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August 10, 2018

Christopher Leswing
Director, Department of Building and Planning
Lower Merion Township
75 E. Lancaster Avenue
Ardmore, PA 19003-2376

RE: **LCB Senior Living**
211 Belmont Avenue
Lower Merion Township, Montgomery County, PA
McMahon Project No. 817389.11

Dear Mr. Leswing:

McMahon Associates, Inc. has completed this evaluation to satisfy Condition #3 in the Township's Tentative Sketch Plan conditions for the proposed senior living facility at 211 Belmont Avenue, per the letter dated July 31, 2018, as follows:

Condition #3: A left turn lane and crosswalk shall be evaluated for traffic entering the site from Rock Hill Road. The Preliminary Plan shall include the analysis and conclusions whether a left-turn lane and/or crosswalk is recommended. (TE,P).

As part of this evaluation, McMahon has completed conceptual plans for illustrative purposes, which are provided in **Attachment 1**. The final design of any modifications within the right-of-way along Rock Hill Road (S.R. 3052) is subject to review and approval by PennDOT, and is dependent upon detailed engineering, impacts and costs. The following provides a summary of the design elements and impacts based on the traffic analyses and conceptual plans.

Left-Turn Lane

Per the detailed evaluation in the *Traffic Impact Assessment for LCB Senior Living* (dated August 10, 2018), a left-turn lane is not warranted for the site access along Rock Hill Road (S.R. 3052) per PennDOT criteria. PennDOT reviewed the study, and is not requiring a left-turn lane based on their letter dated June 4, 2018. The study also demonstrates that the site access will function acceptably with regards to vehicle delay and queuing, and will not result in traffic backups without a left-turn lane along Rock Hill Road (S.R. 3052).

The proposed senior housing facility is a very low traffic generating use. Employee shift changes constitute the highest traffic generating periods for the site, which are still very low volume and only occur a few times

throughout the day. Furthermore, the existing traffic patterns show the far majority (approximately 85 percent) of the traffic along Rock Hill Road (S.R. 3052) originates to and from the east, due in large part to the close proximity of the I-76 Schuylkill Expressway interchange along Belmont Avenue. These characteristics demonstrate that a left-turn lane is not necessary for traffic operations, and it would be utilized on a very limited basis.

Although not required by PennDOT, a conceptual plan has been prepared to satisfy the Township's condition and to identify the impacts of a left-turn lane at the site access. The left-turn lane was designed in accordance with the minimum standards outlined in PennDOT *Publication 13M, Design Manual Part 2* in order to minimize the impacts.

The conceptual plan (provided in Attachment 1) includes the following:

- At full width, the left-turn lane matches the existing left-turn lane into the CVS driveway, which is approximately 10.8 feet wide.
- The left-turn lane provides 50 feet of vehicle storage, the minimum PennDOT would permit.
- The concept plan provides a 225-foot transition taper, which is required at a minimum.
- In order to provide the design elements described above, widening along Rock Hill Road (S.R. 3052) is required. The conceptual plan shows widening only on the north side of Rock Hill Road (S.R. 3052) due to the following considerations:
 - To preserve the curb and sidewalk on the south side of Rock Hill Road (S.R. 3052).
 - Any widening on the south side would require additional right-of-way, since the existing right-of-way extends only to the back of the sidewalk.
 - Since the applicant controls some of the property on the north side of Rock Hill Road (S.R. 3052), some of the impacts due to the widening can be accommodated within the applicant's property frontage.

Through this evaluation, it was determined that providing a left-turn lane would have the following impacts to the roadway and adjacent properties:

- The concept plan identifies the following impacts to the adjacent property owned by 231 Rock Hill, LLC:
 - Permanent right-of-way is required.
 - Temporary construction easements are required.
 - Two utility poles need to be relocated to accommodate the widening. Since the building setback from the road is narrow, and will be reduced further with the required roadway widening, there is limited opportunity to relocate these utility poles.
 - At least one driveway would need to be adjusted to accommodate the widening.

- A significant amount of new gore striping is needed, which will be required to be maintained.
- No pedestrian crossing is provided; however, if pedestrians choose to cross at this location the roadway widening results in an increased crossing distance to 36 feet, including three lanes of traffic with no refuge.

Crosswalk with Pedestrian Refuge Island

With the proposed senior living facility, a ten-foot wide path will be provided along the Rock Hill Road (S.R. 3052) property frontage, as required by Township code. It is anticipated that this will draw more pedestrians to the area, between the development, the Cynwyd Heritage Trail, CVS, and other uses along Rock Hill Road (S.R. 3052) and beyond, which is the intent of the Township's Rock Hill Road Overlay District requirements. The provision of a midblock crosswalk with pedestrian refuge island along Rock Hill Road (S.R. 3052) at the site access intersection has been evaluated.

The conceptual plan (provided in Attachment 1) includes the following:

- The refuge island geometry provides a minimum 6-foot wide pedestrian refuge island, 8-inch curbs and a 1-foot shoulder.
- A minimum of 11-foot travel lanes are maintained along Rock Hill Road (S.R. 3052).
- The concept plan provides a 100-foot transition taper, which is similar to the transition taper provided for the existing left-turn lane into the CVS driveway.
- In order to provide the design elements mentioned above, minor widening of Rock Hill Road (S.R. 3052) is required. The concept plan shows widening only on the north side of Rock Hill Road (S.R. 3052) due to the following considerations:
 - To preserve the curb and sidewalk on the south side of Rock Hill Road (S.R. 3052).
 - Any widening on the south side would require additional right-of-way, since the existing right-of way extends only to the back of the sidewalk.
 - Since the applicant controls some of the property on the north side of Rock Hill Road (S.R. 3052), the impacts can be accommodated within the applicant's property frontage.
- The refuge island is positioned and designed to accommodate the Township's largest emergency vehicle entering the proposed site.
- Pedestal mounted rectangular rapid flashing beacons (RRFBs) are provided along both approaches of Rock Hill Road (S.R. 3052) to alert drivers to pedestrians within the crosswalk.

- Advanced signage will be provided to warn drivers approaching the pedestrian crossing.
- ADA-compliant curb ramps will be provided for all sidewalk connections.

Through this evaluation, it was determined that providing the pedestrian crossing would have the following impacts to the roadway and adjacent properties:

- Minor widening and curb adjustments are required on the north side of Rock Hill Road (S.R. 3052), which appears to be accommodated within the existing right-of-way or applicant's property frontage. The crossing features are largely accommodated within the existing gore striped area.
- For the ADA-compliant curb ramp that is required on the south side of Rock Hill Road (S.R. 3052), a minor sidewalk adjustment is needed (estimated to be less than 1 foot in width), and potentially a temporary construction easement.
- A permanent easement will be required to install the RRFB behind the sidewalk on the south side of the crossing. The existing bike racks may also need to be adjusted or relocated.
- The pedestrian crossing distance would be reduced to two separate crossings, each approximately twelve feet in width, allowing pedestrians to cross one travel lane at a time, with a protected refuge median.

PennDOT Publication 46, Section 11.9 Evaluation

The pedestrian crossing has been evaluated in accordance with Chapter 11.9 of PennDOT *Publication 46*, which provides the following minimum requirements for unsignalized midblock crossing installations:

1. *Speed Limit* – **Satisfied** as the speed limit along Rock Hill Road (S.R. 3052) is 35 mph.
2. *Other Marked Crosswalks* – **Satisfied** as the nearest crosswalk is 530 feet away at Belmont Avenue.
3. *Number of Pedestrian Crossing*: Unknown. The crosswalk would not only serve pedestrian movements between the development and associated public spaces along the Rock Hill Road (S.R. 3052) frontage, the existing CVS and the trailhead, but would also serve as a crossing for further redevelopment of properties along Rock Hill Road (S.R. 3052) to the west. Rock Hill Road (S.R. 3052) is approximately six tenths of a mile (3,200 feet) between Belmont Avenue and Conshohocken State Road, of which a significant portion includes horizontal curvature limiting the opportunity to provide midblock crossing locations due to limited sight distance. It is also noted that it is unlikely, even with further redevelopment along the corridor, that another traffic signal will be installed along Rock Hill Road (S.R. 3052) to provide a signalized crossing location.

4. *Traffic Volume*: **Satisfied** as the ADT of Rock Hill Road (S.R. 3052) is 8,631 vehicles per day, which is below the 10,000 vehicles per day threshold.
5. *Parking Restrictions* – **Satisfied** as no on-street parking is permitted along Rock Hill Road (S.R. 3052).
6. *Sight Distance* – **Satisfied** as illustrated in the next section.

A preliminary sight distance evaluation was completed for the pedestrian crossing with consideration for existing obstructions, as well as the anticipated improvements along the property frontage along Rock Hill Road (S.R. 3052). **Table 1** below provides a summary of the existing and future sight distance measurements for the pedestrian crossing based on the current development plans and property frontage improvements. Available sight distances must be confirmed during detailed engineering.

**Table 1. Preliminary Sight Distance Evaluation
 Rock Hill Road Midblock Pedestrian Crossing**

Direction	REQUIREMENTS		Field Measured Available Sight Distance	Maximum speed at which available sight distance satisfies safe stopping sight distance
	Minimum Safe Stopping Sight Distance at Posted 35 MPH ¹	PennDOT PUB 46 Minimum Sight Distance for Midblock Crosswalks at Posted 35 MPH ²		
South Curb Ramp Looking West	274'	333'	372'	42 MPH
Pedestrian Refuge Island Looking West	274'	333'	404'	44 MPH
North Curb Ramp Looking East	258'	333'	333' (minimum)	41 MPH
Pedestrian Refuge Island Looking East	258'	333'	333' (minimum)	41 MPH

1 – Based on the safe stopping sight distance requirements contained in the Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads for the posted speed limit of 35 MPH.

2 – Minimum sight distance requirements for midblock pedestrian crosswalks on roadways with a posted speed limit of 35 MPH, per PennDOT Publication 46.

The existing available sight distance looking to the east is obstructed by vegetation along the site, which will be removed with the development. Sight line exhibits are provided in **Attachment 2**, which depict the minimum safe stopping sight distance, PennDOT *Publication 46* minimum sight distance for midblock crosswalks, and an estimate of the maximum achievable sight distance based on the current site design looking to the east.

As shown in Table 1 and the exhibits in Attachment 2, the sight distance for the pedestrian crossing meets or exceed the minimum sight distance requirements for midblock crossings outlined in PennDOT *Publication 46* for the posted speed limit of 35 miles per hour. A small sample of speed data was collected at free flow conditions along Rock Hill Road (S.R. 3052) in the vicinity of the proposed pedestrian crossing. Based on

the collected speed data, it was determined that the 85th percentile speed along Rock Hill Road (S.R. 3052) was at or below the posted speed limit of 35 MPH.

Recommendation

It is recommended to pursue the midblock pedestrian crossing with provision of a crosswalk and pedestrian refuge island, in accordance with Sheet 2 of 4 as contained in Attachment 1, as it will provide a benefit to the proposed site, as well as existing and future development along Rock Hill Road (S.R. 3052), subject to PennDOT review and approval. It achieves multimodal transportation goals for the corridor, as laid out within the Rock Hill Road Overlay District. With further redevelopment of properties along Rock Hill Road (S.R. 3052), it is unlikely that a traffic signal will be installed, and therefore, any crossing of Rock Hill Road (S.R. 3052) would be unsignalized. Given the horizontal curvature along Rock Hill Road (S.R. 3052), there are limited opportunities to provide an unsignalized midblock crossing. A left-turn lane, which is neither warranted nor required by PennDOT, would require additional right-of-way that the applicant does not control, resulting in significant impacts to the adjacent property. Also, the left-turn lane would result in a wider cartway along Rock Hill Road (S.R. 3052), which will increase the crossing distance and traffic exposure for any pedestrians that may choose to cross at this location, and may also increase vehicle travel speeds.

If you should have any questions, or require further information, please feel free to contact me at 610-594-9995 or nkline@mcmahonassociates.com.

Sincerely,



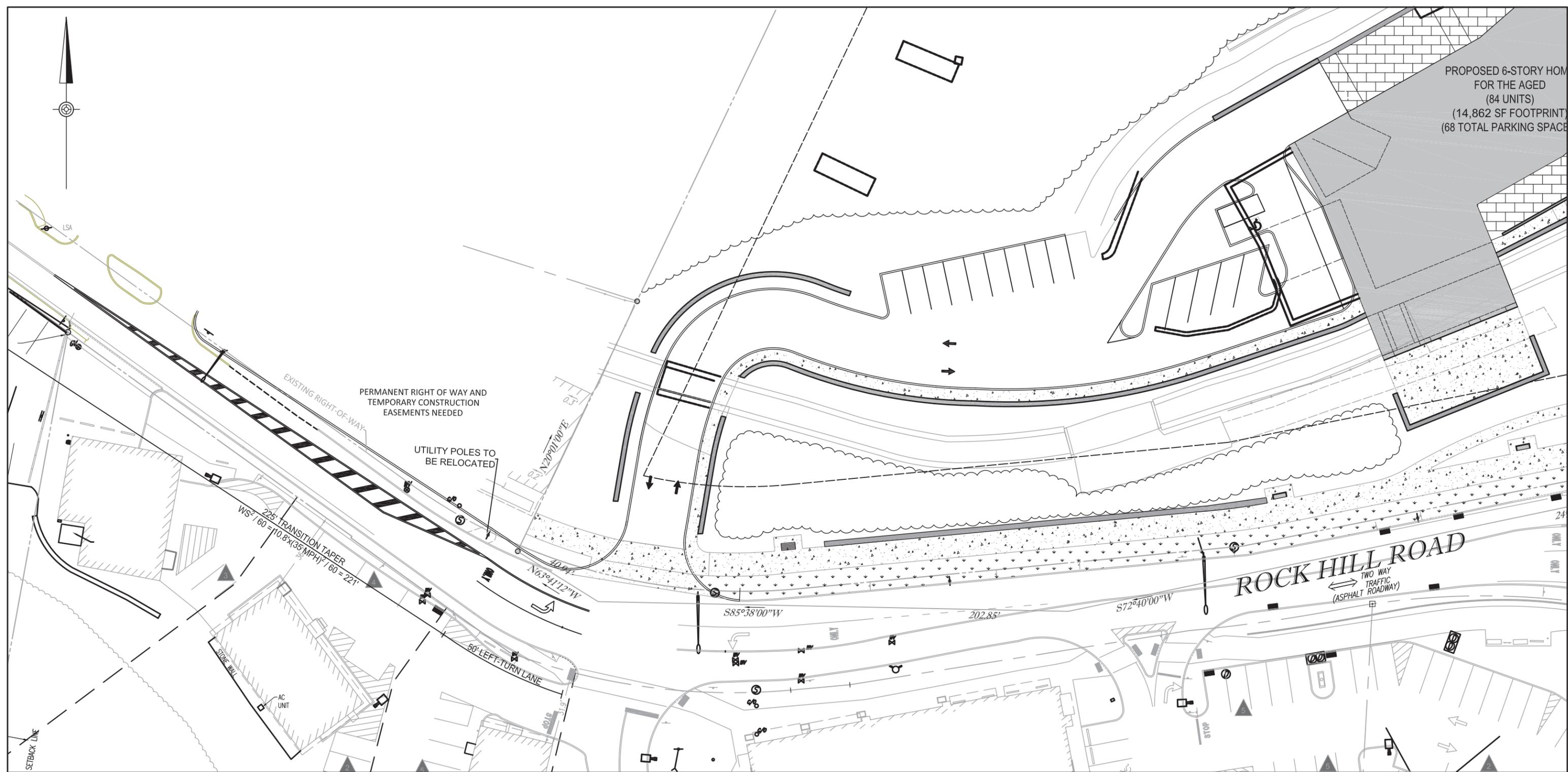
Nicole R. Kline-Elsier, P.E., PTOE
Senior Project Manager

NRKE/bgg
Attachments

cc: John Lombardo, LCB Senior Living
Jonathan Spergel, Esquire, Manko Gold Katcher Fox, LLP
Zachary Koslap, Manko Gold Katcher Fox, LLP
Christos Dinoulis, P.E., Bohler Engineering

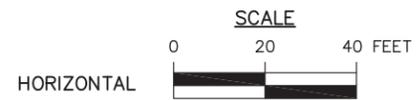
ATTACHMENT 1

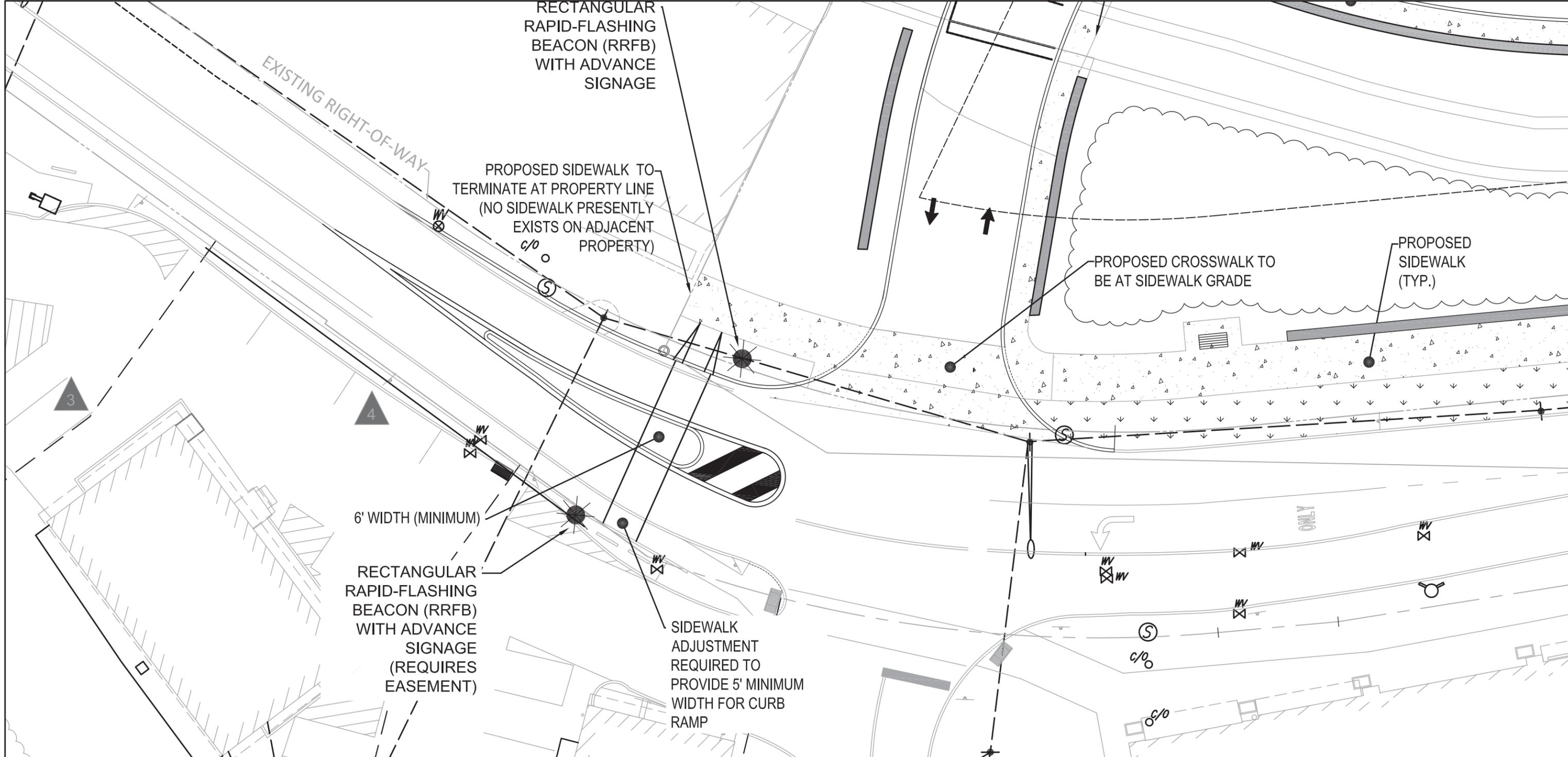
PROPOSED 6-STORY HOME
FOR THE AGED
(84 UNITS)
(14,862 SF FOOTPRINT)
(68 TOTAL PARKING SPACE)



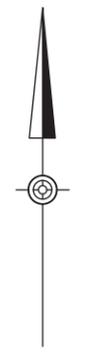
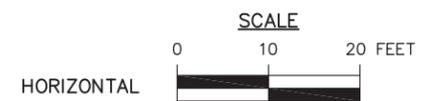
NOTES:

1. THIS DRAFT CONCEPTUAL DESIGN EXHIBIT HAS BEEN PREPARED TO ILLUSTRATE A LEFT-TURN LANE ALONG ROCK HILL ROAD (S.R. 3052) INTO THE SITE ACCESS. THE FINAL DESIGN OF THE LEFT-TURN LANE IS DEPENDENT UPON DETAILED ENGINEERING, IMPACTS AND COSTS. FURTHER COORDINATION WITH THE TOWNSHIP WILL OCCUR DURING THE DETAILED ENGINEERING.

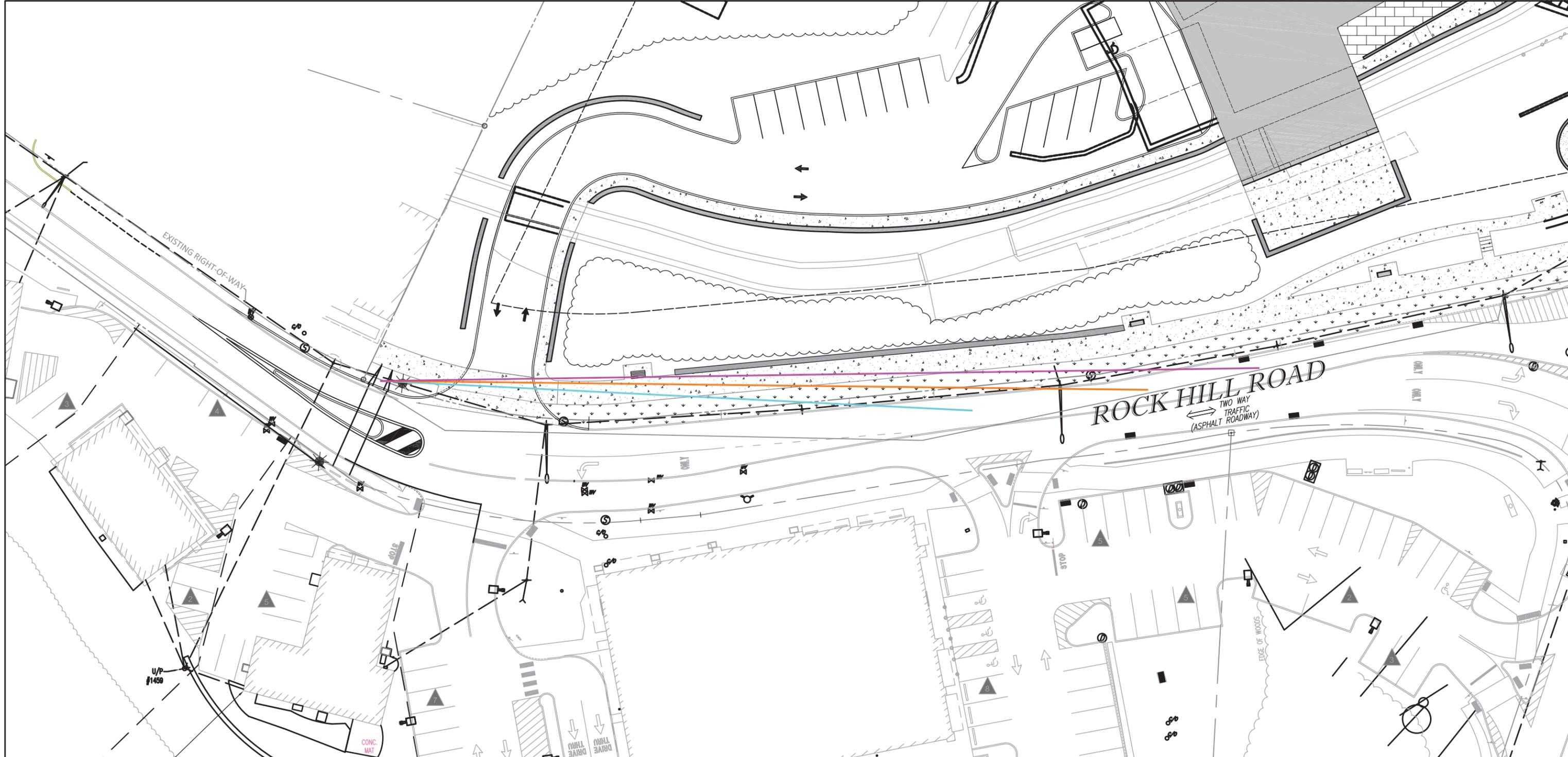




NOTES:
 1. THIS DRAFT CONCEPTUAL DESIGN EXHIBIT HAS BEEN PREPARED TO ILLUSTRATE PRELIMINARY PEDESTRIAN CROSSING FEATURES, AS REQUESTED BY THE TOWNSHIP SUPERVISORS AND TOWNSHIP ENGINEERS FOR THE APPLICANT'S CONSIDERATION. THE FINAL DESIGN OF THE PEDESTRIAN CROSSING IS DEPENDENT UPON FURTHER STUDIES REQUESTED BY THE TOWNSHIP, DETAILED ENGINEERING, IMPACTS AND COSTS. FURTHER COORDINATION WITH THE TOWNSHIP WILL OCCUR DURING THE DETAILED ENGINEERING.



ATTACHMENT 2



NOTES:

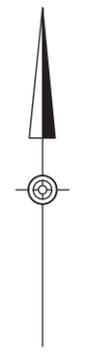
1. THIS DRAFT CONCEPTUAL DESIGN EXHIBIT HAS BEEN PREPARED TO ILLUSTRATE PRELIMINARY PEDESTRIAN CROSSING FEATURES, AS REQUESTED BY THE TOWNSHIP SUPERVISORS AND TOWNSHIP ENGINEERS FOR THE APPLICANT'S CONSIDERATION. THE FINAL DESIGN OF THE PEDESTRIAN CROSSING IS DEPENDENT UPON FURTHER STUDIES REQUESTED BY THE TOWNSHIP, DETAILED ENGINEERING, IMPACTS AND COSTS. FURTHER COORDINATION WITH THE TOWNSHIP WILL OCCUR DURING THE DETAILED ENGINEERING.

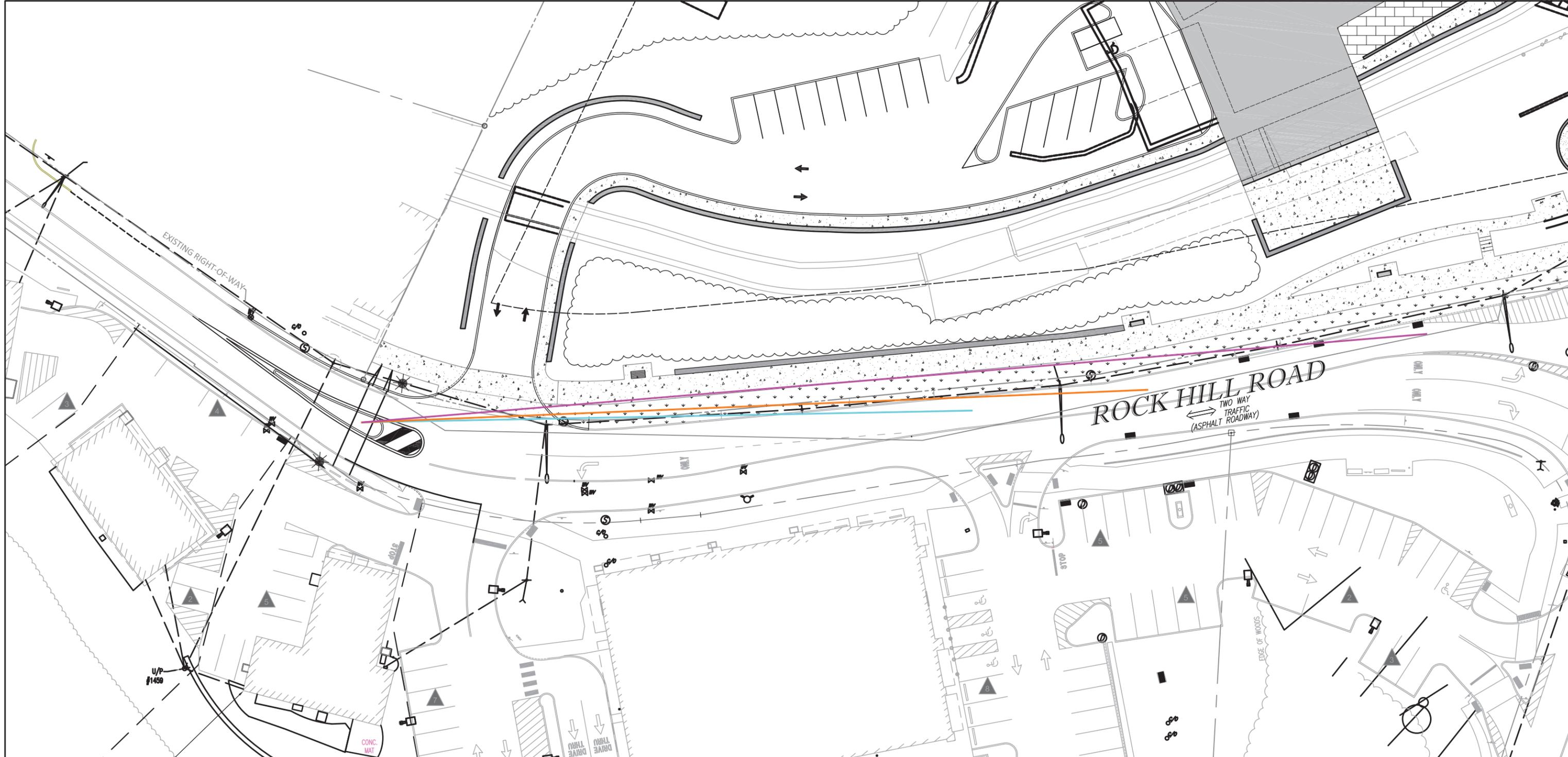
SIGHT DISTANCE EVALUATION:

MINIMUM SAFE STOPPING SIGHT DISTANCE (35 MPH) - 258'

PUB 46 MINIMUM SIGHT DISTANCE FOR MIDBLOCK CROSSING (35 MPH) - 333'

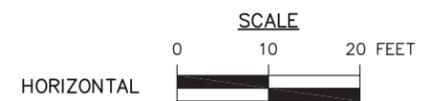
MAXIMUM ACHIEVABLE SIGHT DISTANCE - 381'





NOTES:
 1. THIS DRAFT CONCEPTUAL DESIGN EXHIBIT HAS BEEN PREPARED TO ILLUSTRATE PRELIMINARY PEDESTRIAN CROSSING FEATURES, AS REQUESTED BY THE TOWNSHIP SUPERVISORS AND TOWNSHIP ENGINEERS FOR THE APPLICANT'S CONSIDERATION. THE FINAL DESIGN OF THE PEDESTRIAN CROSSING IS DEPENDENT UPON FURTHER STUDIES REQUESTED BY THE TOWNSHIP, DETAILED ENGINEERING, IMPACTS AND COSTS. FURTHER COORDINATION WITH THE TOWNSHIP WILL OCCUR DURING THE DETAILED ENGINEERING.

SIGHT DISTANCE EVALUATION:
 MINIMUM SAFE STOPPING SIGHT DISTANCE (35 MPH) - 258'
 PUB 46 MINIMUM SIGHT DISTANCE FOR MIDBLOCK CROSSING (35 MPH) - 333'
 MAXIMUM ACHIEVABLE SIGHT DISTANCE - 454'



SHEET 4 OF 4

**CONCEPTUAL DESIGN EXHIBIT
 NOT FOR CONSTRUCTION**

LAST REVISED: 8/3/2018