STONEFIELD

February 21, 2023

Jon Altshul, Manager
Westtown Township
1039 Wilmington Pike
West Chester, PA 19381

RE: Traffic, Safety and Visibility Letter Report
1632 Associates, LLC
1632 West Chester Pike
UPI 67-3-131
Township of Westtown, Chester County, PA
PRI-230063

Dear Mr. Altshul:

Stonefield Engineering and Design, LLC ("Stonefield") has prepared this analysis to examine the traffic impacts of the signage design for the proposed visual arts center the adjacent roadway network. The subject property is located at the southwesterly quadrant of the intersection of Wester Chester Pike (Pennsylvania Route 3) and Green Lane in the Town of Westtown, Chester County, Pennsylvania. The subject property is designated as UPI 67-3-131 (Parcel ID 6703 01310000). The existing site is undeveloped. Under the proposed development program, a 2,750-square-foot Visual Arts Center would be constructed. Access is proposed via one (1) right-in/right-out driveway along West Chester Pike and one (1) full-movement driveway along Green Lane.

Under the proposed development program, two (2) 12-foot by 40-foot LED displays would be constructed on the easterly and westerly façades of the proposed visual arts facility respectively. This report examines the visibility of the LED displays from the roadway network.

Existing Conditions

The subject property is located along the eastbound side of West Chester Pike prior to the intersection of Green Lane in the Township of Westtown, Chester County County, Pennsylvania.

West Chester Pike (State Route 3) is classified as a Principal Arterial roadway with a general east-west orientation, and is under the jurisdiction of the Pennsylvania Department of Transportation. Along the site frontage, the roadway generally provides two (2) lanes of travel in each direction, separated by a concrete and grass median, and has a posted speed limit of 55 mph. Curb and sidewalk are not provided along both sides of the roadway, shoulders are not provided, and on-street parking is not permitted. West Chester Pike provides east-west mobility within Chester County, and provides access to the City of Philadelphia to the west of our site, for predominately commercial uses along its length. Based in PennDOT data (TMS Site 25436) annual daily traffic along West Chester Pike is approximately 27,542 vehicles per day; with the peak hour being 4:00 p.m. to 5:00 p.m. with 2,382 vehicles.

Green Lane is classified as a local roadway with a general north-south orientation, and is under the jurisdiction of the Township of Westtown. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 35 mph. Curb and sidewalk are not provided along, shoulders are not provided along, and on-street parking is not permitted. Green Lane provides north-south mobility in the Township of Westtown, and provides access to West Chester Pike at its northern terminus for a mix of commercial and residential uses along its length.

Recommended Signage Criteria

When placing a sign along a roadway, several factors are used to determine the viewable area of a proposed sign. Factors to consider include the speed of traffic along the roadway, decision time of the typical driver, and the height of the driver's eye relevant to the proposed sign. As drivers approach a display, they enter into the "non-viewable" zone when the sign becomes illegible to the reader. The non-viewable zone occurs when the angle between the mid-point of the sign and the driver's eye exceeds 20 degrees. The viewable zone is defined as the area where a display would be legible and within the driver's line of sight.

The distance of drivers within the viewable zone is used to determine the size of the characters on a proposed sign. Sign design also considers the size of the characters relevant to the total size of the display. The negative space of a sign has a direct impact on how readable a sign is for drivers along a roadway corridor. The ideal sign provides approximately 60% of negative space, meaning space devoid of text or symbols, to help the driver quickly read and process the copy provided on the sign. According to the Pennsylvania Transportation Institute (PTI), every inch of a character height is equal to 30 feet of viewable distance. The ratio of copy area to negative space is used to calculate the ideal size of a sign for drivers and improve roadway safety.

Visual Calculations of Sign Face

A review was conducted of the proposed LED display using the conceptual architectural façade rendering and elevations. In completing this review, particular attention was focused on the height of the sign relevant to the adjacent roadway.

The bottom edge of the LED display would be located 7.58 feet above the edge of the roadway pavement for the easterly side of the building, and 10.67 feet above the edge of pavement for the westerly side. When calculating the distance of the "non-viewable" zone to the mid-point of the sign, it is assumed the driver's eye would be located 3.5 feet above the ground. The speed limit along West Chester Pike was used to determine the average speed of drivers approaching the proposed visual arts center. A design speed of 60 miles per hour (88 feet per second) and a viewer reaction time of ten (10) seconds is assumed. A typical driver along West Chester Pike traverses 880 feet in the viewable zone of the proposed LED display. These calculations are summarized in **Table 1.**

The distance to the start of the viewable zone was used to calculate the ideal character height for the LED display along West Chester Pike. To determine the total copy area, it is assumed that the average character width would be 80% of the character height, and the sign would provide an average of 64 characters. The total copy area is then used to calculate the ideal negative space, and determine the ideal total sign area to provide. **Table 2** provides the calculations of the characters for the LED display on the westerly side of the building. The proposed 12 foot by 40 foot LED displays would provide 480 square feet.

TABLE 1 – PROPOSED LED DISPLAY SIGN DISTANCE CALCULATIONS

Description	East Side	West Side
Height of Mid-point of Sign	10.1 Feet	13.2 Feet
Length of Non-viewable Zone	27.7 Feet	36.3 Feet
Distance to Viewable Zone Start	**907.7 Feet**	**916.3 Feet**

TABLE 2 – PROPOSED LED DISPLAY CALCULATIONS

Description	Size
Character Height	30.54 inches
Character Area	5.18 Square Feet
Copy Area	331.52 Square Feet
Negative Space	497.28 Square Feet
Total Sign Area	828.80 Square Feet

Line of Sight Review

As per the visibility calculations, the proposed display on the proposed Visual Arts Center is such that it is not oversized beyond the readable distance. In fact, the sign size is modest to still promote a message that is safely readable to drivers along West Chester Pike, while not causing undue distractions due to its location and angle of visibility.

Accident Analysis

A search of crash data along the adjacent roadway network indicates that from 2017 to 2021, there have been three (3) crashes at along West Chester Pike proximate to the site frontage, none of which resulted in an injury. The most frequent type of crash was a rear-end collusion, which accounted for two (2) of the three (3) crashes, due to careless driving, and one (1) crash was due to a deer in the roadway. The crash rate of the subject stretch of West Chester Pike is 1 accident per 8,377,358 vehicle miles traveled; far below the PennDOT average over the same timeframe of 1 accident per 815,723 vehicle miles traveled. Therefore, per the review of the crash data show that this roadway corridor does not experience a high level of accidents in current conditions. With adequate sight distance provided, the addition of the LED display sign would not create an inherent safety issues within the roadway corridor, and the additional of the LED display sign is sited and sized appropriately to not be a hazard to motorists.

Conclusions

This report was prepared to examine the potential safety impacts and visibility of the LED display on the of the proposed Visual Arts Center along West Chester Pike in Westtown. The analysis findings, which have been based on industry standard guidelines, indicate that the proposed display would not have a negative impact on the traffic operations and safety of the adjacent roadway network. The proposed display has been appropriately designed for safe and effective readability and visibility which promotes safe driving.

Please do not hesitate to contact our office if there are any questions.

Best regards,

Matthew J. Seckler, PE, PTOE
Stonefield Engineering and Design, LLC

John Corak
Stonefield Engineering and Design, LLC