HAM-32-4.47
SR 32 Improvements
Village of Newtown
PID 86462

Feasibility Study

November 18, 2021

Prepared for:

Ohio Department of Transportation
District 8
505 South SR 741
Lebanon, Ohio 45036

Prepared by:

Stantec Consulting Services Inc.

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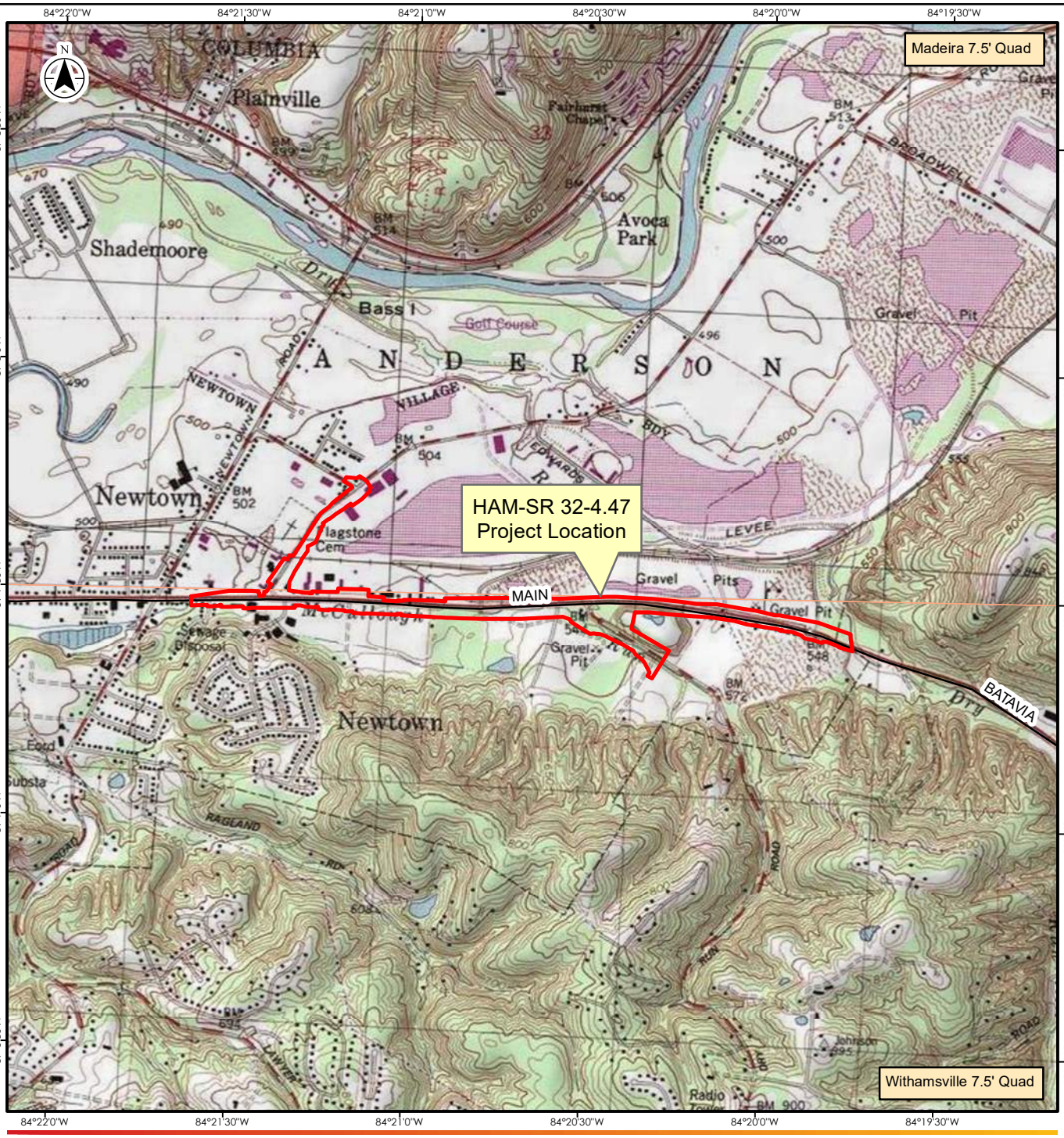
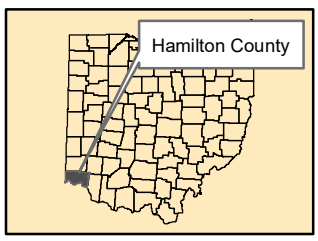
1.0 INTRODUCTION

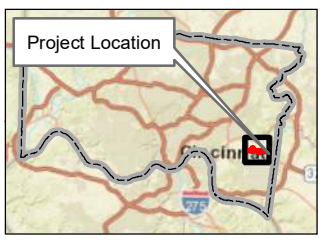
The Ohio Department of Transportation (ODOT) is proposing improvements to SR 32 in the Village of Newtown, as well as the construction of a shared-use path that will be a part of the Little Miami Scenic Trail (LMST) system. The proposed project, HAM-32-4.47, SR 32 Improvements (PID 86462), is located in southeast Hamilton County and extends along SR 32 from just west of the intersection of Round Bottom Road to Newtown's eastern corporation limit. The project also extends along Round Bottom Road to the intersection of Valley Avenue and along Little Dry Run Road to the intersection with Ivy Hills Boulevard. (See **Figure 1**, **Project Location Map**). SR 32 has a functional classification of a minor arterial roadway with an average daily traffic of 18,616 vehicles. Throughout the project area, the speed limit of SR 32 varies from 25 mph from the beginning of the project to Round Bottom Road, to 35 mph between Round Bottom Road to just east of Ivy Hills Place and 45 mph for the remainder of the project. The project includes four of 68 concepts within the Eastern Corridor Segments II and III study area which were identified in the *Conceptual Alternatives Implementation Plan for Segment II/III of the Eastern Corridor Study (PID 86462).* These improvements address safety and congestion concerns along SR 32 through Newtown. In addition to the road improvements, the proposed project includes the construction of a shared-use path to provide an improved connection to the LMST and the Lake Barber Trail. This Feasibility Study was prepared as part of ODOT's Project Development Process (PDP) to document the process used to choose the preferred alternative for the SR 32 Improvements project.

1.1 PROJECT HISTORY

SR 32 through Newtown has experienced congestion issues for many years. The safety and capacity issues along SR 32 were documented in the *Transportation Needs Analysis* prepared for Eastern Corridor Segments II and III (PID 86462) dated July 31, 2017. This report identified transportation needs in the Segments II and III study area of the Eastern Corridor Program, a multi-modal transportation improvement program extending from downtown Cincinnati and communities through eastern Hamilton County and into western Clermont County, Ohio. The Eastern Corridor Program is a coordinated series of regional transportation improvement studies and projects in varying stages of planning, construction, and completion. The Segments II and III study area extends between the Red Bank Corridor (Segment I) and the I-275/SR 32 interchange in the Eastgate Area of Clermont County (Segment IV) encompassing key routes through this area including SR 32. Transportation needs in the Segments II and III study area were identified through technical studies and confirmed and refined through community and stakeholder input. Technical studies conducted included: traffic count updates; crash data review; evaluation of major intersections, roadway movements, and ramp junction operations; travel time studies; travel pattern analyses; and roadway geometry assessments (curves, elevation, sightlines). In addition to technical studies, the project team conducted extensive public and stakeholder outreach to learn how communities prioritized transportation needs with respect to community goals, objectives, and ongoing planning. SR 32







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Stantec

Project Location
Anderson Township,
Hamilton County, Ohio

173620124
Prepared by MDV on 2020-08-31

Client/Project
HAM-SR 32-4.47
PID 86462
Feasibility Study

Figure No.
1

Title
Project Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. Base features produced from project design elements.
3. Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

within the Village of Newtown intersection was identified in the Needs Analysis as an area having congestion issues. Excerpts from the Transportation Needs Analysis relevant to this project can be found in **Attachment A**.

ODOT began to develop solutions for the transportation needs identified in the Needs Analysis in the Fall of 2017. Solutions were developed through extensive input from five Advisory Committees comprised of stakeholders from six focus areas identified within the Segments II and III study area. Advisory Committee members included elected officials, transportation planning professionals, and community and interest group representatives. Advisory Committee members assisted with identifying, evaluating, and prioritizing recommended solutions for transportation needs within their assigned focus area, as well as developing strategies for implementation. Each Advisory Committee convened for four work sessions throughout this process for a combined total of 20 meetings. Two public meetings were also held throughout the development and refinement of the transportation concepts. Through this process, 68 transportation concepts were recommended for the Segments II and III study area and are identified in the *Conceptual Alternatives Implementation Plan* dated June 21, 2019. Excerpts from the *Conceptual Implementation Plan* relevant to this project can be found in **Attachment B**. The Implementation Plan identified three concepts to improve congestion along SR 32 within the Village of Newtown. These concepts included:

- Constructing improvements at the SR 32/Round Bottom Road intersection including dual southbound left turn lanes on Round Bottom Road, extending the westbound right turn lane, and adding a second eastbound lane and shared-use path on SR 32 from Round Bottom Road to Little Dry Run Road (Concept B2)
- Constructing improvements at the SR 32/Little Dry Run Road intersection including adding an eastbound right turn lane and modifying the curve on Little Dry Run Road to improve visibility at the intersection (Concept C1)
- Widening SR 32 from Little Dry Run Road to the Newtown east corp. limit to construct a center two-way left turn lane (Concept C3)

In addition to the road and intersection improvements, the Implementation Plan included a concept to construct a shared-use path on Round Bottom Road from SR 32 to Valley Avenue (Concept B7). Since the shared-use trail could be constructed concurrently with the SR 32 roadway improvements, these concepts are included in the same project.

2.0 PURPOSE AND NEED

The need elements of the SR 32 Improvements project include existing or future conditions that are causing the transportation problems (primary needs), as well as needs that may not be up to a desired standard but are not causing undue issues (secondary needs). Primary needs **must** be addressed to the extent feasible in order to satisfy the purpose and need; whereas secondary needs are considered discretionary and are not the deciding factor in alternative development.

2.1 PROJECT PURPOSE

The purpose of the proposed project is to improve congestion along SR 32 through the Village of Newtown, including the SR 32/Round Bottom Road/River Hills Drive and SR 32/Little Dry Run Road intersections, and to improve pedestrian and bicycle connectivity along SR 32 and Round Bottom Road to area trails.

2.2 NEED ELEMENTS

2.2.1 Congestion (Primary)

The primary need of the SR 32 Improvements project is to reduce congestion along SR 32 and at the signalized intersections of SR 32 with Round Bottom Road and Little Dry Run Road. As part of the *Transportation Needs Analysis*, traffic analyses were conducted for segments of SR 32 between Round Bottom Road and Little Dry Run Road, including the SR 32/Round Bottom Road/River Hills Drive and SR 32/Little Dry Run intersections. The results of these analyses are summarized briefly below:

SR 32/Round Bottom Road/River Hills Drive Intersection: Highway Capacity Software 2010 (HCS 2010), which implements the Highway Capacity Manual procedures, was used to evaluate the SR 32/Round Bottom Road/ River Hills Drive Intersection, a five-leg, signalized intersection. The HCS analysis indicates that during the AM peak-hour, the westbound through movement is failing with a v/c ratio of 1.01 and the southbound left turn movement is at capacity[1]. In addition, the 95th percentile queue length for the movement is more than twice the storage length during the PM peak-hour. Additionally, the eastbound through movement fails during the PM peak-hour in the opening year with a v/c ratio of 1.02 and only gets worse in the design year with a v/c ratio of 1.09.

To supplement the HCS analysis, a queue study was conducted for the westbound approach during the AM peak period and the eastbound and southbound approaches during the PM peak period. The number of cars in the queue was recorded at the end of the green light for 15 minutes prior to the peak hour to 15 minutes after the peak-hour ended. The number of cars was translated to a length by assuming a queue length of 25 feet per vehicle. During the AM peak period the maximum westbound queue extended 850 feet. During the PM peak period the maximum eastbound queue extended 1,250 feet and the maximum southbound queue extended 1,050 feet.

SR 32: Round Bottom Road to Little Dry Run Road: The section of SR 32 between Round Bottom Road and Little Dry Run Road is approximately 0.78 mile in length. This section of roadway has two through lanes and a center two-way left turn lane. Just east of Round Bottom Road, the speed limit increases from 25 mph to 35 mph. The speed limit is raised again at Ivy Hills Place where it increases to 45. No level of service

[1] Volume-to-Capacity Ratio is a measurement of the operating capacity of a roadway or intersection where the number of vehicles passing through is divided by the number of vehicles that could theoretically pass through when at capacity. If vehicles (v) divided by capacity (c) is less than one the facility has additional capacity. If (v)/(c) is greater than one, then the capacity is not able to support the volume based on its design and number of lanes.

analysis was conducted for this segment; however, the travel time data indicates a 45% increase in the eastbound travel time during the PM peak-hour and a 35% increase in the westbound travel time during the AM peak-hour compared to the off-peak travel time, indicating congestion during the AM and PM peak hours.

SR 32/Little Dry Run Road Intersection: This is a three-leg, signalized intersection. The HCS analysis indicates that the eastbound through/right-turn movement is currently failing during the PM peak-hour with a v/c ratio of 1.06. This problem is only exacerbated in the No Build opening year (2022) and the No Build design year (2042) conditions. During the AM peak-hour in the opening and design years, the westbound through-movement is failing with v/c ratios of 1.05 and 1.06, respectively.

To supplement the HCS analysis, a queue study was conducted for the westbound approach during the AM peak period and the eastbound approach during the PM peak period. The number of cars in each queue was recorded at the end of the green cycle, beginning 15 minutes prior to the peak hour and ending 15 minutes after the peak hour. The number of cars was translated to a length by assuming a queue length of 25 feet per vehicle. During the AM peak period the maximum queue extended 475 feet and during the PM peak period the maximum queue extended 800 feet.

2.2.2 Pedestrian/Bicycle Connectivity (Secondary)

A secondary transportation need is to provide improved pedestrian/bicycle connectivity for walkers, runners, and bicyclists along SR 32 and Round Bottom Road and to improve access to the Lake Barber Trail and the LMST. Improved pedestrian/bicycle connectivity within the Village of Newtown is included as an objective of Newtown's Draft Comprehensive Plan, dated January 9, 2020.

Newtown lacks safe pedestrian/bicycle connections between the village center, Lake Barber, and the Ivy Hills area neighborhoods. There are no sidewalks between Round Bottom Road and Little Dry Run Road, creating a safety concern for pedestrians and bicyclists in this area.

2.2.3 Facility Deficiencies (Secondary)

The following facility deficiency was identified as a secondary need:

Deficient Sight Distance on Little Dry Run: Currently there is insufficient stopping sight distance on northbound Little Dry Run approaching the SR 32 intersection. With a design speed of 35 mph at this location, there should be a stopping sight distance of 250 feet. However, due to trees and vegetation along the eastern edge of Little Dry Run Road, the stopping sight distance on northbound Little Dry Run towards the SR 32 intersection is approximately 110 feet. Reduced stopping sight distance is a safety concern.

Inadequate Pedestrian Facilities along SR 32: Currently there is no sidewalk along SR 32 between Round Bottom Road and Little Dry Run Road and the curb-attached sidewalk width along the eastern edge of Little Dry Run Road is only five feet, two feet less than the seven-foot minimum sidewalk width for a curb-attached sidewalk in residential area.

3.0 ALTERNATIVES

Three Build Alternatives were considered in addition to the No Build Alternative. These alternatives are discussed below.

3.1 NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no improvements to SR 32 within the Village of Newtown or at the intersections of SR 32 with Round Bottom Road or Little Dry Run. Currently, there is peak-hour congestion in the eastbound direction of SR 32 and for the southbound approach on Round Bottom Road at the SR 32 intersection. This congestion is expected to increase in the future without improvements to increase capacity along this corridor. In addition, under the No Build Alternative, there would be no improvement of facilities for pedestrians and bicyclists in the Village of Newtown.

3.2 BUILD ALTERNATIVES

Three Build Alternatives were evaluated for the SR 32 Improvements project. Each Build Alternative includes the same improvements to SR 32 between the intersections with Round Bottom Road and Ivy Hills Place. The primary difference between the alternatives is the configuration of the shared-use path and the roadway between Ivy Hills Place and Little Dry Run Road. In Build Alternatives 1 and 3 the shared-use path is located on the north side of SR 32 and the roadway is not shifted in this area. In Build Alternative 2 the shared-use path is located south of SR 32, requiring the roadway to be shifted to the north to minimize impacts to McCullough Run, the existing sidewalk, and retaining walls on the south side of the road. Each Build Alternative includes the following improvements:

<u>Intersection Improvements at SR 32 and Round Bottom Road</u>

- Two left turn lanes from Round Bottom Road to eastbound SR 32 would be created by converting the thru lane for River Hills Drive to a shared thru/left lane and modifying signal operations.
- A second eastbound through lane would be added from just west of the SR 32/Round Bottom Road intersection to the Little Dry Run Road intersection. (This lane is needed to accept the dual left turn movement from Round Bottom Road).
- The turn lane length for vehicles turning from SR 32 eastbound to Round Bottom Road would be increased so they are not blocked by stopped westbound traffic.

<u>Intersection Improvements at SR 32 and Little Dry Run</u>

- The turn lanes on Little Dry Run Road would be lengthened as the road approaches SR 32.
- The curve on Little Dry Run Road would be modified to improve visibility at the intersection with SR 32.

- A dedicated right turn lane would be added on eastbound SR 32 to Little Dry Run Road to prevent turning traffic from being blocked by traffic continuing east.

SR 32 Widening to Add Center Turn Lane

- A center turn lane would be added from Little Dry Run Road to the Village's east corp. limit (approximately 500 ft. east of the entrance to Valley Asphalt).

The shared-use path components of each Build Alternative are as follows:

3.2.1 Build Alternative 1

This alternative, which is shown in **Attachment C-1**, includes the following components in addition to those listed above in Section 3.2:

- Between the SR 32/Round Bottom Road intersection and Ivy Hills Place, the shared-use path would be located on the south side of SR 32 to facilitate access to businesses and residential areas. The path would tie to the existing sidewalk along SR 32 that currently ends at River Hills Drive.
- At the Ivy Hills Place traffic signal, the shared-use path would cross to the north side of SR 32 via a street-level crosswalk and then extend to Little Dry Run Road along the north side of SR 32.
    - Locating the shared-use path on the north side of SR 32 would facilitate access to a new shared-use path connector that would pass underneath the Norfolk Southern Railroad tracks and link to the existing Lake Barber Trail.
    - An additional shared-use path connector would be constructed to link the Lake Barber Trail with the Round Bottom Road and Valley Avenue intersection. The LMST can be accessed on the west end of Valley Avenue, near the Little Miami Golf Center, by using the existing sidewalks along Valley Avenue.
- At the Little Dry Run Road traffic signal, users would cross back to the south side of SR 32 via a street-level crosswalk to access the sidewalk along Little Dry Run Road.
- Plans include a future extension of the shared-use path along the north side of SR 32, east of Little Dry Run, to connect to the future ANCOR development.
- Portions of the existing sidewalk along the east side of Little Dry Run Road disturbed by project construction would be reconstructed as needed.

3.2.2 Build Alternative 2

This alternative, shown in **Attachment C-II**, includes the following features in addition to those listed above in Section 3.2:

- Similar to Alternative 1, Alternative 2 includes:
    - A shared-use path on the south side of SR 32 between the SR 32/Round Bottom Road intersection and Ivy Hills Place.
    - Two Lake Barber Trail connector paths:
        - One connector would be located between SR 32 and the Lake Barber Trail (the connector path would pass underneath the Norfolk Southern Railroad tracks).
        - One connector would link the Lake Barber Trail to Valley Avenue.
    - Plans for a future extension of the shared-use path on the north side of SR 32, east of Little Dry Run, to connect to the future ANCOR development.
    - A reconstructed sidewalk along the east side of Little Dry Run Road.
- The primary difference between Alternatives 1 and 2 is that in Alternative 2, the entirety of the main shared-use path would be located on the south side of SR 32 between Ivy Hills Place and Little Dry Run Road.
    - A mid-block crossing of SR 32 would not be located at a traffic signal, as the crossings are in Alternative 1. Instead, a raised concrete pedestrian island would be provided in the center of SR 32, providing a refuge location between the single westbound traffic lane and the two eastbound traffic lanes. Pedestrian activated traffic control devices (such as a Rectangular Rapid Flashing Beacon or HAWK) could be implemented to help users cross the road.

3.2.3 Build Alternative 3

As shown in **Attachment C-III**, this alternative is comprised of the following features in addition to those listed above in Section 3.2:

- Alternative 3 is similar to Alternative 1:
    - The shared-use path would be located on the south side of SR 32 between the SR 32/Round Bottom Road intersection and Ivy Hills Place.
    - The shared-use path would shift to the north side of SR 32 between Ivy Hills Place and Little Dry Run Road. Crossings of SR 32 would be located at traffic signals at both Ivy Hills Place and Little Run Road.
    - Plans include an alignment for a future ANCOR development.
    - A reconstructed sidewalk along the east side of Little Dry Run Road.

- Alternative 3 replaces the Lake Barber Trail connector paths proposed in Alternatives 1 and 2 with a shared-use path that would be constructed along the east side of Round Bottom Road, between SR 32 and Valley Avenue.
- Crossing from the shared-use path on SR 32 to a new path along Round Bottom Road would involve the following four-step crossing movement at the SR 32/Round Bottom Road intersection:
    - Cross River Hills Drive via a crosswalk using a traffic signal.
    - Cross SR 32 via a crosswalk to the center island with the fountain using a traffic signal.
    - Cross Round Bottom Road via a crosswalk to a traffic island using a traffic signal.
    - Cross the continuous right turn lane from SR 32 to Round Bottom Road to the new shared-use path on the east side of Round Bottom Road. There would not be a traffic signal to stop traffic at this crossing.
- The new shared-use path would have an at-grade crossing of the Norfolk Southern Railroad, which would require separate crossing gates.

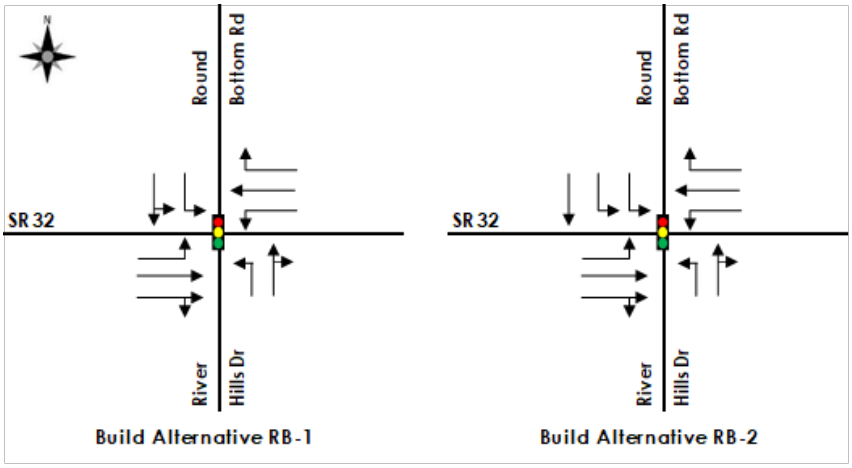
4.0 KEY ISSUES

The key issues used to evaluate the alternatives include traffic impacts, roadway design issues, utility impacts, environmental impacts, and public input. These factors are summarized below:

4.1 TRAFFIC ANALYSIS

A traffic operations analysis was performed as part of the Newtown Feasibility Study to evaluate alternative lane configurations at the SR 32 intersections with Round Bottom Road, Ivy Hills Place, and Little Dry Run Road. Two lane configurations were evaluated at the SR 32/Round Bottom Road intersection. The results of this analysis are summarized in the Traffic Operations Analysis Report prepared by Stantec in August 2020 and included as **Attachment D**. The lane configurations evaluated are described as follows:

SR 32/Round Bottom Road: Two alternative lane configurations were evaluated. They are described below and shown on **Figure 2.**



- Convert the southbound through lane to a shared through/left turn lane on Round Bottom Road (Round Bottom (RB) Alternative 1)
- Construct a second southbound left turn lane on Round Bottom Road (RB Alternative 2)
- Extend a westbound right turn lane on SR 32 (RB Alternatives 1 and 2)
- Construct a second eastbound lane on SR 32 (RB Alternatives 1 and 2)

SR 32/Ivy Hills Place

- Construct a second eastbound lane on SR 32 (RB Alternatives 1 and 2)

SR 32/Little Dry Run Road

- Construct an eastbound drop right turn lane on SR 32 (RB Alternatives 1 and 2)

No Build Traffic Analysis

The No Build traffic conditions at the SR 32 intersections with Round Bottom Road, Ivy Hills Place, and Little Dry Run Road were analyzed for the 2022 opening year, 2042 design year, and 2042 design year with traffic from the Martin Marietta Materials, Inc. development[2]. The results of the No Build AM and PM peak-hour Synchro intersection analysis indicate that all intersections are anticipated to operate at acceptable level-of-service standards during both the AM and PM peak hours for the 2022 opening year. For the 2042 design year (with and without the Marietta Materials, Inc. traffic), the SR 32/Round Bottom

[2] Martin Marietta Materials, Inc. has proposed developing an underground limestone mining operation and surface processing plant on Broadwell Road, which would be accessed primarily from SR 32 via Round Bottom Road.

Road intersection operates at level-of-service E with both the eastbound through/right and southbound left turn movements having a v/c ratio greater than 1.0, as shown in **Table 1**. There are also movements at the SR 32/Ivy Hills Place and SR 32/Little Dry Run Road intersections that have v/c ratios greater than 1.0.

Build Traffic Analysis

The 2022 opening year, 2042 design year, and 2042 design year with traffic from the Martin Marietta Materials, Inc. development were again evaluated with the road improvements at the three study intersections. The road improvements are intended to relieve PM peak-hour congestion in the eastbound direction of SR 32 and for the southbound approach on Round Bottom Road at the SR 32 intersection. As shown in the No Build analysis, most of the failures are during the PM peak-hour within the study area. The results of the build AM and PM peak-hour Synchro intersection analysis, shown in **Tables 2** and **3**, indicate that all road alternatives provide improvements over the no build conditions and are anticipated to operate at acceptable level-of-service standards during the PM peak-hour for the 2022 opening year, 2042 design year, and 2042 design year with traffic from the Martin Marietta Materials, Inc. development. During the AM peak-hour, the westbound through movement at the Ivy Hills Place intersection is anticipated to be over capacity by 2042, similar to the no build conditions. Both alternatives will result in a reduction in overall intersection delay compared to the No Build conditions, as shown in **Table 4**.

In addition to the percent reduction in delay at the three intersections, the percent reduction in eastbound queues along SR 32 (the direction of the added lane) for the 2042 design with the Martin Marietta Materials development was evaluated for the road improvement alternatives and no build conditions. Both road improvement alternatives will significantly shorten the queue lengths compared to the no build conditions, with greater reductions during the PM peak-hour compared to the AM peak-hour and range from a 17% reduction to an 88% reduction. The percent reduction in eastbound 2042 queue lengths for RB Alternatives 1 and 2 compared to the no build conditions is summarized in **Table 5**.

While RB Alternative 2 has a higher percent reduction in delay at the SR 32/Round Bottom Road intersection compared to RB Alternative 1, it will result in more significant impacts to the Hamilton County Engineer’s Office Highway Maintenance property, located on the northeast quadrant of this intersection. Therefore, RB Alternative 1 was selected as the preferred intersection configuration for the SR 32/Round Bottom intersection.

Scenario	Intersection	Time Period	Overall Intersection		Max v/c Ratio (mvmt)	Approach Delay (sec/veh) & LOS			
			LOS	Delay (sec/veh)		EB	WB	NB	SB
2022 Opening Year	SR 32 & Round Bottom Rd	AM	C	26.1	0.76 (SBL)	15.7 B	17.7 B	63.6 E	77.9 E
		PM	D	51.4	0.98 (EBT/R)	48.5 D	36.7 D	75.6 E	68.9 E
	SR 32 & Ivy Hills Pl	AM	B	16.9	0.95 (WBT)	2.9 A	19.0 B	77.3 E	
		PM	A	8.9	0.86 (EBT/R)	7.0 A	3.5 A	73.7 E	
	SR 32 & Little Dry Run Rd	AM	C	26.4	0.88 (WBT)	10.3 B	22.0 C	91.4 F	
		PM	C	20.4	0.94 (EBT/R)	19.9 B	6.1 A	81.3 F	
2042 Design Year	SR 32 & Round Bottom Rd	AM	C	28.1	0.78 (SBL)	19.3 B	18.5 B	71.0 E	76.5 E
		PM	**E**	**69.7**	**1.07 (EBT/R)**	**66.6 E**	38.1 D	87.5 F	**108.5 F**
	SR 32 & Ivy Hills Pl	AM	C	24.0	**1.00 (WBT)**	3.0 A	**28.1 C**	83.7 F	
		PM	B	19.0	**1.31 (WBL)**	12.8 B	**20.3 C**	81.5 F	
	SR 32 & Little Dry Run Rd	AM	C	30.3	0.97 (WBT)	12.2 B	27.4 C	89.3 F	
		PM	D	35.8	**1.05 (EBT/R)**	**43.8 D**	8.5 A	79.5 E	
2042 Design Year w/ Martin Marietta Traffic	SR 32 & Round Bottom Rd	AM	C	30.5	0.90 (SBL)	21.0 C	19.0 B	70.2 E	87.5 F
		PM	**E**	**69.1**	**1.10 (SBL)**	**66.6 E**	38.1 D	87.5 F	**106.0 F**
	SR 32 & Ivy Hills Pl	AM	C	32.0	**1.04 (WBT)**	2.6 A	**40.2 D**	83.7 F	
		PM	C	20.2	**1.31 (WBL)**	15.0 B	**20.1 C**	81.5 F	
	SR 32 & Little Dry Run Rd	AM	C	34.9	0.97 (WBT)	13.3 B	35.0 C	89.3 F	
		PM	D	41.2	**1.07 (EBT/R)**	**53.1 D**	8.5 A	79.5 E	

Table 2: Round Bottom (RB) Alternative 1 Intersection Conditions

Scenario	Intersection	Time Period	Overall Intersection		Max v/c Ratio (mvmt)	Approach Delay (sec/veh) & LOS			
			LOS	Delay (sec/veh)		EB	WB	NB	SB
2022 Opening Year	SR 32 & Round Bottom Rd	AM	C	24.6	0.76 (SBL)	15.5 B	11.4 B	82.4 F	94.6 F
		PM	D	34.2	0.83 (SBL)	25.0 C	15.4 B	76.2 E	61.8 E
	SR 32 & Ivy Hills Pl	AM	B	13.0	0.95 (WBT)	0.7 A	14.3 B	77.3 E	
		PM	A	5.8	0.61 (NBL/R)	3.4 A	3.5 A	55.0 D	
	SR 32 & Little Dry Run Rd	AM	C	26.1	0.88 (WBT)	9.2 A	22.0 C	91.4 F	
		PM	B	16.5	0.83 (EBT/R)	15.6 B	5.1 A	69.4 E	
2042 Design Year	SR 32 & Round Bottom Rd	AM	C	26.9	0.77 (SBL)	17.1 B	12.8 B	85.8 F	95.0 F
		PM	D	37.1	0.85 (SBL)	28.5 C	17.0 B	85.1 F	61.9 E
	SR 32 & Ivy Hills Pl	AM	B	19.2	0.99 (WBT)	0.9 A	21.7 C	89.8 F	
		PM	A	6.8	0.67 (NBL/R)	3.6 A	4.1 A	62.4 E	
	SR 32 & Little Dry Run Rd	AM	C	29.6	0.92 (WBT)	10.2 B	26.7 C	91.7 F	
		PM	B	19.8	0.90 (EBT)	20.5 C	5.8 A	68.1 E	
2042 Design Year w/ Martin Marietta Traffic	SR 32 & Round Bottom Rd	AM	C	28.1	0.80 (SBL)	19.4 B	13.1 B	85.8 F	93.5 F
		PM	D	37.3	0.86 (SBL)	28.8 C	17.1 B	85.1 F	62.1 E
	SR 32 & Ivy Hills Pl	AM	C	24.6	**1.02 (WBT)**	0.9 A	**29.9 C**	89.8 F	
		PM	A	6.8	0.67 (NBL/R)	3.6 A	4.3 A	62.4 E	
	SR 32 & Little Dry Run Rd	AM	C	32.8	0.96 (WBT)	11.1 B	32.2 C	91.7 F	
		PM	C	20.6	0.91 (EBT)	21.6 C	6.4 A	68.1 E	

Overall intersection LOS is worse than D or an approach has a v/c ratio greater than 1.0

Table 3: Round Bottom (RB) Alternative 2 Intersection Conditions

Scenario	Intersection	Time Period	Overall Intersection		Max v/c Ratio (mvmt)	Approach Delay (sec/veh) & LOS			
			LOS	Delay (sec/veh)		EB	WB	NB	SB
2022 Opening Year	SR 32 & Round Bottom Rd	AM	C	20.1	0.65 (SBL)	9.5 A	8.3 A	77.3 E	83.7 F
		PM	D	33.0	0.76 (SBL)	26.7 C	13.3 B	73.6 E	58.0 E
	SR 32 & Ivy Hills Pl	AM	B	13.5	0.95 (WBT)	2.1 A	14.6 B	77.3 E	
		PM	A	5.7	0.61 (NBL/R)	3.1 A	3.5 A	55.0 D	
	SR 32 & Little Dry Run Rd	AM	C	26.1	0.88 (WBT)	9.0 A	22.0 C	91.4 F	
		PM	B	16.7	0.83 (EBT/R)	15.8 B	5.1 A	69.4 E	
2042 Design Year	SR 32 & Round Bottom Rd	AM	C	22.7	0.68 (WBT)	13.2 B	9.6 A	83.7 F	83.4 F
		PM	D	35.7	0.78 (SBL)	31.1 C	15.2 B	79.6 E	56.4 E
	SR 32 & Ivy Hills Pl	AM	B	19.7	0.99 (WBT)	2.3 A	21.8 C	89.8 F	
		PM	A	6.8	0.67 (NBL/R)	3.6 A	4.1 A	62.4 E	
	SR 32 & Little Dry Run Rd	AM	C	29.3	0.92 (WBT)	9.1 A	26.7 C	91.7 F	
		PM	B	19.3	0.90 (EBT)	19.7 B	5.8 A	68.1 E	
2042 Design Year w/ Martin Marietta Traffic	SR 32 & Round Bottom Rd	AM	C	23.8	0.70 (SBL)	14.6 B	9.9 A	83.4 F	82.6 F
		PM	D	35.8	0.79 (SBL)	31.5 C	15.3 B	79.6 E	56.3 E
	SR 32 & Ivy Hills Pl	AM	C	25.0	**1.02 (WBT)**	2.1 A	**30.0 C**	89.8 F	
		PM	A	6.6	0.67 (NBL/R)	3.2 A	4.3 A	62.4 E	
	SR 32 & Little Dry Run Rd	AM	C	32.7	0.96 (WBT)	10.6 B	32.2 C	91.7 F	
		PM	C	20.1	0.91 (EBT)	20.9 C	6.4 A	68.1 E	

Overall intersection LOS is worse than D or an approach has a v/c ratio greater than 1.0

Table 4: Percent Reduction in Overall Intersection Delay

Scenario	Intersection	Time Period	No-Build		Build Alternative RB-1			Build Alternative RB-2		
			Overall Intersection		Overall Intersection		Percent Reduction in Delay (Sec/veh)	Overall Intersection		Percent Reduction in Delay (Sec/veh)
			LOS	Delay (sec/veh)	LOS	Delay (sec/veh)		LOS	Delay (sec/veh)	
2022 Opening Year	SR 32 & Round Bottom Rd	AM	C	26.1	C	24.6	6%	C	20.1	23%
		PM	D	51.4	D	34.2	33%	D	33.0	36%
	SR 32 & Ivy Hills Pl	AM	B	16.9	B	13.0	23%	B	13.5	20%
		PM	A	8.9	A	5.8	35%	A	5.7	36%
	SR 32 & Little Dry Run Rd	AM	C	26.4	C	26.1	1%	C	26.1	1%
		PM	C	20.4	B	16.5	19%	B	16.7	18%
2042 Design Year	SR 32 & Round Bottom Rd	AM	C	28.1	C	26.9	4%	C	22.7	19%
		PM	E	69.7	D	37.1	47%	D	35.7	49%
	SR 32 & Ivy Hills Pl	AM	C	24.0	B	19.2	20%	B	19.7	18%
		PM	B	19.0	A	6.8	64%	A	6.8	64%
	SR 32 & Little Dry Run Rd	AM	C	30.3	C	29.6	2%	C	29.3	3%
		PM	D	35.8	B	19.8	45%	B	19.3	46%
2042 Design Year w/ Martin Marietta Traffic	SR 32 & Round Bottom Rd	AM	C	30.5	C	28.1	8%	C	23.8	22%
		PM	E	69.1	D	37.3	46%	D	35.8	48%
	SR 32 & Ivy Hills Pl	AM	C	32.0	C	24.6	23%	C	25.0	22%
		PM	C	20.2	A	6.8	66%	A	6.6	67%
	SR 32 & Little Dry Run Rd	AM	C	34.9	C	32.8	6%	C	32.7	6%
		PM	D	41.2	C	20.6	50%	C	20.1	51%

Through Approach	Time Period	No-Build 95th %tile Queue (ft)		Alternative RB-1 95th %tile Queue (ft)					Alternative RB-2 95th %tile Queue (ft)				
						95th %tile Queue Percent Reduction					95th %tile Queue Percent Reduction		
		HCM 6th	Synchro	HCM 6th	Synchro	HCM 6th	Synchro	Avg.	HCM 6th	Synchro	HCM 6th	Synchro	Avg.
EB SR 32 at Round Bottom Rd	AM	573	353	303	168	47%	52%	50%	143	149	75%	58%	66%
	PM	610	1,177	25	279	96%	76%	86%	15	251	98%	79%	88%
EB SR 32 at Ivy Hills Pl	AM	13	64	5	22	62%	66%	64%	5	54	62%	16%	39%
	PM	40	973	15	283	63%	71%	67%	18	270	55%	72%	64%
EB SR 32 at Little Dry Run	AM	20	593	18	455	10%	23%	17%	18	393	10%	34%	22%
	PM	295	2,136	153	1,497	48%	30%	39%	153	1,534	48%	28%	38%

4.2 ROADWAY DESIGN ISSUES

Roadway design issues considered during the development and evaluation of the project alternatives include how well each alternative improves existing roadway deficiencies and provides safe and functional pedestrian and bike facilities.

No Build Alternative

Under the No Build Alternative, there are several existing facility deficiencies that would not be addressed, which were identified as Secondary Needs of this project. These deficiencies include insufficient stopping sight distance at the northbound approach to the SR 32/Little Dry Run Road intersection and inadequate pedestrian facilities along SR 32 and Little Dry Run Road.

Stopping Sight Distance: The required stopping sight distance for a design speed of 35 mph is 250 feet; however, the existing stopping sight distance on northbound Little Dry Run Road approaching the SR 32 intersection is approximately 110 feet. Sight distance is disrupted by trees and vegetation located along the eastern edge of the Little Dry Run Road alignment.

Pedestrian Facilities: The minimum sidewalk width for a curb-attached sidewalk in residential areas is seven feet. However, the curb-attached sidewalk width along the eastern edge of Little Dry Run Road is only five feet. In addition, there are no pedestrian facilities along SR 32 between Round Bottom Road and Little Dry Run Road. With the high volume of daily traffic and density of truck traffic that travels this stretch of roadway, safe pedestrian facilities are needed in this area.

Build Alternatives

Each of the build alternatives include the same design to mitigate and/or resolve the sight distance and sidewalk width deficiencies along Little Dry Run Road. By realigning Little Dry Run Road and shifting the intersection with SR 32 to the west, the stopping sight distance increased 55 percent to 172 feet, closer to the desired sight distance of 250 feet. The realignment of Little Dry Run Road also includes a curb-attached sidewalk along the east side of the roadway with a width of seven feet to achieve the minimum desired sidewalk width.

Each of the build alternatives include a shared-use path along the southern edge of SR 32 between Round Bottom Road and Ivy Hills Road. The differences between the alternatives occurs between Ivy Hills Drive and Little Dry Run Road where the shared-use path is on the north side of SR 32 in Alternatives 1 and 3 and remains on the south side of SR 32 in Alternative 2. These alternatives have different features in terms of pedestrian and bicycle access as described below:

Build Alternative 1: At the Ivy Hills Place traffic signal, the shared-use path would cross to the north side of SR 32 via a street-level crosswalk and then extend to Little Dry Run Road along the north side of SR 32. Midway between Ivy Hills Place and Little Dry Run Road, the shared-use path would connect to a new shared-use path that would pass underneath the Norfolk Southern Railroad tracks and link to the existing Lake Barber Trail. This alternative also includes a connector between the Lake Barber Trail and the Round

Bottom Road and Valley Avenue intersection. The LMST could be accessed on the west end of Valley Avenue near the Little Miami Golf Center by utilizing the existing sidewalk along Valley Avenue. At the eastern terminus of the shared-use path on SR 32, users would need to cross back to the south side of SR 32 via a street-level crosswalk to access the sidewalk along Little Dry Run Road.

This alternative focuses on shifting the shared-use path to the north side of SR 32 to avoid McCullough Run, the existing sidewalk, and the retaining wall which run along the south side of SR 32. This alternative would require coordination with the Norfolk Southern Railroad to construct a tunnel under its tracks.

Build Alternative 2: At Ivy Hills Place, the shared-use path would remain on the south side of SR 32 to its eastern terminus at Little Dry Run Road. There would be a mid-block crossing of SR 32 to link the shared-use path with the new Lake Barber Trail connector. Unlike Build Alternative 1, this SR 32 crossing would not be at a traffic signal. Instead, a raised concrete pedestrian island would be constructed in the center of SR 32 to serve as a refuge location between the single westbound traffic lane and the two eastbound traffic lanes. Pedestrian activated traffic control devices such as a Rectangular Rapid Flashing Beacon or HAWK, would be considered to help users cross the road. This alternative, like Alternative 1, also includes a connector path to the Lake Barber Trail, requiring a tunnel under the Norfolk Southern Railroad tracks. In addition, a connector would be constructed to link the Lake Barber Trail with Valley Avenue.

This alternative requires shifting the road alignment to the north in order to fit the shared-use path on the south side of the roadway and to the north to avoid impacts to McCullough Run. This alternative also would require coordination with the Norfolk Southern Railroad to construct a tunnel under its tracks.

Build Alternative 3: At Ivy Hills Place, the shared-use path would shift to the north side of SR 32 where it would extend to its terminus at Little Dry Run Road. This alternative includes crossings of SR 32 at the Ivy Hills Place and Little Dry Run Road signalized intersections. This alternative includes a shared-use path that would be constructed along the east side Round Bottom Road between SR 32 and Valley Avenue.

This alternative shifts the shared-use path to the north side of SR 32 to avoid McCullough Run, the existing sidewalk, and the retaining wall on the south side of SR 32. This alternative would cross the Norfolk Southern Railroad at-grade, requiring separate crossing gates. This alternative would require coordination with the railroad.

4.3 MAINTENANCE OF TRAFFIC

No Build Alternative: There would be no impacts to traffic patterns under the No Build Alternative.

Build Alternatives: With each build alternative, Maintenance of Traffic (MOT) would utilize a combination of shoulder closures with lane reductions to shift traffic, allowing construction activities to be completed while maintaining traffic along the busy SR 32 corridor without lane closures or detours. Upgrades to Little Dry Run Road would require a road closure from Ivy Hills Boulevard to the intersection of SR 32. This closure would require a detour for local traffic to Lawyer Road and maintaining SR 32 via Newtown Road. Construction of the shared-use path adjacent to SR 32 from Round Bottom Road to Little Dry Run Road could be constructed with the roadway widening operations and would not require separate maintenance

of traffic considerations. MOT would vary between the alternatives for the construction of the shared-use path between Ivy Hills and Little Dry Run as follows:

Build Alternatives 1 and 2: Both Build Alternatives 1 and 2 include connections to the existing Lake Barber Trail. MOT for this work would include the closure of the shoulder on the east edge of Round Bottom Road at the Valley Avenue intersection to construct the new path/curb ramp at the end of the path connecting the Lake Barber Trail to Round Bottom Road. Both alternatives would also require maintenance of rail traffic for the installation of the underpass of the Norfolk Southern Railroad. Coordination with the railroad would be required to determine the requirements for the maintenance of rail traffic for the underpass construction.

Build Alternative 2 would also require the construction of a pedestrian island between Ivy Hills Drive and Little Dry Run Road. This work could be constructed without lane closures.

Build Alternative 3: This alternative includes the construction of a proposed curb along SR 32 to Valley Avenue, along the eastern edge of Round Bottom. MOT for this construction would include shoulder closures, reduction in lane widths and lane shifts to maintain two lanes of traffic, one lane in each direction. While Alternative 3 would require new crossing gates at the Norfolk Southern Railroad tracks, maintenance of rail traffic would not be required with Norfolk Southern because the new crossing gates could be installed without taking the tracks out of service.

4.4 RIGHT-OF-WAY REQUIREMENTS

No Build Alternative: No new right-of-way would be required for the No Build Alternative.

Build Alternatives: The widening of SR 32 along the SR 32 corridor would require the take of an existing commercial building located just east of the SR 32/Round Bottom Road intersection, and minor property impacts to 36 parcels. These impacts are preliminary and would be refined through project development. The right-of-way impacts would vary between alternatives based on the configuration of the shared-use path as described below.

Build Alternatives 1 and 2: These alternatives would require approximately 1.38 acres in right-of-way from three properties to connect the existing Lake Barber Trail to Round Bottom Road/Valley Avenue on the west end of the proposed alignment and to SR 32 on the east side of the proposed alignment. In addition, easements would be required from the railroad right-of-way for the shared-use path and the tunnel and associated retaining walls at the railroad tracks for the underpass required to connect the shared-use path along SR 32 to the existing Lake Barber Trail. Both Alternatives 1 and 2 would have minor impacts to the Hamilton County Engineer's property at the intersection of SR 32 and Round Bottom Road as a result of the shift of SR 32 to the north in this location.

Build Alternative 3: This alternative has greater impacts to the Hamilton County Engineer's property located at the SR 32/Round Bottom Road intersection. These impacts include the loss of six parking spaces and property on the northwest corner currently being used for material and equipment storage. In addition, there

would be minor impacts to six properties located along the east side of Round Bottom Road for the construction of the shared-use path. There would also be easement revisions needed for impacts to the Norfolk Southern Railroad right-of-way to add railroad crossing gates for the shared use path at the existing at-grade crossing of Round Bottom Road.

4.5 UTILITY ISSUES

No Build Alternative: There would be no impacts to utilities with the No Build Alternative.

Build Alternatives: Based on available survey information, there are several utilities located within the project area. The widening of SR 32 for all three build alternatives would be accomplished largely through the salvage of existing pavement, reducing impacts to underground utilities along the SR 32 corridor. In addition, most of the drainage along SR 32 free flows into ditches located off the edge of pavement, with the exception of the stretch of SR 32 west of Round Bottom Road which has curbs and curb inlets to address stormwater runoff. Widening in this area is limited to the north side of SR 32, requiring the relocation of the existing curb inlets to the proposed curb line. All three build alternatives will require relocation of nine electric transmission poles on the south side between Round Bottom Road and Ivy Hills Place. With the realignment of Little Dry Run Road, one pole carrying aerial electric and communication lines located along the west side of the road would require relocation and the existing stormwater drainage system would require removal and replacement of inlets and lines to account for stormwater runoff along the new alignment.

Build Alternative 1: In addition to the impacts noted above, along SR 32 there are eight additional electric transmission poles between Ivy Hills Place and Burger Farm on the north side that will need relocation. In the Norfolk Southern Railroad right-of-way at least one buried utility (a fiber optic line) would require relocation at the new shared use path crossing leading to the Lake Barber Trail.

Build Alternative 2: In addition to the impacts noted above, along SR 32 there are 14 additional electric transmission poles between Ivy Hills Place and Burger Farm on the north side that will need relocation. In the Norfolk Southern Railroad right-of-way at least one buried utility (a fiber optic line) would require relocation at the new shared use path crossing leading to the Lake Barber Trail.

Build Alternative 3: In addition to the impacts noted above, along SR 32 there are eight additional electric transmission poles between Ivy Hills Place and Burger Farm on the north side that will need relocation. In the Norfolk Southern Railroad right-of-way at the Round Bottom Road crossing, relocation would be required for the buried fiber optic line and at least one aerial electric/communication line pole. In addition, the construction of the shared-use path along Round Bottom Road would impact the existing drainage system, consisting of ditches and inlets, along the east side of the roadway.

4.6 ENVIRONMENTAL ANALYSIS

The following is a summary of environmental resources within the project area and anticipated involvement with those resources under the No Build and Build Alternatives.

***Rivers, Streams, and Wetlands*:** The Village of Newtown SR 32 Improvements project runs along McCullough Run, a tributary of the Little Miami River. Based on National Wetland Inventory mapping, the lower reach of McCullough Run is a riverine habitat classified as a R2UBHx wetland and the upper reach is a freshwater forested/shrub habitat classified as a PFO1Ax wetland (See **Attachment E-1**). McCullough Run is also designated by the Ohio Environmental Protection Agency (OEPA) as a warmwater habitat (WWH). McCullough Run flows for approximately 6,510 linear feet east-west through the project study area and consists of a combination of perennial, intermittent, and ephemeral reaches. In addition, two isolated emergent wetlands (Wetland A and Wetland B) are found in the northern section of the study area; Wetland A measures at 0.028 acres and Wetland B measures at 0.008 acres in area (See **Attachment E-2**). The potential impacts under each alternative are described below:

No Build Alternative: There would be no impacts to rivers, streams, and wetlands under the No Build Alternative.

Build Alternative 1: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Ivy Hills Place, impacting approximately 2,030 linear feet of intermittent McCullough Run. In addition, a shared-use connector path would link Round Bottom Road to the existing Lake Barber Trail, impacting Wetland A. The roadway improvement plans associated with the project include the relocation of a section of McCullough Run near the eastern terminus of the project along Little Dry Run Road. This would result in an additional approximate 200 linear feet of stream impacts.

Build Alternative 2: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Little Dry Run Road. This would impact approximately 2,030 linear feet of intermittent McCullough Run and approximately 1,290 linear feet of ephemeral McCullough Run. In addition, like Alternative 1, a shared-use connector path would link Round Bottom Road to the existing Lake Barber Trail, impacting Wetland A. The roadway improvement plans associated with the project include the relocation of a section of McCullough Run near the eastern terminus of the project along Little Dry Run Road. This would result in an additional approximate 200 linear feet of stream impacts.

Build Alternative 3: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Ivy Hills Place. This would impact approximately 2,030 linear feet of intermittent McCullough Run. Alternative 3 has no impacts to wetlands. The roadway improvement plans associated with this alternative includes the relocation of a section of McCullough Run near the eastern terminus of the project along Little Dry Run Road. This would result in an additional approximate 200 linear feet of stream impacts.

Floodplain: The project is partially within the 100-year floodplain and 500-year floodplain of the Little Miami River (**Attachment E-3**). Various impacts to the floodplain would be made with the roadway improvements from Drake Street to Round Bottom Road and construction of a shared-use path along Round Bottom Road. The potential impacts under each alternative are described below:

No Build Alternative: There would be no impacts to floodplains as a result of the No Build Alternative.

Build Alternative 1: Under Alternative 1, the shared-use path would impact the 500-year floodplain of the Little Miami River. Approximately 480 feet of shared-use path would be constructed connecting Round Bottom Road to the existing Lake Barber Trail and the proposed path on SR 32 to another portion of the existing Lake Barber Trail within the floodplain. The roadway improvement plans associated with this alternative involves additional permanent impacts to both the 100-year floodplain and 500-year floodplain of the Little Miami River.

Build Alternative 2: Like Alternative 1, the shared-use path in Alternative 2 would have permanent impacts to the 500-year floodplain of the Little Miami River. Approximately 480 feet of shared-use path would be constructed connecting Round Bottom Road to the existing Lake Barber Trail and the proposed path on SR 32 to another portion of the existing Lake Barber Trail within the floodplain. The roadway improvement plans associated with this alternative involves additional permanent impacts to both the 100-year floodplain and 500-year floodplain of the Little Miami River.

Build Alternative 3: Under Alternative 3 the shared-use path would result in permanent impacts to the 500-year floodplain of the Little Miami River. Approximately 1,920 feet of new shared-use path would be constructed along Round Bottom Road from SR 32 to Valley Avenue within the floodplain. The roadway improvement plans associated with this alternative involves additional permanent impacts to both the 100-year floodplain and 500-year floodplain of the Little Miami River.

Threatened and Endangered Species: The project is located within Hamilton County, Ohio. Hamilton County is within the known habitat ranges of the, running buffalo clover, the bald eagle, and fanshell, rayed bean, sheepnose, snuffbox, and pink mucket pearly mussels. Habitat for these species is not located within the project area (See **Attachment E-4**). In addition, the project is located within the known habitat ranges of the Indiana bat, federally endangered, and northern long eared bat (federally threatened). There is some suitable wooded habitat (SWH) for these bat species within the project area. The amount of SWH to be impacted by the project will be determined during the detailed environmental studies to be conducted for the project.

Cultural Resources: The project area does not contain any landmarks considered to be on or eligible for the National Register of Historic Places (NRHP). Cultural resource surveys have been conducted at both the eastern and western terminals of the project area and there are two known archaeological sites located within the project area (See **Attachment E-5**). The potential impacts under each alternative are described below:

No Build Alternative: There would be no impacts to cultural resources.

Build Alternatives 1, 2, and 3: Each of the Build Alternatives would impact two mapped archaeological sites, requiring further coordination with the Ohio State Historic Preservation Office (OSHPO) and possibly additional archaeological studies.

Section 4(f)/6(f): This project proposes construction of a public shared-use path within the LMST system that would connect to the existing Lake Barber Trail, a Section 4(f) property. No other public parks or facilities are located within the project area (See **Attachment E-6**). There are no properties in the project area that have received Land and Water Conservation Funds (LWCF). Therefore, there would be no Section 6(f) impacts.

> **No Build Alternative:** There would be no impacts to Section 4(f)/6(f) properties.
>
> **Build Alternatives 1, 2, and 3:** Each Build Alternative would connect to the Lake Barber Trail. The project would be considered an enhancement activity and would be an exception to the requirement for Section 4(f) approval. Coordination would still be required with the Official with Jurisdiction (OWJ).

Air Quality: The project is located in an area that is currently in attainment for criteria for air pollutants under the National Ambient Air Quality Standards. This project adds capacity but would have an average daily traffic (ADT) less than 140,000 so would require a qualitative Mobile Source Air Toxics (MSAT) analysis. The project is located in Hamilton County, which is an ozone marginal nonattainment area. The project is not on OKI's FY 2020-2023 Transportation Improvement Program dated March 9, 2019, nor is it on the ODOT's FY 2018-2021 Statewide Transportation Improvement Program (STIP) dated May 2017. Therefore, a request will need to be made to OKI to place the project on the TIP to ensure that it is included in the latest regional conformity analysis prior to project implementation. The project is located in Hamilton County, which is not a PM2.5 non-attainment area. Therefore, no PM 2.5 analysis is required. The State of Ohio is in attainment for Carbon Monoxide (CO) at this time and no coordination or analysis is required.

Noise Levels: The project involves an alteration of existing SR 32 which significantly changes the vertical alignment and it also adds an auxiliary turn lane along SR 32. There are approximately 135 residential buildings within 500 feet of the project area. As a result, a noise analysis may be required for the Build Alternatives. There would be no noise impacts under the No Build Alternative.

Drinking Water Resources: The project is entirely located within the boundaries of a designated sole source aquifer (See **Attachment E-7**). Under each of the Build Alternatives, plan notes to protect groundwater resources would be included in the project plans. There would be no impacts to Drinking Water Resources under the No Build Alternative.

Farmland: The project is located entirely within an urbanized area and would not require coordination under the Farmland Protection Policy Act (See **Attachment E-8**).

Regulated Materials: This project area encompasses a total of 65 regulated material sites as mapped by the Ohio Regulated Properties Search (ORPS) Tool (See **Attachment E-9**). The potential impacts under each alternative are described below:

> **No Build Alternative:** There would be no impacts to regulated material sites under the No Build Alternative.

Build Alternative 1: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Ivy Hills Place, not impacting any mapped regulated materials. The shared-use path would cross over to the north side of SR 32 and continue eastward to Little Dry Run Road, impacting one active solid waste ¼-mile buffer and one solid waste facility. In addition, a shared-use connector path would link Round Bottom Road to the existing Lake Barber Trail, impacting one spill site. The roadway improvement plans associated with this alternative would result in additional impacts to 42 mapped regulated materials. These include 7 Resource Conservation and Recovery Act (RCRA) sites, 4 underground storage tank (UST) sites, 16 leaking underground storage tank (LUST) sites, 2 active solid waste ¼-mile buffers, and 3 solid waste facilities.

Build Alternative 2: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Little Dry Run Road, impacting one active solid waste ¼-mile buffer. In addition, a shared-use connector path would link Round Bottom Road to the existing Lake Barber Trail, impacting one spill site. The roadway improvement plans associated with this alternative would result in additional impacts to 42 mapped regulated materials. These include 7 RCRA sites, 4 UST sites, 16 LUST sites, 2 active solid waste ¼-mile buffers, and 3 solid waste facilities.

Build Alternative 3: The shared-use path would run on the south side of SR 32 from the SR 32/Round Bottom Road intersection to Ivy Hills Place, not impacting any mapped regulated materials. The shared-use path would cross over to the north side of SR 32 and continue eastward to Little Dry Run Road, impacting one active solid waste ¼-mile buffer and one solid waste facility. The roadway improvement plans associated with this alternative would result in additional impacts to 42 mapped regulated materials. These include 7 RCRA sites, 4 UST sites, 16 LUST sites, 2 active solid waste ¼-mile buffers, and 3 solid waste facilities.

Underserved Populations: U.S. Census data was used to identify underserved populations in the project area as shown in **Table 6 (**see **Attachment E-10**).

Table 6: Percent Underserved Populations by Block Group[1]

	Block Group 390610249011	Block Group 390610249023	Block Group 390610249024
Minority	12.9%	14.5%	5.5%
Low-Income	34.8%	16.8%	7.8%
Limited English Proficiency	3.3%	0%	0%
Elderly	17.5%	14.5%	0%

(1) US 2010 Census Data Provided in ODOT's TIMS Mapping

Impacts to Underserved Populations for each alternative are as follows:

No Build Alternative: There would be no changes to Underserved Populations under the No Build Alternative. There would be no residential or commercial displacements or changes in vehicular, bicycle, and pedestrian access.

Build Alternatives: None of the Build Alternatives would result in residential displacements. Each alternative would improve pedestrian and bicycle access along SR 32 between Round Bottom Road and Little Dry Run. In addition, each alternative provides a connection to the Round Bottom Road and Valley intersection, providing access to the Little Miami Scenic Trail.

Public Involvement: As discussed in Section 1.1, Project History, the need for improvements to SR 32 in the Village of Newtown was identified in the *Eastern Corridor Segments II and III (PID 86462) Transportation Needs Analysis*, prepared on July 31, 2017. This study was followed by the *Conceptual Alternatives Implementation Plan for Eastern Corridor Segments II and III (PID 86462)*, prepared on June 21, 2019, which identified the proposed improvements of the SR 32 corridor in the Village of Newtown as four of 68 projects that should be prioritized for implementation. The public involvement process for each of these studies is detailed in the reports cited above and summarized briefly as follows.

Transportation Needs Analysis: During the Needs Analysis study, stakeholder input was gathered through an Eastern Corridor Development Team (ECDT) meeting, which included Eastern Corridor Partners, community representatives, and leadership of the Eastern Corridor communities, business associations, and other stakeholder groups that have an interest in the Eastern Corridor Program. In addition, a series of Focus Area Workshops were held for smaller geographic areas within the Eastern Corridor area to gather public input regarding community values and priorities and the transportation needs of the focus areas. To reach all residents within the Eastern Corridor area, an online interactive survey was conducted which solicited information from residents and commuters about transportation issues in Segments II and III of the Eastern Corridor. ODOT also held a Public Open House to update the public on the Eastern Corridor Segments II and III Transportation Needs Analysis Study and provide an opportunity for the pubic to provide comments on the needs identified for the six focus areas.

Conceptual Alternatives Implementation Plan: As part of the development of the Implementation Plan, Advisory Committees were established for the six Focus Areas within Segments II and III. These committees included elected officials, transportation planning professionals, and community and interest group representatives, as well as representatives of the Sierra Club, Tri-State Trails/Green Umbrella, and the Ohio-Kentucky-Indiana (OKI) Regional Council of Governments. Each Advisory Committee held four meetings with ODOT over the course of the study to further refine transportation needs in the Focus Areas and assist with developing solution concepts. Two Public Open House Meetings also were held throughout the development and refinement of the transportation concepts to ensure that the public had an opportunity to provide input at key decision points.

In the winter of 2021, a virtual open house was held in order to share the three Build Alternatives with residents of the community as well as those who work within and pass through the corridor. The virtual open house, presented as a self-guided tour, opened to the public on February 14 and included written descriptions of the alternatives as well as graphics of the proposed Build Alternatives. The three Build Alternatives were compared to each other in terms of cost, length of new path constructed, and R/W impacts with the first alternative being specified as the Preferred Alternative to the public. Comments were accepted from residents of Newtown, public figures, workers near Newtown, and others who drove through the area

regularly until March 22 via publicinput.com, email, and physical comment form. The Public Engagement Summary is included in **Attachment F**.

The virtual open house received 1,200 views. One hundred visitors responded to survey questions provided on the open house webpage. Of the 45 respondents who completed the survey question regarding their preference of shared-use path alternative, 60% (27 respondents) preferred Alternative 1, 24% (10 respondents) preferred Alternative 2, 4% (2 respondents) preferred Alternative 3, and 11% (4 respondents) had no preference.

4.7 COST ESTIMATES

Preliminary construction and right-of-way cost estimates were developed for each of the Build Alternatives and are included in **Attachments G** and **H,** respectively.

Build Alternative 1: The estimated construction and right-of-way costs for Alternative 1 are $8.8 million and $2.2 million, respectively, for a total cost of $11.0 million. Major cost considerations of this alternative include the cost of the constructing the shared-use path under the Norfolk Southern Railroad and required utility relocations.

Build Alternative 2: The estimated construction and right-of-way costs for Alternative 2 are $9.2 million and $2.1 million, respectively, for a total cost of $11.3 million. Like Alternative 1, this alternative includes the cost of the railroad underpass construction and utility relocation. In addition, Alternative 2 includes costs for the construction of a midblock crossing with signage and rapid flashing warning lights and requires new pavement between Ivy Hills Drive and Little Dry Run Road as a result of the realignment of SR 32 north in this area.

Build Alternative 3: The estimated construction and right-of-way costs for Alternative 3 are $8.6 million and $2.1 million, respectively, for a total cost of $10.7 million. Alternative 3 does not have the cost of the underpass at the railroad tracks and the utility relocation in this area. However, Alternative 3 does include increased costs for the additional length of shared-use path required to make the connection at Valley Avenue and the construction of an at-grade railroad crossing with gates along Round Bottom Road.

5.0 COMPARISON OF ALTERNATIVES

A detailed comparative evaluation matrix, which summarizes purpose and need, environmental, engineering, traffic, and public input evaluation criteria for the alternatives is provided in **Table 7**.

Table 7: Evaluation Matrix

Feature/Consideration	Preliminary Alternatives			
	No Build Alternative	Build Alternative 1	Build Alternative 2	Build Alternative 3
Purpose and Need – Primary Need				
Address congestion issues on SR 32	No	Yes	Yes	Yes
Purpose and Need- Secondary Need				
Address Pedestrian/Bicycle Connectivity	No	Yes	Yes	Yes
Address deficient sight distance on Little Dry Run	No	Yes	Yes	Yes
Right-of-way Requirements				
Relocations	No	1 commercial bldg.	1 commercial bldg.	1 commercial bldg.
Property Impacts	No	Minor impacts to 39 properties; Railroad ROW required	Minor impacts to 39 properties; Railroad ROW required	Minor impacts to 45 properties; impacts to parking and storage on HCEO property; minor Railroad ROW required
ENVIRONMENTAL ANALYSIS				
Ecological Resources				
Streams	No	2,240 lf stream impacts	3,520 lf stream impacts	2,230 lf stream impacts
Wetlands	No	Impacts to 1 wetland	Impacts to 1 wetland	No
Jurisdictional Ditches	No	No	No	No
Threatened & Endangered Species	No	May Affect but Not Likely to Adversely Impact Indiana and northern long eared bat species.	May Affect but Not Likely to Adversely Impact Indiana and northern long eared bat species.	May Affect but Not Likely to Adversely Impact Indiana and northern long eared bat species.
100-Year Floodplain				
100-Year Floodplain Encroachment	No	Impacts to 100-year floodplain	Impacts to 100-year floodplain	Impacts to 100-year floodplain
Hazardous Materials				
Regulated Materials Review	No	45 RMR Sites	44 RMR Sites	44 RMR Sites
Drinking Water Resources				
Sole-Source Aquifer	No	Yes	Yes	Yes
Source Water Protection Area	No	No	No	No
Air Quality and Noise				
Air Quality	No	No	No	No
Traffic Noise	No	TBD	TBD	TBD
Cultural Resources				
Historic Resources	No	No	No	No
Archaeological Resources	No	2 known sites	2 known sites	2 known sites
Community and Land Use				

Feature/Consideration	Preliminary Alternatives			
	No Build Alternative	**Build Alternative 1**	**Build Alternative 2**	**Build Alternative 3**
Underserved Populations (UP)	No	Improves Bike/Pedestrian Connectivity	Improves Bike/Pedestrian Connectivity	Improves Bike/Pedestrian Connectivity
Stakeholder/Public Involvement				
Virtual Public Open House Survey	Not Preferred by Public	(60% support)	(24% support)	(4% support)
ENGINEERING CONSIDERATIONS				
Traffic Analysis				
Overall Intersection PM LOS 2042 Design Year w/Marietta Traffic • SR 32 & Round Bottom • SR 32 & Ivy Hills PL • SR 32 & Little Dry Run Road	PM LOS E PM LOS C PM LOS D	PM LOS D PM LOS A PM LOS C	PM LOS D PM LOS A PM LOS C	PM LOS D PM LOS A PM LOS C
Roadway Design Issues				
Railroad Involvement	No	Underpass of Railroad Required	Underpass of Railroad Required	Railroad Crossing Gates Required
Crossings of SR 32 by Trail Users	0	Traffic Signals at Ivy Hills PL & Little Dry Run	Mid-Block Crossing with HAWK	4-step crossing at Round Bottom Road; Traffic Signals at Ivy Hills PL & Little Dry Lane
Maintenance of Traffic	No	One-lane Traffic; No Detour; RR MOT	One-lane Traffic; No Detour; RR MOT	One-lane Traffic; No Detour
Utilities	No	Stormwater Fiber Optic Line	Stormwater Fiber Optic Line	Stormwater
Preliminary Cost Estimates				
Preliminary Construction Costs	$0.00	$8.8M	$9.2M	$8.6M
Preliminary Right-of-Way Costs	$0.00	$2.2M	$2.1M	$2.1M
Total Costs	$0.00	$11.0M	$11.3M	$10.7M
Conclusion				
Recommended as Preferred Alternative?	**No**	**Yes**	**No**	**No**

6.0 PREFERRED ALTERNATIVE

The purpose of the Newtown Improvements Project is to improve automobile congestion along SR 32 through the Village of Newtown, as well as to expand bicycle and pedestrian facilities along SR 32 and provide linkages to the existing LMST. Three Build Alternatives, in addition to the No Build Alternative, were evaluated for this project. Each of the Build Alternatives reduce congestion on SR 32 by improving the intersections of SR 32 with Round Bottom Road and Little Dry Run and adding a center turn lane from Little Dry Run to the Village east corp. limit. The major difference between the alternatives is the configuration of

the shared-use trail. Based on the environmental and engineering analyses conducted for this project, Build Alternative 1 is recommended as the Preferred Alternative for the following reasons:

- Alternative 1 operates better for trail users than Alternatives 2 and 3. Alternative 1 includes crossings at the signalized intersections of Ivy Hills Lane and Little Dry Run, which would be safer for trail users and would not affect traffic flow on SR 32.
- Alternative 1 is preferred by the public. Of the 45 respondents who completed the survey question regarding their preference of shared-use path alternative, 60% (27 respondents) preferred Alternative 1.

6.1 NEXT STEPS

During the next steps of the project, ODOT will work with the Village of Newtown to identify funding, complete designs of the preferred alternative, and construct the project. Specific steps to be taken include the following:

- The preliminary alternatives developed for the Feasibility Study utilized a combination of 11-foot and 12-foot lanes. Moving forward, options will be evaluated to utilize 11-foot lanes exclusively throughout the preferred alternative in an effort to reduce costs and impacts.
- The location of the connector trail between SR 32 and the Lake Barber Trail will be reviewed to locate the point of least disturbance to the railroad and also to the surrounding parcels. An at-grade railroad crossing of the Lake Barber Connector Trail will be investigated. In addition, active coordination with the Norfolk Southern Railroad will be undertaken to further explore the feasibility of constructing an underpass of the railroad for the shared-use path.
- Recognizing that the total project cost is too high for the Village of Newtown to undertake as one big project, strategies to divide the project into phases will be explored. Potential phasing splits could include SR 32 from Round Bottom to Little Dry Run Road; SR 32 east of Little Dry Run Road; Improvements to Little Dry Run Road; and the bike trail connection either from SR 32 to the Lake Barber Trail or from SR 32 along Round Bottom Road.

7.0 REFERENCES

Stantec Consulting Services Inc., 2019. *Conceptual Alternatives Implementation Plan for Segment II/III of the Eastern Corridor Study (PID 86462)*. Lebanon, Ohio

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Village of Newtown, *Plan Newtown,* update to 1998 Comprehensive Plan. January 9, 2020. Accessed April 30, 2021 online at plannewtown-v.2-1.9.20-for-public-review.pdf (wordpress.com).