

1. INTRODUCTION

The Authority has awarded the project "Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) in the state of Bihar. To the EPC contractor.

This report explains Avenue Tree Translocation Planning & its Estimate for Bikramganj – Dumraon of NH-120 Ch. 201.665 to Ch 245.665) excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) which is part of above project.

For this purpose, the total 3018 number of trees are found within proposed toe line of the project highway. Out of that 1122 nos are proposed for translocation, 1518 nos of trees are saved at site and 378 nos of trees are to be felled.

To counterbalance the loss of trees and other changes resulted into the surroundings; there is a need to follow the approach of "Corridor Development & Management", rather than "Highway Development". Apart from mitigating the environmental losses, it must plan to enhance the aesthetics of the highway corridor from all possible angles. Highways should not be looked upon merely as a means of transportation, but as a part and parcel of the environmental and socio-economic milieu.

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2. TRANSLOCATED TREE PROTECTION PLAN

Project Name: - Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) **excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665)** in the state of Bihar

Brief Information about the Project: -

The Government of Bihar has decided to take up the development of various road stretches/Corridors in the various parts of the State to upgrade the road network to meet the growing traffic requirement in of the State by augmenting the road capacity for safe and efficient movement of the traffic of selected road stretches for NH connectivity.

In pursuance of the above the Road Construction Department on behalf of MORTH have decided to take up "Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) **excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665)** in the state of Bihar. Total length is 36.965 km under EPC Mode" to improve the efficiency of freight movement having a total length 44.00 km and proposed Right of Way (ROW) varies between 20 m to 30 m.

Project stretch falls in the state of Bihar an Indian state considered to be a part of South Bihar Gaya to Buxar.

The Project will result in fast economic growth to the region as it will connect to capital Patna and generally traverses in the East-West direction and start from Bikramganj and traverses through Dawath, Maliyabagh and Finally terminates at NH-922 at Purana Bhojpur (Bihar).

Absence of alternative mode of travel in the region between Bikramganj to Buxar leaves this Highway as the only means of communication.

This proposed project road will provide uninterrupted free flow of traffic and shall result in: -

1. Saving in travel time, cost and Natural resources (Fuel).
2. Saving in foreign exchange due to less consumption of fuel.
3. Increase in income of truck, bus, taxi etc. Owners as they will be able to communicate maximum distance in short time.
4. Reduction in accidents as it will provide safe travel.
5. Will act as catalyst to the Infrastructural & Industrial development.

Section from km 201.665 (Bikramganj chowk) to km 219.265 (Maliyabagh) falls under the jurisdiction of Forest Division Rohtas having a effective length of 17.080 km (excluding Dawath bypass) and km 219.265 (Maliyabagh) to km 240.200 (Dumraon) of proposed road falls under the jurisdiction of Forest Division Bhojpur having a length of 20.935 km. Sufficient care has been taken during the design stage to keep the alignment along the existing road/highway to utilize its ROW. There is no forest areas located along the project road in view of the above.

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The proposed alignment passing through the notified protected forest land from km 201.665 to km 240.200

The trees present in the proposed alignment have been jointly visited and the numeration list has been prepared. In total 3018 number of trees are found within proposed toe line of the project highway. Out of that 1122 nos are proposed for translocation, 1518 nos of trees are saved at site and 378 nos of trees are to be felled.

Details of trees affected and to be translocated:

Details including species, name and the size of the trees after joint enumeration and verification has been prepared and attached herewith separately. Affected trees would be translocated in the ROW of the Project Bikramganj to Dumraon.

Tree protection:

Project Period: 2022-23 to 2023-24

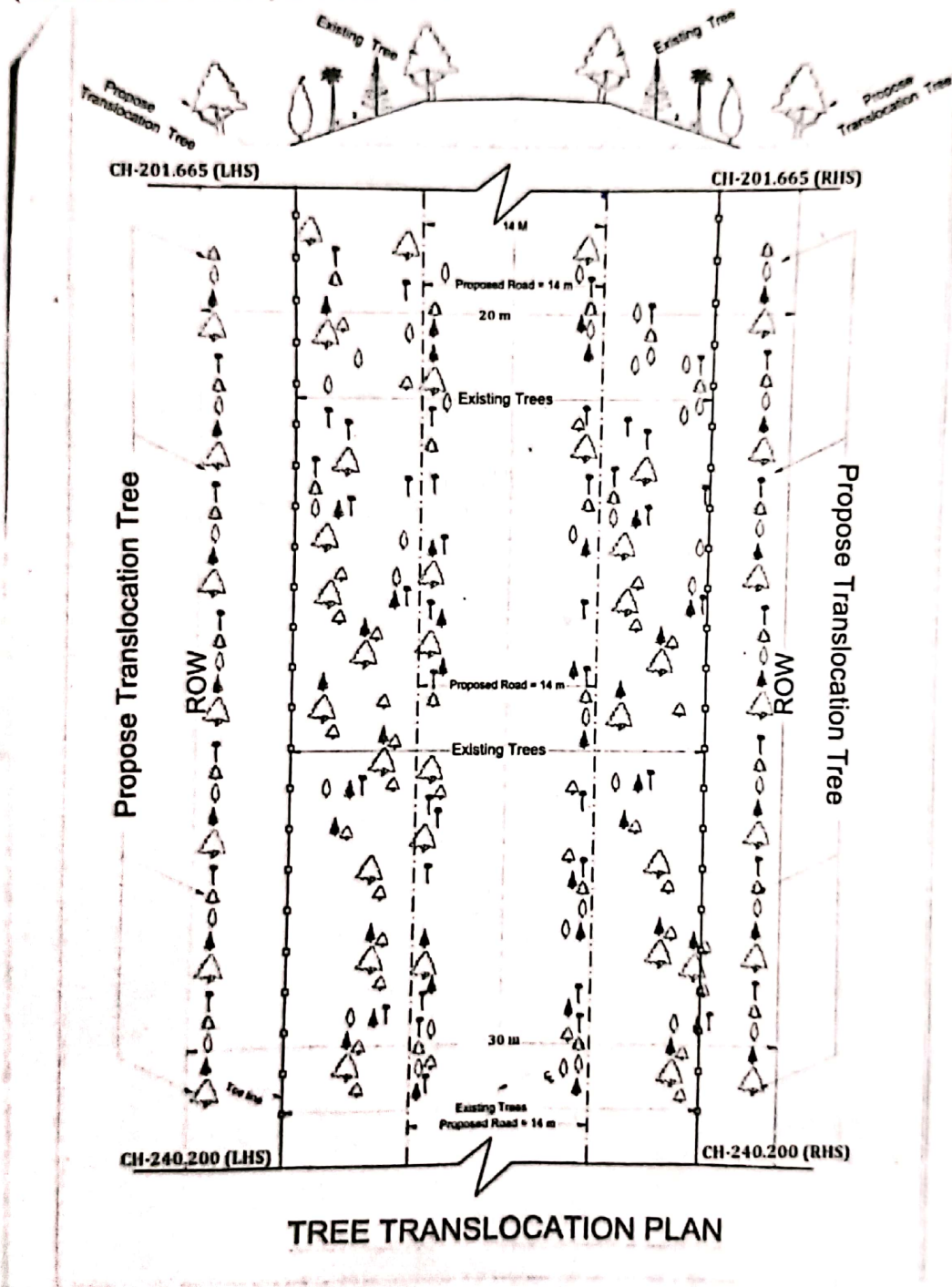
Tree Protection Period: 2022-23 to 2024-25

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Project Name: - Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) in the state of Bihar



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ABSTRACT OF TREES TO BE TRANSLOCATED (ROHTAS DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	10	236	16	7	7	7	283
2	RHS	29	237	28	8	9	6	317
							Total	600

ABSTRACT OF TREES TO BE CUT (ROHTAS DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	1	23	3	7	8	25	67
2	RHS	10	23	9	16	19	24	101
							Total	168

ABSTRACT OF TREES TO BE SAVED (ROHTAS DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	60	592	29	7	8	38	734
2	RHS	82	499	42	38	30	90	781
							Total	1515

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ABSTRACT OF TREES TO BE TRANSLOCATED (BUXAR DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	3	25	35	36	30	90	219
2	RHS	1	53	75	67	38	69	303
							Total	522

ABSTRACT OF TREES TO BE CUT (BUXAR DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	0	13	13	18	23	36	103
2	RHS	0	8	5	19	19	56	107
							Total	210

ABSTRACT OF TREES TO BE SAVED (BUXAR DISTRICT)								
Sl. No	Side	Girth (0-30 cm) count	Girth (31-60 cm) count	Girth (61-90 cm) count	Girth (91-120 cm) count	Girth (121-150 cm) count	Girth (>150cm) count	Total
1	LHS	0	0	0	0	1	2	3
2	RHS	0	0	0	0	0	0	0
							Total	3

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**CALCULATION OF TREE TRANSLOCATION AT AVAILABLE/VACANT LOCATION BEYOND
ORNAMENTAL PLANTATION LINE**

Sl.No.	Chainage From	Chainage To	Length (M)	Nos of Shade tree		Remark
				LHS	RHS	
1	201665	201900	235			BUILTUP AREA
2	201900	202100	200	4	3	BUILTUP AREA
3	202100	202415	315	5	2	BUILTUP AREA
4	202415	202810	395	18	25	
5	202810	203215	405	15	30	
6	203215	203350	135	2	3	BUILTUP AREA
7	203350	203510	160	8	7	
8	203510	203900	390	35	18	
9	203900	204150	250	5	5	
10	204150	204250	100	3	2	
11	204250	204400	150	3	2	
12	204400	204500	100	5	2	
13	204500	204610	110			
14	204610	204700	90			
15	204700	205900	1200		26	
16	205900	206150	250	3		BUILTUP AREA
17	206150	206600	450	12	15	
18	206600	206720	120		4	
19	206720	207150	430	12	15	
20	207150	207400	250	2		BRIDGE APPROACH
21	207400	207700	300	4		BUILTUP AREA
22	207700	207900	200	5		
23	207900	208330	430	10	4	
24	208330	208700	370			
25	208700	208900	200	5	10	
26	208900	209200	300	6	12	
27	209200	209500	300	8	16	
28	209500	209700	200		7	
29	209700	210000	300		8	
30	210000	210350	350		9	
31	210350	210830	480		5	
32	210830	211200	370			DAWATH BYPASS
33	211200	211400	200			
34	211400	211600	200			
35	211600	211900	300			
36	211900	212150	250			
37	212150	212400	250			
38	212400	212600	200	8	5	
39	212600	212900	300	7	8	
40	212900	213250	350	10	9	
41	213250	213400	150	3	4	
42	213400	213625	225			

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43	213625	213700	75	1	1	
44	213700	214000	300			
45	214000	214450	450	18	16	
46	214450	214670	220			CANAL CROSSING
47	214670	214800	130			
48	214800	215350	550	8	9	
49	215350	215600	250		3	
50	215600	215900	300	4	4	
51	215900	216050	150	1	1	
52	216050	216415	365	3	3	
53	216415	216500	85		2	
54	216500	216750	250			BUILTUP AREA
55	216750	217000	250			BUILTUP AREA
56	217000	217300	300		3	BUILTUP AREA
57	217300	217500	200		7	BUILTUP AREA
58	217500	217800	300	8	15	
59	217800	218000	200	5	12	
60	218000	218200	200			BUILTUP AREA
61	218200	218500	300			BUILTUP AREA
62	218500	218810	310			BUILTUP AREA
63	218810	219100	290	10	12	
64	219100	219500	400			MAJOR BRIDGE AND APPROACH
65	219500	219800	300			
66	219800	220100	300			
67	220100	220210	110	4	5	
68	220210	220350	140	2	3	BUILTUP AREA
69	220350	220700	350			
70	220700	220900	200	5	6	
71	220900	221100	200	5	10	
72	221100	221300	200	3	3	BUILTUP AREA
73	221300	221600	300			BUILTUP AREA
74	221600	221900	300			BUILTUP AREA
75	221900	222150	250			BUILTUP AREA
76	222150	222350	200	4	2	BUILTUP AREA
77	222350	222700	350	10	8	
78	222700	222900	200	8	7	
79	222900	223100	200			CANAL CROSSING
80	223100	223400	300	10	8	
81	223400	223750	350	11	18	
82	223750	224150	400	8	5	
83	224150	224400	250	5	7	
84	224400	224600	200	8	7	
85	224600	224800	200	8	6	

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86	224800	225100	300	6	6	
87	225100	225350	250	10	8	
88	225350	225530	180	9	8	
89	225530	225800	270	2	2	BUILTUP AREA
90	225800	226000	200			BUILTUP AREA
91	226000	226120	120			BUILTUP AREA
92	226120	226250	130			BUILTUP AREA
93	226250	226400	150			BUILTUP AREA
94	226400	226700	300			BUILTUP AREA
95	226700	227000	300	3	3	BUILTUP AREA
96	227000	227200	200	10	12	
97	227200	227500	300	12	12	
98	227500	227800	300	10	10	
99	227800	228000	200	8	7	
100	228000	228200	200	4	3	
101	228200	229000	800	10	12	
102	229000	229220	220	12	10	
103	229220	229580	360			BUILTUP AREA
104	229580	230200	620	12	12	
105	230200	230900	700	22	20	
106	230900	231150	250			BUILTUP AREA
107	231150	231400	250			BUILTUP AREA
108	231400	231800	400			BUILTUP AREA
109	231800	232250	450			BUILTUP AREA
110	232250	232600	350	3	3	
111	232600	232900	300			
112	232900	233750	850			
113	233750	234100	350			BUILTUP AREA
114	234100	234600	500			
115	234600	234850	250			
116	234850	236000	1150	3	3	
117	236000	236770	770	13	11	
118	236770	236900	130			BUILTUP AREA
119	236900	237500	600	8	7	
120	237500	238000	500	4	2	
121	238000	238200	200			BUILTUP AREA
122	238200	238500	300	7	7	
123	238500	239000	500			
124	239000	239300	300			
125	239300	239600	300			
126	239600	239800	200			
127	239800	240000	200			
128	240000	240200	200	5	5	
Total Length=			38535	520	602	
Deduction of			1570	1122		
Effective Length =			36965			

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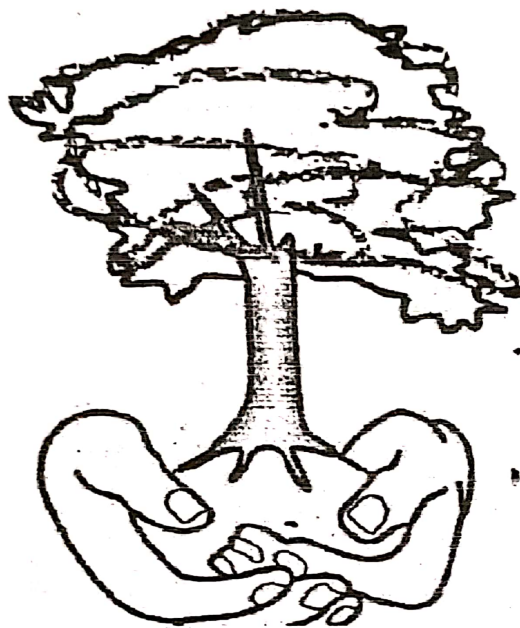
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3. METHODOLOGY OF TREE TRANSLOCATION

Project Name: - Widening and strengthening work of existing Two Laning with paved shoulder of stretch from Bikramganj – Dawath – Maliyabagh – Nawanagar – Dumraon of NH- 120 (Ch. 201.665 to Ch 245.665) excluding Dawath (Ch. 210.830 to Ch.212.400) & Dumraon bypass (Ch 240.200 to 245.665) in the state of Bihar

Subject: Methodology of Tree Translocation within ROW



Methodology of Tree Translocation

1.General

2.Soil Testing

3.Tree Preparation

4.Root Excavation

Method

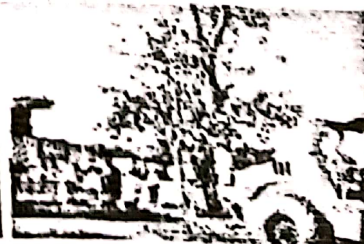
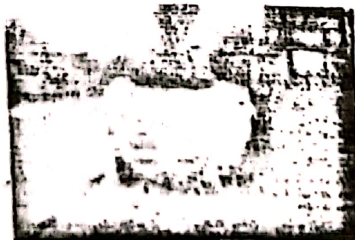
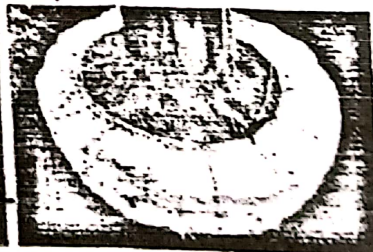
5.Transport

6.Planting Procedure

7.Tree Support

8.Watering

9.Maintenance



CONTENTS

1. **General :** Translocation or Transplantation of trees from one location to another site is a major operation. The work shall be executed & supervised by a well experienced person in this type of work. Roots investigation, Diagnosis of health & Treatment of infected area must be executed before initiation. The most difficult job is production of root ball by digging mechanically and manually all around the tree, carefully cutting the roots, then wrapping the root ball in netting. The difficulty is to handle the root ball without causing deformation
2. **Soil Testing :** The work shall be executed & supervised by a well experienced person in this type of work. Analysis of the soil at the proposed transplant site where the tree has to be translocated and if require any, import backfill materials so that appropriate amendments applied. Analysis may include pH, Organic Matter, Major and Trace Elements and Exchangeable Cations.

3. Tree Preparation :

3.1 Formative Pruning - Selectively remove specific branches to enhance form and improve structure, and to directionally shape the tree. With smaller diameter branches it may be necessary to reduce the branch to a dormant bud. Formative pruning shall aim to reduce the development of structural weaknesses and to accommodate site constraints and reduce encroachment on utilities as the tree grows.



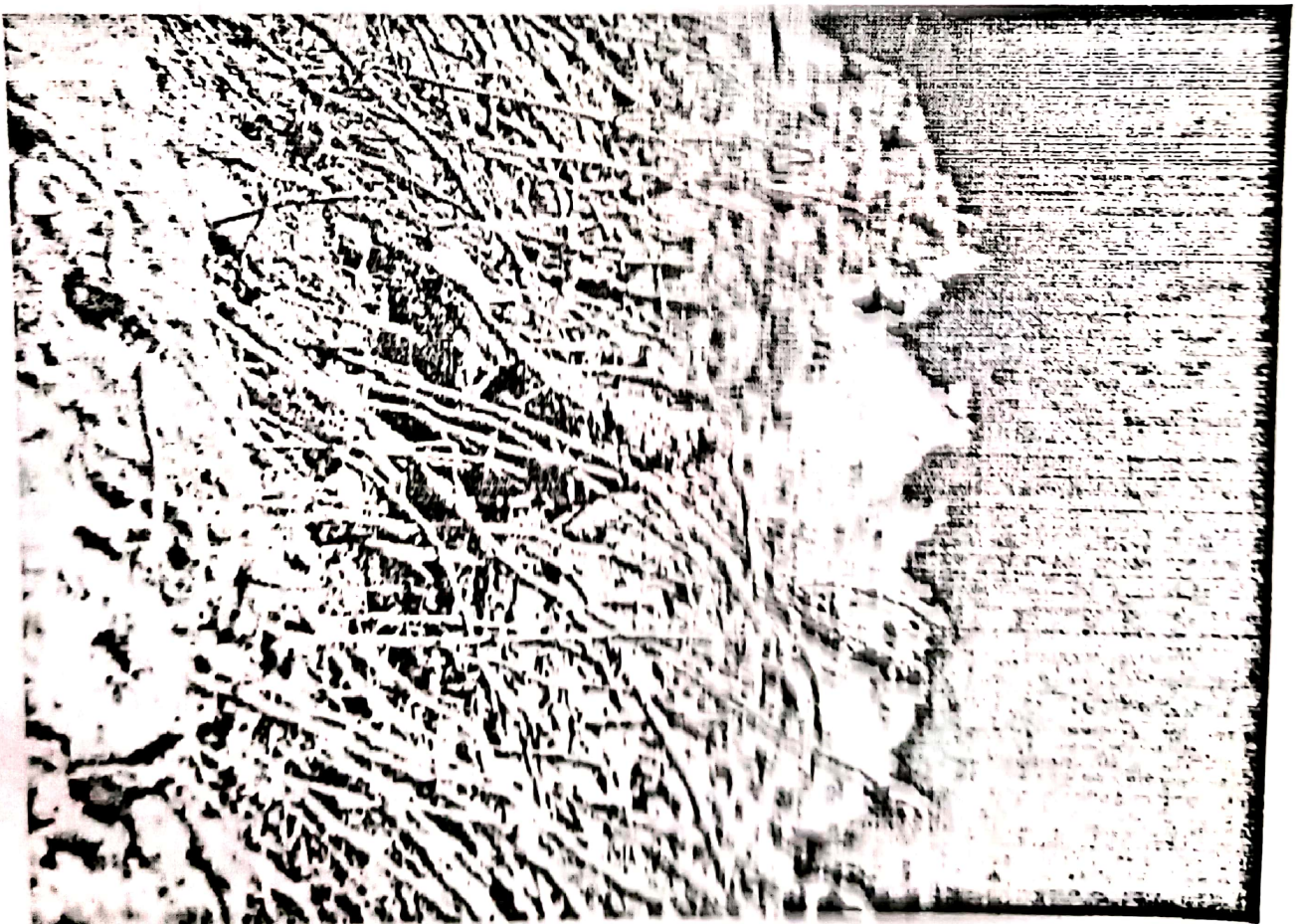
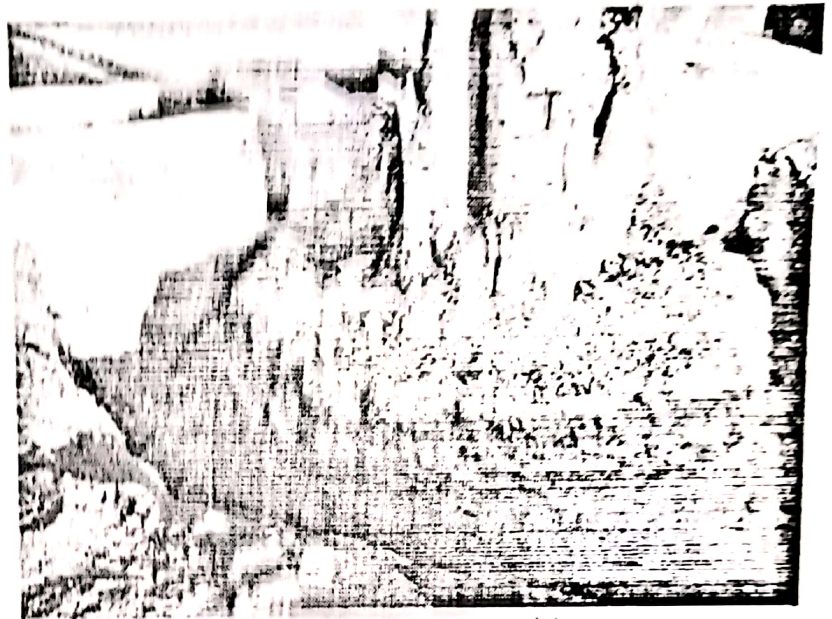
3.2 Root Preparation Requirements and Responsibilities -

In all cases a preparation of the root system, that is to say, a circular partial cutting of the roots all around the tree is strongly recommended one to two months before transplanting.

This ring cutting has the objective of spreading the period of trauma to which the tree is subjected so as to permit it to react in the best way.

Root pruning and soaking shall be carried out a minimum of 1 month before transplanting.

The pruning trench shall be backfilled with a sandy soil mixture and kept moist



leading up to the transplant date. The soil moisture content shall be maintained to adequately support the health of the tree. The remaining soil shall be used to build a water holding berm around the outside of the backfilled trenches

4. Root Excavation Method : Prior to digging, the soil around the root system shall be thoroughly moistened to help keep the root ball together.

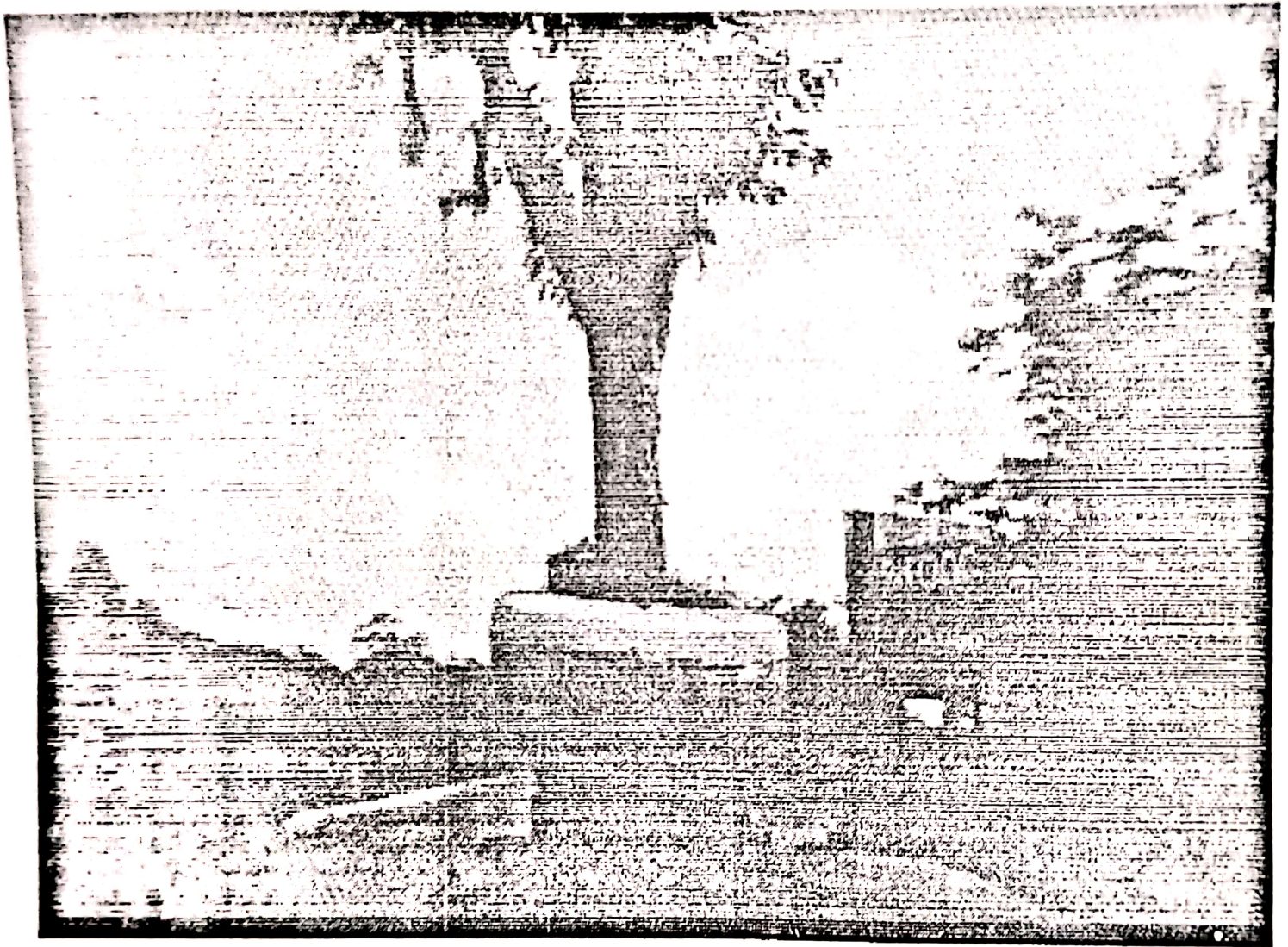
The root ball shall be excavated around the outside of the root trench. All exposed roots shall be pruned flush with the face of the root ball. Sharp Blades shall be used to cut roots. Roots shall be cut in a way that will not jar and loosen the soil in the root ball. The depth of the root ball is depend on each individual tree species.

Digging below the root ball shall occur when the amount of roots reduce considerably within the root ball trench. This will determine the depth of the root ball. Tension shall be applied by the crane while undercutting the root ball



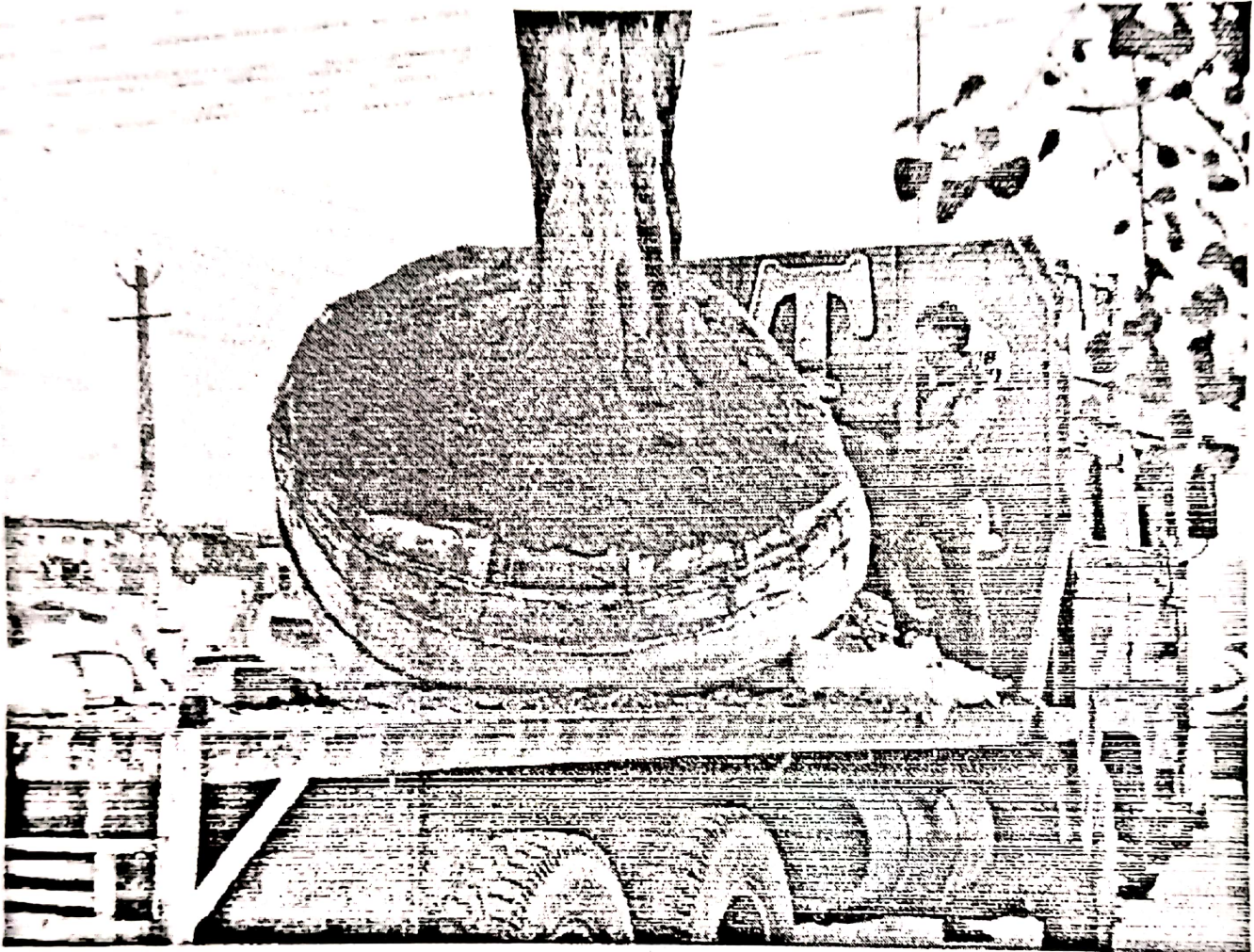
5. Transportation :

5.1 **Lifting Technique** - Lifting of trees shall be carried out or supervised by a qualified and/or suitably experienced person and crane operator using a crane and supports



Appropriate lifting equipment shall be used. Suitable slings shall be attached around a balance point of the trunk and shall provide a support system around the root ball. When a sling is attached to the trunk, padding and protection is required to reduce possible damage. A qualified crane operator shall determine the support system to be used.

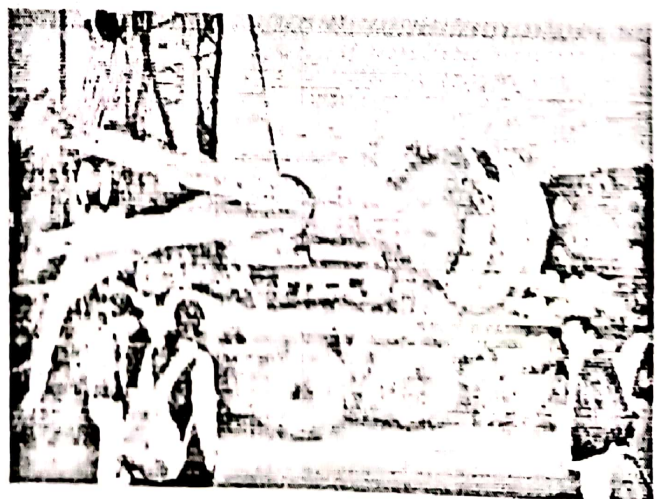
5.2 Preparation for Transport - Only natural fibre materials that have not been chemically treated shall be used to support the root ball. Synthetic materials shall not be used. Burlap shall be applied before moving the tree to protect the



shape and structure of the root ball during transport. Once the tree is lifted burlap shall be used to cover the base of the root ball.

5.3 Transport Vehicle - The transport vehicle shall be adequate to transport the tree without damage.

6. Planting Procedure :



6.1 **Preparation of Planting Hole** - Excavated soil may be used as backfill if it is free of weeds, deleterious materials and particles larger than 25 mm. When backfilling, sedimentary layers in soil shall be observed so topsoil remains above the subsoil.

Remove from site any unsuitable material brought to the surface during



excavation.

The planting hole shall be excavated by spade. The hole shall be 600 mm wider than the diameter of the root ball and no deeper than the height of the proposed root ball. If the depth of the hole exceeds the root ball height, compacted soil shall be added to the hole to prevent settling after transplanting. The sides of the hole shall be roughened to create an irregular surface that will facilitate root penetration.

The bottom of the hole shall be decompacted to a depth of 150 mm and lightly compacted.

6.2 **Orientation** - The tree shall be orientated at the new site in the same direction as at the original site.



The bottom of the hole shall be decompacted to a depth of 150 mm and lightly compacted.

6.2 **Orientation** - The tree shall be orientated at the new site in the same direction as at the original site.



6.3 Backfill - If excavated material is unsuitable for backfill, imported soil shall be used. Imported soil shall be as closely as practicable to the existing site soil. Organic matter shall not be added to the backfill material.

Any soil deficiencies shall be rectified prior to placing backfill.

6.4 Fertilizer and Soil Additives - Requirements of fertilizer and/or other soil additives as per experienced person.

(a) TerraCottem

TerraCottem shall be applied as required.

(b) Gypsum

Gypsum shall be applied in accordance with the requirements.

(c) Sugar

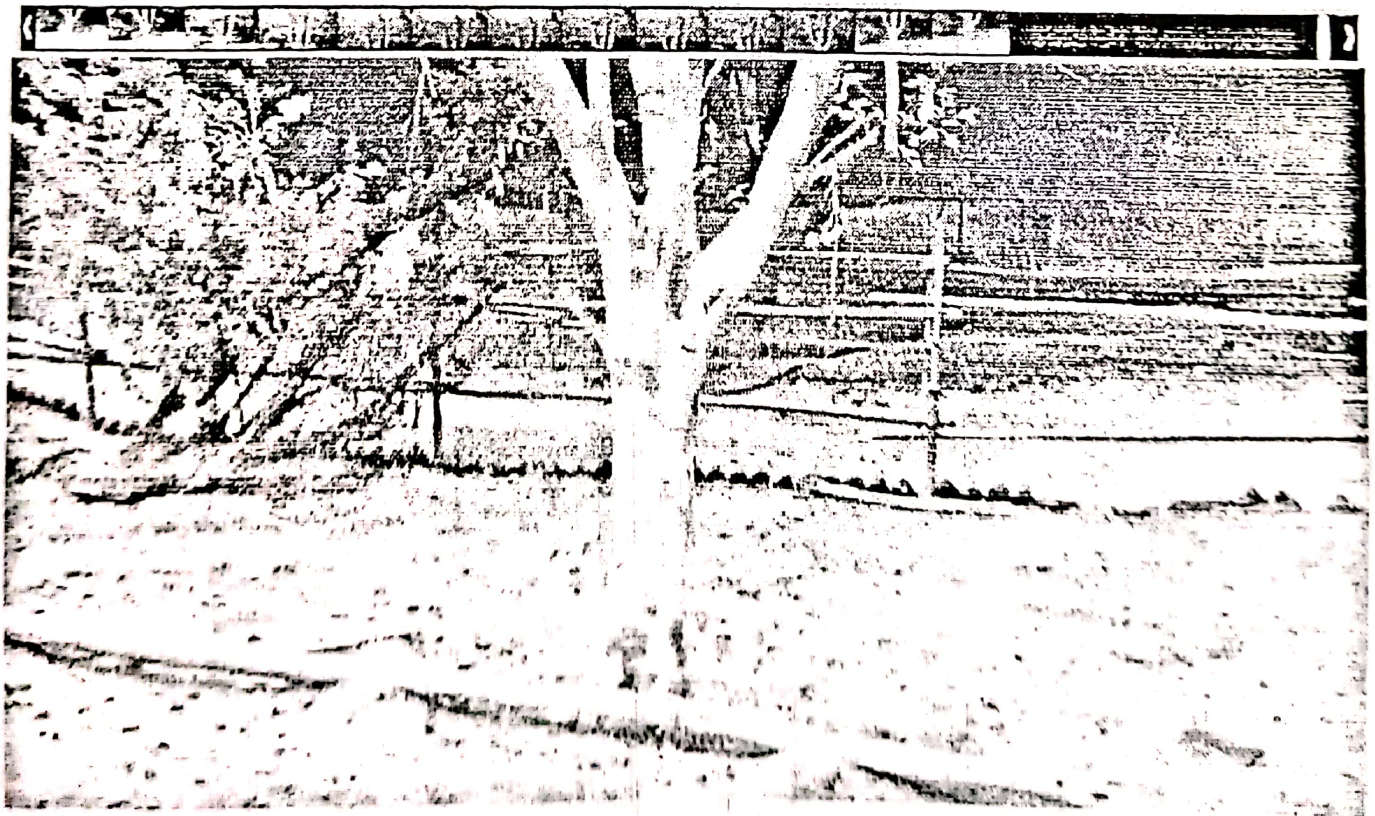
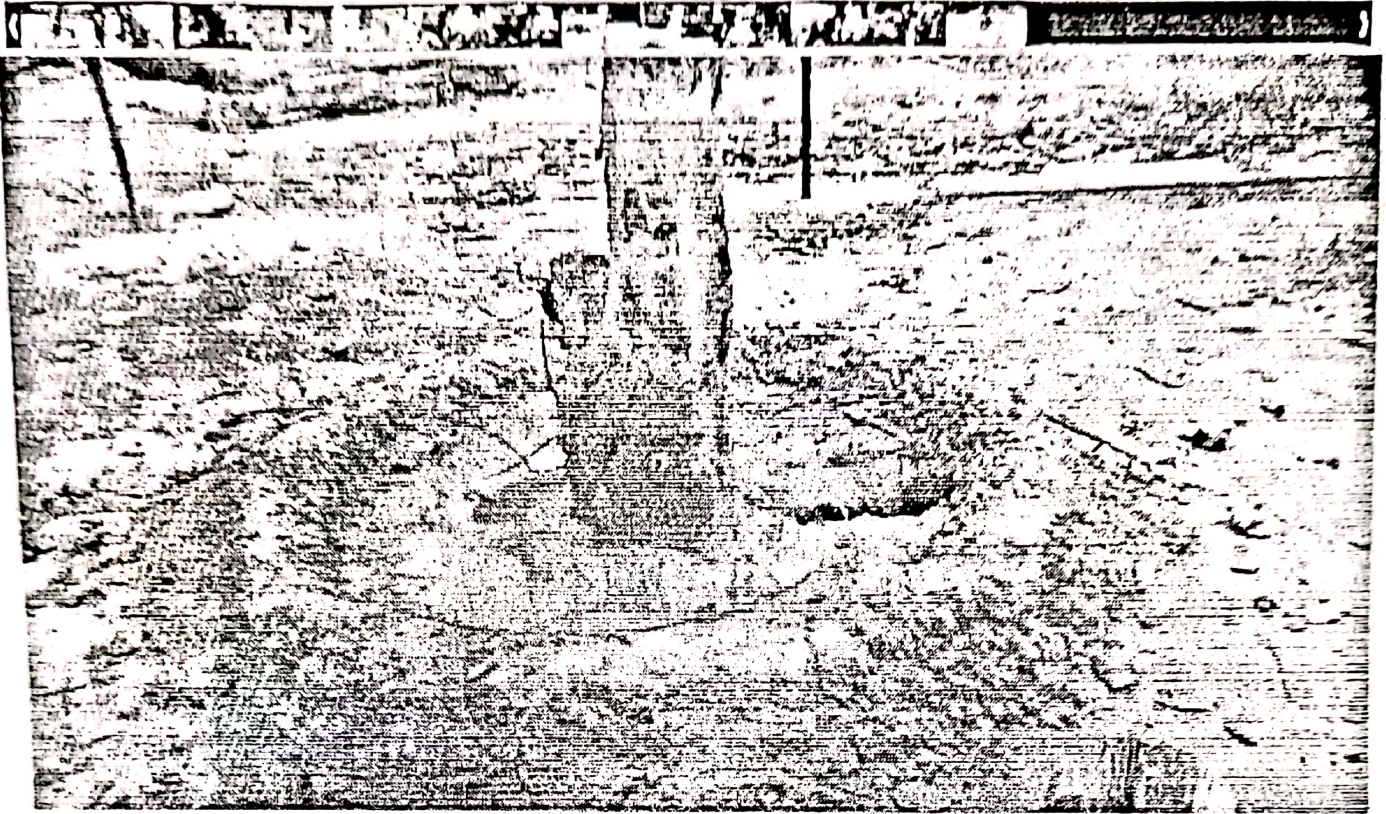
The backfill shall be soil injected with a sucrose solution at 20 grams per liter of water and approximately 100 liters of solution applied per tree. Soil injections of Sucrose Solutions have been shown to improve the defence systems of stressed trees and increase the volume of new roots.

(d) N-Fix

The backfill shall be soil injected with N-Fix at 10 ml N-Fix per 1 litre of water applying approximately 100 litres of solution per tree, evenly injected over the available root zone.

(e) Rooting Hormone

Photographs:

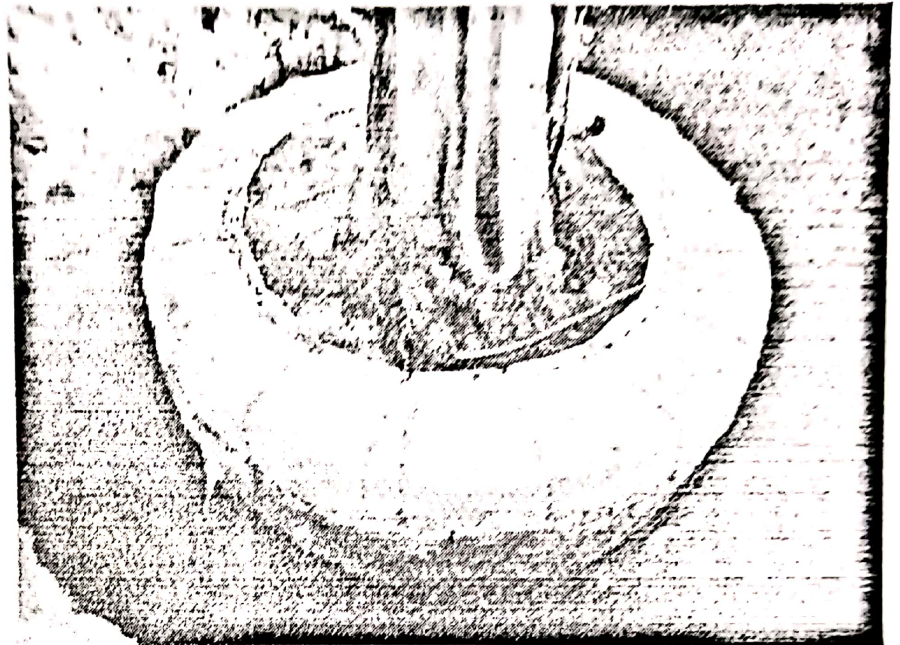


Rooting hormone shall be mixed with the backfill material before the tree is positioned.

7. Tree Support :

Scaffoldings or hydraulic crane should be used to support pre and post translocation of the trees.

8. Watering : Immediately following planting, each tree shall be soaked to remove air pockets from the soil.



Ensure that trees maintain health and are free of water stress at all times.

Monitor moisture levels to determine the exact watering requirements to ensure tree survival.

Water shall be applied to the entire root area and not just the immediate trunk base.

9. Maintenance : The tree shall be maintained for a period of minimum one year. Regular inspection & strict schedule should be followed.

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