DETAILED ENGINEERING SURVEY, DESIGN & COST ESTIMATE
OF
JHUMKA-SHINGHIYA-RAMDHUNI-PRAKASHPUR-LAUKAHI-BOARDER
ROAD (0+000 KM- 5+260 KM AND 8+340 KM- 18+700KM) & JUNGE
CHOWK OF PRAKASHPUR-PURVA PASCHIM HIGHER SECONDARY
SCHOOL - VDC BUILDING -SHIKARITHAN SECTION RAOD (3.140KM)
SUNSARI DISTRICT

VOLUME: II
DRAWINGS

JUNE, 2017

Submitted by:

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Location Map of Proposed Jhumka- Shinghiya- Ramdhuni- Prakashpur- Madhuwan- Shukrabare- Paschimkushaha- Laukahi- Boarder Road (Branch Road)
<table>
<thead>
<tr>
<th>IP</th>
<th>X</th>
<th>Y</th>
<th>WCB</th>
<th>Def. Angle</th>
<th>Tan. Length</th>
<th>Simple Curve Data</th>
<th>CHAINAGE</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(m)</td>
<td>(m)</td>
<td></td>
<td>(deg)</td>
<td>(m)</td>
<td>R</td>
<td>E</td>
</tr>
<tr>
<td>1</td>
<td>0.000</td>
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<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
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</tbody>
</table>

**HORIZONTAL CURVE DATA TABLE**

**CHAINAGE**

**DATE:** JUNE, 2017

**SCALE:**

**HORIZONTAL CURVE DATA**

**REVISION NO.**

**DATE**

**DESCRIPTION**

**SIGNATURE**

**SCALE**

**PRODUCT/CAP**

**DEPARTMENT OF LOCAL INFRATRASTRUCTURE DEVELOPMENT AND RURAL CONNECTIVITY IMPROVEMENT PROJECT**

**CONTRACTOR**

**THEM (P) Ltd.**

**Address:**

**Email:**

**Detailed Engineering Survey, Design & Civil Execution of Bridges, Irriagations & Road Projects – Lincoln – Bunch Road Area**

**Bunch Road Section**

**CHECKED BY:**

**APPROVED BY:**

**PLOT No.:**
Typical Road Section of Single Lane Road
District Road in Terai

- Road Way
- Shoulder
- Vegetation Turfing
- Min" 0.5m
- HFL

G.L

1.5:1 (H:V)

- Asphalt concrete 30mm
- 150mm Base course
- 200mm Sub-base course
- Compacted earth

SCALE : AS SHOWN
TYPICAL CEMENT MASONARY WALL

PROFILE 1

NOTES
1. Slope length to be verified as per actual site condition as per the Engineer.
2. Variation in levels of C/M Wall shall be installed as per the actual site condition by the Engineer.
3. Suitable method to be followed for installation of drain pipes as given in the Schedule.

PROFILE 2

Note: Unless otherwise specified the Drain Turn out is simple side drain provided to drain out the water from the side drain at downhill of hair-pin bends.
As per site condition

Masonry Box Culvert

PLAN

Section at AA

RCC Slab (1:1.5:5)

C/m wall in 1:4 e/s mortar

PCC 1:9:4

Stone Slining

Section at BB

Wing Wall

Inlet

Outlet

Wing Wall

Cut Off Wall

C/m wall in 1:3 e/s mortar

P.C.C (7.5 Cm) in 1:2:4

Stone Slining (15 Cm)

Irrigation Canal Section

12 mm dia @ 1.5 cm c/c

10 mm dia @ 20 cm c/c
Note:

1. K.M Post will be the name and distance in kilometers of intermediate station only. The name being on top and the distance at the bottom.

2. Alternative K.M. Post will be in Nepali and English languages.

3. The 5th K.M. Post will have the name and distance in K.M. of terminal station on one face and the starting station at other face.

4. The 5th K.M. Post will be have description both in Nepali and English languages, Nepali language being on top. The top trapezoidal portion of a 5th K.M. Post will show the R.L in meter on both faces.

5. The Reinforcement shall be for steel confirming to IS 456(1978)
LAYOUT OF HAIRPIN BENDS

DESIGN STANDARDS FOR HAIRPIN BENDS

- Design speed 90km
- 2% grade
- Minimum radius of 25m (side by side), 50m (end by end)
- Minimum length 100m
- Minimum road surface width 7m
- Scab Fairing installed (as required)
- Intersection must align with road alignment
- Access control up to 0.5m wide; cautionary stripes
- Shoulder length 2m with 0.5m gastronomic

SCALE AS SHOWN

PLAN OF LAY-BYE
1. The Diagram shows a section and plan of an outlet protection work for a culvert.
2. **Section A-A**: Shows the water trajectory at design discharge.
3. **Section C-C**: Indicates the chute to be constructed of cement masonry set in 1:3 grout mortar.
4. **Plan**: Depicts the outlet protection work with dimensions and notes.

**Note**: Unless otherwise specified, the Drain Turn Out is a simple side drain provided to drain out the water from side drain at downhill of hair-pin bends.

**Outlet Protection Work: Type-1**
(Culvert Sputt Outlet Apron)

**Outlet Protection Work: Type-2**
(Culvert Outlet Chute)
1. DELINEATORS IN SHARP CURVE/ FLOOD WAY

Recommended Spacing for Delineator Posts

<p>| Radius of | Spacing of |</p>
<table>
<thead>
<tr>
<th>circle, m</th>
<th>circle, m</th>
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<tbody>
<tr>
<td>S1</td>
<td>S2</td>
</tr>
<tr>
<td>up to 20</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>60</td>
<td>7</td>
</tr>
<tr>
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</tr>
<tr>
<td>300</td>
<td>20</td>
</tr>
<tr>
<td>500</td>
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2. OTHER LOCATIONS OF DELINEATORS

When Embankment height is > 3m
At Places where there is vertical drop of > 3m at valley side of road
At road section with steep gradient of > 12%
At valley side of hair-pin bends
At both sides of approaching roads of bridges

Note: Delineator Posts have not to be provided if there exist parapet or other barriers.
GABION BARRIER FOR GABION WALL (HEIGHT > 3.0 m)

SECTIONAL VIEW OF DELINEATOR FOR CRRM WALL (HEIGHT > 3.0 m)

DELINEATOR FOR EMBANKMENT (HEIGHT > 3.0 m)

PLAN VIEW OF DELINEATOR FOR CRRM WALL