

Appendix-11: Outline Design Drawings



REPUBLIC OF KIRIBATI
MINISTRY OF PUBLIC WORKS & UTILITIES

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY
ON TARAWA TO ADAPT CLIMATE CHANGE

THE DRAWINGS

DECEMBER 2015



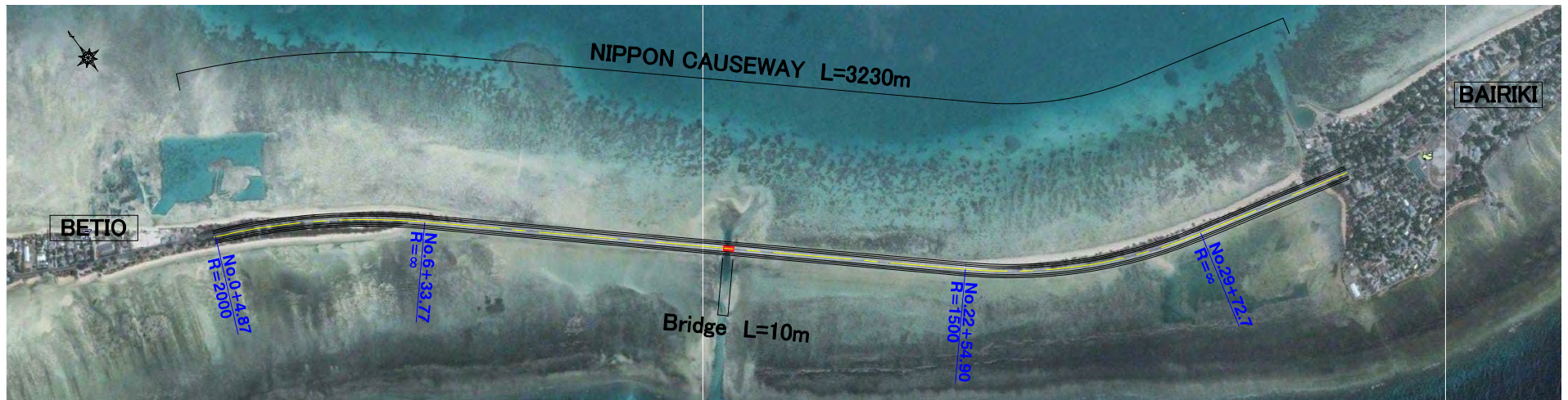
JAPAN INTERNATIONAL COOPERATION SYSTEM

CTI ENGINEERING INTERNATIONAL Co.,LTD.

Drawing List

| No. | Drawing Title | Sheet No. | DRG No. |
|-----|--------------------------------------------|-----------|---------|
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LOCATION MAP



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
LOCATION MAP

| SCALE | DRG. No. |
|-----------|-----------|
| AS SHOWN | LM-1 |
| DATE | SHEET No. |
| Mar. 2016 | 1 |

HORIZONTAL ALIGNMENT (1)

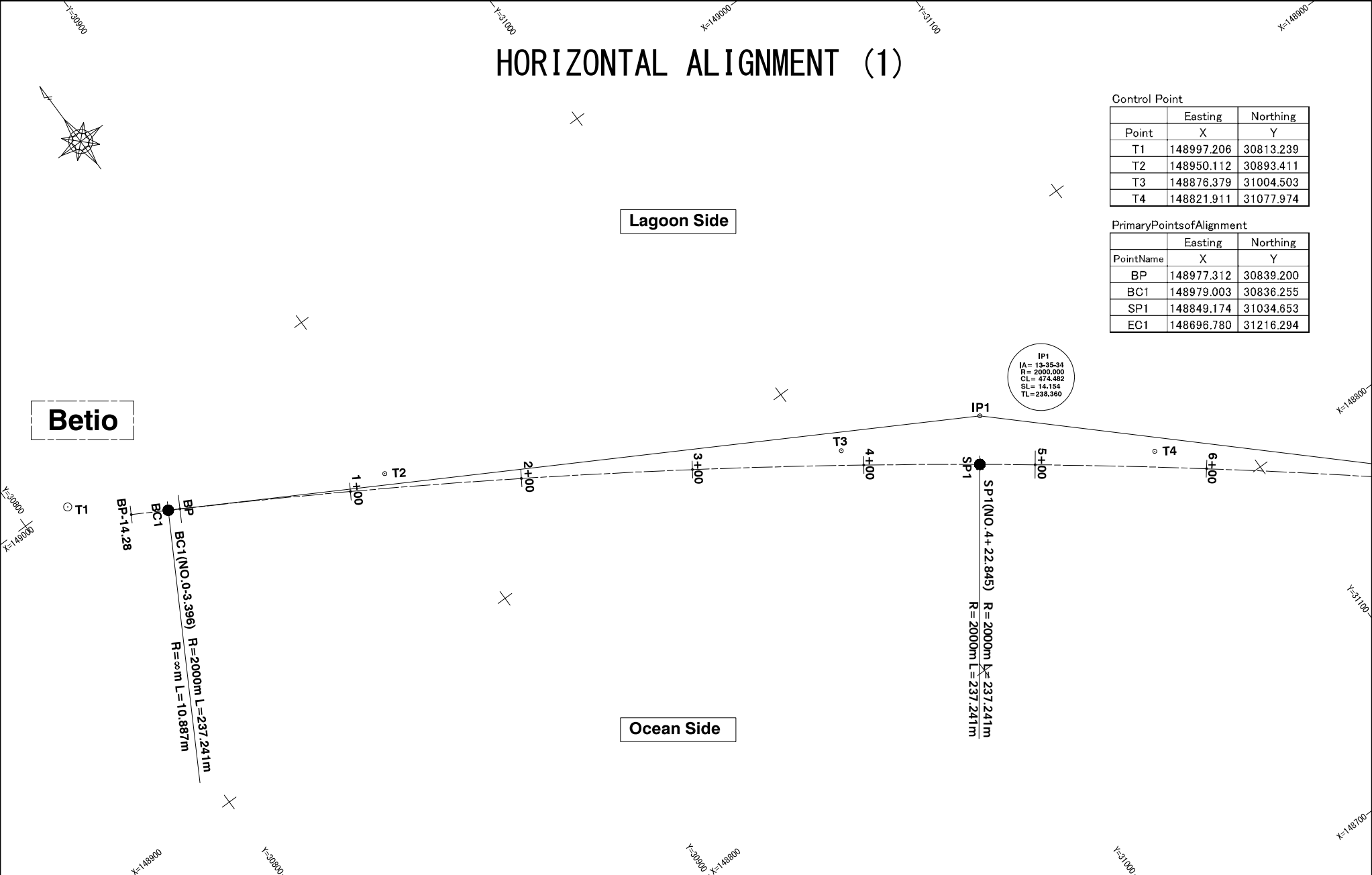
Control Point

| Point | Easting | Northing |
|-------|------------|-----------|
| T1 | 148997.206 | 30813.239 |
| T2 | 148950.112 | 30893.411 |
| T3 | 148876.379 | 31004.503 |
| T4 | 148821.911 | 31077.974 |

Primary Points of Alignment

| Point Name | Easting | Northing |
|------------|------------|-----------|
| BP | 148977.312 | 30839.200 |
| BC1 | 148979.003 | 30836.255 |
| SP1 | 148849.174 | 31034.653 |
| EC1 | 148696.780 | 31216.294 |

IP1
 IA= 13-35-34
 R= 2000.000
 CL= 474.482
 SL= 14.154
 TL= 238.360



AP11-4



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 NIPPON CAUSEWAY ON TARAWA
 TO ADAPT CLIMATE CHANGE
 IN KIRIBATI REPUBLIC

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TITLE:
HORIZONTAL ALIGNMENT (1)

| SCALE | DRG. No. |
|-----------|-----------|
| | HA-1-9 |
| DATE | SHEET No. |
| Mar. 2018 | 2 |

HORIZONTAL ALIGNMENT (2)

| Point | Easting | Northing |
|-------|------------|-----------|
| | X | Y |
| T5 | 148754.606 | 31159.823 |
| T6 | 148658.331 | 31264.540 |
| T7 | 148541.657 | 31387.974 |

Lagoon Side

Ocean Side

EC1 EC1 (NO. 9+21.086) R= ∞ m L=1625.057m
R=2000m L=237.241m

AP11-5



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TITLE:
HORIZONTAL ALIGNMENT (2)

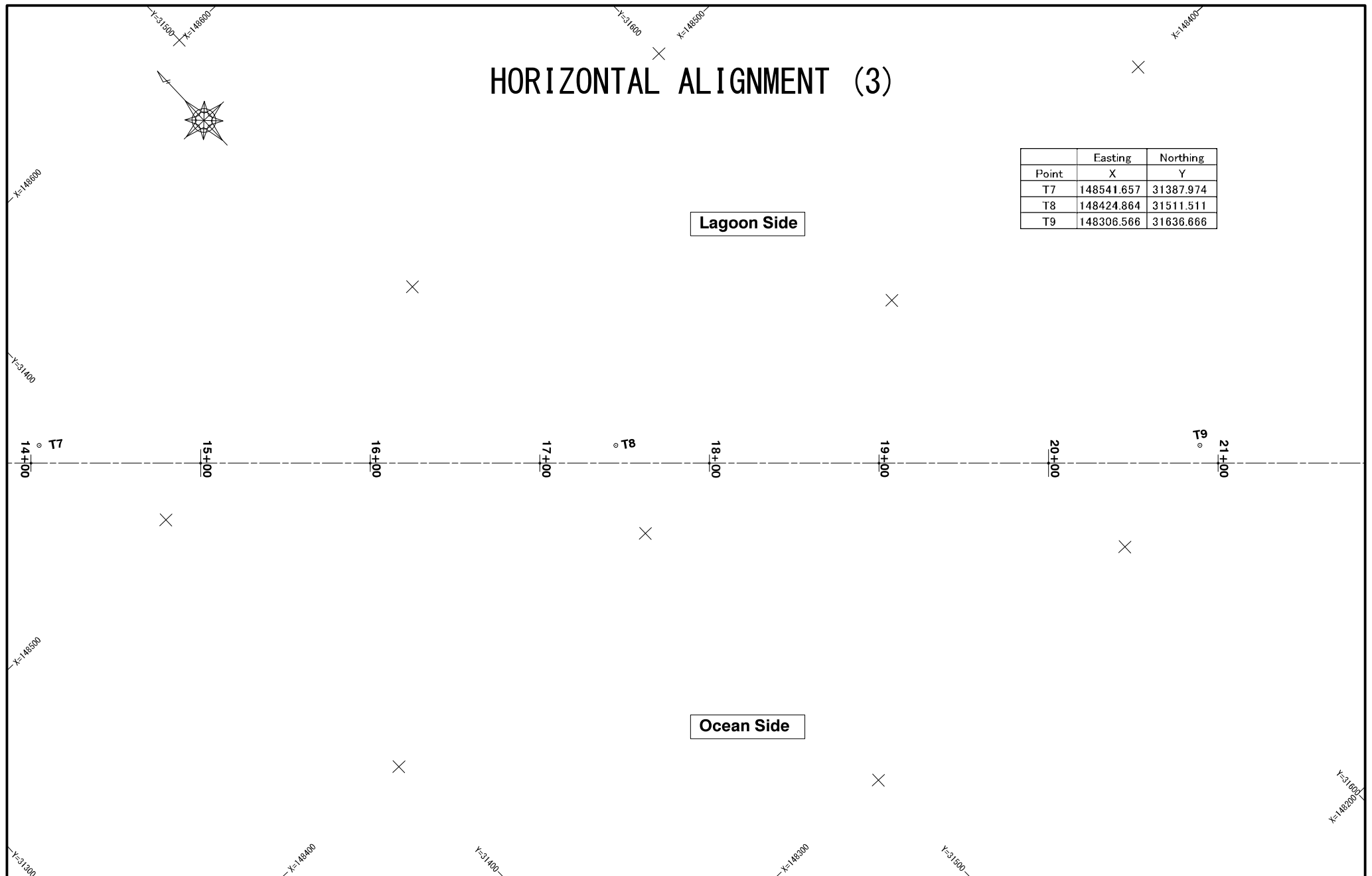
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|-----------|-----------|
| | HA-1--9 |
| DATE | SHEET No. |
| Mar. 2016 | 3 |

HORIZONTAL ALIGNMENT (3)

| Point | Easting | Northing |
|-------|------------|-----------|
| | X | Y |
| T7 | 148541.657 | 31387.974 |
| T8 | 148424.864 | 31511.511 |
| T9 | 148306.566 | 31636.666 |

Lagoon Side

Ocean Side



AP11-6



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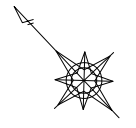
TITLE:
HORIZONTAL ALIGNMENT (3)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 4 |

Y=31600
X=148200

AP11-7

HORIZONTAL ALIGNMENT (4)

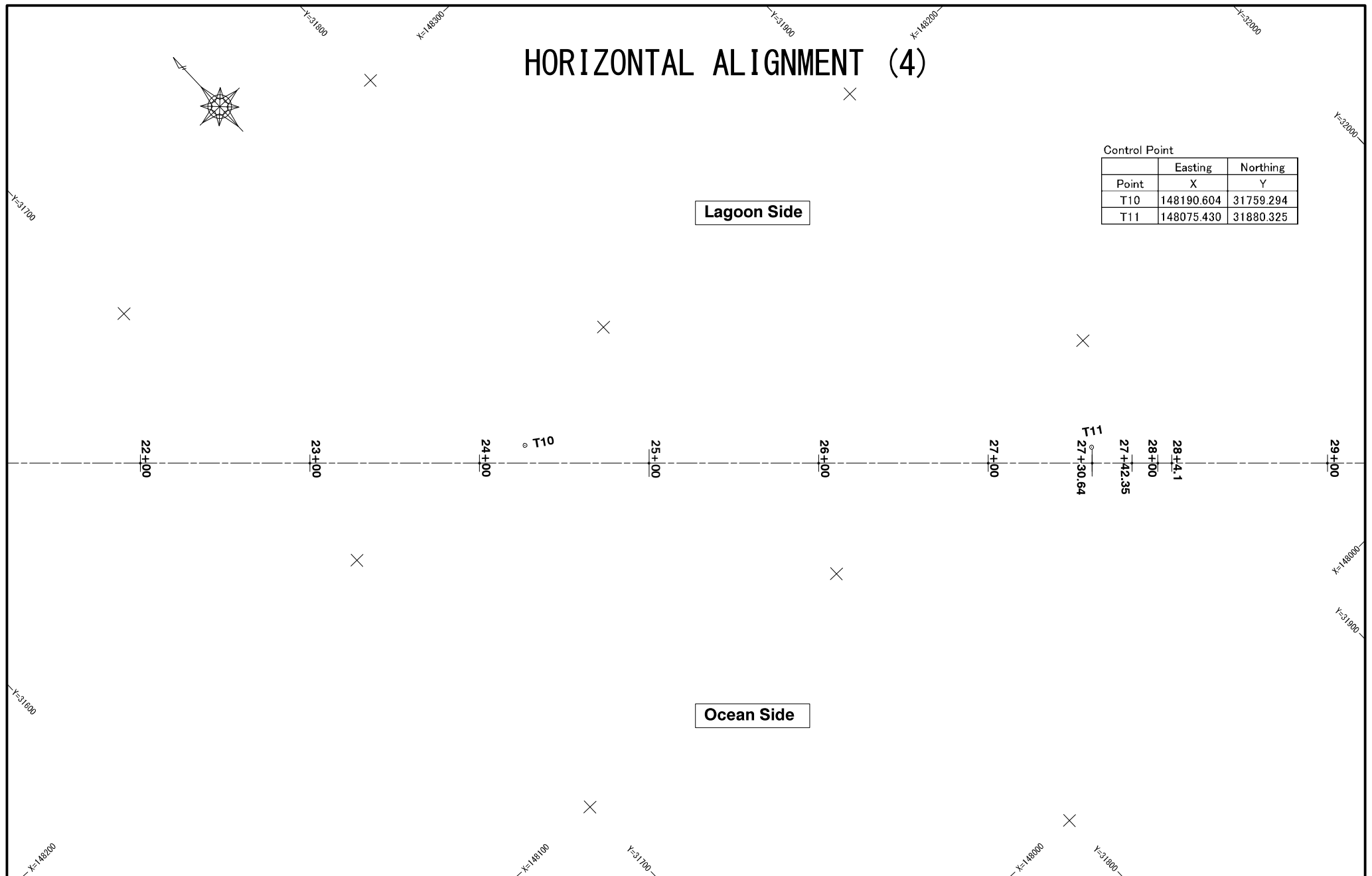


Lagoon Side

Ocean Side

Control Point

| Point | Easting | Northing |
|-------|------------|-----------|
| | X | Y |
| T10 | 148190.604 | 31759.294 |
| T11 | 148075.430 | 31880.325 |



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IN KIRIBATI REPUBLIC

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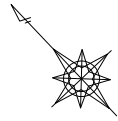
Designed
Checked
Approved

TITLE:
HORIZONTAL ALIGNMENT (4)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 5 |

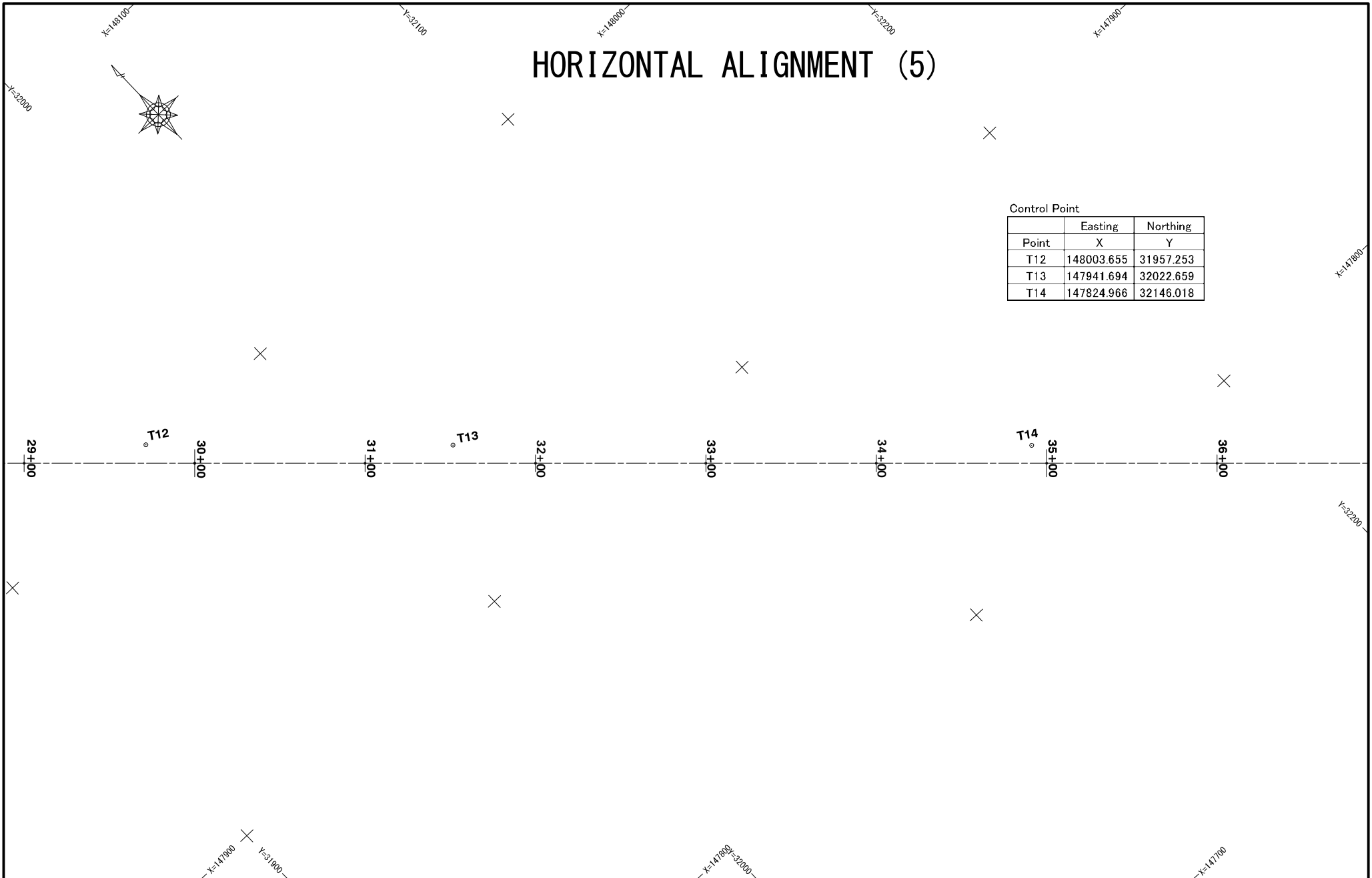
AP11-8

HORIZONTAL ALIGNMENT (5)



Control Point

| Point | Easting | | Northing | |
|-------|------------|-----------|----------|---|
| | X | Y | X | Y |
| T12 | 148003.655 | 31957.253 | | |
| T13 | 147941.694 | 32022.659 | | |
| T14 | 147824.966 | 32146.018 | | |



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TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



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TITLE:
HORIZONTAL ALIGNMENT (5)

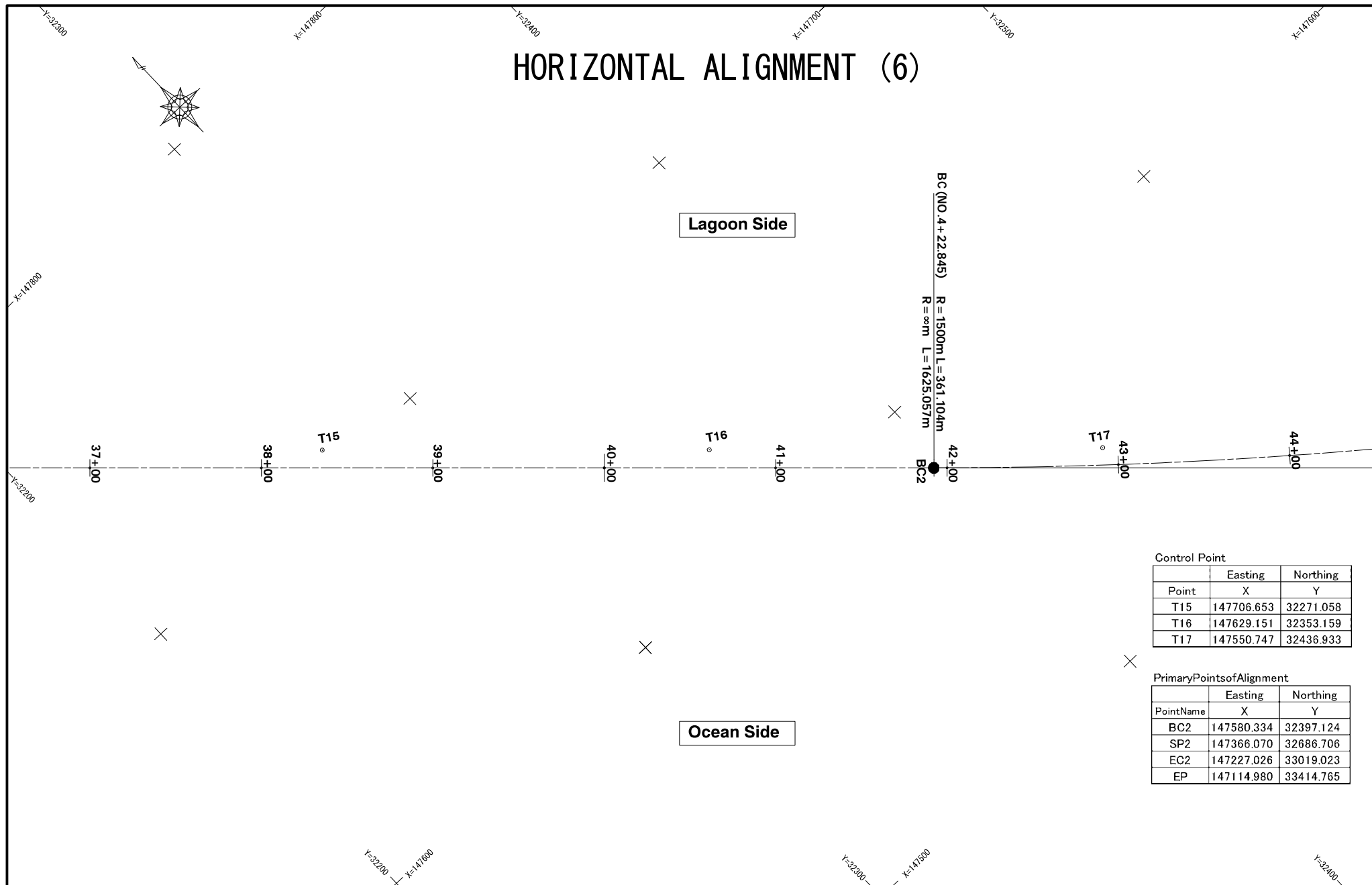
| SCALE | DRG. No. |
|-----------|-----------|
| | HA-1--9 |
| DATE | SHEET No. |
| Mar. 2018 | 6 |

HORIZONTAL ALIGNMENT (6)

Lagoon Side

Ocean Side

BC (NO. 4+22.845) R = 1500m L = 361.104m
 R = ∞m L = 1625.057m
 BC2



Control Point

| Point | Easting X | Northing Y |
|-------|------------|------------|
| T15 | 147706.653 | 32271.058 |
| T16 | 147629.151 | 32353.159 |
| T17 | 147550.747 | 32436.933 |

Primary Points of Alignment

| Point Name | Easting X | Northing Y |
|------------|------------|------------|
| BC2 | 147580.334 | 32397.124 |
| SP2 | 147366.070 | 32686.706 |
| EC2 | 147227.026 | 33019.023 |
| EP | 147114.980 | 33414.765 |

AP11-9



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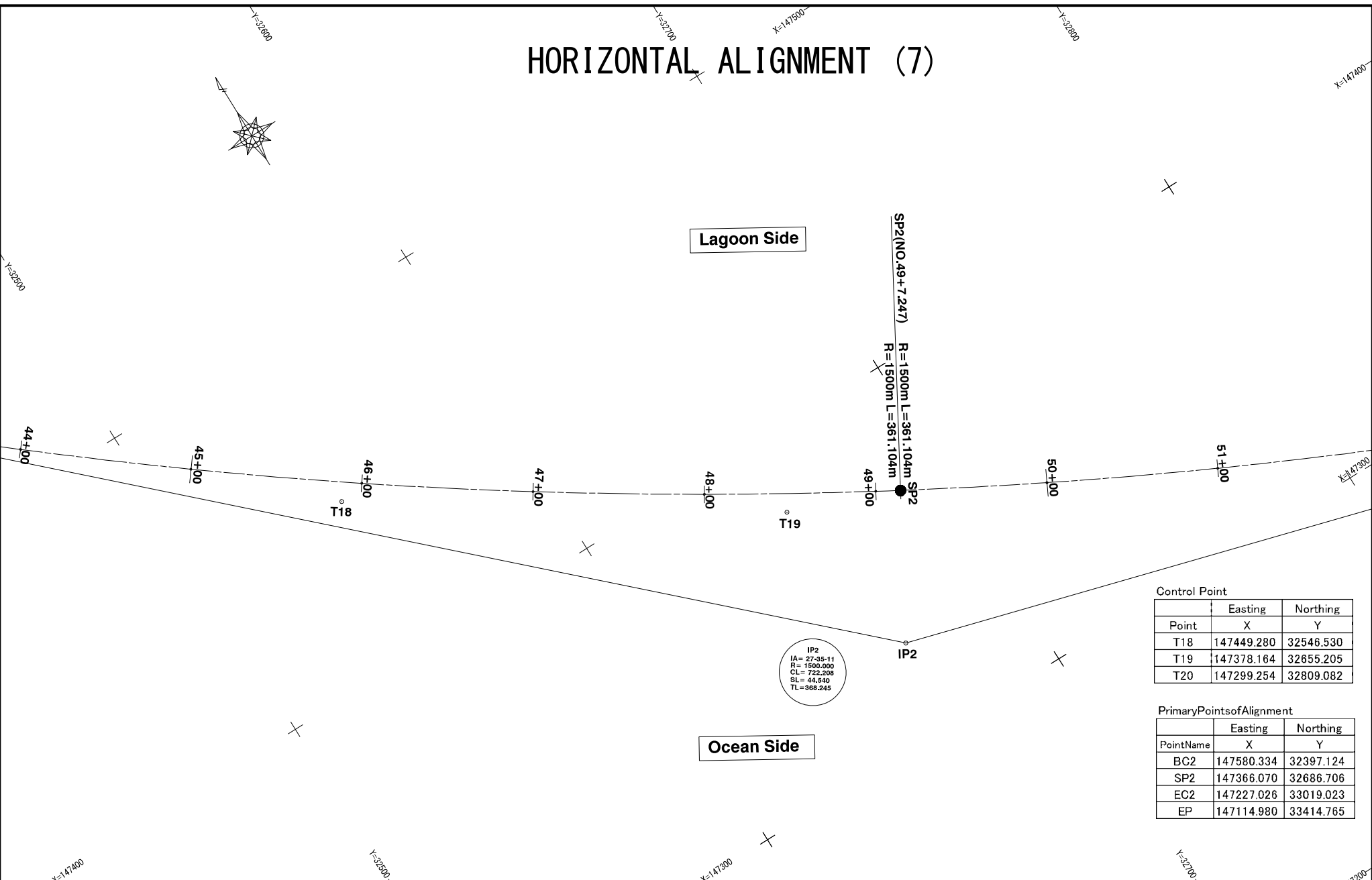
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TITLE:
 HORIZONTAL ALIGNMENT (6)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 7 |

HORIZONTAL ALIGNMENT (7)



Control Point

| Point | Easting X | Northing Y |
|-------|------------|------------|
| T18 | 147449.280 | 32546.530 |
| T19 | 147378.164 | 32655.205 |
| T20 | 147299.254 | 32809.082 |

IP2
 IA= 27.95-11
 R= 1500.000
 CL= 722.208
 SL= 44.540
 TL= 365.245

Primary Points of Alignment

| PointName | Easting X | Northing Y |
|-----------|------------|------------|
| BC2 | 147580.334 | 32397.124 |
| SP2 | 147366.070 | 32686.706 |
| EC2 | 147227.026 | 33019.023 |
| EP | 147114.980 | 33414.765 |

AP11-10



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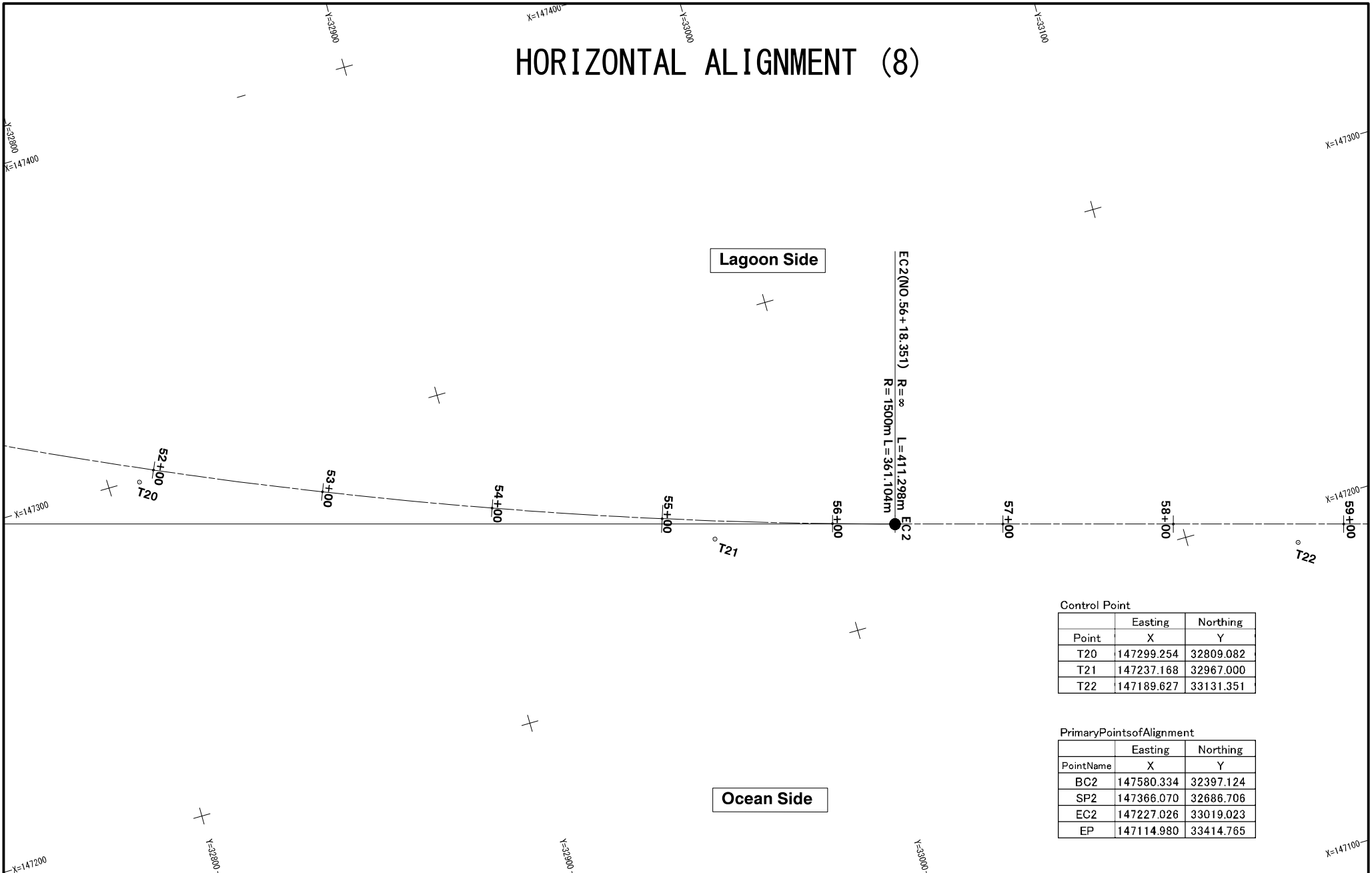
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TITLE:
 HORIZONTAL ALIGNMENT (7)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | HA-1-9 |
| Mar. 2018 | SHEET No. |
| | 8 |

HORIZONTAL ALIGNMENT (8)



Control Point

| Point | Easting X | Northing Y |
|-------|--------------|---------------|
| T20 | 147299.254 | 32809.082 |
| T21 | 147237.168 | 32967.000 |
| T22 | 147189.627 | 33131.351 |

Primary Point of Alignment

| Point Name | Easting X | Northing Y |
|------------|--------------|---------------|
| BC2 | 147580.334 | 32397.124 |
| SP2 | 147366.070 | 32686.706 |
| EC2 | 147227.026 | 33019.023 |
| EP | 147114.980 | 33414.765 |

AP11-11



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IN KIRIBATI REPUBLIC

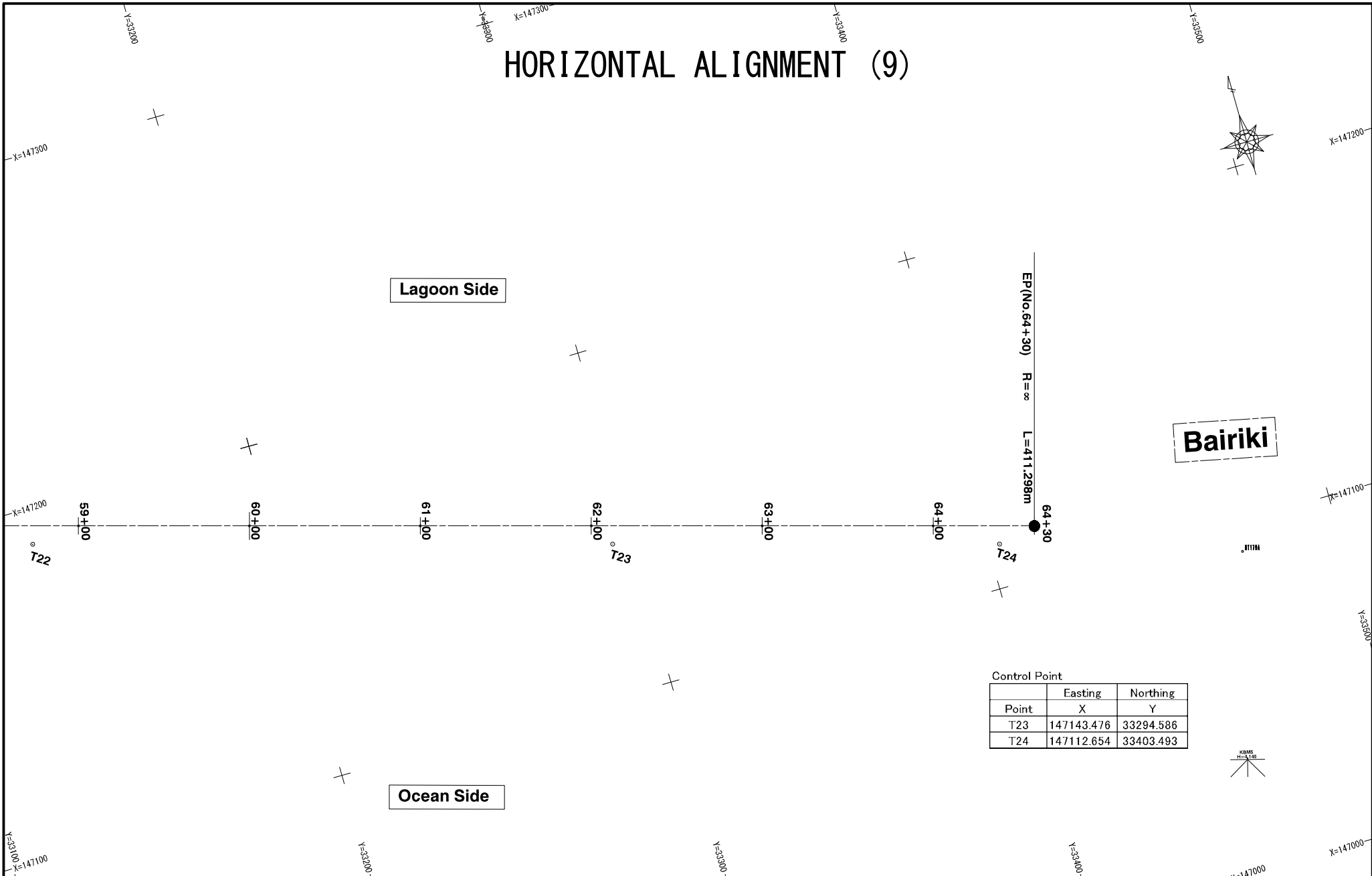
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TITLE:
HORIZONTAL ALIGNMENT (8)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 9 |

HORIZONTAL ALIGNMENT (9)



Control Point

| Point | Easting | | Northing | |
|-------|------------|-----------|----------|---|
| | X | Y | X | Y |
| T23 | 147143.476 | 33294.586 | | |
| T24 | 147112.654 | 33403.493 | | |

AP11-12



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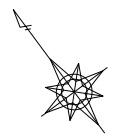
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Approved

TITLE:
HORIZONTAL ALIGNMENT (9)

| SCALE | DRG. No. |
|-----------|-----------|
| | HA-1--9 |
| DATE | SHEET No. |
| Mar. 2018 | 10 |

PLAN (1)

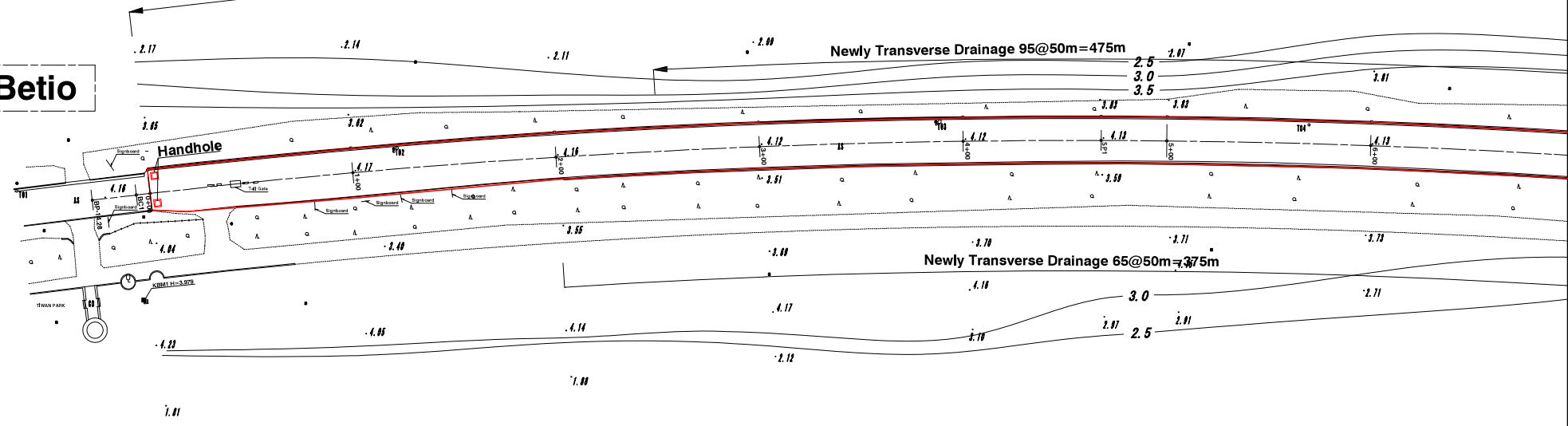


Lagoon Side

IP1
 IA = 13-35-34
 R = 2000.000
 CL = 474.482
 SL = 14.154
 TL = 238.360

Nippon Causeway L=3230m

Betio



Ocean Side

AP11-13



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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 Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



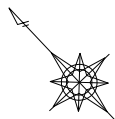
JAPAN INTERNATIONAL COOPERATION AGENCY
 CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
 Checked
 Approved

TITLE:
 PLAN (1)

| SCALE | DRG. No. |
|-----------|-----------|
| | PL1-9 |
| DATE | SHEET No. |
| Mar. 2016 | 11 |

PLAN (2)



Lagoon Side

Nippon Causeway L=3230m

Utilities Connection Section

L=20m

Present Sloop Maintained (Option-1)L=250m

Parapet (TYPE-1)L=1600m

Newly Transverse Drainage 95@50m=475m

Transverse Drainage

Transverse Drainage

Transverse Drainage

Handhole

Newly Transverse Drainage 95@50m=475m

Transverse Drainage

Transverse Drainage

Transverse Drainage

Transverse Drainage

Transverse Drainage

Transverse Drainage

Parapet (TYPE-2)L=942.35m

Present Sloop Maintained (Option-1)L=150m

Overlaid with Fabrimat 25cm(Option-2)L=787.35m

Ocean Side

AP11-14



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TO ADAPT CLIMATE CHANGE
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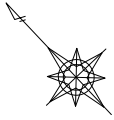
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

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TITLE:
PLAN (2)

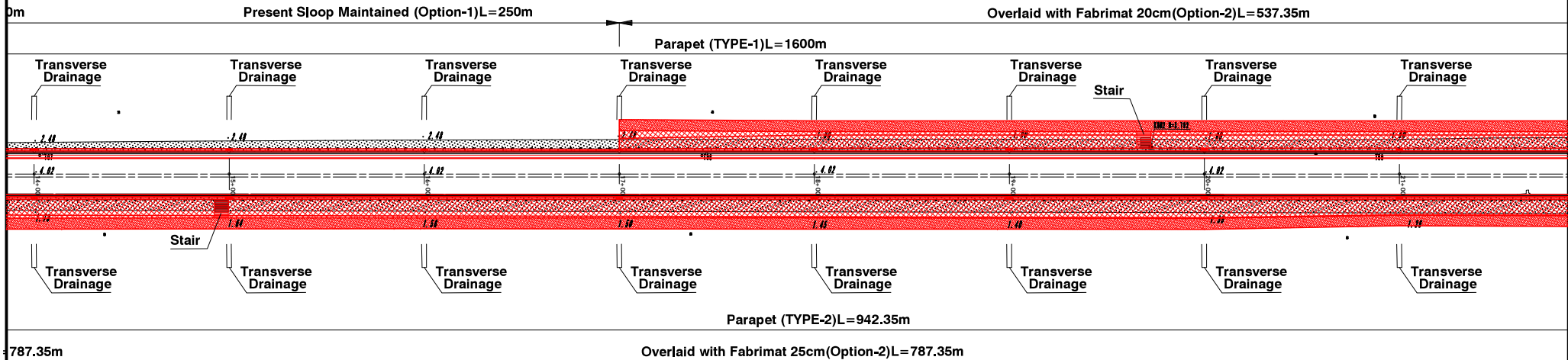
| SCALE | DRG. No. |
|-----------|-----------|
| | PL1-9 |
| DATE | SHEET No. |
| Mar. 2016 | 12 |

PLAN (3)



Lagoon Side

Nippon Causeway L=3230m



Ocean Side

AP11-15



MINISTRY OF PUBLIC WORKS & UTILITIES
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IN KIRIBATI REPUBLIC



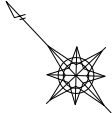
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TITLE:
PLAN (3)

| SCALE | DRG. No. |
|-----------|-----------|
| | PL1-9 |
| DATE | SHEET No. |
| Mar. 2016 | 13 |

PLAN (4)

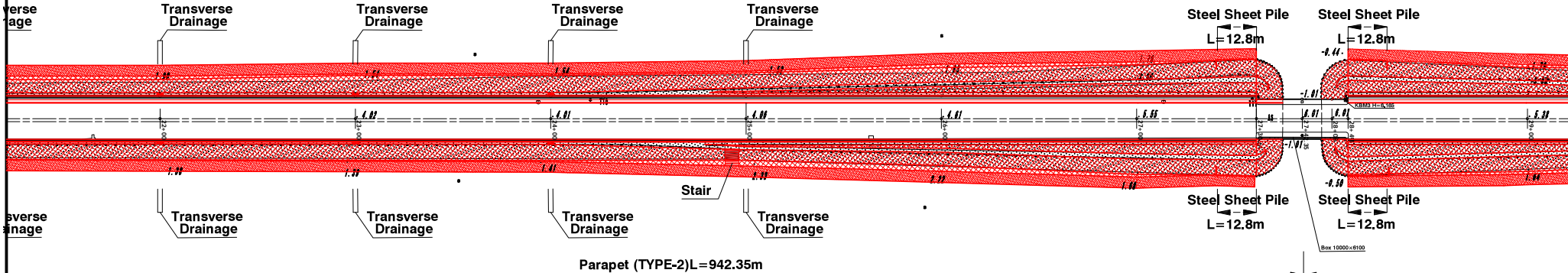


Lagoon Side

Nippon Causeway L=3230m

Overlaid with Fabrimat 20cm(Option-2)L=537.35m

Parapet (TYPE-1)L=1600m



Parapet (TYPE-2)L=942.35m

Overlaid with Fabrimat 25cm(Option-2)L=787.35m

Ocean Side

No.27 + 37.35
No.27 + 47.35
Bridge
L=10m

AP11-16



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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Project Manager:

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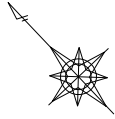
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TITLE:
PLAN (4)

| SCALE | DRG. No. |
|-----------|-----------|
| | PL1-9 |
| DATE | SHEET No. |
| Mar. 2018 | 14 |

PLAN (5)

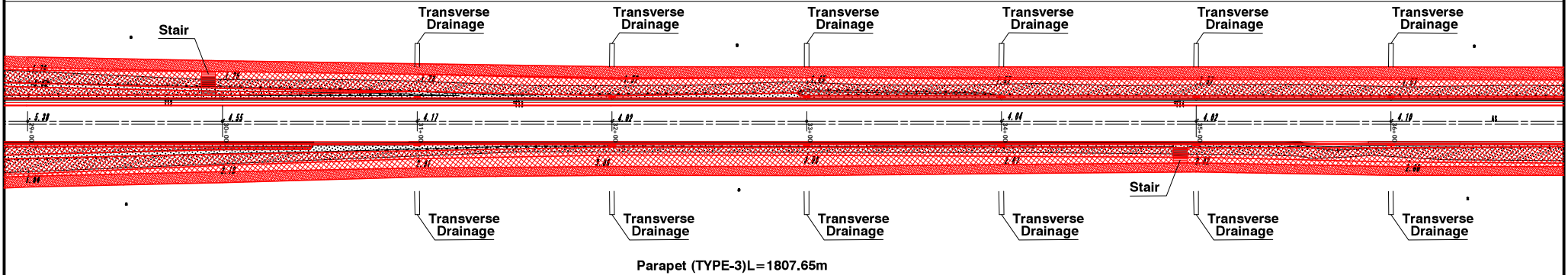


Lagoon Side

Nippon Causeway L=3230m

Overlaid with Fabrimat 15cm(Option-2)L=802.65m

Parapet (TYPE-1)L=1600m



Parapet (TYPE-3)L=1807.65m

Overlaid with Fabrimat 30cm + Steel Sheet Pile (Option-3) L=1082.65m

Ocean Side

AP11-17



MINISTRY OF PUBLIC WORKS & UTILITIES
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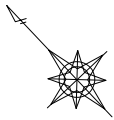
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CTI ENGINEERING INTERNATIONAL CO., LTD.

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TITLE:
PLAN (5)

| SCALE | DRG. No. |
|-----------|-----------|
| | PL1--9 |
| DATE | SHEET No. |
| Mar. 2016 | 15 |

PLAN (6)



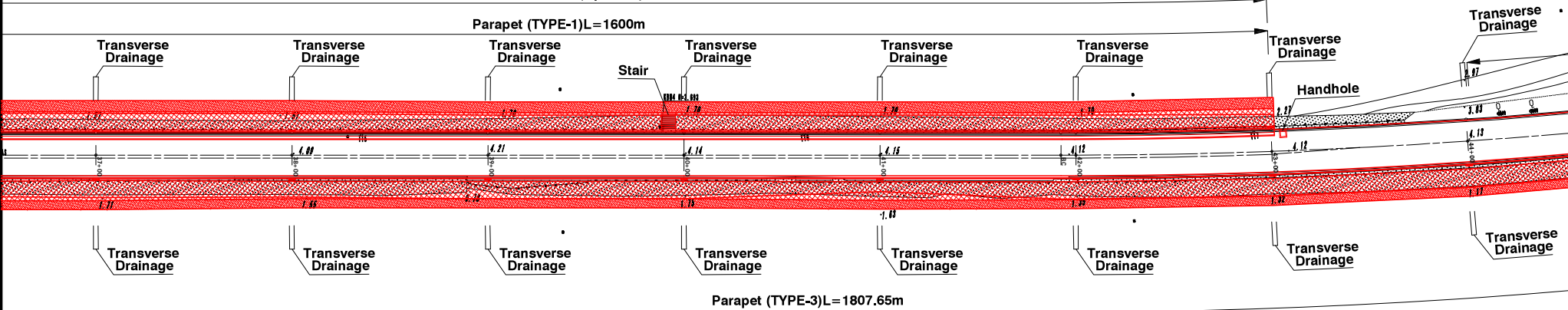
Lagoon Side

Nippon Causeway L=3230m

Utilities Connection Section
L=20m

Overlaid with Fabrimat 15cm(Option-2)L=802.65m

Parapet (TYPE-1)L=1600m



Ocean Side

AP11-18

| | | | | | | | | |
|--------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------|--|-------------------------------|-----------|-----------|
| <p>MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)</p> | <p>Approved by</p> | <p>THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC</p> | <p>JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.</p> | Designed | | <p>TITLE:</p> <p>PLAN (6)</p> | SCALE | DRG. No. |
| | <p>Project Manager:</p> | | | Checked | | | DATE | SHEET No. |
| | | | | Approved | | | Mar. 2018 | 16 |

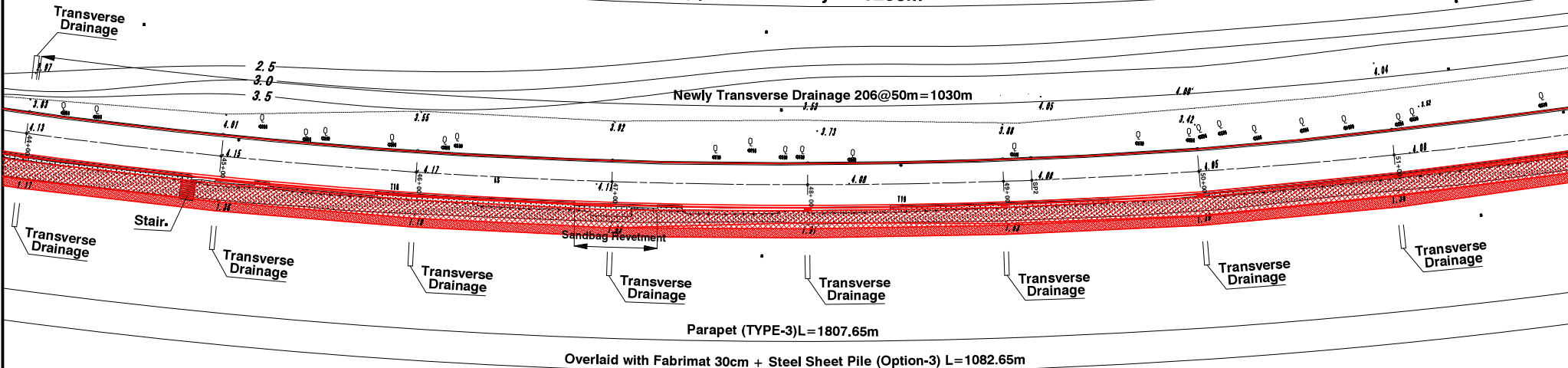
PLAN (7)



Lagoon Side

Nippon Causeway L=3230m

Newly Transverse Drainage 206@50m=1030m



Ocean Side

AP11-19



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CTI ENGINEERING INTERNATIONAL CO., LTD.

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TITLE:
PLAN (7)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 17 |

PLAN (8)

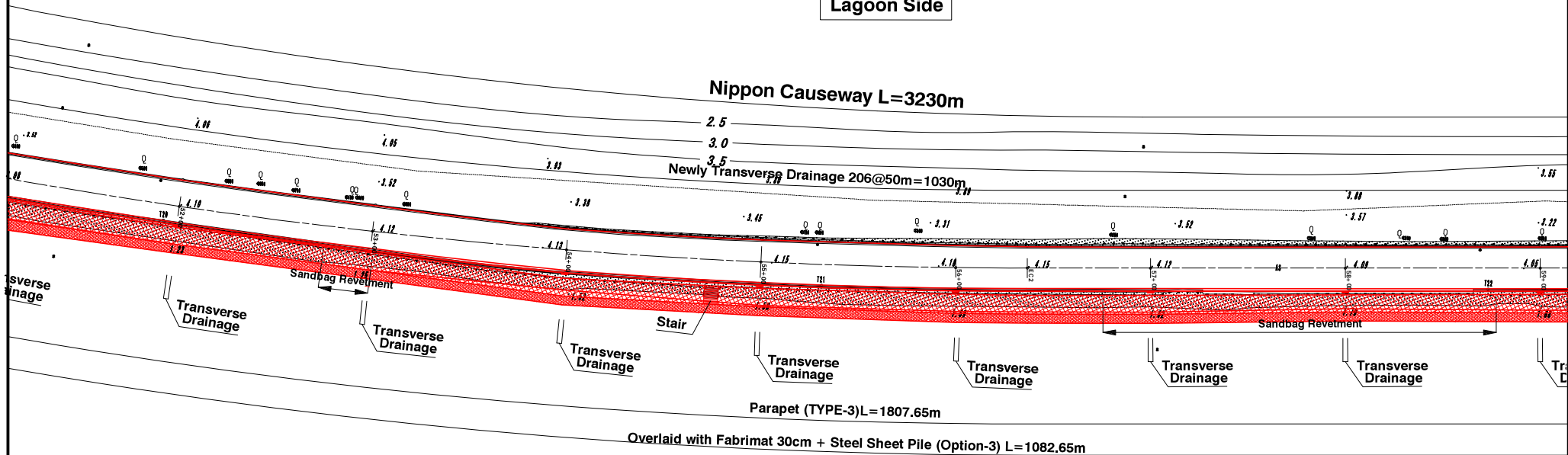


Lagoon Side

Nippon Causeway L=3230m

Newly Transverse Drainage 206@50m=1030m

AP11-20



Ocean Side



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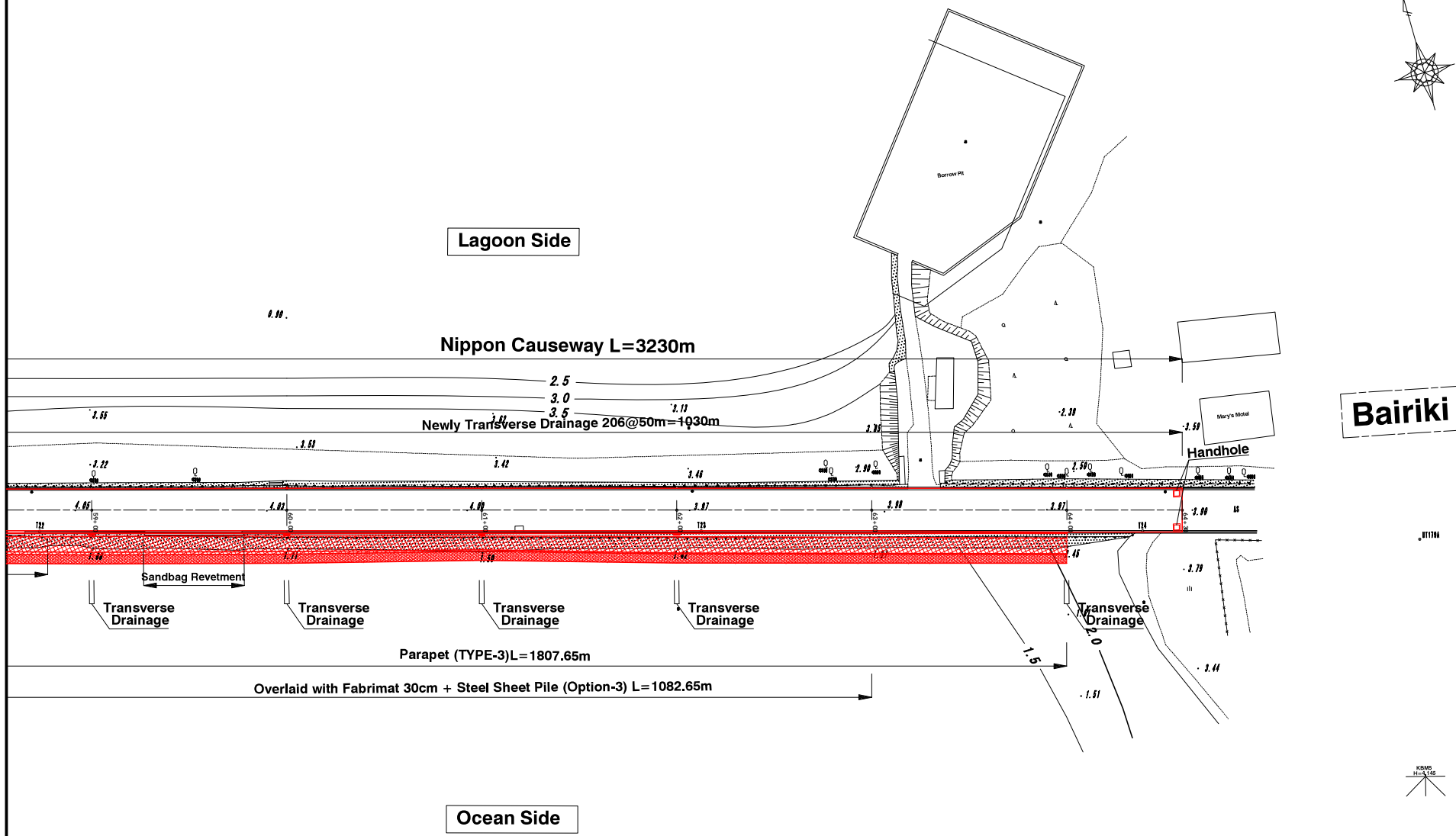
TITLE:
PLAN (8)

| SCALE | DRG. No. |
|-----------|-----------|
| | PL1-9 |
| DATE | SHEET No. |
| Mar. 2016 | 18 |

PLAN (9)



AP11-21



Bairiki

| | | | | | | | | | | |
|--|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|----------|----------|------------------------|-------|-----------|-----------|
| | Approved by Project Manager: | THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC | | JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD. | Designed | | TITLE: PLAN (9) | SCALE | DRG. No. | |
| | | | | | | Checked | | | DATE | SHEET No. |
| | | | | | | Approved | | | Mar. 2016 | 19 |

PROFILE (2)

Nippon Causeway L=3230m

- Parapet Height
- Proposed Height
- Foot Protection Cement Bag Top Height
- Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------|---------|----------|----------|--------|----------|----------|---------|----------|------------|----------|---------|----------|---------------------------------------------------------------------|----------|---------|-----------|-----------|--------|-----------|-----------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| Superelevation | i=2.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gradient | 4.41 | LEVEL | | | | | | | | | | 4.41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | | | | | | | | | | | | 1.89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parapet Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parapet Height (Ocean Side) | | | | | | | | | | | | 5.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed Height | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Height | 4.13 | | 4.13 | | 4.14 | | 4.14 | | 4.14 | | 4.14 | | 4.14 | | 4.15 | | 4.16 | | 4.08 | | 4.02 | | 4.02 | | 4.02 | | 4.02 | | 4.02 | | 4.02 | | 4.02 | | 4.02 | | | | | | | | |
| Cumulative Distance | 300.000 | 20.000 | 320.000 | 20.000 | 340.000 | 20.000 | 350.000 | 10.000 | 360.000 | 10.000 | 380.000 | 20.000 | 400.000 | 20.000 | 420.000 | 20.000 | 426.700 | 6.700 | 440.000 | 13.300 | 450.000 | 10.000 | 460.000 | 10.000 | 471.086 | 11.086 | 480.000 | 8.914 | 490.000 | 20.000 | 500.000 | 20.000 | 520.000 | 20.000 | 540.000 | 20.000 | 550.000 | 10.000 | 560.000 | 10.000 | 580.000 | 20.000 | 600.000 |
| Distance | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 6.700 | 13.300 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 11.086 | 8.914 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 10.000 | 20.000 | | | | |
| Station | No. 6 | No. 6+20 | No. 6+40 | No. 7 | No. 7+10 | No. 7+30 | No. 8 | No. 8+20 | No. 8+26.7 | No. 8+40 | No. 9 | No. 9+10 | EC1 | No. 9+30 | No. 10 | No. 10+20 | No. 10+40 | No. 11 | No. 11+10 | No. 11+30 | No. 12 | | | | | | | | | | | | | | | | | | | | | | |
| Horizontal Alignment | | | | | | | | | | | | | TP1 IA=1335-34 R1=2000,000 CL=474,482 TL=238,360 SL=14,154 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

AP11-23

PROFILE (3)

Revetment Measures(OceanSide) Option-1 L=150m

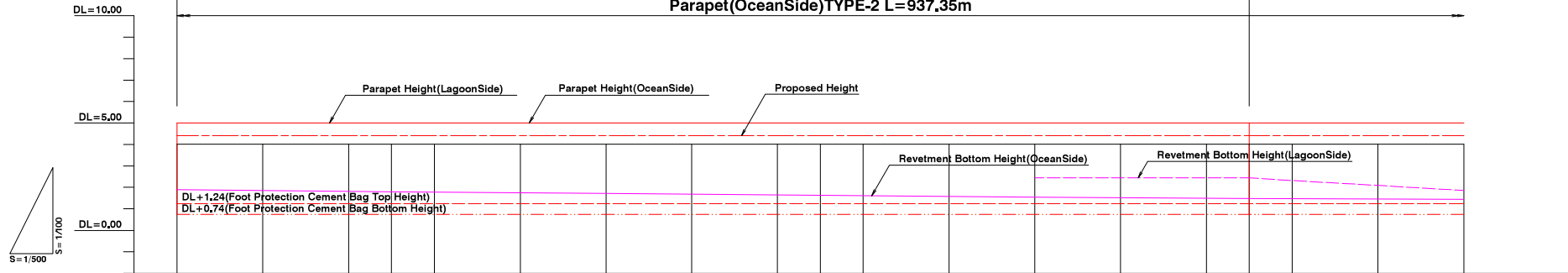
Revetment Measures(LagoonSide) Option-2(Overlay20cm) L=537,35m

Revetment Measures(LagoonSide)Option-1 L=250m

Revetment Measures(OceanSide) Option-2(Overlay25cm) L=787,35m

Parapet(LagoonSide)TYPE-1 L=787,35m

Parapet(OceanSide)TYPE-2 L=937,35m



| | | | | | | | | | | | | | | | | | |
|---------------------------------------|---------|-----------|-----------|---------|-----------|-----------|---------|-----------|-----------|---------|-----------|-----------|---------|-----------|-----------|---------|-----------|
| Superelevation | i=2.0% | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | 1.39 | | | 1.80 | | | 1.72 | | | | 1.63 | | | | 1.55 | | |
| Parapet Height (Lagoon Side) | 5.00 | | | 5.00 | | | 5.00 | | | | 5.00 | | | | 5.00 | | |
| Parapet Height (Ocean Side) | 5.00 | | | 5.00 | | | 5.00 | | | | 5.00 | | | | 5.00 | | |
| Proposed Height | 4.41 | | | 4.41 | | | 4.41 | | | | 4.41 | | | | 4.41 | | |
| Ground Height | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 |
| Cumulative Distance | 600.000 | 620.000 | 640.000 | 660.000 | 680.000 | 700.000 | 720.000 | 740.000 | 760.000 | 780.000 | 800.000 | 820.000 | 840.000 | 860.000 | 880.000 | 900.000 | 937.350 |
| Distance | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 |
| Station | No. 12 | No. 12+20 | No. 12+40 | No. 13 | No. 13+10 | No. 13+30 | No. 14 | No. 14+20 | No. 14+40 | No. 15 | No. 15+10 | No. 15+30 | No. 16 | No. 16+20 | No. 16+40 | No. 17 | No. 17+30 |
| Horizontal Alignment | | | | | | | | | | | | | | | | | |

AP11-24

PROFILE (4)

Nippon Causeway L=3230m

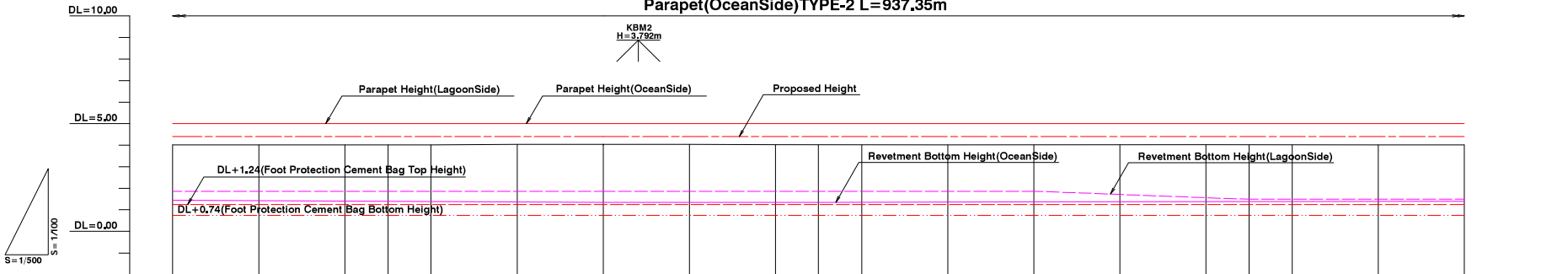
Revetment Measures(LagoonSide)Option-2(Overlay20cm) L=537.35m

Revetment Measures(OceanSide) Option-2(Overlay25cm) L=787.35m

Parapet(LagoonSide)TYPE-1 L=787.35m

Parapet(OceanSide)TYPE-2 L=937.35m

- Parapet Height
- Proposed Height
- Foot Protection Cement Bag Top Height
- Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------|---------|-----------|-----------|---------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|
| Superelevation | i=2.0% | | | | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | 1.86 | | 1.86 | | 1.86 | | 1.86 | | 1.86 | | 1.86 | | 1.86 | | 1.49 | | 1.49 | | 1.49 | |
| Revetment Bottom Height (Ocean Side) | 1.44 | | 1.39 | | 1.34 | | 1.35 | | 1.37 | | 1.38 | | 1.38 | | 1.38 | | 1.40 | | 1.40 | |
| Parapet Height (Lagoon Side) | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | |
| Parapet Height (Ocean Side) | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | |
| Proposed Height | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | |
| Ground Height | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.03 | 4.03 | 4.03 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.01 | 4.01 |
| Cumulative Distance | 900.000 | 920.000 | 940.000 | 950.000 | 960.000 | 980.000 | 1000.000 | 1020.000 | 1040.000 | 1050.000 | 1060.000 | 1080.000 | 1100.000 | 1120.000 | 1140.000 | 1150.000 | 1160.000 | 1180.000 | 1200.000 | 1200.000 |
| Distance | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 |
| Station | No. 18 | No. 18+20 | No. 18+40 | No. 19 | No. 19+10 | No. 19+30 | No. 20 | No. 20+20 | No. 20+40 | No. 21 | No. 21+10 | No. 21+30 | No. 22 | No. 22+20 | No. 22+40 | No. 23 | No. 23+10 | No. 23+30 | No. 24 | No. 24 |
| Horizontal Alignment | | | | | | | | | | | | | | | | | | | | |

AP11-25



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PROFILE (4)

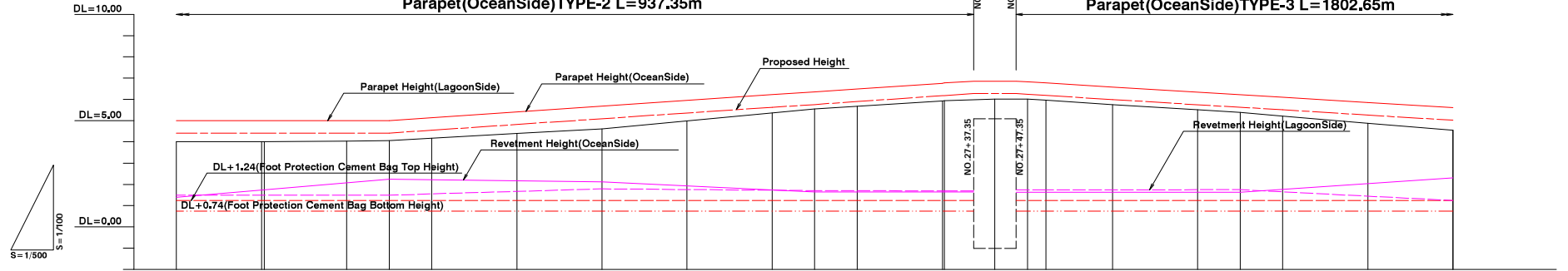
SCALE
DRG. No.
DATE
SHEET No.
Mar. 2018
23

PROFILE (5)

KBM3
H=6.165m

Nippon Causeway L=3230m

- Parapet Height
- - - Proposed Height
- - - Foot Protection Cement Bag Top Height
- - - Foot Protection Cement Bag Bottom Height
- - - Revetment Bottom Height (Ocean Side)
- - - Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------|----------|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------------------------------|----------|----------------------------------|----------|----------|----------|----------|----------|----------|----------|
| Superelevation | i=2,0% | | | | | | | | | | | | | | | | | | | | |
| Gradient | 4.41 | | LEVEL | | | | | | | | | | | | | | | 6.27 | | 6.27 | |
| Revetment Bottom Height (Lagoon Side) | 1.49 | | 1.49 | | 1.79 | | 1.71 | | 1.69 | 1.69 | | 1.74 | 1.74 | | 1.75 | | 1.24 | | | | |
| Revetment Bottom Height (Ocean Side) | 1.40 | | 2.24 | | 2.12 | | 1.64 | | 1.64 | 1.64 | | 1.63 | 1.63 | | 1.63 | | 2.31 | | | | |
| Parapet Height (Lagoon Side) | 5.00 | | 5.00 | 5.14 | 5.41 | 5.68 | 5.95 | 6.22 | 6.76 | 6.77 | 6.77 | 6.86 | 6.83 | 6.78 | 6.78 | 6.58 | 6.34 | 6.22 | 6.11 | 5.85 | 5.61 |
| Parapet Height (Ocean Side) | 5.00 | | 5.00 | 5.14 | 5.41 | 5.68 | 5.95 | 6.22 | 6.76 | 6.77 | 6.77 | 6.86 | 6.83 | 6.78 | 6.78 | 6.58 | 6.34 | 6.22 | 6.10 | 5.85 | 5.61 |
| Proposed Height | 4.41 | | 4.41 | 4.55 | 4.82 | 5.09 | 5.36 | 5.63 | 6.17 | 6.18 | 6.18 | 6.27 | 6.24 | 6.19 | 5.99 | 5.75 | 5.63 | 5.51 | 5.26 | 5.02 | |
| Ground Height | 4.01 | 4.01 | 4.04 | 4.06 | 4.17 | 4.39 | 4.61 | 4.99 | 5.93 | 5.94 | 5.94 | 6.01 | 6.01 | 5.96 | 5.96 | 5.76 | 5.51 | 5.38 | 5.21 | 4.88 | 4.55 |
| Cumulative Distance | 1200,000 | 1220,000 | 1240,000 | 1250,000 | 1260,000 | 1280,000 | 1300,000 | 1320,000 | 1340,000 | 1360,000 | 1380,000 | 1392,350 | 1400,000 | 1404,100 | 1404,300 | 1420,000 | 1440,000 | 1450,000 | 1460,000 | 1480,000 | 1500,000 |
| Distance | 20,000 | 20,000 | 19,400 | 10,000 | 10,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 10,000 | 11,710 | 7,650 | 4,100 | 0,200 | 15,700 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 |
| Station | No.24 | No.24+20 No.24.60 | No.24+40 | No.25 | No.25+10 | No.25+30 | No.26 | No.26+20 | No.26+40 | No.27 | No.27+10 | No.27+30 No.27.50 No.27.64 | No.28 | No.28+10 No.28.10 No.28.30 | No.28+20 | No.28+40 | No.29 | No.29+10 | No.29+30 | No.30 | |
| Horizontal Alignment | | | | | | | | | | | | | | | | | | | | | |

AP11-26



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PROFILE (5)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 24 |

PROFILE (6)

Nippon Causeway L=3230m

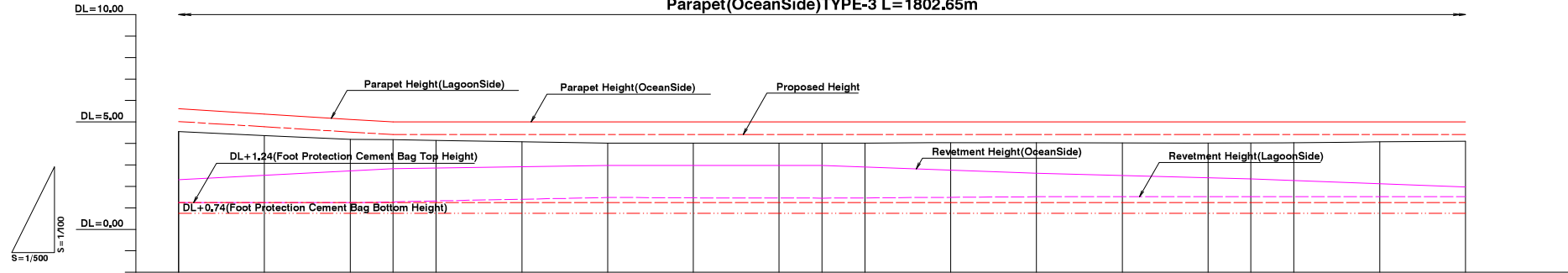
Revetment Measures(LagoonSide)Opton-2(Overlay20cm) L=802.65m

Revetment Measures(OceanSide) Option-3(Overlay30cm) L=1700m

Parapet(LagoonSide)TYPE-1 L=802.65m

Parapet(OceanSide)TYPE-3 L=1802.65m

- Parapet Height
- - - Proposed Height
- - - - - Foot Protection Cement Bag Top Height
- - - - - Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- - - Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|----------------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|--|
| Superelevation | i=2,0% | | | | | | | | | | | | | | | | | | | |
| Gradient | L=152,65m i=1,22% | | | | | | | | | | LEVEL | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | 1.24 | | | 1.24 | | | 1.48 | | | 1.45 | | | 1.52 | | | 1.52 | | | 1.52 | |
| Revetment Bottom Height (Ocean Side) | 2.31 | | | 2.83 | | | 2.97 | | | 2.97 | | | 2.61 | | | 2.34 | | | 1.97 | |
| Parapet Height (Lagoon Side) | 5.68 | 5.37 | 5.12 | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | |
| Parapet Height (Ocean Side) | 5.61 | 5.37 | 5.12 | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | |
| Proposed Height | 5.02 | 4.78 | 4.53 | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | |
| Ground Height | 4.55 | 4.37 | 4.19 | 4.17 | 4.14 | 4.08 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.02 | 4.03 | 4.04 | 4.03 | 4.02 | 4.02 | 4.04 | 4.07 | |
| Cumulative Distance | 1500,000 | 1520,000 | 1540,000 | 1550,000 | 1560,000 | 1580,000 | 1600,000 | 1620,000 | 1640,000 | 1650,000 | 1660,000 | 1680,000 | 1700,000 | 1720,000 | 1740,000 | 1750,000 | 1760,000 | 1780,000 | 1800,000 | |
| Distance | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 | |
| Station | No. 30 | No. 30+20 | No. 30+40 | No. 31 | No. 31+10 | No. 31+30 | No. 32 | No. 32+20 | No. 32+40 | No. 33 | No. 33+10 | No. 33+30 | No. 34 | No. 34+20 | No. 34+40 | No. 35 | No. 35+10 | No. 35+30 | No. 36 | |
| Horizontal Alignment | | | | | | | | | | | | | | | | | | | | |

AP11-27



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PROFILE (6)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 25 |

PROFILE (7)

Nippon Causeway L=3230m

Revetment Measures(LagoonSide)Opton-2(Overlay20cm) L=802.65m

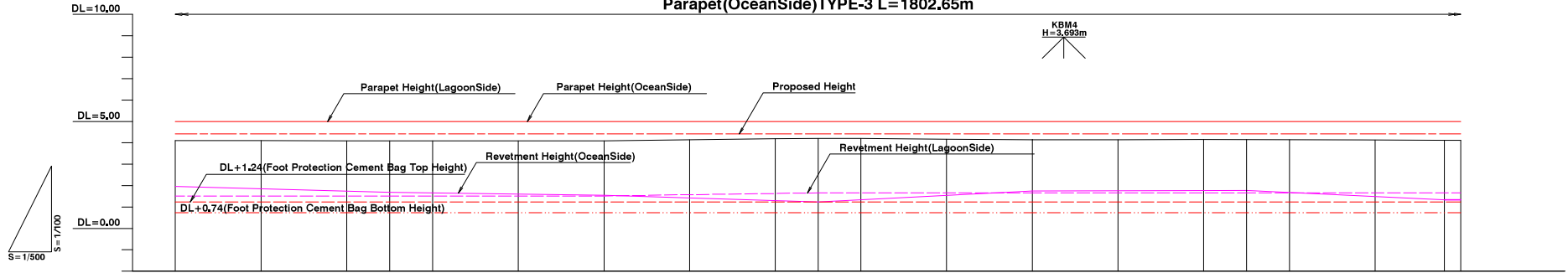
Revetment Measures(OceanSide) Option-3(Overlay30cm) L=1700m

Parapet(LagoonSide)TYPE-1 L=802.65m

Parapet(OceanSide)TYPE-3 L=1802.65m

KBM4
H=3.693m

- Parapet Height
- - - Proposed Height
- - - Foot Protection Cement Bag Top Height
- - - Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- - - Revetment Bottom Height (Lagoon Side)

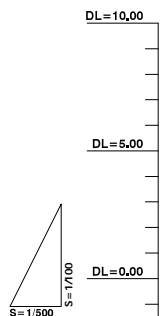
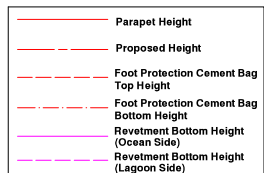


| | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|----------|
| Superelevation | i=2.0% | | | | | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | 1.52 | | 1.52 | | 1.52 | | 1.66 | | 1.66 | | 1.66 | | 1.66 | | 1.66 | | 1.66 | | 1.66 | | 1.66 |
| Revetment Bottom Height (Ocean Side) | 1.97 | | 1.69 | | 1.55 | | 1.24 | | 1.75 | | 1.78 | | 1.34 | | 1.34 | | 1.34 | | 1.34 | | 1.34 |
| Parapet Height (Lagoon Side) | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 |
| Parapet Height (Ocean Side) | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | 5.00 |
| Proposed Height | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 | | 4.41 |
| Ground Height | 4.10 | 4.10 | 4.09 | 4.09 | 4.09 | 4.09 | 4.14 | 4.19 | 4.21 | 4.20 | 4.17 | 4.14 | 4.14 | 4.15 | 4.15 | 4.14 | 4.13 | 4.12 | 4.12 | 4.12 | 4.12 |
| Cumulative Distance | 1800.000 | 1820.000 | 1840.000 | 1850.000 | 1860.000 | 1880.000 | 1900.000 | 1920.000 | 1940.000 | 1950.000 | 1960.000 | 1980.000 | 2000.000 | 2020.000 | 2040.000 | 2050.000 | 2060.000 | 2096.143 | 2100.000 | 2100.000 | 2100.000 |
| Distance | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 10.000 | 16.143 | 3.857 | 3.857 | 3.857 |
| Station | No. 36 | No. 36+20 | No. 36+40 | No. 37 | No. 37+10 | No. 37+30 | No. 38 | No. 38+20 | No. 38+40 | No. 39 | No. 39+10 | No. 39+30 | No. 40 | No. 40+20 | No. 40+40 | No. 41 | No. 41+10 | No. 41+30 | 8+2 | 8+2 | 8+2 |
| Horizontal Alignment | | | | | | | | | | | | | | | | | | | | | |

AP11-28

PROFILE (8)

Nippon Causeway L=3230m

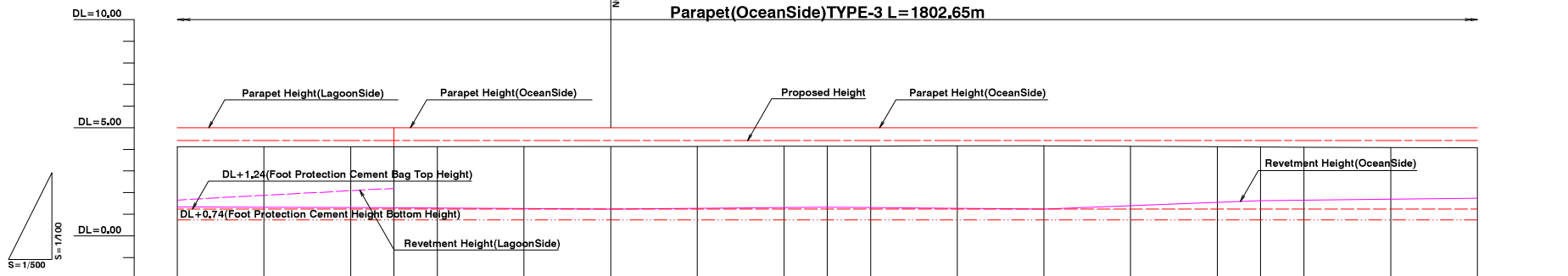


Revetment Measures(LagoonSide)Opton-2(Overlay20cm)
L=802.65m

Revetment Measures(OceanSide) Option-3(Overlay30cm) L=1700m

Parapet(LagoonSide)TYPE-1 L=802.65m

Parapet(OceanSide)TYPE-3 L=1802.65m



| | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---------------------------------------------------------------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|
| Superelevation | i=2.0% | | | | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | 1.66 | | | 2.20 | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | 1.34 | | | 1.30 | | | 1.24 | | | 1.33 | | | 1.24 | | | | 1.63 | | | 1.75 |
| Parapet Height (Lagoon Side) | 5.00 | | | 5.00 | | | | | | | | | | | | | | | | |
| Parapet Height (Ocean Side) | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | | 5.00 | | | 5.00 |
| Proposed Height | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | | 4.41 | | | 4.41 |
| Ground Height | 4.12 | 4.12 | 4.12 | 4.12 | 4.12 | 4.13 | 4.13 | 4.14 | 4.15 | 4.15 | 4.15 | 4.16 | 4.17 | 4.15 | 4.12 | 4.11 | 4.10 | 4.09 | 4.08 | 4.08 |
| Cumulative Distance | 2100.000 | 2120.000 | 2140.000 | 2150.000 | 2160.000 | 2180.000 | 2200.000 | 2220.000 | 2240.000 | 2250.000 | 2260.000 | 2280.000 | 2300.000 | 2320.000 | 2340.000 | 2350.000 | 2360.000 | 2380.000 | 2400.000 | 2400.000 |
| Distance | 3.857 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 |
| Station | No. 42 | No. 42+20 | No. 42+40 | No. 43 | No. 43+10 | No. 43+30 | No. 44 | No. 44+20 | No. 44+40 | No. 45 | No. 45+10 | No. 45+30 | No. 46 | No. 46+20 | No. 46+40 | No. 47 | No. 47+10 | No. 47+30 | No. 48 | No. 48 |
| Horizontal Alignment | IP2 IA=2735-11 RI=1500,000 CL=722,208 TL=368,245 SL=44,540 | | | | | | | | | | | | | | | | | | | |

AP11-29



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PROFILE (8)

SCALE
DRG. No.
PF-1-11
DATE
SHEET No.
Mar. 2018
27

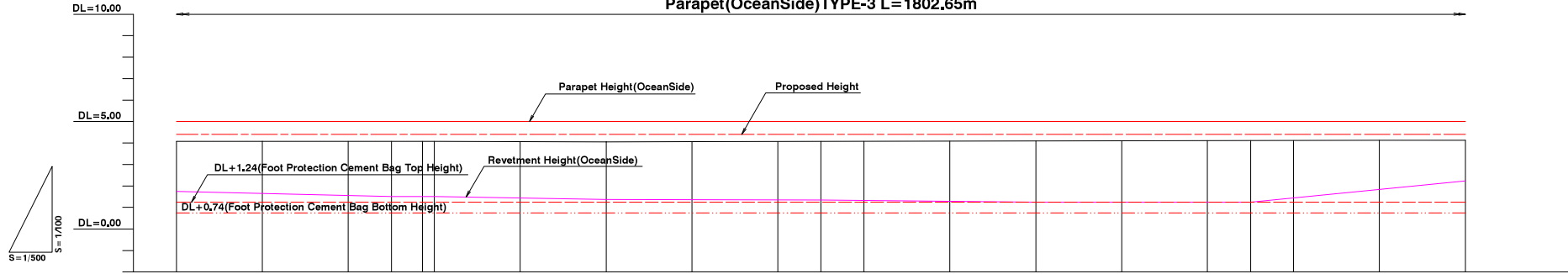
PROFILE (9)

Nippon Causeway L=3230m

Revetment Measures(OceanSide) Option-3(Overlay30cm) L= 1700m

Parapet(OceanSide)TYPE-3 L= 1802.65m

- Parapet Height
- - - Proposed Height
- - - - - Foot Protection Cement Bag Top Height
- - - - - Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- - - Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| Superelevation | 2.0% i=2.0% | | | | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | 1.75 | | | 1.51 | 1.51 | | 1.38 | | | 1.34 | | | 1.24 | | | 1.24 | | | 2.24 | |
| Parapet Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | |
| Parapet Height (Ocean Side) | 5.00 | | | 5.00 | 5.00 | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | | | 5.00 | |
| Proposed Height | 4.41 | | | 4.41 | 4.41 | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | | | 4.41 | |
| Ground Height | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 | 4.08 | 4.06 | 4.05 | 4.06 | 4.07 | 4.08 | 4.08 | 4.09 | 4.10 | 4.11 | 4.12 | 4.12 | 4.12 | 4.13 | 4.13 |
| Cumulative Distance | -2400.000 | -2420.000 | -2440.000 | -2460.000 | -2457.247 | -2460.000 | -2480.000 | -2500.000 | -2520.000 | -2540.000 | -2560.000 | -2580.000 | -2600.000 | -2620.000 | -2640.000 | -2660.000 | -2680.000 | -2700.000 | | |
| Distance | 20.000 | 20.000 | 20.000 | 10.000 | 7.247 | 2.753 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 |
| Station | No. 48 | No. 48+20 | No. 48+40 | No. 49 | SP2 | No. 49+10 | No. 49+30 | No. 50 | No. 50+20 | No. 50+40 | No. 51 | No. 51+10 | No. 51+30 | No. 52 | No. 52+20 | No. 52+40 | No. 53 | No. 53+10 | No. 53+30 | No. 54 |
| Horizontal Alignment | <small> 1/2 IA=27-35-11 RI=1500, 000 CL=722, 208 TL=366, 245 SL=44, 540 </small> | | | | | | | | | | | | | | | | | | | |

AP11-30

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|------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------|----------------------------------|-----------|-----------|
| MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU) | Approved by Project Manager: | THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC | JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD. | Designed | TITLE: PROFILE (9) | SCALE | DRG. No. |
| | | | | Checked | | DATE | SHEET No. |
| | | | | Approved | | Mar. 2018 | 28 |

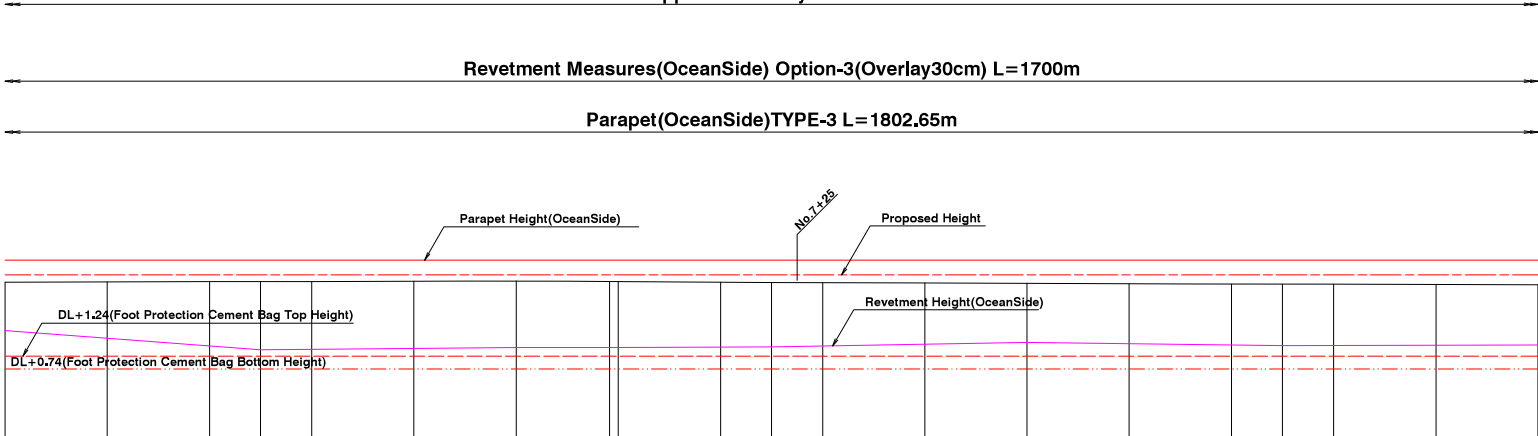
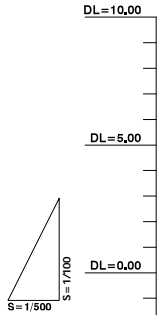
PROFILE (10)

Nippon Causeway L=3230m

Revetment Measures(OceanSide) Option-3(Overlay30cm) L=1700m

Parapet(OceanSide)TYPE-3 L= 1802,65m

- Parapet Height
- - - Proposed Height
- - - Foot Protection Cement Bag Top Height
- - - Foot Protection Cement Bag Bottom Height
- Revetment Bottom Height (Ocean Side)
- - - Revetment Bottom Height (Lagoon Side)



| | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------|----------------------------------------------------------------------|-----------|-----------|----------|-----------|-----------|----------|------------------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|
| Superelevation | i = 2.0% | | | | | | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | 2.24 | | 1.48 | | 1.57 | 1.58 | | 1.59 | | 1.77 | | 1.65 | | | | | | | 1.68 | |
| Parapet Height (Lagoon Side) | | | | | | | | | | | | | | | | | | | | |
| Parapet Height (Ocean Side) | 5.00 | | 5.00 | | 5.00 | 5.00 | | 5.00 | | 5.00 | | 5.00 | | | | | | | 5.00 | |
| Proposed Height | 4.41 | | 4.41 | | 4.41 | 4.41 | | 4.41 | | 4.41 | | 4.41 | | | | | | | 4.41 | |
| Ground Height | 4.13 | 4.14 | 4.15 | 4.15 | 4.16 | 4.17 | 4.18 | 4.15 | 4.15 | 4.13 | 4.12 | 4.11 | 4.10 | 4.09 | 4.07 | 4.06 | 4.05 | 4.05 | 4.04 | 4.03 |
| Cumulative Distance | 2700.000 | 2720.000 | 2740.000 | 2750.000 | 2760.000 | 2780.000 | 2800.000 | 2818.351 | 2820.000 | 2840.000 | 2850.000 | 2860.000 | 2880.000 | 2900.000 | 2920.000 | 2940.000 | 2950.000 | 2960.000 | 2980.000 | 3000.000 |
| Distance | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 18.351 | 1.649 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 | 20.000 | 20.000 | 10.000 | 10.000 | 20.000 | 20.000 |
| Station | No. 54 | No. 54+20 | No. 54+40 | No. 55 | No. 55+10 | No. 55+30 | No. 56 | 562 No. 56+20 | No. 56+40 | No. 57 | No. 57+10 | No. 57+30 | No. 58 | No. 58+20 | No. 58+40 | No. 59 | No. 59+10 | No. 59+30 | No. 60 | |
| Horizontal Alignment | TP2 IA=27.36-11 RI=1500.000 CL=722.208 TL=386.245 SL=44.540 | | | | | | | | | | | | | | | | | | | |

AP11-31



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



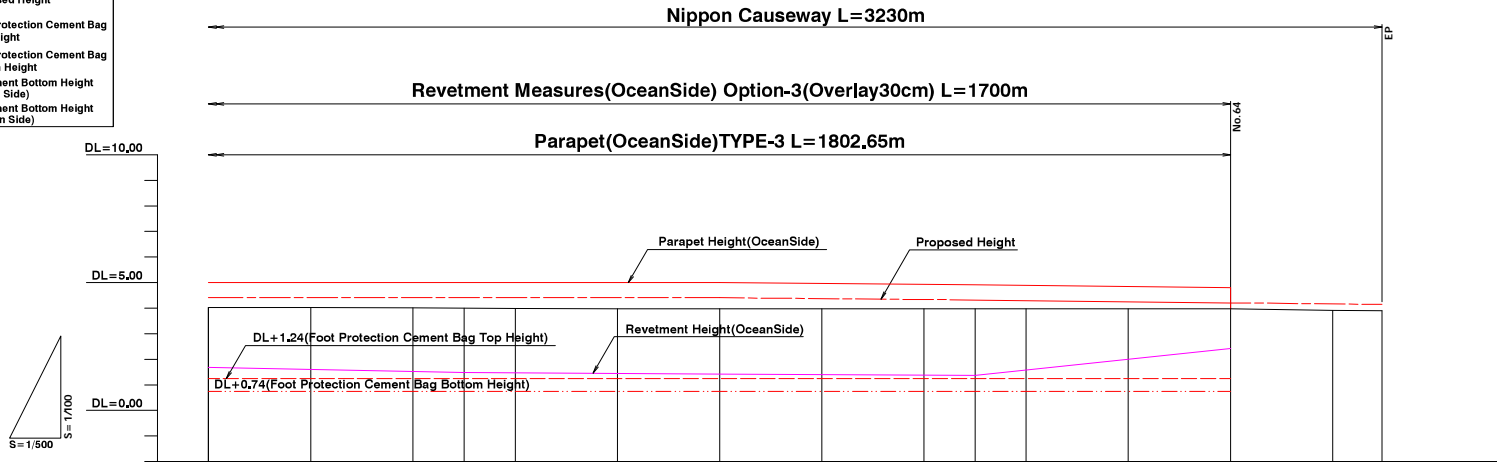
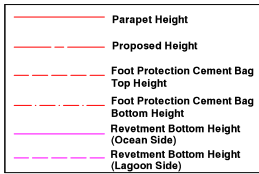
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PROFILE (10)

SCALE
DRG. No.
DATE
SHEET No.
Mar. 2018
29

PROFILE (11)



| | | | | | | | | | | | | | | | |
|----------------------------------------------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|-----------|-----------|----------|-----------|-----------|----------|----------|
| Superelevation | i=3,0% | | | | | | | | | | | | | | |
| Gradient | LEVEL | | | | | | | | | | | | | | |
| Revetment Bottom Height (Lagoon Side) | | | | | | | | | | | | | | | |
| Revetment Bottom Height (Ocean Side) | 1.68 | | 1.49 | | 1.42 | | 1.37 | | 2.42 | | | | | | |
| Parapet Height (Lagoon Side) | | | | | | | | | | | | | | | |
| Parapet Height (Ocean Side) | 5.00 | | 5.00 | | 5.00 | | 4.91 | | 4.80 | | | | | | |
| Proposed Height | 4.41 | | 4.41 | | 4.41 | | 4.32 | | 4.21 | | | | 4.15 | | |
| Ground Height | 4.03 | 4.02 | 4.01 | 4.00 | 3.99 | 3.98 | 3.97 | 3.97 | 3.98 | 3.98 | 3.98 | 3.97 | 3.97 | 3.92 | 3.90 |
| Cumulative Distance | 3000,000 | 3020,000 | 3040,000 | 3050,000 | 3060,000 | 3080,000 | 3100,000 | 3120,000 | 3140,000 | 3150,000 | 3160,000 | 3180,000 | 3200,000 | 3220,000 | 3229,649 |
| Distance | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 | 20,000 | 10,000 | 10,000 | 20,000 | 20,000 | 20,000 | 20,000 | 9,649 |
| Station | No. 60 | No. 60+20 | No. 60+40 | No. 61 | No. 61+10 | No. 61+30 | No. 62 | No. 62+5 | No. 62+20 | No. 62+40 | No. 63 | No. 63+10 | No. 63+30 | No. 64 | EP |
| Horizontal Alignment | | | | | | | | | | | | | | | |

AP11-32



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



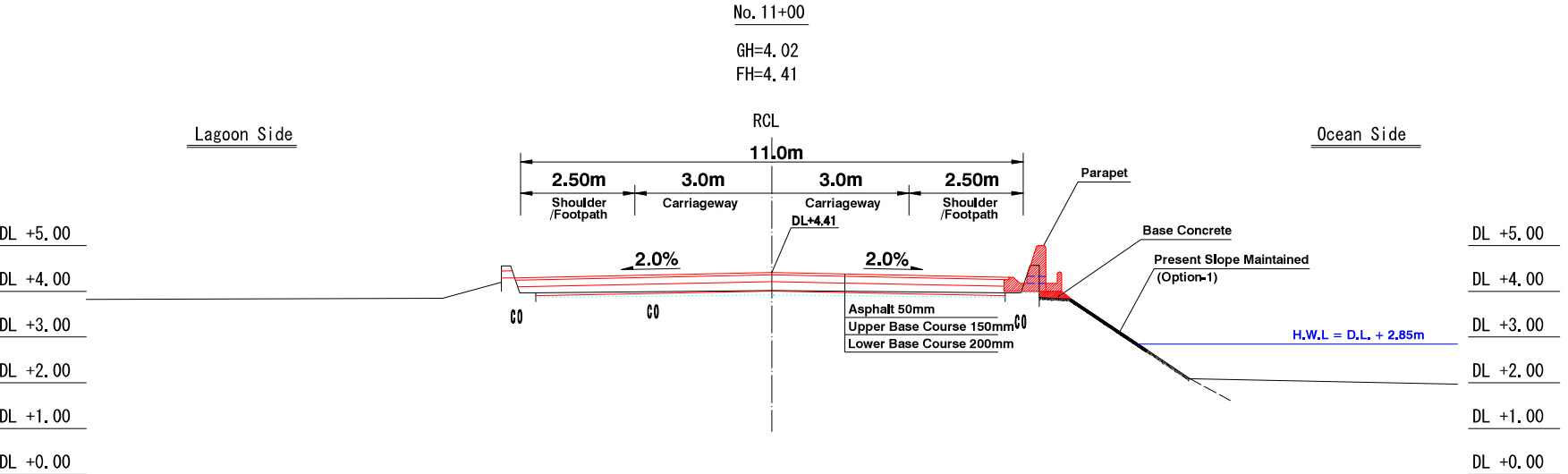
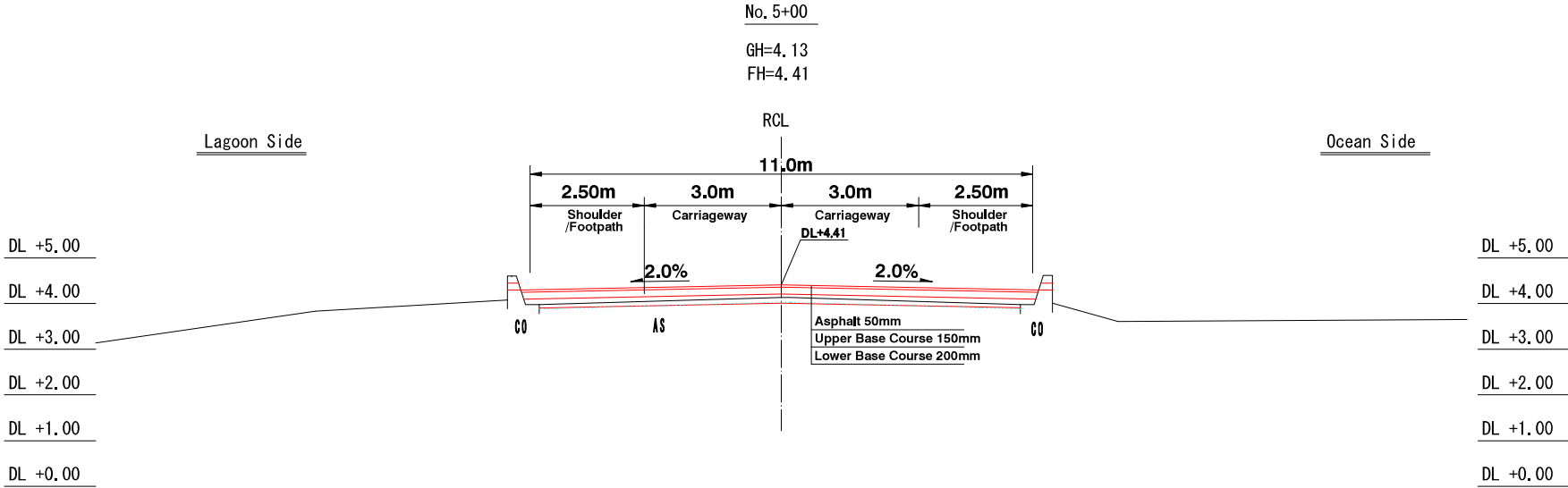
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
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Approved

TITLE:
PROFILE (11)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 30 |

TYPICAL CROSS SECTION (1)



AP11-33



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



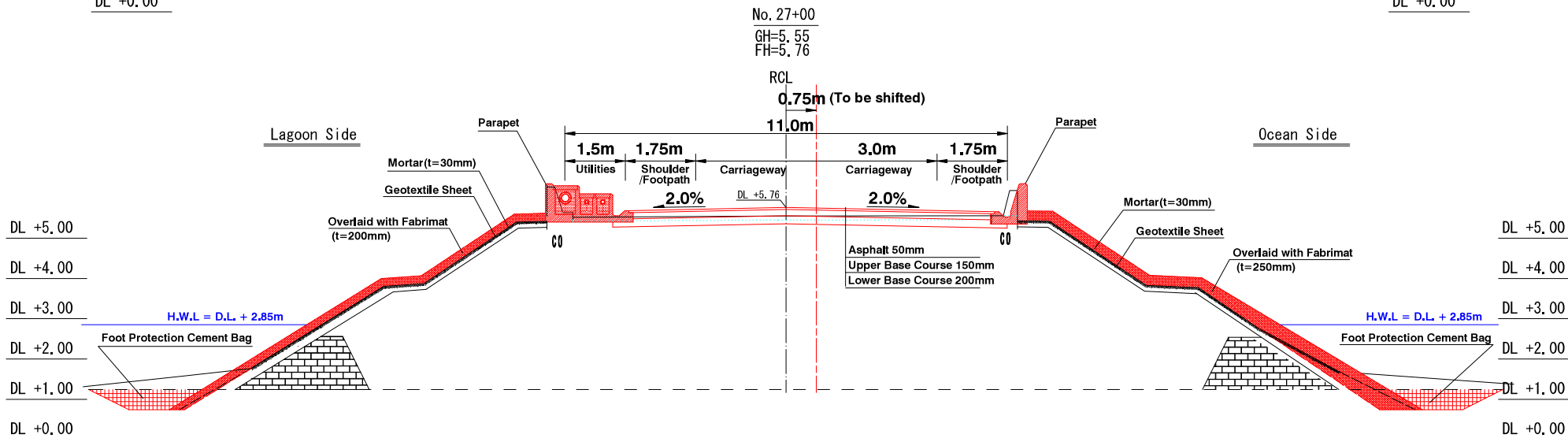
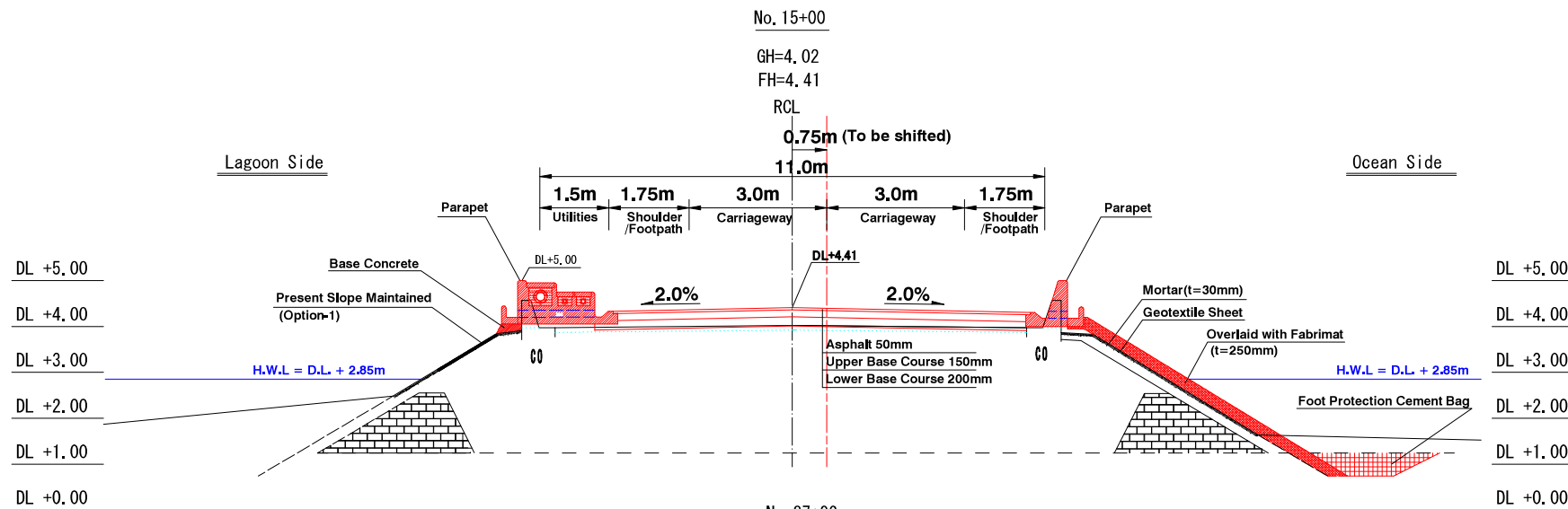
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
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Approved

TITLE:
TYPICAL CROSS SECTION (1)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 31 |

TYPICAL CROSS SECTION (2)



AP11-34



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



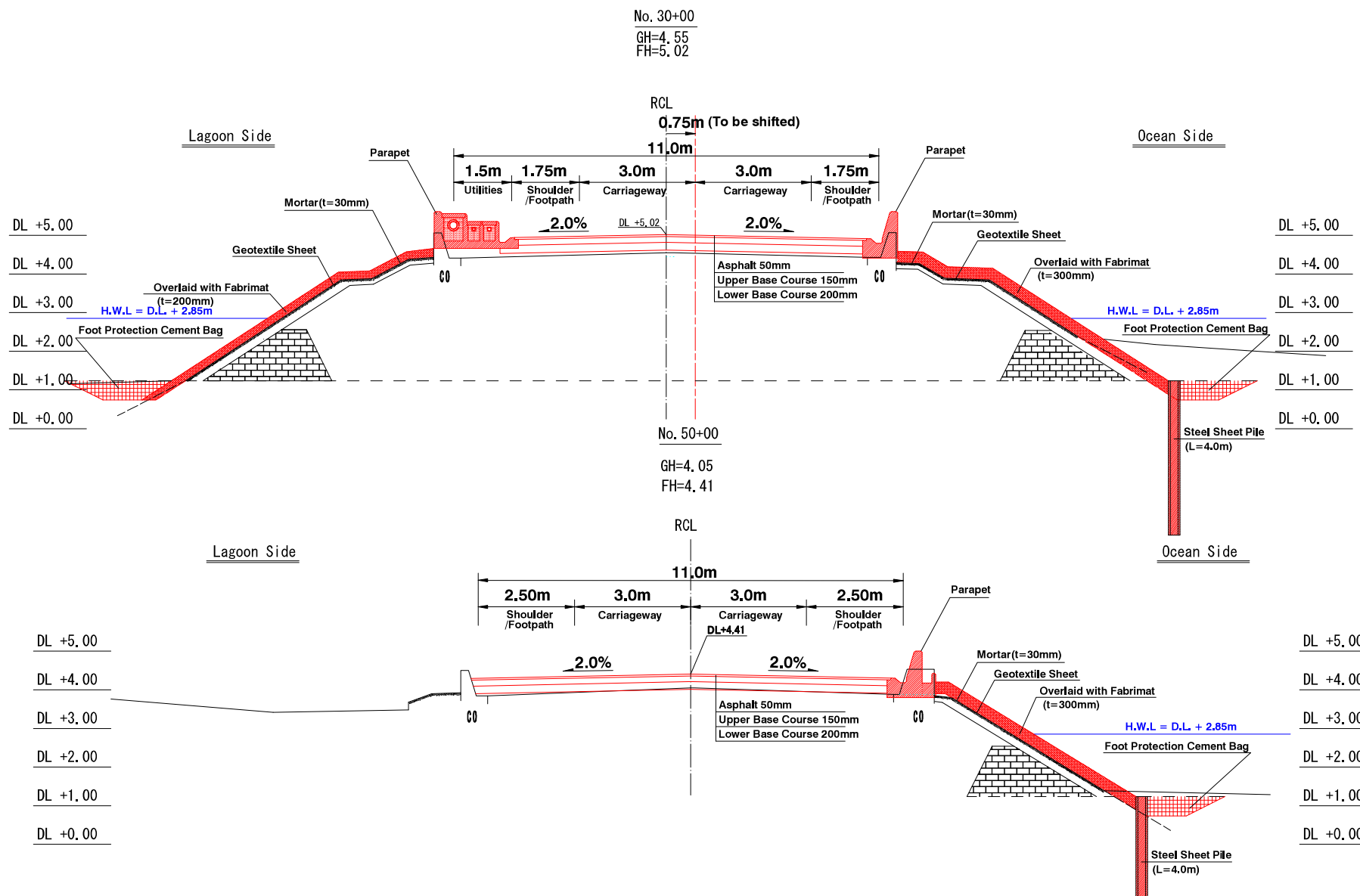
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
TYPICAL CROSS SECTION (2)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 32 |

TYPICAL CROSS SECTION (4)



AP11-36



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
 Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



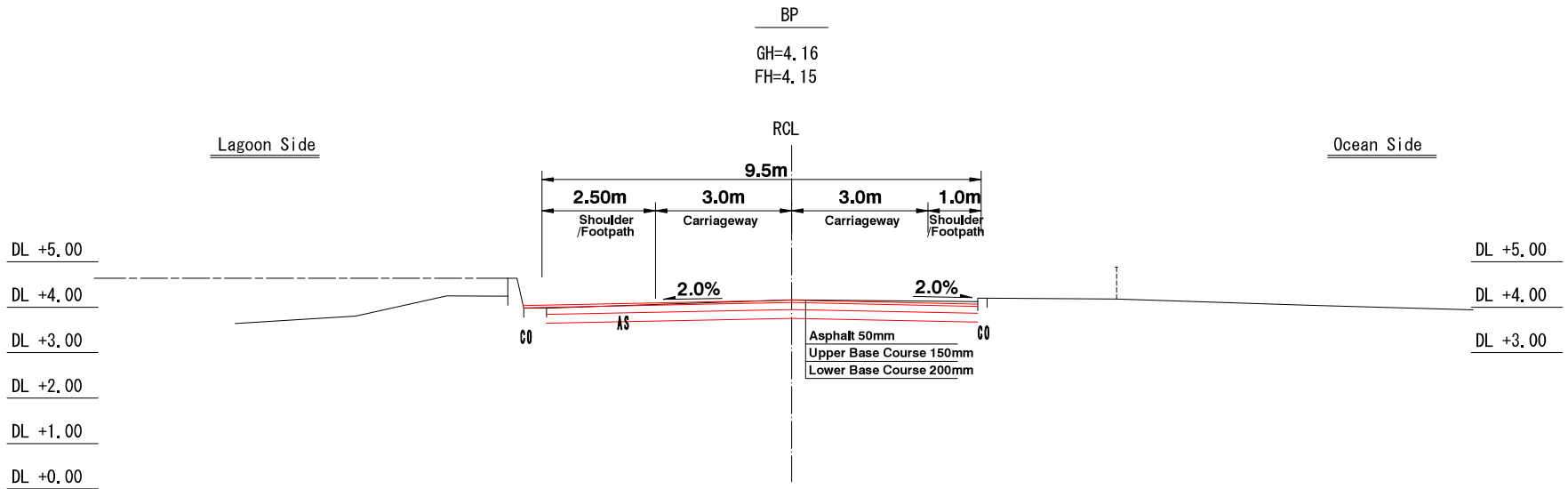
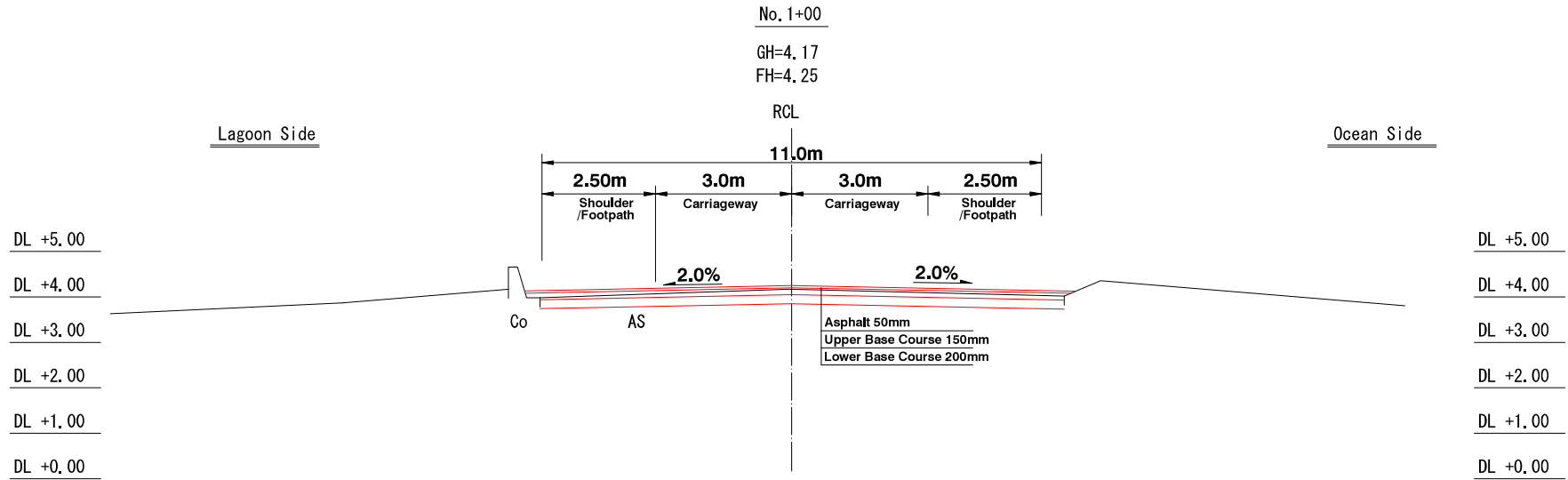
JAPAN INTERNATIONAL COOPERATION AGENCY
 CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
 Checked
 Approved

TITLE:
 TYPICAL CROSS SECTION (4)

| | |
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 34 |

CROSS SECTION (1)



AP11-37



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (1)

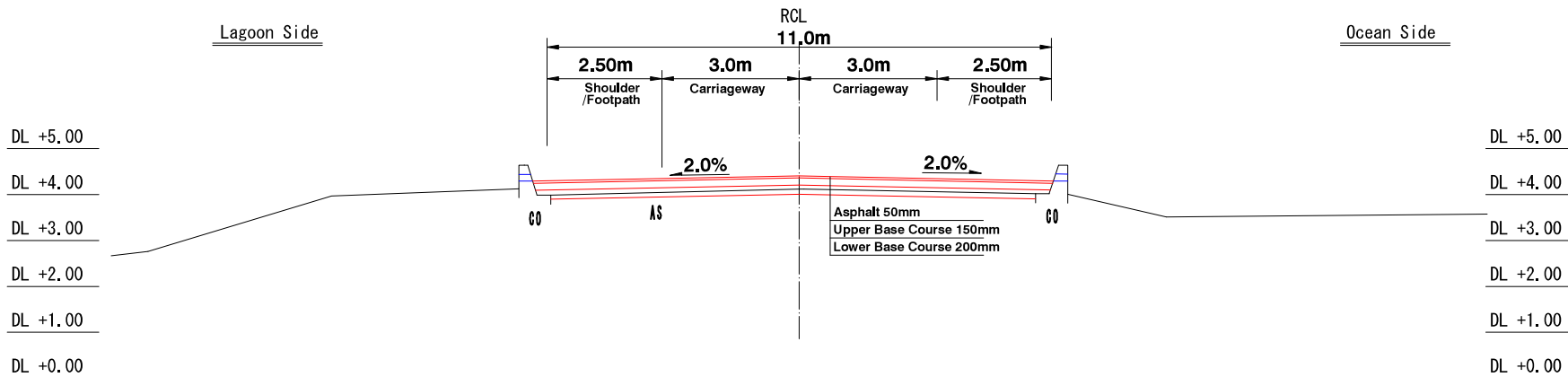
| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 35 |

CROSS SECTION (2)

No. 3+00

GH=4, 12

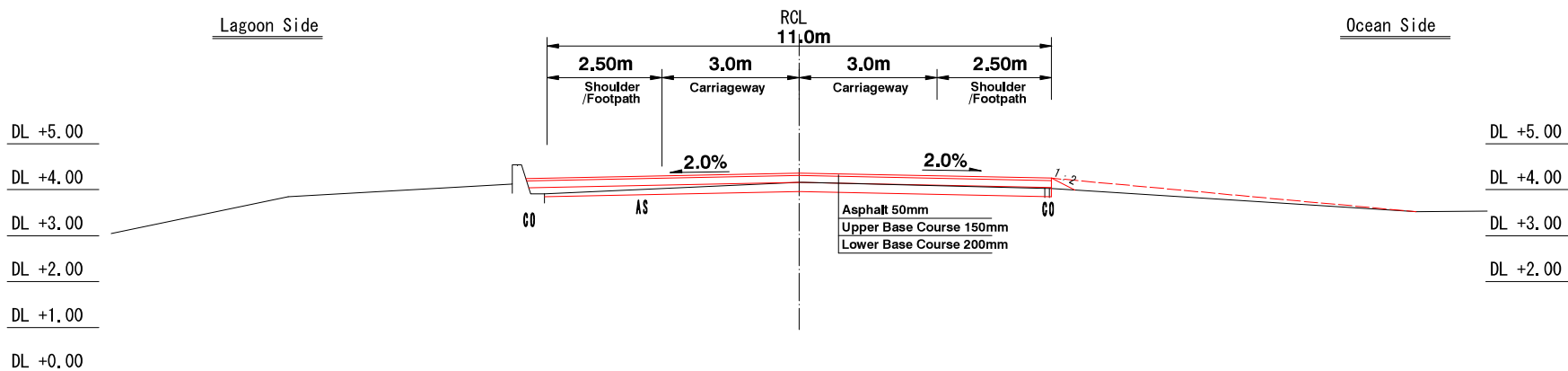
FH=4, 41



No. 2+00

GH=4, 16

FH=4, 36



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY

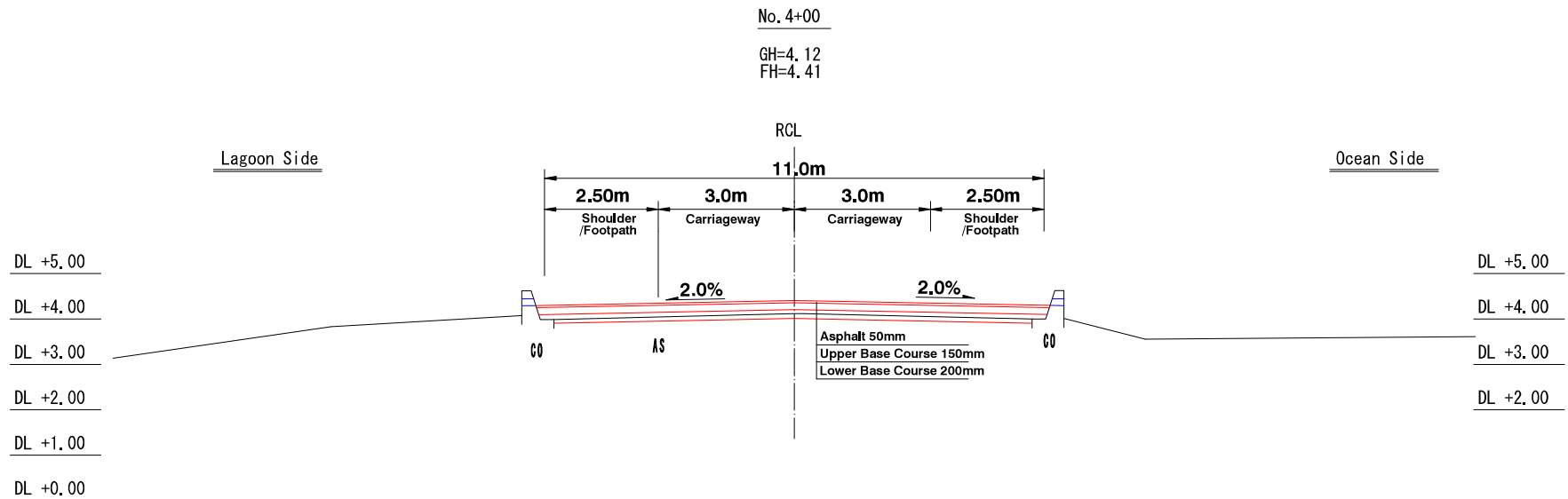
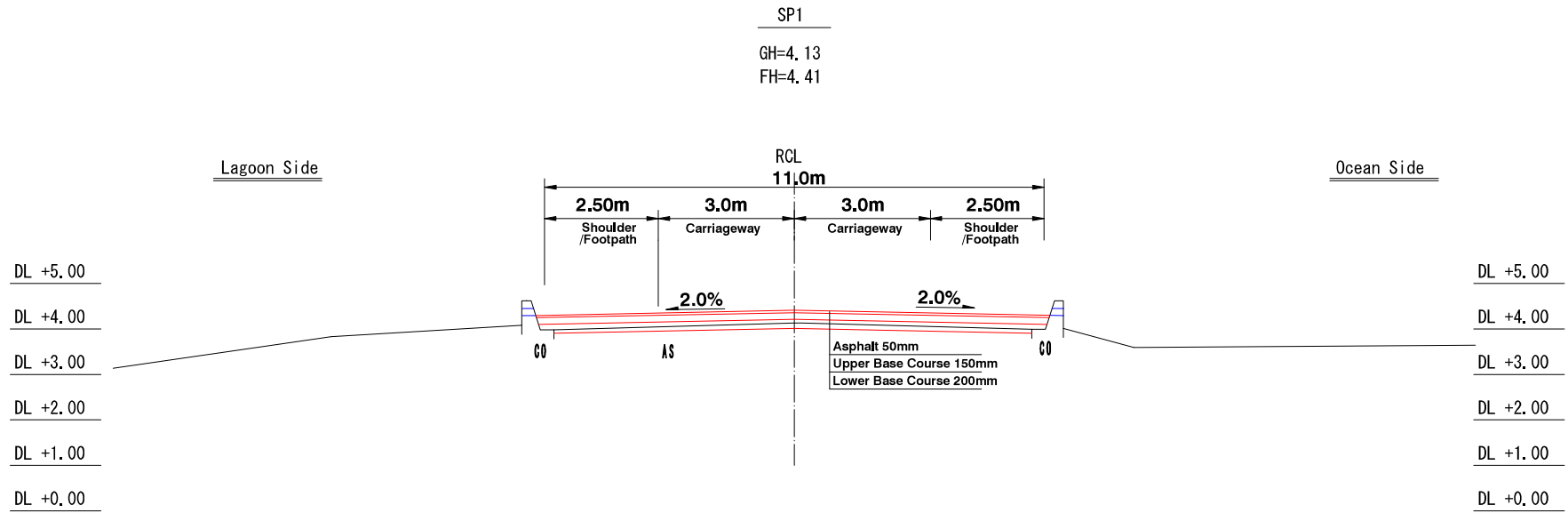
CTI ENGINEERING INTERNATIONAL CO., LTD.

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TITLE:
CROSS SECTION (2)

| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 36 |

CROSS SECTION (3)



AP11-39



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



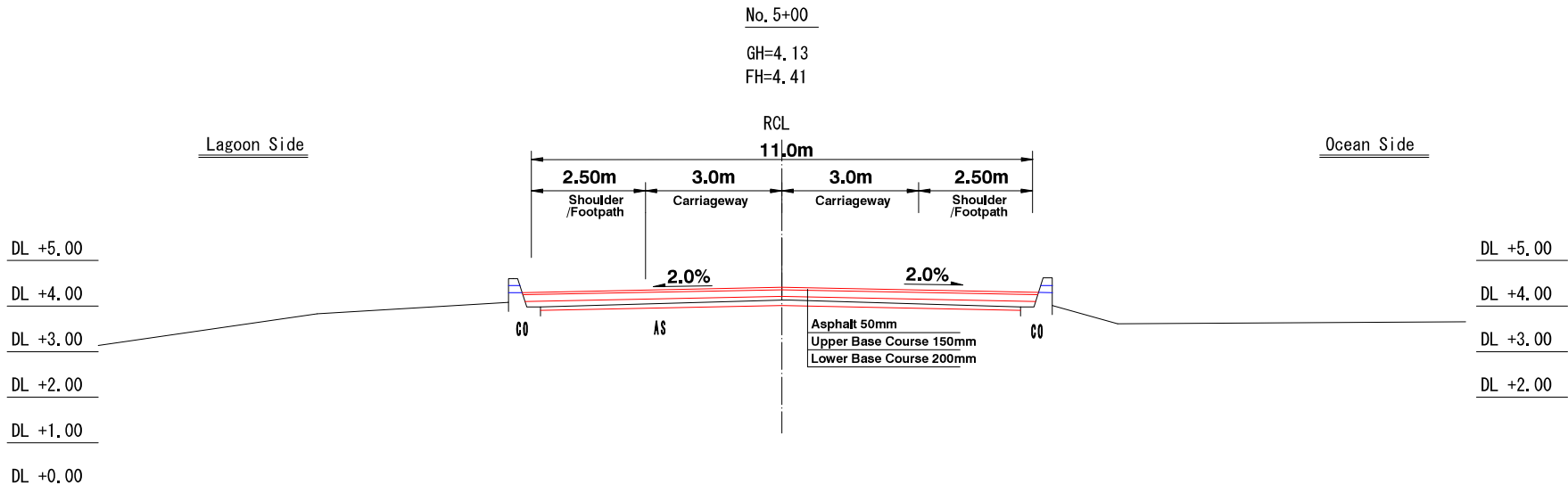
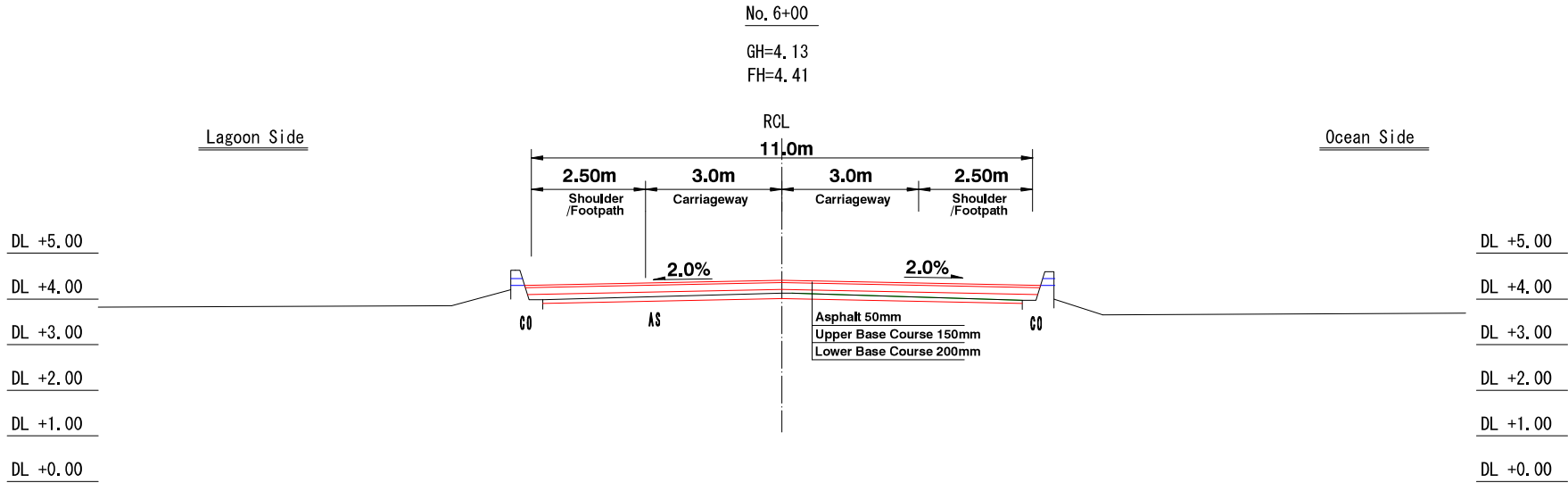
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

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Approved

TITLE:
CROSS SECTION (3)

| SCALE | DRG. No. |
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| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 37 |

CROSS SECTION (4)



AP11-40



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



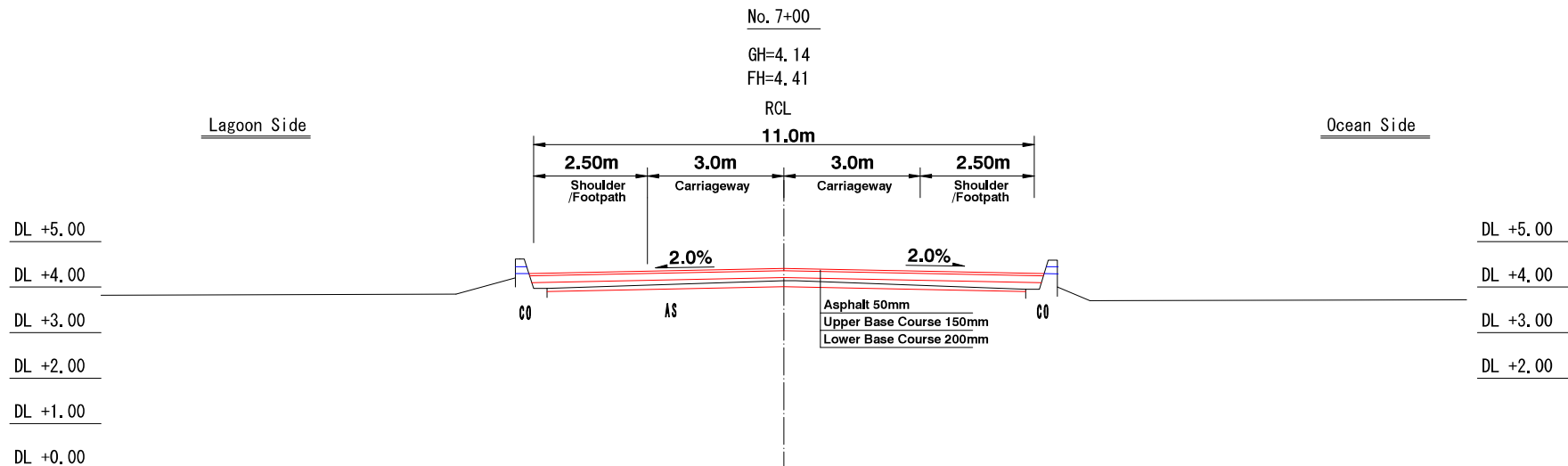
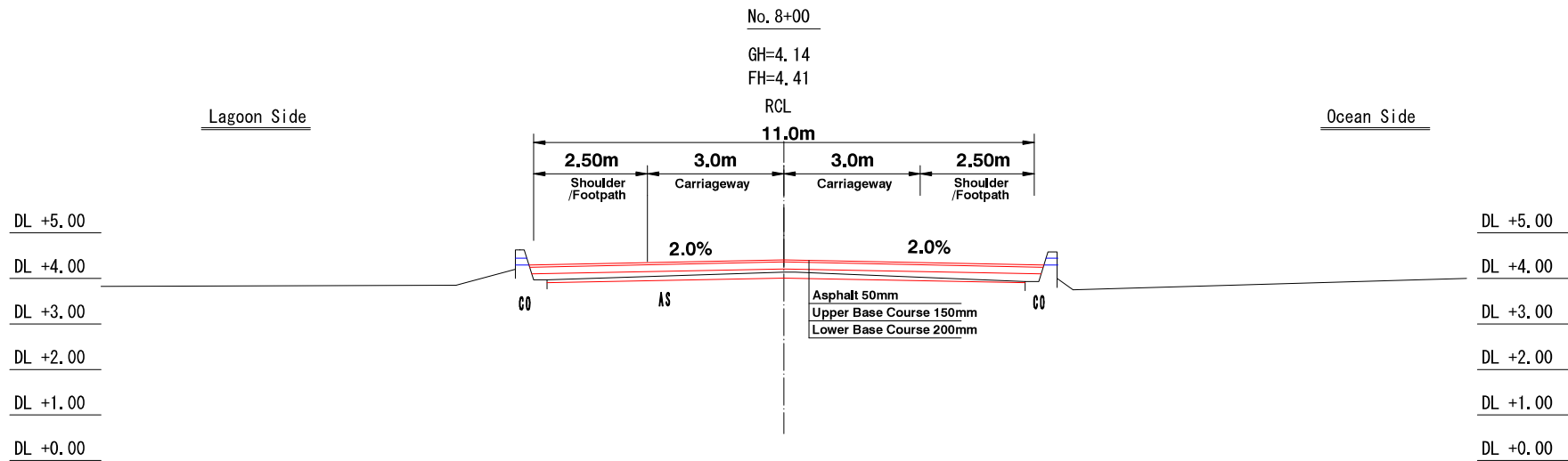
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
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Approved

TITLE:
CROSS SECTION (4)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 38 |

CROSS SECTION (5)



AP11-41



MINISTRY OF PUBLIC WORKS & UTILITIES
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Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



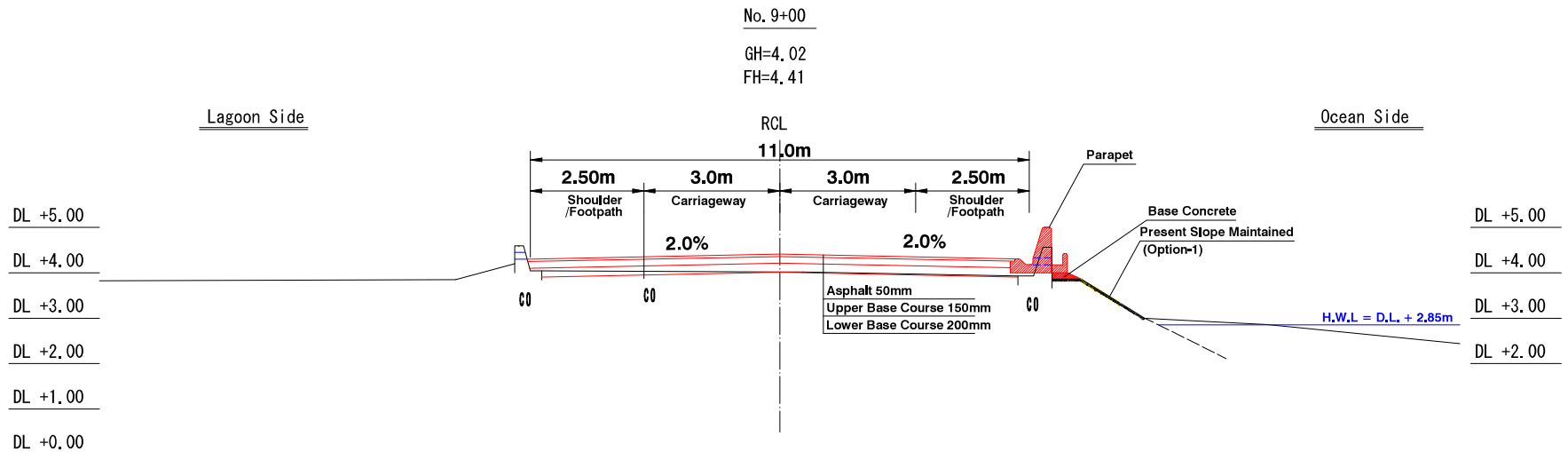
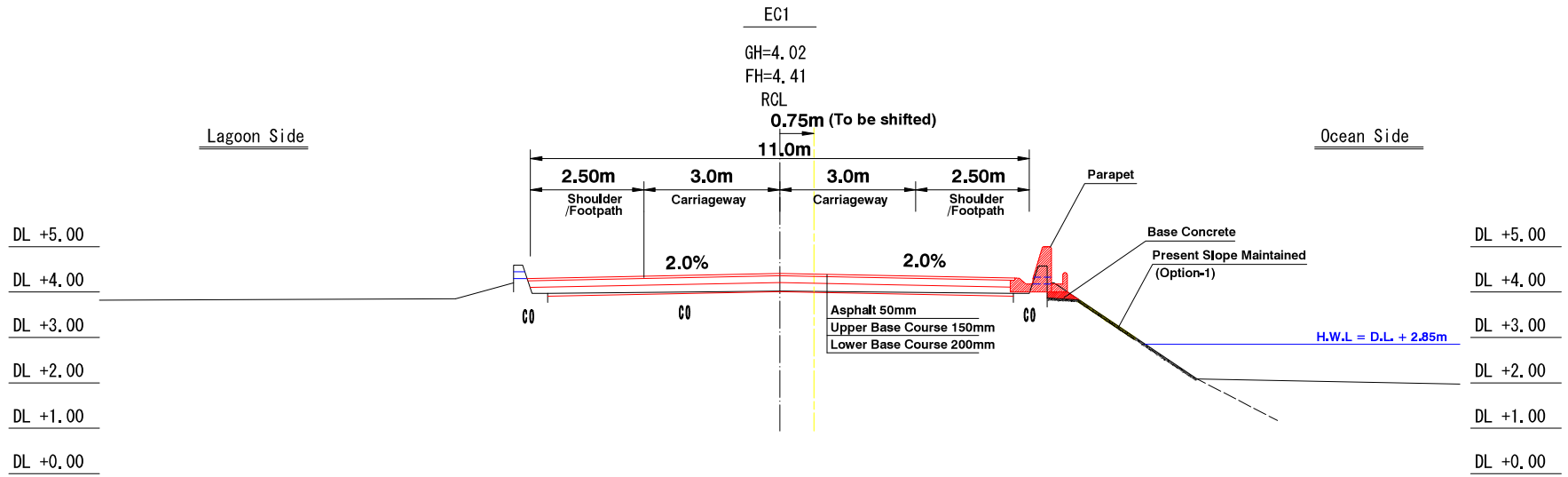
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (5)

| SCALE | DRG. No. |
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| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2016 | 39 |

CROSS SECTION (6)



AP11-42



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



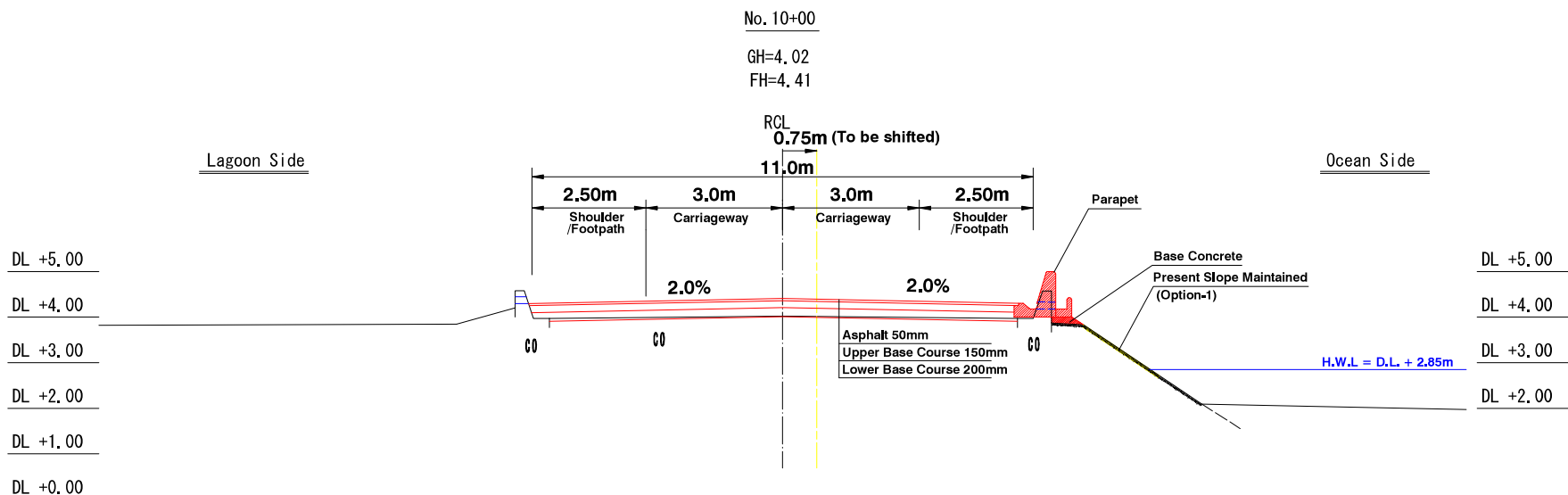
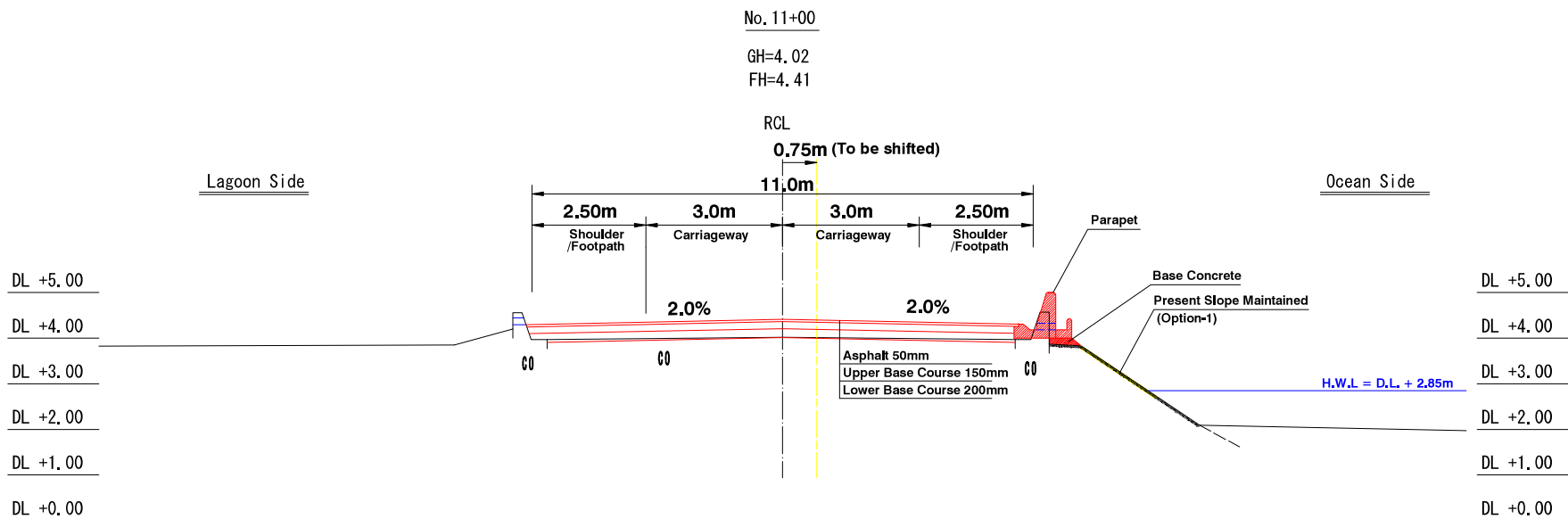
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

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Approved

TITLE:
CROSS SECTION (6)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 40 |

CROSS SECTION (7)



AP11-43



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (7)

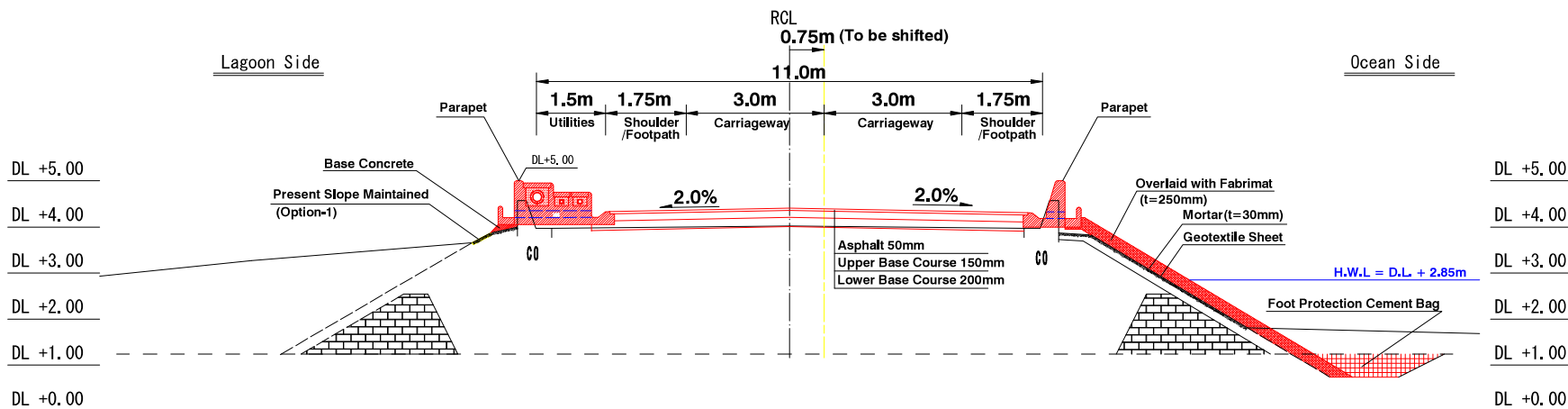
| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2016 | 41 |

CROSS SECTION (8)

No. 13+00

GH=4.02

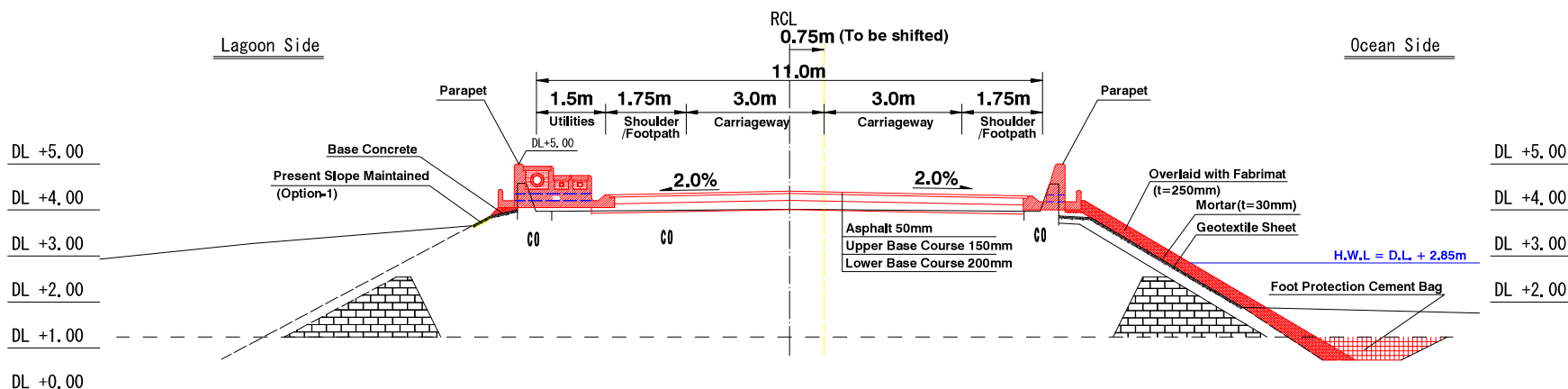
FH=4.41



No. 12+00

GH=4.02

FH=4.41



AP11-44



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (8)

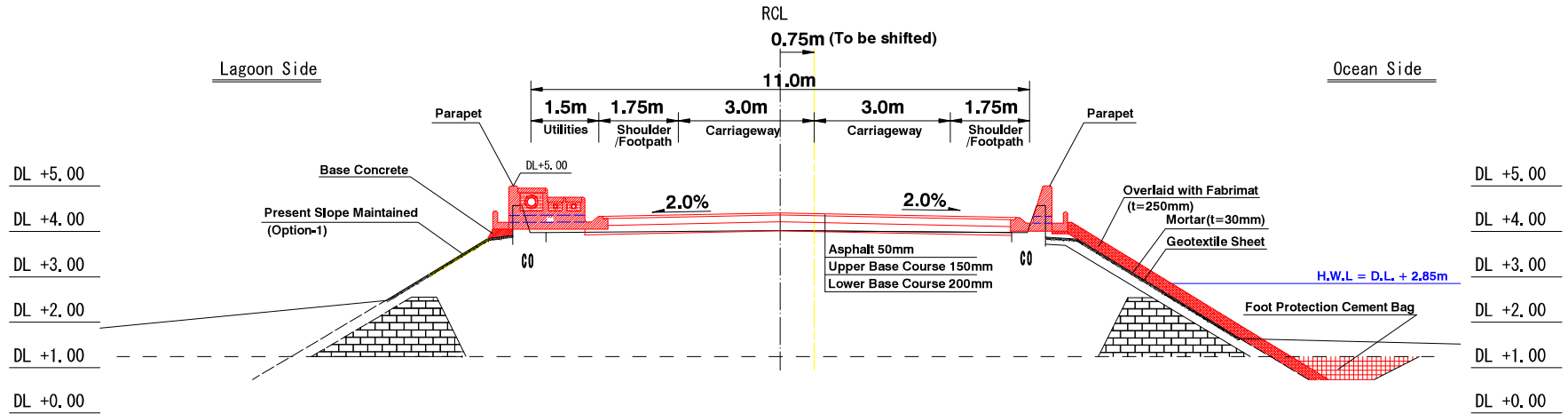
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| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2018 | SHEET No. |
| | 42 |

CROSS SECTION (9)

No. 15+00

GH=4.02

FH=4.41

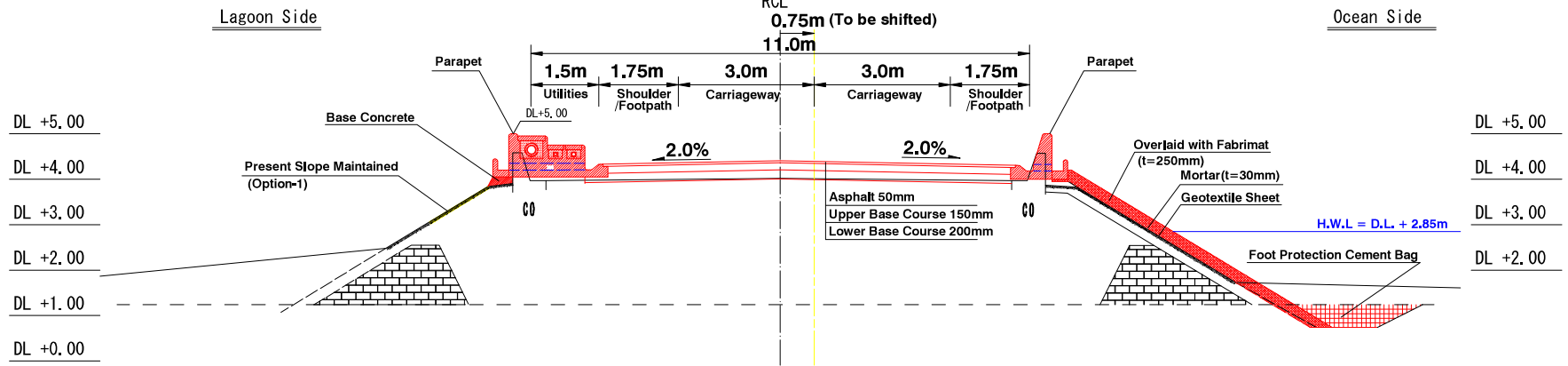


No. 14+00

GH=4.02

FH=4.41

RCL



AP11-45



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



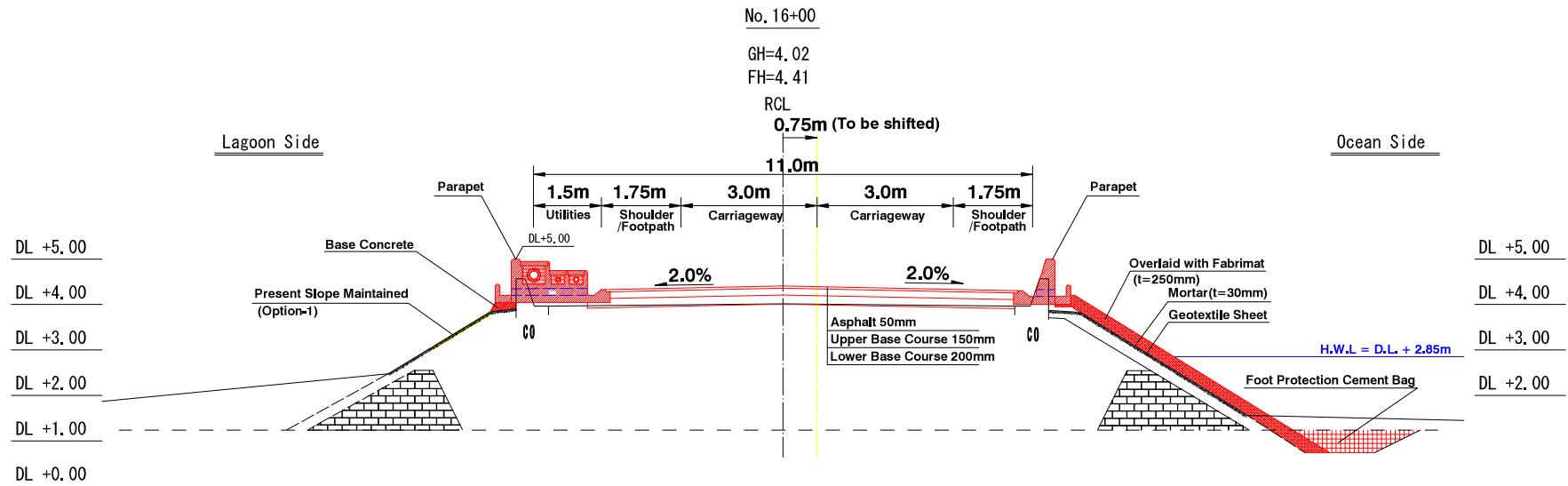
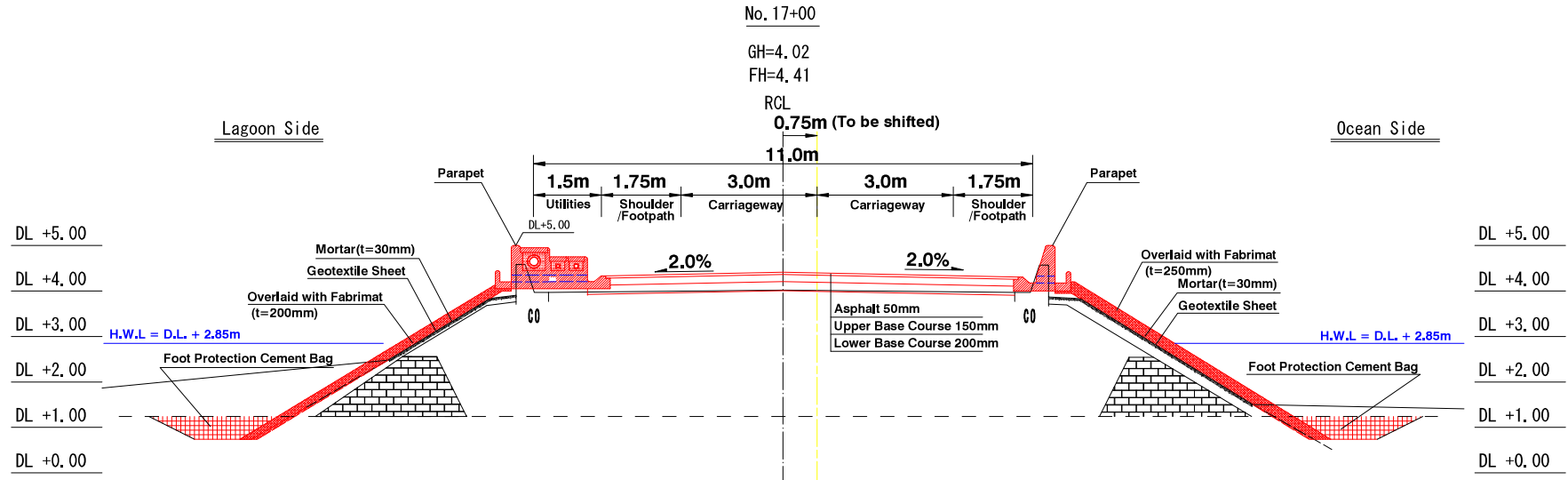
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (9)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 43 |

CROSS SECTION (10)



AP11-46



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



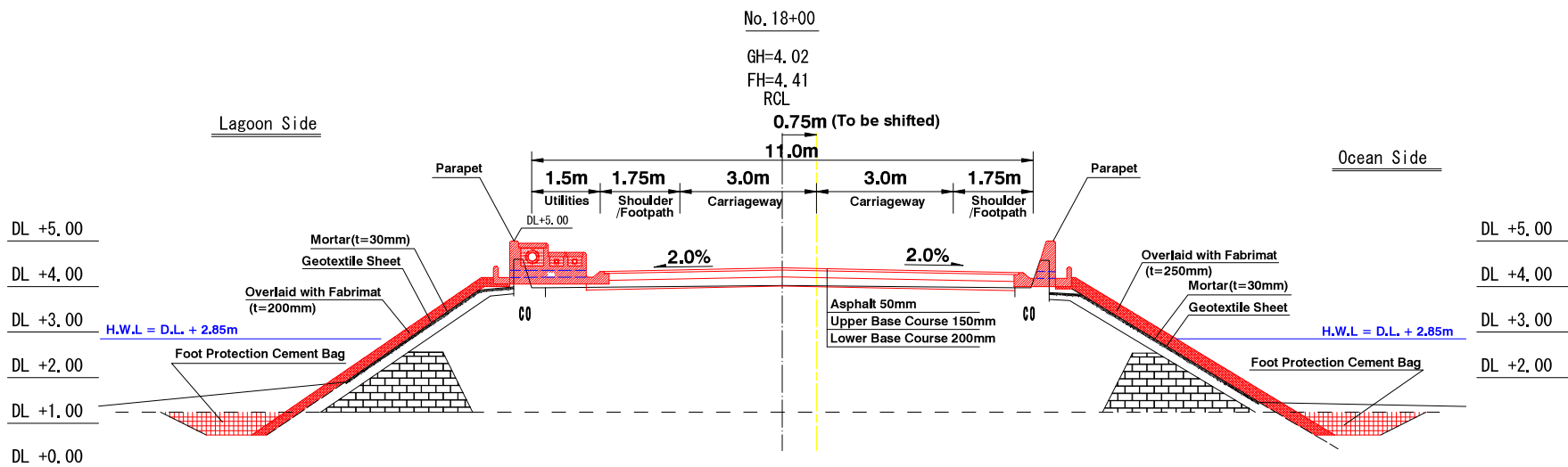
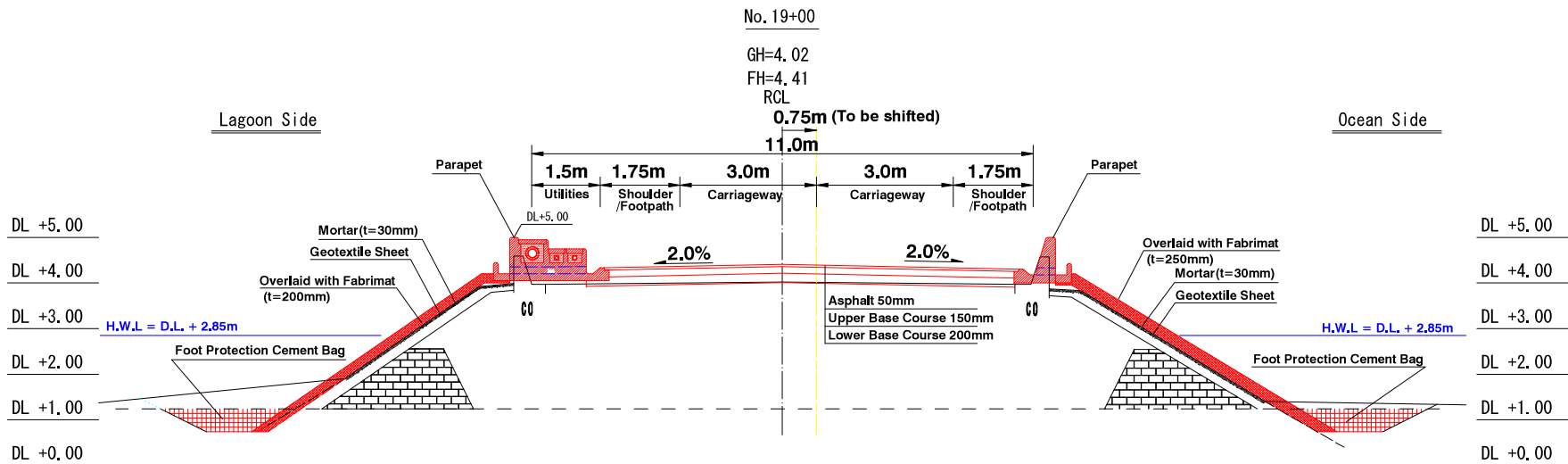
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (10)

| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2016 | 44 |

CROSS SECTION (11)



AP11-47



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



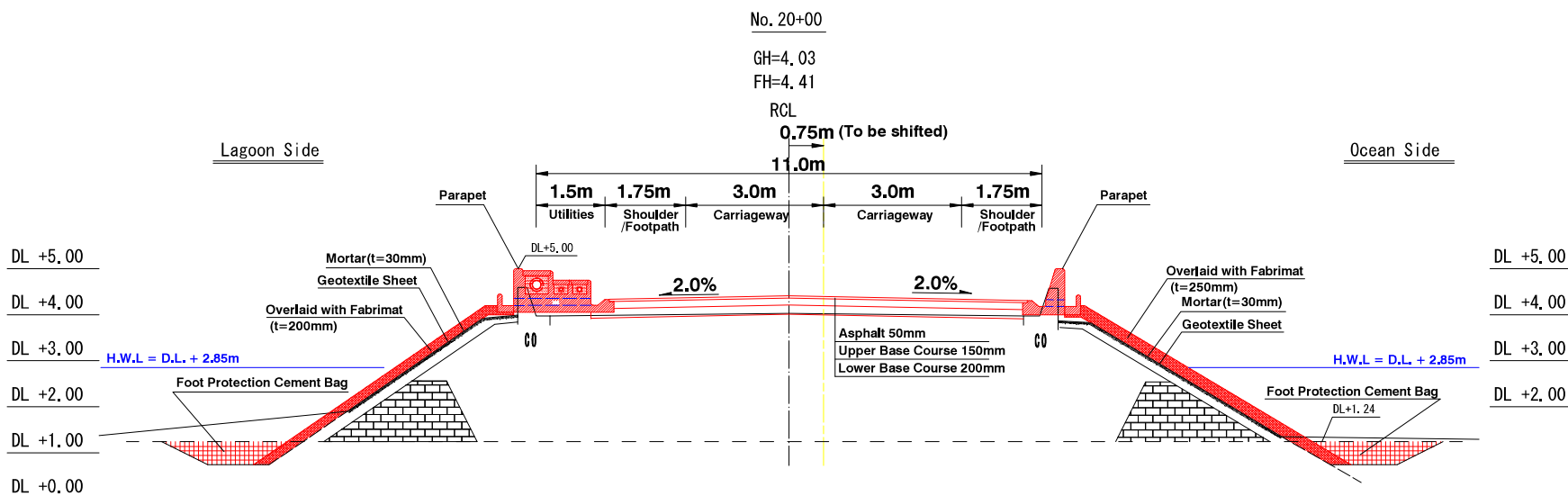
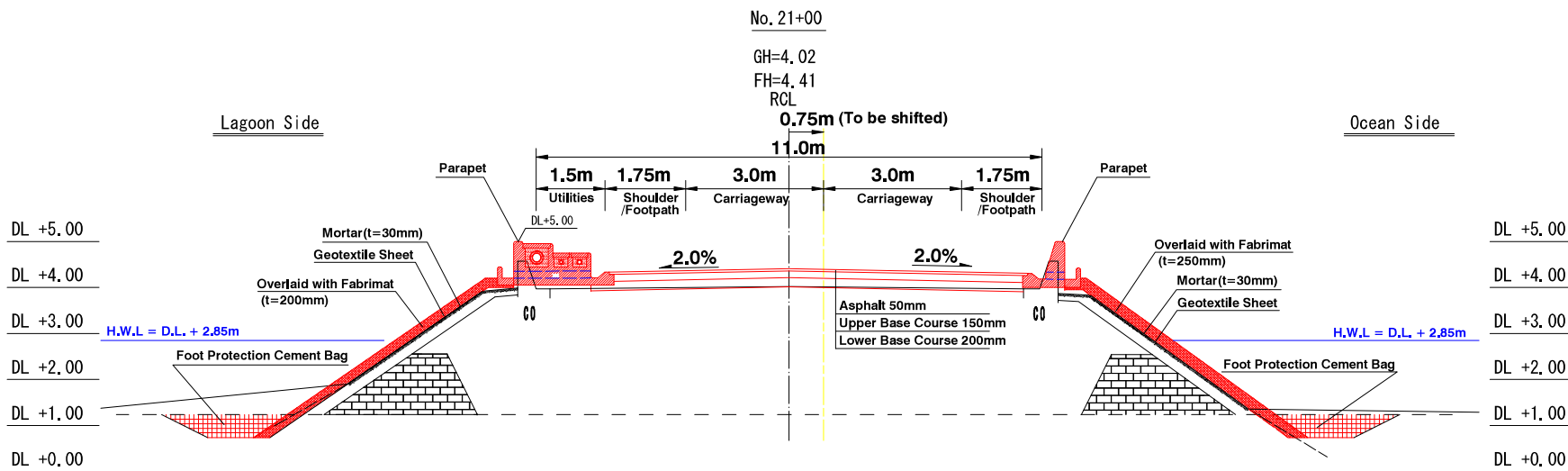
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (11)

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|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 45 |

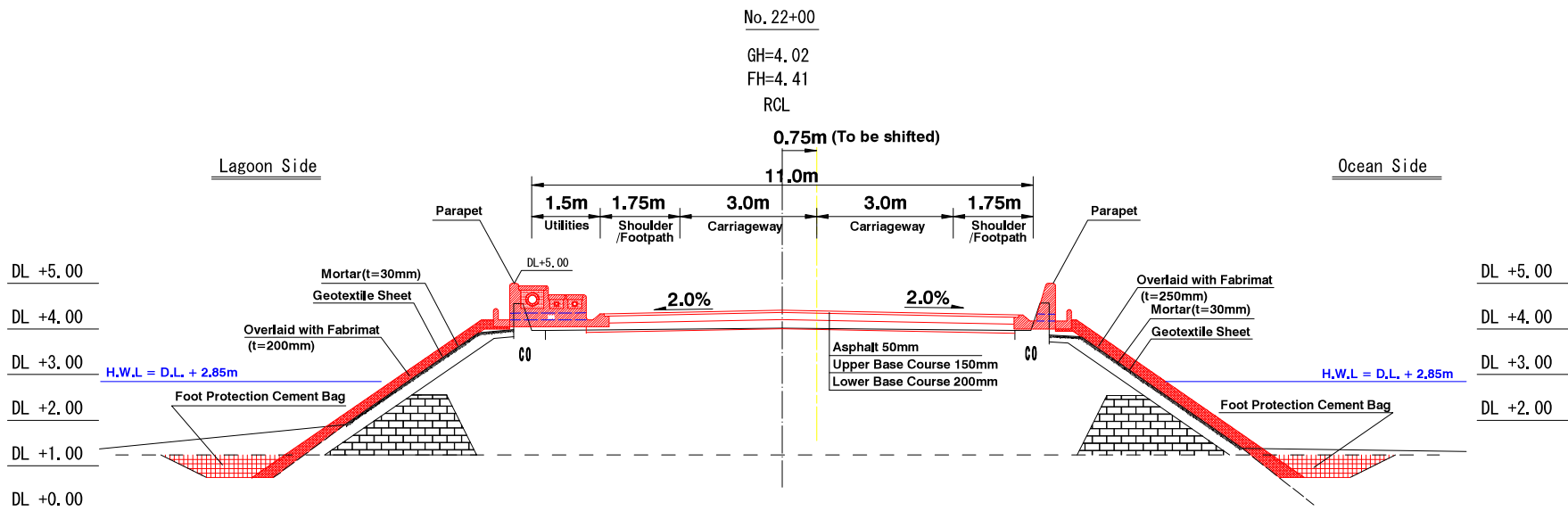
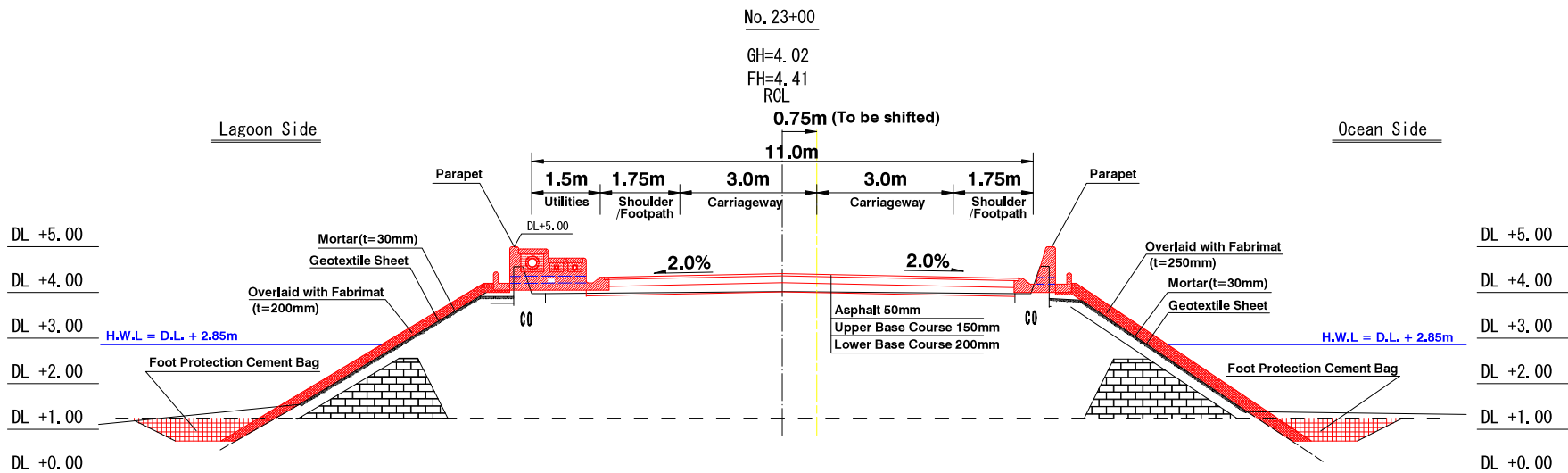
CROSS SECTION (12)



AP11-48

| | | | | | | | |
|------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------|-------------------------------------------|-----------|-----------|
| <p>MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)</p> | Approved by | <p>THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC</p> | <p>JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.</p> | Designed | <p>TITLE: CROSS SECTION (12)</p> | SCALE | DRG. No. |
| | Project Manager: | | | Checked | | DATE | SHEET No. |
| | | | | Approved | | Mar. 2016 | 46 |

CROSS SECTION (13)



AP11-49

| | | | | | | | |
|--------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------|--------------------------------------|-------|-----------|
| <p>MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)</p> | Approved by | <p>THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC</p> | <p>JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.</p> | Designed | <p>TITLE: CROSS SECTION (13)</p> | SCALE | DRG. No. |
| | Project Manager: | | | Checked | | DATE | SHEET No. |
| | Approved | | | Mar. 2018 | | 47 | |

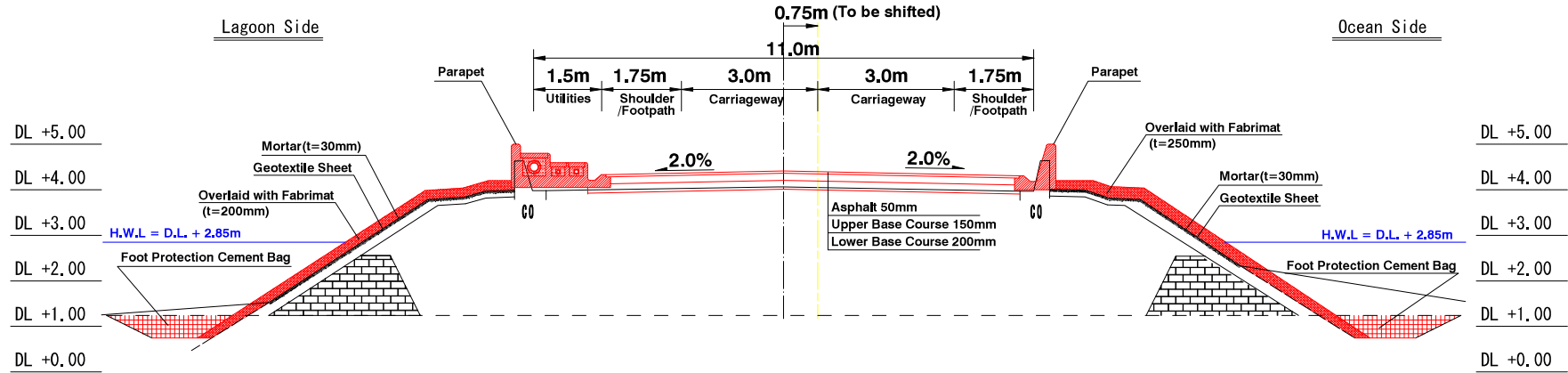
CROSS SECTION (14)

No. 25+00

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FH=4.41

RCL

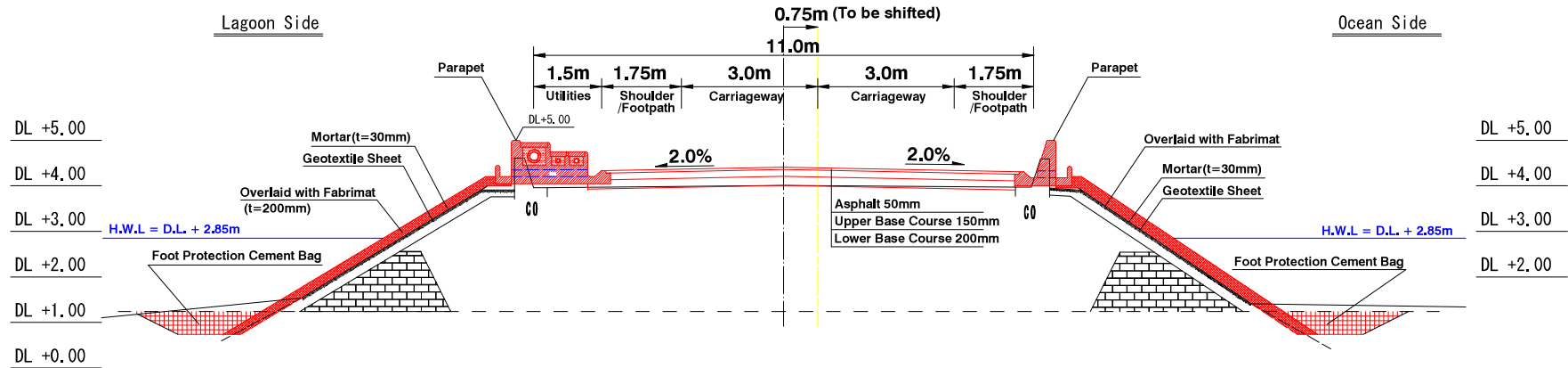


No. 24+00

GH=4.01

FH=4.41

RCL



AP11-50



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (14)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2016 | SHEET No. |
| | 48 |

CROSS SECTION (15)

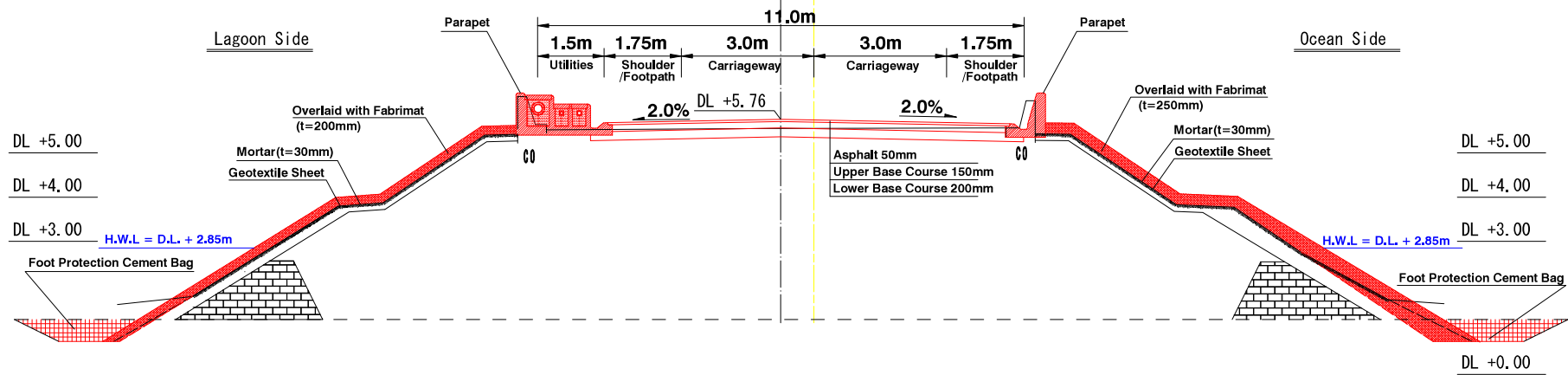
No. 27+00

GH=5.55

FH=5.76

RCL

0.75m (To be shifted)



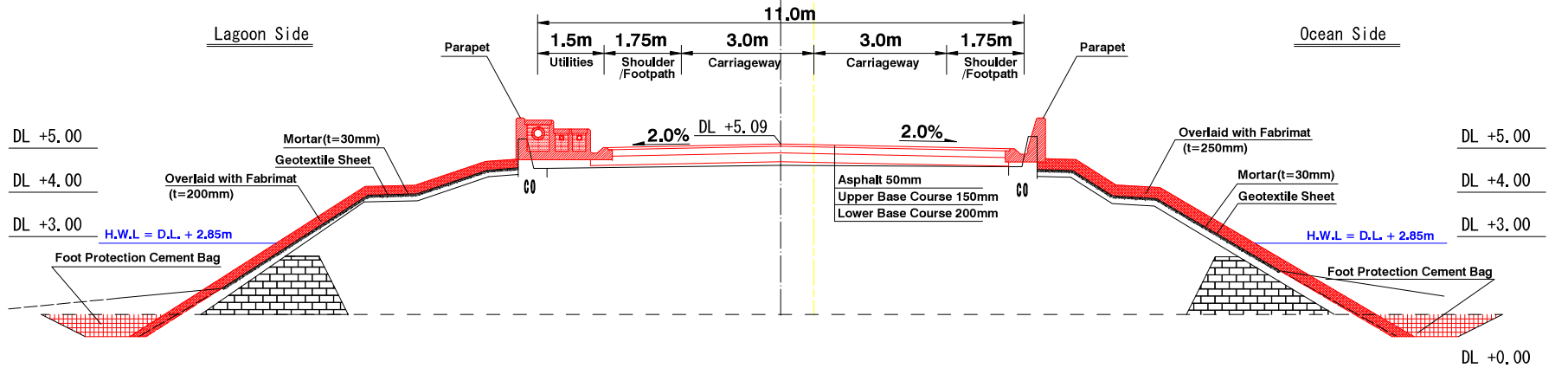
No. 26+00

GH=4.61

FH=5.09

RCL

0.75m (To be shifted)



AP11-51



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (15)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2016 | SHEET No. |
| | 49 |

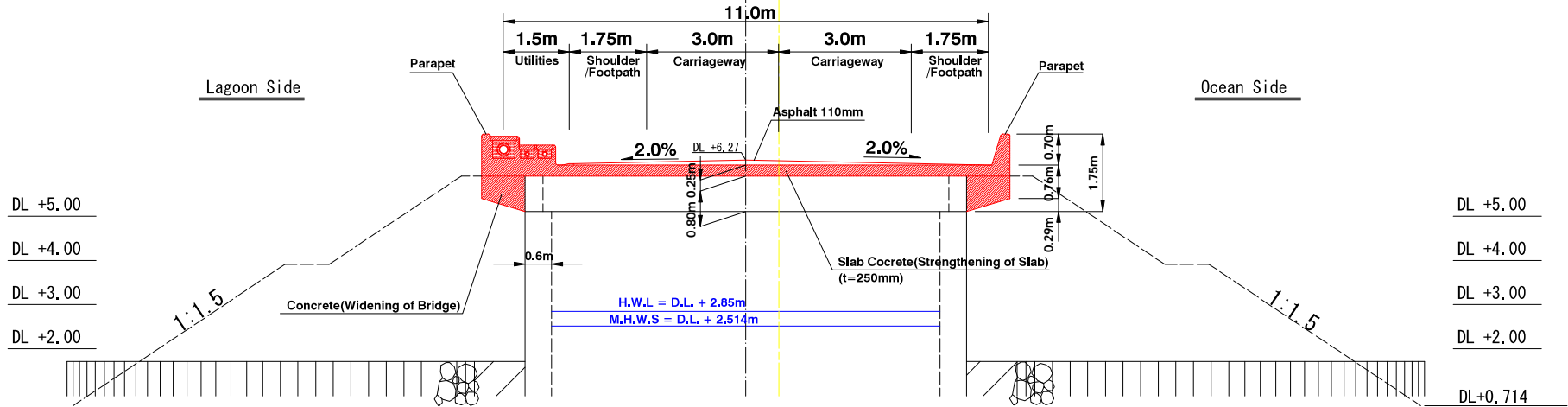
CROSS SECTION (16)

No. 27+42.35 (Bridge)

GH=6.01
FH=6.27

CL

0.75m (To be shifted)

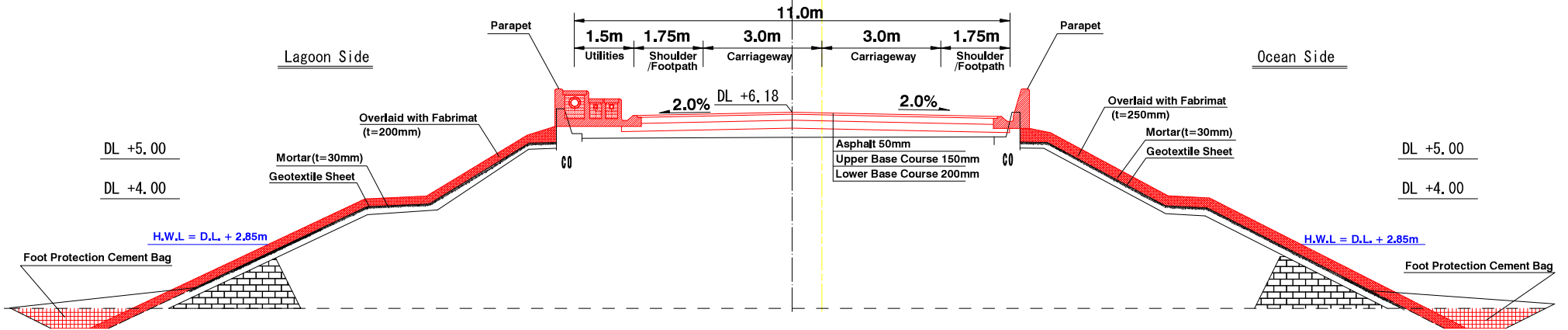


No. 27+30.64

GH=5.55
FH=6.18

RCL

0.75m (To be shifted)



AP11-52



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (16)

| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2016 | 50 |

CROSS SECTION (17)

No. 28+4. 10

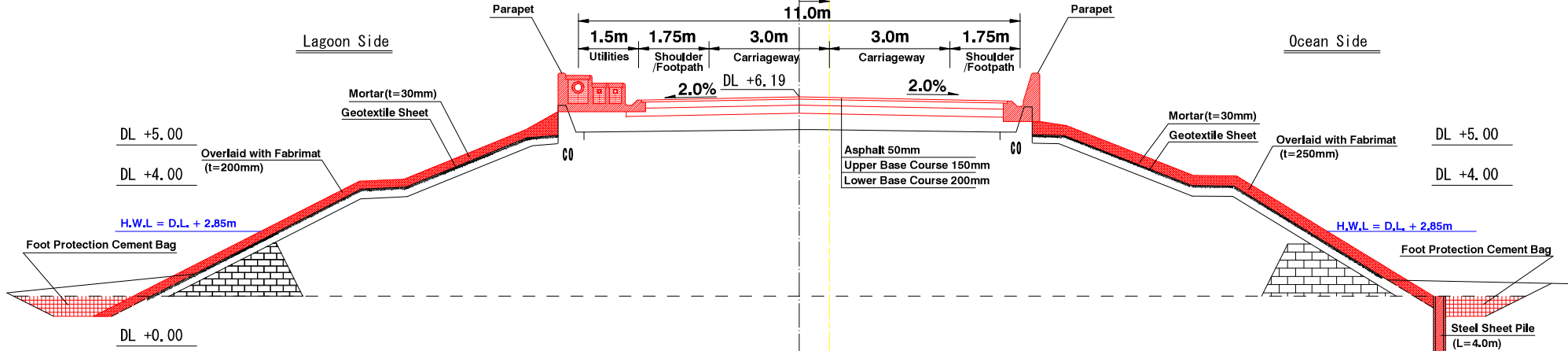
GH=5. 38

FH=6. 19

RCL

0,75m (To be shifted)

11,0m



No. 28+00

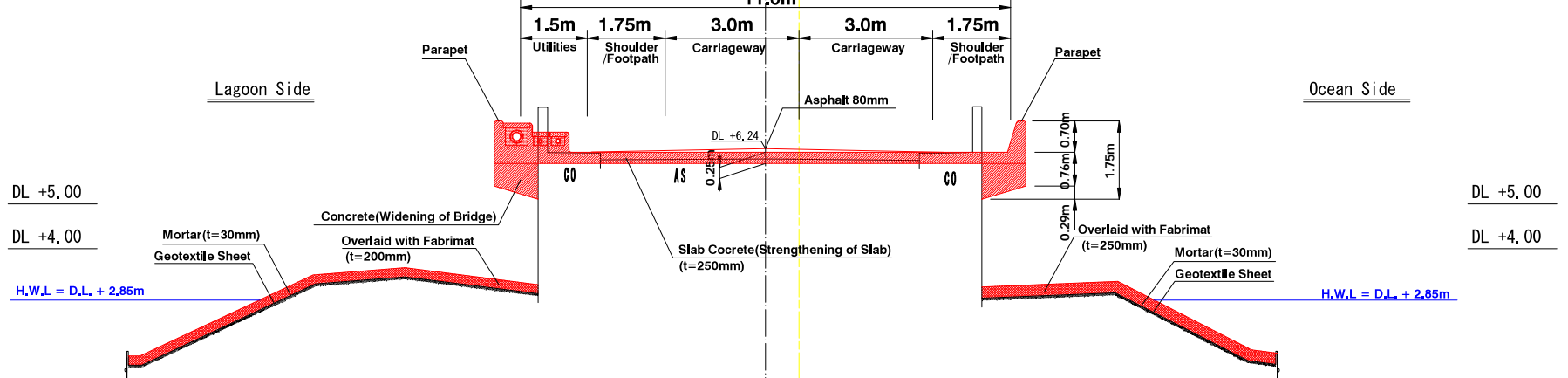
GH=6. 01

FH=6. 24

RCL

0,75m (To be shifted)

11,0m



AP11-53



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

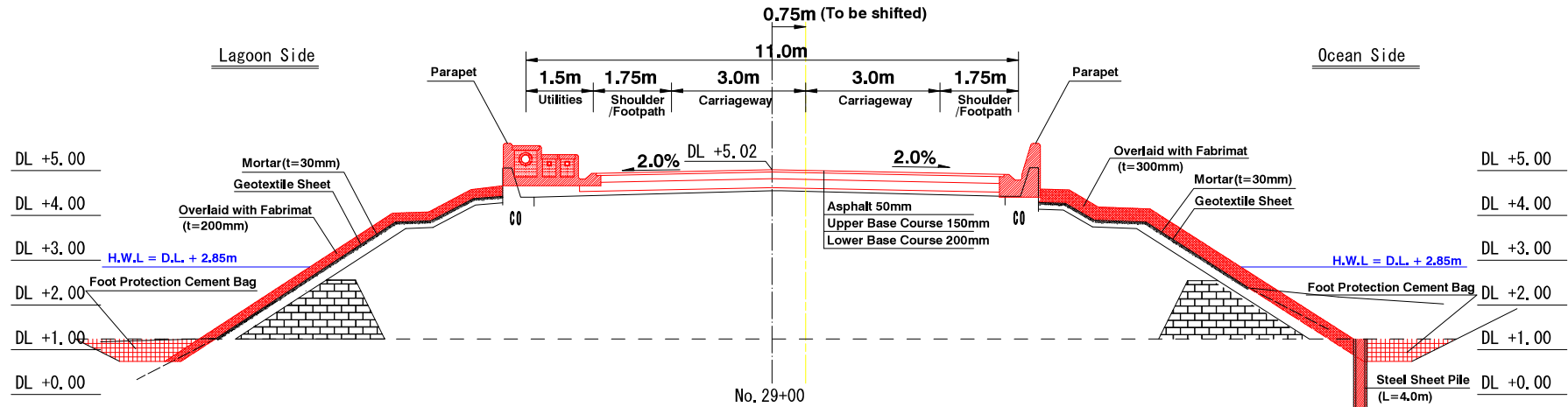
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CROSS SECTION (17)

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| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2016 | SHEET No. |
| | 51 |

CROSS SECTION (18)

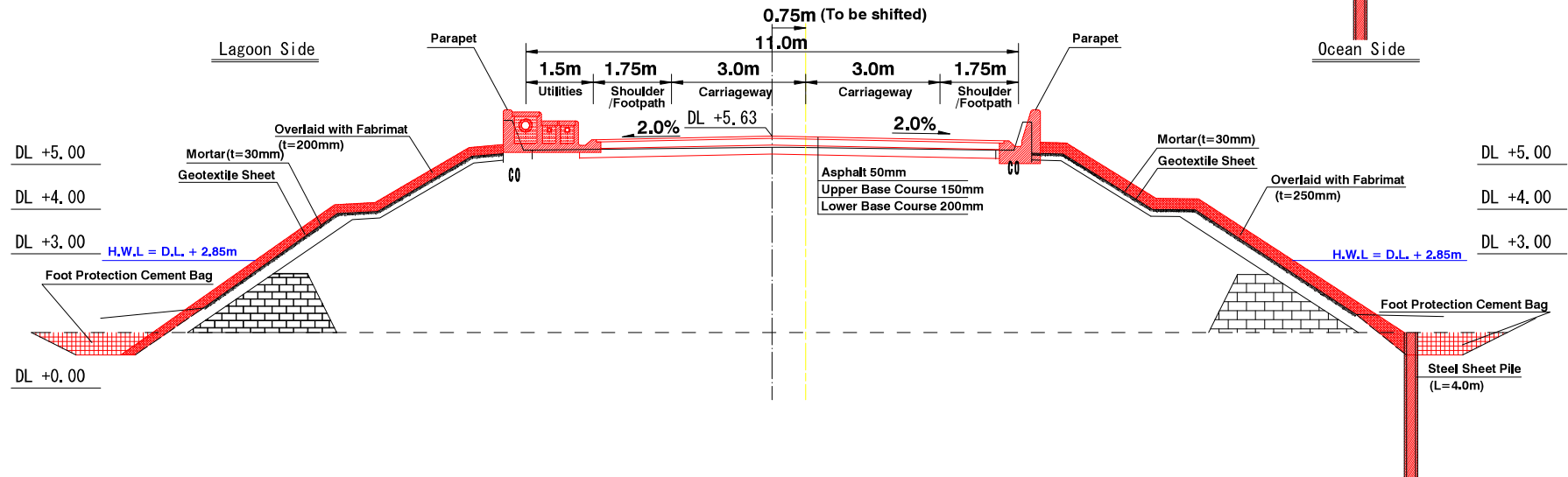
No. 30+00

GH=4.55
FH=5.02
RCL



No. 29+00

GH=5.38
FH=5.63
RCL



AP11-54



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (18)

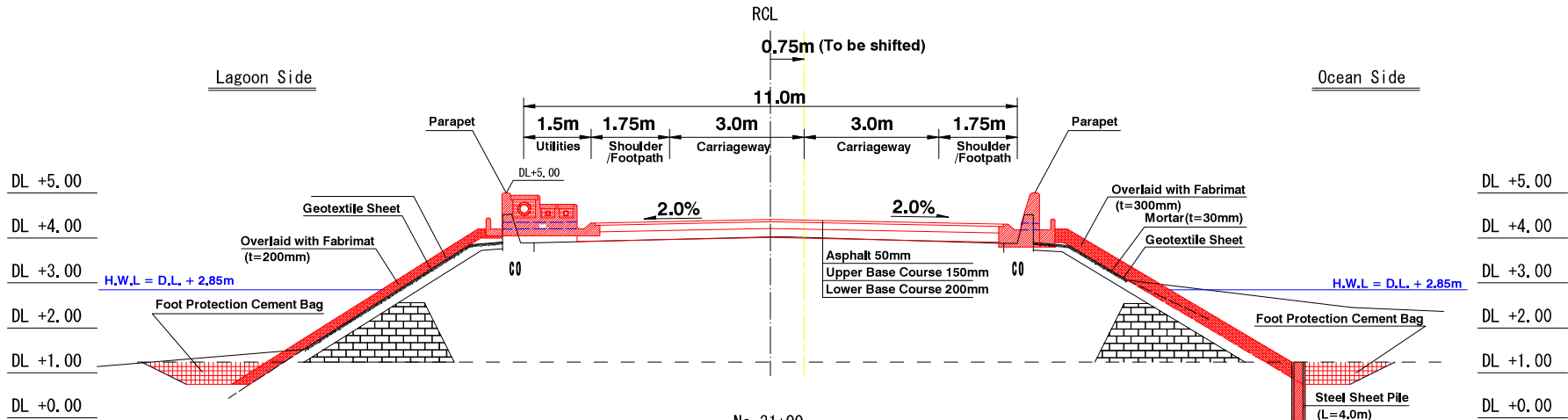
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| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2016 | SHEET No. |
| | 52 |

CROSS SECTION (19)

No. 32+00

GH=4.02

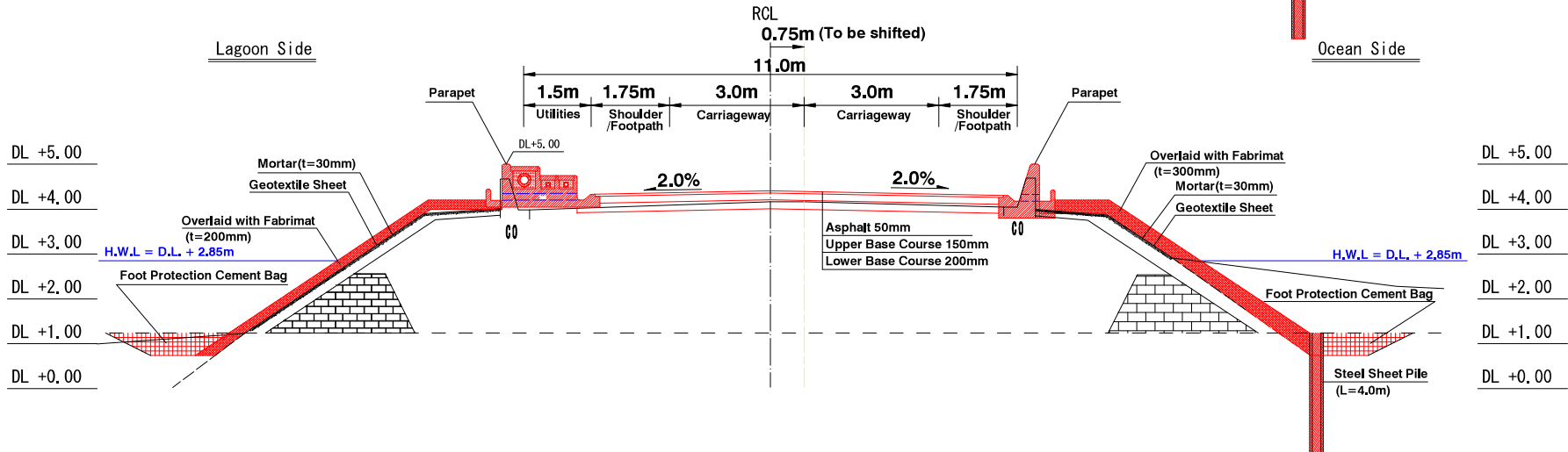
FH=4.41



No. 31+00

GH=4.17

FH=4.41



AP11-55



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (19)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | CS-1-37 |
| Mar. 2016 | SHEET No. |
| | 53 |

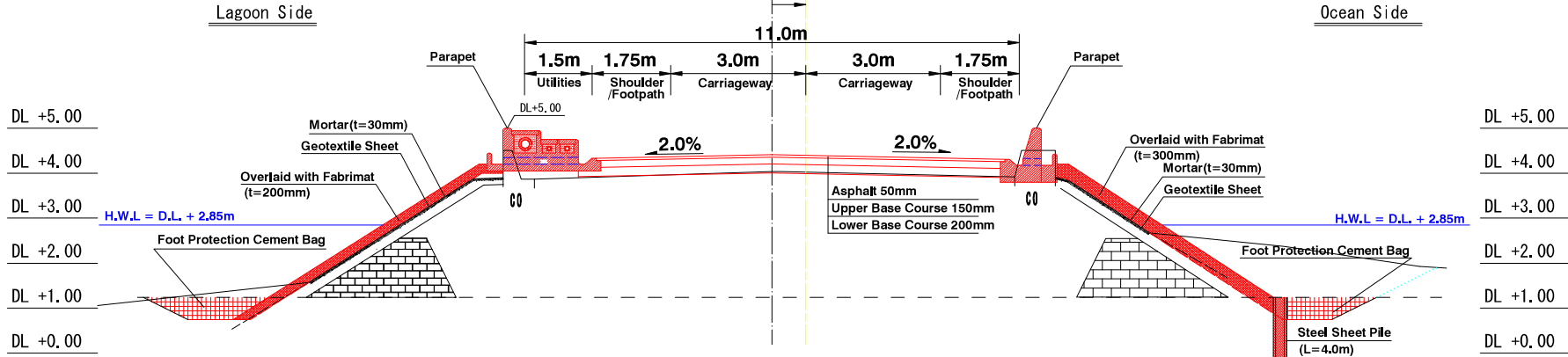
CROSS SECTION (20)

No. 34+00

GH=4.04

FH=4.41

RCL
0.75m (To be shifted)

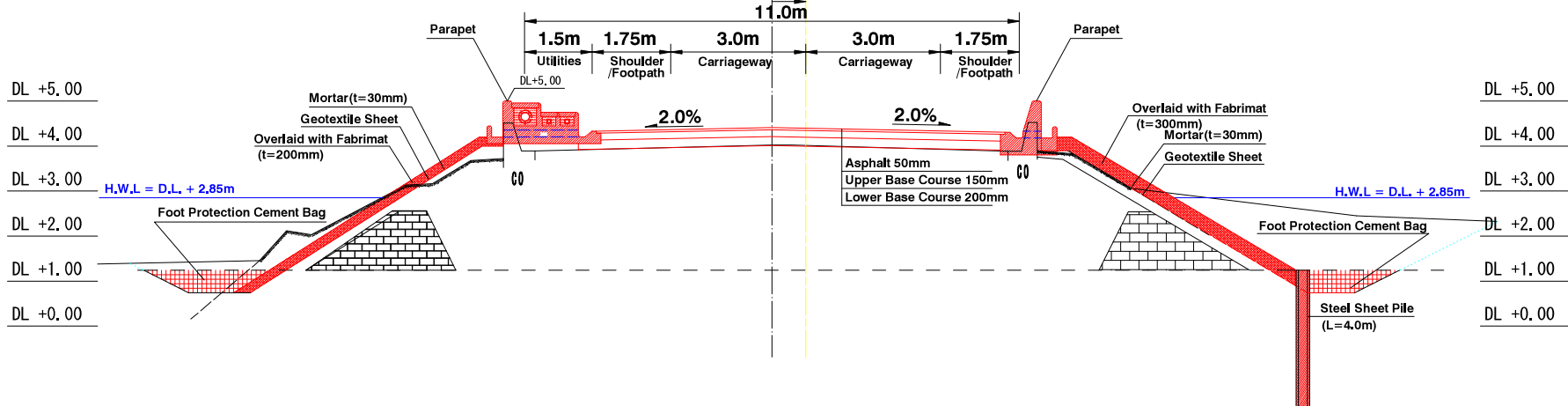


No. 33+00

GH=4.02

FH=4.41

RCL
0.75m (To be shifted)



AP11-56



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



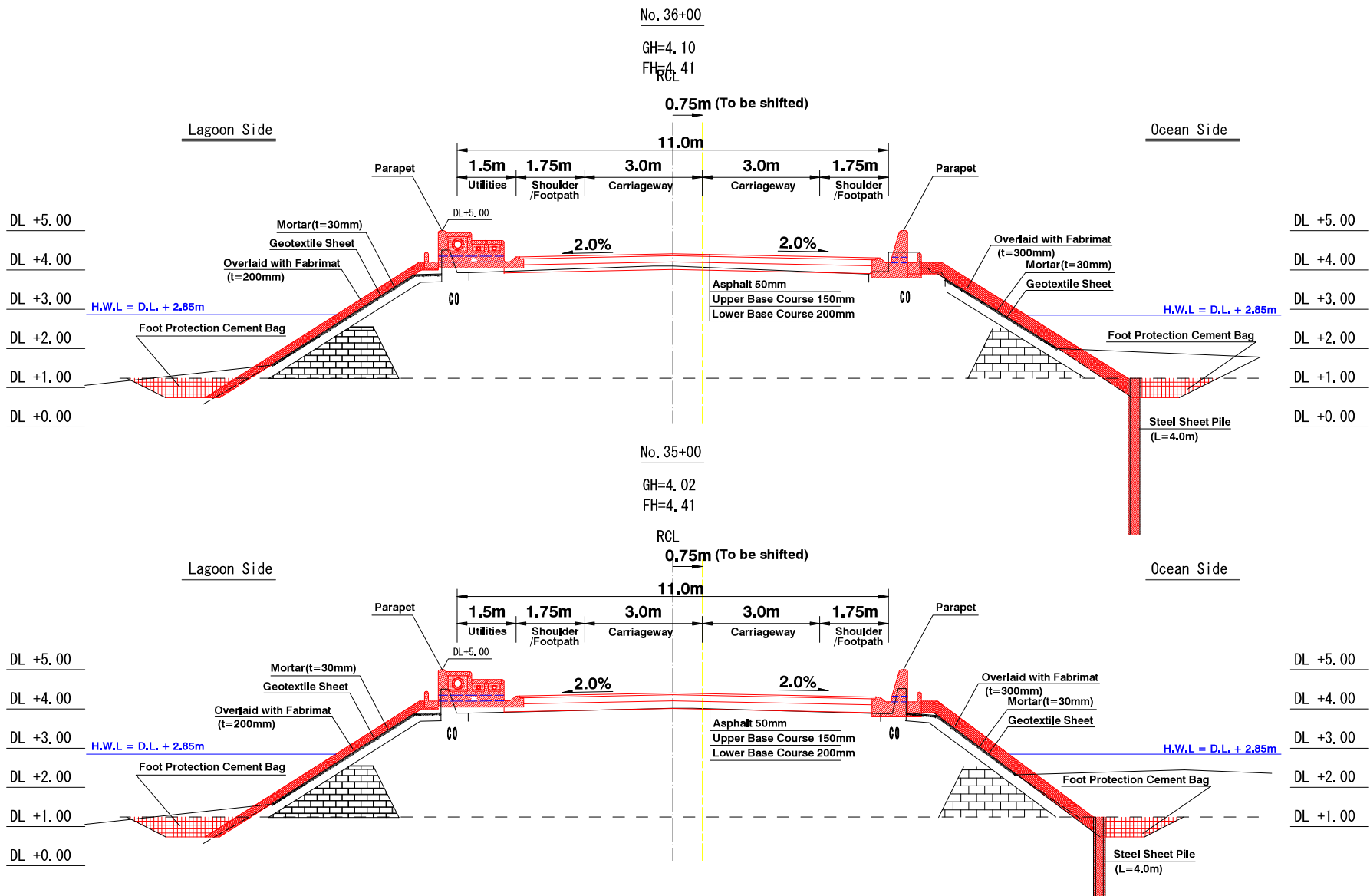
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (20)

| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 54 |

CROSS SECTION (21)



AP11-57



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
 Project Manager:

THE PREPARATORY SURVEY ON
 THE PROJECT FOR RECONSTRUCTION OF
 NIPPON CAUSEWAY ON TARAWA
 TO ADAPT CLIMATE CHANGE
 IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
 CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
 Checked
 Approved

TITLE:
 CROSS SECTION (21)

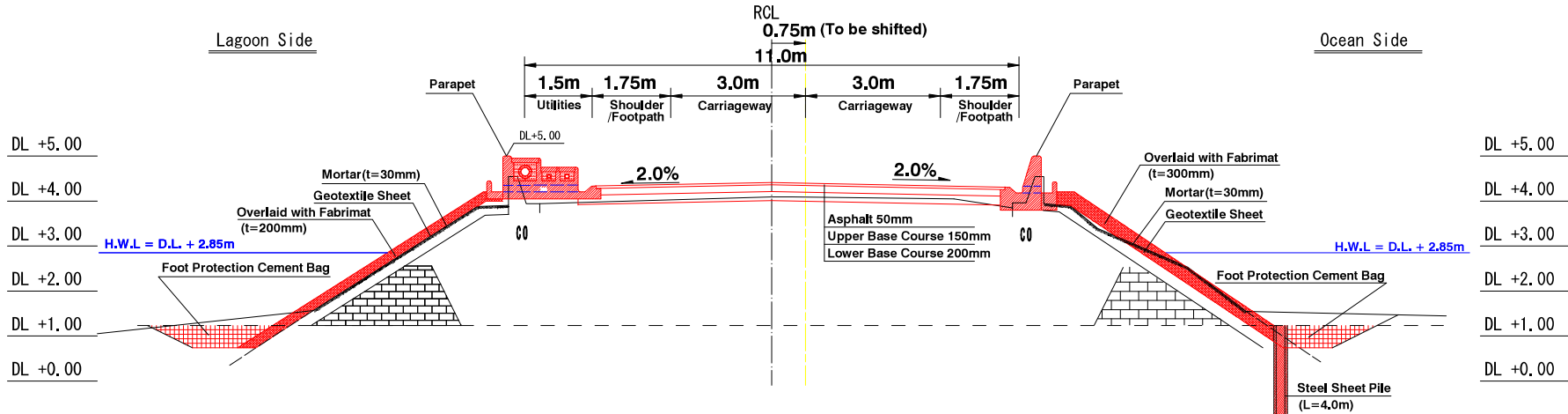
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 55 |

CROSS SECTION (22)

No. 38+00

GH=4.09

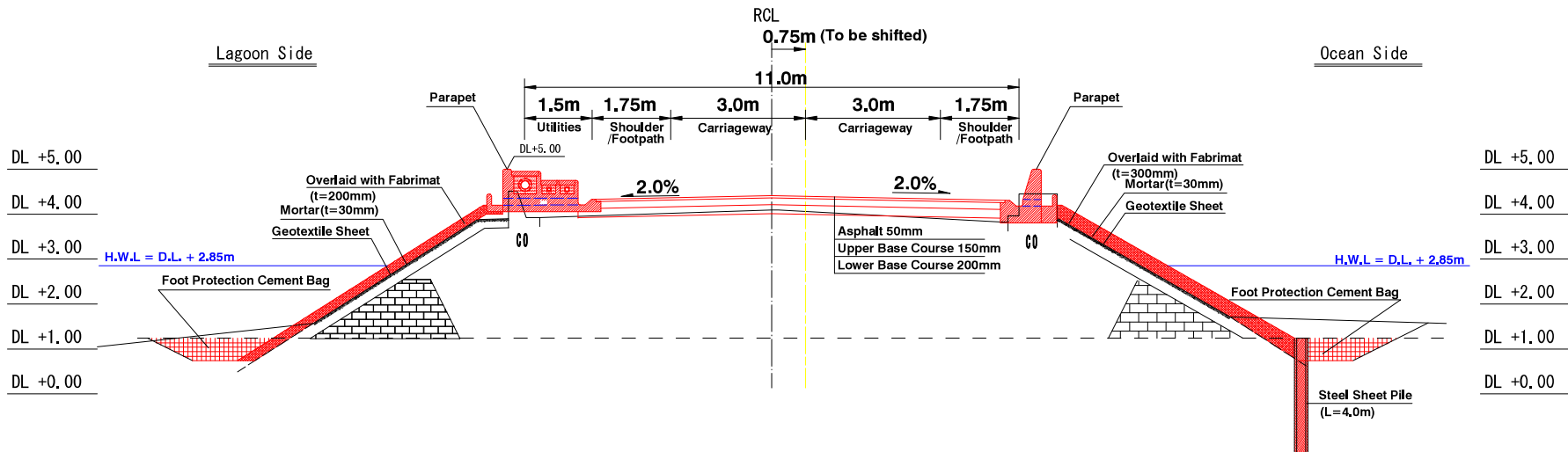
FH=4.41



No. 37+00

GH=4.09

FH=4.41



AP11-58



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (22)

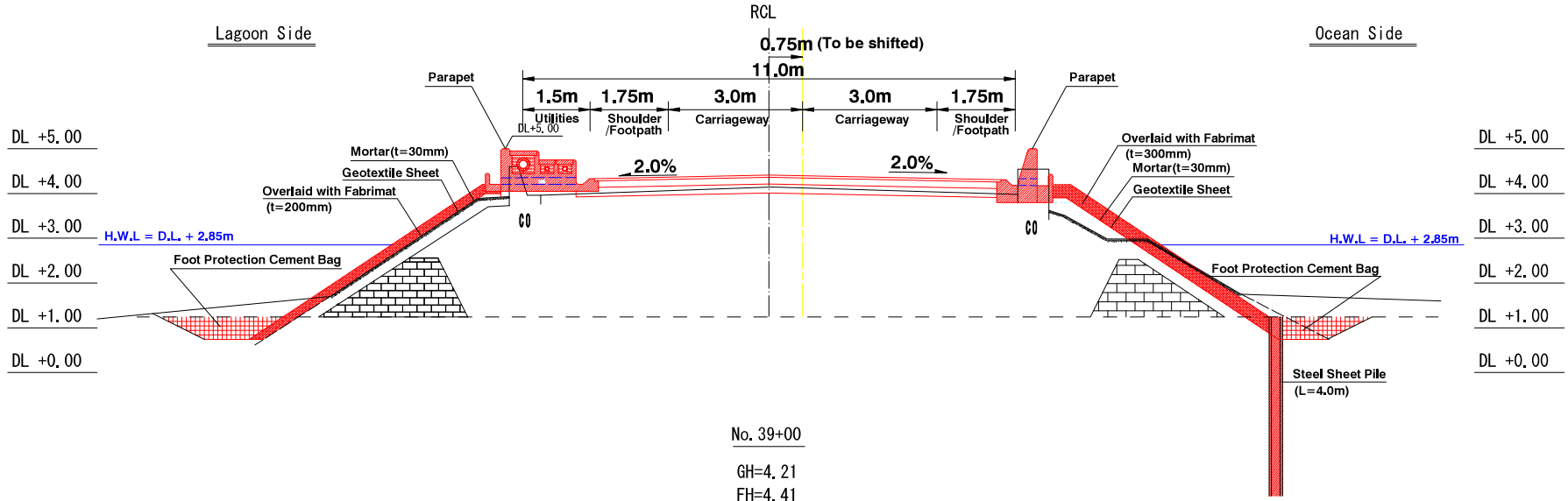
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| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 56 |

CROSS SECTION (23)

No. 40+00

GH=4.14

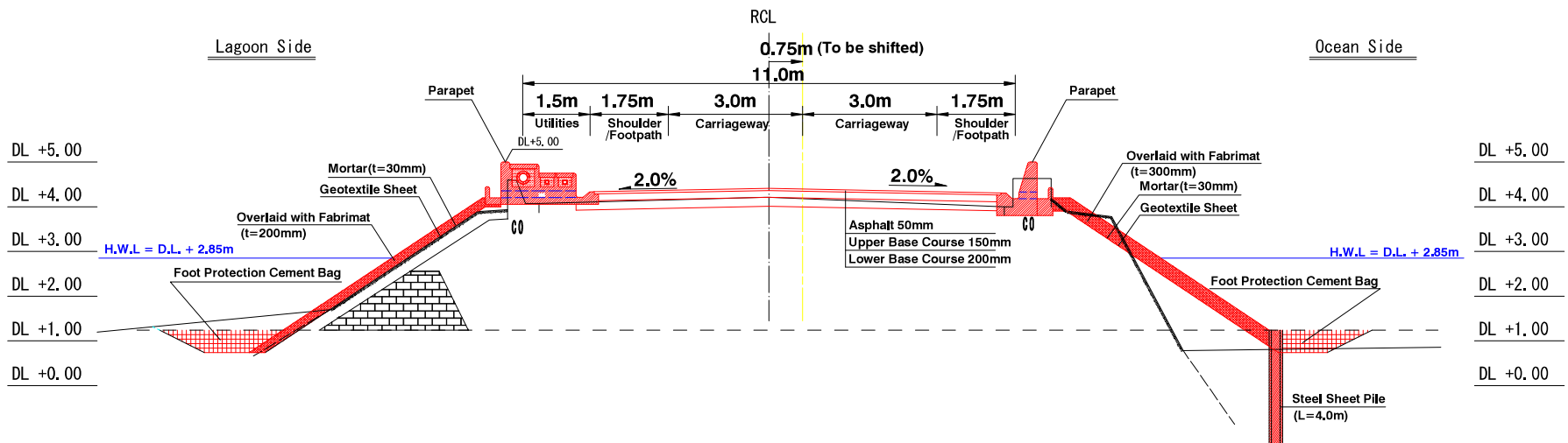
FH=4.41



No. 39+00

GH=4.21

FH=4.41



AP11-59



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



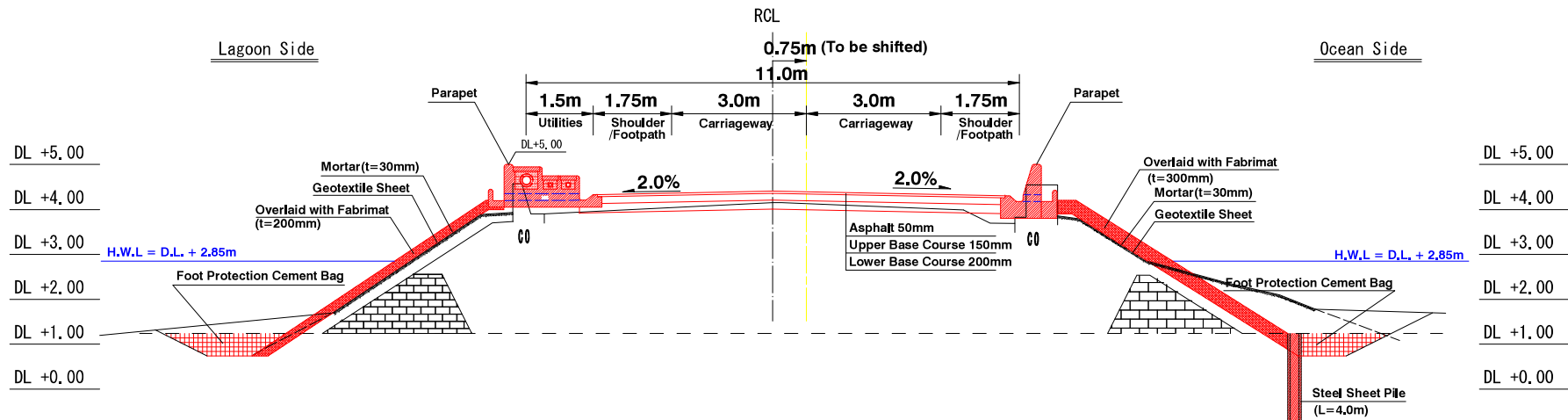
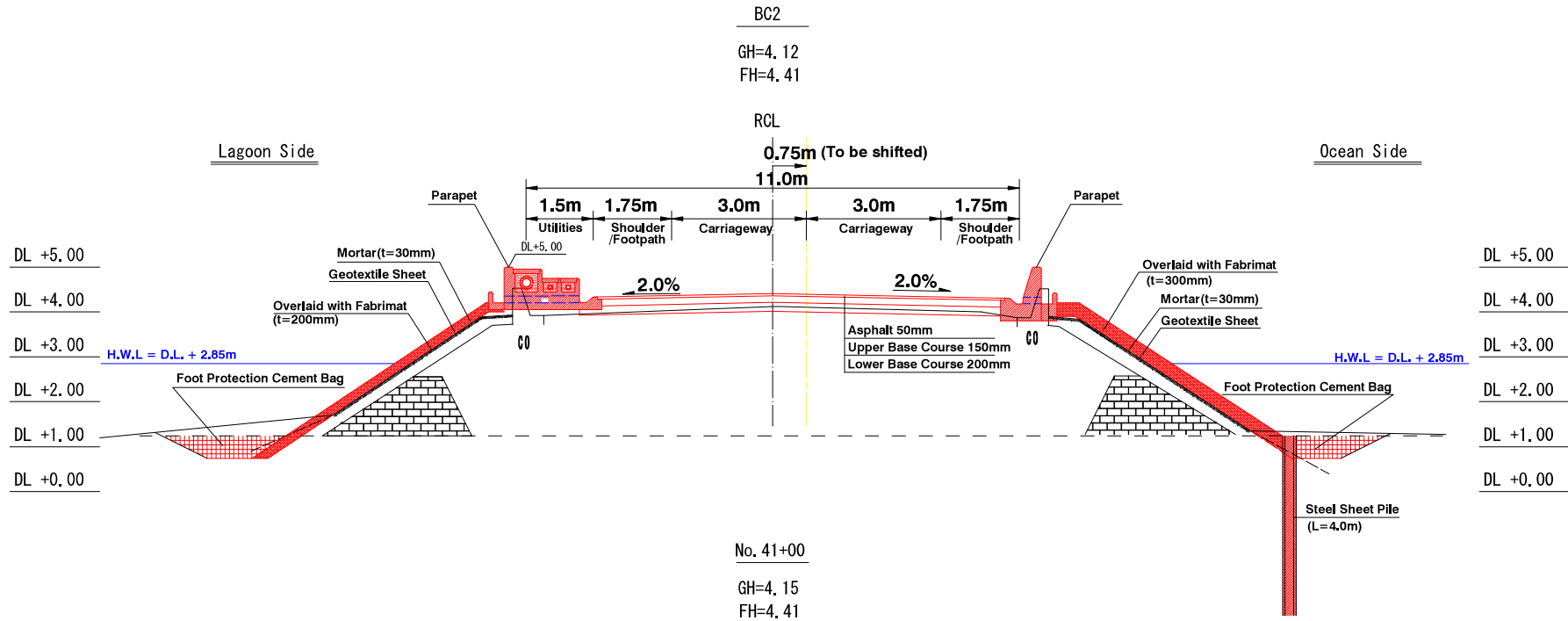
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (23)

| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 57 |

CROSS SECTION (24)



AP11-60



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (24)

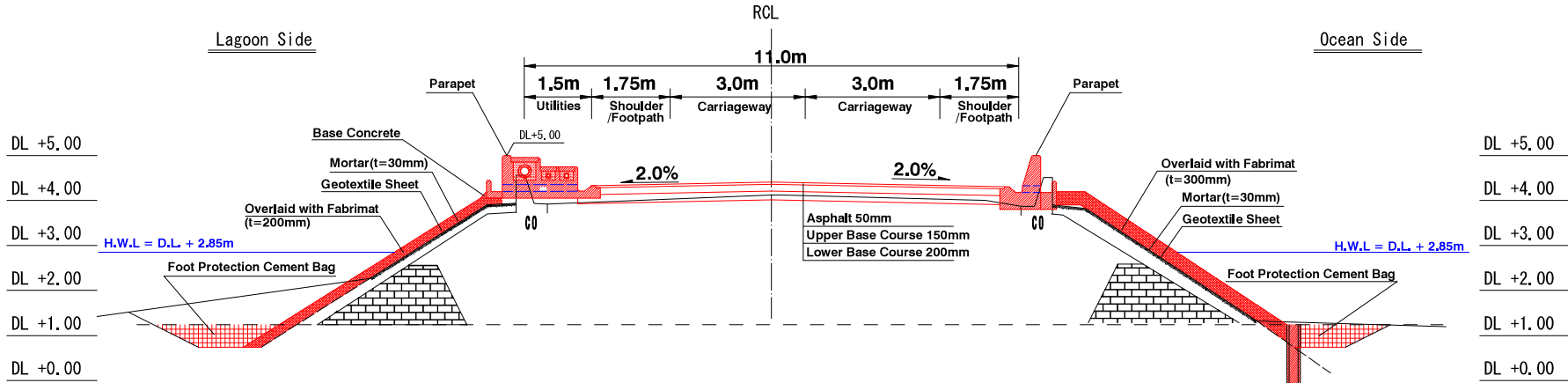
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 58 |

CROSS SECTION (25)

No. 43+00

GH=4.12

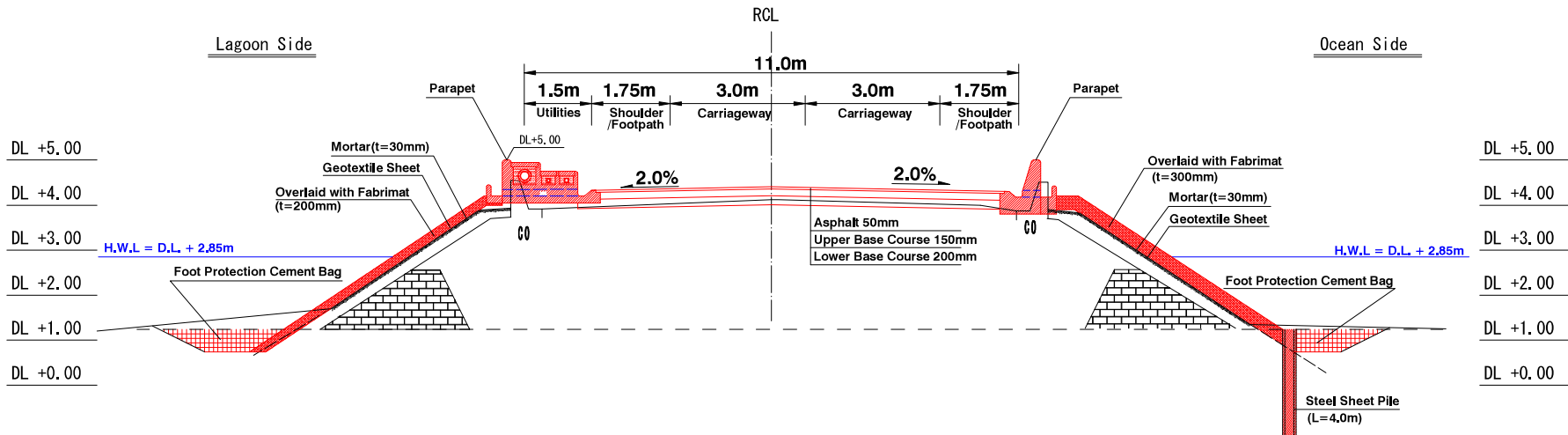
FH=4.41



No. 42+00

GH=4.12

FH=4.41



AP11-61



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (25)

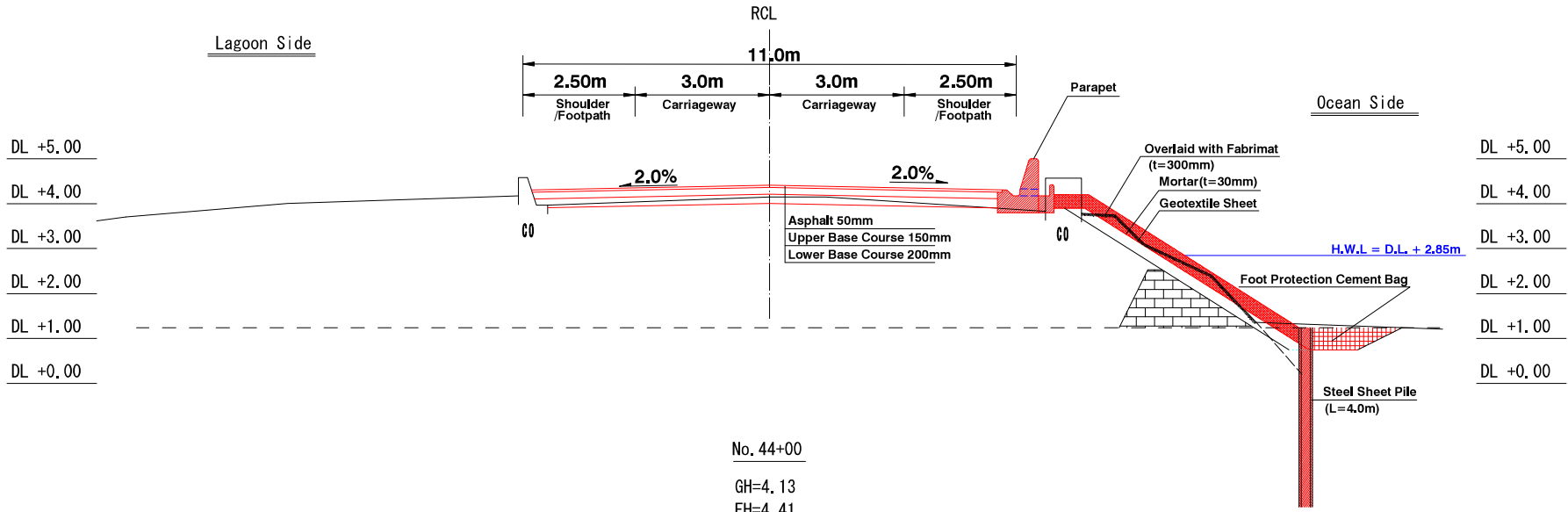
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 59 |

CROSS SECTION (26)

No. 45+00

GH=4.15

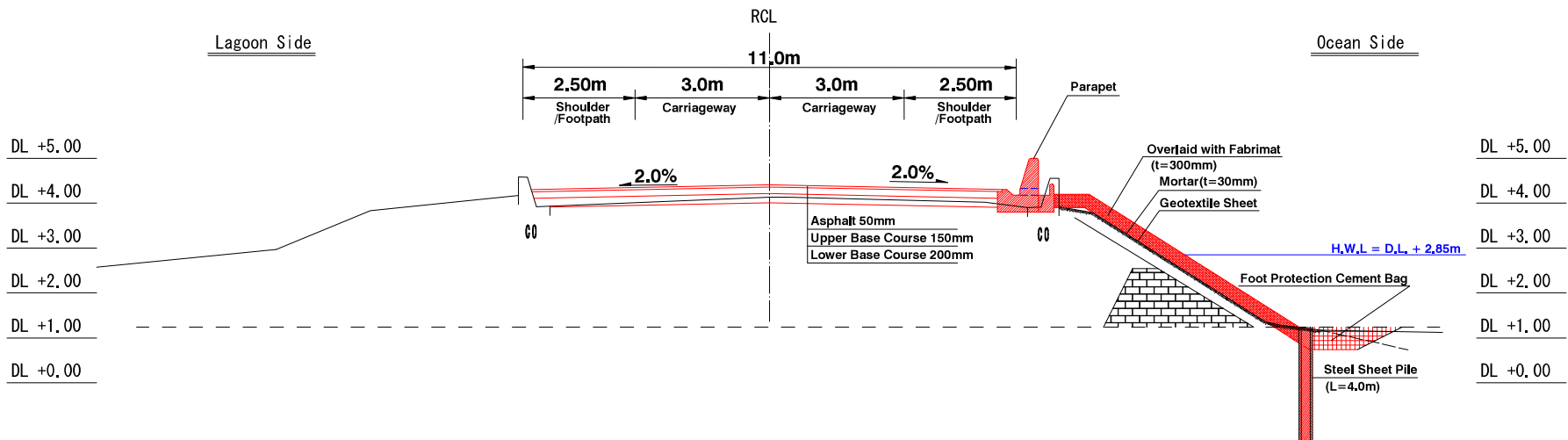
FH=4.41



No. 44+00

GH=4.13

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

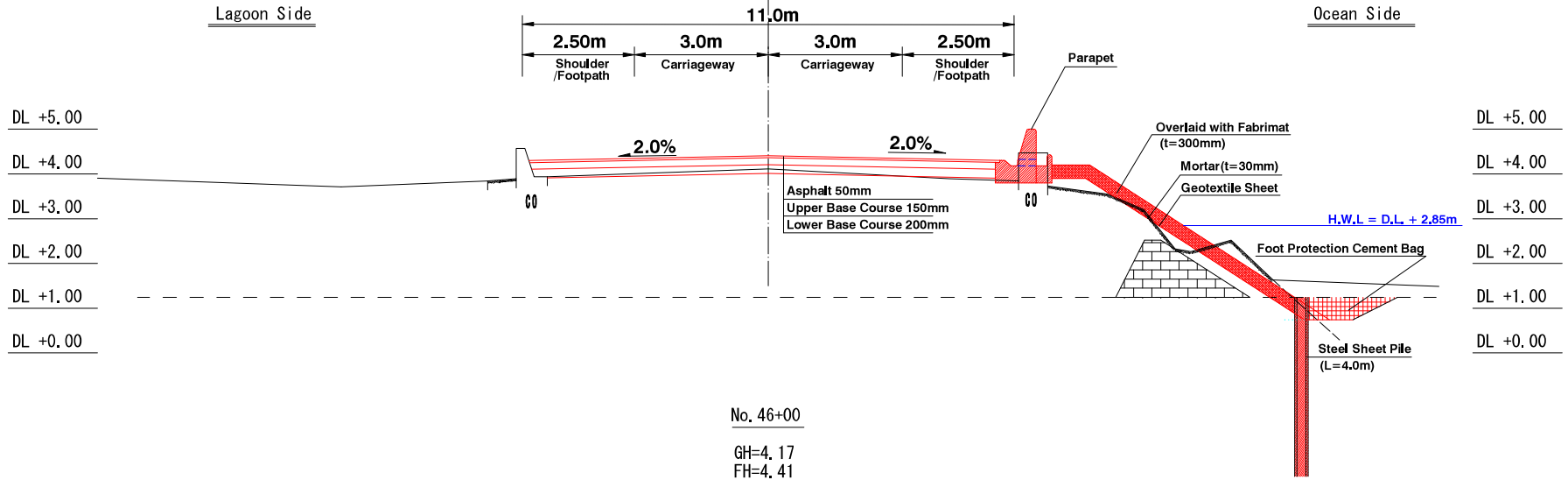
TITLE:
CROSS SECTION (26)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 60 |

CROSS SECTION (27)

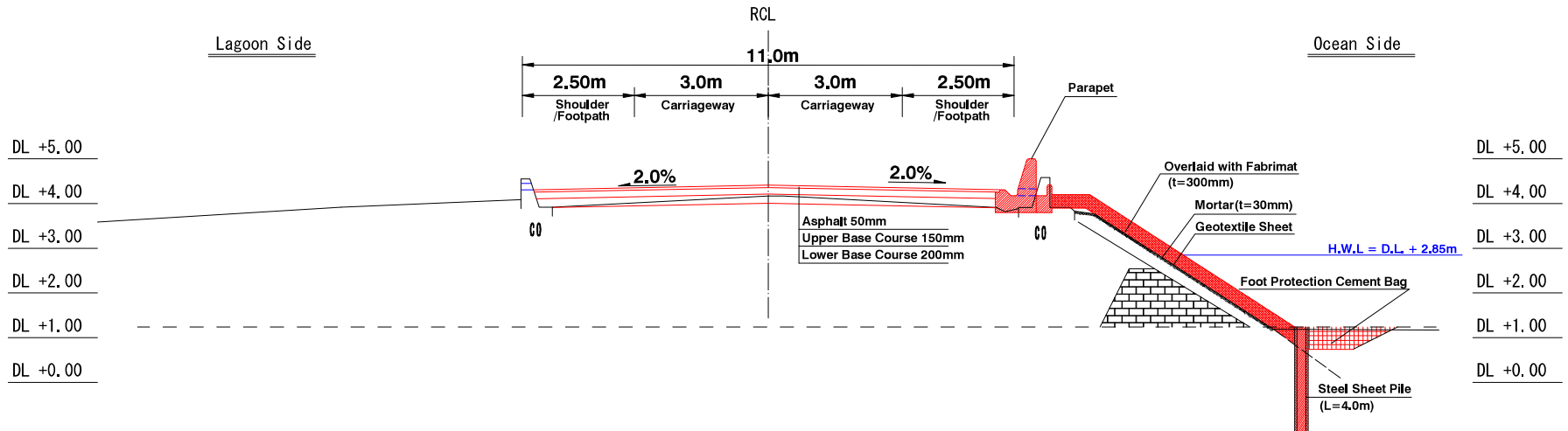
No. 47+00

GH=4.11
FH=4.41
RCL



No. 46+00

GH=4.17
FH=4.41
RCL



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (27)

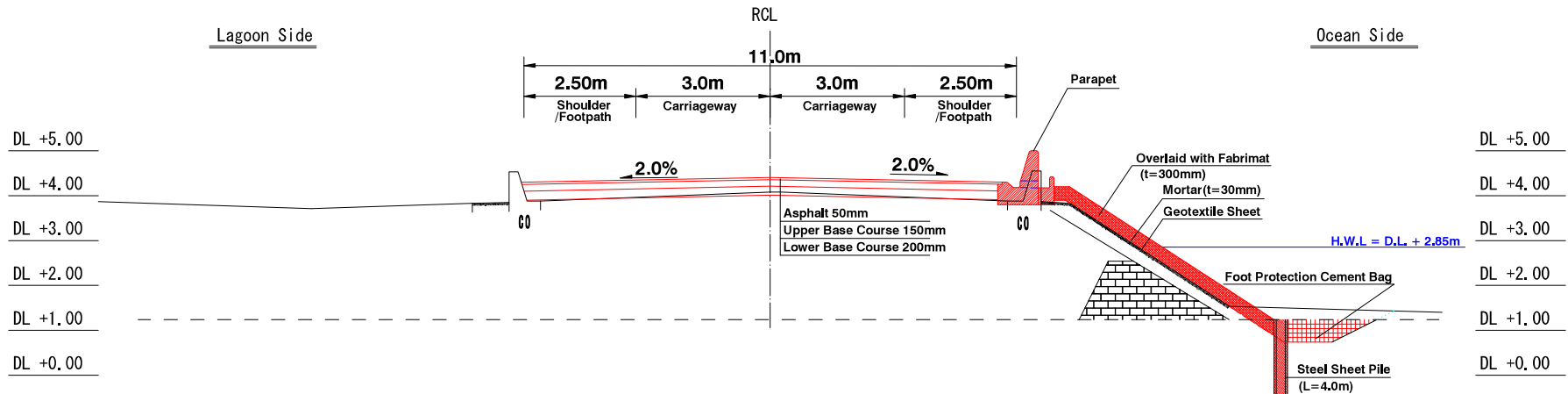
| SCALE | DRG. No. |
|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2018 | 61 |

CROSS SECTION (28)

No. 49+00

GH=4.08

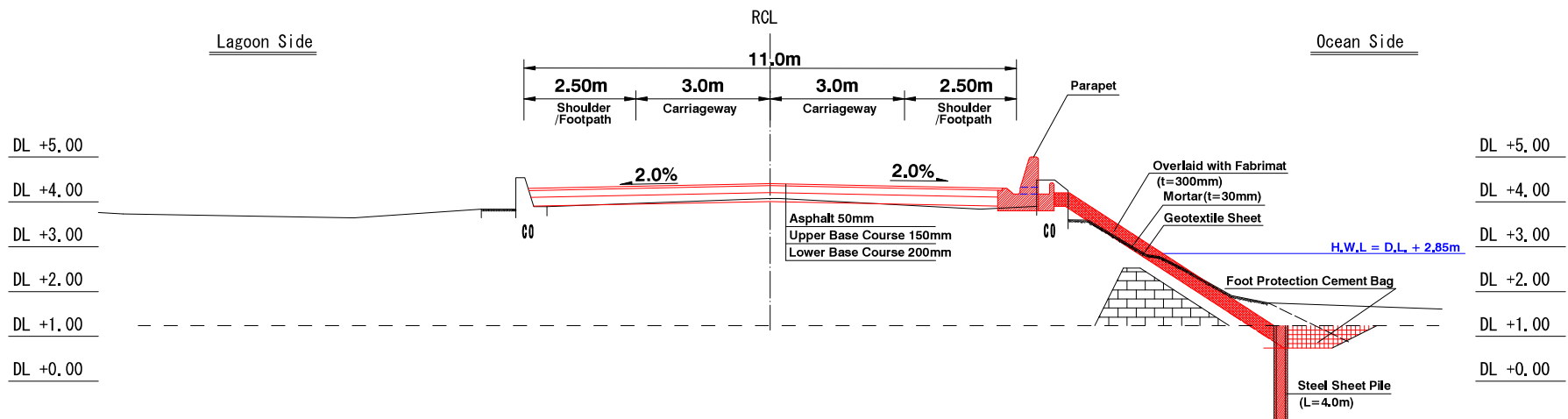
FH=4.41



No. 48+00

GH=4.08

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (28)

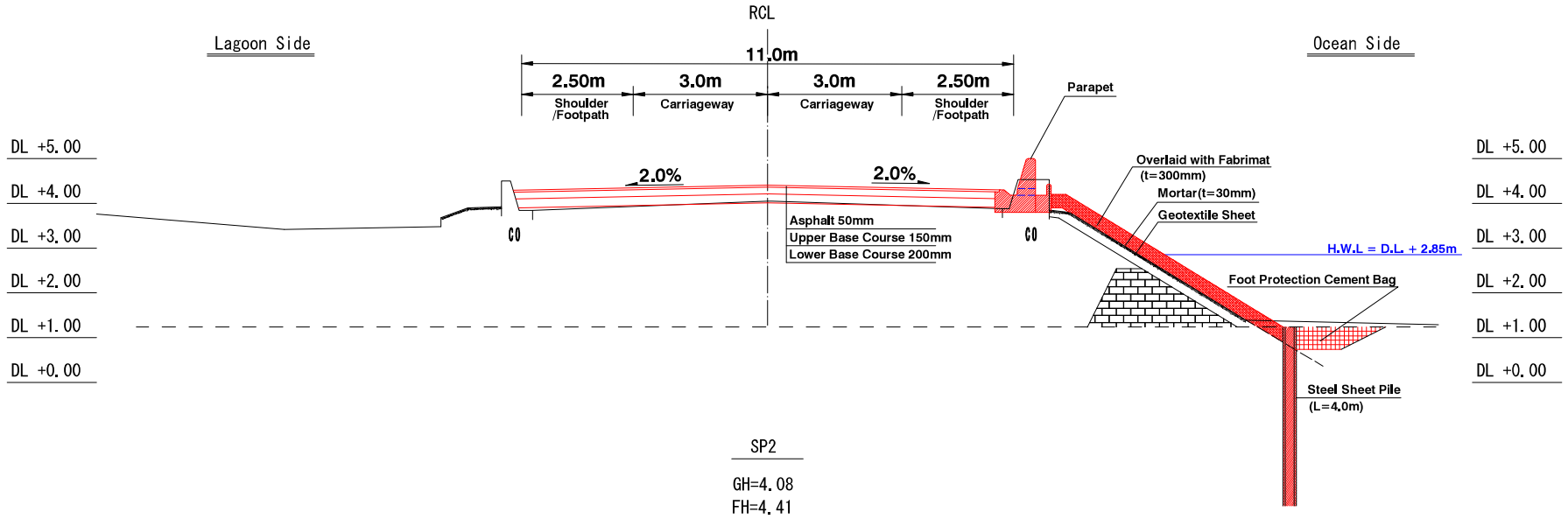
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 62 |

CROSS SECTION (29)

No. 50+00

GH=4.05

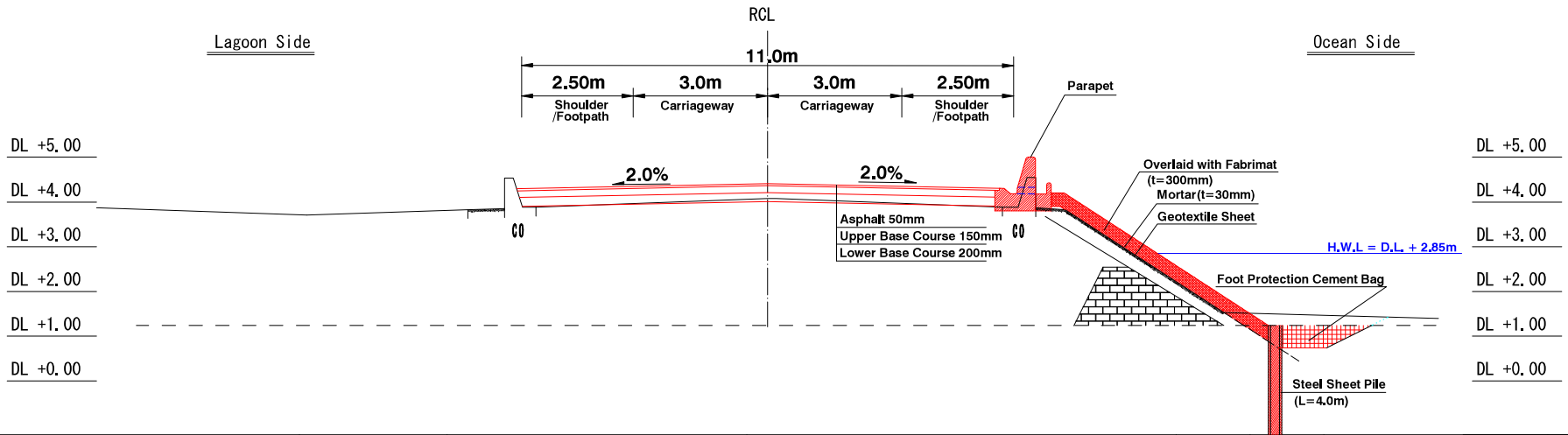
FH=4.41



SP2

GH=4.08

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
THE PROJECT FOR RECONSTRUCTION OF
NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (29)

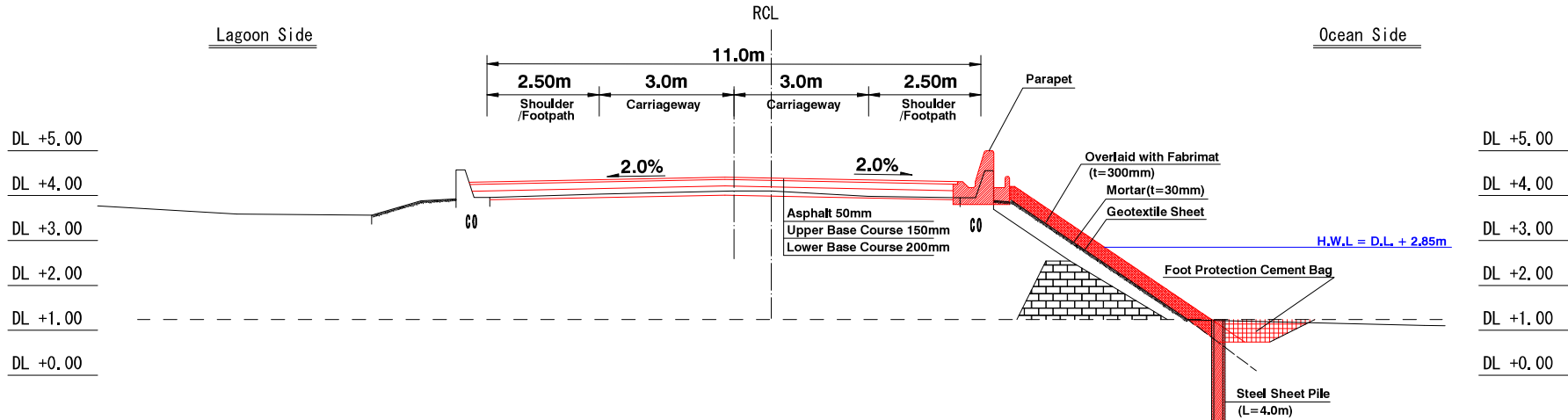
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 63 |

CROSS SECTION (30)

No. 52+00

GH=4.10

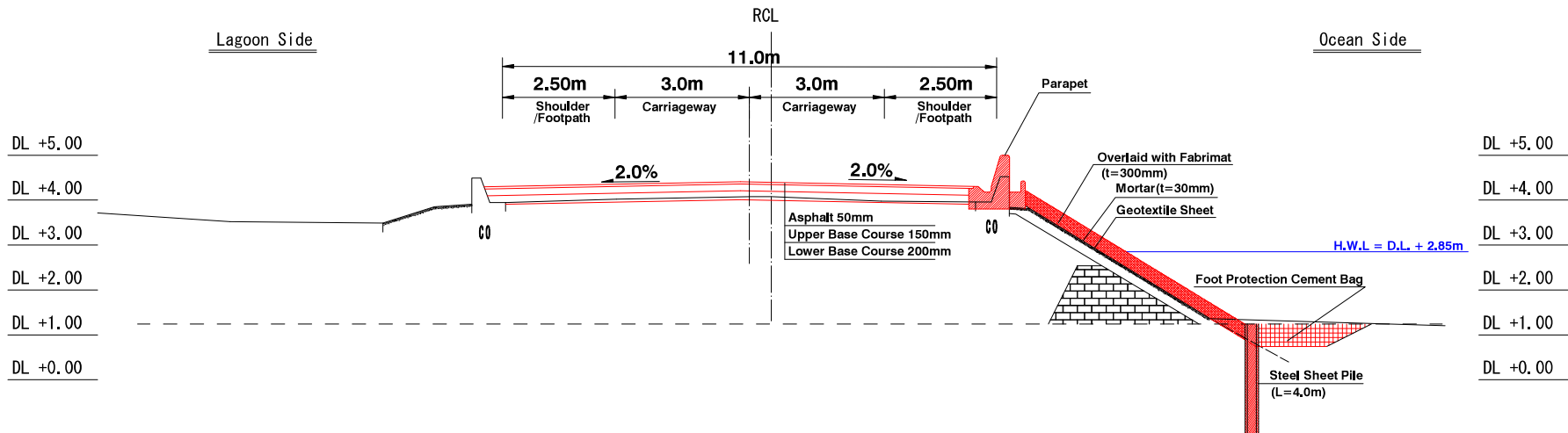
FH=4.41



No. 51+00

GH=4.08

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

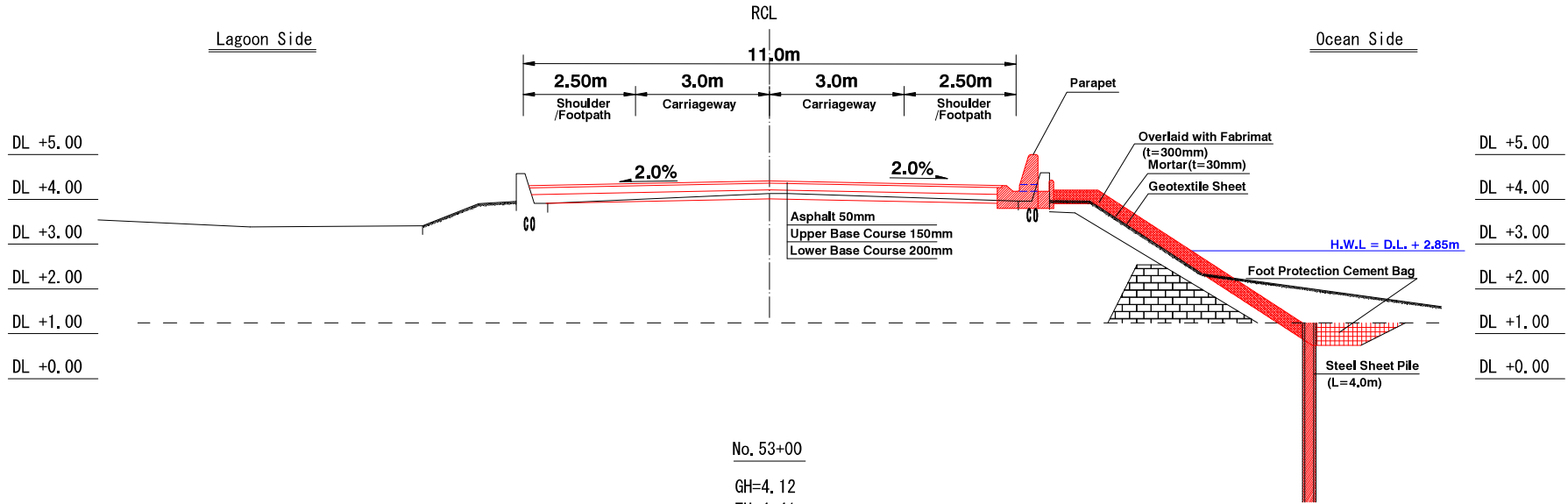
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CROSS SECTION (30)

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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 64 |

CROSS SECTION (31)

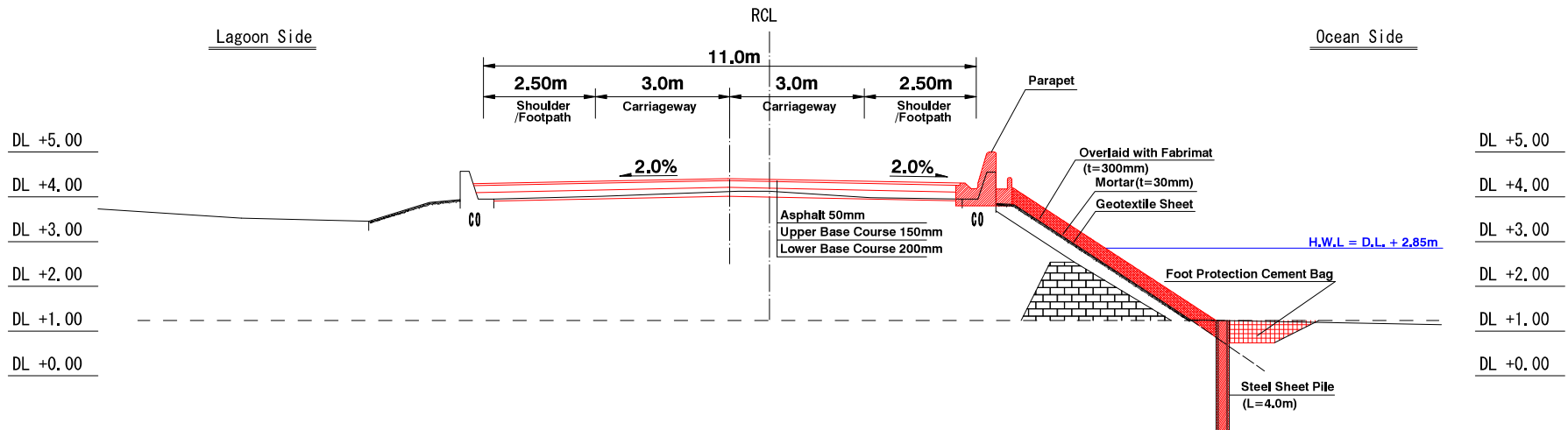
No. 54+00

GH=4.13
FH=4.41



No. 53+00

GH=4.12
FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (31)

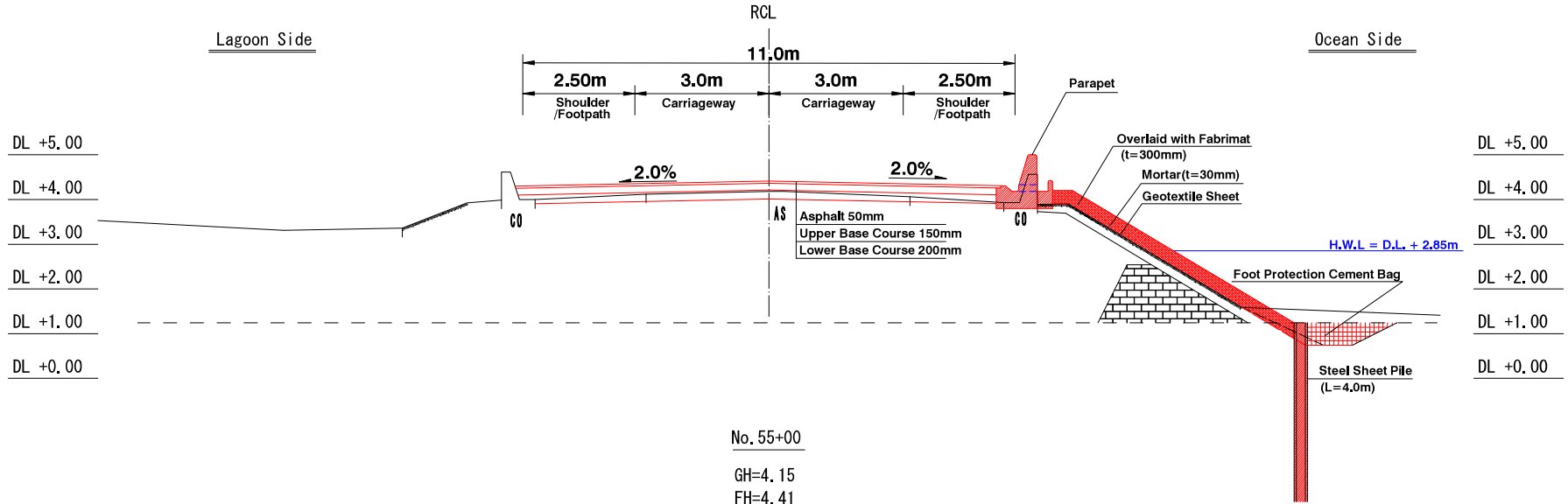
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 65 |

CROSS SECTION (32)

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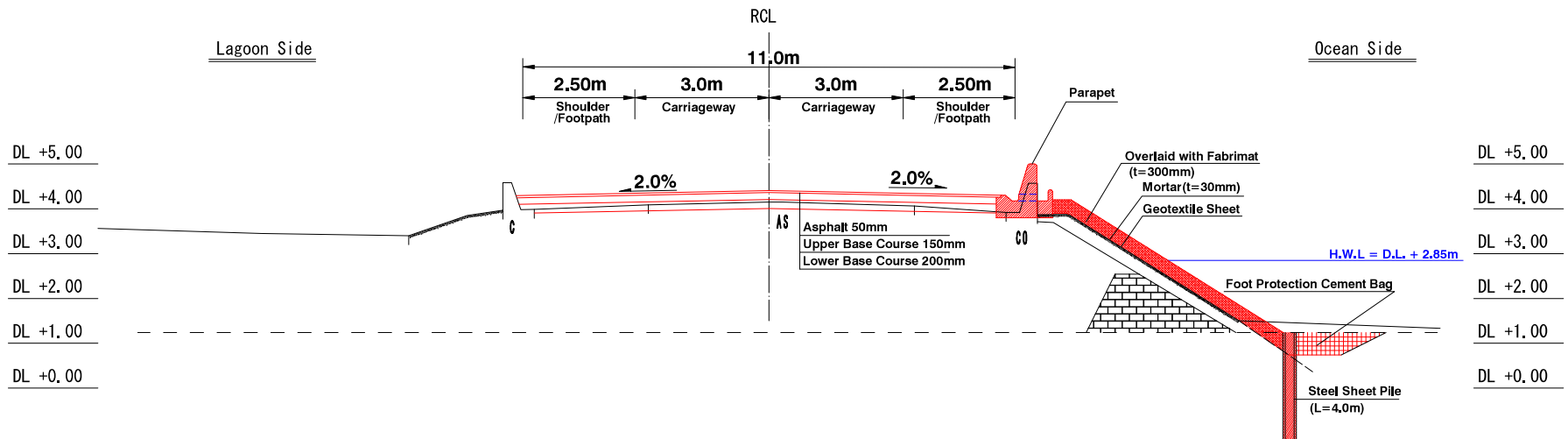
FH=4.41



No. 55+00

GH=4.15

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (32)

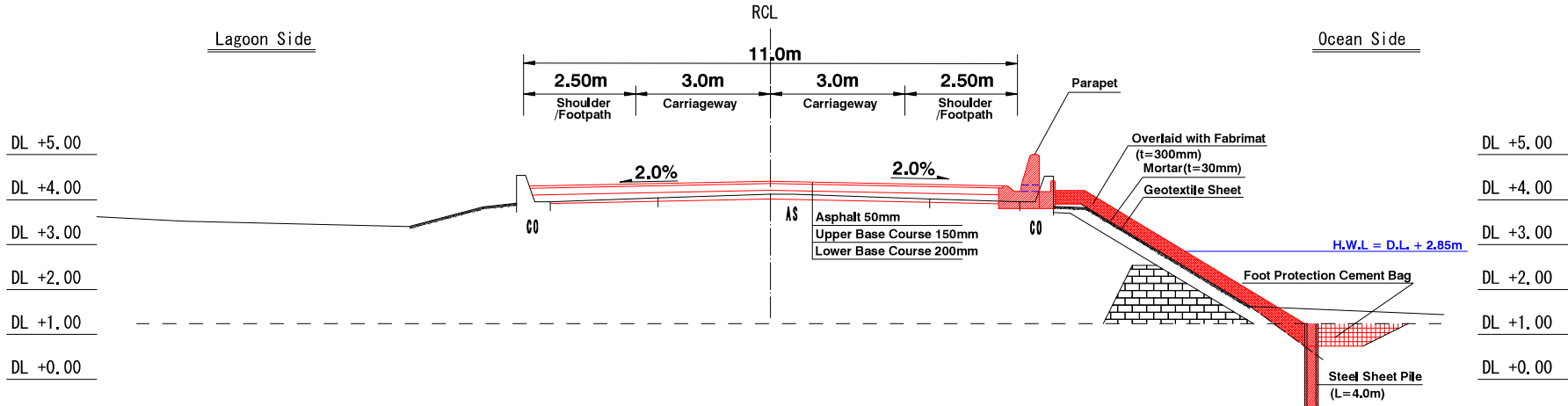
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|-----------|-----------|
| | CS-1-37 |
| DATE | SHEET No. |
| Mar. 2016 | 66 |

CROSS SECTION (33)

No. 57+00

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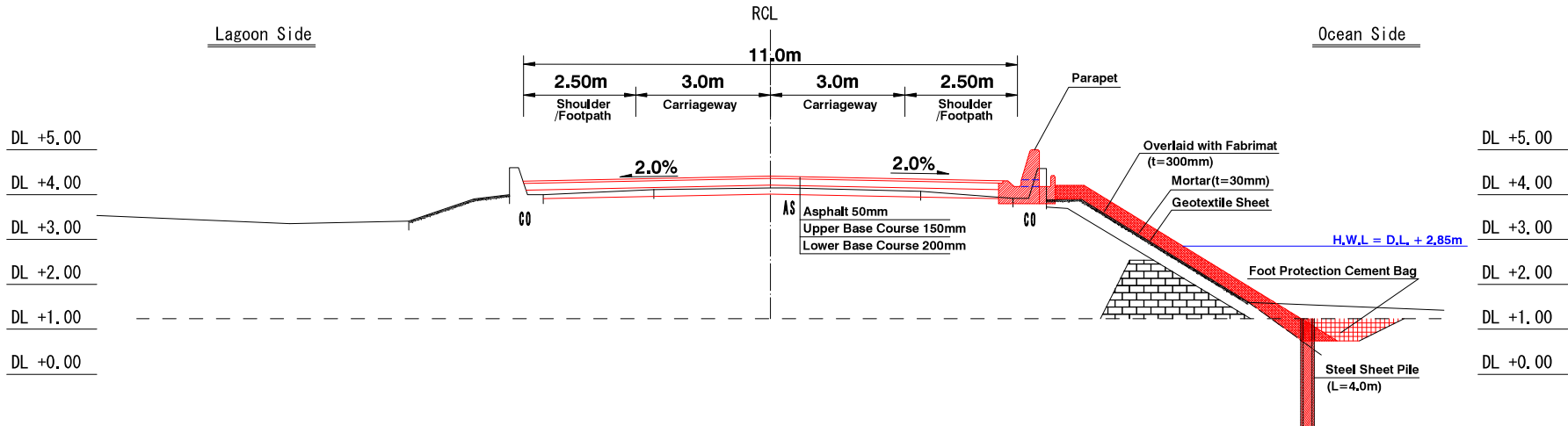
FH=4.41



EC2

GH=4.15

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
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IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (33)

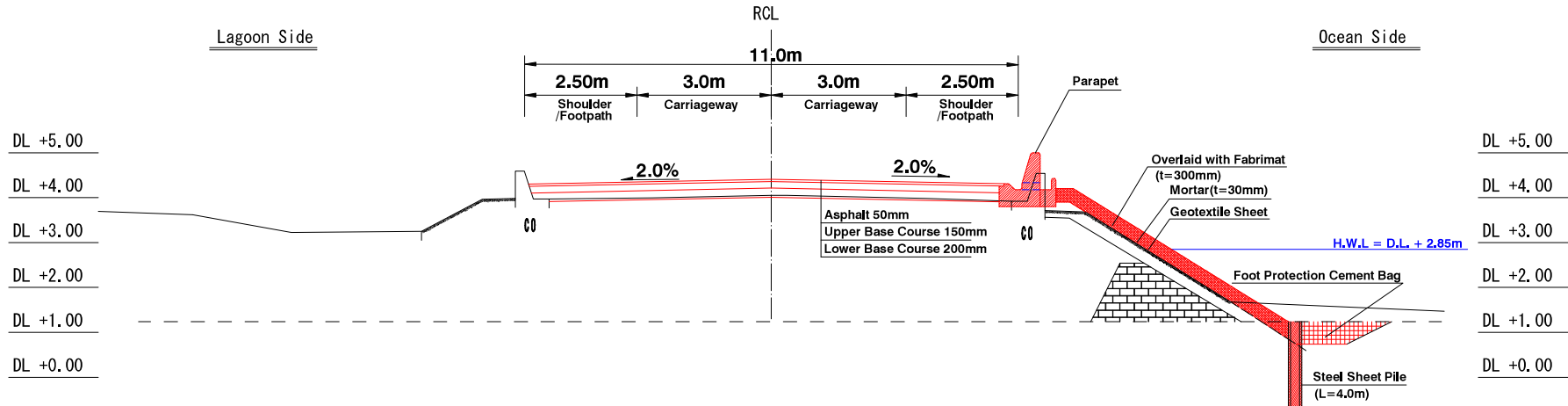
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2016 | 67 |

CROSS SECTION (34)

No. 59+00

GH=4.05

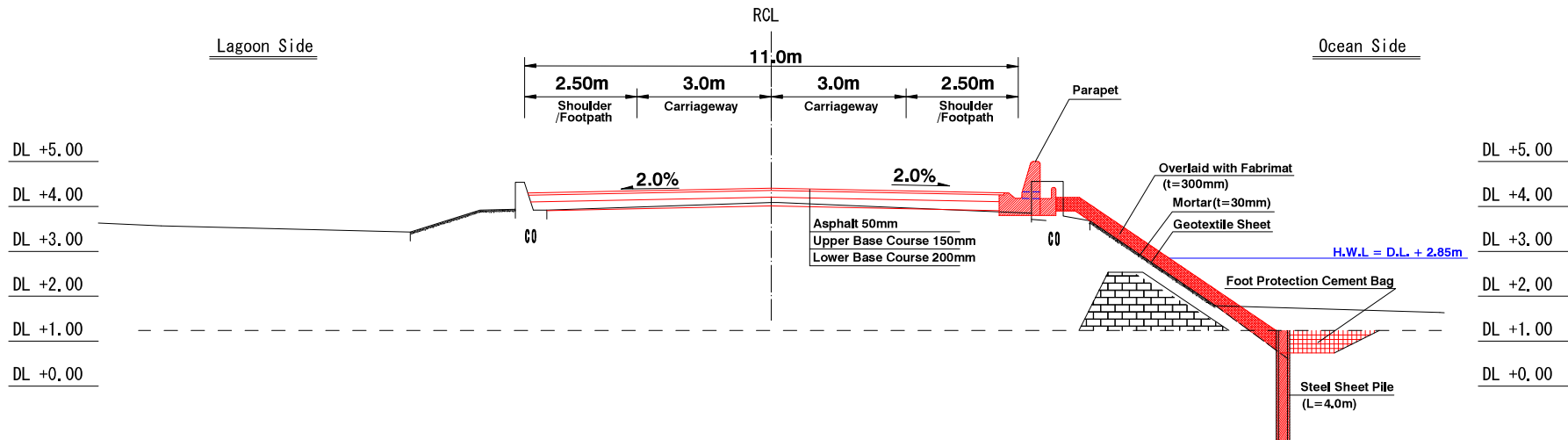
FH=4.41



No. 58+00

GH=4.09

FH=4.41



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (34)

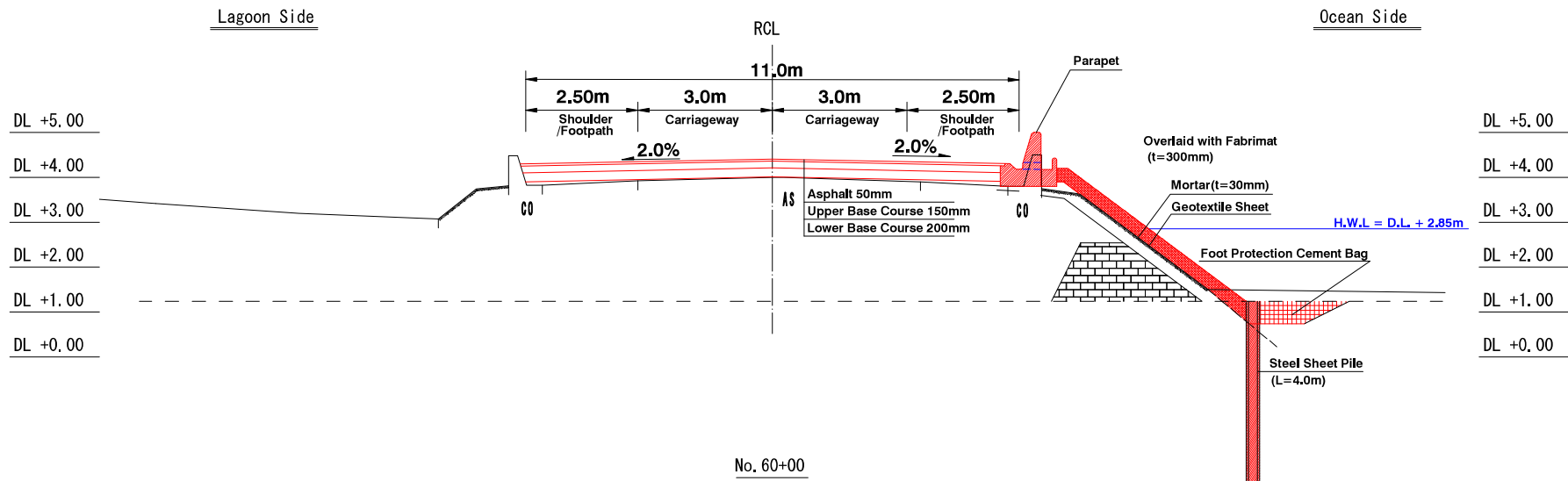
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 68 |

CROSS SECTION (35)

No. 61+00

GH=4.00

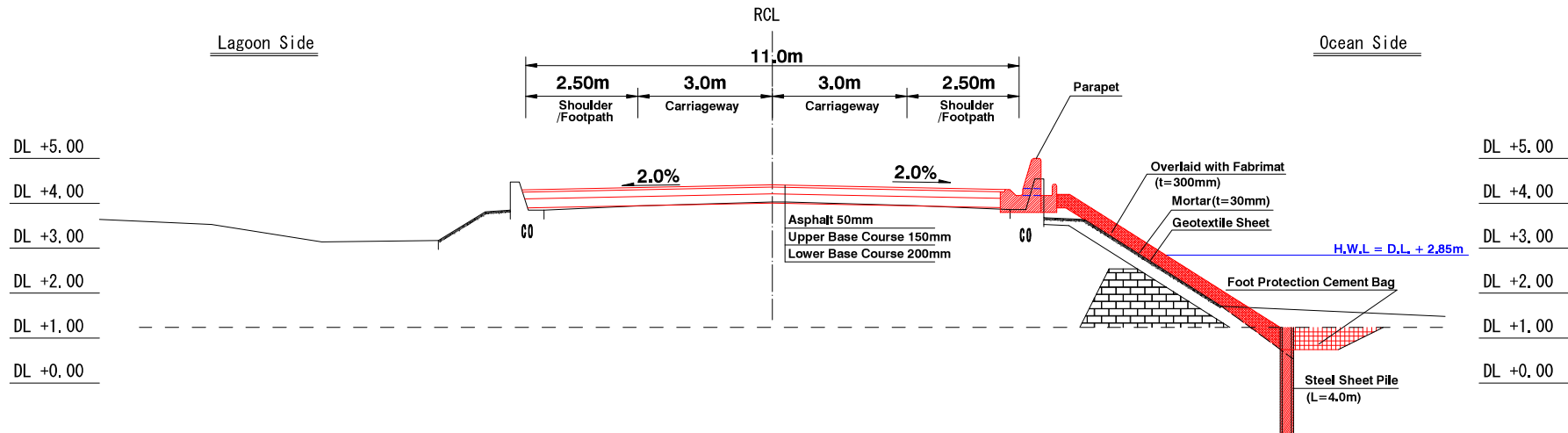
FH=4.41



No. 60+00

GH=4.03

FH=4.41



AP11-71



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
CROSS SECTION (35)

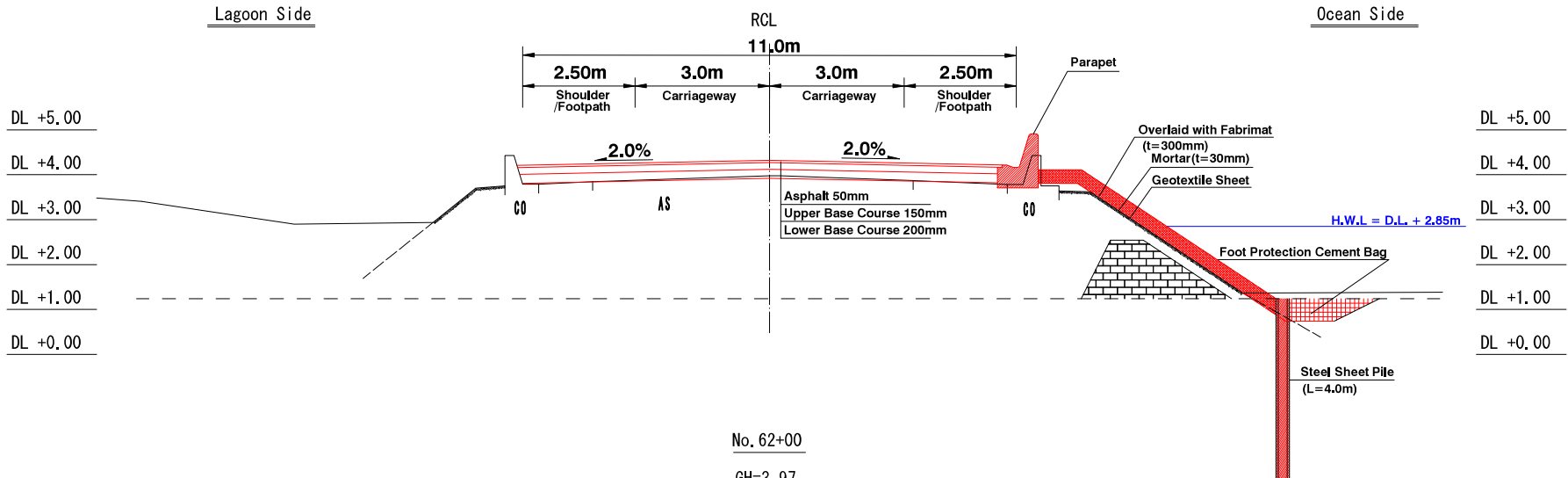
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| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 69 |

CROSS SECTION (36)

No. 63+00

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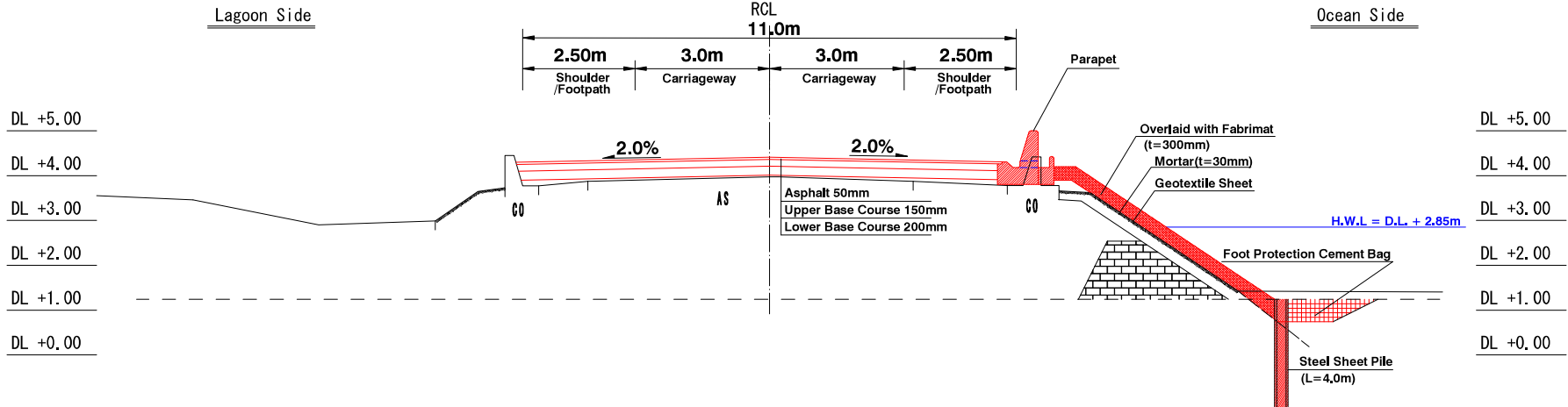
FH=4.32



No. 62+00

GH=3.97

FH=4.41

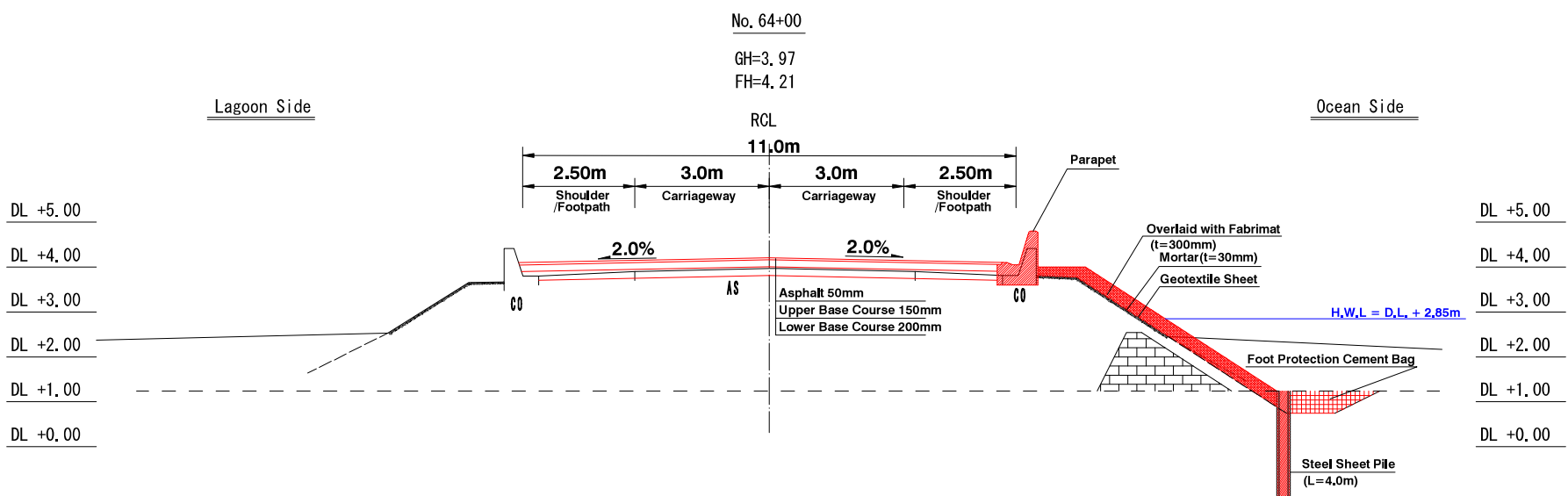
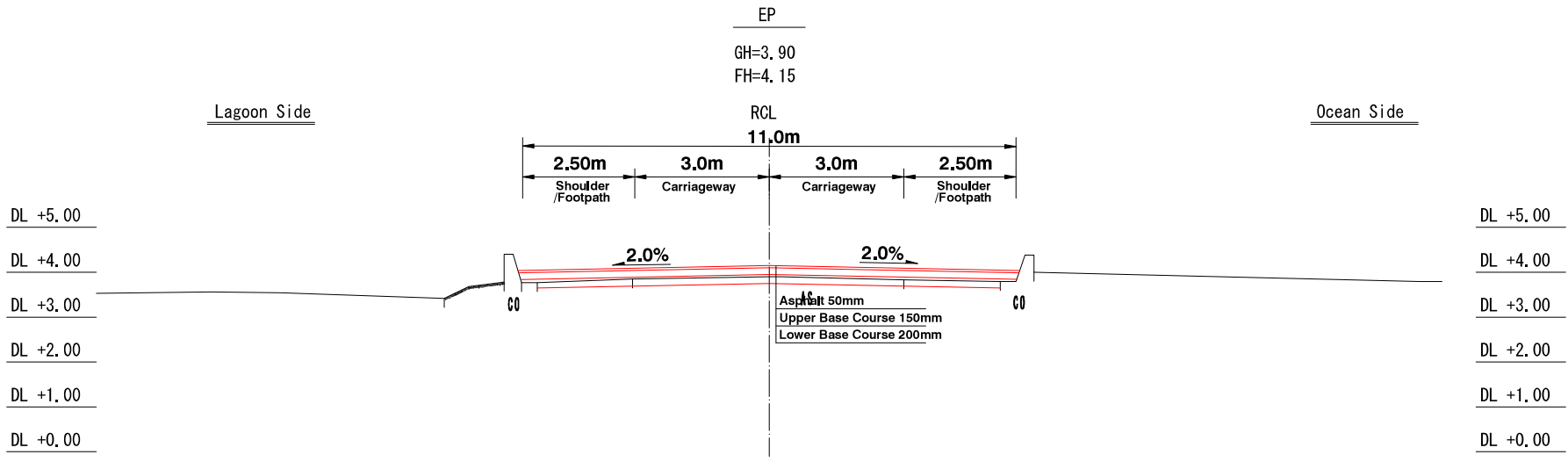


AP11-72

| | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------|-----------|-----------|
|  MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU) | Approved by Project Manager: | THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC |  JAPAN INTERNATIONAL COOPERATION AGENCY | Designed | TITLE: CROSS SECTION (36) | SCALE | DRG. No. |
| | | | | Checked | | DATE | SHEET No. |
| | | | | Approved | | Mar. 2016 | 70 |


CTI ENGINEERING INTERNATIONAL CO., LTD.

CROSS SECTION (37)



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
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TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

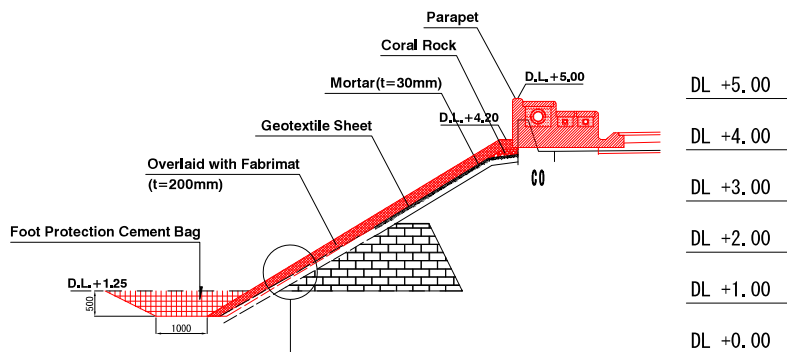
Designed
Checked
Approved

TITLE:
CROSS SECTION (37)

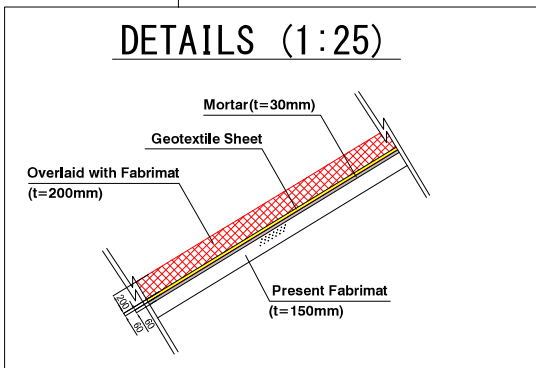
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|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 71 |

TYPICAL DRAWING OF REVETMENT STRENGTHENING (1)

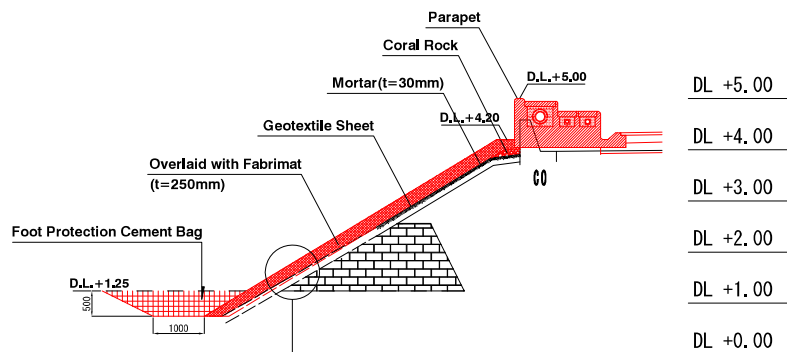
Overlaid with Fabrimat (t=200mm)



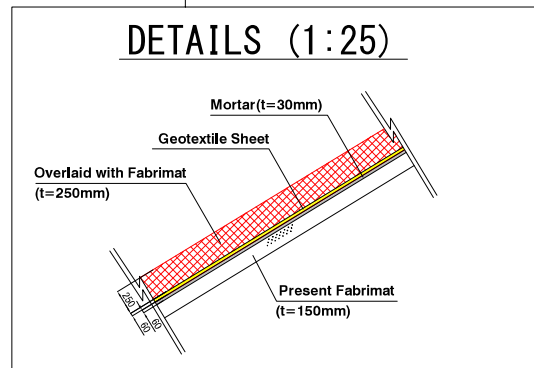
DETAILS (1:25)



Overlaid with Fabrimat (t=250mm)



DETAILS (1:25)



AP11-74



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
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NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

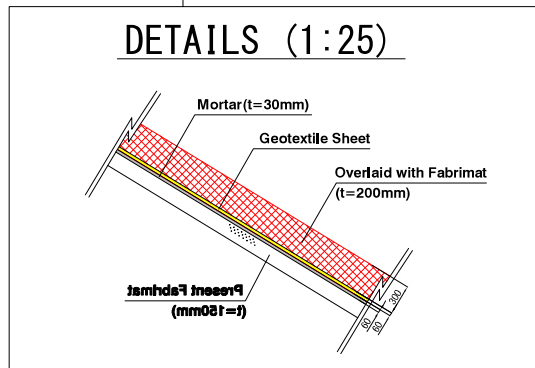
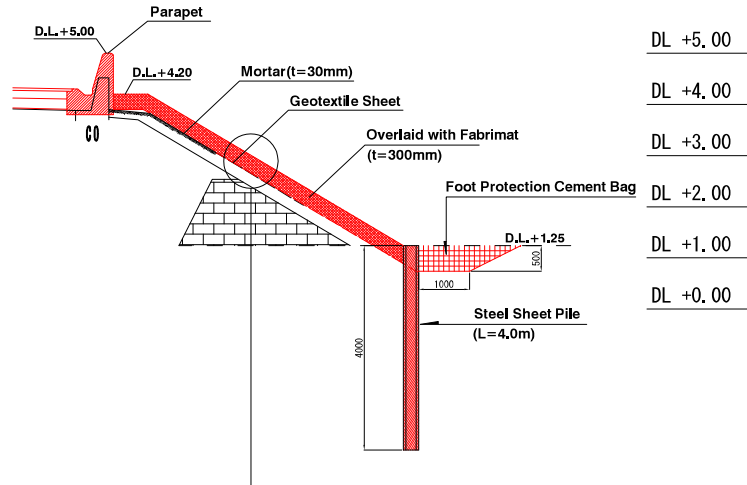
Designed
Checked
Approved

TITLE:
TYPICAL DRAWING OF
REVTMENT STRENGTHENING (1)

| SCALE | DRG. No. |
|-----------|-----------|
| 1:50 | TRS-1-2 |
| DATE | SHEET No. |
| Mar. 2018 | 72 |

TYPICAL DRAWING OF REVETMENT STRENGTHENING (2)

Overlaid with Fabrimat (t=300mm)+Steel Sheet Pile



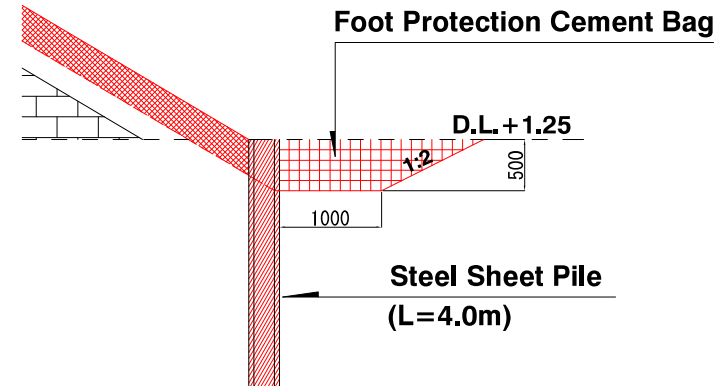
Foot Protection Cement Bags (1:25)

~Overlaid with Fabrimat (t=200mm, t=250mm)~

Foot Protection Cement Bag



~Overlaid with Fabrimat (t=300mm)+Steel Sheet Pile~



AP11-75



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

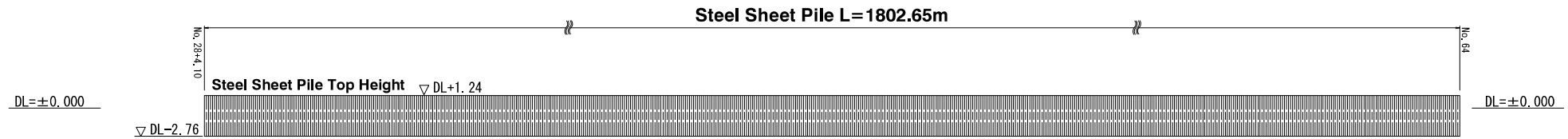
Designed
Checked
Approved

TITLE:
TYPICAL DRAWING OF REVETMENT STRENGTHENING (2)

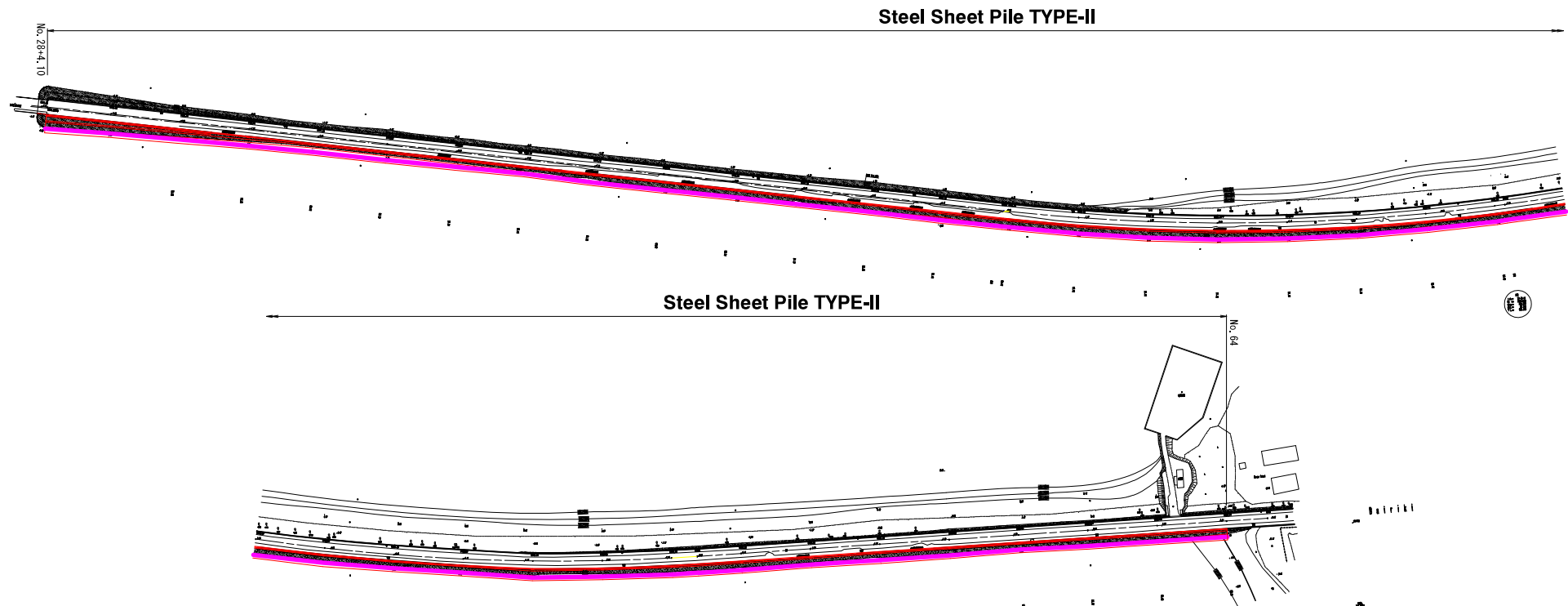
| SCALE | DRG. No. |
|-----------|-----------|
| 1:50 | TRS-1-2 |
| DATE | SHEET No. |
| Mar. 2018 | 73 |

TYPICAL DRAWING OF STEEL SHEET PILE

FRONT VIEW (No. 28+4.1~No. 64) L=1802.65m



PLAN

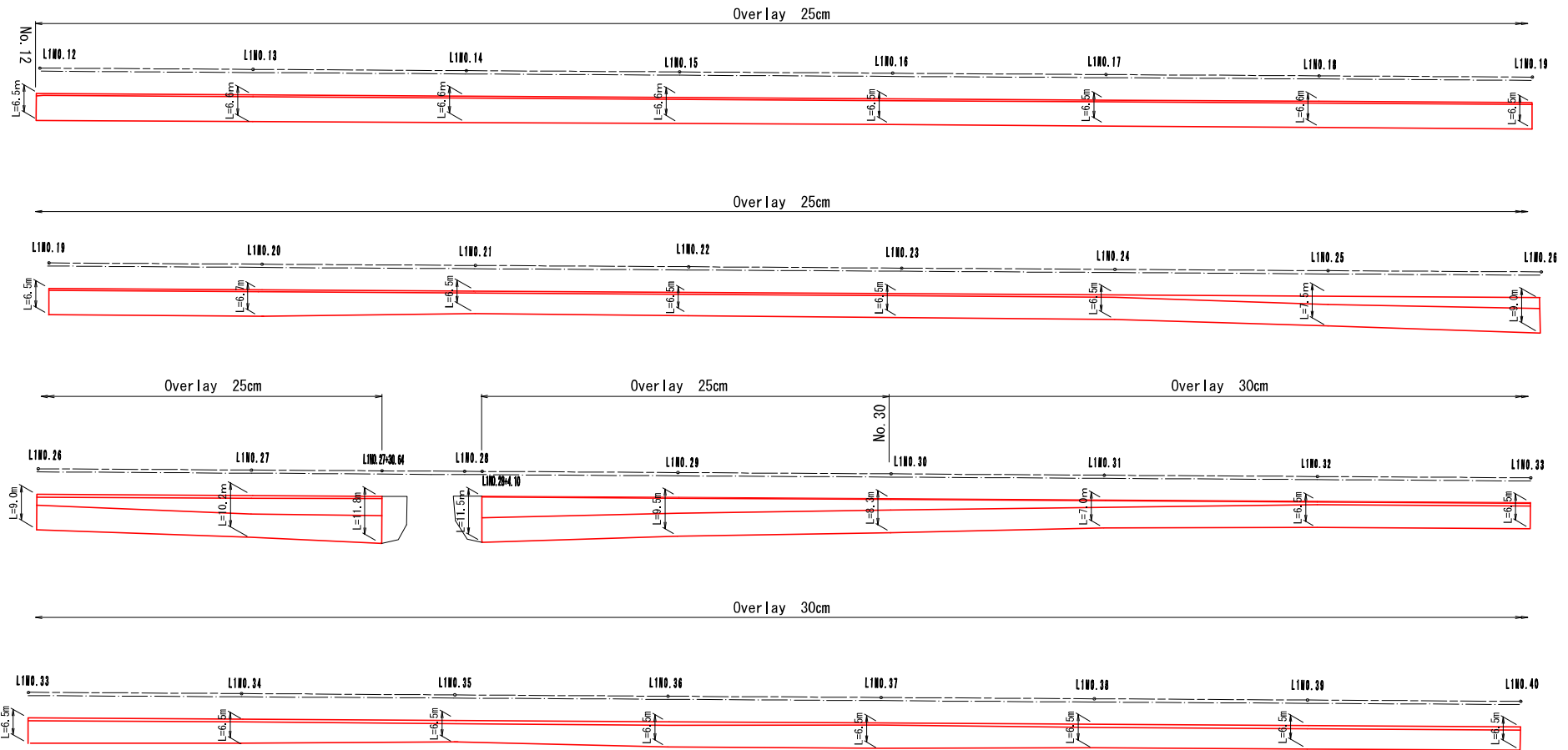


AP11-76

| | | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------|------------------|------------------|
|  <p>MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)</p> | <p>Approved by</p> <p>Project Manager:</p> | <p>THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC</p> |  <p>JAPAN INTERNATIONAL COOPERATION AGENCY</p>  <p>CTI ENGINEERING INTERNATIONAL CO., LTD.</p> | <p>Designed</p> | <p>TITLE:</p> <p>TYPICAL DRAWING OF STEEL SHEET PILE</p> | <p>SCALE</p> | <p>DRG. No.</p> |
| | | | | <p>Checked</p> | | <p>DATE</p> | <p>SHEET No.</p> |
| | | | | <p>Approved</p> | | <p>Mar. 2016</p> | <p>74</p> |

FABRIMAT DETAILS (1)

Ocean Side



AP11-77



MINISTRY OF PUBLIC WORKS & UTILITIES
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THE PREPARATORY SURVEY ON
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TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

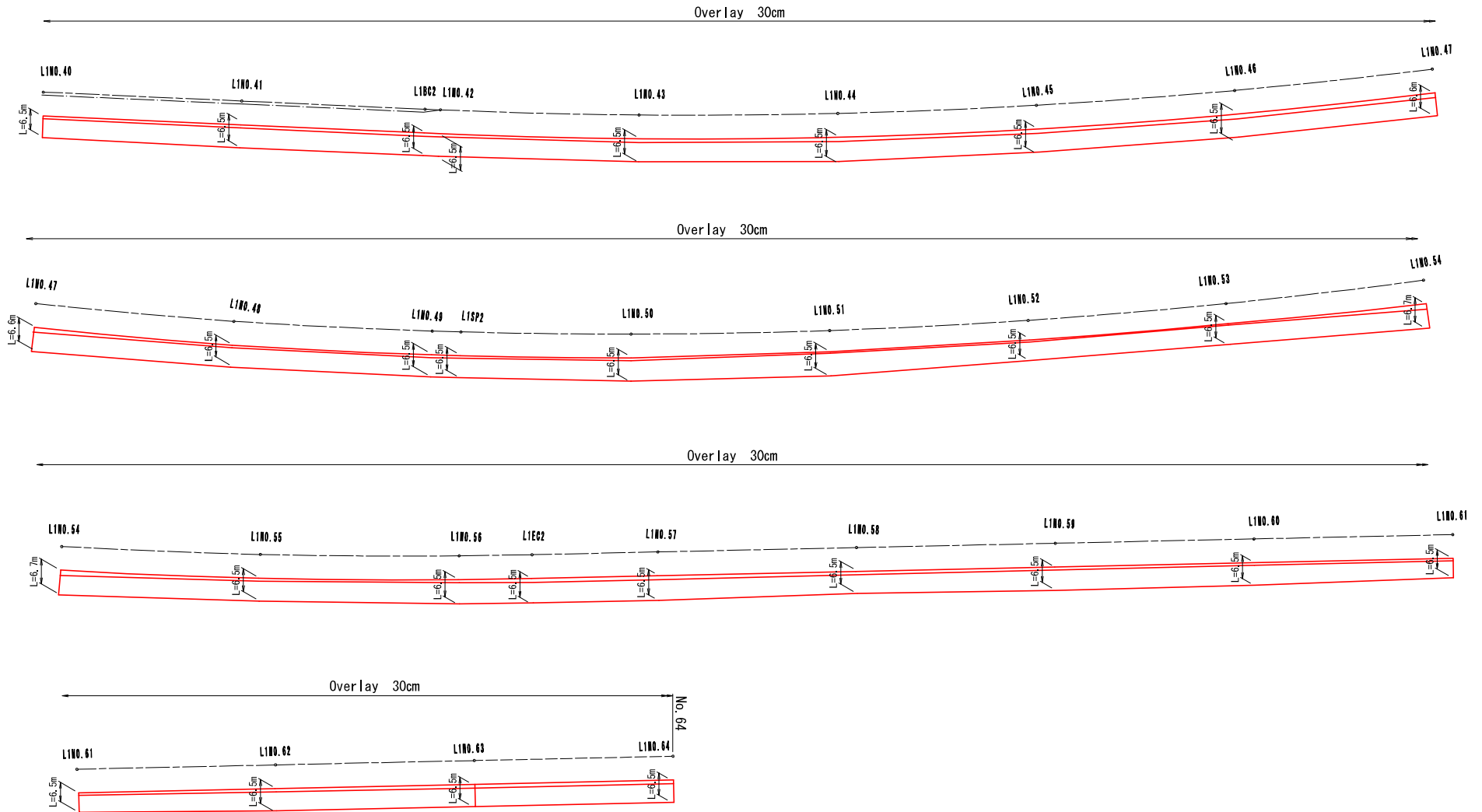
Designed
Checked
Approved

TITLE:
FABRIMAT DETAILS (1)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | SHEET No. |
| Mar. 2018 | 75 |

FABRIMAT DETAILS (2)

Ocean Side



AP11-78



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
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NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

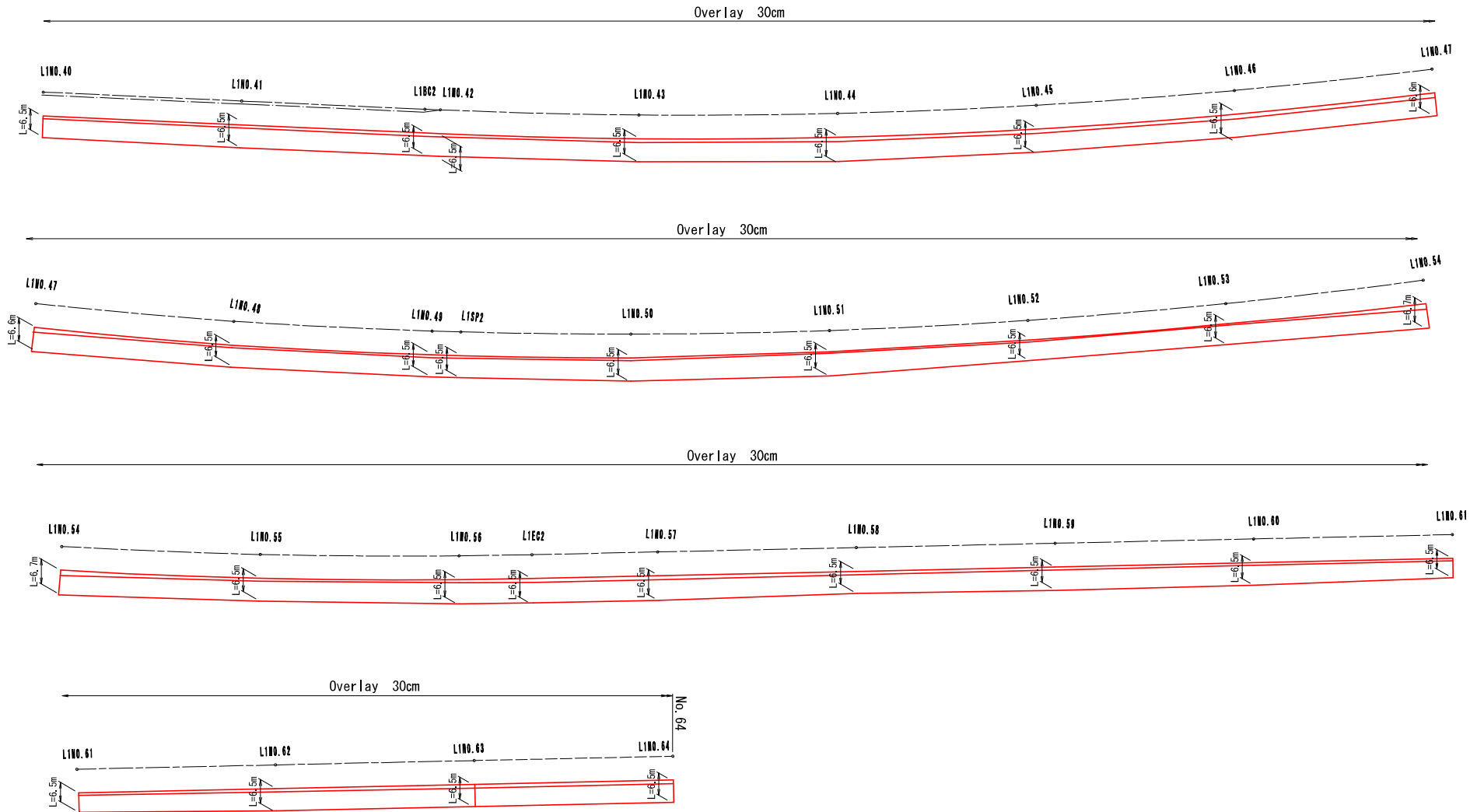
Designed
Checked
Approved

TITLE:
FABRIMAT DETAILS (2)

| | |
|-----------|-----------|
| SCALE | DRG. No. |
| DATE | FD-1-3 |
| Mar. 2018 | SHEET No. |
| | 76 |

FABRIMAT DETAILS (3)

Lagoon Side



AP11-79



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

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Project Manager:

THE PREPARATORY SURVEY ON
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NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

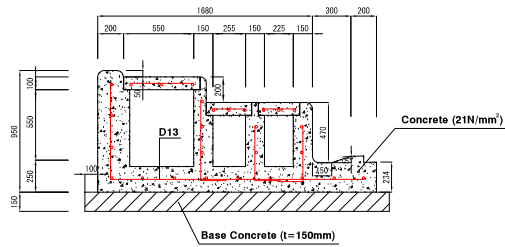
Designed
Checked
Approved

TITLE:
FABRIMAT DETAILS (3)

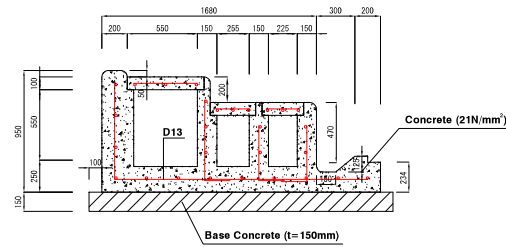
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|-----------|-----------|
| | FD-1-3 |
| DATE | SHEET No. |
| Mar. 2018 | 77 |

PARAPET DETAILS (1) S=1:20

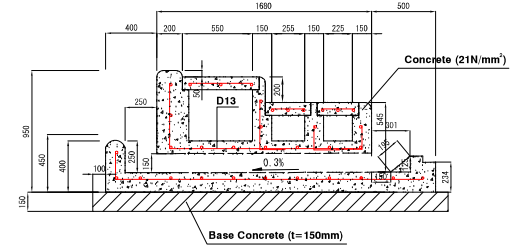
TYPE 1-1



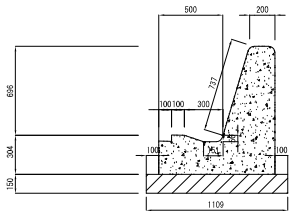
TYPE 1-2



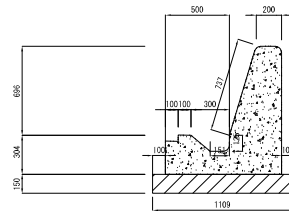
TYPE 1-3



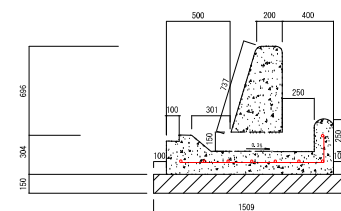
TYPE 2-1



TYPE 2-2



TYPE 2-3



AP11-80



MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

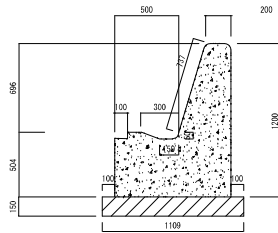
Designed
Checked
Approved

TITLE:
PARAPET DETAILS (1)

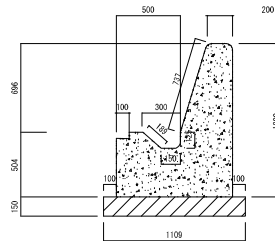
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|-----------|-----------|
| 1:20 | PD-1-2 |
| DATE | SHEET No. |
| Mar. 2018 | 78 |

PARAPET DETAILS (2) S=1:20

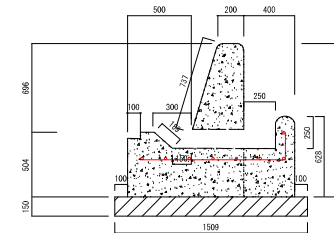
TYPE 3-1



TYPE 3-2



TYPE 3-3



AP11-81



MINISTRY OF PUBLIC WORKS & UTILITIES
(MPWU)

Approved by
Project Manager:

THE PREPARATORY SURVEY ON
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NIPPON CAUSEWAY ON TARAWA
TO ADAPT CLIMATE CHANGE
IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

Designed
Checked
Approved

TITLE:
PARAPET DETAILS (2)

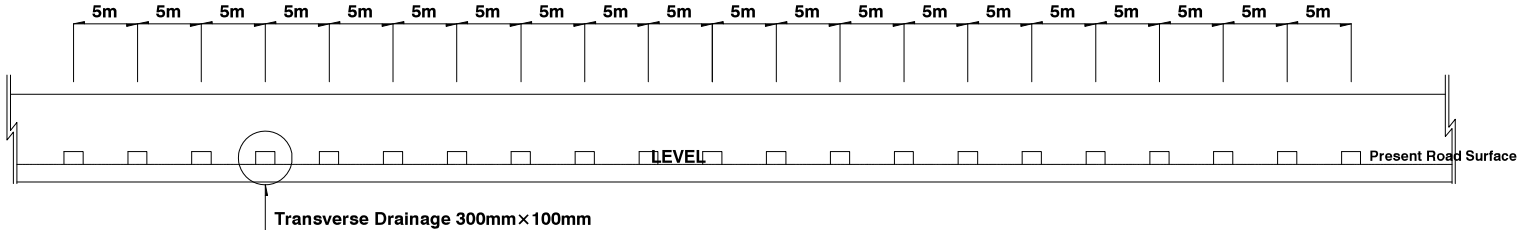
| SCALE | DRG. No. |
|-----------|-----------|
| 1:20 | PD-1-2 |
| DATE | SHEET No. |
| Mar. 2016 | 79 |

TRANSVERSE DRAINAGE DETAILS (1)

~Present Parapet Section~

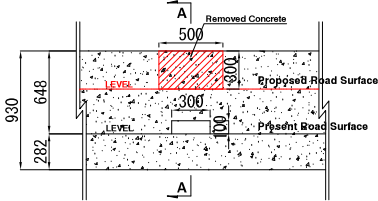


Present Transverse Drainage Overview

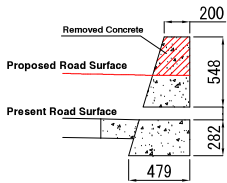


Transverse Drainage Details

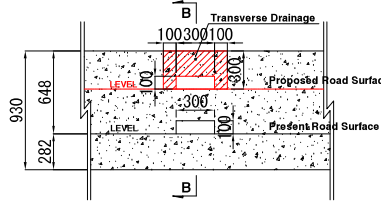
Removed Concrete Details



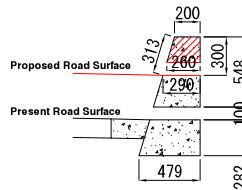
Cross Section A-A



Transverse Drainage Details



Cross Section B-B



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Approved by
Project Manager:

THE PREPARATORY SURVEY ON THE PROJECT FOR RECONSTRUCTION OF NIPPON CAUSEWAY ON TARAWA TO ADAPT CLIMATE CHANGE IN KIRIBATI REPUBLIC



JAPAN INTERNATIONAL COOPERATION AGENCY
CTI ENGINEERING INTERNATIONAL CO., LTD.

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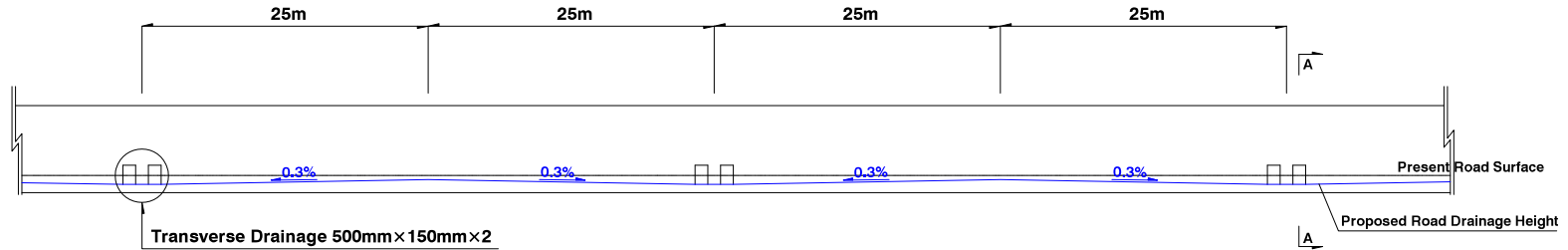
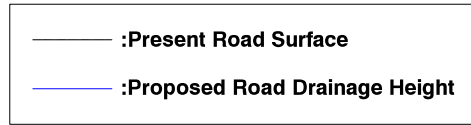
TITLE:
TYPICAL CROSS SECTION (1)

| | |
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| SCALE | DRG. No. |
| 1:20 | TDD-1~2 |
| DATE | SHEET No. |
| Mar. 2016 | 80 |

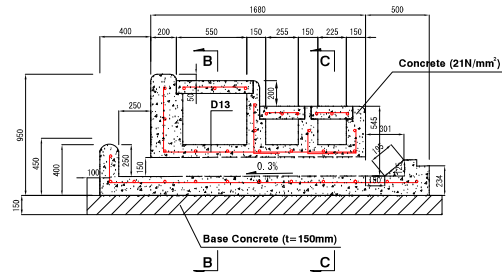
TRANSVERSE DRAINAGE DETAILS (2)

~Newly Parapet Section~

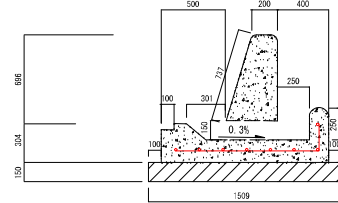
Present Transverse Drainage Overview



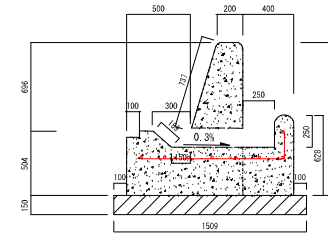
Cross Section A-A (TPYE-1)



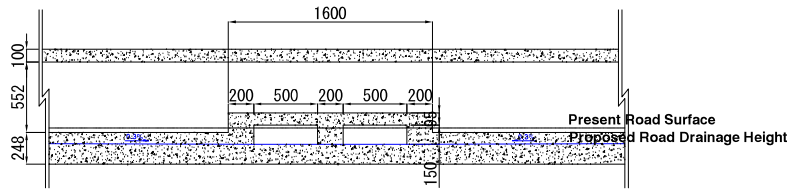
Cross Section A-A (TPYE-2)



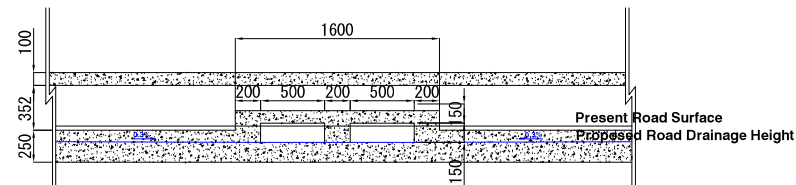
Cross Section A-A (TPYE-3)



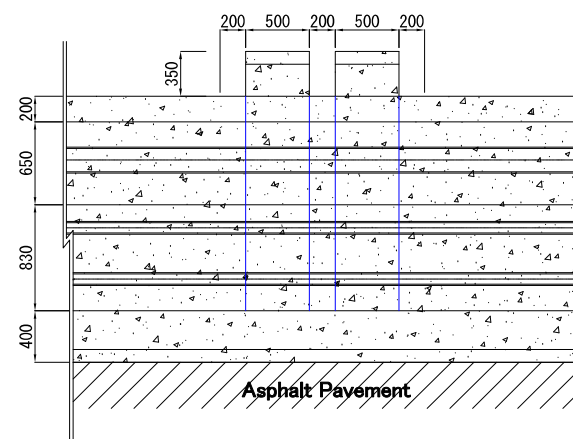
Cross Section E-B



Cross Section C-C



Plan (TYPE-3)



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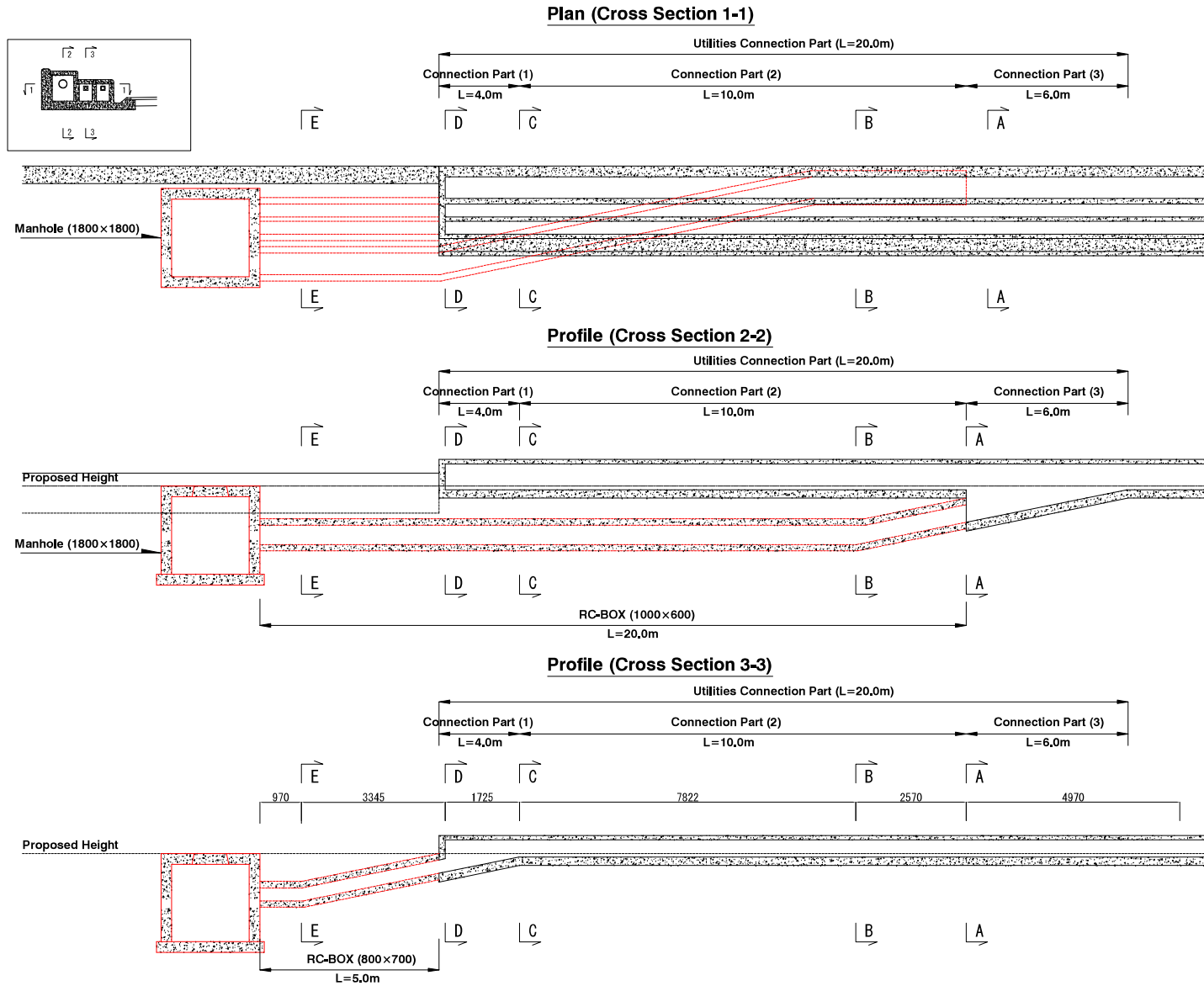
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Checked
Approved

TITLE:
TYPICAL CROSS SECTION (2)

| SCALE | DRG. No. |
|-----------|-----------|
| 1:20 | TDD-1~2 |
| DATE | SHEET No. |
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UTILITIES CONNECTION PART DETAILS (1)



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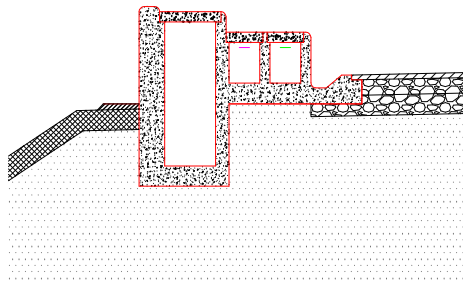
Designed
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TITLE:
UTILITIES CONNECTION
PART DETAILS (1)

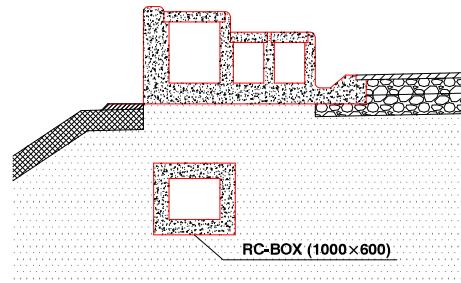
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| DATE | SHEET No. |
| Mar. 2016 | 82 |

UTILITIES CONNECTION PART DETAILS (2)

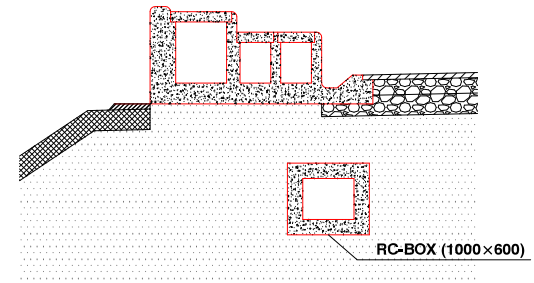
Cross Section A-A



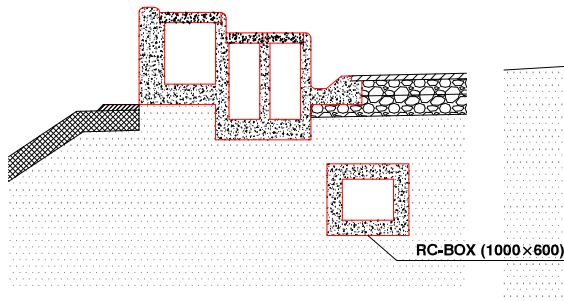
Cross Section B-B



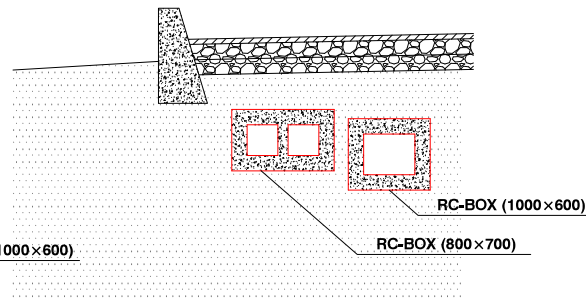
Cross Section C-C



Cross Section D-D



Cross Section E-E



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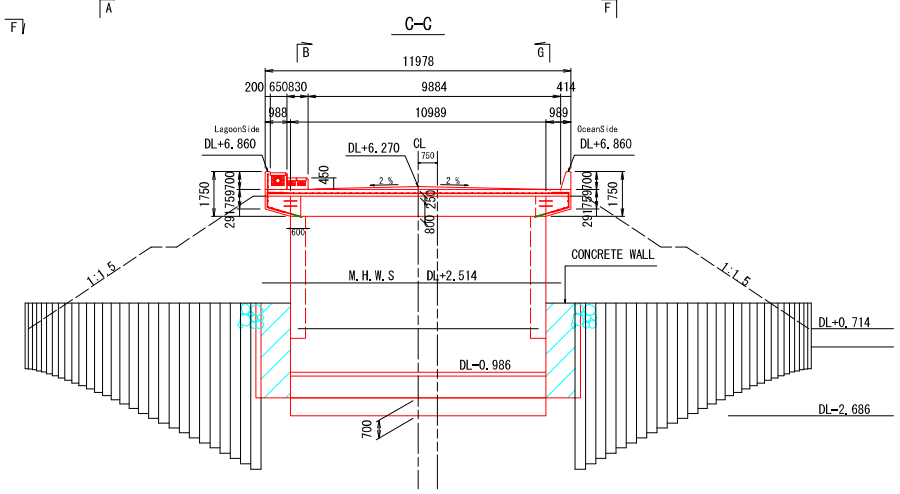
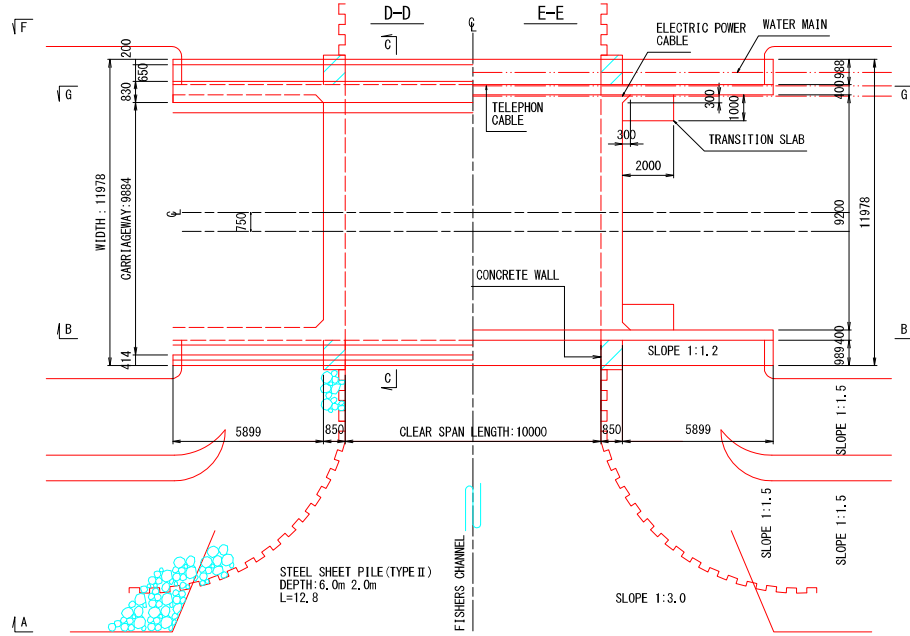
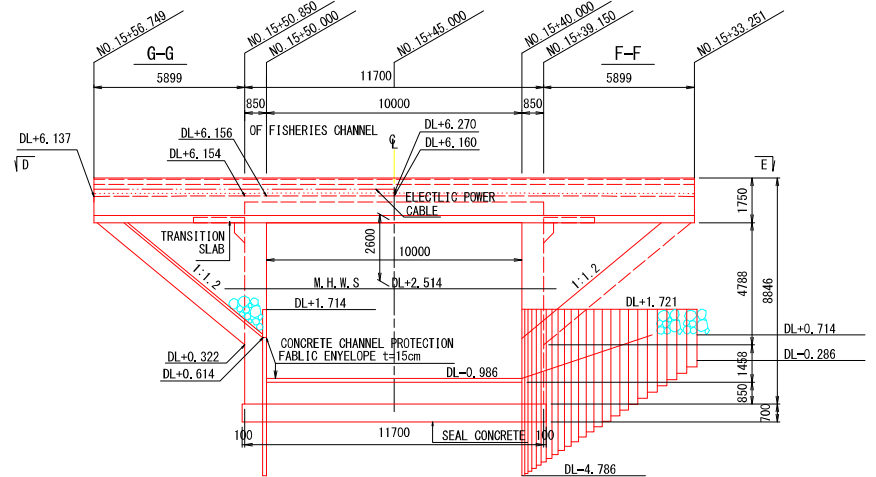
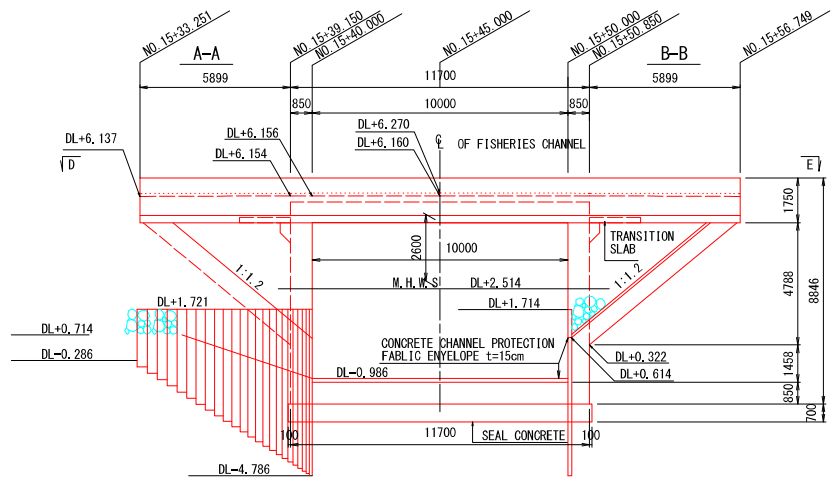
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Approved

TITLE:
UTILITIES CONNECTION
PART DETAILS (2)

| SCALE | DRG. No. |
|-----------|-----------|
| 1:25 | UCP-1~2 |
| DATE | SHEET No. |
| Mar. 2016 | 83 |

TYPICAL DRAWING OF BRIDGE STRENGTHENING



GENERAL NOTES

- UNLESS OTHERWISE SHOWN ALL DIMENSIONS ARE IN MILLIMETERS.
- CONCRETE SHALL BE:
 - ALL BOUNDRY EXCEPT SEAL CONC. : (A) (28-240kg/cm²)
 - SEAL CONCRETE : (S) (25-180kg/cm²)
- ALL CORNERS OF CONCRETE SHALL BE PROVIDED WITH 2cm CHAMFER
- REINFORCING BARS SHALL BE S300, JIS R 5211.
- ALL RE-BAR SPACING REFER TO CENTER TO CENTER DISTANCE.
- NO NEEP HOLE SHALL BE PROVIDED.

LOADING SPECIFICATION

TL-20, CONFORMING TO 'THE STANDARD SPECIFICATION FOR HIGHWAY BRIDGES' ADOPTED BY JAPAN ROAD ASSOCIATION (JRA)

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MINISTRY OF PUBLIC WORKS & UTILITIES (MPWU)

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Project Manager:

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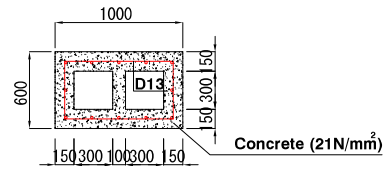
Designed
Checked
Approved

TITLE:
TYPICAL DRAWING OF BRIDGE STRENGTHENING

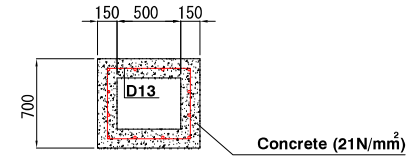
| | |
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| SCALE | DRG. No. |
| 1:100 | TBS-1 |
| DATE | SHEET No. |
| Mar. 2018 | 84 |

TYPICAL DRAWING OF STRUCTURES (1)

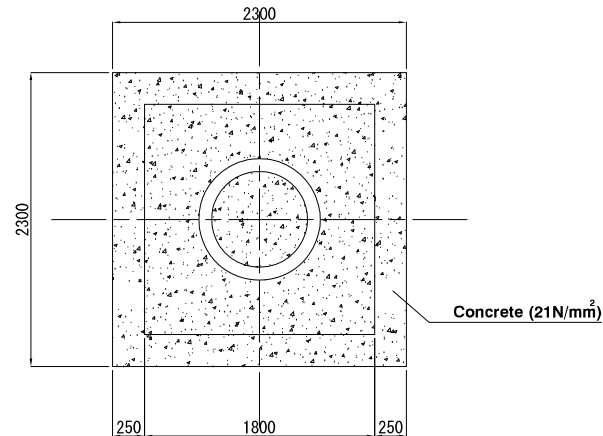
RC-BOX (1000 × 600)



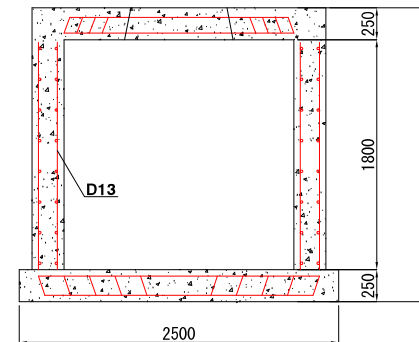
RC-BOX (800 × 700)



Manhole (1800 × 1800)



Plan



Cross Section

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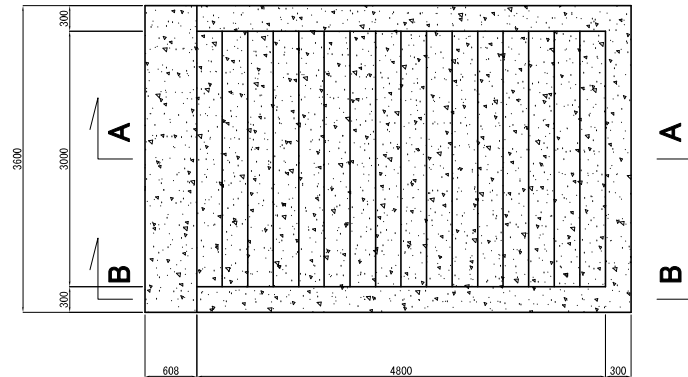
Designed
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TITLE:
TYPICAL DRAWING OF
STRUCTURES (1)

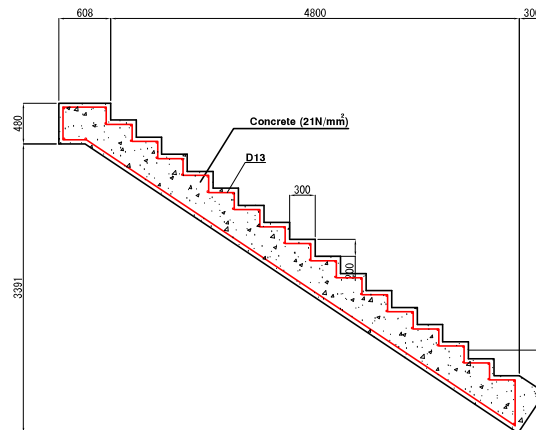
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| 1:20 | TDS-1~2 |
| DATE | SHEET No. |
| Mar. 2016 | 85 |

TYPICAL DRAWING OF STRUCTURES (2)

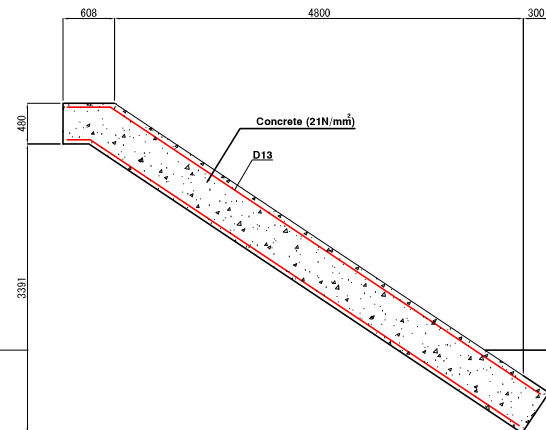
STAIR



Cross Section A-A



Cross Section B-B



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TITLE:
TYPICAL DRAWING OF
STRUCTURES (2)

| SCALE | DRG. No. |
|-----------|-----------|
| 1:30 | TDS-1~2 |
| DATE | SHEET No. |
| Mar. 2016 | 86 |