MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.
(A Govt. of Maharashtra Undertaking)
CIN : U40109MH2005SGC153645

Office of the Chief Engineer (Distributions)
Maharashtra State Electricity Distribution Co. Ltd.
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Ref. No.C.E.(Dist.)/D-III/ No 07500 Date : 15 MAR 2019

CIRCULAR

Sub : Revised Guidelines – Preparation of estimates for shifting of existing distribution electrical infrastructure due to road widening, construction of bridges etc. by National Highway Authority of India (NHAI), Public Works Department (PWD), MSRDC, Railways Local bodies, etc. under DDF.

Ref: 1) CE (Dist)/D-III/23799 dtd.28.09.2017
2) CE (Dist)/D-III/NHAI/T-87/24724 dtd.19.10.2018
3) CE (Dist)/D-III/shifting works/27137 dtd.16.11.2018.

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Various authorities like National Highway Authority of India (NHAI), Public Works Department (PWD), MSRDC, Railways, Local bodies, etc. approach our field offices for shifting of existing electrical distribution infrastructure due to road widening, Bridge constructions etc. Accordingly, after the joint inspection, estimates are prepared and approved by the competent authority as per the amount of the estimates. However, it was observed that different approaches and practices were followed by the field offices while preparation of these estimates and no uniformity was found. Numbers of complaints were received at corporate office about the estimates having exorbitant value. The Corporate office took serious note of these complaints and issued circular for standard guidelines vide reference (1) for preparation of DPR of such electrical infrastructure shifting works.

Vide letters u/r (2) & (3), additional guidelines have been also issued for further clarification on receipt of feedbacks from the field. Accordingly, the field offices were instructed to review already sanctioned estimate where the work has not started or the estimates which are under consideration. However, during the recent meeting on dated 28/01/2019 at Nagpur, there was request from NHAI authorities to clarify few issues regarding the standard installation practices being followed by MSEDCL. In view of this, consolidated revised guidelines for preparation of DPR, execution of work as per DPR and certification of completed works are being issued. These guidelines will supersede all earlier directives given. All field officers are directed

to implement these guidelines while executing the shifting of electrical distribution infrastructure works under DDF.

I. Preparation of DPR:-

1. The application of NHAI, PWD, Local bodies, etc for shifting of existing distribution electrical infrastructure shall be accepted at circle office of MSEDCL and the same shall be forwarded to the concerned division office for survey and preparation of estimates accordingly.
   The joint committees of Executive Engineer (MSEDCL), Executive Engineer (NHAI), Executive Engineer (PWD) or Executive Engineer (Local Bodies) as applicable will the formed by Superintending Engineer, Circle office for joint survey, preparation of estimate, and monitoring of the work of shifting of distribution electrical infrastructure. ---- SOP - 2 days
2. On receipt of application by Dn. Office, joint survey of the site where shifting is to be carried out shall be done by the joint committee and survey report shall be prepared, which will be signed by all the members of the committee.----SOP - One week
3. Estimate shall be prepared on the basis of joint survey report using the prevailing cost-data of MSEDCL, the centages applicable for such type of work shall be considered while preparing estimate.----SOP - 3 days
4. Proper single line diagram with Geo-coordinates, showing existing electrical infrastructure and the proposed shifting shall be prepared. The estimate shall be approved by the Division Executive Engineer / Superintending. Engineer / Chief Engineer as per the G.O. powers. Demand note of 1.3% supervision charges shall be issued by the competent authority to the agency for payment.---
   -SOP - 1 week
5. While doing joint survey and preparation of estimate, following clearances shall be ensured.

   a. Consent shall be obtained from the appropriate authority of the applicant for execution of work as per MSEDCL specifications and under the supervision of MSEDCL by paying 1.3% supervision charge to MSEDCL.
   b. While preparation of estimate right of way shall be taken from NHAI/PWD/ Local bodies etc. as per guidelines given in the "Manual of Specifications & Standards, Planning commission Government of India, New Delhi (Four-laning of Highways through Public Private partnership) and Appendix B-I (Details of proposed Right of Way (ROW)" (Attached herewith).

6. While preparing the estimates following technical inputs shall be considered.

a. The overhead & underground line structures outside the Right of Way (RoW) and not abstracting the road widening work shall not be shifted.

b. If the existing materials like conductor, Cables, Distribution Transformers etc. are in good conditions and can be reused, the same shall not be considered in the estimate.

c. If the old materials are not of standard capacity/rating then new material of standard rating followed by MSEDCL shall only be used.

d. However the final decision regarding reuse of old material will be taken by MSEDCL and will prevail.

e.g. i) If the existing Distribution Transformer is of 63 KVA which is not used in MSEDCL nowadays, 100 KVA Distribution Transformer shall be used.

ii) If conductor size of existing HT line is 34/80 sq.mm AAAC which is not used by MSEDCL nowadays, 55/100 sq.mm AAAC conductor shall be used.

e. 300 sq.mm size XLPE cables shall be used in case of O/H line to U/G conversion.

f. For distribution transformer 95 sq.mm. XLPE HT cable shall be used.

g. 300 sqmm XLPE HT cable shall be used for HT line road crossing.

h. For 33kV/22kV overhead lines, 152x152, 13 Mtr. RSJ poles shall be used. For 11kV overhead lines, 100X115(4X4.5), 11 Meter RSJ pole shall be used.

i. No stay wire shall be proposed for angle locations or cut points along the road/Highway/railway track and town area. Instead, RSJ stud poles of size 4 X4.5 ,11 Meter and 9 Meter for 33 /22kV and 11 kV lines respectively shall be proposed .

j. All the metel fabrications in coastal area i.e areas under Bhandup zone, Konkan Zone, Kalyan Zone and areas prone to heavy corrosion due to chemical Industries etc. shall be of hot dip GI. For RSJ poles in coastal areas / chemically polluted areas, anti corrosive paint over and above existing paint shall be provided for 4 meter from the bottom.

k. The use of polymeric Disc /Pin insulators may be encouraged.

l. AB switch shall be proposed only for the T points or DTC locations .No AB switch shall be proposed in the run-of line.

m. Lightening arresters shall be proposed only at the one end of the cable crossing and DTC location.

n. HDPE pipes as per standard specification of MSEDCL (as used for laying underground cable through HDD) shall be proposed for protection of cable while taking up on the DP structure instead of GI pipe.

o. The sand / half round RCC covers for cable shall not be proposed for the length where cable is laid through HDPE pipe / RCC duct.

p. Fibers clamps of appropriate size shall be provided for fixing /clamping the cable on DP structure.

q. As each pole of the DP is earthed, the same pole earthing shall be extended for the cable termination earthing on DP structure. No separate earthing for the cable termination shall be provided.

7. While carrying out the underground cabling work, the materials as per the specifications of MSEDCL shall be used and the standard installation practice of MSEDCL shall be followed. Some of the practices are as under,

i. The LT cable shall be XLPE armored cable with Aluminum conductor, confirming to IS amended up to date of make CCI / Universal / Polycab / Unicab or equivalent as per the specification of bidding document.

ii. The HT cable shall be XLPE armored with Aluminum conductor for 33kV / 22 kV / 11 kV lines confirming to IS amended up to date of make CCI / Universal / Polycab / Unicab or equivalent as per the specification of bidding document.

iii. The cable shall be laid 1.0 /1.2 Meter below ground level for HT / LT respectively.

iv. The size of the underground cable to be used in the estimate shall be 300 sqmm^2 for lines and 95 sqmm^2 if cable is used for Distribution Transformer.

v. The work shall be carried out by strictly adhering to the Electricity Act 2003 / IE Rules and as per the standard installation practice of MSEDCL.

vi. The work shall be carried out under supervision of the Joint committee formed for this purpose by Superintending Engineer MSEDCL or their representative.

vii. The jointing of cable shall be done in the presence of the Engineer or his representative.

a. Cable shall be laid as per sketch enclosed herewith, where in cable looping, pole height and road to pole clearance 2.5 meter is specially mentioned.

b. Standby cable shall be provided for road crossing locations only.

viii. All Highway / Railway crossings shall be done by underground cables only. Number of crossings, if technically feasible, shall be reduced by realigning the existing lines.

e.g. If there are crossings at nearby two / three locations at a distance of 300 to 400 Meters, these crossings may be converted in to one, if technically feasible by realignment of the lines.

ix. Normally the road crossing by underground cable shall be done through the RCC duct (of minimum diameter of 300 mm^2) provided by NHAI / PWD / Local bodies etc. MSEDCL officials shall request the concerned authority for providing one extra duct in view of further requirement. However, if these ducts are not provided and the authorities of NHAI / PWD / Local bodies insists for horizontal directional drilling (HDD), the road crossing shall be done by HDD. Further, it shall be ensured that while doing HDD, the length of bore shall not be more than actual width of the road.

x. The length of the cable loop at the DP structure shall be 5 Meter as per standard practice.

xi. The laying of two cables (double run arrangement) along one side of road should be generally avoided and instead one cable on either side of the road should be laid, if technically feasible. The single cable on either side of the road can feed power supply to Distribution Transformers on that side. Further, these cables can be converted at the tail end in loop for N+1 ring main configuration by RMU. This practice will ensure the reliability of power supply in case if one cable is failed.

xii. The stage inspection of material should be carried out by MSEDCL representative prior to work execution to ensure use of good quality material conforming to MSEDCL specification & IS standards. The quantity of the material inspected shall be also recorded in the system.

xiii. While framing the estimates, it should be ensured that, standard materials / equipments approved by MSEDCL are used. The cost of these materials should be taken from the prevailing cost data only. However, if a material / equipment not available in the cost data is used, the cost of such material / equipment shall be confirmed from adjoining zones or Chief Engineer (Distribution), Corporate Office. The cost of material / services shall be considered without any overheads and taxation / GST, i.e. Ex-work price shall be considered, and thereafter the prevailing approved centeges shall be added.

xiv. The Board vide BR No. 491 dated 11.03.2005 has decided to permit Govt. agencies, semi Govt., Municipal corporations and Local Bodies to retain old materials / equipments after replacement of HT/LT lines, poles etc. The guidelines regarding the same have been circulated vide circular no. Dist/III/shifting/10367 dtd.05.04.2005. These guidelines shall be followed while framing the estimate.

8. **Horizontal directional drilling (HDD):**

HDD is generally required wherever underground cable is laid for road crossing. The issue of HDD has been discussed with NHAI/PWD authorities during the meeting on 19/07/2017 at MSRDC office, Bandra and it is decided that NHAI/PWD/local body shall provide RCC duct of minimum dia.300 mm with one spare duct wherever road crossing of U/G cable is to be done. Hence no HDD shall be considered in the estimate unless insisted by these authorities. If insisted, the length of bore shall be restricted to actual size of the road proposed by the concerned authority.

The rates for the H.D.D shall conform to Circular No. CE/Infra/DDUGJY/ Rate of Horizontal Bore/2617 Dated 05.02.2018 i.e Rs 3450 per meter & as amended from time-to-time.

Sr No.	Particulars	Unit	Quantity	Rate (Rs)
1	Providing H.D.D Bore (Size 150 mm Dia) for laying underground cable.	Meter	1	2400.00
2	Providing HDPE/ GI pipe	Meter	1	1050.00
			Total	**3450.00**

9. If during survey, it is observed that the No. of distribution transformers to be shifted are more than 20% of the total quantity of distribution transformers in the particular RoW, the approval from concerned Regional Director shall be obtained.

10. **Centages :**

The detail estimate for the above works shall be prepared with the latest centages for DDF works as approved by the Board of the Directors time to time. The prevailing centages for DDF works are as under.

Sr.No	Particulars	Inside substation		Outside substation	
		Proposed O/H	DPR Amount	Proposed O/H	DPR Amount
A	Ex-Works Prices		100		100
1	Transportation	4.00%	4	4.00%	4
2	T&P on material cost	1.00%	1	1.00%	1
3	Contigencies on material cost	0.50%	0.5	0.50%	0.5
4	Erection cost on material	5.00%	5	15.00%	15
5	Contractor supervision charges on material	5.00%	5	5.00%	5
6	Insurance , Labour & Finance Cost	2.50%	2.5	2.50%	2.5
B	Total services		18		28
C	Sub-Total		118		128
7	Profit	4%	4.72	4%	5.12
D	Centages		22.72		33.12
E	Tender cost		122.72		133.12
8	GST	18%	22.09	18%	23.96
9	Price Escalation on net material cost	0%	0	0%	0
F	Sub-Total		144.81		157.08
10	HO supervision charges @ 1.3 % of material cost & erection charges	1.30%	1.37	1.30%	1.5
11	Interest during construction of F	0%	0	0%	0
G	Grand Total(DPR cost)		146.17		158.58
	Percentage of centages		46.17%		58.58%

Note: a) For 6 months contract PV is not applicable. IDC is not applicable in DDF case.

b) The applicant has to pay as per DPR cost and any additional higher quote by MSEDCL contractor against material cost, if it requests MSEDCL to execute the work. Else only supervision charges are applicable.

c) The old material like conductor, cables, poles, etc have to be credited to applicant party. The depreciated value of only old metallic material like poles, fabrications & clamps, conductor and Distribution Transformer i.e salvage value equal to 25% of material cost including dismantling charges shall be separately shown in the estimates, for accounting procedure for NHAI/PWDI local authorities.

11. Estimates shall be verified by the concerned Executive Engineer / Superintending Engineer / Chief Engineer of MSEDCL or Competent authority and after due verification demand of supervision charges @ rate of 1.3 % of Material cost + Erection charges shall be raised to the concerned applicant authority.

12. After payment of supervision charges the concerned applicant authority shall be allowed to execute the work.

II. Execution of work and supervision thereof:

i. All the works shall be executed as per the standard installation practice of MSEDCL. The material shall be strictly as per the standard specification of MSEDCL and shall be procured from the approved venders of MSEDCL only.

ii. While erecting the poles erection of poles by vertical drilling method instead of digging the pit manually, shall be encouraged.

iii. Earthing shall be provided to all HT poles. Similarly safety guarding shall be provided wherever required as per standard installation practice.

iv. All the RSJ poles as well as fabrication shall be painted with two coats of red lead oxide, black bituminous paints and one coat of industrial aluminum paints at store only before erection and the final coat of industrial aluminum paints shall be provided after the complete erection.

v. The work shall be supervised by the joint committee during execution for quality and quantity as per safety regulations. However, concerned Executive Engineer shall do 5% sample checking of the works.

vi. Normally, no deviation to the sanctioned work shall be allowed. However, in case due to some reason, deviations in the scope of work becomes necessary during the execution of works, the same shall be done by taking approval from the estimate sanctioning authority.

vii. Plan approval & charging permission shall be obtained by concerned agency of NHAI/PWD/Local body from Electrical Inspector Office.

III. Joint measurement / asset handing over :

After the completion of the work and successful commissioning, the asset will be handed over by the concerned applicant authority to MSEDCL. The MSEDCL officer who is taking over the asset ,shall ensure that the works mentioned in the handing over /taking over note are completed in all respect as per DPR and commissioned , the quantity of materials /equipments is as per the actual , which should be physically verified during the joint measurement by joint committee. After verification as mentioned above the asset shall be taken over and certification accordingly shall be given by the concerned authority of MSEDCL.

Review of estimates sanctioned and not operated so far:

All the estimates that are already prepared / sanctioned, and not yet operated should be reviewed by the Joint committee within **a week** after receipt of this circular and revised estimate shall be approved accordingly and issued to the agency within **2 weeks**.

The said circular shall come into force with immediate effect.

This circular is available on www.mahadiscom.in website

(K. R. Shegokar)
Chief Engineer (Distribution)

Copy s. w. rs. to:

1. The Chairman and Managing Director, MSEDCL, Mumbai
2. The Director (Operations / Projects / Finance), MSEDCL, Mumbai
3. The Executive Director (Dist / Infra /Spl projects), MSEDCL, Mumbai
4. The Joint Managing Director, MSEDCL, Aurangabad Region, Aurangabad.
5. Regional Director (Pune/Nagpur/Konkan Region), MSEDCL, Pune / Kalyan / Nagpur.

Copy f. w. cs. to:

All Chief Engineer, O&M Zones, MSEDCL

Copy to:

1. The OSD to Hon CMD, MSEDCL, Corporate office, Mumbai.
2. All Superintending Engineers, O & M Circles, MSEDCL

C39 ANNEX-I (1/3)

Four-laning of Highways
through
Public Private Partnership

MANUAL
OF
SPECIFICATIONS & STANDARDS

Planning Commission
Government of India
New Delhi

(iii) In embankments with height more than 6.0 m, the granular shoulder may be raised with provision of kerb channel to channelize the drainage as an erosion control device in accordance with Section 6.

(iv) The composition and specification of the paved shoulder shall be same as of the main carriageway.

2.7 Roadway Width

2.7.1 The width of roadway shall depend upon the width of carriageway, shoulders and the median.

2.7.2 On horizontal curves with radius up to 300 m, width of pavement and roadway in each carriageway shall be increased as per Table 2.5.

Table 2.5: Extra Width of Pavement and Roadway in each carriageway

Radius of Curve	Extra Width
75-100 m	0.9 m
101-300 m	0.6 m

2.8 Crossfall

2.8.1 The crossfall on straight sections of road carriageway, paved shoulders and paved portion of median shall be 2.5 per cent for bituminous surface and 2.0 per cent for cement concrete surface.

2.8.2 The crossfall shall be unidirectional for either side carriageway sloping towards the shoulder in straight reaches and towards the lower edge on horizontal curves. The camber on the existing road shall be modified to unidirectional crossfall.

2.8.3 The crossfall for granular shoulders on straight portions shall be at least 0.5 per cent steeper than the slope of the pavement and paved shoulder subject to a minimum of 3.0 per cent. On super elevated sections, the earthen portion of the shoulder on the outer side of the curve would be provided with reverse crossfall of 0.5 per cent so that the earth does not drain on the carriageway and the storm water drains out with minimum travel path.

(i) Vehicular underpass	5.5 m
(ii) Pedestrian and Cattle underpass	3.0 m (to be increased to 4.5m, in case certain categories of animals such as elephant/camel are expected to cross the Project Highway frequently. This will be as specified in Schedule-B.)

Wherever existing slab culverts and minor bridges allow a vertical clearance of more than 2 m, these can be used in dry season for pedestrian and cattle crossing by providing necessary flooring. This will not be a substitute for normal requirements of pedestrian and cattle crossings as per para 2.13.3.

2.11 Lateral and Vertical Clearance at Overpasses

Wherever any structure is provided over the Project Highway; the minimum clearances at overpasses shall be as follows:

2.11.1 *Lateral Clearance*

Full roadway width shall be carried through the overpass structure unless otherwise specified in Schedule-B. Provision shall also be made for future widening of the Project Highway to 6-lane with service roads. The abutments and piers shall be provided with suitable protection against collision of vehicles. Crash barriers shall be provided on abutment side and on sides of piers for this purpose. The ends of crash barriers shall be turned away from the line of approaching traffic.

2.11.2 *Vertical Clearance*

A minimum 5.5 m vertical clearance shall be provided at all points of the carriageway of the Project Highway.

2.12 Access Control

2.12.1 *Access*

Access to the Project Highway shall be partially controlled. In general, access to the Project Highway shall be provided at the following locations:

(i) Intersection with National Highways

C 49 ANNEX III

(1/3)

National Highways Authority of India

(Ministry of Road, Transport & Highways)
Government of India

PREPARATION OF FEASIBILITY CUM PRELIMINARY DESIGN REPORT FOR CONSTRUCTION OF STAND ALONE RING ROAD/BYPASS AROUND JAMMU CITY IN THE STATE OF J&K UNDER NHDP PHASE-VII

TECHNICAL SCHEDULE (A TO D)

OCTOBER 2016

G-5 & 6, Sector – 10, Dwarka, New Delhi – 110 075

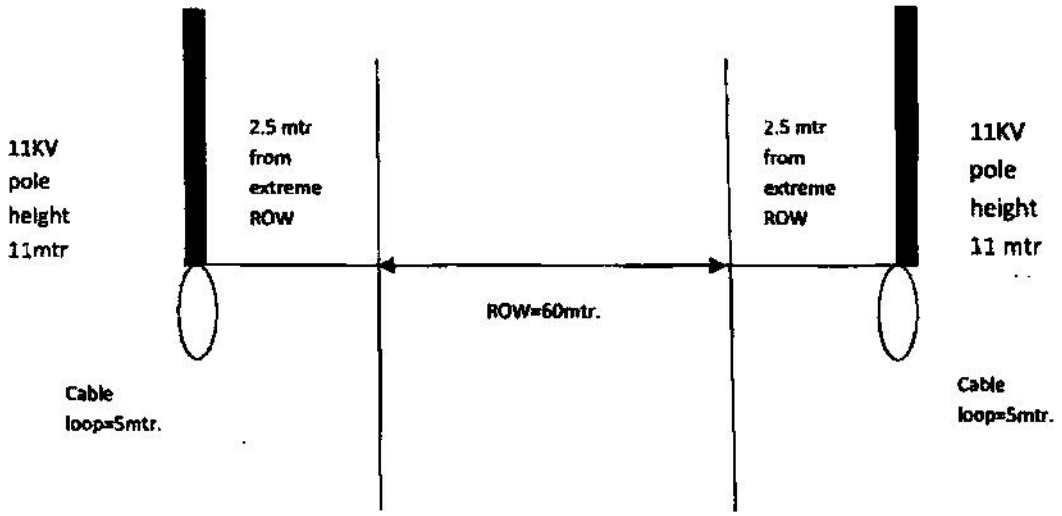
Appendix B-I

Details of Proposed Right of Way (ROW)

Proposed Right of way is provided in the table below in the entire length of project road except where additional width is required to accommodate Junction development as per requirement given in IRC SP:84 -2014 etc.

Details of Proposed Right of Way (PROW)						
S. No.	Chainage		Length	Section	Proposed ROW* (meter)	Remarks
	From	To	km			
1	-0.687 (85.312 Existing Km)	0.000	0.687	Plain	45	
2	0.000	7.990	7.990	Plain	60	
3	7.990	8.130	0.140	Plain	84	Truck Lay bye
4	8.130	8.950	0.820	Plain	60	
5	8.950	9.650	0.700	Plain	45	
6	9.650	12.265	2.615	Plain	60	
7	12.265	12.365	0.100	Plain	45	
8	12.365	21.150	8.785	Plain	60	
9	21.150	21.750	0.600	Plain	90	Toll Plaza
10	21.750	31.480	9.730	Plain	60	
11	31.480	31.720	0.240	Plain	150 - 170	Truck Lay bye
12	31.720	43.170	11.450	Plain	60	
13	43.170	43.370	0.200	Plain	70 - 85	Truck Lay bye
14	43.370	46.650	3.280	Plain	60	
15	46.650	47.850	1.200	Hilly	45	
16	47.850	48.590	0.740	Hilly	75	
17	48.590	48.690	0.100	Hilly	82.5	
18	48.690	49.050	0.360	Hilly	68 - 81	
19	49.050	49.330	0.280	Hilly	75	
20	49.330	49.700	0.370	Hilly	45 - 60	
21	49.700	49.850	0.150	Hilly	90	High Hill cutting
22	49.850	50.200	0.350	Hilly	75	
23	50.200	50.430	0.230	Hilly	85	
24	50.430	50.630	0.200	Hilly	75	
25	50.630	50.710	0.080	Hilly	85 - 105	High Hill cutting
26	50.710	51.470	0.760	Hilly	45	Tunnel
27	51.470	51.710	0.240	Hilly	70 - 108	High Hill cutting
28	51.710	52.370	0.660	Hilly	55	
29	52.370	52.650	0.280	Hilly	65	
30	52.650	53.780	1.130	Hilly	70 - 118	High Hill cutting
31	53.780	54.480	0.700	Hilly	45	Tunnel
32	54.480	56.390	1.910	Hilly	50 - 120	High Filling
33	56.390	57.130	0.740	Hilly	75	
34	57.130	57.200	0.070	Hilly	75 - 90	Junction Part
35	57.200	57.562	0.362	Hilly	45-90	
*Actual PROW has been marked in plan and profile drawings						

Sketch of cable length indicating cable looping, pole height and road to pole clearance



Cable length for ROW of 60 mtr is as follows								
Particulars	Pole height in mtr	Utility allowed location from extreme ROW	Cable loop	ROW	Utility allowed location from extreme ROW	Cable loop	Pole height in mtr	Total in mtr
Length of cable in mtr.	11	2.5	5	60	2.5	5	11	97

Annex - II
(Schedule-A)

Dates for providing Right of Way

The dates on which the Authority shall provide Right of Way to the Contractor on different stretches of the Site are stated below:

Sl. No	From km to km	Length (km)	Width (m)	Date of providing ROW *
1	2	3	4	5
(i) Full Right of Way (full width) (a) Stretch (b) Stretch (c) Stretch	Km 86 of NH-1A (Design Chainage 0) to Km 14.7 at Nagrota bypass of NH-1A (Design Chainage 57.206)	57.206	45m to 120m as per Appendix B-I	90 days
(ii) Part Right of Way (part width) (a) Stretch (b) Stretch (c) Stretch	Km 85.312 of NH-1A (Design Chainage-0.687) to Km 86 of NH-1A (Design Chainage 0) Km 14.7 of Nagrota bypass (Design Chainage57.206) to Km 15.068 of NH-1A (Design Chainage57.568)	0.687 0.362	45m	30 days
(iii) Balance Right of Way (width) a) Stretch b) Stretch c) Stretch	Km 85.312 of NH-1A (Design Chainage-0.687) to Km 86 of NH-1A (Design Chainage 0) Km 14.7 of Nagrota bypass (Design Chainage57.206) to Km 15.068 of NH-1A (Design Chainage57.568)	0.687 0.362	More than 45m to 120m as per Appendix B-I	90days

* The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.