

(D) *Sh* **D.G.M. (Tech.)**
Geopate **BS**
Kumar
Manoj Kumar
PIU Kathi
11/11/2011
11/11/2011

The proposed project road in this section starts at village Katamatha and at design chainage 32+035 where it follows SH-99 and travels 13.245 Km and passes through villages of Kishanganj district directly or indirectly. The proposed road is passing through Kochadhaman tehsil in Kishanganj District.

BYPASS/REALIGNMENT-

The approved alignment of Kishanganj PF section (Existing Chainage-32+035 to 45+280) is a part of Byasi-Bahadurganj-Dighalbank strengthening and widening project which is initiating near Katamatha and terminating near Sonthapunas village in this stretch. As per the details from BSRDCL, this road has ROW of 24 m. Overall, the alignment is already revised due to avoiding some productive agriculture land, so there is no need for realignment again.

TRAFFIC CHARACTERISTICS-

Traffic varies by the hour, by the day and by the month. Hence it is essential to provide a factor which provides relationship between Average Annual Daily Traffic and Average Daily Traffic of the month corresponding to the traffic survey.

As per the vide circular letter no. RW/NH-33044/37/2015/S&R (R) dated 26TH 2016 the MORT& H revised upgradation to 4-lane in plain terrain with Traffic as 10,000 PCU/day.

The Average Annual Daily Traffic (AADT) is 10266 in the year 2021 and the project PCU will be more. So, the project stretch qualifies for 2-lane.

DETAILS OF AFFECTED TREES:

The entire linear stretch of roadside plantation along highway is declared as protected forest. About nearly 1090 no. of trees have been affected within the PROW of the entire project section from Katamatha to Sonthapunas (Existing Chainage 32+035 to 45+280). 572 trees are proposed to be translocated and remaining 518 trees need to be felled. **List of trees (572) need to be translocated are also attached.**

1. Detail of Land identified for translocation of Trees

- **Name of District of Identified Land:**
- **Location of Identified Land for Translocation of Trees:**

Kishanganj

Rest land for Avenue plantation both the sides of Proposed ROW (toward 12m from existing centreline) of entire project section of



Dr. A. K. Singh

BSR
Kishanganj

- Name of the forest division:
- No. of Trees for Translocation:

Kishanganj district (Design chainage 32+035 to 45+015).

Araria Forest Division

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Calculation of Identified Land

- Required area for 01 tree= $3\text{m} \times 3\text{m} = 9\text{m}^2$
- Therefore, required area for 572 trees= $572 \times 9 = 5148\text{ m}^2$ (0.5 Hectare)
- Required length for translocation of trees with available width 3 m= 1.716 Km

Existing Km		Design Chainage		Length (Km)	Cross Section Type	Remarks	Balance width (m) L/R	Width (L+R)	Length	Area(sq. m)
From	To	From	To							
33/3 40	33/8 05	33+0 50	33+5 40	0.49	TCS-4	Flexible Pavement	5.50	11	490	5390
33/8 05	34/2 55	33+5 40	33+9 90	0.45	TCS-5	Rigid Pavement	5.50	11	450	4950
39/4 50	39/7 50	39+1 50	39+5 50	0.4	TCS-5	Rigid Pavement	5.50	11	400	4400
42/7 60	43/3 10	42+4 90	43+0 40	0.55	TCS-5	Rigid Pavement	5.50	11	550	6050
Total Area										20790

- Available length for Translocation of Trees= $(20790/3 = 6930\text{m})$ 6.930 Km
- No. of trees which can be accommodated= 2310



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Methodology for Trees Translocation

Translocation is the term used to describe the digging and replanting of trees from one location to a new location. Due to wide extent and morphology of tree root system, translocation of trees usually involves substantial removal of roots.

Design and Documentation

It is ensured that the requirements such as timing of root pruning, size of root ball, translocate and lifting requirement, monitoring and post translocation maintenance, etc. shall be properly planned.

Safety precautions- Tree Translocation, like other tree management works, would be conducted in a controlled and safe manner. Workers who shall involve in translocate trees will be given adequate instruction and supervision to ensure that the tasks are completed in a safe manner.

Translocation operations

Tools and equipment- All tools and equipment shall be appropriate to the operations and prepared in advance. Digging and root pruning tools shall be sharp and clean in order to cut without breaking, crushing or tearing roots. Mechanical digging and root pruning equipment shall be operated according to manufacturers' recommendations to minimize root damage.

Lifting cables, chains, straps and/or slings shall be inspected and used according to manufacturers' instructions and specifications.

Preparation of root ball- Root pruning is sometimes required before translocating a tree. Sufficient time shall be allowed between preparation and final lifting for development of new roots capable of sustaining and continuing the growth of the translocated tree.

The root system of a woodland or open-grown tree will normally be widespread. Lifting such trees without initial preparation of a root ball will result in much of root system being left in the soil. After translocation, the tree crown may then die back, or the tree may not be able to recover and will die eventually.

The root ball size would be of a diameter and depth to encompass enough of the root system as necessary for establishment. Normally the diameter of a root ball is larger than its depth which seldom exceeds 1 meter.

Pre-lifting operations: - Tree lifting operations shall be carefully timed so as to enable direct delivery to the receptor site. No translocation operations would commence until either the receptor site or the holding nursery is fully prepared. Tree uplifted must be translocated and watered the same day. Watering before lifting is recommended.

Before uplifting, the outer edge of the previously dug trenches shall be loosened from the surrounding soil, and the root ball can be shaped with taper on the sides, slanting inward toward



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the base. The first cut around the perimeter of the root ball should be made with a sharp tool. Cuts should be clean to avoid tearing or breaking the roots. The shaping and final cuts should be clean to avoid tearing or breaking the roots. The shaping and final cuts should be done by hand.

Temporary support of trees before lifting- A tree after pruning shall not be having extensive root support during the interim of the translocate process. It may be vulnerable to inclement weather such as typhoon or heavy rainfall.

Removal of the root system may sometimes aggravate the natural form and balance of a tree is likely to be jeopardized, a temporary support, such as guying or simple prop is essential.

Lifting and handling of root-balled trees- The root ball would be properly wrapped before lifting. Lifting shall be done by direct lift, with padded protection for the tree, using a machine of appropriate capacity connected to the support around the root ball, not to any other part of the trees. Trees shall not be lifted by the trunk as this can cause serious trunk injury but by its root ball which shall be properly prepared and wrapped. Root balls that are not properly protected would easily collapse during transplanting due to its own weight.

Post-planting Care- In case of translocation of trees within the project site amidst the construction activities, they will be well protected with robust fencing.

All newly translocated trees shall receive proper maintenance care in order to facilitate recovery of tree from the translocation shock. It would be ensuring the tree shall be stable before its root system is fully recovered to gain support.

The stress of a tree shall be observed immediately after translocation or gradually after a period of time. Proper care after transplanting will help to assure survival and minimize stress and ensure a higher successful rate. Maintenance of translocate trees will be in continuation till one year.

Annexure: - 1. Summary of Trees which needs to be translocated

2. Undertaking to bear the amount of translocation and translocation shall be done by User Agency
3. Geo-referenced Map of identified Land to translocate the trees (572 No.)



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**Detailed Summary of Trees for Widening and Strengthening of SH-99 from
Existing Chainage Km 32+035 to 45+280 (Kishanganj P.F. section)**

From km 32+035 to km 45+280			
Affected Trees/Plants	Left Side	Right Side	Total Trees / Plants (Both side)
Kishanganj District	522	568	1090



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Detailed Summary of Trees for widening and strengthening of SH-99 Km 32+035 to 45+280 (Kishanganj P.F. Section)

(A) Detailed summary of affected plants (Both side) for Translocation Section-Kishanganj P.F.
(Existing Chainage 32+035 to 45+280)

Girth Size(cm)	Left	Right	Total (Both Side)	Remarks
0-30	41	62	103	Need to be Translocated
31-60	105	136	241	
61-90	108	120	228	
Total	254	318	572	

(B) Detailed summary of affected plants (Both side) for Felling Section-Kishanganj P.F.
(Existing Chainage 32+035 to 45+280)

Girth Size(cm)	Left	Right	Total (Both Side)	Remarks
91-120	124	140	264	Need to be felled
121-150	87	69	156	
>150	57	41	98	
Total	268	250	518	

Abstract

Existing Chainage From Km 32+035 to 45+280

Abstract			
From km 32+035 to km 45+280			
Affected Trees/Plants	Left Side	Right Side	Total Trees / Plants (Both side)
(A) Translocation Plants	254	318	572
(B) Felling Plan	268	250	518
Total Trees	522	568	1090



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**Effected Tree Details for Translocation in Kishanganj Division SH-99 (Existing
Chainage 32+035 to 45+280)**

(District-Kishanganj) Kishanganj P.F. Section

Existing Chainage From 32+035 Km to 45+280 Km

Tree List Summary of Kisanganj km 32+035 to km 45+280								Grand Total
Scientific name	Species Name	Left	Right	Left	Right	Left	Right	
		0-30(cm)		31-60(cm)		61-90(cm)		
<i>Mangifera indica</i>	Aam	10	13	12	19	5	9	68
<i>Acacia</i>	Akesia	2	0	2	0	0	0	4
<i>Albizia</i>	Albijia	0	0	0	0	0	0	0
<i>Cassia fistula</i>	Amaltas	0	0	0	1	0	0	1
<i>Psidium</i>	Amrud	0	0	0	3	0	0	3
<i>Terminalia arjuna</i>	Arjun	0	2	2	1	6	3	14
<i>Saraca asoca</i>	Ashok	0	0	0	0	1	0	1
<i>Vachellia nilotica</i>	Babool	0	0	1	0	1	0	2
<i>Ziziphus mauritiana</i>	Bair	2	1	6	7	4	2	22
<i>Melia azedarach</i>	Bakain	0	0	4	1	0	0	5
<i>Ficus benghalensis</i>	Bargad	0	0	0	1	0	0	1
Other	Bhadar	1	0	0	1	0	0	2
<i>Senna siamea</i>	Chakundi	0	0	0	0	7	8	15
<i>Manilkara zapota</i>	Chikoo	0	0	1	0	0	0	1
<i>Eucalyptus</i>	Eucalyptus	0	0	2	1	0	3	6
<i>Hibiscus</i>	Gulhad	0	0	1	0	0	0	1
<i>Delonix regia</i>	Gulmohar	0	0	2	1	0	1	4
<i>Tamarindus indica</i>	Imli	0	0	0	0	0	0	0
<i>Lagerstromia speciosa</i>	Jahrul	0	0	0	1	0	0	1
<i>Pithecellobium dulce</i>	Jalebi	0	0	3	2	0	0	5
<i>Syzygium cumini</i>	Jamun	0	2	0	0	1	1	4
Other	Jeeyal	2	2	6	14	1	3	28
<i>Rattlepods</i>	Junjuna	0	0	0	1	1	0	2
<i>Neolamarckia cadamba</i>	Kadam	0	1	7	8	4	3	23
<i>Indigofera suffruticosa</i>	Kanil	0	0	3	0	0	0	3
<i>Artocarpus heterophyllus</i>	Kathal	0	0	1	3	3	0	7
<i>Phoenix dactylifera</i>	Khajur	0	0	0	0	1	2	3



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<i>Swietenia</i>	Mahogani	0	0	1	2	0	0	3
<i>Cocos nucifera</i>	Nariyal	0	0	0	0	1	3	4
<i>Azadirachta indica</i>	Neem	0	0	1	0	1	0	2
<i>Citrus limon</i>	Nimbu	0	2	2	1	0	0	5
<i>Gmelina arborea</i>	Pani Gamhar	23	33	42	59	53	64	274
<i>Ficus religiosa</i>	Peepal	0	0	0	0	0	0	0
Other	Phul Gamhar	0	0	0	0	1	0	1
<i>Moringa oleifera</i>	Saajan	0	0	1	0	1	0	2
<i>Tectona grandis</i>	Sagwan	0	0	0	1	0	0	1
<i>Annona reticulata</i>	Sarifa	1	1	0	0	0	0	2
<i>Dalbergia sissoo</i>	Seesam	0	0	1	0	1	0	2
<i>Bombax ceiba</i>	Semal	0	3	2	6	2	8	21
<i>Albizia lebbeck</i>	Siris	0	1	1	2	8	8	20
<i>Areca catechu</i>	Supari	0	1	0	0	0	0	1
<i>Borassus flabellifer</i>	Tad	0	0	0	0	4	0	4
<i>Acacia catechu</i>	Khair	0	0	1	0	1	1	3
Other	Lakdi	0	0	0	0	0	1	1
	Total	41	62	105	136	108	120	572

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Dr. A. (Tech.)
BSRDC
PIU-K

Project Title: Widening/upgradation of existing single/intermediate lane to 2-lanes with earthen shoulders/ paved shoulder of Baysi-Bahadurganj-Dighalbank section of SH 99 (Kishanganj P.F. section-32+035 to 45+280 Km) from Km 0/000 to Km 73/840 under Purnia and Kishanganj Districts in the State of Bihar.

**UNDERTAKING TO TRANSLOCATE AFFECTED TREES WITHIN PROPOSED
RIGHT OF WAY**

I, D.G.M (Tech.) undersigned that on behalf of Bihar State Road Development Corporation Limited, PIU-Katihar, Bihar, ensuring affected trees (572 nos.) (which are decided by concerned Forest Department) shall be translocated on both the sides of proposed ROW after stage-1 clearance with all safety measures to remain its safety from machineries and raw material at the construction phase. The affected plants shall be translocated according to a detailed scheme for suitable trees prepared in consultation with the state Forest Department and the cost for the same shall be borne by User Agency.

User Agency also undertakes to continue to maintain such trees for a period of one year from transportation.

Date:

You're sincerely

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13/10/2022
Anjani Kumar
D.G.M. (Tech), PIU-Katihar

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Tree List Summary Punea km 0+000 to km 32+035

Species Name	0-30	31-60	61-90	91-120	121-150	>150	Grand Total
Aam	26	68	65	25	12	26	222
Aamda	0	0	0	0	0	1	1
Acacia	20	27	4	1	0	1	53
Amaltash	1	1	0	1	1	2	6
Amrood	0	1	0	0	0	0	1
Arjun	6	14	13	0	0	0	33
Ashok	3	8	3	4	0	3	21
Bahoor	1	0	0	0	0	2	3
Bakain	8	39	40	5	0	0	92
Balamkhera	0	0	1	1	0	0	2
Ballori	5	6	13	2	0	0	26
Bargad	0	0	0	0	0	2	2
Bel	2	4	5	1	3	2	17
Ber	13	27	15	8	1	0	64
Chakundi	0	0	1	0	0	0	1
Chhatwan	0	2	2	3	2	0	9
Dahua	2	4	7	2	0	0	15
Eucalyptus	22	47	15	7	10	26	127
Pani Gamhar	90	212	185	201	121	111	920
Phool Gamhar	0	1	0	0	0	0	1
Gular	3	26	13	4	3	2	51
Gulmohar	22	32	15	9	1	2	81
Jalebi	7	18	4	12	2	4	47
Jamun	3	1	3	0	0	2	9
Jarhul	0	1	0	0	0	0	1
Jhunjhuna	2	7	1	0	0	0	10
Jiyal	0	0	1	0	0	0	1
Jugni	0	3	2	0	0	0	5
Kachnar	0	1	1	1	0	0	3
Kadam	20	72	184	235	71	20	602
Karanj	22	42	12	0	0	1	77
Kasmar	23	90	53	10	0	0	176
Kathal	11	13	12	9	2	6	53
Lathora	0	0	0	1	0	0	1
Lichi	5	6	0	0	0	0	11
Madar	0	9	3	5	0	1	18
Mahogani	41	76	121	27	1	1	267
Neem	6	17	10	8	1	4	46
Nimbu	7	7	3	3	0	0	20
Pipal	0	0	1	1	1	8	11
Rubber	0	1	0	0	0	0	1
Sagwan	0	1	2	0	0	0	3
Sarifa	0	3	0	0	0	0	1
Saur	0	1	0	0	0	0	1
Semal	3	12	11	20	34	74	154
Shisham	3	4	4	14	18	20	63
Siris	14	13	31	47	38	19	162
Supari	7	44	1	0	0	0	52
Tad	0	0	3	2	2	0	7
Emli	0	0	0	0	1	2	3
Total	398	961	860	669	325	342	3555

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Manager
BSRD
U-Kanpur

25.04.2022
परिमल मनाधिकारी
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Tree Inventory for Kishanganj Division Km 32+035 to Km 45+280

Scientific name	Tree Type	0-30	31-60	61-90	91-120	121-150	>150	Grand Total
<i>Mangifera indica</i>	Aam	23	31	14	7	5	18	98
<i>Acacia</i>	Akesia	2	2	0	0	0	0	4
<i>Albizia</i>	Albijia	0	0	0	0	0	1	1
<i>Cassia fistula</i>	Amaltas	0	1	0	0	0	0	1
<i>Psidium</i>	Amrud	0	3	0	0	0	0	3
<i>Terminalia arjuna</i>	Arjun	2	3	9	38	7	14	73
<i>Saraca asoca</i>	Ashok	0	0	1	0	0	0	1
<i>Vachellia nilotica</i>	Babool	0	2	3	3	0	0	8
<i>Ziziphus mauritiana</i>	Bair	3	13	6	2	0	0	24
<i>Melia azedarach</i>	Bakain	0	5	0	0	0	0	5
<i>Ficus benghalensis</i>	Bargad	0	2	0	0	0	1	3
Other	Bhadar	1	0	0	0	0	0	1
<i>Senna siamea</i>	Chakundi	0	0	15	21	9	0	45
<i>Manilkara zapota</i>	Chikoo	0	1	1	0	0	0	2
<i>Eucalyptus</i>	Eucalyptus	0	3	3	0	1	0	7
<i>Hibiscus</i>	Gulhad	0	1	0	0	0	0	1
<i>Delonix regia</i>	Gulmohar	0	3	1	3	1	0	8
<i>Tamarindus indica</i>	Imli	0	0	0	0	0	1	1
<i>Lagerstromia speciosa</i>	Jahrul	0	1	0	0	0	0	1
<i>Pithecellobium dulce</i>	Jalebi	0	5	0	1	1	2	9
<i>Syzygium cumini</i>	Jamun	2	0	2	3	0	0	7
Other	Jeeyal	4	20	4	0	0	0	28
Rattlepods	Junjuna	0	1	1	0	0	0	2
<i>Neolamarckia cadamba</i>	Kadam	1	14	7	1	1	2	26
<i>Indigofera suffruticosa</i>	Kanil	0	3	0	0	0	0	3
<i>Artocarpus heterophyllus</i>	Kathal	0	4	3	3	0	0	10
<i>Phoenix dactylifera</i>	Khajur	0	0	3	1	0	0	4
<i>Swietenia</i>	Mahogani	0	3	0	0	0	0	3
<i>Cocos nucifera</i>	Nariyal	0	0	4	4	0	0	8
<i>Azadirachta indica</i>	Neem	0	1	1	0	2	1	5
<i>Citrus limon</i>	Nimbu	2	3	0	0	0	0	5
<i>Gmelina arborea</i>	Pani Gamha	56	101	117	109	63	26	472
<i>Ficus religiosa</i>	Peepal	0	0	0	0	0	4	4
Other	Phul Gamha	0	0	1	0	0	0	1
<i>Moringa oleifera</i>	Saajan	0	1	1	0	0	0	2
<i>Tectona grandis</i>	Sagwan	0	1	0	0	0	0	1
<i>Annona reticulata</i>	Sarifa	2	0	0	0	0	0	2
<i>Dalbergia sissoo</i>	Seesam	0	1	1	4	1	2	9
<i>Bombax ceiba</i>	Semal	3	8	10	18	17	5	61
<i>Albizia lebbeck</i>	Siris	1	3	16	45	48	21	134
<i>Areca catechu</i>	Supari	1	0	0	0	0	0	1
<i>Borassus flabellifer</i>	Tad	0	0	4	1	1	0	6
		103	240	228	264	157	98	1090

Scientific name	Species Name	0-30		31-60		61-90		91-120		121-150		Left >150	Right >150	Grand Total
		Left	Right	Left	Right	Left	Right	Left	Right	Left	Right			
<i>Artocarpus heterophyllus</i>	Kathal	0	0	1	3	3	0	2	1	0	0	0	0	10
<i>Phoenix dactylifera</i>	Khajur	0	0	0	0	1	2	0	1	0	0	0	0	4
<i>Swietenia</i>	Mahogani	0	0	1	2	0	0	0	0	0	0	0	0	3
<i>Cocos nucifera</i>	Nariyal	0	0	0	0	1	3	3	1	0	0	0	0	8
<i>Azadirachta indica</i>	Neem	0	0	1	0	1	0	0	0	2	0	0	1	5
<i>Citrus limon</i>	Nimbu	0	2	2	1	0	0	0	0	0	0	0	0	5
<i>Gmelina arborea</i>	Pani Gamhar	23	33	42	59	53	64	50	59	36	27	16	11	473
<i>Ficus religiosa</i>	Peepal	0	0	0	0	0	0	0	0	0	0	0	4	4
Other	Phul Gamhar	0	0	0	0	1	0	0	0	0	0	0	0	1
<i>Moringa oleifera</i>	Saajan	0	0	1	0	1	0	0	0	0	0	0	0	2
<i>Tectona grandis</i>	Sagwan	0	0	0	1	0	0	0	0	0	0	0	0	1
<i>Annona reticulata</i>	Sarifa	1	1	0	0	0	0	0	0	0	0	0	0	2
<i>Dalbergia sissoo</i>	Seesam	0	0	1	0	1	0	4	1	1	1	1	1	11
<i>Bombax ceiba</i>	Semal	0	3	2	6	2	8	5	13	5	11	3	2	60
<i>Albizia lebbeck</i>	Siris	0	1	1	2	8	8	19	25	27	21	14	6	132
<i>Areca catechu</i>	Supari	0	1	0	0	0	0	0	0	0	0	0	0	1
<i>Borassus flabellifer</i>	Tad	0	0	0	0	4	0	1	0	1	0	0	0	6
<i>Acacia catechu</i>	Khair	0	0	1	0	1	1	0	0	0	1	0	0	4
Other	Lakdi	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	Total	41	62	105	136	108	120	124	140	87	69	57	41	1090

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