

EXECUTIVE SUMMARY

The Kentucky Transportation Cabinet (KYTC) initiated the Science Hill Railroad Crossing Study to evaluate alternatives to improve safety and reliability in Science Hill. Dual Norfolk Southern railroad tracks form a barrier between the eastern and western portions of town. Seven at-grade crossings are located within the study area, as shown in **Figure ES-1**. The northern four crossings carry the majority of local traffic whereas the southern three each serve a few private residences. The nearest grade-separated crossing is the US 27 overpass, near the southern limits of the study area.

The study identified the need for a project to improve cross-railroad mobility, reliability, and safety for motorists—especially emergency responders—in Science Hill. The need for an improvement project is based on high volumes of daily through trains, trains stopping on tracks, lengthy detours when at-grade crossings are blocked, and inherent safety risks for at-grade crossings. Efficient response times for fire, police, and ambulances are critical for community safety. These are compromised by the current disruptions in accessibility caused by existing train traffic.

Planners analyzed existing roadway conditions, present and future traffic volumes, crash trends, etc. to understand the context of the study area.

- Analyses showed that generally, the existing highway network provides adequate capacity for current and future traffic volumes; all studied segments and intersections operate at Level of Service (LOS) D or better.
- Five years of crash data showed 174 crashes reported throughout the study area, including two fatalities and 35 injury collisions. Half of the reported crashes were along US 27; all three high crash spots identified occur at US 27 intersections.
- KY 635 near Hall Street (CS-4017) is locally known as “Mill Hill”—an 11% grade leading to curves in front of the mill—and was identified by local law enforcement personnel and other stakeholders as a local safety concern.

Science Hill has a population of 693 and is located 8 miles north of Somerset in Pulaski County. The area is a typical small town in southern Kentucky, a mix of residential, business and agricultural land uses, with an abundance of farmland in the southern portion. Small streams, wetlands, and forested parcels providing potential bat habitat comprise the natural environment. There is a high to very high potential to encounter karst features though only bowl depressions were noted during field visits. The community is home to potentially historic resources along Stanford and Main streets, several churches, a park, and other civic services concentrated in the northern portion of the study area.

The project team (i.e., KYTC Central Office Division of Planning, District 8 staff, Lake Cumberland Area Development District, and the consultant) examined a wide range of initial improvement concepts to address the purpose and need. Rolling terrain combined with the design requirement of a 23-foot minimum vertical clearance over the rail tracks drove engineering considerations. Several design concepts require steep grades and/or reconstruction of large sections of KY 1247 to maintain connections. Nine initial alternatives fit into one of three geographic areas within the study area: North, Middle, or South. These were shared with local officials and stakeholders to obtain community input regarding strengths and weaknesses associated with each alternative. While opinions differed concerning which alternative was most desirable, attendees agreed that a project was needed and a grade-separated crossing with a connection to KY 1247 would serve local needs just as well as a larger connection to US 27.

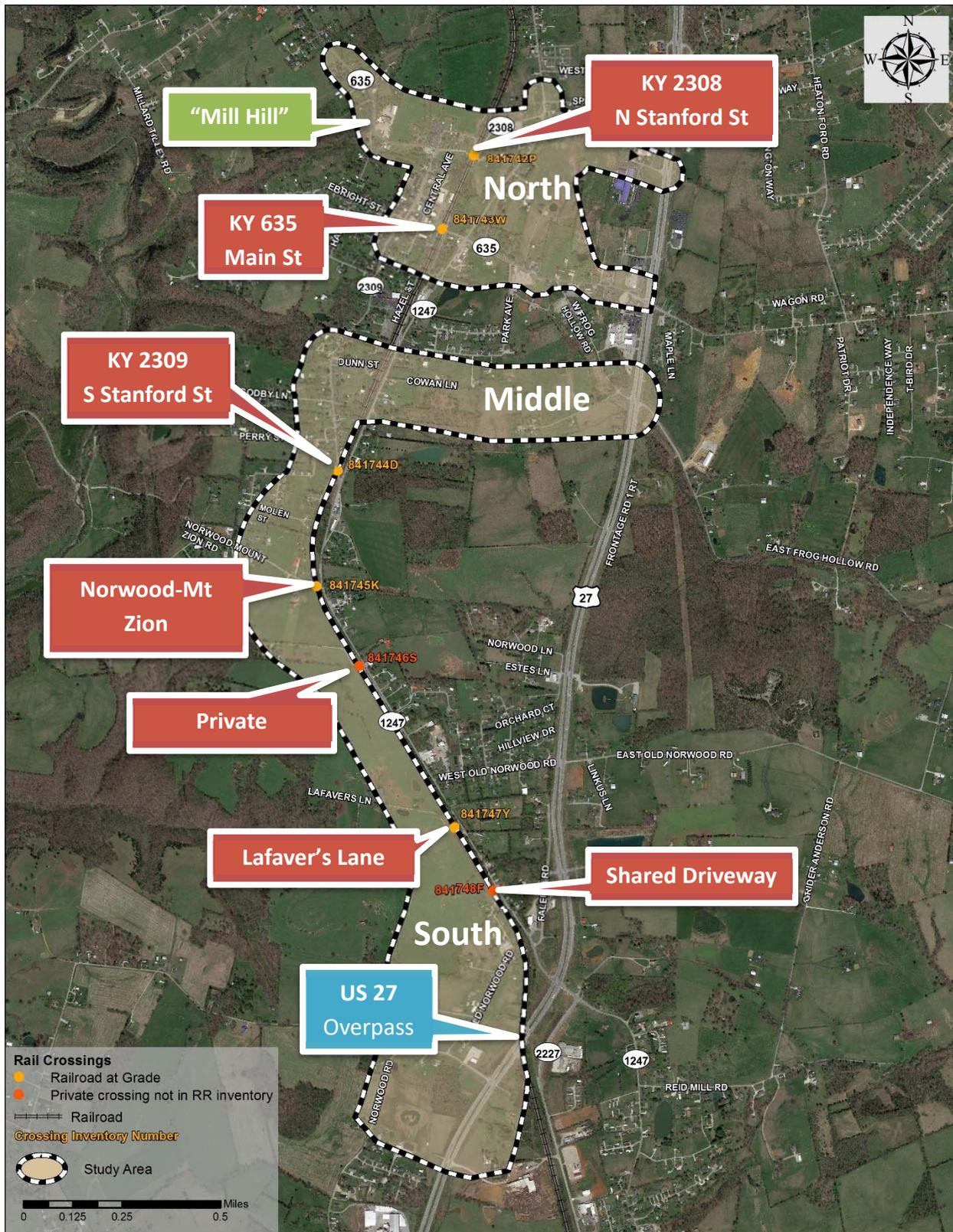


Figure ES-1: Study Area with Local Rail Crossings

Based on costs, impacts, input from local officials and stakeholders, and more, the project team eliminated some of the initial alternatives and identified four to present to the public (**Figure ES-2**). One or more alternatives from each geographic group was advanced, representing the best solution(s) within that group. Each alternative was renamed with a corresponding color for simplicity and ease of identification. A Molen Street Connector was considered alongside north and middle concepts.



Figure ES-2: Alternatives Presented for Public Consideration

The **Red Alternative**, which provides a new southern connection to US 27, offers a 55 mph connection with no new bridge structures to maintain. It creates a 2-mile long roadway west of the tracks and closes five of the seven local at-grade crossings. The longest alternative considered, it results in the most impacted parcels and the greatest number of potential residential relocations. The estimated cost for this alternative is \$12.3 million. It has the highest cost estimate and exceeds the budget established in the current FY 2018—FY 2024 Highway Plan. Operationally, the Red Alternative results in the greatest mileage savings and decrease in vehicle hours of travel overall as the majority of trips are headed to/from the south. With facilities off KY 635 (Main Street) in the North section of the study area, fire and police representatives expressed concern that the increased travel time compromises their response times in emergency situations as they must travel three miles south of town then north along US 27 to react to local calls when the remaining crossings are blocked. Most local school buses would also have to be rerouted when a train is blocking the remaining at-grade options, resulting in increased travel times/distances. For these reasons, neither the Red Alternative nor a similar southern concept were recommended to advance for further consideration.

The **Green Alternative**, located in the middle of the study area, is 0.36 miles long. It closes the KY 635 (Main Street) at-grade crossing, bridges the railroad tracks and KY 1247, and connects to KY 635 just west of Science Hill Ball Park. Estimated costs for this alternative total \$9.3 million for all phases. This alternative results in the steepest grades (8.4% max). It relocates more properties (three businesses and eight homes) than the northern options but does not impact churches. It is the lowest rated choice based on public surveys. Operationally, the Green Alternative results in negligible mileage savings and increases vehicle hours of travel compared

to today because trip lengths to the south and east increase. For these reasons, neither the Green Alternative nor a similar middle concept were recommended to advance.

Two northern concepts were advanced for detailed study: the Blue and Yellow Alternatives. Each crosses the railroad tracks while they are in a cut section, reducing the maximum grade requirement to achieve the required 23-foot clearance. Each would close the KY 2308 (North Stanford Street) crossing. Half of the public surveys received preferred a northern concept, making the Blue or Yellow alternative most preferred over southern (Red) and middle (Green) options. Local officials, particularly fire and police representatives, preferred the northern concepts as they provided the closest connection to their facilities, resulting in the most efficient response times. The most prevalent concern for either of the northern alternatives is impacts to nearby churches.

- The **Yellow Alternative** is 0.30 miles long and is the shortest and least expensive (estimated cost of \$6.2 million) of the alternatives considered. It impacts a portion of the Northside Baptist Church parking lot and requires the relocation of the Science Hill Christian Church building and parsonage. Four other homes also likely require relocation.
- The **Blue Alternative** is located slightly north of the Yellow and also reconstructs KY 635 on a new alignment to avoid Mill Hill for a total length of 0.56 miles; estimated costs total \$8.5 million for all phases. The Blue Alternative impacts a portion of the Northside Baptist Church parking lot, likely relocates the Northside Baptist Church parsonage, and relocates the Science Hill Christian Church building and parsonage. Five other homes also likely require relocation.

The project team held an open house public meeting on January 29, 2019, to gather public input on the options presented. In total, 80 members of the public signed in at the meeting. A survey was distributed to attendees and made available online for the public at large. Throughout the 15-day comment period, 180 responses were received. Overall, the majority of respondents (88%) felt an improved connection was needed; access/reliability were cited as the primary needs. When asked about alternative preferences, 50% preferred a Northern route (Yellow or Blue), 19% preferred Southern (Red), 13% preferred Middle (Green), and the remainder did not have a preference.

Based on the study process described herein, the Blue and Yellow alternatives are recommended to advance for preliminary design efforts and evaluation. The northern alternatives provide the most cost effective solutions, minimize overall impacts, and are preferred by both local officials and the public.

The Molen Street Connector is a low cost additional connection between Molen Street and Norwood-Mount Zion Road that can be combined with any north or middle concept. It provides homes along Norwood-Mount Zion Road with access to a new bridge over the railroad without looping back through the existing detour. It should also advance for consideration in preliminary design.