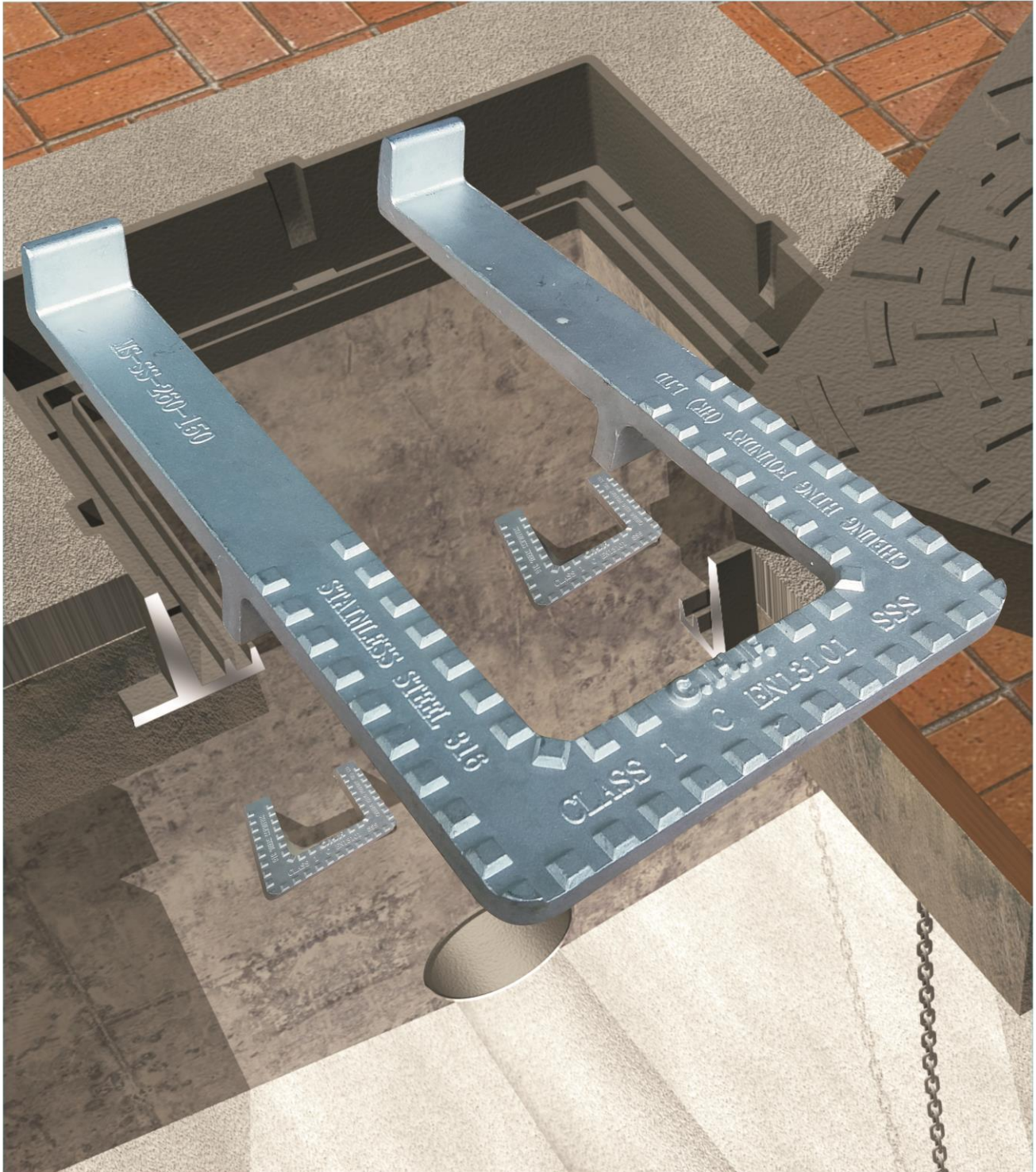


Manhole Step

CHF[®]

Stainless Steel : CLASS 1 C EN 13101 SSS

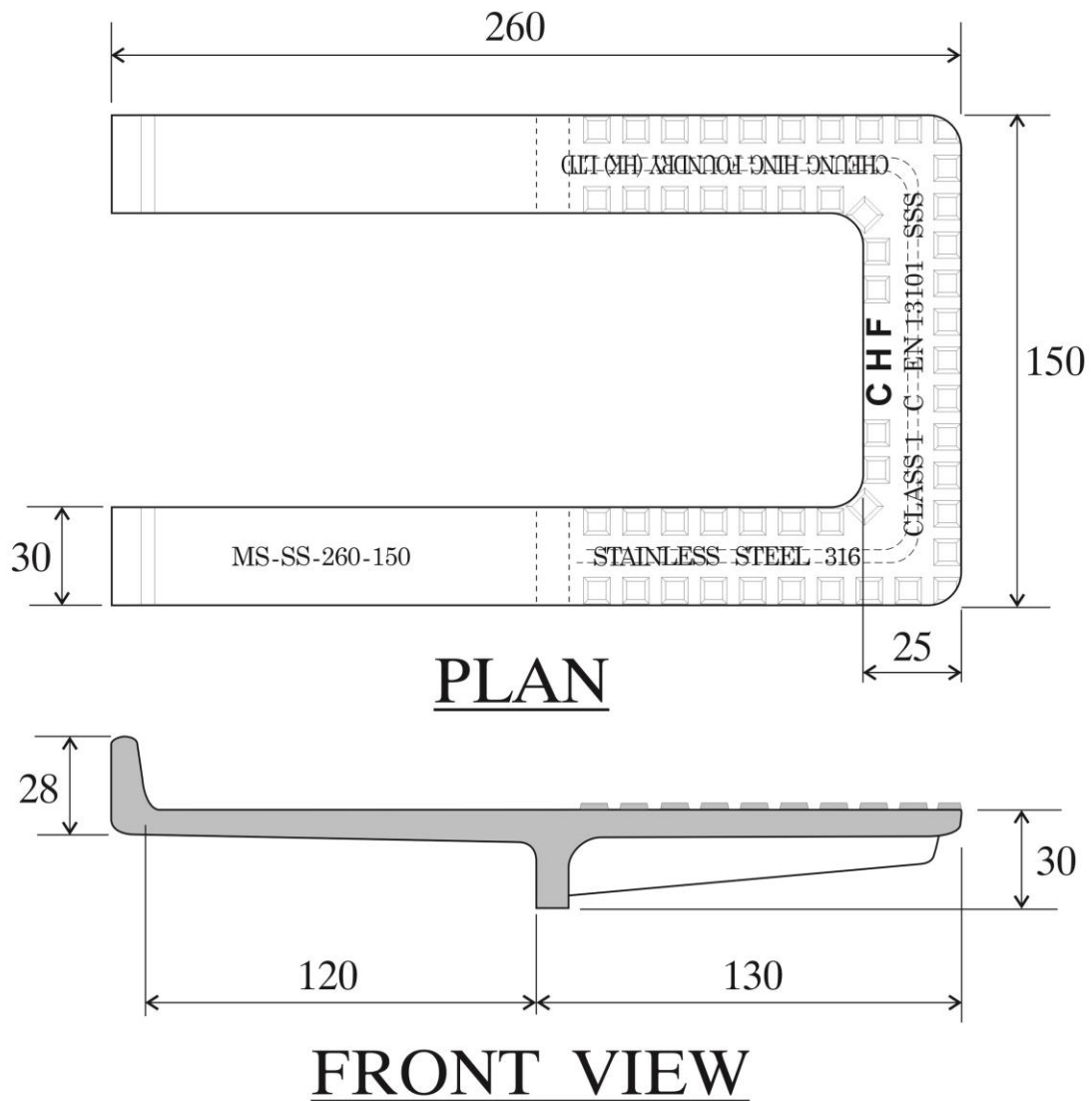
不銹鋼沙井腳踏 : SS 316



祥興鑄鐵有限公司
CHEUNG HING FOUNDRY (HK) LIMITED

CHF[®] Manhole Step - Stainless Steel

不銹鋼沙井腳踏: SS 316



Technical Specifications:

| | | |
|----|-----------------------------|--|
| 1. | Standard of Manhole Step | BS EN 13101:2002 |
| 2. | Material | Stainless Steel 316 |
| 3. | Standard of Stainless Steel | BS NE 1008-2:2014, Table1, Grade 1.4401 (3316) & BS EN 1025-4:2000, Table2, Grade 1.4401 |
| 4. | Size | 260mm x 150mm |

Functions:

To provide step-like access to underground sewage system through the opening of manhole for servicing and maintenance.

Stainless steel material resists rust and enhances durability and safety.



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CHEUNG HING FOUNDRY (HK) LIMITED

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Test Report
Chemical Analysis of Steel

Date of issue: 24-02-2020
Page 2 of 2
Castco LRN: MS0200213-1

| Chemical Analysis | Element | Result |
|-------------------------|---------|--------|
| 1) Total Carbon Content | C % | 0.043 |
| 1) Total Sulfur Content | S % | 0.0055 |
| 2) Chromium | Cr % | 17.88 |
| 2) Manganese | Mn % | 1.12 |
| 2) Molybdenum | Mo % | 2.01 |
| 2) Nickel | Ni % | 10.37 |
| 2) Phosphorus | P % | 0.023 |
| 2) Silicon | Si % | 0.673 |
| 2) Nitrogen | N % | 0.062 |

End of Report

Form No. CRM Steel 1 T 01 10/12/2015

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Appendix A
Summary of Chemical Analysis of Steel

Date of issue: 24-02-2020
Page 1 of 1
Castco LRN: MS0200213-1

Name of Customer: Cheung Hing Foundry (HK) Limited
Job Title: --
Contract No.: --
Customer's Ref. No.: --
Date of Received by Lab.: 13-02-2020
Testing Period: 19-02-2020 to 21-02-2020

| Sample Description | Test Results | Within / Exceed limit |
|--|--------------|-----------------------|
| Specification: BS EN 10088-2:2014, Table 1, Grade 1.4401 (316) | | |
| Carbon C 0.07 max. % | 0.043 | Within limit |
| Sulfur S 0.015 max. % | 0.0055 | Within limit |
| Chromium Cr 16.5 to 18.5 % | 17.88 | Within limit |
| Manganese Mn 2.00 max. % | 1.12 | Within limit |
| Molybdenum Mo 2.00 to 2.50 % | 2.01 | Within limit |
| Nickel Ni 10.0 to 13.0 % | 10.37 | Within limit |
| Phosphorus P 0.045 max. % | 0.023 | Within limit |
| Silicon Si 1.00 max. % | 0.673 | Within limit |
| Nitrogen N 0.10 max. % | 0.062 | Within limit |

Remarks:
I. Test results only relate to the specimen tested.
II. Test results of the specimen are in compliance with the chemical requirements of BS EN 10088-2:2014, Table 1, Grade 1.4401 (316).

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Test Report
Chemical Analysis of Steel

Date of issue: 24-02-2020
Page 1 of 2
Castco LRN: MS0200213-1

Details as supplied by customer

Name of Customer: Cheung Hing Foundry (HK) Limited
Address: 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, Hong Kong
Job Title: --
Contract No.: --
Customer's Ref. No.: --

Sample details as supplied by customer

Date Sampled: --
Date Received: 13-02-2020
Test Period: 19-02-2020 to 21-02-2020
Sample Description: Stainless Steel Plate
Specification: BS EN 10088-2:2014, Table 1, Grade 1.4401 (316) & BS EN 10250-4:2000, Table 2, Grade 1.4401
Location of Work: --
Sample Identification No.: --

Test Method(s):

- BS EN ISO 15350: 2010
- ST-Multi-1(I)CP-OES
- BS EN ISO 15351: 2010

Remark:
I. Test results only relate to the specimen tested.

Checked by:

Lau Hiu Yat
Assistant Technical Manager

Approved Signatory:

Cheng Chi Fai
Senior Manager

Form No. CRM Steel 1 T 01 10/12/2015

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Appendix B
Summary of Chemical Analysis of Steel

Date of issue: 24-02-2020
Page 1 of 1
Castco LRN: MS0200213-1

Name of Customer: Cheung Hing Foundry (HK) Limited
Job Title: --
Contract No.: --
Customer's Ref. No.: --
Date of Received by Lab.: 13-02-2020
Testing Period: 19-02-2020 to 21-02-2020

| Sample Description | Test Results | Within / Exceed limit |
|--|--------------|-----------------------|
| Specification: BS EN 10250-4:2000, Table 2, Grade 1.4401 | | |
| Carbon C 0.07 max. % | 0.043 | Within limit |
| Sulfur S 0.030 max. % | 0.0055 | Within limit |
| Chromium Cr 16.50 to 18.50 % | 17.88 | Within limit |
| Manganese Mn 2.00 max. % | 1.12 | Within limit |
| Molybdenum Mo 2.00 to 2.50 % | 2.01 | Within limit |
| Nickel Ni 10.00 to 13.00 % | 10.37 | Within limit |
| Phosphorus P 0.045 max. % | 0.023 | Within limit |
| Silicon Si 1.00 max. % | 0.673 | Within limit |
| Nitrogen N ≤0.11 % | 0.062 | Within limit |

Remarks:
I. Test results only relate to the specimen tested.
II. Test results of the specimen are in compliance with the chemical requirements of BS EN 10250-4:2000, Table 2, Grade 1.4401.

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CASTCO 佳力高試驗中心有限公司
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Test Report
Steps for Underground Man Entry Chambers - Twist Test
(BS EN 13101 : 2002 Clause 4.3.6 Annex A)

Date of issue : 31 August 2020
Page 2 of 2 page(s)
Castco LRN : NW0200810-001

Appendix A

CASTCO 佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

Test Report
Steps for Underground Man Entry Chambers - Twist Test
(BS EN 13101 : 2002 Clause 4.3.6 Annex A)

Date of issue : 31 August 2020
Page 1 of 2 page(s)
Castco LRN : NW0200810-001

Details as supplied by customer
Customer : Cheung Hing Foundry (HK) Limited
Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, Hong Kong
Job title : --
Sample description : Stainless Steel (SS316) Manhole Step Iron
Manufacturer : Cheung Hing Foundry (HK) Limited
Brand name : CHF
Origin : China
Sample submitted by : Asia Development (HK) Limited

Customer's ref. no. : --
Contract no. : --

Laboratory test results
Date of sample received : 10 August 2020
Date of test : 14 August 2020

| | |
|--|--|
| Specimen no. | 1 |
| Maximum difference of height of front edge of the thread from surface (mm) | 0.97 |
| Requirement | The height of the front edge of the tread from the level surface shall not vary along its length by more than 3.0 mm |

Remarks(s) :
1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 13101 : 2002 Clause 4.3.6 (effect of measurement uncertainty has not been taken into account).

Checked by : FU HO MAN
Certified by : WONG KA MAN

CASTCO 佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

Test Report
Steps for Underground Man Entry Chambers - Vertical Loading Test
(BS EN 13101 : 2002 Annex B)

Date of issue : 31 August 2020
Page 1 of 1 page(s)
Castco LRN : NW0200810-002

Details as supplied by customer
Customer : Cheung Hing Foundry (HK) Limited
Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, Hong Kong
Job title : --
Sample description : Stainless Steel (SS316) Manhole Step Iron
Manufacturer : Cheung Hing Foundry (HK) Limited
Brand name : CHF
Origin : China
Sample submitted by : Asia Development (HK) Limited

Customer's ref. no. : --
Contract no. : --

Laboratory test results
Date of sample received : 10 August 2020
Date of test : 15 August 2020

| Specimen no. | 1 | |
|---------------------|---------------------------------|-----------------------------|
| Initial load | Apply load (kN) | Deflection (mm) |
| | 0.5 | 0.47 |
| | 1.0 | 0.92 |
| | 1.5 | 1.38 |
| | 2.0 | 1.87 |
| | Hold for 1 minute & remove load | Permanent deflection (mm) : |
| Present of cracking | | No |
| Ultimate load | Apply load (kN) | |
| | 4.0 | |
| | Hold for 1 minute & remove load | Permanent deflection (mm) : |
| Present of cracking | | No |

Compliance :-
1. Step shall support of both initial and ultimate load without visible cracking and the deflection under load shall not exceed 5mm.
2. After removal of the load, the permanent deflection shall not exceed 1mm of Initial load and 5mm of Ultimate load.

Remark(s) :
1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 13101 : 2002 Clause 4.3.7 (effect of measurement uncertainty has not been taken into account).

Checked by : FU HO MAN
Certified by : WONG KA MAN

End of Report

Form no. : NW_STEP_VERTICAL_LOAD_08/2011/01/2002_T of 1/19/2020
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CASTCO 佳力高試驗中心有限公司
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Test Report
Steps for Underground Man Entry Chambers - Resistance to Pull-out
(BS EN 13101 : 2002 Annex D)

Date of issue : 31 August 2020
Page 1 of 1 page(s)
Castco LRN : NW0200810-003

Details as supplied by customer
Customer : Cheung Hing Foundry (HK) Limited
Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, Hong Kong
Job title : --
Sample description : Stainless Steel (SS316) Manhole Step Iron
Manufacturer : Cheung Hing Foundry (HK) Limited
Brand name : CHF
Origin : China
Sample submitted by : Asia Development (HK) Limited

Customer's ref. no. : --
Contract no. : --

Laboratory test results
Date of sample received : 10 August 2020
Date of test : 15 to 29 August 2020

| | |
|---|----------------------------------|
| Specimen no. | 2 |
| Nominal dimensions of concrete block (mm) | 100 x 200 x 250 |
| Date of concrete block casted | 15/08/2020 |
| Age of concrete block at test (days) | 14 |
| Apply the load of 5 kN and sustain for 1 minute | Step resisted the load |
| Requirement | Step shall resist a force of 5kN |

Remark(s) :
1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 13101 : 2002 Clause 4.3.9 (effect of measurement uncertainty has not been taken into account).

Checked by : FU HO MAN
Certified by : WONG KA MAN

End of Report

Form no. : NW_STEP_PULL_OUT_08/2011/01/2002_T of 1/19/2020
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