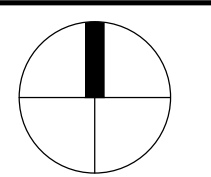
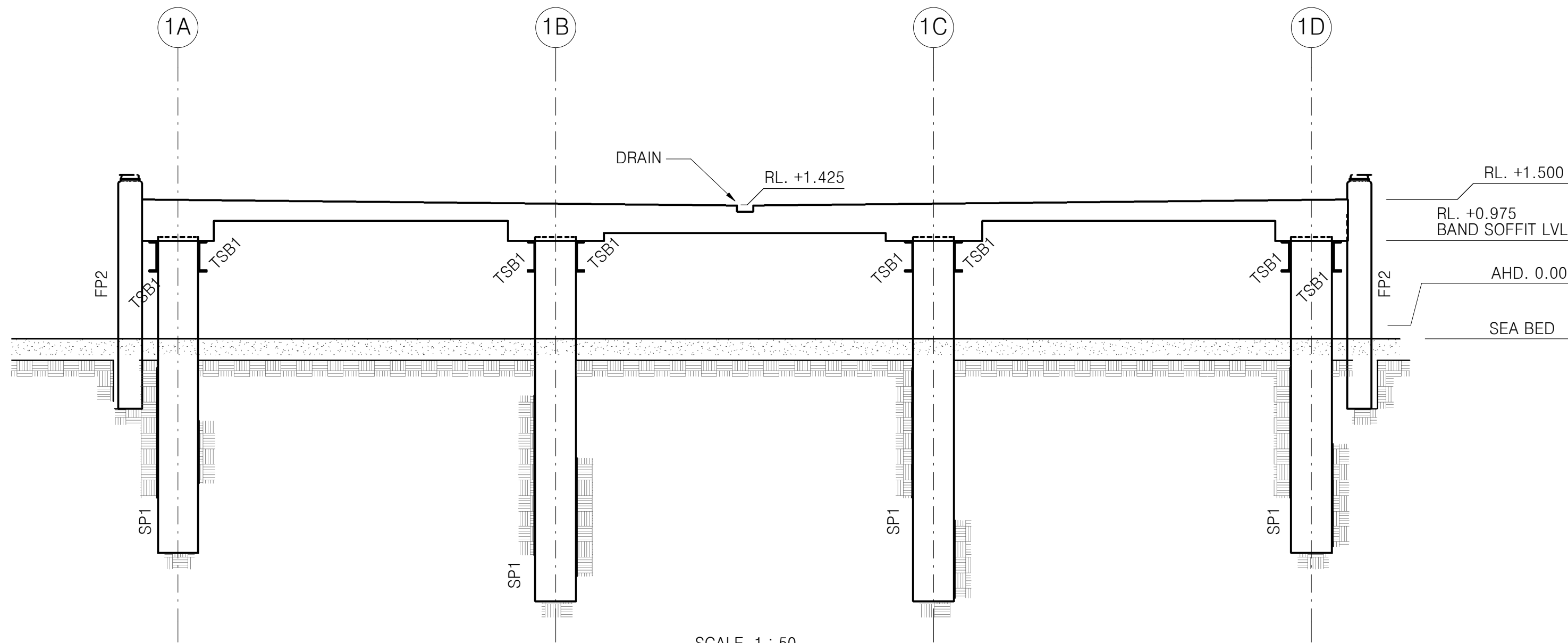


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Rev.	Date	Description	Drawn	Design
1	11.09.18	PRELIMINARY ISSUE	DF	RH
2	19.09.18	CONCRETE BEAM & PILES REVISED AND REINFORCED SLAB RATES ADDED	DF	RH
3	03.10.18	ISSUE FOR INFORMATION	DF	RH
A	18.10.18	CONSTRUCTION ISSUE	DF	RH
B	31.10.18	SETOUT DIMENSIONS ADDED	DF	RH



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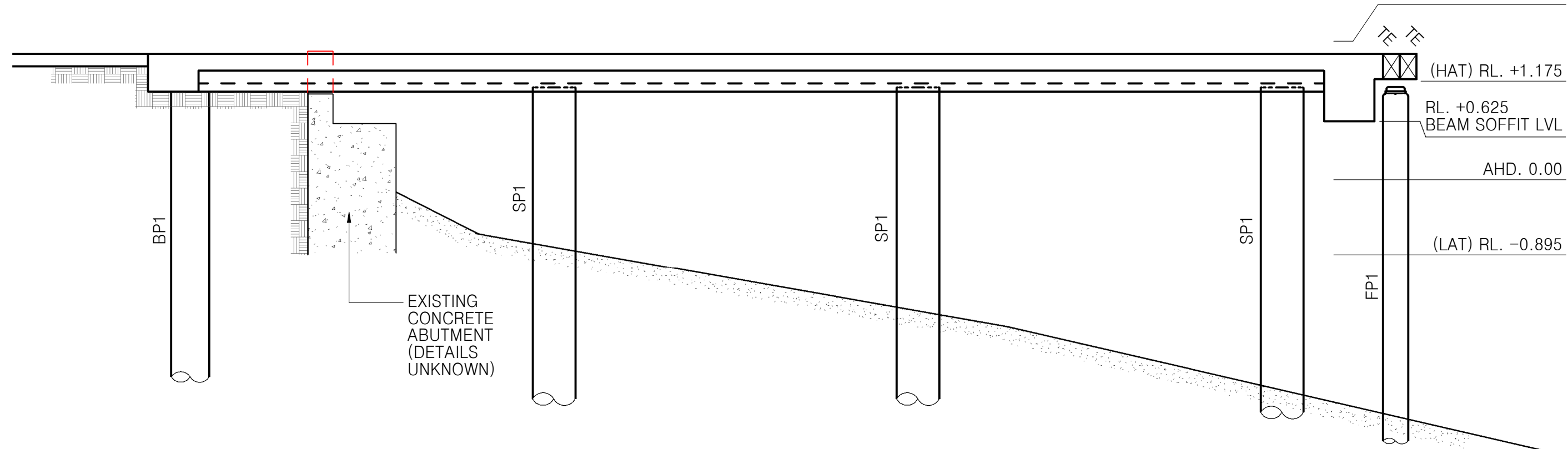


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A
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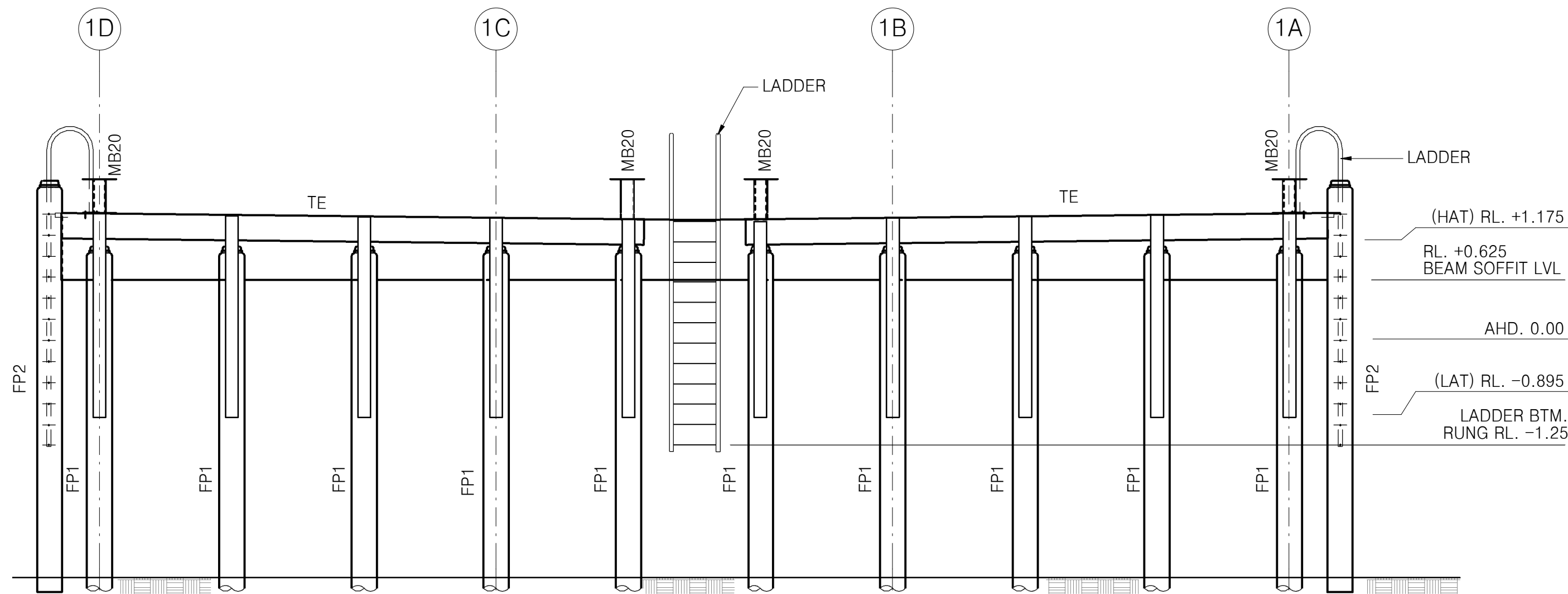
NOTE : TSB1 BEAMS TO CONTRACTORS DETAIL
AND ARE SHOWN INDICATIVELY ONLY

HIGHEST WAVE RUN
UP LEVEL DURING
CONSTRUCTION / 1
YEAR ARI STILL
WATER +20 YEARS
ARI STORM EVENT
RL. +1.65



SCALE 1 : 50

B
S1000

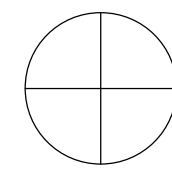


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1	03.10.18	ISSUE FOR INFORMATION	DF	RH
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**CHURCH POINT
PRECINCT UPGRADE**

CARGO WHARF SECTIONS

Principal : M. Baker

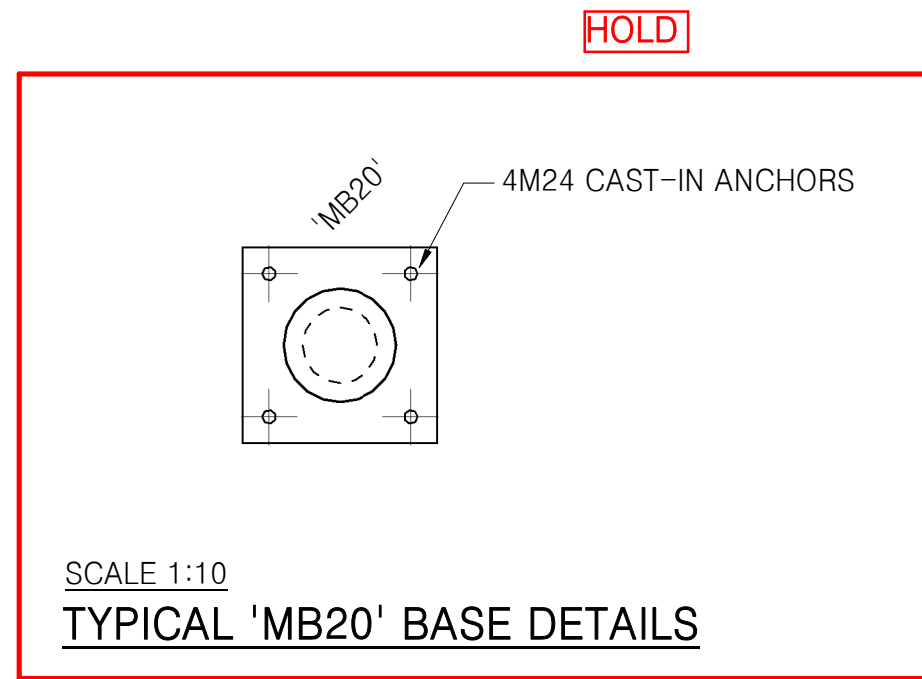
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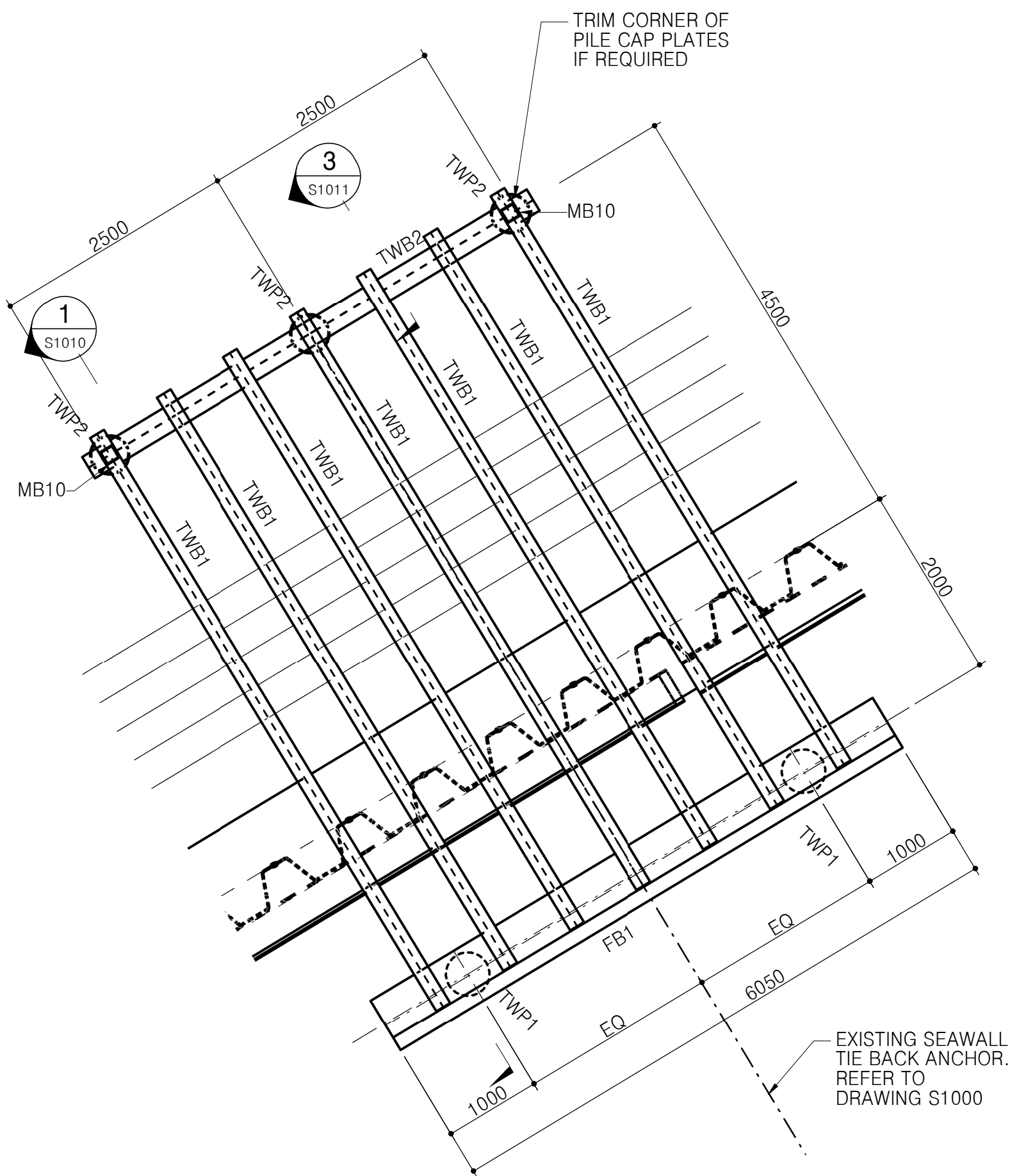
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Dwg. No. **S1005**

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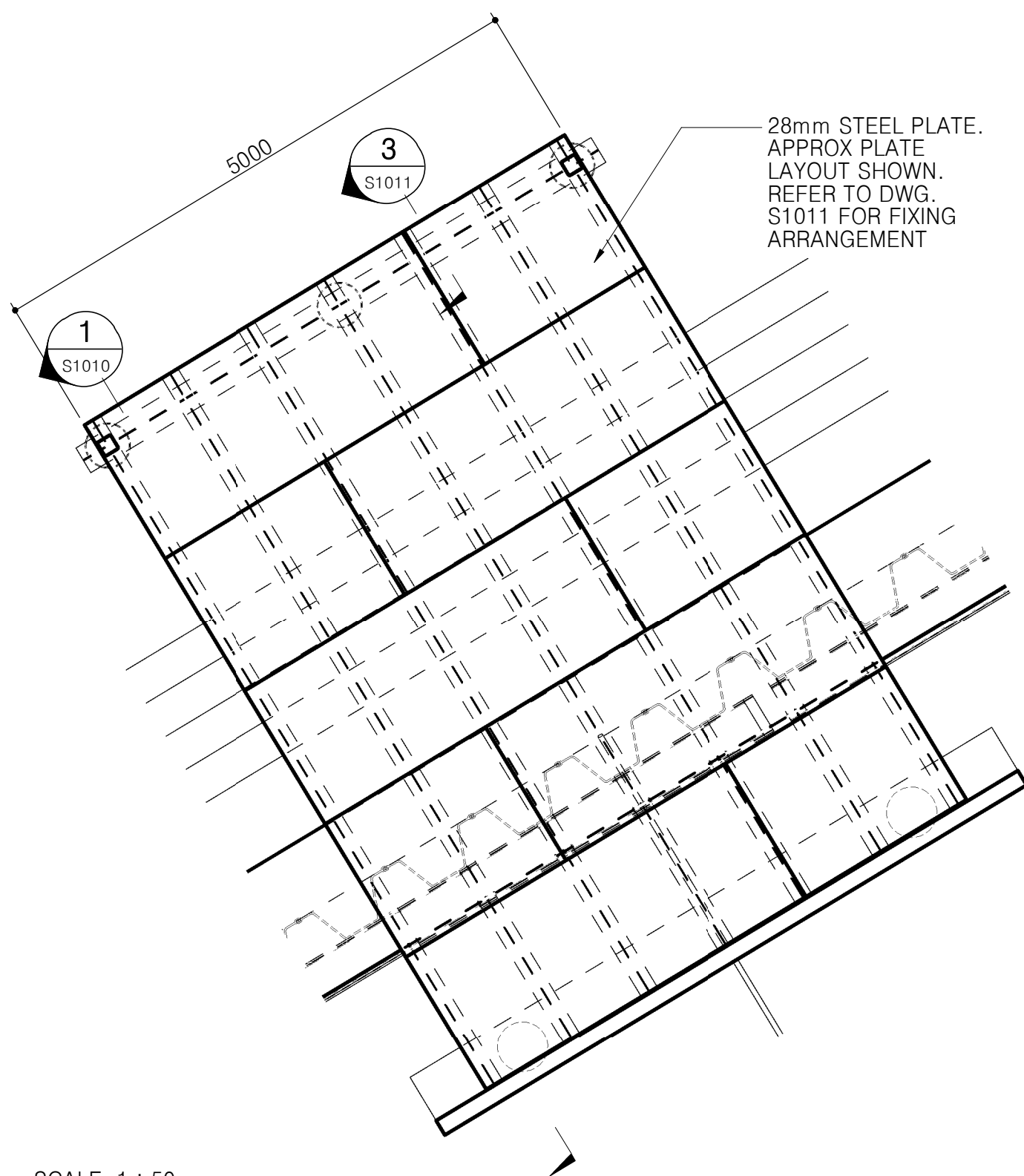
Rev. No. **A**



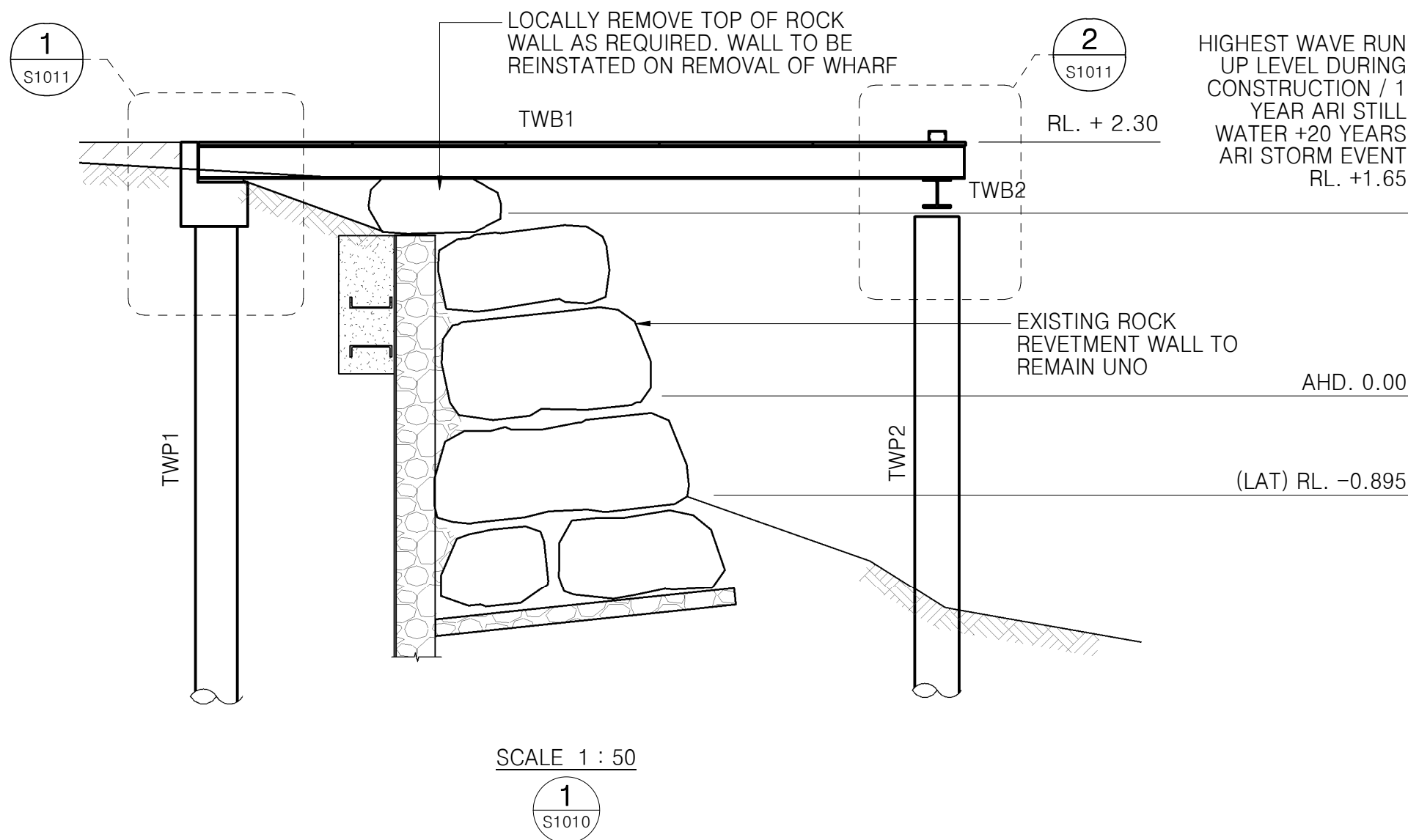


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TEMPORARY WHARF FRAMING PLAN

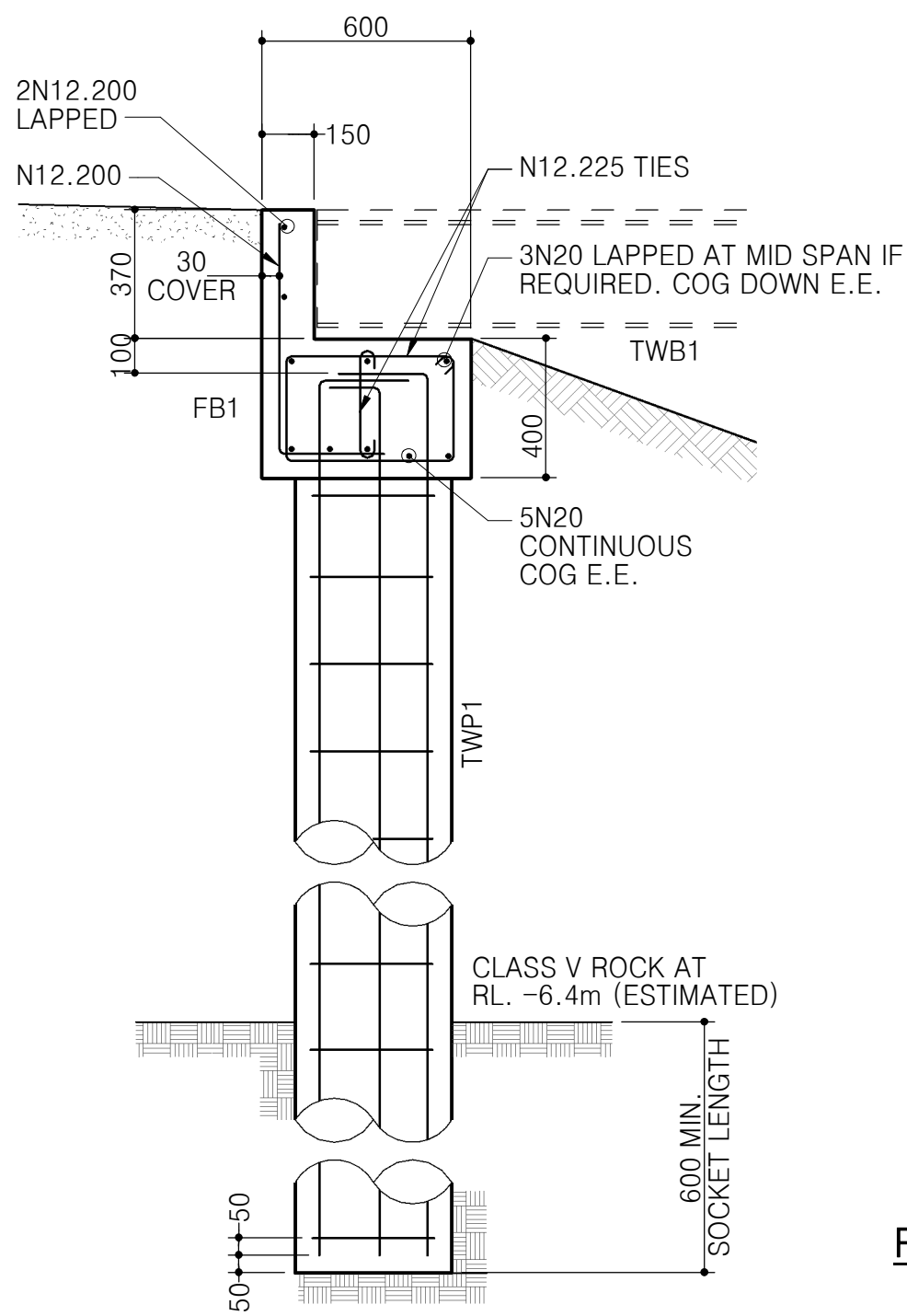
TEMPORARY CARGO WHARF MEMBER...	
MARK	Description
FB1	REINFORCED CONCRETE FOOTING BEAM
MB10	MOORING BOLLARD - 10 TONNE
TWB1	310UB46 AT 800 MAX. CTS
TWB2	250UC89 CAP WALE
TWP1	450 Dia. BORED PILE
TWP2	406 Dia x 9.5 CHS PILE



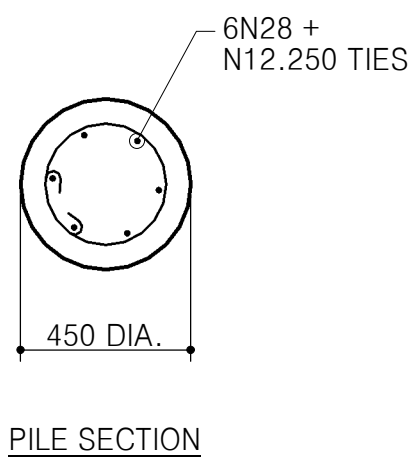
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DECK PLATE LAYOUT



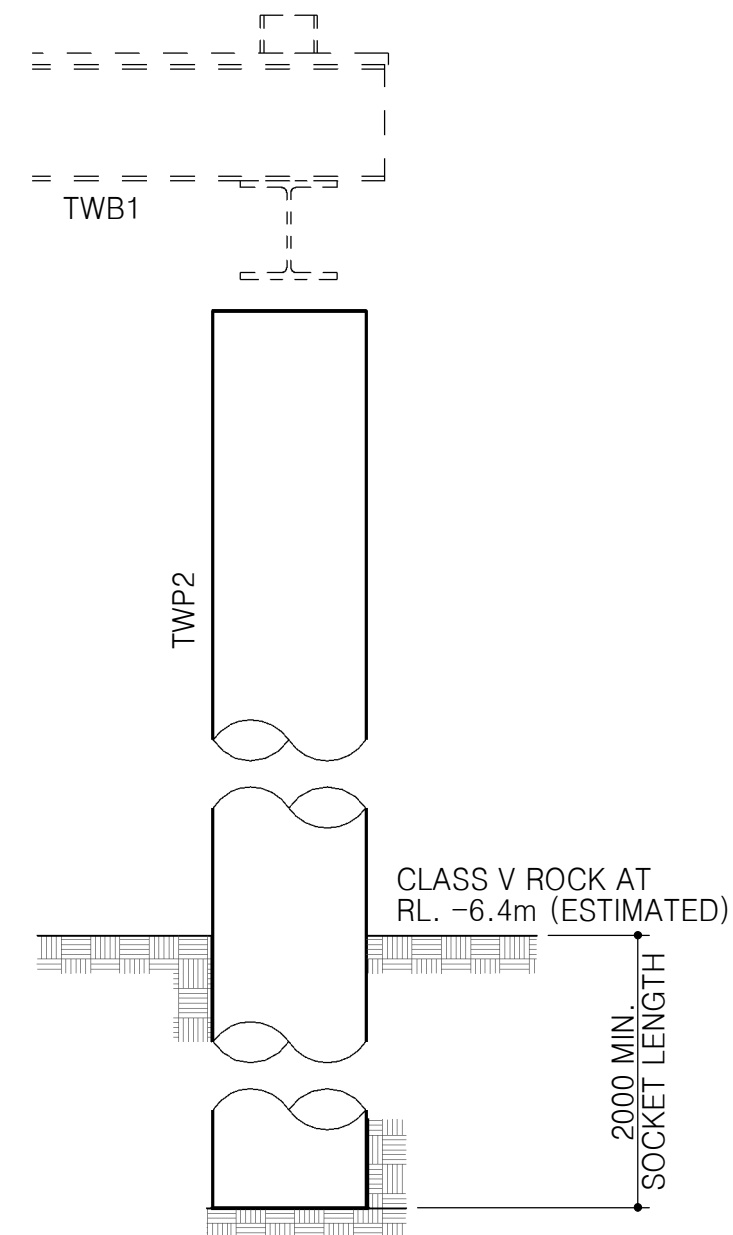
SCALE 1 : 50



SCALE 1 : 20
TWP1 AND FB1 DETAIL



SCALE 1:20
REINFORCED 'BP' DETAIL



SCALE 1 : 20
TWP2 DETAIL
NOTE :
PILES ARE TO BE DRIVEN TO
ACHIEVE SOCKET (NOT SCREWED)

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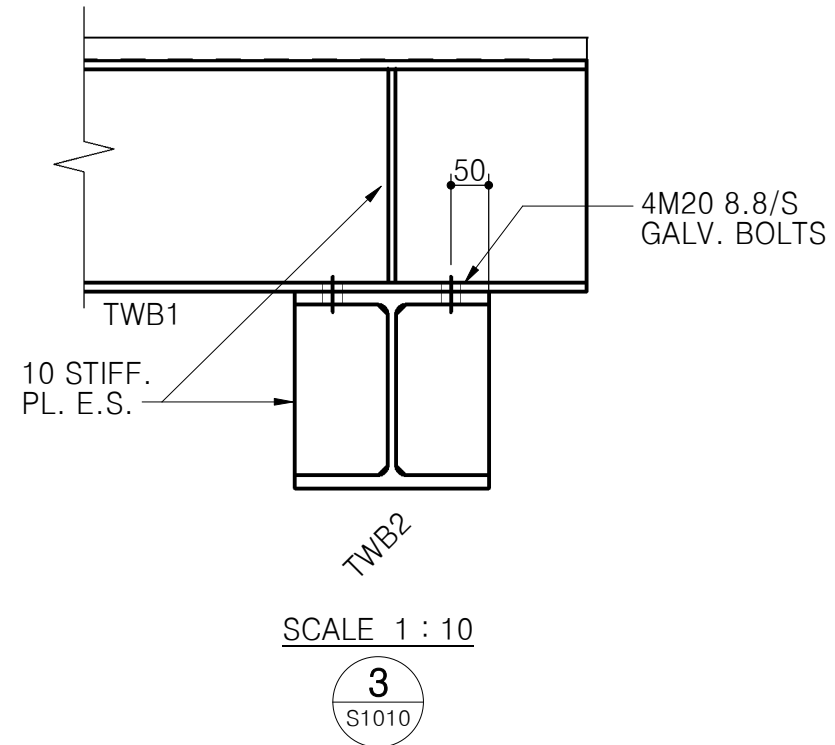
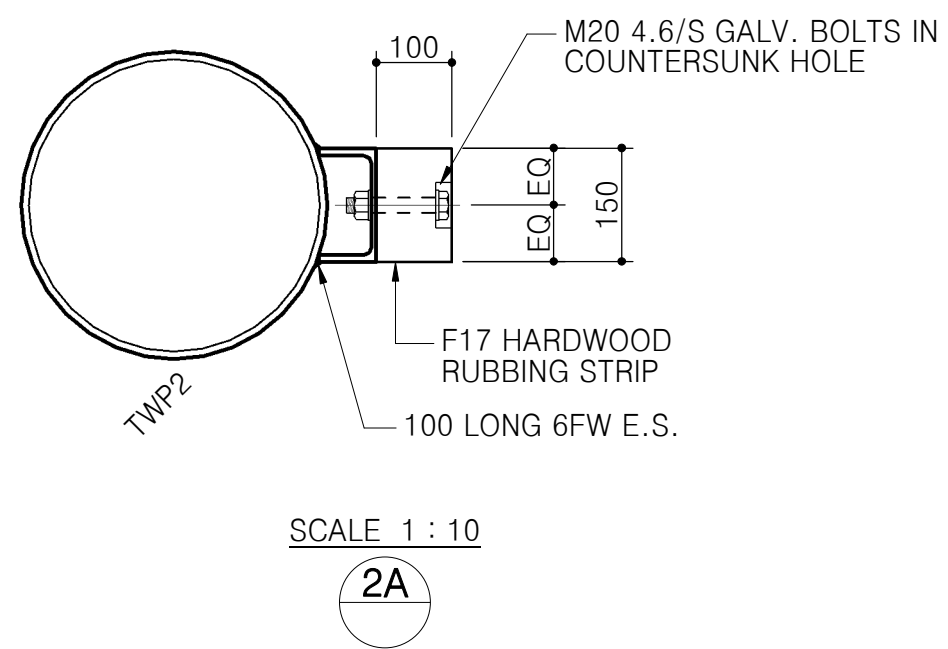
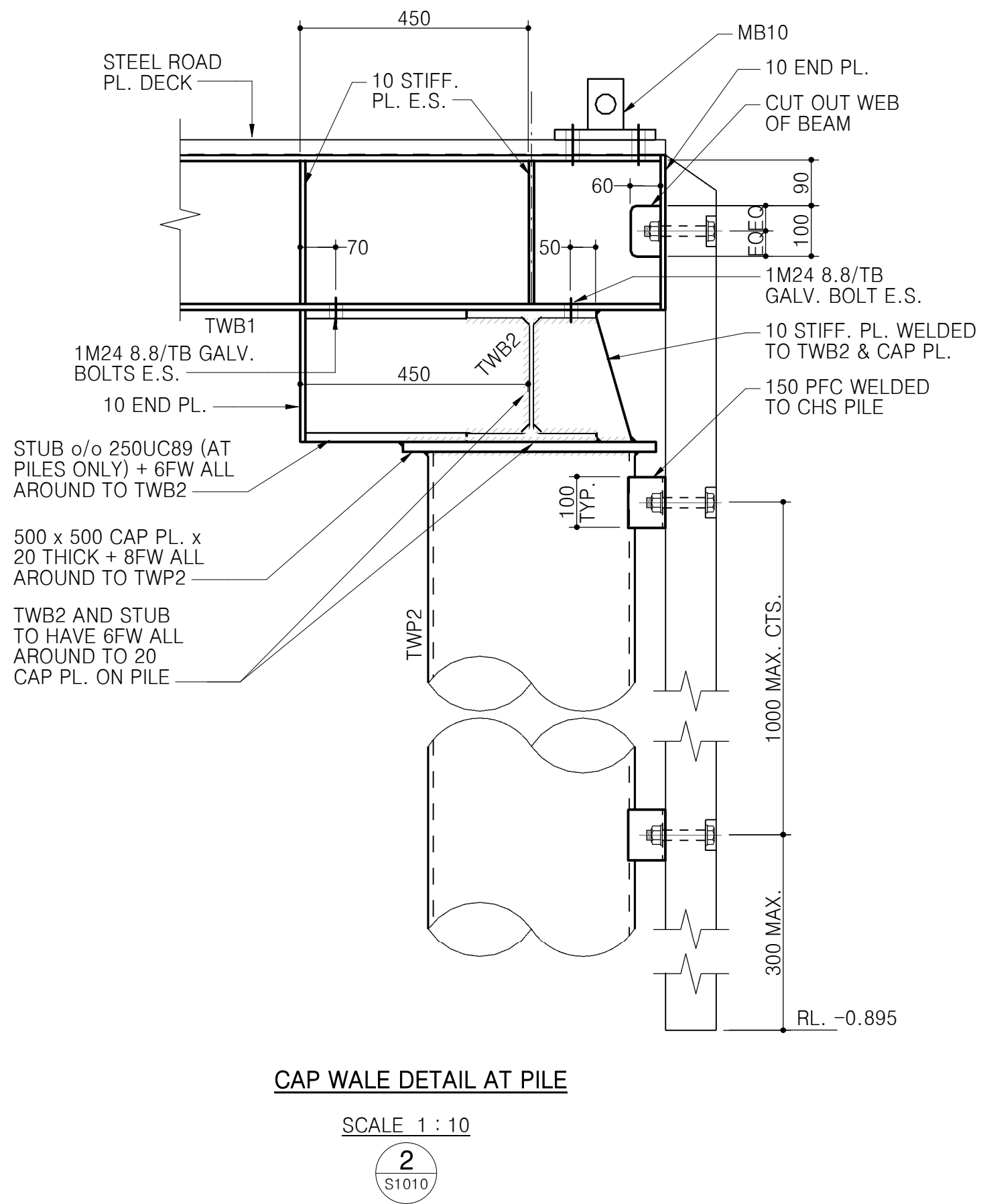
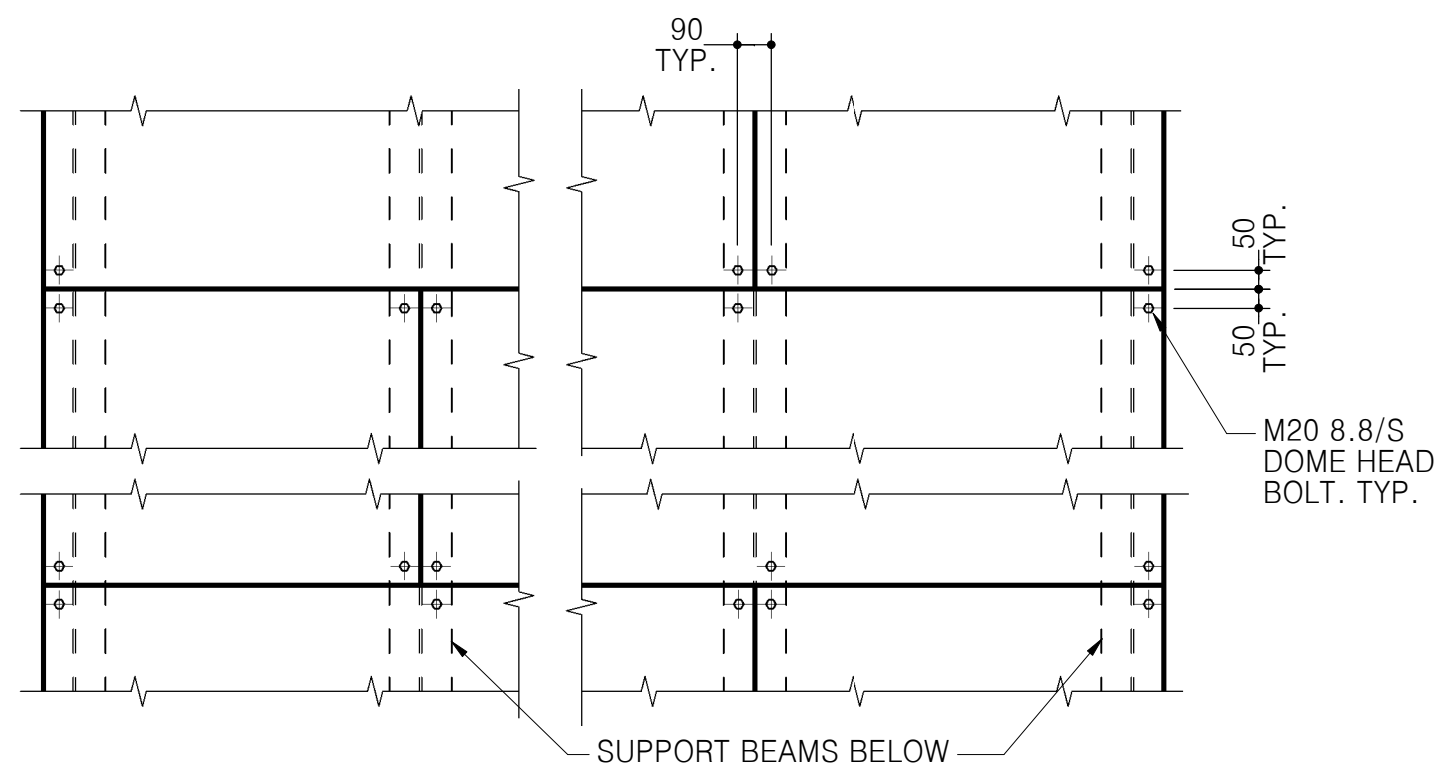
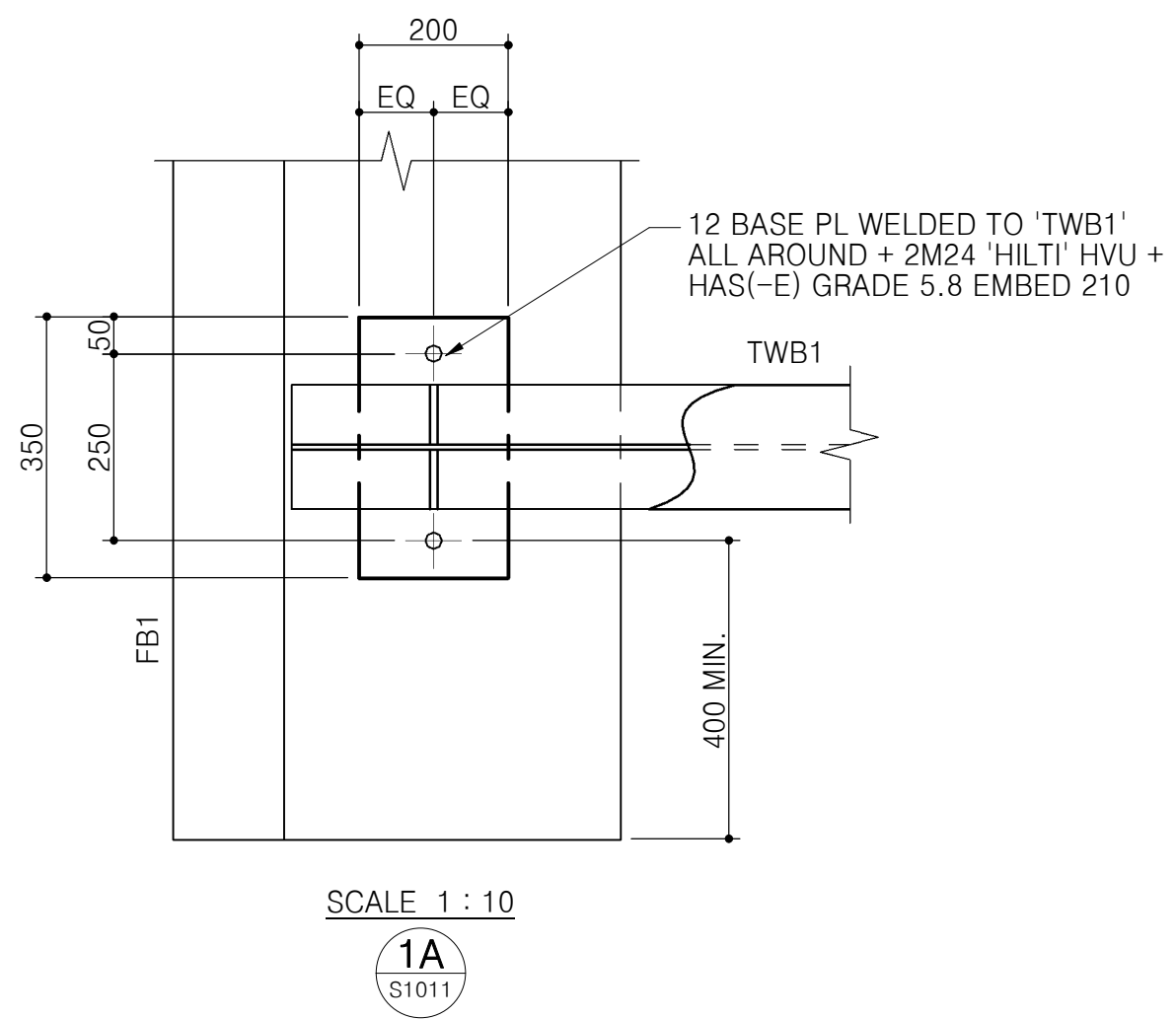
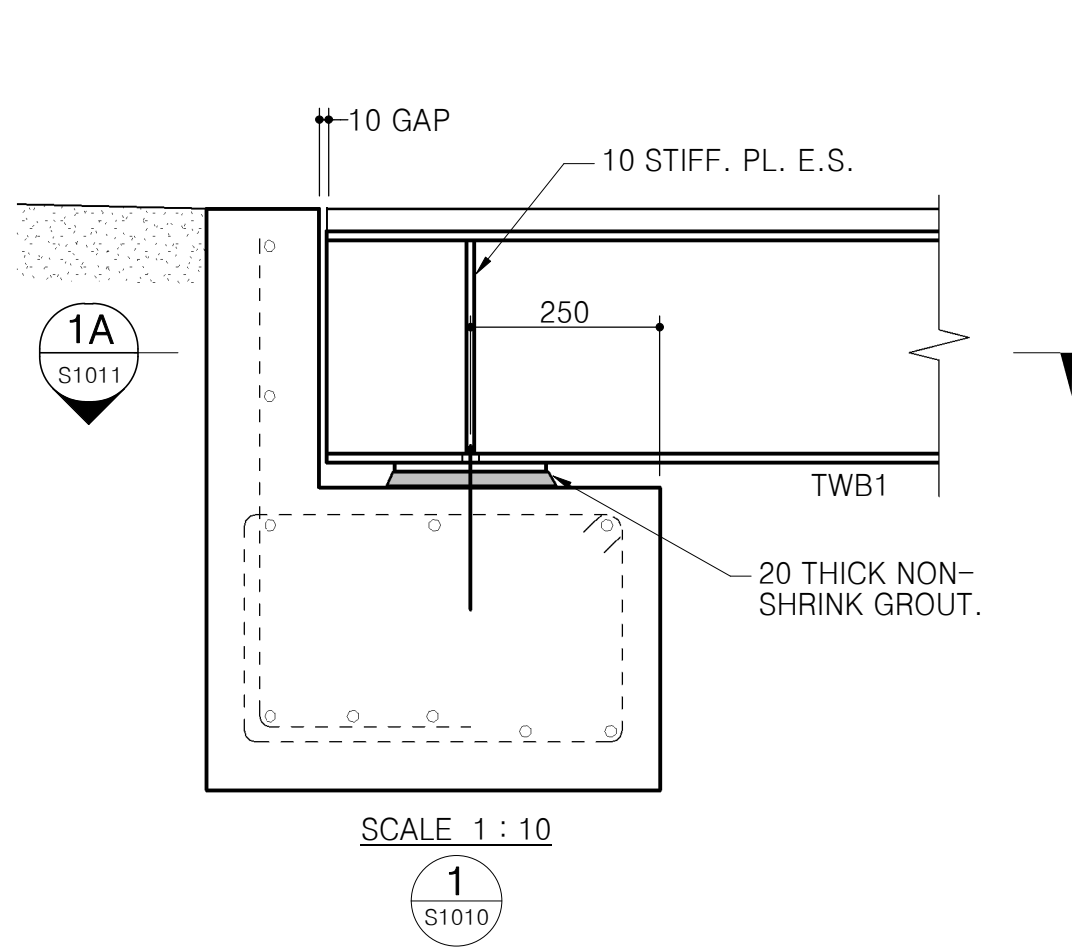
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CHURCH POINT
PRECINCT UPGRADE

TEMPORARY WHARF GENERAL
ARRANGEMENT

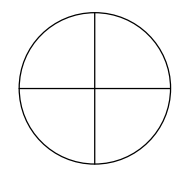
Principal : M. Baker	Project No. 18025
Sheet Size A1	Dwg. No. S1010
Scales As indicated	Rev. No. A

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CHURCH POINT
PRECINCT UPGRADE

TEMPORARY WHARF DETAILS

Principal : M. Baker

Project No. 18025

Sheet Size A1

Dwg. No. S1011

Scales As indicated

Rev. No. A

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* ALUMINIUM

* BED CONTOURS

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* CONCRETE SURFACE FINISH

* DEMOLITION

* FLOATING SEDIMENT/TURBIDITY CURTAINS

* FOUNDATIONS

* FLOATING STRUCTURE

* PILES – GENERAL

* PILES – TREATED TIMBER
- * PILES – PROTECTIVE TREATMENT

* STAINLESS STEEL PINS, ROLLERS, WHEELS, PLATES, SECTIONS & BOLTS

* STRUCTURAL STEEL – GENERAL

* STRUCTURAL STEEL – PROTECTIVE TREATMENTS

* TIMBER

* SAFETY IN DESIGN NOTES

* DECKING

* SCHEDULE OF WITNESS AND HOLD POINTS

GENERAL NOTES

1. Do not obtain dimensions by scaling these drawings. Only principal structural dimensions are shown. All dimensions are in millimetres. Details are diagrammatic and may not be to scale.
2. Read these drawings in conjunction with all other contract documents and the requirements of the relevant Authorities. Before proceeding with work, clarify any discrepancies.
3. Provide materials and workmanship in accordance with the relevant and current Standards Australia Codes (including Amendments) and the Specification.
4. All demolition work is to be undertaken in accordance with AS 2601.
5. Where proprietary products are specified on drawings equivalent alternatives may be used subject to approval by the engineer.
6. All proprietary products are to be supplied, stored, mixed, applied and cured in accordance with the manufacturer's specifications.
7. All work is to be undertaken in accordance with the conditions of Development Consent and Construction Consent.
8. All material testing and reporting is to be undertaken by a laboratory with NATA accreditation appropriate for each test.
9. Protect all workers against WHS risks. If in the opinion of the Contractor the structural details present unacceptable WHS risk levels then refer to Engineer for direction.
10. Prior to commencing any works on site contact "Dial Before You Dig" (Tel. 1100) and/or the appropriate service authorities to determine the details, locations and depths of all services on or near the site, and undertake on-site services searches.
11. Abbreviations used are as follows:

A.A.	All Around	MAX.	Maximum
ARCH	Architectural	MHWM	Mean High Water Mark
BDY	Boundary	MIN.	Minimum
BTM.	Bottom	N.F.	Near Face
c/s	Courses	N/A	Not Applicable
CL.	Centreline	NSOP	Not Shown On Plan
COS	Confirm On Site	NTS	Not To Scale
CTS.	Centres	O/A	Over All
DOW	Division of Waterways	o/o	Out Of
DP.	Deep	OAE	Or Approved Equivalent
E.E.	Each End	REINF'T	Reinforcement
E.F.	Each Face	S.S.	Stainless Steel
E.S.	Each Side	SOP	Setout Point
E.W.	Each Way	SPEC'N	Specification
EX.	Extra	STIFF.	Stiffener
F.F.	Far Face	SWL	Still Water Level
GALV.	Galvanised	TYP.	Typical
GR.	Grade	U/S	Underside
HAT	Highest Astronomical Tide Level	UNO.	Unless Noted Otherwise
		VERT.	Vertical
HORIZ.	Horizontal	WD.	Wide
LAT	Lowest Astronomical Tide Level	ø; dia	Diameter

12. Maintain the structure in a stable condition during construction. Do not exceed the design live loads shown or cause any element to be overstressed. Provide temporary bracing as required.
13. Design live loads are as follows:–

A. Gangway :

a. 4.00 kPa

b. 4.50 kN point load

B. Pontoon

a. 4.00 kPa for strength

b. 3.00 kPa for flotation and stability design

C. Boardwalk

a. 5.00 kPa

b. 4.50 kN point load

D. Cargo Wharf

a. 15.00 kPa

b. 200 kN point load

c. 70t Barge or 2 x 50t Barge

E. Temporary Cargo Wharf

a. 10 kPa

b. 80 kN point load

c. 50t Barge

Design Vessel	70t Barge	50t Barge	Commuter 5M Dinghy
Beam (m)	7	6	2.1
Displacement (t)	70	50	1
Draft at Keel (m) (Fully Laden)	0.9	0.8	0.2
Draft other than at Keel (m) (Fully Laden)	–	–	0.4
Length O/A (m)	18	12	5

WAVE DETAILS	HEIGHT (mm)	period (s)
VESSEL GENERATED WAVES (at sailing lines)		
Motor Cruiser (15m)	800	3.6
Power Boat	400	2.0
Water Taxi	500	2.2
WIND GENERATED WAVES		
Significant Wave	Hs = 0.5	Ts = 1.9



CONCRETE

1. Conform to AS 3600 and the Specification except where varied by the contract documents.
2. Refer to Schedule of Witness and Hold Points for relevant items.
3. Provide concrete to the performance criteria noted below with marine cement, maximum aggregate size 20, approved admixtures and strength grade as follows.

ELEMENT	EXPOSURE CLASSIFICATION TO AS3600	STRENGTH (MPa)
Temporary Abutment	B2	32
Cargo Wharf Deck Slab	C2	50
Pad Footing for Boardwalk	C2	50
Core Fill for Piles	C2	50
Temporary Cargo Wharf Bored Piles	A2	32
Cargo Wharf Bored Piles	A2	50

4. Project Control Testing shall be carried out in accordance with AS 3600 and AS 1379.
5. Grade 50 concrete shall comply with the following :–

A. Water binder ratio : 0.40 max.

B. Binders : Blended cements for marine use conforming with Australian Standards. Supplementary binder materials are to be used to minimise the adiabatic temperature rise and there by minimise the risk of thermal cracking.

C. Rapid Chloride migration coefficient less than 4.0x10⁻¹² m²/s.

D. Effective Chloride diffusion coefficient less than 2.5x10⁻¹² m²/s.

E. Drying shrinkage at 56 days : Target value 550 microstrain with + 15% variance for maximum shrinkage.

F. Density when cured : 2350 kg/m³ average.

6. Grade 20, 25, and 32 concrete shall have a maximum free drying shrinkage (target +15% variation) at 56 days of 550 microstrain for grade 20, 600 microstrain for grades 25 and 32, and 650 microstrain for grades 40.

7. Clear concrete cover to all reinforcement for durability shall be as follows UNO :

Tempoary Cargo Wharf :

– Abutment Beam : 30mm

– Bored Piers : 30mm

Cargo Wharf Deck :

– Soffit & Sides : 65mm

– Surface : 50mm

8. Sizes of concrete elements do not include thickness of applied finishes.

9. Beam depths are written first and include slab thickness. Maintain the slab and beam depths shown.

10. Do not make any construction joints, holes or chases in the concrete elements unless shown or approved by the Engineer.

11. Conduits and pipes cast into the plane of slabs and beams, or crossing beams :

A. shall be non-metallic unless wrapped in approved isolation tape and kept 30mm clear of all reinforcement,

B. in slabs shall be located between the bottom and top reinforcement,

C. in beams shall be located in the middle third of the depth and shall be 30mm clear of all reinforcement,

D. greater than 32mm in diameter shall not be placed unless shown or approved by the Superintendent, and

E. shall be spaced at minimum 3 x conduit diameters, but not less than 150mm UNO.

12. All falls in slabs, chamfers, reglets and drip grooves to Architectural Detail and Specification. Maintain concrete cover at these details.

13. Reinforcement notation:

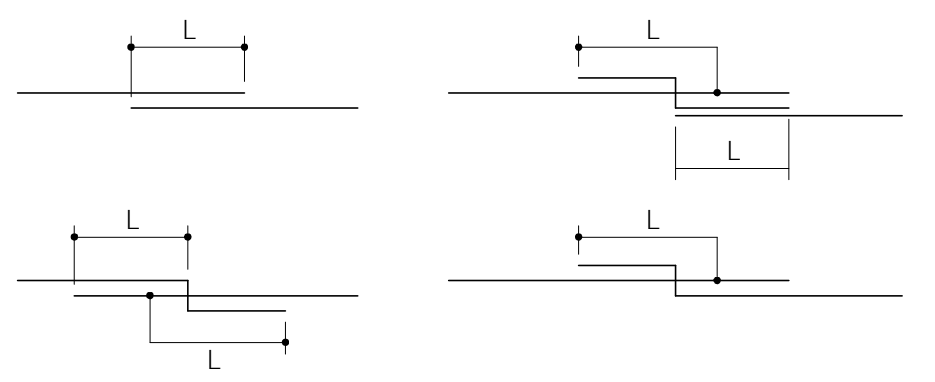
REINFORCEMENT NOTATION	
Example : 8N16,200.T denotes 8 Grade 500N deformed bars of 16 diameter at 200 centres placed in the top of the element.	
N	Grade 500N deformed bar to AS/NZS 4671
RL	Grade 500L deformed wire rectangular reinforcing fabric to AS/NZS 4671
SL	Grade 500L deformed wire squared reinforcing fabric to AS/NZS 4671
L TM	Grade 500L deformed wire trench mesh to AS/NZS 4671
R	Grade 250N hot-rolled plain bars to AS/NZS 4671

14. Reinforcement is represented diagrammatically and not necessarily in true projection.

15. Use maximum bar chair spacings of 750. Use only plastic bar chairs for surfaces exposed to ground or weather. Prevent damage to vapour barriers and membranes.

17. Provide laps only at locations shown and of dimensions as follows unless detailed otherwise or approved in writing by the Engineer.

BAR SIZE	LAP LENGTH 'L' (mm)	
	Bar with 300mm or less depth of concrete under the bar.	Bar with more than 300mm depth of concrete under the bar.
N10	400	550
N12	550	700
N16	800	1050
N20	1100	1400
N24	1400	1800
N28	1700	2200
N32	2000	2600
N36	2400	3100



18. For rectangular fabrics place bottom fabric main wires lowermost and top fabric main wires uppermost in direction of arrows.
19. Overlap first and second cross wires of each sheet of fabric by 25 at laps.
20. Do not heat, weld or site bend starters or other reinforcement unless shown or approved by the Engineer.
21. Tie all unsupported bars to N12,300.B or N12,450.T crossrods, lapped 550 where required.
22. Do not pour slabs on hot and/or windy days when the bleed water evaporation rate may exceed 0.5kg/m² per hour.
23. Apply an aliphatic alcohol to freshly placed & screeded slabs to reduce evaporation & protect against finishing difficulties & plastic shrinkage cracking. Re-apply aliphatic alcohol as needed to maintain coverage until final setting of concrete has commenced.
24. Prop, cure and strip in accordance with AS 3600, AS 3610 and the Specification.
25. Curing shall be achieved by the application of water to, or the retention of water in, the freshly cast concrete, and shall commence as soon as practicable after the finishing of any unformed surfaces has been completed. Where retention of water in the fresh concrete relies on the application to exposed surfaces of sprayed membrane-forming curing compounds, the compounds used shall comply with AS 3799.

Exposure classification to AS3600	Minimum initial curing requirements (continuous)	Minimum average compressive strength at the time of stripping of forms or removal from moulds (MPa)
B1	Wet cure continuously for at least 7 days	20
B2	Wet cure continuously for at least 7 days	25
C1	Wet cure continuously for at least 7 days	32
C2	Wet cure continuously for at least 7 days	32

27. All galvanised reinforcement is to be galvanised in accordance with AS 1650 with a coating mass of not less than 700g/m²
28. All proprietary chemical and mechanical anchors are to be installed at spacings, edge distances and depths as indicated on the drawings. Installation shall be in accordance with manufacturer's recommendations including drilling method, hole diameter, cleaning, curing, and tightening.
29. Formwork shall be in accordance with AS 3610. The contractor is responsible for the design of all formwork, associated propping and capacity of the structure under construction to carry the loading.
30. MINIMUM FORMWORK STRIPPING TIMES FOR INSITU CONCRETE (Subject to concrete test results)

STRIPPING SCHEDULE			
# : Single storey construction only. Refer to Formwork Engineer and/or AS3610–1995 for multi storey construction.			
FORMED SURFACE	HOT CONDITIONS >20°C	AVERAGE CONDITIONS ≤20°C>12°C	COLD CONDITIONS ≤12°C≥5°C
Vertical faces (beams & slabs)	5 days	6 days	7 days
Beam & slab soffits – Forms	5 days	6 days	8 days

CONCRETE SURFACE FINISH

1. The finish for all trafficable surfaces shall be broomed concrete UNO.
2. The finish for all trafficable surfaces is to be slip resistant in accordance with AS/NZS 4586 : 2013 and HB 197 : 2014 from Standards Australia.
3. The slip resistance of all trafficable surfaces is to satisfy :–

A. Classification 'W' (BPN > 45) using the Wet Pendulum Test, or

B. Classification 'B' using the Wet Barefoot Ramp Test, or

C. R11 using the Oil–Wet Ramp Test.
4. The slip resistance of all trafficable surfaces is to have a friction angle of not less than 18°.

DEMOLITION

1. All demolition work is to be undertaken in accordance with AS 2601.
2. The Contractor is to submit details of its demolition license.
3. The Contractor is to prepare a demolition plan and a certificate from an experienced Engineer on the institution of Engineers National Professional Engineers Register, certifying that the demolition plan is in accordance with Australian Standard AS 2601–2001 Demolition of Structures.
4. The existing piles are to be fully removed from the seabed unless agreed with Transport – Roads & Maritime Services.
5. Before (Transport – Roads & Maritime Services) will consider not fully extracting a pile from the bed, the Contractor is to demonstrate that the subject pile has not moved vertically when it has been subjected to a sustained vertical tension load of not less than 500kN for a period of not less than 30 minutes.
6. Piles which are agreed to be left embedded, shall be cut off 500mm below the bed level or at the rock level, whichever is higher.
7. The locations of all piles which are not fully removed from the seabed, are to be marked on the "as constructed" drawings.
8. All extracted and demolished materials awaiting removal from the site, shall remain covered at all times. The Contractor shall minimise the length of time that extracted piles are stored on site.
9. The Contractor shall ensure odour suppressant material is routinely applied to all odorous surfaces and materials as odour becomes apparent.

FLOATING SEDIMENT/TURBIDITY CURTAINS

1. Prior to commencement of each section of seawall work, the adjacent marine environment is to be protected by approved floating sediment/turbidity curtains.
2. The curtains are to encapsulate the entire work section length with no gap at the seawall at each end.
3. The curtains are to be anchored or weighted to the bed, are to extend to the bed and are to allow for the full range of tidal water levels while maintaining full protection.

FOUNDATIONS

1. Refer to Schedule of Witness and Hold Points for relevant items.
2. Refer to site investigation report no. 29253SYrpt dated 23 May 2016 by JK Geotechnics.
3. Founding material at piles has been designed for either:

A. weak rock –

a. Ultimate vertical bearing pressure – 3000 kPa

b. Ultimate lateral bearing pressure – 1000 kPa

c. Ultimate shaft adhesion – 150kPa

B. or engineered fill with design characteristics as follows –

a. Internal friction angle – 30° min.

b. Dry density – 18 kN/cubic metre

c. Elastic Modulus E/s – 20MPa
4. Do not exceed a rise of 1 in a run of 2 for the line of slope between adjacent footings or excavations.
5. Do not excavate below the level of adjacent existing footings until the engineer has been advised and structural details of shoring and/or underpinning have been approved.

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REFER TO DWG. No.'s S0010, S0011 & S0012 FOR CONSTRUCTION NOTES.				
Rev.	Date	Description	Drawn	Design
A	05.10.18	TEMPORARY CARGO WHARF ISSUE	DF	RH

FOR CONSTRUCTION

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CHURCH POINT
PRECINCT UPGRADE

CONSTRUCTION NOTES – SHEET 1

Principal : M. Baker	Project No. 18025
Sheet Size A1	Dwg. No. S0010
Scales	Rev. No. A

FLOATING STRUCTURE

- GENERAL
1. The flotation units, the floating structure as a whole and the piles providing lateral restraint to the floating structure are to comply with the requirements of:
- A. AS 3962 – Guidelines for Design of Marinas.
 - B. Roads and Maritime Services Engineering Standards.
 - C. Other sections of these notes.
2. Refer to Schedule of Witness and Hold Points for relevant items.
3. The floating structure and the piles providing lateral restraint to the floating structure are to be designed to withstand the loads arising from:
- A. Vessel impact;
 - B. Wind and wave loads on vessels;
 - C. Wave loads on the floating structure.
 - D. The dynamic effect of the waves including the effects from the longer period vessel waves with all berths of the floating structure occupied.
4. The floating structure is to have a design life of no less than 25 years.
5. The walking surface of the floating structure shall be concrete.

- FENDERING, MOORING CLEATS & SERVICES BOLLARDS.
1. Fendering is to be provided continuously along all walers and around all pile guide brackets as shown on the drawings.
2. All fendering is to be made from hardwood timber.
3. Mooring cleats are to be provided in the locations shown on the plans.
4. Services Bollards are to contain a light, water outlet, one 3 phase power outlet and one 240 volt power outlet as specified UNO. by the Services Engineer and in the locations shown on the drawings.

- WALERS
1. The flotation units are to be connected together with timber walers or aluminium frames.

2. Where timber walers are used each waler is to be made up from two timber sections.
3. The joints in the timber sections making up the walers are to be such that:
- A. Only one timber section is jointed at any location.
 - B. All joints in timber sections are to occur at the mid length of a pontoon unit.

4. The walers are to be connected to the flotation units using galvanised through bolts with galvanised steel spring washers, nuts and nylock nuts at each end of each bolt or FRP through rods with matching nuts & washers. At the interface between the flotation unit and the timber waler, galvanised shear plates are to be installed at each bolt as shown on the drawings.
5. The through bolts are to extend the full width of each pontoon unit.

BUOYANCY CHARACTERISTICS

Loading Characteristics	Calculated Average Freeboard (m)
Self weight of floats, frames, timber deck, attachments and ramp	450

- PILE GUIDES
1. Pile guides are to be positioned to suit pile locations determined by the contractor.

2. At pile guides, rubbing blocks are to be provided to keep floating in position.
3. All rubbing blocks in pile guides are to be have 2mm folded stainless steel plates fixed to the face of the rubbing block and where it will come into contact with the HDPE sleeve.
4. On completion of installation of the floating structure the average gap at any pile between the face of the stainless steel plate or the rubbing block and the HDPE sleeve around the pile is to be 6mm.

- ON COMPLETION
1. On completion of the work, the contractor is to submit to the Superintendent:
- A. As Constructed drawings for the structure, ramp and piles.
 - B. A maintenance plan for all elements of the floating structure and ramps.

PILES – PROTECTIVE TREATMENT

- STEEL PILES
1. Protective Treatment is to be in accordance with the Specification & these notes.
2. All piles are to be uncoated UNO.
3. Steel piles supporting the Cargo Wharf are to be wrapped with the 'Denso' Seashield 100 corrosion protection system, installed in accordance with the manufacturers recommendation.
4. Steel piles supporting the Northern Boardwalk and access gangway are to be sleeved with HDPE as shown.
5. Sacrificial anodes are to be attached to all steel piles in the locations shown on the drawings.
6. The sacrificial anodes are to be bolt fixed to the piles & are to have a design life of 10 years before requiring replacement.
7. The sacrificial anodes are to provide continuous long term corrosion protection to each pile from 500mm below the bed level to the HAT.

- TIMBER PILES –
1. Type 1 – Piles FP2 & TP1

The tops of all the timber piles are to be coated with a protective treatment as follows	
Surface Preparation	Remove bark "hairs" with sanding disc & make smooth.
1st Coat	'Altex Coatings – Everseal" DFT50 microns. Colour – Amber
2nd Coat'	'Altex Coatings – Devthane" 359 HS, DFT100 microns. Colour – White

2. Type 2 – Piles FP1

The tops of all the timber piles are to be coated with a protective treatment as follows	
Surface Preparation	Remove bark "hairs" with sanding disc & make smooth.
1st Coat	'Altex Coatings – Everseal" DFT50 microns. Colour – Amber

PILES – GENERAL

1. Piles are to be supplied, installed & finished in accordance with the Specification & AS 2159 – Piling Code UNO.
2. Steel piles are to be fabricated in accordance with AS 4100, the steelwork specification & the steel notes on these drawings.
3. Refer to Schedule of Witness and Hold Points for relevant items.
4. Piles are to be installed to the following tolerances:

Pile Mark	Deviation from Specified Plan Position at RL +3.500 (ZFDTG) UNO.	Deviation from Vertical
All UNO.	75mm	1 Horiz. to 50 Vert.

5. Piles shall be supplied in one continuous length unless otherwise approved. Splicing of sections to achieve pile length will be permitted. Splice locations and details are to be submitted to the Superintendent for approval. No spliced pile shall be installed until such approval has been given.
6. All weld splices in all piles are to be inspected using Ultrasonic inspection techniques in accordance with AS 1554.
7. All lengths of defective welds are to be gouged out & rewelded prior to transport of piles from the fabricator's yard.
8. Piles nominated for driving are to be driven into holes drilled in the rock which are a smaller diameter than the pile which will result in the socketed length of the steel pile hard against the rock all around and for the full length of the socket.
9. Piles nominated as screwed are to be screwed into rock with cutting teeth on the base of the pile angled to result in a maximum distance of 20mm from the outside of the pile to the rock face. On completion of drilling, piles are to be driven to refusal.
10. During socketing of the piles in rock the rate of progress of the piling is to be monitored such that seams and unsuitable layers of material are identified. If seams and unsuitable material are encountered advise the Superintendent who will advise on the course of action to be taken.
11. Advise Superintendent of overburden thickness to medium strong rock. Obtain confirmation of rock socket length for each pile before moving piling rig to the next pile.
12. Piles not socketed into rock shall be driven over a single interrupted period to achieve the embedment specified. Jetting of these piles is not permitted without approval from the Superintendent.

PILES – TREATED TIMBER

1. Treated piles shall be stored off site for not less than 12 weeks after completion of the treatment before being delivered to site.
2. Where 'oily' surfaces are observed on treated timber piles delivered to site, these piles are not to be used on the project. The piles are to be removed from site.

STAINLESS STEEL PINS, ROLLERS, WHEELS, PLATES, SECTIONS & BOLTS

1. All pins, rollers, wheels, plates, sections and bolts shall be:
- A. Grade 316 or 316L UNO.
 - B. All handrails, balustrades and welded attachments are to be fabricated from grade 316L.
 - C. Supplied in accordance with ASTM A240M/A480M and ASTM A276.
 - D. Manufactured and installed in accordance with AS 4100, AS 4673 and AS 1554.
 - E. Pins to be Grade SAF 2205 UNO.
 - F. Bolts to be Class A4–70 UNO in accordance with ISO 3506–1.
 - G. Protected during fabrication, transportation & installation to minimise the risk of iron or carbon steel particles becoming embedded in the surface.
2. All rollers and pins shall be fabricated within a tolerance for the diameter of ±0.25mm.
3. All stainless steel plates, sections, pins, rollers and wheels shall be pickled and passivated.
4. All stainless steel exposed to view shall be machine polished to 600 grit followed by electro polishing.
5. All stainless steel shall be supplied & fabricated in accordance with the notes & the Steelwork notes.
6. Immediately prior to installation, all stainless steel pins, rollers, and plates shall be subject to a Ferroxyl test. Any embedded iron found as a result of this test is to be removed.
7. All welding shall be in accordance with AS 1554.6.
8. All welds to be Category SP UNO. All welds shall be 5mm continuous fillet using an "over alloyed" electrode compatible with the strength grade of the stainless steel plate at the weld UNO.
9. Welds shall be tested in accordance with the weld testing specified in the Steelwork notes.
10. Where stainless steel pins are surrounded by a bearing, prior to installing the bearing, apply a light oil to the inside of the bearing which is in contact with the stainless pin.
11. Where stainless steel fixings are in contact with aluminium surfaces, passivate the stainless steel by coating with "TEF–GEL", or an approved equivalent, over all surfaces which could come into contact with the aluminium.
12. Stainless steel shall be fabricated by a specialist Stainless Steel Fabricator accredited by the Australian Stainless Steel Development Association (ASSDA).

STRUCTURAL STEEL – GENERAL

1. Comply with AS/NZS 1163, AS/NZS 3679, AS/NZS 1554, AS 4100 and the Specification except where varied by the contract documents.
2. Refer to Schedule of Witness and Hold Points for relevant items.
3. Abbreviations used are as follows:

B.W.	Butt Weld	RHS	Rectangular Hollow Section
CHS	Circular Hollow Section	SHS	Square Hollow Section
EA	Equal Angle	UA	Unequal Angle
F.W.	Fillet Weld	UB	Universal Beam
LLH	Long Leg Horizontal	UC	Universal Column
LLV	long Leg Vertical	WB	Welded Beam
PFC	Parallel Flange Channel	WC	Welded Column
PL	Plate		

4. Provide upward camber to beams where shown. Pre-cambers may be achieved by pre–setting subject to approval from the Superintendent.
5. Stability of the structure during construction is the Builder's responsibility. Provide any temporary bracing that may be required for this purpose.
6. Use the following grades of steel, UNO:

STEEL MEMBER TYPE	GRADE
Circular hollow sections	350
Plates & Rods	250
Rectangular hollow sections	450
Rolled Sections	300
Square hollow sections (greater than 50mm)	450
Square hollow sections (less than or equal to 50mm)	350
Welded Sections	300

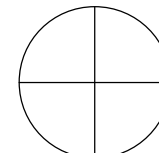
7. All stainless steel bolts to be grade 316 class A4–50 bolts or better UNO. All stainless steel fixings are to be in accordance with ISO 3506.

BOLT TYPE	COMMENTS
4.6/S	Commercial bolts of grade 4.6 to AS 1111 snug tightened to AS 4100.
8.8/S	High strength structural bolts of grade 8.8 to AS 1252 snug tightened to AS 4100.
8.8/TB	High strength structural bolts of grade 8.8 to AS 1252 fully tensioned to AS 4100 as bearing joint.
8.8/TF	High strength structural bolts of grade 8.8 to AS 1252 fully tensioned to AS 4100 as friction joint iwth facing surfaces left uncoated UNO.

8. Unless noted otherwise all bolts shall be M24 Grade 8.8/S. No connection shall have less than 2 bolts.
9. TB and TF bolts to be installed using an approved direct tension indication device such as "Hobson Squirter Washers".
10. All welds shall be Category SP UNO. All welds shall be 6mm continuous fillet using E49XX electrodes UNO. Butt welds shall be complete penetration butt welds to AS 1554.
11. The extent of non–destructive weld examination shall be as shown in the table below. Visual scanning, visual examination, and radiographic or ultrasonic examination shall be in accordance with AS/NZS 1554.1, AS 2177.1, and AS 2207 as appropriate.

TYPE OF WELD AND CATEGORY	EXTENT (% of total length of weld type)		
	Visual Scanning	Visual Examination	Radiographic or ultrasonic inspection
Fillet welds, SP	100%	50%	–
Fillet welds, GP	100%	25%	–
Butt welds, SP	100%	50%	10%
Butt welds, GP	100%	25%	–

12. Where stainless steel is welded to mild steel, use a suitable over alloyed electrode.
13. All plates including but not limited to cap, base and gusset plates to be fully welded to steel members UNO.
14. All plates shall be 10 thick UNO.
15. Provide 14Ø holes as required for affixed timber members UNO.
16. Use non–shrink grout with a minimum compressive strength of 30MPa, tightly packed under all bearings and base plates.
17. Provide seal plates to all hollow sections, with "breather" holes if members are to be hot dip galvanised.
18. All corners and edges of all steel plates and all sections are to be rounded to a radius of not less than 3mm prior to surface preparation.
19. All proprietary chemical and mechanical anchors are to be installed at spacings, edge distances and depths as indicated on the drawings. Installation shall be in accordance with manufacturer's recommendations including drilling method, hole diameter, cleaning, curing, and tightening.
20. All stainless steel bolts to have stainless steel washers installed between nuts and fixed washers.
21. 'Loctite' is to be applied to the threads of all stainless steel bolts at the nuts, immediately prior to tightening.

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REFER TO DWG. No.'s S0010, S0011 & S0012 FOR CONSTRUCTION NOTES.					
Rev.	Date	Description	Drawn	Design	
A	05.10.18	TEMPORARY CARGO WHARF ISSUE	DF	RH	

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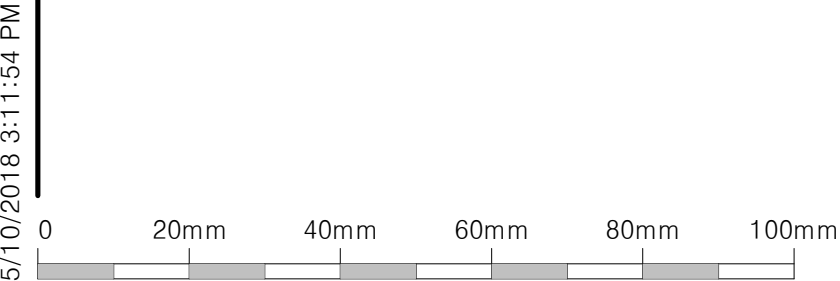
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TAYLOR LAUDER BERSTEN PTY. LTD.
CONSULTING STRUCTURAL, CIVIL & MARITIME ENGINEERS

CHURCH POINT
PRECINCT UPGRADE

CONSTRUCTION NOTES – SHEET 2

Principal : M. Baker	Project No. 18025
Sheet Size A1	Dwg. No. S0011
Scales	Rev. No. A



STRUCTURAL STEEL – PROTECTIVE TREATMENTS

CORROSION PROTECTION

- 1. Refer to Schedule of Witness and Hold Points for relevant items.
- 2. Surface preparation and corrosion protection of the steelwork is to be provided to satisfy the following atmospheric corrosivity categories and years to first maintenance in accordance with AS 2312.1 and/or AS/NZS 2312.2

Steelwork Elements	Atmospheric Corrosivity Category (excluding micro-environments)	Years to First Maintenance
Internal Steelwork	C4	25+
External Steelwork	C5-M	15+

- 3. Steelwork in an internal environment subject to cross ventilation of outside air is to be classified as being in an external environment.
- 4. The coating system shall be
 - A. internal steelwork – EHB6
 - B. external steelwork – EHB6
- 5. Surface preparation and application procedures are to be in accordance with AS 2312.1, AS/NZS 2312.2 and the supplier's specification.
- 6. Unless noted otherwise, provide bolts in the completed structure with equivalent corrosion protection as for the steel members they connect.
- 7. In addition to the finish specified any steelwork in contact with the concrete is to be coated with a bitumen paint to a minimum dry film thickness of 0.4mm, to 100mm above ground level UNO.
- 8. When galvanising hollow sections of steelwork provision for adequate venting and draining shall be made during the galvanising process in accordance with galvaniser's requirements and AS/NZS 4690. The location and size of holes should be shown on the fabrication shop drawings for review by the Structural Engineer. Venting holes in external and/or architecturally exposed members are to be suitably plugged and sealed prior to the steel arriving on site.
- 9. Refer to the Architectural specifications for top coat finishes and colours. All corrosion protection coatings are to be compatible with any applied finishes and top coats, including any fire rated coatings.
- 10. Any coating repairs shall be undertaken to provide the same level of protection as the original surface treatment.
- 11. Restore damaged or untreated surfaces on site after erection to their specified shop treatment condition only with the approval of the Superintendent.
- 12. All edges and corners of all steel sections and plates are to be rounded to a minimum radius of 3mm.
- 13. The contractor is to appoint an approved independent surface preparation and coating inspector prior to commencement of fabrication.
- 14. The level of inspection & testing is to satisfy Level 2 Inspections in accordance with AS 2312.1
- 15. Where stainless steel is welded to mild steel which is painted, the paint coating is to extend 20mm onto the stainless steel.
- 16. No welding, cutting or modifying of painted steelwork shall be undertaken unless approved by the Superintendent.
- 17. Any defects found in the coating by this procedure shall be repaired by the Coating Contractor in accordance with the manufacturer's recommended repair procedure.

TIMBER

- 1. All timber shall comply with AS 2082 UNO. and shall be equal to or better than as set out in the following table.
- 2. All Deck timbers with a nominal thickness of 70mm or greater shall comply with AS 3818.6.
- 3. All piles shall comply with AS 3818.3.

MEMBER	SPECIES	STRENGTH GROUP	STRESS GRADE	DURABILITY CLASS	JOINT GROUP
All timber below RL +0.775 (AHD)	Turpentine	S3	F17	1	J2 or better
Beams & Capwales above RL +0.775 (AHD)	Hardwood, Non Ash Eucalypts from QLD or NSW	S3	F17 or better	1 (above ground)	J2 or better
Deck timbers UNO, greater than or equal to 50mm thick	Refer Below	S2	F17	1 (above ground)	J2 or better
Piles	Turpentine	S3	F17	1 (marine borer resistance)	J2 or better
Piles	Koppers Treated Piles	S2	F27	1 (after treatment)	J2 or better

- 4. Timber work shall comply with AS 1720.
- 5. Refer to Schedule of Witness and Hold Points for relevant items.
- 6. All checks, recesses, bolt holes and the like in timber beams and capwales are to be coated with Protim Timbercare CN Timber oil.
- 7. Bolt heads shall be set into timbers & recesses filled with bituminous sealant or Porion external grade filler from Timbermate, following final retightening of all nuts on completion of the work.
- 8. All timber connections, other than plywood or decking, to have M24 4.6/S galvanised bolts with galvanised steel washers. Typical UNO.
- 9. All packing between timbers is to be Polystone P300 (colour – black) UNO.
- 10. Bolts in timber connections shall be used with washers under heads and nuts. Minimum washer size shall be :

BOLT SIZE	WASHER		
	Thickness (mm)	Diameter for round washers (mm)	Side length for square washers (mm)
M12	3.0	55	50
M16	4.0	65	60
M20	5.0	75	65
M24	6.0	80	75

NAILPLATES

1. Fix nailplates to the beams and piles as specified in table below:		
Ends of Beams, Capwales & Decking greater than 100mm thick	Pryda Knuckle Nailplates covering the whole cross section of the member less 25mm in width & 25mm in depth	
Tops of Piles without caps and rings	300mm dia Pryda Pole cats	

- 2. Nailplates are to be attached to the ends of members prior to fixing member into the structure.

PROTECTIVE TREATMENT

- 1. Beams and Capwales
 - A. Before applying nail plates the ends of all capwales are to be coated with "Altex Coatings – Everseal" DFT 50 microns Colour – Amber.
- 2. All packing between new and existing timbers is to be Polystone P300 (colour – black) UNO.
- 3. All gaps between the underside of capwales & recessed surface of existing piles are to be cleaned out to remove all loose material and rot spores, then filled with an approved Hydrophobic epoxy.

DECKING

- 1. At the time of fixing to the supporting beams, the timber decking is to have an average moisture content of 23%.
- 2. All decking timber shall be equal to or better than as set out in the following table.

MEMBER	SPECIES	STRENGTH GROUP	STRESS GRADE	DURABILITY CLASS	JOINT GROUP
All timbers	Grey Box, Grey Gum, Grey Ironbark, Tallow Wood, Coastal Blackbutt or Spotted Gum	S2	F17 or better	1 (above ground)	J2 or better

- 3. Each timber decking plank is to be fixed to each supporting timber using 2 * 14 gauge (6mm shank dia) x 100mm long grade 316 stainless steel Bugle Head batten self tapping screws. Screws are to be positioned and installed as shown on the drawings.
- 4. The head of each screw shall be flush with the top of the deck timber.
- 5. Deck timber shall be rough sawn timbers dressed on one side only such that the maximum difference in the top surface level between adjacent timbers is 1.5mm. The dressed sides of the deck timbers are to be on the under side.
- 6. Pre drill holes for all fixings in timber decking and apply Protim Timbercare CN timber oil before installing the fixings.
- 7. Each timber decking plank is to be installed hard against adjacent planks, with no gaps between planks.

SAFETY IN DESIGN NOTES

- 1. TLB Engineers has assessed the health and safety risks related to the structural design. TLB Engineers has carried out a safe design risk assessment and has not identified hazards considered to be atypical and / or unique for this project.
- 2. TLB Engineers may have identified hazards in each of the following stages in the lifecycle of the structure and where appropriate may have provided recommendations to mitigate the residual risks:-
 - A. Design for Use – Any Use hazards identified are tagged on the drawings as UH#
 - B. Design for Construction – Any Construction hazards identified are tagged on the drawings as CH#
 - C. Design for Maintenance – Any Maintenance hazards identified are tagged on the drawings as MH#
 - D. Design for Demolition – Any Demolition hazards identified are tagged on the drawings as DH#
- 3. The hazards identified by TLB Engineers are not exhaustive. do not relieve any other party from undertaking their own safety in design review, and do not relieve any other party of their obligations and responsibilities under the Work Health and Safety Act.

SCHEDULE OF WITNESS AND HOLD POINTS

(SUBMISSIONS TO STRUCTURAL ENGINEER U.N.O)

DESIGN DRAWINGS AND DETAILS		
Description	Witness Point	Hold Point
Piles including design assumptions, details, strength & settlement calculations, & details of connection to structure.		Submit for review prior to fabrication.
Proprietary or other floating structural systems including certification for flotation stability and strength.		Submit for review prior to fabrication.
Cathodic protection systems.		Submit for review prior to fabrication.
Proprietary or other ramp and gangway systems.		Submit for review prior to fabrication.
Details of attachments <ul style="list-style-type: none">– ladders– rubbing strips– mooring cleats– mooring bollards– services pedestals– hose reels and stands		Submit prior to ordering

SHOP DRAWINGS		
Description	Witness Point	Hold Point
Structural steelwork Structural aluminium Floating structures Pile attachments		Submit for review prior to fabrication.
Cathodic protection systems.		Submit for review prior to fabrication.

SITE REVIEW – (PROVIDE MIN. 24 HOURS NOTICE)		
Description	Witness Point	Hold Point
Founding material for strip, pad, and bored pier footings.		Site approval by Geotechnical Engineer.
Reinforcement for reinforced concrete and shotcrete elements. Leave one face of rectangular columns and walls open. Leave circular columns unformed prior to inspection.		Site review and approval.
Completed structural steel, aluminium and timber framing including grouting of base plates & tightening of bolts. Do not cover until approved.		Site review and approval.
Completed timber works		Prior to placement of decking
Completed installation of ramp, pontoon, floating structure & services.		Site review and approval.

CONSTRUCTION RECORDS		
Description	Witness Point	Hold Point
Founding material		Submit for review prior to trimming piles or pouring footings.
Founding level of piles.	Submit piling records each day.	Submit for review prior to removal of piling rig from site.
Piling installation and testing records, and engineering certification.	Submit on completion of each test & after each pile installed.	Submit for review prior to removal of piling rig from site.
Free board measurements for floating structures and pontoons.	Submit for review prior to installation of ballast.	Submit for review after all attachments have been installed and floating structure /pontoon is in place on site.
Design, installation and commissioning certificates for sacrificial anodes.		Submit on completion.
Third Party Certification for the following items: <ul style="list-style-type: none">– structural steel– structural timber– structural aluminium– deck timber– reinforcement–structural bolts		Submit before ordering materials.
Fabricator Accreditation <ul style="list-style-type: none">– stainless steel		Submit prior to commencing fabrication.
Deck Timbers <ul style="list-style-type: none">– moisture content		Submit test certificate before delivering to site
Coating for structural steelwork dry film thickness and holiday detection tests.		Submit before coated steelwork leaves contractor's yard.
Weld tests and inspection records.		Submit before steelwork leaves fabricator's yard.
Concrete mix characteristic shrinkage.		Submit prior to delivery to site.
Concrete test certificates for strength and slump.	Submit progressively.	Submit on completion.
Joint locations and connection details of waters on floating structures.		Submit for review prior to installation.
Protective treatment other than paint coating: inspection and testing records.		Submit before treated materials leave contractor's yard

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REFER TO DWG. No.'s S0010, S0011 & S0012 FOR CONSTRUCTION NOTES.			
Rev.	Date	Description	Drawn Design
A	05.10.18	TEMPORARY CARGO WHARF ISSUE	DF RH

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CHURCH POINT
PRECINCT UPGRADE

CONSTRUCTION NOTES – SHEET 3

Principal : M. Baker	Project No. 18025
Sheet Size A1	Dwg. No. S0012
Scales	Rev. No. A

