CONSTRUCTION OF GANGCHITPO BAILEY BRIDGE ON SILAMBI-NAGOR GC ROAD, LINGMITHANG REGIONAL OFFICE

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<td>13</td>
<td>FRONT REINFORCEMENT VIEW &amp; SECTION &quot;E-E&quot; OF LEFT ABUTMENT</td>
<td>GB-ABT-12</td>
</tr>
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<tr>
<td>18</td>
<td>BAR BENDING SCHEDULE OF LEFT RETURN WALL</td>
<td>GB-ABT-17</td>
</tr>
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<td>FOOTING &amp; BEARING PLAN OF RIGHT ABUTMENT</td>
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</tr>
<tr>
<td>21</td>
<td>REINFORCEMENT DETAILS OF RIGHT ABUTMENT</td>
<td>GB-ABT-20</td>
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<td>22</td>
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<td>GB-ABT-21</td>
</tr>
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<td>BAR BENDING SCHEDULE OF RIGHT ABUTMENT</td>
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</tr>
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<td>GB-ABT-23</td>
</tr>
<tr>
<td>25</td>
<td>ELEVATION &amp; SECTION OF WING WALL</td>
<td>GD-ABT-24</td>
</tr>
</tbody>
</table>
**GENERAL NOTES FOR RCC CONSTRUCTION WORK**

**A. GENERAL**

1. The notes in this drawing shall be read in conjunction with all relevant drawing pertaining to the bridge.

2. Unless otherwise specified, all dimensions in millimeter (mm) and all levels are in meter (m). Dimensions are not to be scaled and only written dimension are to be followed.

3. The contractor shall verify all chainages, reduced levels, coordinates and dimensions before start of the work. In case of any discrepancy, the matter shall be brought to notice of the engineer.

4. Abutments of the bridge is designed as per IRC-21 & IS 456 using MIDAS CIVIL.

5. Loading: **Class 24R** as per IRC.

**B. CONCRETE**

Unless otherwise specifically mentioned in the drawings or directed by the engineer, concretes grade shall be as per the related section of contract document partly reproduced as below:

**APPLICATION LOCATION**

**SPECIFIED COMpressive STRENGTH IN CUBE (28 DAYS) IN MPa**

<table>
<thead>
<tr>
<th>REINFORCED CONCRETE (RCC)</th>
<th>FOOTING SLAB, ABUTMENT &amp; RETURN WALL.</th>
<th>PLAIN CEMENT CONCRETE (PCC) FOR LEVELING.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REINFORCEMENT</strong></td>
<td><strong>M25</strong></td>
<td><strong>M10</strong></td>
</tr>
</tbody>
</table>

***Unless otherwise mentioned in the specification, the trial mix design strength shall be 31.6 MPa.***

**C. REINFORCEMENT**

1. All reinforcement shall be of high yield strength deformed bars (MIN fy 500 MPa).

2. Scheduling of bar is done in accordance with ISO 4066:2000.

3. Minimum lap length of reinforcement shall be conform to AASHTO/2007. If 50% of reinforcement is to be spliced provide Class B and for 100% splicing provide Class C as shown below:

<table>
<thead>
<tr>
<th>BAR DIA mm</th>
<th>DEV. LENGTH, mm</th>
<th>SPLICE LENGTH, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>220</td>
<td>300</td>
</tr>
<tr>
<td>12</td>
<td>317</td>
<td>412</td>
</tr>
<tr>
<td>16</td>
<td>563</td>
<td>732</td>
</tr>
<tr>
<td>18</td>
<td>713</td>
<td>926</td>
</tr>
<tr>
<td>20</td>
<td>880</td>
<td>1211</td>
</tr>
<tr>
<td>22</td>
<td>1084</td>
<td>1495</td>
</tr>
<tr>
<td>25</td>
<td>1374</td>
<td>1909</td>
</tr>
<tr>
<td>28</td>
<td>1724</td>
<td>2337</td>
</tr>
<tr>
<td>32</td>
<td>2252</td>
<td>2931</td>
</tr>
</tbody>
</table>

4. Clear concrete cover to reinforcement is as follow. Unless otherwise specified by engineer, this shall be followed throughout the construction.

<table>
<thead>
<tr>
<th>bar</th>
<th>ABUTMENT (ALL SIDES)</th>
<th>RETURN WALL (ALL SIDES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>= 75 MM (up to outer face of main reinforcement)</td>
<td>= 75 MM</td>
</tr>
</tbody>
</table>

5. Specifically made cover blocks of same strength as that of concrete and dimension as provided in drawings shall be only used to obtain the uniformity of clear cover through out the construction.

**D. WATER**

WATER TO BE USED IN THE CONCRETING AND CURING SHALL BE PORTABLE WATER.

**E. SUPERVISION**

Contraction work must be supervised by a competent supervision engineer.
### TABLE 3: STANDARD RE-BAR PROPERTIES
(UNIT WT. 0.00785 kg / mm² / m)

<table>
<thead>
<tr>
<th>REBAR DESIGNATION</th>
<th>DIA, mm</th>
<th>AREA, mm²</th>
<th>UNIT WT., kg/m</th>
<th>REBAR TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>T10</td>
<td>10</td>
<td>79</td>
<td>0.617</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T12</td>
<td>12</td>
<td>113</td>
<td>0.888</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T16</td>
<td>16</td>
<td>201</td>
<td>1.578</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T20</td>
<td>20</td>
<td>314</td>
<td>2.466</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T25</td>
<td>25</td>
<td>491</td>
<td>3.853</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T28</td>
<td>28</td>
<td>616</td>
<td>4.834</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
<tr>
<td>T32</td>
<td>32</td>
<td>804</td>
<td>6.313</td>
<td>IS : 1786 GRADE Fe 500</td>
</tr>
</tbody>
</table>

### TABLE 4: STANDARD HOOK AND BEND REQUIREMENT
(ART. 5.10 AASHTO LRFD 2007)

### NOTES

#### A. GENERAL
ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.

#### B. SHAPE CODE & BAR SHAPE

#### BAR MARK

BAR MARK

- **SPACING**
- **LOCATION/REMARK**
- **DIA. OF REBAR**

**BAR MARK**

- **BENDING RADIUS AS PER TABLE 4**
- **DIAMETER OF BAR AS SHOWN**

#### LEGEND:

- **r** = BENDING RADIUS AS PER TABLE 4
- **d** = DIAMETER OF BAR

**SHAPE CODE AS PER ISO 4066 : 2000**

<table>
<thead>
<tr>
<th>SHAPE CODE</th>
<th>SHPAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>a</td>
</tr>
<tr>
<td>11</td>
<td>a-b</td>
</tr>
<tr>
<td>21</td>
<td>a-b-c</td>
</tr>
<tr>
<td>51</td>
<td>a-b-c-d</td>
</tr>
</tbody>
</table>

**Total Length:**

- **a**
- **a+b-½r+d**
- **a+b-r+2d**
- **2(a+b)=16d**
GENERAL PLAN 01

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambti-Nagor GC Road
under Lingmithang Regional Office

SHEET CONTENTS:
GENERAL PLAN 01

REVISION
FIRST ISSUE
REvised
REvised

DATE
Oct., 2017

NAME & SIGNATURE
KARMA WANGDI (CE)

DRAWING NO.
GB-GP01-04

SCALE:
1:250

(as Sheet A3 size)
GENERAL PLAN 02

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambi-Nagor GC Road
under Lingmithang Regional Office

SHEET CONTENTS:
GENERAL PLAN 02

REVISION DATE NAME & SIGNATURE DRAWING NO.
FIRST ISSUE Oct., 2017 TSHERING RINZIN (E)
REVISED TSHERING RINZIN (E)
CHECKED RINCHEN KHANDU (EE)
APPROVED TSHEWANG RINZIN (E)

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

GB-GP02-05
SCALE: 1:170
(as Sheet A3 size)
GENERAL ELEVATION 01

80 FT DOUBLE SINGLE BAILEY TYPE STEEL TRUSS BRIDGE

80’ + 2.25’’ (Bearing to Bearing)

Datum: 95.000
99.706 0.000
100.000 2.068
100.639 3.762
101.266 5.474
101.951 7.177
102.639 8.874
103.095 10.000
103.226 10.200
103.659 10.500
104.072 11.752
104.706 13.000
107.072 25.000
107.113 30.000
107.980 35.911
108.083 40.911

Horizontal Scale 1:400
Vertical Scale 1:400

EXISTING ROAD LEVEL
RL= 102.108

FINISHED ROAD LEVEL
RL= 107.070

DIRT WALL TOP
RL= 102.008

TOP OF FOOTING SLAB
RL= 97.706

BEARING LEVEL
RL= 103.706

BEARING LEVEL
RL= 103.706

BEARING LEVEL
RL= 103.706

FINISHED TERRAIN
HFL= 97.659
LWL= 96.159

DIRT WALL TOP
RL= 102.008

BOTTOM OF PCC SLAB
RL= 102.606

BEARING LEVEL
RL= 103.706

BASEMENT FOUNDATION

EXISTING ROAD LEVEL
RL= 109.039

FINISHED TERRAIN
HFL= 96.659
LWL= 95.159

1501 10200 5100

BOULDER FILLING

SHEET CONTENTS:
GENERAL ELEVATION 01

REVISED
DESIGN
Tshering Rinchen (E)

DRAWN
Tshering Rinchen (E)

CHECKED
Rinchen Wangdu (E)

APPROVED
Karma Wangdi (E)

GB-GE01-06

(AS SHEET A3 SIZE)

SCALE: 1:140
80 FT DOUBLE SINGLE BAILEY TYPE STEEL TRUSS BRIDGE

80' + 2.25" (Bearing to Bearing)

DIRT WALL TOP
RL = 104.328

BEARING LEVEL
RL = 103.706

TOP OF FOOTING SLAB
RL = 98.706

BOULDER FILLING

FINISHED TERRAIN
HFL = 97.659

BUILDING LEVEL
RL = 97.606

BEARING LEVEL
RL = 103.706

BOULDER FILLING

FINISHED TERRAIN
HFL = 97.659

LWL = 96.159

GENERAL ELEVATION 02
SIDE ELEVATION
Scale: 1:35

DIET WALL TO BE CONSTRUCTED AFTER
BRIDGE SUPERSTRUCTURE IS LAUNCHED

FRONT ELEVATION
Scale: 1:35

Weep holes
Ø 11 cm HDPE pipes
1 in 20 slope

Construction
joint

SHEET CONTENTS:
SIDE ELEVATION &
FRONT ELEVATION OF
LEFT ABUTMENT

SAINT GOITRIDGE
[65 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambi-Nagor GC Road
under Lingmithang Regional Office

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human Settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[65 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambi-Nagor GC Road
under Lingmithang Regional Office

REVISED
NAME & SIGNATURE

REVISION
DATE

FIRST ISSUE
Oct., 2017

DRAWN
TSHERING RINZEN (E)

CHECKED
RINCHEN KHANDU (E)

APPROVED
TSHEWANG RINZIN (C)

AS SHOWN
GB-ABT-08

AS SHOWN
GB-ABT-08

SCALE: AS SHOWN

(AS Sheet A3 size)
FOOTING PLAN
Scale: 1:35

BEARING PLAN
Scale: 1:35

NOTES

GENERAL
1. ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THIS DRAWINGS. USE GIVEN DIMENSIONS ONLY.
3. DURING THE CONSTRUCTION, THE CONTRACTOR MUST CHECK THE DIMENSIONS, LEVELS AND MEASUREMENTS. DISCREPANCY IF ANY TO BE REPORTED TO THE ENGINEER BEFORE EXECUTION.

MATERIALS
1. CONCRETE 28 DAYS STRENGTH IN CUBE, fck = 25 MPa. [UNLESS OTHERWISE MENTIONED IN THE SPECIFICATION, THE TRIAL MIX DESIGN STRENGTH SHALL BE 31.6 MPa]
2. YIELD STRENGTH OF STEEL, fy = 500 MPa (GRADE Fe 500, IS 1786).
3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

COVERING
ABUTMENT WALL (ALL SIDES) = 75 MM
(T - HIGH YIELD DEFORMED BAR
Y - DEFORMED MS BAR
R - ROUND MS BAR
INDICATES BAR CUT POINT
BAR MARK

SPACING
NOS. OF BAR
BAR MARK
TYPE OF REBAR
LOCATION
/ REMARK

SHEET CONTENTS:
FOOTING & BEARING PLAN OF LEFT ABUTMENT

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambi-Nagor GC Road
under Lingmithang Regional Office

DESIGN
TIJERIHA RINZIN (E)

DRAWN
TIJERIHA RINZIN (E)

CHECKED
RINGCHEN RINZIN (E)

APPROVED
KARMA RINZIN (E)

DRAWING NO.
GB-ABT-09

SCALE
AS SHOWN
(as Sheet A3 size)
SECTIONAL ELEVATION
Scale: 1:35

REINFORCEMENT VIEW "1-1"
Scale: 1:30

NOTES

GENERAL
1. ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THIS DRAWINGS. USE GIVEN DIMENSIONS ONLY.
3. DURING THE CONSTRUCTION, THE CONTRACTOR MUST CHECK THE DIMENSIONS, LEVELS AND MEASUREMENTS. DISCREPANCY IF ANY TO BE REPORTED TO THE ENGINEER BEFORE EXECUTION.

MATERIALS
1. CONCRETE 28 DAYS STRENGTH IN CUBE, fck = 25 MPa. [UNLESS OTHERWISE MENTIONED IN THE SPECIFICATION, THE TRIAL MIX DESIGN STRENGTH SHALL BE 31.6 MPa]
2. YIELD STRENGTH OF STEEL, fy = 500 MPa (GRADE Fe 500, IS 1786).
3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

COVERING
ABUTMENT WALL (ALL SIDES) = 75 MM (UP TO OUTER FACE OF MAIN BAR)

BAR MARK
BAR MARK
NOS. OF BAR
TYPE OF REBAR
LOCATION / REMARK
DIAM. OF REBAR
SPACING
T - HIGH YIELD DEFORMED BAR
Y - DEFORMED MS BAR
R - ROUND MS BAR
INDICATES BAR CUT POINT

LEGEND
-------- TOP BAR
---------- BOTTOM BAR

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY] On Silambi-Nagor GC Road
under Lingimuthang Regional Office

DESIGN
TSHERING RINZIN (E)

DRAWN
TSHERING RINZIN (E)

CHECKED
RINCHEN KHANDU (E)

APPROVED
KARMA RANGDI (E)

AS SHOWN

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

DRAWING NO.
GB-ABT-10

SHEET CONTENTS:
SECTIONAL ELEVATION & REINFORCEMENT VIEW "1-1" OF LEFT ABUTMENT

REVISION
FIRST ISSUE
Oct., 2017

DATE
NAME & SIGNATURE
TSHERING RINZIN (E)

SCALE
AS SHOWN
(as Sheet A3 size)

DRAWING NO.
GB-ABT-10
**NOTES**

**GENERAL**

1. ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED.

2. DO NOT SCALE THIS DRAWINGS. USE GIVEN DIMENSIONS ONLY.

3. DURING THE CONSTRUCTION, THE CONTRACTOR MUST CHECK THE DIMENSIONS, LEVELS AND MEASUREMENTS. DISCREPANCY IF ANY TO BE REPORTED TO THE ENGINEER BEFORE EXECUTION.

**MATERIALS**

1. CONCRETE 28 DAYS STRENGTH IN CUBE, $f_{ck} = 25$ MPa. [UNLESS OTHERWISE MENTIONED IN THE SPECIFICATION, THE TRIAL MIX DESIGN STRENGTH SHALL BE 31.6 MPa]

2. YIELD STRENGTH OF STEEL, $f_y = 500$ MPa (GRADE Fe 500, IS 1786).

3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

**COVERING**

- **ABUTMENT WALL (ALL SIDES)** = 75 MM (UP TO OUTER FACE OF MAIN BAR)
- **RETURN WALL** = 75MM

**BAR MARK**

- **BAR MARK**
- **TYPE OF REBAR**
- **DIA. OF REBAR**
- **LOCATION / REMARK**
- **SPACING**
- **T** - HIGH YIELD DEFORMED BAR
- **Y** - DEFORMED MS BAR
- **R** - ROUND MS BAR

**INDICATES BAR CUT POINT**

---

**SPACER PLAN**

*Scale: 1:30*

- Weep holes
- Ø 11 cm HDPE pipes
- 1 in 20 slope

**SECTION OF RETURN WALL**

*Scale: 1:30*

- Filter materials
- 50 cm thick

---

**SHEET CONTENTS:**

- SPACER PLAN & SECTION OF RETURN WALL

**REVISION DATE NAME & SIGNATURE DRAWING NO.**

- FIRST ISSUE Oct., 2017 TSHERING RINZIN (E)
- REVISED TSHERING RINZIN (E)
- DRAWN RINCHEN KHANDU (E)
- CHECKED TSHEWANG RINZIN (E)
- APPROVED KARMA RANGDI (CE)

**SCALE:** AS SHOWN

**DRAWING NO.:** GB-ABT-13
REINFORCEMENT SECTION OF RETURN WALL
Scale: 1:30

8x4 = 32-05-T12-600-SPACER
34-04-T12-150-VS
34-03-T12-150-BS
8-02-T16-250-VS
8-01-T16-250-BS

REINFORCEMENT SIDE VIEW OF RETURN WALL
Scale: 1:30

NOTES

GENERAL
1. All the dimensions are in millimeter unless otherwise mentioned.
2. Do not scale this drawings. Use given dimensions only.
3. During the construction, the contractor must check the dimensions, levels and measurements. Discrepancy if any to be reported to the engineer before execution.

MATERIALS
1. Concrete 28 days’ strength in cube, $f_{ck} = 25$ MPa. (Unless otherwise mentioned in the specification, the trial mix design strength shall be 31.6 MPa)
2. Yield strength of steel, $f_y = 500$ MPa (Grade Fe 500, IS 1786).
3. Details of steel is mentioned in the drawing and its quantity in the bar bending schedule.

COVERING
Abutment Wall (All Sides) = 75 MM (up to outer face of main bar)
Return Wall = 75 MM

BAR MARK
• NOS. OF BAR
• TYPE OF REBAR
•LOCATION / REMARK
• DIA. OF REBAR
• INDICATES BAR CUT POINT

LEGEND
BACKFILL SIDE BAR
VALLEY SIDE BAR

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY]
On Silambti-Nagor GC Road
under Lingmithang Regional Office

SHEET CONTENTS:

REINFORCEMENT SECTION & REINFORCEMENT SIDE VIEW OF RETURN WALL

REVISION
DATE
NAME & SIGNATURE
DRAWING NO.

\[\text{GB-ABT-14}\]

AS SHOWN
(as Sheet A3 size)
REINFORCEMENT PLAN OF RETURN WALL

Scale: 1:15

NOTES

GENERAL
1. ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THIS DRAWINGS. USE GIVEN DIMENSIONS ONLY.
3. DURING THE CONSTRUCTION, THE CONTRACTOR MUST CHECK THE DIMENSIONS, LEVELS AND MEASUREMENTS. DISCREPANCY IF ANY TO BE REPORTED TO THE ENGINEER BEFORE EXECUTION.

MATERIALS
1. CONCRETE 28 DAYS STRENGTH IN CUBE, $f_{ck} = 25$ MPa. [UNLESS OTHERWISE MENTIONED IN THE SPECIFICATION, THE TRIAL MIX DESIGN STRENGTH SHALL BE 31.5 MPa]
2. YIELD STRENGTH OF STEEL, $f_y = 500$ MPa (GRADE Fe 500, IS 1786).
3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

COVERING
ABUTMENT WALL (ALL SIDES) = 75 MM
(UP TO OUTER FACE OF MAIN BAR)
RETURN WALL = 75 MM

BAR MARK
T - HIGH YIELD DEFORMED BAR
Y - DEFORMED MS BAR
R - ROUND MS BAR
INDICATES BAR CUT POINT

SHEET CONTENTS:
REINFORCEMENT PLAN OF RETURN WALL

REVISION DATE NAME & SIGNATURE DRAWING NO.
GB-ABT-15

ROYAL GOVERNMENT OF BHUTAN
Ministry of Works & Human settlement
Department of Roads, Bridge Division
Thimphu, Bhutan

BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
[DS 80 FT SPAN & 3.277 m CARRIAGEWAY] On Silambi-Nagor GC Road
under Lingmethang Regional Office

Thimphu, Bhutan

DESIGN TIJHANG RINZIN (E)
DRAWN TIJHANG RINZIN (E)
CHECKED RINCHEN KHANDU (E)
APPROVED KARMA RANGD (E)
# REBAR SCHEDULE OF LEFT ABUTMENT WALL

| Member | Bar Mark | Type & Size | Length of each bar | Number of bar in each members | Number of bar in each members | Total number | Total length | Shape code | Shape | b | c | d | e | Hook | Additional Information | Location/Remarks |
|--------|----------|-------------|--------------------|-----------------------------|-------------------------------|--------------|-------------|-------------|-----------|-------|---|---|---|---|------|-----------------------|-----------------|
| FOOTING SLAB 01 | T20 | 5450 | 1 | 40 | 40 | 218000 | 21 | a | b | c | 850 | 3850 | 850 | 90 Degree | 90 Degree | 537.59 | BOTTOM BAR IN LONGITUDINAL DIRECTION |
| FOOTING SLAB 02 | T16 | 4282 | 1 | 40 | 40 | 171280 | 21 | a | b | c | 256 | 3850 | 256 | 90 Degree | 90 Degree | 270.28 | TOP BAR IN LONGITUDINAL DIRECTION |
| FOOTING SLAB 03 | T16 | 6720 | 1 | 27 | 27 | 181440 | 21 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 286.31 | BOTTOM BAR IN TRANSVERSE DIRECTION |
| FOOTING SLAB 04 | T16 | 6720 | 1 | 27 | 27 | 181440 | 21 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 286.31 | TOP BAR IN TRANSVERSE DIRECTION |
| FOOTING SLAB 5(A&B) | T12 | 6174 | 1 | 6 | 6 | 37044 | 21 | a | b | c | 192 | 5850 | 192 | 90 Degree | 90 Degree | 32.90 | FACE BAR IN TRANSVERSE DIRECTION |
| FOOTING SLAB 6(A&B) | T12 | 2410 | 1 | 20 | 20 | 48200 | 99 | b | c | 180 | 775 | 500 | 775 | 190 | 90 Degree | 90 Degree | 42.80 | CHAIRS |
| FOOTING SLAB 7(A&B) | T12 | 4174 | 1 | 6 | 6 | 25044 | 21 | a | b | c | 192 | 3850 | 192 | 90 Degree | 90 Degree | 22.24 | FACE BAR IN LONGITUDINAL DIRECTION |
| ABUTMENT STEM 08(A) | T20 | 7841 | 1 | 40 | 40 | 305640 | 21 | a | b | c | 880 | 5850 | 1011 | 90 Degree | 90 Degree | 753.71 | VERTICAL BAR AT BACK SIDE OF ABUTMENT |
| ABUTMENT STEM 08(B) | T16 | 6570 | 1 | 40 | 40 | 262800 | 21 | a | b | c | 900 | 5850 | 200 | 90 Degree | 90 Degree | 414.70 | VERTICAL BAR AT RIVER SIDE OF ABUTMENT |
| ABUTMENT STEM 09(A) | T16 | 6720 | 1 | 34 | 34 | 228480 | 21 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 360.54 | TRANSVERSE BAR AT BACK SIDE OF ABUTMENT |
| ABUTMENT STEM 09(B) | T16 | 6720 | 1 | 30 | 30 | 201600 | 21 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 318.12 | TRANSVERSE BAR AT RIVER SIDE OF ABUTMENT |
| ABUTMENT STEM 10 | T16 | 6720 | 1 | 8 | 8 | 53750 | 21 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 84.83 | TRANSVERSE BAR AT ABUTMENT CAP (RIVER SIDE) |
| ABUTMENT STEM 11 | T16 | 3055 | 1 | 31 | 31 | 94705 | 21 | a | b | c | 1175 | 170 | 1790 | 90 Degree | 135 Degree | 233.54 | INCLINED TOP BAR AT ABUTMENT CAP |
| ABUTMENT STEM 12 | T16 | 6282 | 1 | 11 | 11 | 69102 | 21 | a | b | c | 256 | 5850 | 256 | 90 Degree | 90 Degree | 109.04 | TRANSVERSE BAR AT TOP OF ABUTMENT CAP |
| ABUTMENT STEM 13 | T12 | 6302 | 1 | 6 | 6 | 37812 | 21 | a | b | c | 256 | 5850 | 256 | 90 Degree | 90 Degree | 33.58 | VERTICAL FACE BAR AT ABUTMENT STEM |
| ABUTMENT STEM 14 | T12 | 6740 | 1 | 80 | 80 | 539200 | 99 | a | b | c | 475 | 5850 | 475 | 90 Degree | 90 Degree | 478.81 | SPACER |

**Note:**
Bar Bending Schedule prepared is just for reference and estimation purpose only. The Contractor has to prepare separate Bar Bending Schedule before bar bending starts.
# REBAR SCHEDULE OF LEFT RETURN WALL

<table>
<thead>
<tr>
<th>Member</th>
<th>Bar Mark</th>
<th>Type &amp; Size</th>
<th>Length of each bar</th>
<th>Number of members</th>
<th>Number of bar in each members</th>
<th>Total number</th>
<th>Shape code</th>
<th>Shape</th>
<th>Hook Start</th>
<th>Hook End</th>
<th>Total Weight Kg</th>
<th>Location/Remarks</th>
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</table>

**Note:**
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**SHEET CONTENTS:**

- REBAR SCHEDULE OF LEFT RETURN WALL

**REVISION**

- FIRST ISSUE
- REVISED

**DATE**

- Oct., 2017

**NAME & SIGNATURE**

- DESIGN: Tshering Rinzen (E)
- DRAWN: Tshering Rinzen (E)
- CHECKED: Rinchen Wangdi (E)
- APPROVED: Karma Wangdi (E)

**DRAWING NO.**

- GB-ABT-17

**SCALE:**

- NTS

**(as Sheet A3 size)**
Note:
Dirt Wall to be constructed only after Bridge Superstructure is launched.
FOOTING PLAN
Scale: 1:35

BEARING PLAN
Scale: 1:35

NOTES
GENERAL
1. ALL THE DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED.
2. DO NOT SCALE THIS DRAWINGS. USE GIVEN DIMENSIONS ONLY.
3. DURING THE CONSTRUCTION, THE CONTRACTOR MUST CHECK THE DIMENSIONS, LEVELS AND MEASUREMENTS. DISCREPANCY IF ANY TO BE REPORTED TO THE ENGINEER BEFORE EXECUTION.

MATERIALS
1. CONCRETE 28 DAYS STRENGTH IN CUBE, $f_{ck} = 25$ MPa. UNLESS OTHERWISE MENTIONED IN THE SPECIFICATION, THE TRIAL MIX DESIGN STRENGTH SHALL BE 31.6 MPa
2. YIELD STRENGTH OF STEEL, $f_y = 500$ MPa (GRADE Fe 500, IS 1786).
3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

COVERING
ABUTMENT WALL (ALL SIDES) = 75 MM (UP TO OUTER FACE OF MAIN BAR)
RETURN WALL = 75 MM

BAR MARK
BAR MARK
SPACING
NOS. OF BAR
TYPE OF REBAR
LOCATION / REMARK
DIA. OF REBAR
T - HIGH YIELD DEFORMED BAR
Y - DEFORMED MS BAR
R - ROUND MS BAR
INDICATES BAR CUT POINT—
REINFORCEMENT DETAILS
Scale: 1:20

REINFORCEMENT DETAILS OF RIGHT ABUTMENT

Sheet Contents:
- BAILEY TYPE STEEL TRUSS GANGCHITPO BRIDGE
  [DS 80 FT SPAN & 3.277 m CARRIAGEWAY]
  On Silambi-Nagor GC Road
  under Lingmithang Regional Office

Revision
- First Issue: Oct., 2017
- Design: Tshering Rinzen (E)
- Drawn: Tshering Rinzen (E)
- Checked: Rinchen Wangdu (E)
- Approved: Karma Wangdi (E)

Drawing No.: GB-ABT-20

Scale: AS SHOWN

(as Sheet A3 size)
Anchor Hole should be minimum of 32mm Dia.

NOTES

GENERAL
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MATERIALS
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3. DETAILS OF STEEL IS MENTIONED IN THE DRAWING AND ITS QUANTITY IN THE BAR BENDING SCHEDULE.

COVERING
ABUTMENT WALL (ALL SIDES) = 75 MM
RETURN WALL = 75MM

LEGEND

BOTTOM BAR

PLAN OF ANCHORAGE BAR
Scale:1:30

REINFORCEMENT VIEW "1-1"
Scale:1:30

40-02-T16-150-BOTT.
40-03-T16-150-TOP
13-04-T16-150-BOTT.
13-05-T16-150-TOP
# REBAR SCHEDULE OF RIGHT ABUTMENT WALL

<table>
<thead>
<tr>
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<th>Number of bar in each members</th>
<th>Total number</th>
<th>Total length</th>
<th>Shape code</th>
<th>BENDING DIMENSION</th>
<th>ADDITIONAL INFORMATION</th>
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**SHEET CONTENTS:**
- **REBAR SCHEDULE OF RIGHT ABUTMENT WALL**

**REVISIONS:**
- FIRST ISSUE: Oct., 2017

**SIGNATURES:**
- **DESIGN:** THIMSHANG RINZEN (E)
- **DRAWN:** THIMSHANG RINZEN (E)
- **CHECKED:** RINCHEN KHANDU (E)
- **APPROVED:** KARMA RANGDRA (E)

**DRAWING NO.:** GB-ABT-22

**SCALE:** NTS

**SIZE:** (as Sheet A3 size)
GENERAL ELEVATION OF RRM WALL
Scale: 1:80

100mm thick PCC M10
20mm agg.

500mm filter media
with approved materials

RRM in cement mortar 1:4

100x100mm weepholes
@ 1.5m c/c

Back filling by using
selected subgrade materials

100mm thick PCC
M10, 40mm agg.
200mm thick
stone soiling

SECTION "A-A"
Scale: 1:65

SHEET CONTENTS:
ELEVATION & SECTION
OF WING WALL

REVISED