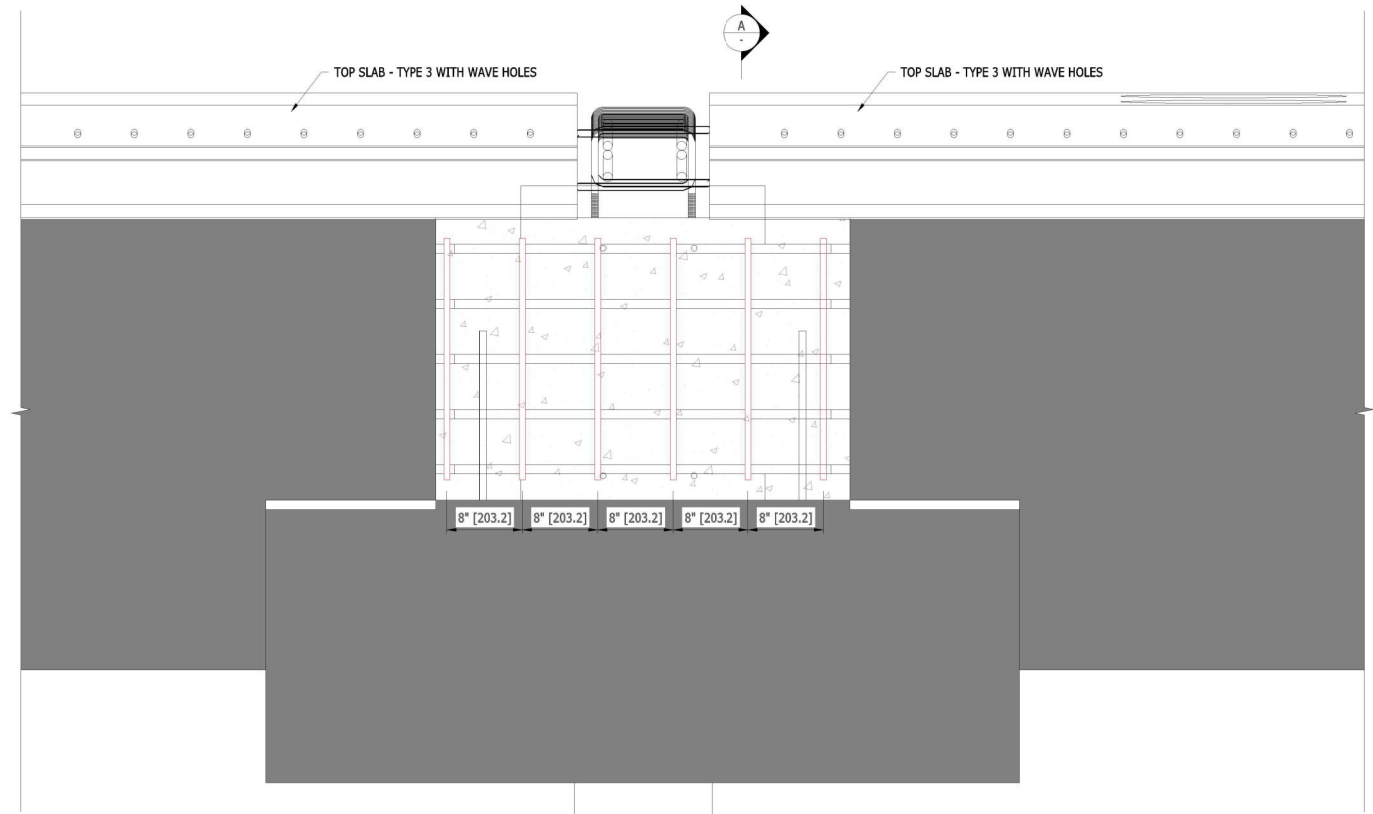


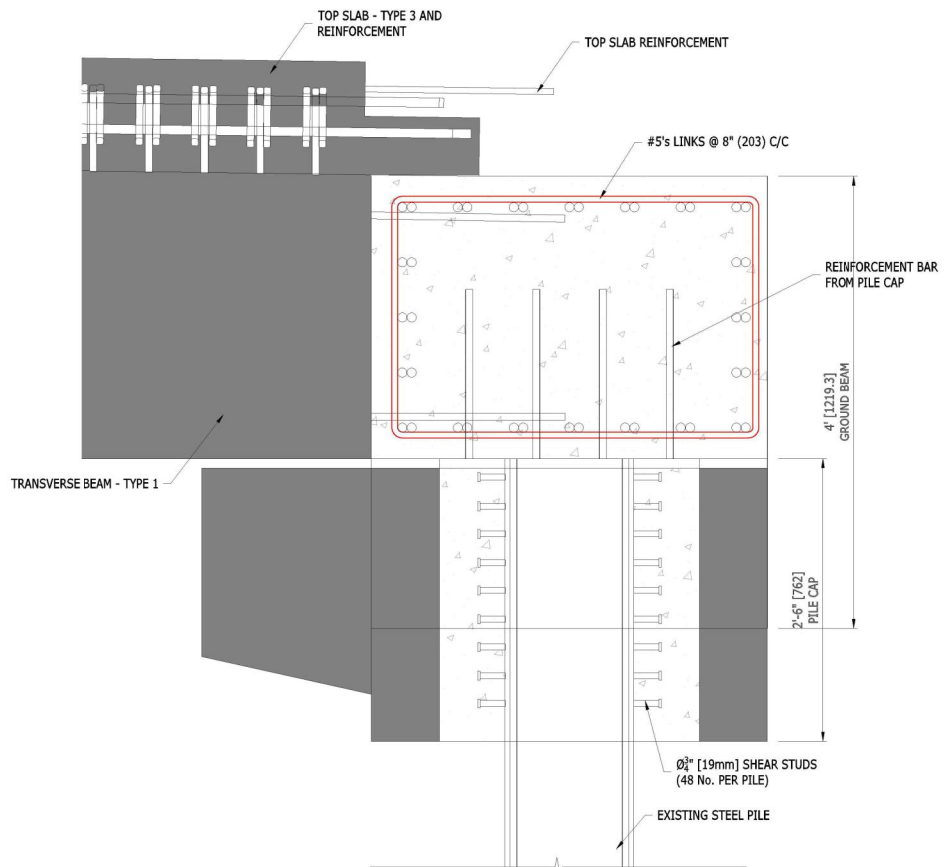
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- ALL CONCRETE SHALL BE GRADE M50 TO ACI 318 - REFER TO THE PROJECT SPECIFICATION FOR DETAILS
- REINFORCEMENT SHALL BE GRADE 60 TO ASTM A615 AND HOT DIPPED GALVANISED, UNLESS NOTED OTHERWISE. STAINLESS STEEL REINFORCEMENT WHERE USED SHALL BE GRADE 75.
- NOMINAL COVER TO ALL INSITU CONCRETE  
 $50 + \Delta c = 55\text{mm}$   
 $2" + \Delta c = 2 - 3/16"$
- FOR DETAILS ON PROTRUDING BARS FROM THE PRECAST ELEMENTS REFER TO THE FOLLOWING DRAWINGS:  
 TRANSVERSE BEAM - TYPE 1 -RAM-XX-00-DR-CW-300  
 TRANSVERSE BEAM - TYPE 2 -RAM-XX-00-DR-CW-301  
 SLAB UNIT - TYPE 1 -RAM-XX-00-DR-CW-310  
 SLAB UNIT - TYPE 2 -RAM-XX-00-DR-CW-311  
 SLAB UNIT - TYPE 3 -RAM-XX-00-DR-CW-312  
 SLAB UNIT - TYPE 4 -RAM-XX-00-DR-CW-313
- FOR CONCRETE FINISH PLEASE REFER TO SPECIFICATION FOR HIGHWAYS WORKS SERIES 1700 STRUCTURAL CONCRETE STANDARD SUB CLAUSE 1708-4 FOR FINISHES TYPES:  
 UPWARD FACING SURFACES OF INSITU CONCRETE - U4 BRUSHED FINISH  
 ALL OTHER EXPOSED FACES OF INSITU CONCRETE - U4 / F4
- ALL JOINTS SHALL BE FLUSHED WITH FRESH WATER IMMEDIATELY BEFORE CONCRETE IS PLACED TO REMOVE SALTS



**ELEVATION**  
1:10  
ELEVATION ON BACK OF GROUND BEAM

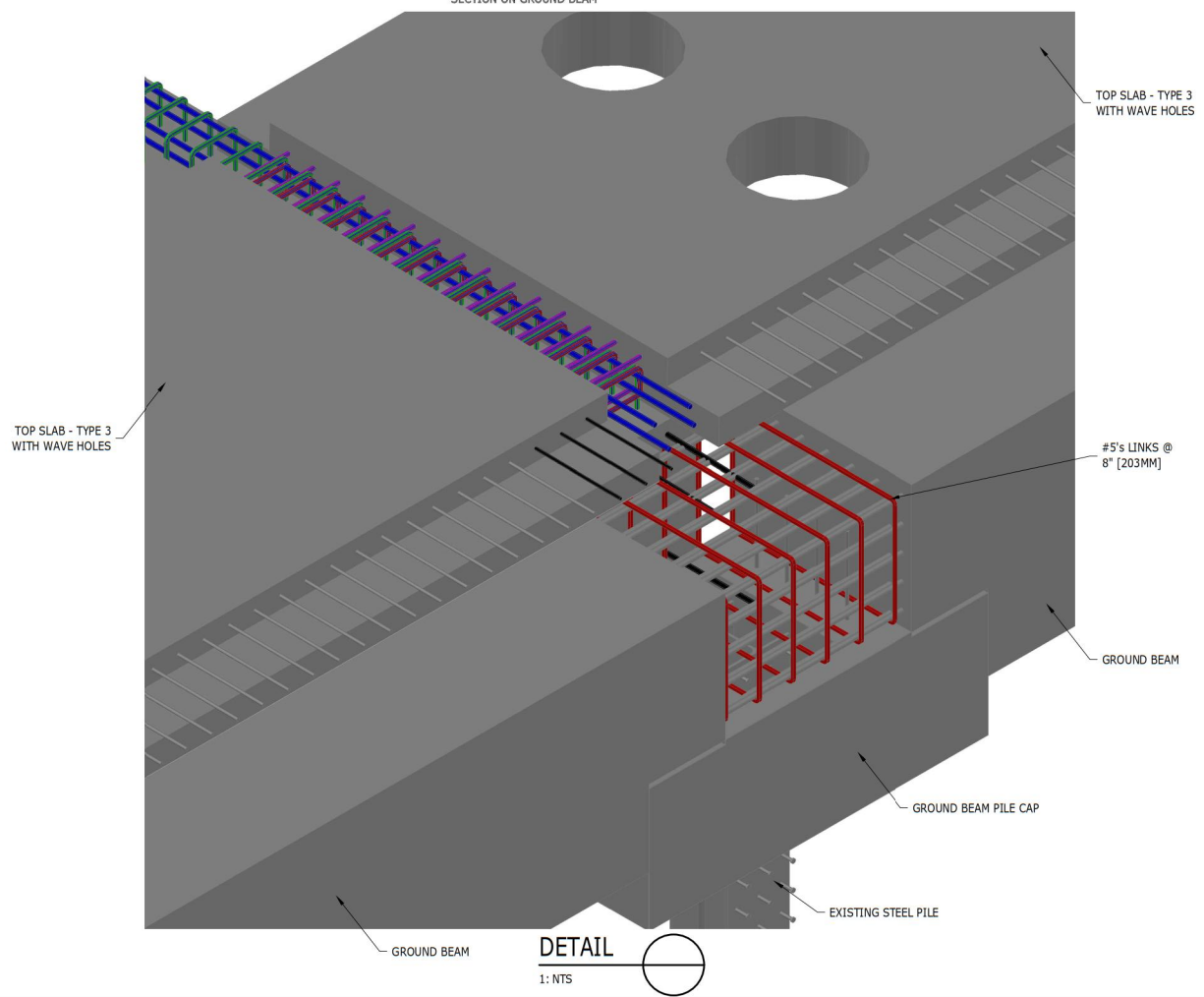


**SECTION**  
1:10  
SECTION ON GROUND BEAM

ALL REINFORCEMENT FOR INSITU CONCRETE TO BE PROVIDED BY PRECAST SUPPLIER AND FIXED BY CONTRACTOR

SCHEDULE OF REINFORCEMENT  
(SUBJECT TO SITE CHECK)

BAR MRK.	BAR DIA.	SPACING / NO.	SHAPE	STEEL	REMARKS
01	#5 [16mm]	8" [203mm c/c]		STAINLESS STEEL	LOOSE BARS



**DETAIL**  
1: NTS

R01	FOR TENDER	1307 2018	CDW EL	JC
Rev	Description	Date	By CHK	App

FOR TENDER

**KINGS WHARF REHABILITATION  
BERMUDA  
61-53-79-04**



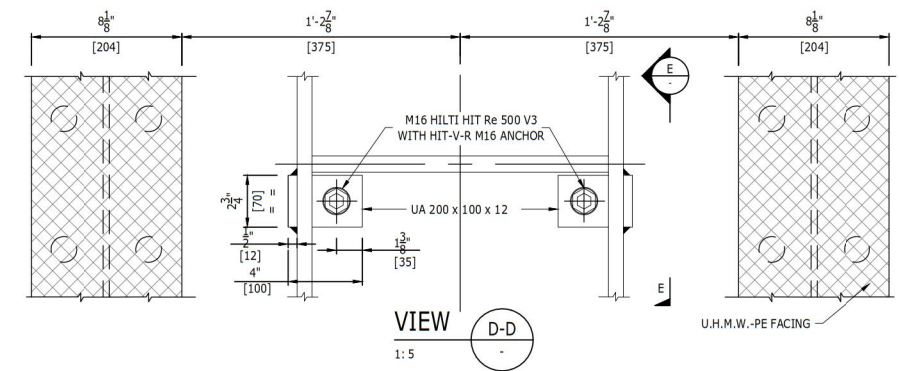
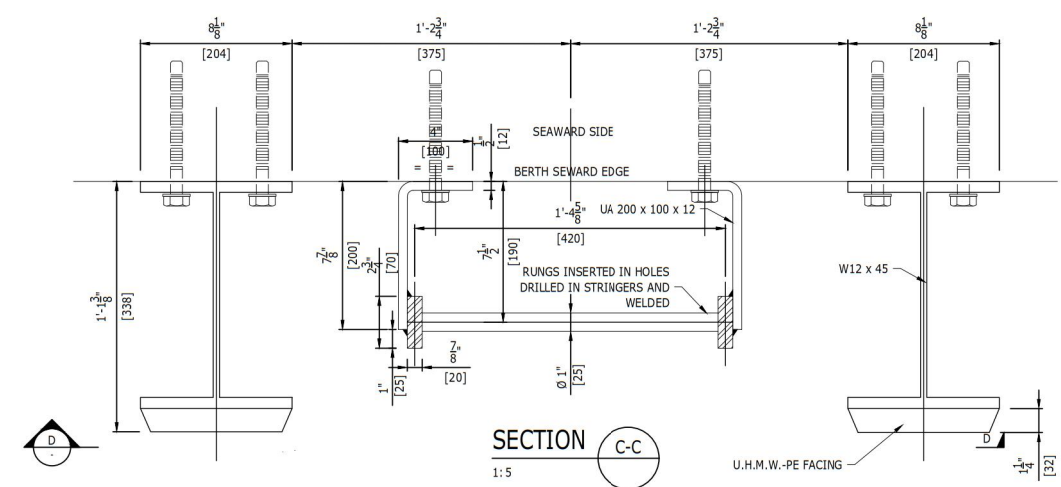
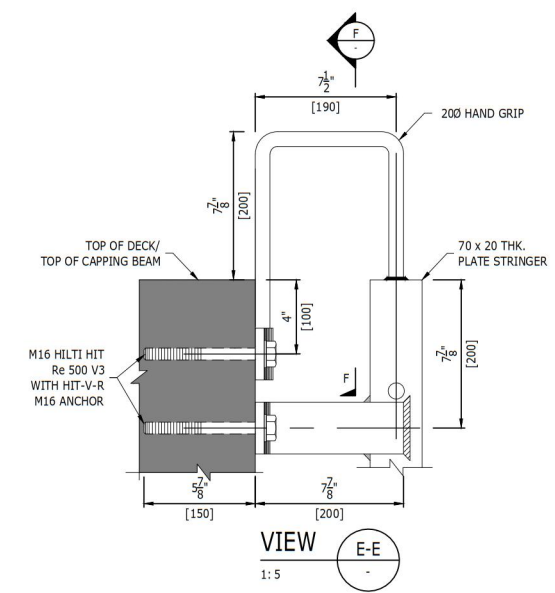
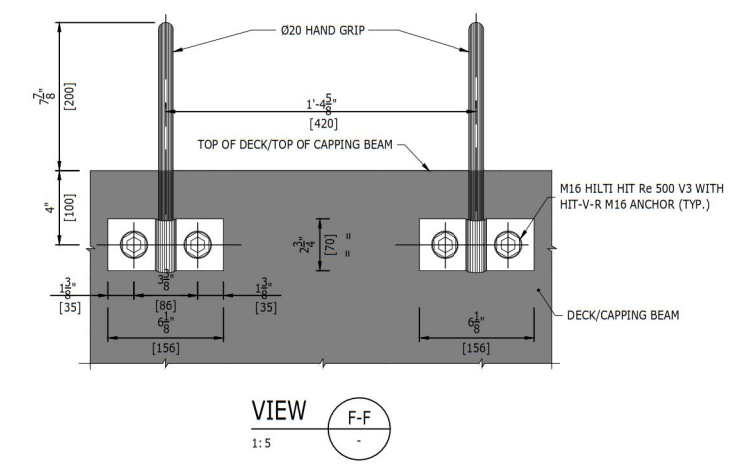
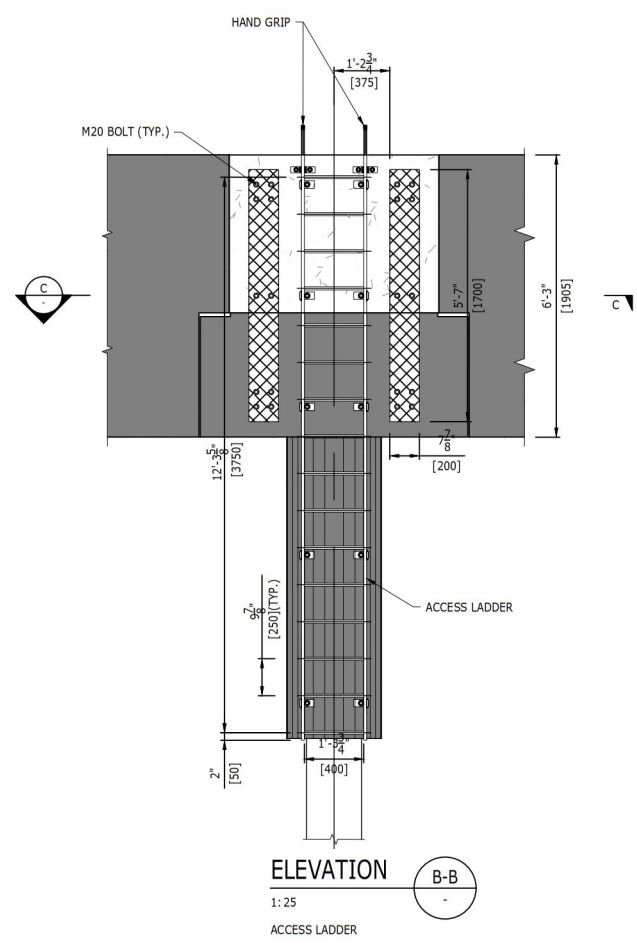
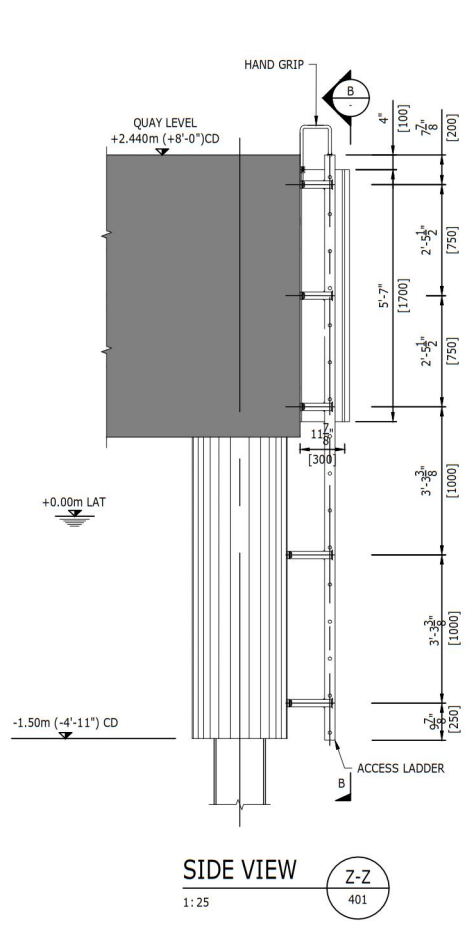
tel 020 7631 5291 fax 020 7323 4645 london@ramboll.co.uk  
www.ramboll.co.uk

**IN SITU REINFORCEMENT  
FOR GROUND BEAM**

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	1:10	CDW	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0343	R01		



- Notes
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  - IMPERIAL MEASUREMENTS SHALL BE USED FOR CONSTRUCTION. METRIC UNITS PROVIDED FOR INFORMATION ONLY.
  - ALL STEELWORK TO BE HOT DIPPED GALVANISED - REFER TO PROJECT SPECIFICATION FOR DETAILS



R01	FOR TENDER	13/07/2018	GDW/EL	JC
Rev	Description	Date	By	App

FOR TENDER

KINGS WHARF REHABILITATION  
BERMUDA  
61-53-79-04



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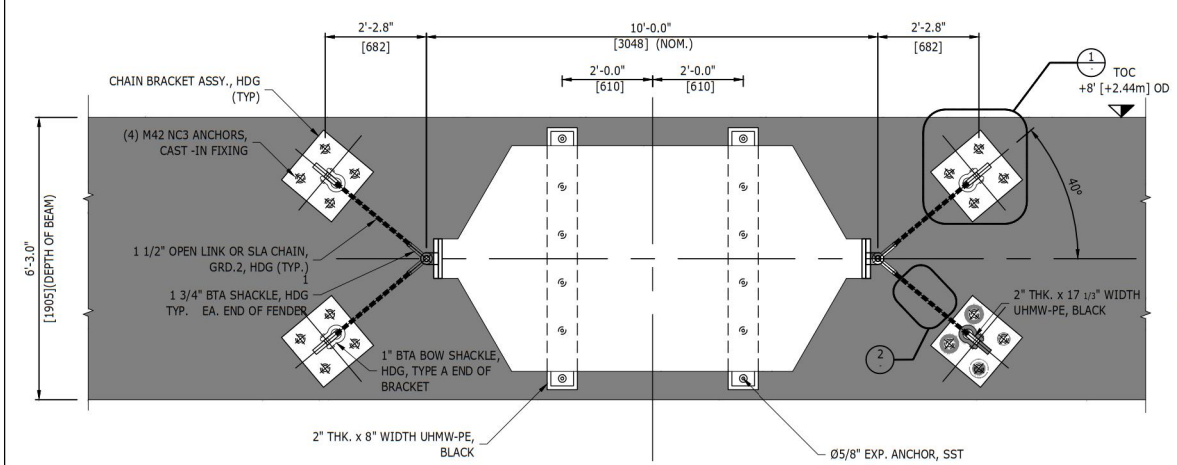
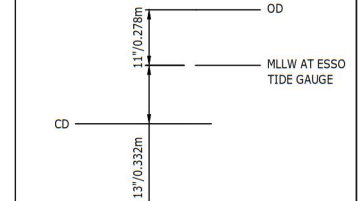
FURNITURE DETAILS  
ACCESS LADDERS

Project No:	Scale (0A1):	Drawn:	Date:
1620004884	AS NOTED	SOPI	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0401	R01		

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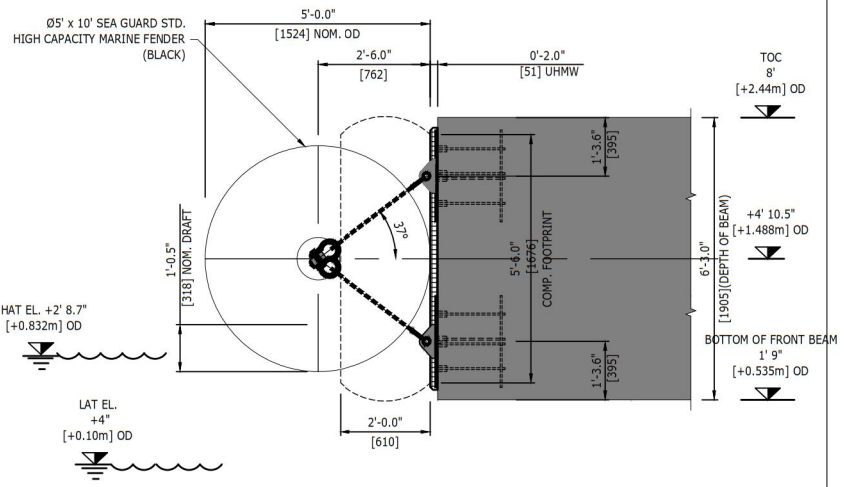
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- SHACKLE BOLTS TO BE INSTALLED WITH THE BOLT HEAD UPPERMOST

VERTICAL DATUM  
CHART DATUM IS LOCATED 2/0.61m BELOW ORDNANCE DATUM



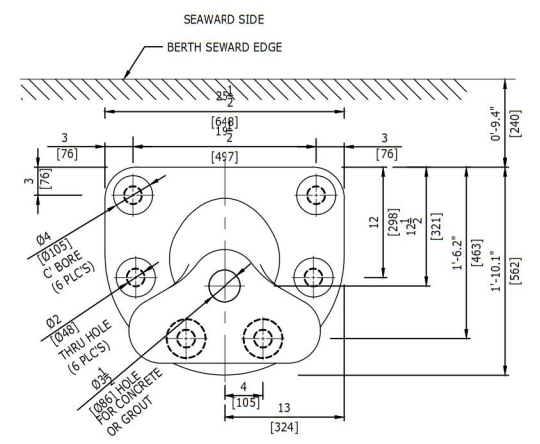
**ELEVATION**

1:25  
SEA GUARD STD. CAPACITY MARINE FENDER



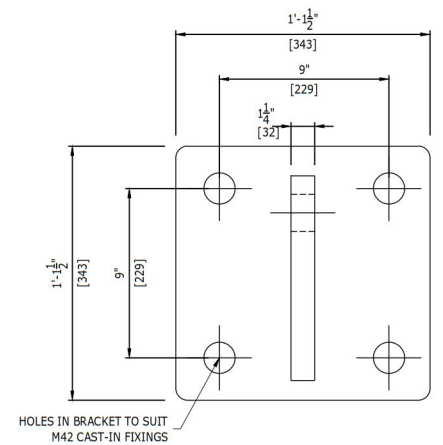
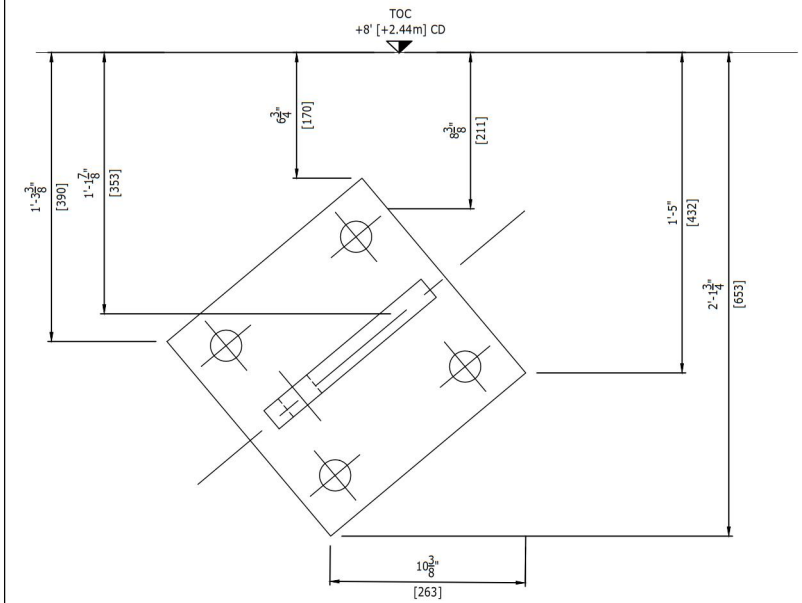
**SIDE VIEW**

1:50



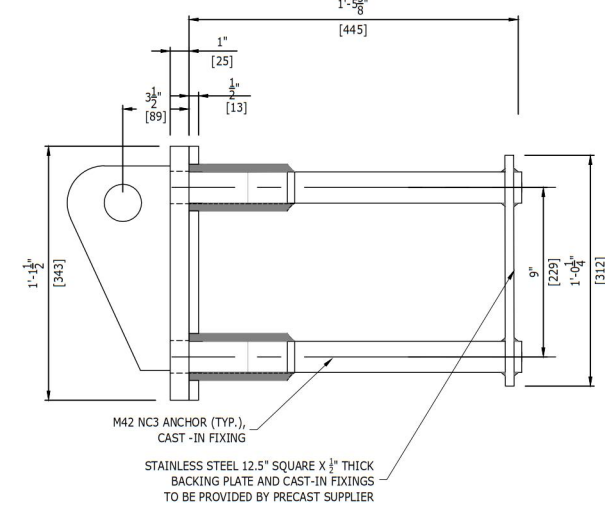
**PLAN VIEW**

1:10  
75t BOLLARD



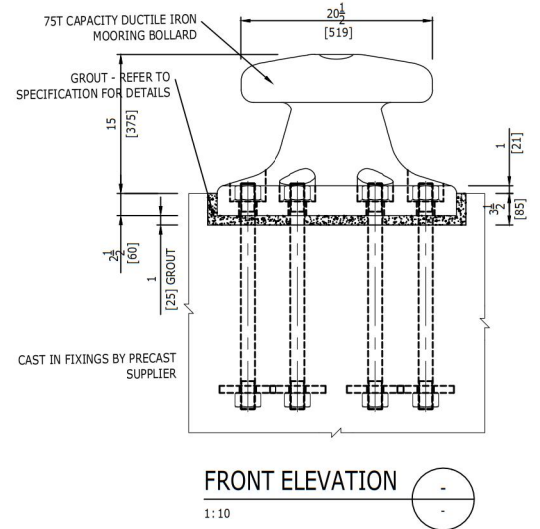
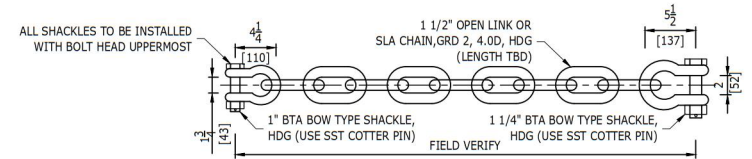
**DETAIL 1**

1:5  
CHAIN BRACKET ASSY.



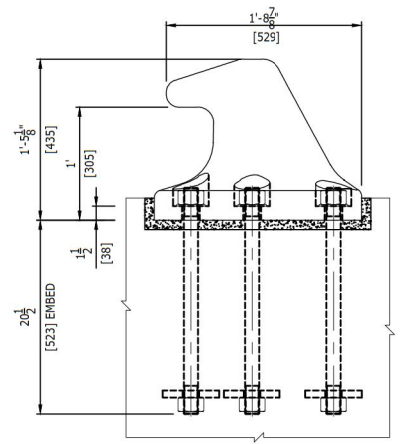
**DETAIL 2**

1:10  
CHAIN ASSY.



**FRONT ELEVATION**

1:10



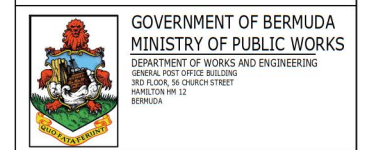
**SIDE ELEVATION**

1:10

R01 FOR TENDER	13/07/2018	GDW	JC
Rev	Description	Date	By Chk App

FOR TENDER

KINGS WHARF REHABILITATION  
BERMUDA  
61-53-79-04



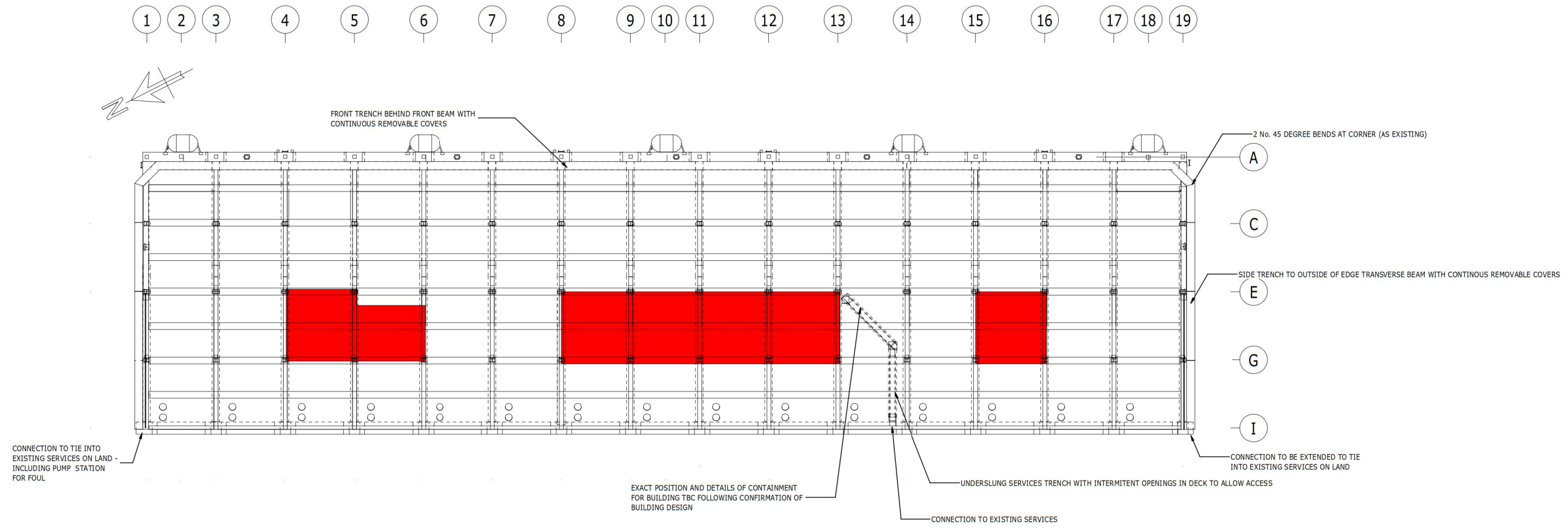
tel 020 7631 5291 fax 020 7323 4645 london@ramboll.co.uk www.ramboll.co.uk

FURNITURE DETAILS  
FENDERS AND BOLLARDS

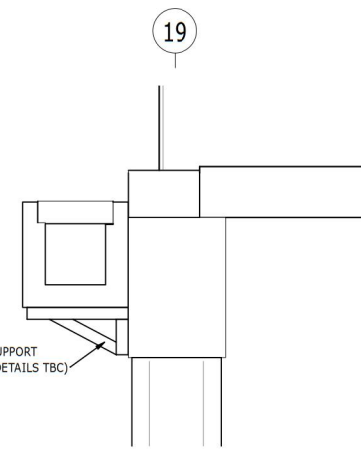
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1620004884	AS NOTED	SOPI	JULY 18
Drawing No:	-RAM-XX-00-DR-CW-0402		Rev:
			R01

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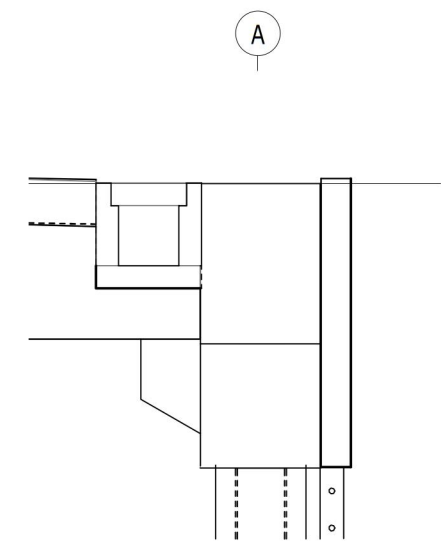
- Notes
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  - BATHYMETRY SURVEY 2012 BY GOLDER ASSOCIATES - CONTOURS SHOWN AT 1m SPACING AS MARKED. MAJOR CONTOURS AS MARKED. BATHYMETRY SURVEY IS RELATIVE TO MLLW AT ESSO TIDE GAUGE - SEE DIAGRAM
  - IMPERIAL MEASUREMENTS SHALL BE USED FOR CONSTRUCTION. METRIC UNITS PROVIDED FOR INFORMATION ONLY
  - ALL LEVELS ARE RELATIVE TO ORDNANCE DATUM UNLESS NOTED OTHERWISE VALUES ARE GIVEN IN METRIC AND IMPERIAL
  - PILE POSITIONS SHOWN ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS. ACTUAL PILE HEAD POSITIONS MAY VARY AND DESIGN HAS ALLOWED FOR A VARIANCE OF UP TO 3" / 75MM IN ANY DIRECTION



PLAN  
1 : 200  
1  
SERVICES LAYOUT



DETAIL  
1 : 25  
3  
201  
SERVICE TRENCH END  
DETAIL



DETAIL  
1 : 25  
2  
202  
SERVICE TRENCH FRONT  
BEAM DETAIL

R01	FOR TENDER	13.07	CDW	JC
Rev	Description	Date	By CHK	App

FOR TENDER

KINGS WHARF REHABILITATION  
BERMUDA  
61-53-79-04



GOVERNMENT OF BERMUDA  
MINISTRY OF PUBLIC WORKS  
DEPARTMENT OF WORKS AND ENGINEERING  
GENERAL POST OFFICE BUILDING  
3RD FLOOR, 56 CHURCH STREET  
HAMILTON HM12  
BERMUDA



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SERVICES CONTAINMENT  
LAYOUT

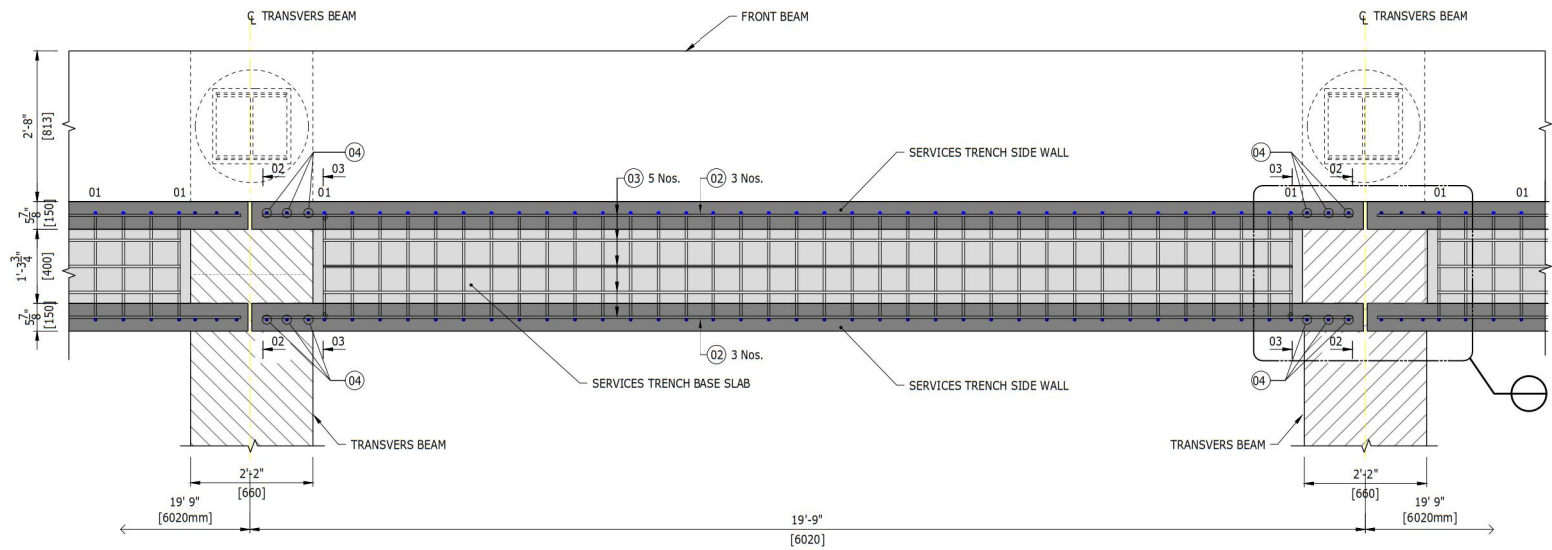
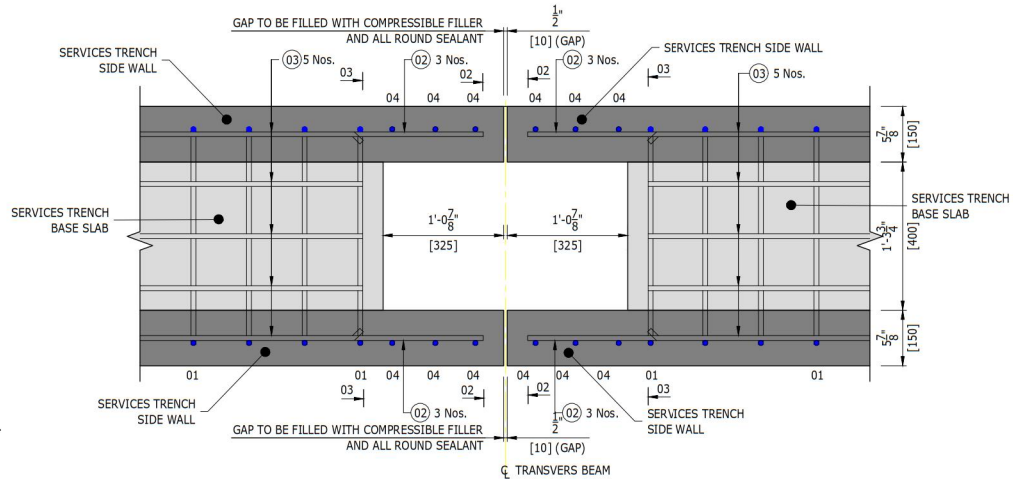
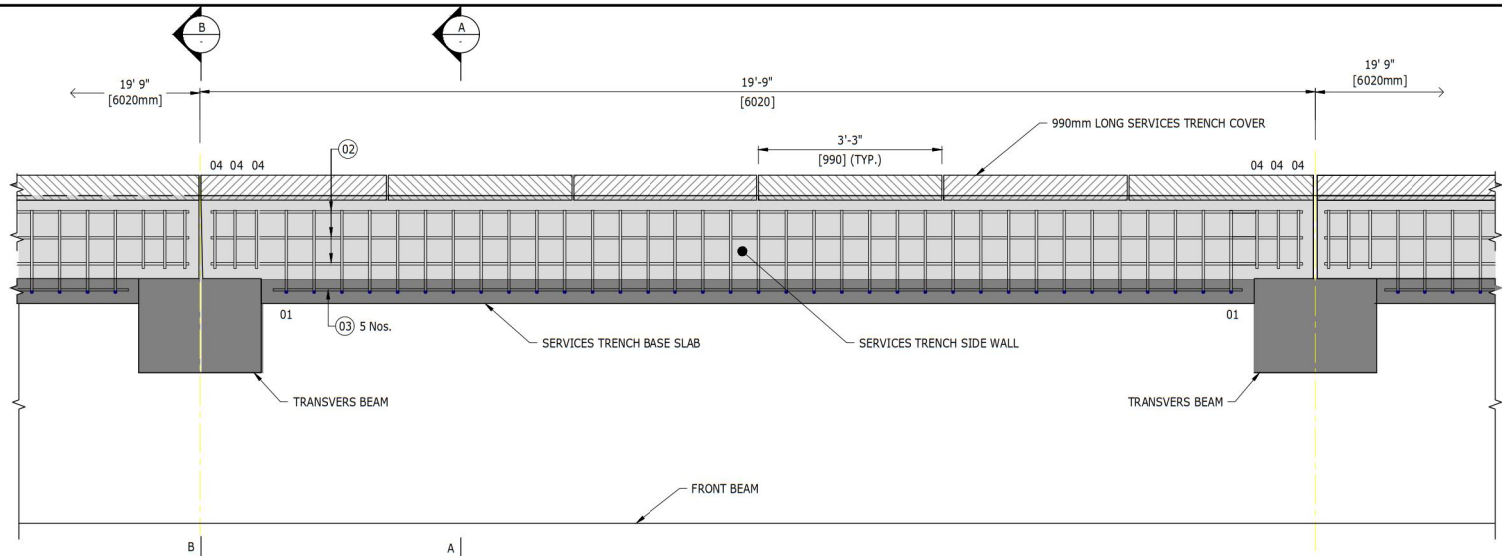
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Drawing No: -RAM-XX-00-DR-CW-500			Rev: R01

SCHEDULE OF REINFORCEMENT  
(SUBJECT TO SITE CHECK)

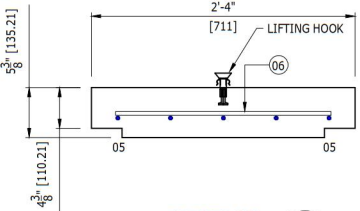
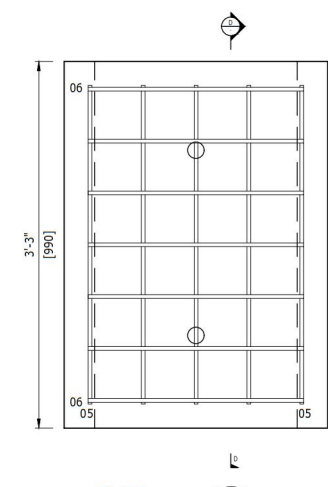
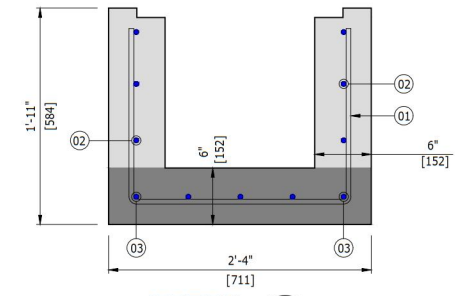
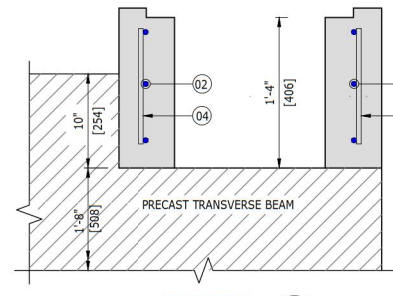
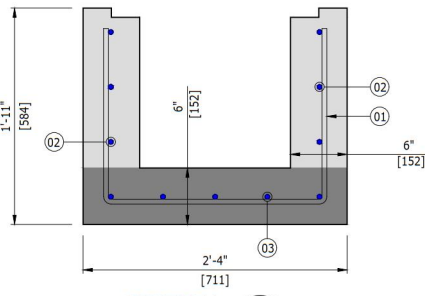
BAR MRK.	BAR DIA.	SPACING / NO.	SHAPE	STEEL	REMARKS
01	#4 [13mm]	6" [150mm c/c]	U	GALVANISED	SERVICES TRENCH
02	#4 [13mm]	5 1/2" [140mm c/c]	—	GALVANISED	
03	#4 [13mm]	6" [150mm c/c]	—	GALVANISED	
04	#4 [13mm]	6" [150mm c/c]	—	GALVANISED	
05	#3 [10mm]	6" [150mm c/c]	—	GALVANISED	
06	#3 [10mm]	6" [150mm c/c]	—	GALVANISED	

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  - ALL CONCRETE GRADE M50 AND REINFORCEMENT GRADE 60, UNLESS NOTED OTHERWISE.
  - NOMINAL COVER TO FACES :  $50 + \Delta c = 55 \text{mm} : 2'' + \Delta c = 2-3/16''$
  - APPROXIMATE TROUGH WEIGHT SIDE TRENCH (19'8"/5.99m LONG) = 3550KG
  - APPROXIMATE TROUGH WEIGHT FRONT TRENCH (19'9"/6.02m LONG) = 3565KG
  - APPROXIMATE COVER SLABS WEIGHT (TYPICALLY 1m LONG) = 245KG EACH
  - AS SHOWN 2" DRAINAGE HOLES TO BE PROVIDED IN THE BASE OF THE TROUGH TO ALLOW DRAINAGE OF SURFACE WATER
  - RUBBER CONFORMANCE LAYER BETWEEN TROUGH AND COVER TO BE PROVIDED ALONG FRONT TRENCH



SERVICE TROUGHS AND COVERS TO BE PROVIDED BY PRECAST SUPPLIER.  
- FOR CONTRACTOR INFORMATION



R01	FOR TENDER	13/07/2018	CDW/EL	JC
Rev	Description	Date	By	App

**PRELIMINARY**

**KINGS WHARF REHABILITATION BERMUDA 61-53-79-04**

GOVERNMENT OF BERMUDA  
MINISTRY OF PUBLIC WORKS  
DEPARTMENT OF WORKS AND ENGINEERING  
GENERAL POST OFFICE BUILDING  
35/37 FLOCK, 56 CROUCH STREET  
HAMILTON HM 12  
BERMUDA

**RAMBOLL**  
tel 020 7631 5291 fax 020 7323 4645 london@ramboll.co.uk www.ramboll.co.uk

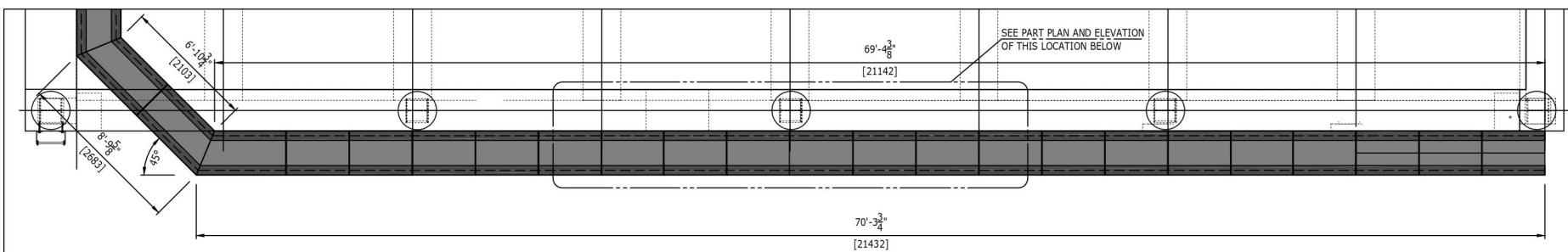
**SERVICE CONTAINMENT DETAILS**

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	AS NOTED	SOPI	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0501	R01		

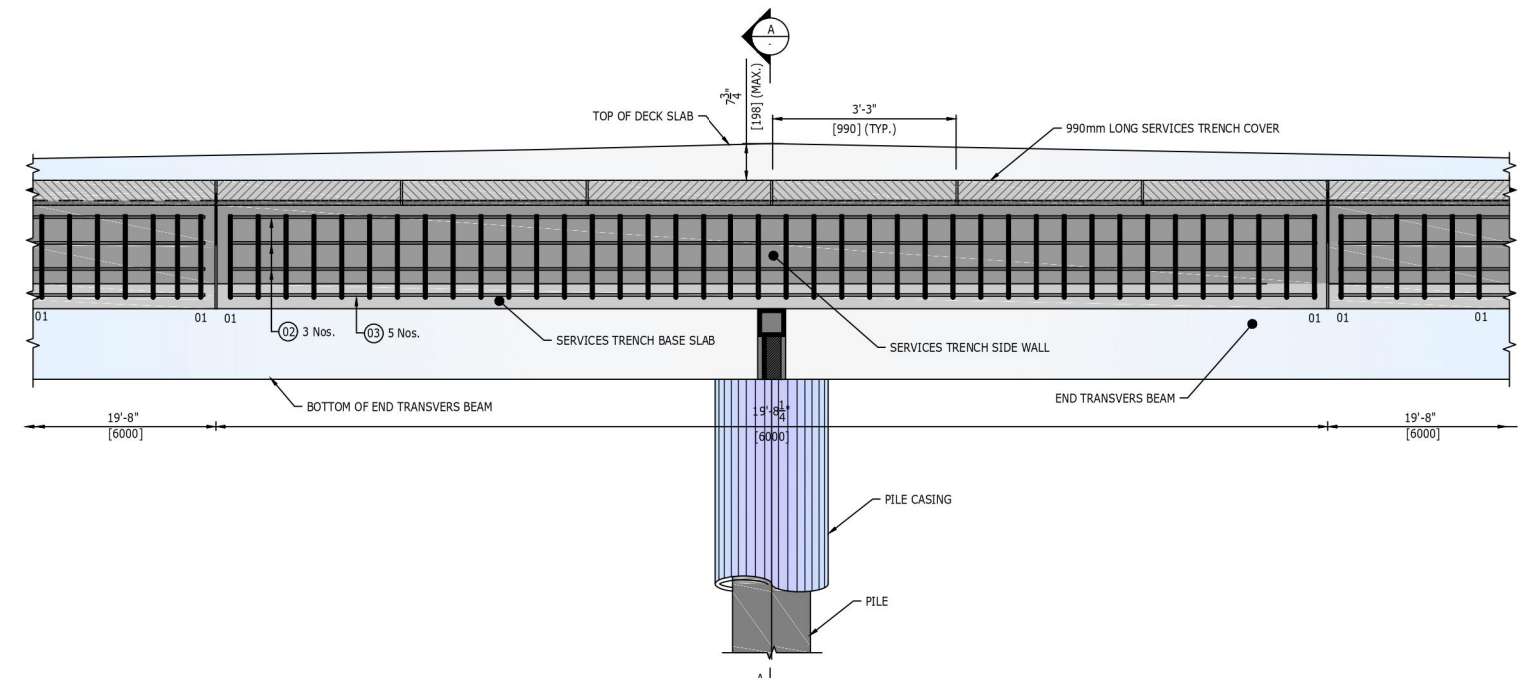
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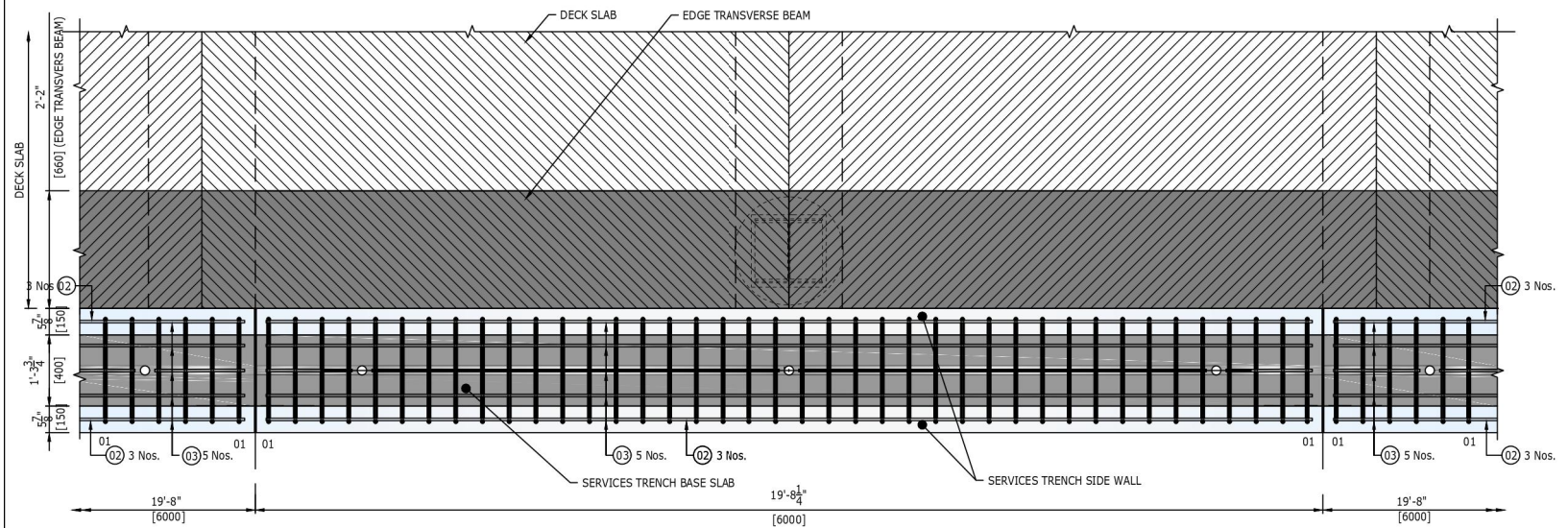
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- RUBBER CONFORMANCE LAYER BETWEEN TROUGH AND COVER TO BE PROVIDED ALONG FRONT TRENCH



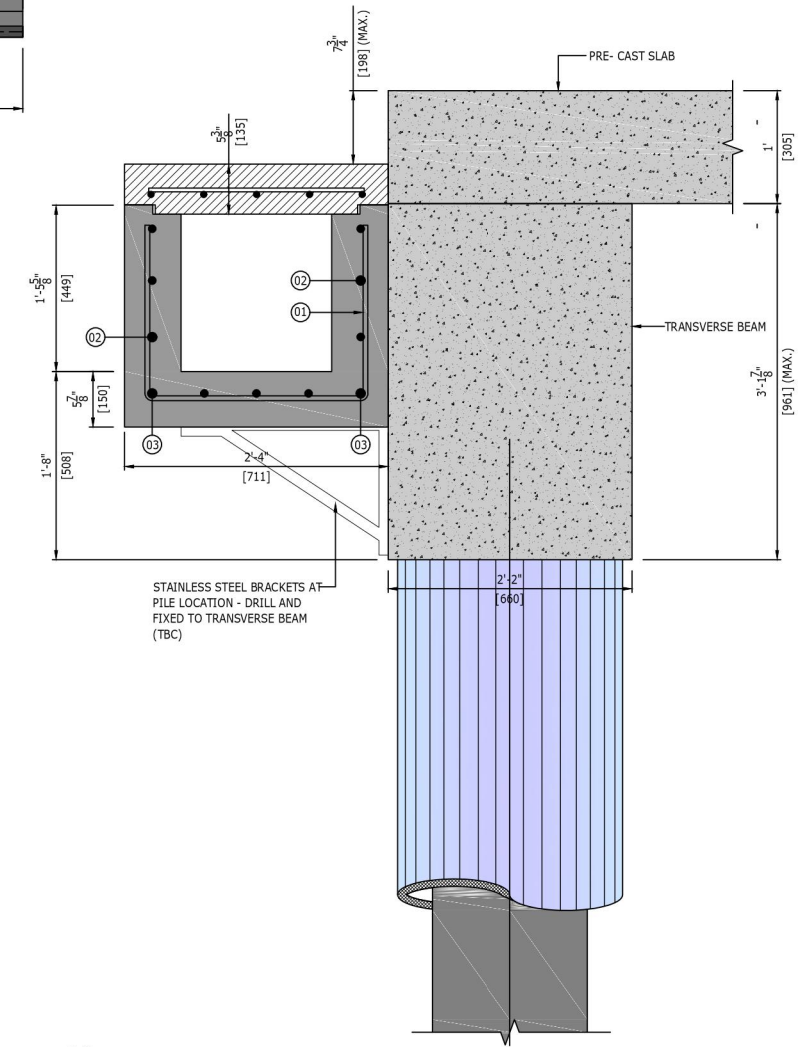
**KEY PLAN**  
1:50  
SHOWING SERVICES TRENCH ALONG EDGE TRANSVERSE BEAM



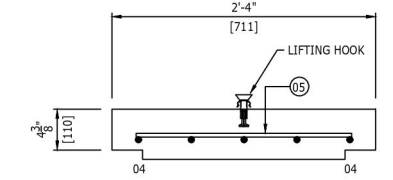
**ELEVATION**  
1:20



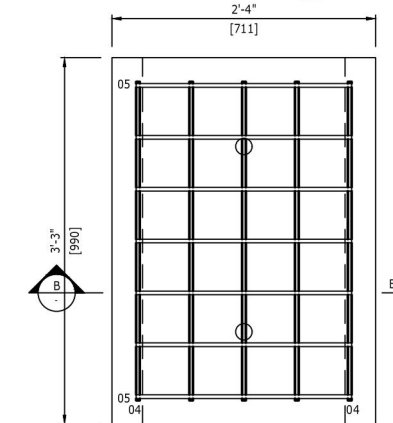
**PLAN**  
1:20  
PART PLAN SHOWING SIDE SERVICES TRENCH



**SECTION A-A**  
1:10  
SIDE TRENCH AT EDGE TRANSVERSE BEAM



**SECTION B-B**  
1:10



**PLAN**  
1:10  
PRECAST CONCRETE SERVICES TRENCH COVER

SERVICE TROUGHS AND COVERS TO BE PROVIDED BY PRECAST SUPPLIER. - FOR CONTRACTOR INFORMATION

SCHEDULE OF REINFORCEMENT (SUBJECT TO SITE CHECK)

BAR MRK.	BAR DIA.	SPACING / NO.	SHAPE	SHAPE	REMARKS
01	#4 [13mm]	6" [150mm c/c]	[U]	GALVANISED	SIDE SERVICES TRENCH
02	#4 [13mm]	5 1/2" [140mm c/c]	[—]	GALVANISED	
03	#4 [13mm]	6" [150mm c/c]	[—]	GALVANISED	
04	#3 [10mm]	6" [150mm c/c]	[—]	GALVANISED	
05	#3 [10mm]	6" [150mm c/c]	[—]	GALVANISED	

R01 FOR TENDER	13/07/2018	GDW	JC
Rev	Description	Date	By / Chk / App

FOR TENDER

**KINGS WHARF REHABILITATION BERMUDA**  
61-53-79-04



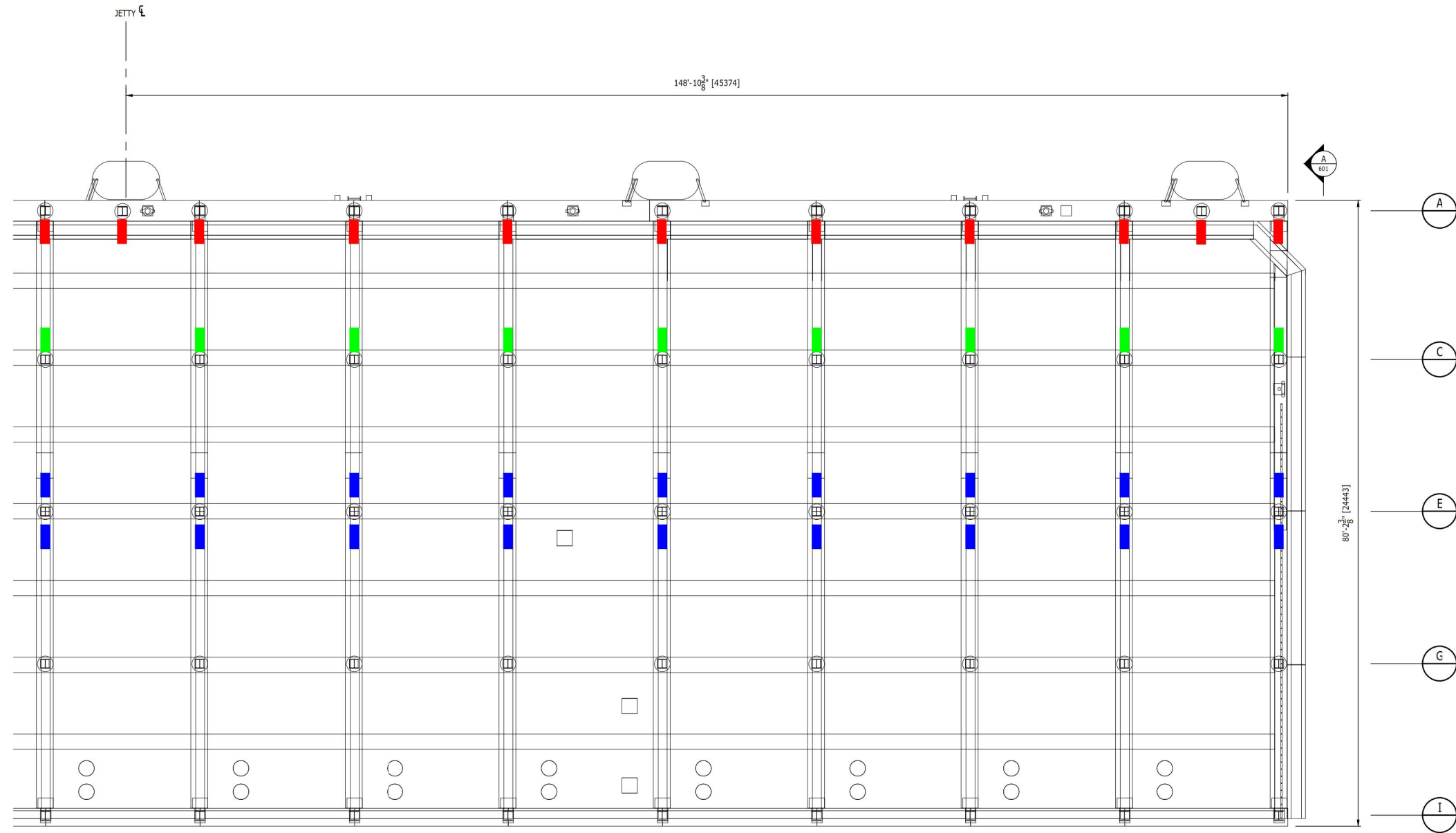
tel 020 7631 5291 fax 020 7323 4645 london@ramboll.co.uk www.ramboll.co.uk

**SERVICE CONTAINMENT DETAILS SHEET 2**

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	AS NOTED	SOPI	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0502	R01		

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**PLAN**  
1: 100  
PLAN VIEW ON HALF OF PROPOSED STRUCTURE  
SAME ARRANGEMENT ON OTHER HALF OF JETTY

HALF DECK SHOWN

- - TYPE 1 ANODE (2 No. PER PILE ON SAME FACE)
- - TYPE 2 ANODE (2 No. PER PILE ON SAME FACE)
- - TYPE 3 ANODE (2 No. PER PILE ON OPPOSITE FACE)

R01	FOR TENDER	13/07/2018	CDW	JC
Rev	Description	Date	By	App

FOR TENDER

**KINGS WHARF REHABILITATION**  
**BERMUDA**  
61-53-79-04



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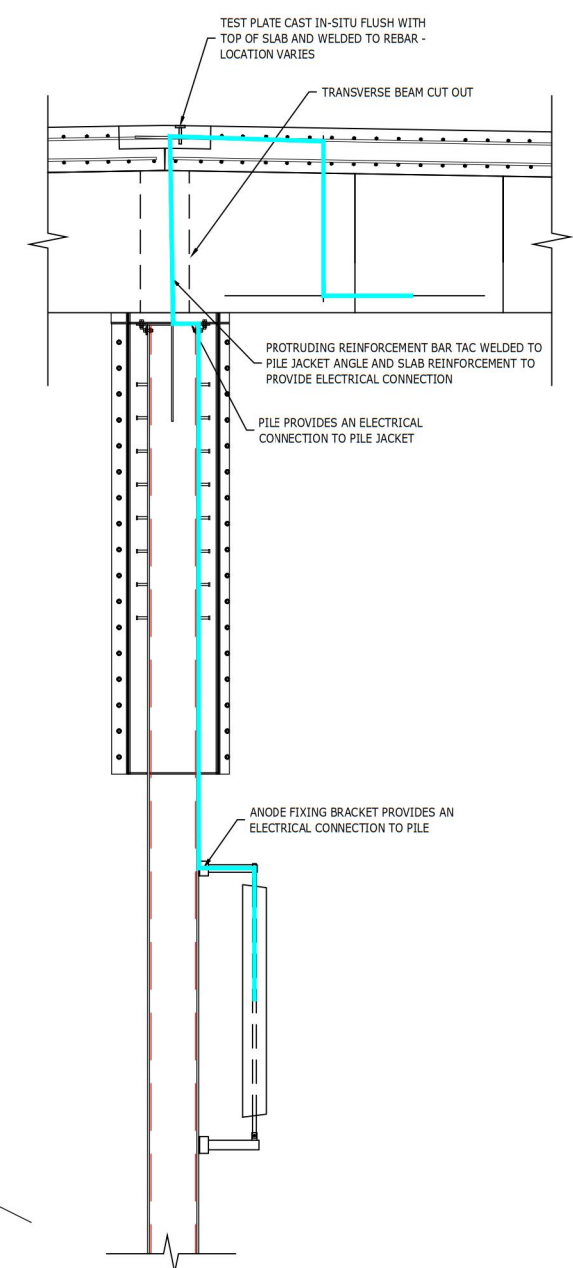
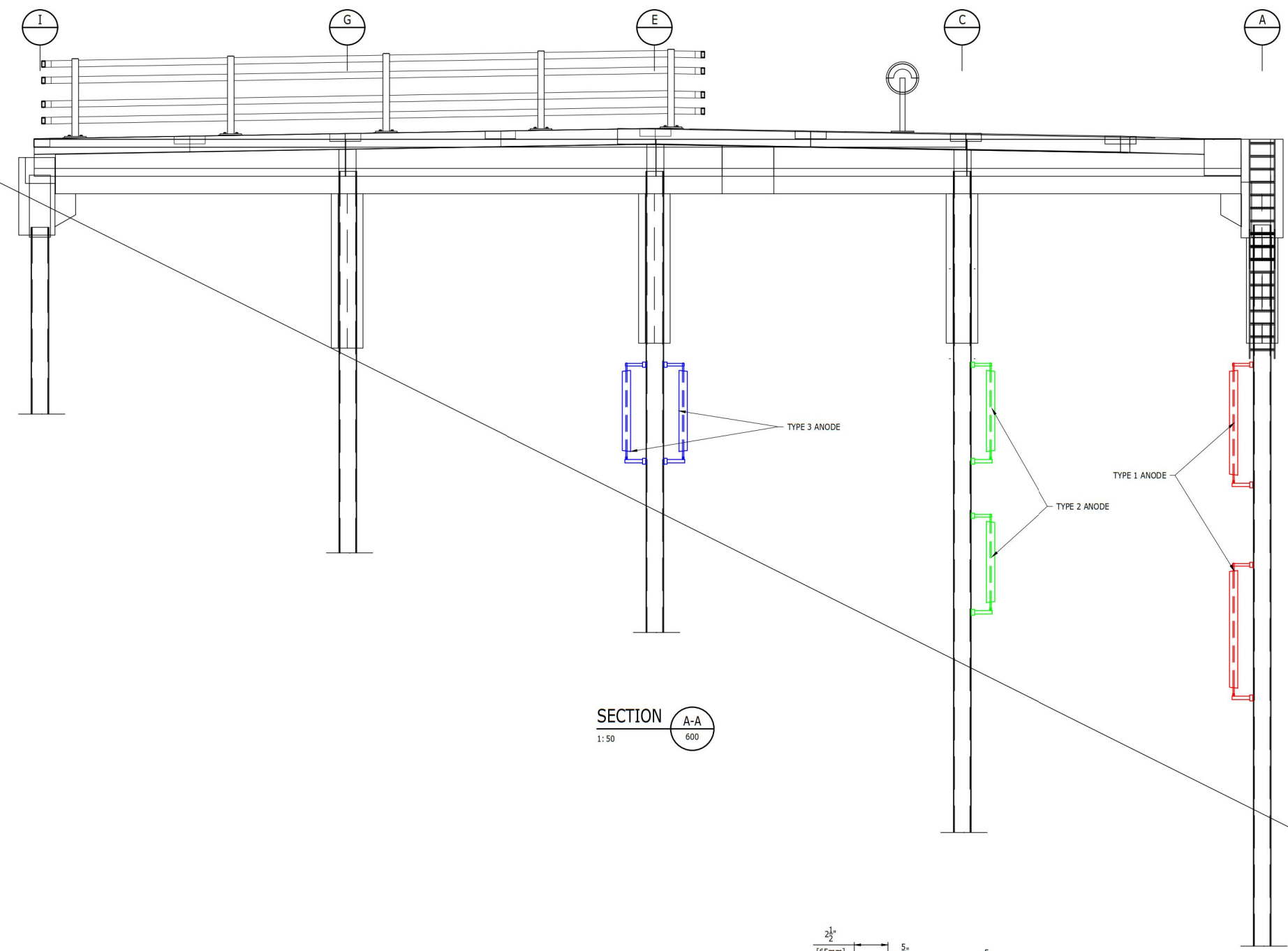
**CATHODIC PROTECTION**  
**GENERAL ARRANGEMENT**  
**(WHARF)**

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	1:100	CDW	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0600	R01		



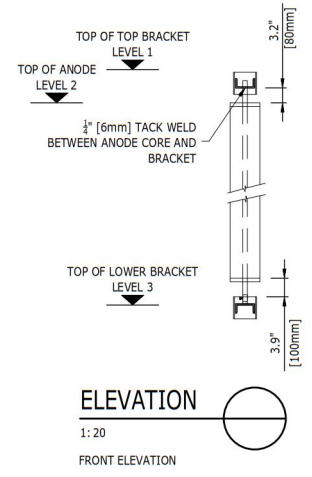
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  - IMPERIAL MEASUREMENTS SHALL BE USED FOR CONSTRUCTION. METRIC UNITS PROVIDED FOR INFORMATION ONLY.
  - INSTALLATION TO COMPLY WITH CATHODIC PROTECTION SPECIFICATION CLAUSE 5.
  - NO WELDING WORKS SHALL BE PERMITTED UNTIL SUCH TIME THAT ALL WELD PROCEDURES AND DIVER WELDERS ARE APPROVED
  - WELDING TO BE UNDERTAKEN IN ACCORDANCE WITH CATHODIC PROTECTION SPECIFICATION CLAUSE 5.5
  - ON ROWS 'A' AND 'C' AND DOLPHIN PILES, IF BED LEVEL PREVENTS LOWER ANODE BEING INSTALLED AT DESIGNED LEVEL, LOWER ANODE MAY BE FITTED AT HIGHER LEVEL. MAXIMUM DISTANCE BETWEEN SEABED AND BOTTOM OF ANODE SHALL NOT EXCEED 400mm

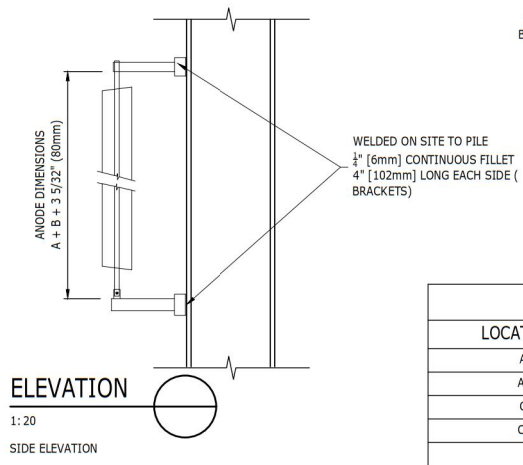


SECTION A-A  
1:50

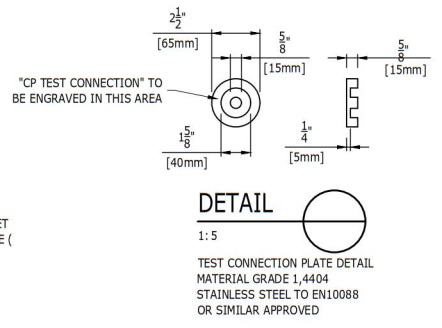
DETAIL  
1:25  
ELECTRICAL CONNECTION THROUGHOUT PROPOSED STRUCTURE



ELEVATION  
1:20  
FRONT ELEVATION



ELEVATION  
1:20  
SIDE ELEVATION



DETAIL  
1:5  
TEST CONNECTION PLATE DETAIL MATERIAL GRADE 1,4404 STAINLESS STEEL TO EN10088 OR SIMILAR APPROVED

ANODE PLACEMENT LEVELS						
LOCATION (ROW)	LEVEL 1 (ft,In OD)	LEVEL 1 (m OD)	LEVEL 2 (ft,In OD)	LEVEL 2 (m OD)	LEVEL 3 (ft,In OD)	LEVEL 3 (m OD)
A - UPPER	-6', 6.7"	-2.000	-7', 1.2"	-2.165	-14', 8.4"	-4.480
A - LOWER	-23', 9.4"	-7.250	-24', 3.9"	-7.415	-31', 11.1"	-9.730
C - UPPER	-6', 6.7"	-2.000	-7', 1.2"	-2.165	-13', 5.4"	-4.100
C - LOWER	-19', 9.4"	-5.870	-19', 9.6"	-6.035	-26', 1.8"	-7.970
E	-6', 6.7"	-2.000	-7', 1.2"	-2.165	-15', 1.3"	-4.605

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FOR TENDER  
KINGS WHARF REHABILITATION  
BERMUDA  
61-53-79-04



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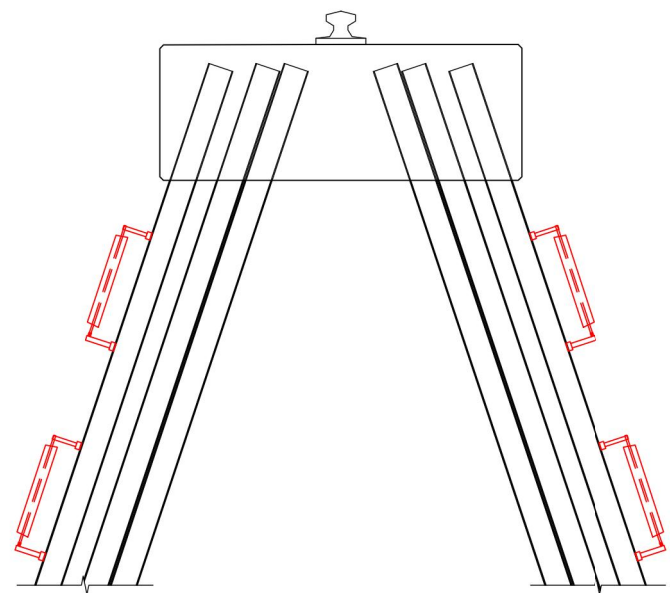
CATHODIC PROTECTION SECTIONS

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	AS NOTED	CDW	JULY 18
Drawing No:	Rev:		
-RAM-XX-00-DR-CW-0601	R01		

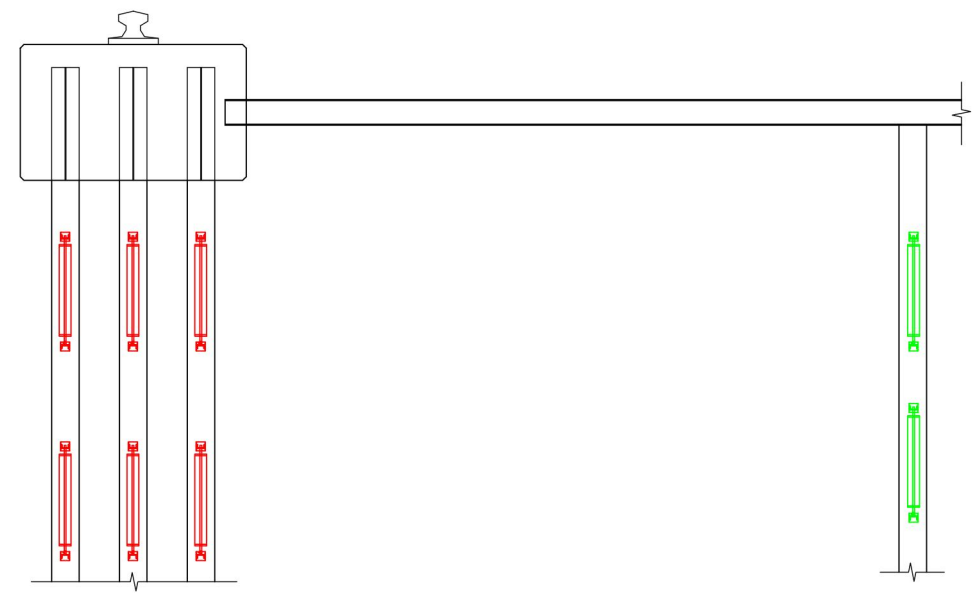
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- - TYPE 1 ANODE (2 No. PER PILE ON SAME FACE)
- - TYPE 2 ANODE (2 No. PER PILE ON SAME FACE)

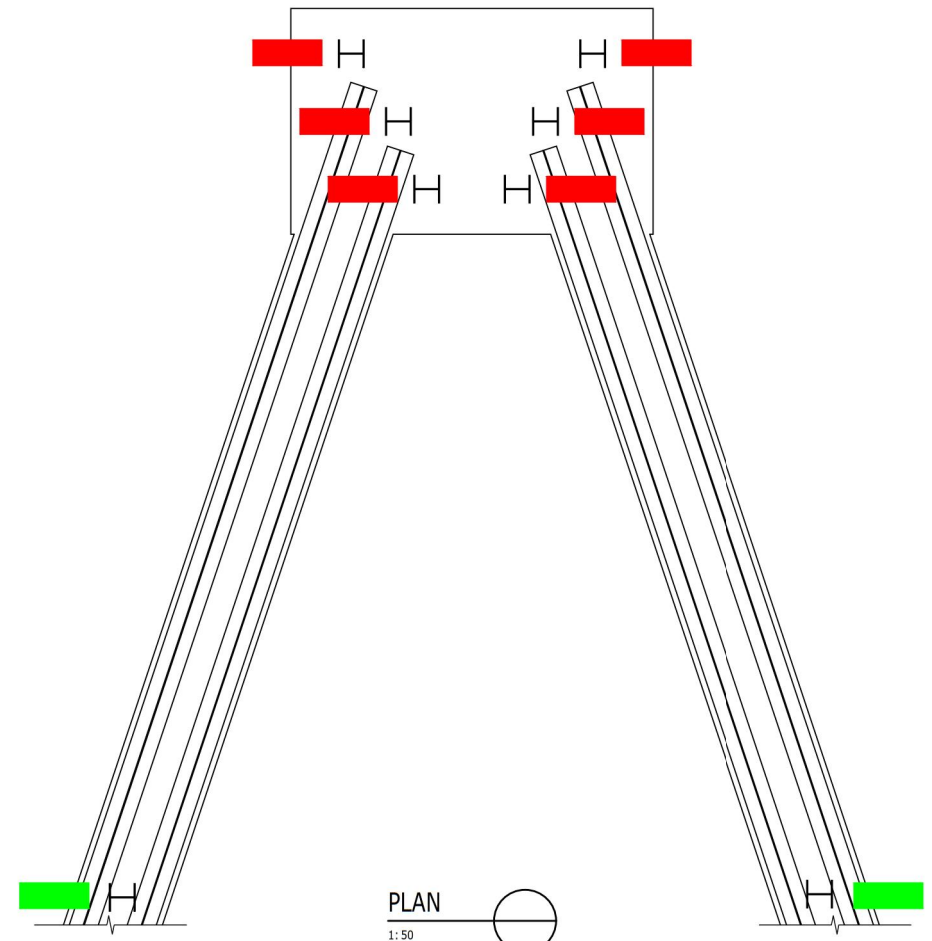
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  3. IMPERIAL MEASUREMENTS SHALL BE USED FOR CONSTRUCTION. METRIC UNITS PROVIDED FOR INFORMATION ONLY.
  4. INSTALLATION TO COMPLY WITH CATHODIC PROTECTION SPECIFICATION CLAUSE 5.
  5. NO WELDING WORKS SHALL BE PERMITTED UNTIL SUCH TIME THAT ALL WELD PROCEDURES AND DIVER WELDERS ARE APPROVED
  6. WELDING TO BE UNDERTAKEN IN ACCORDANCE WITH CATHODIC PROTECTION SPECIFICATION CLAUSE 5.5
  7. ON ROWS 'A' AND 'C' AND DOLPHIN PILES, IF BED LEVEL PREVENTS LOWER ANODE BEING INSTALLED AT DESIGNED LEVEL, LOWER ANODE MAY BE FITTED AT HIGHER LEVEL. MAXIMUM DISTANCE BETWEEN SEABED AND BOTTOM OF ANODE SHALL NOT EXCEED 400mm



**ELEVATION**  
1: 50  
ELEVATION ON DOLPHIN  
OTHER ANODES OMITTED FOR CLARITY

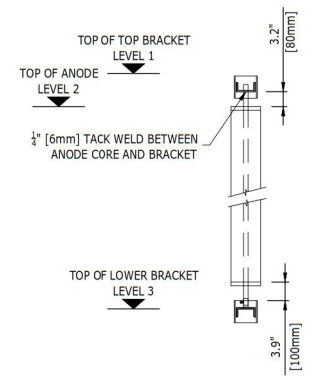


**ELEVATION**  
1: 50  
ELEVATION ON DOLPHIN

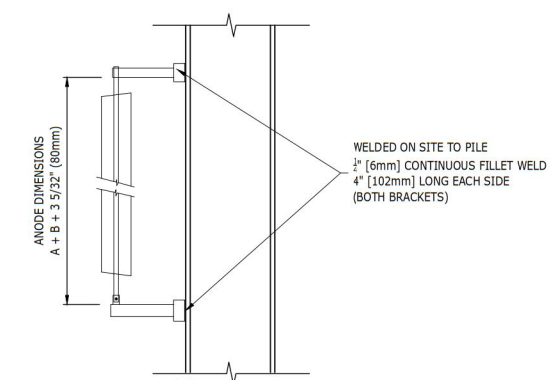


**PLAN**  
1: 50

ANODE PLACEMENT LEVELS						
LOCATION	LEVEL 1 (ft,In OD)	LEVEL 1 (m OD)	LEVEL 2 (ft,In OD)	LEVEL 2 (m OD)	LEVEL 3 (ft,In OD)	LEVEL 3 (m OD)
BATTER TOP PILES	-6', 6.7"	-2.000	-7', 1.2"	-2.165	-14', 8.4"	-4.480
BATTER LOWER PILES	-23', 9.4"	-7.250	-24', 3.9"	-7.415	-31', 11.1"	-9.730
STRUT TOP PILES	-6', 6.7"	-2.000	-7', 1.2"	-2.165	-13', 5.4"	4.100
STRUT BOTTOM PILES	-19', 9.4"	-5.870	-19', 9.6"	-6.035	-26', 1.8"	-7.970



**ELEVATION**  
1: 20  
FRONT ELEVATION

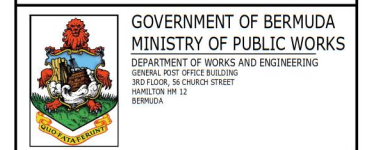


**ELEVATION**  
1: 20  
SIDE ELEVATION

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**KINGS WHARF REHABILITATION  
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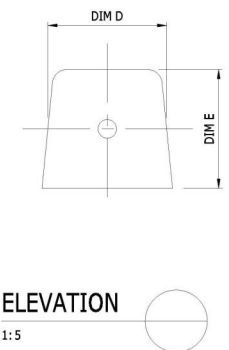
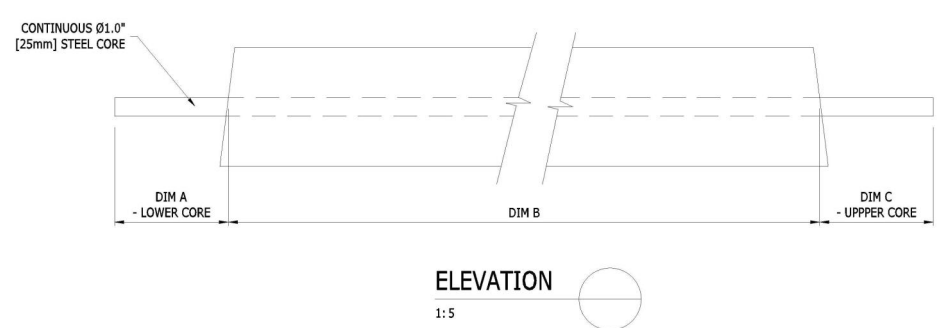
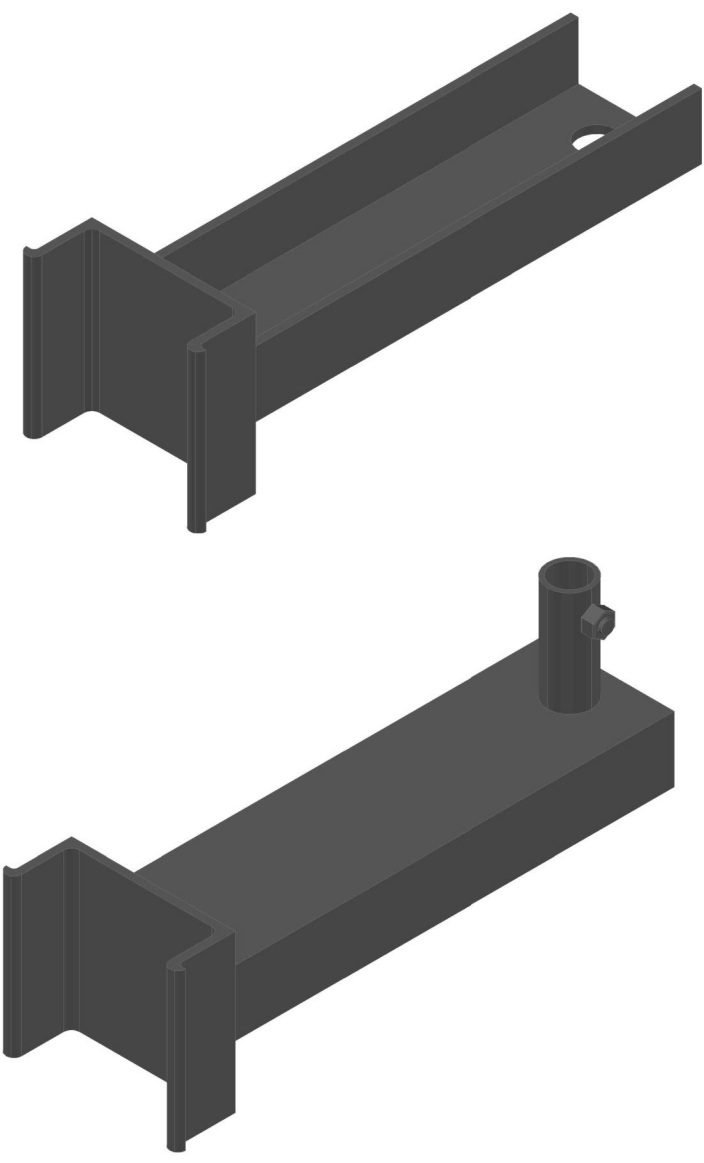
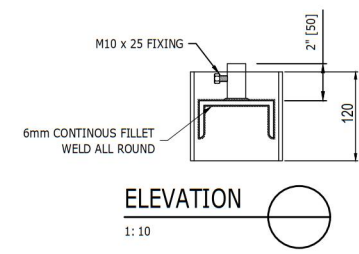
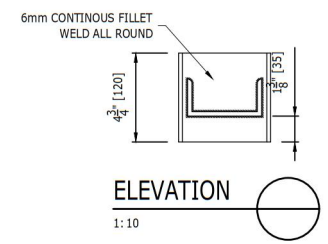
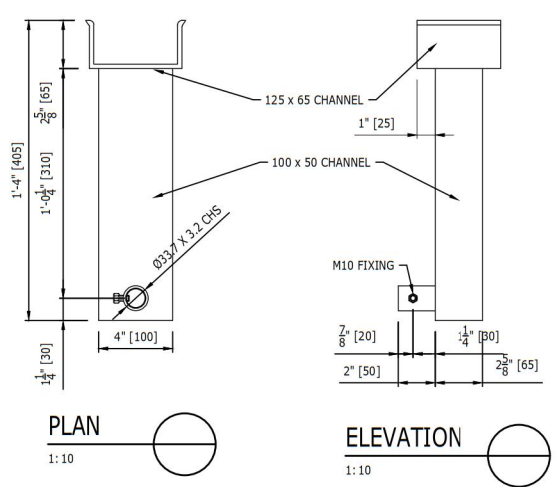
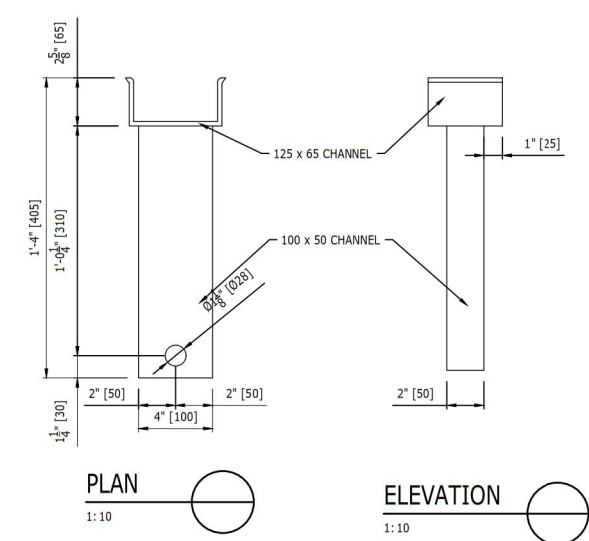
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**CATHODIC PROTECTION  
GENERAL ARRANGEMENT  
(DOLPHINS)**

Project No:	Scale (BA1):	Drawn:	Date:
1620004884	AS NOTED	CDW	JULY 18
Drawing No:	-RAM-XX-00-DR-CW-0602		Rev:
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  - IMPERIAL MEASUREMENTS SHALL BE USED FOR CONSTRUCTION. METRIC UNITS PROVIDED FOR INFORMATION ONLY.
  - ANODE ALLOY MATERIAL TO COMPLY WITH THE REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSES 4.1.4.2
  - INSERT MATERIAL TO COMPLY WITH REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSE 4.1.5.
  - ANODE FABRICATION TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSE 4.1.4.
  - INSPECTION AND DOCUMENTATION REQUIREMENTS ARE DETAILED IN CATHODIC PROTECTION SPECIFICATION CLAUSE 4.1.6.
  - BRACKET SPECIFICATION TO COMPLY WITH THE GENERAL REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSE 4.2.
  - BRACKET MATERIAL TO COMPLY WITH THE REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSE 4.2.3.
  - WELDING AND WELD TESTING TO COMPLY WITH REQUIREMENTS OF CATHODIC PROTECTION SPECIFICATION CLAUSE 4.2.4.
  - CONTRACTORS TO CONFIRM COMPATIBILITY BETWEEN BRACKET DETAIL AND RETAINED ANODES



**DIMENSIONAL TOLERANCES:**  
 DIMENSION B ± 1.0" [25mm]  
 DIMENSION D ± 10%  
 DIMENSION E ± 5%  
 OVERALL CORE LENGTH (DIM A + DIM B + DIM C) ± 3/16" [5mm]  
**NETT ALLOY WEIGHT:**  
 ± 5% FOR INDIVIDUAL ANODE  
 -0% +2% FOR THE SUM OF EACH ANODE TYPE

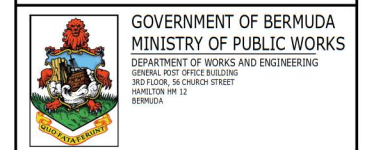
**ANODE DIMENSIONS SCHEDULE (mm)**

TYPE	A	B	C	D	E	NET WEIGHT (kg)	NET WEIGHT (lb)	No. REQUIRED
1	4" [102mm]	7' - 4 1/2" [2248mm]	5" [127mm]	5 7/8" [149mm]	5 7/8" [149mm]	133.4	294	62
2	4" [102mm]	6' - 1 5/8" [1870mm]	5" [127mm]	5 7/8" [149mm]	5 7/8" [149mm]	111.1	245	40
3	4" [102mm]	7' - 9 1/2" [2375mm]	5" [127mm]	5 7/8" [149mm]	5 7/8" [149mm]	144.5	318.5	32

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**CATHODIC PROTECTION  
 GENERAL DETAILS**

Project No:	Scale (@A1):	Drawn:	Date:
1620004884	AS NOTED	CDW	JULY 18
Drawing No:	-RAM-XX-00-DR-CW-0603		Rev:
			R01