PROJECT NUMBER 12596020





SHIRE OF NORTHAMPTON **BLUE HOLES, KALBARRI**

DRAWING LIST

DRG No. 12596020-GHD-00-03-DRG-ST-00001 STRUCTURAL NOTES

DRAWING TITLE 12596020-GHD-00-03-DRG-CI-00001 LOCALITY PLAN AND DRAWING LIST 12596020-GHD-00-03-DRG-CI-00100 GENERAL ARRANGEMENT PLAN 12596020-GHD-00-03-DRG-CI-00200 TYPICAL CROSS SECTIONS 12596020-GHD-00-03-DRG-CI-00300 REVETMENT GENERAL NOTES 12596020-GHD-00-03-DRG-ST-00200 TYPICAL RETAINING WALL DETAILS 12596020-GHD-00-03-DRG-ST-00300 RETAINING WALL PROFILE



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BLUE HOLES, KALBARRI

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Project No. 12596020

Status TENDER





ON	Drawing Title LOCALITY PLAN AND DRAWING LIST	Size A1
	Drawing No. 12596020-GHD-00-03-DRG-CI-00001	Rev P02



LEGEND





P03 FENCE AND BOLLARD NOTES UPDATED P02 ISSUED FOR TENDER P01 PRELIMINARY DESIGN Rev Description	SA SA SA Checked	AK AK AK Approved	20/02/24 08/02/24 21/12/12 Date	0 2.5 5 7.5 10 12.5m SCALE 1:250 AT ORIGINAL SIZE
Author S.DAVIES Drafting Check A.KRAUSE Designer S.DAVIES Design Check A.KRAUSE				
Plot Date: 21 February 2024 - 3:47 PM Plotted by: Steve	n Davies			File Name: N:\AU\Perth\Projects\61\12596020\CADD\Drawings\03_Blue_Holes\12596020-GHD-00-03-DRG-CI-00100.dwg



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Project No. 12596020

Status TENDER

SETOUT INFORM	TRONIC FORMAT	G au
N	Drawing GENERAL ARRANGEMENT PLAN	Size A1
	Drawing No. 12596020-GHD-00-03-DRG-CI-00100	Rev P03



R THIS DRAWING INCLUDES COLOURED INFORMATION COPIES OF THIS DRAWING MUST BE PRODUCED IN COLOUR



Plot Date: 20 February 2024 - 2:26 PM Plotted by: Steven Davies

File Name: N:\AU\Perth\Projects\61\12596020\CADD\Drawings\03_Blue_Holes\12596020-GHD-00-03-DRG-CI-00200.dwg

REVETMENT NOTES

- 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER WORKING DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONSTRUCTION. ALL DISCREPANCIES AND VARIATIONS SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK.
- 2. DURING CONSTRUCTION THE CONTRACTOR (AS PRINCIPAL CONTRACTOR) SHALL BE RESPONSIBLE FOR ENSURING NO PART OF EXISTING STRUCTURES ARE DAMAGED.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION.
- 4. ON COMPLETION OF WORKS THE SITE (INCLUDING ALL ACCESS ROUTES) SHALL BE LEFT IN A CLEAN AND TIDY CONDITION TO THE SATISFACTION OF THE SUPERINTENDENT.
- 5. WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH THE RELEVANT SAA CODES EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- 6. ALL LEVELS ARE EXPRESSED IN METRES TO AUSTRALIA HEIGHT DATUM. ALL DIMENSIONS RELEVANT TO THE SETTING OUT OF THE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION PROCEEDS.
- 7. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BEFORE INCORPORATION INTO THE WORK.
- 8. CONTRACTOR TO LOCATE ALL SERVICES PRIOR TO COMMENCEMENT OF WORK.
- 9. ALL EXCAVATED EXCESS CLEAN SAND TO BE PLACED SEAWARD OF THE STRUCTURE TOE AND GRADED BACK OVER THE TOE OF THE WALL TO MATCH THE EXISTING BEACH GRADE IMMEDIATELY POST CONSTRUCTION
- 10. SURVEY RECEIVED 17.08.2023. SURVEY UNDERTAKEN BY HTD SURVEYORS & PLANNERS, EXISTING SAND PROFILE MAY HAVE CHANGED SINCE SURVEY WAS UNDERTAKEN.

ARMOUR ROCK

- CLASS & GRADING
- 1. ROCKS SHALL BE GRADED BOTH VISUALLY AND IN ACCORDANCE WITH THE SPECIFICATION.
- 2. NOT MORE THAN 5% OF ROCKS SHALL HAVE A RATIO OF MAXIMUM DIMENSION TO MINIMUM DIMENSION OF GREATER THAN 3:1 UNLESS APPROVED BY THE SUPERINTENDENT.
- 3. THE SIZES OF THE ARMOUR ROCK TO BE USED IN THE WORKS ARE SET OUT BELOW: WEIGHT WMIN W15 W50 W85 WMAX DANOE

RANGE	(KG)	(KG)	(KG)	(KG)	(KG)	
REVETMENT	700	850	1500	2260	2500	
RELATIVE DENSITY (OF RO	CK SHAL	L BE A	MINIM	JM OF 2	2.2

- (SATURATED SURFACE DRY).
- 4. MATERIAL SHALL BE PLACED SO THAT THE DISTRIBUTION OF ROCKS WITHIN ANY 5m x 5m AREA CONFORMS TO THE ROCK ARMOUR GRADING.

CORE ROCK

- **CLASS & GRADING**
- 1. THE SIZES OF THE CORE ROCK TO BE USED IN THE WORKS ARE SET OUT BELOW: WEIGHT Wmin. W15 W50 W85 WMAX RANGE (KG) (KG) (KG) (KG) (KG) REVETMENT 60 85 100 180 300 RELATIVE DENSITY OF ROCK SHALL BE A MINIMUM OF 2.2 (SATURATED SURFACE DRY).
- 2. MATERIAL SHALL BE PLACED SO THAT THE DISTRIBUTION OF ROCKS WITHIN ANY 5m x 5m AREA CONFORMS TO THE ROCK FILTER GRADING.

GEOTEXTILE

- 1. GEOTEXTILE FABRIC SHALL BE TEXCEL 1200R (NON WOVEN OR SUITABLE EQUIVALENT)
- 2. GEOTEXTILE SHALL BE INSTALLED VERTICALLY DOWN THE SLOPE WITH 500mm MINIMUM OVERLAP AT JOINTS.

ROCK PLACEMENT

- WORKS MEETS THE SPECIFIED STANDARDS.
- INSPECTION.
- SHOWN ON THE DRAWINGS.
- THICKNESS SHOWN ON THE DRAWINGS.
- 5. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR DETERMINING SATISFACTORY PLACEMENT TECHNIQUES TO ENSURE GEOTEXTILE IS NOT DAMAGED
- BETWEEN ADJACENT ROCKS.
- CONTACT WITH THREE OTHER ROCKS.
- 8. TOLERANCE AND FINISH LEVELS:

 - FROM THE SPECIFIED SLOPE.

QUALITY OF ROCK MATERIAL

- TO BE PROVIDED BY THE CONTRACTOR
- ENVIRONMENT OF THE SITE OF THE WORKS.
- 3. ANY STONE WHICH WILL UNDERGO PHYSICAL CHANGE CAUSING SPALLING. ACCEPTABLE.
- OF THIS SAMPLING AND TESTING ARE TO BE INCLUDED IN A REPORT.
- LABORATORY.
- ka/m³
- SHALL NOT EXCEED 2.5%.
- ROCK
- INSPECTION.
- TO QUARRY LOAD OUT.



P02 ISSI	JED FOR TENDER			SA	AK	08/02/24
P01 PRELIMINARY DESIGN				SA	AK	21/12/23
Rev Des	cription			Checked	Approved	Date
Author	S.DAVIES	Drafting Check	A.KRAUSE			
Designer	P.KETELAAR	Design Check	H.O'KEEFFE			

Plotted by: Steven Davies

Plot Date: 8 February 2024 - 4:58 PM

100 200 300 400 500m SCALE 1:10,000 AT ORIGINAL SIZE

File Name: N:\AU\Perth\Projects\61\12596020\CADD\Drawings\03_Blue_Holes\12596020-GHD-00-03-DRG-CI-00300.dwg

1. THE CONTRACTOR SHALL SUPPLY A METHOD STATEMENT DETAILING ITS PROPOSED METHOD OF ROCK PLACEMENT AND CONTROL TO ENSURE THE CONSTRUCTION

2. EXISTING ROCK MATERIAL PROPOSED FOR REUSE SUBJECT TO SUPERINTENDENT

3. CORE ROCK IS TO BE PLACED ON THE GEOTEXTILE TO THE MINIMUM THICKNESS

4. ARMOUR ROCK IS TO BE PLACED ON THE CORE ROCK IN ONE LAYER TO THE MINIMUM

6. THE METHOD OF PLACING SHALL PRODUCE A DENSE, EVENLY DISTRIBUTED ROCK BLANKET WITH A MINIMUM OF VOIDS AND SHALL ENSURE THE MAXIMUM INTERLOCK

7. INDIVIDUAL ROCKS SHALL BE PLACED TO A NON-MOVING STABLE POSITION IN

- THE ARMOUR ROCK THICKNESS SHALL BE WITHIN -00mm AND +100mm OF THE SPECIFIED THICKNESS AT ALL LOCATIONS.

- THE SLOPE OF THE ROCK LAYER SHALL NOT VARY BY MORE THAN 10%

1. LOCAL SANDSTONE IS PREFERRED FOR USE IN THIS LOCATION. DETAILS OF QUARRY

2. ARMOUR ROCK SHALL COMPRISE INDIVIDUAL STONE WHICH IS DENSE. SOUND. RESISTANT TO ABRASION AND FREE OF CRACKS, CLEAVAGE PLANES, SEAMS AND OTHER DEFECTS WHICH WOULD RESULT IN BREAKDOWN OF THE STONE IN THE

WEATHERING OR FRACTURING IN THE ENVIRONMENT OF THE SITE WILL NOT BE

4. THE CONTRACTOR SHALL SUPPLY TESTING BY A SUITABLY EXPERIENCED PETROLOGIST OR GEOTECHNICAL ENGINEER WHO HAS OBTAINED REPRESENTATIVE SAMPLES AND CARRIED OUT TESTING TO DETERMINE THE MINERAL COMPOSITION AND OTHER TESTS AS PER BELOW TO DETERMINE THE SUITABILITY OF THE ROCK. 5. THESE TESTS MUST INCLUDE THOSE LISTED BELOW, IDENTIFIED AS (A) TO (E) INCLUSIVE, TOGETHER WITH THE DETERMINATION AND DISTRIBUTION OF DELETERIOUS SECONDARY MINERALS FOR ALL BASIC IGNEOUS ROCKS. FULL DETAILS 6. ALL ARMOUR ROCK TO BE INCORPORATED IN THE WORKS SHALL COMPLY WITH THE FOLLOWING TEST REQUIREMENTS AND BE TESTED AT NATA ACCREDITED

A. LOS ANGELES ABRASION TEST FOR SPECIMENS TO COMPLY WITH AS 1141-1980 SECTION 23. THE LOSS WHEN TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THAT STANDARD SHALL NOT EXCEED 20%. B. DENSITY OF THE PARTICLE DENSITY OF THE 37.5MM TO 63MM FRACTION OF A CRUSHED SAMPLE EXPRESSED ON A DRY BASIS SHALL NOT BE LESS THAN 2200

C. WATER ABSORPTION SHALL NOT EXCEED 3% WHEN DETERMINED BY THE RELEVANT METHODS DESCRIBED IN AS 1141-1980, SECTION 6 OR AS4133.2 D. SODIUM SULPHATE SOUDNESS TEST TO AS1141, SECTION 24 FOR 5 CYCLES, LOSS

E. CRUSHING RESISTANCE ULTIMATE COMPRESSIVE STRENGTH (UCS) TEST IN ACCORDANCE WITH AS 4133.4.2.1 SHALL HAVE MINIMUM 100 MPA FOR CORE AND ARMOUR ROCK. THE POINT LOAD INDEX (IS50) AS PER AS 4133.4.1 FOR ROCK ARMOUR SHALL HAVE A MINIMUM VALUE OF 3.5 MPA AND 2.3 MPA FOR CORE

7. RELAXATION ON THE ROCK ARMOUR QUALITY MAY BE GRANTED AT THE SUPERINTENDENTS DISCRETION UPON REVIEW OF QUARRY TEST RESULTS AND SITE

8. QUARRY TEST RESULTS ARE TO BE PROVIDED FOR SUPERINTENDENT REVIEW PRIOR

SAFETY IN DESIGN

SID1. THE SAFETY RISK MITIGATION ITEMS IDENTIFIED IN HS040 "SAFETY IN DESIGN RISK ASSESSMENT" ARE BASED ON GHD'S DESIGN OFFICE EXPERIENCE AND DO NOT NECESSARILY ACCOUNT FOR ALL CONSTRUCTION. OPERATION. MAINTENANCE AND

DEMOLITION SAFETY RISKS. BASED ON INFORMATION AVAILABLE WHEN THIS DRAWING WAS MADE, IN ITS CAPACITY AS DESIGNER ONLY, GHD HAS TRIED TO IDENTIFY SAFETY RISKS PERTAINING TO CONSTRUCTION, OPERATION, MAINTENANCE AND DEMOLITION PHASES OF THE ASSET. INCLUSION (OR NOT) OF ANY ITEM DOES NOT REDUCE OR LIMIT OBLIGATIONS OF CONSTRUCTOR, USER MAINTAINER AND DEMOLISHER TO UNDERTAKE APPROPRIATE RISK MANAGEMENT ACTIVITIES TO REDUCE RISK AND IS NOT AN ADMISSION BY GHD THAT INCLUSION OF ANY ITEM IS DESIGNER'S RESPONSIBILITY.



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SHIRE OF NORTHAMPTC

^{roject} BLUE HOLES, KALBARRI

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Project No. 12596020

Status TENDER



DN	Drawing Title REVETMENT GENERAL NOTES	Size A1
	Drawing No. 12596020-GHD-00-03-DRG-CI-00300	^{Rev} P02

GENERAL

- READ THESE NOTES IN CONJUNCTION WITH SPECIFICATIONS, AND WITH SUCH OTHER WRITTEN INSTRUCTIONS ISSUED. IN CASE OF DISCREPANCY, PRECEDENCE IS GIVEN TO DRAWINGS, THEN NOTES, THEN SPECIFICATION
- CARRY OUT WORK IN A SAFE MANNER IN ACCORDANCE WITH APPLICABLE LEGISLATION, STATUTORY REGULATIONS, BY-LAWS OR RULES. CONTRACTOR IS RESPONSIBLE FOR OCCUPATIONAL HEALTH AND SAFETY OF SITE PERSONNEL AND GENERAL PUBLIC IN ACCORDANCE WITH ALL CURRENT WORK HEALTH AND SAFETY ACTS, LEGISLATIVE REQUIREMENTS, ASSOCIATED REGULATIONS AND CODES OF PRACTICE, INDUSTRIAL AGREEMENTS AND ACCEPTED INDUSTRY PRACTICE.
- REFER DISCREPANCIES TO SUPERINTENDENT BEFORE PROCEEDING WITH WORK. SUBMIT DETAILS OF PROPOSED CHANGES TO SCOPE, WORK METHODS OR MATERIALS ETC FOR APPROVAL BEFORE
- PROCEEDING. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT
- CHECK STRUCTURAL DRAWINGS AGAINST ARCHITECTURAL, COASTAL, AND OTHER DRAWINGS FOR REQUIREMENTS FOR PENETRATIONS, PIPES, ETC.
- 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. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT. INSTALL PROPRIETARY ITEMS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
- OBTAIN NECESSARY PERMITS AND APPROVALS FROM RELEVANT AUTHORITIES BEFORE COMMENCING WORK ON SITE. NOTIFY RELEVANT SERVICE AUTHORITIES BEFORE COMMENCING WORK ON SITE.
- GIVE TWO WORKING DAYS' (48 HOURS) NOTICE SO THAT INSPECTION MAY BE MADE OF CRITICAL STAGES OF WORK.
- INSPECTIONS MUST BE ALLOWED FOR AS PER THE SPECIFICATION INSPECTIONS AND REVIEWS UNDERTAKEN BY SUPERINTENDENT OR OTHERS DO NOT RELIEVE CONTRACTOR OF
- RESPONSIBILITY FOR COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS. DO NOT OBTAIN DIMENSIONS BY SCALING FROM DRAWINGS.
- DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES UNO, CHAINAGES ARE IN METRES UNO.
- 12. HAVE SURVEY AND SETTING OUT UNDERTAKEN BY A REGISTERED SURVEYOR.
- 13. TAKE CARE OF HAZARDS ASSOCIATED WITH BURIED, CONCEALED OR OVERHEAD SERVICES. TAKE PRECAUTIONS AND UNDERTAKE EXPLORATION TO ESTABLISH LOCATION OF AND PROTECT EXISTING SERVICES AT SITE. SERVICES SHOWN ON DRAWINGS ARE IN APPROXIMATE LOCATIONS ONLY. SERVICES OTHER THAN THOSE SHOWN MAY EXIST ON SITE. MARK LOCATIONS OF SERVICES CLEARLY ON SITE, AND ON AS-BUILT DRAWINGS. HAND EXCAVATE WITHIN ONE METRE OF IN-GROUND SERVICES.
- 14. DISPOSE OF SURPLUS MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY WASTE REGULATIONS 15. IMPLEMENT SOIL AND WATER MANAGEMENT PROCEDURES TO AVOID EROSION, WIND BLOWN SAND, CONTAMINATION AND SEDIMENTATION OF SITE, SURROUNDING AREAS AND DRAINAGE SYSTEMS.
- WORKMANSHIP AND MATERIALS TO COMPLY WITH REQUIREMENTS OF AUSTRALIAN STANDARDS, NATIONAL CONSTRUCTION CODE (NCC) AND BY-LAWS AND ORDINANCES OF RELEVANT BUILDING AUTHORITIES. ALL STANDARDS REFERRED TO ARE THOSE CURRENT (AS AMENDED) AT COMMENCEMENT OF CONTRACT.
- OBTAIN REQUIREMENTS FOR SERVICES, ADJOINING ELEMENTS ETC TO BE EMBEDDED IN, FIXED TO OR SUPPORTED ON WORK AND PROVIDE FOR REQUIRED FIXINGS. PROVIDE FOR TEMPORARY SUPPORT OF ADJOINING ELEMENTS DURING CONSTRUCTION. DRAWINGS DO NOT SHOW DETAILS OF ALL REQUIRED FIXTURES, INSERTS, SLEEVES, RECESSES OR OPENINGS ETC. 18. PROTECT EXISTING STRUCTURES FROM DAMAGE OR CRACKING. MAKE GOOD ANY DAMAGE TO EXISTING ELEMENTS AT
- COMPLETION OF WORKS OR AS DIRECTED BY SUPERINTENDENT.
- WHERE NEW WORK ABUTS EXISTING, PROVIDE SMOOTH TRANSITION FREE OF ABRUPT CHANGES.
- 20. NEATLY CUT BACK CONCRETE TO BE REMOVED TO A CLEAN TRUE FACE USING A DIAMOND SAW. 21. HAVE TESTING PERFORMED BY AN INDEPENDENT NATA (NATIONAL ASSOCIATION OF TESTING AUTHORITIES) ACCREDITED
- AUTHORITY, AND PROVIDE TEST REPORTS TO SUPERINTENDENT. SEPARATE METALS FROM INCOMPATIBLE MATERIALS (EG STAINLESS STEEL, GALVANIZED STEEL, UNGALVANIZED STEEL AND TREATED TIMBER ETC) BY CONCEALED LAYERS OF SUITABLE INERT MATERIALS OF SUITABLE THICKNESSES. USE PLASTIC SLEEVES AND WASHERS FOR BOLTS, ETC.
- 23. EXTERNAL ELEMENTS ARE THOSE EXPOSED TO WEATHER, RAIN AND WATER PENETRATION IN FINAL WORKS.
- 24. FOR EXTERNAL HORIZONTAL SURFACES, PROVIDE ADEQUATE GRADIENT TO DRAIN WATER
- 25. SUPPLY RELEVANT NOTES, DRAWINGS AND SPECIFICATIONS ETC TO SUB-CONTRACTORS. 26. UNO=UNLESS NOTED OTHERWISE, SLS=SERVICEABILITY LIMIT STATE, ULS=ULTIMATE LIMIT STATE, NSL=NATURAL SURFACE LEVEL, FSL=FINISHED SURFACE LEVEL.
- 27. SUPERINTENDENT=SUPERINTENDENT NOMINATED IN CONTRACT.
- 28. BUILD, FABRICATE AND PROCURE ONLY FROM DRAWINGS 'ISSUED FOR CONSTRUCTION'.
- 29. KEEP ON SITE A COMPLETE SET OF CONTRACT DOCUMENTS (INCLUDING DRAWINGS AND SPECIFICATIONS) AND SITE INSTRUCTIONS.

TEMPORARY WORKS

- THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS. CONSTRUCTION METHODS AND TEMPORARY WORKS ARE RESPONSIBILITY OF THE CONTRACTOR.
- PROVIDE SCAFFOLDING, BARRIERS, FALL RESTRAINT, HAND-MID RAILS AND TOE BOARDS FOR WORK AT HEIGHT. ERECT ACCESS STAIRS AT EARLIEST OPPORTUNITY TO REDUCE OPEN SHAFT HAZARDS AND FACILITATE ACCESS. MAINTAIN SAFETY MESH AND BARRIERS TO ALL OPENINGS AND ELEVATED EDGES.
- MAINTAIN STRUCTURE IN A STABLE CONDITION DURING CONSTRUCTION AND PROVIDE TEMPORARY BRACING AND / OR SUPPORT AS REQUIRED. SHOW TEMPORARY MEMBERS ON SHOP DRAWINGS. PROVIDE SPREADERS AT LOADS AND / OR LIFTING POINTS WHERE REQUIRED. ENSURE NO PART IS OVERSTRESSED. DO NOT PLACE OR STORE BUILDING MATERIALS ON, SUPPORT FORMWORK OR PROP FROM STRUCTURAL MEMBERS WITHOUT SUPERINTENDENT'S APPROVAL. PROVIDE CALCULATIONS BY SUITABLY QUALIFIED STRUCTURAL ENGINEER TO PROVE ADEQUACY OF STRUCTURE FOR PROPOSED CONSTRUCTION SEQUENCE, METHODS AND LOADS INCLUDING PROPPING, CRANE LIFTS ETC.
- PROVIDE TEMPORARY BRACING WHERE REQUIRED FOR STRUCTURAL ELEMENTS OR FRAMES STABILIZED BY MASONRY, PRECAST CONCRETE OR OTHER ELEMENTS CONSTRUCTED AFTER ERECTION OF THE STRUCTURAL ELEMENT OR FRAME, ANI SHOW ON SHOP DRAWINGS.

DESIGN ASSUMPTIONS

- STRUCTURAL WORK HAS BEEN DESIGNED FOR FOLLOWING LOADS:
- PERMANENT DEAD LOAD OF STRUCTURE AS SHOWN ON DRAWINGS SOIL DENSITY: 18 kN/m³
- ACTIVE LATERAL EARTH PRESSURE COEFFICIENT: $K_{\Delta} = 0.33$
- AT REST LATERAL EARTH PRESSURE COEFFICIENT: $K_0 = 0.5$ HYDROSTATIC PRESSURE: NONE
- BUILDING DESIGN WORKING LIFE: BUILDING IMPORTANCE LEVEL:

EARTHWORKS

EARTHWORKS TO BE TO AS3798 AND AS2870.

REMOVE TOPSOIL, MATERIAL CONTAINING GRASS ROOTS OR OTHER ORGANIC MATTER, RUBBLE AND / OR DEBRIS AND ALL

50 YEARS

- UNSUITABLE MATERIAL BELOW FOUNDATIONS AND WHERE SHOWN ON DRAWINGS. DO NOT STOCKPILE MATERIAL AGAINST RETAINING WALLS, BUILDINGS, FENCES OR TREES ETC. DO NOT OBSTRUCT THE FREE
- FLOW OF WATER. PROVIDE TEMPORARY SUPPORT TO FACES OF EXCAVATIONS AS REQUIRED.
- HAVE SAFETY OF PROPOSED EXCAVATIONS INCLUDING ANY TEMPORARY WORKS ASSESSED BY SUITABLY QUALIFIED
- GEOTECHNICAL / STRUCTURAL ENGINEER GENERAL FILL TO BE WELL GRADED MATERIAL, INORGANIC, LESS THAN 0.5% SULPHUR, MAXIMUM PARTICLE SIZE 75 mm,
- PLASTICITY INDEX < 55%. SELECTED FILL MATERIAL SHALL BE SAND CUT FROM SITE. OTHERWISE IT MUST COMPLY WITH THE FOLLOWING:
- INORGANIC, LESS THAN 0.5% SULPHUR
- MAXIMUM PARTICLE SIZE 75 mm
- PROPORTION PASSING 0.075 mm SIEVE: 25% MAXIMUM
- PLASTICITY INDEX: >2%, <15%
- PROPORTION EXCEEDING PARTICLE SIZE OF 50 mm: 75% MINIMUM

Drafting Check A.KRAUSE

Design Check P.TONKIN

Plotted by: Steven Davies

- PLACE FILL MATERIAL UNDER BUILDINGS AND OTHER FOOTINGS IN LAYERS NOT EXCEEDING 150 mm THICK AND COMPACT TO AT LEAST 95% MAXIMUM DRY DENSITY (STANDARD COMPACTION) TO AS1289.
- ADJUST MOISTURE CONTENT OF FILL AT TIME OF COMPACTION WITHIN THE RANGE OF 8-12% DETERMINED BY AS1289.2.1 TO
- ACHIEVE REQUIRED DENSITY 10. SAMPLE AND TEST COMPACTION TO MINIMUM 95% MMDD.

SLABS AND FOOTINGS

P02 ISSUED FOR TENDER

P01 PRELIMINARY DESIGN

Rev Description

Author S.DAVIES

Designer S.AGHERDIEN

Plot Date: 8 February 2024 - 4:55 PM

SLAB PANELS TO BE FOUNDED ON NATURAL SOIL WITH A CALIFORNIA BEARING RATIO (CBR) OF NOT LESS THAN 10%. REMOVE SOFT SPOTS AND REPLACE WITH COMPACTED CRUSHED ROCK. WHERE SLAB PANELS AND INTERNAL BEAMS FOUNDED ON CONTROLLED FILL, CONTROLLED FILL MUST CONTINUE AT LEAST ONE METRE PAST BUILDING.

SA

AK 08/02/24

AK 21/12/23

Checked Approved Date

SLABS AND FOOTINGS CONTINUED

- PUNCTURING OR DAMAGE BY PLACING A PLASTIC PLATE UNDER REINFORCEMENT SUPPORTS.
- SLOPE SLAB SO THAT WATER WILL FLOW INTO THE DRAINAGE POINT.

CONCRETE

- LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
- WATER ON SURFACE, LOSS OF MATERIAL, CONTAMINATION OR OTHER VISIBLE DEFECTS. 3. CONCRETE TO HAVE GOOD DIMENSIONAL STABILITY AND ABLE TO RESIST PLASTIC SETTLEMENT CRACKING, THERMAL CRACKING
- AND SHRINKAGE CRACKING.
- REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS OR HONEYCOMBS. OF UNIFORM COLOUR AND TEXTURE, WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE.
- 5. CONCRETE BLEED TO BE LESS THAN 3% FOR FLOOR SLABS.
- 6. AIR ENTRAINMENT IS NOT PERMITTED.
- 7. REVIEW LOCATION OF EMBEDDED ITEMS TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY.
- QUALITY OF CONCRETE ELEMENTS TO BE N50, MAX. 100mm SLUMP, MAX. 20mm AGGREGATE
- FURNACE SLAG (GGBFS OR SLAG) COMPLYING WITH AS3582. 10. RHEOLOGY, WORKABILITY AND SLUMP TO BE AS REQUIRED FOR PLACEMENT (EG PUMPING, CHUTE, SPRAYING ETC),
- WORKABILITY. DO NOT ADD WATER.
- 11. MAXIMUM ACID SOLUBLE CHLORIDE ION CONTENT OF CONCRETE IS 4 kg/m³. DO NOT USE STRONGLY IONIZED SALTS 12. MAXIMUM SULPHATE CONTENT OF CONCRETE TO BE LESS THAN 5% BY MASS OF ACID SOLUBLE SO3 AS A PERCENTAGE OF CEMENTITIOUS MATERIAL.
- 13. TOTAL REACTIVE ALKALI CONTENT IN CONCRETE TO BE LESS THAN 2.8 kg/m³ NA2OE (EQUIVALENT).
- USE CEMENTITIOUS MATERIALS LESS THAN SIX MONTHS OLD. USE BAGGED CEMENT IN ORDER OF RECEIPT
- 15. FOR GENERAL BLENDED CEMENT (GB) CONTAINING ORDINARY PORTLAND CEMENT PLUS AT LEAST 5% SUPPLEMENTARY
- CEMENTITIOUS MATERIALS:
- SILICA FUME TO BE LESS THAN 10%, OR FLYASH TO BE LESS THAN 25%, OR
- GROUND GRANULATED BLAST FURNACE SLAG TO BE LESS THAN 40%.
- PERCENTAGES GIVEN ABOVE FOR CONSTITUENTS INCLUDED.
- FOR TRIPLE BLENDED CEMENT TOTAL SUPPLEMENTARY CEMENTITIOUS MATERIAL MUST BE LESS THAN 40%. AS PROPOSED IN THE WORKS.
- 17. SUPPLEMENTARY CEMENTITIOUS MATERIALS SPECIFIED IN NOTE 9 ARE IN ADDITION TO MATERIALS INCORPORATED IN GB CEMENT
- CHEMICAL ADMIXTURES OR OTHER MATERIALS WITHOUT SUPERINTENDENT'S WRITTEN APPROVAL.
- 19. DO NOT ADD WATER TO CONCRETE AFTER TRUCK HAS LEFT BATCHING PLANT.
- 20. MIX CONCRETE TO ENSURE UNIFORM DISTRIBUTION OF CONSTITUENTS.

CONCRETE TESTING

- TOLERANCE LIMITS IS LIABLE TO REJECTION.
- CONCRETE TEST RESULTS INDICATE 28 DAY STRENGTHS ARE LIKELY TO BE BELOW SPECIFIED STRENGTH.
- 3. CONCRETE SAMPLING AND TESTING TO BE BY AN APPROVED INDEPENDENT NATA REGISTERED LABORATORY.

FORMWORK

- CONTRACTOR
- 2. DO NOT SUPPORT OR RESTRAIN FORMWORK ON PERMANENT WORKS WITHOUT SUPERINTENDENT'S WRITTEN APPROVAL
- WILL HAVE DIMENSIONS, SHAPE, LOCATION AND FINISH SPECIFIED. 4. PROVIDE OPENINGS OR REMOVABLE PANELS IN FORMWORK FOR INSPECTION AND CLEANING.
- RECEIVE AN APPLIED FINISH OR COATING FOR WHICH THERE IS NO COMPATIBLE RELEASE AGENT). WHERE NECESSARY CLEAN REINFORCEMENT TO REMOVE TRACES OF RELEASE AGENT.
- 6. SEAL JOINTS BETWEEN FORMWORK PANELS, AND TO HARDENED CONCRETE WITH A FLEXIBLE RUBBER STRIP. SET OUT SURFACE.
- 7. DO NOT USE FORMWORK HARDWARE THAT FORMS A COMPLETE HOLE THROUGH CONCRETE ELEMENTS. DO NOT USE REINFORCEMENT TO SUPPORT FORMWORK
- PROVIDE HOLES IN REBATE FORMERS, ETC, AS REQUIRED TO PREVENT AIR ENTRAPMENT. AFTER FLOODING WITH WATER. KEEP VOID FORMERS DRY UNTIL CONCRETE IS PLACED.
- 10. DO NOT STRIP FORMWORK PRIOR TO 36 HOURS AFTER PLACEMENT.
- WITHOUT DAMAGE. MINIMUM STRIPPING TIMES TO BE AS PER AS3610 TABLE 5.4.1.
- SUBMIT DETAILS OF PROPOSED REPAIR METHODS TO SUPERINTENDENT FOR APPROVAL.

PLACING OF CONCRETE 1. CONSTRUCTION TOLERANCES TO BE TO AS3610.

WATER IN FRESH CONCRETE

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2. PROVIDE 0.2 mm HIGH IMPACT-RESISTANT VIRGIN POLYETHYLENE FILM DAMP PROOF MEMBRANE TO AS2870 ON 50 mm SAND BLINDING WHERE SHOWN ON DRAWINGS. LAP 200 mm AND SEAL DAMP PROOF MEMBRANES, TAPE AT PENETRATIONS, ETC TO ENSURE A COMPLETE VAPOUR BARRIER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS2870. PREVENT

1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS3610, AS1379, AS1478, AS3582, AS3799, AS2758.1, AND AS3972. FOR

WET CONCRETE TO BE UNIFORM, DENSE, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION OF AGGREGATES AND / OR FIBRES, EXCESS FREE

4. FINISHED CONCRETE TO BE A DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, EMBEDDING FIBRES

9. SUPPLEMENTARY CEMENTITIOUS MATERIALS INCLUDE AMORPHOUS SILICA FUME, FLY ASH, AND GROUND GRANULATED BLAST

COMPACTION AND FINISHING. USE SUPERPLASTICISERS AND HIGH RANGE WATER REDUCERS TO AS1478 TO ACHIEVE ADEQUATE

• FOR DOUBLE BLENDED CEMENT TOTAL SUPPLEMENTARY CEMENTITIOUS MATERIAL MUST BE LESS THAN SMALLER OF

16. TEST FINE AND COARSE AGGREGATES FOR POTENTIAL AGGREGATE ALKALI REACTIVITY (AAR) USING CSIRO ACCELERATED MORTAR BAR TEST (REFER SAA HANDBOOK HB-69 APPENDIX B3.2). ALTERNATIVELY USE ASTM C1293 CONCRETE PRISM TEST. PETROGRAPHIC TESTING CAN PROVIDE ADDITIONAL AGGREGATE AAR RISK INFORMATION. TESTS MUST USE SAME CEMENT TYPE

18. ADMIXTURES TO COMPLY WITH AS1478. ADMIXTURES MUST NOT REDUCE STRENGTH OF CONCRETE BELOW SPECIFIED VALUE IN SHORT OR LONG TERM. ADMIXTURES MUST NOT CONTAIN CALCIUM CHLORIDE. USE ADMIXTURES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONCRETE ADMIXTURES SHALL NOT CAUSE OR ACCELERATE CORROSION OF REINFORCEMENT, NOR BE DETRIMENTAL TO CONCRETE OR STEEL DURING EXPECTED LIFE OF STRUCTURE. DO NOT USE

1. 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

2. CARRY OUT PROJECT ASSESSMENT OF CONCRETE TO AS1379 CLAUSE 6.4 AND 6.5. TAKE SAMPLES AT PROJECT SITE AT POINT OF DISCHARGE FROM AGITATOR. SPREAD SAMPLING EVENLY THROUGH POUR. 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 25m³ OF CONCRETE DELIVERED PER DAY, NOT LESS THAN FIVE SAMPLES TOTAL FOR EACH MIX DESIGN. EACH SAMPLE TO COMPRISE FOUR CYLINDERS: TEST TWO AT 7 DAYS AND TWO AT 28 DAYS. TAKE ADDITIONAL SAMPLES OF SPRAYED CONCRETE FOR TESTING AT EARLIER AGE. NOTIFY SUPERINTENDENT WITHIN 2 WORKING DAYS IF 7-DAY

1. RESPONSIBILITY FOR DESIGN. CERTIFICATION. CONSTRUCTION AND PERFORMANCE OF FORMWORK AND FALSEWORK LIES WITH

CONSTRUCT FORMWORK TO COMPLY WITH AS3610 AND CLAUSE 17.6 OF AS3600 WHERE THIS IS MORE STRINGENT SO CONCRETE

5. APPLY RELEASE AGENT COMPATIBLE WITH CONTACT SURFACES TO INTERIOR OF FORMWORK (EXCEPT WHERE CONCRETE IS TO

FORMWORK TO GIVE A REGULAR ARRANGEMENT OF PANELS, JOINTS, BOLT HOLES AND SIMILAR VISIBLE ELEMENTS IN FORMED

9. CARDBOARD VOID FORMER: USE VOID FORMER THAT WILL NOT DEFLECT DURING CONCRETE PLACING AND COMPACTION OR DURING SETTING PERIOD, BUT WILL COLLAPSE RESULTING IN LOSS OF LOAD CARRYING CAPACITY NOT MORE THAN 48 HOURS

11. DO NOT STRIP FORMWORK UNTIL CONCRETE IS HARDENED SUFFICIENTLY TO WITHSTAND MOVEMENT AND FORM REMOVAL

12. 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 PRE-MIXED NON-SHRINK CEMENTITIOUS APPROVED REPAIR MORTAR MATCHING CONCRETE SURFACE COLOUR, STRENGTH AND DURABILITY AND ADEQUATE BOND.

2. FORMWORK, REINFORCEMENT AND COVER, DOWELS, WATERSTOPS, CAST-IN ITEMS ETC TO BE INSPECTED AND APPROVED BY SUITABLY QUALIFIED GEOTECHNICAL ENGINEER / SUPERINTENDENT / BUILDING SURVEYOR BEFORE CONCRETE IS PLACED. 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

4. INSTALL 0.2 mm HIGH IMPACT RESISTANT VIRGIN POLYETHYLENE FILM DAMP PROOF MEMBRANE TO AS2870 TO BASE TO RETAIN

PLACING OF CONCRETE CONTINUED

5. 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.

CONCRETE TEMPERATURE AT TIME OF DISCHARGE (°C)	MAXIMUM ELAPSED TIME (HOURS)
10-24	2.00
24-27	1.50
27-30	1.00
30-32	0.75

- ELAPSED TIME LIMITS MAY BE VARIED IF TRIALS DEMONSTRATE USE OF SET RETARDERS (TYPE RE OR WRRE TO AS1478) PROVIDE ADEQUATE RETENTION OF WORKABILITY FOR LONGER PERIODS AT REQUIRED TEMPERATURE. SLUMP LIMITS STILL APPLY. RE-TEMPERING BEYOND MAXIMUM ALLOWED DISCHARGE TIME USING WATER OR ADMIXTURES IS NOT ALLOWED.
- 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 AND APPROVED BY SUPERINTENDENT) TO REMOVE AIR BUBBLES AND GIVE MAXIMUM COMPACTION WITHOUT SEGREGATION OF CONCRETE. TAKE CARE TO AVOID CONTACT BETWEEN VIBRATORS AND PARTIALLY HARDENED CONCRETE, FORMWORK OR REINFORCEMENT. DO NOT USE VIBRATORS TO MOVE CONCRETE ALONG FORMS.
- 8. DO NOT DISTURB CONCRETE ONCE INITIAL SET HAS OCCURRED.
- 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, METHODS OF PLACEMENT AND COMPACTION, PROJECT ASSESSMENT CARRIED OUT, SLUMP MEASUREMENTS, VOLUME AND OTHER NOTABLE MATTERS THAT MAY AFFECT PERFORMANCE OF CONCRETE.
- 10. IN COLD WEATHER MAINTAIN TEMPERATURE OF FRESHLY MIXED CONCRETE WITHIN LIMITS SHOWN BELOW. "OUTDOOR" AIR TEMPERATURE IS AIR TEMPERATURE AT TIME OF MIXING, OR PREDICTED OR LIKELY AIR TEMPERATURE DURING NEXT 48 HOURS. BEFORE AND WHILE PLACING CONCRETE MAINTAIN TEMPERATURE OF FORMWORK AND REINFORCEMENT AT > 5C. DO NOT USE CALCIUM CHLORIDE TO ACCELERATE SETTING TIME. DO NOT USE SALTS, CHEMICALS OR OTHER MATERIAL IN MIX TO LOWER THE FREEZING POINT OF CONCRETE. DO NOT ALLOW FROZEN MATERIALS TO ENTER MIXER. EVALUATE THE NEED FOR INSULATION OF CONCRETE SURFACES. DO NOT USE HIGH ALUMINA CEMENT.
- 11. KEEP FORMS, MATERIALS, EQUIPMENT IN CONTACT WITH CONCRETE FREE OF FROST AND ICE. HEAT CONCRETE MATERIALS (OTHER THAN CEMENT) TO MINIMUM TEMPERATURE NECESSARY TO ENSURE TEMPERATURE OF PLACED CONCRETE IS WITHIN LIMITS SPECIFIED. MAXIMUM WATER TEMPERATURE: 60°C WHEN PLACED IN MIXER.
- 12. IN HOT WEATHER PREVENT PREMATURE STIFFENING OF FRESH CONCRETE; REDUCE WATER ABSORPTION AND EVAPORATION LOSSES. MIX, TRANSPORT, PLACE AND COMPACT CONCRETE AS QUICKLY AS POSSIBLE. DURING PLACEMENT TEMPERATURE OF CONCRETE MUST NOT EXCEED 32°C.
- 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 REINFORCEMENT AND FORMWORK AS REQUIRED. MAINTAIN SPECIFIED TEMPERATURE OF PLACED CONCRETE BY:
- PLACING CONCRETE WHEN AMBIENT TEMPERATURE IS LOW (AT NIGHT)
- COOL CONCRETE USING LIQUID NITROGEN INJECTION BEFORE PLACING, OR
- COVER CONTAINER IN WHICH CONCRETE IS TRANSPORTED TO FORMS, OR
- SHADING AND SPRAYING COARSE AGGREGATE USING COLD WATER, OR
- USE CHILLED MIXING WATER.
- 13. 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 CURING PERIOD
- 14. FOR CONCRETE WITH WATER: CEMENT RATIO LESS THAN 0.5, IN HOT, WINDY OR DRY (LOW HUMIDITY) 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 RE-VIBRATING CONCRETE BEFORE IT REACHES INITIAL SET.
- 15. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT STAINED. ACCEPTABLE METHODS OF CURING INCLUDE:
- RETENTION OF FORMWORK PONDING OR CONTINUOUS SPRINKLING WITH WATER (MOIST CURING)
- 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
- STEAM CURING
- AN APPROVED CURING COMPOUND. PROVIDE:
- EFFICIENCY INDEX
- CERTIFIED TEST RESULTS FOR WATER RETENTION TO AS3799 APPENDIX B EVIDENCE THAT AN ACCEPTABLE FINAL SURFACE COLOUR WILL BE OBTAINED
- EVIDENCE OF COMPATIBILITY WITH CONCRETE AND APPLIED FINISHES (IF ANY)
- METHODS OF OBTAINING REQUIRED ADHESION FOR TOPPINGS, RENDER ETC.
- UNIFORM CONTINUOUS FLEXIBLE COATING WITHOUT VISIBLE BREAKS OR PINHOLES, WHICH REMAINS UNBROKEN FOR AT LEAST THE CURING PERIOD AFTER APPLICATION.
- 16. CURE CONTINUOUSLY FOR 7 DAYS.
- 17. FINISHES AS LAID:
- EXPOSED SURFACES STEEL TROWEL AND BRUSHED
- HIDDEN SURFACES WOOD FLOAT
- DO NOT MAKE HOLES, PENETRATIONS, RECESSES, CHASES, NOR EMBED PIPES (OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS) WITHOUT APPROVAL OF SUPERINTENDENT. DO NOT PLACE CONDUITS, PIPES ETC WITHIN COVER CONCRETE. LOCATE CONDUITS, PIPES ETC ONLY IN MIDDLE THIRD OF SLAB OR BEAM DEPTH AND BETWEEN REINFORCEMENT LAYERS, SPACED AT 3 X PIPE / CONDUIT DIAMETER CENTRES MINIMUM. DO NOT CUT REINFORCEMENT AT PENETRATIONS WITHOUT APPROVAL.

JOINTS

- 1. IF CONSTRUCTION JOINTS PROPOSED OTHER THAN WHERE SHOWN, PROVIDE PROPOSED LOCATIONS FOR SUPERINTENDENT'S APPROVAL AT LEAST 7 DAYS PRIOR TO CONSTRUCTION.
- PROVIDE JOINTING MATERIALS COMPATIBLE WHEN USED TOGETHER, AND NON-STAINING TO CONCRETE IN VISIBLE LOCATIONS
- PROVIDE DETAILS OF CONSTRUCTION JOINTS FOR SUPERINTENDENT'S APPROVAL AT LEAST 7 DAYS PRIOR TO CONSTRUCTION.
- INSTALL WATERSTOPS ONTO SMOOTH CONCRETE SURFACE. DO NOT SCABBLE CONCRETE BENEATH WATERSTOPS. 5. SUBMIT PROPOSALS FOR CUTTING OR CORING HARDENED CONCRETE OR SAW CUT JOINTS, INCLUDING METHODS, TIMING AND SEQUENCE AT LEAST 7 DAYS BEFORE UNDERTAKING WORKS.
- 6. SAW CUT CRACK CONTROL JOINTS AS SOON AFTER CASTING AS PRACTICABLE TO AVOID SPALLING OR RAVELLING OF JOINT EDGES, AND WITHIN 16 HOURS OF CASTING TO PREVENT THERMAL AND / OR SHRINKAGE CRACKING OF SLAB. IMMEDIATELY AFTER SAW CUTTING FLUSH OUT JOINTS TO REMOVE SAWING RESIDUE AND INSERT A TEMPORARY FOAMED PLASTIC BEAD TO KEEP JOINT CLEAN PRIOR TO FILLING OR SEALING. PROTECT SAW CUTS FROM WHEEL LOADS FOR AT LEAST ONE WEEK AFTER CUTTING.
- DO NOT INSTALL SEALANTS IF EXPECTED MAXIMUM DAILY TEMPERATURE EXCEEDS 30 DEGREES C. ENSURE RECESSES ARE CLEAN AND DRY PRIOR TO INSTALLING FILLERS OR SEALANTS, AND PREPARE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. TOLERANCE ON SEALANT WIDTHS +5, -0 mm.



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Client SHIRE OF NORTHAMPT

^{Project} BLUE HOLES, KALBARR

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Project No 12596020

Status TENDER

REINFORCEMENT

1. SYMBOLS ON DRAWINGS FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS:

- R: STRUCTURAL GRADE 250 PLAIN ROUND BAR TO AS/NZS4671
- N: HOT ROLLED GRADE 500 DEFORMED (RIBBED) BAR DUCTILITY CLASS N TO AS/NZS4671
- L: HOT ROLLED GRADE 500 DEFORMED BAR DUCTILITY CLASS L TO AS/NZS4671
- SL: HARD DRAWN WIRE GRADE 500 SQUARE MESH DUCTILITY CLASS L TO AS/NZS4671
- RL: HARD DRAWN WIRE GRADE 500 RECTANGULAR MESH DUCTILITY CLASS L TO AS/NZS4671
- TM: HARD DRAWN STEEL GRADE 500 TRENCH MESH DUCTILITY CLASS L TO AS/NZS4671
- W: GRADE 500 STEEL REINFORCING WIRE TO AS/NZS4671

2. MANUFACTURERS AND PROCESSORS OF STEEL REINFORCING AND PRE-STRESSING MATERIALS MUST HOLD A VALID CERTIFICATE OF APPROVAL ISSUED BY ACRS (AUSTRALASIAN CERTIFICATION AUTHORITY FOR REINFORCING AND STRUCTURAL STEELS). PROVIDE ACRS CERTIFICATION OF COMPLIANCE WITH AS/NZS4671, PRODUCT TAGS AND SUPPORTING DOCUMENTATION FOR ALL REINFORCEMENT. PROVIDE CERTIFICATION OF COMPLIANCE WITH AS/NZS4672.1 FOR ALL PRESTRESSING TENDONS.

PROVIDE DOCUMENTATION TO SHOW THAT REINFORCEMENT SUPPLIER AND MILL COMPLY WITH AS/NZS4671.

- 4. REINFORCEMENT MUST HAVE UNIQUE MARKS TO IDENTIFY SUPPLIER.
- 5. DO NOT USE LOW DUCTILITY REINFORCEMENT (GRADE L) UNO.
- 6. USE MESH SUPPLIED IN FLAT SHEETS UNLESS APPROVED OTHERWISE
- 7. REINFORCEMENT TO BE CLEAN, FREE OF LOOSE MILL SCALE, RUST, OIL, GREASE, MUD OR OTHER MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.
- 8. COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE ETC) AND OUTSIDE SURFACE OF STRUCTURAL CONCRETE.
- 9. TOLERANCE ON COVER TO BE TO AS5100.5 CLAUSE 4.10.3.1
- 10. TO MINIMIZE TRIP HAZARDS CONSIDER MAXIMUM REINFORCEMENT BAR SPACING FOR TRAFFICABLE AREAS PRIOR TO CASTING CONCRETE OF 200 mm. ALTERNATIVELY PROVIDE SL82 ADDITIONAL IF MAIN REINFORCEMENT SPACING IS GREATER THAN
- 11. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
- 12. CAP STARTER BARS AND OTHER REINFORCEMENT TO REDUCE RISK OF IMPALEMENT AND LACERATIONS.
- 13. ENSURE ALL LAID REINFORCING BARS ARE RESTRAINED BEFORE STOPPING WORK TO PREVENT BARS ROLLING UNDERFOOT. 14. REINFORCEMENT TO BE SUPPLIED TO SITE PRE-BENT TO REQUIRED SHAPES. REINFORCEMENT CAGES TO BE PRE-FABRICATED OFF-SITE AS FAR AS PRACTICABLE.
- 15. 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.
- 16. SECURELY TIE REINFORCEMENT WITH WIRE TIES. TURN ENDS OF TIE WIRES INTO CONCRETE, CLEAR OF COVER ZONE. 17. SUPPORT REINFORCEMENT ON PROPRIETARY CONCRETE, METAL OR PLASTIC SUPPORTS ADEQUATE TO 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.
- DO NOT PLACE OR MOVE REINFORCEMENT DURING OR AFTER CONCRETE PLACEMENT.
- 19. ENSURE EMBEDDED ITEMS (INSERTS, THREADED SOCKETS, FERRULES, BOLTS, DISSIMILAR METAL ITEMS, ETC) IN COVER CONCRETE OR EXPOSED TO AIR ARE NOT IN CONTACT WITH REINFORCEMENT. PROVIDE ISOLATION BETWEEN DISSIMILAR METALS, AND BETWEEN REINFORCEMENT AND EXPOSED ITEMS.
- 20. OBTAIN SUPERINTENDENT'S APPROVAL OF INSERTS, FIXINGS AND OTHER ITEMS EMBEDDED IN COVER CONCRETE. 21. SPLICE REINFORCEMENT ONLY AT LOCATIONS SHOWN ON DRAWINGS OR AS APPROVED BY SUPERINTENDENT. STAGGER LAPS WHERE POSSIBLE. LAPPED SPLICE LENGTHS TO COMPLY WITH AS3600. 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. 22. LAY MESH REINFORCEMENT SO THAT MINIMUM COVER IS TO MAIN WIRES UNO.
- 23. PROVIDE MINIMUM MESH LAPS TO CROSS WIRES OF REINFORCING MESH, SO TWO OUTERMOST WIRES OF ONE SHEET OVERLAP TWO OUTERMOST WIRES OF ADJACENT SHEET BY AT LEAST 25 mm, THUS:

MESH TYPE	END LAP	SIDE LAP
RECTANGULAR MESHES	225	125
SQUARE MESHES SL102 TO SL42	225	225
SL81	125	125
TRENCH MESH	500	N/A

- USE LAP LENGTHS BASED ON LARGEST WIRE SPACING. DO NOT LAP MORE THAN THREE SHEETS AT ANY ONE POINT. 24. ALTERNATIVELY USE N12 SPLICE BARS TO LAP ADJACENT SHEETS OF MESH, SPACING OF SPLICE BARS TO MATCH SPACING OF
- BARS IN MESH, SPLICE BARS TO OVERLAP MESH BY 750 mm MINIMUM UNO. 25. SPLICE TRENCH MESH BY A LAP OF 750 mm MINIMUM UNO. AT T- AND L-INTERSECTIONS, CONTINUE TRENCH MESH FULL WIDTH OF INTERSECTION. AT L-INTERSECTIONS PROVIDE AN N12 L BAR TO LAP 750 mm WITH OUTSIDE BARS UNO
- DO NOT WELD REINFORCEMENT, CAST-IN ITEMS ETC UNLESS SHOWN ON DRAWINGS OR OTHERWISE APPROVED BY
- SUPERINTENDENT 26. DO NOT BEND OR STRAIN REINFORCEMENT IN A WAY THAT MAY CAUSE DAMAGE. BEND DIAMETERS TO BE TO AS3600. BARS TO BE BENT COLD UNO, GRADE 250 BARS MAY BE BENT AT TEMPERATURES UP TO 850°C. DO NOT COOL HEATED BARS BY QUENCHING.
- 27. DO NOT BEND REINFORCEMENT AFTER GALVANIZING OR APPLICATION OF OTHER COATINGS.
- 28. PERCUSSION ROTARY DRILL HOLES FOR GROUTED BARS AND THREADED RODS (NOTE: CORED HOLES MUST BE ROUGHENED). HOLE DIAMETER AND INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. EMBEDMENT LENGTHS AS PER DRAWINGS.
- 29. ENSURE HOLES FOR GROUTED BARS AND THREADED RODS ARE DRY AND CLEANED THOROUGHLY BEFORE INSTALLING
- ANCHORS, WIRE BRUSH HOLES AND BLOW OUT WITH COMPRESSED AIR TO REMOVE DUST. FILL HOLE WITH ADHESIVE USING A CAULKING GUN FROM BOTTOM OF HOLE OUTWARDS. DISCARD ADHESIVE FROM FIRST TRIGGER PULL. PROVIDE BARS / THREADED RODS WITH CHAMFERED (CHISELLED) ENDS. BARS TO BE DEGREASED, AND FLAKY RUST REMOVED. ROTATE WHILE INSERTING TO ENSURE FULLY COATED AND PUSH FULLY INTO HOLE. PROTECT FROM DISTURBANCE DURING CURING. FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- 30. USE ADHESIVES IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS UNO.

RETAINING WALL NOTES

- 1. ALL BLOCKS TO BE MINIMUM DENSITY OF 1800kg/m³ (DRY).
- 2. COMPLETED BLOCKWORK OF WALL TO BE OF THICKNESS NO LESS THAN MINIMUM PROFILE INDICATED.
- 3. GROUND FOR WALL FOOTING TO BE COMPACTED TO A MINIMUM OF 95% MODIFIED M.D.D. OR TO A MINIMUM OF 10 BLOWS PER 300mm WITH A STANDARD PERTH SAND PENETROMETER OR EQUIVALENT.
- 4. ALL BLOCK JOINTS TO BE VERTICAL OR HORIZONTAL (NOT SLOPED), MAX 30mm ROLLED JOINTS. MORTAR TO BE 1:1:6 CEMENT:LIME:SAND. FACE JOINTS - IF COLOURED - TO BE MATCHING MORTAR.
- 5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RETAINING WALL LONG SECTION PLANS & RETAINING WALL LOCALITY PLAN 6. LOCATION OF CONTROL JOINT IN BLOCK RETAINING WALLS TO BE APPROVED BY SUPERINTENDENT PRIOR TO WALL
- CONSTRUCTION. (CONTROL JOINTS AT 20m NOM).
- 7. ALL BACKFILL TO BE LOCAL SAND, FREE FROM ORGANIC MATTER. 8. THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS. CONSTRUCTION METHODS AND TEMPORARY WORKS ARE THE
- RESPONSIBILITY OF THE CONTRACTOR.



ON	Drawing STRUCTURAL NOTES	Size A1
Ι		
	Drawing No. 12596020-GHD-00-03-DRG-ST-00001	Rev P02









- 1. ALL BLOCKS TO BE MINIMUM DENSITY OF 1800kg/m (DRY).
- 2. COMPLETED BLOCKWORK OF WALL TO BE OF THICKNESS NO LESS THAN MINIMUM PROFILE INDICATED.
- 3. GROUND FOR WALL FOOTING TO BE COMPACTED TO A MINIMUM OF 95% MODIFIED M.D.D. OR EQUIVALENT WITH TEST RESULTS INCLUDED IN QA DOCUMENTATION
- 4. ALL BLOCK JOINTS TO BE VERTICAL OR HORIZONTAL (NOT SLOPED) 30mm (MAX)
- ROLLED JOINTS, MORTAR TO BE 1:1:6 FACE JOINTS TO BE MATCHING MORTAR. 5. WEEP HOLES TO BE CONSTRUCTED IN WALLS WHEN FOOTING IS IN ROCK, CAPSTONE OR WHERE FOOTINGS ARE PLACED ON LESS THAN 600mm OF SAND.
- 6. THREE COATS OF NON SACRIFICIAL ANTI GRAFFITI COATING IS TO BE APPLIED TO WALLS FACING A ROAD, P.A.W. DRAINAGE SUMP OR P.O.S.
- FOR ANY OTHER WALLS, DIFFERENT TO WALL SECTIONS ON THIS DRAWING 7. CONSULT THE ENGINEERS.
- 8. CONTRACTOR TO LIAISE WITH LOCAL AUTHORITY TO OBTAIN BUILDING LICENSE FOR ALL RETAINING WALLS.
- 9. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RETAINING WALL LONGITUDINAL SECTION PLANS. 10. LOCATION OF CONTROL JOINT IN BLOCK RETAINING WALLS TO BE APPROVED BY
- SUPERINTENDENT PRIOR TO WALL CONSTRUCTION. (CONTROL JOINTS AT 20.00m NOM)
- 11. RETAINING WALL NOT DESIGNED FOR TRUCK LOADING.
- 12. HEAVY COMPACTION EQUIPMENT TO BE USED AT A MINIMUM OF 1.5m AWAY FROM THE REAR FACE OF RETAINING WALL.
- 13. USE LIGHTWIGHT COMPACTOR BEHIND WALL

DETAILS SHOWN ARE FOR RECONSTITUTED LIMESTONE AND "BLOK-NATURAL EARTH" BLOCKS

ON	Drawing TYPICAL RETAINING WALL DETAILS	Size A1
	Drawing No. 12596020-GHD-00-03-DRG-ST-00200	Rev P02

				- CONTROL JOINT	
	SIA = 0+000.00 EL = 4.12		STA = 0+006.12	EL = 4.24	
		2.00%			
SCALE: H 1:50 1:50 DATUM 0.000					
OVERALL WALL HEIGHT	0.720		0.720	062.0	0.1 20
DESIGN TOP OF WALL	4.120		4.242	CYC Y	7-7-7
DESIGN BOTTOM OF WALL	3.400		3.522	3 600	0.044
PAVEMENT LEVEL	3.569		3.654	2 678	0.0.0
CHAINAGE	0.000		6.122		000.01

LONGITUDINAL SECTION - RETAINING WALL

File Name: N:\AU\Perth\Projects\61\12596020\CADD\Drawings\03_Blue_Holes\12596020-GHD-00-03-DRG-ST-00300.dwg

P02 ISS	UED FOR TENDER			SA	AK	08/02/24
P01 PRE	ELIMINARY DESIGN			SA	AK	21/12/23
Rev Des	scription			Checked	Approve	d Date
Author	S.DAVIES	Drafting Check	A.KRAUSE			
Designer	S AGHERDIEN	Design Check	P.TONKIN			
Designer	0./ (OHERDIEN	Dooigii onoon				

3 4 5m 2 SCALE 1:100 AT ORIGINAL SIZE

L JOINT	STA = 0+020.00	CONTROL JOINT	STA = 0+031.38	- CONTROL JOINT STA = 0+038.60 FI = 4.79
0.720	062.0	0.720	0.720	0.720
4.242	CPC 7	4.442	4.470	4.795
3.522	3 5,09	3.722	3.750	4.075
3.678	0č2 c	3.886	3.944	4.207
10.000		30.000	31.379	38.596



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Project No. 12596020

Status TENDER



N	Drawing RETAINING WALL PROFILE	Size A1
	Drawing No. 12596020-GHD-00-03-DRG-ST-00300	^{Rev} P02