

August 8, 2023

Mr. Tom Scannell  
Community Development Director  
City of Independence, Missouri

Re: Tybrook Development – Sight Distance Analysis  
Hg Consult Project No. 2023-029

Mr. Scannell.

This memo is to document the results and recommendations from a sight distance analysis for the intersection of 7<sup>th</sup> Street and Powell Avenue in Independence, Missouri for the Tybrook Development.

### Project Site Location

Tybrook development is located on South Powell Avenue and 7<sup>th</sup> Street. The nearby area includes manufacturing with heavy trucks, Independence Power and Light Power Plant, as well as the Independence School District Transportation offices and bus barn. The Project site location can be seen in **Figure 1**.



**Figure 1: Project Site Location**

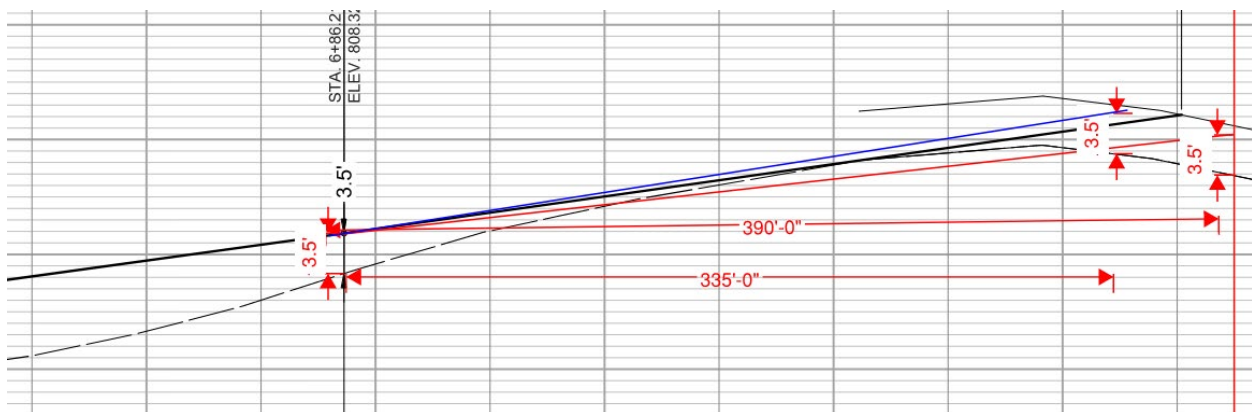
The proposed plat of the project can be seen in **Figure 2**.



U.S. Customary			
Design Speed (mph)	Stopping Sight Distance (ft)	Intersection Sight Distance for Passenger Cars	
		Calculated (ft)	Design (ft)
15	80	165.4	170
20	115	220.5	225
25	155	275.6	280
30	200	330.8	335
35	250	385.9	390
40	305	441.0	445
45	360	496.1	500
50	425	551.3	555
55	495	606.4	610
60	570	661.5	665
65	645	716.6	720
70	730	771.8	775
75	820	826.9	830
80	910	882.0	885

**Table 1: Stopping and Intersection Sight Distance from AASHTO Green Book**

Based on profiles of South Powell Avenue and the site grading, an analysis of the available site distance was conducted. **Figure 3** shows the graphical analysis of the sight distance provided at the entrance to the site (at 7<sup>th</sup> Street).



**Figure 3: Graphical Analysis of Intersection Sight Distance**

The result of the analysis of the intersection sight distance at the location of 7<sup>th</sup> Street and South Powell Avenue shows that the intersection does not provide adequate intersection sight distance for a posted speed limit of 35mph. It will provide sufficient sight distance for a posted speed limit of 30mph, which is 335-feet.

## Reduction in Speed Limit Considerations

It should be noted that while the intersection of 7<sup>th</sup> Street and South Powell Avenue does not support a sight distance for a posted speed of 35mph, that perhaps South Powell Avenue should be posted as 30 mph. With the increased residential development, the manufacturing businesses located on South Powell Avenue, as well as the Independence School District's Transportation Hub and bus barn, a reduction in the posted speed limit would mean increased safety throughout the corridor.

The risk of death or serious injury to pedestrians and cyclists is significantly lower at 30 mph than at 35 mph. A study by the Insurance Institute for Highway Safety found that a pedestrian hit by a car traveling at 30 mph has a 45% chance of being killed, while a pedestrian hit by a car traveling at 35 mph has a 55% chance of being killed. For cyclists, the risk of death or serious injury is even greater. Another study by the University of California, Berkeley found that a cyclist hit by a car traveling at 30 mph has a 75% chance of being killed, while a cyclist hit by a car traveling at 35 mph has an 85% chance of being killed.

Another study by the National Highway Traffic Safety Administration found that for every 5 mph increase in speed, the risk of a crash increases by 10%. This means that a road with a 35 mph speed limit is more likely to have crashes than a road with a 30 mph speed limit. This is especially true where there are bicyclists, pedestrians or heavy vehicles such as school buses are located.

## Summary and Conclusions

Based on the intersection sight distance analysis, the following conclusions and recommendations are made:

- The intersection of 7<sup>th</sup> Street and South Powell Avenue does not provide adequate sight distance based on a 35mph posted speed limit.
- The intersection of 7<sup>th</sup> Street and South Powell Avenue does provide adequate sight distance for a posted speed of 30mph.
- Due to the increased safety and the adjacent land uses, including IPL Power Plat, the Independence School District Transportation facility and bus barn, it should be considered to lower the posted speed limit to 30mph, or at the very least an intersection ahead warning sign with an advisory speed sign of 30mph posted north of the intersection of 7<sup>th</sup> Street and South Powell Avenue.

Sincerely,



Nathan Hladky, PE, PTOE  
Hg Consult, Inc.

