

GOVERNMENT OF BERMUDA Ministry of Public Works Works and Engineering

## **Reference Drawing List**

Note: The drawings provided correspond to the original works and are to be used as a guide only.

## General

61/01/01/T1	Title Sheet
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61/01/01/T4	Standard Barge Attachments
61/01/01/T5	Standard Aluminium Platforms
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## Hamilton Terminal

- 13/26/02/HT2 Site Plan
- 13/26/02/HT3 Barge Assembly Plan
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- 13/26/02/HT5 Assembly Connection Details
- 13/26/02/HT6 Ballasting Plan
- 13/26/02/HT8 Wall Notch Construction
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## **Dockvard Terminal**

- 61/45/01/DY1 Existing Conditions
- 61/45/01/DY3 Barge & Aluminum Assembly Plan
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- 61/45/01/DY8 Not Included
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## Market Wharf

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## Hamilton Depot

61/35/01/HD3	Barge Assembly Plan
S00	General Arrangement Plan

## MINISTRY OF WORKS AND ENGINEERING



REPLACEMENT FERRY PROJECT PHASE 1 DOCK CONSTRUCTION PROJECT NO. 61/01/01 MAY 2001

CURRENT REVISION

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DRAWING LIST

HAMILTON TERMINAL

HT2 SITE PLAN

HT7 CANOPY

DOCKYARD

HT1 EXISTING CONDITIONS

HT6 BALLASTING PLAN

HT9 WALL DETAILS

HT11 WALL FENDER HT12 MOORING PILES

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HT3 BARGE ASSEMBLY PLAN

HT4 ALUMINUM ASSEMBLY PLAN

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HT10 GANGWAY PIER EXTENSION

DY1 EXISTING CONDITIONS

DY4 ASSEMBLY CONNECTIONS

DY3 BARGE & ALUMINUM ASSEMBLY PLAN

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DY2 \*\*SHEET DELETED\*\*

DY5 BALLASTING PLAN

DY8 \*\*SHEET DELETED\*\*

DY9 FENDER DETAILS

DY11 MOORING LAYOUT

DY12 MOORING DETAILS

DY10 MISC. DETAILS

DY7 WALL FENDER

HT5 ASSEMBLY CONNECTION DETAILS

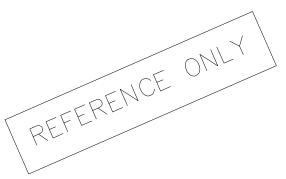
TITLE

A1 PROPOSED LAYOUT PLAN AND ELEVATION

A4 LANDSIDE WORKS - SECTIONS AND DETAILS

A2 LANDSIDE WORKS - ALTERATIONS TO EXISTING A A3 LANDSIDE WORKS - PLAN AND ELEVATION

DRAWING #



	DRAWING LIST	
DRAWING	# TITLE	CURRENT REVISION
ST. C	EORGE'S	
SG1	EXISTING CONDITIONS	
SG2	SITE LAYOUT	В
SG3	BARGE & ALUMINUM ASSEMBLY	PLAN B
	ASSEMBLY CONNECTION	В
~~~~	BALLASTING PLAN	В
~ ~ ~	PIER PLAN AND DETAILS	
	MOORING PILES	В
	MISC. DETAILS	В
SG9	PLAN, SECTIONS AND DETAILS	
ROC	KAWAY TERMINAL	
RW1	EXISTING CONDITIONS	
RW2	SITE LAYOUT	
RW3	ACCESS RAMP PLAN & ELEVATION	ON B
RW4	ACCESS RAMP REINFORCING DE	ETAILS A
RW5	OUTSHORE PLATFORM AND SUS	SPENDED SLAB
RW6	PIER PLAN & ELEVATIONS	
RW7	PIER PILE/PILECAP PLAN & ELEV	ATIONS
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RW9	SHEETING ELEVATION & DETAIL	LS
RW1	) PIER STRUCTURE ALTERNATIV	'ES
RW1	PIER NOTCH PLAN & ELEVATIO	ONS
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RW1	3 BERTHING DOLPHINS	
RW1	4 DOLPHIN DETAILS	
RW1	5 GANGWAY HOIST PLAN & DETA	AILS
	5 DOLPHIN ASSEMBLY PLANS &	DETAILS B
RW1	7 MISC. DETAILS	

# Reference

DRAWING #       TITLE       CURRENT REVISION         GENERAL DRAWINGS       T1       TITLE SHEET       B         T2       GENERAL NOTES       B         T3       STANDARD BARGE UNITS       B         T4       STANDARD BARGE ATTACHMENTS       B         T5       STANDARD BARGE ATTACHMENTS       B         T6       STANDARD ALUMINUM PLATFORMS          T6       STANDARD ALUMINUM GANGWAYS & RAMPS          HAMILTON DEPOT       HD1       EXISTING CONDITIONS          HD2       SITE LAYOUT       B       HD3         BARGE ASSEMBLY PLAN       B       HD4       ALUMINUM ASSEMBLY PLAN       B         HD5       ASSEMBLY CONNECTIONS       B       B         HD6       BALLASTING PLAN       B       B         HD6       BALLASTING PLAN       B       B         HD7       PIER PILE CAP DETAILS           HD8       PIER PILE CAP DETAILS           HD9       STRUCTURE ALTERNATIVES           HD10       MISCELLANEOUS CONCRETE DETAILS       B       HD11       WALL AND VESSEL FENDER       A         HD12       MOORING PILES		DRAWING LIST		
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HD11WALL AND VESSEL FENDERAHD12MOORING PILESB	/			
HD12 MOORING PILES B				-
HD13 MISC. DETAILS B				-
	HDI	3 MISC. DETAILS		В

Drawings			
	Drav	WIN	Igs

SHEET NUMBER:	
61/01/01/T1	

TTLE	SHEET

DRAWING FILE NO: TITLE SHT REV.dwg SHEET TITLE:

PROJECT NAME:

ACAD R-14

REVISION

## REPLACEMENT FERRY PROJEC PHASE I DOCK CONSTRUCTION

SCALE: NO SCALE	
<u>SURVE</u> Y PREPARED BY:	DATE:
DESIGN PREPARED BY: RRB CHECKED BY: RRB	DATE: 23/05/01 DATE: 23/05/01
DRAWING PREPARED BY: RRB CHECKED BY: RRB	DATE: 23/05/01 DATE: 23/05/01
APPROVED BY: RRB	
PROJECT NUMBER: 61/01/01	

Structu	ures	Sect.	ion	

THE MINISTRY OF WORKS AND ENGINEERING

P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151

ENGINEERING and OPERATIONS DIVISION Fax: (441)295-0170



ISSUED FOR: REFERENCE ONLY 2016 09 07

APP DATE:

RRB 04/01/02 MAM 2016 09 07

GENERAL NOTES:

AMENDMENTS: NO: | REVISION

B NOTES

### GENERAL NOTES:

ALL ELEVATIONS ARE IN ORDNANCE DATUM MEAN HIGH WATER (MHW) = 0.80 m MEAN LOW WATER (MLW) = -0.60 m

	Cat 1 Hurricane	Cat 3 Hurricane	Cat 5 Hurricane
Terminal Location	Max Surge (m)	Max Surge (m)	Max Surge (m)
Hamilton Depot	0.79	1.56	2.34
Hamilton Terminal	0.79	1.56	2.34
Rockaway	1.72	3.05	4.39
Dockyard	0.82	1.52	2.33
St. George's	0.56	1.05	1.63
DESIGN LOAI	OS		
Ramps and Platform	s (uniform)	4800 N/M <sup>2</sup>	
Ramps and Platform	s Concentrated	1335 N (25 cm <sup>2</sup> Area)	
Guardrails (uniform)		1460 N/M	
Guardrails (concentra		1110 N	
Handrails (uniform)		730 N/M	
Handrails (concentra	ted)	1110 N	
Wind Load	)	2000 N/M <sup>2</sup>	
		\ \	
110 MPH sustained	with gusting factor	)	
	0 0	)	
Vessel Berthing Spec	ed_	, ,	
	ed Side	4.6 KPH	
Vessel Berthing Spee Normal	ed Side Bow	4.6 KPH 2.8 KPH	
Vessel Berthing Spec	ed Side Bow Side	4.6 KPH 2.8 KPH 10 KPH	
Vessel Berthing Spec Normal Extreme	ed Side Bow Side Bow	4.6 KPH 2.8 KPH	
Vessel Berthing Spea Normal Extreme Vessel Design Freeb	ed Side Bow Side Bow oard	4.6 KPH 2.8 KPH 10 KPH 5 KPH	
Vessel Berthing Spec Normal Extreme Vessel Design Freeb Cata	ed Side Bow Side Bow <u>oard</u> umaran Bow	4.6 KPH 2.8 KPH 10 KPH 5 KPH 2300 mm	
Vessel Berthing Spec Normal Extreme Vessel Design Freeb Cata Cata	e Side Bow Side Bow oard amaran Bow umaran Side	4.6 KPH 2.8 KPH 10 KPH 5 KPH 2300 mm 1600 mm	
Vessel Berthing Sper Normal Extreme Vessel Design Freeb Cat Cat War	ed Side Bow Side Bow <u>oard</u> umaran Bow	4.6 KPH 2.8 KPH 10 KPH 5 KPH 2300 mm	

Type I. II

Type III. IV

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

CODES AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) AMERICAN WELDING SOCIETY (AWS) AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) ALUMINUM ASSOCIATION SPECIFICATIONS FOR ALUMINUM STRUCTURES AMERICAN CONCRETE INSTITUTE (ACI) CONCRETE REINFORCING STEEL INSTITUTE (CRSI) AMERICAN BUREAU OF SHIPPING - RULES FOR BUILDING AND CLASSING STEEL BARGES (ABS)

1380 mm

### FOUNDATION

BERMUDA BUILDING CODE

BOCA NATIONAL BUILDING CODE

PILE CAPACITY MOORING PILE TYPE I 15 TONS MOORING PILE TYPE II 25 TONS MOORING PILE TYPE III 25 TONS ALL BEARING PILES 50 TONS HAMILTON TERMINAL DOLPHIN 60 TONS TOTAL CAPACITY FOR GROUP

BEARING CAPCITY ROCKAWAY RETAINING WALLS TSF

### STRUCTURAL STEEL

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITIONS

ALL STEEL PLATE AND ANGLES SHALL BE WEATHERING STEEL AND SHALL CONFORM TO ASTM A588 GRADE A. THE MINIMUM ATMOSPHERIC CORROSION INDEX SHALL BE 8

ALL OTHER STRUCTURAL STEEL SHAPES, UNLESS OTHERWISE NOTED, SHALL CONFORM TO ASTM A36

ALL STAINLESS STEEL BARS AND SHAPES SHALL CONFORM TO ASTM A276. TYPE 316 ALLOY

ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL ASTM F593. TYPE 316 ALLOY

MACHINE AND EYE BOLTS SHALL BE STAINLESS STEEL AND CONFORM TO ASTM A276, TYPE 316 ALLOY UNLESS OTHERWISE NOTED

ANCHOR BOLTS SHALL BE STAINLESS STEEL TYPE 316 ALLOY AND CONFORM TO ASTM A276 AND A479

WELDING RODS SHALL CONFORM TO AWS E70XX GRADE.

ALL STAINLESS STEEL WELDING SHALL CONFORM TO ASTM A530.

ALL WELDING OF WEATHERING STEEL SHALL BE ANSI / AASHTO / AWS D1.5-88. CONTRACTOR SHALL USE LOW-HYDROGEN ELECTRODES AND FOLLOW ALL MINIMUM PREHEAT SUGGESTIONS IN ANSI / AWS D1.1-92

GALVANIZING SHALL BE BY THE HOT DIP METHOD ACCORDING TO ASTM SPECIFICATIONS A-123 AND A-153 UNLESS OTHERWISE NOTED. HOT DIP GALVANIZING SHALL BE IN A DRY KETTLE METHOD, WITH A ZINC-NICKEL ALLOY, IN ACCORDANCE WITH ASTM A 123, ASTM A 153 AND ASTM A385, AS APPLICABLE, GALVANIZING SHALL BE DONE WITH A NICKEL ENRICHMENT OF THE GALVANIZING TANK SUCH AS "NIGALV" OR APPROVED EOUAL

## ALUMINUM

THE DECKING FOR BOTH THE GANGWAY, RAMPS AND PLATFORMS SHALL BE NON-SKID WITH EITHER A RAISED RIB PROFILE WITH THE RIBS NO HIGHER THAN 1/4" AND PERPENDICULAR TO THE FLOW OF TRAFFIC, OR COVERED WITH A UNIFORM CARBORUMDUM SURFACE, SURFACES CAPABLE OF HAVING A SLOPE OF THAT IS STEEPER 1:12 SHALL HAVE A STATIC COEFFICIENT OF FRICTION OF 0.8 OR GREATER WHEN WET. SURFACES WHERE THE SLOPE WILL ALWAYS BE 1:12 OR LESS SHALL HAVE A STATIC COEFFICIENT OF FRICTION OF 0.5 OR GREATER WHEN WET.

ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL ASTM F593 TYPE 316 ALLOY. NUTS SHALL BE SELF LOCKING

EXPANSION JOINT MATERIAL BETWEEN ALUMINUM PLATFORMS SHALL BE CROSS LINKED POLYETHYLENE METASEALAS MANUFACTURED BY CAPITAL SERVICES OF NY, INC, TO THE DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS

GANGWAY CONNECTION PINS AND SLEEVES SHALL BE STAINLESS STEEL AND MEET ASTM A269 TYPE 316 ALLOY

## COATINGS

ALL COATINGS SHALL BE FROM THE SAME MANUFACTURER UNLESS OTHERWISE AGREED BY THE OWNER, ALL COATINGS SHALL BE TWO PART EPOXY, MIXED IMMEDIATELY PRIOR TO INSTALLATION.

ALL STEEL SHALL BE CLEANED AND PREPARED AS RECOMMENDED BY THE MANUFACTURER FOR EACH TYPE OF COATING PRIOR TO FABRICATION

SANDBLASTING SHALL MEET THE REOUIREMENTS OF SSPC-SP10 "NEAR-WHITE BLAST CLEANING"

COATINGS SHALL MEET THE REQUIREMENTS OF SSPC-PS 13.01

COATING ON ALL STEEL PLATE AND SHAPES, ALL FIELD WELDED OR DAMAGED AREAS SHALL BE REPAIRED AS PER MANUFACTURERS RECOMMENDATION

THE EXTERIOR OF THE BARGE, SIDES AND BOTTOM SHALL BE COATED WITH AMERCOAT 235 TWO PART EPOXY WITH 68% SOLIDS OR APPROVED EQUAL. THERE SHALL BE A MINIMUM OF TWO COATS WITH A FINAL DRY FILM THICKNESS OF 16 MILS (MINIMUM, NOT AVERAGE). THERE SHALL BE A STRIP COAT OVER SHARP EDGES. CUTOUTS AND WELDS. THERE SHALL BE CONTRASTING COLORS FOR EACH COAT. WITH THE FINAL COLORS DARK GREY ABOVE THE WATERLINE AND LIGHT BLUE BELOW THE WATERLINE. ALL SURFACES MUST BE INSPECTED PRIOR TO COATING.

THE DECK OF THE BARGE SHALL BE COATED WITH AMERCOAT 238 TWO PART EPOXY WITH 77% SOLIDS OR APPROVED EQUAL. THERE SHALL BE A MINIMUM OF TWO COATS WITH A FINAL DRY FILM THICKNESS OF 16 MILS (MINIMUM, NOT AVERAGE). THE FINAL COAT SHALL CONTAIN AMERON FINE GRIT 886 ALUMINUM OR APPROVED EOUAL. THERE SHALL BE A STRIP COAT OVER SHARP EDGES. CUTOUTS AND WELDS. THERE SHALL BE CONTRASTING COLORS FOR EACH COAT WITH THE FINAL COLORS LIGHT GREY. ALL SURFACES MUST BE INSPECTED PRIOR TO COATING.

THE CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS OF THE MANUFACTURER

ALL BARGE DECKS OR OTHER STEEL WALKING SURFACES SHALL HAVE A LIGHT GRAY COLOR COATING AND SHALL HAVE A NON-SKID FINISH

## STEEL BARGES

TACTILE WARNING STRIP SHALL BE DETECTABLE WARNING SURFACE AS MANUFACTURED BY AMS TACTILE SYSTEMS, LLC, STOUGHTON, MA OR APPROVED EQUAL

ANODES SHALL BE ALOLINE GALVANIC ALUMINUM ANODES 29FM, MANUFACTURED BY FARWEST CORROSION, GARRDENA CA OR EQUAL. CONSUMPTION RATE OF 7.6 PONDS PER AMP YEAR, NO MERCURY ALLOWED. ALL ANODE CONNECTIONS SHALL BE BOLTED

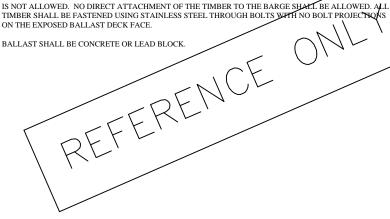
TYPE I BARGE UNITS SHALL HAVE 16 ANODES (MIN) TYPE II BARGE UNITS SHALL HAVE 12 ANODES (MIN) TYPE III BARGE UNITS SHALL HAVE 12 ANODES (MIN) TYPE IV BARGE UNITS SHALL HAVE 6 ANODES (MIN).

TYPE I PILE GUIDE SHALL HAVE 2 ANODES (MIN). TYPE II PILE GUIDE SHALL HAVE 2 ANODES (MIN). TYPE III PILE GUIDE SHALL HAVE 1 ANODES (MIN).

BOW LOADER UNITS SHALL HAVE 4 ANODES (MIN)

ALL BALLAST SHALL BE PLACED ON CCA TREATED TIMBER CROSS FRAMED TO PREVENT MOVEMENT OF THE TIMBER. TIMBER SHALL BE INSTALLED AND SECURED SUCH THAT MOVEMENT OF THE TIMBER IS NOT ALLOWED. NO DIRECT ATTACHMENT OF THE TIMBER TO THE BARGE SHALL BE ALLOWED. ALL TIMBER SHALL BE FASTENED USING STAINLESS STEEL THROUGH BOLTS WITH NO BOLT PROJECTIONS ON THE EXPOSED BALLAST DECK FACE.

BALLAST SHALL BE CONCRETE OR LEAD BLOCK.



## FENDER PANELS

THE RUBBER ELEMENTS USED SHALL BE CONE TYPE UNIT AS MANUFACTURED BY SUMITOMO. FENDER UNIT SHALL BE SUMITOMO PVT-600H, WITH CT2 TYPE RUBBER OR APPROVED EQUAL. FENDERS SHALL BE MOLDED RUBBER UNITS WITH METAL MOUNTING PLATES IMBEDDED IN AND BONDED TO THE ENDS TO CREATE AN INTEGRAL UNIT AT BOTH CONNECTION FACES. FENDER UNITS SHALL BE RESISTANT TO OZONE, SUNLIGHT, TEMPERATURE EXTREMES, MARINE GROWTH, WEAR AND ABRASION. EMBEDDED STEEL PLATES SHALL CONFORM TO ASTM A36 OR BETTER.

THE RUBBER PERFORMANCE CHARACTERISTICS SHALL BE: RATED DEFLECTION 57.5% - REACTION LOAD 25.7 ton / ENERGY ABSORPTION 6.4 ton-M MAXIMUM DEFLECTION 60% - REACTION LOAD 28.2 ton / ENERGY ABSORPTION 6.8 ton-M

FENDER PANEL CHAINS SHALL BE GALVANIZED, SPECTRUM 4 HIGH STRENGTH CHAIN AS MANUFACTURED BY CROSBY GROUP OR APPROVED EOUAL HAVING A SAFE WORKING LOAD CAPACITY OF 18,500 POUNDS

CONNECTING LINKS SHALL BE OF THE SIZE SHOWN ON THE PLAN AND SHALL BE LOK-A-LOY-6 CONNECTING LINKS AS MANUFACTURED BY CROSBY GROUP OR APPROVED EQUAL HAVING A SAFE WORK LOAD CAPACITY OF 23,000 POUNDS.

RUBBER FENDER FACING: MATERIAL SHALL BE A SOLID RUBBER, NATURAL OR SYNTHETIC AND CONFORM TO ASTM D2000 CALLOUT 3BA720A14B13C12EA14F17G11 (G112250 LB/SQ IN) AS MANUFACTURED BY MARITIME INTERNATIONAL, INC. OR APPROVED EQUAL

FENDER PANEL PERIMETER: PERIMETER OF PANEL SHALL BE COVERED WITH UHMW-PE.

## CONCRETE WORKS

ALL REINFORCEMENT SHALL BE NEW DEFORMED BILLET STEEL BARS, GRADE 60, AND GALVANIZED IN ACCORDANCE WITH ASTM A-123.

REINFORCEMENT ACCESSORIES SHALL BE DIELECTRIC COATED STEEL OR APPROVED PLASTIC FORM COATINGS SHALL BE NON-GRAIN RAINING AND NON-STAINING TYPE THAT DO NOT LEAVE RESIDUE

THERE ARE TWO TYPES OF AGGREGATE FOR THE PROJECT. IMPORTED AGGREGATE SHALL MEET ASTM C33 FOR FINE COARSE AGGREGATES. LOCAL BERMUDA AGGREGATE SHALL BE APPROVED BY THE OWNER PRIOR TO USE.

NO WATER SHALL BE ADDED AT THE SITE DURING PLACEMENT OPERATIONS. ALL CONCRETE SHALL MEET SLUMP REQUIREMENTS FOR THE TYPE AND LOCATION. AIR ENTRAINMENT SHALL BE MAINTAINED AT 3% - 5% FOR ALL CONCRETE WORKS. TYPE A GROUT IS CEMENTATIOUS GROUT THAT IS NON-METALLIC AND CONTAINS NO CHLORIDE. TYPE B SHALL BE A HIGH STRENGTH, NON-SHRINK GROUT WITH SALTWATER RESISTANCE SUCH AS FIVE

STAR GROUT 120. CONSTRUCTION JOINTS SHALL BE A MAXIMUM OF 40 APART

EXPANSION JOINTS SHALL INCLUDE A JOINT FILLER, BOND BREAKER AND JOINT SEALANT. CONCRETE SHALL BE CURED FOR 7 DAYS AND KEEP IN A MOIST CONDITION FOR THIS ENTIRE TIME

## PILE JACKETS

ALL CONCRETE FOR PILE JACKETING SHALL BE 4000 PSI CONCRETE WITH 3/8" (3/4" ALLOWED IF LARGER PIPE USED FOR PLUMBING) IMPORTED AGGREGATE. PILE JACKETS SHALL BE 1/4" THICK MINIMUM FIBERGLASS JACKET THAT NEST ON EACH TO PROVIDE THE SUFFICIENT LENGTH OF JACKET. THE BOTTOM OF THE FORM REQUIRES A 200MM EPOXY GROUT PLUG THAT HAS FULLY CURED PRIOR TO PLACEMENT OF CONCRETE.

THE JACKETS SHALL HAVE REINFORCING BANDS AS RECOMMENDED BY THE MANUFACTURER OF THE IACKET

### HOIST SYSTEM

THE MECHANICAL WINCH SHALL BE JEAMAR CMA HEAVY DUTY SEAWORTHY ALUMINUM MODEL CMA

THE ELECTRICAL WINCH SHALL BE THE JEAMAR NI \$2000 HEAVY DUTY LIFTING WINCH. SINGLE PHASE THE WIRE ROPE SHALL BE THE STEEL WIRE ROPE. 6X37 IWRC. EIPS AS SUPPLIED BY JEAMAR WITH THE WINCHES.

ALL SHEAVES AND BLOCKS SHALL BE JEAMAR UNITS THAT ARE SEALED AND SELF LUBRICATING. REMOTE WINCH CONTROLLER AND ELECTRICAL BOX SHALL BE WEATHER TIGHT, LOCKING AS SUPPLIED BY JEAMAR WITH THE UNITS ALL CABLE DIRECTED TO BE SUBAQUEOUS SHALL BE MINING CABLE - 600/2000 VOLT TYPE G OR GC

THREE CONDUCTOR ROUND CABLE.

## MISCELLANEOUS ITEMS

ALL FRICTION SURFACES SHALL HAVE A DYNAMIC COEFFICIENT OF FRICTION OF 0.10 - 0.14 (DRY). MATERIAL SHALL HAVE A DENSITY OF 0.93 g/cm<sup>3</sup>, MINIMUM TENSILE STRENGTH OF 4000 psi, ABRASION INDEX OF 10 (SAND SLURRY), A SAND ON WHEEL INDEX OF 100cc (ASTM G65) AND A DUROMETER VALUE OF 67 (ASTM D-2240)

ALL HATCHES SHALL BE REMOVABLE WITH A MINIMUM OPENING OF 0 680M CLEAR HATCHES SHALL BE WATERTIGHT WITH A NEOPRENE GASKET THAT CONFORMS TO MIL SPEC MIL R-6855 CLASS 2 NEOPRENE GRADE 60. HATCH SHALL BE SECURED WITH STAINLESS STEEL SOCKET SCREWS, FLUSH TO THE HATCH

ALL DISSIMILAR METALS SHALL BE SEPARATED WITH PLASTIC SHEETS OR BUSHINGS NO LESS THAN 1.59MM (1/16") THICK. PLASTIC PADS SHALL BE PLACED UNDER ALL ALUMINUM BASE PLATES AND BUSHINGS INSTALLED BETWEEN ALL STAINLESS STEEL STUDS. THE SEPARATION MATERIAL SHALL BE NYLATRON-GS PLASTIC CONFORMING TO MILITARY SPECIFICATION MIL-P-1503

RAILING SHALL BE 1 1/2" I.P.S. SCHEDULE 40 INTER-RAIL TYPE WITH HEAVY DUTY BASE PLATES.



## THE MINISTRY OF WORKS AND ENGINEERING

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Structures Section



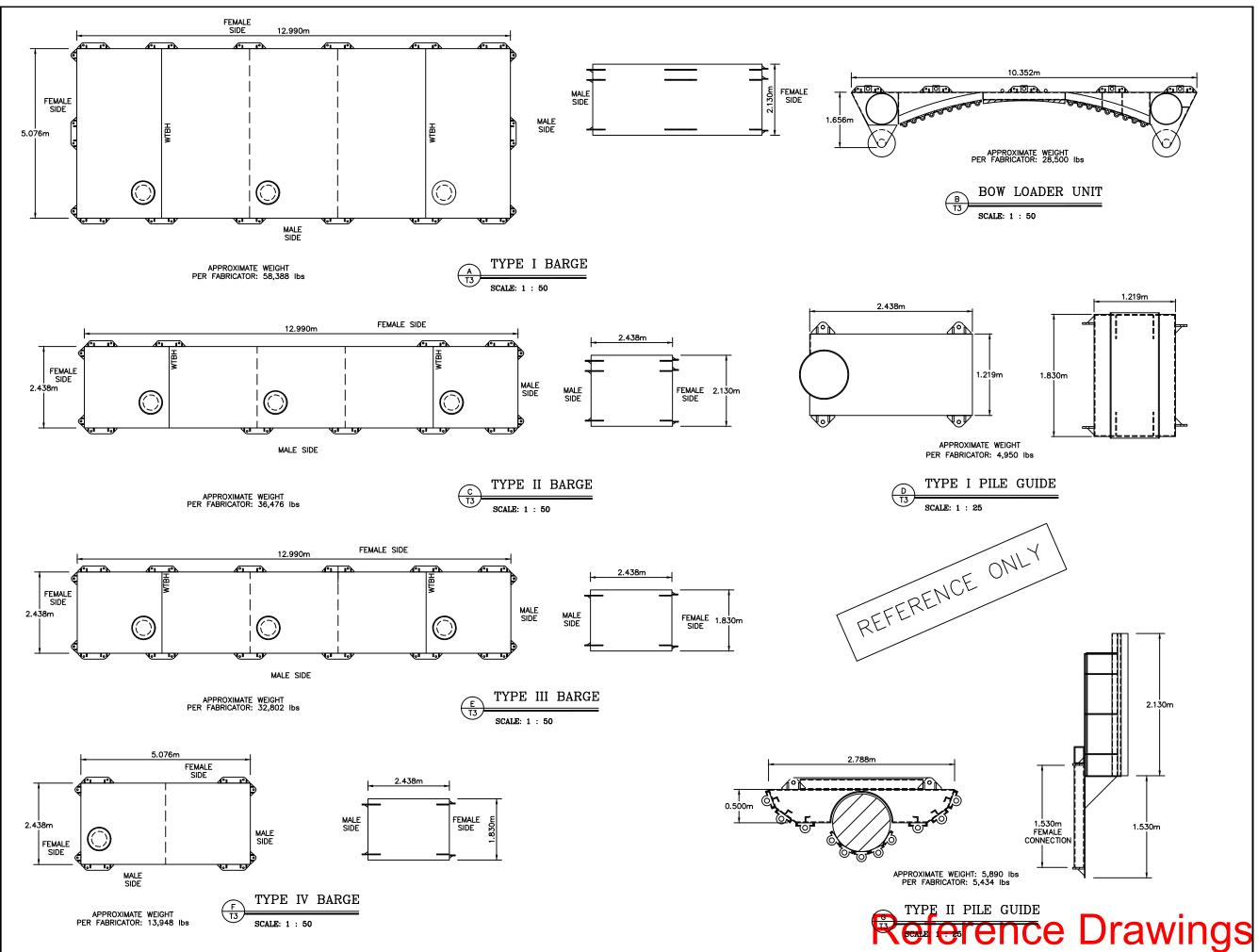
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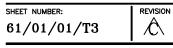
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SHEET TITLE:

REVISION





## SHEET TITLE: STANDARD BARGE UNITS

DRAWING FILE NO: T-3 STD Barge Units.dwg

PROJECT NAME:

ACAD R-14

## REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION

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ENGINEERING and OPERATIONS DIVISION

Fax: (441)295-0170

Structures Section

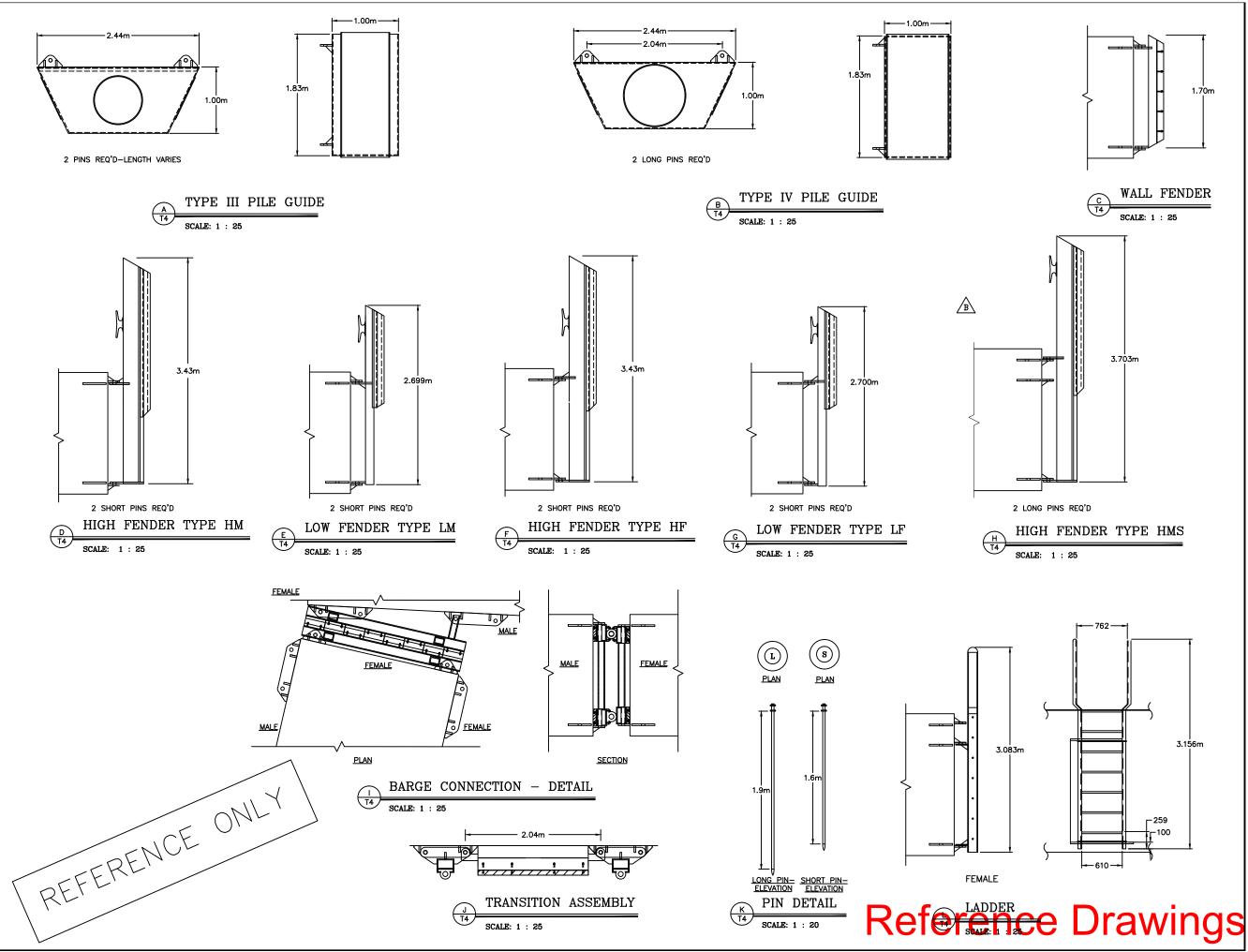
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GENERAL NOTES:

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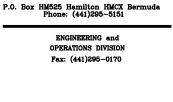
TRL (508) 528-8133 FAX

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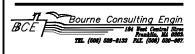


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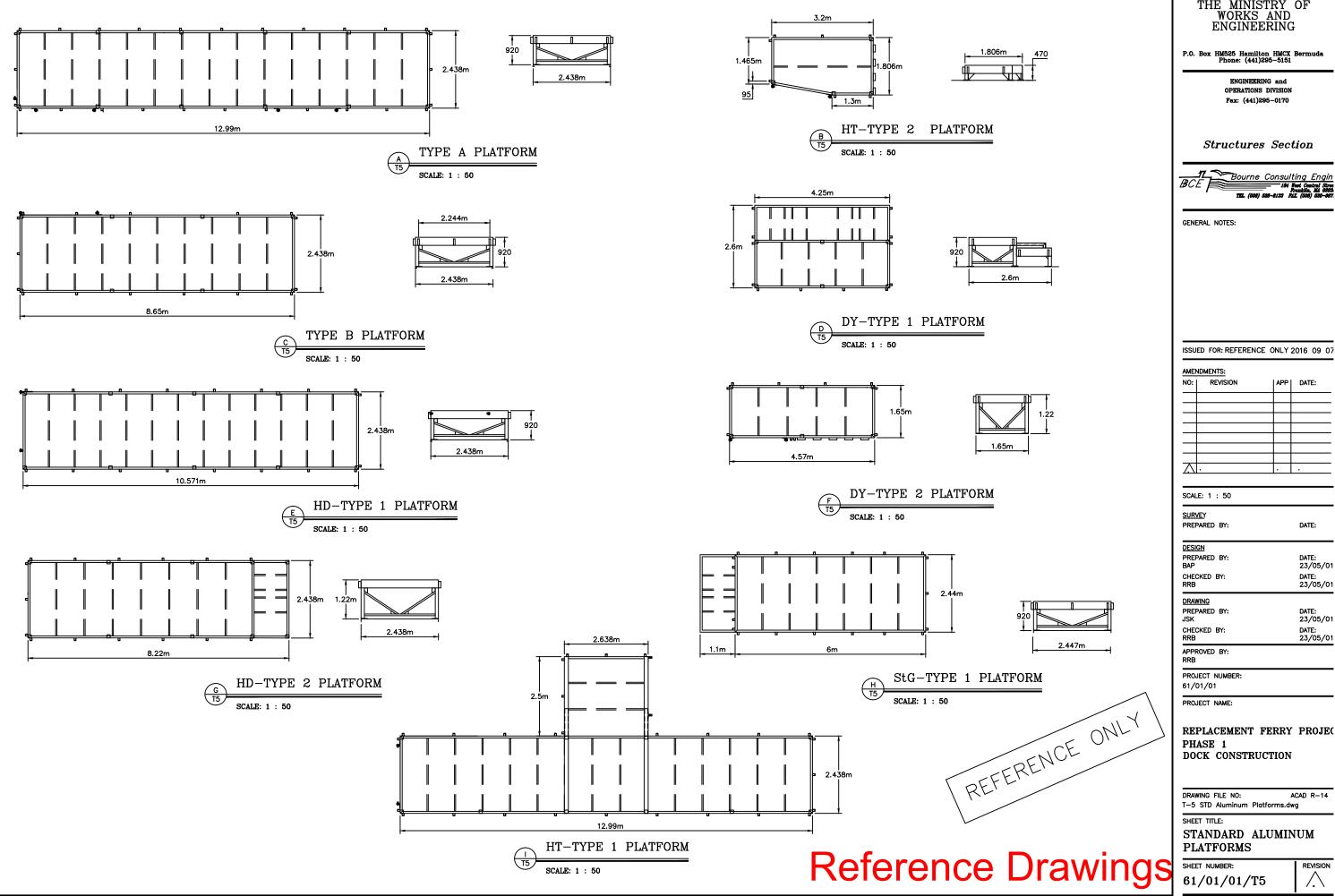
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DOCK CONSTRUCTION

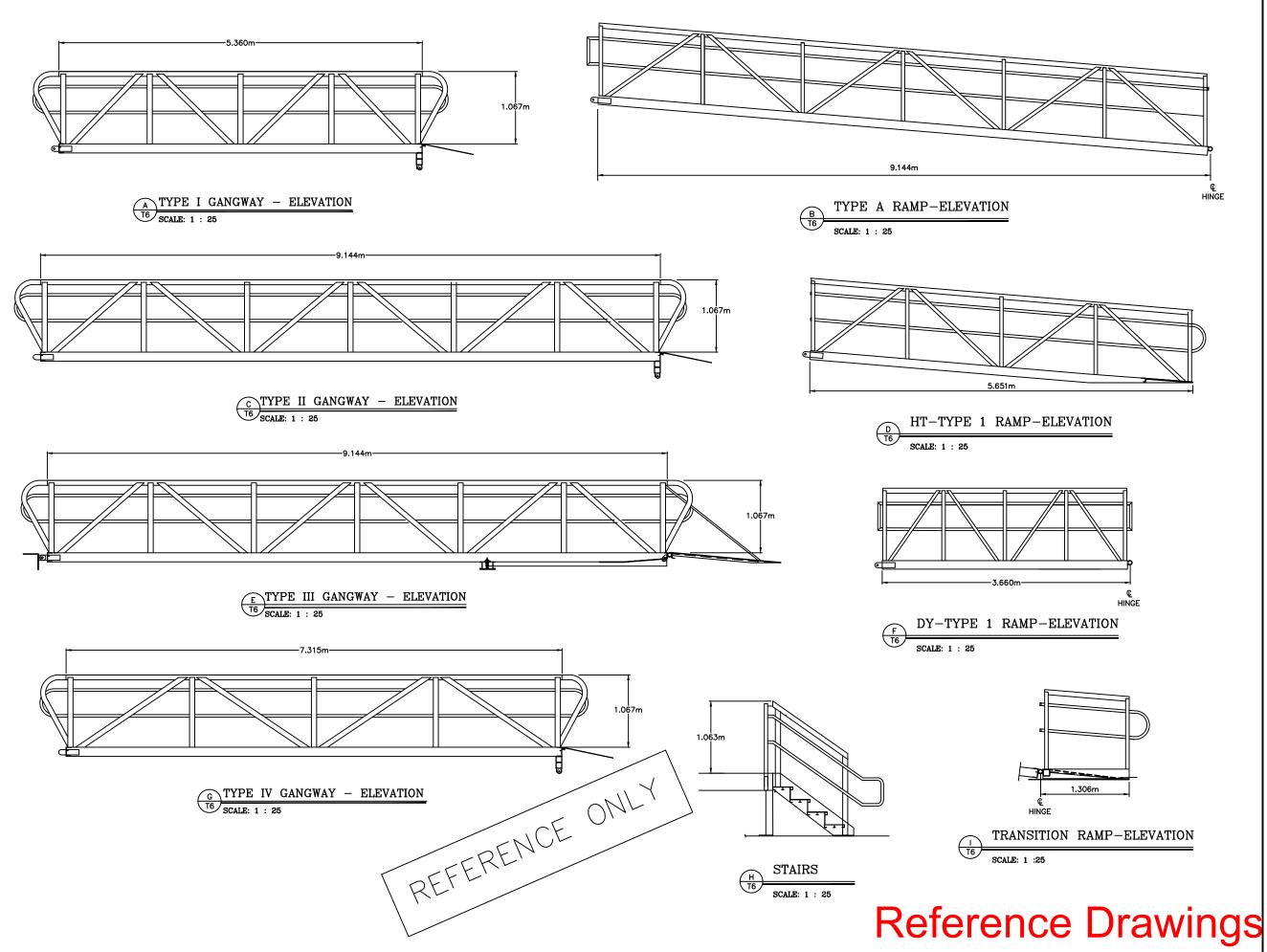
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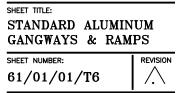
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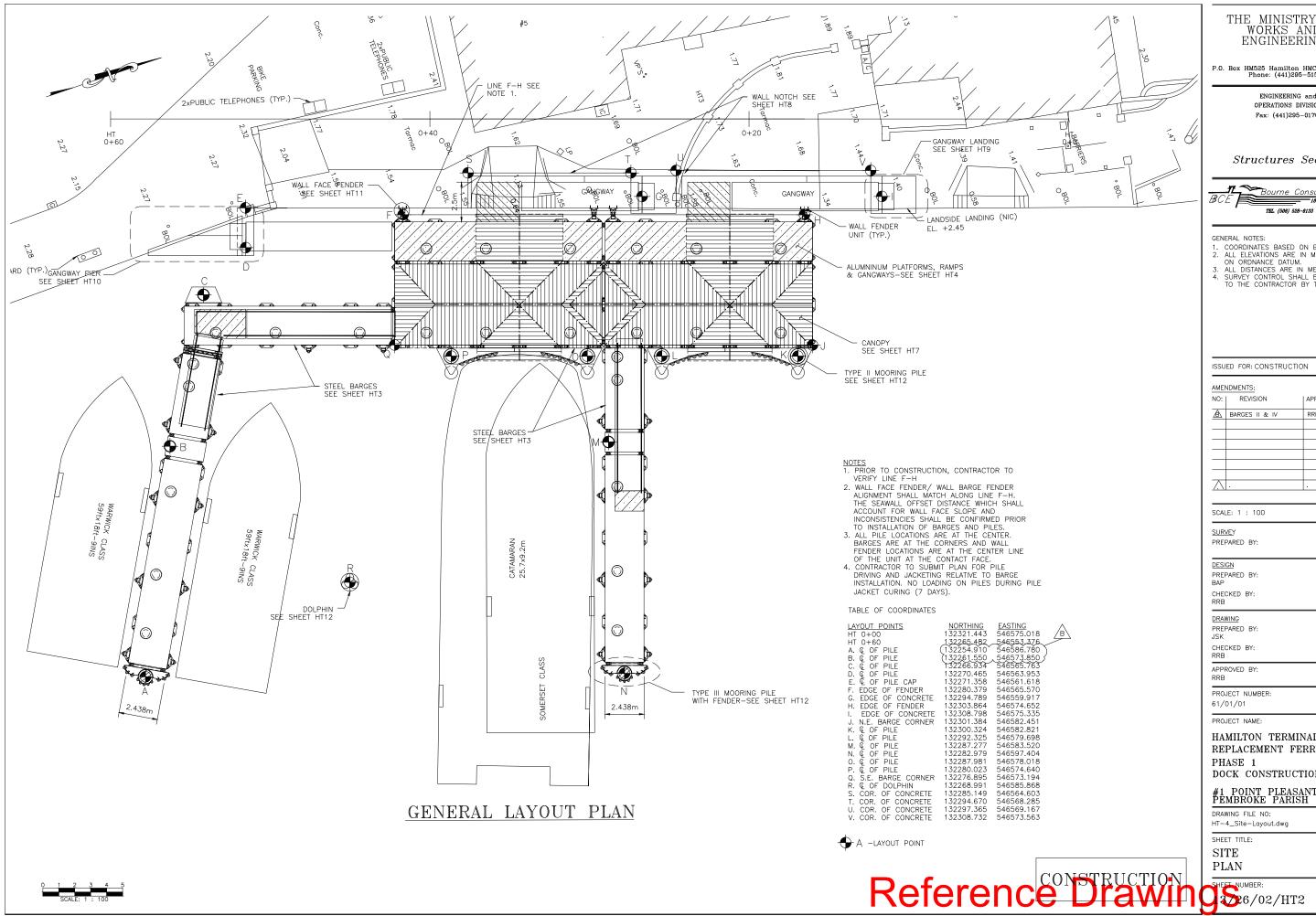
P.O. Box HM525 Hamilton HMCX Bermu Phone: (441)295-5151

ENGINEERING and OPERATIONS DIVISION Fax: (441)295-0170

Structures Section

Bourne Consulting

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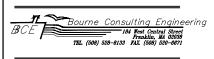


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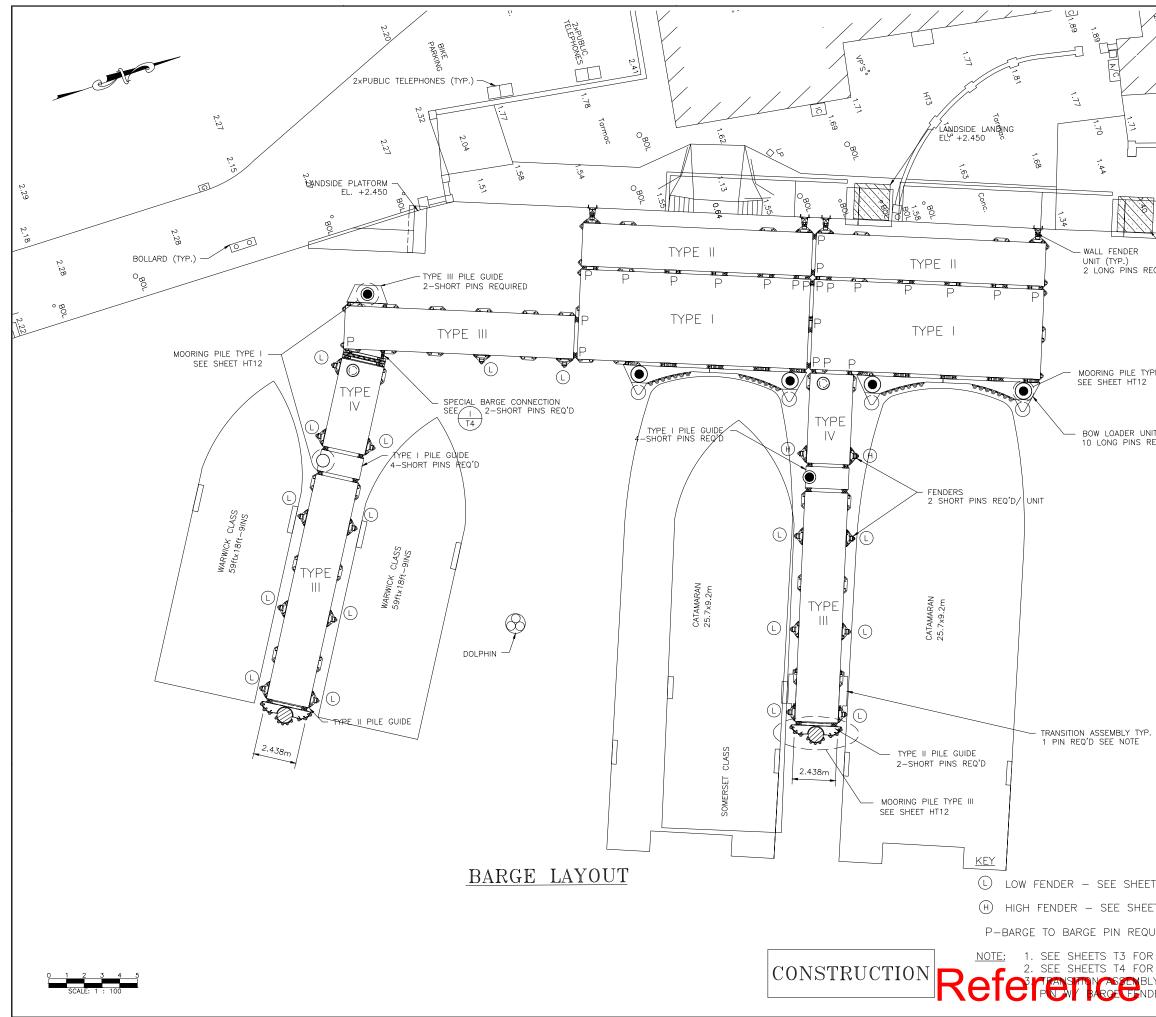
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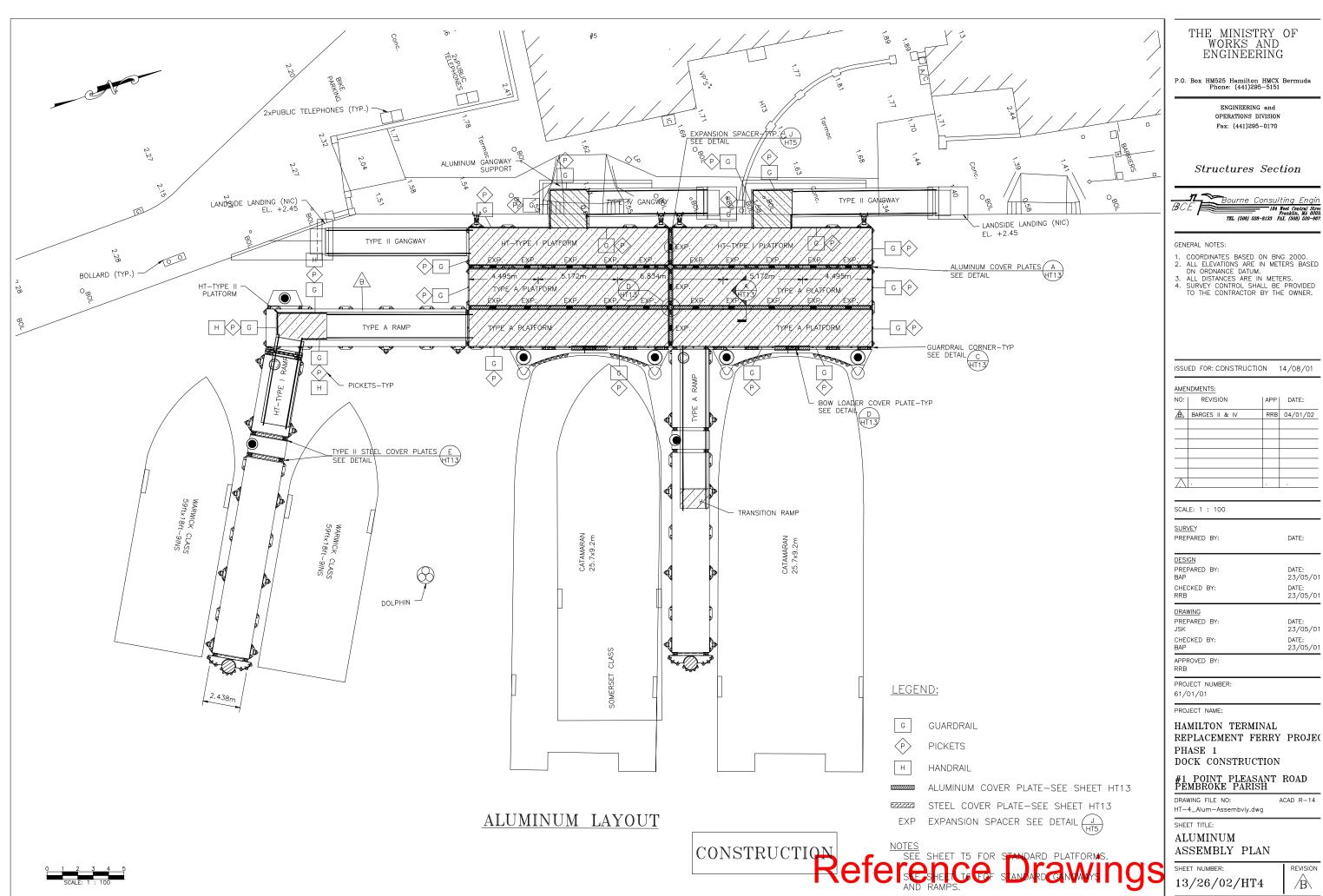


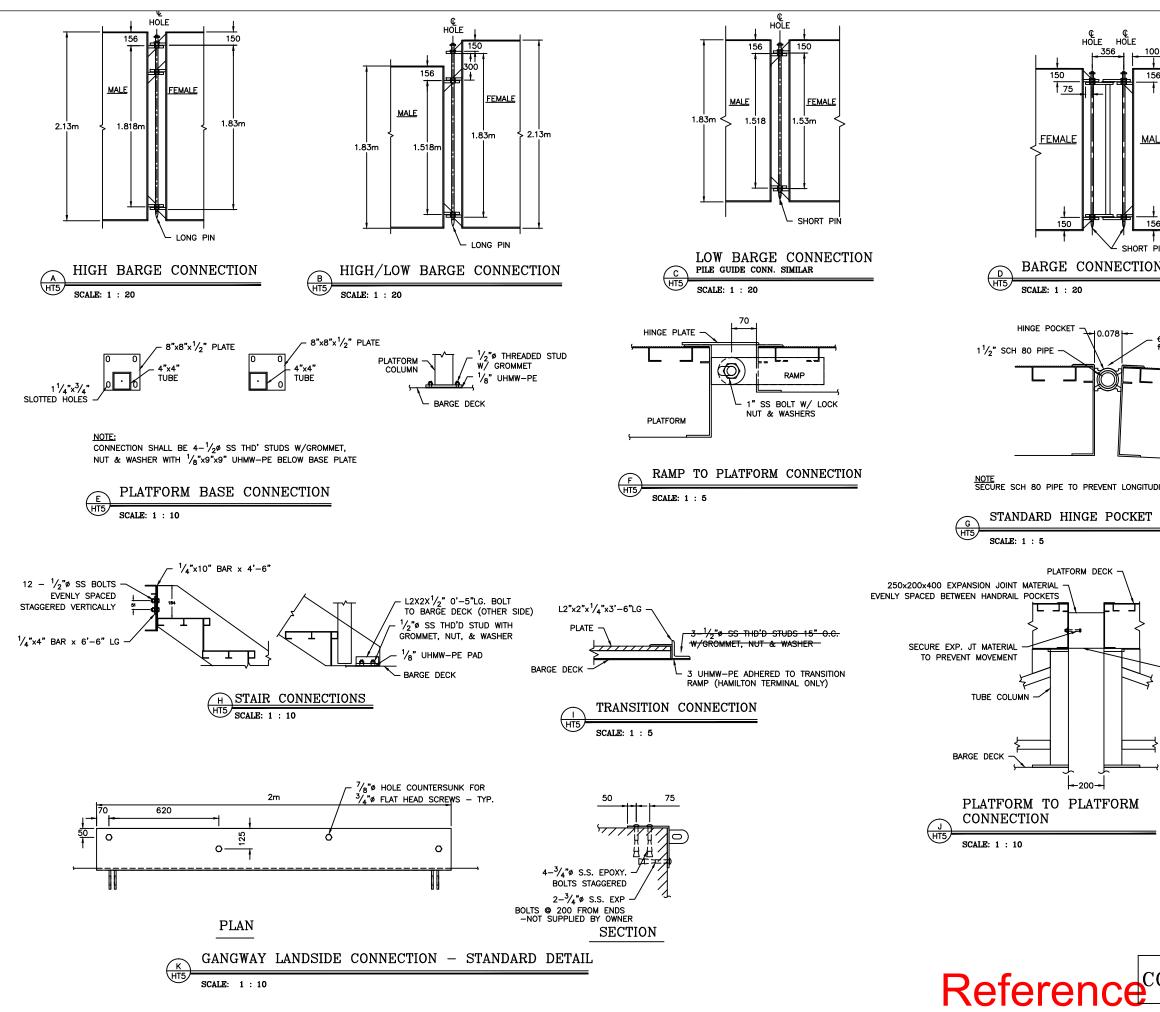
- GENERAL NOTES:
  COORDINATES BASED ON BNG 2000.
  ALL ELEVATIONS ARE IN METERS BASED ON ORDNANCE DATUM.
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  SURVEY CONTROL SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER.

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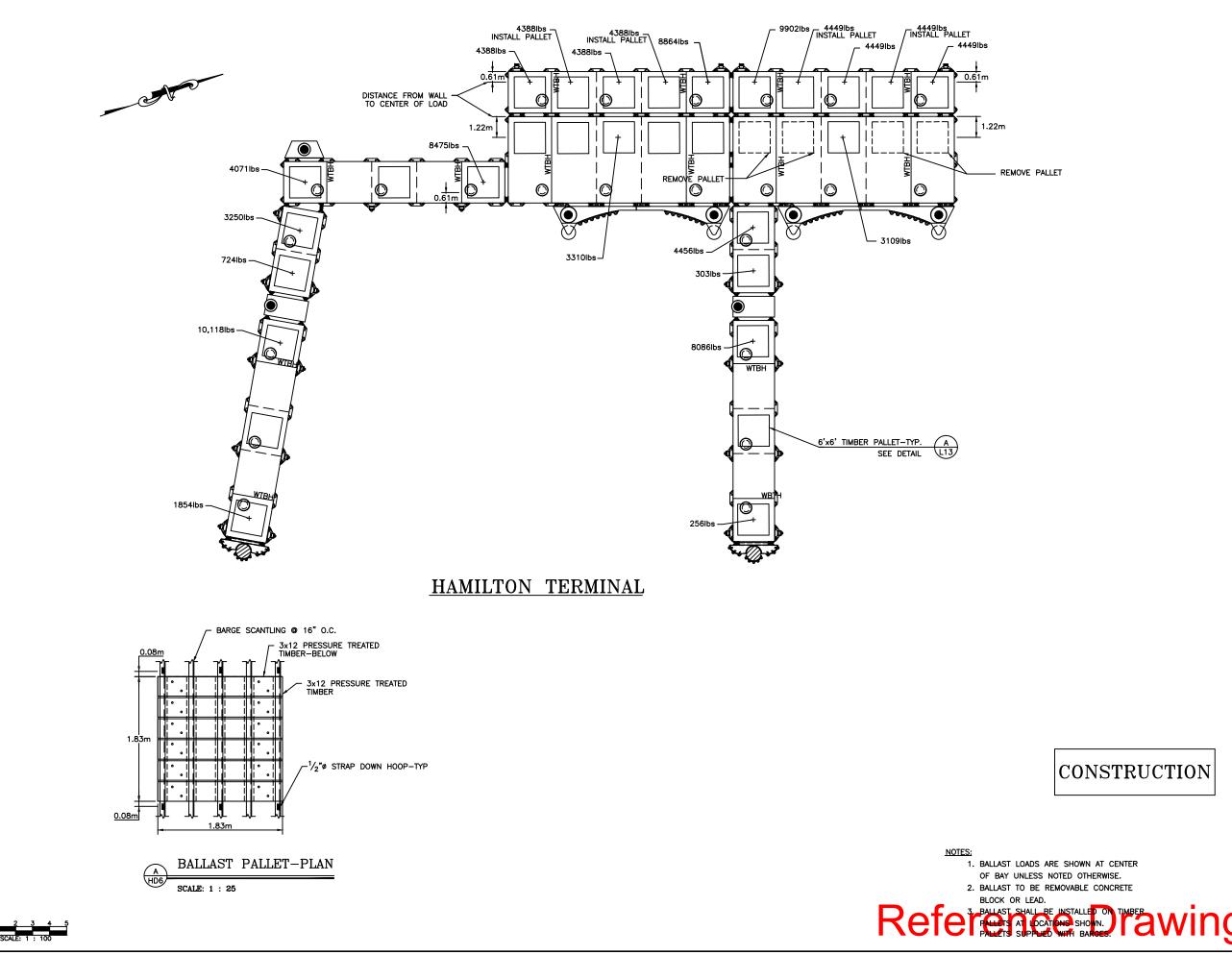


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NDER TO TRAWINGS	SHEET NUMBER: 13/26/02/HT3	



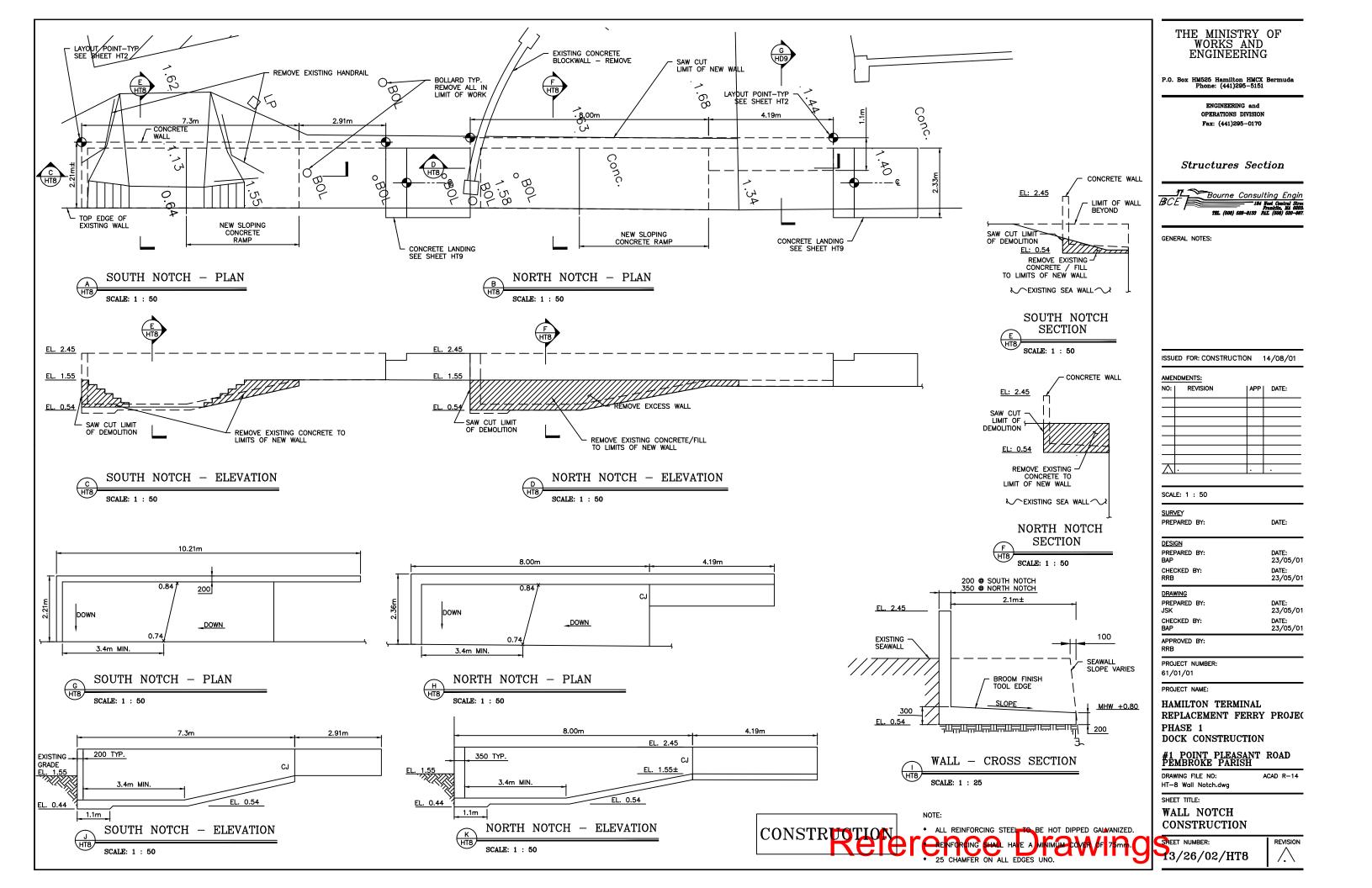


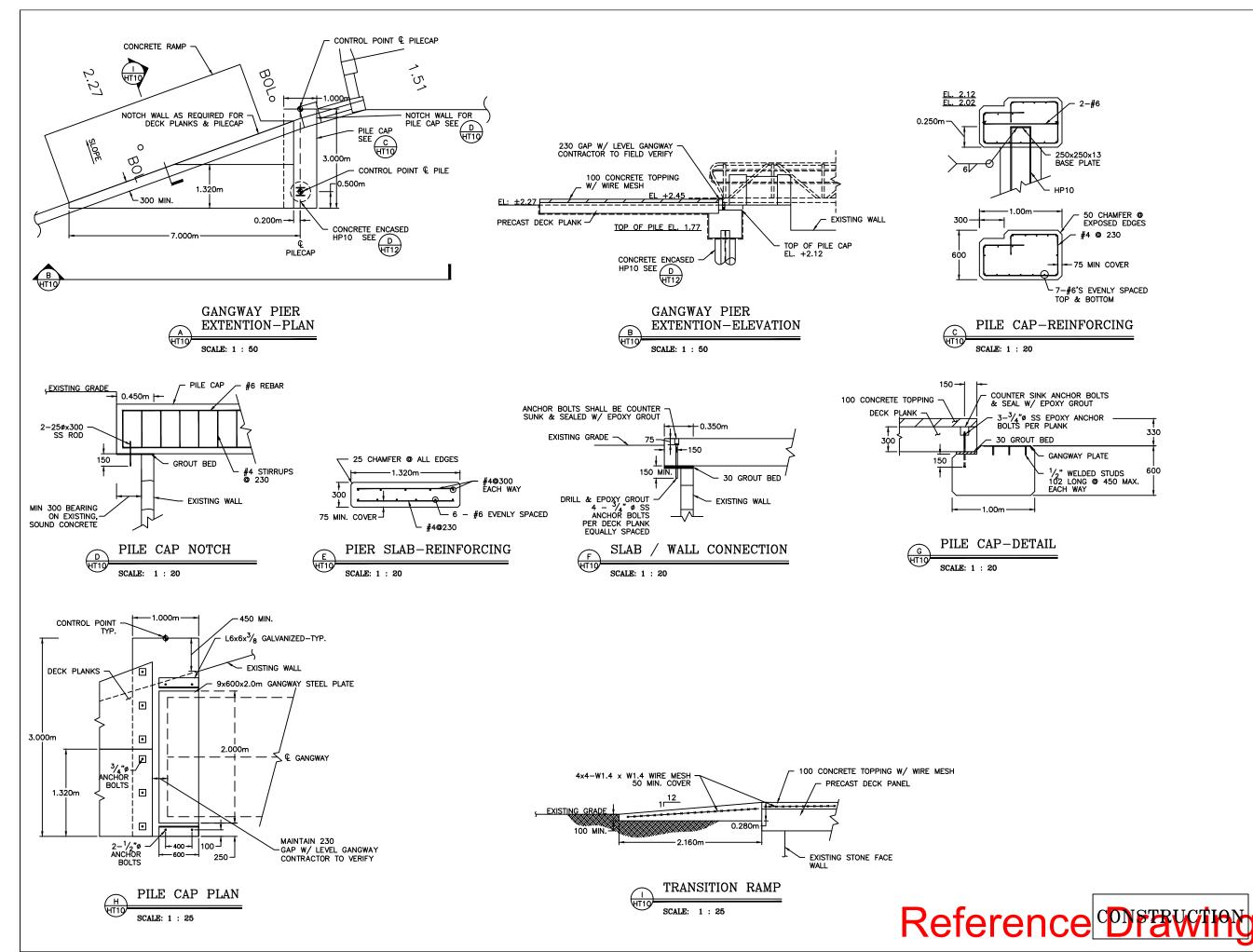
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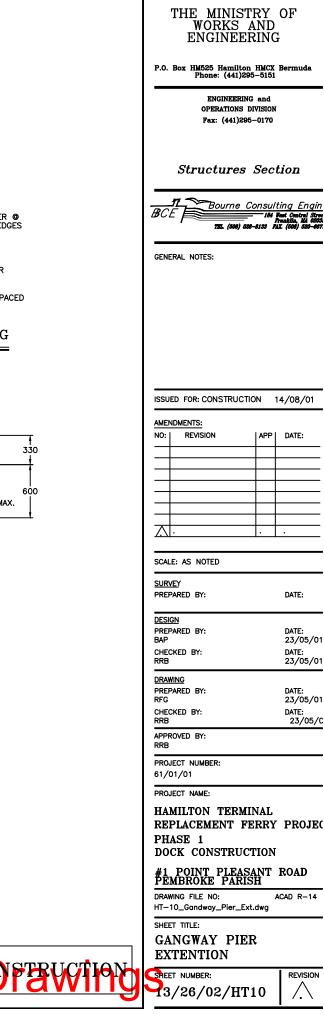


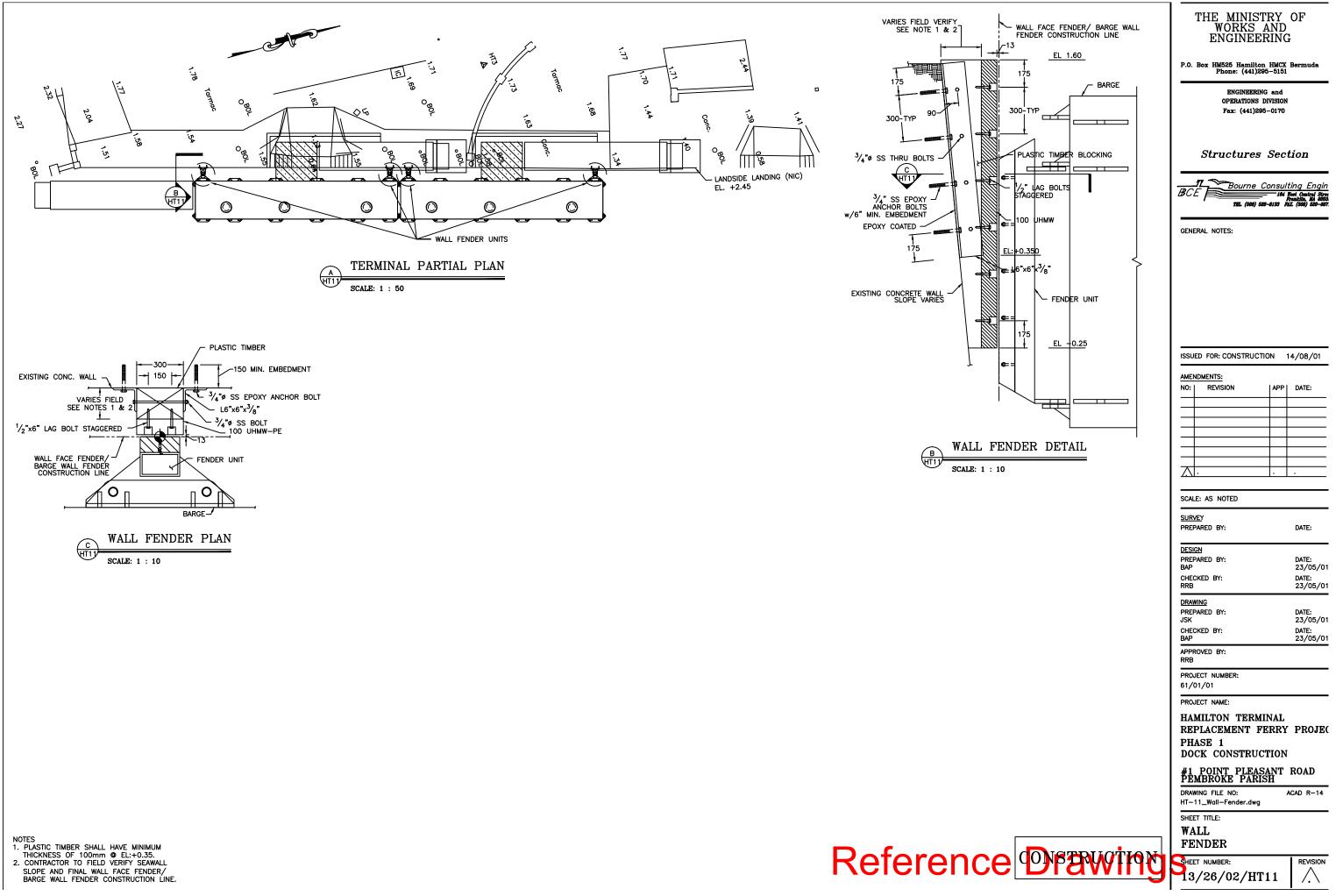
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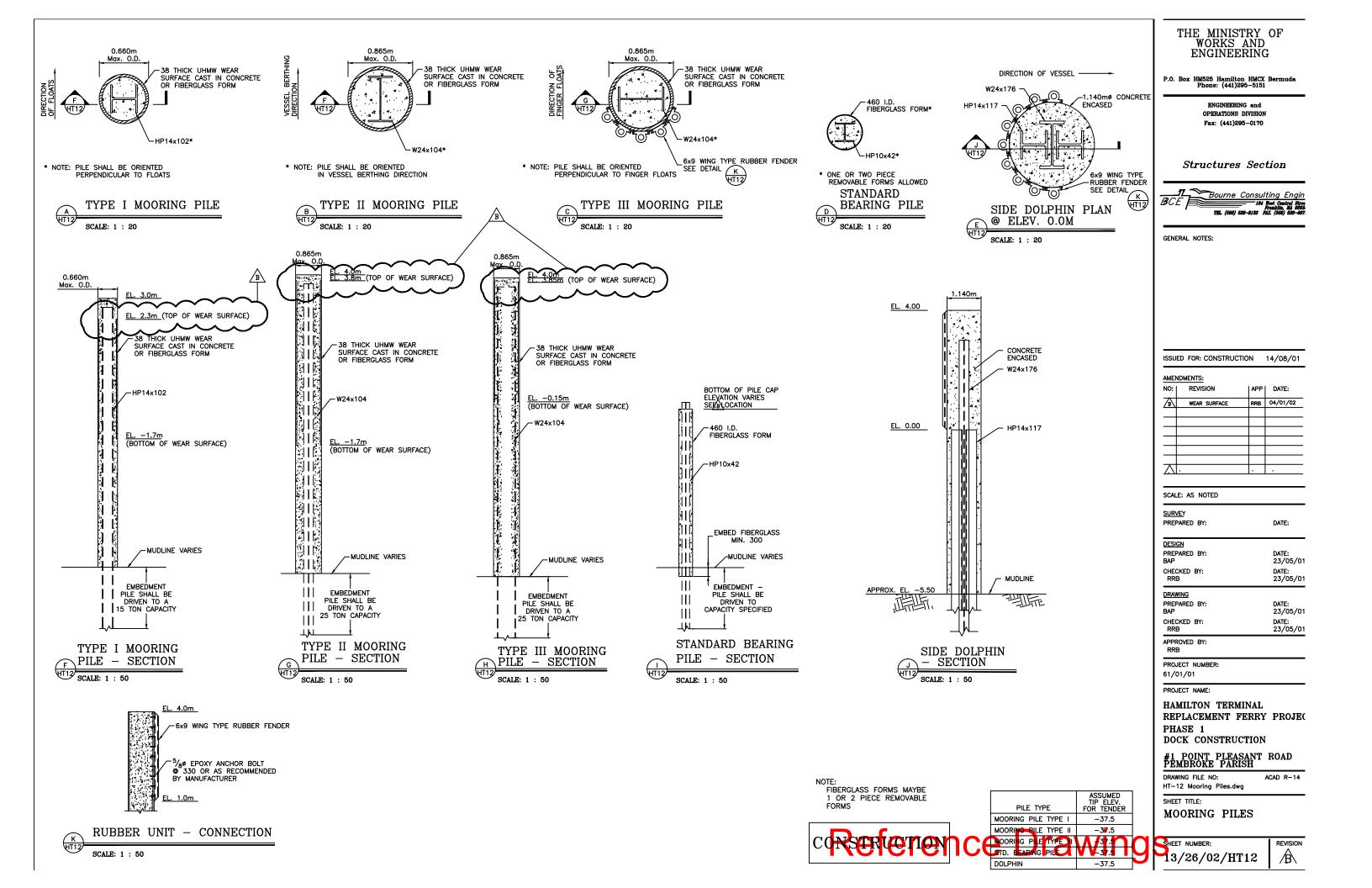


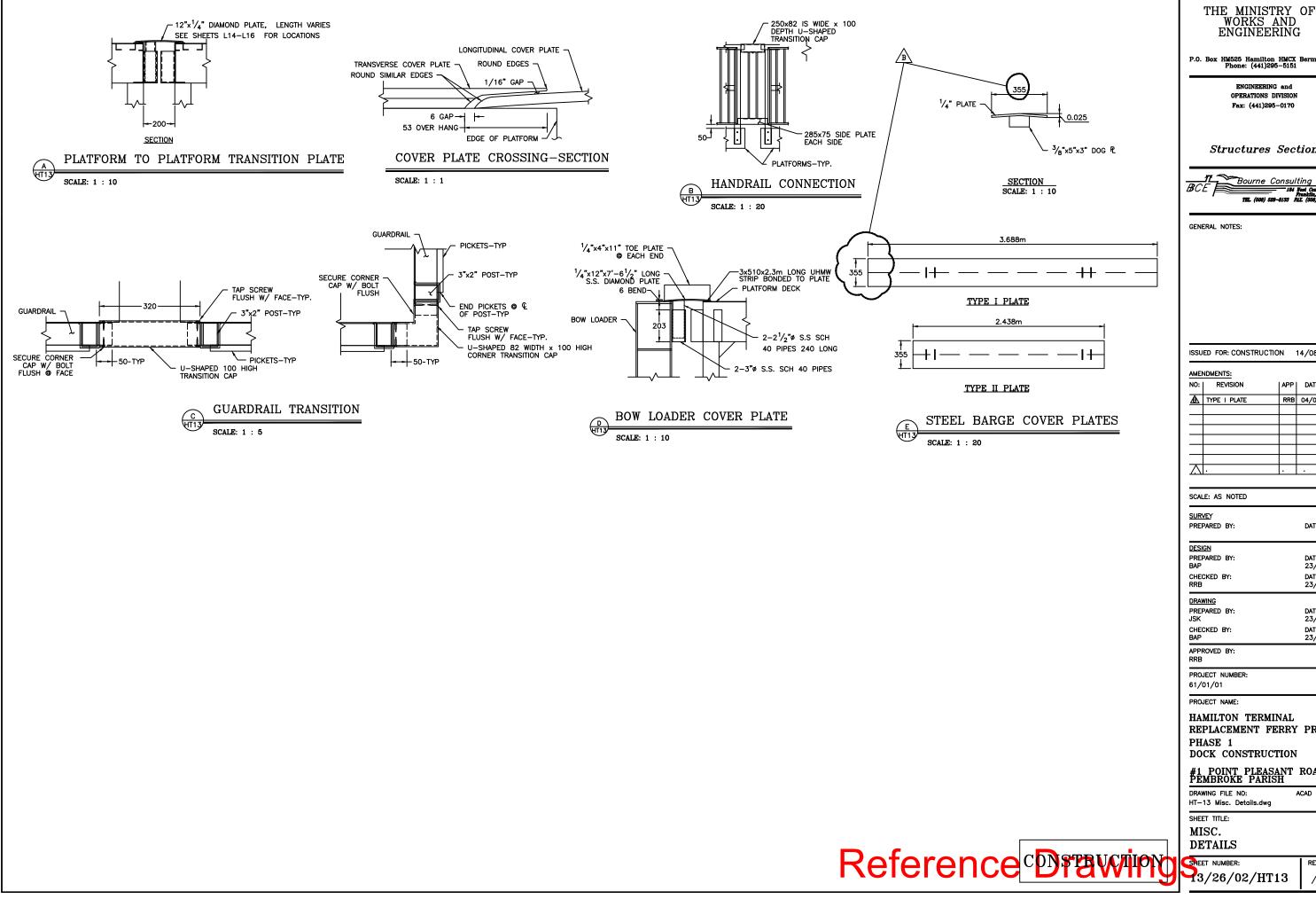


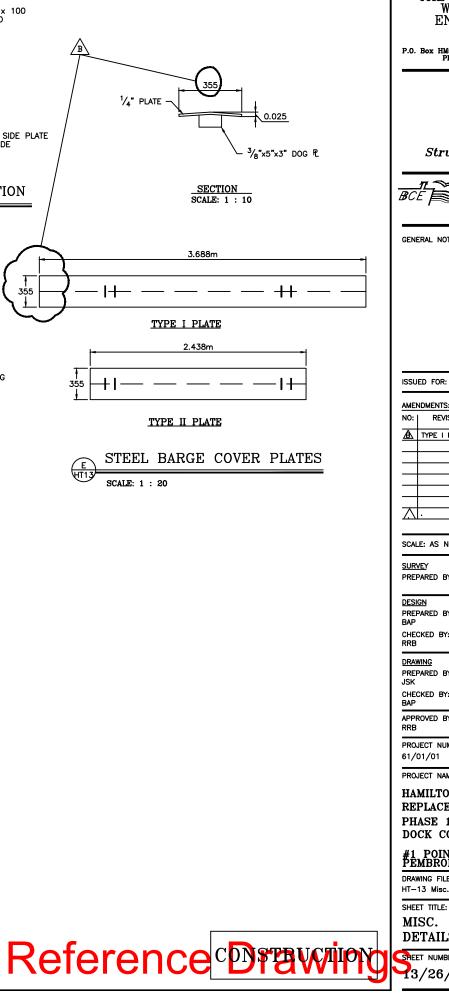




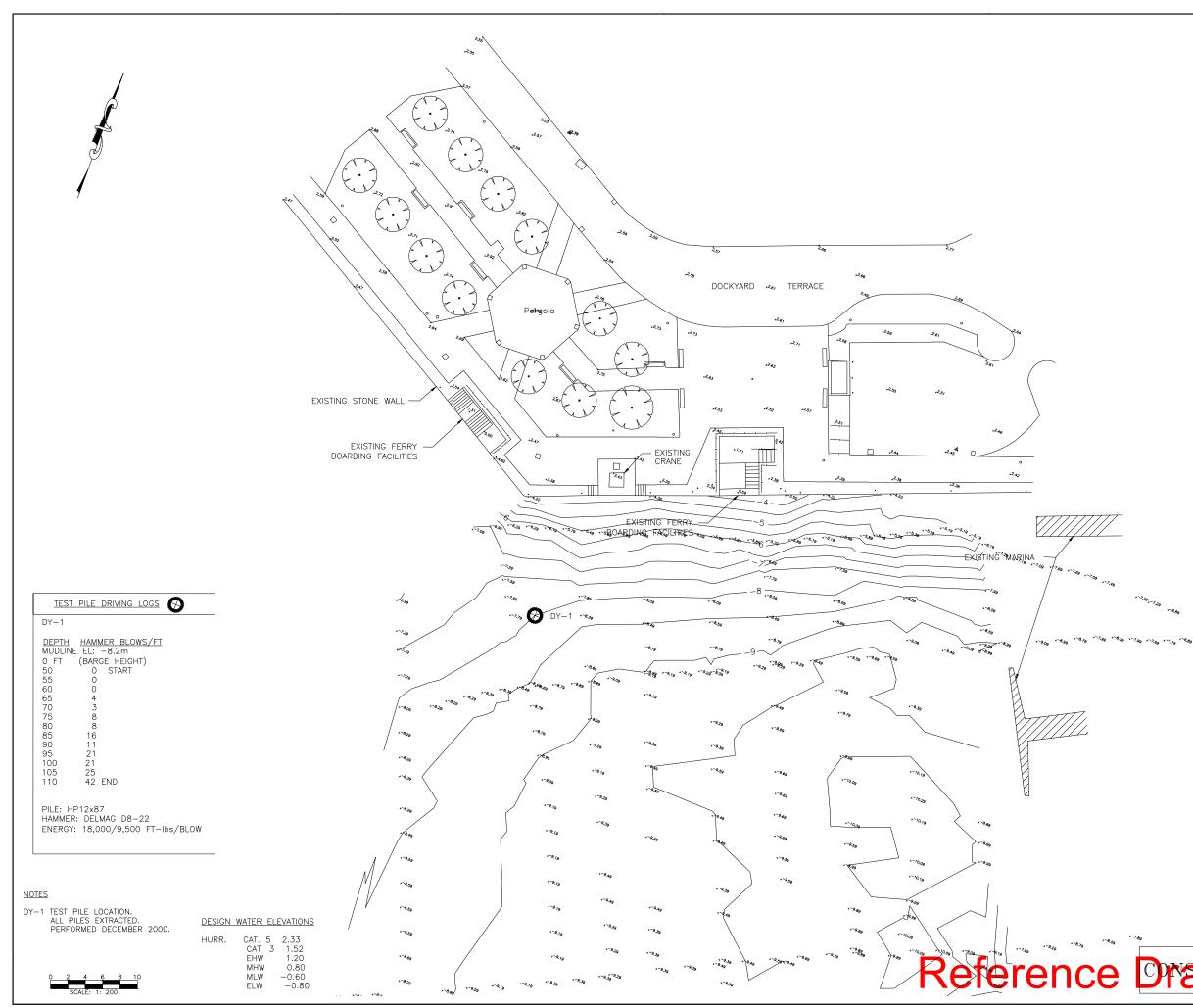








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## DOCKYARD TERRACE SANDYS PARISH

PHASE 1 DOCK CONSTRUCTION

## DOCKYARD REPLACEMENT FERRY PROJEC

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61/01/01

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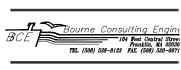
Fax: (441)295-0170

ENGINEERING and OPERATIONS DIVISION

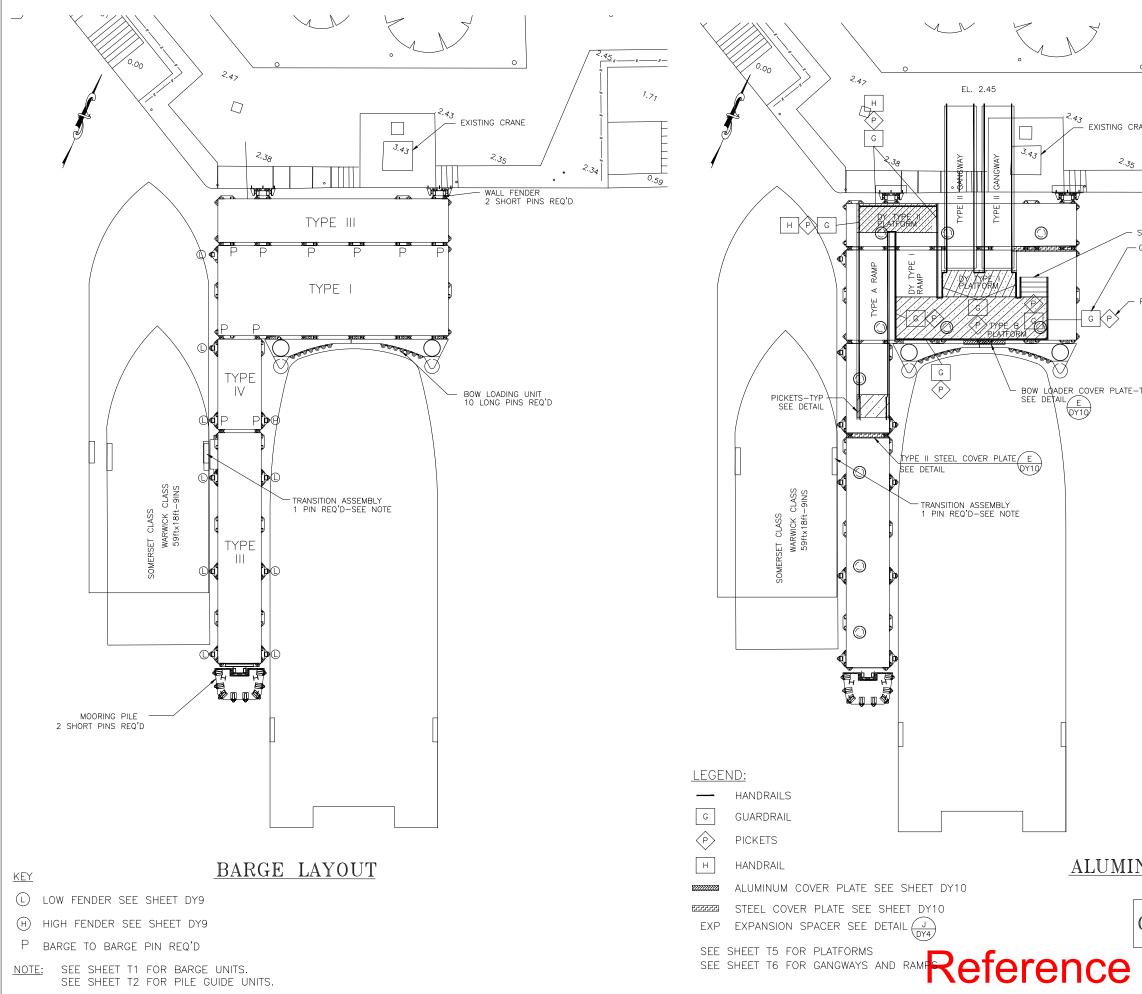
THE MINISTRY OF WORKS AND ENGINEERING

P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151

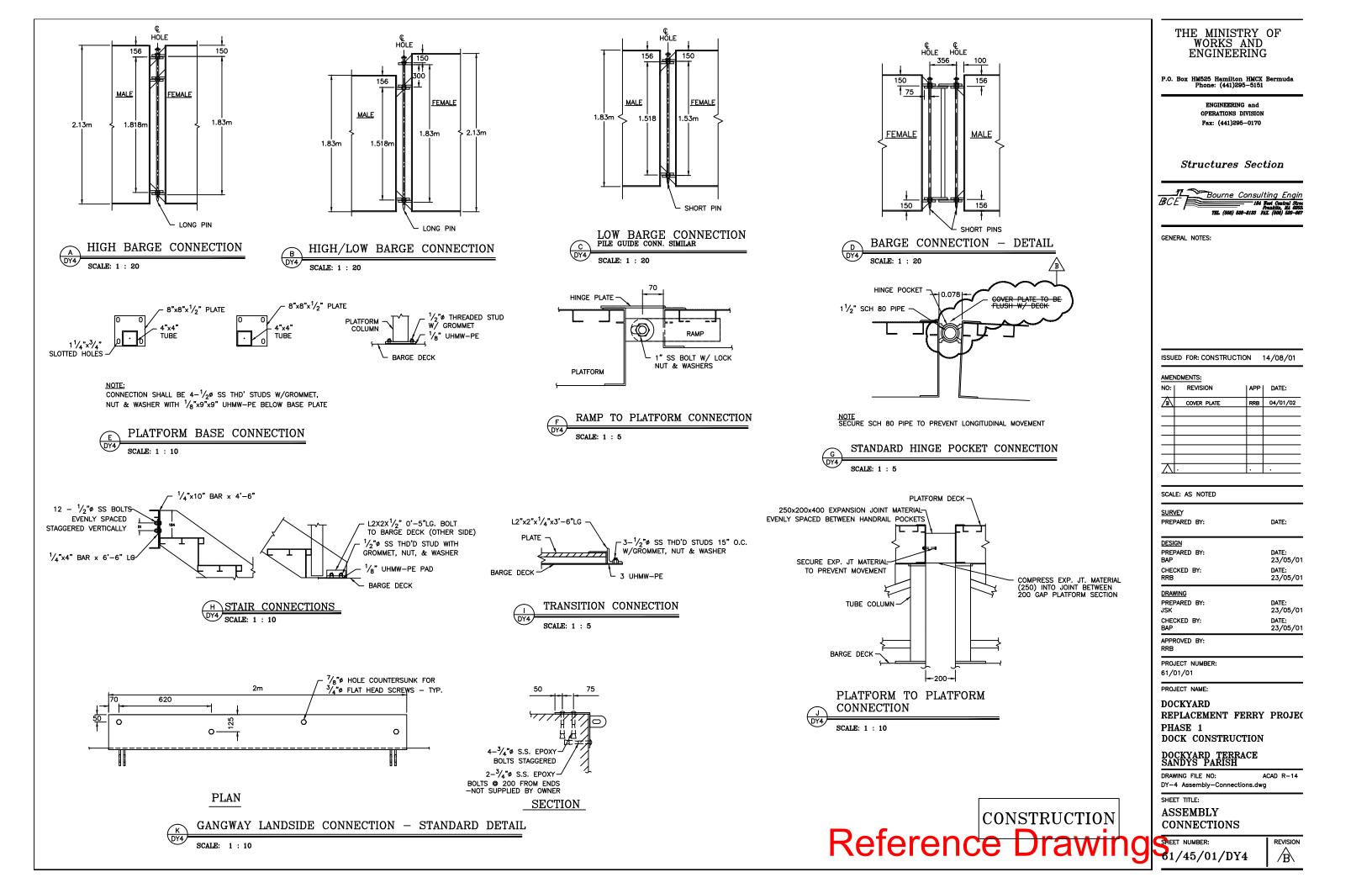
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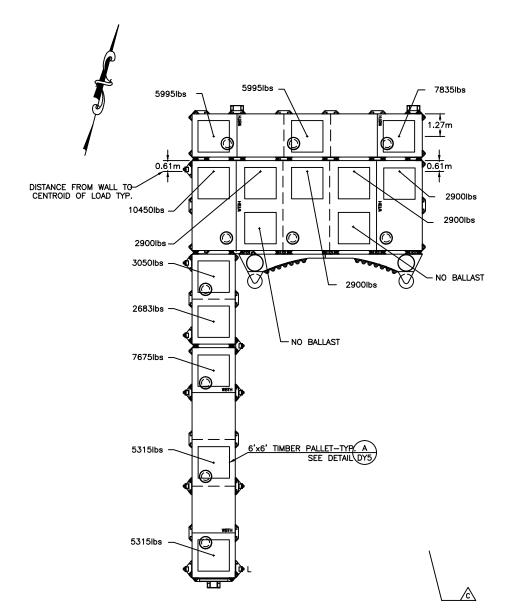


- COORDINATES BASED ON BNG 2000.
   ALL ELEVATIONS ARE IN METERS BASED ON ORDNANCE DATUM.
   ALL DISTANCES ARE IN METERS.
   SURVEY CONTROL SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER.

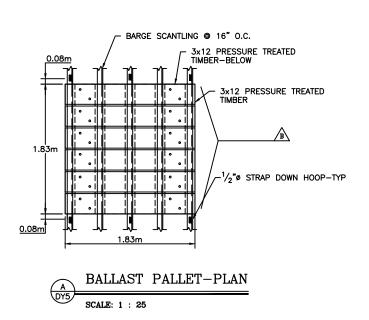


	THE MINISTRY OF WORKS AND ENGINEERING		
o 2.4 <u>5</u> """"""""""""""""""""""""""""""""""""	P.0. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151		
RANE	ENGINEERING and OPERATIONS DIVISION Fax: (441)295-0170		
. 2.34	Structures Section		
	BCE		
STAIRS - GUARDRAIL–TYP • PICKETS–TYP	<ul> <li>GENERAL NOTES:</li> <li>1. COORDINATES BASED ON BNG 2000.</li> <li>2. ALL ELEVATIONS ARE IN METERS BASED ON ORDNANCE DATUM.</li> <li>3. ALL DISTANCES ARE IN METERS.</li> <li>4. SURVEY CONTROL SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER.</li> </ul>		
-TYP	ISSUED FOR: CONSTRUCTION 14/08/01		
-11F	AMENDMENTS:		
	NO: REVISION APP DATE:		
	A         BARGES/ LAYOUTS         RRB         04/01/02		
	SCALE: 1 : 100		
	SURVEY PREPARED BY: DATE:		
	DESIGN           PREPARED BY:         DATE:           BAP         23/05/01           CHECKED BY:         DATE:           RRB         23/05/01		
	DRAWING           PREPARED BY:         DATE:           JSK         23/05/01           CHECKED BY:         DATE:           BAP         23/05/01		
	APPROVED BY: RRB		
	PROJECT NUMBER: 61/01/01		
	PROJECT NAME: DOCKYARD REPLACEMENT FERRY PROJE( PHASE 1 DOCK CONSTRUCTION		
NUM LAYOUT	DOCKYARD TERRACE SANDYS PARISH DRAWING FILE NO: ACAD R-14		
CONSTRUCTION	DRAWING FILE NO: ACAD R-14 DY-3_Borge_Alum_Assembly.dwg SHEET TITLE: BARGE & ALUMINUM		
Drawings	ASSEMBLY PLAN		
	61/45/01/DY3 /B		











NOTES:

1. BALLAST LOADS ARE SHOWN AT CENTER OF BAY UNLESS NOTED OTHERWISE. 2. BALLAST TO BE REMOVABLE CONCRETE BLOCK OR LEAD. 3. BALLAST SHALL BE INSTALLED ON TIMBER PALLETS AT LOCATIONS SHOWN. PALLET SUPPLIED W/ BARGES

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EN	IGINEE	CRIN	3

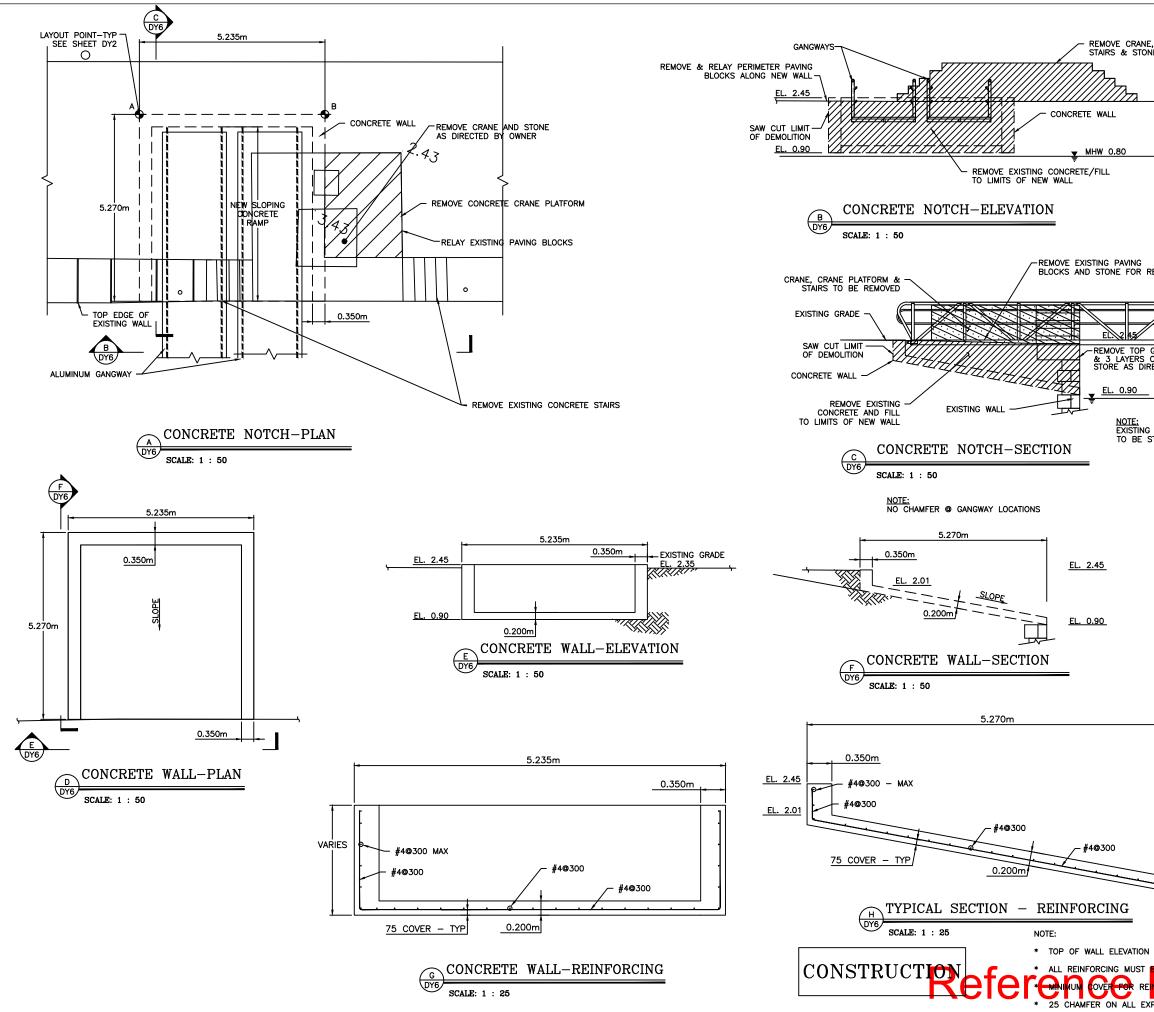
P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151

ENGINEERING and OPERATIONS DIVISION Fax: (441)295-0170

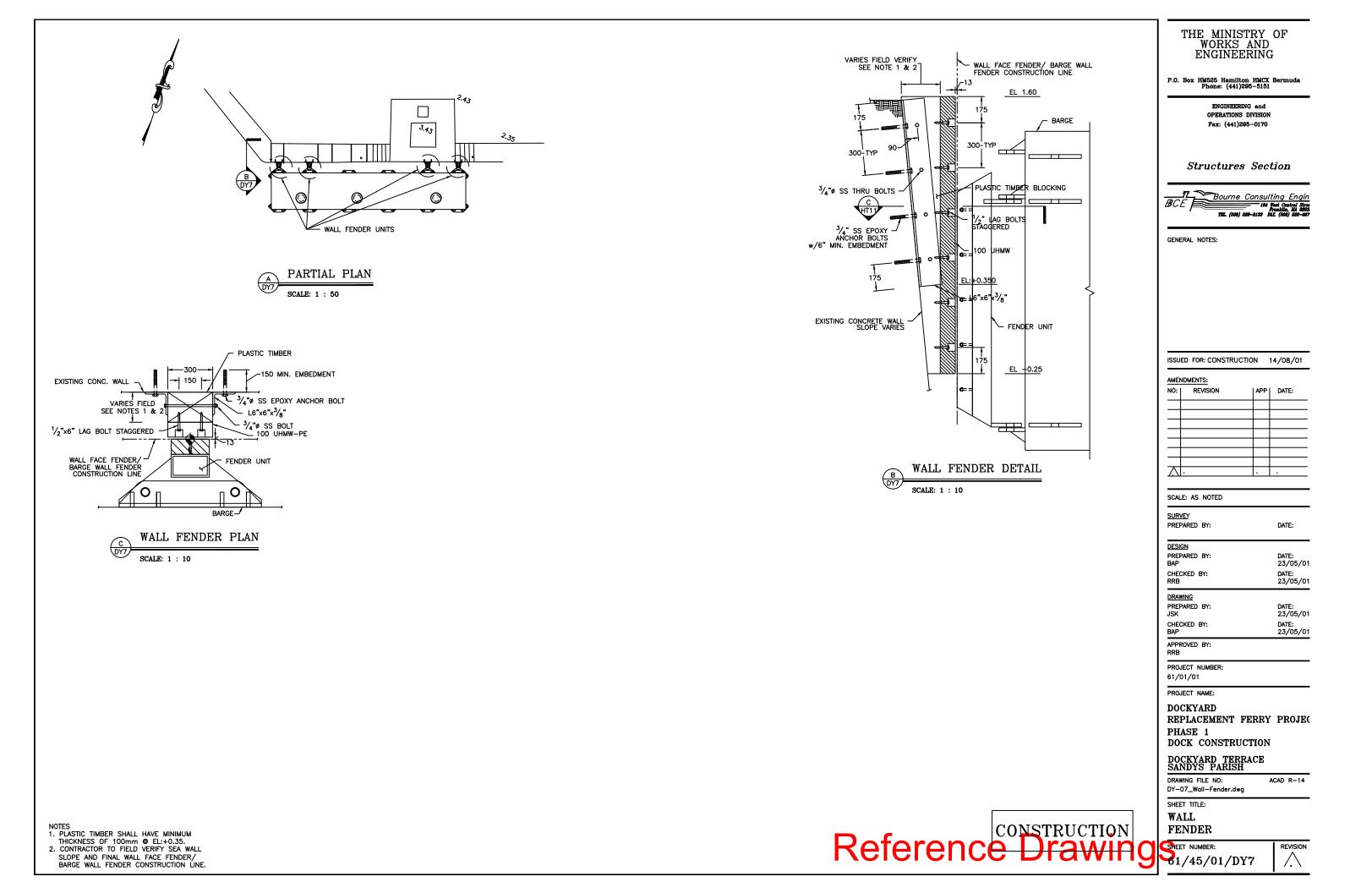
Structures Section

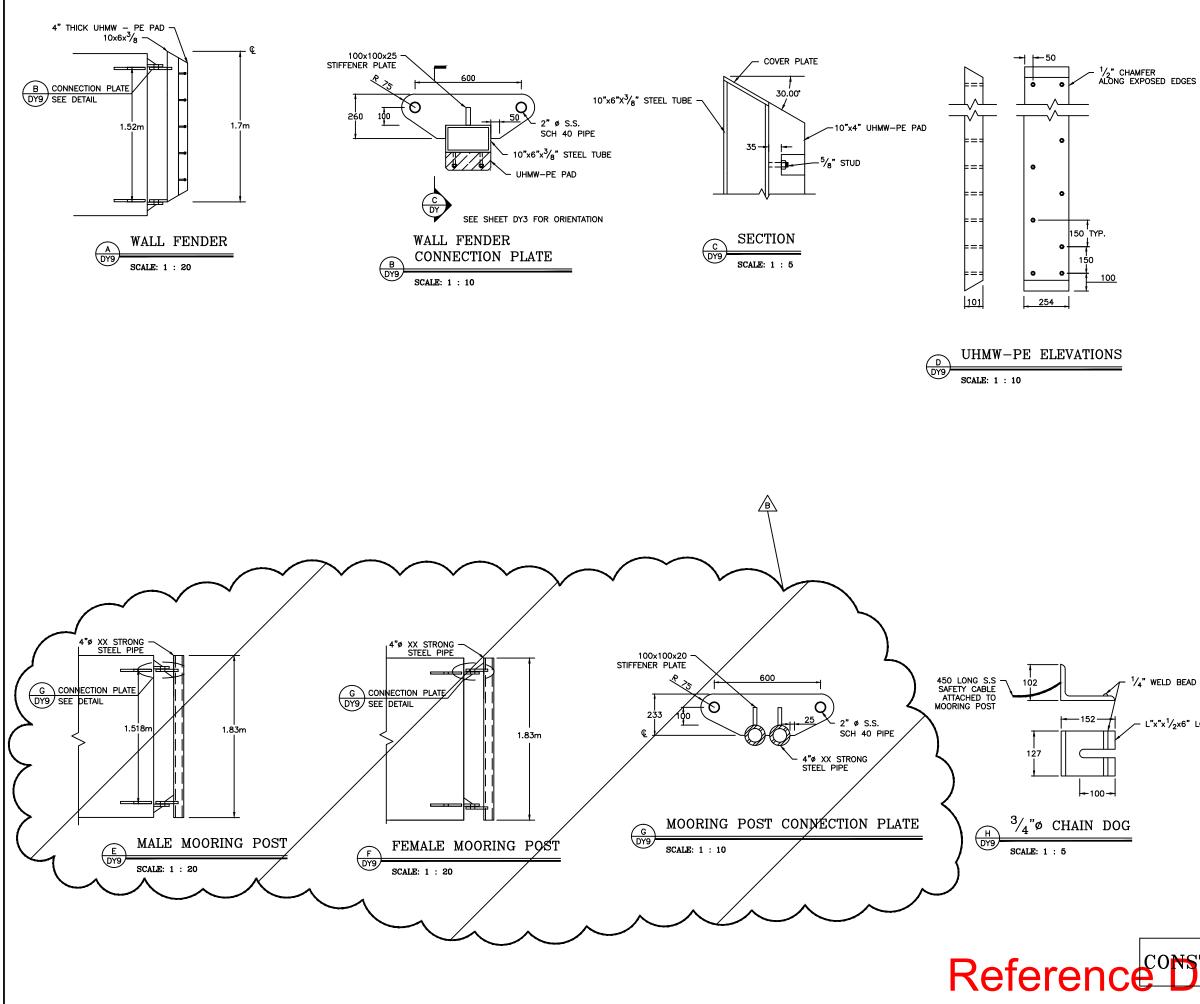


ISSU	ED FOR: CONSTRUCTION	ON ·	14/08/01	
AME	NDMENTS:			
NO:	REVISION		DATE:	
Ā	HOOP ORIENTATION	RRB	04/01/02	
◬	BALLAST LAYOUT	RRB	11/02/02	
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<u> /</u>				
SCAI	LE: AS NOTED			
<u>SUR</u> PRE	<u>VE</u> Y PARED BY:		DATE:	
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RRB			23/05/01	
PRE	WING PARED BY:		DATE: 23/05/01	
CHECKED BY: DATE:			DATE:	
BAP 23/05/01				
APPROVED BY: RRB				
PROJECT NUMBER: 61/01/01				
PRO	JECT NAME:			
DOCKYARD REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION				
DOCKYARD TERRACE SANDYS PARISH				
DRAWING FILE NO: ACAD R-14 DY-05_Ballasting Plan.dwg				
SHEET TITLE: BALLASTING PLAN				
SHE	ET NUMBER:		REVISION	
61	/45/01/DY	5	<u>À</u>	



RANE, CRANE PLATFORM, STONE AS DIRECTED BY OWNER	THE MINISTRY OF WORKS AND ENGINEERING P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151 ENGINEERING and OPERATIONS DIVISION Fax: (441)295-0170		
NG OR REUSE	Structures Section		
TOP GRANITE STONE TOP GRANITE STONE STORECTED BY OWNER			
E: STING UNUSED FULL PAVING BLOCKS BE STORED AS DIRECTED BY OWNER	ISSUED FOR: CONSTRUCTION         14/08/01           AMENDMENTS:         APP         DATE:           NO:         REVISION         APP         DATE:		
	SOLEL: AS NOTED       SURVEY       PREPARED BY:       DATE:       BAP       23/05/01       CHECKED BY:       DATE:       RRB       23/05/01       DRAWING       PREPARED BY:       DATE:       BAP       23/05/01       CHECKED BY:       DATE:       RRB       23/05/01       CHECKED BY:       DATE:       RRB       23/05/C		
EL. 0.90	PROJECT NUMBER: 61/01/01 PROJECT NAME: DOCKYARD REPLACEMENT FERRY PROJE( PHASE 1 DOCK CONSTRUCTION DOCKYARD TERRACE SANDYS DRAWING FILE NO: ACAD R-14 DY-6 Gangway Notch.dwg SHEET TITLE: GANGWAY NOTCH		
TION +2.45 UST <b>PE N</b> OT DIPPED GALVANIZED. RENFORCEMENT SHALV BE 75mm L EXPOSED EDGES UNO	GANGWAT NOTCH       PLAN & DETAILS       Sheet NUMBER:       61/45/01/DY6		





	SCALE: AS NOTED		
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	DESIGN PREPARED BY: BAP CHECKED BY: RRB	DATE: 23/05/01 DATE: 23/05/01	
EAD	DRAWING PREPARED BY: JSK CHECKED BY: BAP	DATE: 23/05/01 DATE: 23/05/01	
5" LONG	APPROVED BY: RRB	20/00/01	
	PROJECT NUMBER: 61/01/01		
	PROJECT NAME: DOCKYARD REPLACEMENT FERRY PHASE 1 DOCK CONSTRUCTION	PROJEC	
	DOCKYARD TERRACE SANDYS PARISH DRAWING FILE NO: AI DY-09Mooring Details	CAD R-14	
STRUCTION	SHEET TITLE: FENDER DETAILS		
Jrawing	STALET NUMBER: 01/45/01/DY9		

THE MINISTRY OF WORKS AND ENGINEERING

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ENGINEERING and OPERATIONS DIVISION

Fax: (441)295-0170

Structures Section

ISSUED FOR: CONSTRUCTION 14/08/01

A DELETE MRG. DETAILS RRB 04/01/02

APP DATE:

BCE

GENERAL NOTES:

AMENDMENTS:

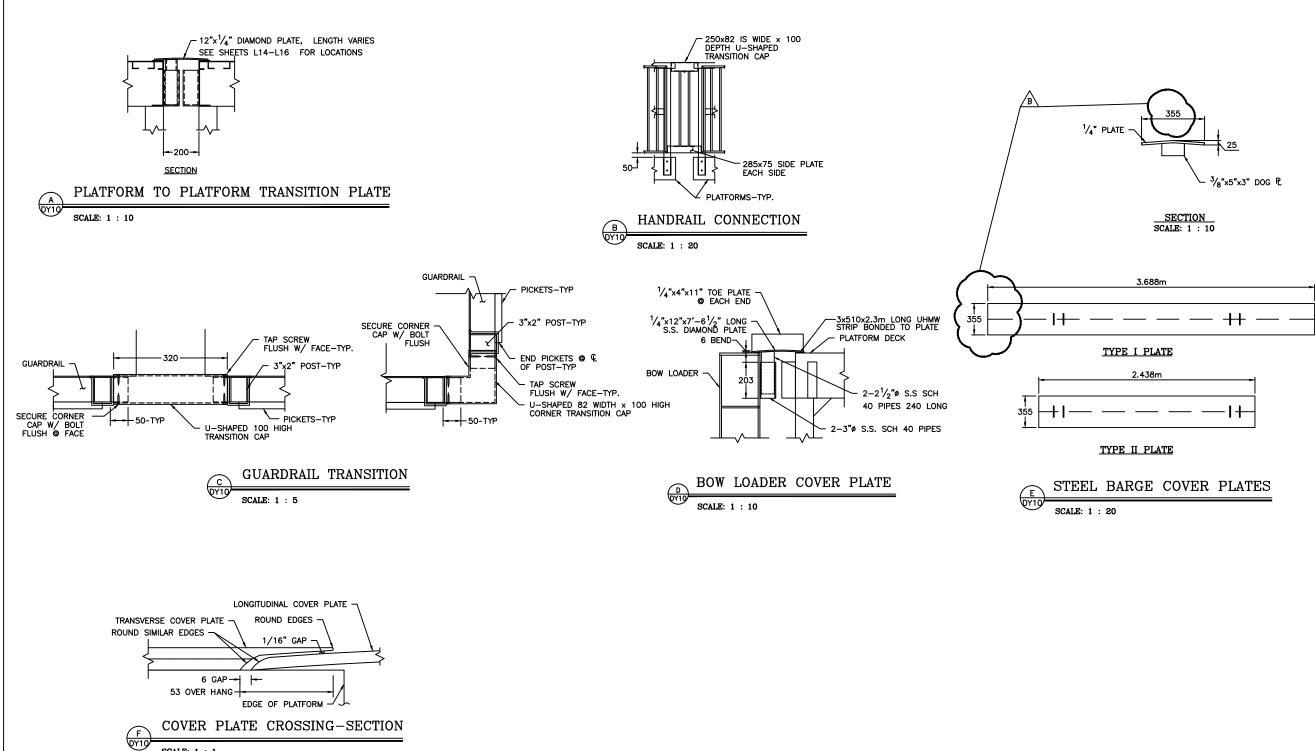
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T \_\_\_\_\_Bourne Consulting Engin

Pranklin, MA 0203 1121. (608) 528-8153 PAX. (608) 520-867



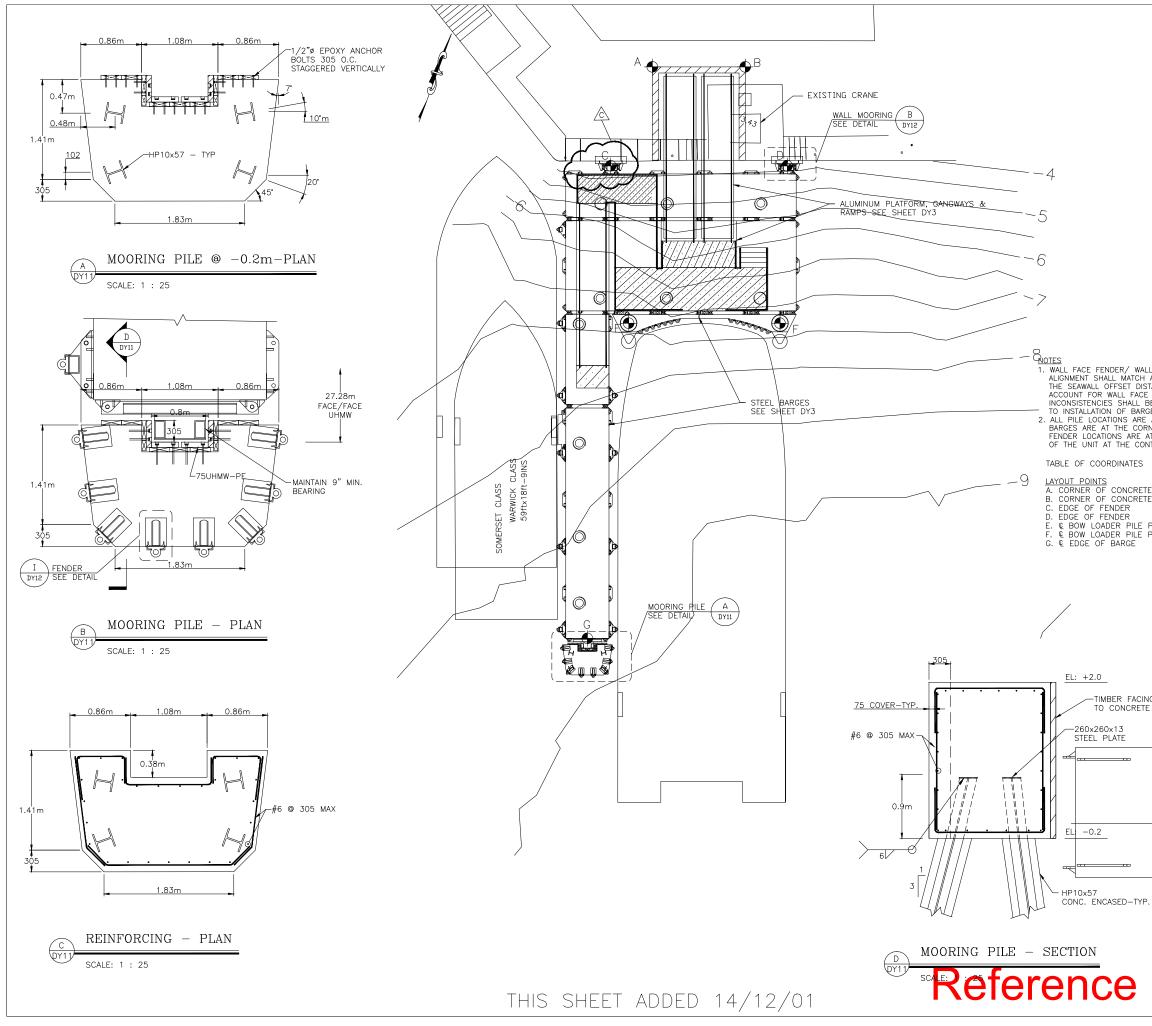
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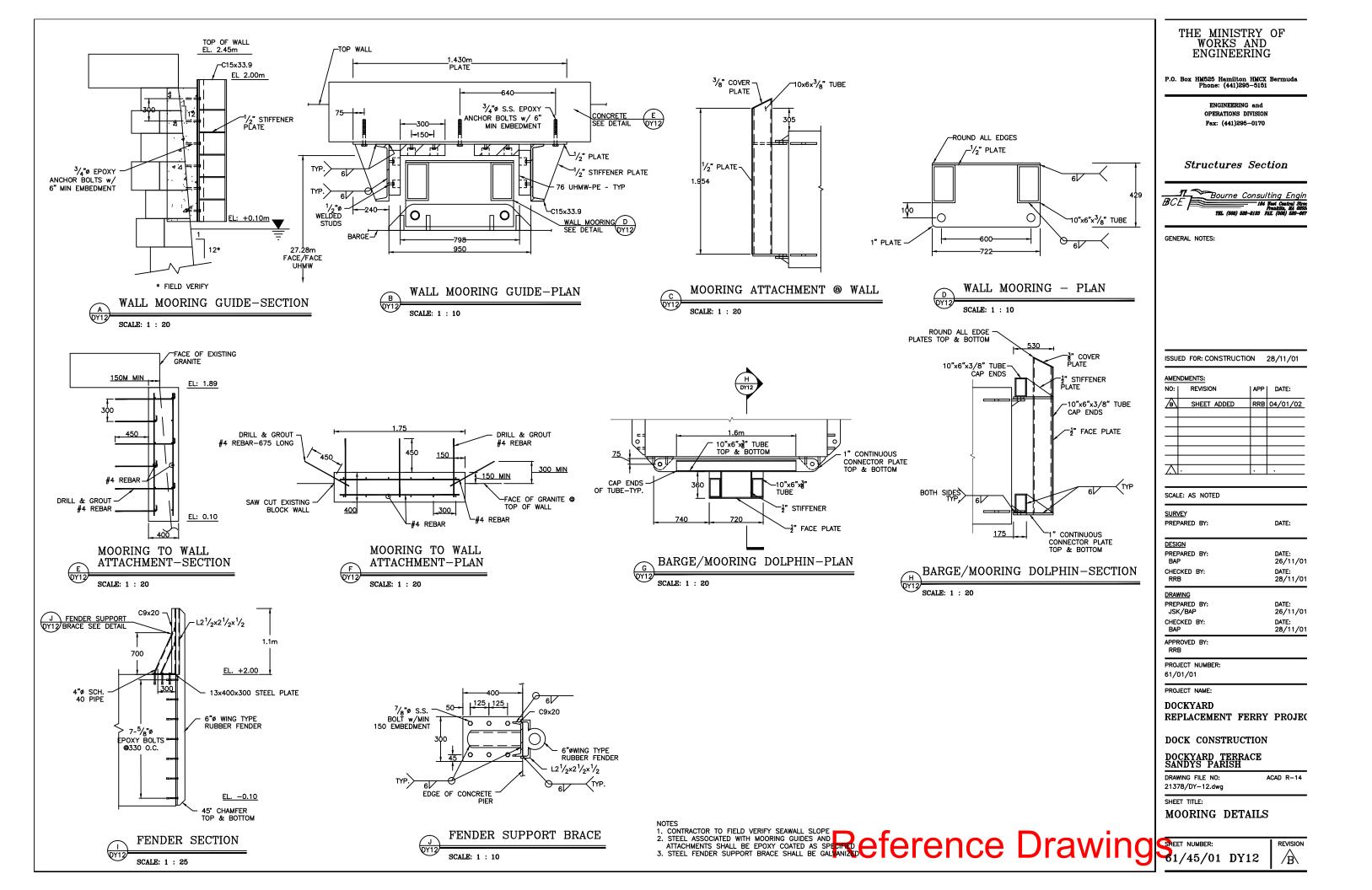
	THE MINISTRY OF WORKS AND ENGINEERING			
P.0.	Box HM525 Hamilton Phone: (441)295	HMCX -5151	Bermuda	
	ENGINEERING OPERATIONS DI Fax: (441)295-	VISION		
	Structures	Sect	tion	
BC	F Bourne Ca	onsult	ing Engin	
20.	TRL. (508) 528-	8133 FA	Test Central Stree ranklin, MA 0303. I. (506) 530–667	
GEN	ERAL NOTES:			
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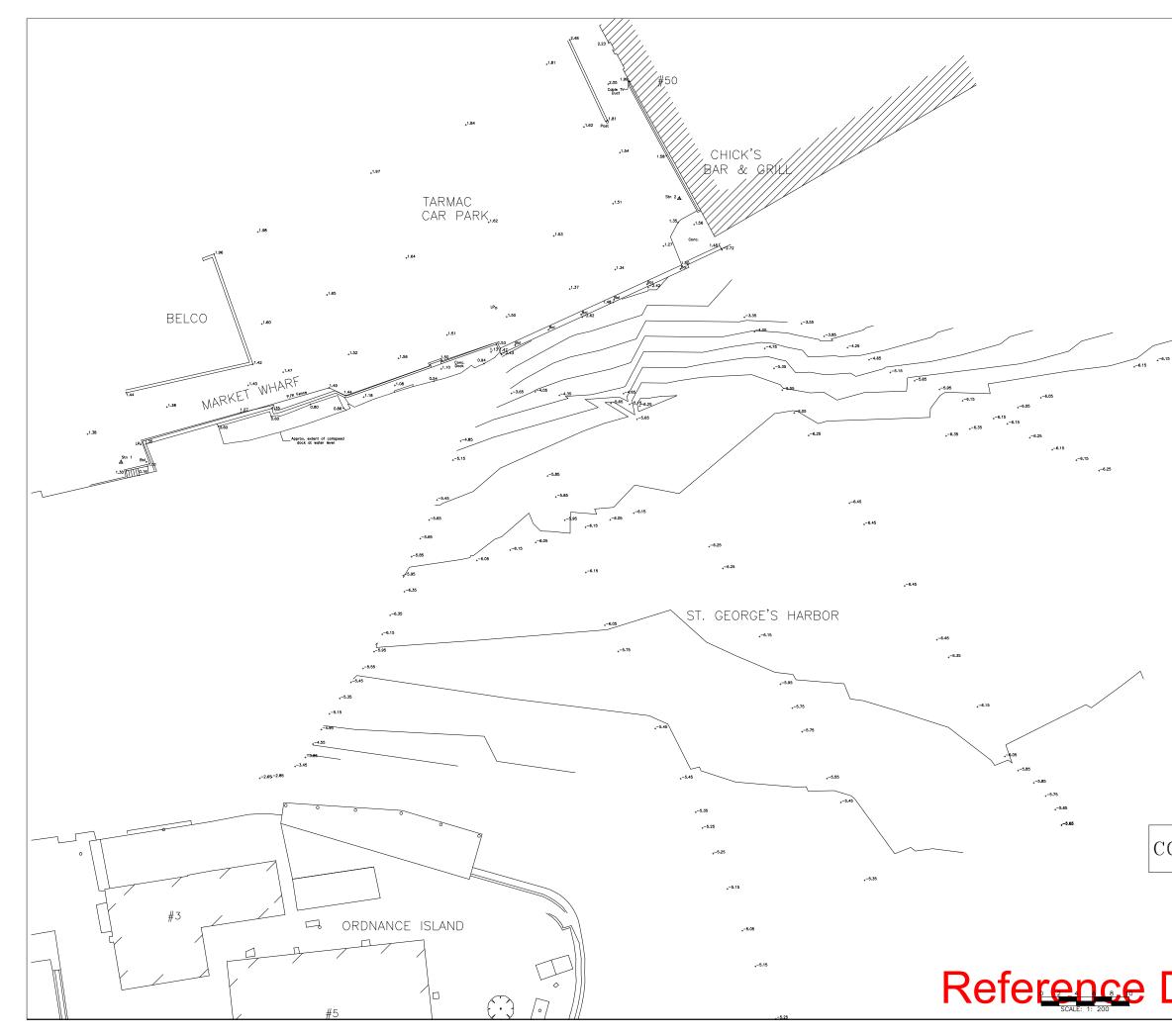
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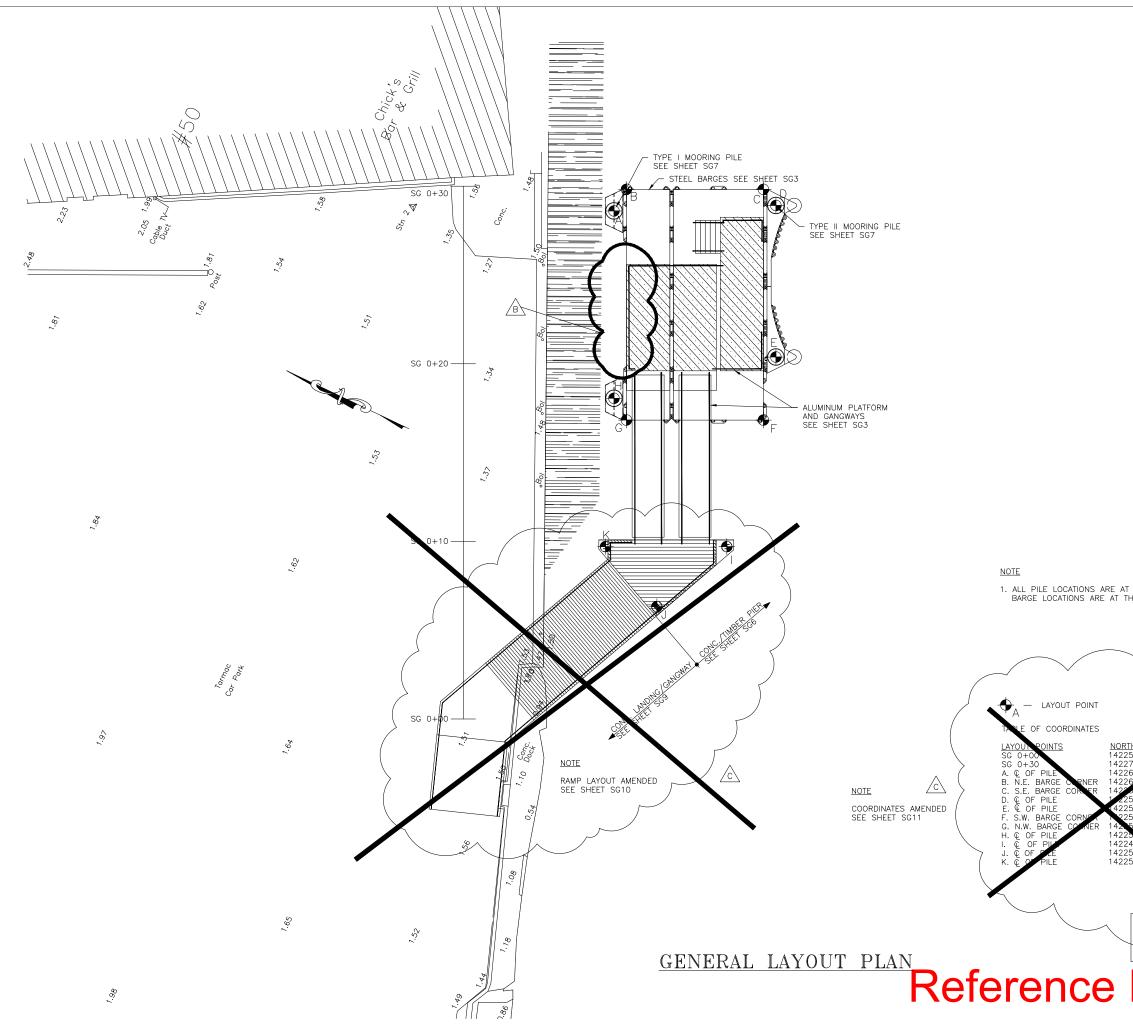


	THE MINISTRY OF WORKS AND ENGINEERING
	P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151
	ENGINEERING and OPERATIONS DIVISION Fax: (441)295–0170
	Structures Section
	BCE Bourne Consulting Engine
	PIL (000) SE0-6133 PIL (000) SE0-677.
	GENERAL NOTES:
LL BARGE FENDER † ALONG LINE F-H. STANCE WHICH SHALL E SLOPE AND	
BE CONFIRMED PRIOR RGES AND PILES. E AT THE CENTER.	ISSUED FOR: CONSTRUCTION 28/11/01
RNERS AND WALL AT THE CENTER LINE NTACT FACE.	AMENDMENTS: NO:   REVISION   APP   DATE:
	A SHEET ADDED RRB 04/01/02 COORDINATES REVISED DGF 22/02/02
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TE 136202.45 542138.34 /C) 136194.40 542133.46 136198.20 542142.66	
POCKET 136188:56 542137.79 POCKET 136189.84 542145.67 136169.25 542142.43	
100100.20 012112.10	SCALE: AS NOTED
	SURVEY
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NG ANCHORED	DRAWING PREPARED BY: DATE: BAP 26/11/01
TYPE III BARGE	DAF         20/11/01           CHECKED BY:         DATE:           RRB         28/11/01
/	APPROVED BY: RRB
	PROJECT NUMBER: 61/01/01
	PROJECT NAME:
	DOCKYARD REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION
	DOCKYARD TERRACE SANDYS PARISH
Þ.	DRAWING FILE NO: ACAD R-14 21378/DY-11.dwg
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Drawings	SHEET NUMBER: REVISION
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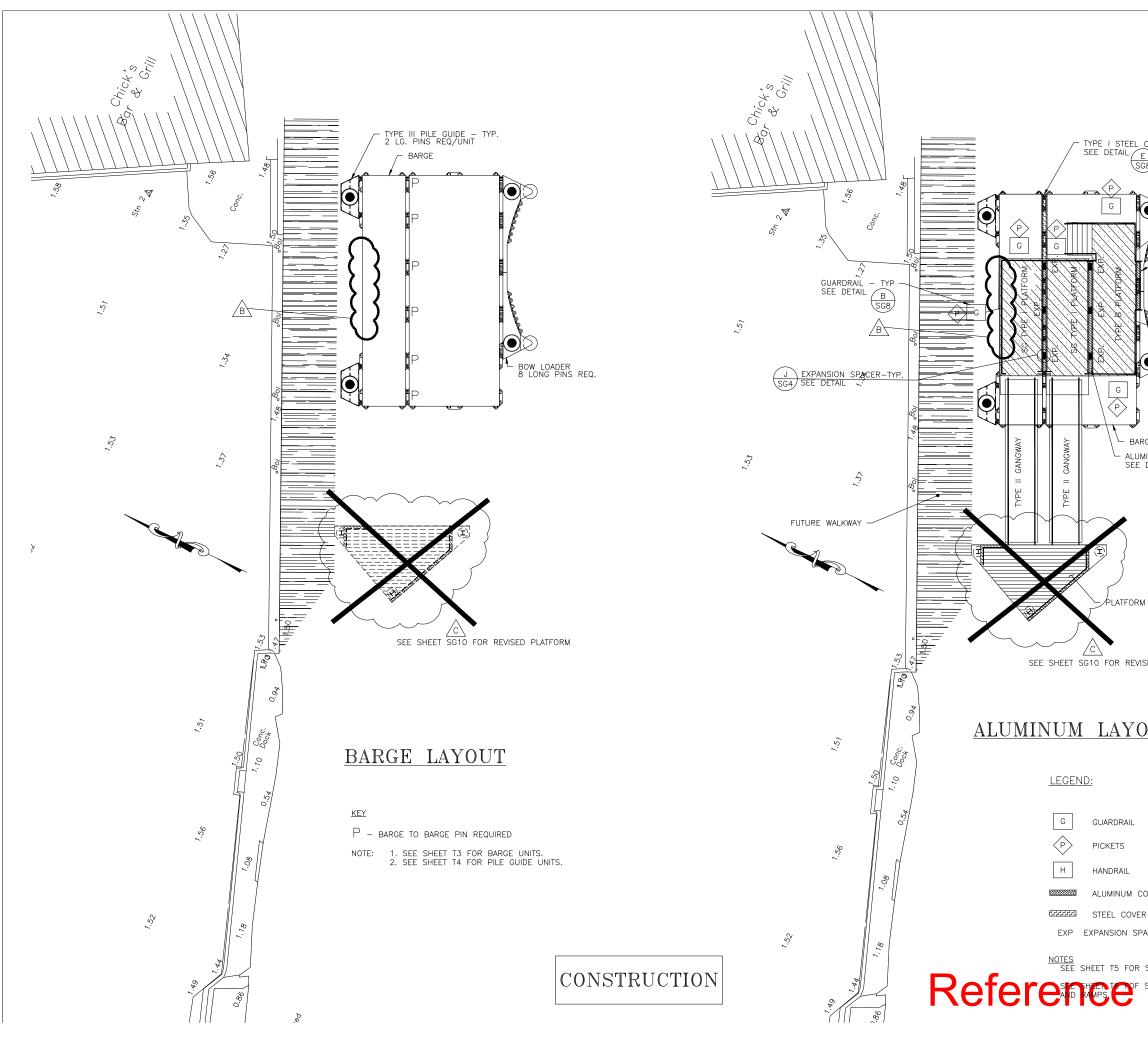




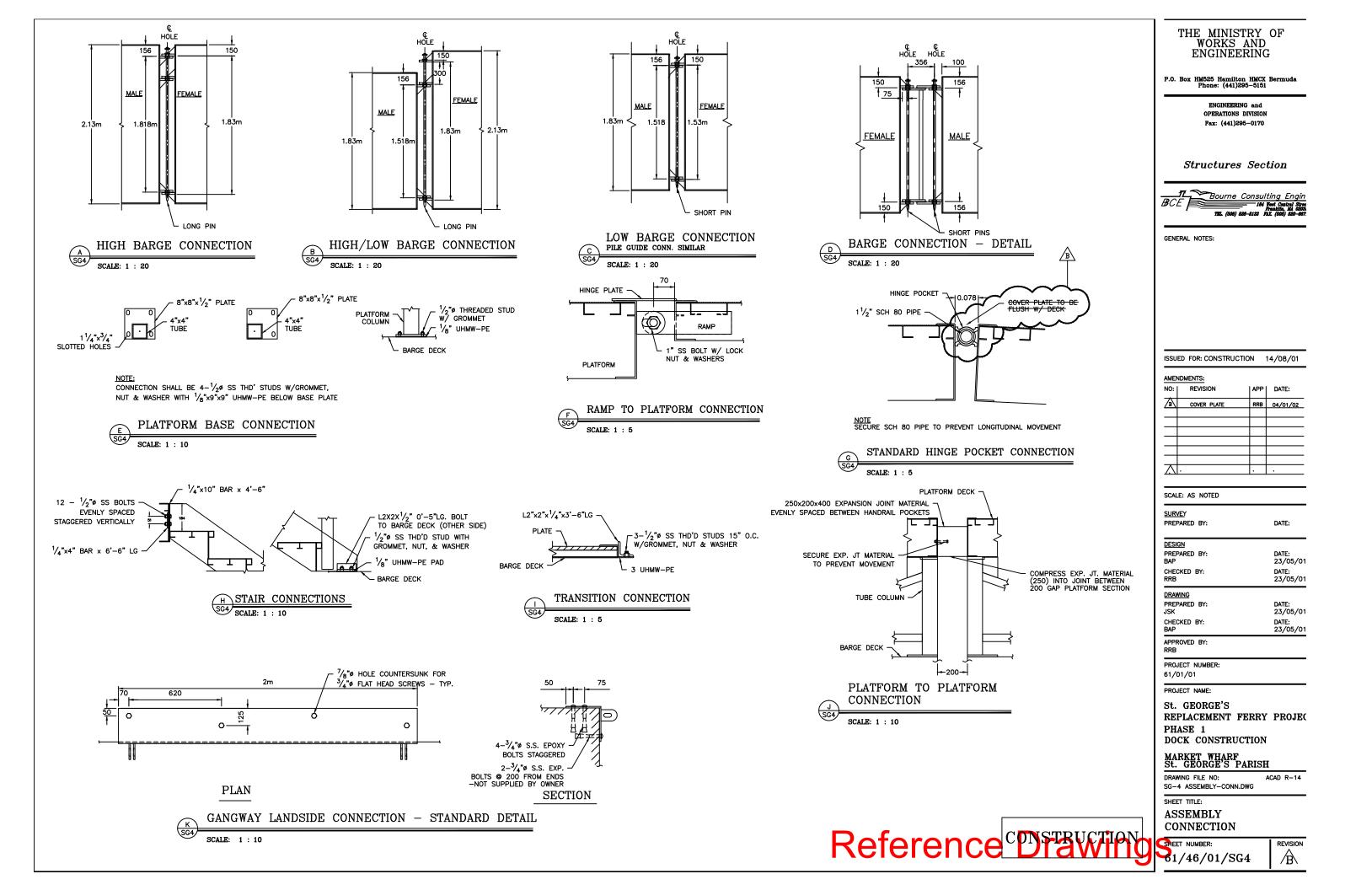
		I WORKS AND		
		P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295–5151		
		OPERATIONS DIVISION		
		Structures Section		
	,~6.35	<ol> <li>COORDINATES BASED ON BNG 2000.</li> <li>ALL ELEVATIONS ARE IN METERS BASED ON ORDINANCE DATUM.</li> <li>ALL DISTANCES ARE IN METERS.</li> <li>SURVEY CONTROL SHALL BE PROVIDED</li> </ol>		
43 SCALE: 1 : 200 SURVEY PREPARED BY: DATE: DESIGN PREPARED BY: DATE: BAP 23/05/01 CHECKED BY: DATE: BAP 23/05/01 CHECKED BY: DATE: BAP 23/05/01 DRAWING PREPARED BY: DATE: BAP 23/05/01 DRAWING PREPARED BY: DATE: BAP 23/05/01 DRAWING PREPARED BY: DATE: BAP 23/05/01 DRAWING PREPARED BY: DATE: BAP 23/05/01 DRAWING PROJECT NUMBER: 61/01/01 PROJECT NUMBER: 61/01/01 PROJECT NAME: St. GEORGE'S REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DRAWING FILE NO: ACAD R-14 SG-1 Existing Cond.dwg SHEET TITLE: EXISTING CONDITIONS SHEET NUMBER: REVISION				
43 SCALE: 1 : 200 SURVEY PREPARED BY: DATE: DESIGN PREPARED BY: DATE: BAP 23/05/01 CHECKED BY: DATE: BAP 23/05/01 CHECKED BY: DATE: BAP 23/05/01 DRAWING PREPARED BY: DATE: BAP 23/05/01 PROJECT NUMBER: 61/01/01 PROJECT NUMBER: 61/01/01 PROJECT NAME: St. GEORGE'S REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DRAWING FILE NO: ACAD R-14 SG-1 Existing Cond.dwg SHEET TITLE: EXISTING CONDITIONS SHEET NUMBER: REVISION				
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CHECKED BY: DATE: BAP 23/05/01 APPROVED BY: RRB PROJECT NUMBER: 61/01/01 PROJECT NUMBER: 61/01/01 PROJECT NAME: St. GEORGE'S REPLACEMENT FERRY PROJEC PHASE 1 DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DRAWING FILE NO: ACAD R-14 SG-1 Existing Cond.dwg SHEET TITLE: EXISTING CONDITIONS SHEET NUMBER: REVISION		PREPARED BY: DATE:		
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61/01/01         PROJECT NAME:         St. GEORGE'S         REPLACEMENT FERRY PROJEC         PHASE 1         DOCK CONSTRUCTION         MARKET WHARF         St. GEORGE'S PARISH         DRAWING FILE NO:         ACAD R-14         SG-1 Existing Cond.dwg         SHEET TITLE:         EXISTING CONDITIONS         SHEET NUMBER:         REVISION				
DESIGN WATER ELEVATIONS         HUR. CAT 5 1.63         CAT 3 1.05         EHW 1.20         MLW -0.60         ELW -0.80    St. GEORGE'S REPLACEMENT FERRY PROJECT PHASE 1 DOCK CONSTRUCTION MARKET WHARF St. GEORGE'S PARISH DRAWING FILE NO: ACAD R-14 SG-1 Existing Cond.dwg SHEET TITLE: EXISTING CONDITIONS SHEET NUMBER:				
DESIGN WATER ELEVATIONS         HUR. CAT 5 1.63         CAT 3 1.05         EHW 1.20         MHW 0.80         MLW -0.60         ELW -0.80    NOTE CONSTRUCTIONS SHEET NUMBER: REVISION		St. GEORGE'S		
DESIGN WATER ELEVATIONS         HUR. CAT 5       1.63         CAT 3       1.05         EHW       1.20         MHW       0.80         ELW       -0.60         ELW       -0.80    NOTE          NOTE       DREMINING FILE NO:    ACAD R-14 SG-1 Existing Cond.dwg          SHEET TITLE:         ELW       -0.80    SHEET NUMBER:          REVISION	CONSTRUCTION	PHASE 1		
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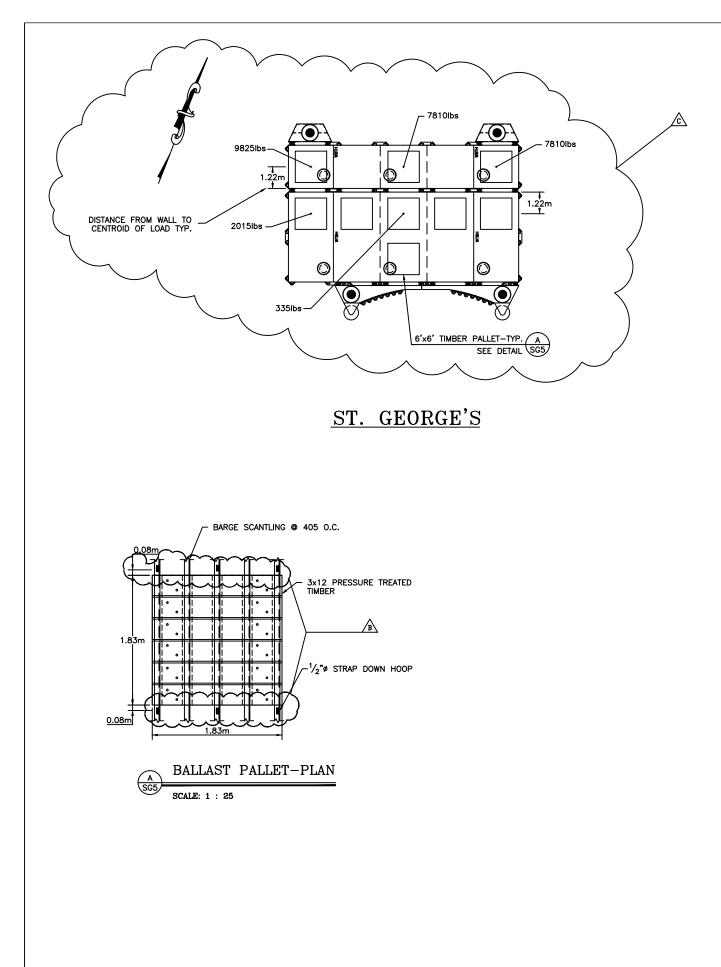


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	P.O. Box HM525 Hamilt Phone: (441)	
	ENGINEER OPERATIONS Fax: (441)2	5 DIVISION
	Structures	s Section
	BCE	Consulting Engin 184 Vest Central Stree Franklin, MA 0203, 528-8133 PAX. (508) 520-867.
	GENERAL NOTES: 1. COORDINATES BASE 2. ALL ELEVATIONS AR ON ORDNANCE DATI 3. ALL DISTANCES ARE 4. SURVEY CONTROL S TO THE CONTRACTO	E IN METERS BASED UM. IN METERS. SHALL BE PROVIDED
	ISSUED FOR: CONSTRUC	CTION 14/08/01
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	BARGE II	RRB         04/01/02           RJT         23/05/02
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AT THE CENTER. THE CORNERS.	<u>SURVE</u> Y PREPARED BY:	DATE:
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DRTHING         EASING           2258.262         54003.180           2271.064         557030.312           2262.791         557032.672           2262.783         557034.074	APPROVED BY: RRB PROJECT NUMBER: 61/01/01	
2255.704 557037.365 2254.682 557036.840 2251.042 557029.124 2250.161 557025.617 257.137 557022.326 229 291 557023.130 2248.31 557018.287 2251.105 557013.552 2255.159 157015.373	PROJECT NAME: St. GEORGE'S REPLACEMENT : PHASE 1 DOCK CONSTRU	
	MARKET WHARF St. GEORGE'S H	,
	DRAWING FILE NO: SG-2 SITE LAYOUT.dwg	ACAD R-14
CONSTRUCTION	SHEET TITLE: SITE	
Drawing	LAYOUT SHEET NUMBER:	REVISION
Drawings	61/46/01/S	
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	P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295–5151		
	ENGINEERING and		
	OPERATIONS DIVISION Fax: (441)295-0170		
L COVER PLATE-TYP			
SC8	Stanstance Costion		
	Structures Section		
	Bourne Consulting Engin		
C (P)	BCE 184 West Central Street Franklin, MA 0203. TEL. (508) 528-8133 FAX. (508) 520-667.		
BOW LOADER COVER PLATE-TYP SEE DETAIL			
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F)	ISSUED FOR: CONSTRUCTION 14/08/01		
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ARGE UMINUM COVER	AMENDMENTS: NO:   REVISION   APP   DATE:		
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	RRB 23/05/01		
	DRAWING PREPARED BY: DATE:		
OUT	JSK 23/05/01 CHECKED BY: DATE:		
	BAP 23/05/01 APPROVED BY:		
	RRB		
	PROJECT NUMBER: 61/01/01		
	PROJECT NAME:		
	St. GEORGE'S REPLACEMENT FERRY PROJE(		
	PHASE 1		
	DOCK CONSTRUCTION		
COVER PLATE-SEE SHEET SG8	MARKET WHARF St. GEORGE'S PARISH		
/ER PLATE-SEE SHEET SG8	DRAWING FILE NO: ACAD R—14 SG—3 Barge & Assembly Plan.dwg		
SPACER SEE DETAIL J SG5	SHEET TITLE:		
R STANDARD PLATFORMS.	BARGE & ALUMINUM		
	ASSEMBLY PLAN		
F SANDY AND TANKINGS	SHEET NUMBER: REVISION		
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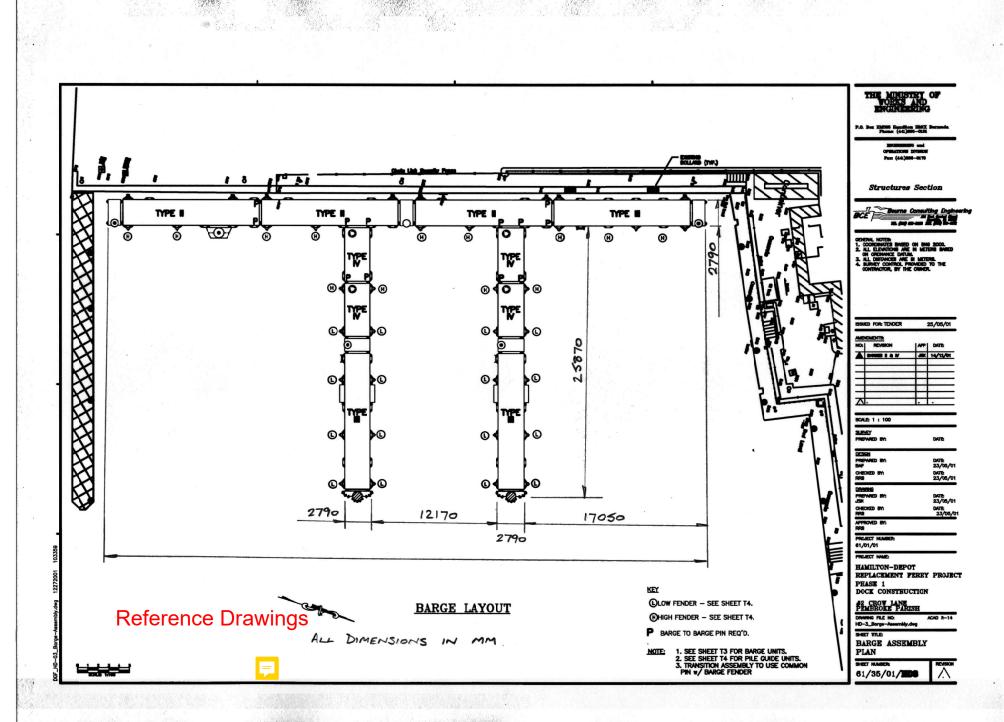




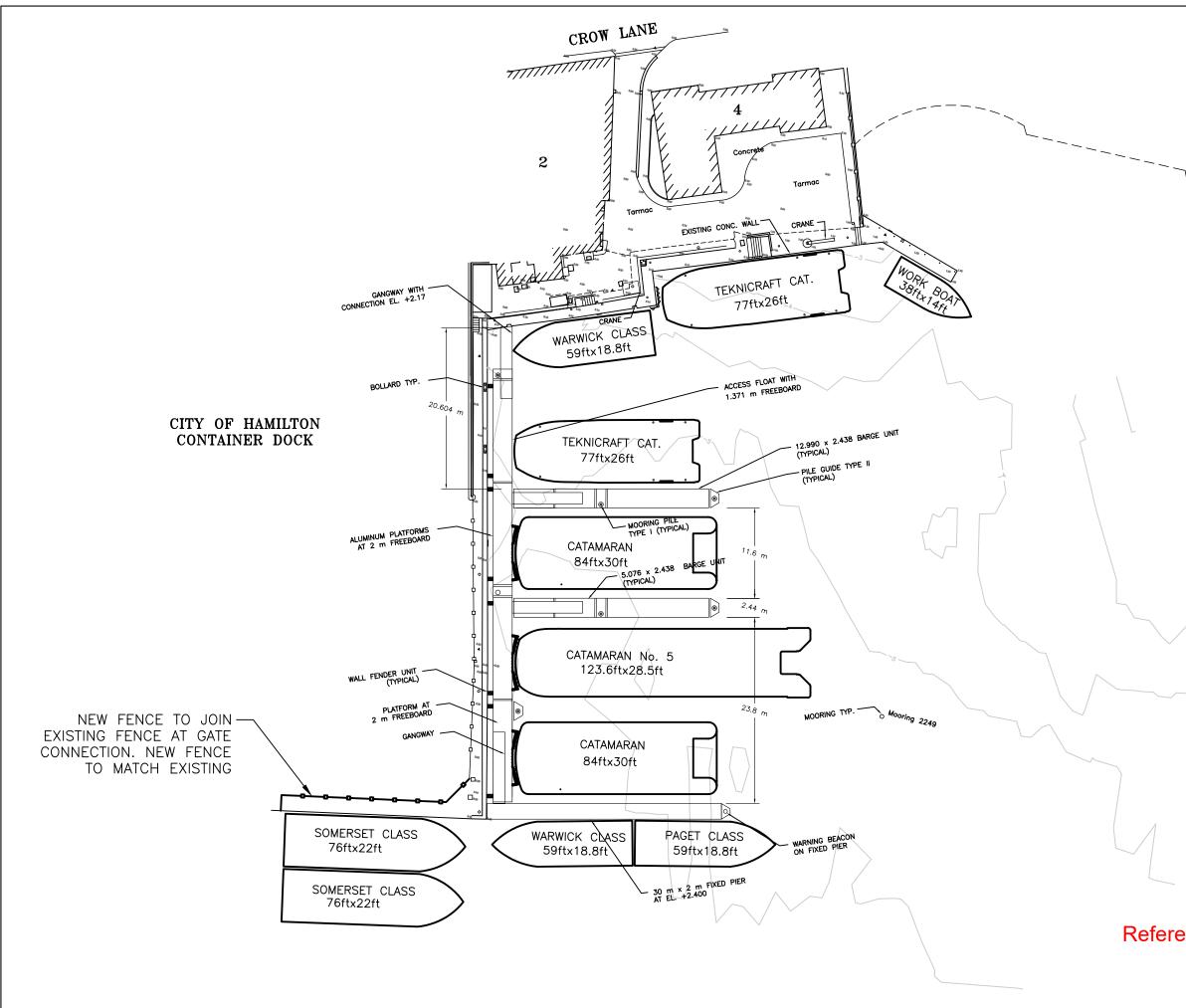


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	P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295–5151				
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NOTES: 1. BALLAST LOADS ARE SHOWN AT CENTER OF BAY UNLESS NOTED OTHERWISE. 2. BALLAST TO BE REMOVEABLE CONCRETE BLOCK OR LEAD. 3. BALLAST SHALL BE INSTALLED ON TIMBER PALLETS AT LOCATIONS SHOWN PALLETS AT LOCATIONS SHOWN



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# THE MINISTRY OF WORKS AND ENGINEERING AND HOUSING

P.O. Box HM525 Hamilton HMCX Bermuda Phone: (441)295-5151

### ENGINEERING and OPERATIONS DIVISION Fax: (441)294-9087

## Structures Section

NOTE: ALL DIMENSIONS ARE IN METERS UNLESS STATED OTHERWISE.

ISSUED FOR:	INFORMATION
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25/07/06

AMENDMENTS:

NO	REVISION	BY	APP	DATE
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SCALE: 1:500

SURVEY PREPARED BY: KOS/ORS	DATE: 14/07/99
DESIGN	
PREPARED BY:	DATE:
L. SYLVESTER	21/07/06
CHECKED BY:	DATE:

DRAWING	
PREPARED BY:	DATE:
T. HARMER	24/07/06
CHECKED BY:	DATE:
L. SYLVESTER	25/07/06
APPROVED BY:	DATE:

PROJECT NUMBER:

PROJECT NAME:

## HAMILTON DEPOT REPLACEMENT FERRY PROJECT

4 CROW LANE HAMILTON

SHEET TITLE:

GENERAL ARRANGEMENT PLAN

S00

SHEET NUMBER:

ACAD 2002

REVISION  $\wedge$ 

## **Reference Drawings**



GOVERNMENT OF BERMUDA Ministry of Public Works Works and Engineering

## **Component List**

Note: The component list contains items used in the original works. Items may have changed since then, so this list is to be used as a guide only. The Contractor is advised to confirm this list.

There might be missing components or additional spare components stored at Government Quarry.

<u>Components</u>	H <u>amilton Terminal</u>	Dockyard	From St. Georges
			Now believed to be at
			Governments Quarry
Barges			
Туре І	2	1	1
Туре II	2		1
Type III	3	2	
Type IV	2	1	
Barge Connectors			
Long pins	60	33	25
Short pins	53	30	
Special connector	1		
Pile Guides			
Туре І	2		
Туре II	2	1	
Type III	1		2
Type IV			
Bow Loader Unit	2	1	1
Fenders			
Туре Н	2		
Type L	17	10	
Wall fenders			
Fender Panels			
Gangways			
Туре І			
Type II	2	2	2
Type III			
Type IV	1		
Ramps			
Туре А	2	1	

Transition Ramp	1	1	
HT - Type I	1		
DY - Type I		1	
DY - Stairs		1	
SG - Stairs			1
Platforms			
Туре А	4		
HD - Type I			
HD - Type 2			
HD - Type 3			
HT - Type 1	2		
HT - Type 2	1		
Туре В		1	1
DY - Type 1		1	
DY - Type 2		1	
SG - Type 1			2

END OF SECTION