

Enhancement of the safety of street trees

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1. Introduction

An increasing number of street trees are becoming larger in diameter and weaker because a long time has passed since planting, and lodged trees and fallen branches cause some traffic hazards when a strong wind blows such as a typhoon.

NILIM performs considerations on the methods that enable road administrators to perform the maintenance of street trees efficiently, as well as greening methods, which are less likely to cause the falling of trees and branches, by grasping the actual situation of falling of trees and branches, as well as the current growth conditions of street trees.

2. Cause of falling of tree and branches

In many cases, although weather disasters, such as a strong wind and heavy snow, could be the direct causes of falling of trees and branches, there are also multiple factors, such as the decrease in wood strength or root system bearing the strength of the tree itself. A lack of understanding about the characteristics and physiology of trees in the design, construction, and maintenance stages of greening, as well as the construction, making little of the perspective of tree preservation are considered contributors to the decrease in the strength of trees themselves (Figure 1).

3. Greening methods giving due consideration to falling of trees and branches

In order to prevent the occurrence of falling of trees and branches, it is important to apply greening technologies that minimize the damage to trees at the stages of selecting tree species, as well as designing, constructing, and maintaining planting ground structures appropriately and to take immediate and effective measures after inspecting and diagnosing the weakness of trees periodically and accurately (Figure 2).

4. Conclusion

The results of this research will be summarized as the technical data on the measures against the falling trees and branches of street trees, including the introduction of measures taken by local governments as examples that can be utilized by operational managers.

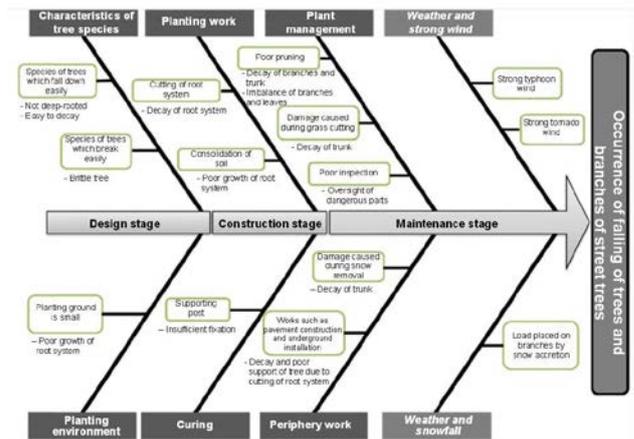


Figure 1 Major causes of falling trees and branches of street trees

Major points to be observed in the inspection and diagnosis of street trees		
Inspection ... Periodic walk-around	(1) Cracks	(2) Decay and hollow spaces (Mushrooms show the symptoms.)
	(3) Significant swing of tree	(4) Gap in the soil
	(5) Unevenness and difference in the tilt of pavement	(6) Deformation of guard fence
	(7) Improper installation of support post and tread prevention board	
	(1) Supplement of items to be checked during periodic walk-around (unnatural incline, existence of mushrooms, etc.)	
	(2) Check of abnormality using inspection tool (such as wooden hammer and copper rod)	
	(3) Incomplete connection of trunk and branches	
Diagnosis ... Investigation of the soundness of tree	(4) Guard ring root	(5) Insects living in the trunk
	(6) Measurement of the proportion of decayed and hollow areas	
	(7) Condition of the trees planted on the ground adjacent to a road (risk of affecting road traffic due to obstruction by fallen trees, etc.)	

Figure 2 Points to be observed in the inspection and diagnosis of street trees (example).