

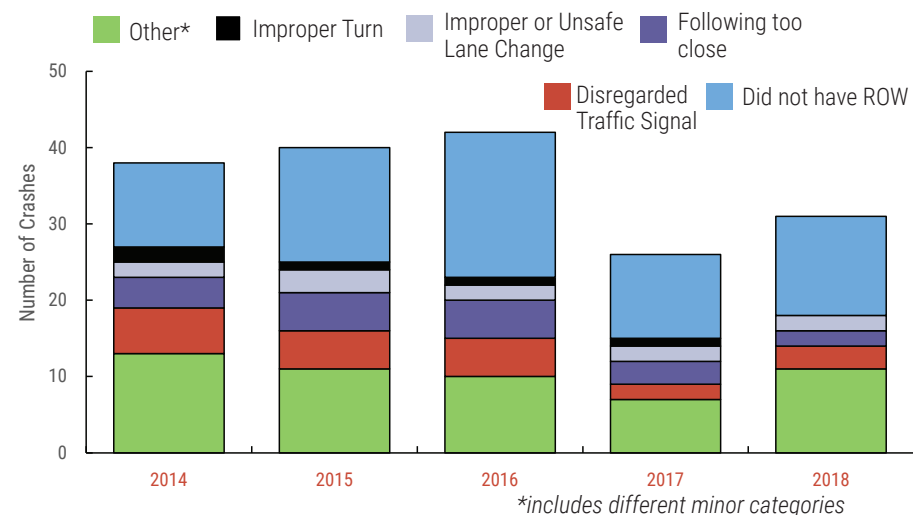
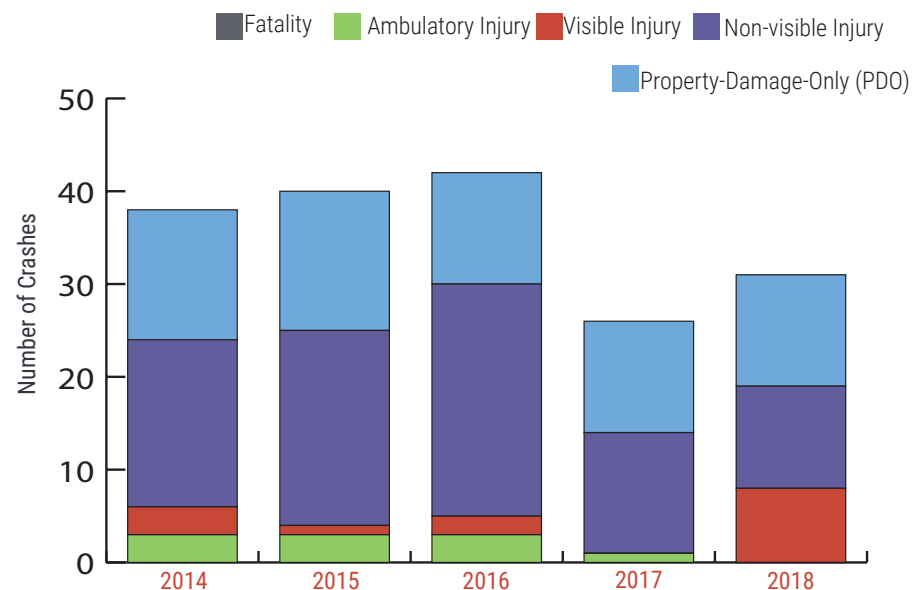
MERIT CRITERIA

The Mathis Corridor Revitalization Project aligns well with each merit criteria. A description of the major anticipated benefits of this project is provided below. Efforts have been made to specifically identify those benefits that will be the direct result of each project component.

Safety

The Mathis Corridor Revitalization Project will improve safety for motorists and pedestrians by providing parallel accommodations, addressing bottlenecks, and implementing access management best practices. Those two innovative projects will also be a benefit to the region by demonstrating their effectiveness in improving safety.

An analysis of crash data from 2014–2018 indicated a total of 177 crashes along the corridor. Of those, 128 crashes occurred within the improvement area of the streetscape component and 49 crashes occurred within the improvement area of the roundabout. Based on the total number of crashes and the suggested valuation of crash-related injuries, this represents an annual societal safety cost of \$2.5 million (see detailed calculations in safety data summary tab in BCA spreadsheet). The most prevalent crash types in the study area were rear-end crashes and angle crashes. The crash types noted for the Centreville Rd / Sudley Rd Prescott Ave intersection are types which could potentially be mitigated by a modern roundabout. **Roundabouts have been shown to reduce fatalities by all crashes by 35 percent and injuries by 76 percent compared to other intersection types, including traffic signals, according to the FHWA's Roundabouts: An Informational Guide (2nd Edition). Consequently, the roundabout is expected to decrease crashes from 49 to 32 crashes.**



The streetscape component will provide a safe alternative for pedestrians.

Mathis Avenue runs parallel to Route 28 to the South and Portner Avenue to the North. Those two corridors are identified as statewide priority in VDOT Pedestrian Safety Action Plan with Route 28 being in top 1% and Portner Avenue in top 5%.

The streetscape component reduces the likelihood of crashes

Providing raised medians or pedestrian refuges at pedestrian crossings has demonstrated a 46 percent reduction in pedestrian crashes based on documentation from the Federal Highway Administration (FHWA) Safety Program. For vehicles, a raised median instead of a two-way left-turn lane removes many mid-block turning movements and conflict points where angle crashes occur.

Based on the FHWA Crash Modification Factor (CMF) Clearinghouse, raised medians have been shown to reduce the anticipated number of study area crashes and were attributed a value of 0.59. Applying a CMF of 0.59 to reduce the number of annual crashes anticipated along the Mathis Corridor results in a 20-year societal safety cost savings of \$5.9 million (discounted at 7 percent).

The streetscape component narrows the travel way and adds a buffer between pedestrians and vehicles

Narrower lane widths—real or perceived—have been shown to reduce driving speeds. Reduced speeds, combined with a physical separation of pedestrian and vehicles, improves pedestrian comfort and safety.

The roundabout component reduces likelihood of crashes

Roundabouts have a reduced number of conflict points compared to traditional intersections. Modern roundabouts are proven safety countermeasures. They are particularly effective at reducing the frequency of angle collisions and reducing crash severity due to reduced vehicle speeds. Rear-end crashes also would be expected to be reduced compared to existing conditions, due to decreases in stopped vehicles at the intersection.

Based on the FHWA CMF Clearinghouse, the conversion of an intersection to a roundabout has been shown to reduce the anticipated number of crashes and was attributed a value of 0.42. Applying a CMF of 0.42 to reduce the number of annual crashes anticipated at the intersection of Sudley Road and Route 28 results in a 20-year societal safety cost savings of \$4.5 Million (discounted at 7 percent).

The roundabout component improves pedestrian interactions with traffic at a busy intersection

The proposed design includes sidewalks in all four quadrants connecting to the existing sidewalk network. Marked crosswalks will be provided across all four legs and pedestrian refuge areas will be provided in the median. These refuge areas will enable pedestrians to cross one direction of traffic at a time and then safely wait to find a gap in the other direction of traffic.

BCA Methodology

To calculate the safety benefits for this project, published crash modification factors prepared by the Virginia Department of Transportation (VDOT) in its "Roundabout Cost Comparison Tool v 2.6" and in the FHWA's Crash Modification Factor Clearinghouse were utilized. This Safety Benefit analysis utilized information obtained from VDOT's crash database from the years 2014 through 2018. The expected consequence for all crashes per year utilized recommended monetized values. Once the risk reduction and expected cost consequences were determined, then a simple multiplication of these two variables provided the safety benefit per year. The expected cost consequences per year were inflated by 1.0% per year across 20 years of the analysis period.

Environmental Sustainability

The Mathis Corridor Revitalization Project reduces transportation impacts to the built and natural environment which is essential to achieve the City's and region sustainability goals. Both components support numerous objectives stated in the Environmental Sustainability & Health Chapter of the City's Comprehensive Plan:

- Support diverse native vegetation as a core function of the urban landscape to boost property value, cut energy consumption, reduce costs for stormwater management and erosion control, and make the City a more beautiful place (ESH 8.2)

The streetscape component improves stormwater management and sustainable features

The streetscape component reduces the amount of impervious area with a raised median and landscaped buffer to aid in stormwater management. The streetscape component also includes green, sustainable elements such as street trees and conversion to LED lighting. Street trees reduce ambient heat and improve air quality, while LED lighting reduces the City's energy costs. This will result in a 20-year cost savings of approximately \$125,000 (discounted at 7 percent).



North Grant Avenue-a city green street

- Create green infrastructure network of interconnected natural areas, parks, and green streets, recognizing the value of nature for a healthy, resilient, and prosperous community (ESH 8.3)

Both components increase resiliency.

This project will convert Mathis Avenue into a green street as well as increase the resiliency of the transportation system with the addition of a roundabout. Indeed, this intersection will not be dependent on electric stoplights which is crucial in time of power outage due to extreme weather events.

- Create a more safe and secure future by encouraging the reduction of fossil fuel consumption and emissions that are harmful to human health and the environment (ESH 8.5)

The roundabout component improves air quality

The roundabout component reduces air quality and climate change impacts as well as fuel consumption associated with idling, acceleration, and deceleration in congested driving conditions. Based on the FHWA CMAQ Emissions Toolkit, **the roundabout will reduce total daily emissions by 607.042 kg/day of carbon dioxide equivalent and total energy consumption by 7.978 MMBTU.**

This reduction in emissions is the equivalent of driving 550,000 fewer miles or saving 25,000 gallons of gas in one year.

BCA Methodology

Calculated benefits included those related to street trees and to LED conversion.

The City of Manassas recently prepared a streetlight masterplan which indicated an annual savings of \$297 per converted Streetlight. This value was applied to the anticipated number of streetlight conversion and totaled for the 20-year analysis period.

Health benefits for street trees were based on empirical data from a study of 5 cities. The average net benefit to public health (express through less costs for emission, energy, and healthcare) was calculated at \$30 per tree.

Quality of Life

The City is committed to building a more equitable and inclusive Manassas. Recommendations from the City's Equity & Inclusion Task Force final report to the Manassas City Council in December, 2021 are being implemented to create a more equitable and livable City.

The revitalization of the Mathis Corridor improves the overall sense of place, character, and livability of the neighborhood and bringing the region closer to its livability goal.

The streetscape improvements support and encourage active, affordable mobility

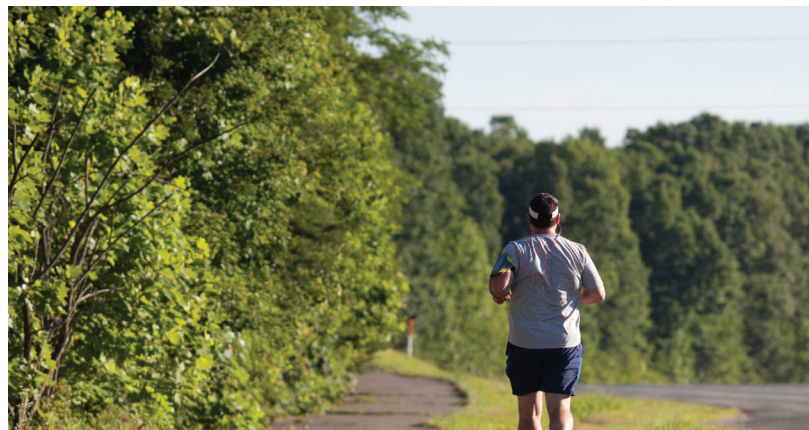
The proposed design includes a wide sidewalk, upgraded crosswalks, street trees, and a buffer zone between pedestrians and vehicles. These elements protect and promote walking as a viable way to move between the corridor and the Downtown Core. The improvements also include enhancements to bus stops along the corridor, which, combined with the pedestrian improvements, supports additional transit accessibility and ridership.

The streetscape improvements support healthy lifestyles

Improved sidewalks and better connectivity promote and support healthy lifestyles. The revitalized streetscape will provide direct access between two parks (Liberia House and Annaburg Manor). Access to parks and open/green space has been shown to reduce stress and improve physical and mental health, which often leads to a reduction in healthcare costs.

The roundabout calms traffic and reduces transportation noise

Compared to a traffic signal, roundabouts can be navigated without coming to a full stop; this results in a potential reduction in transportation noise associated with idling, acceleration, and deceleration. Particularly during the off-peak hours, this results in a more harmonious and serene environment that is beneficial to residents, business, and pedestrians along the corridor.



Manassas supports healthy lifestyles with its Healthy Eating Active Living (HEAL) initiative.

The roundabout reduces a known traffic bottleneck

Manassas is a net importer of labor. An improvement to the Sudley Road/Route 28 intersection reduces traffic delays for 50,000 daily commuters. It has the potential to reduce wait and crossing times for pedestrians, and, critically, can improve the access and connectivity to the Novant Health UVA Prince William Medical Center for emergency service vehicles but also to numerous Equity Emphasis Areas (as designated by the Metropolitan Washington Council of Governments) located in the quadrant delineated by Sudley Road to west, Route 28 to the east, and I-66 to the north.

The Mathis Corridor Revitalization Project is supportive of infill redevelopment, more accessible housing options, and improved proximity between housing, employment, and entertainment.



Liberia House

Mobility and Community Connectivity

The Mathis Corridor Revitalization Project provides more travel options along the 28 corridor.

The roundabout component relieves vehicular traffic congestion and delays along Sudley Road and Route 28, while the streetscape component improves pedestrian comfort and consequently multimodal connectivity by supporting transit accessibility and ridership along Mathis Avenue. The project includes bus stops for a local bus route connecting to the transit hub and is located within ½ mile of the Manassas VRE Station. As first mile/last mile, the project also supports the use of Shared Mobility Devices which are available in the City.

The project has been tailored to provide a complete corridor, which will have positive impacts felt beyond the immediate vicinity into the rest of the City. Vehicular and pedestrian improvements complement each other and different travel options are emphasized where they

most make sense and where they most align with the character of the Mathis Corridor.

The Mathis Corridor Revitalization Project will create an important pedestrian-friendly connection between two parks—Liberia House and Annaburg Manor.

Central to the 18-acre Liberia House Park is the historic 1825 Liberia House, a headquarters to both Confederate and Union troops during the Civil War. Before the Civil War, Liberia was a successful 2,000-acre plantation that included a school, a mercantile, and numerous outbuildings.

During the War, Confederate President Jefferson Davis was thought to have visited the house after the First Battle of Manassas (Bull Run) in 1861. In 1862, President Abraham Lincoln visited the home during the Union Army's occupation. Union troops continued to use the home until the war's end, when the Weir family returned to find their land devastated but their home intact.

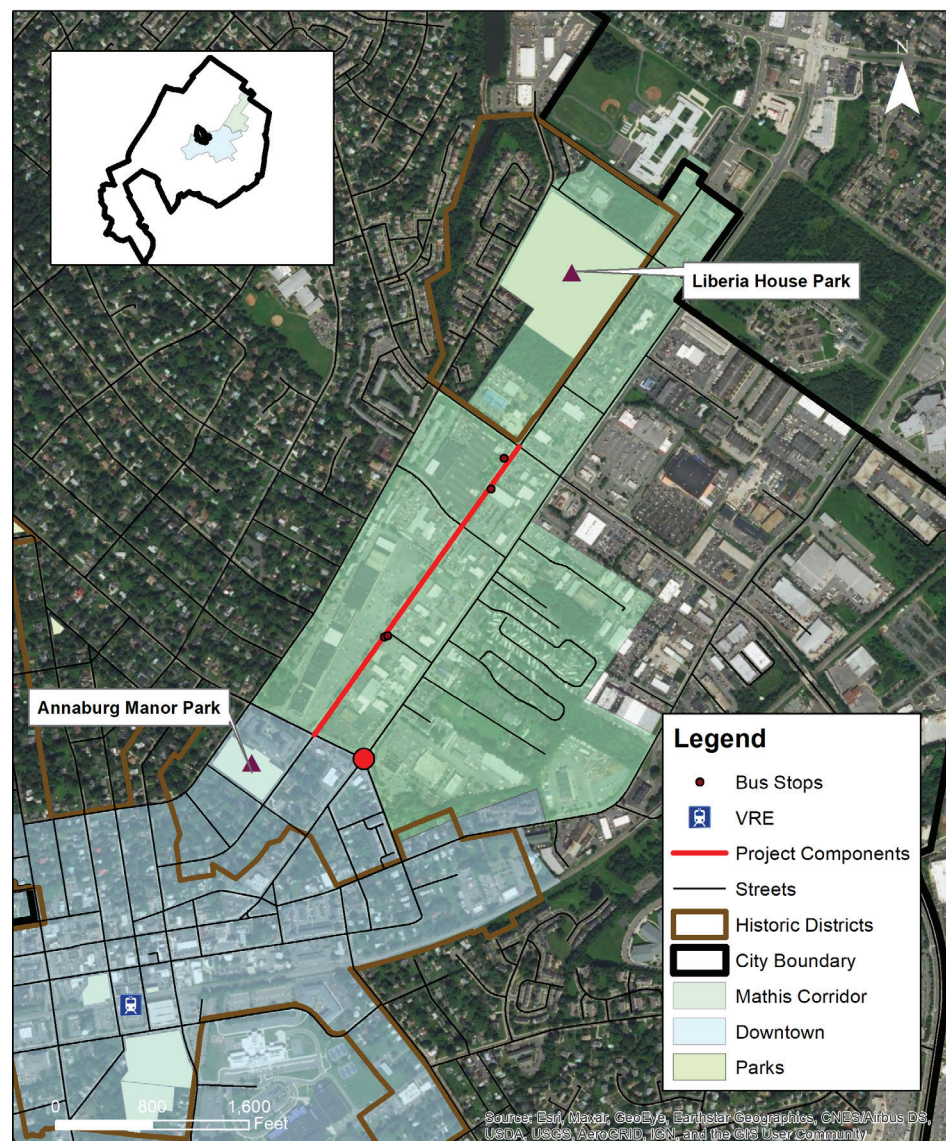


Annaburg Manor

After the Weir family sold the home and property in 1888, Liberia became a dairy farm, and in 1947, the home and property were sold to the Breeden family, which donated the home and land to the City of Manassas in 1986. The house and grounds have undergone extensive restoration and a restroom was recently added to the property. A trail system through the extensively-wooded site is being developed and maintained by scouting groups. The park is open for passive recreation from sunrise to sunset, and the Liberia House is open for special events and tours.

The 3.6-acre Annaburg Manor Park is named for the historic 1892 house built by wealthy Alexandria brewer, Robert Portner. This 35-room home was one of the country's first equipped with mechanical air conditioning of Portner's own invention. Twenty-five landscaped acres and a park of luxurious trees, some of which still stand, surrounded the house, and the 2,000-acre estate included a deer park, fountains, a greenhouse, a vineyard, a swimming pool, and Liberia Plantation during its era as a dairy farm. Through the early part of the 1900s, the house and grounds were considered a park for area residents, who enjoyed picnics, ice skating, fishing, and even church baptisms there.

From the 1960s through 2007, Annaburg Manor was used as a nursing and rehabilitation center run by Novant Health UVA Health System Prince William Medical Center. The City's recent purchase of the house and land will add more green space for passive recreation. The Annaburg Manor house is currently closed and awaiting restoration by an interested nonprofit foundation. A Master Plan for the surrounding park land has been completed with extensive community input and will guide future uses for the site.



The Mathis Corridor Revitalization Project will create an important pedestrian-friendly connection between two of the three City's Historic Districts—Liberia House and Downtown.

The Liberia Historic District is comprised of the Liberia House site and surrounding residential areas. The site is owned by the City and comprises one building, an accessory building, and 18 acres located within a quartermile radius of the structures.

The Manassas Local Historic District is the largest of the City's three local districts – containing approximately 2.5 square miles of land area and over 300 structures. Including most of the downtown commercial area as well as adjacent historic residential neighborhoods, the district features a large number of late 19th- and early 20th-century brick, frame, and stone buildings representing a variety of building types and architectural styles.

The Mathis Corridor Revitalization Project will create an important pedestrian-friendly connection and gateway between two character areas –Downtown and Mathis Corridor

The current City's comprehensive plan divides the City into ten character areas which places greater emphasis on the quality of development and its form rather than on the separation of individual uses. Each character area considers mixed uses and supports pedestrian-friendly urban forms.

Downtown

Downtown is the traditional and historic core of the City. This civic and business hub serves as a unique destination within the region. The mix of historic and modern buildings set in a compact walkable environment contributes strongly to the identity of Manassas as a community.

Mathis Corridor

The Mathis area represents a revitalization opportunity that builds upon the strength of Downtown and the northeast access provided by Route 28.

The vision for the Mathis area is a mixed-residential area with supportive commercial uses. While adjacent to Downtown, Mathis is a distinct area that should complement, but not mirror, the historic character of Downtown and stand as the Modern Beat alongside the City's Historic Heart. The Mathis area provides an opportunity for a variety of high-quality residential neighborhoods – small lot singlefamily homes, townhouse units, and mid-rise multifamily units – within walking distance of Downtown and the VRE station.

Economic Competitiveness and Opportunity

The Mathis Corridor Revitalization Project addresses regional transportation goals for providing transportation alternatives through multimodal improvements, better pedestrian features, and improved access to public transportation. Route 28 is a major regional north south corridor that provides direct access between two major airports; four counties; two cities; and major federal, state and local roadways. The Virginia Department of Transportation has consistently classified the level of service at signalized intersections along Route 28 with an “F” or “D” rating during peak commuting hours for congestion and safety, with a fatality. Relieving the known bottleneck will reduce congestion and delay for nearly 50,000 travelers daily.

The Mathis Corridor Revitalization Project creates additional economic opportunities for current and future commercial uses along the corridor, improves property values, and increases productivity. Additionally, the project represents a significant infrastructure enhancement in the City’s only federally-designated Opportunity Zone. The City’s efforts, in combination with the tax incentives offered to private investment in the Opportunity Zone, will be supportive of economic development and job creation in an economically-distressed community.

The streetscape component stimulates a declining commercial corridor

City and federal investment in the Mathis Corridor will be a catalyst for private redevelopment of the corridor. The pedestrian scale improvements are supportive of a 21st century modern mixed-use retail, employment, and residential environment that complements the offerings of the historic Downtown core.

The streetscape component increases property values

Complete streets investments have been shown to have a positive impact on the property value of surrounding existing properties. This is related to improved property access, street frontage beautification, and the additional foot traffic created by a pedestrian oriented environment. Even assuming a modest 5 percent increase in property

values for adjacent properties along the corridor increases total corridor property values by \$2.3 million (discounted at 7 percent).

The roundabout component reduces travel times and associated costs of delay

The roundabout is a direct response to a known traffic bottleneck and the delays experienced by nearly 50,000 daily commuters. **In its first year of operation, the roundabout will save more than 16,000 hours of delay in the AM and PM peak hours of travel.** During a 20-year analysis, this equates to delay, lost time, and productivity savings of \$2.5 million (discounted at 7 percent).

The Mathis Corridor Revitalization Project stimulates job creation in specialized, high-paying sectors

Micron announced the largest capital investment in modern Virginia history in 2018—\$3 billion by 2030. They will create at least 1,110 new high-wage jobs and will increase exports from Virginia by more than \$1 billion annually. Micron is the City’s largest employer, tax payer, and utility customer. The Mathis Corridor serves as a vital gateway to and from the Micron campus. New and existing employees of Micron are frequent visitors of Historic Downtown Manassas and its retail communities. Revitalization of the Mathis Corridor will also provide a new exciting plaza for residents and visitors, bringing in substantial revenue to businesses.



BCA Methodology

To calculate the economic benefits for this project, the intersection was coded into Synchro and Sidra traffic software. AM and PM peak hour delays were calculated. These calculations were performed for the following scenarios:

- Existing Conditions
- Existing Conditions with roundabout in place
- 2035 Conditions with signal in place
- 2035 Conditions with roundabout in place

The resulting peak hour delay savings between a roundabout and the signalized intersection control was quantified. Daily peak hour savings were annualized using a factor of 480. As such this analysis only considers the delay savings during the weekday peak hours of a year.

Delay saving for interim years were estimated based on calculated growth rates of Corridor traffic (assumed to be 0.5% annually) Delay savings were separated out into heavy vehicle and passenger vehicle delays based on the corridor daily heavy vehicle percentage (3%). These vehicle delays were then converted to person delays using the appropriate car occupancy factors (1.0 for heavy vehicle and 1.68 for passenger vehicles).

Lastly, the delay savings were monetized using the recommended value of time of all-purpose travel (\$16.10/hour) and for truck driver (\$28.60/hour) travel.

Long-term job creation benefits were calculated for employer Micron only. Micron has expressed the commitment to add 1,100 new jobs in the City of Manassas in the next 10 years. A major selling point for this commitment is the walkable environment and support for modern housing that will be created by this project. To be conservative, the BCA assumed that 10 percent of the jobs created by Micron could be attributed to the revitalization project. A \$75,000 salary (matching the median income in the City of Manassas) was applied to 110 new jobs created between 2020 and 2030.

Property value benefits were created for properties adjacent to the streetscape corridor. A premium/increase of 5 percent was applied to the latest assessed property values. This property value increase was treated as a benefit, once, at the year in which the project is completed. It is noted that a review of case studies demonstrated property value increase between 5 and 12 percent. The lower value was chosen in this BCA to remain conservative.

State of Good Repair

The Mathis Corridor Revitalization Project considers components that are more efficient to operate and maintain than the current status quo. The City of Manassas will be responsible for the maintenance of these new infrastructures.

The streetscape component results in less asphalt

The streetscape component will convert the center lane of Mathis Avenue from a two-way left-turn lane to a raised median. This will result in less pavement that needs to be resurfaced and repainted at annual intervals. Based on the City's annual budget per lane mile of pavement, the reduction of one paved lane along Mathis Avenue will result in a 20-year pavement operations and maintenance (O&M) savings of approximately \$425,730 (discounted at 7 percent).

The roundabout component is more efficient to operate and maintain than a signalized intersection

Typically, a roundabout has lower O&M costs than a traffic signal because there is no need for electricity, signal timing equipment, or any other technical hardware. Based on the net O&M savings between a roundabout and a signalized intersection, the roundabout component results in a 20-year cost savings of approximately \$64,300 (discounted at 7 percent).

BCA Methodology

To calculate the state of good repair benefit (or disbenefit) the City of Manassas' annual pavement maintenance per lane mile were reviewed. A cost savings was developed due to the reduction of one paved lane where the raised median will be constructed. Additionally, the annual operation and maintenance savings were calculated by comparing the anticipated O&M of a roundabout to the anticipated O&M of a signalized intersection as reported by the VDOT "Roundabout Cost Comparison Tool v 2.6".



City crews stripe and maintain roads



City crews build sidewalks

Partnership and Collaboration

No transportation projects would ever come to completion without a valuable partnership between the public and private sector. In this particular project, support from the public sector at the regional and state levels is reflected in the attached letters of support from different stakeholders, the dedicated regional funding from the North Virginia Transportation Authority (NVTa) and the Metropolitan Washington Council of Governments (MwCOG), and VDOT for completing the survey for the roundabout. The private sector includes a consultants team involved in both components of the project and property owners. The City is working diligently to reduce, to the maximum, ROW impacts on private properties but is planning on future redevelopment projects to include additional amenities such as a cycle track.

Innovation

The Mathis Corridor Revitalization Project is an innovative approach to address both current mobility needs and the redevelopment of a declining commercial corridor, an approach that could be applied in the entire region.

The roundabout component will be the first multilane roundabout in the City of Manassas. The modern roundabout concept was reviewed by the Virginia Department of Transportation's (VDOT) Innovative Intersection Committee and represents a fresh approach to accommodate significant traffic demand while creating a hallmark gateway feature for City of Manassas.

The streetscape component represents an innovative template for how the Mathis Streetscape Standards can be implemented within the entire Mathis Corridor area and Citywide.



Partners celebrating groundbreaking ceremony for the Nokesville/Route 28 widening project.

"The City exists in a built urban environment making large scale infrastructure projects a challenge. The RAISE grant is a critical tool that can help Manassas address a pressing need to redevelop one of its primary commercial corridors by fixing a transportation bottle neck and streetscape that have contributed to disinvestment in the community."

W. Patrick Pate, City Manager