

Progress Report on Median Planting for Headlight-Glare Screening and Traffic Guidance

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During 1959 and 1960 appreciable interest and consideration has been shown in the problem of "Median Planting for Headlight-Glare Screening and Traffic Guidance" by many state highway departments located in different sections of the United States.

Connecticut, Maryland, New Jersey, New York, North Carolina and Ohio have been making increased use of functional planting for the following purposes:

1. To screen out headlight glare from opposing traffic by median planting;
2. To screen out headlight glare affecting traffic traveling paralleling service roads by placing plantings between the main expressway and service roadways;
3. Planting in medians to provide living barriers which will eliminate illegal crossings by vehicles as well as pedestrians;
4. Screen planting at interchanges to reduce headlight glare and to help to delineate the changing alignment of "on" and "off" ramps; and
5. Use of plant material to reduce headlight glare along service roads where expressways pass through residential subdivisions.

CONNECTICUT

The Highway Department considers median planting for screening headlight glare and traffic guidance an essential part of their design and construction programs for the next few years.

The following projects are in various stages of construction:

Location	Distance (mi)
Newton, I 84	0.69
Windsor and Windsor Locks, I 91	3.43
East Windsor and Enfield, I 91	3.16
Middletown, Rt. 9	2.98
New Haven, Rt. 34	0.70
Bloomfield, East Grandy and Simsbury, Rt. 9 and 187	4.10
Total	15.06

The Department is also planting 15 miles of highway medians with state forces, as follows:

Location	Distance (mi)
Tolland, Willington, Ashford, Union, Rt. 15	15.0
Middletown	0.05
	15.05

Total work in progress is reported as approximately 30 miles.

Connecticut has reported some interesting crash tests where seedling Japanese Rose (*Rosa multiflora*) has been planted since 1956 in two double rows on 4-ft centers on each side of the median drainage way. Plants were 5 years old and 5 ft high. The following observations have been made:

1. Test run October 1960.
2. The vehicle was gradually and effectively decelerated from 40 mph to 5 mph.
3. The driver was alerted to brake and grab the steering wheel immediately to guide the car to the right.

4. There was no damaging effect to the vehicle or the operator.
5. Had the planting been more mature it would have prevented the vehicle from crossing the median as well as being an effective screen against headlight glare.
6. The erection of a cable guide rail within the planting would provide immediate positive protection against median crossings.

MARYLAND

The State Road Commission had completed approximately 15 miles of median planting for screening headlight glare in 1958. On Interstate 83, Baltimore-Harrisburg Expressway, two miles of median planting has been installed. Plans for Interstate 70 and 695 (Baltimore Belt Way) specify three miles of planting for headlight-glare reduction. Medians are generally 50 feet wide. Since 1959 the design standard for medians requires a minimum width of 76 feet. When additional lanes are added in the future the ultimate median will measure 50 feet.

Species selected for use in medians for screening headlight glare are *Rosa multiflora*, *Ligustrum obtusifolium* and *regelianum*, *Lonicera fragrantissima*, *Rhamnus frangula*, *Viburnum prunifolium* and small trees such as flowering crabs and hawthorns. Some pines are being used for year round effect. A median planting which has proved very satisfactory in Maryland consists of *Pyracantha coccinea lalandi* and *Juniperus chinensis glauca hetzi* arranged in two rows 18 inches apart, with plants placed 4 to 5 feet on centers. Plantings have been mulched with peanut shells or wood chips. The mulch of unground peanut hulls was placed three inches thick at a contract bid price of \$0.35 per square yard. All new plantings are maintained, pruned, fertilized, and sprayed for a period of 4 yr after installation.

NEW JERSEY

Planting for headlight glare reduction on US 202 was completed in December 1960. The plantings are along the section of highway between Flemington and Somerville, and are also intended to prevent cars from illegally crossing the median.

More than 6,500 shrubs were planted in two rows 5 ft apart in various sections of the route's 32-ft grass median.

Three types of shrubs were used in the 3.08 mi of median planting, as follows:

Shrub	No.	Height
<i>Ligustrum obtusifolium</i>		
<i>regelianum</i>	1,320	2-2½ ft
<i>Rosa multiflora</i>	3,300	2-3 ft
<i>Viburnum prunifolium</i>	1,940	3-4 ft
		(B & B)



Figure 1. Planting of *Rosa multiflora* as a headlight-glare screen and crash barrier on Connecticut State Highway.

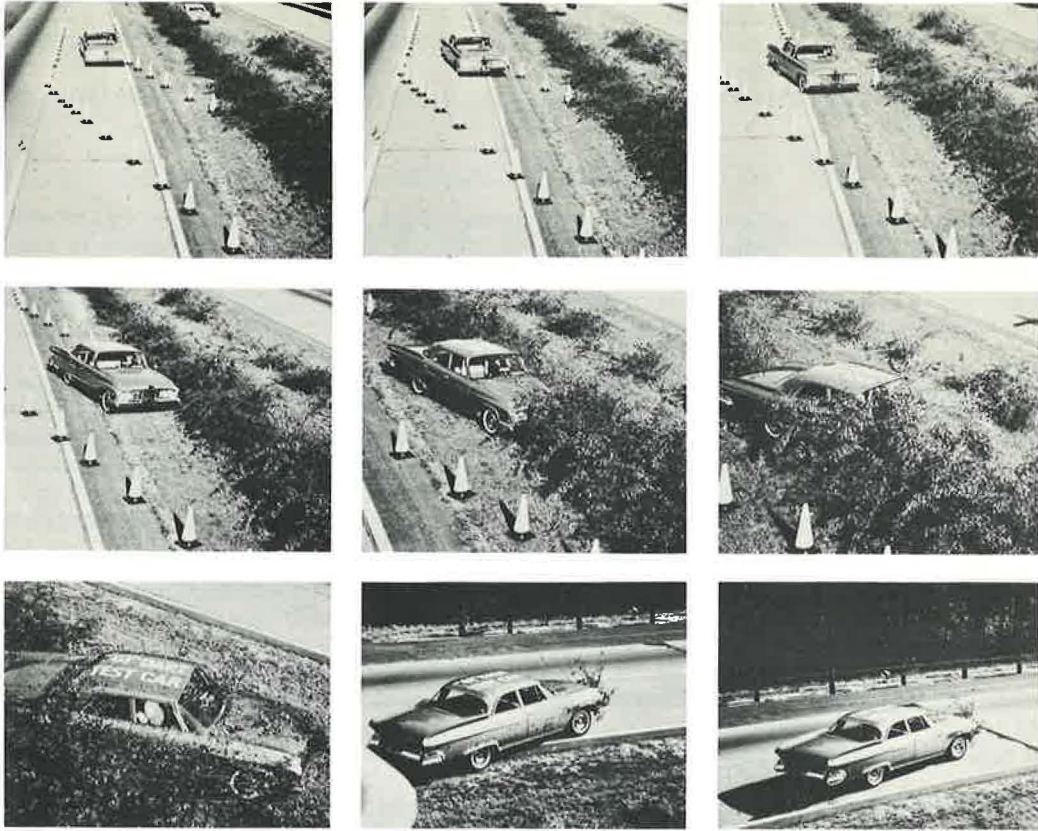


Figure 2. Crash barrier tests conducted by the Connecticut State Highway Commission to determine the effectiveness of *Rosa multiflora* plantings in preventing a speeding car from crossing into the opposite lane. Car entering hedge planting at 40 mph at a 5-degree angle was slowed to 5 mph before emerging on the opposite lane some 80 ft from the point of impact. Cost of hedge less than \$1.00 per ft as compared with \$4.00 for steel beam guide rail.

On Interstate 80 and 78—more than 2 mi of *Rosa multiflora* were planted to help delineate the changing horizontal alignment as well as provide a green screen against on-coming headlight glare. On Route 21 just under $\frac{1}{2}$ mi of *Rosa multiflora* was planted in the median.

Where the medians are 60 to 80 ft in width, *Rosa multiflora* has been planted by the Landscape Maintenance Group to control the drifting of snow. Ultimately, this planting will also help screen-out headlight glare.

For guiding traffic at interchanges the New Jersey State Highway Department has used a considerable amount of *Euonymus alatus compactus*. Single rows of this species have been planted on 3-ft spacings, and in double rows plants have been staggered on 5-ft spacings.

NEW YORK

The State Department of Public Works has designed a planting of hawthorn and shrub willows, placed on 8-ft centers, to screen out headlight glare for a distance of 800 ft through a subdivision development. To add height and interest red maples were planted in informal groups in this planting.

On the Palisades Interstate Parkway, between Route 303 and the New York Thruway, a large quantity of hawthorns, white pine, austrian pine, and honeylocusts were planted in December 1959 in a median varying in width from 24 to 80 ft.

On the Sunken Meadow Parkway on Long Island, a hedge of *Crataegus phaenopyrum* 6 to 8 ft in height, was planted on 5- to 6-ft centers in a 7-ft-wide median. Plants were severely pruned after planting. This planting is proving very effective as a headlight-glare screen.

In contrast with these very fine results, reports indicate that a $\frac{1}{2}$ -mi planting of 3- to 4-ft regels privet in a 6-ft median on the Northern State Parkway, Long Island, has been a complete failure. Traffic has driven over plants with well-known disastrous results. It is recommended plant material of larger size be specified for narrow medians.



Figure 3. Headlight glare reduction planting, 1960, by Maryland State Roads Commission on Route 193, College Park. Overpass is US 1. Plant material on 15-ft curbed median is *Lonicera fragrantissima*, nine months after planting.

NORTH CAROLINA

In the spring of 1959, 42,500 lin ft of median planting for screening headlight glare were installed on four Interstate projects in North Carolina. Also, 7,000 to 8,000 lin ft of similar planting were made at various locations on other highway projects.

Because of the relative narrowness of the medians, all of these plantings have been single-row plantings. The predominant shrubs used have been *Ligustrum japonica* and *amurense* and *Lonicera fragrantissima*. Other plants used less frequently have been *Ligustrum lucidum*, *Abelia grandiflora*, and *Rosa multiflora*.

Size of plant material used has been rather small so plantings have not reached their full effectiveness, however, they do look promising. Maintenance forces have objected to the use of *Rosa multiflora* because



Figure 4. N.J. Route 202, vicinity of Flemington, N.J., where *Viburnum prunifolium* (Blackhaw) was planted in a double staggered row four foot on centers to screen headlight glare and delineate the changing horizontal alignment. Planting also prevented illegal U-turns of vehicles across the median.

it has proved difficult to control. It is also rather difficult to cultivate, fertilize, and keep free of trash because of its thorny nature.

Late information from North Carolina indicates that a new narrow-width median design specifies a sand drainage course to extend from underneath the pavement all the way out to the median ditch. This type of design combined with a narrow median does not permit screen planting for headlight-glare interception.

OHIO

On US 40, the Ohio State Highway Department has designed mounded cross-section for a 74-ft median with planting located along the top of the mound. The additional height of the planting plus the low 2-ft mound will intercept headlight glare effectively as well as prevent illegal crossings of the median. The design comprises a double-row hedge, with plants placed on 4-ft centers and staggered in the rows, and groups of flowering crabs interspersed at frequent intervals to relieve the monotonous effect of a hedge-like planting. Species and sizes were as follows:

Forsythia intermedia (Border Forsythia) 2½- 3 ft;
Ligustrum o. regelianum (Regel Privet) 2½- 3 ft;
Lonicera fragrantissima (Winter Honeysuckle) 2½- 3 ft;
Lonicera morrowi (Morrow Honeysuckle) 2½- 3 ft;
Ribes alpinum (Alpine Currant) 1½- 2 ft;
Spiraea bumalda (Anthony Waterer Spirea) 1½- 2 ft;
Symphoricarpos chenaulti (Chenaulti Coralberry) 2½- 3 ft;
Weigela Vaniceki (Newport Red Weigela) 2½- 3 ft;
Crataegus crusgalli (Cockspur Hawthorn) 4-5 ft, B&B;
Crataegus o. pauli (Pauls Scarlet Hawthorn) 4-5 ft, B&B;
Malus atosanguinea (Carmine Crabapple) 4-5 ft;
Malus floribunda (Japanese Fl. Crabapple) 4-5 ft;
Malus p. eleyi (Eley Crabapple) 4-5 ft; and
Prunus c. pissardi (Purpleleaf Plum) 4-5 ft.

CONCLUSIONS

1. There seems to be a definite increase in the interest and attention being given to the functional use of plant material for screening headlight glare and traffic guidance.
2. The construction of narrow medians incorporating certain drainage features eliminates the possibility of using these areas for functional planting purposes.



Figure 6. Sunken Meadow Parkway, Long Island, New York. *Crataegus* were pruned very hard when planted in order to thicken the growth of the hedge-like planting. The dense growth provides an effective headlight-glare screen.



Figure 5. Sunken Meadow Parkway, Long Island, New York. Planting of *Crataegus phaenopyrum* planted on 5- to 6-ft centers in a 7-ft median.

3. Lists of species furnished by different state highway departments seem to indicate a few varieties suitable for headlight glare and traffic guidance plantings.
4. More selection and study of potentially desirable species for headlight-glare screening purposes needs to be continued.
5. Recent crash tests in Connecticut indicate *Rosa multiflora* is a desirable species to use as a median barrier for stopping vehicles out of control.

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