

DOCUMENTATION OF UPGRADED COASTAL PROTECTION WORKS

CONCRETE WALL WITH ROCK TOE

AT 1150 TO 1168 PITTWATER ROAD, COLLAROY, NSW

HORTON COASTAL ENGINEERING PTY LTD

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DRAWING LIST	
Sheet Number	Sheet Title
S01	GENERAL NOTES
S02	COASTAL PROTECTION WORKS PLAN
S03	LANDSCAPING PLAN
S04	EROSION AND SEDIMENT CONTROL PLAN AND WASTE MANAGEMENT PLAN
S10	SECTION 1 (AT 1150)
S11	SECTION 2 (AT 1158)
S12	SECTION 3 (AT 1168)
S16	DEADMAN ANCHOR ALTERNATIVE
S20	ACCESS STAIRS

REFERENCE DOCUMENTS

1. SURVEY DRAWING PREPARED BY:
DETAILED SURVEYS
Ph. (02) 9913 9525
REF No. 030/17
DATED: 28 MAY 2017
(ALSO BASIS OF CURRENT PROFILES)
2. PRE-STORM PROFILES
DERIVED FROM OEH
PHOTOGRAMMETRIC DATA
DATED: 5 APRIL 2016
3. POST-STORM PROFILES
DERIVED FROM UNSW WATER
RESEARCH LABORATORY DATA
DATED: 10 JUNE 2016

ROCK

- R1. INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF THE ROCK IN A MARINE ENVIRONMENT
- R2. ROCK SHALL BE ROUGH AND ANGULAR
- R3. ROCK SHALL BE IGNEOUS WITH A MINIMUM DRY DENSITY OF 2,650kg/m³
- R4. ROCK SHALL HAVE A MASS GRADING AS FOLLOWS: MINIMUM MASS OF 2,850kg, MAXIMUM MASS OF 4,750kg (BUT SEE NOTE R5), AND THE MEDIAN MASS OF ALL ROCKS SHALL EXCEED 3,800kg (NOMINAL MINIMUM DIAMETER OF 1200mm, MAXIMUM DIAMETER OF 1400mm AND 50%ILE DIAMETER OF 1300mm)
- R5. ROCKS EXCEEDING THE MAXIMUM MASS IN NOTE R4 MAY BE USED AS DIRECTED BY COASTAL ENGINEER. ROCKS WITH A RELATIVELY FLAT BASE ARE PREFERRED, PLACED WITH THE BROADEST DIMENSION ON THE CEMENTED SAND LAYER
- R6. THE RATIO OF THE MAXIMUM DIMENSION OF ANY ROCK TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION, SHALL NOT EXCEED 2.5
- R7. ROCK SHALL HAVE A MINIMUM SATURATED POINT LOAD STRENGTH INDEX I_{S(50)} OF 5.0MPa
- R8. ROCK SHALL HAVE A MAXIMUM LOS ANGELES ABRASION VALUE OF 30%
- R9. ROCK SHALL HAVE A MAXIMUM SODIUM SULFATE WEIGHT LOSS OF 12%
- R10. ROCK SHALL BE UNWEATHERED, WITHOUT SIGNIFICANT QUANTITIES OF DELETERIOUS MINERALS SUCH AS ANALCIME (HYDRATED SODIUM ALUMINIUM SILICATE) AND EXPANSIVE CLAY MINERALS OR UNFAVOURABLE LINEATIONS WITHIN THE MICROFABRIC
- R11. ROCK SHALL HAVE NOT MORE THAN 15% (BY VOLUME) OLIVINE AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION
- R12. ROCK SHALL SHOW NO SIGNS OF STRESS-RELIEF
- R13. ROCK SHALL NOT BE ROLLED OR DROPPED INTO POSITION, IT SHALL BE PLACED
- R14. PLACED ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE

STRUCTURAL

- S1. ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AS4100
- S2. ALL TIMBER STRUCTURES SHALL BE IN ACCORDANCE WITH AS 1720, AS1684 AS REQUIRED
- S3. ALL PILING AND CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS

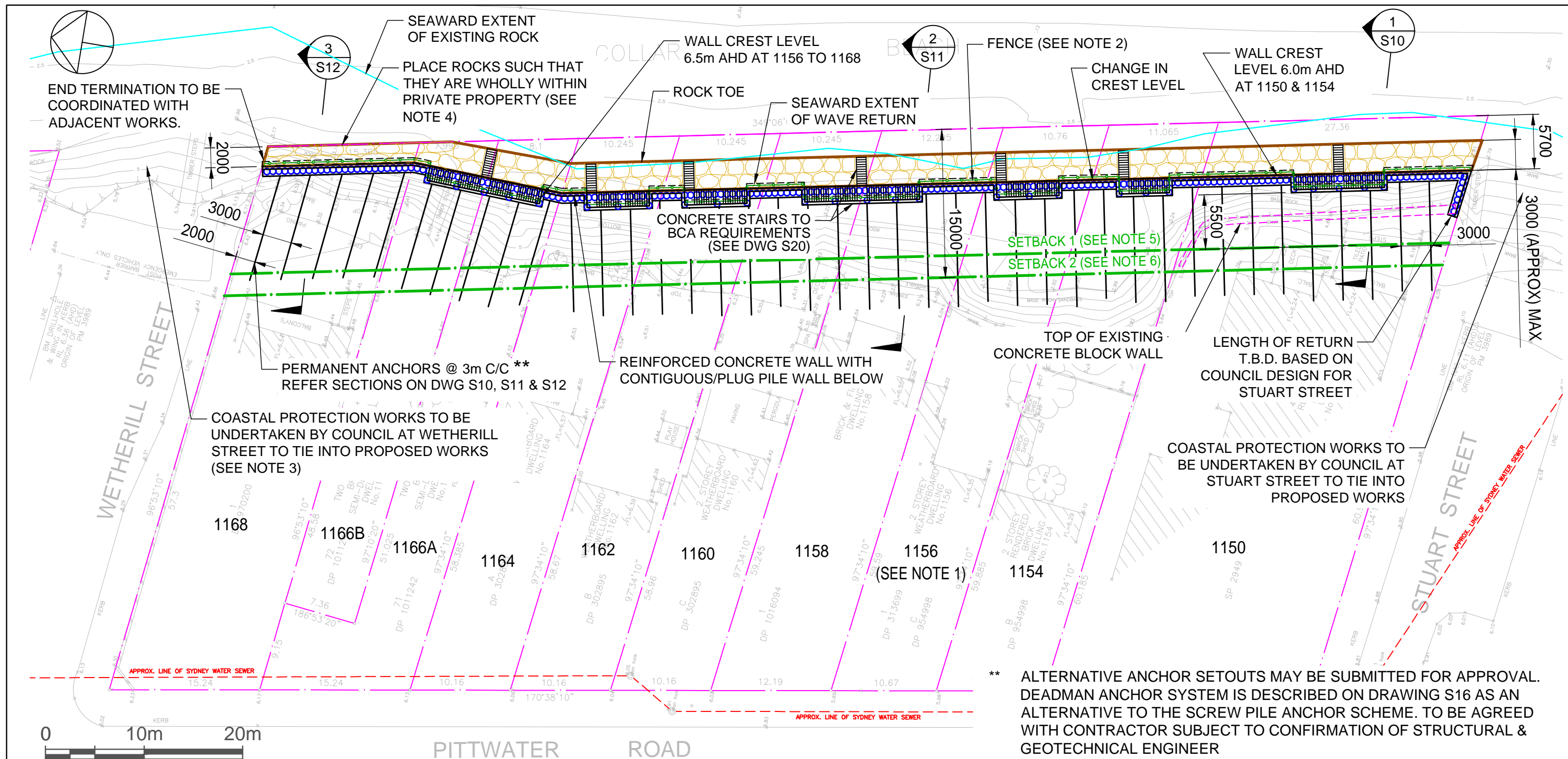
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P.P.	R.Y.	DA SUBMISSION	27.07.18	F
P.P.	R.Y.	FOR COSTING	23.03.18	E
P.P.	R.Y.	REMOVE WORKS OFF CROWN LAND	07.03.18	D
P.P.	R.Y.	MINOR EDITS	14.09.17	C
P.P.	R.Y.	MINOR EDITS	31.08.17	B
P.P.	R.Y.	FOR COUNCIL COMMENT	28.08.17	A
BY	CHKD	DESCRIPTION	DATE	REV

UPGRADED COASTAL PROTECTION WORKS AT 1150-1168 PITTWATER ROAD COLLAROY NSW	COASTAL ENGINEERING DESIGN: HORTON COASTAL ENGINEERING PTY LTD 18 Reynolds Cres. Beacon Hill NSW 2100 TEL: +61 (0)407 012 538 peter@hortoncoastal.com.au www.hortoncoastal.com.au	STRUCTURAL ENGINEERING DESIGN: James Taylor & Associates Civil & Structural Consulting Engineers SUITE 301, 115 MILITARY ROAD NEUTRAL BAY NSW 2090 TEL: 02 99691999 EMAIL: mail@jamestaylorassociates.com.au	DESIGN	P.H.	DRAWN	P.P.	PROJECT NO.	
			CHKD.	R.Y.			5910	
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			SCALE	DATE JUL 2018		S01		F

GENERAL NOTES

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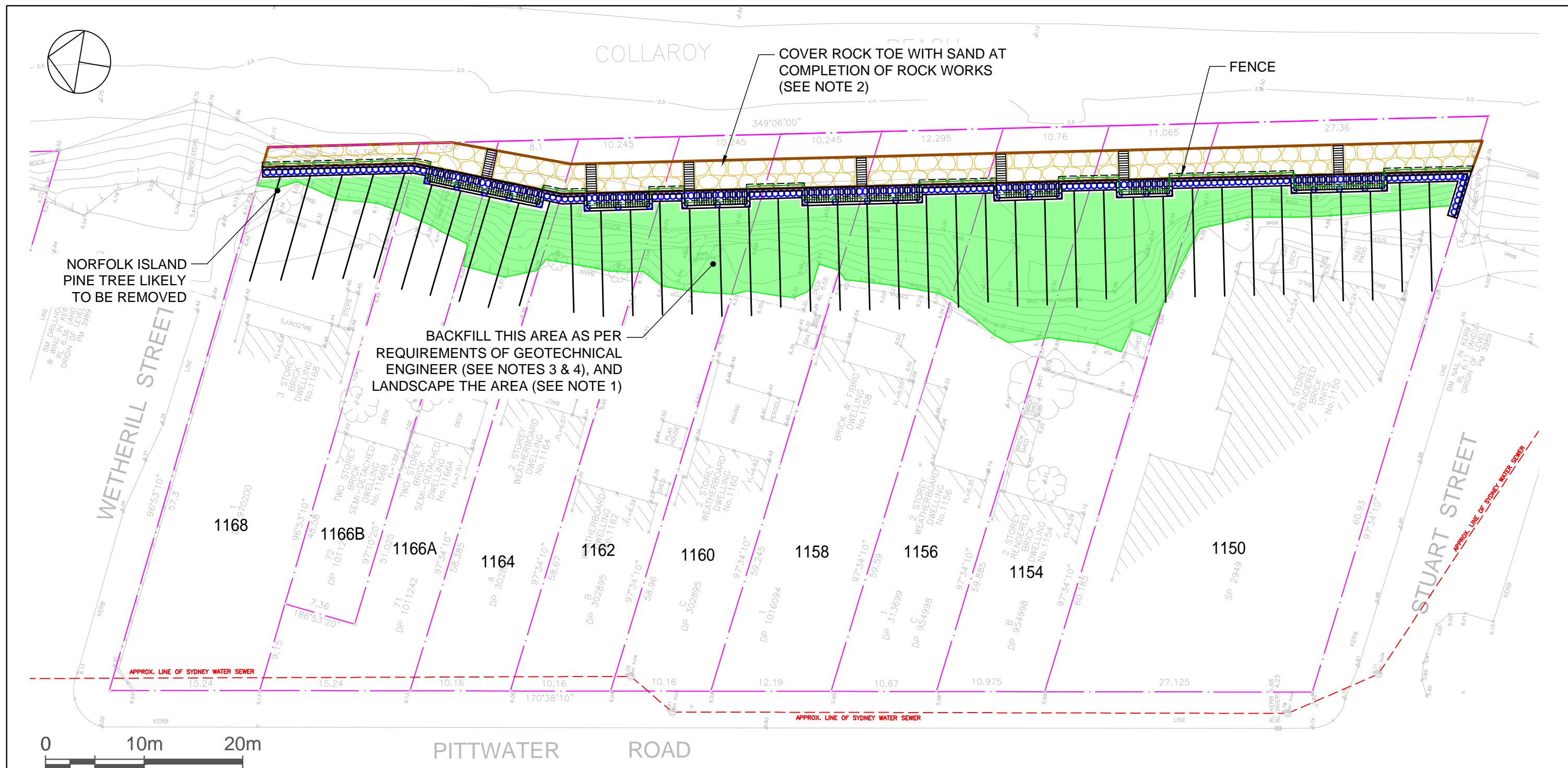
- 1156 IS A DOUBLE LOT. COMMON LOT BOUNDARY IS NOT SHOWN
- ALL FENCING SHALL COMPLY WITH *STATE ENVIRONMENTAL PLANNING POLICY (EXEMPT AND COMPLYING DEVELOPMENT CODES) 2008* AND BUILDING CODE OF AUSTRALIA (BCA)
- COUNCIL PROTECTION WORKS AT WETHERILL STREET EXPECTED TO BE OF SAME DESIGN, SO NO RETURN IS NEEDED ON NORTHERN BOUNDARY OF 1168
- AT 1168, ROCK SHALL BE SELECTED AND POSITIONED AS DIRECTED BY COASTAL ENGINEER. LONGER ROCK DIMENSION MAY NEED TO BE ALONGSHORE TO FIT ROCKS WITHIN PROPERTY
- SETBACK 1 IS A MAINTENANCE SETBACK. NO FUTURE STRUCTURES, EXCEPT READILY RELOCATABLE OR REMOVABLE STRUCTURES THAT DO NOT INTERRUPT VIEWS, TO BE CONSTRUCTED SEAWARD OF THIS LINE, TO ENABLE CLEAR PASSAGE OF CONSTRUCTION PLANT AS REQUIRED FOR FUTURE PROTECTION WORKS MAINTENANCE
- SETBACK 2 IS THE RECOMMENDED MOST SEAWARD SETBACK FOR FUTURE DWELLINGS (SEE NOTE 7), CONSISTENT WITH THE MOST SEAWARD ALIGNMENT OF EXISTING DWELLINGS AT 1150 AND 1168. LOW LEVEL STRUCTURES THAT DO NOT INTERRUPT VIEWS, SUCH AS DECKS AND POOLS, ARE RECOMMENDED TO POTENTIALLY BE PERMISSIBLE IN THE AREA BETWEEN SETBACK 1 AND SETBACK 2 (SEE NOTE 7)
- SETBACKS AND DEVELOPMENT TYPES ADOPTED ARE SUBJECT TO MERIT ASSESSMENT AGAINST OTHER PLANNING CONSIDERATIONS (INCLUDING VIEWS AND OVERSHADOWING) AND SPECIFIC ENGINEERING (COASTAL, STRUCTURAL AND GEOTECHNICAL) ADVICE (INCLUDING POTENTIAL IMPACTS ON THE PROTECTION WORKS)

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							SCALE 1 : 400	DATE JUL 2018	S02	F

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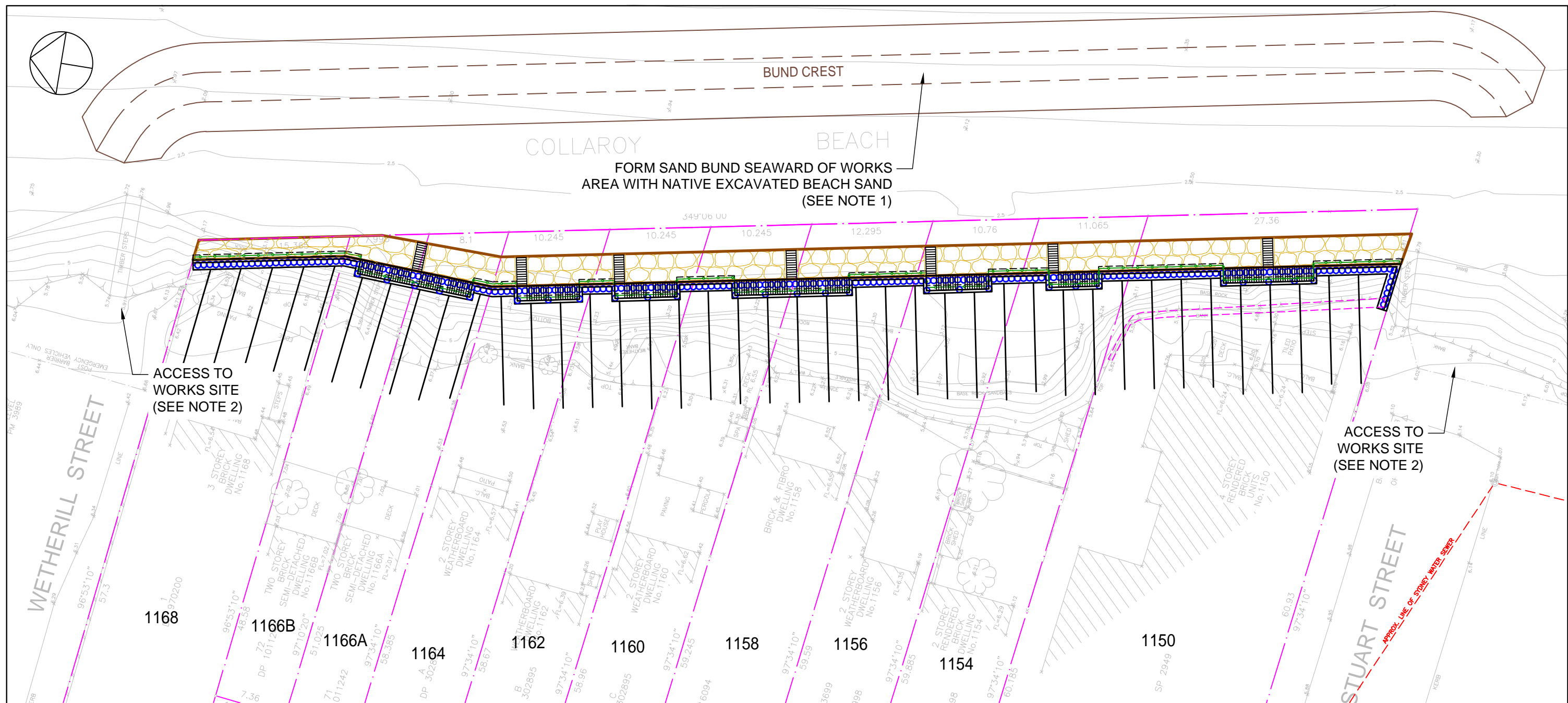


- POTENTIAL VEGETATION SPECIES ARE DISCUSSED IN A REPORT PREPARED BY DIANE WIESNER AND DATED 6 JUNE 2017
- WASH SAND INTO VOIDS OF THE ROCK TOE TO ENSURE SINKHOLES WILL NOT FORM IN REINSTATED BEACH SURFACE, AND SHAPE SAND SEAWARD OF THE ROCK TOE TO A NATURAL PROFILE PRIOR TO THE COMPLETION OF THE WORKS. EXCAVATED BEACH SAND SEAWARD OF THE SUBJECT PROPERTIES MAY BE PLACED OVER THE ROCK TOE, BUT NOT LANDWARD OF THE CONCRETE WALL
- SAND SIZED MATERIAL FOR BACKFILL SHALL NOT BE SOURCED FROM THE BEACH SEAWARD OF THE SUBJECT PROPERTIES. BACKFILL MATERIAL IMPORTED TO THE SITE SHALL BE CLASSIFIED AS VIRGIN EXCAVATED NATURAL MATERIAL (VENM), EXCAVATED NATURAL MATERIAL (ENM), OR RECYCLED MATERIALS OBTAINED FROM AN EPA LICENSED FACILITY. ANY BACKFILL MATERIAL MUST BE CONSISTENT WITH SECTION 9(D) OF COUNCIL'S COASTAL EROSION POLICY 2016. FOR ENM AND RECYCLED MATERIALS, SUPPORTING DOCUMENTATION SHOULD BE REVIEWED BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT WHO IS A MEMBER OF THE AUSTRALIAN CONTAMINATED LAND CONSULTANTS ASSOCIATION INC. ALL BACKFILL SHALL BE TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- BOULDERS EXCAVATED AS PART OF THE WORKS MAY BE REUSED ON NEW ROCK TOE WITH AGREEMENT OF COASTAL ENGINEER. EXCESS BOULDERS MAY BE CRUSHED TO USE AS BACKFILL WITH AGREEMENT OF GEOTECHNICAL ENGINEER, OR TAKEN OFF-SITE TO BE USED BY OTHERS

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LANDSCAPING PLAN	COPYRIGHT: THIS DESIGN AND PLANS ARE NOT TO BE USED OR REPRODUCED WHOLLY OR IN PART WITHOUT WRITTEN PERMISSION FROM HORTON COASTAL ENGINEERING AND JAMES TAYLOR & ASSOCIATES		SCALE 1 : 400		DATE JUL 2018		S03	F



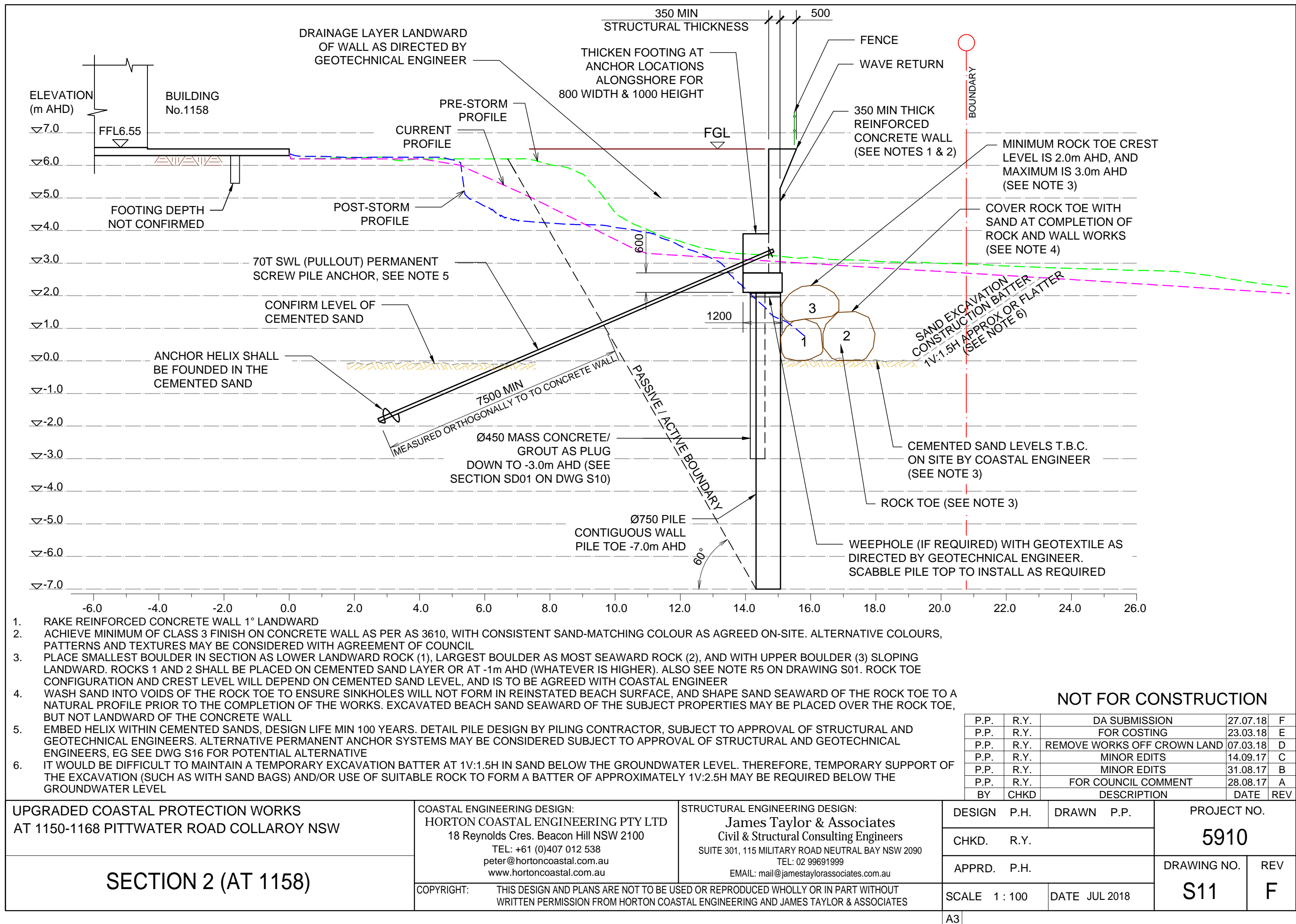
1. BUND MAY BE FORMED OVER A PORTION OR OVER THE ENTIRETY OF THE WORKS AREA DEPENDING ON CONSTRUCTION PROGRAM AND WAVE AND WATER LEVEL CONDITIONS, AS DIRECTED BY COASTAL ENGINEER OR CONTRACTOR. TEMPORARY STEEL SHEET PILING COULD ALSO BE USED IF PREFERRED BY CONTRACTOR, IN CONJUNCTION WITH A BUND, TO PROVIDE ADDITIONAL PROTECTION TO WORKS AREA AGAINST MILD COASTAL STORMS (SUBJECT TO COUNCIL APPROVAL THROUGH "WORKING ON AND ACCESS TO RESERVES PERMIT"). BUND IS TO BE REMOVED, WITH SAND SHAPED TO A NATURAL PROFILE, PRIOR TO COMPLETION OF THE WORKS
2. ACCESS TO WORKS SITE WILL BE VIA STUART AND/OR WETHERILL STREET, AS AGREED BETWEEN CONTRACTOR AND COUNCIL
3. RUBBLE AND OTHER MATERIALS OR WASTE THAT WOULD BE UNSUITABLE ON A BEACH ARE TO BE SEPARATED AND STOCKPILED WHERE ENCOUNTERED DURING EXCAVATION (POTENTIALLY TO BE REUSED, SEE NOTE 8). EXCAVATED AND/OR IMPORTED ROCK BOULDERS MAY BE TEMPORARILY PLACED ON BEACH, ON LANDWARD SIDE OF BUND, AS DIRECTED BY COASTAL ENGINEER, TO PROVIDE SOME PROTECTION TO EXCAVATED WORKS AREA
4. ALL DELETERIOUS MATERIALS AND EQUIPMENT THAT COULD BE DAMAGED ARE TO BE REMOVED FROM WORK AREA IF BUND OR SHEET PILING CANNOT BE MAINTAINED DUE TO ELEVATED WAVES AND WATER LEVELS. WORKS IN BEACH AREA MAY BE NEED TO TEMPORARILY CEASE UNDER THESE CONDITIONS
5. ALL MATERIAL STOCKPILES ARE TO BE LOCATED LANDWARD OF THE EXISTING EROSION ESCARPMENT. ANY STOCKPILE LOCATIONS ON COUNCIL LAND ARE TO BE AGREED BETWEEN COUNCIL AND CONTRACTOR
6. WHEN PLACING SAND OVER THE ROCK TOE AT THE COMPLETION OF ROCK WORKS, SCREENING IS TO BE UNDERTAKEN TO REMOVE RUBBLE, ROCK FRAGMENTS AND OTHER MATERIALS THAT WOULD BE UNSUITABLE ON A BEACH
7. ANY WASTE MATERIALS SHALL BE DISPOSED OF AT AN APPROPRIATE WASTE MANAGEMENT FACILITY OFF SITE
8. WASTE AND RUBBLE MATERIALS MAY BE BURIED LANDWARD OF THE WALL AS AGREED BY GEOTECHNICAL ENGINEER, SUBJECT TO A WASTE CLASSIFICATION UNDERTAKEN BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT (WHO IS A MEMBER OF THE AUSTRALIAN CONTAMINATED LAND CONSULTANTS ASSOCIATION INC). ALSO SEE NOTE 3 ON DWG S03

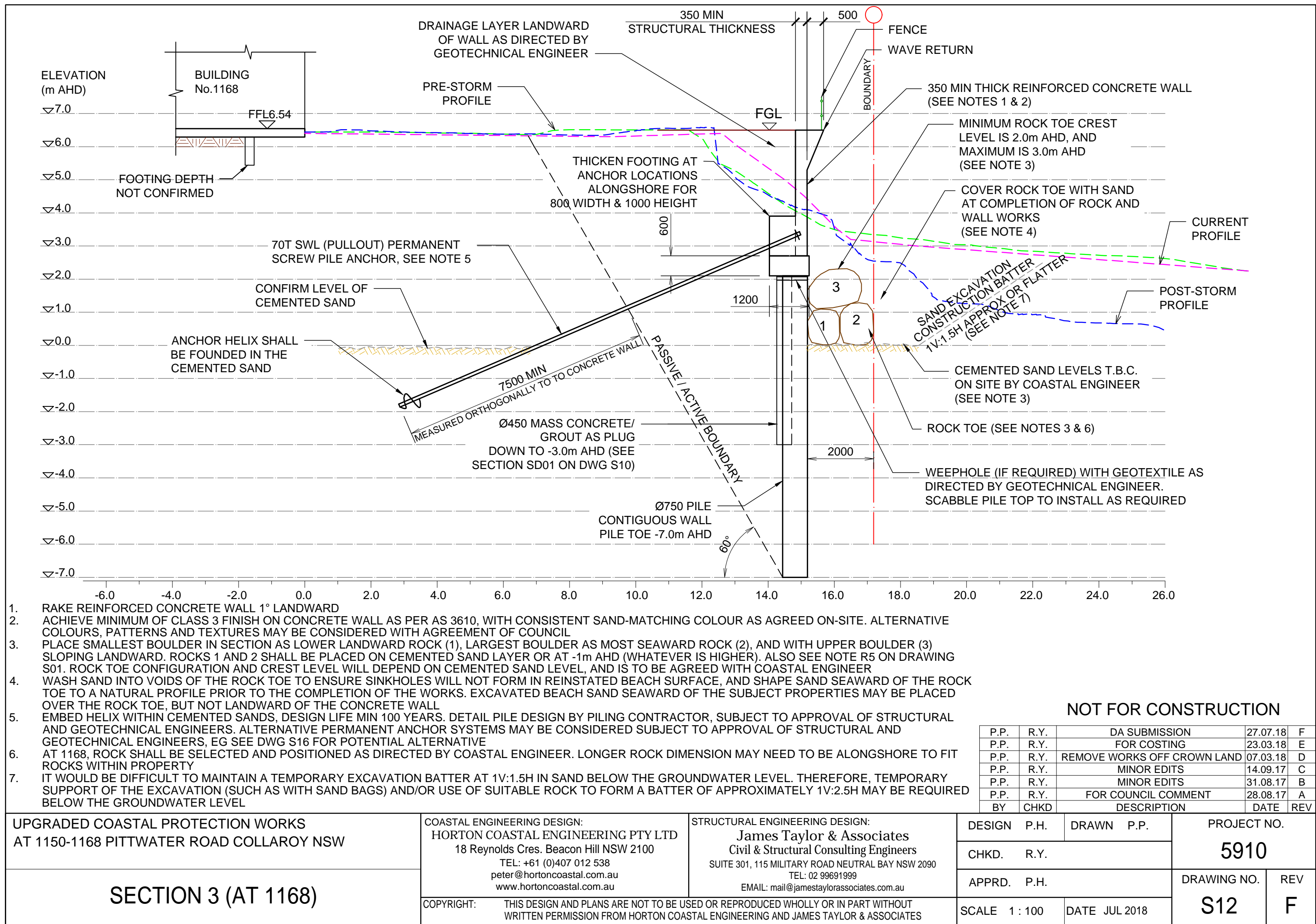


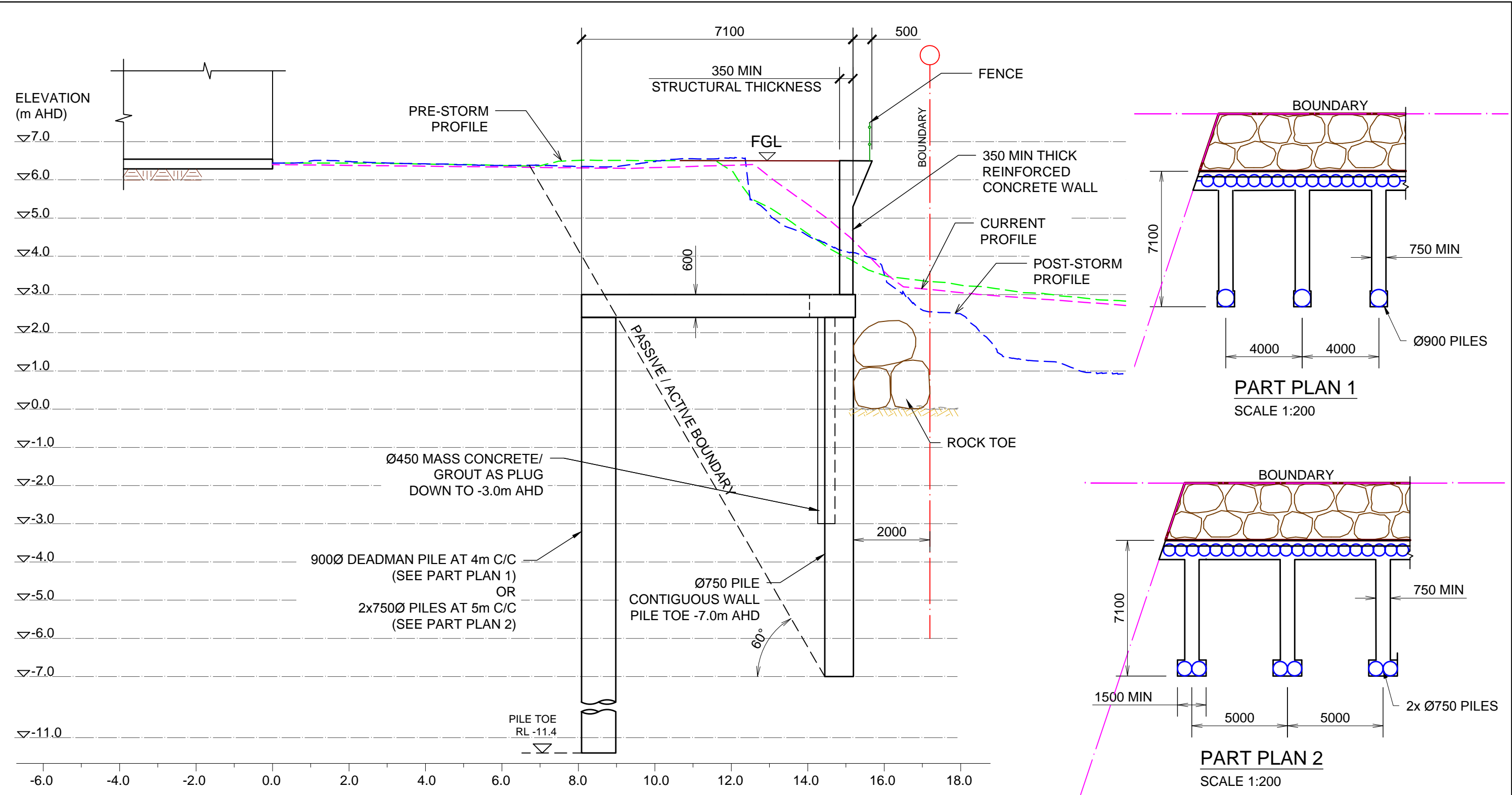
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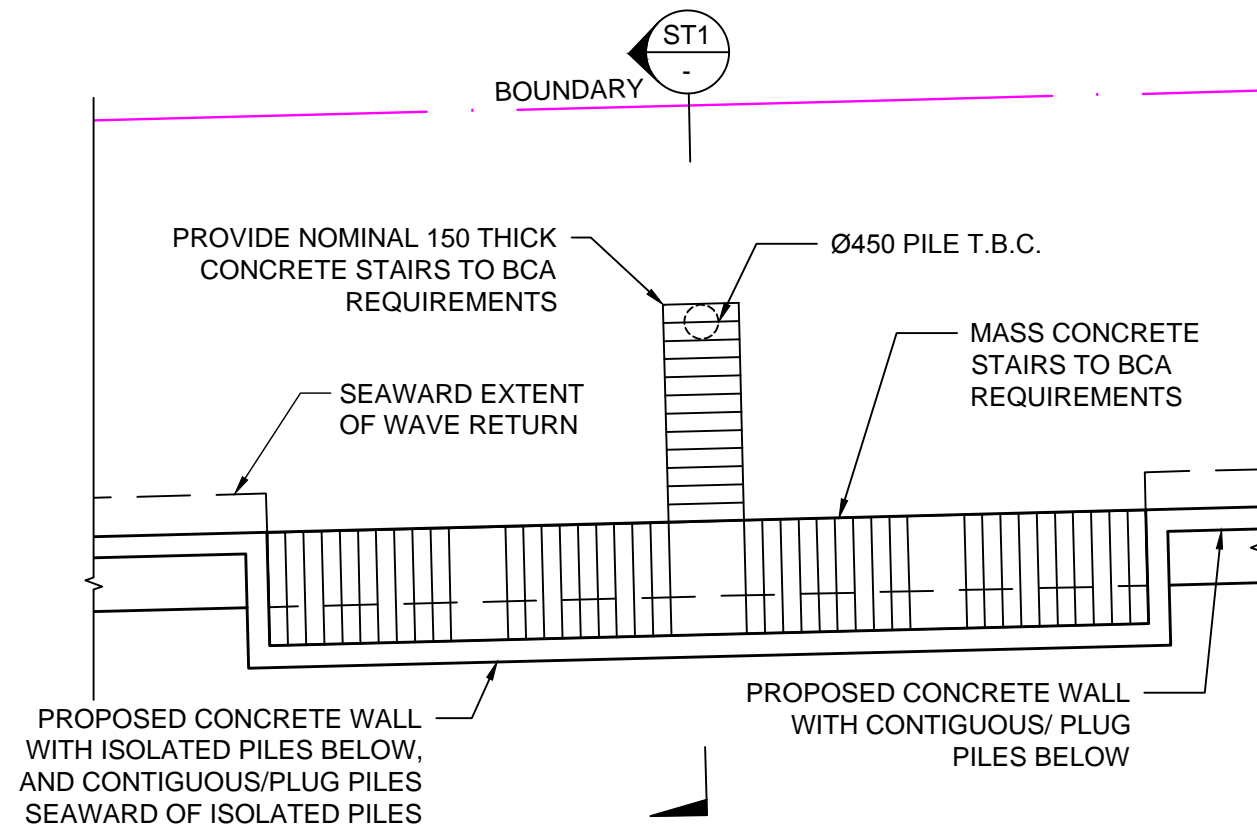




1. REFER TO DRAWING S12 FOR DETAILS OF WALL AND ROCK COMPONENTS
2. EXAMPLE SECTION HERE FROM 1168

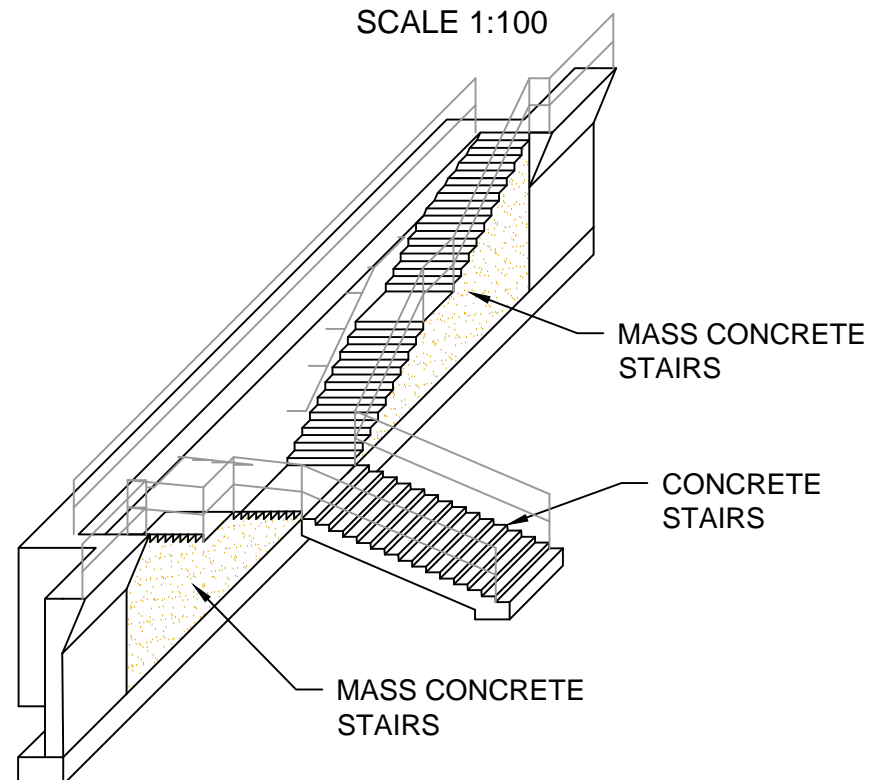
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TYPICAL ACCESS STAIRS

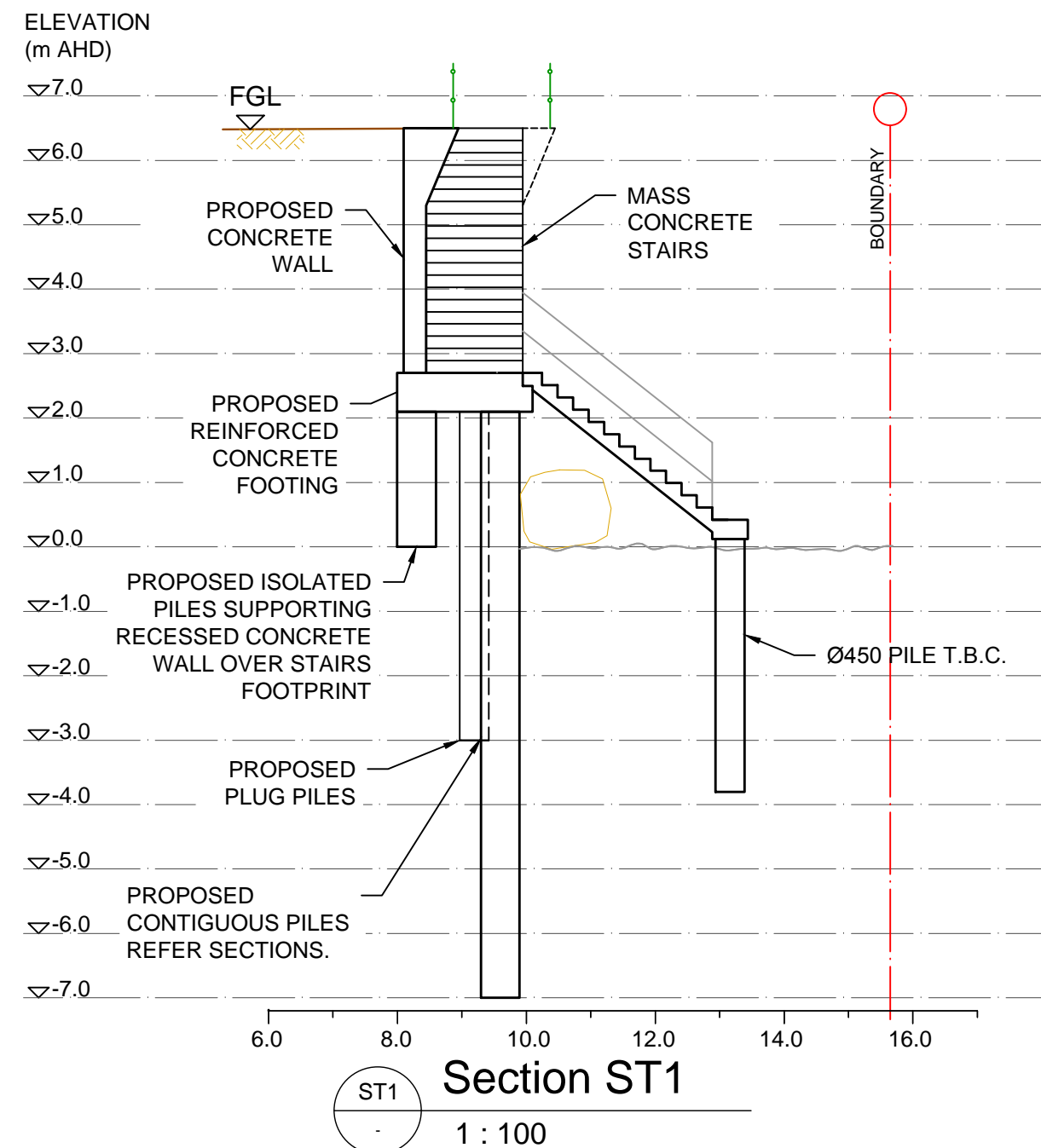
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TYPICAL 3D VIEW OF STAIRS

NTS (SEE NOTES 1 & 2)

1. BALUSTRADES TO STAIRS, AND FENCING, TO BE INCLUDED AS PER BCA REQUIREMENTS
2. FORM STAIRS TO BE COMPLIANT WITH BCA



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ACCESS STAIRS

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