Abstract - Soil Nailing Technique is used at an embankment rather than other alternative technique. This technique is selected by IIT Madras expert in constraints of time, money and availability of material, and durability. The design of soil nailing is done by IIT Madras Expert. Some Alternative technique is compared with soil nailing technique is AKAR PILES & ROOT SYSTEM and finally soil nailing technique is being selected.

Key Words: soil nailing, Embankment, Akar Piles, Root System

1. INTRODUCTION

In Recent years, Soil nailing technique is widely used by geotechnical engineer for stabilizing steep slopes by nailed bar. These bar are usually installed with pressure in pre drilled holes and applied grout on it simultaneously. In our study this technique is applied at site where due to vibration generated by machine on road stretch. Lumps of Soil comes out from an embankments and create risk for the public which use the road. By seeing the condition by NHAI engineer, he stop using vibration machine and stop stretch work on road and by thinking about more risk, nhai officier help from IIT Madras faculty and from so many techniques, soil nailing techniques is being used in guidance of an expert and it is faster in construction and economic.

2. Soil Nailing Technique And Others Alternatives

Nails is placed inclined forcefully on soil surface by nail injector machine and grout is applied simultaneously for filling the gap between the pre drilled holes and the nailed such that proper fitting of nail possible, soil nailing develop tensile forces. Due to this there is very less chance of loosing soil from massive soil. This whole process comes under soil nailing technique.

2.1. Alternatives Methods

- AKAR PILES

Akar piles is mostly used in malasiya and it is very less used in india. The idea of akar piles is generated from tree roots system. this method is combination method say soil nailing and grouting. It can be applied for natural slope and man made slope. this method is used where slope failure depth is less than 4 m. first nails is inserted and then grout is applied such that grout makes connect the soil nails with soil and looks like a tree roots.

- ROOT SYSTEM

In this method we strength the soil by injecting vegetation and trees in soil, when the roots of trees increasing in soil and deep inside the soil then strength of ground is increasing it is simple but times consuming.
3. DESIGN DETAILS OF SOIL NAILING

The design details is developed by an IIT Madras Faculty and it is followed by NHAI Team

The design parameters are given below:

<table>
<thead>
<tr>
<th>SR NO</th>
<th>Parameters</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type of soil</td>
<td>φ – soil</td>
</tr>
<tr>
<td>2</td>
<td>Angle of internal friction</td>
<td>30°</td>
</tr>
<tr>
<td>3</td>
<td>Vertical height of slopes</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Angle of slopes with vertical</td>
<td>10°</td>
</tr>
<tr>
<td>5</td>
<td>Cohesion</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Method of soil nailing</td>
<td>Grouted Nail</td>
</tr>
<tr>
<td>7</td>
<td>Horizontal and vertical space of nailing</td>
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</tr>
<tr>
<td>8</td>
<td>Length of nail</td>
<td>6.4 m</td>
</tr>
<tr>
<td>9</td>
<td>Material of nail</td>
<td>Tor - Steel</td>
</tr>
<tr>
<td>10</td>
<td>Diameter of nail</td>
<td>25 mm</td>
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<tr>
<td>11</td>
<td>Bore Hole Diameter</td>
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<tr>
<td>12</td>
<td>Mix Design</td>
<td>1:1.5:3</td>
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<tr>
<td>13</td>
<td>F.O.S</td>
<td>2.5</td>
</tr>
<tr>
<td>14</td>
<td>Inclination of nail with horizontal</td>
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</tr>
<tr>
<td>15</td>
<td>Facing</td>
<td>Chicken Mesh</td>
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</table>

4. CONCLUSIONS

Soil nailing technique is widely used in india. And hence for our problem soil nailing technique is best suited for problem for vertical height of slopes more than 4 m

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REFERENCES

