



Work Order: 5024339-A
 First Visit Date: 15-Nov-2021
 Last Visit Date: 28-Jan-2022
 Survey Location: Other

Equipment Certification Report

Asset Type Wire Rope
Customer Name USHA MARTIN LIMITED
WCN of Customer 862731
Location Other

This is to certify that the undersigned Surveyors to this Bureau did at the request of USHA MARTIN LIMITED, from 15-Nov-2021 to 28-Jan-2022, carry out the following survey and report as follows:

Client Asset Name	Quantity
MOORING STEEL WIRE ROPE Grade 1770	1

Name Plate Data

ABS Label	Manufacturer	Purchaser	Designer	Destination Vessel
MOORING STEEL WIRE ROPE Grade 1770	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	USHA MARTIN SINGAPORE PTE LTD	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	-

Basic Identification Data

Serial Number	Owner Tag Number	Supplier Ref. Number
-	-	-

Report Details

ABS Stamping

5024339 AB

Design Details

Design state	Drawing Number	Reviewing Organization
Design Approved/Reviewed	21-2134226-PDA	Singapore Ship Engineering

Statement of Work - Classification Service - Certification -

- Subject to satisfactory installation, testing and trials after installation onboard the vessel.
- The principal data has been verified in accordance with the applicable Rules/specifications and applicable approved plans, and confirmed to be within acceptable tolerances.
- All testing (pressure/load/operational/etc.) has been carried out as applicable and verified in accordance with the applicable Rules/specifications.
- Testing machines are maintained in a satisfactory condition and records of their recheck or calibration dates confirmed.
- Traceability of materials used on this project has been verified.

Report Findings

Statement/Observation

Finding No	Asset	Survey Task	Date Created
-------------------	--------------	--------------------	---------------------

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of the American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.



Work Order: 5024339-A
 First Visit Date: 15-Nov-2021
 Last Visit Date: 28-Jan-2022
 Survey Location: Other

48.0 - Certification - MOORING STEEL 28-Jan-2022
 WIRE ROPE Grade 1770

Found

This to report that the undersigned Surveyor to this Bureau did, at the request of Usha Martin Limited, attend their Works at Ranchi, India, to witness the following items as offered with the details as follows: -

Details of Mooring Line Base Design: The product has been manufactured, tested and documented following the guidelines in appendix B of the Mooring Equipment Guidelines, Fourth Edition (MEG4).

Line Manufacturer: USHA MARTIN LIMITED, INDIA
 Line Design Designation (Product Name): Mooring Steel Wire Rope and Lubricated
 Material Type and Grade: Galvanized and 1770
 Line Construction: 6X36WS, IWRC, RHO (Sz)
 Design Range: 28 mm – 44 mm
 Certificate Reference: UML/MEG4/LBDC/02
 Issue Date: 28 January 2022
 Expiry Date: 28January 2027

Base Design Performance Indicator:

Performance Indicators Diameter:	Smallest Diameter				Largest Diameter							
	Design		Measured		Design		Measured					
-----	28mm		28.62mm		44mm		44.80mm					
-----	516.78KN				1280.70KN							
Line Design Break Force (LDBF)												
Angled Break Force % Avg NSBF: (Excluding Constructional stretch)	D/d Ratio: 5 - 76, D/d Ratio: 10 - 85,				D/d Ratio: 5 - 76, D/d Ratio: 10 - 85							
Temperature (T) %	-20°C	0°C	20°C	40°C	60°C	80°C	-20°C	0°C	20°C	40°C	60°C	80°C
BF at 20	100	100	100	100	100	100	100	100	100	100	100	100
%	%LDBF: 10%		%LDBF: 20%		%LDBF: 30%		%LDBF: 40%		%LDBF: 50%			
Elastic stretch at weight% (28mm)	0.17		0.35		0.53		0.69		0.87			
Elastic stretch at weight% (44mm)	0.18		0.35		0.51		0.69		0.87			

Name and address of manufacturing and Testing facility:
 Usha Martin Limited, Wire and Wire Ropes Division, Tatisilwai, Ranchi, 835103, Jharkhand, India

Base Design Sample and Product Documentation Reviewed

1. Base Design Sample Manufacturing report: Y
 2. Base Design Sample Manufacturing ITP: Y
 3. Base Design Sample Test report: Y
 4. Material Test report: Y
 5. Design specification: Y
 6. Manufacturer's Discard and Inspection Criteria: Y
 7. Splicing Instructions: Y
 8. Line Internal Inspection report: Y
 9. Procedures for Testing and Inspection of Retired Mooring Line: Y
- Date of Review: 27 & 28 January 2022

Details of MOORING STEEL WIRE ROPE:

Purchaser: M/s USHA MARTIN SINGAPORE PTE LTD

Construction: 6X36WS

Grade: 1770

Wire Finish: Galvanized

Type of Core/ Lay Direction: IWRC, RHO (Sz)

Length of Rope: 200 m

Lubrication: A2 / Petroleum Lube

1. Certificate No.: HB582410001
Sales Order Number: 7130004341/370
Reel No: B582410001
Nominal Diameter of Rope: 28mm
Minimum Breaking Force: 494KN

2. Certificate No.: HB582430001
Sales Order Number: 7130004341/390
Reel No: B582430001
Nominal Diameter of Rope: 30mm
Minimum Breaking Force: 567KN

3. Certificate No.: HB582450001



Work Order: 5024339-A
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

Sales Order Number: 7130004341/410

Reel No: B582450001

Nominal Diameter of Rope: 32mm

Minimum Breaking Force: 645KN

4. Certificate No.: HB582470001

Sales Order Number: 7130004341/320

Reel No: B582470001

Nominal Diameter of Rope: 34mm

Minimum Breaking Force: 729KN

5. Certificate No.: HB582490001

Sales Order Number: 7130004341/450

Reel No: B582490001

Nominal Diameter of Rope: 36mm

Minimum Breaking Force: 817KN

6. Certificate No.: HB582520001

Sales Order Number: 7130004341/480

Reel No: B582520001

Nominal Diameter of Rope: 38mm

Minimum Breaking Force: 910KN

7. Certificate No.: HB582540001

Sales Order Number: 7130004341/500

Reel No: B582540001

Nominal Diameter of Rope: 40mm

Minimum Breaking Force: 1010KN

8. Certificate No.: HB582580001

Sales Order Number: 7130004341/530

Reel No: B582580001

Nominal Diameter of Rope: 42mm

Minimum Breaking Force: 1110KN

9. Certificate No.: HB582600001

Sales Order Number: 7130004341/550

Reel No: B582600001



Work Order: 5024339-A
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

Nominal Diameter of Rope: 44mm

Minimum Breaking Force: 1220KN

For Performance Indicators details, please refer to Manufacturer's Certificates.

Closing Paragraph:

The component/equipment was surveyed in accordance with the Rules, specifications, and approved drawings, as applicable, and is eligible for installation on board an ABS classed vessel subject to satisfactory installation and testing, as necessary.

Attending Surveyor(s):

George, Joble

Signed-off Date: 18-Apr-2022

Reviewing Surveyor(s)

Work Order Reviewer: Ali, Ashir Ali (Ashir Ali)
Work Order Credit Date: 20-Apr-2022



Work Order: 5024339-B
 First Visit Date: 15-Nov-2021
 Last Visit Date: 28-Jan-2022
 Survey: Other
 Location:

Equipment Certification Report

Asset Type Wire Rope
Customer Name USHA MARTIN LIMITED
WCN of Customer 862731
Location Other

This is to certify that the undersigned Surveyors to this Bureau did at the request of USHA MARTIN LIMITED, from 15-Nov-2021 to 28-Jan-2022, carry out the following survey and report as follows:

Client Asset Name	Quantity
MOORING STEEL WIRE ROPE Grade 1960	1

Name Plate Data

ABS Label	Manufacturer	Purchaser	Designer	Destination Vessel
MOORING STEEL WIRE ROPE Grade 1960	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	USHA MARTIN SINGAPORE PTE LTD	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	-

Basic Identification Data

Serial Number	Owner Tag Number	Supplier Ref. Number
-	-	-

Report Details

ABS Stamping

5024339 AB

Design Details

Design state	Drawing Number	Reviewing Organization
Design Approved/Reviewed	21-2134226-PDA	Singapore Ship Engineering

Statement of Work - Classification Service - Certification -

- Subject to satisfactory installation, testing and trials after installation onboard the vessel.
- The principal data has been verified in accordance with the applicable Rules/specifications and applicable approved plans, and confirmed to be within acceptable tolerances.
- All testing (pressure/load/operational/etc.) has been carried out as applicable and verified in accordance with the applicable Rules/specifications.
- Testing machines are maintained in a satisfactory condition and records of their recheck or calibration dates confirmed.
- Traceability of materials used on this project has been verified.

Report Findings

Statement/Observation

Finding No	Asset	Survey Task	Date Created
-------------------	--------------	--------------------	---------------------

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of the American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.



Work Order: 5024339-B
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

49.0 - Certification - MOORING STEEL 28-Jan-2022
WIRE ROPE Grade 1960

Found

This to report that the undersigned Surveyor to this Bureau did, at the request of Usha Martin Limited, attend their Works at Ranchi, India, to witness the following items as offered with the details as follows: -

Details of Mooring Line Base Design: The product has been manufactured, tested and documented following the guidelines in appendix B of the Mooring Equipment Guidelines, Fourth Edition (MEG4).

Line Manufacturer: USHA MARTIN LIMITED, INDIA

Line Design Designation (Product Name): Mooring Steel Wire Rope and Lubricated

Material Type and Grade: Galvanized and 1960

Line Construction: 6X36WS, IWRC, RHO (Sz)

Design Range: 28 mm – 44 mm

Certificate Reference: UML/MEG4/LBDC/03

Issue Date: 28 January 2022

Expiry Date: 28 January 2027

Base Design Performance Indicator:

Performance Indicators Diameter:	Smallest Diameter		Largest Diameter	
	Design	Measured	Design	Measured
-----	28mm	28.62mm	44mm	44.80mm

Line Design Break Force (LDBF)	569.70KN		1400.30KN	

Angled Break Force % Avg NSBF: D/d Ratio: 5 - 75, D/d Ratio: 10 - 86, D/d Ratio: 5 - 76, D/d Ratio: 10 - 86
(Excluding Constructional stretch)

Temperature (T) %	-20°C	0°C	20°C	40°C	60°C	80°C	-20°C	0°C	20°C	40°C	60°C	80°C
BF at 20	100	100	100	100	100	100	100	100	100	100	100	100

%	%LDBF: 10%	%LDBF: 20%	%LDBF: 30%	%LDBF: 40%	%LDBF: 50%
Elastic stretch at weight% (28mm)	0.18	0.36	0.54	0.71	0.90
Elastic stretch at weight% (44mm)	0.18	0.36	0.53	0.71	0.89

Name and address of manufacturing and Testing facility:

Usha Martin Limited, Wire and Wire Ropes Division, Tatisilwai, Ranchi, 835103, Jharkhand, India

Base Design Sample and Product Documentation Reviewed

1. Base Design Sample Manufacturing report: Y
2. Base Design Sample Manufacturing ITP: Y
3. Base Design Sample Test report: Y
4. Material Test report: Y
5. Design specification: Y
6. Manufacturer's Discard and Inspection Criteria: Y
7. Splicing Instructions: Y
8. Line Internal Inspection report: Y
9. Procedures for Testing and Inspection of Retired Mooring Line: Y

Date of Review: 27 & 28 January 2022

Details of MOORING STEEL WIRE ROPE:

Purchaser: M/s USHA MARTIN SINGAPORE PTE LTD

Construction: 6X36WS

Grade: 1960

Wire Finish: Galvanized

Type of Core/ Lay Direction: IWRC, RHO (Sz)

Length of Rope: 200 m

Lubrication: A2 / Petroleum Lube

1. Certificate No.: HB582420001

Sales Order Number: 7130004341/380

Reel No: B582420001

Nominal Diameter of Rope: 28mm

Minimum Breaking Force: 547KN

2. Certificate No.: HB582440001

Sales Order Number: 7130004341/400

Reel No: B582440001

Nominal Diameter of Rope: 30mm

Minimum Breaking Force: 628KN

3. Certificate No.: HB582460001

Sales Order Number: 7130004341/420



Work Order: 5024339-B
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey: Other
Location:

Reel No: B582460001

Nominal Diameter of Rope: 32mm

Minimum Breaking Force: 715KN

4. Certificate No.: HB582480001

Sales Order Number: 7130004341/440

Reel No: B582480001

Nominal Diameter of Rope: 34mm

Minimum Breaking Force: 807KN

5. Certificate No.: HB582500001

Sales Order Number: 7130004341/460

Reel No: B582500001

Nominal Diameter of Rope: 36mm

Minimum Breaking Force: 904KN

6. Certificate No.: HB582530001

Sales Order Number: 7130004341/490

Reel No: B582530001

Nominal Diameter of Rope: 38mm

Minimum Breaking Force: 1012KN

10. Certificate No.: HB582550001

Sales Order Number: 7130004341/510

Reel No: B582550001

Nominal Diameter of Rope: 40mm

Minimum Breaking Force: 1120KN

11. Certificate No.: HB582590001

Sales Order Number: 7130004341/540

Reel No: B582590001

Nominal Diameter of Rope: 42mm

Minimum Breaking Force: 1230KN

12. Certificate No.: HB582610001

Sales Order Number: 7130004341/560

Reel No: B582610001

Nominal Diameter of Rope: 44mm



Work Order: 5024339-B
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

Minimum Breaking Force: 1350KN

For Performance Indicators details, please refer to Manufacturer's Certificates.

Closing Paragraph:

The component/equipment was surveyed in accordance with the Rules, specifications, and approved drawings, as applicable, and is eligible for installation on board an ABS classed vessel subject to satisfactory installation and testing, as necessary.

Attending Surveyor(s):

George, Joble
Signed-off Date: 18-Apr-2022

Reviewing Surveyor(s)

Work Order Reviewer: Ali, Ashir Ali (Ashir Ali)
Work Order Credit Date: 20-Apr-2022



Work Order: 5024339-C
 First Visit Date: 15-Nov-2021
 Last Visit Date: 28-Jan-2022
 Survey Location: Other

Equipment Certification Report

Asset Type Wire Rope
Customer Name USHA MARTIN LIMITED
WCN of Customer 862731
Location Other

This is to certify that the undersigned Surveyors to this Bureau did at the request of USHA MARTIN LIMITED, from 15-Nov-2021 to 28-Jan-2022, carry out the following survey and report as follows:

Client Asset Name	Quantity
MOORING STEEL WIRE ROPE Grade 2160	1

Name Plate Data

ABS Label	Manufacturer	Purchaser	Designer	Destination Vessel
MOORING STEEL WIRE ROPE Grade 2160	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	USHA MARTIN SINGAPORE PTE LTD	USHA MARTIN LIMITED (WIRE ROPES & SPECIALITY PRODUCTS DIVISION)	-

Basic Identification Data

Serial Number	Owner Tag Number	Supplier Ref. Number
-	-	-

Report Details

ABS Stamping

5024339 AB

Design Details

Design state	Drawing Number	Reviewing Organization
Design Approved/Reviewed	21-2134226-PDA	Singapore Ship Engineering

Statement of Work - Classification Service - Certification -

- Subject to satisfactory installation, testing and trials after installation onboard the vessel.
- The principal data has been verified in accordance with the applicable Rules/specifications and applicable approved plans, and confirmed to be within acceptable tolerances.
- All testing (pressure/load/operational/etc.) has been carried out as applicable and verified in accordance with the applicable Rules/specifications.
- Testing machines are maintained in a satisfactory condition and records of their recheck or calibration dates confirmed.
- Traceability of materials used on this project has been verified.

Report Findings

Statement/Observation

Finding No	Asset	Survey Task	Date Created
-------------------	--------------	--------------------	---------------------

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of the American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.



Work Order: 5024339-C
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

50.0 - Certification - MOORING STEEL 28-Jan-2022
WIRE ROPE Grade 2160

Found

This to report that the undersigned Surveyor to this Bureau did, at the request of Usha Martin Limited, attend their Works at Ranchi, India, to witness the following items as offered with the details as follows: -

Details of Mooring Line Base Design: The product has been manufactured, tested and documented following the guidelines in appendix B of the Mooring Equipment Guidelines, Fourth Edition (MEG4).

Line Manufacturer: USHA MARTIN LIMITED, INDIA

Line Design Designation (Product Name): Mooring Steel Wire Rope and Lubricated

Material Type and Grade: Galvanized and 2160

Line Construction: 6X36WS, IWRC, RHO (Sz)

Design Range: 28 mm – 44 mm

Certificate Reference: UML/MEG4/LBDC/01

Issue Date: 16 November 2021

Expiry Date: 15 November 2026

Base Design Performance Indicator:

Performance Indicators Diameter:	Smallest Diameter		Largest Diameter	
	Design	Measured	Design	Measured
-----	28mm	28.62mm	44mm	44.80mm

Line Design Break Force (LDBF)	632.06KN		1577.79KN	

Angled Break Force % Avg NSBF: D/d Ratio: 5 - 75, D/d Ratio: 10 - 84, D/d Ratio: 5 - 75, D/d Ratio: 10 - 85
(Excluding Constructional stretch)

Temperature (T) %	-20°C	0°C	20°C	40°C	60°C	80°C	-20°C	0°C	20°C	40°C	60°C	80°C
BF at 20	100	100	100	100	100	100	100	100	100	100	100	100

%	%LDBF: 10%	%LDBF: 20%	%LDBF: 30%	%LDBF: 40%	%LDBF: 50%
Elastic stretch at weight% (28mm)	0.18	0.36	0.54	0.72	0.90
Elastic stretch at weight% (44mm)	0.17	0.34	0.51	0.68	0.85

Name and address of manufacturing and Testing facility:

Usha Martin Limited, Wire and Wire Ropes Division, Tatisilwai, Ranchi, 835103, Jharkhand, India

Base Design Sample and Product Documentation Reviewed

1. Base Design Sample Manufacturing report: Y
2. Base Design Sample Manufacturing ITP: Y
3. Base Design Sample Test report: Y
4. Material Test report: Y
5. Design specification: Y
6. Manufacturer's Discard and Inspection Criteria: Y
7. Splicing Instructions: Y
8. Line Internal Inspection report: Y
9. Procedures for Testing and Inspection of Retired Mooring Line: Y

Date of Review: 15 & 16 November 2021

Details of MOORING STEEL WIRE ROPE:

Purchaser: M/s USHA MARTIN SINGAPORE PTE LTD

Construction: 6X36WS

Grade: 2160

Wire Finish: Galvanized

Type of Core/ Lay Direction: IWRC, RHO (Sz)

Length of Rope: 200 m

Lubrication: A2 / Petroleum Lube

1. Certificate No.: HB582400001

Sales Order Number: 7130004341/360

Reel No: B582400001

Nominal Diameter of Rope: 28mm

Minimum Breaking Force: 610KN

2. Certificate No.: HB581870001

Sales Order Number: 7130004341/300

Reel No: B581870001

Nominal Diameter of Rope: 30mm

Minimum Breaking Force: 696KN

3. Certificate No.: HB581880001

Sales Order Number: 7130004341/310



Work Order: 5024339-C
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey: Other
Location:

Reel No: B581880001

Nominal Diameter of Rope: 32mm

Minimum Breaking Force: 793KN

4. Certificate No.: HB581890001

Sales Order Number: 7130004341/320

Reel No: B581890001

Nominal Diameter of Rope: 34mm

Minimum Breaking Force: 898KN

5. Certificate No.: HB582510001

Sales Order Number: 7130004341/470

Reel No: B582510001

Nominal Diameter of Rope: 36mm

Minimum Breaking Force: 997KN

6. Certificate No.: HB581900001

Sales Order Number: 7130004341/330

Reel No: B581900001

Nominal Diameter of Rope: 38mm

Minimum Breaking Force: 1110KN

7. Certificate No.: HB582560001

Sales Order Number: 7130004341/520

Reel No: B582560001

Nominal Diameter of Rope: 40mm

Minimum Breaking Force: 1230KN

8. Certificate No.: HB581910001

Sales Order Number: 7130004341/340

Reel No: B581910001

Nominal Diameter of Rope: 42mm

Minimum Breaking Force: 1356KN

9. Certificate No.: HB581920001

Sales Order Number: 7130004341/350

Reel No: B581920001

Nominal Diameter of Rope: 44mm



Work Order: 5024339-C
First Visit Date: 15-Nov-2021
Last Visit Date: 28-Jan-2022
Survey Location: Other

Minimum Breaking Force: 1490KN

For Performance Indicators details, please refer to Manufacturer's Certificates.

Closing Paragraph:

The component/equipment was surveyed in accordance with the Rules, specifications, and approved drawings, as applicable, and is eligible for installation on board an ABS classed vessel subject to satisfactory installation and testing, as necessary.

Attending Surveyor(s):

George, Joble
Signed-off Date: 18-Apr-2022

Reviewing Surveyor(s)

Work Order Reviewer: Ali, Ashir Ali (Ashir Ali)
Work Order Credit Date: 20-Apr-2022