



T. E. Latham, P.E., President
T. B. Clark, P.E., Exec. V. Pres.
E. J. Adams, P.E., V. Pres.
L. G. Snapp, AIA, LEED AP, V. Pres.,
K. S. Bowman, Dir

J. M. Clark, P.E., (1931 – 2016)
V. R. Geer, Jr., P.E. (1916 – 1994)

D. S. Carrier, P.L.S.
D. A. Benton, P.E.
W. M. Latta, P.E.
C. D. Tisher Jr., P.E.
M. E. Reid, AIA
L. S. Rice, RA

August 17, 2021

Mr. Steven McMahon
Dollar Tree Stores
500 Volvo Parkway
Chesapeake, VA 23320

Re: Family Dollar Store
217 Main Street
West Orange, New Jersey

Subject: Signage Variance
CGL Project No. 2104-47

Dear Mr. McMahon

Clark, Geer, Latham & Associates, Inc. (CGL) is pleased to have the opportunity to assist Dollar Tree Stores (DTS) in evaluating the proper size signage for their new Combination store in West Orange, New Jersey. As always, CGL appreciates DTS' continuing to select us to be a integral part of their phenomenal growth across the country over the past twenty-plus years.

While some may consider Building Signage to be a only minor facet to a Retail development, nothing could be farther from the truth. Building Signage is an extremely important aspect of a new development in several different ways. The most notable of these are: 1) Visibility, for attracting potential Customers and 2) the Safety of Motorists looking for the store. While the first can be critical to the success of a business, we will only be dealing with the second henceforth.

When Motorists are driving along busy roadways, there are numerous distractions to draw their attention away from the roadway. Other buildings, landscaping, billboards, beautiful scenery, etc. can all draw the motorist's eye from the task in front of them, which is driving safely to the intended destination. However, when the intended destination has Building Signage that is obscured or improperly sized, the result can be an extended time of distraction, as the Driver has to "search" with their eyes for their destination or a landmark. Additionally, signage that is too small can create a unique problem in that one might see the signage, but due to the size, they are not able to perceive or read the signage, thus creating more of a distraction than if the signage were properly sized.

For guidance on this topic, we have consulted the American Association of State Highway Transportation Officials (AASHTO), which is the leading authority on most things related to roadways. AASHTO's publication entitled Geometric Design of Highways and Streets is the



most widely accepted document with respect to street and highway design. In Chapter 3 – **Elements of Design, Decision Sight Distance** is discussed. Decision Sight Distance is defined as “the distance needed for a driver to detect an unexpected or otherwise difficult-to-perceive information source or condition in a roadway environment that may be visually cluttered, recognize the condition or its potential threat, select an appropriate speed and path, and initiate and complete the maneuver safely and efficiently.” For this location, the posted Speed Limit is 30 mph, and we would classify this as an “Urban Road” for the purposes of this discussion, which falls into Avoidance Maneuver E. Using these parameters, the Decision Sight Distance should be a minimum of 620 feet. What this tells us is that for a Motorist travelling at 30 mph (that’s 44 feet-per-second), a typical person requires a minimum of 620 feet to see the signage, comprehend it, decide how to react to it, confirm their surroundings, and make the necessary adjustments (lane change, slowing down, etc) to exit the roadway safely. Please note that it takes only 14 seconds to cover this distance travelling at 30 miles-per-hour; even less if a Motorist happens to be exceeding the Posted Speed limit, which is not uncommon. If the motorist has insufficient time available, this could cause them to react too quickly, increasing the likelihood of making an error in judgment.

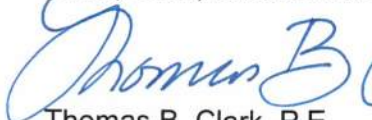
In this case, the proposed building is facing west and is built approximately 200 feet east of the major roadway, Main Street. For a motorist travelling southbound, the proposed building is completely blocked from view by the existing Future Auto Body store, located on the NE corner of Main St. and Babcock Place. The proposed signage first becomes visible at this intersection, and at an angle of greater than 45-degrees from the direction of travel. Additionally, the visibility from northbound motorists of the proposed signage on this building from Main Street is also significantly impaired by trees and neighboring buildings along the roadway, many of which are set much closer to the roadway. These obstructions make it critical that the signage be large enough for a Motorist to understand the message as soon as it becomes visible. For these reasons, our opinion is that the signage should be large enough for a motorist to immediately recognize and comprehend the message.

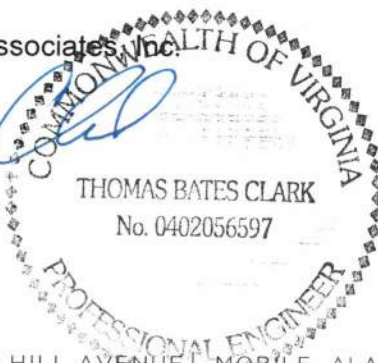
It is therefore our recommendation that, in the interest of public safety, a Variance should be granted to allow Dollar Tree Stores to install the requested larger signage on the front of their building facade. It is our opinion that the larger signage at this particular location would significantly increase the safety of Motorists, allowing a much greater opportunity for motorists to quickly comprehend the store’s location and to safely plan their maneuver to initiate a stop at this store.

Clark, Geer, Latham & Associates, Inc. appreciates this opportunity to assist Dollar Tree Stores with this project. If you have any questions or require any further information, please do not hesitate to contact us.

Sincerely,

Clark, Geer, Latham & Associates, Inc.


Thomas B. Clark, P.E.
Executive Vice President



demand where there is apt to be “visual noise” from competing sources of information, such as roadway elements, traffic, traffic control devices, and advertising signs.

The decision sight distances in Exhibit 3-3 (1) provide values for sight distances that may be appropriate at critical locations, and (2) serve as criteria in evaluating the suitability of the available sight distances at these locations. Because of the additional safety and maneuvering space provided, it is recommended that decision sight distances be provided at critical locations or that critical decision points be moved to locations where sufficient decision sight distance is available. If it is not practical to provide decision sight distance because of horizontal or vertical curvature or if relocation of decision points is not practical, special attention should be given to the use of suitable traffic control devices for providing advance warning of the conditions that are likely to be encountered.

Metric						US Customary					
Design speed (km/h)	Decision sight distance (m)					Design speed (mph)	Decision sight distance (ft)				
	Avoidance maneuver						Avoidance maneuver				
	A	B	C	D	E		A	B	C	D	E
50	70	155	145	170	195	30	220	490	450	535	620
60	95	195	170	205	235	35	275	590	525	625	720
70	115	235	200	235	275	40	330	690	600	715	825
80	140	280	230	270	315	45	395	800	675	800	930
90	170	325	270	315	360	50	465	910	750	890	1030
100	200	370	315	355	400	55	535	1030	865	980	1135
110	235	420	330	380	430	60	610	1150	990	1125	1280
120	265	470	360	415	470	65	695	1275	1050	1220	1365
130	305	525	390	450	510	70	780	1410	1105	1275	1445
						75	875	1545	1180	1365	1545
						80	970	1685	1260	1455	1650

Avoidance Maneuver A: Stop on rural road— $t = 3.0$ s

Avoidance Maneuver B: Stop on urban road— $t = 9.1$ s

Avoidance Maneuver C: Speed/path/direction change on rural road— t varies between 10.2 and 11.2 s

Avoidance Maneuver D: Speed/path/direction change on suburban road— t varies between 12.1 and 12.9 s

Avoidance Maneuver E: Speed/path/direction change on urban road— t varies between 14.0 and 14.5 s

Exhibit 3-3. Decision Sight Distance

Decision sight distance criteria that are applicable to most situations have been developed from empirical data. The decision sight distances vary depending on whether the location is on a rural or urban road and on the type of avoidance maneuver required to negotiate the location properly. Exhibit 3-3 shows decision sight distance values for various situations rounded for design. As can be seen in the exhibit, shorter distances are generally needed for rural roads and for locations where a stop is the appropriate maneuver.

For the avoidance maneuvers identified in Exhibit 3-3, the pre-maneuver time is increased above the brake reaction time for stopping sight distance to allow the driver additional time to detect and recognize the roadway or traffic situation, identify alternative maneuvers, and initiate a