.
- 16. Where there is any conflict between the conditions of this approval and the CEMP, the conditions of this approval shall prevail.
- 17. Any amendments to the approved Construction Environmental Management Plan must be approved by the Gladstone Ports Corporation.
- 18. Construction and associated works are not to be conducted in such a manner that would environmentally degrade Gladstone Ports Corporation land or infrastructure. This includes but is not limited to:
 - · contamination of the land;
 - · encouragement of pest and weed incursion;
 - · loss of land through poor sediment and erosion controls; and
 - localised flooding from poor stormwater management practices/controls.

Any such degradation in or caused by the works must be rectified in a timely manner and measures implemented to prevent further degradation.

- 19. Gladstone Ports Corporation Environment Hotline (07) 4976 1617) is to be notified of the occurrence of any:
 - reportable release/spill of contaminants (e.g. fuels, chemicals);
 - · any environmental complaints received by the holder of this approval; and
 - non-compliance with conditions of this approval or any environmental approval obtained.
- 20. Any spillage of sediment, wastes, contaminants, or other materials must be cleaned immediately. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such materials to any stormwater drainage system, roadside gutters or waters.

3. The Approved Plans –

The approved plans and/or documents forming part of this decision notice are listed in the following table:

Document Reference	Plan / Document Name	Date 13/04/2017	
Draw. No. 600-G-00003 Rev 0	Coversheet		
Draw. No. 600-G-00004 Rev 0	Compilation plan, Notes and Legend	13/04/2017	
Draw. No. 600-C-00030 Rev 0	Telemetry/Solar Panel Relocation Layout	13/04/2017	
Draw. No. 600-C-00031 Rev 0	Telemetry/Solar Panel Details	13/04/2017	
Draw. No. 600-C-00032 Rev 0	Security Fence and Gate Details	13/04/2017	
Draw. No. 600-C-00033 Rev 0	Concrete Notes	13/04/2017	
Draw. No. 600-P-00170 Rev 0	Plan and Longitudinal Section	13/04/2017	
Draw. No. 600-P-00171 Rev 0	v. No. 600-P-00171 Rev 0 Connection Details		
Draw. No. 600-P-00172 Rev 0	Miscellaneous Details	13/04/2017	

4. When the Development Approval Takes Effect -

If the application is approved, or approved subject to conditions, the decision notice, or if a negotiated decision notice is given, the negotiated decision notice, is taken to be the development approval and has effect on the date that the notice is signed by an authorised delegate of the Gladstone Ports Corporation.

5. When Approval Lapses if Development Not Started

The relevant period stated below applies to each aspect of development in this approval, as outlined below:-

4 years

6. Other Necessary Development Approvals

Listed below are the other development permits that are necessary to allow the development to be carried out:

Nil

7. Appeal Rights

No legislated appeal rights are afforded with this decision notice as the application was not made under the provisions of The Sustainable Planning Act 2009.

If you have concerns or queries regarding the conditions, please contact the undersigned on 4976 1287.

8. Assessment Manager Certification

Sarah Hunter Senior Planning Officer

20 April 2017



GLADSTONE AREA WATER BOARD FLNE WATER MAIN EXTENSION IPD2017-048







DRAWING LIST						
DRG No.	DRAWING TITLE					
600-G-00003	COVER SHEET, LOCALITY PLAN AND DRAWING INDEX					
600-G-00004	COMPILATION PLAN, NOTES AND LEGEND					
600-C-00030	TELEMETRY/SOLAR PANEL LAYOUT					
600-C-00031	TELEMETRY/SOLAR PANEL DETAILS					
600-C-00032	SECURITY FENCE AND GATE DETAILS					
600-C-00033	CONCRETE NOTES					
600-P-00170	PLAN AND LONGITUDINAL SECTION					
600-P-00171	CONNECTION DETAILS					
600-P-00172	MISCELLANEOUS DETAILS					

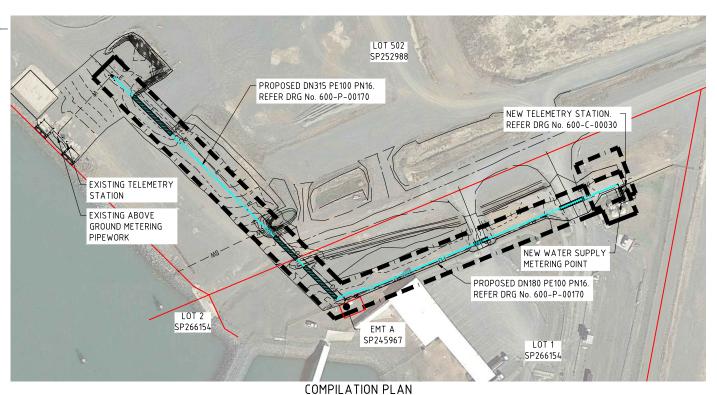
LOCALITY PLAN

APPROVED 20/04/2017

-		-					Gladston	e Area Water Bo	1st Floor 147 Goondoon Street PO Box 466 Gladstone Q 4680 Gladstone Q 4680	Tel: (07) 4976 3000	
-		-		2 / 100 Goondoon Street Gladstone QLD 4680 Australia			DRAWN E.JOHNSON	23/03/17 GLADSTONE AI	REA WATER BOARD) Fax: (07) 4972 5632 ABN: 88 409 667 181	
н —		-		PO Box 373 Gladstone DLD 4680 T 617 4973 1600 F 617 4972 6236 Eqtmail@qhd.com.au W www.qhd.com.au			DESIGNED C.CARMELIT	23/03/17 FLNE WATER M 12/04/17 COVER SHEET,	23/03/17 FLNE WATER MAIN EXTENSION COVER SHEET, LOCALITY PLAN AND DRAWING INDEX		
		-		Z griman@grio.com.ac Www.grio.com.ac		THIS DRAWING IS THE PROPERTY OF AREA WATER BOARD AND IS NOT 1	F GLADSTONE APPROVAL S ORRX	12/04/1/			
0 12/04/	/17 ISSUED FOR CONSTRUCTION	ZRW S0× S0× TW× -		GHD JOB NO. 42-19950		OR USED WITHOUT ITS WRITTEN	PERMISSION APPROVAL S.ORR×	12/04/17 P	ROJECT No. SIZE DRAWING No.	SCALE REV	
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Date: 13 April 2017 - 2:02 PM Plotted by: Toby Staats Cad File No: N:\AU\Gladstone\Projects\42\19950\CADD\Dr





LEGEND:

PROPOSED WATER ALIGNMENT EDGE OF BITUMEN MINOR CONTOUR (0.2m INTERVALS) MAJOR CONTOUR (1m INTERVALS PROPERTY BOUNDARY EXISTING STORMWATER DRAIN – EXISTING ELECTRICAL CONDUIT – EXISTING FIBRE OPTIC CONDUIT

GENERAL NOTES

- THE CONTRACTOR TO PROTECT ALL EXISTING SERVICES AND STRUCTURES CLOSE TO NEW SERVICES AND SUPPORT AS REQUIRED.
- DRAWINGS ARE INDICATIVE ONLY, CONTRACTOR TO COORDINATE WITH ALL SERVICES AND STRUCTURES BEFORE PURCHASING MATERIALS.
- NOMINATION OF PROPRIETARY ITEMS DOES NOT INDICATE EXCLUSIVE PREFERENCE BUT INDICATES REQUIRED PROPERTIES OF ITEM. SIMILAR ALTERNATIVES HAVING REQUIRED PROPERTIES MAY BE OFFERED FOR APPROVAL. INSTALL PROPRIETARY ITEMS IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS.
- ALL VEGETATION THAT IMPACTS ON THE CONSTRUCTION IS TO BE REMOVED OR TRIMMED IN ACCORDANCE WITH GAWB STANDARDS.
- COORDINATE ALL PIPEWORK ON SITE
- WHERE PIPE ALIGNMENT CROSSES A WATER FLOW PATH STABILISED SAND IS TO BE USED AS TRENCH FILL
- TEST PRESSURE TO BE 1000kPa

SURVEY NOTES

- SURVEYOR MPA SURVEYING
- TOWN GLADSTONE
- LOCAL AUTHORITY GLADSTONE REGIONAL COUNCIL
- VERTICAL DATUM AHD
- HORIZ. AZIMUTH MGA56
- ORIGIN PM113955
- DESIGN PREPARED USING 12D SOFTWARE. OUTPUT AVAILABLE TO SURVEYOR FOR SETTING OUT PURPOSES. ONLY AVAILABLE FROM GHD DESIGNER.

SERVICES NOTES

- SOME INFORMATION ON LOCATION OF SERVICES HAS BEEN OBTAINED FROM 'DIAL BEFORE YOU DIG' AND GAWB RECORDS.
- CONTRACTOR TO VERIFY ALL SERVICE LOCATIONS, INVERT LEVELS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES' RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS LIABLE FOR ANY DAMAGE TO ANY UNDERGROUND SERVICE

THRUST BLOCK NOTES:

- ALL THRUST BLOCKS TO BE CAST CENTRALLY ABOUT PIPE.
- THRUST BLOCK BEARING AREA TO BE PROVIDED AGAINST PARENT MATERIAL
- THRUST BLOCK SIZES AND BEARING AREA BASED 50kPa ALLOWABLE HORIZONTAL BEARING PRESSURE FOR TENDERING PURPOSES. CONTRACTOR TO UNDERTAKE A GEOTECHNICAL INVESTIGATION TO DETERMINE SOIL BEARING CAPACITY PRIOR TO CONSTRUCTION TO CONFIRM THRUST BLOCK DIMMENSIONS
- THRUST BLOCK TO BE PROVIDED AT ALL BENDS AND TEES UNLESS NOTED OTHERWISE.
- ALL THRUST BLOCKS TO BE N32 CONCRETE UNLESS NOTED OTHERWISE.

STANDARD DRAWING:

- FOR STANDARD BEDDING AND TRENCH DETAILS REFER WSAA WAT-1201 AND WAT-1202
- FOR STANDARD THRUST BLOCK SIZE AND CONSTRUCTION METHODOLOGY REFER WSAA WAT-1205 AND WAT-1207
- FOR STANDARD VALVE BOXES ON NON-TRAFFICABLE AND TRAFFICABLE REFER WSAA WAT-1303 AND WAT-1304
- FOR VALVE INDENTIFICATION DETAILS DETAILS REFER WSAA STD DRG No. WAT-1300 FOR WATER MARKER DETAILS REFER GAWB DWG No. 500-G-0004

DICL PIPEWORK NOTES:

- ALL DICL FITTINGS SHALL BE DICL CLASS PN35.
- ALL BELOW GROUND DICL PIPES TO BE INSTALLED WITH POLYETHYLENE SLEEVING TO AS3680 U.N.O.
- ALL FLANGES TO BE PN16 TO AS4087, U.N.O.
- ALL FLANGED JOINTS BELOW GROUND TO HAVE GALVANISED BOLTS, NUTS, WASHERS AND GASKETS TO AS4087 UNO
- ALL FLANGED JOINTS ABOVE GROUND TO HAVE STAINLESS STEEL BOLTS, NUTS COATED IN ANTI-FREEZE , WASHERS AND GASKETS TO AS4087, U.N.O.
- ALL BURIED FLANGED JOINTS TO BE WRAPPED WITH DENSO (OR APPROVED EQUIVALENT) IN ACCORDANCE WITH "MANUFACTURERS SPECIFICATION"

PE PIPEWORK NOTES

- ALL PE PIPEWORK TO BE DN315 AND DN180 POLYETHYLENE SERIES 1 PE100 CLASS PN16. UNLESS NOTED OTHERWISE, AND MANUFACTURED IN ACCORDANCE WITH AS 4130 BY AN AUSTRALIAN STANDARDS QUALITY ENDORSED COMPANY.
- INSTALLATION OF POLYETHYLENE PIPE SHALL BE IN ACCORDANCE WITH AS2033.
- POLYETHYLENE PIPE AND FITTINGS FOR PRESSURE APPLICATION SHALL BE IN ACCORDANCE WITH AS/NZS 4129 AND 4130.
- THE PIPELINE SHALL BE A FULLY CONTINUOUS INSTALLATION BETWEEN PIPE RESTRAINTS.
- THE PERSON UNDERTAKING THE JOINTING/WELDING OF POLYETHYLENE PIPES SHALL BE QUALIFIED AS PER REQUIREMENTS OF WSAA01-2004-3.1 ITEM 5.2 AND GAWB PE PIPE
- BUTTWELDED PE JOINTS SHALL BE USED FOR CONNECTING PE INSTALLED PIPELINES TO TRENCHED PIPELINES AND INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND BY QUALIFIED PERSONNEL AND TO GAWB SPECIFICATIONS.
- TESTING OF POLYETHYLENE PIPE SHALL BE IN ACCORDANCE WITH WSAA01-2004-3.1 SECTION 2.13. AND GAWB SPECIFICATION.
- DEFLECT PIPES USING BENDING RADIUS WHERE REQUIRED TO ACHIEVE HORIZONTAL AND VERTICAL ALIGNMENT.
- MINIMUM BENDING RADIUS = DN315 15 x ϕ = 4.725m AND DN180 15 x ϕ = 2.7m
- ALL DICL FLANGES TO BE SUITABLE FOR CONNECTION TO PE STUB FLANGES AND STAINLESS STEEL BACKING RINGS. CONTRACTOR TO PROVIDE GASKETS AND BOLTING SYSTEM TO SUIT THIS CONNECTION IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

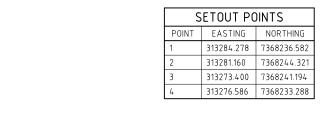


APPROVED 20/04/2017

Gladstone Area Water Board 14-7 Good Office of Class tone 0 4-680 1 Fax: (07) 4-975 5300 1 Fax: (07) 4-972 5-532 1 ABN: 88 4-09 667 181 GLADSTONE AREA WATER BOARD E.JOHNSON 23/03/17 2 / 100 Goondoon Street Gladstone QLD 4680 Australia FLNE WATER MAIN EXTENSION PO Box 373 Gladstone QLD 4680 C.CARMELITO 23/03/17 T 61 7 4973 1600 F 61 7 4972 6236 COMPILATION PLAN, NOTES AND LEGEND S.ORR× 12/04/17 HIS DRAWING IS THE PROPERTY OF GLADSTONE S.ORR> 12/04/17 TELEMETRY/SOLAR PANEL RELOCATION LAYOUT 600-C-00030 AREA WATER BOARD AND IS NOT TO BE COPIED S.ORR× 12/04/17 ISSUED FOR CONSTRUCTION TW× PLAN AND LONGITUDINAL SECTION 600-P-00170 12/04/17 ⊕ ☐ | IPD2017-048 | A1 | 600-G-00004 | REVISION DESCRIPTION DO NOT SCALE 13/04/17



 $-c-c-100\phi$ COMMUNICATIONS CONDUIT



REMOVE EXISTING FENCE

SECTION AND REPLACE WITH NEW ACCESS GATE. FOR

DETAILS REFER TO DWG No.

600-C-00032.

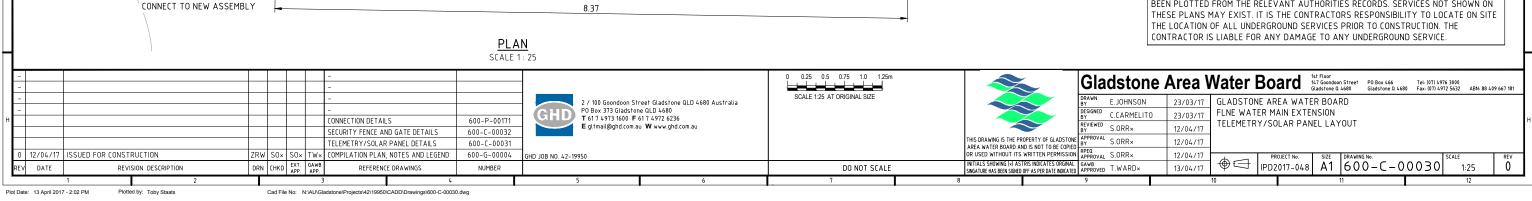
APPROVED 20/04/2017

NOTE:

1. FOR GENERAL NOTES AND LEGEND REFER TO DRAWING No. 600-G-00004.



CONTRACTOR TO VERIFY ALL INVERT LEVELS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES RECORDS. SERVICES NOT SHOWN ON



- NEW TELEMETRY AND SOLAR PANEL. FOR DETAILS REFER DRG No. 600-C-00031.

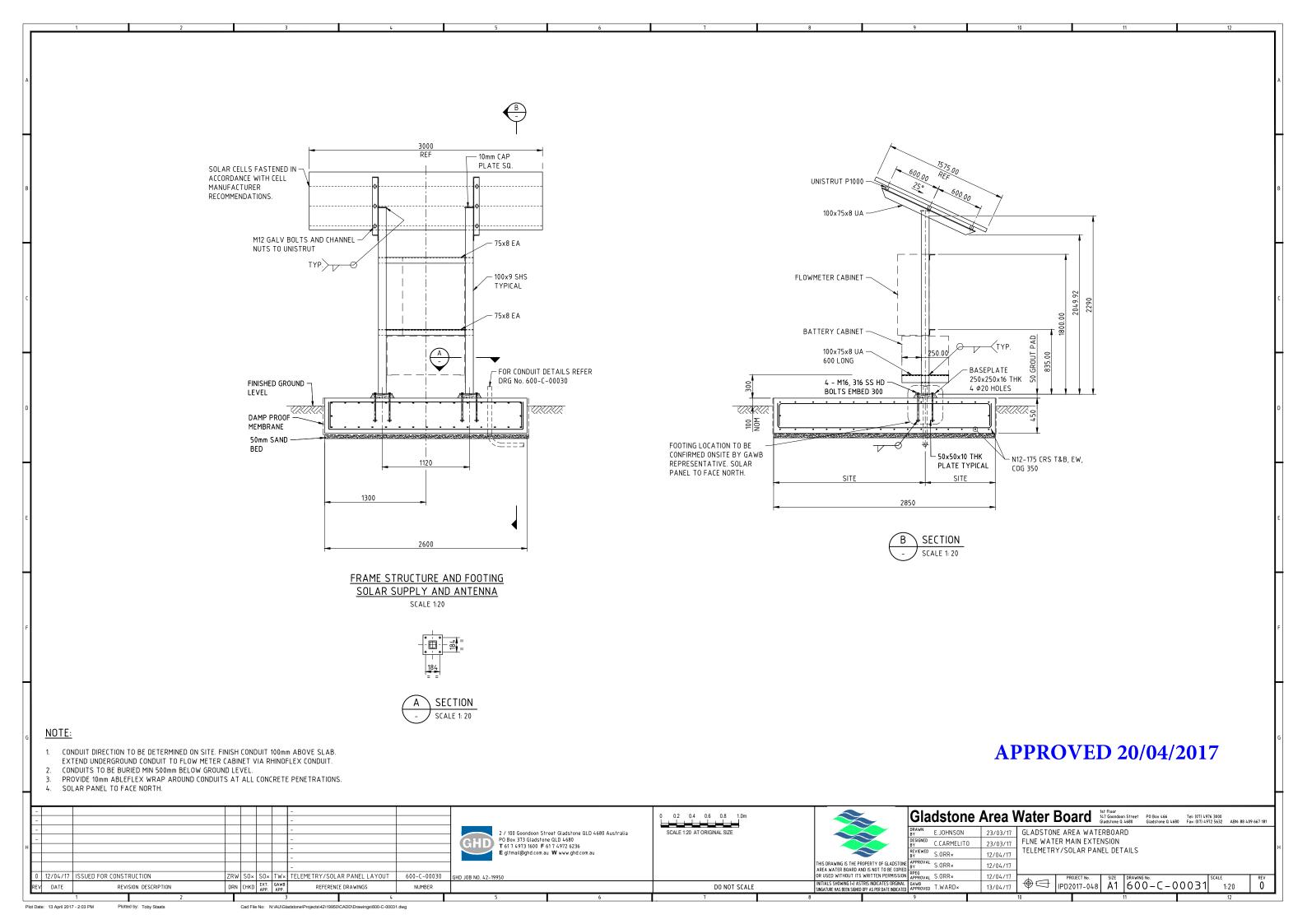
ABOVE GROUND METERING AND RPZ PIPEWORK ASSEMBLY. FOR DETAILS REFER DRG No.

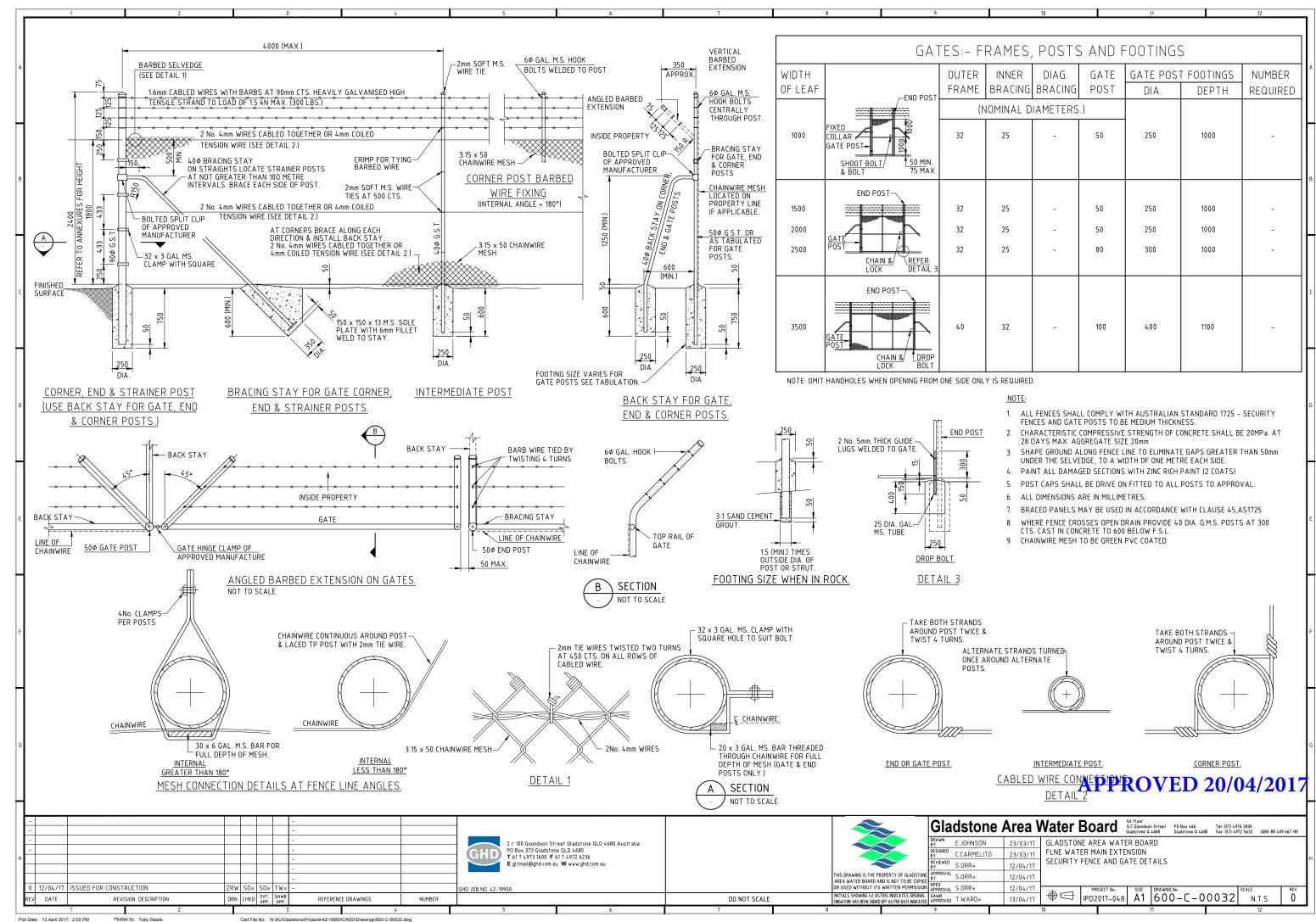
600-P-00171

- ROTATE EXISTING ABOVE

GROUND PVC FILL PIPE 90°

NEW SECURITY FENCE AND GATE. FOR DETAILS REFER DRG No. 600-C-00032.





KEEP ON SITE A LOG BOOK RECORDING EACH PLACEMENT OF CONCRETE INCLUDING DATE, CLIMATIC CONDITIONS, PORTION OF WORK, SPECIFIED GRADE AND SOURCE OF CONCRETE, DELIVERY DOCKET DATA, USE READY MIXED CONCRETE MIXED BY BATCH PRODUCTION PROCESS DELIVERED IN AGITATING TRUCKS FOR EACH BATCH SUPPLY A DOCKET LISTING INFORMATION REQUIRED BY AS1379 CLAUSE 1.7.3 AND CONCRETE METHODS OF PLACEMENT AND COMPACTION, PROJECT ASSESSMENT CARRIED OUT, SLUMP MEASUREMENTS CONCRETE MIX SERIAL NUMBER OF IDENTIFICATION CERTIFICATES OF EACH BATCH WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS3610, AS1379, AS1478, AS3582, AS3799, AS2758.1, AND AS3972. TIME OF BATCHING KEEP FORMS, MATERIALS, EQUIPMENT IN CONTACT WITH CONCRETE FREE OF FROST AND ICE. HEAT NAME OF CONCRETE DELIVERY SUPERVISOR ELEMENT FOR WHICH CONCRETE WAS ORDERED AND WHERE IT WAS PLACED REVIEW LOCATION OF EMBEDDED ITEMS TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY TEMPERATURE OF PLACED CONCRETE IS WITHIN LIMITS SPECIFIED. MAXIMUM WATER TEMPERATURE: 60°C METHOD OF PLACEMENT AND CLIMATIC CONDITIONS DURING POUR HEN PLACED IN MIXER. PROJECT ASSESSMENT CARRIED OUT QUALITY OF CONCRETE ELEMENTS TO BE AS FOLLOWS TEMPERATURE OF CONCRETE TOTAL AMOUNT OF WATER REQUIRED BY MIX DESIGN BLINDING STRUCTURAL ELEMENT MINIMUM MAXIMUM ADMIXTURES TYPE AND QUANTITY TOTAL AMOUNT OF WATER ADDED AT PLANT > 5°C TOTAL FREE WATER IN CONCRETE, INCLUDING THAT ADDED AT SLUMP STAND. SUPERINTENDENT MAY NOT REQUIRE CONCRETE TRIAL MIXTESTS SUBJECT TO REVIEW OF PRODUCTION TEST 32°C INHOT WEATHER PREVENT PREMATURE STIFFENING OF FRESH CONCRETE; REDUCE WATER ABSORPTION AND EVAPORATION LOSSES. MIX, TRANSPORT, PLACE AND COMPACT CONCRETE AS QUICKLY AS POSSIBLE. MAX. AGGREGATE SIZE (mm) SUBMIT DETAILS OF ALL PROPOSED CONCRETE COATINGS TO SUPERINTENDENT FOR REVIEW. PROVIDE RECORD OF SLUMP TESTING TO SUPERINTENDENT. REFER CONCRETE TESTING NOTES. DURING PLACEMENT TEMPERATURE OF CONCRETE MUST NOT EXCEED TEMPERATURES BELOW FORWARD CONCRETE PRODUCTION ASSESSMENT INFORMATION TO SUPERINTENDENT AS PER AS1379 CLAUSE 6.4 WHEN PRODUCTION ASSESSMENT IS UNDERTAKEN. REFER CONCRETE TESTING NOTES. CONCRETE ELEMENT TEMPERATURE DEMENT TYPE LIMIT DO NOT ADD WATER TO CONCRETE AFTER TRUCK HAS LEFT BATCHING PLANT FORWARD CONCRETE PROJECT ASSESSMENT INFORMATION TO SUPERINTENDENT AS PER AS1379 CLAUSE 6.3 WHEN PROJECT ASSESSMENT IS UNDERTAKEN. REFER CONCRETE TESTING NOTES. CONCRETE IN FOOTINGS, BEAMS, COLUMNS, WALLS AND SLABS f'c ≤ 32 MPa REPORT DRYING SHRINKAGE TESTING RESULTS TO SUPERINTENDENT. REFER CONCRETE TESTING NOTES. TEST SLUMP OF EACH BATCH OF CONCRETE DELIVERED BEFORE PLACING CONCRETE FROM THAT DELIVERY SLUMP MEASURED TO BE NO GREATER THAN TARGET SLUMP WITHIN TOLERANCES GIVEN IN AS1379 CLAUSE 5.2.3. CONCRETE OUTSIDE SLUMP TOLERANCE LIMITS IS LIABLE TO REJECTION. PROVIDE CONCRETE TEST RESULTS TO SUPERINTENDENT PROMPTLY, WITHIN SEVEN DAYS OF TESTING. DO NOT MIX CONCRETE WHEN SURROUNDING OUTDOOR SHADE TEMPERATURE ≥ 38°C. MAINTAIN TEMPERATURE OF FORMWORK AND REINFORCEMENT AT ≤ 32°C BEFORE AND DURING PLACING. COOL REGISTER PROJECT FOR DISSEMINATION OF CONCRETE PRODUCTION ASSESSMENT INFORMATION. MANUFACTURER TO CARRY OUT PRODUCTION ASSESSMENT OF CONCRETE FOR COMPLIANCE WITH REINFORCEMENT AND FORMWORK AS REQUIRED. MAINTAIN SPECIFIED TEMPERATURE OF PLACED CONCRETE REINFORCEMENT REQUIREMENTS OF AS1379. PLACING CONCRETE WHEN AMBIENT TEMPERATURE IS LOW (AT NIGHT) SYMBOLS ON DRAWINGS FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS: CARRY OUT PROJECT ASSESSMENT OF CONCRETE TO AS1379 CLAUSE 6.4 AND 6.5. TAKE SAMPLES AT COOL CONCRETE USING LIQUID NITROGEN INJECTION BEFORE PLACING, OR PROJECT SITE AT POINT OF DISCHARGE FROM AGITATOR. SPREAD SAMPLING EVENLY THROUGH POUR COVER CONTAINER IN WHICH CONCRETE IS TRANSPORTED TO FORMS OF SAMPLE CONCRETE FOR PROJECT ASSESSMENT CONCURRENTLY WITH EACH SAMPLE TAKEN FOR PRODUCTION ASSESSMENT AT PROJECT SITE. FOR EACH CONCRETE DESIGN MIX TAKE ONE SAMPLE FROM EACH 25 CUBIC METRES OF CONCRETE DELIVERED PER DAY, NOT LESS THAN FIVE SAMPLES TOTAL FOR EACH SHADING AND SPRAYING COARSE AGGREGATE USING COLD WATER, OF PROTECT FRESH CONCRETE FROM PREMATURE DRYING - PARTICULARLY IN HOT, WINDY OR DRY (LOW HUMIDITY) CONDITIONS, EXCESSIVELY HOT OR COLD TEMPERATURES, RAIN, etc. PROVIDE WIND BREAKS. MAINTAIN CONCRETE AT A REASONABLY CONSTANT TEMPERATURE WITH MINIMUM MOISTURE LOSS FOR MIX DESIGN. EACH SAMPLE TO COMPRISE FOUR CYLINDERS: TEST TWO AT 7 DAYS AND TWO AT 28 DAYS. NOTIFY SUPERINTENDENT WITHIN 2 WORKING DAYS IF 7 DAY CONCRETE TEST RESULTS INDICATE 28 DAY GRADE 500 STEEL REINFORCING WIRE TO AS/NZS4671 STRENGTHS ARE LIKELY TO BE BELOW SPECIFIED STRENGTH. MANUFACTURERS AND PROCESSORS OF STEEL REINFORCING AND PRE-STRESSING MATERIALS MUST HOLD A CARRY OUT DRYING SHRINKAGE TESTING TO AS 1012.13. FOR EACH CONCRETE DESIGN MIX TAKE ONE SAMPLE FOR CONCRETE WITH WATER:CEMENT RATIO LESS THAN 0.5, IN HOT, WINDY OR DRY (LOW HUMIDITY) VALID CERTIFICATE OF APPROVAL ISSUED BY ACRS (AUSTRALASIAN CERTIFICATION AUTHORITY FOR SHERT THREE MONTHS, OR FOR EVERY 1000 m° OF CONCRETE PLACED, A MINIMUM OF ONE SAMPLE. EACH SAMPLE TO COMPRISE THREE SPECIMENS. SAMPLE CONCRETE AT PROJECT SITE, DIRECTLY FROM DELIVERY REINFORCING AND STRUCTURAL STEELS). PROVIDE ACRS CERTIFICATION OF COMPLIANCE WITH ASNZS4671, PRODUCT TAGS AND SUPPORTING DOCUMENTATION FOR ALL REINFORCEMENT. PROVIDE CERTIFICATION OF COMPLIANCE WITH AS/NZS4672.1 FOR ALL PRESTRESSING TENDONS. CONDITIONS SPRAY EXPOSED SURFACES OF FRESH CONCRETE WITH FOG SPRAY APPLICATION OF ALIPHATIC ALCOHOL RETARDANT IMMEDIATELY AFTER PLACEMENT TO REDUCE RISK OF PLASTIC SHRINKAGE CRACKING. IN SEVERE CLIMATIC CONDITIONS CONSIDER REVIBRATING CONCRETE BEFORE IT REACHES INITIAL SET. VEHICLE BASE ASSESSMENT ON AVERAGE OF THREE TEST RESULTS. CONCRETE SAMPLING AND TESTING TO BE BY AN APPROVED INDEPENDENT NATA REGISTERED LABORATORY. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR PROVIDE DOCUMENTATION TO SHOW THAT REINFORCEMENT SUPPLIER AND MILL COMPLIES WITH AS/NZS4671. STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT STAINED. ACCEPTABLE METHODS PROVIDE STANDARD COGS AND HOOKS TO AS3600. TERMINATE ENDS OF COLUMN AND BEAM LIGATURES IN A RESPONSIBILITY FOR DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF FORMWORK AND FALSEWORK LIES WITH CONTRACTOR. HOOK OF AT LEAST 135 DEGREES. PROVIDE FIRST LIGATURE WITHIN 50 mm OF FACE OF SUPPOR PROVIDE ONE CONTINUOUS BAR PARALLEL TO (WITHIN 75 mm OF) CONCRETE EDGES, INCLUDING PONDING OR CONTINUOUS SPRINKLING WITH WATER (MOIST CURING) FORMWORK TO BE DESIGNED BY A SUITABLY QUALIFIED CHARTERED ENGINEER REGISTERED WITH REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND (RPEQ) TO AS3610, AND INDEPENDENTLY CERTIFIED BY A CHARTERED ENGINEER EXPERIENCED IN FORMWORK DESIGN AND REGISTERED WITH REGISTERED AN IMPERMEABLE MEMBRANE (USE CLEAR, WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS) SEALED AROUND EDGES AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE PROVIDE N12 DIAGONAL TRIMMER BARS BY 1000 mm LONG AT EACH LAYER OF REINFORCEMENT AT RE-ENTRANT CORNERS, OPENINGS, SERVICE PENETRATIONS etc UNO. PROFESSIONAL ENGINEER OF QUEENSLAND (RPEQ). PROVIDE COPY OF DESIGN CALCULATIONS AND CERTIFICATION TO SUPERINTENDENT. DESIGN FORMWORK TO ACCOMMODATE DIMENSIONAL CHANGES AND MOVEMENTS RESULTING FROM IMPOSED ACTIONS, CONCRETE SHRINKAGE AND CREEP, TEMPERATURE REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET AN APPROVED CURING COMPOUND, PROVIDE: REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED. CERTIFIED TEST RESULTS FOR WATER RETENTION TO AS3799 APPENDIX B SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS, SPACERS, LIGATURES OR TIES AT 800 mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT. CHANGES, PRESTRESSING FORCES, etc. DO NOT SUPPORT OR RESTRAIN FORMWORK ON PERMANENT WORKS WITHOUT SUPERINTENDENT'S WRITTEN EVIDENCE THAT AN ACCEPTABLE FINAL SURFACE COLOUR WILL BE OBTAINED EVIDENCE OF COMPATIBILITY WITH CONCRETE AND APPLIED FINISHES (IF ANY) CONSTRUCT FORMWORK TO COMPLY WITH AS3610 AND CLAUSE 17.6 OF AS3600 WHERE THIS IS MORE STRINGENT SO CONCRETE WILL HAVE DIMENSIONS, SHAPE, LOCATION AND FINISH SPECIFIED. METHODS OF OBTAINING REQUIRED ADHESION FOR TOPPINGS, RENDER etc. UNIFORM CONTINUOUS FLEXIBLE COATING WITHOUT VISIBLE BREAKS OR PINHOLES, WHICH SECURELY TIE REINFORCEMENT WITH WIRE TIES. TURN ENDS OF TIE WIRES INTO CONCRETE, CLEAR OF PROVIDE OPENINGS OR REMOVABLE PANELS IN FORMWORK FOR INSPECTION AND CLEANING. REMAINS UNBROKEN FOR AT LEAST THE CURING PERIOD AFTER APPLICATION. SUPPORT REINFORCEMENT ON PROPRIETARY CONCRETE, METAL OR PLASTIC SUPPORTS ADEQUATE TO DO NOT USE WAX-BASED OR CHLORINATED RUBBER-BASED CURING COMPOUNDS ON SURFACES FORMING SUBSTRATES TO APPLIED FINISHES, CONCRETE TOPPINGS AND CEMENT BASED RENDER. APPLY RELEASE AGENT COMPATIBLE WITH CONTACT SURFACES TO INTERIOR OF FORMWORK (EXCEPT WHERE WITHSTAND CONSTRUCTION AND TRAFFIC LOADS AND MAINTAIN DURABILITY OF FINISHED CONCRETE STRUCTURE. FOR CONCRETE SURFACES WITH B2 EXPOSURE CLASSIFICATION OR GREATER, ONLY USE PROPRIETARY HIGH STRENGTH FIBRE REINFORCED CEMENT SPACER BLOCKS OR SUPPORTS. CONCRETE IS TO RECEIVE AN APPLIED FINISH FOR WHICH THERE IS NO COMPATIBLE RELEASE AGENT). WHERE NECESSARY CLEAN REINFORCEMENT TO REMOVE TRACES OF RELEASE AGENT. CURE CONTINUOUSLY UNTIL NUMBER OF DAYS DURING WHICH AIR TEMPERATURE IS ABOVE 10°C TOTALS: 7 DAYS FOR EXPOSURE CLASSIFICATION B1, B2 AND C. SEAL JOINTS BETWEEN FORMWORK PANELS, AND TO HARDENED CONCRETE WITH A FLEXIBLE RUBBER STRIP. SET OUT FORMWORK TO GIVE A REGULAR ARRANGEMENT OF PANELS, JOINTS, BOLT HOLES AND SIMILAR DO NOT PLACE OR MOVE REINFORCEMENT DURING OR AFTER CONCRETE PLACEMENT. PREVENT RAPID DRYING OUT AT END OF CURING PERIOD FINISH CONCRETE SURFACES TO AS3810 AND AS SHOWN BELOW: - FORMED SURFACES: ENSURE EMBEDDED ITEMS (INSERTS, THREADED SOCKETS, FERRULES, BOLTS, DISSIMILAR METAL ITEMS, etc) VISIBLE ELEMENTS IN FORMED SURFACE. IN COVER CONCRETE OR EXPOSED TO AIR ARE NOT IN CONTACT WITH REINFORCEMENT. PROVIDE ISOLATION DO NOT USE FORMWORK HARDWARE THAT FORMS A COMPLETE HOLE THROUGH CONCRETE ELEMENTS. DO BETWEEN DISSIMILAR METALS, AND BETWEEN REINFORCEMENT AND EXPOSED ITEMS - EXPOSED SURFACES NOT USE REINFORCEMENT TO SUPPORT FORMWORK - HIDDEN SURFACES 5 FINISHES AS LAID: - EXPOSED SURFACES STEEL TROWEL UNO OBTAIN SUPERINTENDENT'S APPROVAL OF INSERTS, FIXINGS AND OTHER ITEMS EMBEDDED IN COVER PROVIDE HOLES IN REBATE FORMERS, etc., AS REQUIRED TO PREVENT AIR ENTRAPMENT. DO NOT STRIP FORMWORK PRIOR TO 36 HOURS AFTER PLACEMENT. DO NOT WELD REINFORCEMENT, CAST-IN ITEMS etc UNLESS APPROVED UNO. DO NOT STRIP FORMWORK UNTIL CONCRETE IS HARDENED SUFFICIENTLY TO WITHSTAND MOVEMENT AND FORM REMOVAL WITHOUT DAMAGE. MINIMUM STRIPPING TIMES TO BE AS PER AS3610 TABLE 5.4.1. HIDDEN SURFACES WOOD FLOAT SPLICE REINFORCEMENT ONLY AT LOCATIONS SHOWN ON DRAWINGS OR AS APPROVED BY SUPERINTENDENT PROVIDE EXPOSED EDGES AND RE-ENTRANT CORNERS WITH 45 DEGREES x 25 mm CHAMFERS OR FILLETS UNO STAGGER LAPS WHERE POSSIBLE. LAPPED SPLICE LENGTHS TO COMPLY WITH ASSOO. CLEAR SPACING BETWEEN LAPPED BARS TO BE LESS THAN THREE TIMES BAR DIAMETER. WHERE BAR SIZES VARY USE LAPPED SPLICE LENGTH FOR SMALLER BAR DIAMETER. STRIP FORMWORK TO AS3600 CLAUSE 17.6. REMOVE FORM TIE BOLTS WITHOUT DAMAGING CONCRETE. PARTS OF BOLTS LEFT IN CONCRETE MUST NOT INTRUDE INTO COVER CONCRETE. FLUSH FILL HOLES USING PREMIXED NON-SHRINK CEMENTITIOUS REPAIR MORTAR MATCHING CONCRETE SURFACE COLOUR, STRENGTH REINFORCEMENT COVER COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE etc.) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE. LAPPED SPLICE LENGTHS FOR HORIZONTAL BARS WITH MORE THAN 300 mm CONCRETE CAST BELOW THE BAR AND DURABILITY AND ADEQUATE BOND. COVER MUST NOT BE LESS THAN SPECIFIED. PROVIDE MINIMUM CLEAR COVER TO REINFORCEMENT AS SHOWN BELOW, EXCEPT WHERE SPECIFIED OTHERWISE: AND SPACED AT ≥ 150 mm CENTRES TO COMPLY WITH THE FOLLOWING UNO PLACING OF CONCRETE COVER f c N12 N16 N20 N24 N28 N32 ≥ 50 ≥ 40 480 630 890 1200 1530 1890 CONSTRUCTION TOLERANCES TO BE TO AS3610. COVER (mm) FORMWORK REINFORCEMENT AND COVER DOWELS WATERSTOPS CASTANITEMS at TO BE INSPECTED AND DO NOT INTERPOLATE INTERMEDIATE VALUES OF SPLICE LENGTHS. LAPPED SPLICE LENGTHS FOR BARS IN COLUMNS REFER TO AS3600 OR SUPERINTENDENT PPROVED BY SUITABLY QUALIFIED GEOTECHNICAL ENGINEER /SUPERINTENDENT/BUILDING SURVEYOR FOOTINGS UNDERSIDE SLABS ON GROUND, etc. CAST 50 EPOXY COATED BARS, BARS IN LIGHTWEIGHT CONCRETE AND SLIP FORMED CONCRETE WILL REQUIRE REMOVE FREE WATER, DUST AND DEBRIS, STAINS etc FROM FORMS, EXCAVATIONS etc BEFORE PLACING CONCRETE. IN HOT CONDITIONS DAMPEN FORMWORK AND/OR SUB-GRADE BEFORE PLACING CONCRETE. TOP OF SLAB - INTERIOR 50 LONGER SPLICE LENGTHS. REFER TO AS3600 OR SUPERINTENDENT. LAPPED SPLICE LENGTHS FOR VERTICAL BARS (AND HORIZONTAL BARS WITH LESS THAN 300 mm CONCRETE 50 PLACE CONCRETE IN LAYERS LESS THAN 300 mm THICK FOR FIRST LAYER AND 75% OF IMMERSION VIBRATOR LENGTH FOR SUBSEQUENT LAYERS, AND VIBRATE EACH LAYER BEFORE PLACING NEXT. CAST BELOW THE BAR) SPACED AT ≥ 150 mm CENTRES TO COMPLY WITH THE FOLLOWING UNO COVER GIVEN IS ONLY FOR CONCRETE CAST AGAINST FORMWORK OR CONCRETE BLINDING UND. REQUEST COVER fc N12 N16 N20 N24 N28 N32 >50 >40 350 480 690 920 1180 1450 ELAPSED TIME BETWEEN WETTING OF MIX AND DISCHARGE OF CONCRETE AT SITE MUST BE AS SHORT AS POSSIBLE, AND MUST NOT EXCEED LIMITS GIVEN WITHOUT SUPERINTENDENT'S PRIOR WRITTEN CONSENT. REQUIRED COVER DIMENSION FROM SUPERINTENDENT WHERE CONCRETE IS CAST AGAINST GROUND OR A ELEXIBLE MEMBRANE ON GROUND. CONCRETE THICKNESSES MAY BE INCREASED DO NOT INTERPOLATE INTERMEDIATE VALUES OF SPLICE LENGTHS. PROVIDE 50 mm BLINDING CONCRETE UNDER STRUCTURAL REINFORCED CONCRETE CAST ON GROUND UND. CONCRETE TEMPERATURE AT MAXIMUM ELAPSED TIME LAPPED SPLICE LENGTHS FOR BARS IN COLUMNS REFER TO AS3600 OR SUPERINTENDENT TIME OF DISCHARGE ('C) DO NOT CUT, BEND NOR HEAT REINFORCEMENT ON SITE WITHOUT SUPERINTENDENTS PRIOR WRITTEN SUBMIT NAMES AND CONTACT DETAILS OF PROPOSED CONCRETE SUBCONTRACTORS. 10 - 24 2.00 AT LEAST ONE WEEK PRIOR TO CONCRETE PLACEMENT SUBMIT DETAILS OF PROPOSED READY MIXED 1.50 ENSURE HOT BENDING OF REINFORCEMENT COMPLIES WITH AS3600 CLAUSE 17.2.3.1. DO NOT HEAT D500N CONCRETE SUPPLIER, NAME OF CONCRETE DELIVERY SUPERVISOR, LOCATION OF BATCHING PLANT CONCRETE MIX DESIGNS, METHOD OF CONCRETE TEMPERATURE CONTROL, MIXING, HANDLING, TRANSPORT REINFORCEMENT. USE TEMPERATURE INDICATOR PAINTS AND/OR CRAYONS TO ENSURE REINFORCEMENT TEMPERATURE DOES NOT EXCEED MANUFACTURERS RECOMMENDED LIMITS, 450 DEGREES MAXIMUM. REINFORCEMENT THAT CHANGED COLOUR DURING HEATING MUST BE DISCARDED. 1.00 PUMPING, PLACEMENT, COMPACTION, FINISHING, PROTECTION AND CURING, SEQUENCE AND TIMES FOR 0.75 CONCRETE POURS, CONSTRUCTION JOINT LOCATIONS AT LEAST ONE WEEK PRIOR TO DELIVERY OF ELAPSED TIME LIMITS MAY BE VARIED IF TRIALS DEMONSTRATE USE OF SET RETARDERS (TYPE Re OR WRRE CONCRETE FOR SUPERINTENDENT'S APPROVAL. NOMINATE FOR EACH MIX DESIGN THE SOURCE, TYPE AND PROPORTIONS OF CONSTITUENTS, AGGREGATE GRADINGS AND SATURATED SURFACE-DRY DENSITIES, USE STRAIGHT, SMOOTH HOT DIPPED GALVANIZED DOWELS SAWN TO LENGTH WITH SQUARE CUT ENDS FREE OF BURRS. INSTALL DOWELS PARALLEL TO SURFACE OF SLAB AND PERPENDICULAR TO PLANE OF JOINT. MAINTAIN DOWEL ALIGNMENT BY USE OF A SUITABLE SUPPORT ASSEMBLY TO ENSURE HORIZONTAL AND TO AS1478) PROVIDE ADEQUATE RETENTION OF WORKABILITY FOR LONGER PERIODS AT REQUIRED TEMPERATURE SLUMP LIMITS STILL APPLY. RETEMPERING BEYOND MAXIMUM ALLOWED DISCHARGE TIME USING WATER OR ADMIXTURES IS NOT ALLOWED. ADDITIVES AND ADMIXTURES, MAXIMUM WATER CONTENT AND MAXIMUM WATER: CEMENT RATIO, TARGET SLUMP, TARGET CHARACTERISTIC STRENGTH (FC), AND TARGET DRYING SHRINKAGE. PROVIDE DOCUMENTARY EVIDENCE OF PREVIOUS PERFORMANCE AND RELEVANT TEST RESULTS OF MIX DESIGN TARGETS, INCLUDING 3, 7 AND 28 DAY COMPRESSIVE STRENGTHS, CHARACTERISTIC STRENGTH, TEMPERATURE RISE, DRYING SHRINKAGE, LIMITS OF SOLUBLE SALTS AND ALKALI AGGREGATE REACTIVITY etc. VERTICAL ALIGNMENT TOLERANCE OF 2 IN 300. DO NOT INSERT DOWELS DURING PLACEMENT OF CONCRETE USE PLACEMENT METHODS THAT WILL MINIMISE PLASTIC SETTLEMENT AND SHRINKAGE CRACKING. LIMIT VERTICAL FREE FALL BY USE OF CHUTES, etc. KEEP CHUTES VERTICAL, FULL AND IMMERSED IN CONCRETE. PLACE CONCRETE IN LAYERS AND BLEND SUCCEEDING LAYERS BY COMPACTION. MAINTAIN CONCRETE EDGE IN A PLASTIC STATE. PROPERLY COMPACT CONCRETE USING MECHANICAL VIBRATORS (AND HAND METHODS IF REQUIRED) TO REMOVE AIR BUBBLES AND GIVE MAXIMUM COMPACTION WITHOUT SECRECATION OF CONCRETE. TAKE CARE TO AVOID CONTACT BETWEEN VIBRATORS AND PARTILLY HARDENED CONCRETE, FORMWORK OR REINFORCEMENT. DO NOT USE VIBRATORS TO MOVE CONCRETE ALONG FORMS. BEING CERTIFIED TEST RESULTS MADE ON AT LEAST TWO SEPARATE SAMPLES FROM A NATA REGISTERED ON CONCRETE OF SAME MIX DESIGN (IN RESPECT OF ALL DETAILS TO BE NOMINATED ABOVE) OF SIMILAR APPROVED 20/04/2017 GRADE MADE UNDER PRODUCTION CONDITIONS IN SIMILAR PLANT WITHIN LAST SIX MONTHS, OR DO NOT DISTURB CONCRETE ONCE INITIAL SET OCURRED ON PRELIMINARY TESTS FROM LABORATORY OR PLANT TRIALS OF PROPOSED MIX. OBTAIN SUPERINTENDENT'S WRITTEN APPROVAL OF PLACEMENT METHODS FOR CONCRETE ELEMENTS GREATER THAN 1500 mm HEIGHT. Gladstone Area Water Board 1st Floor 147 Gooddoon Street 147 Gooddoon Street Gladstone 4 4580 Gladstone 4 4680 Fax: (07) 4972 5532 ABN: 88 409 667 181 GLADSTONE AREA WATER BOARD E.JOHNSON 23/03/17 2 / 100 Goondoon Street Gladstone QLD 4680 Australia O Box 373 Gladstone QLD 4680 FLNE WATER MAIN EXTENSION C.CARMELITO 23/03/17 T 61 7 4973 1600 F 61 7 4972 6236 ONCRETE NOTES S.ORR× 12/04/17 HIS DRAWING IS THE PROPERTY OF GLADSTONE SORR 12/04/1 AREA WATER BOARD AND IS NOT TO BE COPIED 12/04/17 ISSUED FOR CONSTRUCTION S.ORR× 12/04/17 HD JOB NO. 42-19950 ⊕ ☐ |IPD2017-048 | A1 |600-C-00033 | DO NOT SCALE REVISION DESCRIPTION DRN CHKD EXT. GAW 13/04/17

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