| Planning |
|----------|

# SUBDIVISION REPORT -CONCEPT/DEVELOPMENT PLAN

| ► | FILE #: 6-SB-25-C                   | AGENDA ITEM #: 42   |
|---|-------------------------------------|---|
|   | 6-C-25-DP                           | AGENDA DATE: 6/12/2025  |
| ► | SUBDIVISION:                        | THE HAVEN AT HARDIN VALLEY  |
| ► | APPLICANT/DEVELOPER:                | SAFE HARBOR DEVELOPMENT LLC   |
|   | OWNER(S):                           | SH Couch Mill LLC   |
|   | TAX IDENTIFICATION:                 | 117 00812 (PARTIAL) View map on KGIS  |
|   | JURISDICTION:                       | County Commission District 6  |
|   | STREET ADDRESS:                     | 12202 COUCH MILL RD   |
| ► | LOCATION:                           | Southside of Couch Mill Rd, west of Cascade View Dr   |
|   | GROWTH POLICY PLAN:                 | Planned Growth Area   |
|   | FIRE DISTRICT:                      | Karns Fire Department   |
|   | WATERSHED:                          | Conner Creek  |
| ► | APPROXIMATE ACREAGE:                | 45.869 acres  |
| Þ | ZONING:                             | PR (Planned Residential) up to 3 du/ac  |
| ► | EXISTING LAND USE:                  | Agriculture/Forestry/Vacant Land  |
| ۲ | PROPOSED USE:                       | Adding 13 additional lots to an approved single family residential neighborhood (1-SA-22-C/1-D-22-UR)   |
|   | SURROUNDING LAND<br>USE AND ZONING: | North: Agriculture/forestry/vacant land, single family residential, rural<br>residential - A (Agricultural)<br>South: Agriculture/forestry/vacant land - A (Agricultural)<br>East: Agriculture/forestry/vacant land - A (Agricultural), PR (Planned<br>Residential), up to 3 du/ac<br>West: Agriculture/forestry/vacant land, single family residential, rural<br>residential - A (Agricultural), PR (Planned Residential), up to 1 du/ac |
| ► | NUMBER OF LOTS:                     | 13  |
|   | SURVEYOR/ENGINEER:                  | David Harbin  |
|   | ACCESSIBILITY:                      | Access is via Mount LeConte Drive, a local street with 26 ft of pavement width within a 50-ft right-of-way, and via Signal View Road, a local street with 26 ft of pavement width within a 50-ft right-of-way.  |
| • | SUBDIVISION VARIANCES<br>REQUIRED:  | VARIANCE<br>1. Allow a T-turnaround in lieu of a cul-de-sac at the western terminus<br>of Signal View Road.   |
|   |                                     | ALTERNATIVE DESIGN STANDARDS REQUIRING KNOX COUNTY<br>ENGINEERING AND PUBLIC WORKS APPROVAL (PLANNING<br>COMMISSION APPROVAL NOT REQUIRED)<br>1. Increase the maximum intersection grade from 1 percent to 2  |

percent on Mount LeConte Drive at Signal View Drive. 2. Increase the maximum intersection grade from 1 percent to 2 percent on Road 'M' at Mount LeConte Drive.

3. Increase the maximum intersection grade from 1 percent to 2 percent on Road 'L' at Mount LeConte Drive.

4. Increase the maximum intersection grade from 1 percent to 2 percent on Road 'N' at Road 'L'.

5. Increase the maximum intersection grade from 1 percent to 2 percent on Road 'N' at Signal View Drive.

#### **STAFF RECOMMENDATION:**

Approve the variance to allow a T-turnaround in lieu of a cul-de-sac at the western terminus of Signal View Road.

A. The T-turnaround on this stub street will allow for future access to the adjacent properties and allow for less grading into an area with steep slopes and a closed contour (possible sinkhole).

B. The road stub-out was a requirement of the 2022 concept plan approval, and the T-turnaround will allow for the conversion to a standard road cross section when the road is extended into the adjacent property.

C. The granting of the variance will not be detrimental to public safety, health, or welfare because the turnaround meets the American Association of State Highway and Transportation Officials (AASHTO) standards.

## Approve the Concept Plan subject to 14 conditions.

1. Connection to sanitary sewer and meeting any other relevant requirements of the utility provider.

2. Provision of street names consistent with the Uniform Street Naming and Addressing System within Knox County (County Ord. 91-1-102).

3. If during design plan approval or construction of the development, it is discovered that unforeseen off-site improvements within the right-of-way are necessary as caused by the development, the developer will either enter into an MOU with the County for these improvements or reimburse the County for their direct expenses (if completed by County crews) to make corrections deemed necessary.

4. All sidewalks and crosswalks within the public right-of-way shall meet the applicable ADA standards. The design details shall be worked out with Knox County Engineering and Public Works during the design plan phase.

5. Providing a mid-block crosswalk at the intersection of Road 'M' and Mount LeConte Drive per the requirements of Knox County Engineering and Public Works during the design plan phase.

6. Implementation of the street and intersection improvement recommendations as outlined in the Couch Mill Road Subdivision Transportation Impact Study prepared by AJAX Engineering (revised 2/18/2022), as revised and approved by the Knox County Department of Engineering and Public Works and Planning staff (see Exhibit C). The design details and timing of the installation of the improvements shall be worked out with the Knox County Department of Engineering and Public Works during the design plan stage for the subdivision.

7. Meeting all application requirements of the Knox County Stormwater Management Ordinance (Chapter 26, Article VI of the Knox County Code), including but not limited to, obtaining approval from the director of the Department of Engineering and Public Works to modify or fill any sinkholes (closed contours). If the approved geotechnical report determines that a closed contour identified by Knox County Engineering and Public Works is not a sinkhole, the certification to be provided by Knox County Engineering and Public Works must be placed on the final plat and sealed by the applicant's engineer.

8. Providing the location of all sinkholes/closed contours and the 50-ft buffer (building setback) on the final plat per Section 3.06.B of the Subdivision Regulations.

9. If any building construction is proposed within the 50-ft buffer area around the designated

sinkholes/depressions (including the depressions), a registered engineer must prepare a geotechnical report to determine soil stability. That report must be submitted to the Knox County Department of Engineering and Public Works for consideration. Any construction in these areas is subject to approval by the County following a review of the report. Engineered footings must be designed for these areas. For those lots that do not have a building site outside of the 50-ft buffer, approval by Knox County will be required prior to final plat approval. The sinkholes/depressions and 50-ft buffer shall be designated on the final plat even if they are approved to be filled.

10. Providing the proposed road stub-out at the western terminus of Signal View Road and notification of future street connections per Section 3.04.C.2.b. & d. of the Subdivision Regulations.

11. The temporary turnaround at the western terminus of Signal View Road must meet the American Association of State Highway and Transportation Officials (AASHTO) design standards, as required during the

|  | AGENDA ITEM #: 42 | FILE #: 6-SB-25-C | 6/5/2025 12:52 PM | MIKE REYNOLDS | PAGE #: | 42-2 |
|--|-------------------|-------------------|-------------------|---------------|---------|------|
|--|-------------------|-------------------|-------------------|---------------|---------|------|

design plan phase by Knox County Engineering and Public Works. The portions of the turnaround located outside of the 50-ft public right-of-way may be put in an easement.

12. Meeting all applicable requirements of the Knox County Zoning Ordinance.

13. Meeting all applicable requirements of the Knox County Department of Engineering and Public Works.

14. Prior to certification of the final plat for the subdivision, establish a property owners association that will be responsible for the maintenance of the common areas, amenities, and drainage system.

#### Approve the development plan for 13 additional detached house lots, increasing the total house lots to 372 for The Haven at Hardin Valley Subdivision (formerly Brown Property-Couch Mill Road), subject to 2 conditions.

 Meeting all applicable requirements of the previous development plan approval for The Haven at Hardin Valley Subdivision (formerly Brown Property-Couch Mill Road), 1-D-22-UR.
 Meeting all applicable requirements of the Knox County Zoning Ordinance.

With the conditions noted, this plan meets the requirements for approval in the PR zone and the criteria for approval of a development plan.

## COMMENTS:

This proposal is for 13 additional house lots in Phase 3 of The Haven at Hardin Valley Subdivision (formerly Brown Property-Couch Mill Road), increasing the total to 118 house lots in this phase, and 372 lots in the entire subdivision. The subdivision was originally approved in March 2022 (1-SA-22-C / 1-D-22-UR), and final plats for Phase 1 were recorded in 2024 (135 house lots). The first unit of the next phase, Phase 2A, is also on this agenda for approval (6-SF-25-F), comprising 28 lots.

A revised concept plan application is part of this request because there will be 6 or more new lots, which is the threshold for requiring a concept plan. Since all the new lots are in Phase 3, the revised concept plan is not required for Phases 1 and 2. The road layout and location of lots remain largely unchanged. To accommodate the additional lots, the typical lot width is now 55 ft, with a few exceptions that are larger, whereas the original plan had a mix of lot widths of 55 ft and 65 ft. In addition, three lots were added to the western end of Signal View Road.

#### TRANSPORTATION IMPROVEMENTS

The developer has entered into a Memorandum of Understanding (MOU) with Knox County regarding the offsite improvements to be completed in partnership with the county. This includes a roundabout at the intersection of Sam Lee Road, Swafford Road, and Steele Road, and a sidewalk along Couch Mill Road/Sam Lee Road, from the subdivision's western access point to the aforementioned roundabout.

#### SINKHOLES

There are several large sinkholes on this property. The dashed line around the sinkholes represents the 50 ft buffer from the uppermost closed contour of the feature required by the Subdivision Regulations (Section 3.06.B.). Each lot must have a buildable area outside of the closed contour of a sinkhole. Still, a house can be built within the 50 ft buffer if a geotechnical study prepared by a registered engineer states that building within the 50 ft sinkhole area is acceptable with engineered foundations. During the design plan phase, the uppermost closed contour of the sinkholes will be further defined, which may result in the sinkholes being larger than depicted on this Concept Plan and potentially leading to the loss of lots.

#### VARIANCE

The applicant requests a T-turnaround instead of a cul-de-sac at the western terminus of Signal View Road. This is intended to be temporary because this is a stub street that will provide future access to the adjacent property to the west. Staff recommend approval of this request because of the short length of this street segment (approximately 308 ft) and the limited number of houses (7). The proposed T-turnaround must meet AASHTO design standards.

#### HILLSIDE PROTECTION AREA

There are approximately 31.82 acres of hillside protection (HP) area in the 50.65 acres in the slope analysis. This acreage is approximately 5 acres more than stated on the concept plan for Phase 3 due to the difficulty in matching the case boundary to a development boundary that does not align with parcel lines and has several changes in direction. The slope analysis recommends a disturbance budget of 18.76 acres of the 31.82 acres in the HP area.

However, when evaluating the disturbance within the HP area, we consider the full area of development. The

| AGENDA ITEM #: 42 | FILE #: 6-SB-25-C | 6/5/2025 12:52 PM | MIKE REYNOLDS | PAGE #: | 42-3 |
|-------------------|-------------------|-------------------|---------------|---------|------|
|                   |                   |                   |               |         |      |

slope analysis, created in conjunction with the review of the 2022 concept plan, states that there are 37.48 acres in the HP area and recommends a disturbance budget of 23 acres in the HP area. Most of the HP area is located around the large sinkholes in the northwest portion of the property, which are predominantly in Phase 3. Besides the steep slopes associated with the sinkholes, the property consists mainly of rolling hills. The 2022 concept plan disturbed approximately 20.9 acres of the HP area, which complies with the slope analysis recommendations. The road layout and location of lots have remained relatively unchanged, resulting in no significant change in the disturbance area.

## DEVELOPMENT PLAN ANALYSIS PER ARTICLE 6, SECTION 6.50.06 (APPROVAL OR DENIAL)

In the exercise of its administrative judgment, the Planning Commission shall determine if the proposed plan is in harmony with the general purpose and intent of the zoning ordinance and adopted plans. The Subdivision Regulations require a cul-de-sac at the end of dead-end public streets, but do not allow alternative turnarounds for short, stub-out streets that are meant to be extended in the future.

#### 1) ZONING ORDINANCE

PR (Planned Residential) up to 3 du/ac:

A. The PR zone allows detached houses as a permitted use. The administrative procedures for the PR zone require the Planning Commission to approve the development plan before permits can be issued (Article 5, Section 5.13.15).

B. The gross density of The Haven at Hardin Valley Subdivision with the 13 additional lots is 2.8 du/ac.

#### 2) KNOX COUNTY COMPREHENSIVE PLAN - FUTURE LAND USE MAP

A. The property is classified as the SR (Suburban Residential) place type, which is appropriate for primarily single-family residential development with a range of lot sizes that are generally less than one acre. – The proposed single-family development with varying lot sizes is consistent with the RL place type.

B. Dead-end streets should be limited, and street connections to adjacent residential areas should be provided in new subdivisions. – Two short cul-de-sac (dead-end) streets are in this phase, but the majority of house lots are located on connected streets. One road stub-out is provided in this phase, and the subdivision will have a total of three stub-outs.

C. The proposal conforms to the form attributes of the SR place type, which recommends building heights of 1-2 stories and front setbacks of 20-30 ft. – The maximum height is 35 ft for houses in the PR zone, and the front setback is 20 ft.

## 3) KNOX COMPREHENSIVE PLAN - IMPLEMENTATION POLICIES

A. A common area is provided along the majority of the western boundary, between the adjacent agricultural property and the house lots. This is consistent with Policy 2, which is to ensure that development is sensitive to existing community character.

B. The off-site infrastructure improvements to be completed in partnership with Knox County are consistent with Policy 9, which is to coordinate infrastructure improvements with development.

C. The road stub-outs to adjacent properties and limited internal dead-end streets are consistent with Policies 11 and 14, to promote connectivity with new development and provide network efficiency to reduce congestion and improve redundancy in the transportation network.

## 4) KNOXVILLE – FARRAGUT – KNOX COUNTY GROWTH POLICY PLAN

A. The property is within the Planned Growth Area. The purposes of the Planned Growth Area designation are to encourage a reasonably compact pattern of development, promote expansion of the Knox County economy, offer a wide range of housing choices, and coordinate the actions of the public and private sectors, particularly with regard to provision of adequate roads, utilities, schools, drainage and other public facilities and services. – The proposed development is consistent with the growth plan.

ESTIMATED TRAFFIC IMPACT: A traffic impact study was prepared by the applicant. The findings of that study were used in formulating the recommendations of this staff report.

ESTIMATED STUDENT YIELD: 49 (public school children, grades K-12)

Schools affected by this proposal: Hardin Valley Elementary, Hardin Valley Middle, and Hardin Valley Academy.

• Potential new school population is estimated using locally-derived data on public school student yield generated by new housing.

• Students are assigned to schools based on current attendance zones as determined by Knox County Schools. Students may request transfers to different zones, and zone boundaries are subject to change.

• Estimates presume full build-out of the proposed development. Build-out is subject to market forces, and timing varies widely from proposal to proposal.

• Student yields from new development do not reflect a net addition of children in schools. Additions occur incrementally over the build-out period. New students may replace current population that ages through the system or moves from the attendance zone.

Knoxville-Knox County Planning Commission's approval or denial of this concept plan request is final, unless the action is appealed to Knox County Chancery Court. The date of the Knox County Chancery Court hearing will depend on when the appeal application is filed.

The Planning Commission's approval or denial of this development plan request is final, unless the action is appealed either to the Board of Zoning Appeals or to a court of competent jurisdiction within thirty (30) days of the decision being appealed (Knox County, Tennessee Code of Ordinances, Appendix A, Zoning, 6.50.08).





#### Staff - Slope Analysis Case: 6-SB-25-C

| CATEGORY                      | ACRES | RECOMMENDED<br>DISTURBANCE BUDGET<br>(Percent)              | DISTURBANCE AREA<br>(Acres) |
|-------------------------------|-------|---|-----------------------------|
| Total Area of Site            | 50.65 |   |                             |
| Non-Hillside                  | 18.83 | N/A   |                             |
| 0-15% Slope                   | 10.58 | 100%  | 10.58                       |
| 15-25% Slope                  | 13.26 | 50%   | 6.63                        |
| 25-40% Slope                  | 7.51  | 20%   | 1.50                        |
| Greater than 40% Slope        | 0.47  | 10%   | 0.05                        |
| Ridgetops                     |       |   |                             |
| Hillside Protection (HP) Area | 31.82 | Recommended<br>disturbance budget within<br>HP Area (acres) | 18.76                       |
|                               |       | Percent of HP Area  | 59.0%                       |









EXHIBIT B



Transportation Impact Study Couch Mill Road Subdivision Knox County, Tennessee



**Revised February 2022** 

Prepared for: Safe Harbor Development 308 Letterman Road Knoxville, TN 37919

6-SB-25-C / 6-C-25-DP

Original case number 1-SA-22-C / 1-D-22-UR TIS Version 3 2/18/2022



11812 Black Road / Knoxville, TN 37932 • (865) 556-0042 • ajaxengineering@gmail.com

## **CONCLUSIONS & RECOMMENDATIONS**

The following is an overview of recommendations to minimize the impacts of the proposed Couch Mill Road Subdivision development on the adjacent transportation system while attempting to achieve an acceptable traffic flow and safety level.



Sam Lee Road at Steele Road and Swafford Road: The results of the projected level of service calculations for the Sam Lee Road at Steele Road and Swafford Road intersection in the year 2028 were determined to be adequate with respect to vehicle delays. The exception is the Sam Lee Road westbound approach, which is projected to operate at LOS D and F in the 2028 AM and PM peak hours, respectively.

This intersection currently operates with Steele Road and Swafford Road operating freely with the east and west approaches of Sam Lee Road operating under stop control.

Due to the considerable projected 2028 vehicle delays on the westbound approach of Sam Lee Road at the intersection, an additional analysis was conducted with the intersection operating under All-Way Stop Control (AWSC). This type of control would force southbound motorists on Swafford Road and northbound motorists on Steele Road to stop instead of operating freely as currently operating. Modifying this intersection would allow for the Sam Lee Road westbound approach to operate with fewer vehicle delays. However, this benefit for the westbound approach would come at the expense of the higher traveled northbound approach of Steele Road, particularly during the PM peak hour. The analysis showed that the intersection operating under AWSC in the projected 2028 conditions resulted in the following:

#### TABLE 8 2028 INTERSECTION CAPACITY ANALYSIS RESULTS -PROJECTED HORIZON YEAR (WITH THE PROJECT) - ALL-WAY STOP CONTROL (AWSC)

|                             | TRAFFIC      | APPROACH/                  |     | AM PEAK   |       |     | PM PEAK   |       |
|-----------------------------|--------------|----------------------------|-----|-----------|-------|-----|-----------|-------|
| INTERSECTION                | CONTROL      | MOVEMENT                   | LOS | DELAY     | V/C   | LOS | DELAY     | V/C   |
|                             |              |                            |     | (seconds) |       |     | (seconds) |       |
| Sam Lee Road at Steele Road | Stob<br>Stob | Northbound Left/Thru/Right | В   | 12.3      | 0.440 | D   | 32.9      | 0.870 |
| and Swafford Road           |              | Eastbound Left/Thru/Right  | В   | 11.7      | 0.440 | В   | 12.6      | 0.397 |
|                             |              | Westbound Left/Thru/Right  | В   | 10.5      | 0.236 | В   | 12.2      | 0.299 |
|                             |              | Southbound Left/Thru/Right | Α   | 9.9       | 0.177 | В   | 10.1      | 0.167 |

Note: All analyses were calculated in Synchro 8 software and reported using HCM 2010 intersection methodology

<sup>a</sup> Level of Service

<sup>b</sup> Average Delay (sec/vehicle)

<sup>c</sup> Volume-to-Capacity Ratio



As a result of this outcome, the intersection was investigated whether installing AWSC is warranted and a potential solution to combat the projected high vehicle delays on the Sam Lee Road westbound approach. The evaluation was based on the criteria outlined in the <u>Manual on Uniform Traffic Control Devices 2009</u> (MUTCD) produced by the Federal Highway Administration. The MUTCD defines the standards for all traffic control devices on public roads, including pavement markings, signage, and traffic signals. The MUTCD also includes criteria standards for the installation of traffic signals and AWSC. The criteria from the MUTCD (Section 2B.07) for implementing AWSC is as follows (MUTCD text in blue):

Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal.

The decision to install multi-way stop control should be based on an engineering study. The following criteria should be considered in the engineering study for a multi-way Stop Sign installation:

A. Where traffic control signals are justified, multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

Response: A traffic signal is not planned at this intersection and is not warranted based on the low traffic volumes.

B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.

Response: Knox County Engineering stated that there were three vehicle crashes from 2016-2020. Thus, based on this data, the intersection does not meet that standard.

- C. Minimum volumes:
  - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours



of an average day; and

- 2. The combined vehicular, pedestrian, and bicycle volumes entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; and
- 3. If the 85<sup>th</sup> percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 3.

Response: The projected 2028 traffic volumes at the intersection do not fully meet the above criteria. This result is confirmed in a multi-stop warrant evaluation spreadsheet shown in Appendix K. Appendix K also includes a spreadsheet developed and used to calculate the hourly projected 2028 volumes at the intersection for an 8-hour period that includes the proposed subdivision-generated traffic. The 85<sup>th</sup> percentile speeds are assumed to be less than 40 mph since all the approaches have a posted speed limit of 30-mph.

4. Where no single criterion is satisfied, but where Criteria B, C.1 and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Response: These criteria are not met based on the projected volumes and the crash history.

Other criteria that may be considered in an engineering study include:

A. The need to control left-turn conflicts;

Response: Left-turn conflicts do not appear to be a significant factor at this intersection.

B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;

Response: This intersection was not observed to have any pedestrian volumes.

C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required



to stop.

Response: Intersection sight distance at this intersection appears to be sufficient based on visual inspection.

D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

Response: No significant existing operational issues were observed at the intersection.

Therefore, the evaluation for the projected 2028 conditions determined that the intersection will not fully meet warrants for AWSC and would not be appropriate for installation. Installing AWSC without meeting the specified MUTCD warrants can result in several harmful impacts. Studies indicate that installing AWSC for intersections that do not meet MUTCD warrants can experience poor stop compliance from motorists and may contribute to motorists increasing vehicle speeds before and after the intersection to make up for "lost-time".

A vehicle queue analysis was conducted to further investigate the intersection as-is in the 2028 projected conditions without modifications. An additional software program was used to determine the projected vehicle queues at the intersection. The previously mentioned Synchro Traffic Software includes SimTraffic. The Synchro portion of the software performs the macroscopic calculations for intersections, and SimTraffic performs micro-simulation and animation of vehicular traffic.

The 95<sup>th</sup> percentile vehicle queue length is the recognized measurement in the traffic engineering profession as the design standard used when considering vehicle queue lengths. A 95<sup>th</sup> percentile vehicle queue length means 95% certainty that the vehicle queue will not extend beyond that point. The vehicle queue lengths were calculated from the SimTraffic software.

The calculated vehicle queue results averaged the outcome obtained during ten traffic simulations in the SimTraffic software. The 95<sup>th</sup> percentile vehicle queue lengths at the intersection operating under existing two-way stop conditions in 2028 are shown in Table 9 and Appendix L.



## TABLE 9 VEHICLE QUEUE SUMMARY -2028 AM AND PM PEAK HOUR TRAFFIC VOLUMES

| INTERSECTION                  | APPROACH/                  | 95 <sup>th</sup> PERCENTILE<br>QUEUE LENGTH |              |  |
|-------------------------------|----------------------------|---|--------------|--|
|                               | MOVEMENT                   | AM PEAK HOUR                                | PM PEAK HOUR |  |
| Sam Lee Road at               | Northbound Left/Thru/Right | 24'   | 54'          |  |
| Steele Road and Swafford Road | Eastbound Left/Thru/Right  | 95'   | 86'          |  |
|                               | Westbound Left/Thru/Right  | 61'   | 60'          |  |
|                               | Southbound Left/Thru/Right | -   | 3'           |  |

95th percentile queues were calculated in SimTraffic 8 software

Ultimately, after investigation, this intersection is not recommended to be converted to AWSC based on the current 2028 projections presented in this study. While the calculations show a v/c ratio greater than 1 with a LOS F in the projected 2028 PM peak hour, the actual vehicle queues on the Sam Lee Road westbound approach are expected to be reasonable, with at most, 2 - 3 vehicles in a queue at any one time.

Due to the ongoing and rapid suburbanization of the Hardin Valley area combined with other large and undeveloped property tracts remaining near this intersection, Knox County should consider the possibility of converting this intersection to a roundabout in the future. The existing land around this intersection is relatively flat and is undeveloped on the north side. To the south, property acquisition from two existing single-family house owners would be required but has areas not currently occupied by structures or driveways.

**Couch Mill Road at Sam Lee Road:** No specific recommendations are offered for this intersection based on the study analyses and results.





<u>Couch Mill Road/Sam Lee Road</u>: The proposed plan layout shows two new entrances constructed on Couch Mill Road, with most of the generated traffic expected to occur on Couch Mill Road and Sam Lee Road to the east of the development.

3a) Knox County Engineering has published an informal minimum standard relating Average Daily Traffic (ADT) versus road widths. A graph of this minimum standard is shown in Appendix J, and this standard is more related to traffic safety and operations more so than actual road capacity.

The pavement road width measurements conducted for this study showed an average width of approximately 19 feet from the Proposed West Entrance location on Couch Mill Road to the intersection of Sam Lee Road at Steele Road and Swafford Road. Based on a measured road width of 19 feet and the Knox County standard, the maximum allowable ADT would be 3,000 vehicles per day. The existing ADT in 2019 was 910 vehicles. The projected amount of additional daily traffic that the Couch Mill Road Subdivision will contribute between the development site and the intersection of Sam Lee Road at Steele Road and Swafford Road is expected to be 3,484 vehicles per day (3,667 x 95% of residents are expected to travel to and from the east of the subdivision = 3,484 vehicles/day). Adding the existing ADT volumes with the projected trips results in nearly 4,500 vehicles per day. An ADT of 4,500 would indicate that the road width between the proposed subdivision and the intersection of Sam Lee Road at Steele Road and Swafford Road would need to be widened to 21 feet along the entire route. Providing a road width of 21 feet would be appropriate for up to 5,000 vehicles per day based on Knox County's ADT/road width minimum standard.

Following Knox County's standard, Couch Mill Road and Sam Lee Road are recommended to be widened 1 to 3 feet up to a 21-foot width for approximately 3,050 feet between the Couch Mill Road Subdivision Proposed West Entrance and the intersection of Sam Lee at Steele Road and Swafford Road.

3b) Based on the analysis methods presented in the Highway Capacity Manual, the Florida Department of Transportation (FDOT) developed LOSPLAN, a group of software evaluation tools that provides computational methods for analyzing freeways, highways, and arterials road sections. The software provides conceptual level planning results for determining roadway facilities' capacity and LOS. For this report, this software is regarded to be appropriate for use in this level of study.



Various factors are used to calculate the actual "real world" capacity of a roadway. In almost all cases, the actual roadway capacity is reduced as more heavy vehicles comprise the traffic flow, road grades increase, and other aspects are considered. For 2-lane highway segments in the software, FDOT has set the maximum amount of vehicle flow in developed areas at 1,650 vehicles per hour per lane (vphpl). In this study, values were inputted in the FDOT software to ensure a conservative analysis of Couch Mill Road and Sam Lee Road. The analysis included Couch Mill Road and Sam Lee Road's segment between the proposed development and the intersection of Sam Lee Road at Steele Road and Swafford Road for a total length of 0.6 miles. The major inputs in the software were the following:

- assumed a free-flow speed of 40 mph
- an AADT (Average Annual Daily Traffic) of 4,557 vehicles in 2028
- 2% heavy truck traffic
- Left turn/blockage impact is present due to the lack of left-turn storage bays
- Rolling terrain
- 0% no passing zones present

The AADT of 4,558 vehicles in 2028 was calculated from the ADT volume of 910 vehicles on Couch Mill Road near the project site reported by the Knoxville TPO in 2019, adjusting it upwards with 2% growth up to 2028 and adding the daily volumes generated by the proposed Couch Mill Road Subdivision to and from the east. The additional daily traffic volumes on Couch Mill Road generated by the proposed development were calculated by multiplying the 3,667 total daily generated trips by 95%, which is the assumed distribution of travel to and from the east on Couch Mill Road.

Based on these factors and other inputs, the Level of Service for this segment of Couch Mill Road and Sam Lee Road is calculated to be LOS B in 2028. This result was based on the projected conditions when the proposed Couch Mill Road Subdivision is fully built-out and occupied in 2028. The results from the software are shown in Appendix J.

Thus, it can be stated that the additional trips generated by the proposed project would not unreasonably impair traffic flow along Couch Mill Road through the adjacent Planned Growth Area based on a planning-level capacity analysis.



West Entrance.

- **Proposed Entrances on Couch Mill Road:** The proposed plan layout shows two entrances on Couch Mill Road. The intersections created by the entrances at Road "A" and Road "G" are calculated to operate with excellent LOS and short vehicle delays. A single exiting lane is adequate for these entrances. As discussed previously, separate entering left and right-turn lanes are not warranted at either the Proposed East or
  - 4a) It is recommended that Stop Signs (R1-1) be installed, and 24" white stop bars be applied to the Proposed Entrance approaches at Couch Mill Road. The stop bars should be applied a minimum of 4 feet away from the edge of Couch Mill Road and placed at the desired stopping point that maximizes the sight distance.
  - 4b) Intersection sight distance at the Proposed Entrance approaches must not be impacted by future landscaping, signage, or existing vegetation. Based on a posted speed limit of 30-mph on Couch Mill Road, the required ISD is 300 feet looking in each direction at both entrances, and the SSD is calculated to be 195 feet looking west and 200 feet looking east at the Proposed East Entrance (Road "A"). At the Proposed West Entrance (Road "G"), the calculated SSD is 210 feet looking west and 190 feet looking east. A visual inspection determined that these sight distances are available with caveats. The site designer must ensure that the required sight distances are available and provided in the design plans.

56









AIAX

Conclusions & Recommendations



- 5a) It is recommended that 25-mph Speed Limit Signs (R2-1) be posted near the beginning of Road "A" (Proposed East Entrance) and Road "G" (Proposed West Entrance) within the development. End of roadway signage (OM4-1) should be installed at the southern end of Road "B" and Road "F".
- 5b) Stop Signs (R1-1) with 24" white stop bars and other traffic signage should be installed at the locations, as shown below:





It is recommended that the Road "H" approaches at Road "B" and the Road "F" approaches at Road "E" operate under stop control at the 4-way intersection. A fourway stop for all approaches at these intersections would not be warranted unless sight distance is an issue.

- 5c) Sight distance at the new internal intersections in the development must not be impacted by new signage, future landscaping, parked vehicles, or other structures. With a proposed internal speed limit of 25-mph, the internal intersection sight distance requirement is 250 feet, and the stopping sight distance required is 155 feet for a level road grade. The site designer should ensure that internal sight distance lengths are met and account for other designed internal road grades.
- 5d) All drainage grates and covers for the residential development need to be pedestrian and bicycle safe.
- 5e) Sidewalks should have appropriate ADA-compliant curbed ramps at intersection corners, and the sidewalks are recommended to be 5 feet minimum in width to meet Knox County regulations. White crosswalks should be marked on the road pavement where pedestrians are expected to cross.
- 5f) The United States Postal Service (USPS) has implemented updated delivery guidelines in new residential subdivisions. If directed by the local post office, the site designer should include a parking area within the development for a centralized mail delivery center.



5g) Traffic calming measures might be needed for this development. Several roads within the development have long and straight road segments. The development's possible need for traffic calming measures should be coordinated with Knox County Engineering and Public Works during the detailed design phase.



- 5h) Lots in the subdivision should not directly access Couch Mill Road.
- 5i) Knox County has recently completed a greenway study and showed Couch Mill Road as a route for a new greenway connecting Hardin Valley to Powell. The developer should discuss with Knox County if this potential greenway path is desirable or feasible to implement on the edge of the development property along Couch Mill Road.
- 5j) All internal and external road and intersection elements should be designed to AASHTO, TDOT, and Knox County specifications and guidelines to ensure proper operations.



## EXHIBIT C



## EXHIBIT C

## CONNECTIVITY PROJECTS

| PROJECT | DESCRIPTION   | COST    |
|---------|---|---------|
| C-1     | New roadway connection between Hatmaker Road and Snyder Road  | \$5 M   |
| C-2     | New roadway connection from Hatmaker Lane to Everett Road   | \$6.5 M |
| C-3     | Improve Marietta Church Road to include additional shoulder width for all users   | \$6 M   |
| C-4     | Provide additional N-S connection from Couch Mill Road to proposed E-W connector and Hardin Valley<br>Road                          | \$3 M   |
| C-5     | Provide new E-W connection from Steele Road to Mission Hill Lane to provide parallel route for Hardin Valley                        | \$13 M  |
| C-8     | Connect Dutchtown Road and Lovell Road, east of Pellissippi Parkway; remove access to Pellissippi Parkway from residential property | \$4.5 M |
| C-9     | Explore options for N-S connection via Cherahala Boulevard extension  | \$2.5 M |

## NON-MOTORIZED PROJECTS

| PROJECT | DESCRIPTION  | COST    |
|---------|--|---------|
| NM-1    | Improve the shoulders on Yarnell Road for all users  | \$11 M  |
| NM-3    | Complete sidewalk gap on Outlet Drive  | \$90 K  |
| NM-4    | Provide new bike facilities (either bike lane or wider shoulders) along Bob Gray Road  | \$3.5 M |
| NM-5    | Widen Thompson Road with shoulders and potential bike facility   | \$4.5 M |
| NM-6    | Option A - Near-term safety improvements for existing Greenway crosswalk to potentially include refuge islands, Rectangular Rapid Flashing Beacon (RRFB) | \$60 K  |
|         | Option B - Long-term solution being a grade-separated crossing at Hardin Valley Road   | \$1.2 M |



# Alternative Design Standards

The minimum design and performance standards shall apply to all subdivisions unless an alternative design standard is permitted within Article 3 Section 3.01.D, Application of Alternative Design Standards, or Article 4.01.C, Street Standards (within Hillside and Ridgetop Areas).

There are some alternative design standards that require Planning Commission approval, and some that can be approved by the Engineering Departments of the City or County. However, the City or County Engineering Departments, as applicable, will provide review comments on any alternative design proposed. These comments will be provided during the review process.

#### Alternative Design Standards Requiring Planning Commission Approval

Section 3.03.B.2 - Street frontage in the PR (Planned Residential) zone, Knox County Section 3.03.E.1.e – Maximum grade of private right-of-way Section 3.03.E.3.a – Pavement width reduction, private rights-of-way serving 6 or more lots Section 3.04.H.2 – Maximum grade, public streets Section 3.04.I.1.b.1 – Horizontal curves, local streets in Knox County

## Alternative Design Standards Approved by the Engineering Departments of

the City of Knoxville or Knox County

Section 3.03.E.3.a – Right-of-way width reduction, private rights-of-way serving 6 or more lots Section 3.04.A.3.c – Right-of-way dedication, new subdivisions Section 3.04.F.1 – Right-of-way reduction, local streets Section 3.04.G.1 – Pavement width reduction, local streets Section 3.04.H.3 – Intersection grade, all streets Section 3.04.J.2 – Corner radius reduction in agricultural, residential, and office zones Section 3.04.J.3 – Corner radius reduction in commercial and industrial zones Section 3.11.A.2 – Standard utility and drainage easement

By signing this form, I certify that the criteria for a variance have been met for each request, and that any and all requests needed to meet the Subdivision Regulations are requested above or are attached. I understand and agree that no additional variances can be acted upon by the legislative body upon appeal and none will be requested.

DAVID Harbin 6.3.25

Date

Knoxville-Knox County Planning | KnoxPlanning.org 400 Main Street, Suite 403 | Knoxville, TN 37902 | 865.215.2500

Signature

For each alternative design standard requested, identify how the proposed alternative design either meets the intent of the standard in the Subdivision Regulations or meets an alternative, nationally recognized engineering standard such as The American Association of State Highway and Transportation Officials (AASHTO) or Public Right-of-Way Accessibility Guidelines (PROWAG).

## 1. ALTERNATIVE DESIGN STANDARD REQUESTED:

ALLOW ROADWAY grades at intersections between 1% and 3% A) mont leconte Dr 2.00 % @ its' intersection with Signal View Dr. Approval required by: Planning Commission [ Engineering ]

Engineering supports the alternative design standard requested (to be completed during review process): YES XNO Engineering Comments:

## 2. ALTERNATIVE DESIGN STANDARD REQUESTED:

B) ROAD "H" Z.00 % @ its' intersection with mount le conte DR.

Approval required by: Planning Commission 

Engineering

Engineering supports the alternative design standard requested (to be completed during review process): YES XNO Engineering Comments: S

## 3. ALTERNATIVE DESIGN STANDARD REQUESTED:

C) ROAD "L" 2.00% @ it's intersection with mount lecente DE.

Approval required by: Planning Commission 

Engineering

Engineering supports the alternative design standard requested (to be completed during review process): YES NO Engineering Comments:

## 4. ALTERNATIVE DESIGN STANDARD REQUESTED:

d.) ROAD IN N " 2.00% @ its' intersection with ROAD "L" Approval required by: Planning Commission □ Engineering I

Engineering supports the alternative design standard requested (to be completed during review process): YES NO Engineering Comments:

## 5. ALTERNATIVE DESIGN STANDARD REQUESTED:

e) ZOAD "N" Z. 00% @ its' intersection with signal view De. Approval required by: Planning Commission D Engineering P

Engineering supports the alternative design standard requested (to be completed during review process): YES NO Engineering Comments:



File No:

Variances

The Planning Commission may reduce or otherwise vary the requirements of the Subdivision Regulations when it finds the hardship criteria are met. In granting such variances, the Planning Commission may attach and require whatever conditions it feels are necessary to secure the basic objectives of the varied regulations. Any variance granted by the Planning Commission shall be noted in its official minutes along with the justification for granting the variance (Subdivision Regulations, Section 1.05).

## HARDSHIP CONDITIONS TO BE MET:

- 1 Conditions Required: Where the Planning Commission finds that extraordinary hardships or particular difficulties may result from the strict compliance with these regulations, they may, after written application, grant variations to the regulations, subject to specified conditions, so that substantial justice may be done and the public interest secured, provided that such variations shall not have the effect of nullifying the intent and purpose of these regulations or the comprehensive plan.
- 2 Evidence of Hardship Required: The Planning Commission shall not grant variations to these regulations if the purpose of the variation is solely for financial gain. The Planning Commission shall not grant variations to the Subdivision Regulations unless they make findings based upon the evidence presented to them in each specific case that the following hardships are met:
  - a. Because of the particular surroundings, shape, or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of the regulations were adhered to.
  - b. The conditions upon which the request for a variation is based is unique to the property for which the variation is sought and is not applicable, generally, to other property, and has not been created by any person having an interest in the property.
  - c. The granting of the variation will not be detrimental to the public safety, health, or welfare, or injurious to other property or improvements in the neighborhood in which the property is located.

By signing this form, I certify that the criteria for a variance have been met for each request, and that any and all requests needed to meet the Subdivision Regulations are requested above or are attached. I understand and agree that no additional variances can be acted upon by the legislative body upon appeal and none will be requested.

**David Harbin** 

6/04/25

Signature

Printed Name

Date

It is the applicant's responsibility to identify the hardship that would result, as distinguished from a mere inconvenience, if the strict letter of the regulations was adhered to. Each of the variance criteria must be addressed in the comments below with specific facts regarding the unique details of the property and/or project, as applicable.

## **1. VARIANCE REQUESTED:**

Allowing a T-turnaround at the end of signal view Road

## Specify the hardship that would result for each of the variance criteria:

A. Pertaining to the particular surroundings, shape, or topographical conditions of the subject property:

The utilization of a T-turnaround on this street will allow for future access to adjacent property

B. Pertaining to conditions unique to the property that are not applicable to other property and has not been created by any person having an interest in the property.

The property to the west must access Signal View Road if developed in the future

C. Pertaining to the granting of a variance will not be detrimental to public safety, health, or welfare, or injurious to other property or improvements in the neighborhood in which the property is located.

The granting of the variance will not be detrimental to the public safety, health or welfare since the turn around meets AASHTO standards

## To be completed by the City or County Department of Engineering, as applicable:

Engineering supports the variance requested (to be completed during review process): YES X NO  $\Box$ Engineering Comments:

| Planning    |                  |                     | De                            | velopment<br>Request    |
|-------------|------------------|---------------------|-------------------------------|-------------------------|
| Subdivision | 🖪 Concept Plan   | 🗌 Final Plat        |                               | nequest                 |
| Zoning      | Rezoning         | 🗌 Plan Amendment    |                               |                         |
| Development | Development Plan | Planned Development | 🛛 Use on Review / Special Use | Hillside Protection COA |

| SAFE HARBOR DEVELOPMENT<br>Applicant Name |                             | Affiliation      |                |                   | and the second |
|---|-----------------------------|------------------|----------------|-------------------|--|
| March 24, 2025                            | June 12, 2025               |                  |                |                   | File Number(s)   |
| Date Filed                                | Meeting Date (if applicable | 2)               |                | 6-SB-<br>6-C-2    |  |
| Correspondence                            | All corre                   | spondence will   | be directed to | the appro         | ved contact listed below.  |
| Applicant Property Owner                  | Option Holder 🛛 🗹 Projec    | t Surveyor 🛛 🛛   | Engineer       | 🗌 Archit          | ect/Landscape Architect  |
| DAVIO HARBIN<br>Name                      | BATSON                      | Himes<br>Company | Morey          | eu +              | Poe  |
| 4334 PAPEEMILL RP<br>Address              | Knoxy                       | ー)<br>City       |                | <b>N</b><br>State | 37909<br>ZIP   |
| 865-588-6472<br>Phone                     | Email                       | ·                | _              |                   |  |
| Current Property Info                     |                             |                  |                |                   |  |
|   | 308 LETTERMAL               | RP               |                |                   |  |
|   | Knoxville, M                |                  | 8              | 65-58             | 8-0321   |
| Property Owner Name (if different)        | Property Owner              |                  |                | Pro               | perty Owner Phone  |
| Couch Mill<br>Property Address            | TA                          | K MAP 1<br>Parce |                | tof f             | ARCEL 8.12   |
| WKUP                                      | WKUD                        | (                |                |                   | no   |
| Sewer Provider                            | Water P                     | rovider          |                |                   | Septic (Y/N)   |
| Development Request                       |                             |                  |                |                   |  |
| 🗌 Residential 🔲 Non-Residential           |                             |                  |                | RELATE            | D CITY PERMIT NUMBER   |
|   |                             |                  |                |                   |  |
| Proposed Use                              |                             |                  |                | 1                 |  |

٦

CTAFE DEMEN

|   |                                   |                                    | RELATED REZONING FILE NUMBER               |
|---|-----------------------------------|------------------------------------|--|
| HAVEN@ Hardin V   | alley                             |                                    |  |
| 0   |                                   |                                    |  |
| hase 3 Combin   | e Parcels 🛛 🔼 Divide Parcel       | ]]8                                |  |
| Unit / Phase Number   |                                   | Proposed Number of Lots (to        | tal)                                       |
| Other (specify)   |                                   |                                    |  |
| Specify if requesting: 🔲 Variance   | Alternative design standar        | d                                  |  |
| Specify if a traffic impact study is requ   | ired: 🗌 Yes (required to be       | submitted with application)        | □ No                                       |
| Zoning Request  |                                   |                                    |  |
|   | A                                 |                                    | PENDING PLAT FILE NUMBER                   |
| Zoning Change   |                                   | the famous famous and a            |  |
| Proposed Zoning   |                                   | hits/acre, for PR zone only)       |  |
| Sector Plan 🗌 One Year Plan [   | Comprehensive Plan                |                                    |  |
| Plan Amendment Change Pressor   | ed Plan Designation(s)            |                                    |  |
| Propos  | ed Flatt Designation(s)           |                                    |  |
| <ul> <li>If, in Knox county, submit plan<br/>amendment request with applicat</li> </ul> | ion Previous Rezoning Re          | equests                            |  |
|   |                                   |                                    |  |
| Other (specify)   |                                   |                                    |  |
|   |                                   |                                    |  |
|   | VI declare under penalty of       | perjury the foregoing is true and  | correct: 1) He/she/it is the owner of the  |
| Authorization   | property AND <b>2)</b> The applic | ation and all associated materials | are being submitted with his/her/its consi |
| DARIO   |                                   |                                    | 2 011 26                                   |
| Caudophil   |                                   | rebin                              | 3.24.25                                    |
| Applicant Signature   | Please Print                      |                                    | Date                                       |
| 845-598-6472  |                                   |                                    |  |
| Phone Number  | Email                             |                                    |  |
| 1/10  | CHRIS O                           | oten                               | 4/9/2025                                   |
| Property Owner Signature  | Please Print                      | /                                  | Date Paid                                  |
| Staff Use Only  |                                   | ADDITIONAL REQUIREMENTS            | Property Owners / Option Holder            |
|   | EE 2                              | FEE 3                              | TOTAL                                      |
| 0102 875.00   |                                   |                                    | 875.00                                     |
| 0102 075.00   |                                   |                                    | 015.00                                     |

# **Public Notice and Community Engagement**

Planning strives to provide community members with information about upcoming cases in a variety of ways. In addition to posting public notice signs, our agency encourages applicants to provide information and offer opportunities for dialogue related to their upcoming case(s). We require applicants to acknowledge their role in this process.

# **Sign Posting and Removal**

The Administrative Rules and Procedures of the Knoxville-Knox County Planning Commission require a sign to be posted on the property for each application subject to consideration by the Planning Commission.

**Planning staff will post the required sign.** If a replacement sign(s) is needed, the applicant is responsible for picking up the new sign(s) from Planning and will be charged \$10 for each replacement.

## Location and Visibility

The sign must be posted on the nearest adjacent/frontage street and in a location clearly visible to vehicles traveling in either direction. If the property has more than one street frontage, the sign should be placed along the street that carries more traffic. Planning staff may recommend a preferred location for the sign to be posted at the time of application.

## Timing

The sign(s) must be posted not less than 12 days prior to the scheduled Planning Commission public hearing and must remain in place until the day after the meeting. In the case of a postponement, the sign can either remain in place or be removed and reposted not less than 12 days prior to the next Planning Commission meeting. The applicant is responsible for removing the sign after the application has been acted upon by the Planning Commission.

## Acknowledgement

**By signing below**, you acknowledge that public notice signs must be posted and visible on the property consistent with the guidelines above and between the dates listed below.

#### 05/30/2025

06/13/2025

Date to be Posted

Applicant Signature

Date to be Removed

DAVID HARBI

Applicant Name

Have you engaged the surrounding property owners to discuss your request?

🗆 Yes 🗹 No

No, but I plan to prior to the Planning Commission meeting

Date