

Cardno (WA) Pty Ltd | ABN 77 009 119 000

11 Harvest Terrace

West Perth WA 6005

Tel: 08 9273 3888 Fax: 08 9486 8664

Web: www.cardno.com.au

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City of Wanneroo

Stage 3

DRAWING LIST

GENERAL 59915802-GN-001 59915802-GN-002	GEN Loc
COASTAL 59915802-MA-201 59915802-MA-202 59915802-MA-203 59915802-MA-204 59915802-MA-301 59915802-MA-302 59915802-MA-303 59915802-MA-304 59915802-MA-401 59915802-MA-402 59915802-MA-403 59915802-MA-404	GROYNE GROYNE GROYNE GROYNE GROYNE GROYNE GROYNE GROYNE GROYNE GROYNE
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LANDSCAPE 59915802-LA-501 59915802-LA-101 59915802-LA-102	BEACH A BEACH A BEACH A

City of Wanneroo

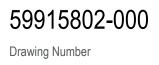
Quinns Beach Long Term Coastal Management

NERAL NOTES CATION PLAN

2 PLAN & LONG SECTION E 2 SECTIONS B, C, D E 2 SECTIONS E, F, G E 2 SECTIONS H, I, J E 3 PLAN & LONG SECTION E 3 SECTIONS B, C, D E 3 SECTIONS E, F, G E 3 SECTIONS H E 4 PLAN & LONG SECTION E 4 SECTIONS B, C, D E 4 SECTIONS E, F, G E 4 SECTIONS H, I, J

E 4 BEACH ACCESS PATH, GENERAL NOTES. E 4 BEACH ACCESS PATH, EXISTING SITE AND SURVEY. E 4 BEACH ACCESS PATH, GENERAL ARRANGEMENT, PLAN. E 4 BEACH ACCESS PATH, SETOUT DETAILS. E 4 BEACH ACCESS PATH, LONGITUDINAL PROFILE, TYPICAL DETAILS. E 4 BEACH ACCESS PATH, CROSS SECTION CHN 5 - CHN. 60, SHEET 1 OF 2 E 4 BEACH ACCESS PATH, CROSS SECTION CHN 65 - CHN. 108, SHEET 2 OF 2 E 4 BEACH ACCESS PATH, RETAINING WALL, DETAILS.

ACCESS, WATERLAND POINT, SITE PLAN ACCESS, GROYNE 1 ACCESS, GROYNE 1, SOUTH





1. GENERAL

- 1.1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTION AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- 1.2. ALL CRITICAL ARRANGEMENTS AND DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES. DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
- 1.3. BEFORE UNDERTAKING ANY WORKS, ESTABLISH THE LOCATION OF ALL EXISTING SERVICES AFFECTED BY THE WORKS. ADVISE THE ENGINEER IF THERE ARE ANY UNKNOWN SERVICES THAT CAN POTENTIALLY BE AFFECTED BY THE WORKS.
- 1.4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING AND BATTERS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS AND EXCAVATION STABLE AT ALL TIMES.
- 1.5. THE CONTRACTOR SHALL PROVIDE CERTIFICATES FROM AN APPROVED TESTING LABORATORY CERTIFYING THAT THE MATERIALS USED COMPLY WITH THE RELEVANT SPECIFICATIONS.
- 1.6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS ON SITE BEFORE THE WORKS COMMENCE.
- 1.7 ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
- 1.8 THE CONTRACTOR SHALL VERIFY ALL GROUND LEVELS ON SITE BEFORE THE WORKS COMMENCE

2. CODES AND STANDARDS

2.1 FOR ALL CODES AND STANDARDS RELEVANT TO THE WORKS, REFER TO THE SPECIFICATION AND DRAWING NOTES.

3. DATUM & COORDINATE

- 3.1 ALL COORDINATES SHOWN ARE RELATIVE TO GDA94, MGA50
- 3.2 UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES RELATIVE TO AUSTRALIAN HEIGHT DATUM (AHD)

4. TIDAL INFORMATION

TIDE DESCRIPTION	LEVEL (m AHD)
HIGHEST ASTRONOMICAL TIDE (H.A.T.)	0.64
MEAN HIGHER HIGH WATER (M.H.H.W.)	0.39
MEAN LOWER HIGH WATER (M.L.H.W.)	0.28
MEAN SEA LEVEL (M.S.L.)	0.05
MEAN HIGHER LOW WATER (M.H.L.W.)	-0.19
MEAN LOWER LOW WATER (M.L.L.W.)	-0.29
LOWEST ASTRONONICAL TIDE (L.A.T.)	-0.5

DESIGN CRITERIA

5.1 THE DESIGN LIFE SHALL BE 50 YEARS FOR ALL GENERAL STRUCTURES

5.2 WAVE LOADS:

THE MAXIMUM SIGNIFICANT WAVE HEIGHT AT THE HEAD OF GROYNE 2 IS 2.31m, AT THE HEAD OF GROYNE 3 IS 2.13m, AND AT THE HEAD OF GROYNE 4 IS 1.98m

5.3 SURVEY:

THE DESIGN PRESENTED IS BASED ON TOPOGRAPHIC AND BATHYMETRIC SURVEY DATA AS NOTED ON EACH DRAWING.

6. GROYNES

- THE DRAWINGS AND SPECIFICATIONS.

- RATIO GREATER THAN 2.
- MORE THAN 3 PERCENT FOR OTHER ROCK GRADES.
- COMPRESSIVE STRENGTH.
- DELETERIOUS MATTER.

- THEIR LONG AXES NORMAL TO THE SLOPE.
- SURFACES OF THE PRIMARY ARMOUR.
- NOMINAL STONE DIAMETER FOR THE MEDIAN ARMOUR SIZE.
- CHART DATUM, RESPECTIVELY.
- MEASUREMENT PROFILE.
- SHALL MAKE DUE ALLOWANCE FOR THE SAME.

7. GEOTEXTILE

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XREF's: b CAD File:	Α	21/02/2017	ISSUED FOR REPORT	CS	CS	CH
XREI	Rev.	Date	Description	Des.	Verif.	Appd.

6.1 GROYNE WORKS SHALL COMPLY WITH CIRIA ROCK MANUAL 2007, BS 6349 AND LOCAL REGULATIONS AND SHALL BE IN ACCORDANCE WITH

6.2 THE AVERAGE SATURATED SURFACE-DRY RELATIVE ROCK DENSITY SHALL BE GREATER THAN 2,000 kg/m3 WITH 90 PERCENT OF THE STONES HAVING A DENSITY OF AT LEAST 2,000 kg/m3 FOR ARMOUR AND UNDERLAYER, AND NOT LESS THAN 2,000 kg/m3 FOR OTHER ROCK GRADES WHEN SAMPLED, TESTED AND REPORTED IN ACCORDANCE WITH CIRIA ROCK MANUAL (2007).

6.3 ROCK SHALL BE NATURALLY OCCURRING, DENSE, SOUND MATERIAL QUARRIED FROM AN APPROVED SOURCE. IT SHALL BE FREE FROM WEATHERING, MECHANICAL WEAKNESS AND CHEMICAL DECOMPOSITION. ROCK SHALL ALSO BE FREE FROM DIRT, SOIL, PEAT, LOAM, CLAY OR ANY ORGANIC MATTER AND ALL HOLES DRILLED FOR BLASTING PURPOSES.

6.4 ROCK IN ARMOUR AND UNDERLAYERS SHALL NOT CONTAIN MORE THAN 50 PERCENT BY WEIGHT OF STONE WITH A LENGTH TO THICKNESS

6.5 THE AVERAGE WATER ABSORPTION OF ROCKS SHALL BE NOT MORE THAN 2 PERCENT FOR ARMOUR ROCK AND UNDERLAYER, AND NOT

6.6 THE MINIMUM FREQUENCY OF TESTING AND VISUAL INSPECTION REQUIRED FOR EACH GRADE OF ROCK SHALL BE WEEKLY OR EVERY 3,000 TONES. TESTS SHALL INCLUDE SHAPE, GRADATION, DENSITY, WATER ABSORPTION, RESISTANCE TO WEATHERING, INTEGRITY AND

6.7 CORE MATERIAL SHALL BE GRANULAR, NON-COHESIVE, NATURALLY OCCURRING MATERIAL AND SHALL BE FREE FROM ORGANIC AND

6.8 THE CORE MATERIAL SHALL HAVE A COEFFICIENT OF UNIFORMITY (D^{60} DIVIDED BY D^{10}) AND LESS THAN 3.0.

6.9 THE MINIMUM FREQUENCY TESTING OF CORE MATERIAL SHALL BE DAILY OR EVERY 1000m³

6.10 GROYNES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS DETAILED IN THE DRAWINGS/SPECIFICATIONS.

6.11 ARMOUR ROCK SHALL BE INDIVIDUALLY PLACED TO ACHIEVE A DENSE, FULLY INTERLOCKED ARMOURED SLOPE SO THAT EACH ROCK IS SECURELY HELD IN PLACE BY ITS NEIGHBORS. A MINIMUM THREE POINT SUPPORT SHALL BE ACHIEVED. ROCKS SHALL BE PLACED WITH

6.12 ALL JUNCTIONS BETWEEN TYPES OF CROSS-SECTION SHALL BE CONSTRUCTED SUCH THAT THERE IS GRADUAL TRANSITION, OVER A LENGTH OF LEAST TWO ARMOUR ROCKS, OR AS OTHERWISE DIRECTED IN THE DRAWINGS, BETWEEN THE PLANES DEFINING THE OUTER

6.13 ROCK ARMOUR PLACING TOLERANCES SHALL BE 0.2 D₅₀ FOR PLACEMENT ABOVE LAT AND 0.4 D₅₀ FOR PLACEMENT BELOW LAT. D₅₀ IS THE

6.14 PLACING TOLERANCE FOR ALL OTHER ROCK APART FROM ROCK ARMOUR SHALL BE 0.1m AND 0.2m FOR PLACEMENT ABOVE AND BELOW

6.15 MEASUREMENTS SHALL BE TAKEN AT 10m INTERVALS ALONG THE LENGTH OF STRUCTURE AND AT 1m INTERVALS ACROSS THE

6.16 THE CONTRACTOR SHALL ASSESS SETTLEMENT OF THE STRUCTURE DURING AND AFTER THE CONSTRUCTION OF THE STRUCTURE AND

6.17 FOR ROCK & CORE MATERIAL GRADING INFORMATION, REFER TO THE SPECIFICATION.

6.18 ALL EXISTING GROYNE ARMOUR IS TO BE REMOVED FROM THE EXISTING GROYNE, GRADED AND STOCKPILED AS PER ROCK GRADES IN SPECIFICATION. EXISTING ARMOUR WHICH COMPLIES WITH THE SPECIFICATION SHALL BE RE-USED. EXISTING ARMOUR WHICH DOES NOT COMPLY WITH THE SPECIFICATION IS TO BE DISPOSED OF OFF-SITE BY THE CONTRACTOR.

6.19 ALL EXISTING GROYNE CORE MATERIAL IS TO BE LEFT IN PLACE EXCEPT WHERE THE NEW CORE COVER IS LESS THAN 37cm. WHERE COVER OF NEW CORE IS LESS THAN 37cm, CONTRACTOR SHALL REMOVE EXISTING CORE SO THAT COVER OF NEW CORE IS AT LEAST 37cm. REMOVED EXISTING CORE SHALL EITHER BE RE-USED, IF REQUIRED, OR REMOVED AND DISPOSED OF OFF-SITE.

6.20 IF HARD SUBSTRATE IS FOUND DURING CONSTRUCTION AT THE STRUCTURE TOE, THE GROYNE SHALL BE CONSTRUCTED DIRECTLY ON TOP OF THE LIMESTONE BEDROCK WITH A TOE TRENCH CUT INTO THE EXISTING BEDROCK TO THE SATISFACTION OF THE SUPERINTENDENT. THE BEDDING LAYER AND GEOTEXTILE MAY NOT BE REQUIRED WHERE THE GROYNE IS CONSTRUCTED DIRECTLY ON LIMESTONE BEDROCK AS DETERMINED BY THE SUPERINTENDENT. NOMINAL TRENCH TOE DETAIL AS SHOWN ADJACENT.

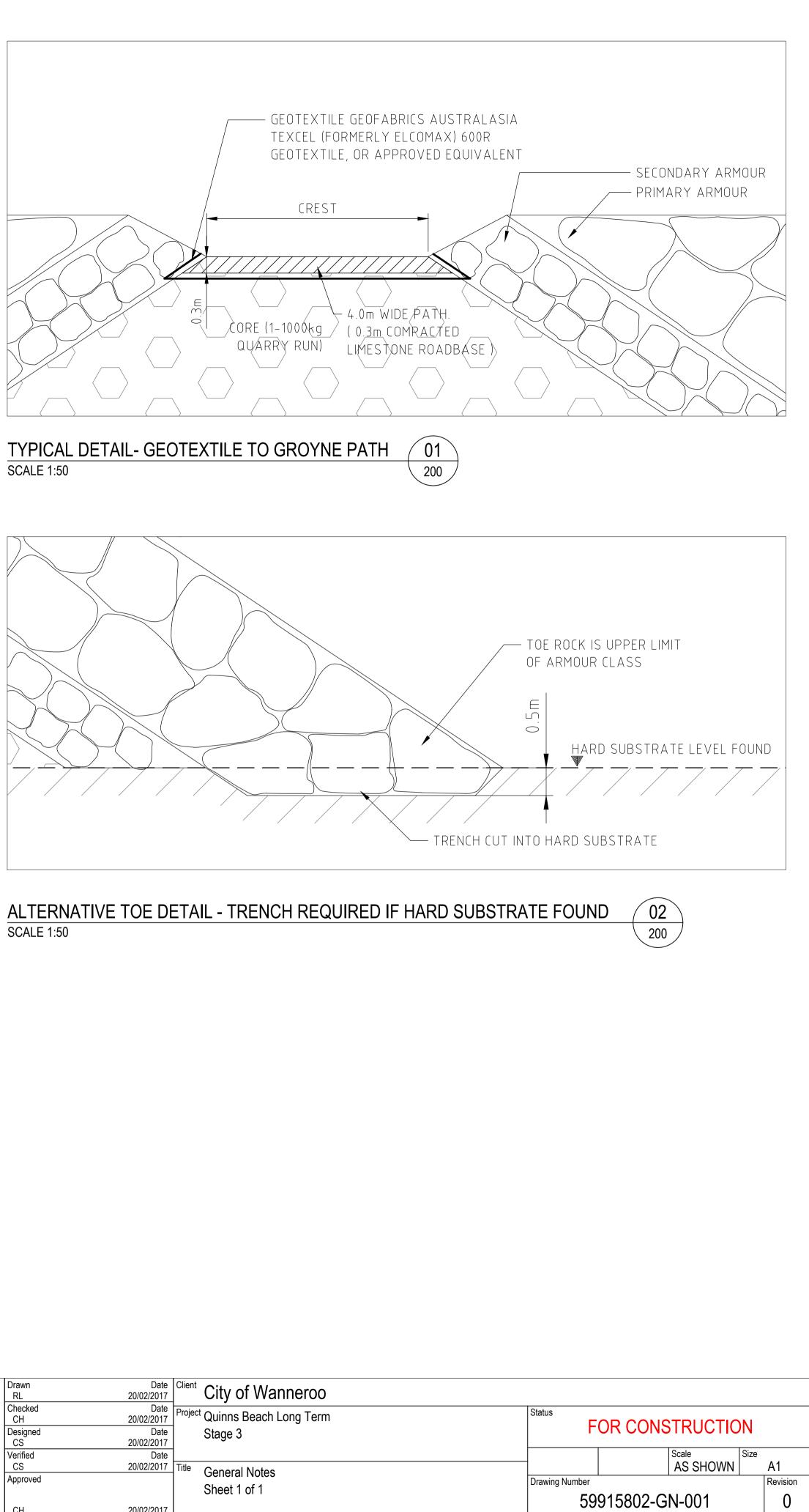
7.1 GEOTEXTILE SHALL BE PLACED AS PER SECTION DRAWINGS. REFER 01/200 FOR TYPICAL DETAIL SHOWING PLACEMENT TO GROYNE PATH.

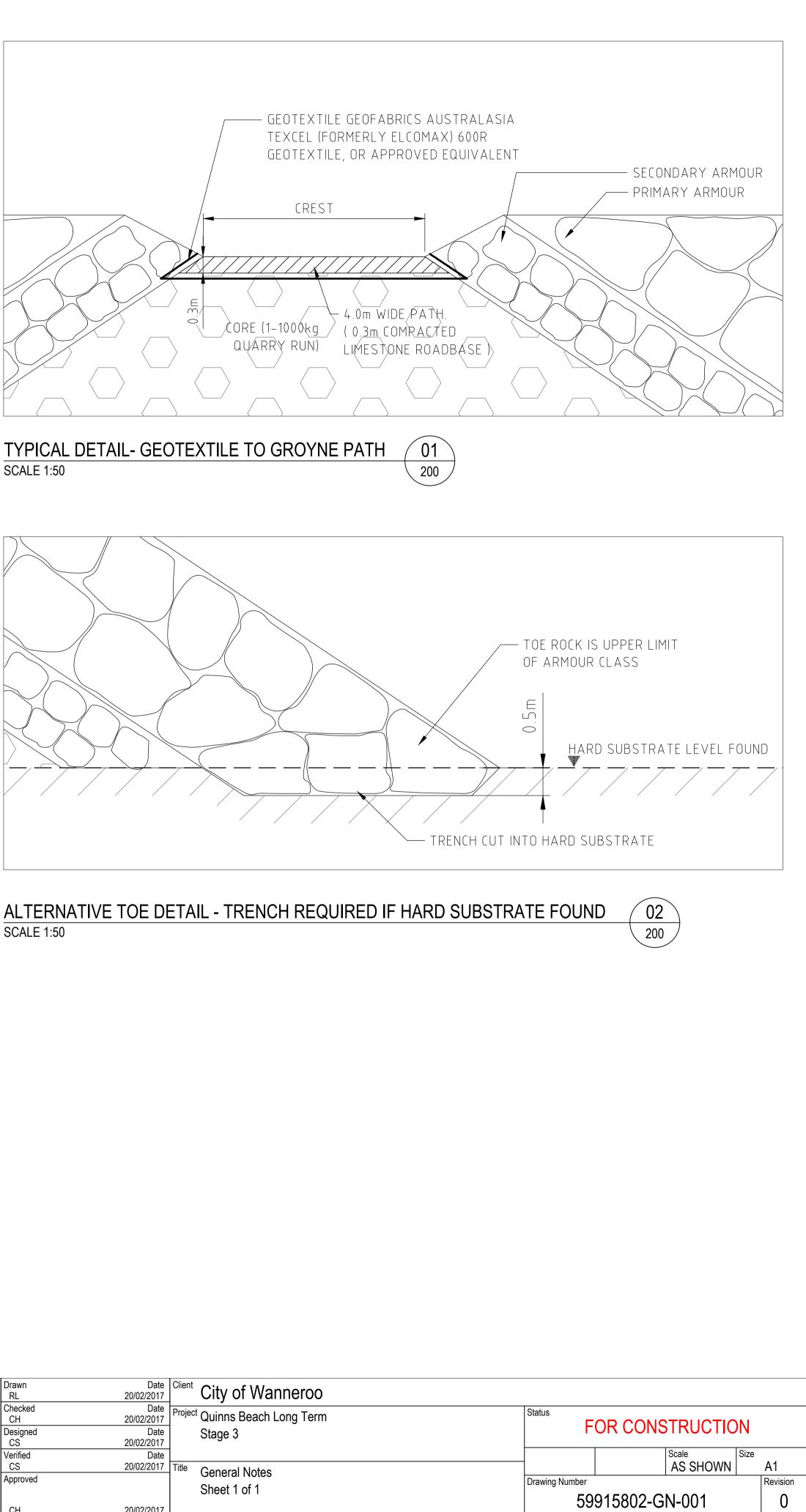
7.2 GEOTEXTILE SHALL BE HANDLED AND STORED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

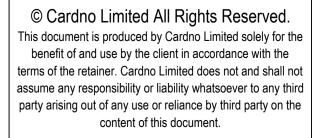
7.3 ALL ROCK PLACED ON GEOTEXTILE SHALL BE PLACED CAREFULLY ON TO THE GEOTEXTILE SUCH THAT THE GEOTEXTILE IS NOT DAMAGED.

7.4 ADJACENT SHEETS OF GEOTEXTILE FILTER FABRIC SHALL BE OVERLAPPED A MINIMUM OF 1m.

7.5 GEOTEXTILE AT TOE IS TO BE WRAPPED AROUND BEDDING LAYER AND UNDERNEATH FIRST TOE ROCK.









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Drawn RL	Date 20/02/2017	Client	City of Wanne
Checked CH	Date 20/02/2017		Quinns Beach Long
Designed CS	Date 20/02/2017		Stage 3
Verified CS	Date 20/02/2017	Title	O an and Nata
Approved		1110	General Notes Sheet 1 of 1
СН	20/02/2017		



С	16.05.2017	ISSUED FOR TENDER	CS	CS	СН	
В	21/02/2017	ISSUED FOR REPORT	CS	CS	СН	
Α	7/02/2017	COMMUNITY CONSULTATION	RL	CS	СН	
Rev.	Date	Description	Des.	Verif.	Appd.	





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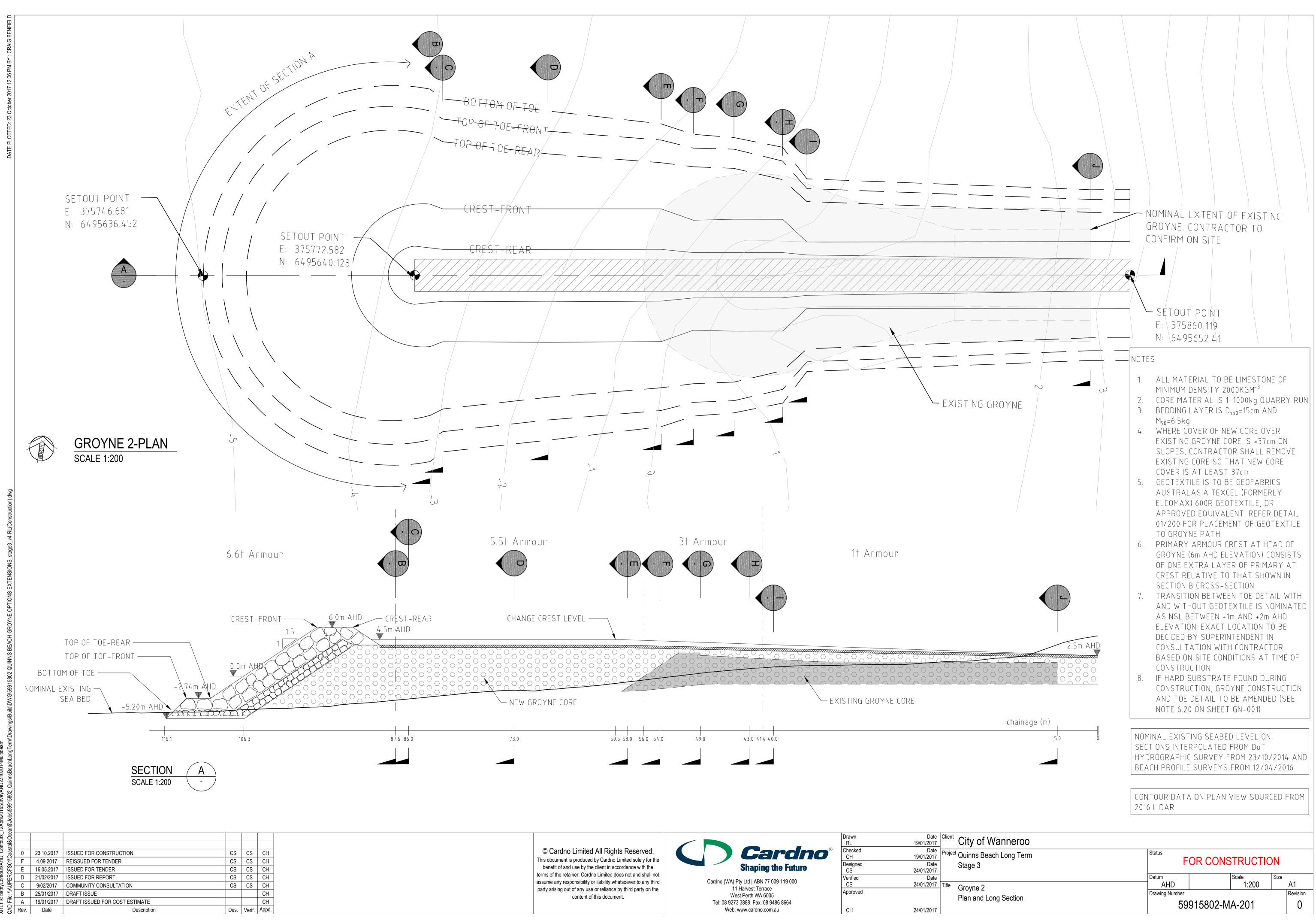
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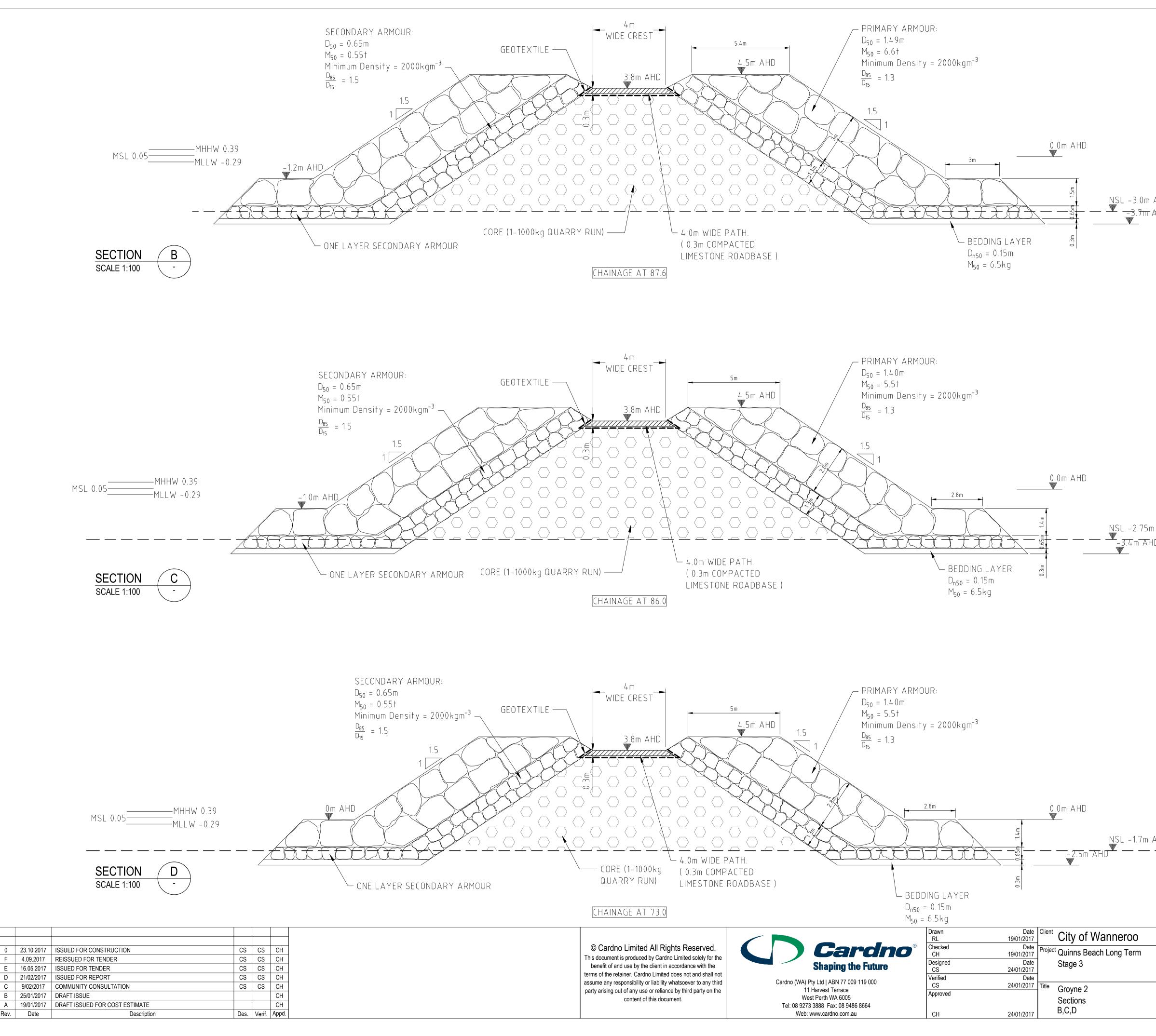
 Date
 Client
 City of Wanneroo
 Date 7/02/2017 ^{Project} Quinns Beach Lo Date 7/02/2017 Stage 3 Date 7/02/2017 Title Location Plan

7/02/2017

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	NOTES	
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	EX SL EX	IERE COVER OF NEW CORE OVER ISTING GROYNE CORE IS <37cm ON OPES, CONTRACTOR SHALL REMOVE ISTING CORE SO THAT NEW CORE VER IS AT LEAST 37cm
	AU	OTEXTILE IS TO BE GEOFABRICS STRALASIA TEXCEL (FORMERLY COMAX) 600R GEOTEXTILE, OR
AHD AHD — — — — —	- 01/	PROVED EQUIVALENT. REFER DETAIL 200 FOR PLACEMENT OF GEOTEXTILE GROYNE PATH.
	GR OF CR	IMARY ARMOUR CREST AT HEAD OF OYNE (6m AHD ELEVATION) CONSISTS ONE EXTRA LAYER OF PRIMARY AT EST RELATIVE TO THAT SHOWN IN CTION B CROSS-SECTION
	7. TR AN AS ELE CO BA	ANSITION BETWEEN TOE DETAIL WITH D WITHOUT GEOTEXTILE IS NOMINATED NSL BETWEEN +1m AND +2m AHD EVATION. EXACT LOCATION TO BE CIDED BY SUPERINTENDENT IN NSULTATION WITH CONTRACTOR SED ON SITE CONDITIONS AT TIME OF
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	SECTION	EXISTING SEABED LEVEL ON S INTERPOLATED FROM DoT RAPHIC SURVEY FROM 23/10/2014 AND

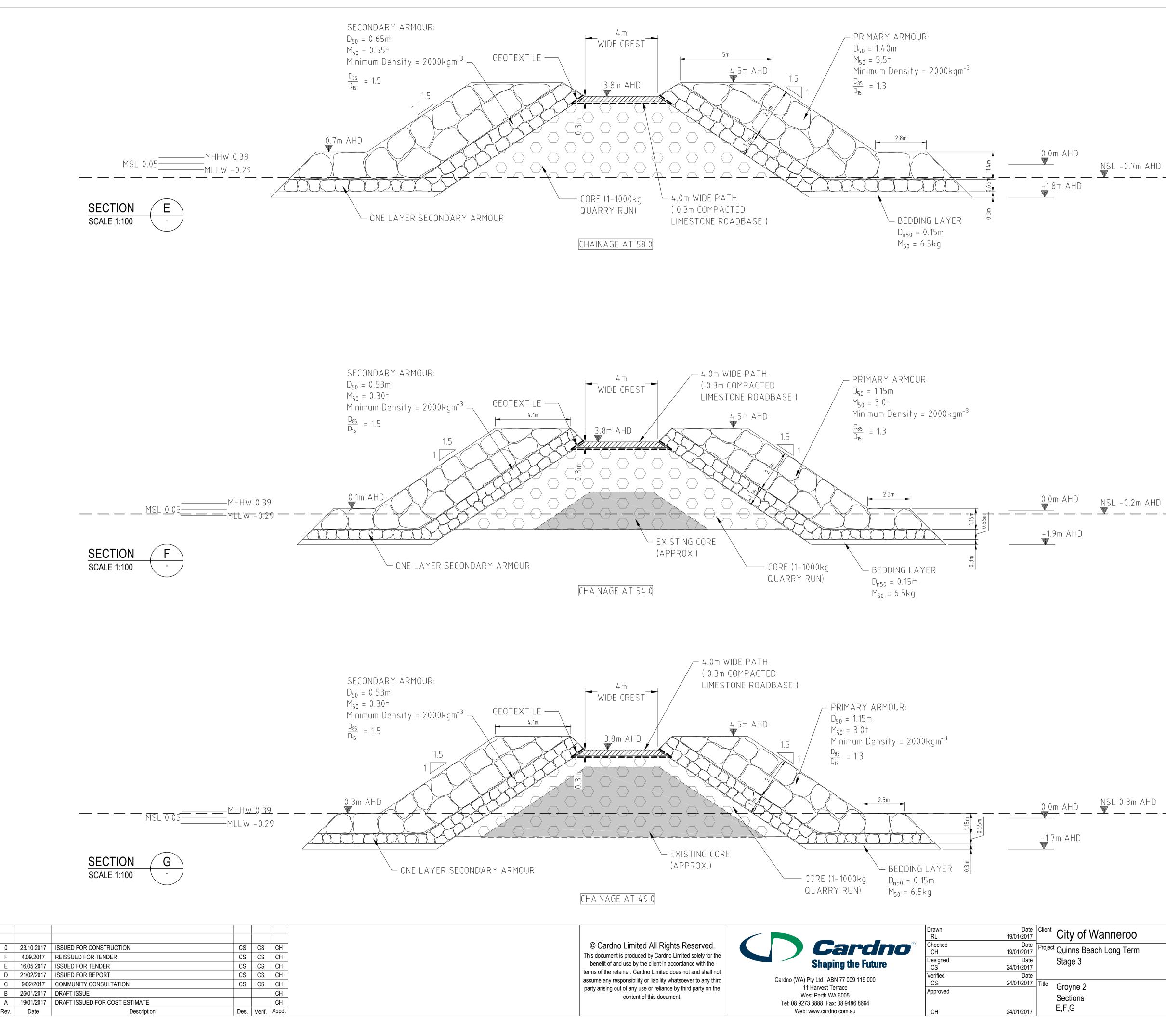
BEACH PROFILE SURVEYS FROM 12/04/2016

NSL -2.75m AHD -3.4m AHD

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NSL -1.7m AHD _ _ _ _

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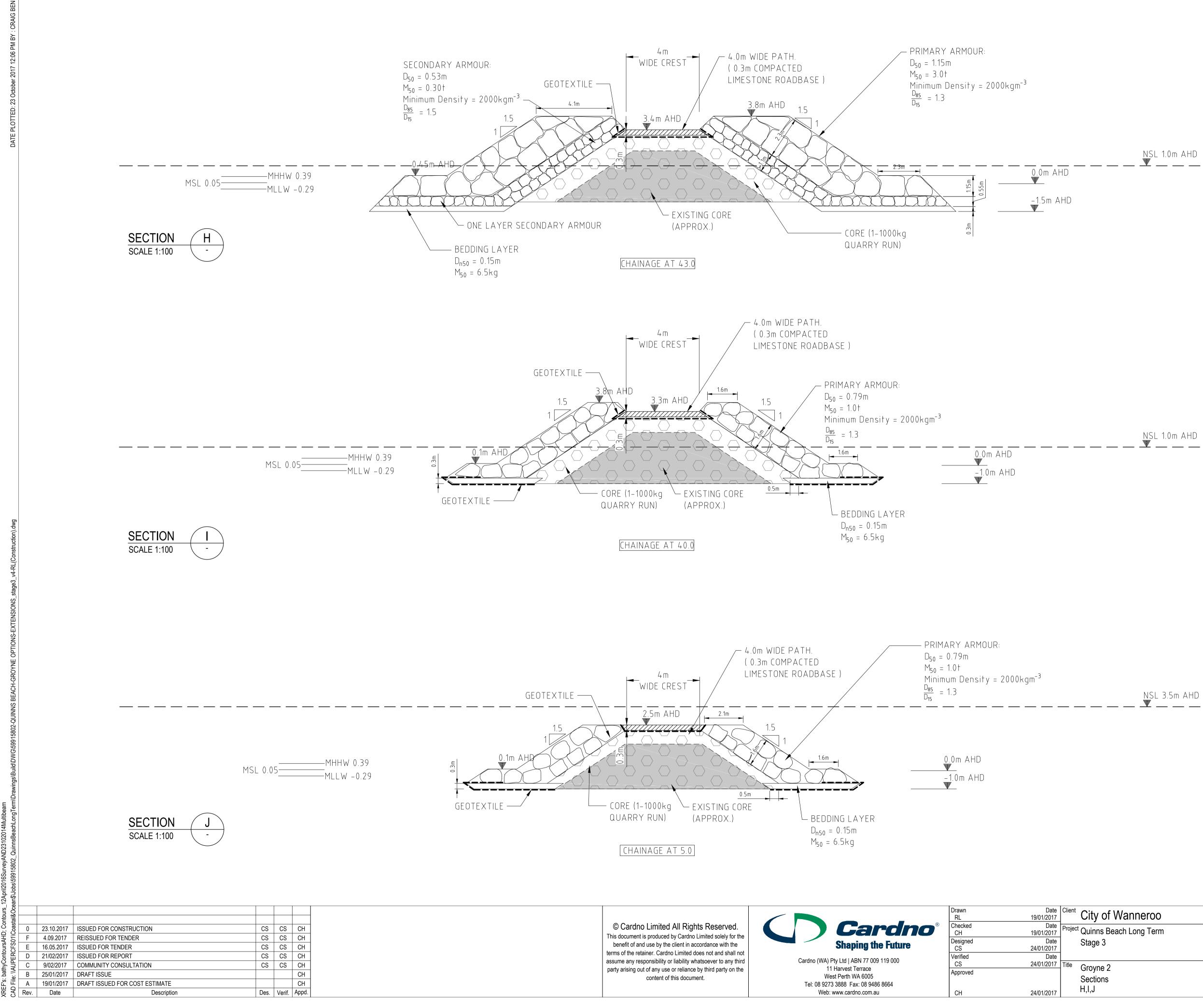
1.	ALL MATERIAL TO BE LIMESTONE OF MINIMUM DENSITY 2000KGM ⁻³
2.	CORE MATERIAL IS 1–1000kg QUARRY RUN
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8.	IF HARD SUBSTRATE FOUND DURING
	CONSTRUCTION, GROYNE CONSTRUCTION
	AND TOE DETAIL TO BE AMENDED (SEE
	NOTE 6.20 ON SHEET GN-001)

NOMINAL EXISTING SEABED LEVEL ON SECTIONS INTERPOLATED FROM DoT HYDROGRAPHIC SURVEY FROM 23/10/2014 AND BEACH PROFILE SURVEYS FROM 12/04/2016

NSL -0.2m AHD

NSL 0.3m AHD

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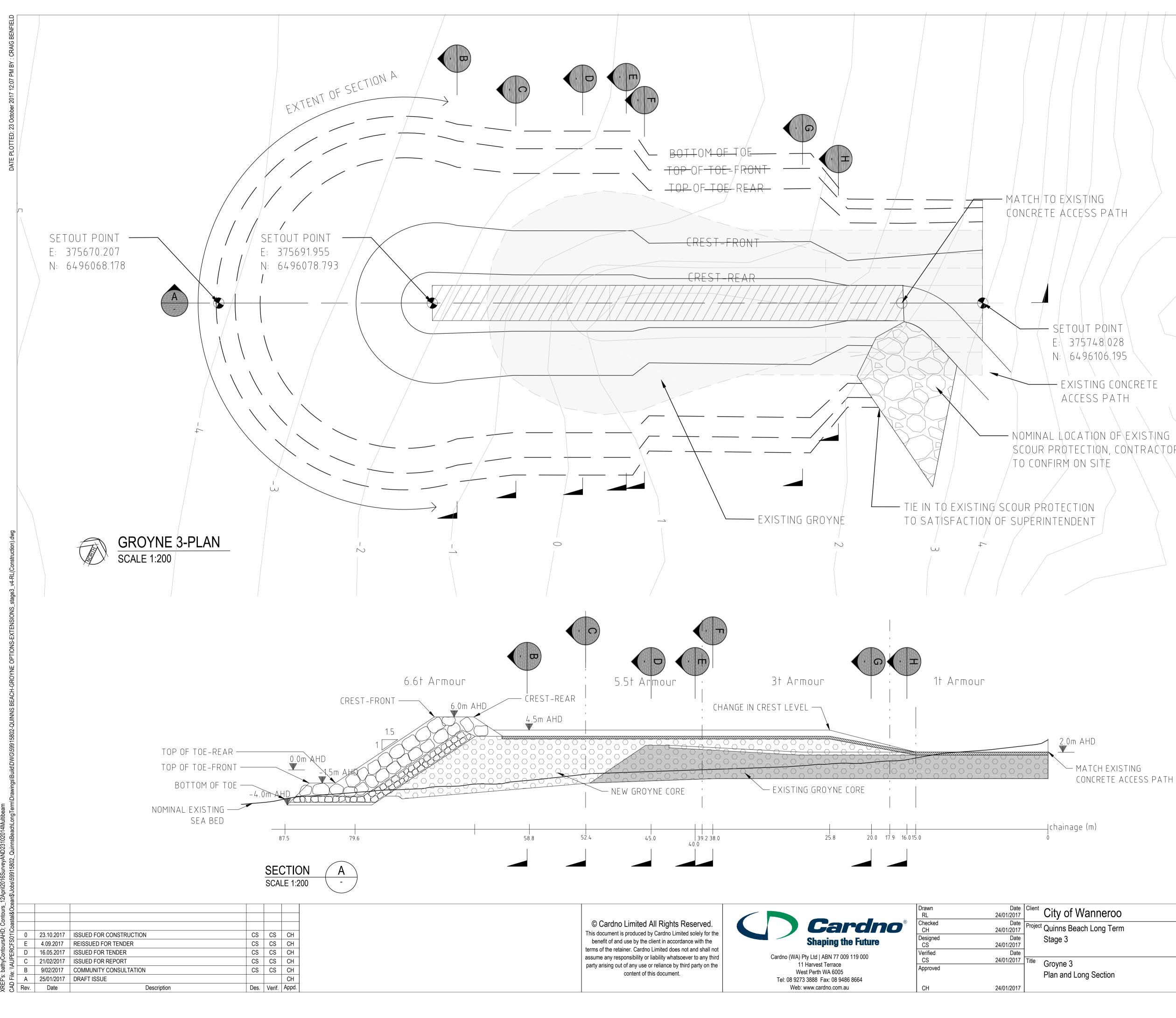
1.	ALL MATERIAL TO BE LIMESTONE OF MINIMUM DENSITY 2000KGM ⁻³
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NSL 1.0m AHD

NOMINAL EXISTING SEABED LEVEL ON SECTIONS INTERPOLATED FROM DoT HYDROGRAPHIC SURVEY FROM 23/10/2014 AND BEACH PROFILE SURVEYS FROM 12/04/2016

NSL 3.5m AHD

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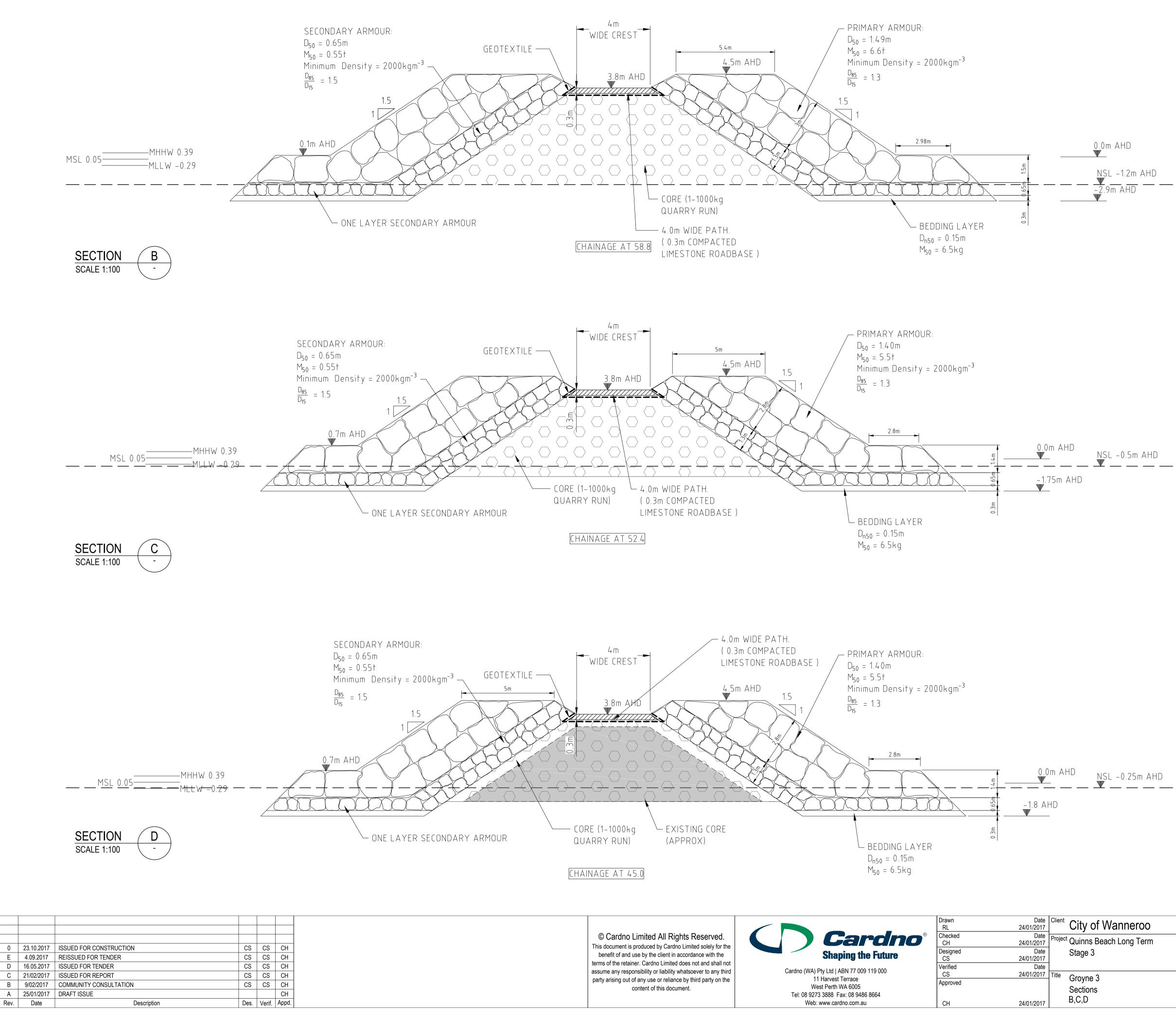
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		INAL EXISTING SEABED LEVEL ON TIONS INTERPOLATED FROM D₀T

HYDROGRAPHIC SURVEY FROM 23/10/2014 AND BEACH PROFILE SURVEYS FROM 12/04/2016

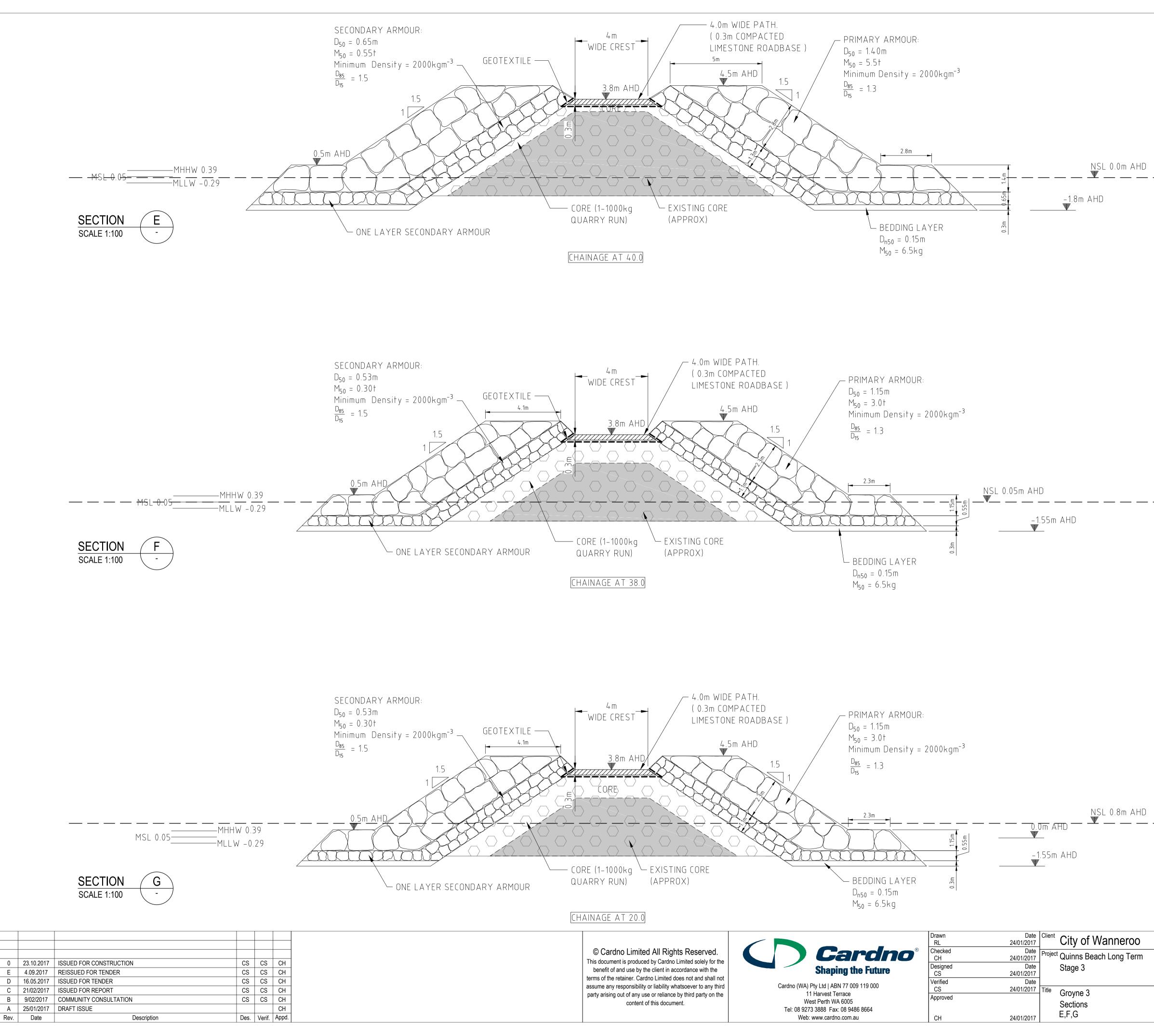
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ng Term	Status FOR CONSTRUCTION				
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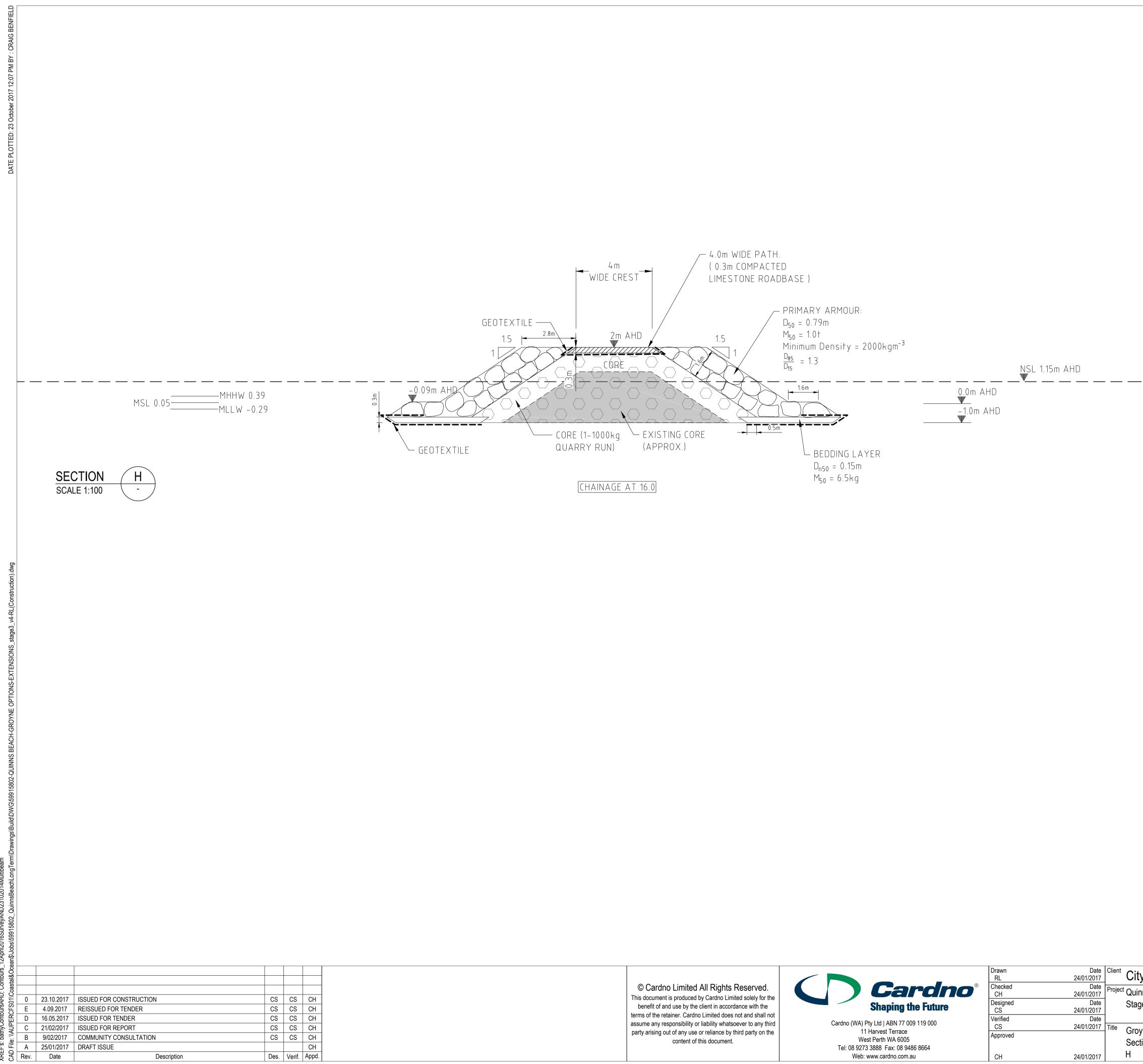


BAX DE Rev.

NOTEC

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DECIDED BY SUPERINTENDENT IN CONSULTATION WITH CONTRACTOR BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION IF HARD SUBSTRATE FOUND DURING CONSTRUCTION, GROYNE CONSTRUCTION AND TOE DETAIL TO BE AMENDED (SEE NOTE 6.20 ON SHEET GN-001)

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ng Term	Status FOR CONSTRUCTION				
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	59915802-N	1A-303	0		

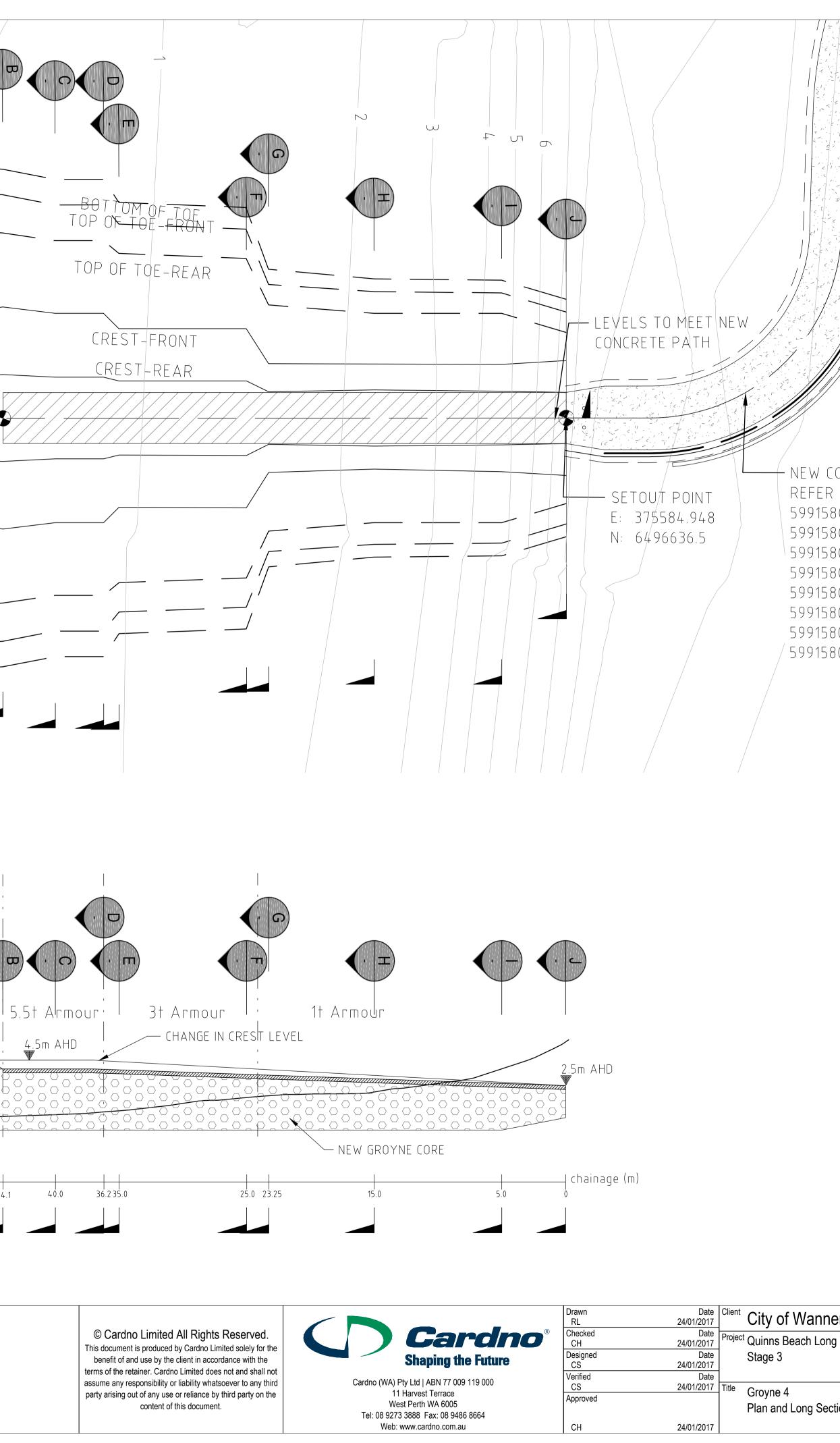


Drawn	Date	Client	City of Monn
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СН	24/01/2017		Quinns Beach Lon
Designed	Date		Stage 3
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Verified	Date		
CS	24/01/2017	Title	Groupo 3
Approved			Groyne 3
			Sections
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I CH	2//01/2017	1	11

- 1. ALL MATERIAL TO BE LIMESTONE OF MINIMUM DENSITY 2000KGM⁻³
- 2. CORE MATERIAL IS 1-1000kg QUARRY RUN 3. BEDDING LAYER IS D_{n50}=15cm AND
- M₅₀=6.5kg
- 4. WHERE COVER OF NEW CORE OVER EXISTING GROYNE CORE IS <37cm ON SLOPES, CONTRACTOR SHALL REMOVE EXISTING CORE SO THAT NEW CORE COVER IS AT LEAST 37cm
- 5. GEOTEXTILE IS TO BE GEOFABRICS AUSTRALASIA TEXCEL (FORMERLY ELCOMAX) 600R GEOTEXTILE, OR APPROVED EQUIVALENT. REFER DETAIL 01/200 FOR PLACEMENT OF GEOTEXTILE TO GROYNE PATH.
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eroo					
g Term	Status	Status FOR CONSTRUCTION			
	Datum AHD	Scale 1:100	Size A1		
	Drawing Number		Revision		
	599158	302-MA-304	0		

4 EXTENT OF SECTION A SETOUT POINT -----, SETOUT POINT ____ E: 375524.114 E: 375543.847 N: 6496612.615 N: 6496620.363 A GROYNE 4-PLAN SCALE 1:200 CREST-REAR — ____ 6.6† Armour 6.0m AHD CREST-FRONT — TOP OF TOE-REAR — TOP OF TOE-FRONT — -2.0mAHD NOMINAL EXISTING SEA BED 65.9 63.8 57.0 44.1 SECTION Α SCALE 1:200 -0 23.10.2017 ISSUED FOR CONSTRUCTION CS CS CH 4.09.2017 REISSUED FOR TENDER CS CS CH E CS CS CH ISSUED FOR TENDER 16.05.2017 D CS CS CH ISSUED FOR REPORT 21/02/2017 COMMUNITY CONSULTATION CS CS CH 9/02/2017 В CH I A 25/01/2017 DRAFT ISSUE Rev. Date Description Des. Verif. Appd.



CONCRETE PATH,	
R CIVIL DRAWINGS	
802-CI-401	
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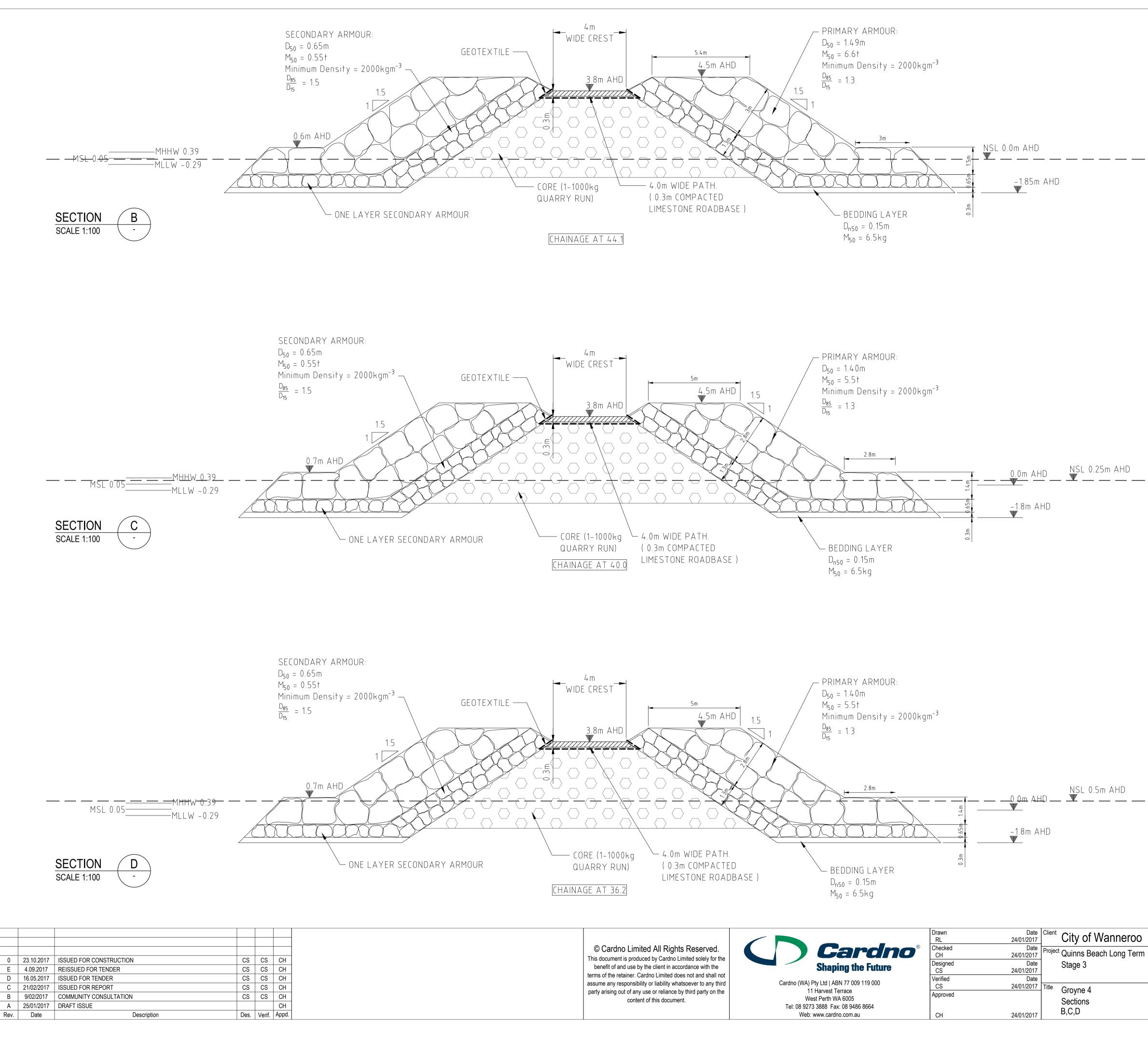
NOTES

1,	ALL MATERIAL TO BE LIMESTONE OF
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	AND TOE DETAIL TO BE AMENDED (SEE
	NOTE 6.20 ON SHEET GN-001)
NOM	INAL EXISTING SEABED LEVEL ON

SECTIONS INTERPOLATED FROM DoT HYDROGRAPHIC SURVEY FROM 23/10/2014 AND BEACH PROFILE SURVEYS FROM 12/04/2016

CONTOUR DATA ON PLAN VIEW SOURCED FROM Dot AND Cow SURVEYS

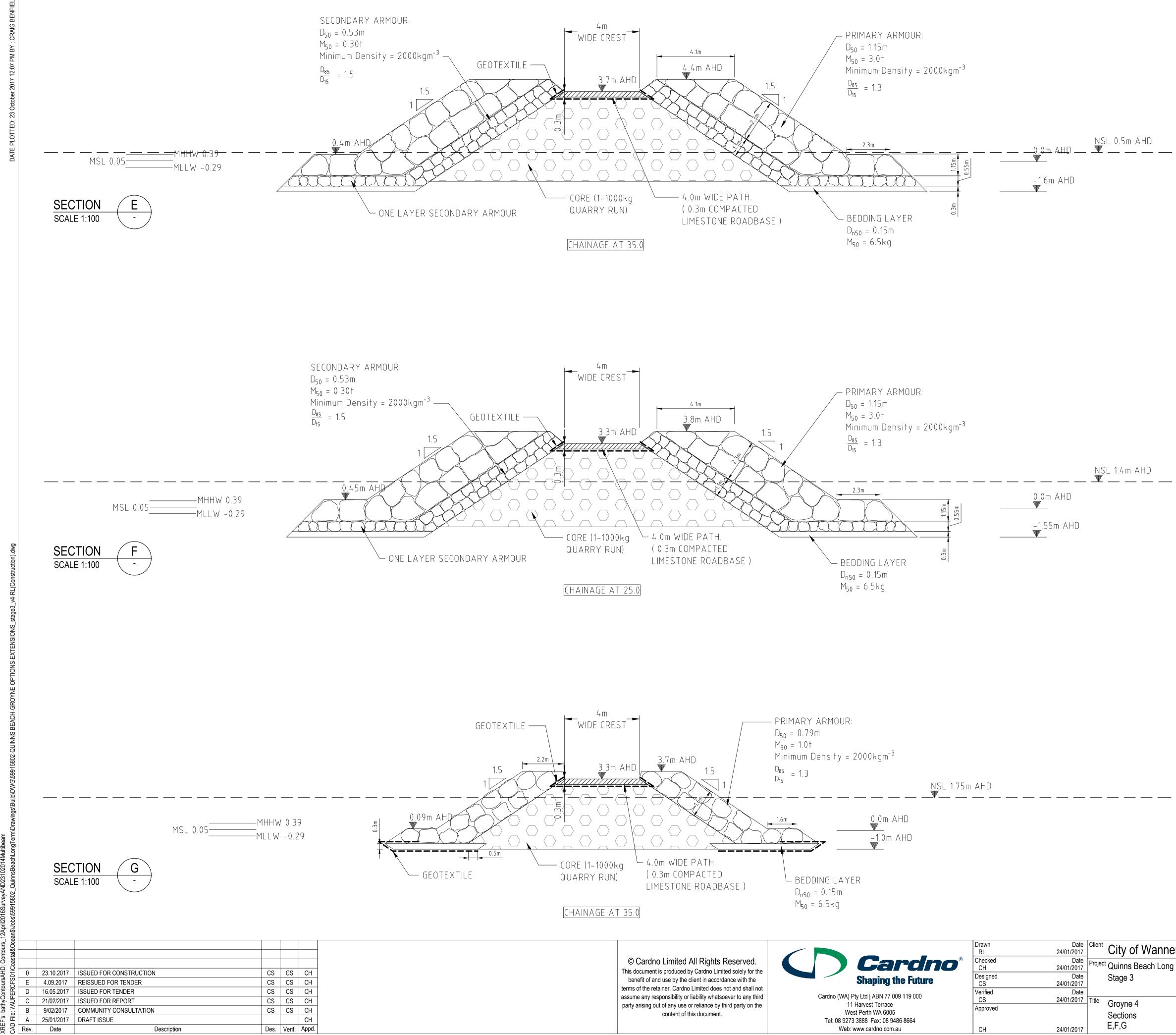
Status FOR CONSTRUCTION		
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Drawing Number		Revision
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NO IL.	5
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	AND WITHOUT GLUTEX TILL IS NOMINATED AS NSL BETWEEN +1m AND +2m AHD
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	NOTE 6.20 ON SHEET GN-001)

NOMINAL EXISTING SEABED LEVEL ON SECTIONS INTERPOLATED FROM DoT HYDROGRAPHIC SURVEY FROM 23/10/2014 AND BEACH PROFILE SURVEYS FROM 12/04/2016

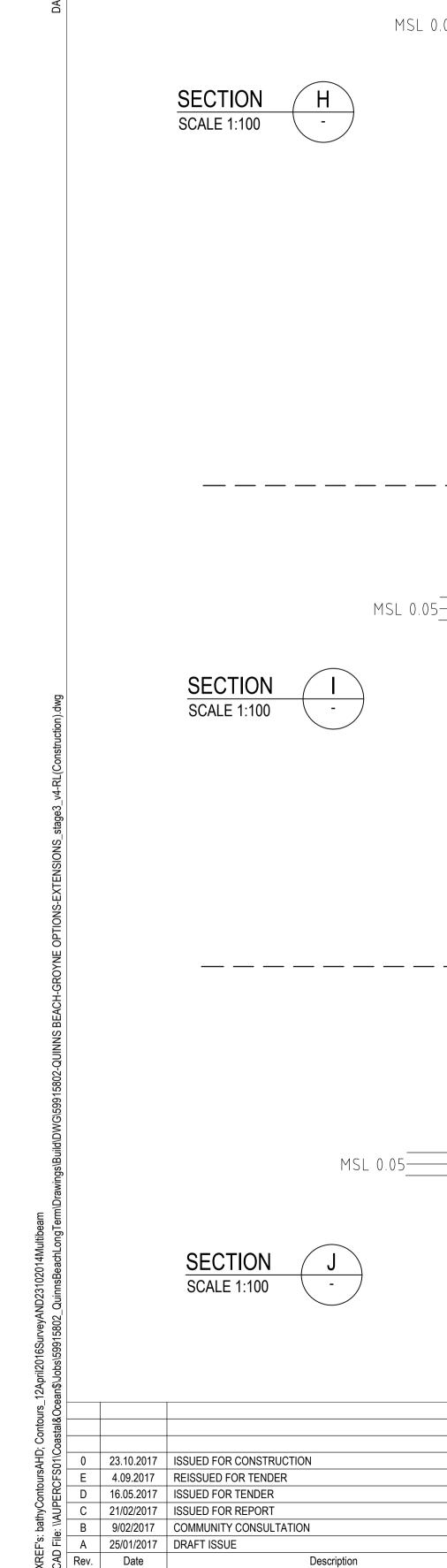
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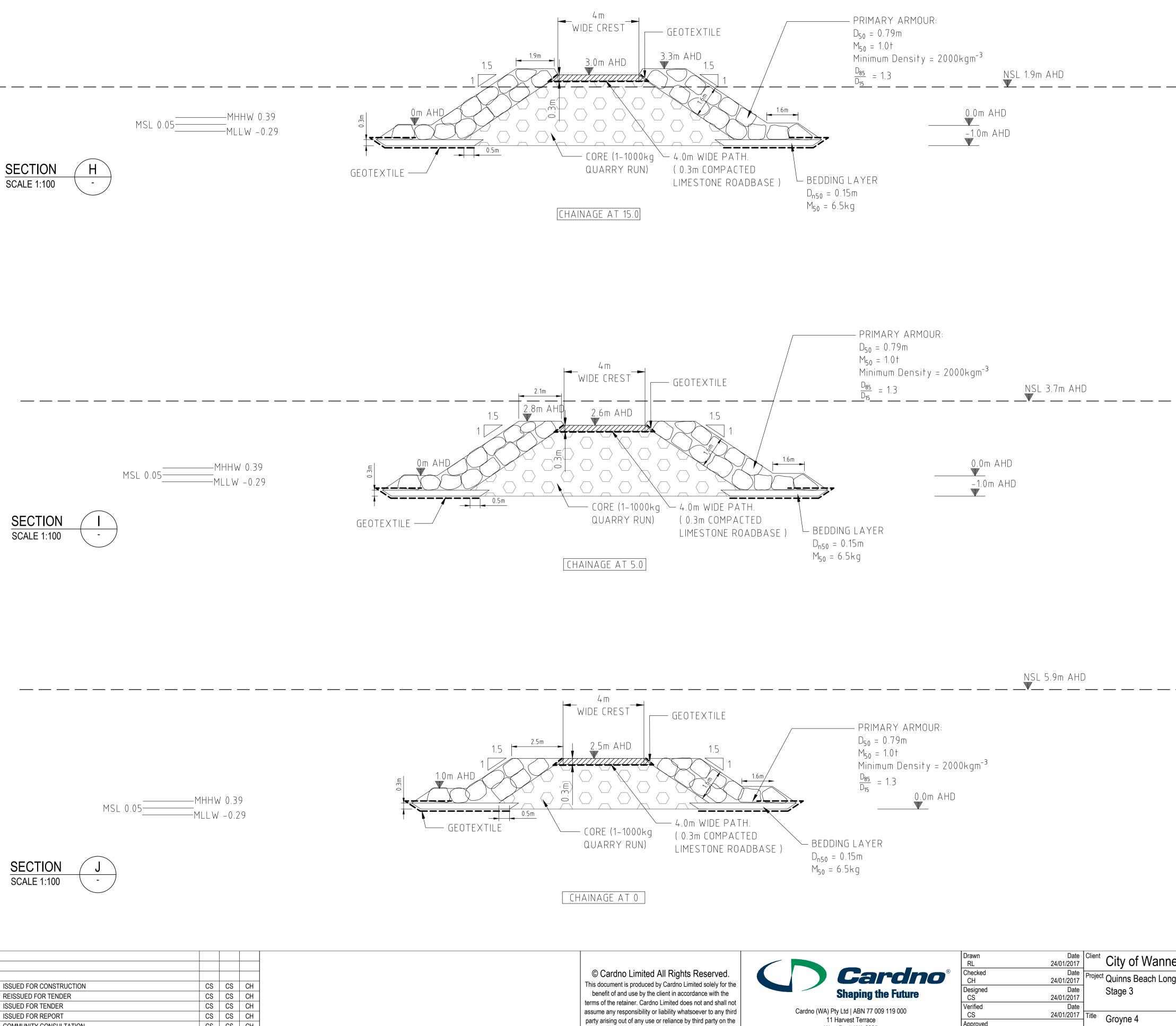




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party arising out of any use or reliance by third party on the

content of this document.

Approved

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Sections

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24/01/2017

West Perth WA 6005

Tel: 08 9273 3888 Fax: 08 9486 8664

Web: www.cardno.com.au

NOTES

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g Term	Status FOR C	CONSTRUCTI	ON
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	Drawing Number		Revision
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CITY OF WANNEROO QUINNS BEACH LONG TERM COASTAL MANAGEMENT **GROYNE 4 BEACH ACCESS PATH**

1. SURVEY SURVEY DATUM SET OUT	THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY SORENSON SHORT AND ASSOCIATES AND LIDAR POINT DATA. THE CONTRACTOR SHALL SET OUT THE WORKS FROM THE NOMINATED DESIGN LINES, SURVEY BENCHMARKS AND CONTROL POINTS SHOWN ON THE PLANS AND TO THE SPECIFIED DETAILS. UPON REQUEST AN ELECTRONIC BASE PLAN OF THE CIVIL DRAWING CAN BE SUPPLIED. WHERE CARDNO'S COMPUTER MODELS ARE UTILISED FOR SET OUT IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT THE PROPOSED VERTICAL AND HORIZONTAL ALIGNMENT ARE CONSISTENT WITH THE INFORMATION SHOWN ON THE DRAWINGS. ANY DISCREPANCY SHALL BE REFERRED TO CARDNO PRIOR TO CONSTRUCTION.	7. TRAFFIC MANAGEMENT GENERAL
AS-CONSTRUCTED SURVEY	UPON COMPLETION OF THE CIVIL WORKS THE CONTRACTOR SHALL PROVIDE CERTIFIED AS-CONSTRUCTED PLANS OF THE WORKS.	8. TESTING DATA
2. EARTHWORKS		
COMPACTION TO AS1289	THE CONTRACTOR SHALL OBTAIN 95% STANDARD MINIMUM DRY DENSITY COMPACTION ON ALL FINISHED SUBGRADES AND FORMATIONS.	AUDIT
FILLING	PRIOR TO THE COMMENCEMENT OF FILLING THE SITE SHALL BE STRIPPED AS NOTED. FILLING IS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND AS3798. APPROVED MATERIAL WON FROM SITE OR APPROVED COMPACTED FILL SHALL BE MOISTURE CONDITIONED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT PRIOR TO BEING PLACED IN UNIFORM HORIZONTAL LAYERS OF 200mm MAXIMUM DEPTH AND COMPACTED AS SPECIFIED. ALL FINISHED SURFACES SHALL ACHIEVE A MINIMUM COMPACTION OF 95% STANDARD DRY DENSITY. COMPACTION TESTING OF ALL FILL SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF AS 3798.	9. SERVICES EXISTING
3. SITE CLEARANCE		CONTACTS
DEMOLITION	ALL EXISTING REDUNDANT CONCRETE, PAVEMENT, SOIL, RUBBISH AND CONSTRUCTION DEBRIS SHALL BE TAKEN UP AND REMOVED FROM SITE.	10. INSPECTIONS
CLEAN UP	PRIOR TO COMPLETION, THE CONTRACTOR SHALL ENSURE THE SITE OF WORKS IS TIDIED AND OBTAIN A CLEARANCE FROM THE SUPERINTENDENT.	GENERAL
4. WORKING AREA	THE PRINCIPLE WILL NOT BE RESPONSIBLE FOR THE SAFE KEEPING OF ANY OF THE CONTRACTORS PLANT, EQUIPMENT, TOOLS, MATERIALS OR OTHER PROPERTY. THE CONTRACTOR MAY PROVIDE AT THEIR OWN COST. ANY SECURITY FENCING CONSIDERED NECESSARY AROUND THE SITE OFFICE, WORKSHOPS OR STORAGE AREAS, SUBJECT TO THE SUPERINTENDENTS PRIOR APPROVAL.	11. PAVEMENTS SAWCUTTING
5. DRAINAGE CHANNEL	DRAINAGE CHANNEL TO BE CAST IN-SITU CONCRETE AS DETAILED ON THE RELEVANT CARDNO DRAWINGS.	CONCRETE JOINTING
SET OUT	CHANNEL LOCATION AND INVERT LEVELS ARE SPECIFIED ON THE RELEVANT CARDNO DRAWING.	
6. PROTECTION OF THE ENVIRONMENT	ALL WORK SHOULD BE CARRIED OUT IN SUCH A MANNER AS TO AVOID NUISANCE AND/OR DAMAGE TO THE ENVIRONMENT. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE CONDITIONS OF APPROVAL IMPOSED BY THE CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN, THE RELEVANT LOCAL COUNCIL, THE ENVIRONMENTAL PROTECTION AUTHORITY, THE CLEAN WATERS ACT, THE CLEAN AIR ACT AND THE NOISE CONTROL ACT. THE CONTRACTOR IS TO ALLOW FOR THIS IN THEIR TENDER.	12. SPECIFICATIONS
	THE CONTRACTOR SHALL PLAN AND CARRY OUT THE WORKS TO AVOID EROSION, CONTAMINATION AND SEDIMENTATION OF THE SITE AND ITS SURROUNDINGS.	13. CONTRACT CONDITIONS GENERAL
	HERBICIDES AND OTHER TOXIC CHEMICALS SHALL NOT BE USED ON THE SITE WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.	MAINTENANCE
	NO NOISE, SMOKE OR OTHER NUISANCE WHICH IN THE OPINION OF SUPERINTENDENT IS UNNECESSARY OR EXCESSIVE SHALL BE PERMITTED BY THE CONTRACTOR IN THE PERFORMANCE OF THE WORKS UNDER THIS CONTRACT. SHOULD WORK OUTSIDE CUSTOMARY WORKING HOURS BE APPROVED. THE CONTRACTOR SHALL NOT USE, DURING SUCH PERIOD, ANY PLANT, MACHINERY OR EQUIPMENT WHICH IN THE OPINION OF THE SUPERINTENDENT IS CAUSING OR LIKELY TO CAUSE A NUISANCE TO THE PUBLIC. NO NOISY WORKS AND /OR WORKS LIKELY TO DISTURB NEARBY RESIDENTS SHALL BE UNDERTAKEN DURING THE HOURS PRECLUDING SUCH ACTIVITY AS SPECIFIED BY COUNCIL IN ACCORDANCE WITH THE REQUIREMENTS FOR DEVELOPMENT CONSENT AND BUILDING APPROVAL.	
	THE CONTRACTOR SHALL ENSURE THAT FUGITIVE DUST FROM DISTURBED AREA IS MINIMISED BY METHOD APPROVED BY THE SUPERINTENDENT.	

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vauper L	0	23.10.2017	ISSUED FOR CONSTRUCTION	JPK	CS
P//	С	16.05.2017	ISSUED FOR TENDER	JPK	CS
	В	27.04.2017	ISSUED FOR TENDER	JPK	CS
	Α	21.03.2017	ISSUED FOR CLIENT APPROVAL	JPK	CS
LAU	Rev	Date	Description	Drawn	Аррг.

OBTAINED FROM STATUTORY AUTHORITY RECORDS AND/OR SITE PLANS WHERE AVAILABLE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN AND ALL SERVICES SHOULD BE PROVEN ON SITE PRIOR TO THE COMMENCEMENT OF WORKS IN THEIR VICINITY. CIVIL CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES FOR RELOCATION OF CABLES , U/G MAINS OR POLES WHERE REQUIRED.

TRAFFIC MANAGEMENT SHALL BE ARRANGED BY THE CONTRACTOR FOR THE DURATION OF THE WORKS IN ACCORDANCE WITH AUSTRALIAN STANDARD AS17112.3–2002 FOR CONSTRUCTION TRAFFIC MANAGEMENT AND TO THE SATISFACTION OF ALL PARTIES, INCLUDING THE PROVISION OF ALL NECESSARY SIGNAGE, LIGHTING AND BARRICADING. TRAFFIC FLOWS IN ALL ABUTTING ROADWAYS AND ACCESS TO THE SITE SHALL REMAIN UNIMPEDED FOR THE DURATION OF THE CONTRACT. A TRAFFIC MANAGEMENT PLAN FOR ANY EXTERNAL ROADWORKS SHALL BE SUBMITTED TO 'CITY OF WANNEROO' FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR

THE CONTRACTOR SHALL SUPPLY WRITTEN TEST RESULTS FROM A NATA REGISTERED LABORATORY

TEST RESULTS WILL BE REVIEWED BY THE SUPERINTENDENT AND WHERE SO REQUIRED ADDITIONAL

ALL STATUTORY AUTHORITY SERVICES MUST BE MAINTAINED AND PROTECTED BY THE CONTRACTOR AT ALL TIMES UNLESS OTHERWISE SHOWN. EXISTING SERVICE LOCATIONS SHOWN HAVE BEEN

TESTS WILL BE PROVIDED BY THE CONTRACTOR TO THE SUPERINTENDENTS SATISFACTION.

COMPLIANCE WITH THE SPECIFICATIONS FOR ALL EARTHWORKS, CONCRETE WORKS AND PAVEMENTS LAYERS.

TO COMMENCEMENT OF WORKS.

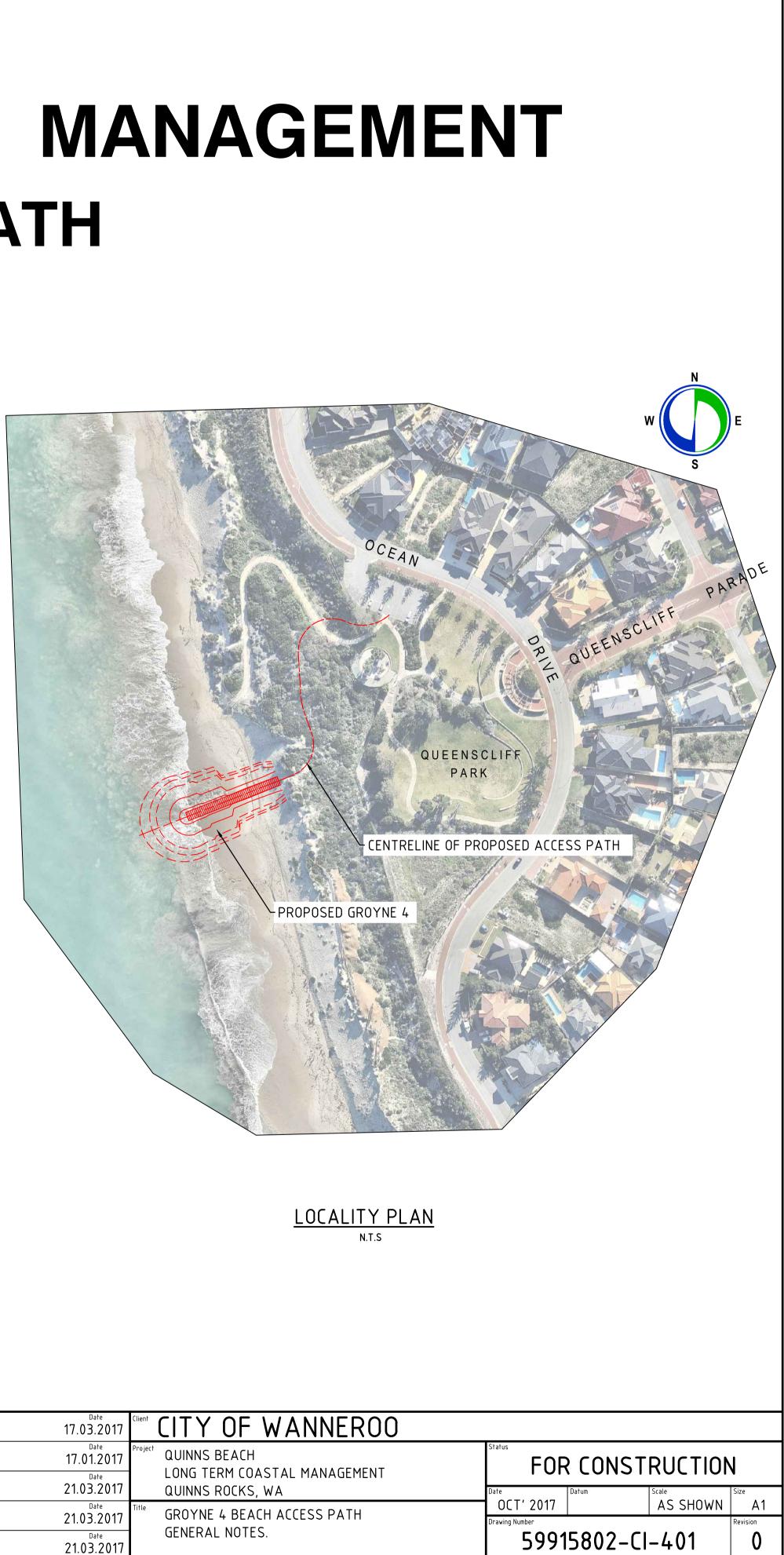
ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PROGRAMME TO THE SATISFACTION OF THE SUPERVISING ENGINEER AND SUBJECT TO PERIODICAL INSPECTION AND WRITTEN STAGED APPROVAL. ADDITIONAL INSPECTIONS CAN BE REQUESTED AT 24 HOURS NOTICE.

ALL EXISTING PAVEMENT ADJACENT TO PROPOSED KERB OR PROPOSED JOINTS SHALL BE SAWCUT IN A NEAT LINE TO THE SATISFACTION OF THE SUPERVISING ENGINEER, AND TO HAVE 300mm OVERLAP. REFER TO STANDARD DETAILS.

RETE JOINTING SAWCUT OR TOOLED CONSTRUCTION JOINTS SHALL BE PROVIDED AT MAX. 5.0m CENTRES TO ACCESS TRACK UNLESS NOTED OTHERWISE. A 19mm EXPANSION JOINT SHALL BE PROVIDED WHENEVER RIGID PAVEMENTS ABUT FIXED STRUCTURES OR AT MAX. 6m. DOWELLED SAWCUT AND CONSTRUCTION JOINTS SHALL BE PROVIDED TO ALL VEHICULAR PAVEMENTS AS DETAILED ON THE DRAWINGS, TYPICALLY EXPANSION JOINTS SHALL BE AT EVERY 4TH JOINT, SPACING SHALL ENSURE SLAB LENGTH IL) 1.5 SLAB WIDTH.

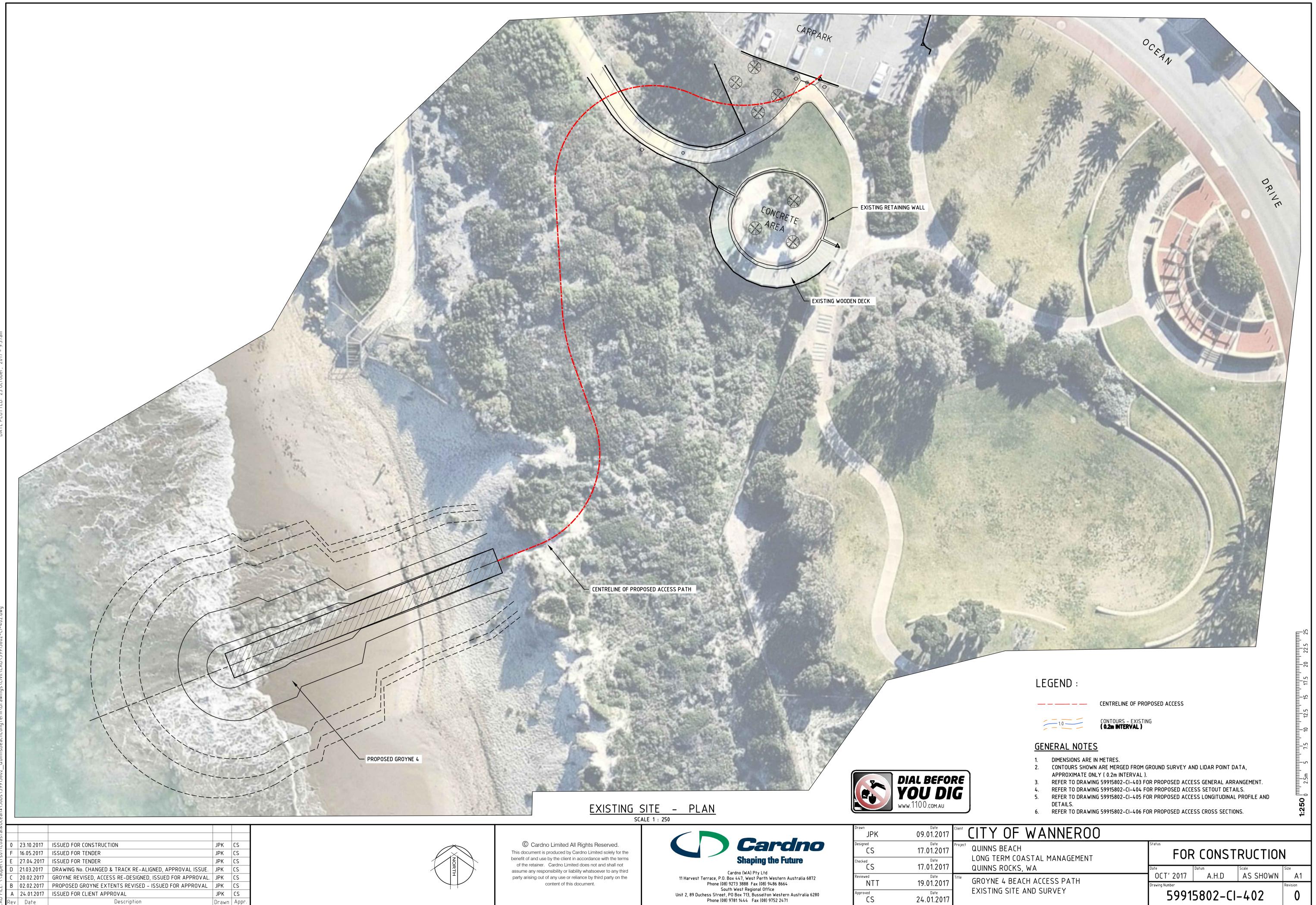
> 'CITY OF WANNEROO' SPECIFICATIONS SHALL BE USED AS THE GENERAL SPECIFICATION FOR ALL WORKS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COPY OF THE CURRENT SPECIFICATIONS ALL RELEVANT STANDARD DRAWINGS AND ALL ASSOCIATED REVISIONS AND AMENDMENTS ETC.

ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 4000 GENERAL CONDITIONS OF CONTRACT PERIOD. A 12 MONTH MAINTENANCE PERIOD WILL APPLY TO THIS CONTRACT UNLESS NOTED OTHERWISE.



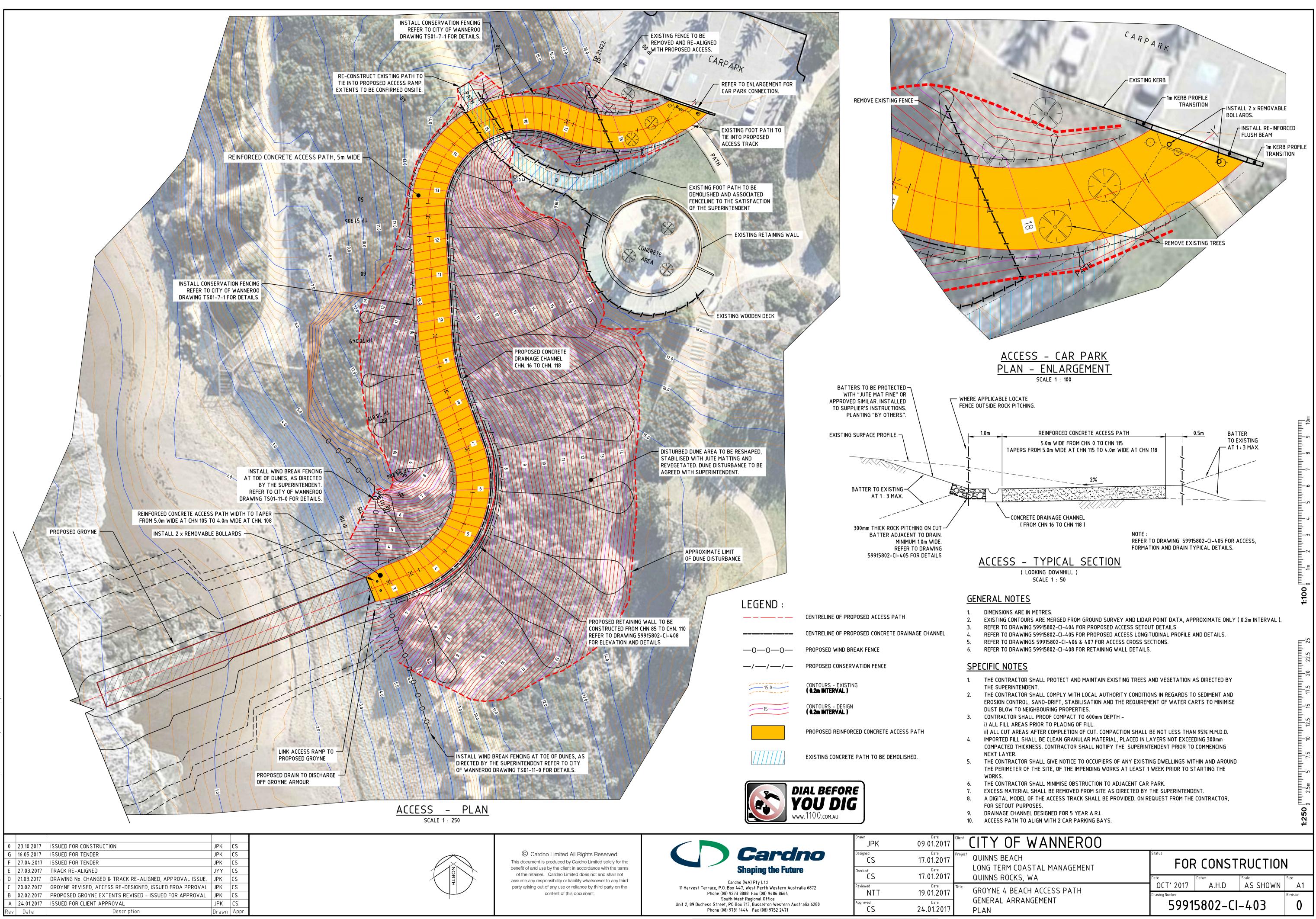
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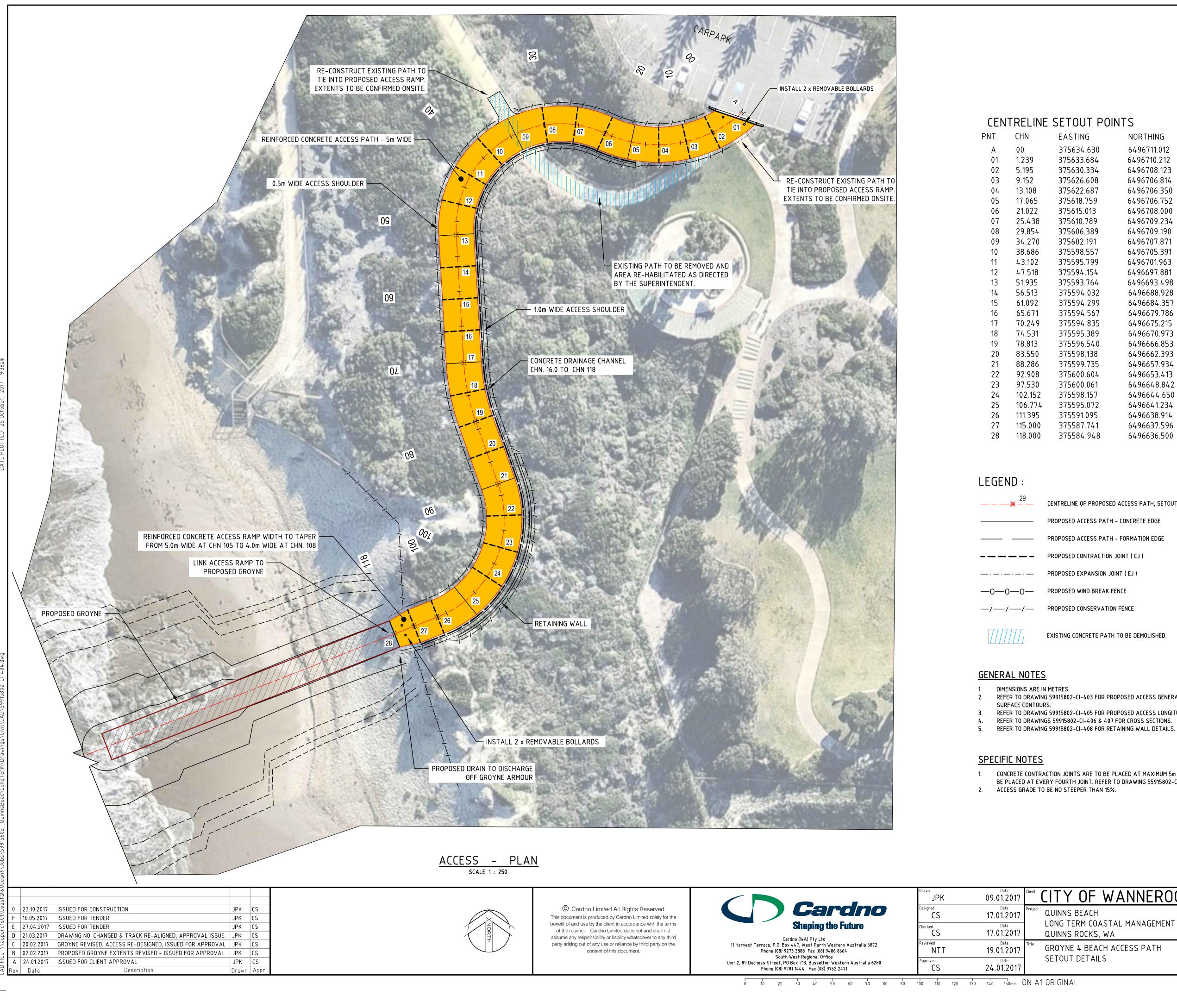
	JPK	Date 17.03.2017	Client CITY OF
Cardno	Designed CS	Date 17.01.2017	Project QUINNS BEAU
Cardno (WA) Pty Ltd	Checked CS	Date 21.03.2017	LONG TERM (QUINNS ROCK
11 Harvest Terrace, P.O. Box 447, West Perth Western Australia 6872 Phone (08) 9273 3888 Fax (08) 9486 8664 South West Regional Office	Reviewed NTT	Date 21.03.2017	GROYNE 4 BE
Unit 2, 89 Duchess Street, PO Box 713, Busselton Western Australia 6280 Phone (08) 9781 1444 Fax (08) 9752 2471	Approved CS	Date 21.03.2017	GENERAL NO



Cardno (WA) Pty Ltd 11 Harvest Terrace, P.O. Box 447, West Perth Western Australia 6872 Phone (08) 9273 3888 Fax (08) 9486 8664 South West Regional Office Unit 2, 89 Duchess Street, PO Box 713, Busselton Western Australia 6280 Phone (08) 9781 1444 Fax (08) 9752 2471

JPK	09.01.2017	
Designed CS	Date 17.01.2017	Project QUINNS BE
Checked CS	Date 17.01.2017	LONG TERM QUINNS RO
Reviewed NTT	Date 19.01.2017	GROYNE 4
Approved CS	Date 24.01.2017	EXISTING S





PNT.	CHN.	EASTING	NORTHING	DESCRIPTION
А	00	375634.630	6496711.012	START – FACE OF PROPOSED FLUSH KERB
01	1.239	375633.684	6496710.212	EJ – BACK OF KERB / ACCESS INTERFACE
02	5.195	375630.334	6496708.123	CJ
03	9.152	375626.608	6496706.814	CJ
04	13.108	375622.687	6496706.350	CJ
05	17.065	375618.759	6496706.752	EJ
06	21.022	375615.013	6496708.000	CJ
07	25.438	375610.789	6496709.234	CJ
08	29.854	375606.389	6496709.190	CJ
09	34.270	375602.191	6496707.871	EJ
10	38.686	375598.557	6496705.391	CJ
11	43.102	375595.799	6496701.963	CJ
12	47.518	375594.154	6496697.881	CJ
13	51.935	375593.764	6496693.498	EJ
14	56.513	375594.032	6496688.928	CJ
15	61.092	375594.299	6496684.357	CJ
16	65.671	375594.567	6496679.786	CJ
17	70.249	375594.835	6496675.215	EJ
18	74.531	375595.389	6496670.973	CJ
19	78.813	375596.540	6496666.853	CJ
20	83.550	375598.138	6496662.393	CJ
21	88.286	375599.735	6496657.934	EJ
22	92.908	375600.604	6496653.413	CJ
23	97.530	375600.061	6496648.842	CJ
24	102.152	375598.157	6496644.650	CJ
25	106.774	375595.072	6496641.234	EJ
26	111.395	375591.095	6496638.914	CJ
27	115.000	375587.741	6496637.596	CJ
28	118.000	375584.948	6496636.500	CJ – END

CENTRELINE
PROPOSED A
PROPOSED A
PROPOSED CO
PROPOSED EX
PROPOSED W
PROPOSED CO
EXISTING CON

OF PROPOSED ACCESS PATH, SETOUT POINT AND NUMBER

- ACCESS PATH CONCRETE EDGE
- ACCESS PATH FORMATION EDGE
- CONTRACTION JOINT (CJ)
- EXPANSION JOINT (EJ)
- WIND BREAK FENCE
- CONSERVATION FENCE

ONCRETE PATH TO BE DEMOLISHED.

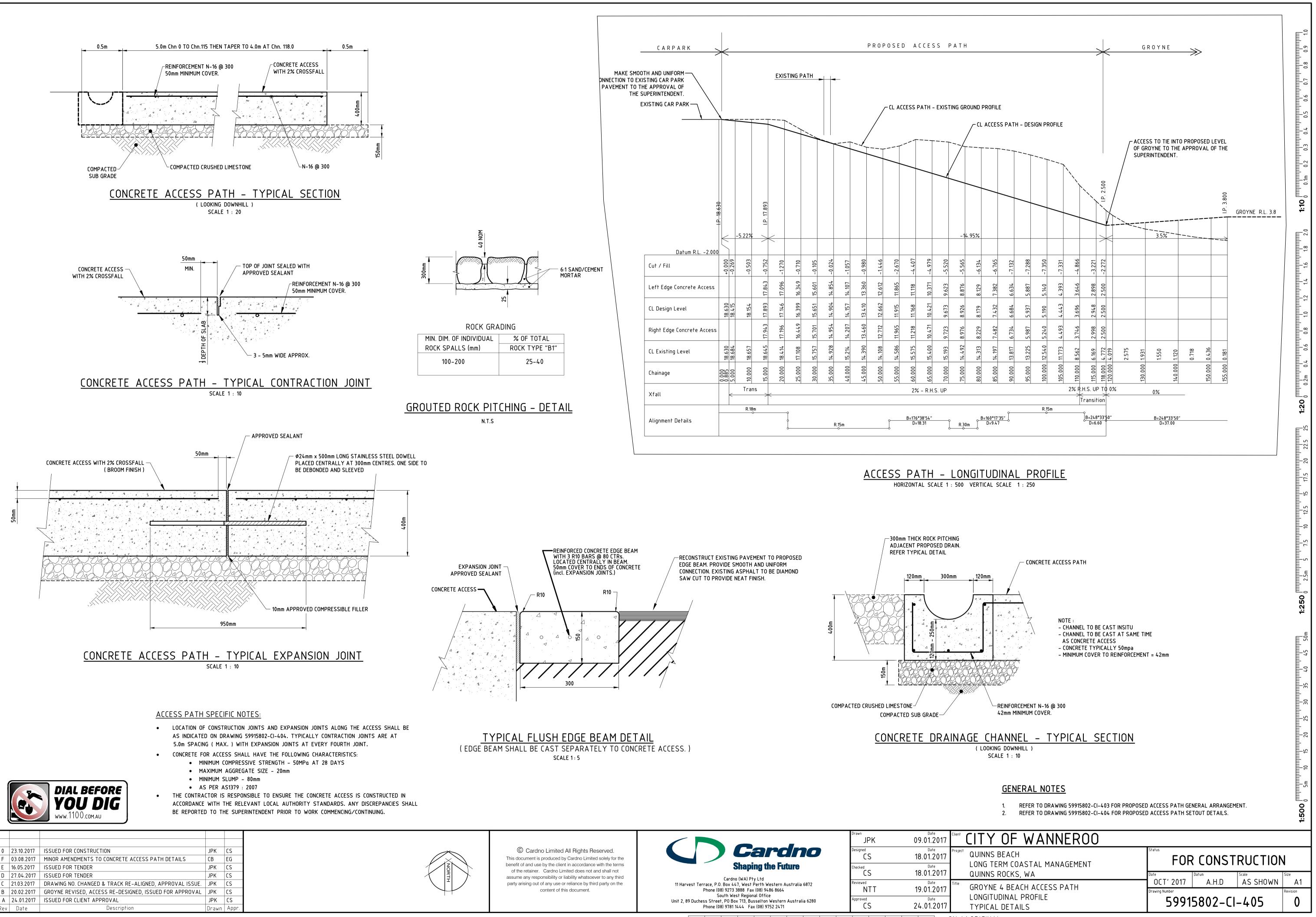
2. REFER TO DRAWING 59915802-CI-403 FOR PROPOSED ACCESS GENERAL ARRANGEMENT AND FINISHED

REFER TO DRAWING 59915802-CI-405 FOR PROPOSED ACCESS LONGITUDINAL PROFILE AND DETAILS.

1. CONCRETE CONTRACTION JOINTS ARE TO BE PLACED AT MAXIMUM 5m INTERVALS. EXPANSION JOINTS TO BE PLACED AT EVERY FOURTH JOINT. REFER TO DRAWING 55915802-CI-405 FOR DETAILS.

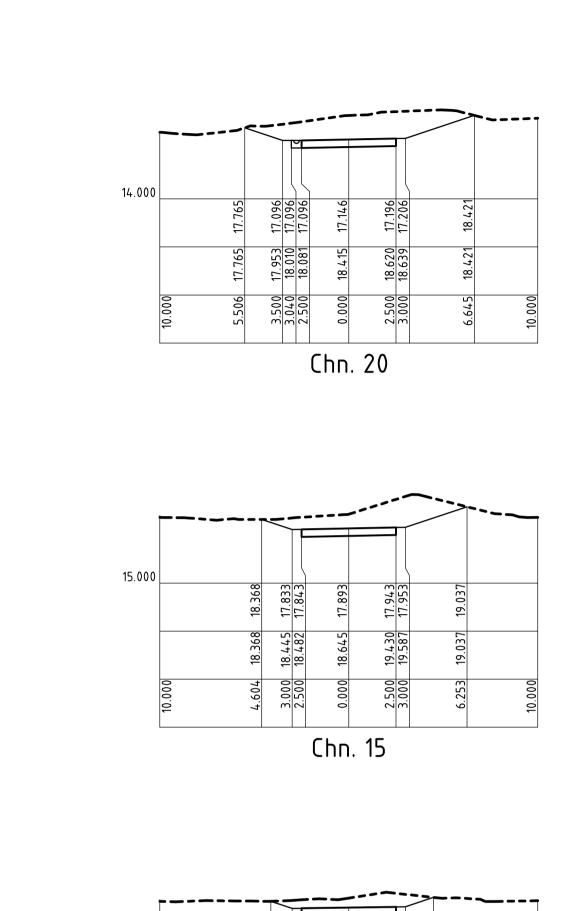


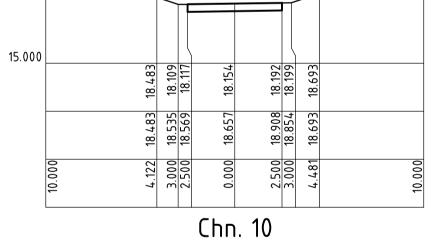
CITY OF WANNEROO						
ect QUINNS BEACH LONG TERM COASTAL MANAGEMENT	FOR CONSTRUCTION					
QUINNS ROCKS, WA	Date OCT' 2017	Datum A.H.D	Scale AS SHOWN	Size A1		
GROYNE 4 BEACH ACCESS PATH SETOUT DETAILS	Drawing Number 59915802-CI-404			Revision 0		

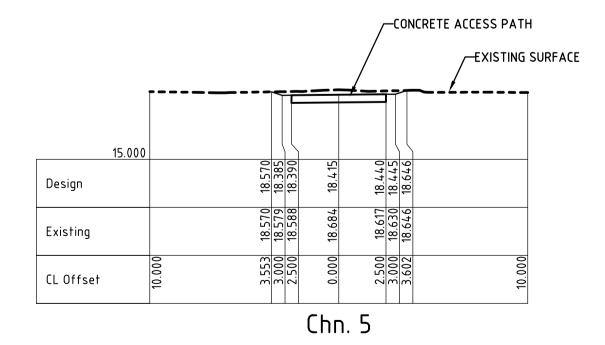


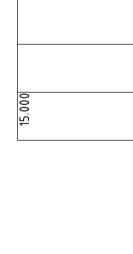
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CKS, WA	Date	Datum	Scale	Size
BEACH ACCESS PATH	OCT' 2017	A.H.D	AS SHOWN	A1
	Drawing Number			Revision
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Design		
Existing		
CL Offset		10.000

GENERAL NOTES

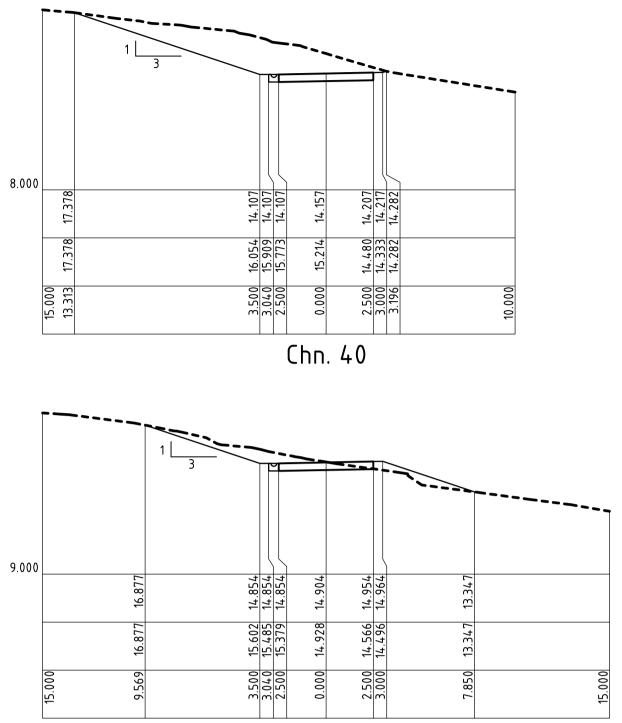
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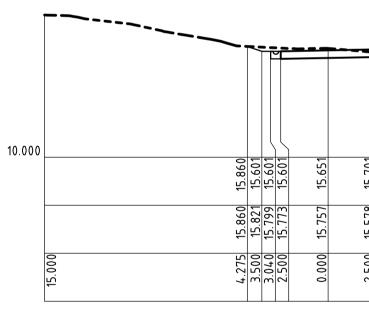
DIMENSIONS ARE IN METRES. CROSS SECTIONS ARE TO BE USED AS A GUIDE. 2.

3. ALL EARTHWORKS BATTERS ARE GENERALLY 1v : 3h.

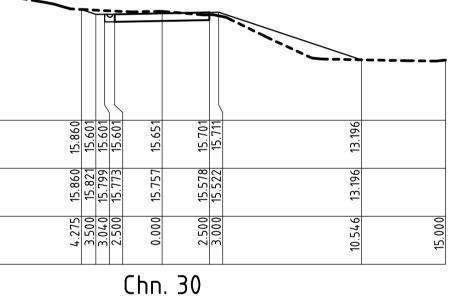
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0	23.10.2017	ISSUED FOR CONSTRUCTION	JPK	CS
Ε	16.05.2017	ISSUED FOR TENDER	JPK	CS
D	27.04.2017	ISSUED FOR TENDER	JPK	CS
C	21.03.2017	DRAWING No. CHANGED & TRACK RE-ALIGNED, APPROVAL ISSUE.	JPK	CS
В	20.02.2017	GROYNE REVISED. ACCESS RE-DESIGNED, ISSUED FOR APPROVAL.	JPK	CS
A	24.01.2017	ISSUED FOR CLIENT APPROVAL	JPK	CS
Re	v Date	Description	Drawn	Арр

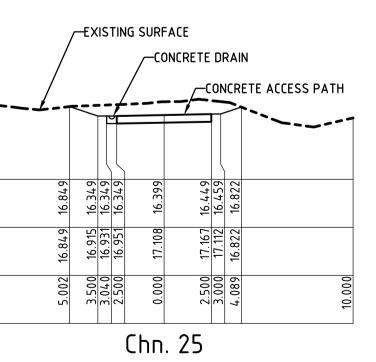
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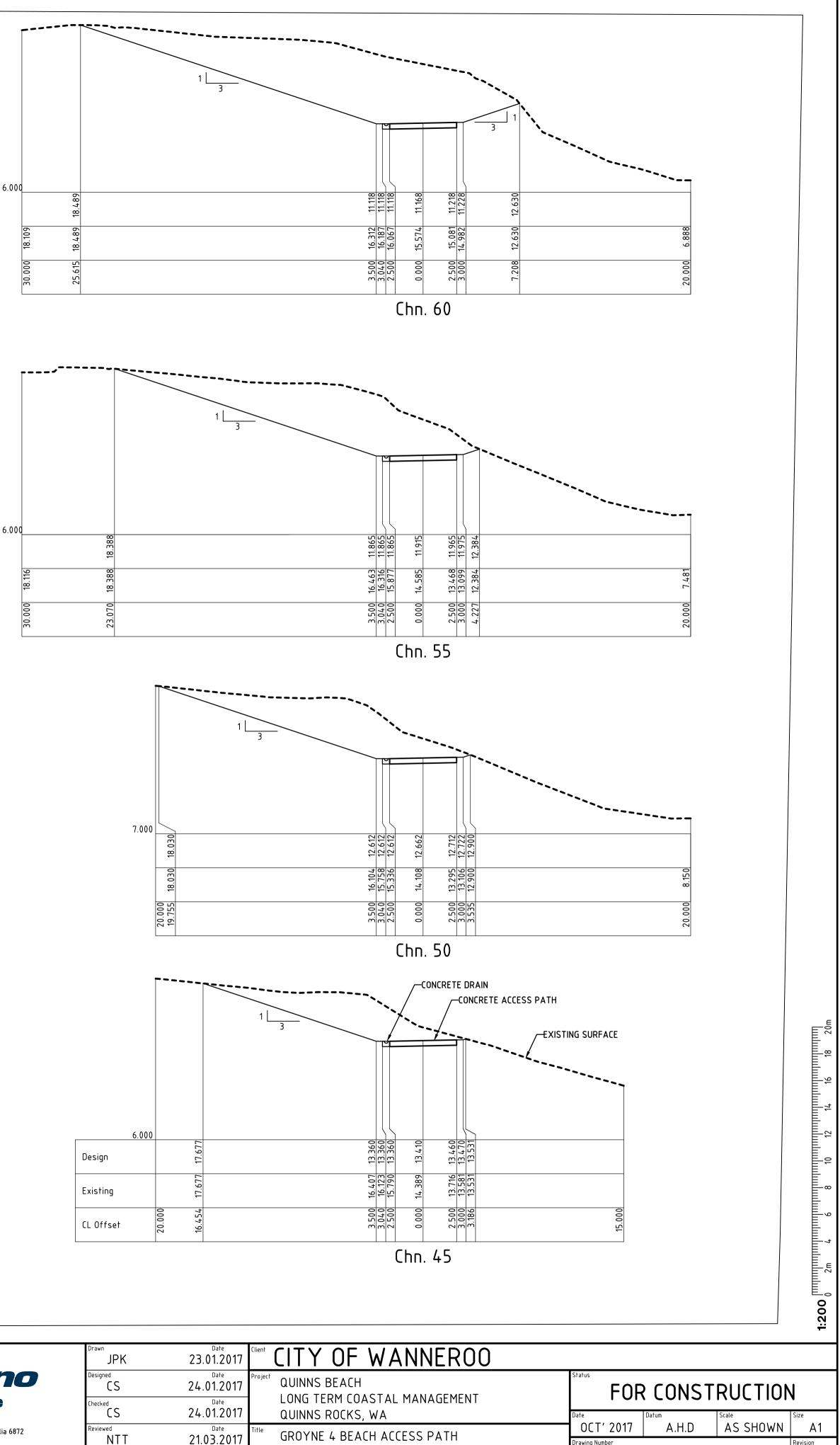


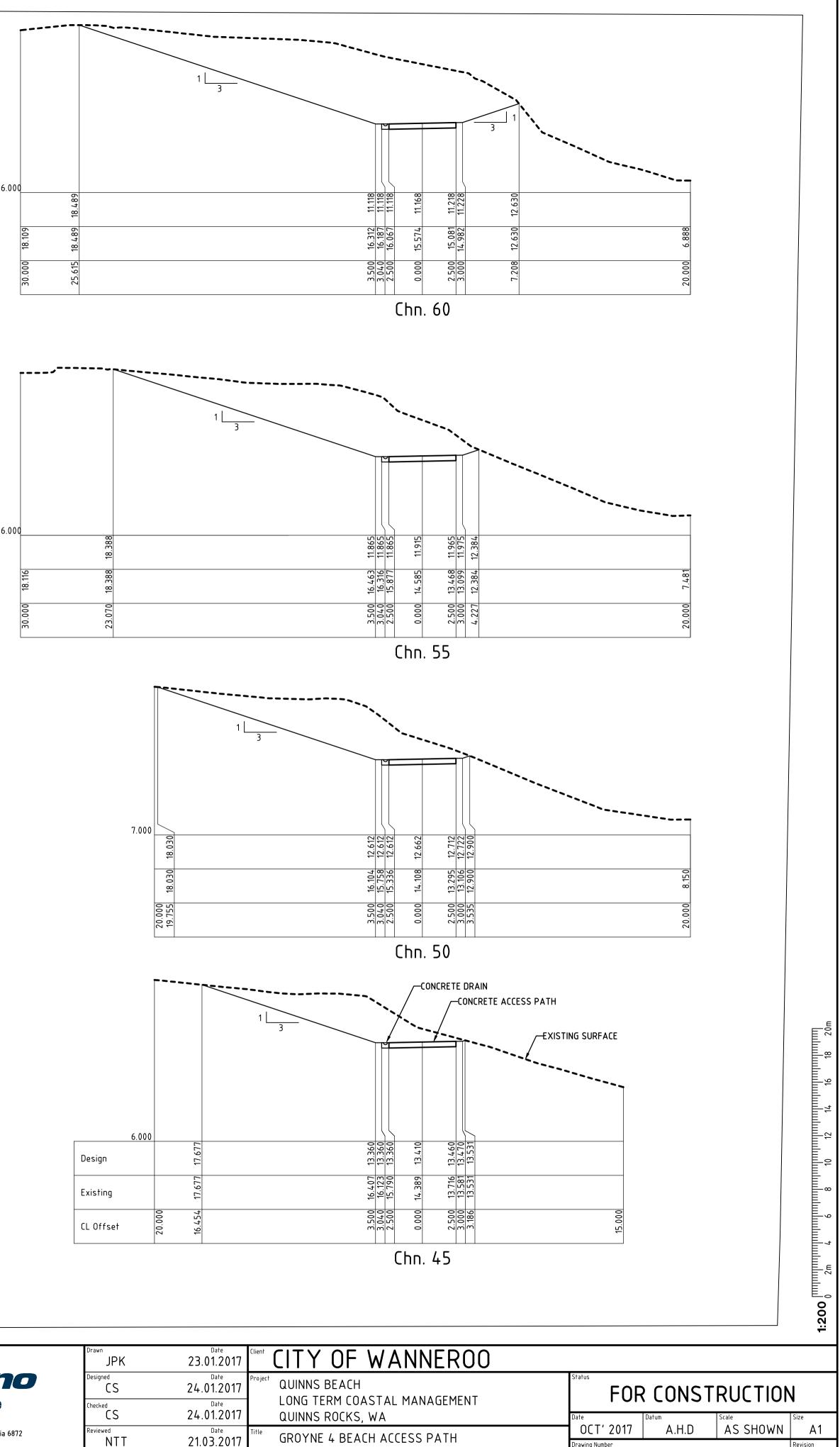


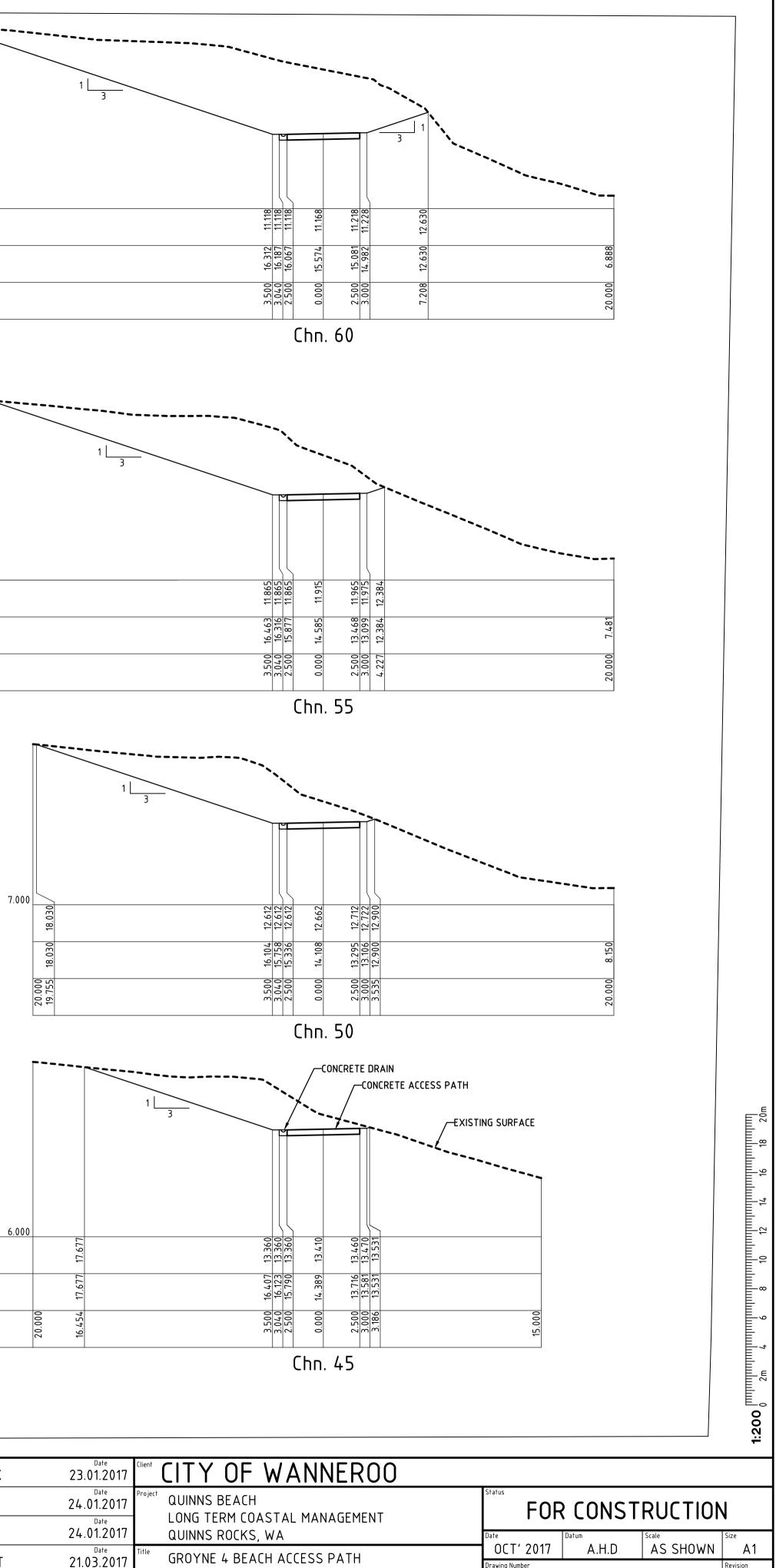
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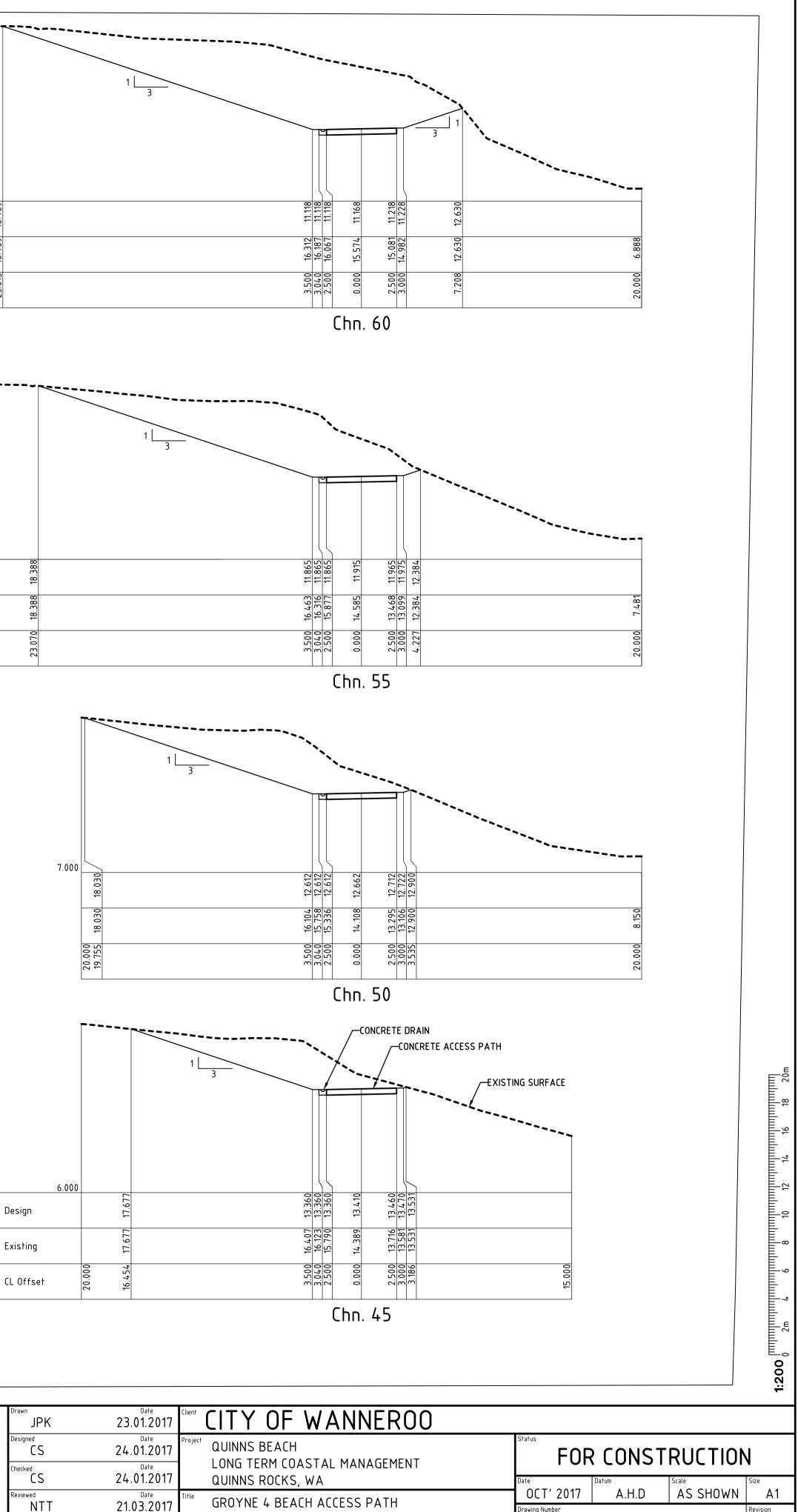




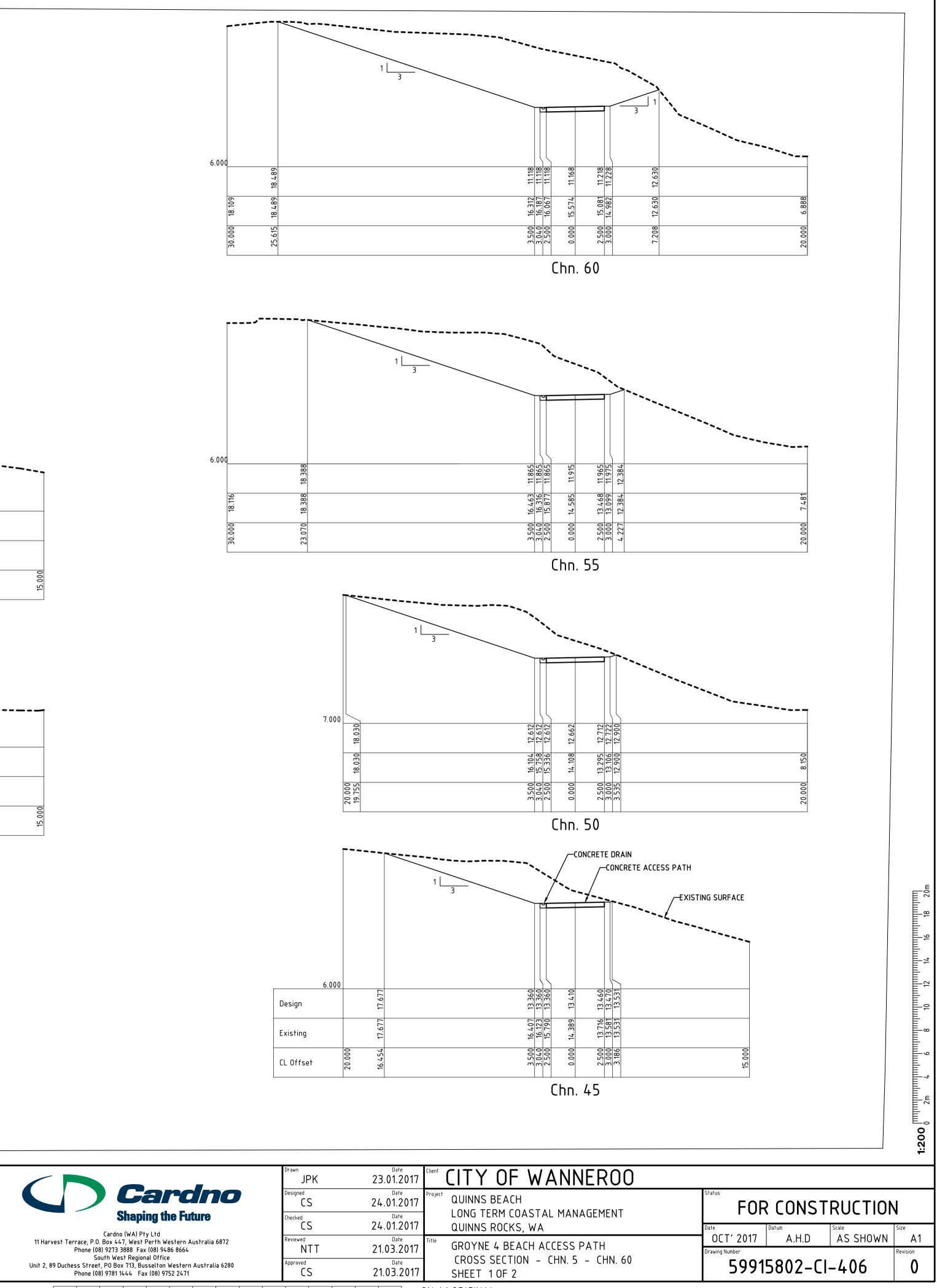


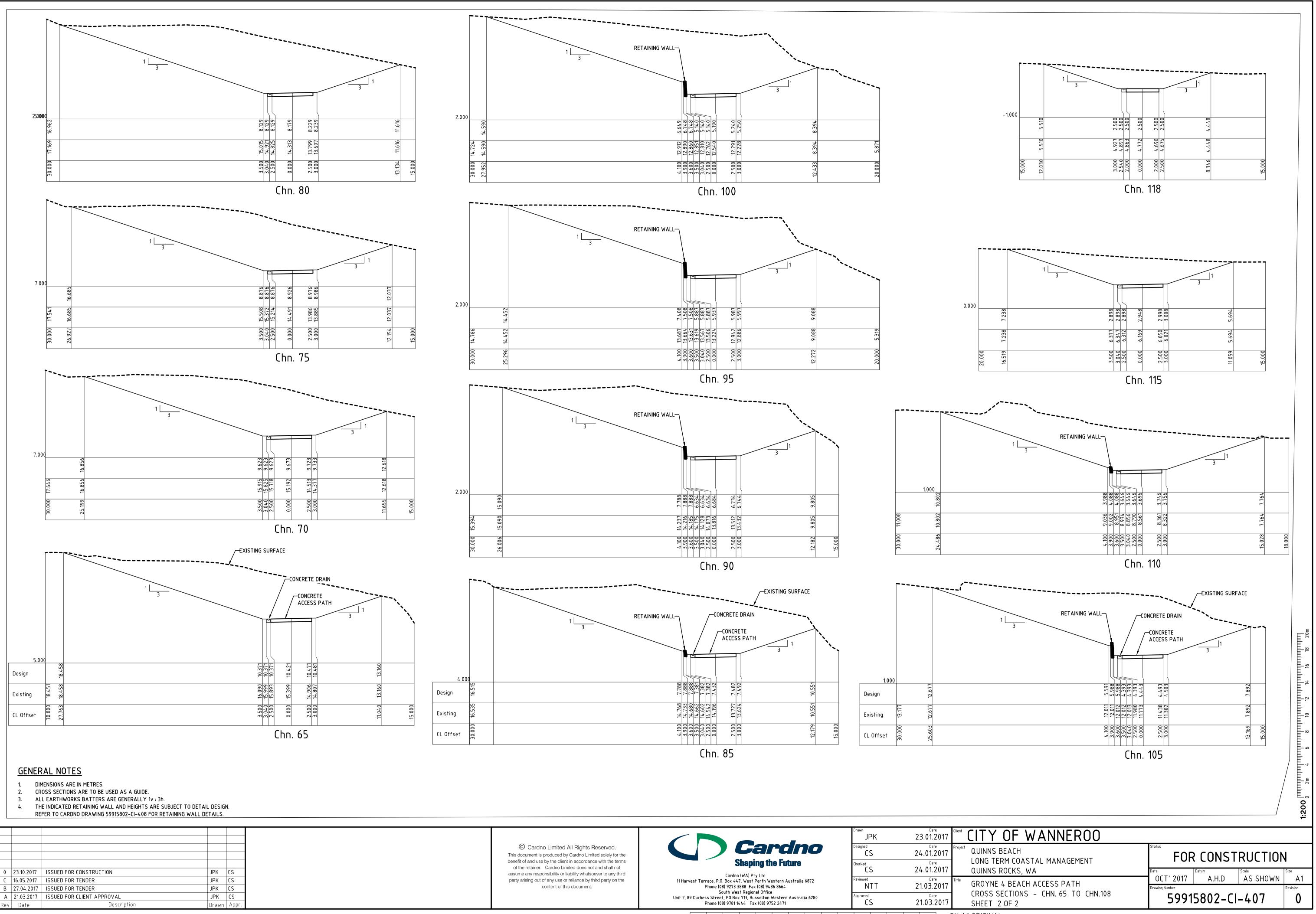




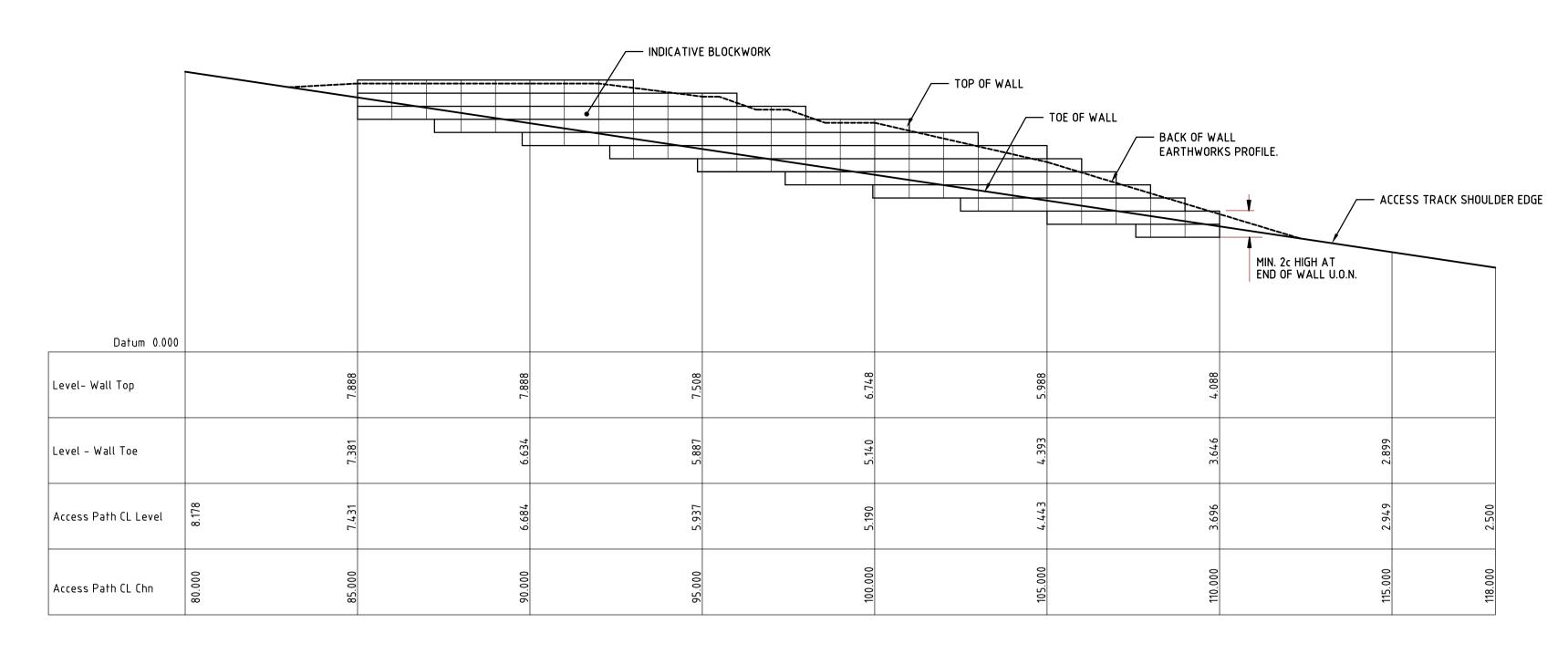


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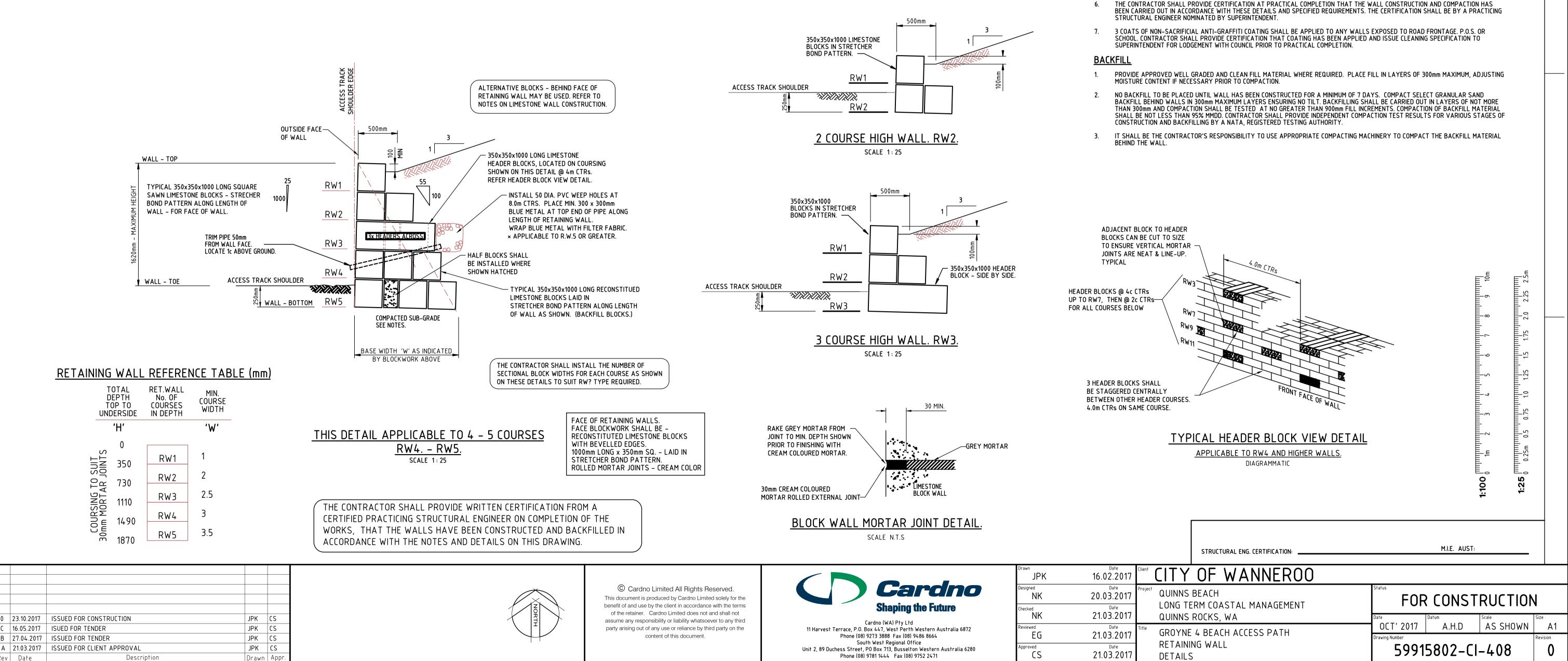


			Date 23.01.2017	Client CITY OF
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	Cardno (WA) Pty Ltd Cardno (WA) Pty Ltd 11 Harvest Terrace, P.O. Box 447, West Perth Western Australia 6872 Phone (08) 9273 3888 Fax (08) 9486 8664 South West Regional Office	^{Checked}	Date 24.01.2017	LONG TERM CO QUINNS ROCKS
		Reviewed NTT	Date 21.03.2017	GROYNE 4 BEA
	Unit 2, 89 Duchess Street, PO Box 713, Busselton Western Australia 6280 Phone (08) 9781 1444 Fax (08) 9752 2471	Approved CS	Date 21.03.2017	CROSS SECTIO SHEET 2 OF 2
	0 10 20 30 40 50 60 70 80 90	100 110 120	130 140 150mm C	N A1 ORIGINAL



FRONT ELEVATION - RETAINING WALL





ev Date

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm ON A1 ORIGINAL

DO NOT SCALE FROM DRAWINGS.

GENERAL NOTES

PREPARATION

ADJOINING PROPERTIES.

3.

4.

5.

6.

2.

4.

CHECK DRAWING AND SITE DIMENSIONS BEFORE COMMENCING WORK. REPORT DISCREPANCIES TO THE ENGINEER AND OBTAIN A DIRECTION. SPECIFICATIONS OR INSTRUCTIONS ON DRAWINGS TAKE PRECEDENCE OVER THESE NOTES.

ENSURE THE WALL DOES NOT SURCHARGE OR UNDERMINE ANY ADJACENT RETAINING WALLS OR STRUCTURES EITHER ON THIS OR

WALLS HAVE BEEN DESIGNED FOR SURCHARGE LOADS (INCLUDING FENCES INSERTED INTO TOP OF WALL) AS SHOWN. APPROVAL FROM AN INDEPENDENT PRACTISING STRUCTURAL ENGINEER MUST BE OBTAINED BEFORE ANY ALTERATIONS OR ADDITIONS ARE MADE TO THE WALL OR ANY CHANGES TO GROUND LEVELS IN THE VICINITY OF THE WALL.

WALLS HAVE BEEN DESIGNED FOR STABLE (CLASS 'A' OR 'S' TO AS2870) FOUNDATION CONDITIONS. FOR SAND BACKFILL (MAX. 5% FINES SMALLER THAN 75 MICRONS) AND FOR A WATER TABLE WHICH WILL NOT RISE ABOVE A LEVEL 600mm BELOW THE BASE OF THE WALL. THE ENGINEER MUST BE CONSULTED PRIOR TO COMMENCING CONSTRUCTION IF ANY OF THESE CONDITIONS CAN NOT BE SATISFIED.

REMOVE UNSUITABLE SILT, CLAY, ORGANIC AND DELETERIOUS MATERIALS FROM AREAS TO BE EXCAVATED OR OCCUPIED BY STRUCTURES, PAVEMENTS, EMBANKMENTS AND THE LIKE.

COMPACT SOIL BASE UNDER RETAINING WALL TO AT LEAST 95% MODIFIED MAXIMUM DRY DENSITY. CONTRACTOR SHALL PROVIDE INDEPENDENT COMPACTION TEST RESULTS BY A NATA REGISTERED TESTING AUTHORITY. LIMESTONE WALL CONSTRUCTION

WALL FACES SHALL BE CONSTRUCTED USING COURSED LIMESTONE BLOCKS AS SPECIFIED ON MAIN SECTION OF THIS DRAWING. RUBBLE SHALL NOT BE USED TO FILL VOIDS. ALL BACK-BLOCKS SHALL BE SQUARE EDGE AND LAID IN STRETCHER BOND PATTERN. VOIDS AT WEEP HOLE LOCATIONS – SHALL BE FILLED WITH CONCRETE AS REQUIRED.

ALL JOINTS TO BE MORTARED WITH 1:1:6 (CEMENT:LIME:SAND) 30mm THICK MORTAR U.O.N. - RUBBLE NOT TO BE USED TO FILL VOIDS. FACE OF MORTAR MIX SHALL MATCH LIMESTONE. REFER JOINT DETAIL. MORTAR THICKNESS SPECIFIED ON LAYOUT.

RECONSTITUTED BLOCK MATERIAL SHALL HAVE A DRY DENSITY OF AT LEAST 1750kg/m³ AND CRUSHING STRENGTH OF AT LEAST 2MPa. CONCRETE BACKER BLOCKS SHALL HAVE A DRY DENSITY OF AT LEAST 1950kg/m³ AND CRUSHING STRENGTH OF AT LEAST 5MPa.

THE CONTRACTOR SHALL INCLUDE CONTRACTION JOINTS WITHIN THE RETAINING WALL AS INDICATED ON PROJECT PLANS (C.J.) OR AT A MAXIMUM SPACING OF 20m ALONG ANY STRAIGHT RUN. WHERE THE WALL CHANGES DIRECTION, A CONTRACTION JOINT SHALL BE INSTALLED AT A DISTANCE 'd' FROM THAT CORNER ALONG ONE OF THE WALL FACES. 'd' = 1.0m (RW2-RW4), 'd' = 2.0m (RW5-RW8), 'd' = 3.0m (RW9-RW12). CONTRACTION JOINTS SHALL BE 15mm WIDE AND FILLED WITH EXPANDED POLYETHYLENE (100mm DEEP) COVERED WITH A 25mm DEEP MASTIC WITH COLOUR TO MATCH WALL MORTAR.