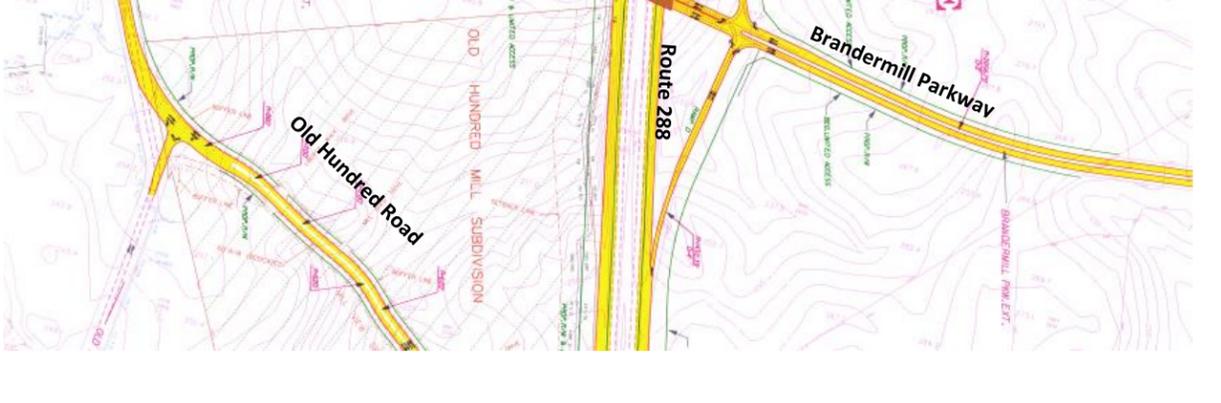
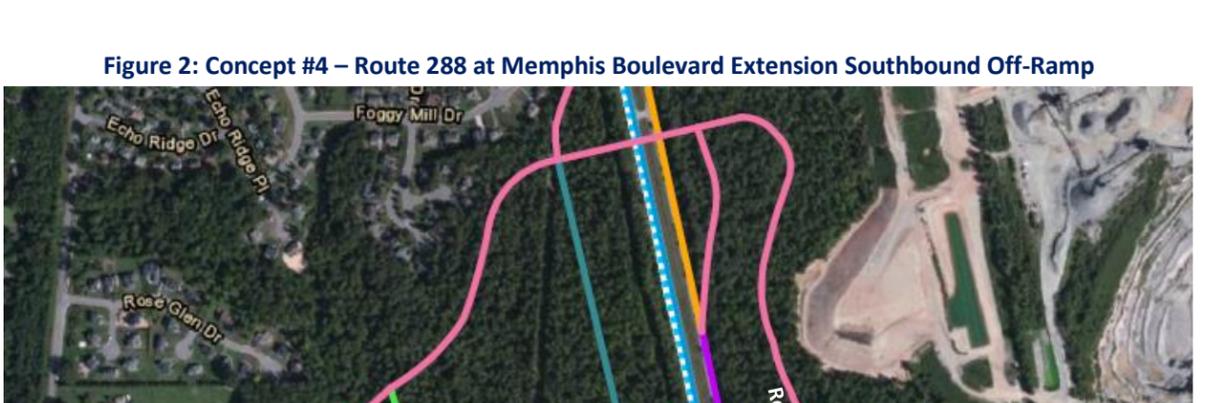




Appendix D: Concept Screening

Appendix D: Concept Screening

Concept Description	Screening Result	Figure 1: Concept #3 – RT 288 at Brandermill Extension – Modified Diamond/Partial Cloverleaf Interchange
<p>Concept #1 – Route 288 Roadway Widening</p> <p>This concept consists of constructing a third lane on northbound and southbound Route 288 between Powhite Parkway and US 360. This improvement is intended to provide additional capacity on Route 288 to accommodate the projected traffic volumes in this segment. The proposed widening would largely occur within existing right-of-way and would not require any bridge improvements. There is currently room for three travel lanes in each direction on Route 288 under the Genito Road overpass. The third lane on southbound Route 288 would connect the auxiliary lane from Powhite Parkway and the deceleration lane for the US 360 westbound exit ramp. The third lane on northbound Route 288 would connect the acceleration lane from US 360 westbound to the auxiliary lane for Powhite Parkway. This improvement is intended to provide additional capacity on Route 288 to accommodate the projected traffic volumes in this segment. Projected traffic volumes indicate that this improvement is required.</p>	<p>**PRIMARY**</p>	
<p>Concept #2 – Route 288 at Genito Road Extension – Partial Cloverleaf Interchange</p> <p>This concept consists of building a partial cloverleaf interchange on Route 288 at the Genito Road overpass. A partial cloverleaf interchange is proposed on Route 288 southbound where the off- and on-ramps are located on the southeast and southwest quadrants of the interchange. Slip ramps would serve the southbound on-ramp and the northbound off-ramp. Loop ramps would serve the southbound off-ramp and the northbound on-ramp. This concept also proposes extending two-lane CD roads on northbound and southbound Route 288 from Powhite Parkway to the existing CD road south of US 360 due to the close proximity to the Powhite Parkway interchange. A bridge replacement is proposed on Genito Road to accommodate the construction of the Route 288 CD roads. The primary purpose of this concept is to reduce traffic at the US 360/Route 288 interchange and the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway. Clover Hill High School is located in the southwest quadrant of Route 288/Genito Road and this interchange would require the existing athletics fields to be relocated. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This concept was removed from consideration based on the proximity to the Route 288/Powhite Parkway interchange.</p>	<p>**ELIMINATED**</p>	
<p>Concept #3 – Route 288 at Brandermill Parkway Extension – Modified Diamond/Partial Cloverleaf Interchange (Figure 1)</p> <p>This concept consists of building a modified diamond/partial cloverleaf interchange on Route 288 approximately a half mile south of the Genito Road overpass. This concept proposes extending Brandermill Parkway from Old Hundred Road to Warbro Road as a four-lane divided facility across Route 288. The proposed interchange concept features a traditional diamond interchange configuration on northbound Route 288 at the Brandermill Parkway Extension. A partial cloverleaf interchange is proposed on Route 288 southbound where the off- and on-ramp are both located on the northwest quadrant of the interchange with a slip ramp and a loop ramp. This concept also proposes two-lane CD roads on northbound and southbound Route 288 from Powhite Parkway to the existing CD road south of US 360 in conjunction with adjacent interchange improvements. A bridge replacement is proposed on Genito Road to accommodate the construction of the Route 288 CD roads. The primary purpose of this concept is to reduce traffic at the US 360/Route 288 interchange and the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This concept was removed from consideration based on the proximity to the Route 288/Powhite Parkway interchange.</p>	<p>**ELIMINATED**</p>	<p>Figure 2: Concept #4 – Route 288 at Memphis Boulevard Extension Southbound Off-Ramp</p> 
<p>Concept #4 – Route 288 at Memphis Boulevard Extension Southbound Off-Ramp (Figure 2)</p> <p>The proposed concept consists of providing an off-ramp from Route 288 southbound at Memphis Boulevard Extension. With this concept, the extension of Memphis Boulevard is proposed from its existing terminus east of Route 288 to Market Square Lane to the west of Route 288. The primary purpose of this concept is to reduce traffic on the Route 288 southbound to US 360 westbound off-ramp by providing an alternate route to Old Hundred Road. The Memphis Boulevard connection would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. The Memphis Boulevard extension also would provide access from Route 288 and Old Hundred Road to the undeveloped land on the northeast and northwest quadrants of the US 360/Route 288 interchange. Travel demand modeling determined that an interchange at the Memphis Boulevard Extension would primarily support new development on the northeast and northwest quadrants of the US 360/Route 288 interchange. A variation of this concept was considered with a northbound on-ramp. The primary purpose of this was to allow access to northbound Route 288 from Old Hundred Road to reduce trips on the US 360/Route 288 eastbound to northbound loop ramp in the AM peak hour. Travel demand modeling determined that this additional connection would primarily support new development on the northeast and northwest quadrants of US 360/Route 288 interchange. Additionally, this concept does not provide direct access from Memphis Boulevard to southbound Route 288 or northbound Route 288 to Memphis Boulevard.</p>	<p>**ELIMINATED**</p>	<div style="border: 1px solid black; padding: 5px;"> <p>Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange</p> <p>Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area</p> <p>Eliminated – Concept vetted by study work group and eliminated for further consideration</p> </div>

Appendix D: Concept Screening

Concept Description

Screening Result

Concept #5 – Route 288 at Memphis Boulevard Extension – Partial Cloverleaf Interchange (Figure 3)

This proposed concept consists of providing a partial cloverleaf interchange along Route 288 at the Memphis Boulevard Extension. The extension of Memphis Boulevard is proposed from its existing terminus east of Route 288 to Market Square Lane to the west of Route 288. The full interchange would require CD roads on both northbound and southbound Route 288. The primary purpose of this concept is to reduce traffic on the Route 288 southbound to US 360 westbound off-ramp by providing an alternate route to Old Hundred Road. A full interchange, along with the Memphis Boulevard connection, would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. The Memphis Boulevard extension also would provide access from Route 288 and Old Hundred Road to the undeveloped land on the northeast and northwest quadrants of the US 360/Route 288 interchange. Travel demand modeling determined that an interchange at the Memphis Boulevard Extension would primarily support new development on the northeast and northwest quadrants of the US 360/Route 288 interchange.

****ELIMINATED****

Concept #6 – Route 288 at Old Hundred Road Relocated – Partial Interchange (Figure 4)

This concept consists of building a partial interchange on Route 288 just to the north of US 360 and south of the Genito Road overpass. This concept proposes relocating Old Hundred Road to the east by following the current alignment of Mill View Drive through the Old Hundred Mill subdivision. This concept also includes extending Old Hundred Road Relocated to tie back into the original alignment of Old Hundred Road at the intersection with Market Square Lane. Old Hundred Road Relocated is proposed as a four-lane divided facility. The proposed partial interchange includes an off-ramp and an on-ramp on southbound Route 288 at Old Hundred Road Relocated. This concept also proposes two-lane CD roads on northbound and southbound Route 288 from Powhite Parkway to the existing CD road south of US 360 in conjunction with adjacent interchange improvements (Concept 5). The primary purpose of this concept is to reduce traffic at the US 360/Route 288 interchange and the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway. This concept would also provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This concept was eliminated due to the impacts to interchange spacing.

****ELIMINATED****

Concept #7 – Route 288 at Bailey Bridge Road – Northbound Route 288 Off-Ramp to Bailey Bridge Road (Figure 5)

This concept consists of constructing an off-ramp from northbound Route 288 to Bailey Bridge Road and an on-ramp to southbound Route 288. This concept is intended to provide a connection from northbound Route 288 to Bailey Bridge Road and assumes there will be a connection from Bailey Bridge Road to Commonwealth Centre Parkway. This improvement will have impacts to the residential properties to the east of Route 288. This concept would also provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This improvement was removed from consideration due to potential impacts to the Route 288 bridge over Bailey Bridge Road and potential impacts to the residences adjacent to Route 288.

****ELIMINATED****

Concept #8 – Route 288 at Bailey Bridge Road – Partial Interchange with Northbound Route 288 Flyover (Figure 5)

This concept consists of constructing a partial interchange that features a flyover off-ramp from northbound Route 288 and a southbound Route 288 on-ramp at Bailey Bridge Road. This concept is intended to provide a connection from northbound Route 288 to Bailey Bridge Road to reduce travel demand on US 360 and assumes there will be a connection from Bailey Bridge Road to Commonwealth Centre Parkway. This concept would also provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This improvement could impact the Route 288 bridge over Bailey Bridge Road and impact residences adjacent to Route 288. Travel demand modeling results indicate that this concept was not as effective at diverting traffic off of US 360 as a full interchange concept; therefore, this improvement was removed from further consideration.

****ELIMINATED****

Concept #9 – Southbound Route 288 Partial Interchange South of Bailey Bridge Road (Figure 6)

This concept consists of constructing southbound Route 288 on- and off-ramps south of Bailey Bridge Road. This concept would provide a connection from southbound Route 288 to Bailey Bridge Road in efforts to reduce travel demand on US 360. This improvement does not provide access to/from northbound Route 288. Also, the ramp improvement follows the general direction of the Swift Creek, which may not be environmentally feasible. This concept would also provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This improvement was removed from further consideration due to potential impacts to the Route 288 bridge over Bailey Bridge Road, residences adjacent to Route 288, and to Swift Creek.

****ELIMINATED****

Figure 3: Concept #5 – Route 288 at Memphis Boulevard Extension – Partial Cloverleaf Interchange

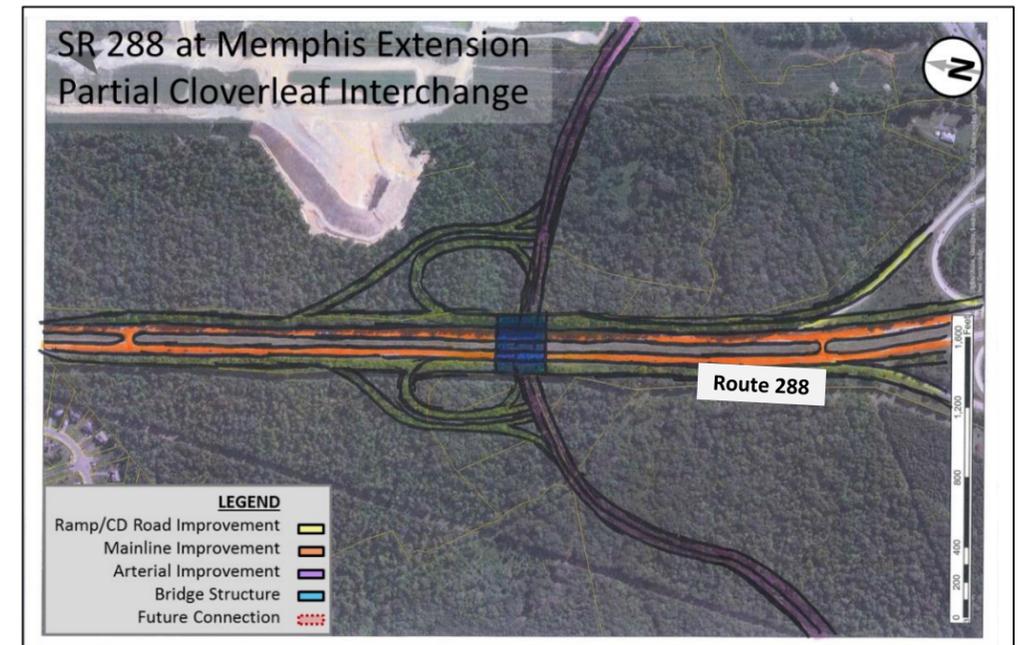
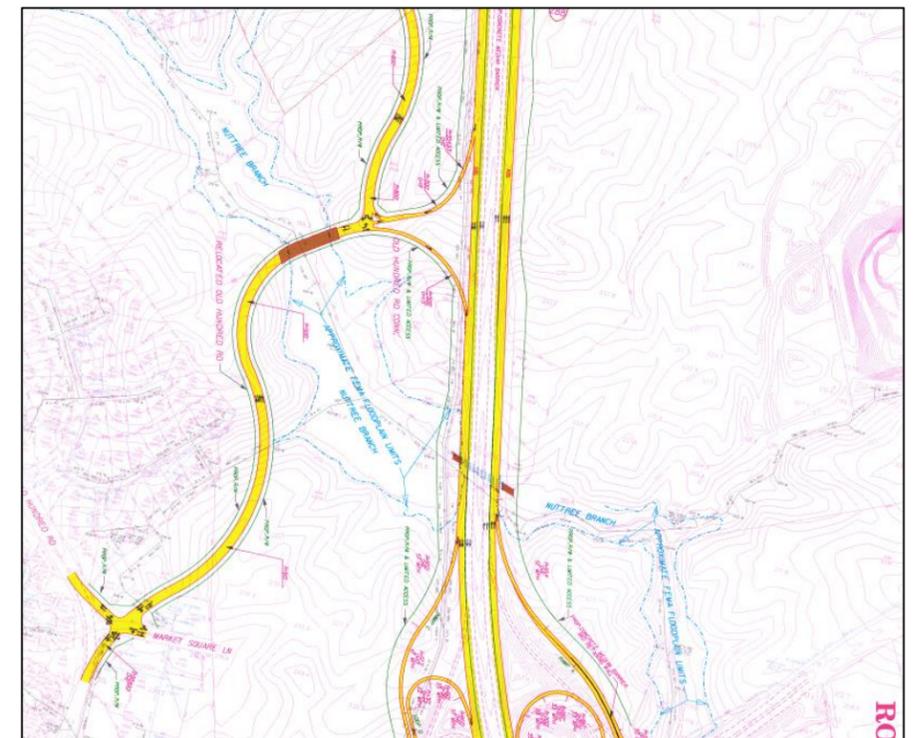


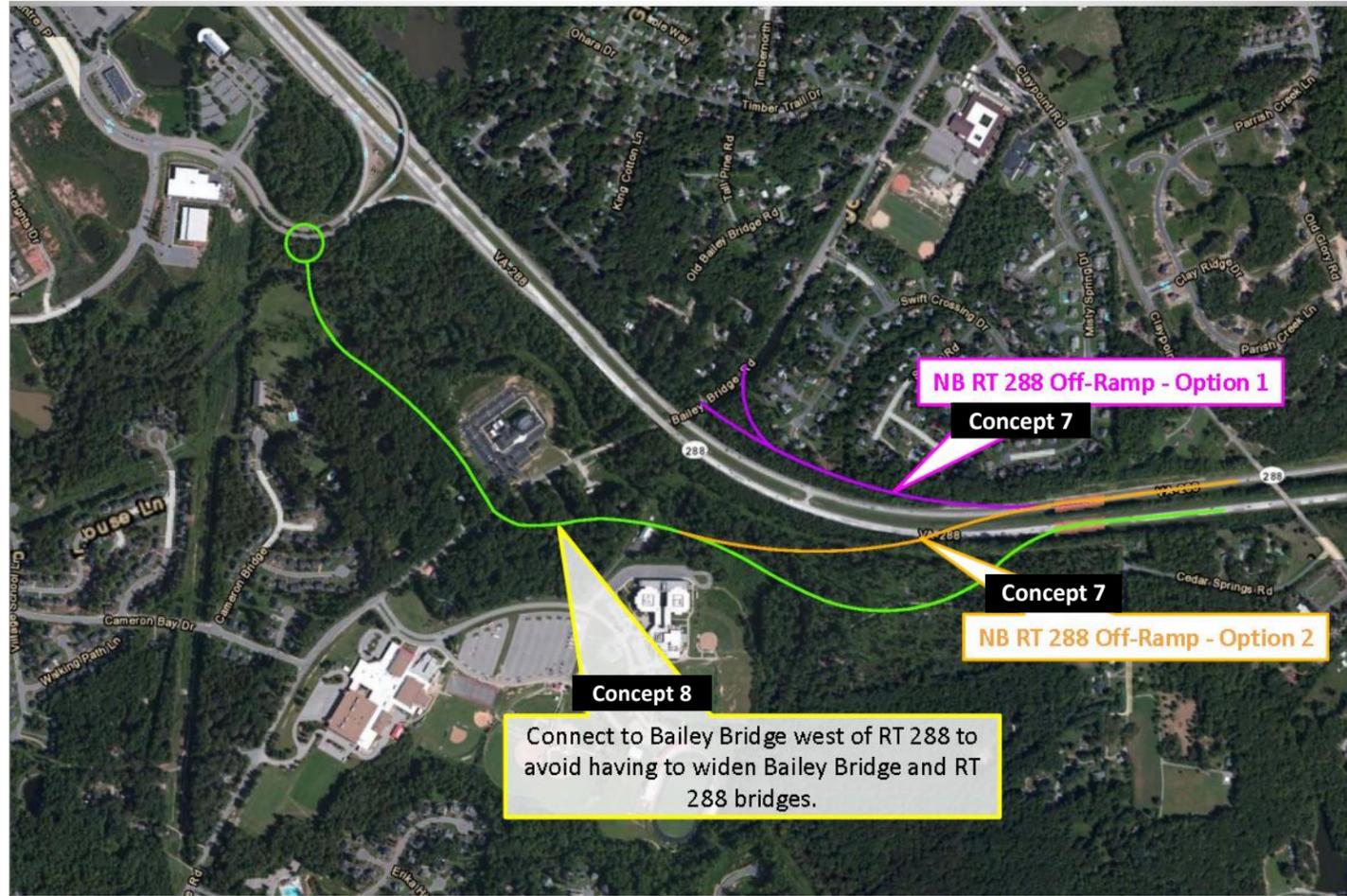
Figure 4: Concept #6 – Route 288 at Old Hundred Road Relocated – Partial Interchange



- Primary** – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange
- Secondary** – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area
- Eliminated** – Concept vetted by study work group and eliminated for further consideration

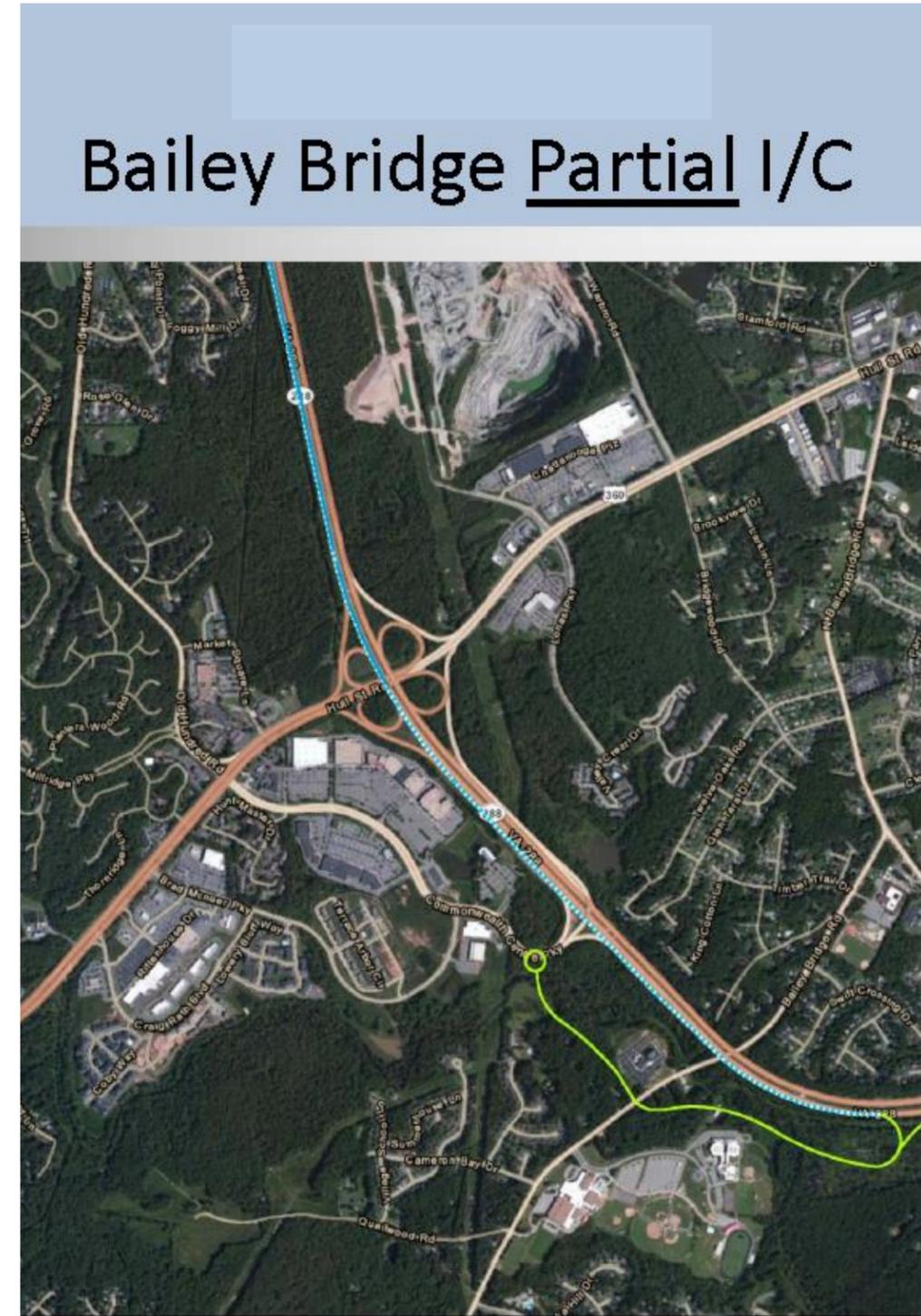
Appendix D: Concept Screening

Figure 5: Concept #7 – Northbound Route 288 Off-Ramp to Bailey Bridge Road and
 Concept #8 – Route 288 at Bailey Bridge Road - Partial Interchange with Northbound Route 288 Flyover



Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.

Figure 6: Concept #9 – Southbound Route 288 Partial Interchange South of Bailey Bridge Road

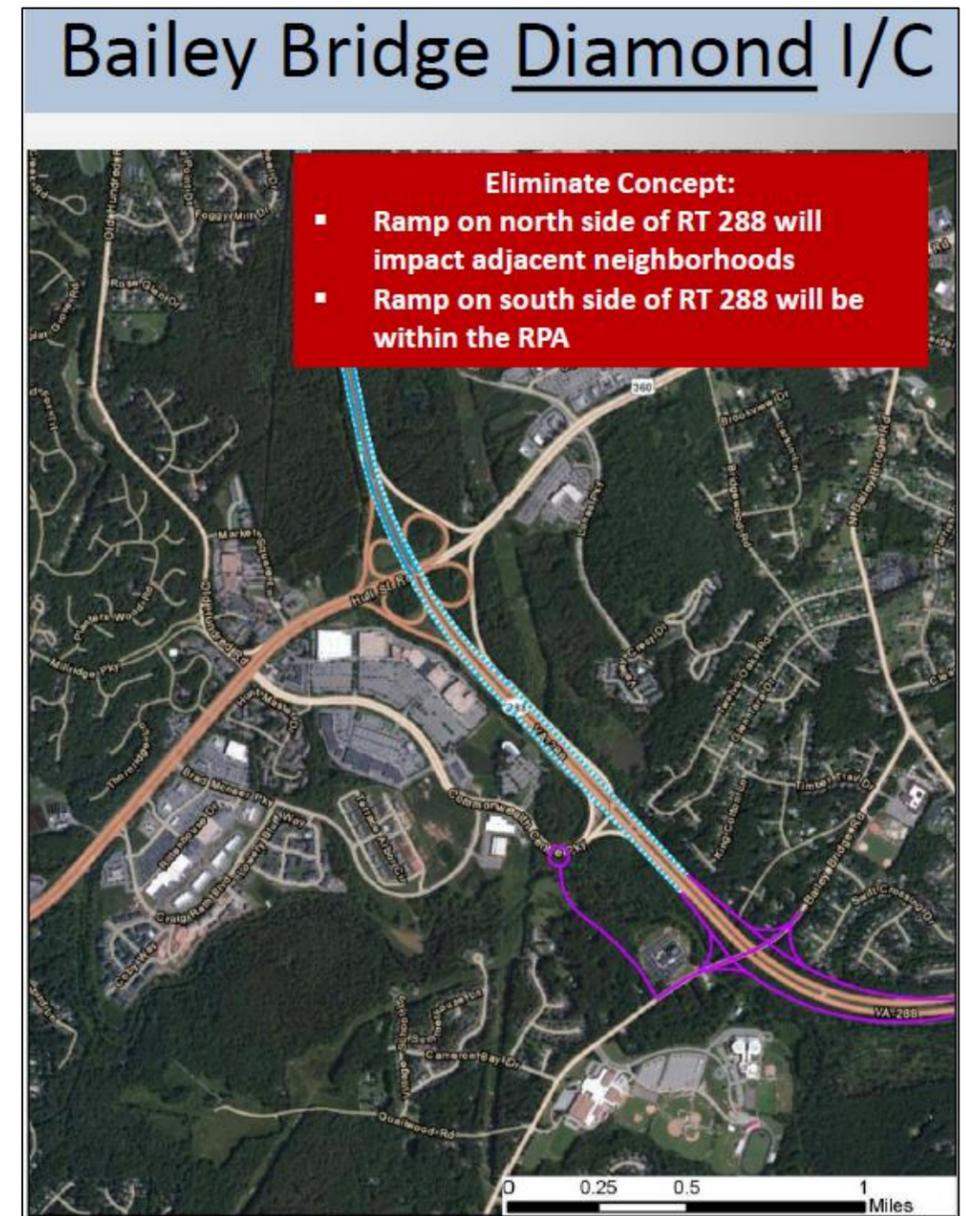


Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.

Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #10 – Route 288 at Bailey Bridge Road – Diamond Interchange (Figure 7)</p> <p>This concept consists of constructing a diamond interchange on Route 288 at Bailey Bridge Road. This improvement is intended to provide access to Bailey Bridge Road from Route 288 to reduce the demand on US 360. This concept could require Bailey Bridge Road to be widened from a two-lane facility to a four-lane facility. This improvement will have impacts to the residential properties to the east of Route 288. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This improvement was removed from consideration due to potential impacts to Bailey Bridge Road, the Route 288 bridge over Bailey Bridge Road, and the residences adjacent to Route 288.</p>	<p>**ELIMINATED**</p>
<p>Concept #11 – Route 288 at Commonwealth Centre Parkway – Directional Interchange (Figure 8)</p> <p>This concept consists of adding a directional ramp from northbound Route 288 to westbound Commonwealth Centre Parkway. This improvement would align the proposed directional ramp with Commonwealth Centre Parkway. The purpose of this improvement is to provide access from northbound Route 288 to Commonwealth Centre. Travel demand modeling results indicate that this improvement will reduce the projected traffic on the northbound Route 288 to westbound US 360 ramp and US 360 between Route 288 and Old Hundred Road/Commonwealth Centre Parkway. However, this improvement did not reduce traffic on US 360 west of Old Hundred Road/Commonwealth Centre Parkway. This concept could require Bailey Bridge Road to be widened from a two-lane facility to a four-lane facility. This improvement will have impacts to the homes adjacent to Route 288. An air and noise study would have to be conducted to determine whether or not a sound wall is required. This concept would provide an alternate travel route during construction of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection.</p>	<p>**PRIMARY**</p>
<p>Concept #12 – Route 288 at Commonwealth Centre Parkway – Directional Interchange with Slip Ramp (Figure 9)</p> <p>This concept consists of adding a directional ramp from northbound Route 288 to westbound Commonwealth Centre Parkway. This improvement would align the proposed directional ramp with the proposed Bailey Bridge Connector road and could require Bailey Bridge Road to be widened from a two-lane facility to a four-lane facility. This improvement also would include a slip ramp from southbound Route 288 to Commonwealth Centre Parkway. The slip ramp will maintain existing access into Commonwealth Centre from southbound Route 288. Improvements such as a roundabout would need to be considered at the intersection of Commonwealth Centre Parkway at Brad McNeer Parkway. The purpose of this improvement is to provide access from Route 288 to Bailey Bridge Road to provide an alternative route to US 360. Travel demand modeling results indicate that this improvement will reduce the projected traffic on US 360. This improvement will have impacts to the homes adjacent to Route 288. An air and noise study would have to be conducted to determine whether or not a sound wall is required. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection.</p>	<p>**PRIMARY**</p>
<p>Concept #13 – Route 288 at Commonwealth Centre Parkway – Urban Diamond Interchange (Figure 10)</p> <p>This concept consists of completely rebuilding the Commonwealth Centre Parkway interchange as an urban diamond interchange. Urban diamond interchanges operate similarly to diamond interchanges; however, the spacing of the ramp terminals is generally closer together. The ramp terminals of the urban diamond interchange are proposed as signalized intersections. This improvement is intended to provide access to Commonwealth Centre Parkway from northbound Route 288. This improvement was effective at pulling traffic from the northbound Route 288 to westbound US 360 exit ramp; however, it was removed from consideration due to the construction costs associated compared to the cost of keeping the existing interchange. An alternative configuration to the urban diamond interchange is to replace the signalized ramp terminals with roundabouts. Roundabouts offer safety benefits; however, roundabouts at the end of ramp terminals do not allow for queue preemption to clear out queues backing from the ramp terminal onto Route 288. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection.</p>	<p>**ELIMINATED**</p>
<p>Concept #14 – Route 288 at Commonwealth Centre Parkway – Urban Diamond Interchange with Lonas Parkway Extension (Figure 11)</p> <p>This concept consists of completely rebuilding the Commonwealth Centre Parkway interchange as an urban diamond interchange and constructing a new roadway from Lonas Parkway to Route 288 (Lonas Parkway Extension). The Lonas Parkway Extension is intended to connect the undeveloped land at Lonas Parkway to Route 288. This improvement would require the proposed extension to cross over a wetland and bisect the Addison at Swift Creek apartment complex. This improvement was removed from consideration once it was determined that it did not impact traffic on US 360 or at the US 360/Route 288 interchange. An alternative configuration to the urban diamond interchange with Lonas Parkway Extension is to replace the signalized ramp terminals with roundabouts. Roundabouts offer safety benefits; however, roundabouts at the end of ramp terminals do not allow for queue preemption to clear out queues backing from the ramp terminal onto Route 288. This concept would provide an alternate travel route through the construction process of improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection.</p>	<p>**ELIMINATED**</p>

Figure 7: Concept #10 – Route 288 at Bailey Bridge Road – Diamond Interchange



Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Figure 8: Concept #11 – Route 288 at Commonwealth Centre Parkway – Directional Interchange

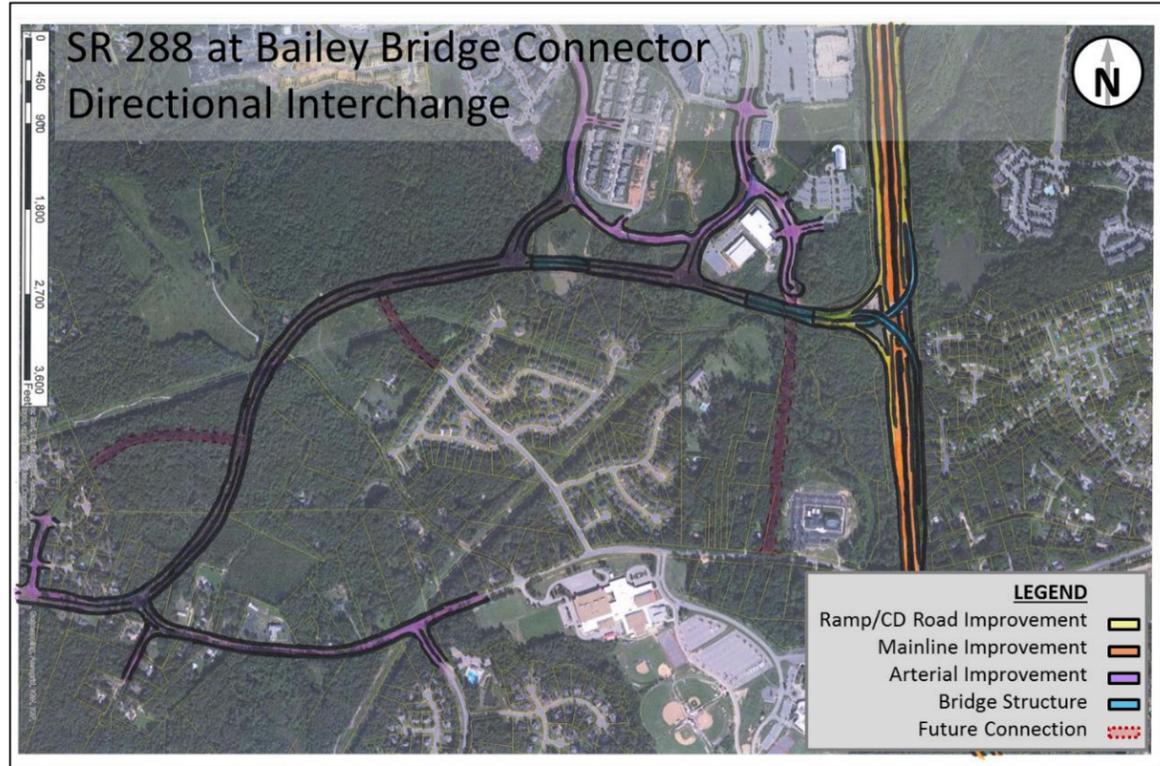


Figure 9: Concept #12 – Route 288 at Commonwealth Centre Parkway – Directional Interchange with Slip Ramp

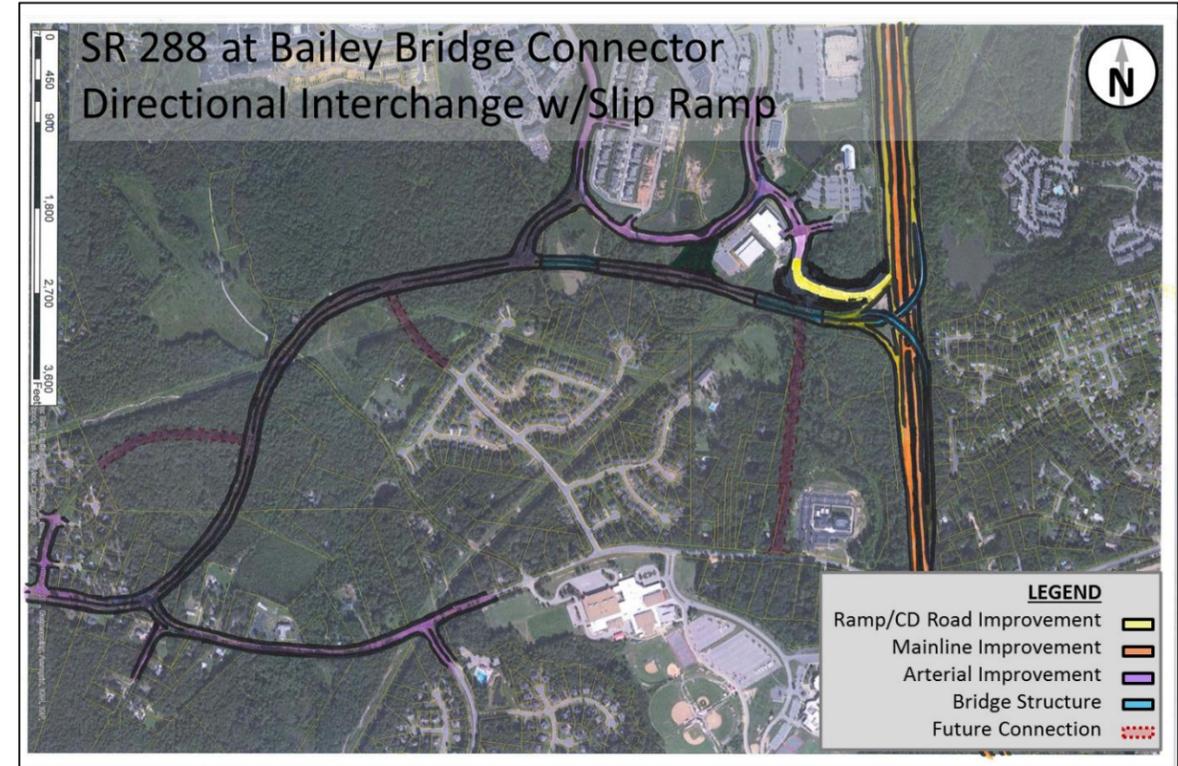


Figure 10: Concept #13 – Route 288 at Commonwealth Centre Parkway – Urban Diamond Interchange

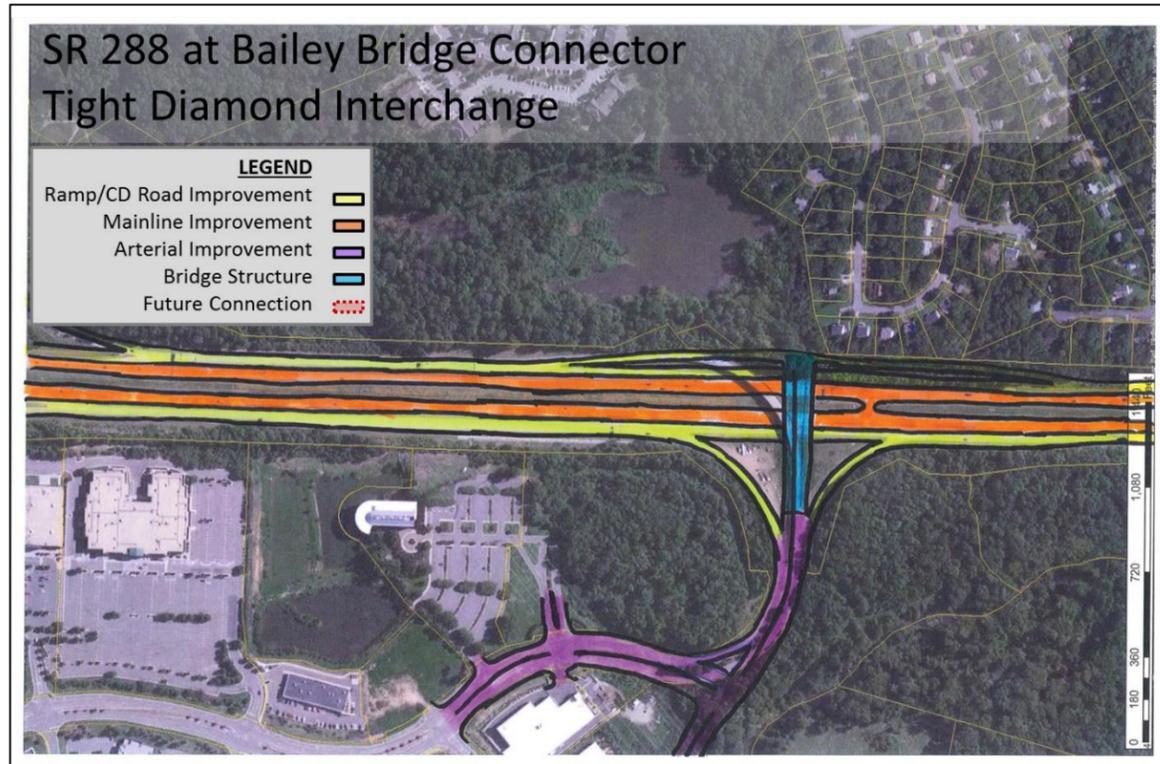
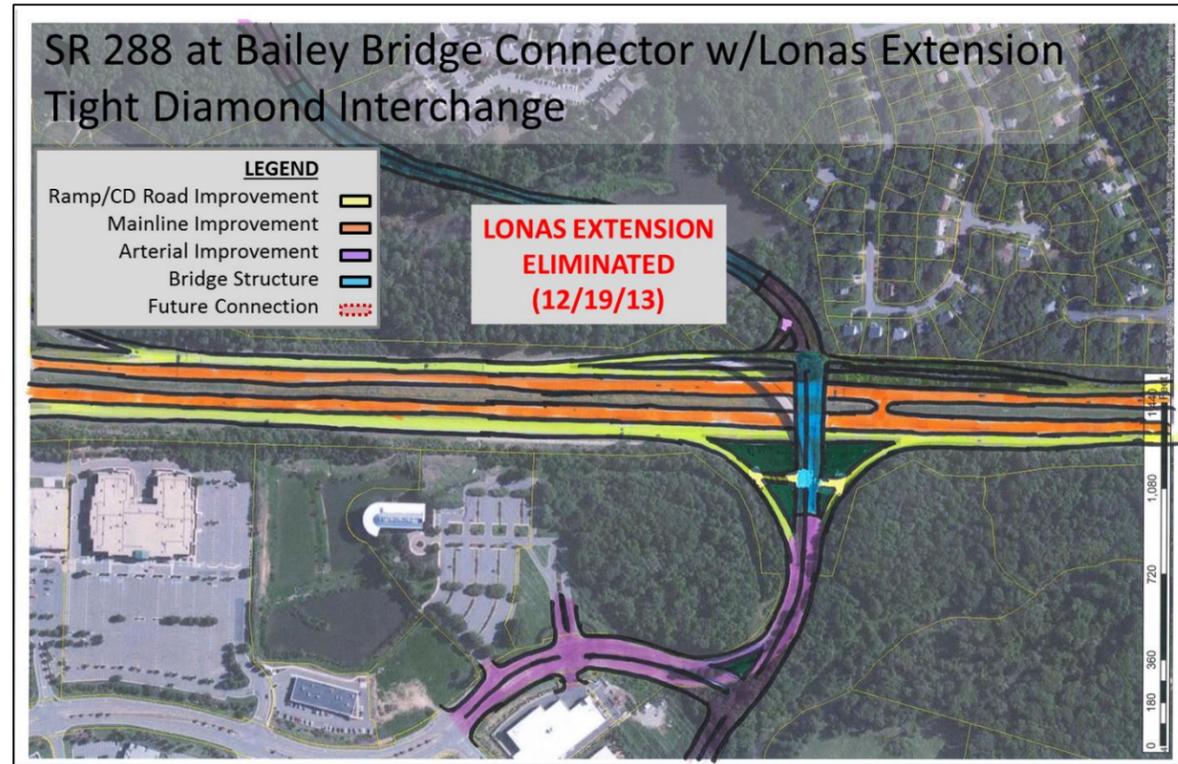


Figure 11: Concept #14 – Route 288 at Commonwealth Centre Parkway – Urban Diamond Interchange with Lonas Parkway Extension



Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #15 – Route 288 at Claypoint Road – Diamond Interchange (Figure 12)</p> <p>The proposed concept consists of constructing a full diamond interchange on Route 288 at the Claypoint Road</p> <p>This concept also consists of constructing a two-lane connector road between Bailey Bridge Road and Claypoint Road. The purpose of this connector road is to divert traffic towards the Route 288 at Qualla Road interchange via Bailey Bridge Road. Travel demand modeling results suggest that this improvement will not be as effective as a connector to Bailey Bridge Road at diverting traffic away from US 360; therefore, this concept did not move forward.</p>	**ELIMINATED**
<p>Concept #16 – Route 288 at Qualla Road – Full Diamond Interchange (Figure 13)</p> <p>The proposed concept consists of constructing a full diamond interchange on Route 288 at the Qualla Road.</p> <p>This concept also consists of constructing two-lane connector roads between Bailey Bridge Road and Claypoint Road and Qualla Road and Claypoint Road. The purpose of these connector roads is to divert traffic towards the Route 288 at Qualla Road interchange via Bailey Bridge Road. Travel demand modeling results suggest that this improvement will not be as effective as a connector to Bailey Bridge Road at diverting traffic away from US 360; therefore, this concept did not move forward.</p>	**ELIMINATED**
<p>Concept #17 – Southbound Route 288 to Westbound US 360 Ramp Widening (Figure 14)</p> <p>This concept consists of widening the existing southbound Route 288 to westbound US 360/Route 288 exit ramp from a one-lane ramp to a two-lane ramp. This improvement proposes to extend the deceleration lane for the ramp along southbound Route 288. A fifth westbound travel lane, which would terminate as a right turn at Old Hundred Road, is required on US 360. This improvement is intended to increase the capacity of the southbound Route 288 to Westbound US 360 ramp. Extending the deceleration lane enhances safety by removing some of the queues from the southbound ramp off of Route 288.</p>	**PRIMARY**
<p>Concept #18 – Market Square Ramp from Southbound Route 288 (Figure 15)</p> <p>This concept consists of constructing a ramp off of the southbound Route 288 to westbound US 360/Route 288 exit ramp to access the Market Square area. A connector road is proposed from the ramp to Old Hundred Road. This ramp is intended to provide direct access from Route 288 to Market Square. This concept could require a design exception in order to construct and sign a ramp from a ramp. Additionally, the results of travel demand modeling suggest that this improvement would provide more benefit to the parcels on the northwest quadrant of the US 360/Route 288 interchange.</p>	**ELIMINATED**
<p>Concept #19 – Route 288 at US 360 – Cloverleaf Interchange with CD Roads (Figure 16)</p> <p>This concept consists of modifying the existing US 360/Route 288 cloverleaf interchange to provide northbound and southbound CD road facilities on Route 288. New bridges would need to be constructed over US 360 to accommodate the proposed two-lane CD roads. The existing loop ramps will be reconstructed to connect to the proposed CD roads. The primary purpose of this improvement is to increase the capacity of the US 360/Route 288 interchange and improve the safety operations of the interchange. The CD road facilities enhance safety by separating the low-speed weaving maneuvers of the US 360/Route 288 interchange loop ramps with the high-speed Route 288 mainline traffic.</p>	**ELIMINATED**
<p>Concept #20 – Route 288 at US 360 – Semi-Directional Interchange with Loop Ramp Improvements (Figure 17)</p> <p>This concept consists of modifying the existing US 360/Route 288 cloverleaf interchange to provide two flyover ramps—one from US 360 eastbound to northbound Route 288 and the other from northbound Route 288 to westbound US 360. This concept proposes removal of the existing US 360 eastbound to northbound Route 288 and northbound Route 288 to westbound US 360 loop ramps. This concept also proposes two-lane CD roads on northbound and southbound Route 288 from Powhite Parkway to the existing CD road south of US 360 in conjunction with adjacent interchange improvements. New bridges would need to be constructed over US 360 to accommodate the proposed two-lane CD roads. The existing loop ramps to remain will be reconstructed to connect to the proposed CD roads. The primary purpose of this improvement is to increase the capacity of the US 360/Route 288 interchange and improve the safety operations of the interchange. The flyover ramp from Route 360 eastbound to Route 288 northbound is proposed as a two-lane facility based on projected traffic volumes. The flyover from northbound Route 288 to westbound US 360 is proposed as a one-lane facility and is only required if a parallel facility to US 360 is not constructed. The capacity of Route 288 is improved by constructing CD roads. Additionally, the CD road facility enhances safety by separating the low-speed weaving maneuvers of the US 360/Route 288 interchange loop ramps with the high-speed Route 288 mainline traffic.</p>	**PRIMARY**

Figure 12: Concept #15 – Route 288 at Claypoint Road – Diamond Interchange

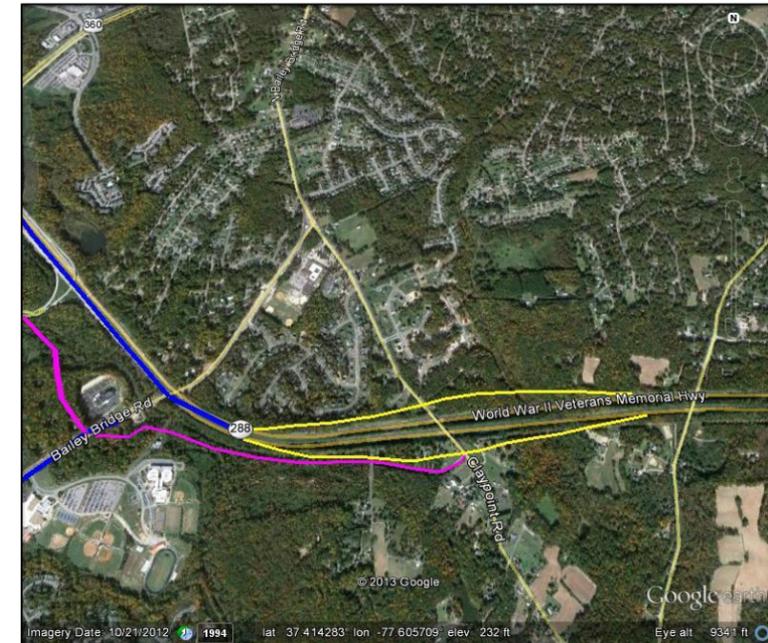
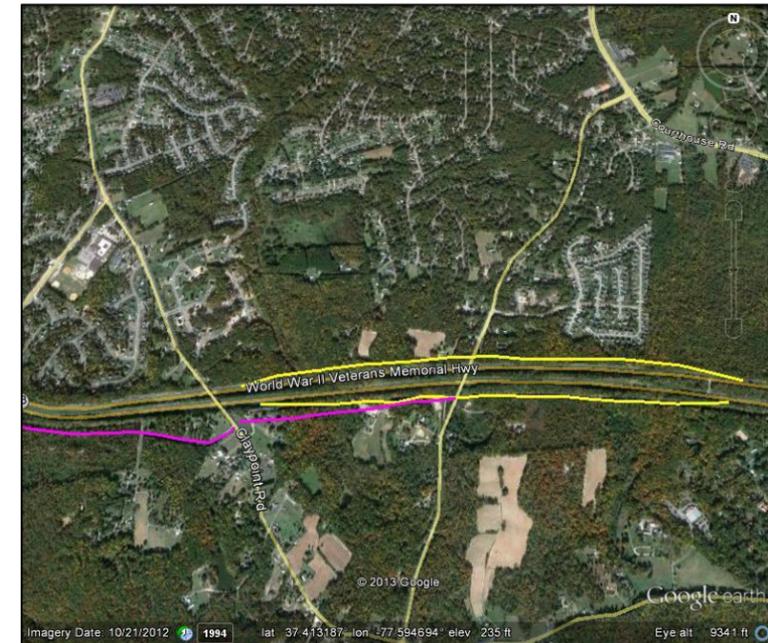


Figure 13: Concept #16 – Route 288 at Qualla Road – Full Diamond Interchange



Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Figure 14: Concept #17 – Southbound Route 288 to Westbound US 360 Ramp Widening

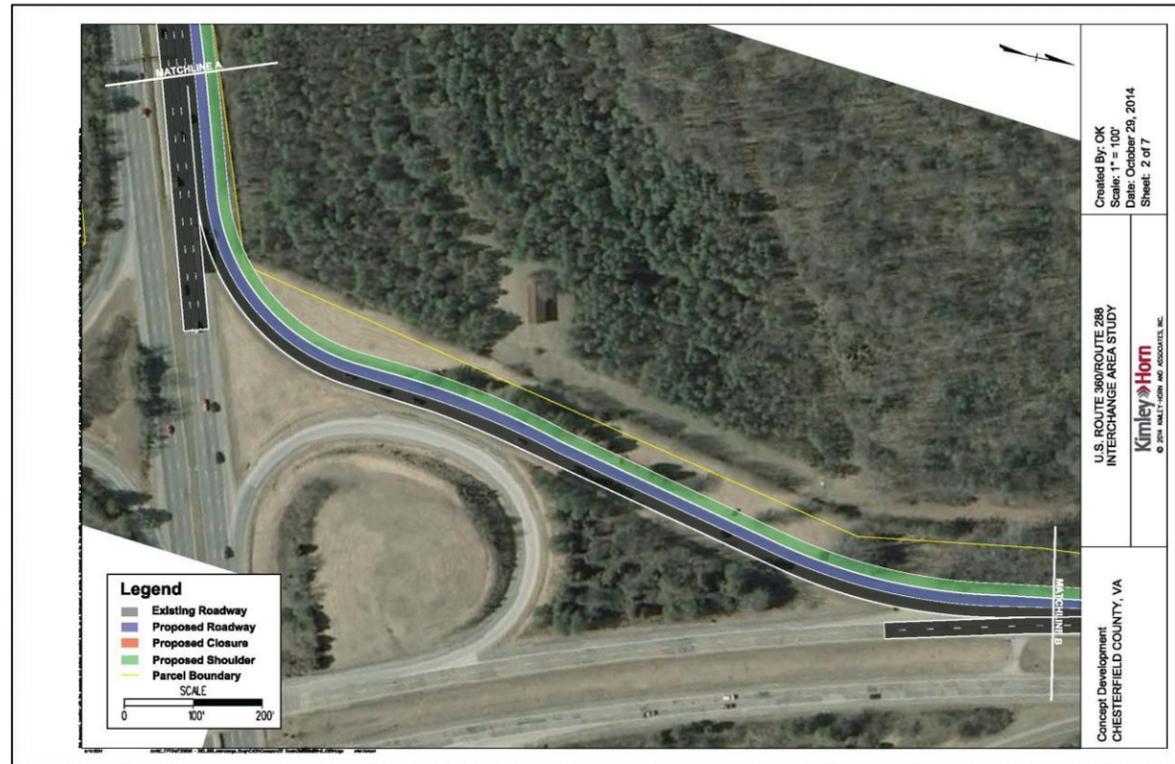


Figure 15: Concept #18 – Market Square Ramp from Southbound Route 288



Figure 16: Concept #19 – Cloverleaf Interchange with Collector-Distributor (C-D) Roads

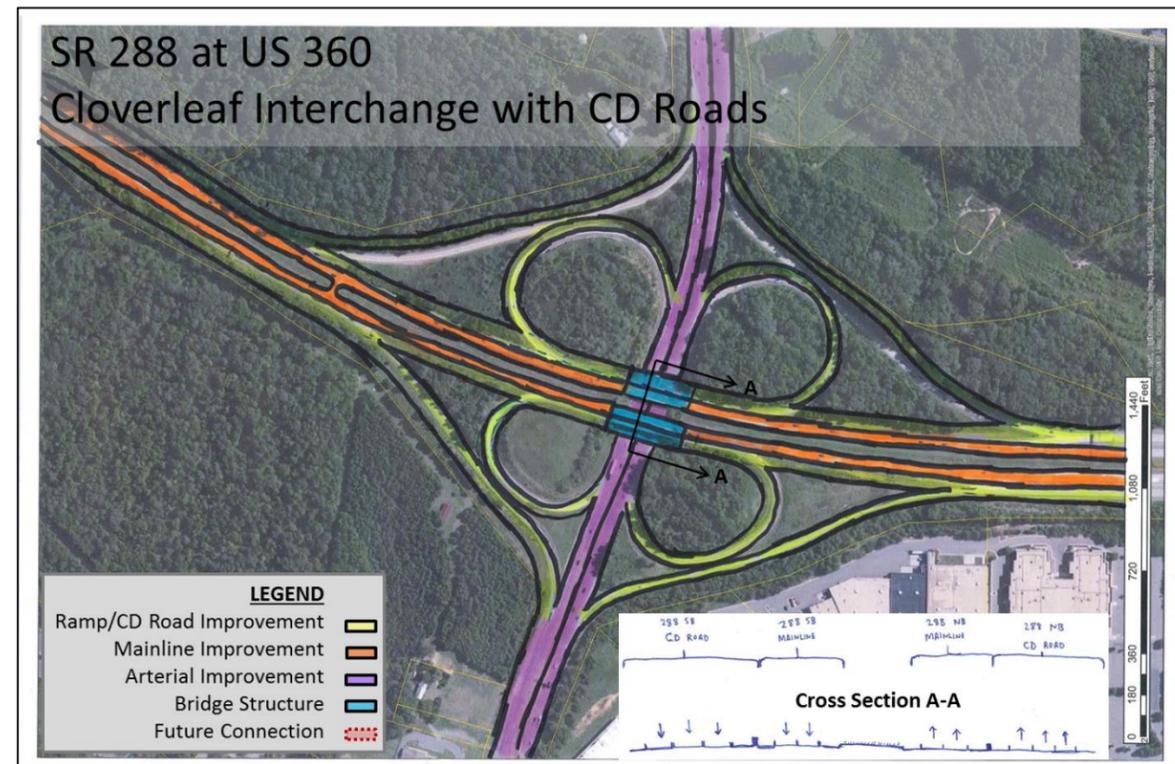
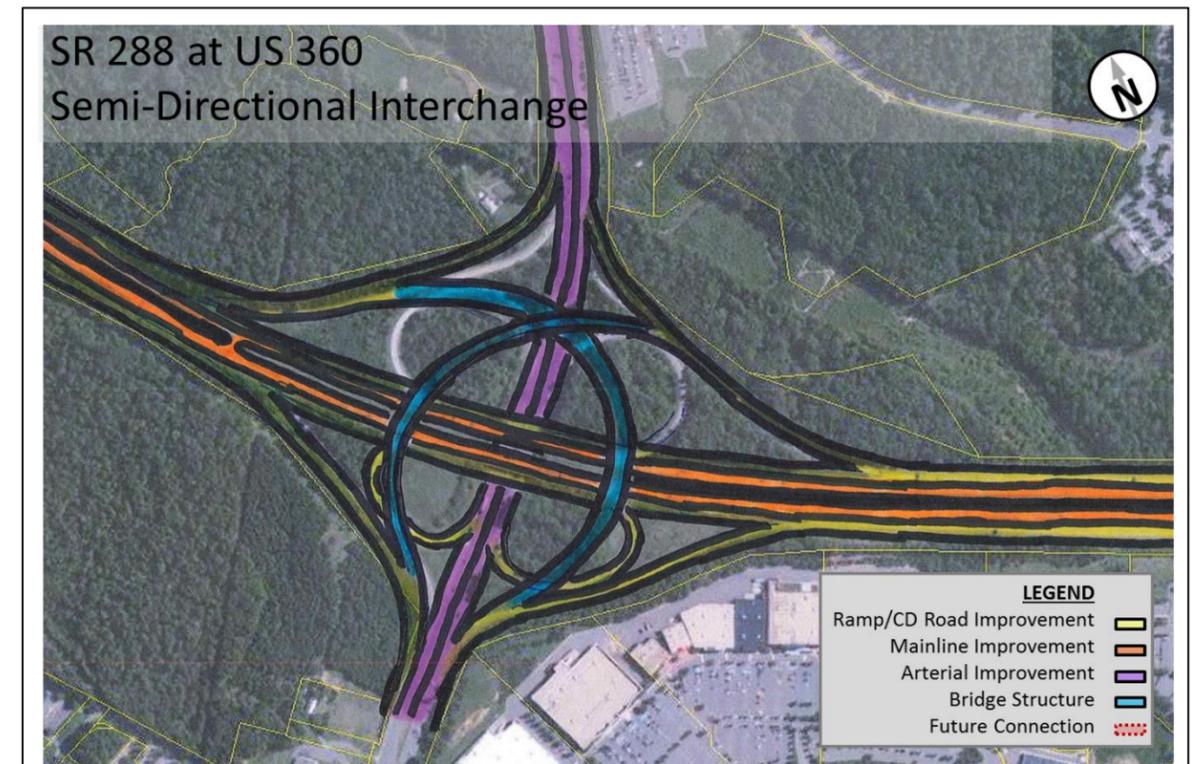


Figure 17: Concept #20 – Semi-Directional Interchange with Loop Ramp Improvements



Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #21 – US 360 Roadway Widening</p> <p>No study recommendations were developed east of Memphis Boulevard/Lonas Parkway with the exception of the planned widening of US 360 from a four-lane divided facility to a six-lane divided facility. The proposed widening project would eliminate the lane drop at the intersection of Memphis Boulevard/Lonas Parkway. (UPC 104890)</p>	<p>**SECONDARY**</p>
<p>Concept #22 – US 360 at Memphis Boulevard/Lonas Parkway – Median Barrier</p> <p>The proposed concept consists of adding a median barrier on eastbound US 360 between Route 288 and Memphis Boulevard/Lonas Parkway to restrict vehicles from northbound Route 288 from turning left on Memphis Boulevard. This improvement is proposed in conjunction improvements to the US 360/Route 288 interchange. The median barrier would remove the weaving maneuver for vehicles traversing across three lanes on US 360 in order to turn into Memphis Boulevard. This barrier would be constructed in conjunction with a Memphis Boulevard interchange, which was not placed under future consideration due to lack of improvement to operations at the US 360/Route 288.</p>	<p>**ELIMINATED**</p>
<p>Concept #23 – US 360 at Market Square Lane – Access Management</p> <p>The proposed concept consists of closing the access on US 360 at Market Square Lane. This concept is proposed in conjunction with multiple improvements to the US 360/Route 288 interchange and the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway. Access to Market Square Shopping Center will be provided via Old Hundred Road. The primary purpose of this concept is to provide improved access spacing between Route 288 and Old Hundred Road/Commonwealth Centre Parkway along US 360.</p>	<p>**PRIMARY**</p>
<p>Concept # 24 – US 360 at Old Hundred Road – At-Grade Displaced Left-Turn (DLT) Intersection (Figure 18)</p> <p>This concept consists of converting the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with a partial displaced left-turn (DLT) intersection. A DLT intersection is also commonly referred to as a continuous flow intersection (CFI). DLT intersections remove left-turn phases by crossing them over opposing traffic volumes at upstream crossovers. This allows for the left-turn phases to run concurrently with through movements. The benefit of a DLT is reduced signal phases, which could be applied toward the mainline through movements. This concept is considered a partial DLT because only the mainline left-turn movements have been crossed over in order to minimize the footprint of the improvement. The primary goal of the partial DLT configuration is to increase the amount of green time on US 360, especially in the westbound direction. Additional benefits of the partial DLT are that it improves left-turn capacity of the mainline and it could improve safety operations by reducing the overall number of intersection conflict points.</p> <p>Additional considerations include constructing a full DLT intersection and allowing the side street approaches to operate with a median U-turn intersection configuration. The full DLT would cross left-turn traffic over from the side-street approaches. This was not considered as part of this concept to reduce the overall footprint and impacts of the DLT. A median U-turn configurations removes left-turn traffic signal phases and allows those vehicles to travel through an intersection and make a downstream U-turn and a subsequent right-turn. Operational results showed that this improvement was actually degraded operations of the DLT configuration.</p> <p>This alternative was analyzed in the 2011 STARS Congestion Mitigation Program US 360/Route 288 Interchange Study and was determined to provide improvement in intersection operations when compared to the no-build alternative, but was over capacity under future 2020 traffic conditions.</p>	<p>**PRIMARY**</p>
<p>Concept #25 – US 360 at Old Hundred Road – At-Grade Displaced Left-turn (DLT) Intersection with Additional Capacity (Figure 19)</p> <p>This concept consists of converting the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with a partial DLT intersection and adding an additional travel lane on both eastbound and westbound US 360. A third left-turn lane also is proposed on northbound Commonwealth Centre Parkway. The primary goal of the partial DLT configuration with roadway widening is to increase the capacity and green time of US 360, especially in the westbound direction. Additional benefits of the partial DLT are that it improves left-turn capacity of the mainline and it could improve safety operations by reducing the overall number of intersection conflict points. The DLT also can be constructed in a shorter time period than a grade-separated intersection at a lower cost and without the same maintenance of traffic concerns. The impacts of this concept are greater than the partial DLT without roadway widening and results in increase impacts to adjacent properties and additional costs. This improvement is considered a long-term solution to the projected congestion on US 360; however, this improvement will not operate at the same levels as a grade-separated intersection.</p>	<p>**PRIMARY**</p>

Figure 18: Concept #25 – At-Grade Displaced Left-Turn (DLT) Intersection



Figure 19: Concept #25 – At-Grade Displaced Left-Turn (DLT) Intersection with Additional Capacity



- Primary** – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange
- Secondary** – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area
- Eliminated** – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Concept Description

Screening Result

Concept #26 – Southbound Route 288 to Westbound US 360 Extended Flyover Off-Ramp (Figure 20)

The proposed concept consists of constructing a flyover ramp from southbound Route 288 to westbound US 360. The tie-down point of the flyover is proposed to the west of Old Hundred Road/Commonwealth Centre Parkway along US 360 westbound. The primary purpose of this concept is to grade-separate traffic volumes from Route 288 southbound from the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway. This concept removes approximately one-third of the traffic from westbound US 360, which improves operations at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. The raised structure for this concept is inconsistent with the rest of the area and could be interfere with the aesthetics of the US 360. This improvement also would not allow vehicles from southbound Route 288 to travel to Old Hundred Road; therefore, an additional ramp would need to be constructed to accommodate this movement. This concept was removed from consideration due to the costs associated with the elevated structure.

****ELIMINATED****

Concept #27 – US 360 – Elevated Roadway (Figure 21)

The proposed concept consists of constructing two elevated roadways from Route 288 to US 360. The tie-down point of elevated roadway is proposed to the west of Brad McNeer Parkway along US 360. The elevated roadways will feature two separate structures for eastbound and westbound US 360 with connections to the US 360/Route 288 interchange. Flyover ramps would connect the eastbound US 360 to northbound Route 288 and northbound Route 288 to westbound US 360 movements. The primary purpose of this concept is to grade-separate traffic volumes on US 360 at the Old Hundred Road/Commonwealth Centre Parkway intersection that are coming from or traveling to Route 288. This concept removes approximately two-thirds of the traffic from US 360, which improves operations at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. The raised structure for this concept is inconsistent with the rest of the area in terms of scale and could negatively impact the aesthetics of the area. Constructability would be difficult, impacts to right-of-way could be significant, and constructing two separate elevated structures is more costly than building other improvements at the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection; therefore, it was removed from further consideration.

****ELIMINATED****

Concept #28 – US 360 – Reversible Elevated Roadway (Figure 22)

The proposed concept consists of constructing a reversible elevated roadway from Route 288 to US 360. The tie-down point of elevated roadway is proposed to the west of Brad McNeer Parkway along US 360. The elevated roadway will feature a structures to serve eastbound volumes in the AM peak hour and westbound volumes in the PM peak hour. The reversible elevated roadway would connect US 360 and the US 360/Route 288 interchange. Flyover ramps would connect the eastbound US 360 to northbound Rout 288 and northbound Route 288 to westbound US 360 movements. The primary purpose of this concept is to grade separate traffic volumes on US 360 through the Old Hundred Road/Commonwealth Centre Parkway intersection that are coming from or traveling to Route 288. This concept removes approximately two-thirds of the traffic from US 360 for each peak hour, which improves operations at the US 360 at Old Hundred Road/ Commonwealth Centre Parkway intersection. The raised structure for this concept is inconsistent with the rest of the area and could be interfere with the aesthetics of the US 360. This concept was advanced past initial screening; however, it was ultimately removed from additional consideration due to the scale of the project and impacts to aesthetics, right-of-way, and costs.

****ELIMINATED****

Concept #29 – US 360 at Old Hundred Road – Grade-Separated Intersection (Figure 23)

This concept consists of grade separating US 360 from Old Hundred Road/Commonwealth Centre Parkway without providing any connections between the two. The purpose behind this improvement was to improve the spacing between the US 360/Route 288 interchange and the first signalized intersection along US 360 westbound. Building a grade-separated intersection without ramps is considered to be less impactful to the parcels surrounding the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. This concept was considered too impactful to the existing operations of the intersection and a viable diversion plan, which included connections from Brad McNeer Parkway to Commonwealth Centre Parkway and an additional interchange on Route 288 between US 360 and Powhite Parkway, was never effectively established. A variation of this concept considered adding a slip ramps to allow for partial movements; however, this was removed from consideration due to the need for full interchange concepts. Overall impacts to corridor aesthetics was also noted as a concern associated with this concept.

****ELIMINATED****

Figure 20: Concept #26 – Southbound Route 288 to Westbound US 360 Extended Flyover Off-Ramp

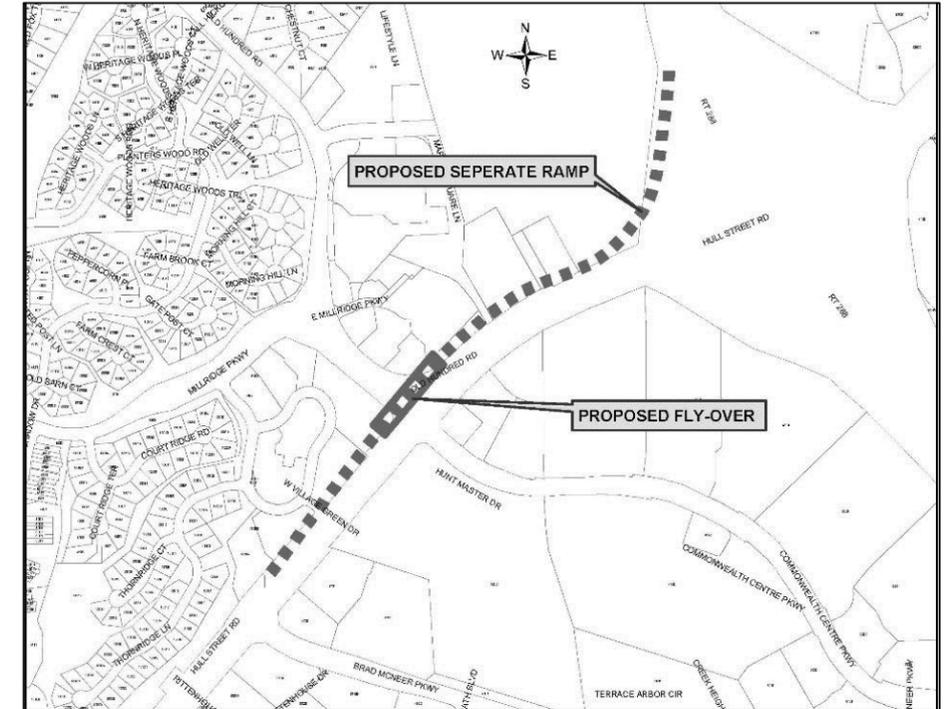


Figure 21: Concept #27 – Elevated Roadway



- Primary** – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange
- Secondary** – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area
- Eliminated** – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Figure 22: Concept #28 – Reversible Elevated Roadway

Extended Fly-Over Ramps – Reversible and Elevated
At-Grade Intersection – US 360 at Commonwealth Parkway

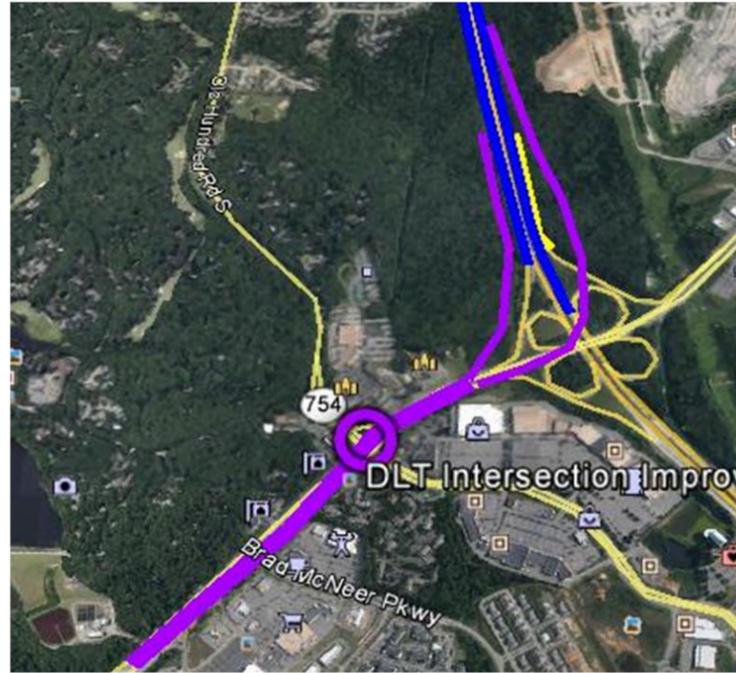
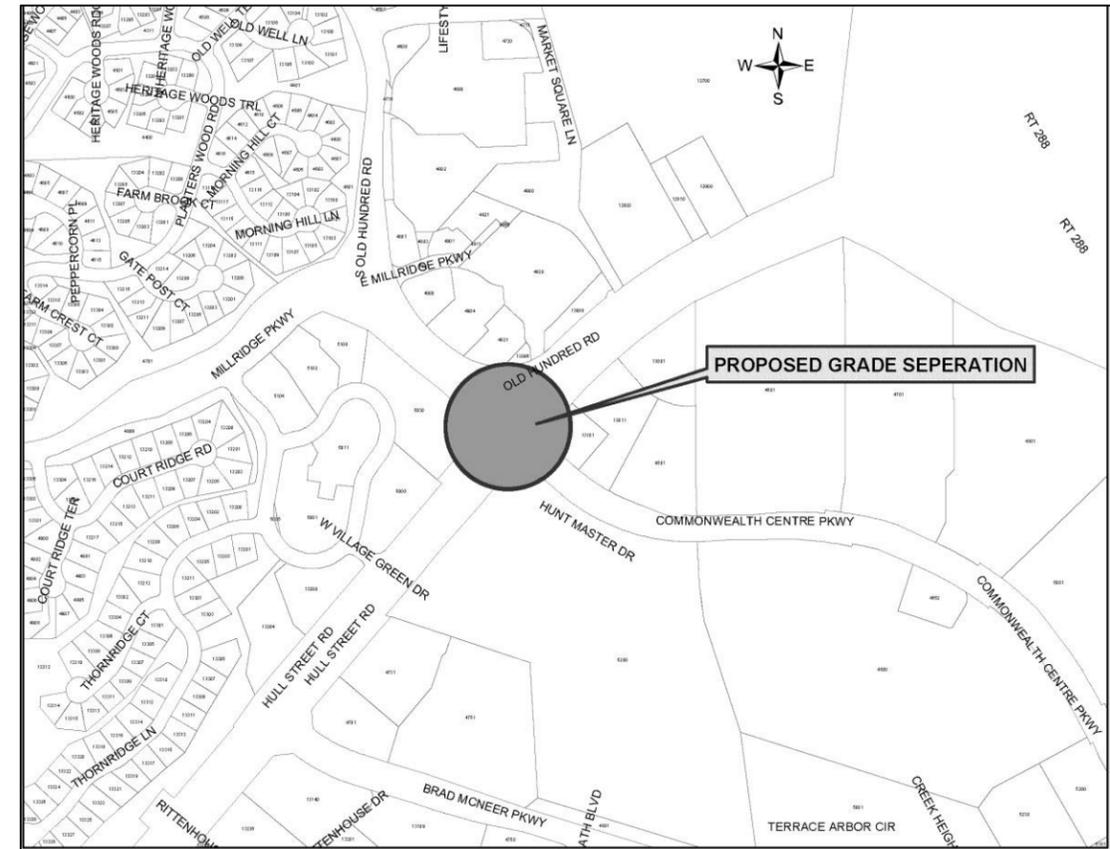


Figure 23: Concept #29 – Grade-Separated Intersection



Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #30 – US 360 at Old Hundred Road – Grade-Separated Diverging Diamond Interchange (DDI) (Figure 24)</p> <p>This concept consists of grade separating the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with a diverging diamond interchange (DDI). A diverging diamond interchange is constructed similar to a traditional diamond interchange; however, the direction of travel is reversed at the ramp terminals to reduce the number of signal phases at the interchange to two. Grade separating the intersection would allow free-flow traffic on eastbound and westbound US 360. This would improve the operations of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection and remove the existing bottleneck that impacts the US 360/Route 288 interchange. Some additional benefits of a DDI include enhanced safety through a reduced number of intersection conflict points and DDIs require fewer lanes than other interchange forms. The grade separated interchange would impact aesthetics along the corridor and right-of-way at all four corners of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. Design considerations would be required for reducing adjacent property impacts and maintaining traffic during construction.</p>	<p>**PRIMARY**</p>
<p>Concept #31 – US 360 at Old Hundred Road – Grade-Separated Single-Point Urban Interchange (SPUI) (Figure 25)</p> <p>This concept consists of grade separating the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with a single-point urban interchange (SPUI). A SPUI is similar in form to a diamond interchange, but has the advantage of allowing opposing left turns to proceed simultaneously by compressing the two intersections of a diamond into one single intersection over or under the free-flowing road. A SPUI was considered at this location due to the space efficiency they provide relative to the volume of traffic they can handle. Grade separating the intersection would allow free-flow traffic on eastbound and westbound US 360. This would improve the operations of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection and remove the existing bottleneck that impacts the US 360/Route 288 interchange. The grade separated interchange would have impacts to all four corners of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. Design considerations would be required for reducing adjacent property impacts and maintaining traffic during construction. This concept performed well operationally; however, a DDI configuration was carried forward instead of the SPUI due to better operational results.</p>	<p>**ELIMINATED**</p>
<p>Concept #32 – US 360 at Old Hundred Road – Grade-Separated Roundabout (Figure 26)</p> <p>This concept consists of grade separating the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with a grade-separated roundabout. Grade separating the intersection would allow free-flow traffic on eastbound and westbound US 360. This would improve the operations of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection and remove the existing bottleneck that impacts the US 360/Route 288 interchange. This concept could improve safety, as roundabouts generally reduce the severity of collisions when compared to signalized intersections. The grade separated interchange would have impacts to all four corners of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. Design considerations would be required for reducing adjacent property impacts and maintaining traffic during construction. This concept was screened with operations analysis, which determined that the roundabout would require multiple lanes to operate at an acceptable level of service. The SPUI and DDI configurations outperformed the roundabout in operations screening; therefore, it was removed from further consideration.</p>	<p>**ELIMINATED**</p>
<p>Concept #33 – US 360 at Old Hundred Road – Grade-Separated Urban Diamond Interchange</p> <p>This concept consists of grade separating the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection with an urban diamond configuration. An urban diamond is a traditional diamond interchange where the ramp terminal spacing is closer to reduce the overall footprint of the interchange. Grade separating the intersection would allow free-flow traffic on eastbound and westbound US 360. This would improve the operations of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection and remove the existing bottleneck that impacts the US 360/Route 288 interchange. The grade separated interchange would have impacts to all four corners of the US 360 at Old Hundred Road/Commonwealth Centre Parkway intersection. Design considerations would be required for reducing adjacent property impacts and maintaining traffic during construction. This concept was screened with operations analysis, which determined that other configurations such as a SPUI and DDI would operate better; therefore, it was removed from further consideration.</p>	<p>**ELIMINATED**</p>

Figure 24: Concept #30 – Grade-Separated Diverging Diamond Interchange (DDI)

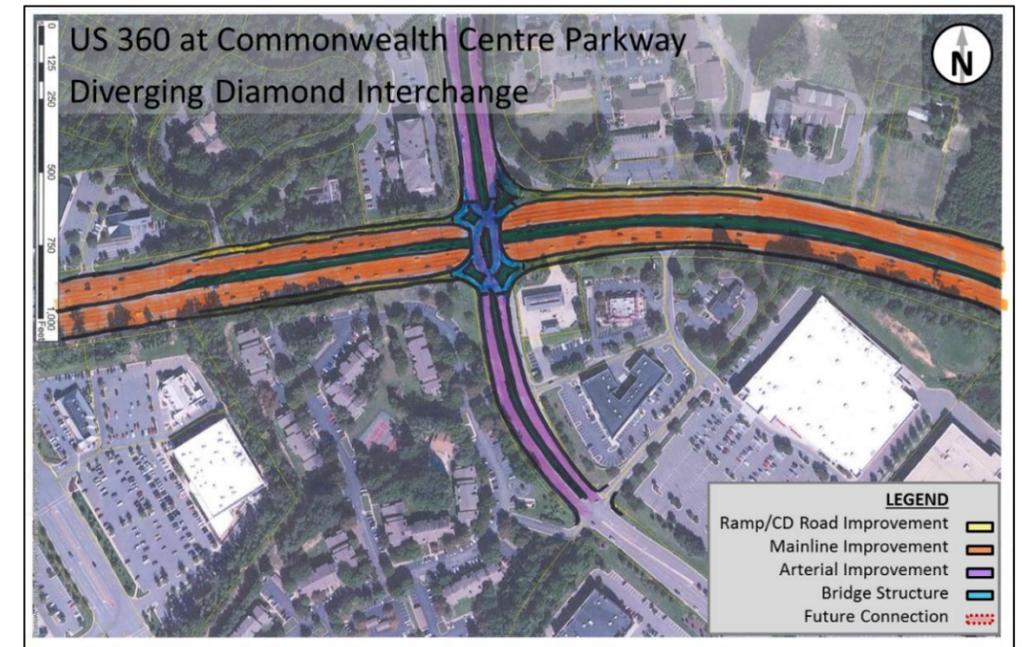
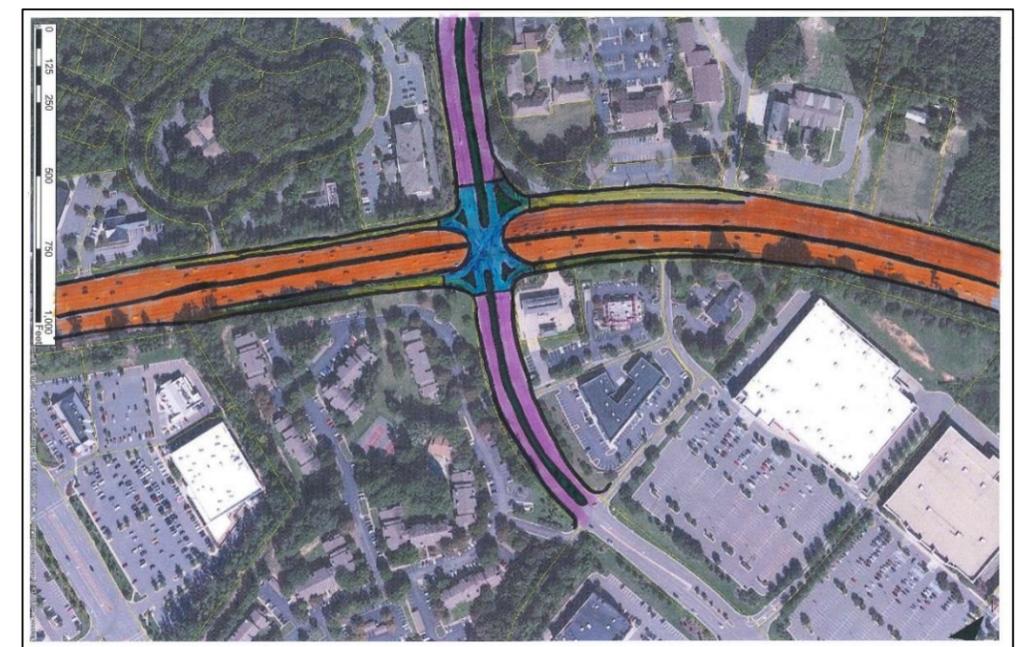


Figure 25: Concept #31 – Grade-Separated Single Point Urban Interchange (SPUI)



Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Figure 26: Concept #32 – Grade-Separated Roundabout



Source: Google Maps

Appendix D: Concept Screening

Concept Description

Screening Result

Concept #34 – US 360 at West Village Green Drive

The concept consists of closing the access on US 360 at West Village Green Drive. This concept is proposed in conjunction with improvements to the intersections of US 360 at Old Hundred Road/Commonwealth Centre Parkway and US 360 at Brad McNeer Parkway. Access previously provided from West Village Green Drive will be provided via Millridge Parkway and Old Hundred Road. The primary purpose of this concept is to provide improved access spacing between Old Hundred Road/Commonwealth Centre Parkway and Brad McNeer Parkway along US 360.

****PRIMARY****

Concept #35 – US 360 at Brad McNeer Parkway – Triple Northbound Left-Turn Lanes from Brad McNeer Parkway (Figure 27)

This concept consists of converting an existing northbound lane, which is striped out for future use as a second right-turn lane, into a left-turn lane. This would bring the total amount of left-turn lanes on the northbound approach to three lanes. The side-street would require less time to accommodate due to the additional capacity and allow more green time of the cycle length to be applied to the US 360 corridor. US 360 westbound has four receiving lanes across so minimal construction would be required to accommodate the triple left-turns from the northbound approach.

****PRIMARY****

Concept #36 – US 360 at Brad McNeer Parkway – Continuous Green-T (CGT) Intersection (Figure 28)

This concept consists of reconfiguring the US 360 at Brad McNeer Parkway intersection from a traditional signalized intersection to a continuous green-T intersection (CGT). A CGT configuration allows for one mainline movement to run unopposed under free conditions by providing an acceleration lane from the side street left-turn movements. In this case, westbound US 360, which is the heavy movement in the PM peak hour, would run unopposed while the northbound left turn from Brad McNeer Parkway would have dedicated acceleration lanes to merge into westbound traffic. The primary purpose of this improvement is to progress westbound US 360 traffic more efficiently once the bottleneck at US 360 and Old Hundred Road/Commonwealth Centre Parkway is solved. Dual acceleration lanes would need to be constructed in the median to accommodate northbound dual left-turn lanes. The acceleration lanes would need to terminate prior to the Swift Creek bridge structure to the west of Craig Rath Boulevard to avoid reconstructing the bridge. This concept would eliminate the westbound left-turn lane into Craig Rath Boulevard.

****PRIMARY****

Figure 27: Concept #35 – Access Management Improvement US 360 at Bayside Lane

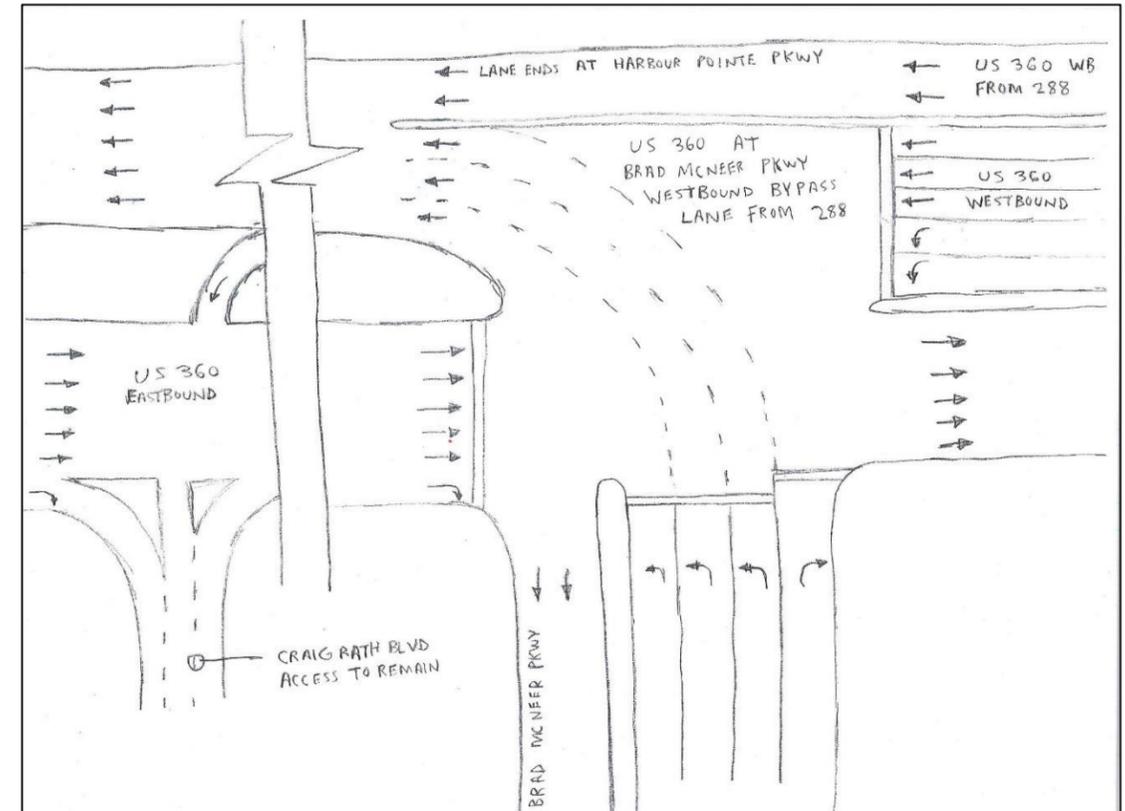
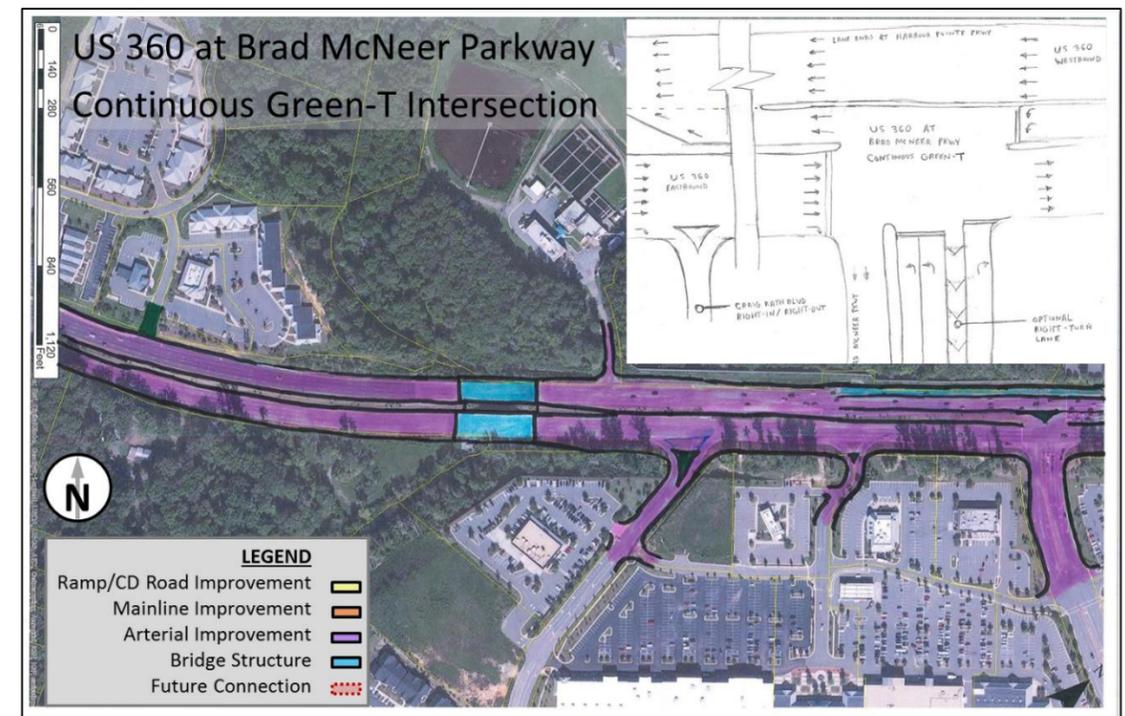


Figure 28: Concept #36 – Access Management Improvement US 360 at Cosby Road



- Primary** – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange
- Secondary** – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area
- Eliminated** – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #37 – US 360 Corridor – Remove Split Phase Operations</p> <p>This recommendation consists of removing split phase operations from all traffic signals on US 360 west of Harbour Pointe Parkway. Split phase operations at these intersections limit the amount of traffic signal timing options. These improvements are considered secondary improvements because they are not considered to be ultimate solutions to the congestion issues on US 360. However, in the interim removal of the split phase operation would allow for more efficient signal timing at these intersections along the US 360 corridor. In order to accommodate the removal of split phase operations, the following improvements are required, refer to Figures 29 – 32 for additional information on proposed improvements:</p> <ul style="list-style-type: none"> Harbour Pointe Parkway /Mockingbird Lane at US 360 (Figure 29) <ul style="list-style-type: none"> Construct a northbound right-turn lane Construct an additional southbound left-turn lane Harbour View Court/Deer Run Drive at US 360 (Figure 30) <ul style="list-style-type: none"> Construct southbound left-turn lane Temie Lee Parkway/North Spring Run Road at US 360 (Figure 31) <ul style="list-style-type: none"> Construct additional northbound lane Construct additional southbound lane Hancock Village Drive at US 360 (Figure 32) <ul style="list-style-type: none"> Restripe existing three-lane northbound approach to two left-turn lanes and one shared left-through lane 	<p>**SECONDARY**</p>

Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Figure 29: Concept Development - Concept #37 – Harbour Pointe/Mockingbird

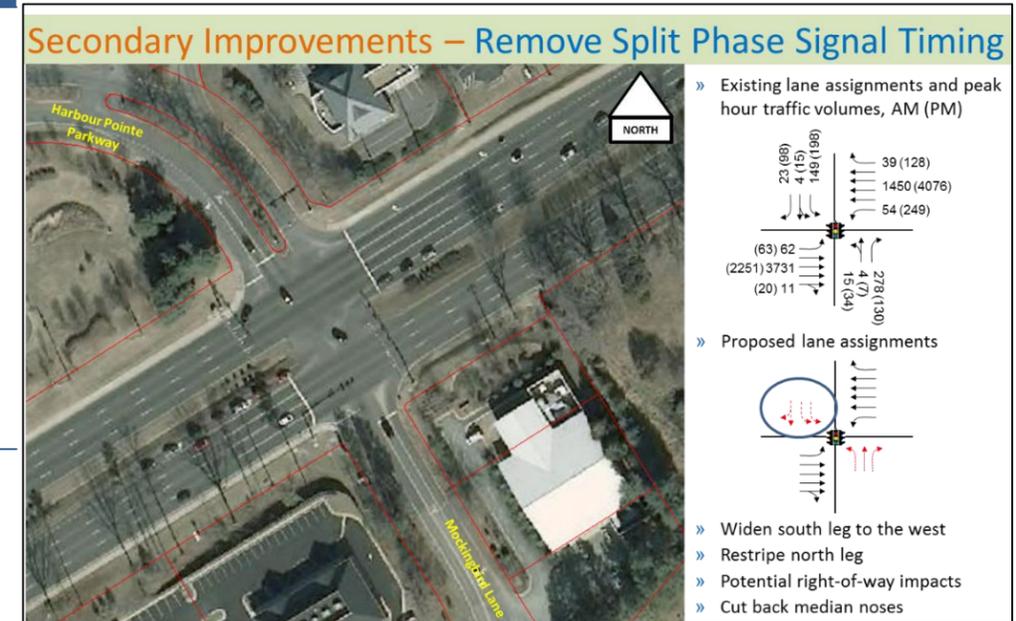


Figure 30: Concept Development - Concept #37 – Harbour View Court/Deer Run



Figure 31: Concept Development - Concept #37 – Temie Lee/N. Spring Run

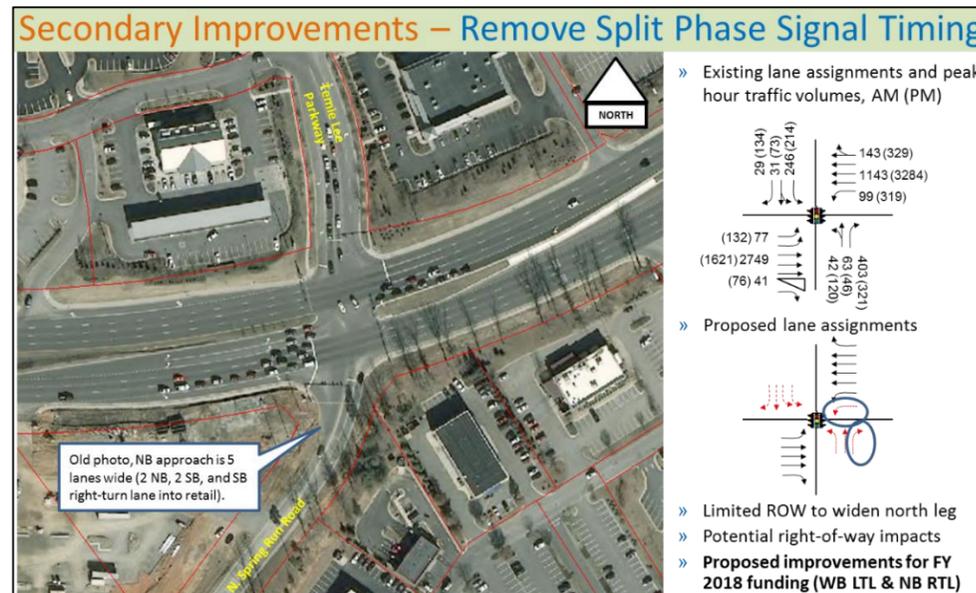


Figure 32: Concept Development - Concept #37 – Harbour Pointe/Mockingbird



Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #38 – US 360 Corridor – Additional Turn Lanes</p> <p>This concept consists of adding dedicated right-turn lanes and additional left-turn lanes to improve operations along US 360. The additional right-turn lanes will allow for better through-travel lane progression throughout the facility. Additional left-turn lane capacity will reduce delays for left-turn movements and allow for more traffic signal cycle length to be applied to the mainline of US 360. These improvements are considered secondary improvements because they are not considered to be ultimate solutions to the congestion issues on US 360. Additional turn lanes are proposed at the following intersections (refer to Figures 33 – 36 for additional information on proposed improvements):</p> <ul style="list-style-type: none"> » US 360 at Ashlake Parkway (Figure 33) <ul style="list-style-type: none"> – Construct eastbound right-turn lane * Planned as part of the US 360 widening project between Winterpock Road and Woodlake Village Parkway (VDOT UPC 97687) » US 360 at Otterdale Road <ul style="list-style-type: none"> – Construct westbound right-turn lane (Figure 34) *Planned as part of the US 360 widening project between Woodlake Village Parkway and Otterdale Road » US 360 at Harbour View Court/Deer Run Drive (Figure 35) <ul style="list-style-type: none"> – Construct westbound right-turn lane » US 360 at Temie Lee Parkway/N. Spring Run Road (Figure 36) <ul style="list-style-type: none"> – Construct additional westbound left-turn lane – Construct westbound right-turn lane *Coordinate with planned intersection improvements (VDOT UPC 104886) 	<p>**SECONDARY**</p>

Figure 33: Concept Development - Concept #38 – US 360 at Ashlake



Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Figure 34: Concept Development - Concept #38 – US 360 at Otterdale

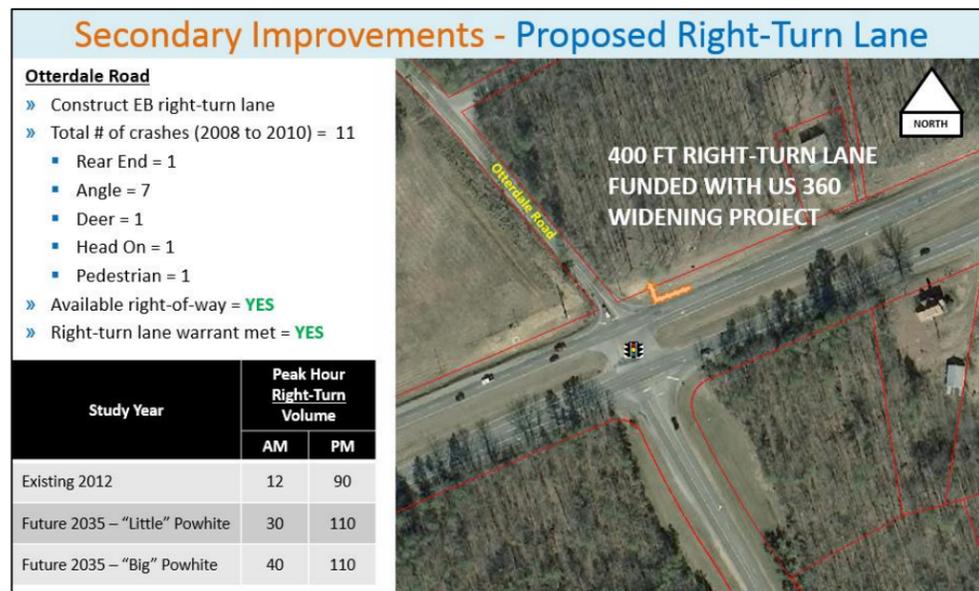
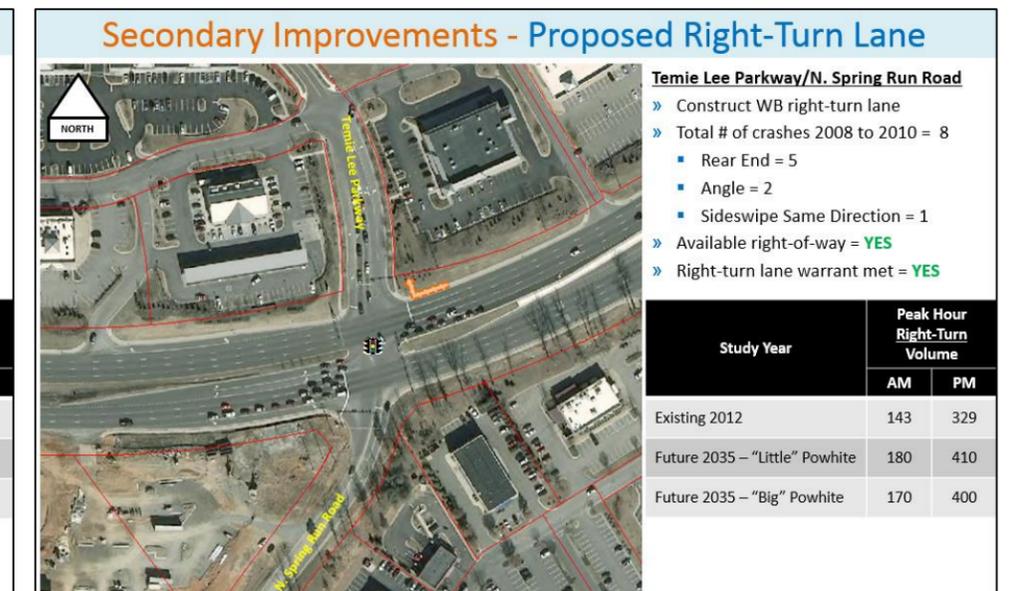


Figure 35: Concept Development - Concept #38 – US 360 at Harbour View/Deer Run



Figure 36: Concept Development - Concept #38 – US 360 at Temie Lee/N. Spring Run



Appendix D: Concept Screening

Concept Description	Screening Result
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Concept #39 – US 360 Corridor – Superstreet Intersections (from Harbour Pointe Parkway to Winterpock Road)	**SECONDARY**
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This concept consists of converting the following five signalized intersections into superstreet configurations:

- US 360 at Harbour Pointe Parkway/Mockingbird Lane (Figure 37)
- US 360 at Harbour View Court/Deer Run Drive (Figure 38)
- US 360 at Chital Drive (Figure 39)
- US 360 at Temie Lee Parkway/North Spring Run Road (Figure 40)
- US 360 at Winterpock Road (Figure 41)

Superstreet configurations convert side street left-turn and through movements into right turns to reduce the number of traffic signal phases to two. The left-turn movements and through movements from the side street are directed to make right turns at the primary intersection to access U-turn crossovers, which are provided to allow for indirect left-turns. The U-turn crossovers could either be signalized or unsignalized; however, the traffic volumes on US 360 indicated that traffic signalization will be required. This improvement would improve the throughput of US 360, which improves the progression of traffic along the facility. The superstreet configuration will require revisions to existing access points, which could result in access points being relocated or closed. Superstreet configurations are most effective along a facility when they are installed continuous at multiple intersections; therefore, superstreets should be considered at multiple locations. Some additional benefits of superstreets are that they reduce the total amount of intersection conflict points, which could reduce delay. The configurations could also increase travel times for minor street left-turn and through movements. This improvement could largely be constructed within existing right-of-way and would not require additional through-travel lanes to be added to US 360.

Concept #40 – US 360 Corridor – Safety Enhancements	**SECONDARY**
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This concept consists of updating the signing and marking on US 360 to meet current Manual on Uniform Traffic Control Devices (MUTCD) standards and for the clearance intervals at each of the signalized intersections along US 360 to be recalculated based on the latest VDOT standards. This improvement would bring US 360 into compliance with current standards. These enhancements are considered secondary improvements because they are not considered to be ultimate solutions to the congestion issues on US 360.

Figure 37: Concept #39 – Superstreet US 360 at Harbour Pointe/Mockingbird



Figure 39: Concept #39 – Superstreet US 360 at Chital

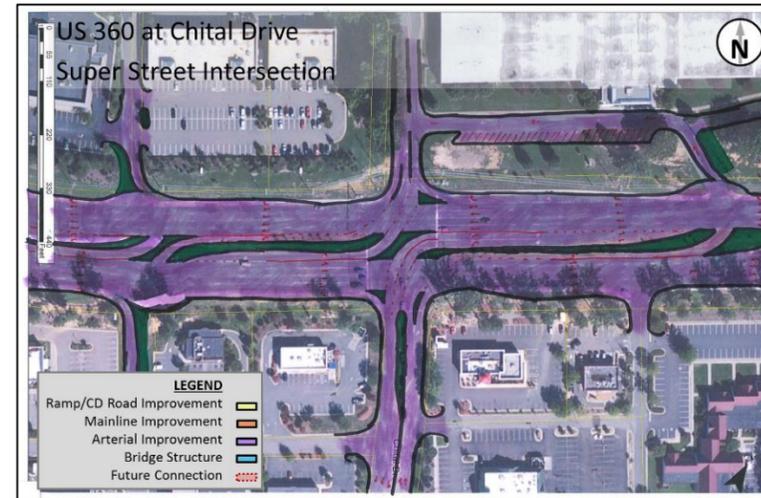


Figure 41: Concept #39 – Superstreet US 360 at Winterpock



Figure 38: Concept #39 – Superstreet US 360 at Harbour View/Deer Run



Figure 40: Concept #39 – Superstreet US 360 at Temie Lee/N. Spring Run

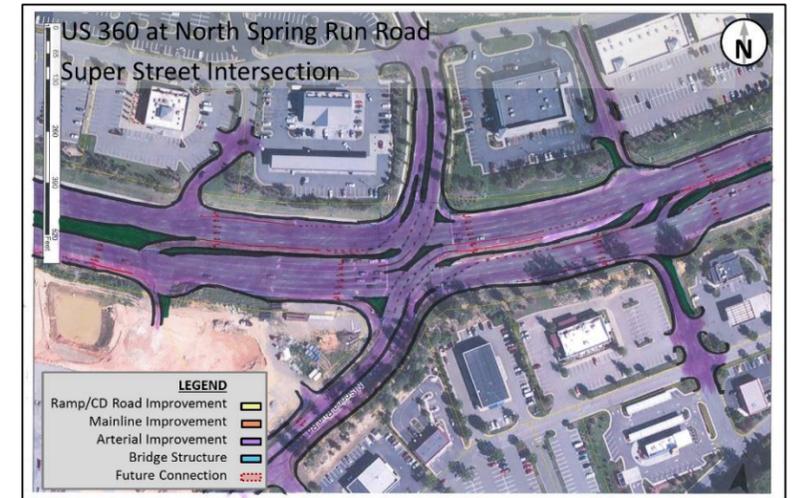


Figure 41: Concept #39 – Superstreet US 360 at Winterpock

- Primary** – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange
- Secondary** – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area
- Eliminated** – Concept vetted by study work group and eliminated for further consideration

Appendix D: Concept Screening

Concept Description

Screening Result

Concept #41 – US 360 Corridor – Access Management Improvements

This concept consists of restricting left-turns from all unsignalized crossovers along US 360 between Harbour Pointe Parkway and Otterdale Road. This concept proposes to channelize the median of any full-access crossovers to allow left-turns from US 360 while restricting left-turn movements out of the side street. The primary purpose of the concept is to enhance safety along US 360 where left-turning vehicles must wait for acceptable gaps in traffic. Left-turn movements would be accommodated at adjacent signalized intersections through cross-site access or an indirect left-turn (a right-turn movement followed by a U-turn movement at the downstream signalized intersection). As part of the access management recommendations, enhanced cross-site access will be encouraged to allow for the restricted left-turns to detour to a signalized intersection. The following full-access intersections have been identified for left-turn restrictions (refer to **Appendix A** for existing corridor access management information):

- US 360 at Bayside Lane – Cross access could be provided to Harbour View Court through internal site roads (Figure 42)
- US 360 at Old Clover Hill High School – A proposed development will align an entrance with this location; however, left turns will not be permitted from the proposed development (Figure 43). Eastbound U-turns are restricted at this crossover.
- US 360 at Cosby Road – A proposed development to the south of this parcel has proffered not to allow a northbound left at this intersection (Figure 44)

****SECONDARY****

Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Figure 42: Concept #41 – Access Management Improvement US 360 at Bayside Lane

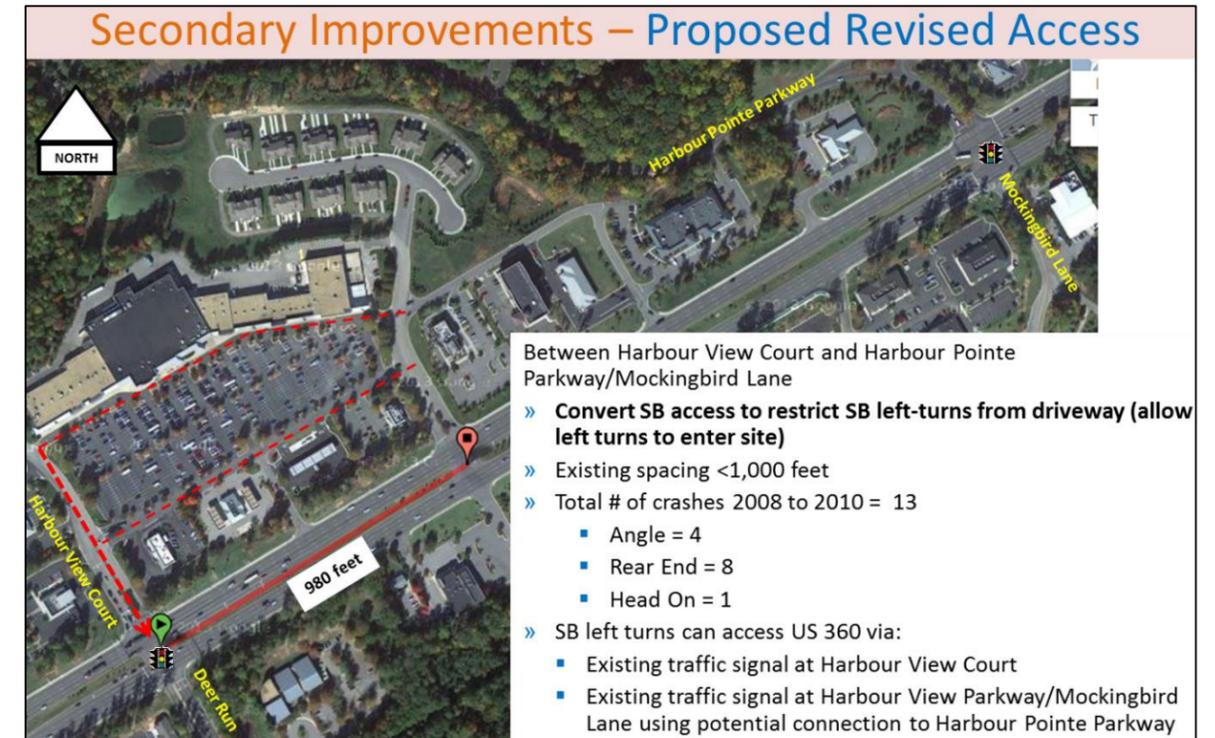


Figure 43: Concept #41 – Access Management Improvement US 360 at Old Clover Hill High School

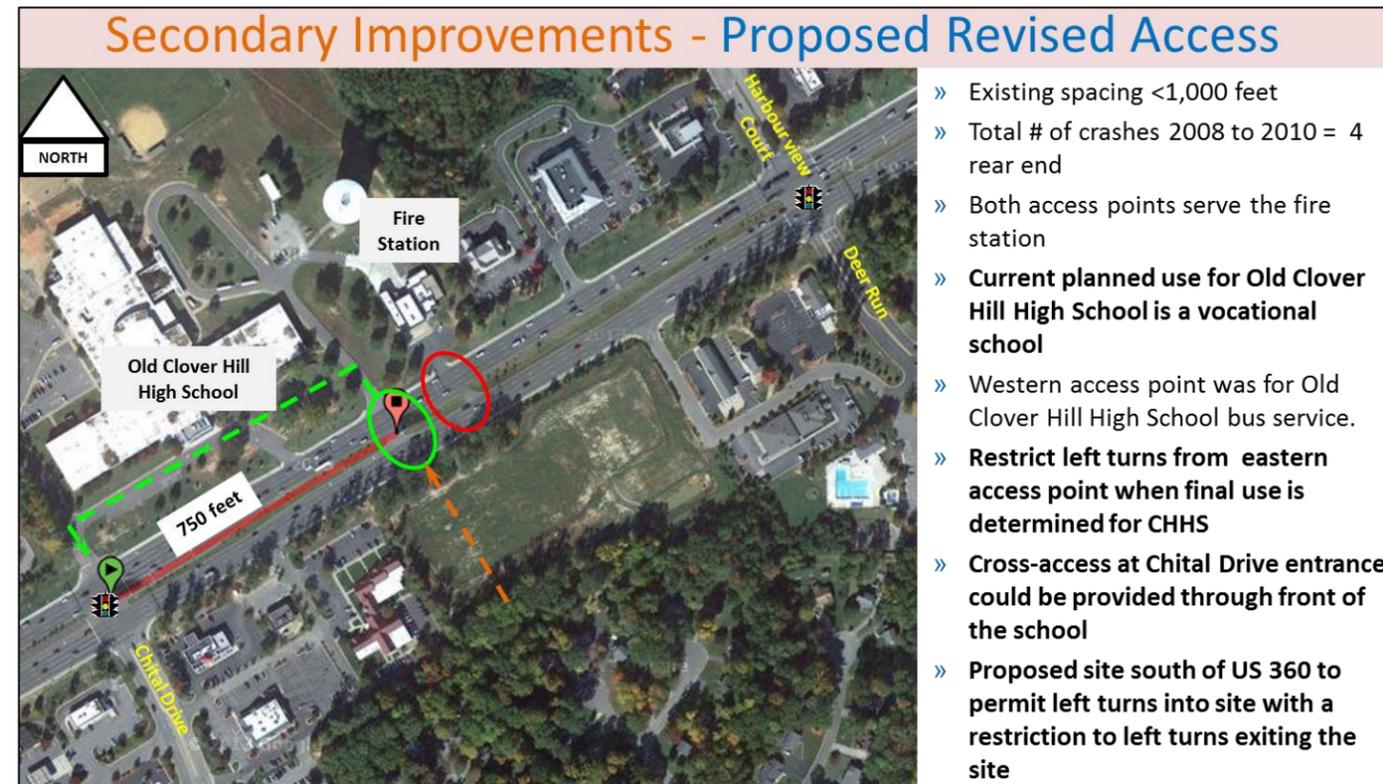
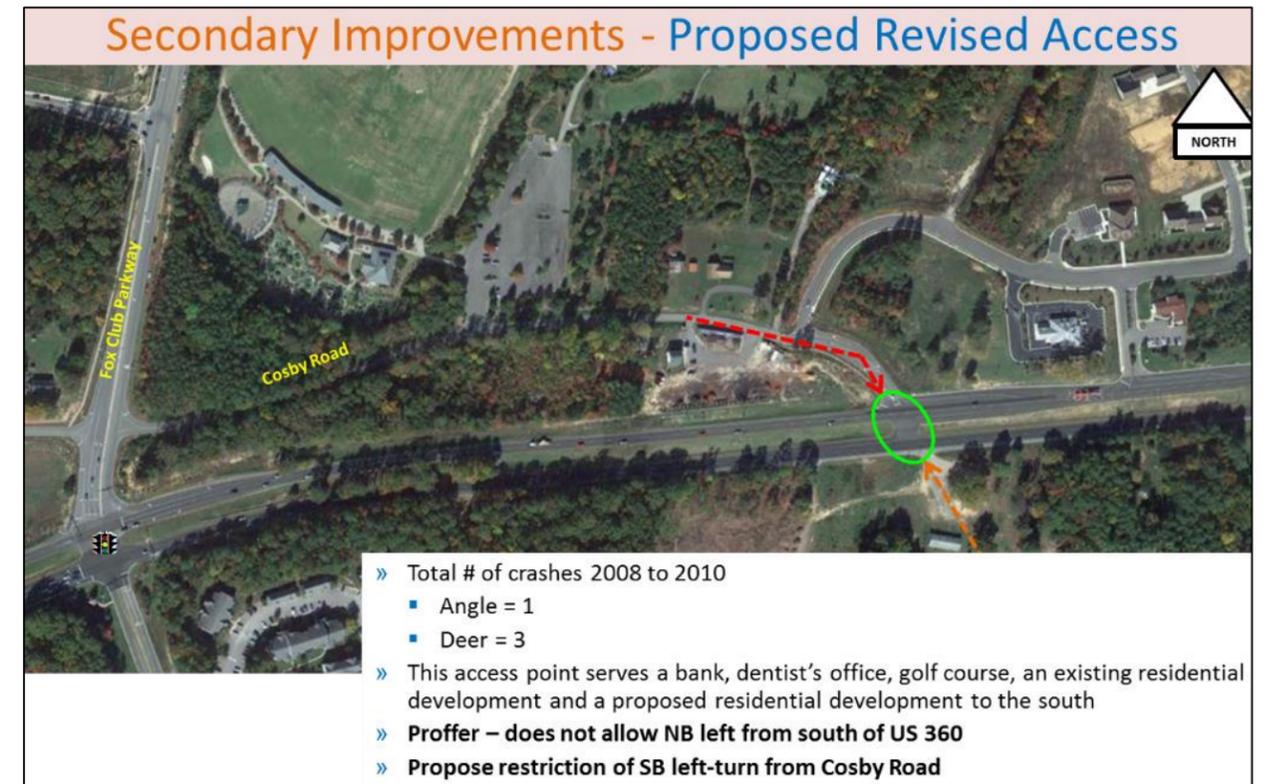


Figure 44: Concept #41 – Access Management Improvement US 360 at Cosby Road



Appendix D: Concept Screening

Concept Description

Screening Result

Concept #42 – Powhite Parkway Extension to Woolridge Road Extended (“Little Powhite”) (Figure 45)

This concept consists of extending Powhite Parkway from the existing terminus at Watermill Parkway to the proposed extension of Woolridge Road after a four-lane divided facility between Route 288 and Watermill Parkway. This concept has been referred to as “Little Powhite” and it has a primary purpose to provide an alternative east-west connection to US 360 and accommodate additional traffic from the projected growth of western Chesterfield County. This concept is included in the Chesterfield County Thoroughfare Plan and is assumed to be complete when developing future year growth rates.

****PRIMARY****

Concept #43 – Powhite Parkway Extension to US 360 (“Big Powhite”) (Figure 46)

This concept consists of extending Powhite Parkway as a limited-access facility from the existing terminus at Watermill Parkway to US 360 just east of Beaver Bridge Road. Powhite Parkway is assumed to feature two mainline lanes in each direction with interchanges at Woolridge Road, Genito Road, Duval Road, and US 360. The primary purpose of this concept is to provide an alternative east-west connection to US 360 and accommodate additional traffic from the projected growth of western Chesterfield County. This concept is included in the Chesterfield County Thoroughfare plan; however, it was not considered with this project based on travel demand modeling results. Travel demand modeling results showed that the construction of the Powhite Parkway Extension to US 360 would have a greater impact to the proposed developments north of U.S. 360 and to the west of Otterdale Road.

****ELIMINATED****

Figure 45: Concept #42 – Powhite Parkway Extension to Woolridge Road Extended (“Little Powhite”)

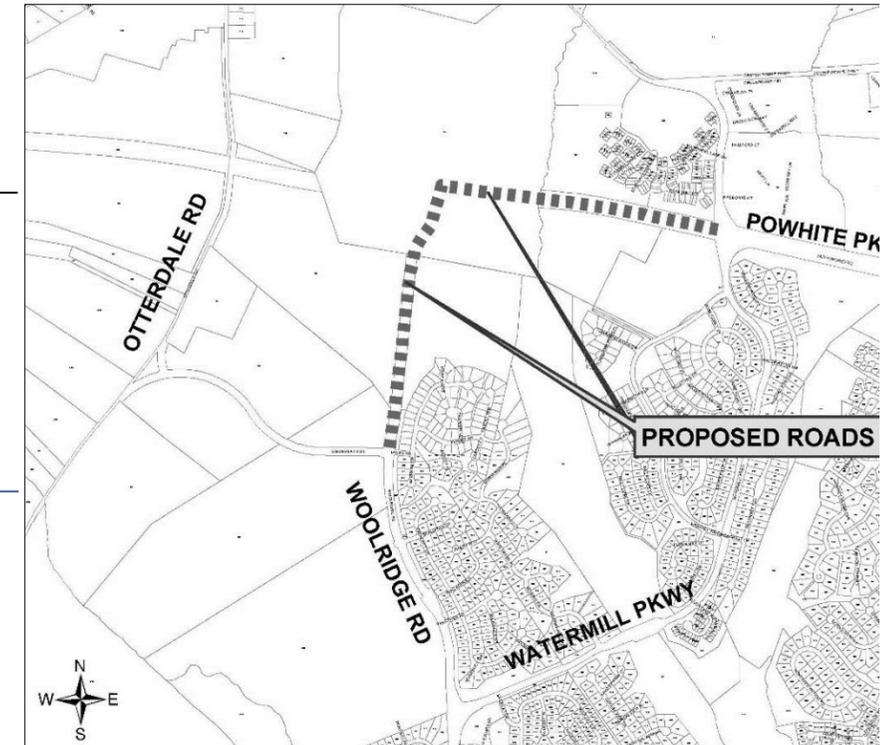
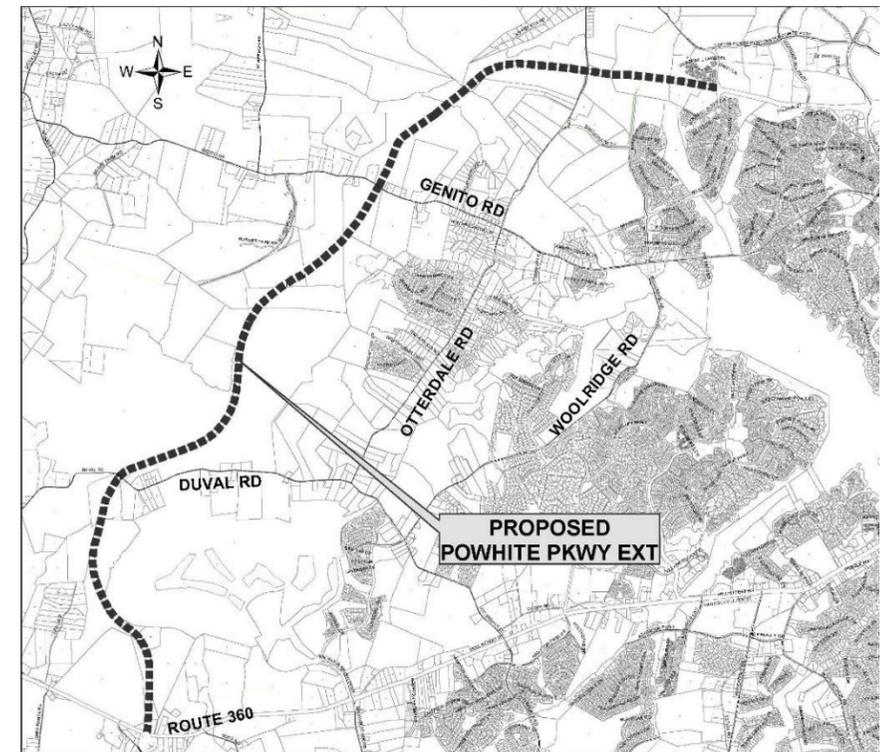


Figure 46: Concept Development - Concept #43 – Powhite Parkway Extension to US 360 (“Big Powhite”)



Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

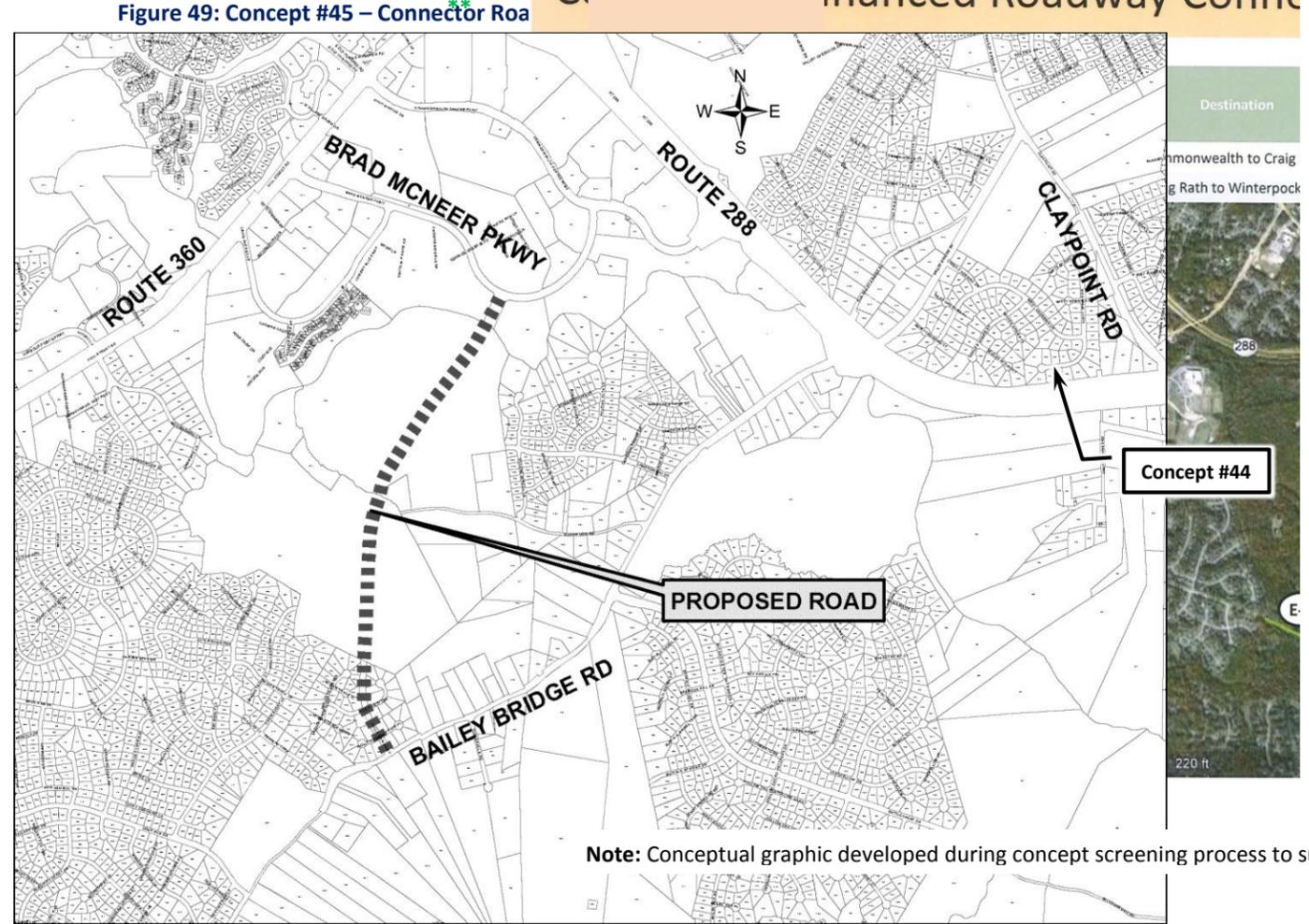
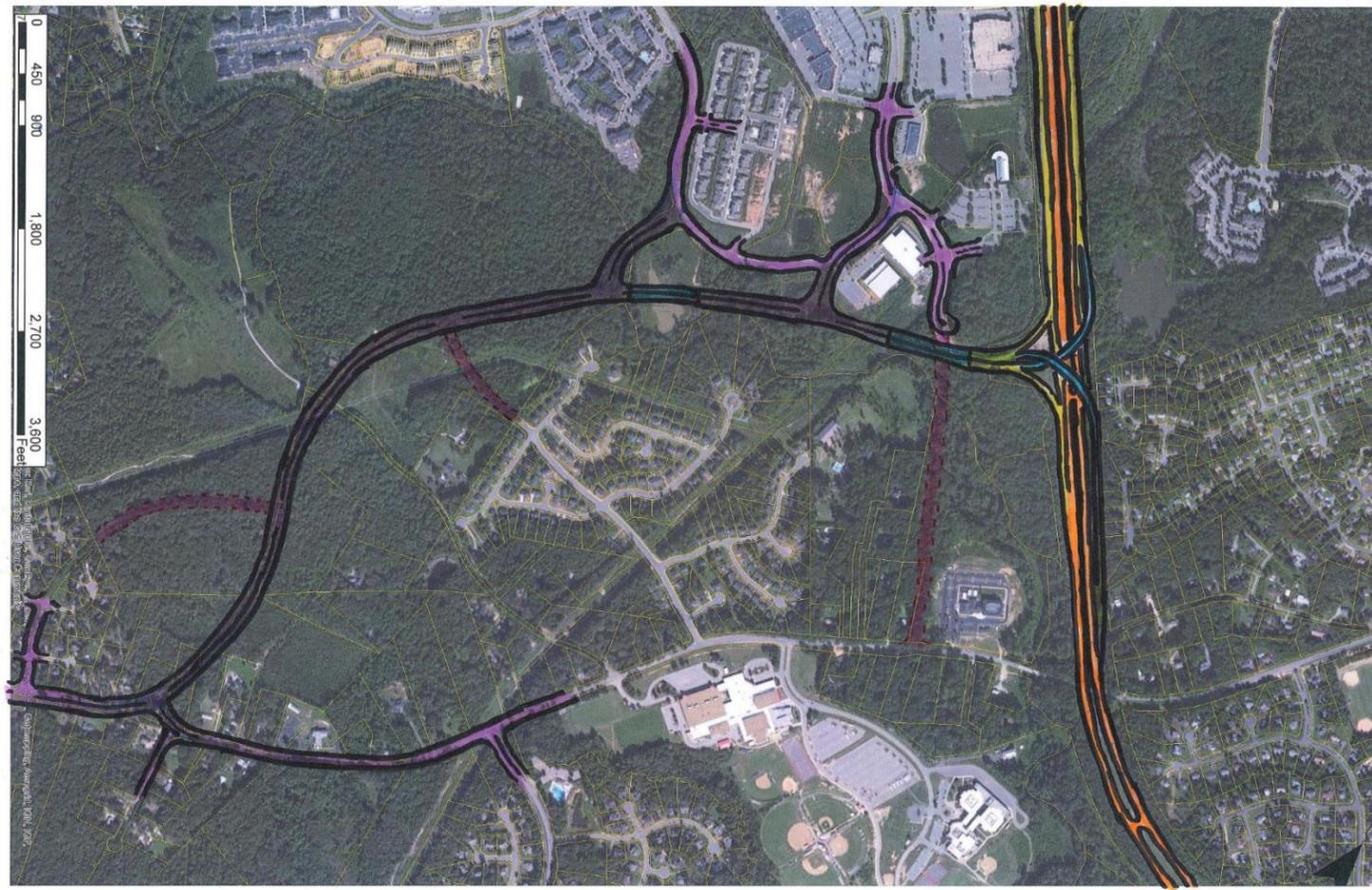
Appendix D: Concept Screening

Concept Description	Screening Result	Concept #
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Concept #44 – Bailey Bridge Connector (Reference Figure 47 and Figure 48: Concept #44 – Bailey Bridge Connector)

****PRIMARY****

Enhanced Roadway Connector



This concept consists of constructing a two-lane undivided or four-lane divided facility between Route 288 and Bailey Bridge Road. The proposed road will provide a connection from the existing Route 288 at Commonwealth Centre Parkway interchange. This concept is intended to connect to Bailey Bridge Road west of Manchester High School and serve as a parallel facility to US 360. This concept would require a new intersection at the proposed roadway and Bailey Bridge Road and may require Bailey Bridge Road to be widened from a two-lane facility to a four-lane facility. Factors to consider with this improvement are the potential impacts to properties and wetlands along the proposed alignment. Travel demand modeling results project that this facility, in conjunction with the Route 288 at Commonwealth Centre Parkway Directional Interchange, reduces overall traffic demand at the US 360/Route 288 interchange.

Concept #45 – Connector Road from Brad McNeer Parkway to Bailey Bridge Road (Labeled E-2 on Figure 47, Figure 49)

****ELIMINATED****

This concept consists of constructing a two-lane undivided facility between Brad McNeer Parkway and Bailey Bridge Road. The proposed road will make use of the existing roadway alignment of Holly View Parkway in the vicinity of Bailey Bridge Road. The primary purpose of this concept is to connect Bailey Bridge Road to Route 288 by way of the Route 288/Commonwealth Centre Parkway Interchange, Commonwealth Centre Parkway and Brad McNeer Parkway to reduce traffic along US 360. This concept is a part of the Chesterfield County Thoroughfare plan.

Appendix D: Concept Screening

Concept #46 – Commonwealth Centre Parkway Extended (Labeled E-1 on Figure 47)

This concept consists of extending Commonwealth Centre Parkway as a four-lane divided facility to Bailey Bridge Road. The proposed road will feature an alignment parallel to Route 288. The primary purpose of this concept is to connect Bailey Bridge Road to the Route 288/Commonwealth Centre Parkway Interchange, Commonwealth Centre Parkway, and Brad McNeer Parkway to reduce traffic along US 360. Travel demand modeling results project that this facility, in conjunction with the Route 288 at Commonwealth Centre Parkway Directional Interchange, reduces overall traffic demand at the US 360/Route 288 interchange. This concept may require Bailey Bridge Road to be widened from a two-lane facility to a four-lane facility and would have impacts to properties and wetlands along the proposed alignment. This concept would require an access management exception due to inadequate spacing from the Route 288/Commonwealth Centre Parkway interchange.

****PRIMARY****

Concept #47 – Commonwealth Centre Parkway to Brad McNeer Parkway Connector (Labeled E-3 on Figure 47)

This concept consists of constructing a connector road between Commonwealth Centre Parkway and Brad McNeer Parkway. The alignment is proposed to connect from Lowery Bluff Way to one of the existing full-access intersections along Commonwealth Centre Parkway. Three alignments were considered in total: Hunt Master Drive, Barnes and Noble, or Padore Dance. This connector road is intended to provide access to Commonwealth Centre Parkway from Brad McNeer Parkway in the event that access restrictions are imposed at US 360 at Old Hundred Road/Commonwealth Centre Parkway. It also could serve as a route to assist with maintenance of traffic along US 360 for any proposed roadway improvements. Since this concept impacts existing businesses at Commonwealth Centre and is only required if access restrictions are imposed at US 360 at Old Hundred Road/Commonwealth Centre Parkway, this concept was not progressed further.

****ELIMINATED****

Concept #48 – Craig Rath Boulevard to Full Rack Drive Connector (Labeled E-4 on Figure 47)

This concept consists of constructing a two-lane facility to connect Craig Rath Boulevard to Full Rack Drive. This concept is intended to provide an additional connection to Craig Rath Boulevard from the Deer Run subdivision. This concept impacts nearby properties and wetlands. The additional traffic caused by this connection is unlikely to be accepted by local citizens.

****ELIMINATED****

Concept #49 – Buffalo Springs Drive Extension (Labeled E-5 on Figure 47)

This concept consists of extending Buffalo Springs Drive to Bailey Bridge Road as a two-lane undivided facility. This concept provides an additional connection along Bailey Bridge Road to facility any connections to Qualla Road. This improvement is proposed to align with the proposed Bailey Bridge Connector. This improvement is intended to provide better access along Bailey Bridge Road. This improvement will impact residential properties along the proposed alignment.

****ELIMINATED****

Concept #50 – Battlecreek Drive Extension (Labeled E-6 on Figure 47)

This concept consists of extending Battlecreek Drive to Qualla Road as a two-lane undivided facility. This concept provides a connection from Qualla Road to Bailey Bridge Road to provide access to Route 288. This improvement was considered with the Qualla Road interchange concept. This improvement will impact residential properties along the proposed alignment.

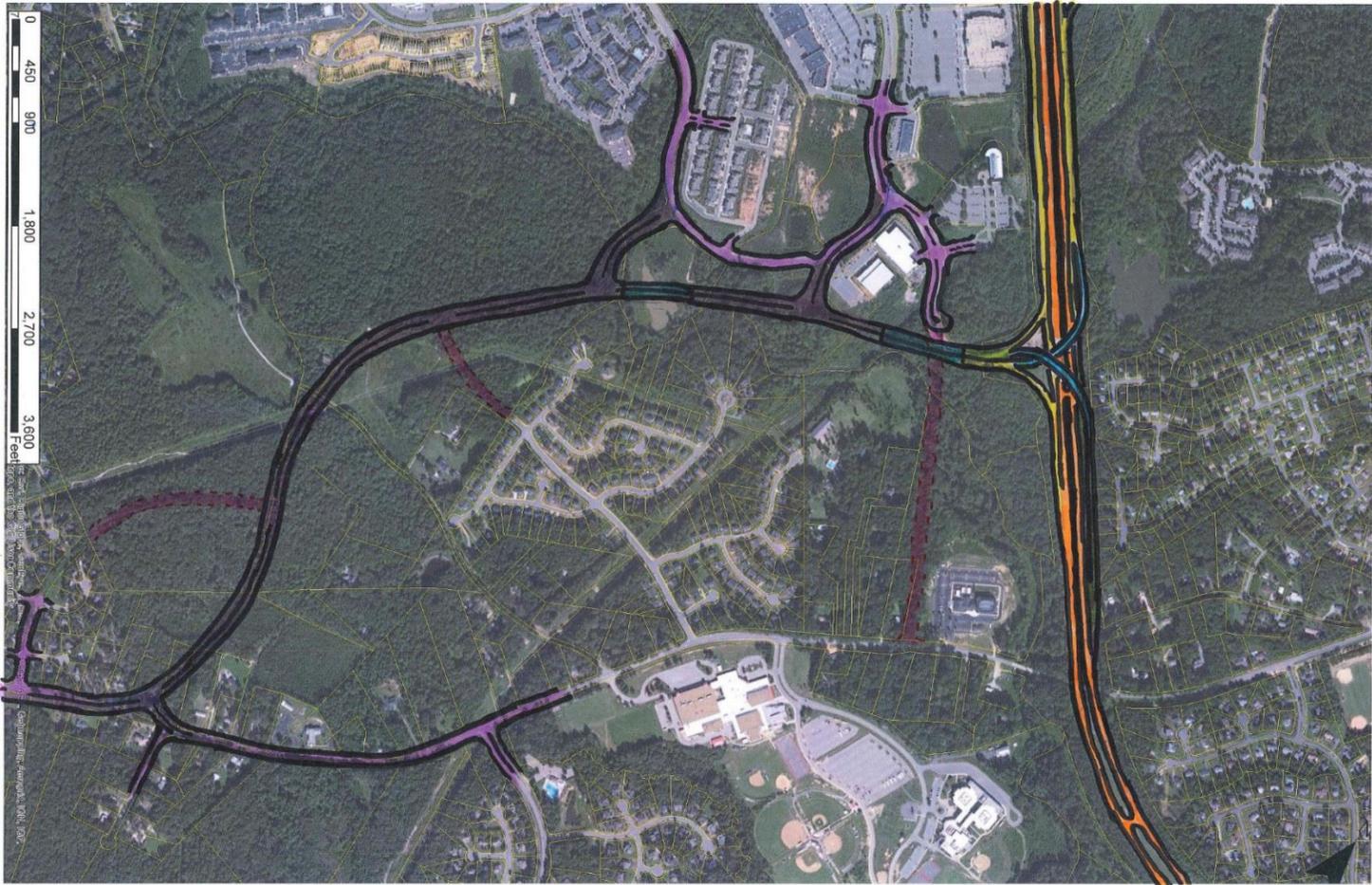
****SECONDARY****

Primary – Recommended improvements determined to have the most impact on traffic issues at the US 360/Route 288 interchange
Secondary – Recommended improvements determined to provide operational benefits in the US 360/Route 288 interchange area
Eliminated – Concept vetted by study work group and eliminated for further consideration

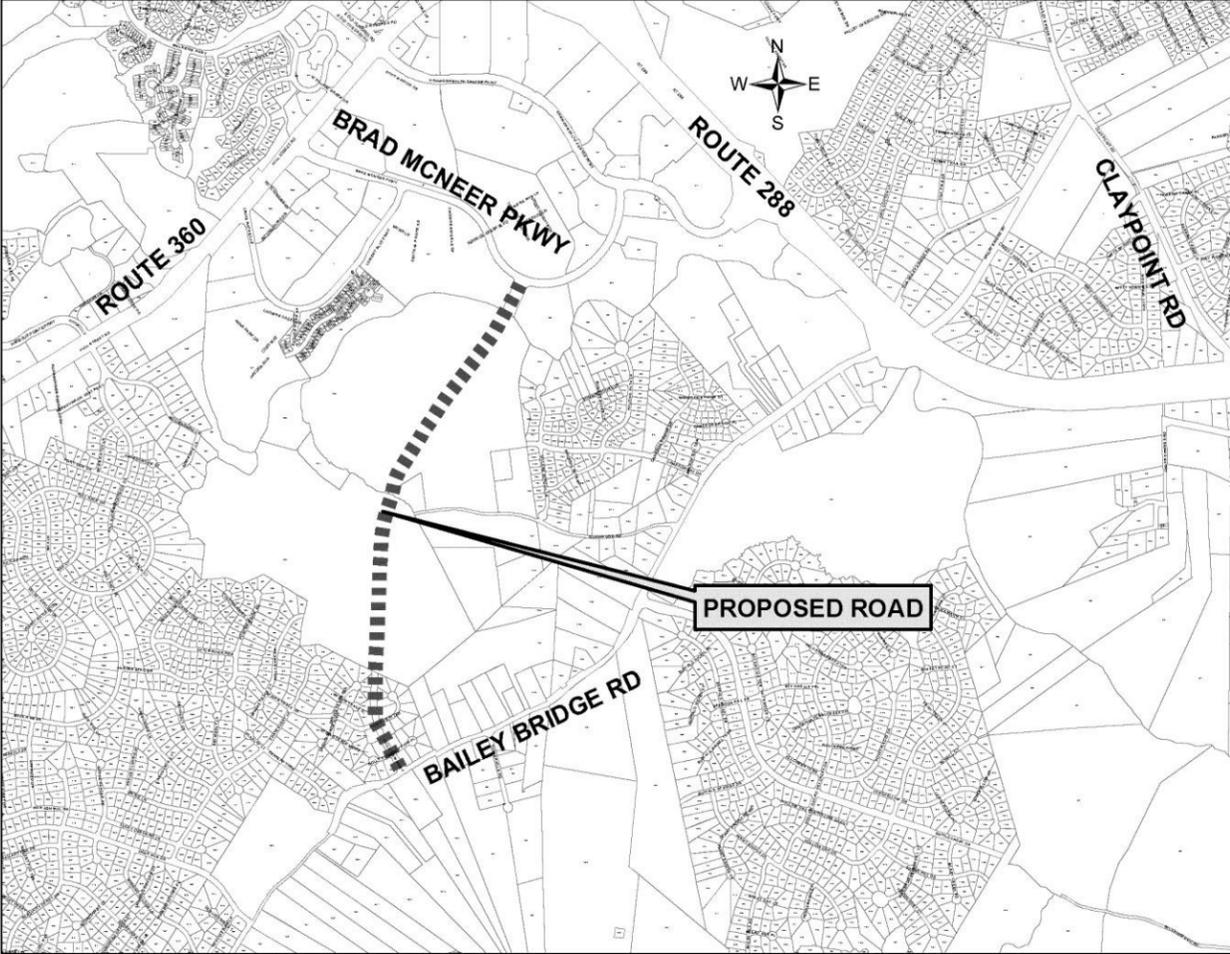
Figure 48: Concept #44 – Bailey Bridge Connector

Figure 49: Concept #45 – Connector Road from Brad McNeer Parkway to Bailey Bridge Road

Appendix D: Concept Screening



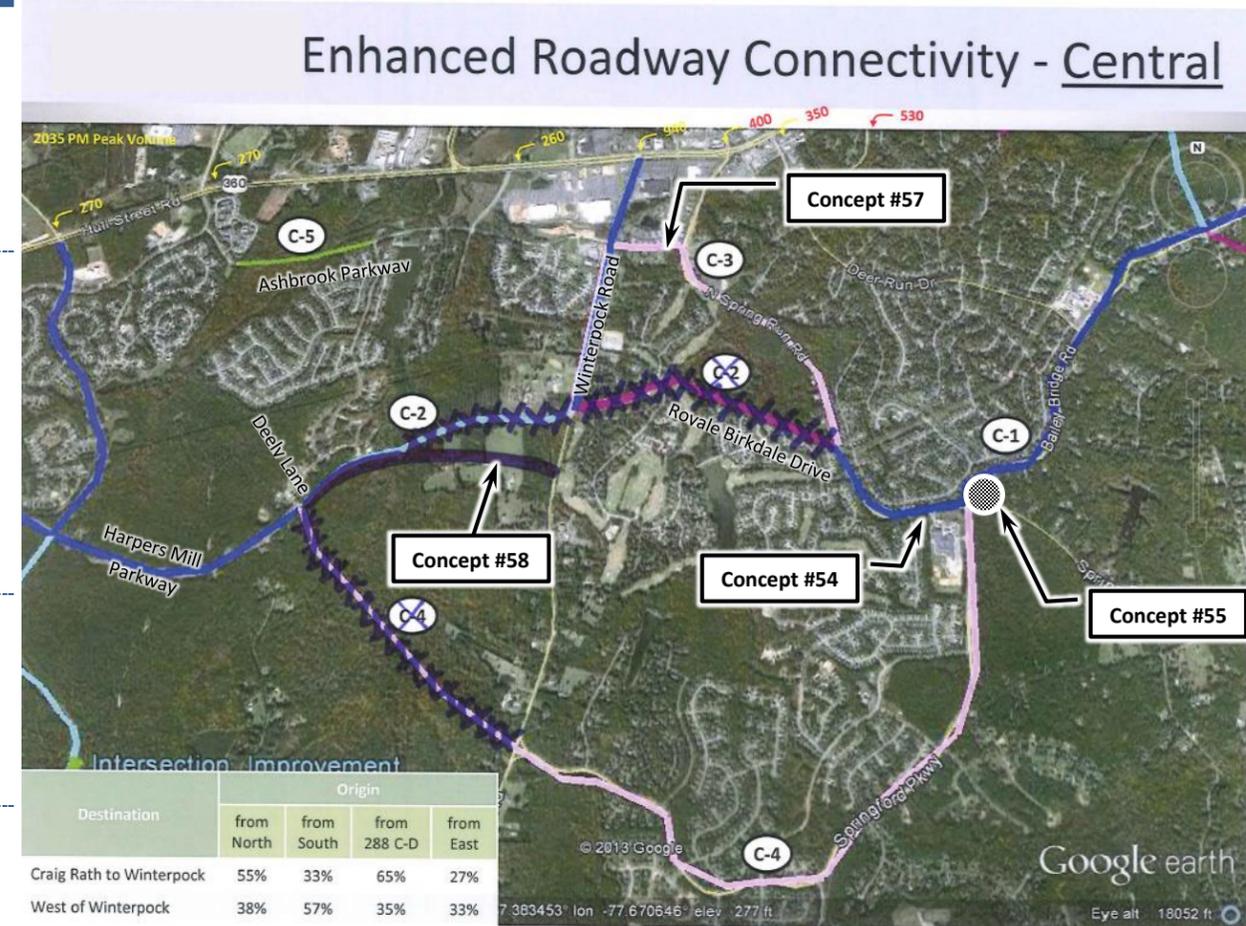
Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.



Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #51 – Bailey Bridge Road Widening (Labeled C-1 on Figure 50)</p> <p>The proposed concept consists of widening Bailey Bridge Road from a two-lane undivided facility to a four-lane divided facility. The widening project is proposed between Route 288 and Springford Parkway. The widening project is intended to improve the capacity of Bailey Bridge Road to accommodate the increased demand on the facility once a connection is provided to Route 288 between US 360 and Courthouse Road. This concept is proposed to provide a multi-use trail on one side of the roadway. Safety would be enhanced by improving the horizontal curvature of the roadway to current VDOT standards. Right-of-way impacts were noted as a concern associated with the proposed widening concept.</p>	**ELIMINATED**
<p>Concept #52 – Bailey Bridge Road Extension to Winterpock Road (Labeled C-2 on Figure 50, Figure 51)</p> <p>This concept consists of extending Bailey Bridge Road as a four-lane divided facility from Royal Birkdale Boulevard to Winterpock Road. Bailey Bridge Road would share the alignment of Spring Run Road between Springford Parkway and Royal Birkdale Drive. The extension of Bailey Bridge Road would require the alignment to run parallel to existing high-tension power lines and a portion of the alignment would require the reconstruction of a few holes at the Birkdale Golf Course. This alignment is intended to extend Bailey Bridge Road to Winterpock Road to attract some of the demand off of US 360 from areas as far west as Winterpock Road. Travel demand modeling show that this improvement, in conjunction with the Commonwealth Centre Parkway Direction Interchange and the Bailey Bridge Connector, was the most effective alternative at diverting traffic off of US 360; however, this concept was removed from consideration due to feasibility concerns. The impacts to the Birkdale Golf Course and properties aligning the golf course would be costly and it might not have been feasible to align a roadway parallel to high-tension power lines.</p>	**ELIMINATED**
<p>Concept #53 – Springford Parkway Widening (Labeled C-4 on Figure 50)</p> <p>The proposed concept consists of widening Springford Parkway from a two-lane undivided facility to a four-lane divided facility. The widening project is proposed between Bailey Bridge Road and Winterpock Road. The section from Spring Run Road to Hensley Road is currently planned to be a four-lane road. The primary purpose of this improvement is to handle increased traffic associated with connecting Bailey Bridge Road to Route 288 and the subsequent road widening project. Travel demand modeling results do not suggest a need to immediately widen Spring Run Road to four lanes; therefore, this improvement was not carried forward.</p>	**ELIMINATED**
<p>Concept #54 – Spring Run Road Widening (Reference Figure 50)</p> <p>The proposed concept consists of widening Spring Run Road from a two-lane undivided facility to a four-lane divided facility. The widening project is proposed between Bailey Bridge Road and just north of Royal Birkdale Drive. The primary purpose of this improvement is to handle increased traffic associated with connecting Bailey Bridge Road to Route 288 and the subsequent road widening project. Travel demand modeling results do not suggest a need to immediately widen Spring Run Road to four lanes; therefore, this improvement was not carried forward.</p>	**ELIMINATED**
<p>Concept #55 – Bailey Bridge Road/Spring Run Road at Springford Parkway – Continuous Green-T (CGT) Intersection (Reference Figure 50)</p> <p>The proposed concept consists of realigning the intersection of Bailey Bridge Road/Spring Run Road at Springford Parkway to a CGT configuration. The primary purpose of this improvement is to provide a continuous movement for westbound traffic on Bailey Bridge Road in conjunction to connecting Bailey Bridge Road to Route 288 and subsequent widening of Bailey Bridge Road. Travel demand modeling results do not suggest a need to immediately widen Bailey Bridge Road, Spring Run Road, or Springford Parkway to four lanes; therefore, this concept was not carried forward. A roundabout configuration should also be considered at this location should future intersection improvements be warranted.</p>	**ELIMINATED**
<p>Concept #56 – North Spring Run Road Widening (Labeled C-3 on Figure 50)</p> <p>This concept consists of widening North Spring Run Road from Royal Birkdale Boulevard to McEnally Road from a two-lane undivided facility to a four-lane divided facility. This improvement is intended to improve the capacity on North Spring Run Road for traffic destined for Route 288 via Bailey Bridge Road. Travel demand modeling showed that this improvement would not divert as much traffic as anticipated due to the close proximity to US 360; therefore, it was removed from consideration.</p>	**ELIMINATED**
<p>Concept #57 – McEnally Road Widening (Referenced on Figure 50)</p> <p>This concept consists of widening McEnally Road from a two-lane undivided facility to a four-lane divided facility. The purpose behind this improvement is to improve the capacity of McEnally Road to handle additional demand from Winterpock Road headed to Bailey Bridge Road assuming a connection to Route 288. Travel demand modeling showed that this improvement would not divert as much traffic as anticipated due to the close proximity to US 360; therefore, it was removed from consideration.</p>	**ELIMINATED**

Figure 50: Concepts #51 through #60



Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.

Appendix D: Concept Screening

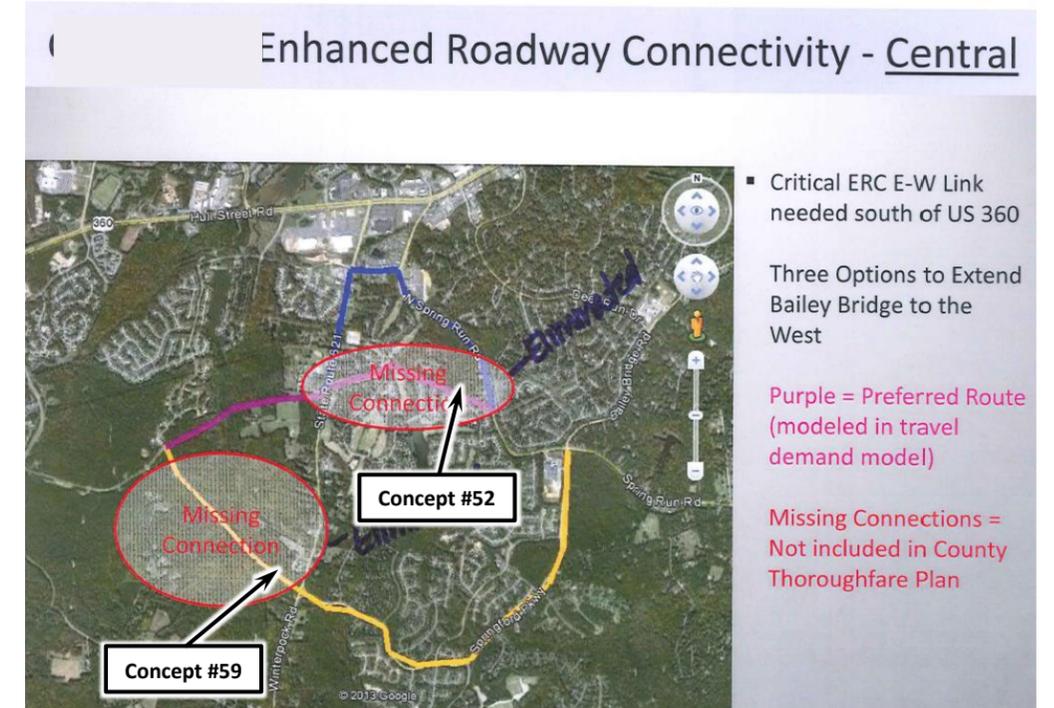
Concept Description	Screening Result
<p>Concept #58 – Harpers Mill Parkway Extension (Referenced on Figure 50)</p> <p>This concept consists of extending Harpers Mill Parkway from its existing terminus at Deeley Lane to Winterpock Road. The purpose behind this improvement is to align and connect Harpers Mill Parkway to the Bailey Bridge Road Extension to provide a parallel facility to US 360 with access to Route 288. This improvement will primarily be built as development occurs. The roadway is currently listed on the Chesterfield County thoroughfare plan. This improvement was considered in developing future growth rates; otherwise, no further action was taken with this improvement due to the minimal impact on US 360.</p>	**SECONDARY**
<p>Concept #59 – Springford Road Extension (Labeled C-4 on Figure 50, Figure 51)</p> <p>This concept consists of constructing a four-lane divided facility from Winterpock Road at Springford Parkway to Harpers Mill Parkway. This improvement is intended to connect Harpers Mill Parkway to Bailey Bridge Road. This improvement will primarily be built as development occurs. The purpose of this improvement is to provide a parallel facility to US 360 west of Winterpock Drive.</p>	**ELIMINATED**
<p>Concept #60 – Ashbrook Parkway Connection (Labeled C-5 on Figure 50)</p> <p>This concept consists of connecting the missing portion of Ashbrook Parkway between Hampton Park Drive and Ashlake Parkway. The purpose of this improvement is to provide a parallel facility to US 360 to reduce travel demand on US 360. This improvement will primarily be built as development occurs. The roadway is currently listed on the Chesterfield County thoroughfare plan. This improvement was considered in developing future growth rates; otherwise, no further action was taken with this improvement due to the minimal impact on US 360.</p>	**SECONDARY**
<p>Concept #61 – Harpers Mill Parkway Extension (Labeled W-1 on Figure 52)</p> <p>This concept consists of extending Harpers Mill Parkway from its first terminus at Winterpock Elementary School to Baldwin Creek Road as a four-lane divided facility. Additionally, the road is proposed to be extended as a two-lane undivided facility from Baldwin Creek Road to Beaver Bridge Road. The purpose of this improvement is to provide a parallel facility to US 360 west of Winterpock Drive. This improvement will primarily be built as development occurs. The roadway is currently listed on the Chesterfield County thoroughfare plan. This improvement was considered in developing future growth rates; otherwise, no further action was taken with this improvement due to the minimal impact on US 360.</p>	**SECONDARY**
<p>Concept #62 – Hampton Park Drive Extension (Labeled W-2 on Figure 52)</p> <p>This concept consists of extending Hampton Park Drive from its first terminus at Hampton Chase Way to Beaver Bridge Road as a two-lane facility. The purpose of this improvement is to provide a parallel facility to US 360 west of Winterpock Drive. This improvement will primarily be built as development occurs. The roadway is currently listed on the Chesterfield County thoroughfare plan. This improvement was considered in developing future growth rates; otherwise, no further action was taken with this improvement due to the minimal impact on US 360.</p>	**SECONDARY**
<p>Concept #63 – Baldwin Creek Extension (Labeled W-3 on Figure 52)</p> <p>This concept consists of widening Baldwin Creek Road from US 360 to Harpers Mill Parkway as a two-lane facility to a four-lane facility. This improvement is intended to provide additional capacity on Baldwin Creek Road to attract traffic towards Harpers Mill Parkway. This would provide a parallel facility to US 360 west of Winterpock Road. This improvement will primarily be built as development occurs. The roadway is currently listed on the Chesterfield County thoroughfare plan. This improvement was considered in developing future growth rates; otherwise, no further action was taken with this improvement due to the minimal impact on US 360.</p>	**SECONDARY**

Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration

Figure 51: Concept #52 and Concept #59



Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.

Figure 52: Concepts #61 through #63



Note: Conceptual graphic developed during concept screening process to supplement study work group discussions.

Appendix D: Concept Screening

Concept Description	Screening Result
<p>Concept #64 – Pedestrian and Bicycle Accommodations</p> <p>State pedestrian and bicycle accommodations should be considered (e.g., sidewalks, multiuse trails, etc.) in conjunction with any arterial improvements, as feasible. Improvements along US 360 should include sidewalk in areas where none currently exists. Sidewalk and trail improvements should also be considered along existing minor arterials such as Bailey Bridge Road, Winterpock Road, Spring Run Road, Springford Parkway, and Old Hundred Road when road widening projects occur. Sidewalks and trails also should be considered as part of any newly constructed roads such as the Bailey Bridge Connector or the Brad McNeer Connector.</p>	<p>**SECONDARY**</p>
<p>Concept #65 – Transit</p> <p>The residential development density along US 360 within the study area does not suggest demand for local transit service; however, commuters could be concentrated at park-and-ride facilities that are serviced by express bus service. At the time of this study, an express bus route is serviced from Commonwealth Centre Parkway and from Swift Creek Baptist church in the vicinity of US 360 and Winterpock Road. This express bus route serves commuters destined for downtown Richmond. Additional express bus destinations could be in demand in the future as congestion increases along Route 288, Powhite Parkway, and other major travel routes in the Richmond metropolitan area. Transit services also could be useful to support maintenance of traffic during the construction of improvements identified in this study.</p>	<p>**SECONDARY**</p>
<p>Concept #66 – Park & Ride Facilities</p> <p>Park-and-ride facilities support a variety of TDM strategies such as transit and ridesharing. Park-and-ride facilities located near limited-access facilities are attractive for ridesharing and/or express bus service to employment centers. It is anticipated that improvements to the US 360/Route 288 interchange, Route 288/Commonwealth Centre Parkway interchange, and the intersection of US 360 at Old Hundred Road/Commonwealth Centre Parkway could require property acquisitions that are suitable for park-and-ride facilities. This concept consists of constructing VDOT park-and-ride facilities in the vicinity of Route 288 on remnant parcels of land that would be acquired to construct proposed roadway improvements. Expanding service to the existing park-and-ride facilities along US 360 should also be considered to support carpooling and express bus service. Potential park-and-ride facility locations are identified in the preferred study alternatives project summary sheets in Appendix G.</p>	<p>**SECONDARY**</p>

Primary – Recommended improvements determined to have the most impact at mitigating safety and operational issues at the US 360/Route 288 interchange

Secondary – Recommended improvements determined to provide operational and safety benefits outside of US 360/Route 288 interchange area

Eliminated – Concept vetted by study work group and eliminated for further consideration