



## MILLENNIUM CHALLENGE ACCOUNT NEPAL (MCA-NEPAL)

### Recycling Pilot Works Contract – Dhan Khola Lamahi 40km Road Section MCA-N/RMP/CB/008

#### ADDENDUM #6

**Date of Issue: 15 January 2025**

This Addendum No. 6 modifies respective portions of the Bidding Document issued on 30 October 2024, amended through Addendum #1 on 28 November 2024, Addendum #2 on 11 December 2024, Addendum #3 on 25 December 2024, Addendum#4 on 7 January 2025 and Addendum #5 on 14 January 2025. The changes, as indicated below, are effective on the date of issue of this Addendum.

Except as expressly amended by this Addendum, all other terms and conditions of the Bidding Document - issued on 30 October 2024, amended through Addendum #1 on 28 November 2024, Addendum #2 on 11 December 2024, Addendum #3 on 25 December 2024, Addendum #4 on 7 January 2025 and Addendum #5 on 14 January 2025 remain unchanged and shall remain in full force and effect in accordance with their terms.

SN	Pages/Paragraph	Amendments
1.	Volume I, Section IV Submission Forms, Bill of Quantities, item No. 2.04 (g), Dismantling of existing minor RCC Slab culverts and/or bridges as a whole including stockpiling of the reusable materials and disposal of unusable materials, all complete <b>Quantity has been amended</b>	<del>7</del> Has been replaced by: <b>6</b>

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2.	<p>Volume I, Section IV Submission Forms, Bill of Quantities, item No. 2.05, Annex A: Relocation of HT, LT Line &amp; Transformer Post completely from the Dhankhola to Lamahi all complete as per NEA specification and as instructed by Engineer (Item 2.05), A) Material Cost SN, III. Transformer and Accessories</p> <p>Transformer and Accessories, Item 9: PVC insulated Earthing Wire</p> <p><b>Work Description has been amended</b> PDF Page 78 of 136</p>	<p>PVC insulated Earthing Wire</p> <p>Has been replaced as:</p> <p>PVC insulated Earthing Wire – 16 sq mm cross section– Approximate diameter of 6.5 mm</p>
3.	<p>Volume I, Section IV Submission Forms, Bill of Quantities, item No. 2.05, Annex A: Relocation of HT, LT Line &amp; Transformer Post completely from the Dhankhola to Lamahi all complete as per NEA specification and as instructed by Engineer (Item 2.05), SN, III. Transformer and Accessories,</p>	<p>HDP Pipe</p> <p><b>Has been replaced by:</b></p> <p>HDP Pipe 25 sq mm cross section – Approximately 8 mm diameter</p>

	<p>Item 12: HDP Pipe</p> <p><b>Work Description has been amended</b></p> <p>PDF Page 78 of 136</p>	
4.	<p>Volume I, Section IV Submission Forms, Bill of Quantities, item No. 2.06, ANNEX B: Relocation of existing water pipeline system (1/2" water supply pipe line or similar) with fitting, accessories and structures as required, complete as instructed by Engineer. (Item 2.06), B: Chirange Jarauni Tinkhande SN, I.</p> <p>Construction Works as per Standard Specification and Engineer's instruction, Item 7: Non Pressure RCC Hume Pipe NP3(450 mm dia), laying &amp; joining works with all complete</p> <p><b>Unit and Quantity have been amended</b></p> <p>PDF Page 82 of 136</p>	<p>Unit: Job Quantity: 1</p> <p>Has been replaced by:</p> <p>Unit: Meter Quantity: Length – 12 m</p>
5.	<p>Volume I, Section IV Submission Forms, Bill of Quantities, item No. 6.05,</p>	<p>Providing, fencing and erecting 50 mm dia painted steel pipe railing in 3 rows on precast M 20 grade RCC vertical posts 1.8 meters high (1.2 m above Ground Level) with 3 holes 50 mm dia for pipe, fixed 2 meters center to, complete as per Drawing and Technical Specifications.</p>

	<p><b>Item Description has been amended</b></p> <p>PDF Page 65 of 136</p>	<p><b>Has been replaced by:</b></p> <p>Providing, fencing and erecting 75 mm dia painted steel pipe railing in 2 rows on precast M 20 grade RCC vertical posts 1.4 meters high (1.2 m above Ground Level) with 3 holes 50 mm dia for pipe, fixed 2 meters center to, complete as per Drawing and Technical Specifications.</p>
<p>6.</p>	<p>Volume II, 241029 Bidding Doc - FDR Works Volume II Part 2, Part 2 – Employer’s Requirements, Section 700 – Pipe Drains, Pipe Culverts and Concrete Channels, 704 Laying of PLHDPE Pipe,</p> <p><b>(1) Transportation and laying of PLHDPE pipe have been amended</b></p> <p>PDF Page 39 of 961</p>	<p>The PLHDPE pipes, warning tape and necessary couplings will be provided by Employer. The Contractor has to transport PLHDPE pipes and couplings from the storage yard of Nepal Telecommunication Limited in Lamahi, Dang. After excavating to required depth as shown in drawing the PLHDPE pipes are to be laid in position and joined by socket (coupling). After laying and joining the pipe, back filling by excavated material with proper compaction (as per sub clause 910) is to be done layer by layer as directed by the Engineer. During back filling warning tape is to be placed at the depth as shown in drawing.</p> <p>Has been replaced by:</p> <p>The PLHDPE pipes, warning tape and necessary couplings will be provided by Employer. The Contractor has to transport PLHDPE pipes and couplings from the storage yard of Nepal Telecommunication Limited in Lamahi, Dang. After excavating to required depth as shown in drawing the PLHDPE pipes are to be laid in position and joined by socket (coupling). After laying and joining the pipe, back filling by excavated material with proper compaction (as per sub clause 910) is to be done layer by layer as directed by the Engineer. During back filling warning tape is to be placed at the depth as shown in drawing. See section 704 for work methodology and Standard Drawings 56 (page 303) for related drawings. The general work methodology for guidance is provided on the attached document as per Annex A of this Addendum. The drawings shall be the MCA-Nepal produced ones, i.e. SD-56.</p>

## Annex 1: General Work Methodology



Methodology to lay  
Optical Fiber in PLHDI

## **Methodology to lay Optical Fiber in PLHDPE ducts in Dhankhola – Lamahi road section**

### **Step 1: Site Survey and Planning:**

A comprehensive drawing of the area identifying probable route for trenching and ducting shall be prepared with due consideration of soil conditions, terrains and existing infrastructures.

### **Step 2: Permits and Permissions:**

Necessary permits and permissions from MCA-Nepal, Department of Roads and from local authorities (if necessary) shall be obtained before the commencement of work.

As far as possible, the excavation shall be done outside the road width or in RoW along with new drain side.

The attached **drawings in Annex-I** represent the RCC Chamber, Route Indicator, RCC Chamber Cover plan and ring chamber and sample images in Annex-II. In these areas, to do the trenching works, the following shall be considered:

- In link road pitch crossing, if permission is granted, pitch cutting and subsequent excavation shall be done. If pitch cutting is not possible, HDD (Horizontal Directional Drilling) shall be done.
- In places with completed end to end pitch work, if permission is granted, pitch cutting shall be done. If pitch cutting is not possible, HDD (Horizontal Directional Drilling) shall be done in coordination with the concerned office / road consultant to come up with the best solution that creates minimal damage to the pitch works.
- In places with completed gravel work, if permission is granted excavation shall be done and after laying of ducts, the gravel road shall be refinished to as is condition. If gravel cutting is not possible, HDD (Horizontal Directional Drilling) shall be done in coordination with the concerned office / road consultant to come up with the best solution that creates minimal damage to the gravel works.

### **Step 3: Resource allocation:**

All required manpower and equipments shall be maintained on the site by the MCA-Nepal for the smooth operation of work as per design and schedule. But the 40/33 PLHDPE pipe and its accessories such as duct Coupler, end plug etc and warning tape.

### **Step 4: Trenching and fiber blowing process:**

#### **4.1 Excavation**

Trenches shall be excavated along the planned route along with the drain side in hill side, ensuring they are wide and deep enough to accommodate the ducting. (Drawing in annex I & Sample Images in Annex-II)

As per the nature of soil, the following depth shall be maintained:

- a. Ordinary Soft/Silty Soil 1.3 meter
- b. Boulder mixed soil 1.3 meter
- c. Soft Rock 1.0 meter
- d. Hard Rock 0.7 meter
- e. Mixed soil of different strata 1.3 meter

Wherever it is seen that sand /mud dunes or any other obstacle are there by roadside, the depth shall be maintained as 1.3 meters from road level.

Adequate precautions shall be taken to avoid damaging existing utilities and infrastructure during trenching.

**4.2 HDD (Horizontal Directional Drilling) excavation**

If necessary, HDD then while doing HDD, the following process shall be followed:

**Drill Path Design:** The drill path shall be ascertained, considering factors such as the desired depth, length, and alignment of the bore, as well as any obstacles that need to be avoided.

**Setup:** The drilling rig shall set up at the entry point, usually referred to as the "drill pad." The rig consists of drilling machinery, and guidance systems.

**End to end Pit:** For the start and end point of the HDD, two pits of dimension 2m by 0.6m shall be excavated to a depth of minimum 1.3m. The pits shall be located at approximate 250m. For this excavation, coordination and permission shall be taken with concerned offices.

**Pilot Hole:** A 100mm diameter pilot hole shall be drilled along the planned path using a directional drilling tool. The direction and angle of the drill head shall be controlled from the surface using guidance systems.

**Backfilling and Restoration:** After the duct pipe is installed, the entry and exit pits shall be backfilled with suitable material to stabilize the surrounding soil and protect the installed ducts and restored to their original condition as far as possible.

**4.3 Dewatering**

The contractor shall be responsible for all necessary arrangements to remove or pump out water from the trench. The contractor should survey the soil condition encountering the section for which he is trenching and make his own assessment about dewatering arrangements that may be necessary.

**4.4 Duct laying procedure.**

The ducts shall be laid carefully along the trench, ensuring proper alignment and gradient for efficient cable installation.

**Support the duct:** Make sure the duct is secure and well-supported to prevent wobbling and maintain precision.

**Use tin snips:** Tin snips are a good choice for straight cuts on smaller ducts.

**Use a reciprocating saw:** For thicker or more extensive rectangular ducts, a reciprocating saw with a

metal-cutting blade is effective.

As and when necessary, the ducts shall be connected using suitable connectors or couplers ensuring that they are securely fastened and sealed against water ingress.

**Warning tapes** shall be laid above the buried ducts to prevent accidental damage during future excavation works, if any.

(Duct Laying Figure annex II)

#### **4.5 Backfilling and compaction**

Provided that the pipe has been properly laid and jointed in the trench, and the back filling operation shall follow as closely as practicable. The back filling operation shall be performed in such a manner as to provide firm support under and above the pipe and to avoid bend or deformation of the pipe, when the pipe gets loaded with the back filled earth.

(Refer annex II for drawings)

#### **4.6 Laying of Duct in shallow culvert crossing**

In case of shallow culvert, excavation shall be done upto 1.3 m depth in the bed of shallow culvert of upto 10 meter span during dry bed conditions, laying of one way appropriate DWC pipe and backfilling with concrete 1:2:4 at least 30 cm over the DWC pipe and rest trench with excavated materials.

#### **4.7 Laying of Duct along bridges**

In case it is essential to lay the duct on the bridge, it shall be done with 125 mm nominal dia GI pipe (Grade-C)/DWC pipe and clamped with spacing of 1m to 1.5m and PLHDPE duct shall be pulled through the pipe. All the clamps, nails, Nuts, and Bolts shall be hot dip galvanized material. Appropriate length of GI pipe shall be placed inside RCC concrete encasing outside of the bridges and culverts. (Refer Annex -I for Drawing)

#### **4.8 Road crossings**

In major Roads with heavy traffic density, Horizontal Directional Drilling (HDD) method shall be used if possible. In technically infeasible areas, PLHDPE shall be encased inside RCC hume pipes or DWC Pipes.

(Refer Annex I for drawings)

#### **4.9 Duct Laying methodology**

Steps in manual duct laying are:

- 1) Place the Jack Stand along the sides of the trench.
- 2) Observe the correct drum position i.e. duct should be uncoiled from the bottom not from top of the drum using decoiler.
- 3) Driven the reel slowly to avoid over spinning of the reel when you are pulling HDPE Duct installation.
- 4) Unroll the duct to the length spacing the workers after every 15-20 meters.
- 5) When encountering an obstruction, utility crossing or bore, pull the HDPE Duct beyond the Obstruction until you have enough duct to maneuver it through or under the obstruction and then re-pull the duct.



Duct can be placed into an open trench either directly from a drum or temporarily laid along the side of the trench and placed later on.

Placement of duct into an open trench:

- 1) When placing the duct into an open trench, the bottom of the trench must be reasonably flat, free of horizontal and vertical bends, and free of stones and debris.
- 2) If surrounding soil contains sharp stones or other materials, the duct should be insulated with a protective layer of fine sand (approximately 5 to 10 cm under and above the duct).
- 3) Place the duct as straight as possible. In case of any directional changes, keep the bending radius as big as possible. A minimum bending radius, which is 12 times the O.D. of the duct, is to be maintained.

#### **4.10 Chambers**

RCC chamber of internal size 1m x 1m x 1m and ring chambers of 1m diameter and 1m depth shall be constructed as per the requirement. The chambers shall be constructed @1900m distance. If there is a bridge on the route, the chambers shall be constructed on both sides and in case of culverts, the chamber shall be on one side of the culvert depending upon the length of the culvert. However, the positions of the chambers may vary depending upon the site conditions. The chambers shall be avoided as far as possible in the pitch and gravel areas, so as to ensure minimal damage to road surfaces.

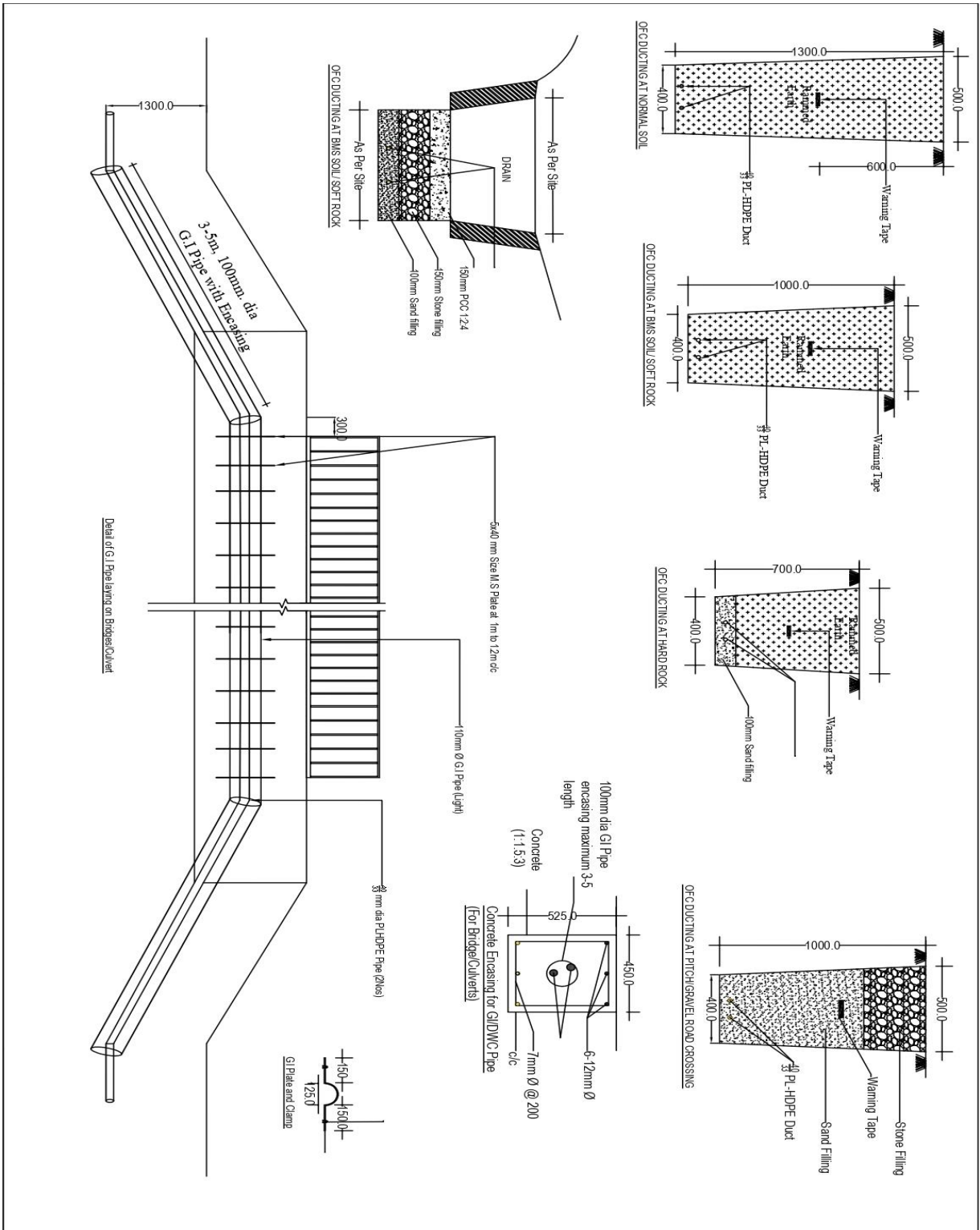
(Refer Annex I for drawings and Annex-II for sample Images)

### **Step 5: Indicators and markers:**

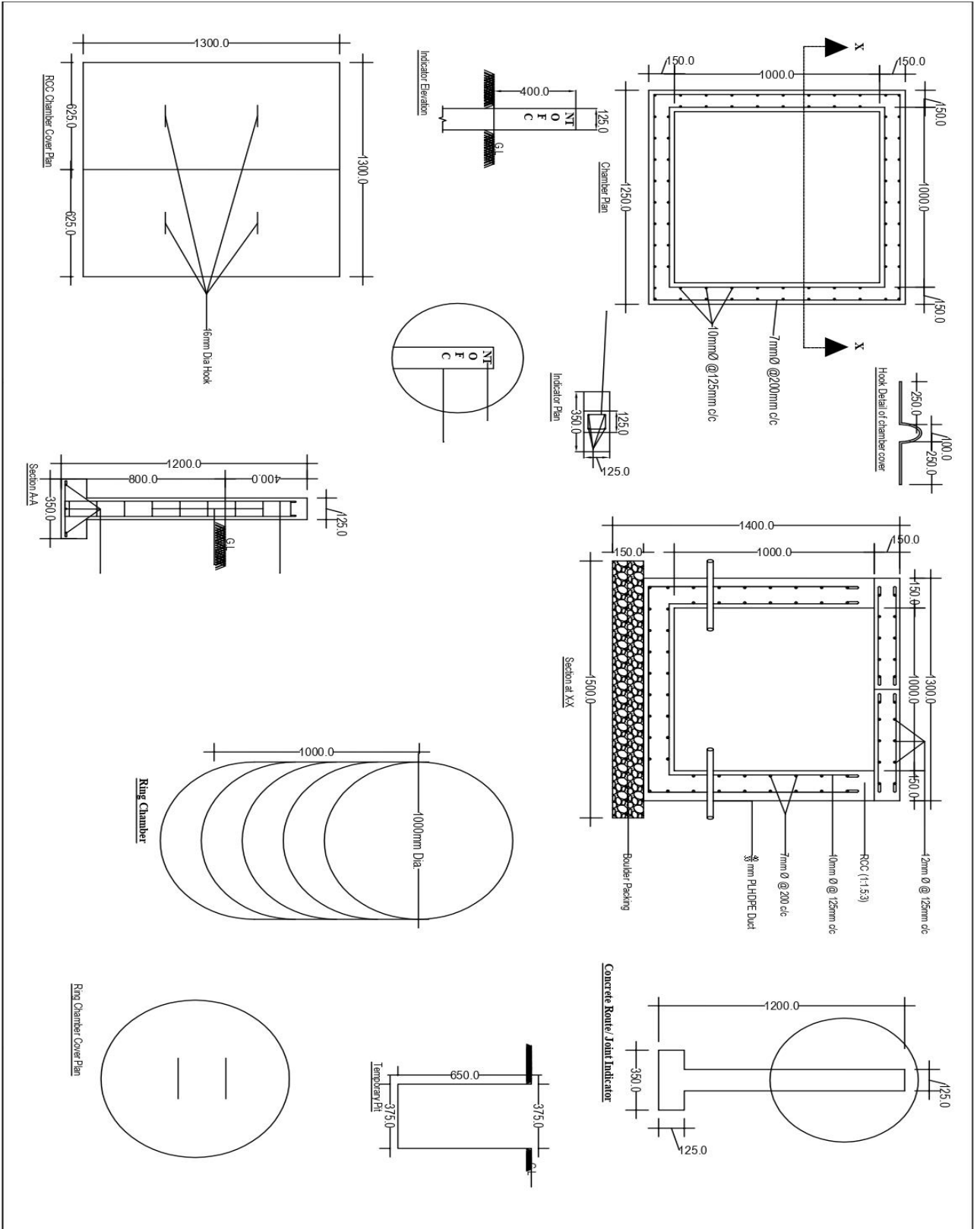
#### **5.1 Fixing of Route indicator**

The precast RCC route indicator as per specification and drawing should be fixed in the route line to indicate the position of Telecom duct. In open country the Route indicators should be fixed at every 200 meters in the city area and at both ends of the road crossing. These should be liberally used when route changes at curves, bends & crossings. The letters NT OFC shall be engraved in the marker in bold letters of proper size. The Route markers are painted with enamel paint of yellow color and letters with red color. However, the joint marker is to be painted with red color and letters with white color.(Refer annex II for drawings)

Annex -I (Drawing )



Methodology to lay Optical Fiber in PLHDPE ducts in Dhankhola Lamahi road section



Methodology to lay Optical Fiber in PLHDPE ducts in Dhankhola Lamahi road section

Annex-II (Images)



Fig-1, PLHDPE Pipe Connecting by Coupler



Fig-2, PLHDPE Pipe End Sealing Plug



Fig-3, PLHDPE Pipe Connecting by Coupler



Fig-4, PLHDPE Pipe Laying in Trench





Fig-4, Laying of Warning Tape above PLHDPE Pipe



Fig-5, PLHDPE Pipe Uncoiling



Fig-5, PLHDPE Pipe Uncoiling



Fig-6, PLHDPE Pipe Laying in Trench



Fig-7, RCC Chamber Sample Figure