



## Dunkirk and Prince Frederick Bikeways Feasibility Studies

Final Report

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## Introduction

The 2040 Calvert County Comprehensive Plan (adopted in August 2019 and amended in December 2022) calls for the creation of safe and attractive bicycle and pedestrian paths that allow people to travel within the town centers, connecting residential, commercial, recreation, institutional and employment areas. As indicated in the Comprehensive Plan, currently there are few connected trails for bicyclists or pedestrians to use, either for recreation or for transportation. Providing these connections is challenging because of east-west stream valleys cutting through the county on either side of the ridgeline that MD 2/4 follows. The volume and speed of vehicles, and in some instances, the lack of shoulders are impediments to pedestrian and bicycle travel as well.

As a first step towards establishing a network of bicycle facilities, the Calvert County Department of Planning & Zoning received a grant from the Maryland Department of Transportation's Maryland Kim Lamphier Bikeways Network Program. The grant enabled the county to plan for a network of bicycle facilities accessible to riders of all ages and abilities with a specific geographic focus on the Prince Frederick and Dunkirk Town Centers. Lessons learned from these planning efforts can be applied to the other town centers in Calvert County. This report summarizes the efforts made to identify the most promising opportunities for bicycle facilities and develop viable concepts to implement them.

**Part 1** describes the type of facilities recommended in the Dunkirk and Prince Frederick Town Centers, the considerations used when applying those facilities, and design standards used in developing the concept plans.

**Part 2** of the report provides recommended improvements to the county's design standards.

**Part 3** of the report provides a brief description of existing conditions and discusses the basis of design for each proposed bikeway segment, as well as a preliminary cost estimate and discussion of implementation requirements. Concept plans for short-term, high priority projects are shown in an appendix.

- Prince Frederick Boulevard and Dares Beach Road (MD 402) in Prince Frederick
- Dunkirk Way, Town Center Boulevard, Ward Road and connections to Dunkirk District Park



## Part 1. Bicycle Facilities

This section describes the type of facilities recommended in the Dunkirk and Prince Frederick Town Centers, the considerations used when applying those facilities, and design standards used in developing the concept plans.

### FACILITY TYPES

There are five primary types of bicycle facilities in use in Maryland: shared-use paths, protected bike lanes, striped bike lanes, bike-on-shoulder and “sharrows.” The table below illustrates the types of bicycle facilities considered for the Dunkirk and Prince Frederick Town Centers.



#### Shared-Use Path

Shared-use pathways are bicycle- and pedestrian-specific transportation corridors. Pathways are ideally 10 to 12 feet wide to accommodate bidirectional walking and bicycling, with two-foot grass shoulder areas. Adjacent to roadways, they are called sidepaths and typically require a five-foot landscaped buffer from the roadway.



#### Protected Bike Lane

Bike lanes are “protected” when they provide physical separation between motor vehicles and bicycles. One-way protected bike lanes are usually at least 5 feet wide and two-way lanes are 8 to 10 feet wide, with at least a two-foot-wide buffer with delineators such as flex posts (as shown here), parking stops, precast curbs, or planter boxes.



#### Bike Lane

Bike lanes are roadway lanes that provide designated space for people bicycling but do not provide any physical separation or protection between motor vehicles and bicycles. Bike lanes are typically 5 to 6 feet wide. If 7 feet or more is available, a buffer should be provided, instead of a very wide bike lane, to discourage driving or parking in the bike lane.



#### Paved Shoulder

Paved shoulders are a paved space beyond the edge line of a roadway’s travel lanes. They provide space for bicycling outside the usual path of motor vehicles, but also provide clear space (a “recovery area”) for motorists and accommodate drainage and emergency stopping.



#### Shared Lane Marking (“Sharrow”)

Sharrows are lanes shared by vehicles and bicycles. Sharrows are indicated by bike icons with chevrons. They mark roadway lanes that advise motorists that bicyclists may be present and indicate to bicyclists where to position themselves within a travel lane.

## CONSIDERATIONS IN APPLYING FACILITY TYPES

The application of each facility type varies by operating environment, including the level of traffic stress, roadside conditions and available rights-of-way, density of destinations along the route, and other considerations. The application of facility types on roadways in Dunkirk and Prince Frederick is described in Part 3 of this report.

### Level of Traffic Stress

Traffic volume and speed are the primary traffic-related considerations affecting the “level of stress” faced by bicyclists when using a bicycle facility. On roadways with a higher average daily traffic (ADT), greater separation and accommodation for bicyclists is most desirable; off-street pathways (known as sidepaths or shared-use paths) can accommodate bicycling and walking without causing delay to motorists. Motor vehicle speeds affect bicyclist stress and dramatically impact survivability of crashes between vehicles and bicyclists/pedestrians; therefore, on roadways with higher average speeds, off-street pathways are also preferred. Tables 1 through 3 describe the Level of Traffic Stress (LTS) as mentioned in the *2040 Maryland Bicycle and Pedestrian Master Plan 2019 Update*.

Table 1. Characteristics of Traffic Level of Stress Designations

LEVEL OF TRAFFIC STRESS	BICYCLE FACILITY CHARACTERISTICS
1	Strong separation from all except low speed, low volume traffic. Simple crossings. Suitable for children.
2	Except in low speed/low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. Physical separation from higher speed and multilane traffic. Crossings that are easy for an adult to negotiate. A level of traffic stress that most adults can tolerate, particularly those sometimes classified as “interested but concerned.”
3	Involves interaction with moderate speed or multilane traffic, or close proximity to higher speed traffic. A level of traffic stress acceptable to those classified as “enthused and confident.”
4	Involves interaction with higher speed traffic or close proximity to high-speed traffic. A level of stress acceptable only to those classified as “strong and fearless.”

Source: Maryland Department of Transportation, ESRI GIS Level of Traffic Stress Application

Table 2. Level of Traffic Stress Where Bicyclists are in Mixed Traffic

Through Lanes per Direction	ADT	Prevailing speed (mph)						
		20	25	30	35	40	45	50+
Unlaned (no centerline) yet two-way	0-750	LTS1	LTS1	LTS2	LTS2	LTS3	LTS3	LTS3
	751-1500	LTS1	LTS1	LTS2	LTS3	LTS3	LTS3	LTS4
	1501-3000	LTS2	LTS2	LTS2	LTS3	LTS4	LTS4	LTS4
	3000+	LTS2	LTS3	LTS3	LTS3	LTS4	LTS4	LTS4
1	0-750 <sub>a</sub>	LTS1	LTS1	LTS2	LTS2	LTS3	LTS3	LTS3
	750-1500 <sub>a</sub>	LTS2	LTS2	LTS2	LTS3	LTS3	LTS3	LTS4
	1501-3000 <sub>a</sub>	LTS2	LTS3	LTS3	LTS3	LTS4	LTS4	LTS4
	3001+ <sub>a</sub>	LTS3	LTS3	LTS3	LTS3	LTS4	LTS4	LTS4
2	0-8000 <sub>b</sub>	LTS3	LTS3	LTS3	LTS3	LTS4	LTS4	LTS4
	8001+ <sub>b</sub>	LTS3	LTS3	LTS4	LTS4	LTS4	LTS4	LTS4
3+	any ADT	LTS3	LTS3	LTS4	LTS4	LTS4	LTS4	LTS4

Table 3. Level of Traffic Stress Where Bike Lanes and Shoulders Are Not Along Parking Lane

Number of thru lanes per direction	Bike lane width (ft)	Prevailing speed (mph)					
		<25	30	35	40	45	50+
1 or unlaned	6+	LTS1	LTS2	LTS2	LTS3	LTS3	LTS3
	4 or 5	LTS2	LTS2	LTS2	LTS3	LTS3	LTS4
2	6+	LTS2	LTS2	LTS2	LTS3	LTS3	LTS3
	4 or 5	LTS2	LTS2	LTS2	LTS3	LTS3	LTS4
3+	any	LTS3	LTS3	LTS3	LTS4	LTS4	LTS4

Figure 1. Existing Level of Traffic Stress on Roads in Dunkirk

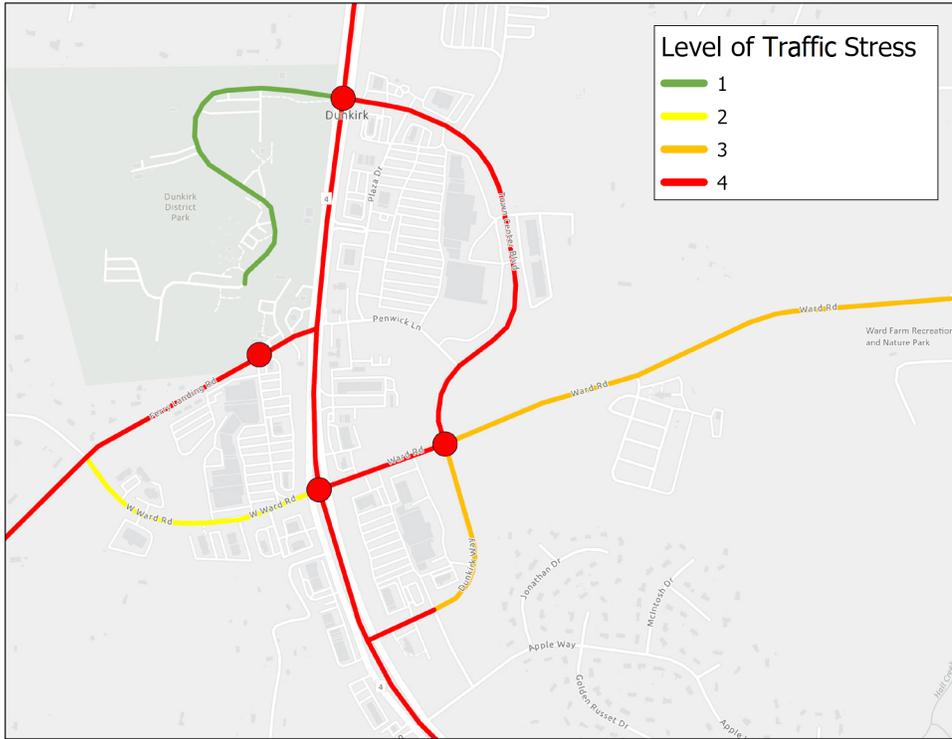
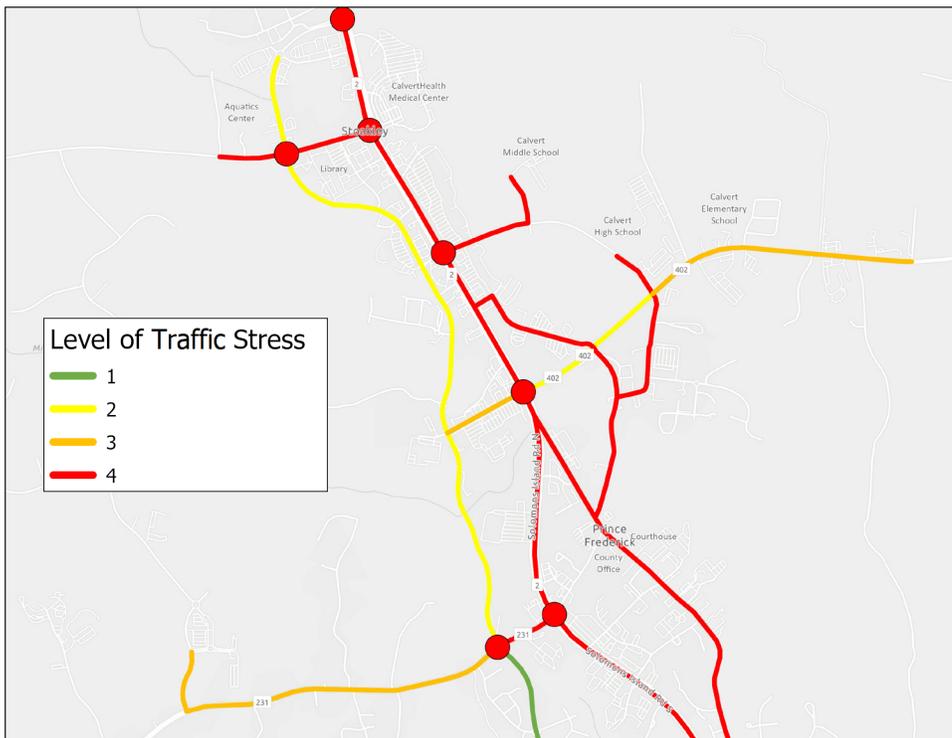


Figure 2. Existing Level of Traffic Stress on Roads in Prince Frederick



### Roadside Conditions & Rights-of-Way

The two primary roadside condition criteria are the frequency of curb breaks and the presence of structures such as utility poles or drainage facilities within the immediate roadside zone. The safety impact of frequent curb breaks is similar for on-road and off-road bicycle facilities. However, frequent driveway aprons or at-grade driveway crossings significantly inhibit ride quality, present accessibility challenges and cause construction challenges for shared-use pathways. In contrast, on-road bicycle facilities can take advantage of a roadway surface that remains consistent even adjacent to driveway aprons or at-grade driveways. Therefore, on-road bicycle facilities are preferred along segments with a high frequency of curb breaks.

The presence of drainage ditches, utility poles, guard rails and other appurtenances within the right-of-way often makes a shared-use facility prohibitively expensive. In exurban/rural areas such as Dunkirk and Prince Frederick, the time and expense of acquiring rights-of-way for new bicycle facilities along existing roads are not often justified by the likely number of users. Where a new road is being constructed or widened, including appropriate bicycle facilities when establishing rights-of-way needs and in the original roadway design produces a much better outcome for all users.

### Destinations

Generally, road segments with a greater number of pedestrian and bicycle trip generators should have a greater degree of accommodation and protection for pedestrians and bicyclists. In addition, the expected balance of short pedestrian trips versus moderate-length bicycle trips should affect the chosen bicycle facility types: where bicycle riders are anticipated to make up a higher proportion of total non-automotive road users, bicycle-specific facilities are preferred over shared bicycle/pedestrian spaces.



### DESIGN STANDARDS FOR PROPOSED BICYCLE FACILITIES

As many of the recommended bicycle facilities are proposed to be constructed on MDOT SHA roadways and because the county does not have bicycle-specific design guidance, the Prince Frederick and Dunkirk bikeway feasibility studies use the MDOT SHA Bicycle Policy & Design Guidelines, 2015 edition. The guidelines provide uniform criteria for bicycle facilities to achieve a consistent state-wide approach to bicycle design. It is the intent that SHA policy and design guidelines apply to all state roadways in Maryland, incorporating current SHA road design practices, accepted national guidelines and standards, and best practices used by state and local governments. Where deviations from the design guidelines are necessary due to site-specific considerations, a waiver can be obtained from MDOT SHA.

## Part 2. Roadway Classification & Design Standards

This section summarizes recommended changes to the county code, policies and design requirements which should be implemented to advance a bikeways program in Calvert County. Most of the roadway classification standard typical sections and details in the county's Construction Standards for Roads, Streets and Incidental Structures lack mention of bicycle facilities. It is recommended that the Calvert County Road and Site Development Ordinance (Chapter 104, Part 3, Article 7) be updated as described below so that when new or significantly altered roadways are constructed according to the designated roadway classification, such roadways have appropriate bicycle facilities described in the updated code. Proposed revisions to the county's Standard Roadway Details are included in Appendix A.

- Add narrative to Minor Residential Collector Roadway – Urban; Residential Collector Roadway-Urban; and Minor Collector Roadway such that 5-foot bike lanes shall be standard use where an adopted plan calls for bike lanes.
- Revise the existing Residential Collector Roadway – Urban standard (RD-6B) to include an eight-foot pathway with a two-foot buffer on one side.
- Revise the Minor Collector Roadway – Urban standard (RD-7B) to include seven-foot buffered/protected bike lanes where an adopted plan calls for their inclusion.
- Add an alternative Minor Collector Roadway – Urban standard that includes an eight-foot pathway with two-foot buffer on one side.
- Add an alternative Commercial and Industrial Roadway – Urban standard that narrows the existing shoulders to 6 feet, 6 inches, and travel lanes to 13 feet to be used where an adopted plan calls for a sidepath. The total pavement width of 39 feet can accommodate two travel lanes and a turn lane if necessary while creating space within the right-of-way for an eight-foot pathway with a two-foot buffer.
- Revise the Major Connector (RD-9) and Town Center Boulevard Roadway (RD-10) standards to include an eight-foot pathway with two-foot buffer on one side of the roadway.
- Create a standard for eight-foot minimum shared-use asphalt pathway in addition to the existing concrete and paver/brick sidewalk standards.

### TOWN CENTERS – ROADWAY CLASSIFICATION, DESIGN & CONSTRUCTION REQUIREMENTS

Each Town Center master plan should contain a roadway classification plan that includes the types of bicycle/pedestrian facilities to be in the public right-of-way. As roadways are resurfaced or reconstructed, or when new land development occurs, changes to the roadway classification system should be implemented. For example:

- When the Department of Public Works plans to resurface a roadway, a revised striping plan should be implemented in accordance with the roadway standard identified in the town center master plan, including bicycle facilities specified in the standard.
- When a developer is required to improve the frontage of a property being newly developed or redeveloped, the developer should be required to meet the roadway standard identified in the town center master plan, including bicycle facilities specified in the standard.

This approach will ease implementation of the bicycle plan in a manner that is affordable and orderly.

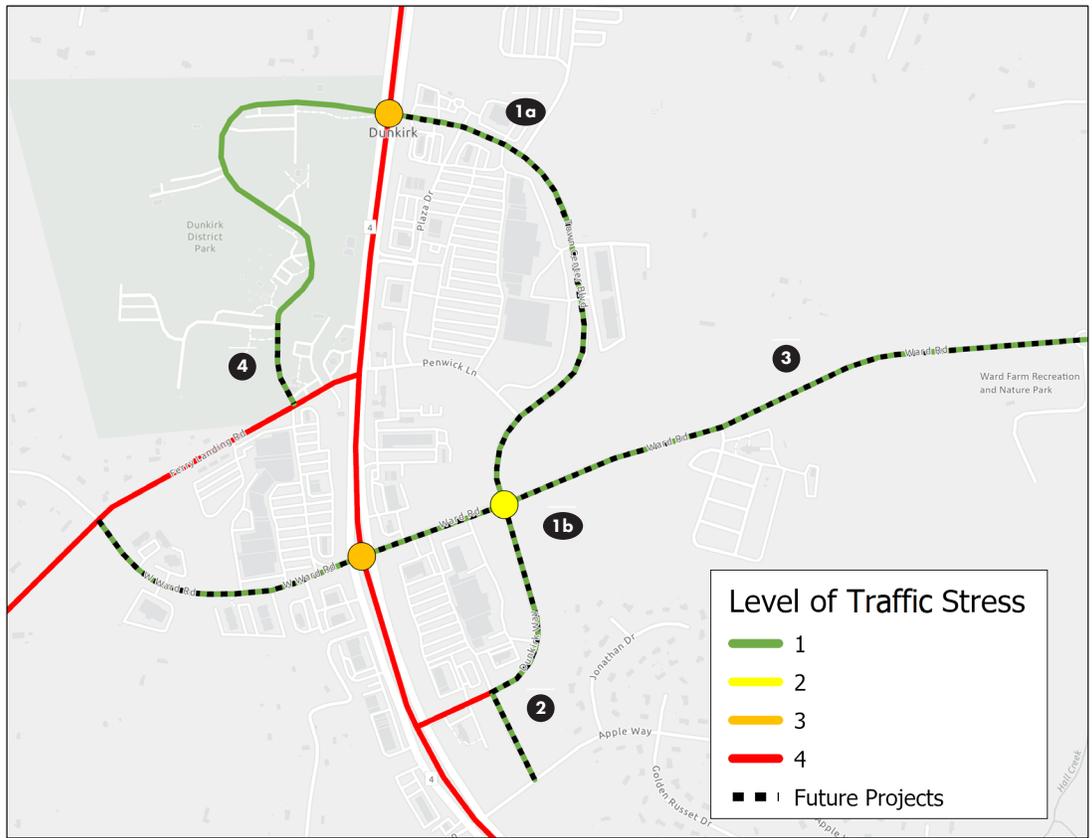


### Part 3. Bikeways Plan for Dunkirk

Dunkirk is the northern gateway to Calvert County and consists of scattered low-density subdivisions along MD 4 as well as a commercially oriented town center with an adjacent county park and a park-and-ride lot for commuter transit services. Just east of the town center is the newly created Ward Farm Recreation and Nature Park.

As the land use environment in Dunkirk is stable with little new development occurring or forecast to occur over the next several years, all the bicycle facilities recommended for Dunkirk are within the existing right-of-way and would occur by action of the county. The most viable opportunities for bicycle facilities in the Dunkirk Town Center are on the roads looping behind the shopping areas (Dunkirk Way and Town Center Boulevard); and along Ward Road which crosses MD 4 and connects the two parks. In addition, upgraded bicycle facilities are needed within Dunkirk District Park, and the provision of a safe connection to Dunkirk Market Place, as well as a safer connection across MD 4 at Adventure Drive from Town Center Boulevard to access the northern end of Dunkirk District Park. Consideration was also given to bicycle facilities along Ferry Landing Road west of Dunkirk District Park, but it was determined that improvements could not be made in a safe or cost-effective manner. Recommended facilities are described further below.

Figure 4. Level of Traffic Stress on Dunkirk Roadways with Implementation of Proposed Facilities



- 1a 1b** Reduce Town Center Boulevard and Dunkirk Way to one lane in each direction and add protected bicycle lanes
- 2** Construct pathway between Apple Green community and Dunkirk Way
- 3** Construct shared-use path between Dunkirk District Park and Ward Farm Recreation and Nature Park along Ward Road
- 4** Extend pathway and establish crossing from Dunkirk District Park to shopping center along Ferry Landing Road

## WARD ROAD – PARK TO PARK SHARED-USE PATH

Ward Road provides an excellent opportunity for a recreational bikeway connection from the southern end of Dunkirk District Park (at Ferry Landing Road) to Ward Farm Recreation and Nature Park, which is approximately three-quarters of a mile to the east of MD 4.

Beginning at W. Ward Road and continuing to Dunkirk Way, the existing five-foot sidewalk could be retrofitted to an eight-foot shared use path. The crossing of MD 4 is accomplished by enhanced signage on MD 4 and by striping a crosswalk on the south leg of the intersection. Once east of Dunkirk Way, the 50-foot right-of-way – including between 14 and 16 feet from the edge of pavement on the south side of the road – creates an opportunity for a shared-use path buffered from traffic. A small stream crossing is required; however, it appears that this could be accomplished with either extension of the culvert or a fabricated steel or timber bridge. At certain points, descending and ascending the stream valley along Ward Road, the grade exceeds the five percent tolerance typically required to meet ADA standards; however, a design exception should be pursued here as switchback or other design accommodation would be prohibitively expensive and have significant environmental impact.

Figure 5. Existing and Proposed Future Condition of Park to Park Shared-use Path Along Ward Road



### CONNECTION FROM DUNKIRK DISTRICT PARK TO DUNKIRK MARKETPLACE

At the south end of Dunkirk District Park, a chain link fence prohibits access to Ferry Landing Road. Residents and park users have expressed a desire that a pedestrian/bicycle gate be installed to allow access to neighborhoods along Ferry Landing Road and to the Dunkirk Marketplace. A pathway would also be needed parallel to the fence line with the Smithville United Methodist Church to extend approximately 300 feet to the existing park walkways. It should be noted that the Department of Parks & Recreation has expressed concern regarding a gate along Ferry Landing Road due to security and liability concerns when the park is not open.

Figure 6. Ferry Landing Road (looking west) at the Location of Proposed Bicycle/Pedestrian Access to Dunkirk District Park



Figure 7. Proposed Pathways within Dunkirk District Park and Connecting Pathway to Ferry Landing Road



## TOWN CENTER BOULEVARD & DUNKIRK WAY

Both roadways looping behind the shopping areas on the east side of the town center are striped for four lanes of traffic, with dedicated turn lanes where they intersect Ward Road and MD 4. No turn lanes are provided at the shopping center entrances. Traffic volume on both Town Center Boulevard and Dunkirk Way is very low relative to capacity; it is recommended that the outer lanes of both roadways be converted to protected bicycle lanes. Where necessary, left turn lanes can be marked and the bicycle lanes can be appropriately striped for safe through movements. If the parcels on the east side of Dunkirk Way and Town Center Boulevards are developed, it is recommended that a shared-use pathway be installed along the frontage as per the revised standard details proposed in Part 2.

Figure 8. Existing and Proposed Future Condition of Park to Park Shared-use Path Along Town Center Boulevard



## SHOPPES WAY

The Dunkirk Town Center Master Plan and Zoning Ordinance, adopted in 1987, includes a proposed road connecting Apple Way to what is now Dunkirk Way to create connectivity for residents of the Apple Greene subdivision without needing to access MD 4. There is a county-owned right-of-way known as Shoppes Way that would make this connection. Regardless of future intent to construct the road, it is recommended that a shared-use pathway be constructed along the right-of-way.

*Figure 9. Looking South from Dunkirk Way is the Existing Shoppes Way Right-of-Way*



### CONCEPT PLANS, COST ESTIMATES & IMPACT SUMMARY

Concept plans for each facility are located in Appendix B-1. Preliminary cost estimates for each project (including a 30% contingency), required permits, approvals and coordination, and property acquisition for each facility are listed below. Detailed cost estimates can be found in Appendix C.

BIKEWAY SEGMENT	ESTIMATED COST	COORDINATION, PERMITTING, & APPROVALS <sup>2</sup>	RIGHT-OF-WAY REQUIREMENTS
Park to Park Connection (Town Center Boulevard to Ward Road)	\$1,287,000	Design coordination required with MDOT SHA regarding crossing of MD 4.  Federal/State Alteration of Non-tidal Wetland permit and approval required along Ward Road	Subject to further design development, temporary easements may be necessary for grading and/or construction. No permanent impacts anticipated.
Town Center Boulevard & Dunkirk Way (inc. connection to Apple Way)	\$368,000	None anticipated.	None. The connection to Apple Way is already dedicated as public right-of-way.
Ferry Landing Road (Dunkirk District Park to Dunkirk Market Place)	\$176,000	None anticipated.	Subject to further design development, temporary easements may be necessary for grading or construction. and/or permanent impacts anticipated.

<sup>2</sup>By agencies or processes not controlled by Calvert County.

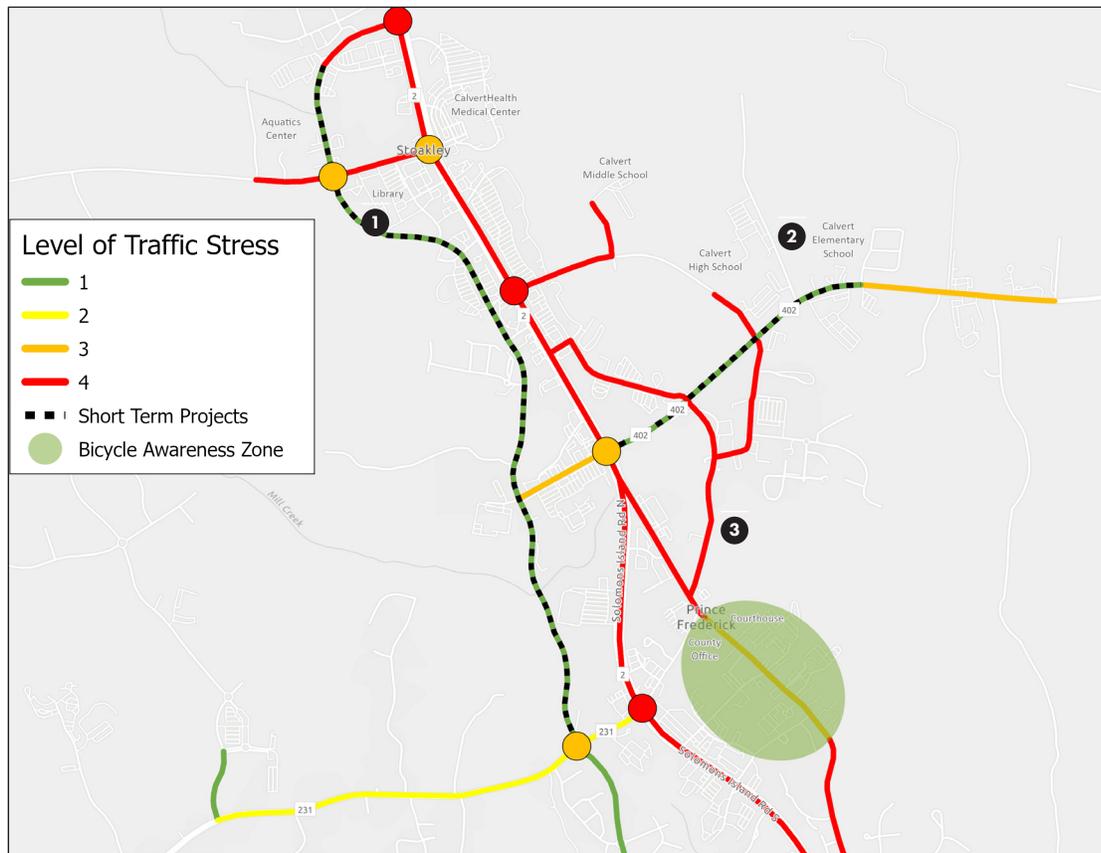
## Part 4. Bikeways Plan for Prince Frederick

Prince Frederick is the population center and county seat of Calvert County, and its environs are the most dynamic within the county’s borders. Opportunities exist in Prince Frederick to capture short-trip bicycle commuting, shopping, access to schools and libraries, and other benefits with the installation of a low-stress bicycle network. Developing a bicycle network that connects the Chesapeake Bay, Patuxent River, forests, and natural resource areas to the historic and commercial core of Prince Frederick also represents a significant opportunity for economic development through recreation and tourism. The proposed bicycle network in Prince Frederick relies on retrofit of existing roadways, the inclusion of bike facilities in new roadways as they are built, and the construction of bike facilities in concert with new development as it occurs.

### SHORT-TERM PROJECTS

Short-term projects will be the east-west and north-south spine of the Prince Frederick low-stress bicycle network. They can be implemented within the existing right-of-way at relatively low cost and provide direct access to many community facilities.

Figure 10. Proposed Short-Term Projects (with Level of Traffic Stress Shown After Implementation)



- 1 Install protected bicycle lane along Prince Frederick Boulevard during planned resurfacing
- 2 Construct shared use path between MD 2-4 and Calvert Elementary School along Dares Beach Road
- 3 Upgrade signs and markings, and install decorative bicycle racks to create a bicycle awareness zone in the historic core

### Prince Frederick Boulevard

Retrofit of Prince Frederick Boulevard represents the best short-term opportunity to create a low-stress bicycle facility in Prince Frederick. The county's planned resurfacing of Prince Frederick Boulevard from Dares Beach Road to Stoakley Road and construction of a new roundabout at Traskers Boulevard allows for low-cost installation of protected bike lanes in both directions along most of the two-mile loop road. The segment between Dares Beach Road and Hallowing Point Road (MD 231) is not scheduled for resurfacing, but protected bike lanes should be installed regardless. South of Hallowing Point Road, a shared-use path exists to the terminus of Prince Frederick Boulevard at Yearling Drive.

Figure 11. Existing Condition of Prince Frederick Boulevard (top) and Implementation of a Design Similar to Proposed for Prince Frederick Boulevard (bottom).



### *Dares Beach Road/MD 402*

When MDOT SHA widened MD 2/4 through Prince Frederick, an opportunity was missed to install sidewalks along Dares Beach Road to a logical terminus. Instead, a guardrail runs along the edge of both sides of the closed-section roadway making sidewalk or shared-use path construction infeasible without significant widening and the addition of retaining walls. From the west side of MD 2/4, bicyclists will need to dismount and walk approximately 400 feet east to the beginning of a shared-use path on the north side of Dares Beach Road. For bicyclists traveling west, there is a pocket lane to traverse the intersection. As new development is unlikely in the segment continuing to the round-about at Armory Road, the shared-use path should be constructed by the county or MDOT SHA and continue to approximately 500 feet east of the roundabout where a new residential subdivision is planned. Construction of the shared-use path should be part of the developer's improvement package.

Once east of Fox Run Boulevard, the shared-use path would continue along the frontage of Calvert High School and in the public right-of-way along the residences continuing to Adderton Drive. A protected crossing of Dares Beach Road is recommended near Fox Run Boulevard/Fairground Road to access the MTA Park-and-Ride and future site of the Harriet Elizabeth Brown Community Center. While no further improvements on Dares Beach Road east of Adderton Drive are specifically proposed as part of this bikeways plan, the paved shoulder could be marked for bicycles continuing along MD 402 to its end near the Chesapeake Bay.

*Figure 12. A Shared-use Path is Proposed for the North Side of Dares Beach Road*



**Bicycle Awareness Zone**

In the historic core of Prince Frederick, traffic operates at low speeds, and there is often significant pedestrian traffic along and across Main Street accessing the courthouse and county and state office buildings. Crosswalks are well marked and visible; on-street, head-in parking is well used and considered part of the traffic calming strategy for Main Street. As such, marked bicycle facilities are not feasible. In this area, the county should consider clearly marking stop bars at park-ing lot entrances and side streets, adding sharrow to Main Street, and adding unique bicycle racks that remind all roadway users of the presence of bicyclists in the area.



**CONCEPT PLANS, COST ESTIMATES & IMPACT SUMMARY**

Concept plans for each short-term project are in Appendix B-2. Preliminary cost estimates for each project (including a 30% contingency), required permits, approvals and coordination, and property acquisition for each facility are listed below. Detailed cost estimates can be found in the Appendix C.

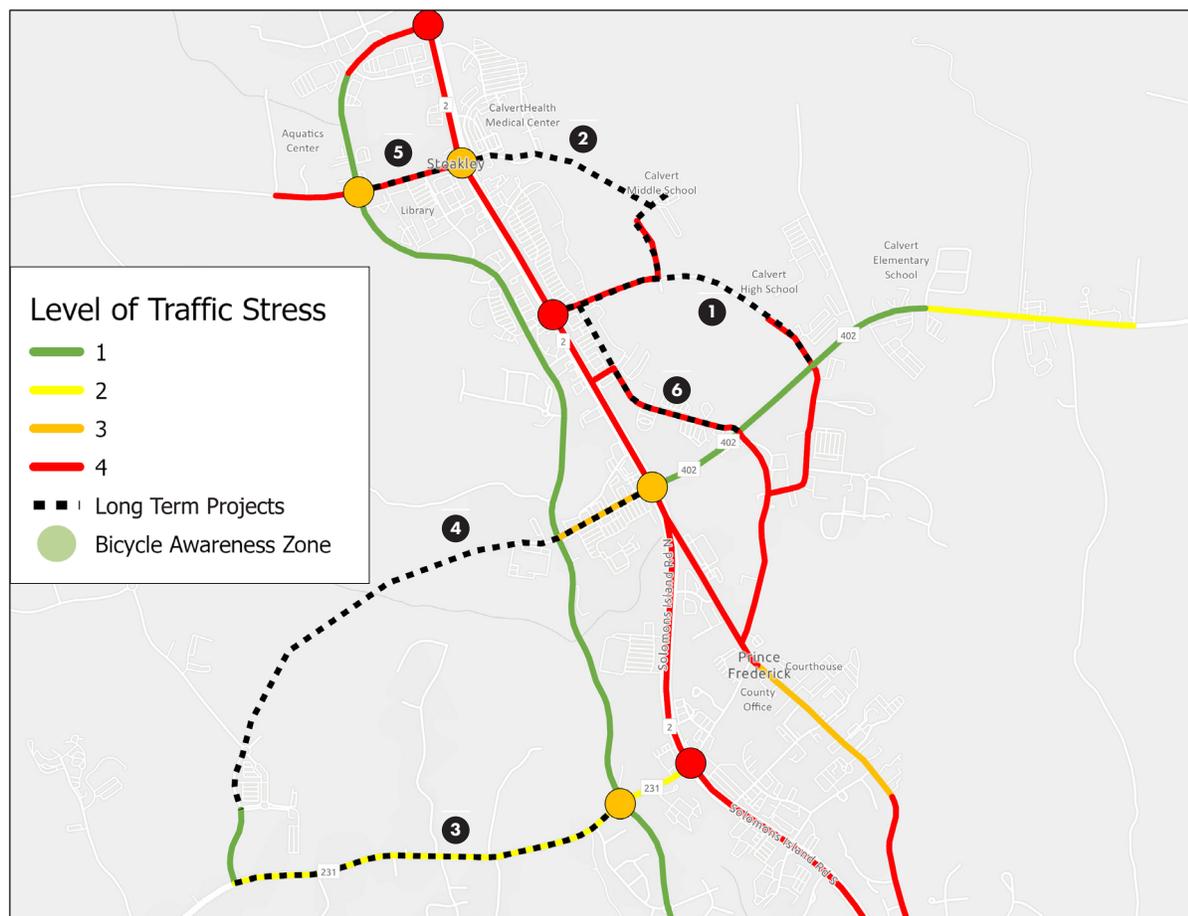
BIKEWAY SEGMENT	ESTIMATED COST	COORDINATION, PERMITTING, & APPROVALS <sup>3</sup>	RIGHT-OF-WAY REQUIREMENTS
Prince Frederick Boulevard	\$126,000  (net increase over standard marking plan)	It is proposed that this project be integrated into the resurfacing of Prince Frederick Boulevard and construction of the roundabout at Traskers Boulevard	None anticipated.
Dares Beach Road	\$1,826,000  (including anticipated developer cost at subdivision improvements)	MDOT SHA Access Permit and design coordination.	None anticipated.

<sup>3</sup> By agencies or processes not controlled by Calvert County.

## LONG-TERM PROJECTS

Long-term projects are those that would be constructed as part of new or widened roadways or implemented by developers as part of their projects pursuant to the Town Center Master Plan. Revisions to the roadway classification standard details are imperative for this to occur, otherwise there is no basis of design to be followed by the Department of Public Works. Concept plans for these segments are not provided for long-term projects, except for Hallowing Point Road (MD 231) where the purpose of the concept plan is to document for MDOT SHA the county’s expectation when the road is widened. No cost estimates or permitting/approval considerations are provided either as it is expected that the bicycle facilities would be part of the road widening project.

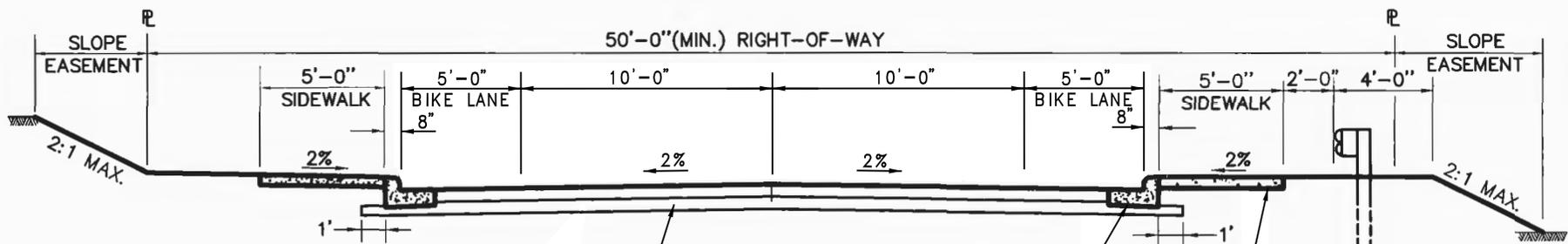
Figure 13. Proposed Long-Term Projects (with Level of Traffic Stress Shown After Implementation of Short-Term Projects)



- 1 When existing segments of Fox Run Boulevard are connected, a shared-use path should be installed in the new segment and retrofit of the existing segments should be considered.
- 2 If Chesapeake Boulevard is extended to the north/west as shown in the Town Center Master Plan, a shared-use path should be installed, and retrofit of the existing segments should be considered.
- 3 If MDOT widens MD 231 west of Thoroughbred Drive, the widening should include a shared-use path to the College of Southern Maryland.
- 4 If West Dares Beach Road is extended to new subdivisions surrounding the College of Southern Maryland, the extension should include a shared-use path. Concurrently, the existing segment of W. Dares Beach Road to MD 2-4 should be redesigned with access management controls that accommodate safe turning movements, bicyclists and pedestrians.
- 5 If Chesapeake Boulevard is extended as shown in #2, then a shared-use path should be installed along the north side of Stookley Road to Prince Frederick Blvd.
- 6 Development of Armory Square and realignment of Armory Road should include a shared-use path along Armory Road.

Appendix A

Recommended Updates to Design Standards



1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE  
 5" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE  
 6" GRADED AGGREGATE BASE COURSE  
 OR APPROVED EQUIVALENT

TYPE "D" CURB  
 SEE PLATE RD-19B

SIDEWALK AS REQUIRED BY  
 SUBDIVISION REGULATIONS

TRAFFIC BARRIER  
 W/BEAM WHERE REQ'D  
 SEE SPECIFICATIONS  
 & MD. SHA STD'S

NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2 1/2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

NOT TO SCALE



CALVERT  
 COUNTY  
 MARYLAND

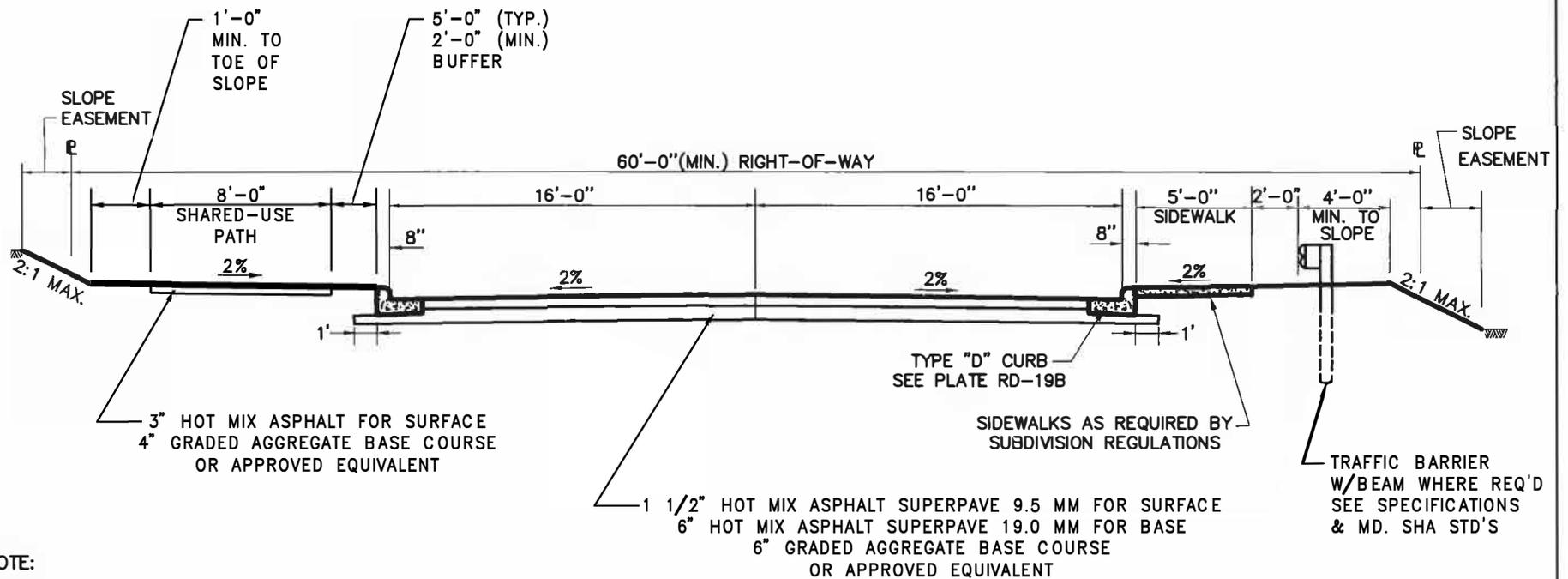
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 DIRECTOR  
 DEPARTMENT OF  
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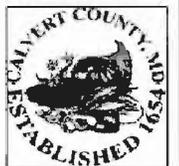
STANDARD ROAD DETAILS  
 MINOR RESIDENTIAL  
 COLLECTOR ROADWAY - URBAN

STANDARD  
 NUMBER

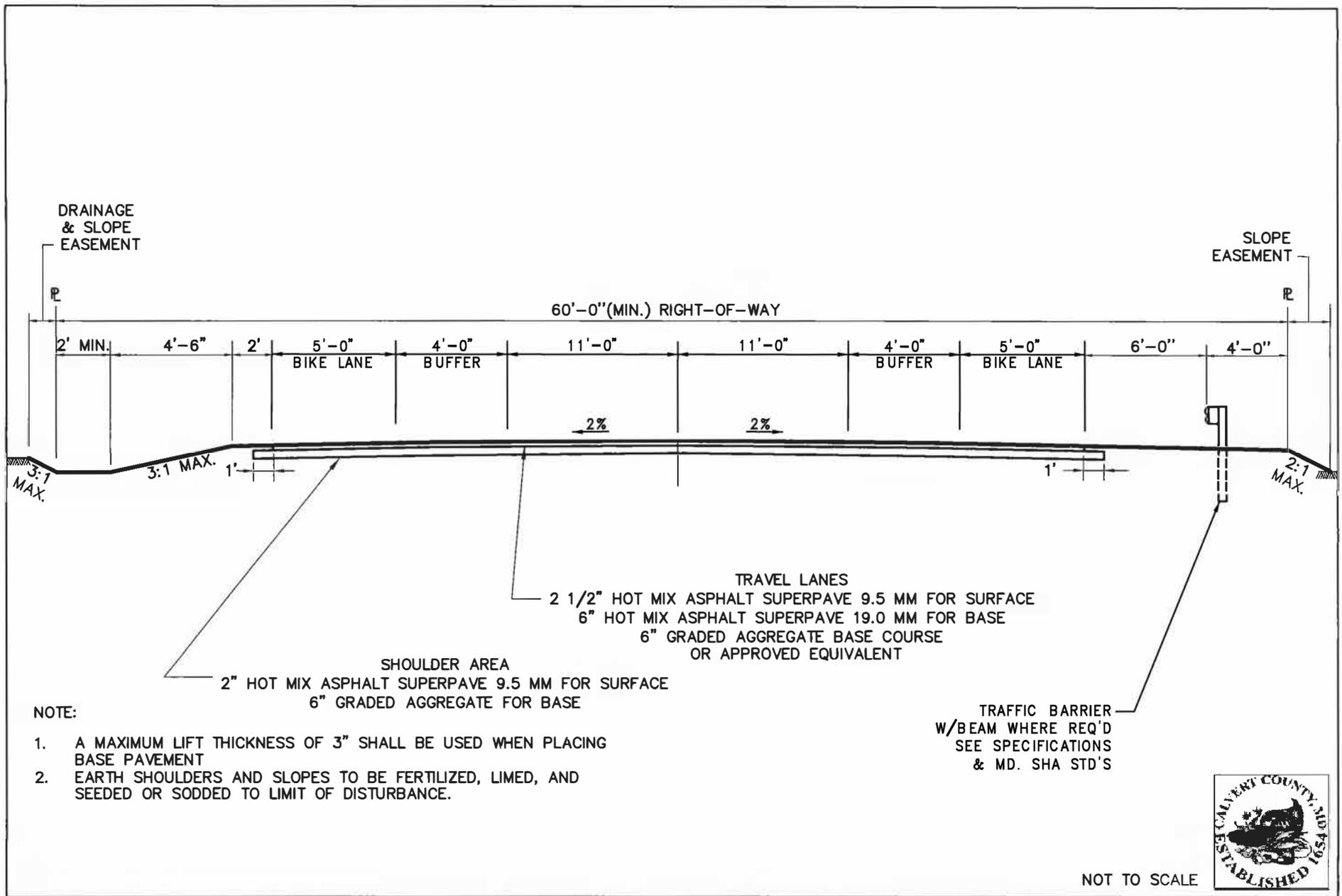
**RD-5B**



NOT TO SCALE



CALVERT COUNTY MARYLAND	<b>DRAFT</b> APPROVED <i>[Signature]</i> DIRECTOR DEPARTMENT OF PUBLIC WORKS JULY 1, 2012	REVISED		STANDARD ROAD DETAILS RESIDENTIAL COLLECTOR ROADWAY - URBAN	STANDARD NUMBER
		DATE	BY		
		09/30/2021	XXXXX		
					RD-68

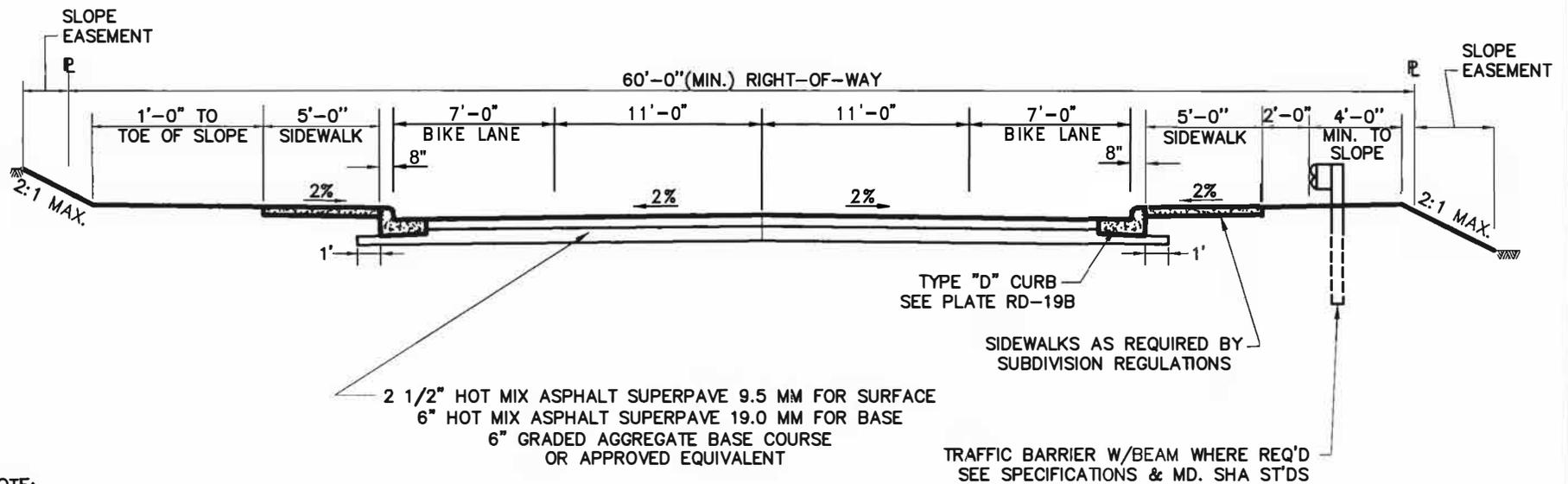


NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



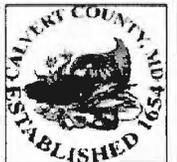
CALVERT COUNTY MARYLAND	<div style="font-size: 2em; color: red; font-weight: bold; opacity: 0.5;">DRAFT</div> <div style="font-size: 0.8em; margin-top: 5px;">           APPROVED             DIRECTOR            DEPARTMENT OF PUBLIC WORKS            JULY 1, 2012         </div>	REVISED		STANDARD ROAD DETAILS MINOR COLLECTOR ROADWAY - RURAL	STANDARD NUMBER
		DATE	BY		RD-7A
		09/30/2021	XXXXX		



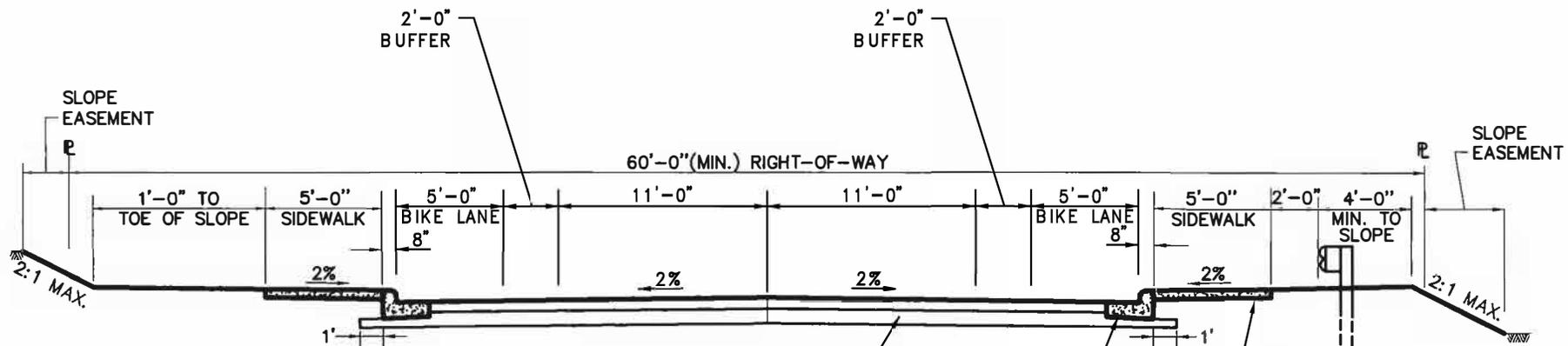
NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

NOT TO SCALE



CALVERT COUNTY MARYLAND	<p>APPROVED</p> <p><b>DRAFT</b></p> <p>DIRECTOR</p> <p>DEPARTMENT OF PUBLIC WORKS</p> <p>JULY 1, 2012</p>	REVISED		STANDARD ROAD DETAILS MINOR COLLECTOR ROADWAY - URBAN	STANDARD NUMBER  <b>RD-7B</b>
		DATE	BY		
		09/30/2021	XXXXX		



1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE  
 6" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE  
 6" GRADED AGGREGATE BASE COURSE  
 OR APPROVED EQUIVALENT

TYPE "D" CURB  
 SEE PLATE RD-19B

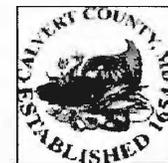
TRAFFIC BARRIER  
 W/BEAM WHERE REQ'D  
 SEE SPECIFICATIONS  
 & MD. SHA STD'S

NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

SIDEWALK AS REQUIRED BY  
 SUBDIVISION REGULATIONS

NOT TO SCALE



CALVERT  
 COUNTY  
 MARYLAND

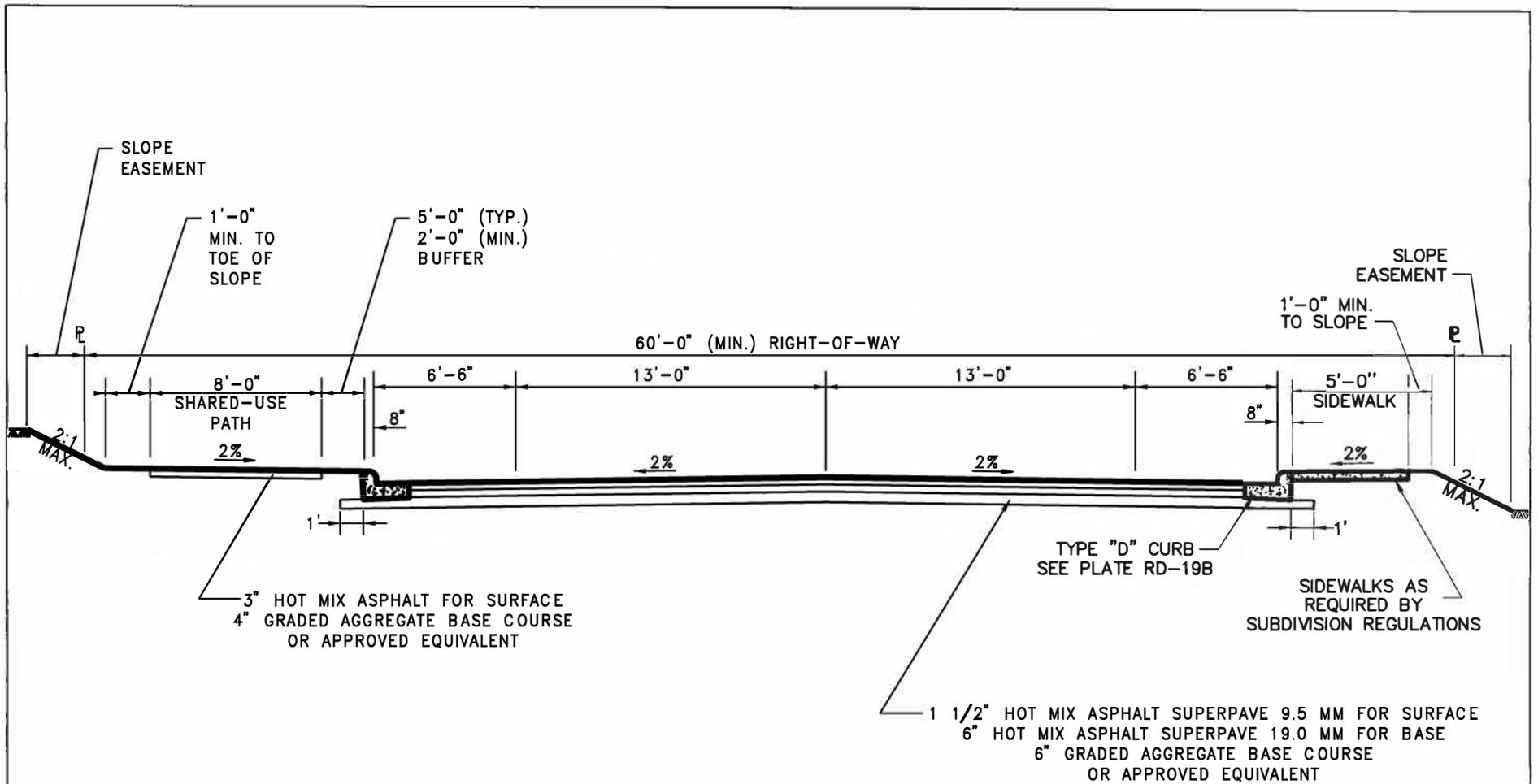
**DRAFT**  
 APPROVED  
 DIRECTOR  
 DEPARTMENT OF  
 PUBLIC WORKS  
 JULY 1, 2012

REVISED	
DATE	BY
09/30/2021	XXXXX

STANDARD ROAD DETAILS  
 MINOR COLLECTOR  
 ROADWAY - URBAN

STANDARD  
 NUMBER

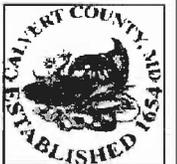
**RD-7B**



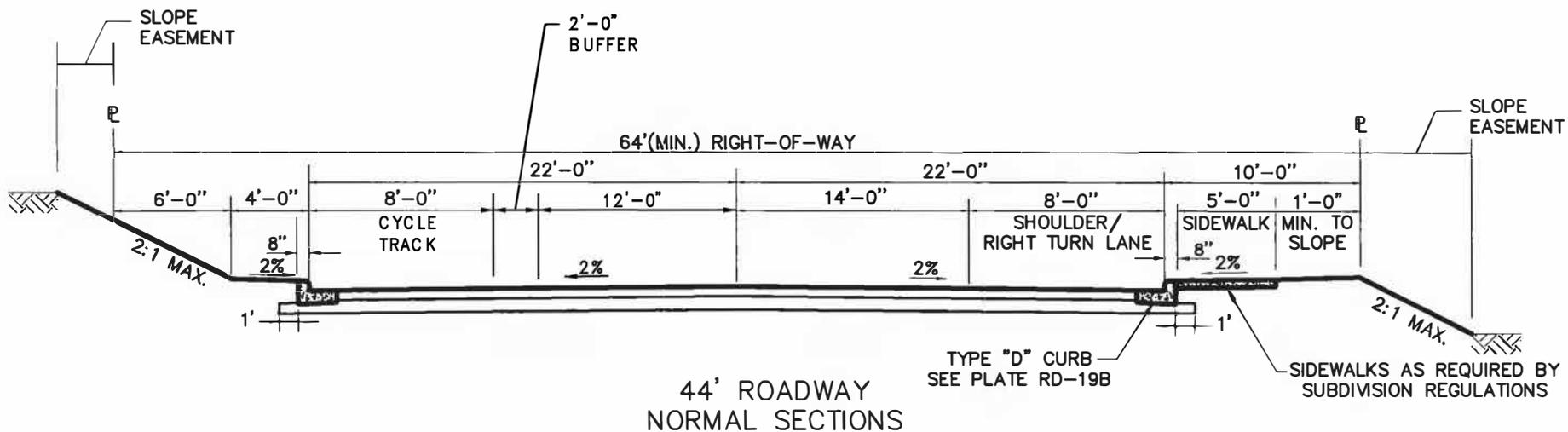
**NOTE:**

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING THE SURFACE COURSE
3. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

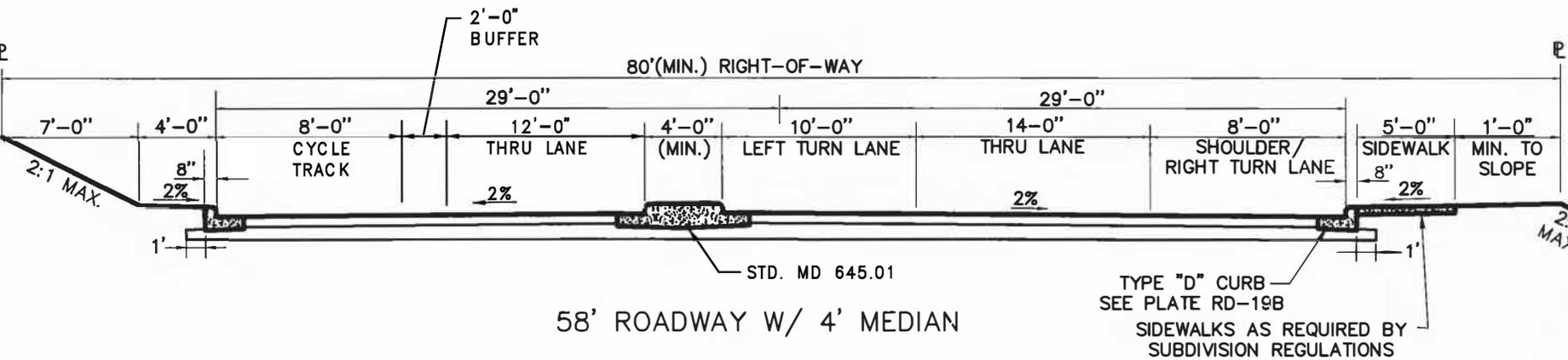
NOT TO SCALE



CALVERT COUNTY MARYLAND	<b>DRAFT</b> APPROVED  DIRECTOR DEPARTMENT OF PUBLIC WORKS JULY 1, 2012	REVISED		STANDARD ROAD DETAILS COMMERCIAL AND INDUSTRIAL ROADWAY - URBAN	STANDARD NUMBER <b>RD-8B</b>
		DATE 09/30/2021	BY XXXXXX		



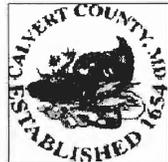
44' ROADWAY  
NORMAL SECTIONS



58' ROADWAY W/ 4' MEDIAN

- NOTE: 1. PAVEMENT SECTION TO BE DESIGNED BY THE ENGINEERING PROFESSIONAL REPRESENTATIVE AND APPROVED BY THE DIRECTOR  
 2. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT  
 3. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING THE SURFACE COURSE  
 4. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

NOT TO SCALE



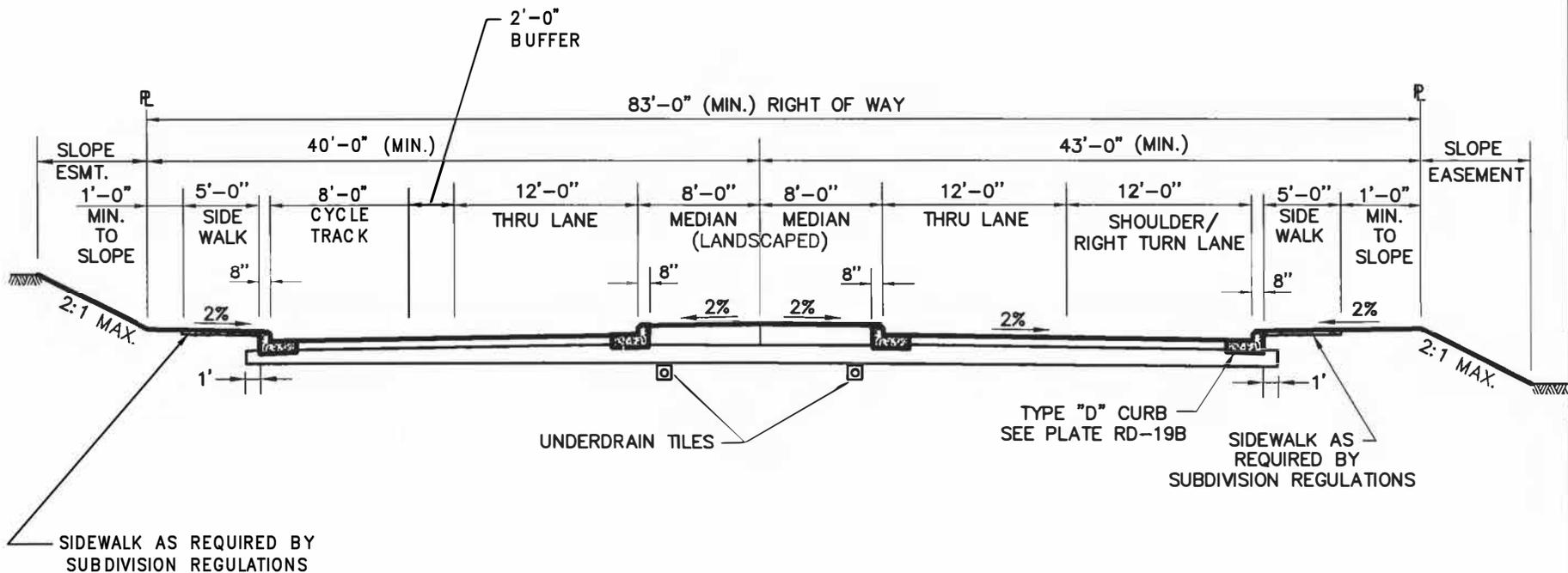
CALVERT  
COUNTY  
MARYLAND

APPROVED  
**DRAFT**  
DIRECTOR  
DEPARTMENT OF  
PUBLIC WORKS  
JULY 1, 2012

REVISED	
DATE	BY
09/30/2021	XXXXXX

STANDARD ROAD DETAILS  
TYPICAL SECTIONS  
MAJOR CONNECTOR

STANDARD  
NUMBER  
**RD-9**



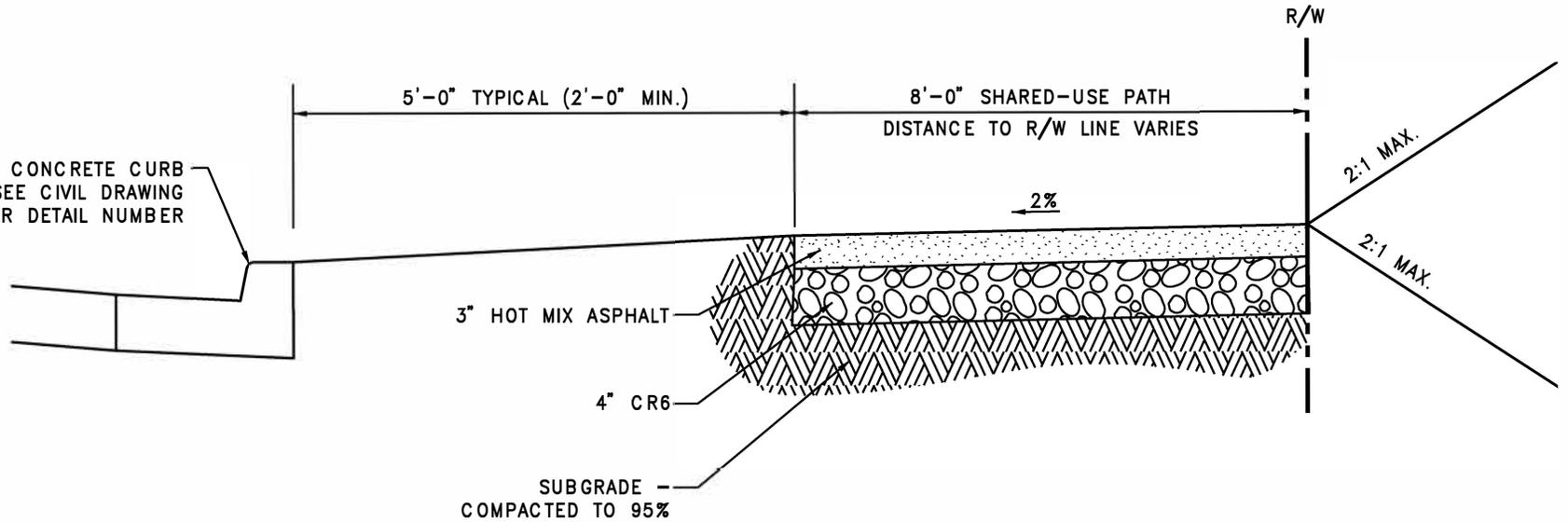
- NOTE: 1. PAVEMENT SECTION TO BE DESIGNED BY THE ENGINEERING PROFESSIONAL REPRESENTATIVE AND APPROVED BY THE DIRECTOR  
 2. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT  
 3. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING THE SURFACE COURSE  
 4. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDDED OR SODDED TO LIMIT OF DISTURBANCE.

NOT TO SCALE



CALVERT COUNTY MARYLAND	APPROVED <b>DRAFT</b> DIRECTOR DEPARTMENT OF PUBLIC WORKS JULY 1, 2012	REVISED		STANDARD ROAD DETAILS TOWN CENTER BOULEVARD ROADWAY	STANDARD NUMBER  RD-10
		DATE 09/30/2021	BY XXXXX		

CONCRETE CURB  
SEE CIVIL DRAWING  
FOR DETAIL NUMBER



NOT TO SCALE



CALVERT  
COUNTY  
MARYLAND

APPROVED  
**DRAFT**  
DEPARTMENT OF  
PUBLIC WORKS  
JULY 1, 2012

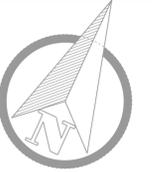
REVISED	
DATE	BY
09/30/2021	XXXXXX

STANDARD ROAD DETAILS  
ASPHALT SHARED-USE PATH

STANDARD  
NUMBER  
**RD-20C**

Appendix B-1

Design Concepts – Dunkirk



MD 4 (SOUTHERN MARYLAND BLVD)

MD 4 (SOUTHERN MARYLAND BLVD)

5' BIKE LANE  
2' BUFFER

MOD PIZZA

STARBUCK'S

SHOPPING CENTER ENTRANCE



RIGHT-OF-WAY

DUNKIRK WAY

10'

10'

10'

RIGHT-OF-WAY

5' BIKE LANE  
2' BUFFER

CONNECTOR TO  
APPLE WAY

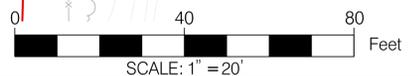
PLANNED TRAIL



DUNKIRK DENTAL

**LEGEND**

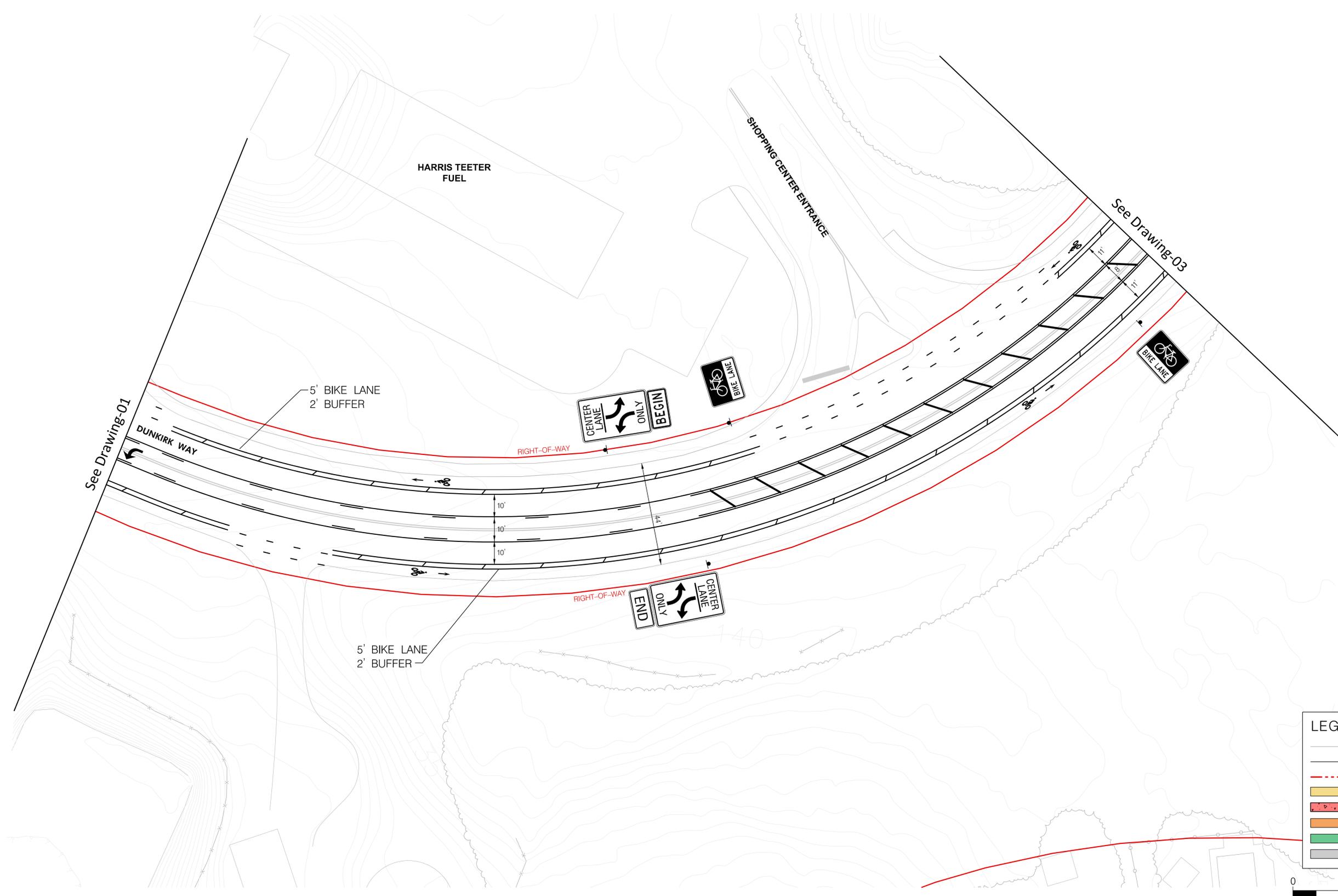
- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



SCALE: 1" = 20'

See Drawing-02

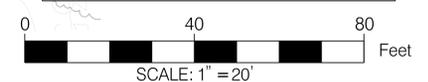


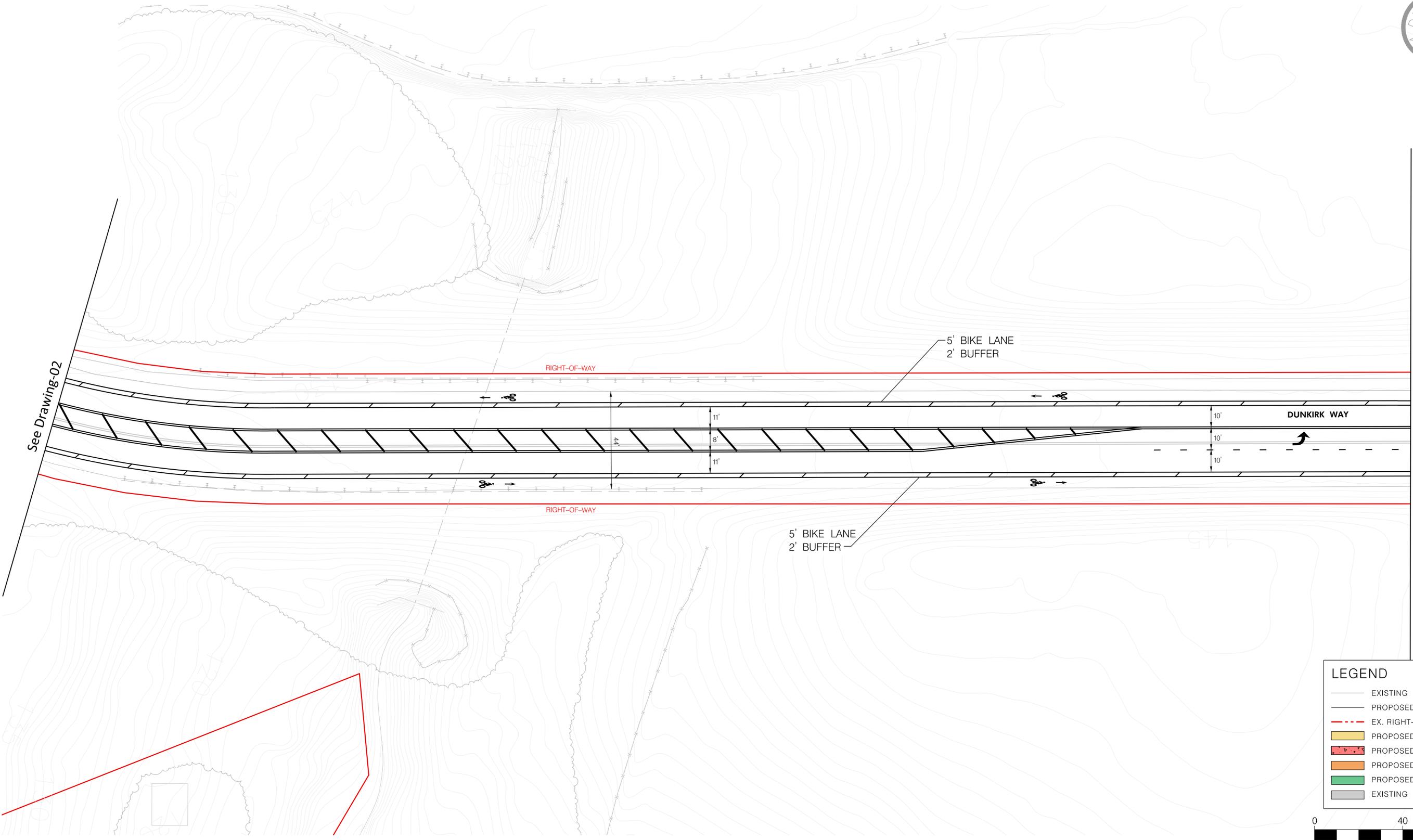
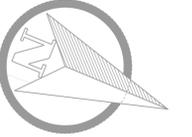


See Drawing-01

See Drawing-03

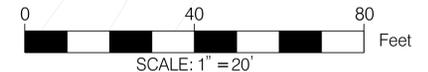
LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK





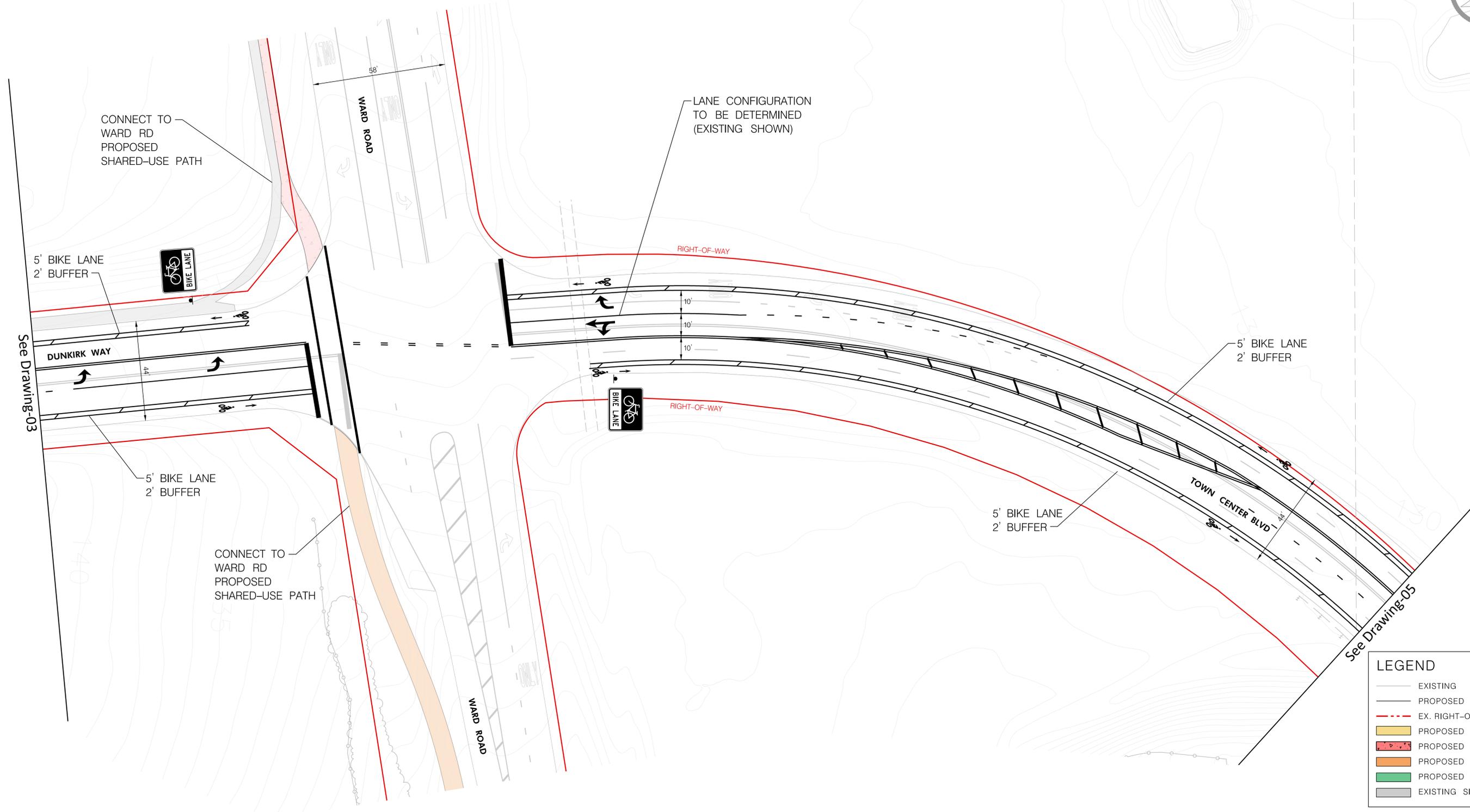
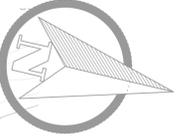
**LEGEND**

-  EXISTING
-  PROPOSED
-  EX. RIGHT-OF-WAY
-  PROPOSED BIKE LANE
-  PROPOSED SIDEWALK
-  PROPOSED SHARED-USE PATH
-  PROPOSED GRASS AREA
-  EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**TOWN CENTER BOULEVARD**  
 April 1, 2022

**Drawing-03** **Mead & Hunt**

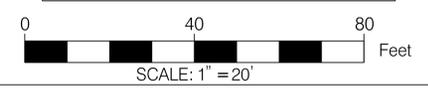


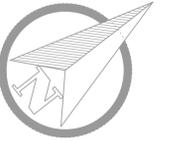
See Drawing-03

See Drawing-05

**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK





WALMART

WALMART ENTRANCE

RIGHT-OF-WAY



10'  
10'  
10'

See Drawing-04

See Drawing-06

5' BIKE LANE  
2' BUFFER

TOWN CENTER BLVD

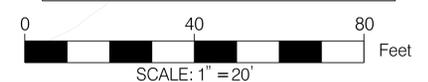


RIGHT-OF-WAY

5' BIKE LANE  
2' BUFFER

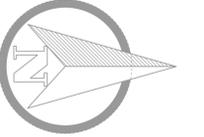
11'  
8'  
11'

LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**TOWN CENTER BOULEVARD**  
 April 1, 2022

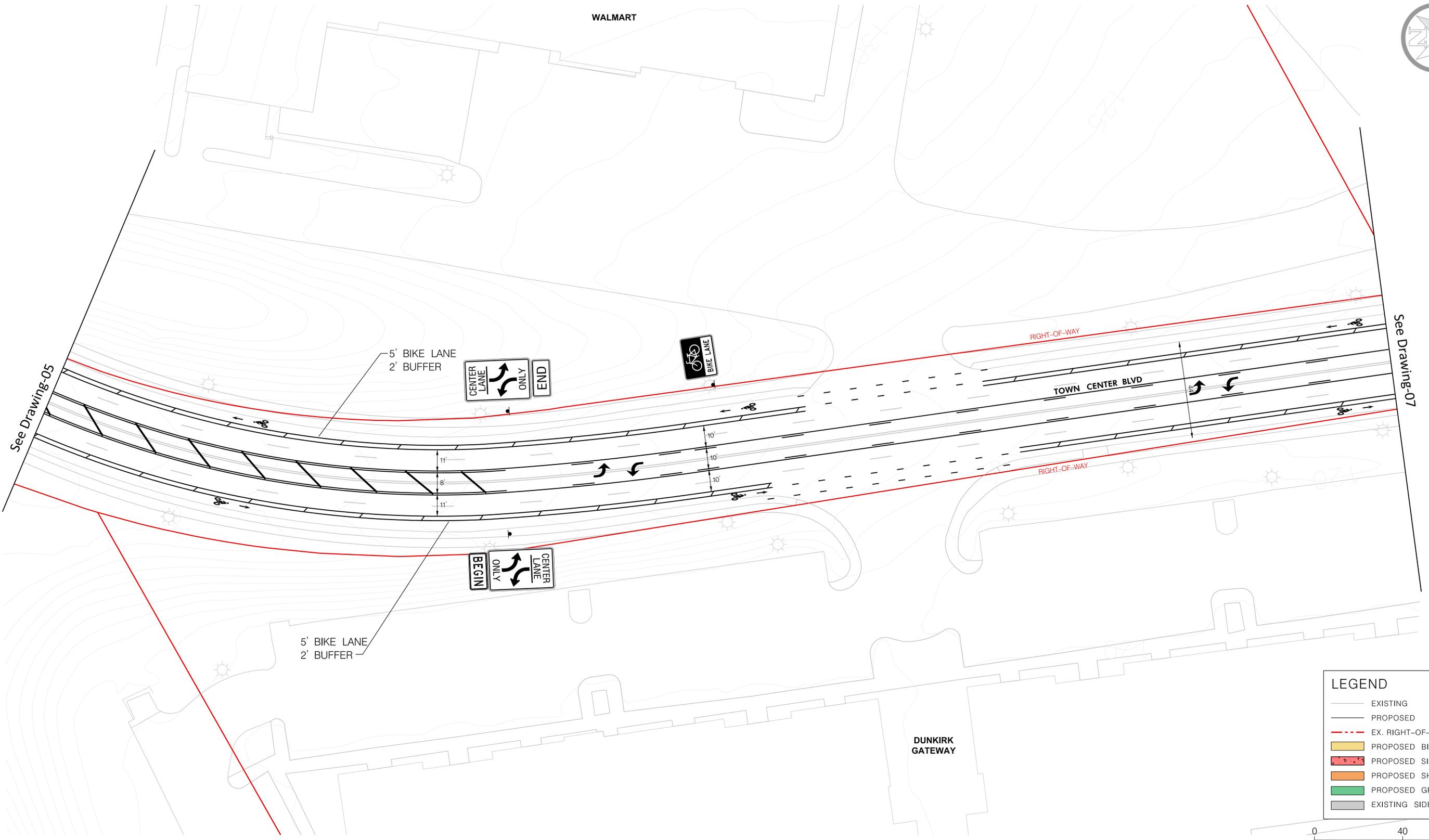
**Mead & Hunt**  
 Drawing-05



WALMART

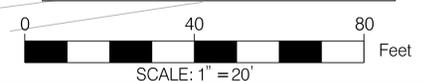
See Drawing-05

See Drawing-07



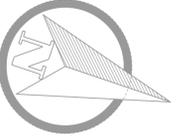
**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**TOWN CENTER BOULEVARD**  
 April 1, 2022

**Drawing-06** **Mead & Hunt**



GIANT FOODS

UPS STORE

See Drawing-06

See Drawing-08

5' BIKE LANE  
2' BUFFER

5' BIKE LANE  
2' BUFFER

RIGHT-OF-WAY

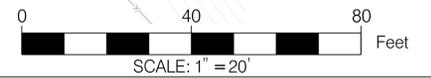
RIGHT-OF-WAY

TOWN CENTER BLVD



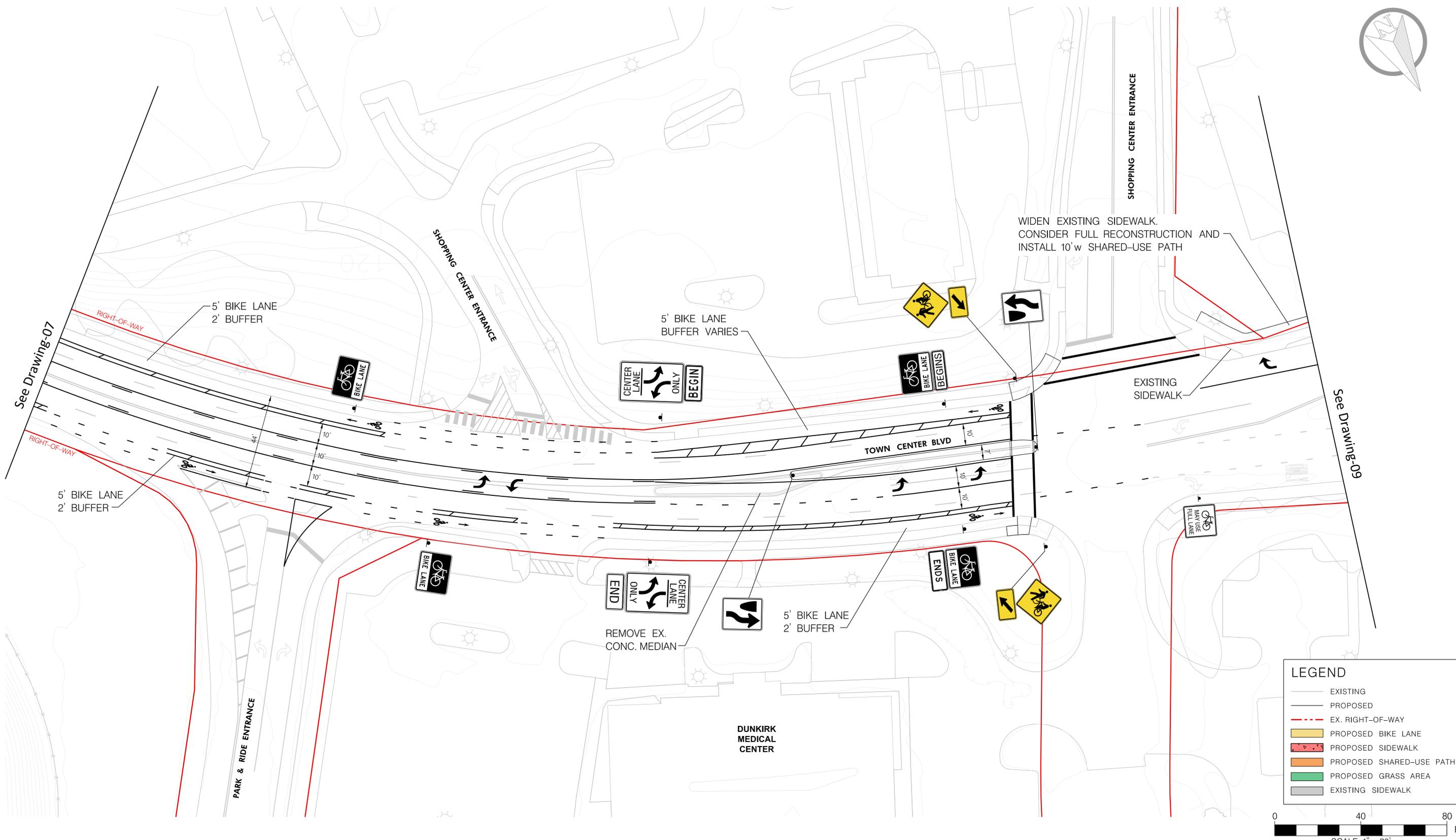
DUNKIRK GATEWAY ENTRANCE

LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**TOWN CENTER BOULEVARD**  
 April 1, 2022

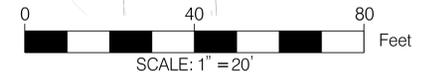
**Drawing-07** **Mead & Hunt**



WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK





See Drawing-08

MCDONALD'S

WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

EXISTING  
SIDEWALK

BP  
GAS  
STATION

MD 4 (SOUTHERN MARYLAND BLVD)

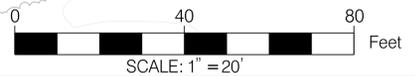
EXISTING  
SIDEWALK

ADVENTURE DRIVE

TOWN CENTER BLVD

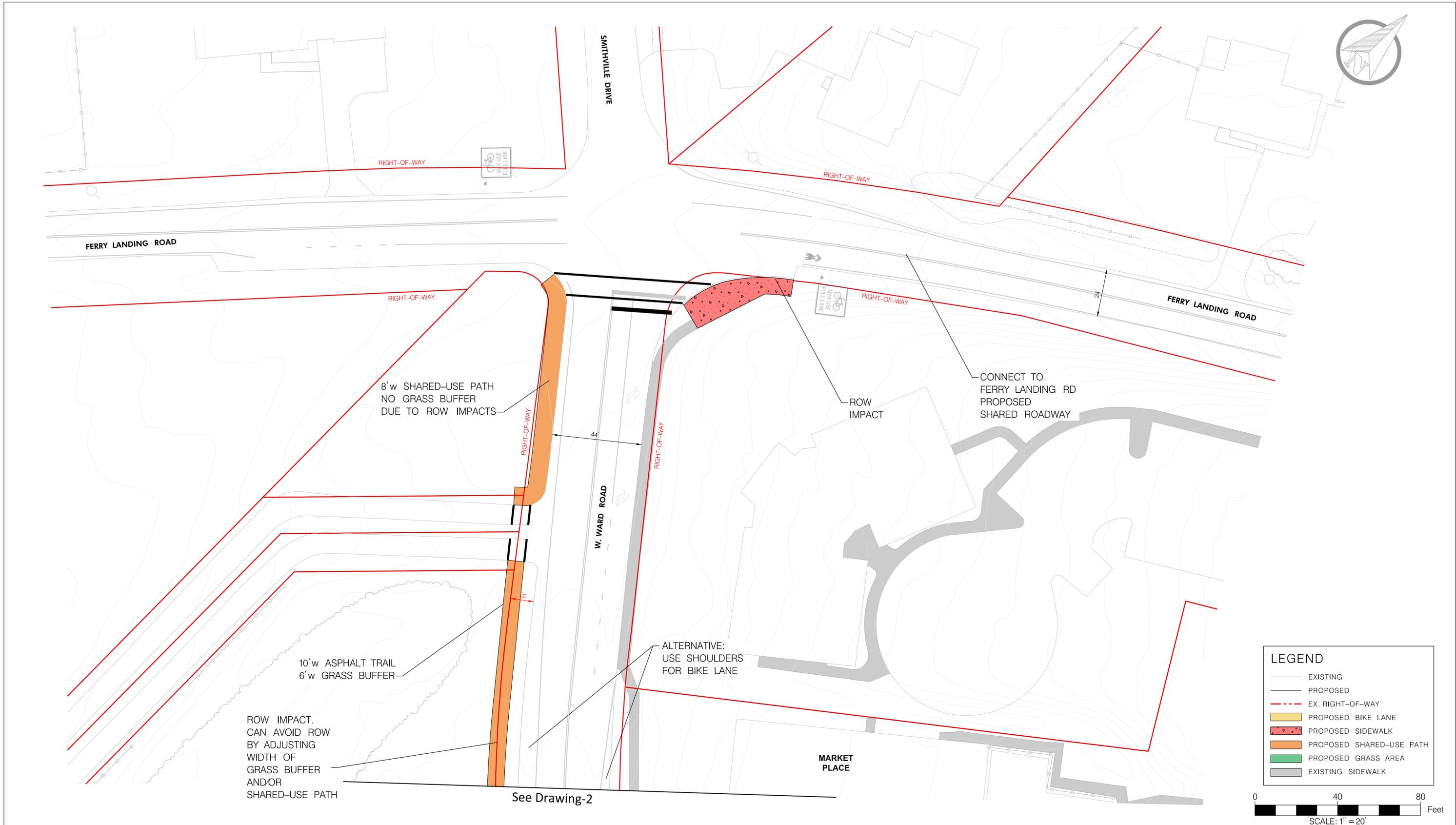
**LEGEND**

-  EXISTING
-  PROPOSED
-  EX. RIGHT-OF-WAY
-  PROPOSED BIKE LANE
-  PROPOSED SIDEWALK
-  PROPOSED SHARED-USE PATH
-  PROPOSED GRASS AREA
-  EXISTING SIDEWALK



SCALE: 1" = 20'







MARKET PLACE PARKING LOT

ALTERNATIVE: USE SHOULDERS FOR BIKE LANE

EXISTING CULVERT

See Drawing-3

See Drawing-1

RIGHT-OF-WAY

W. WARD ROAD

DOWN-SLOPE: WILL NEED TO REGRADE OR ADD RETAINING WALL

10'w SHARED-USE PATH  
6'w GRASS BUFFER

ROW IMPACT. CAN AVOID IMPACT BY ELIMINATING GRASS BUFFER AND REDUCING SHARED-USE PATH TO 8'w

EXISTING SIDEWALK  
WIDEN EXISTING SIDEWALK. CONSIDER FULL RECONSTRUCTION AND INSTALL 10'w SHARED-USE PATH

EXISTING SIDEWALK

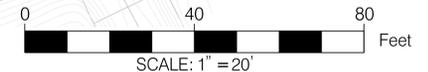
ROW IMPACT

WIDEN EXISTING SIDEWALK. CONSIDER FULL RECONSTRUCTION AND INSTALL 10'w SHARED-USE PATH

DUNKIRK VOL. FIRE COMPANY

**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





SAFEWAY

ALTERNATIVE:  
USE SHOULDERS  
FOR BIKE LANE

RIGHT-OF-WAY

See Drawing-4

See Drawing-2

W. WARD ROAD

44'

44'

RIGHT-OF-WAY

EXISTING  
SIDEWALK

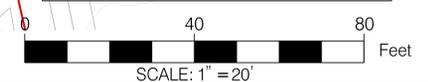
WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

EXISTING  
SIDEWALK

WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



BURGER  
KING



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**WARD ROAD**  
April 1, 2022

**Mead  
& Hunt**

**Drawing-3**



See Drawing-3

See Drawing-5

JERRY'S  
SUBS &  
PIZZA

10'w SHARED-USE PATH  
NO BUFFER

MD 4 (SOUTHERN MARYLAND BLVD)

W. WARD ROAD

WARD ROAD

ROW  
IMPACT

10'w SHARED-USE PATH  
GRASS BUFFER VARIES

EXISTING  
SIDEWALK

10'w SHARED-USE PATH  
5'w GRASS BUFFER

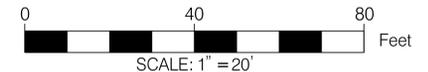
WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

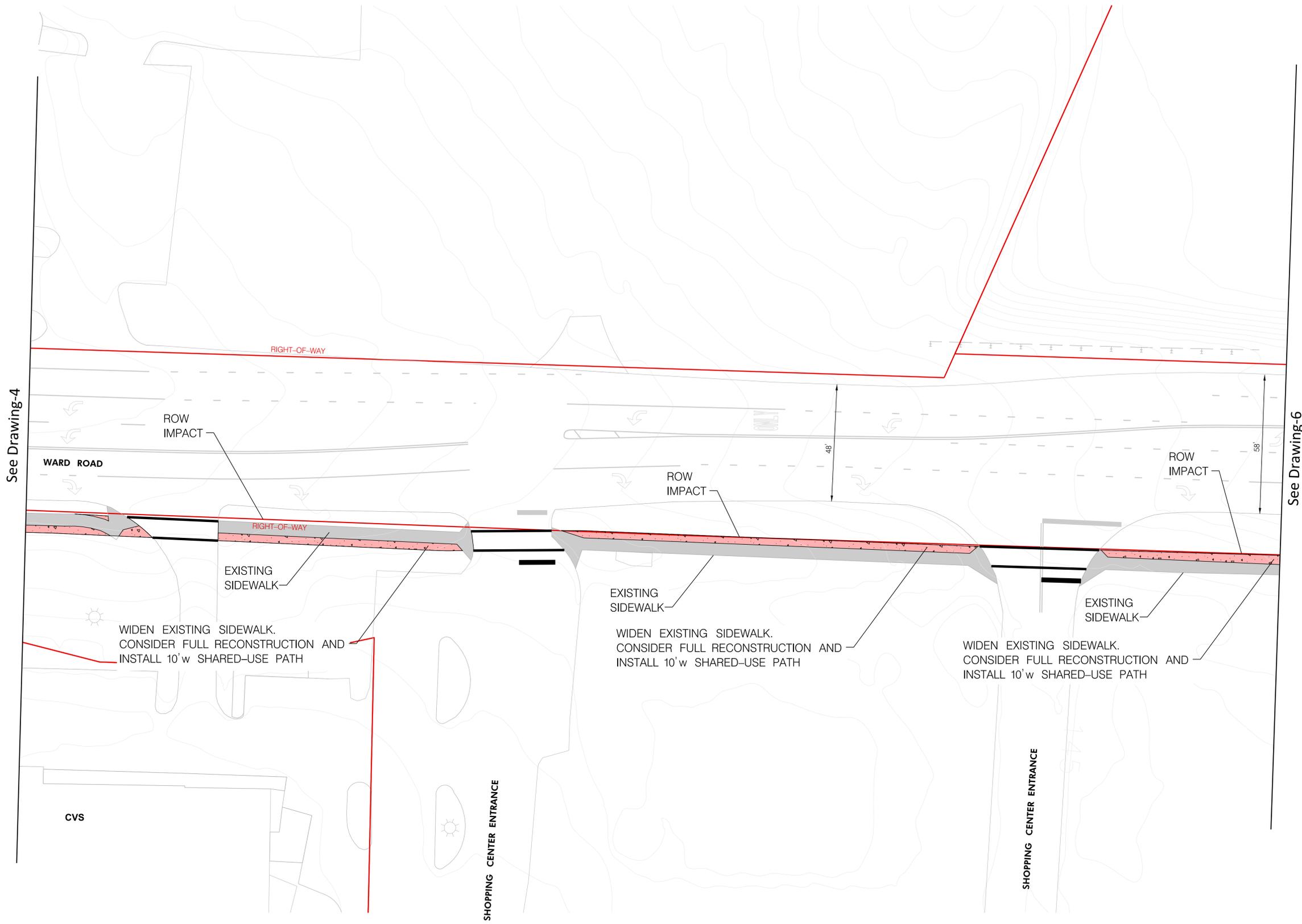
WAWA

MD 4 (SOUTHERN MARYLAND BLVD)

**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK





See Drawing-4

See Drawing-6

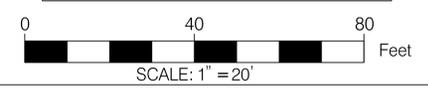
WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

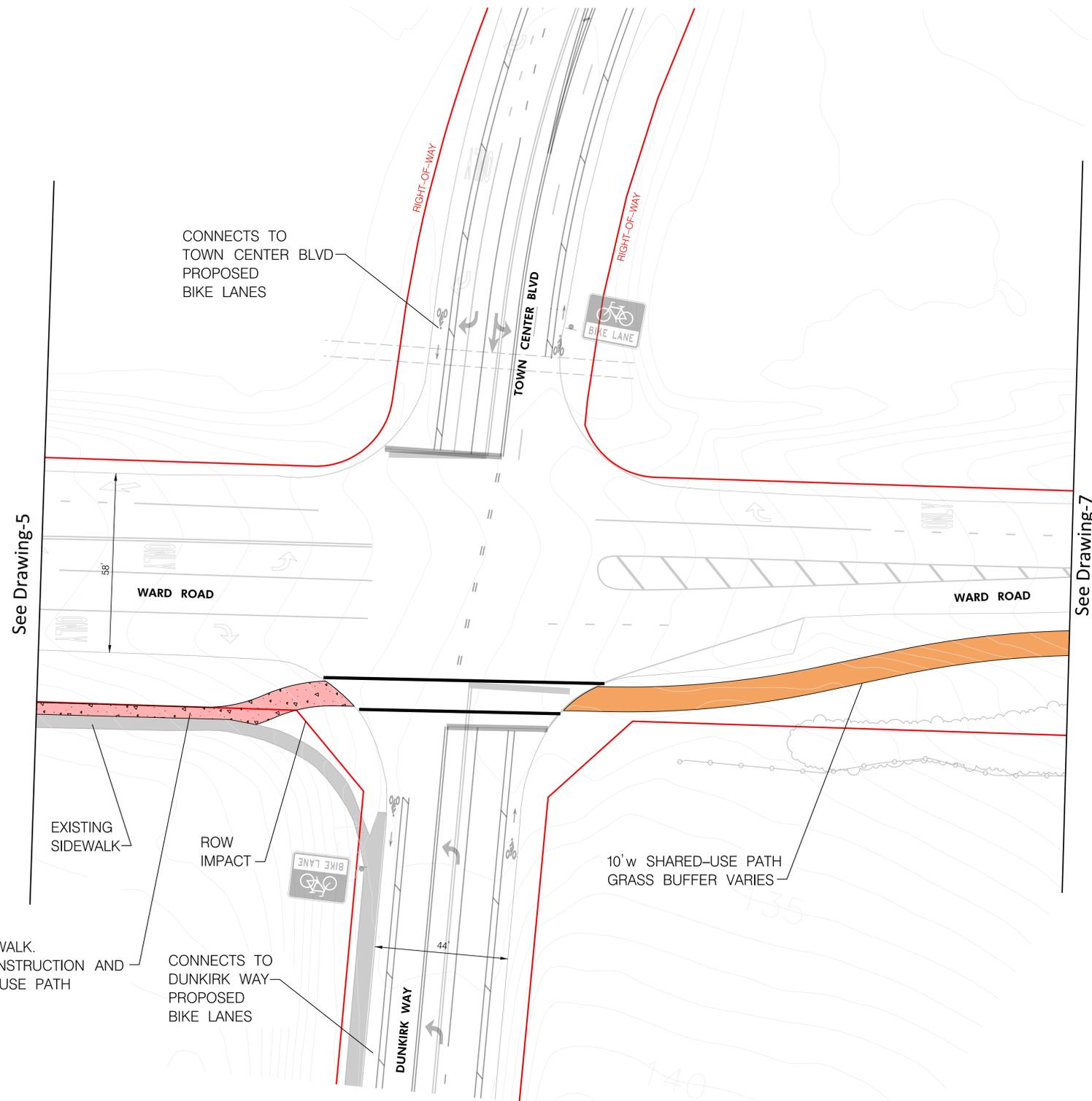
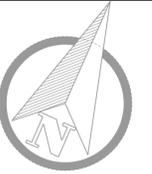
WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK

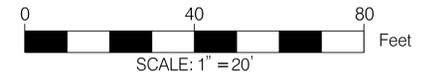


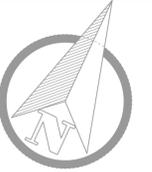


WIDEN EXISTING SIDEWALK.  
CONSIDER FULL RECONSTRUCTION AND  
INSTALL 10'w SHARED-USE PATH

**LEGEND**

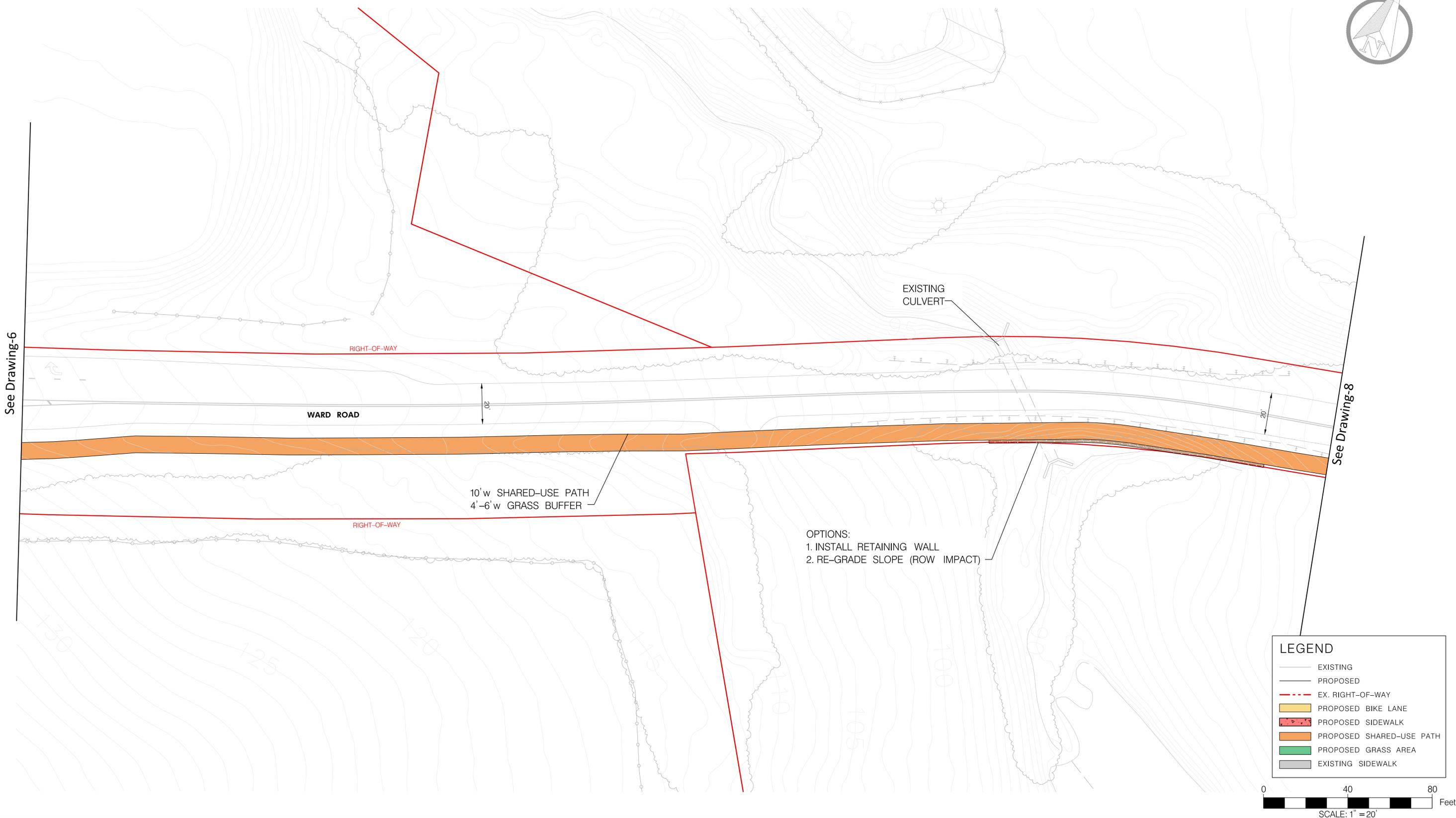
- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





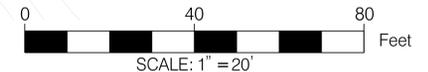
See Drawing-6

See Drawing-8



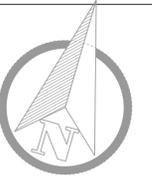
**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
 WARD ROAD  
 April 1, 2022

**Drawing-7**  
**Mead & Hunt**



See Drawing-7

See Drawing-9



10' w SHARED-USE PATH  
4'-6' w GRASS BUFFER

WARD ROAD

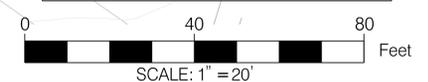
RIGHT-OF-WAY

RIGHT-OF-WAY

20'

**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**WARD ROAD**  
April 1, 2022

**Drawing-8**  
**Mead & Hunt**



See Drawing-8

See Drawing-10

RIGHT-OF-WAY

WARD ROAD

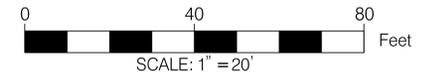
RIGHT-OF-WAY

10'w SHARED-USE PATH  
4'-6'w GRASS BUFFER

EXISTING  
CULVERT

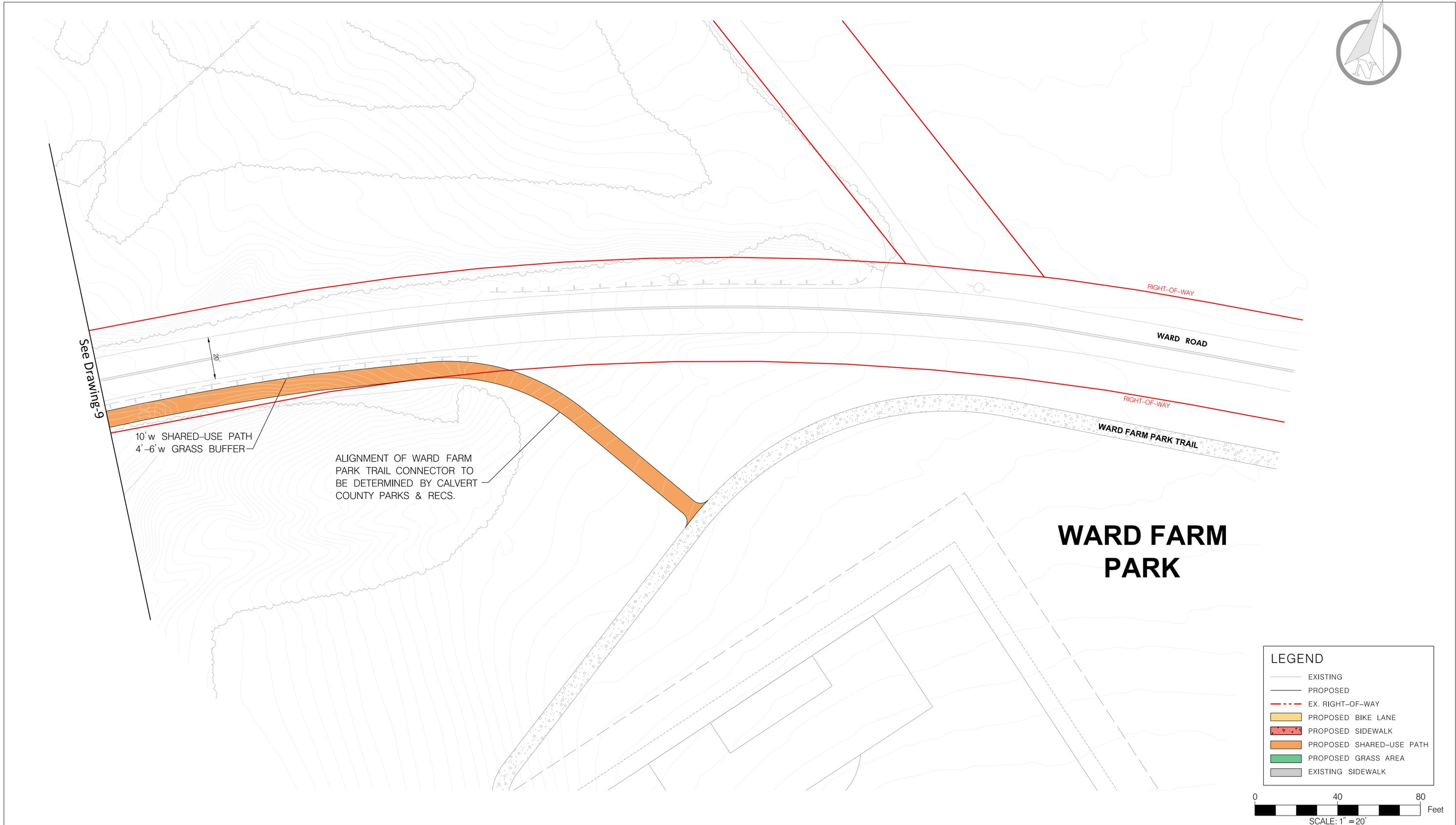
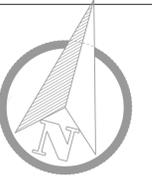
OPTIONS:  
1. INSTALL PEDESTRIAN BRIDGE  
2. INSTALL RETAINING WALL

LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
 WARD ROAD  
 April 1, 2022

**Drawing-9**  
**Mead & Hunt**



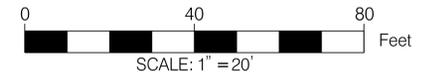
See Drawing-9

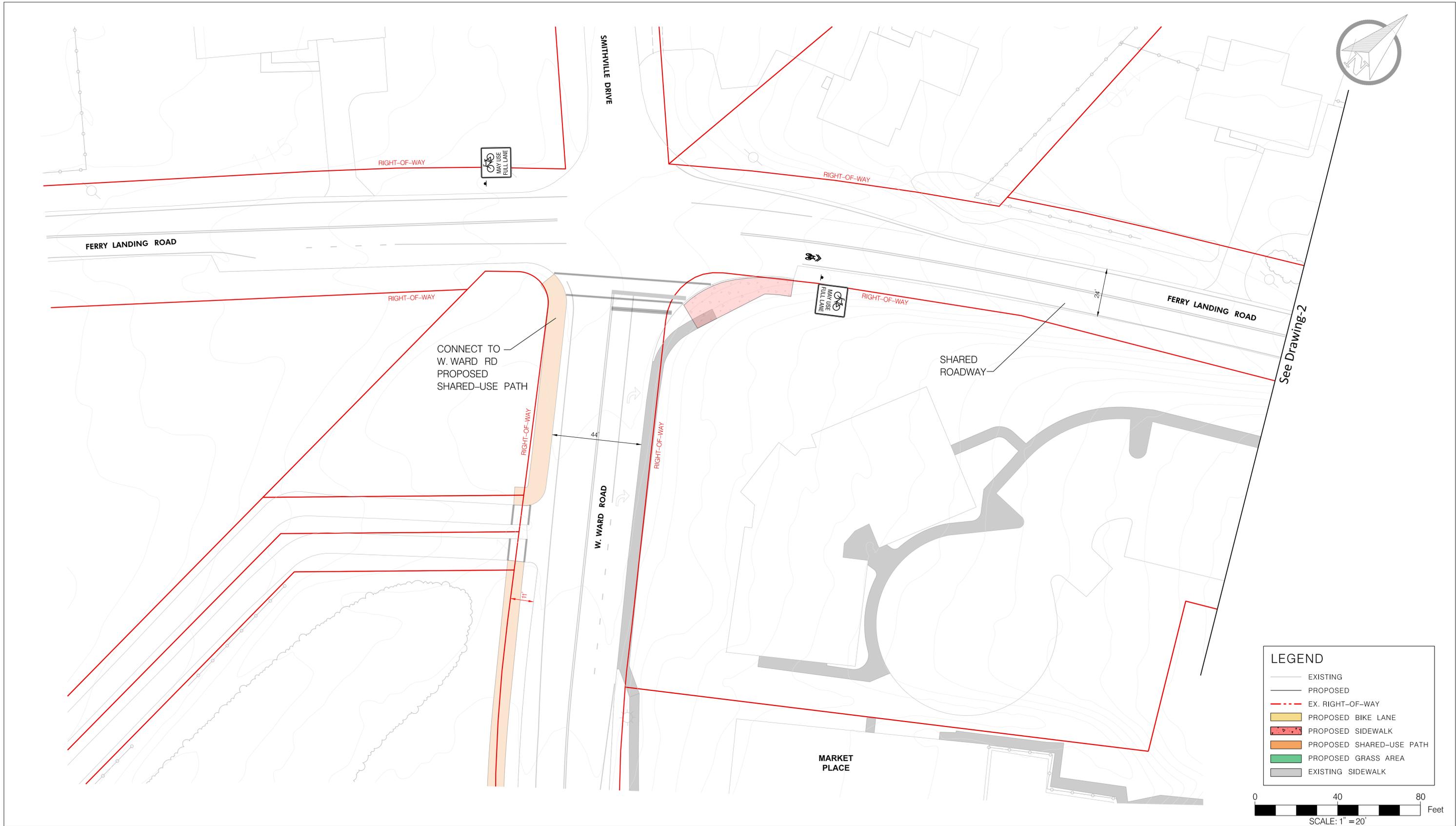
10' w SHARED-USE PATH  
4'-6' w GRASS BUFFER

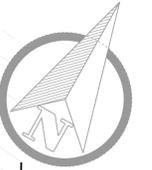
ALIGNMENT OF WARD FARM  
PARK TRAIL CONNECTOR TO  
BE DETERMINED BY CALVERT  
COUNTY PARKS & RECS.

# WARD FARM PARK

LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK

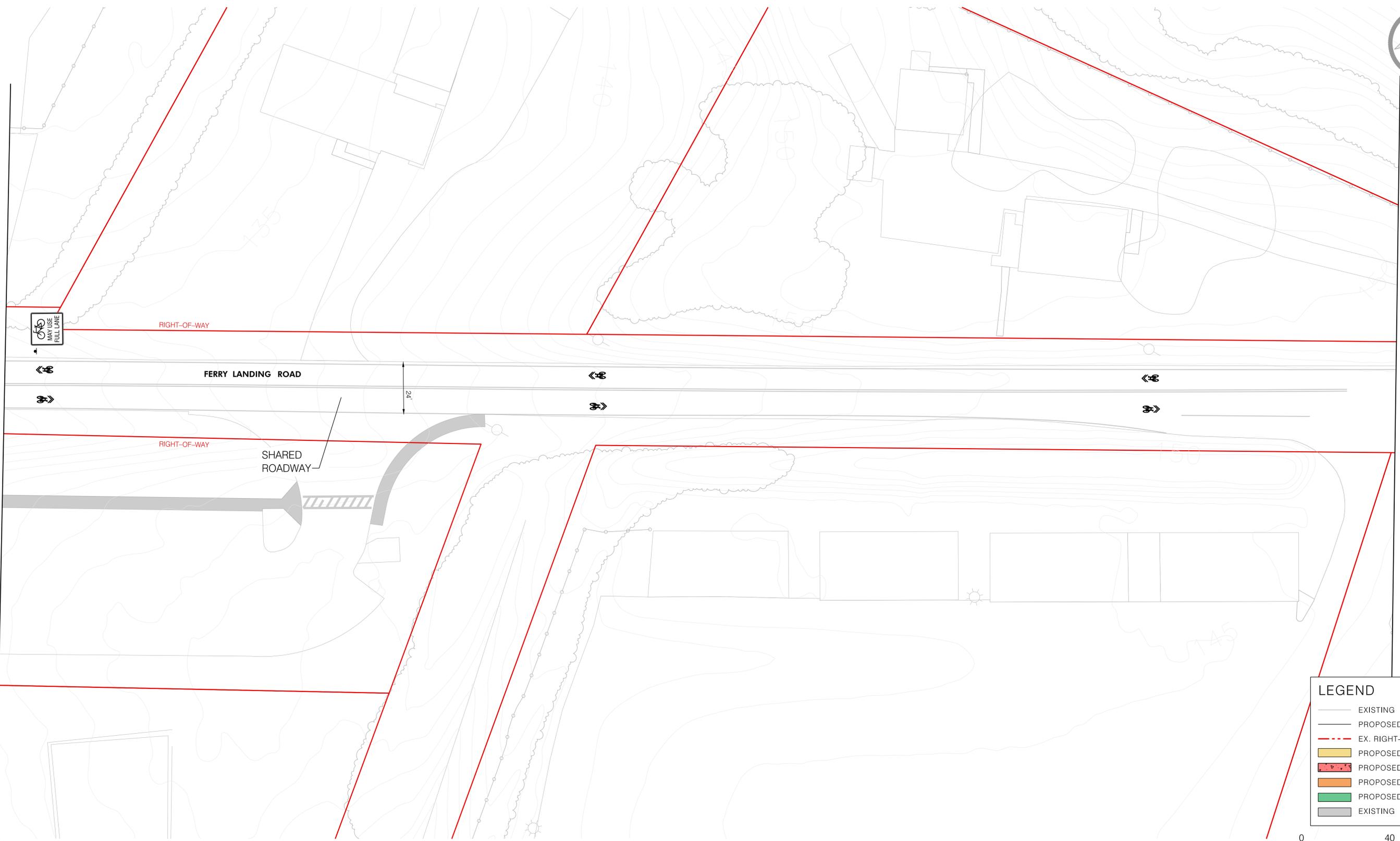






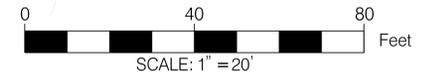
See Drawing-1

See Drawing-3



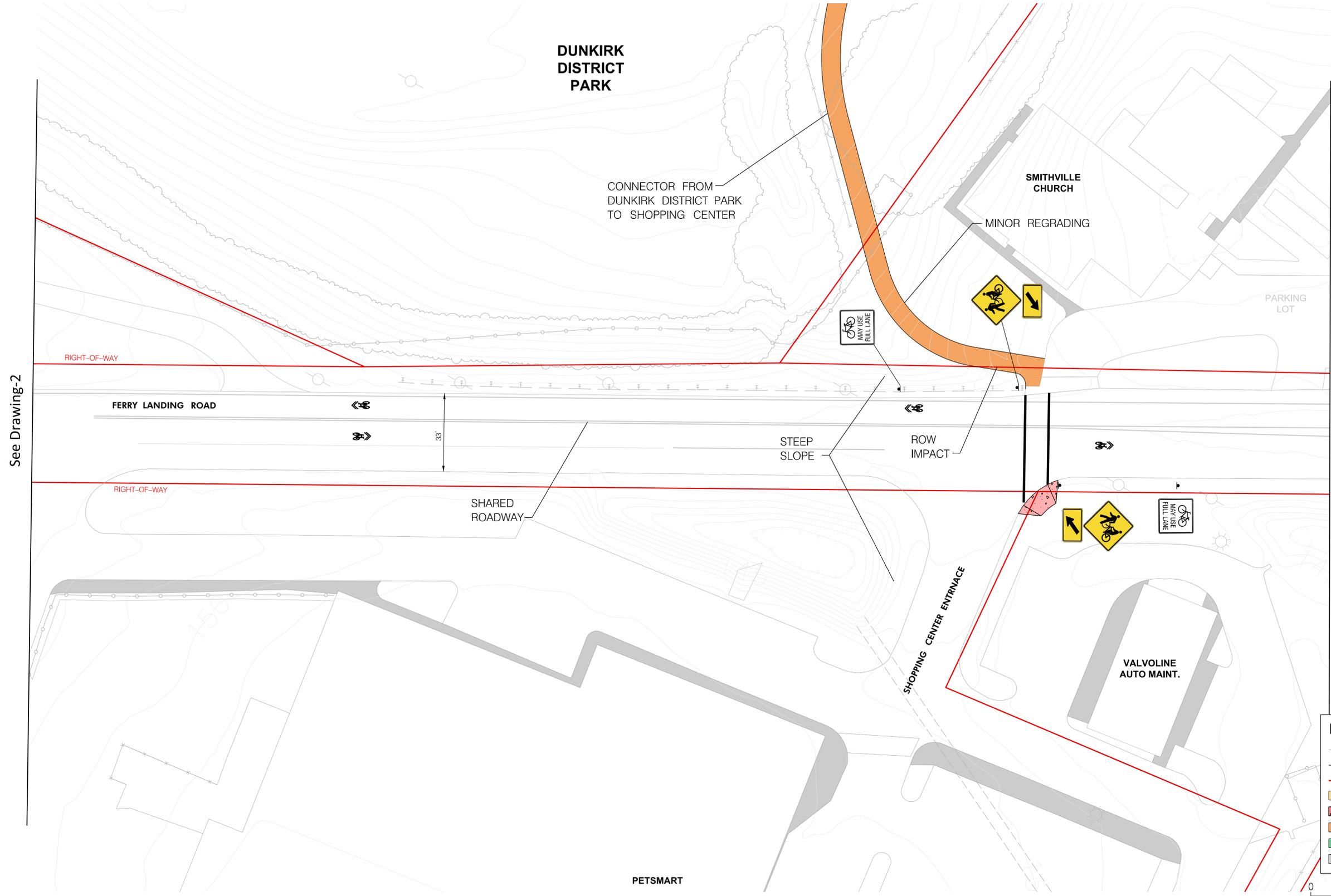
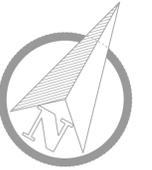
**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**FERRY LANDING ROAD**  
 April 1, 2022

**Drawing-2** **Mead & Hunt**

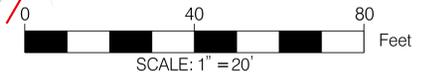


See Drawing-2

See Drawing-4

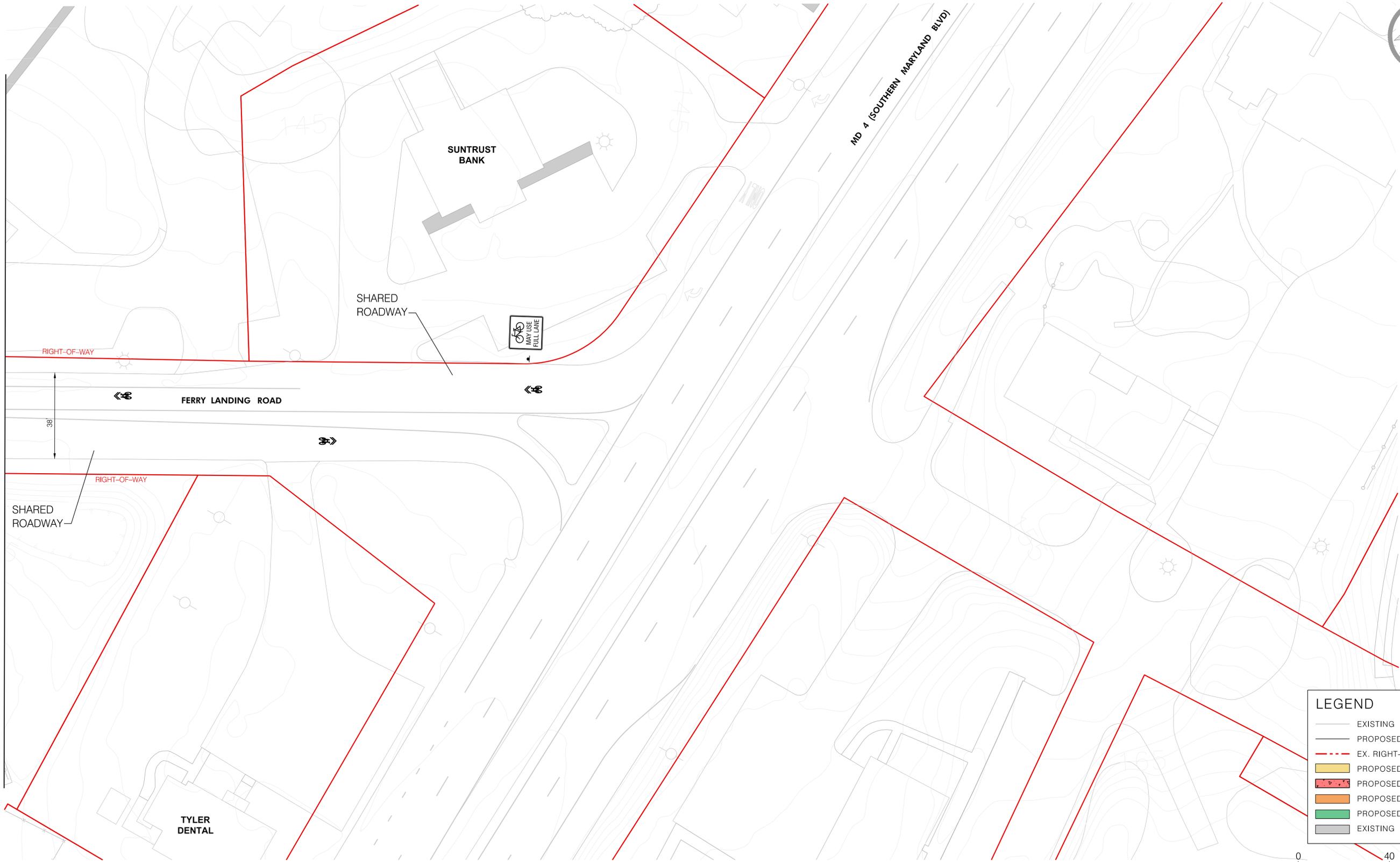
**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK

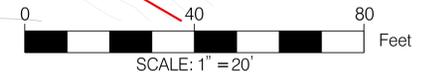




See Drawing-3



LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK

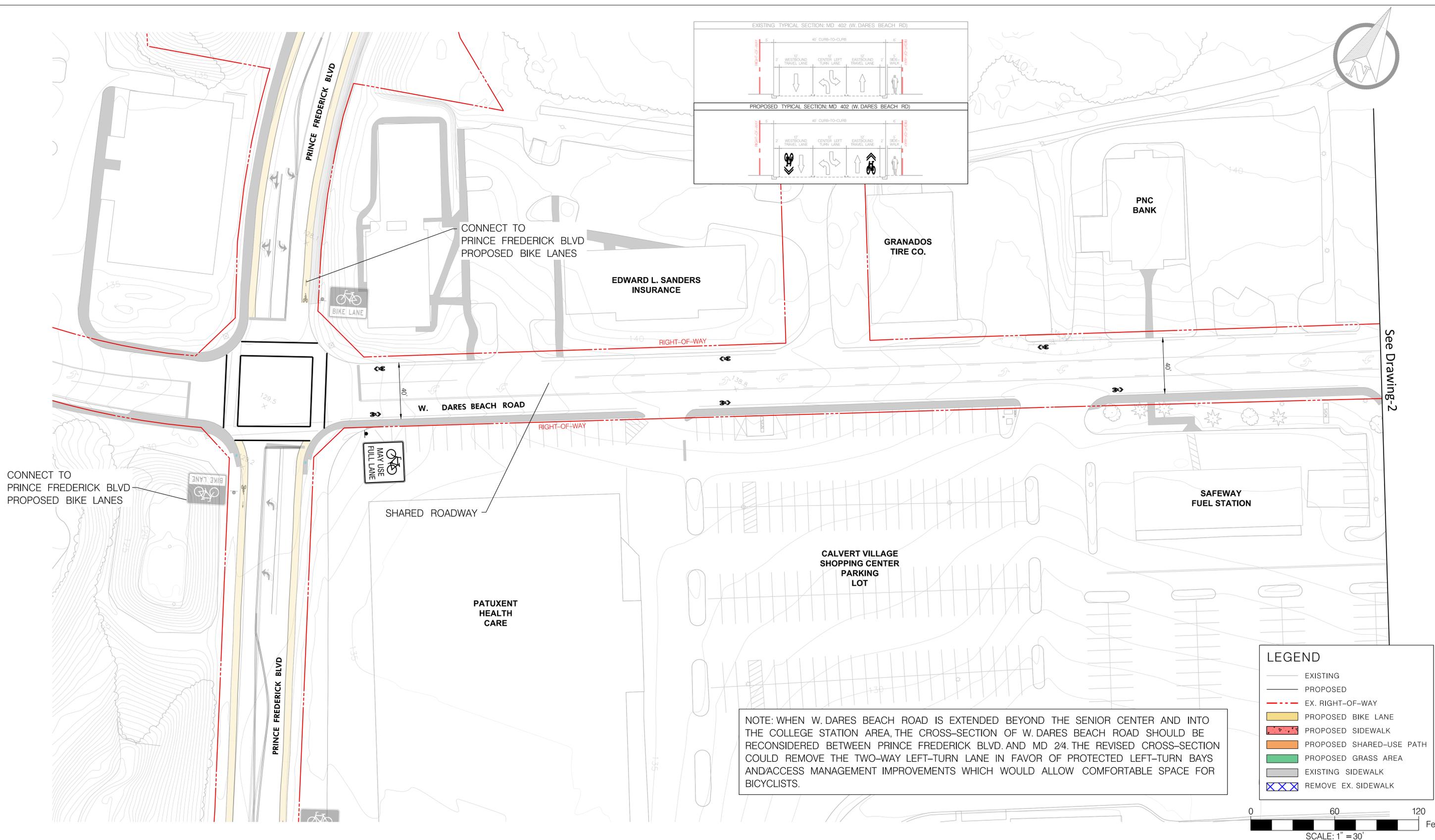
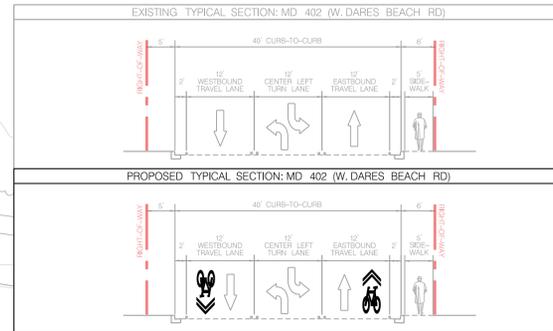


**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**FERRY LANDING ROAD**  
 April 1, 2022

**Drawing-4**

Appendix B-2

Design Concepts – Prince Frederick

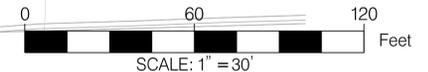


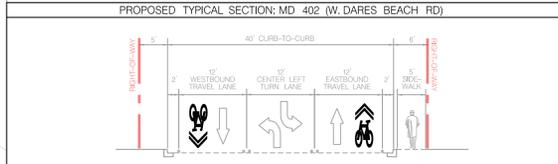
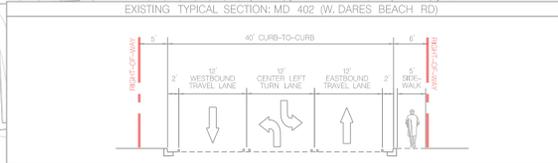
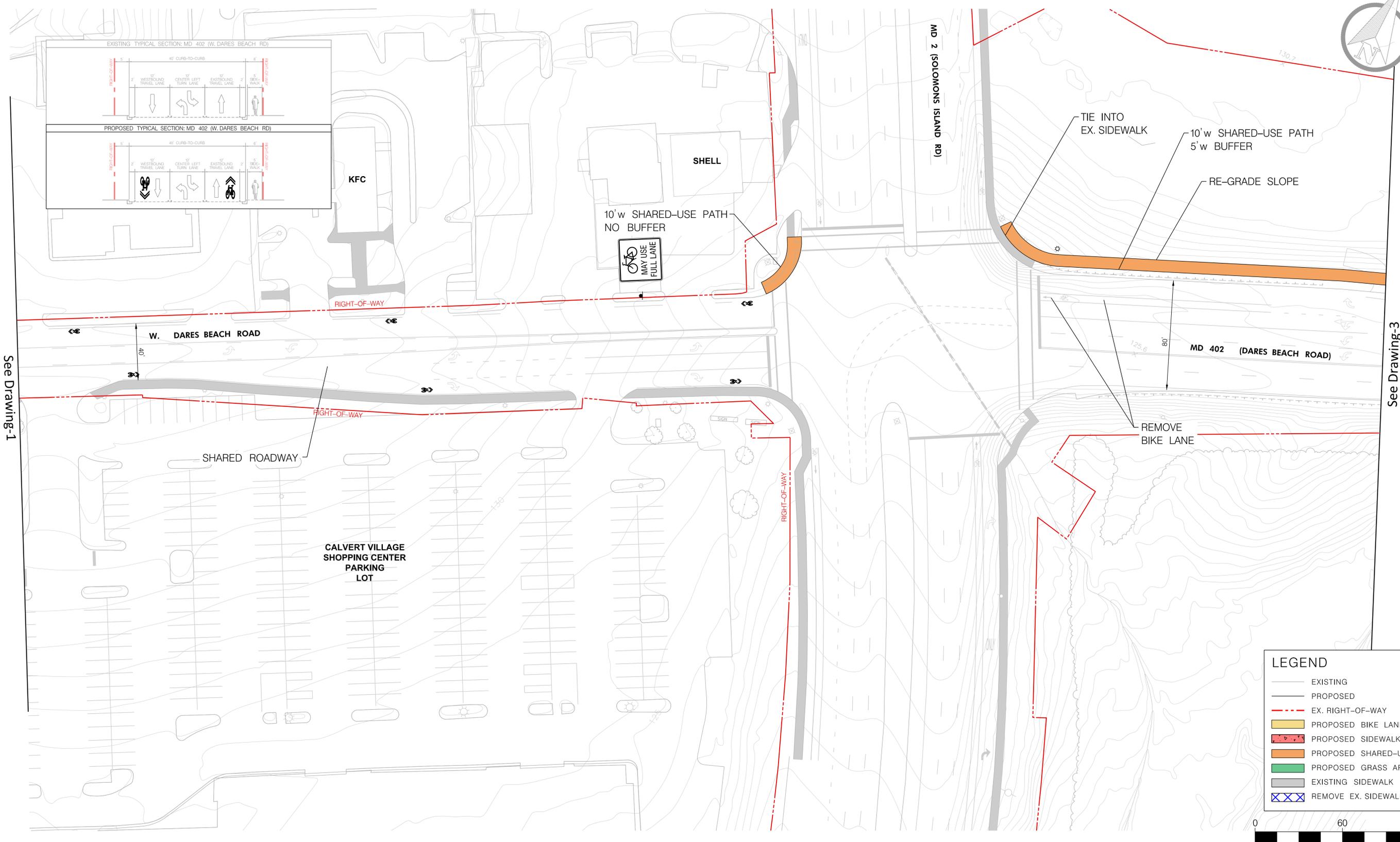
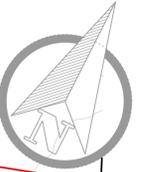
See Drawing-2

**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK

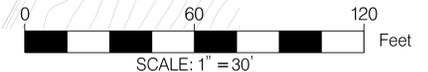
NOTE: WHEN W. DARES BEACH ROAD IS EXTENDED BEYOND THE SENIOR CENTER AND INTO THE COLLEGE STATION AREA, THE CROSS-SECTION OF W. DARES BEACH ROAD SHOULD BE RECONSIDERED BETWEEN PRINCE FREDERICK BLVD. AND MD 24. THE REVISED CROSS-SECTION COULD REMOVE THE TWO-WAY LEFT-TURN LANE IN FAVOR OF PROTECTED LEFT-TURN BAYS AND ACCESS MANAGEMENT IMPROVEMENTS WHICH WOULD ALLOW COMFORTABLE SPACE FOR BICYCLISTS.





**LEGEND**

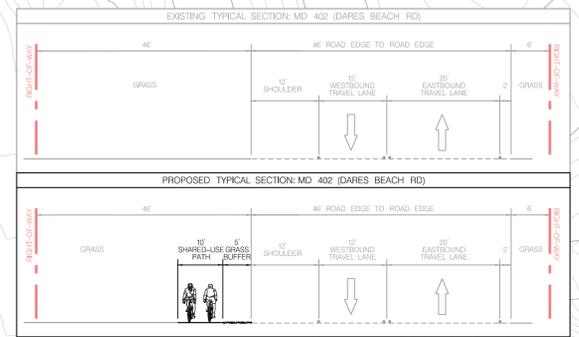
- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK



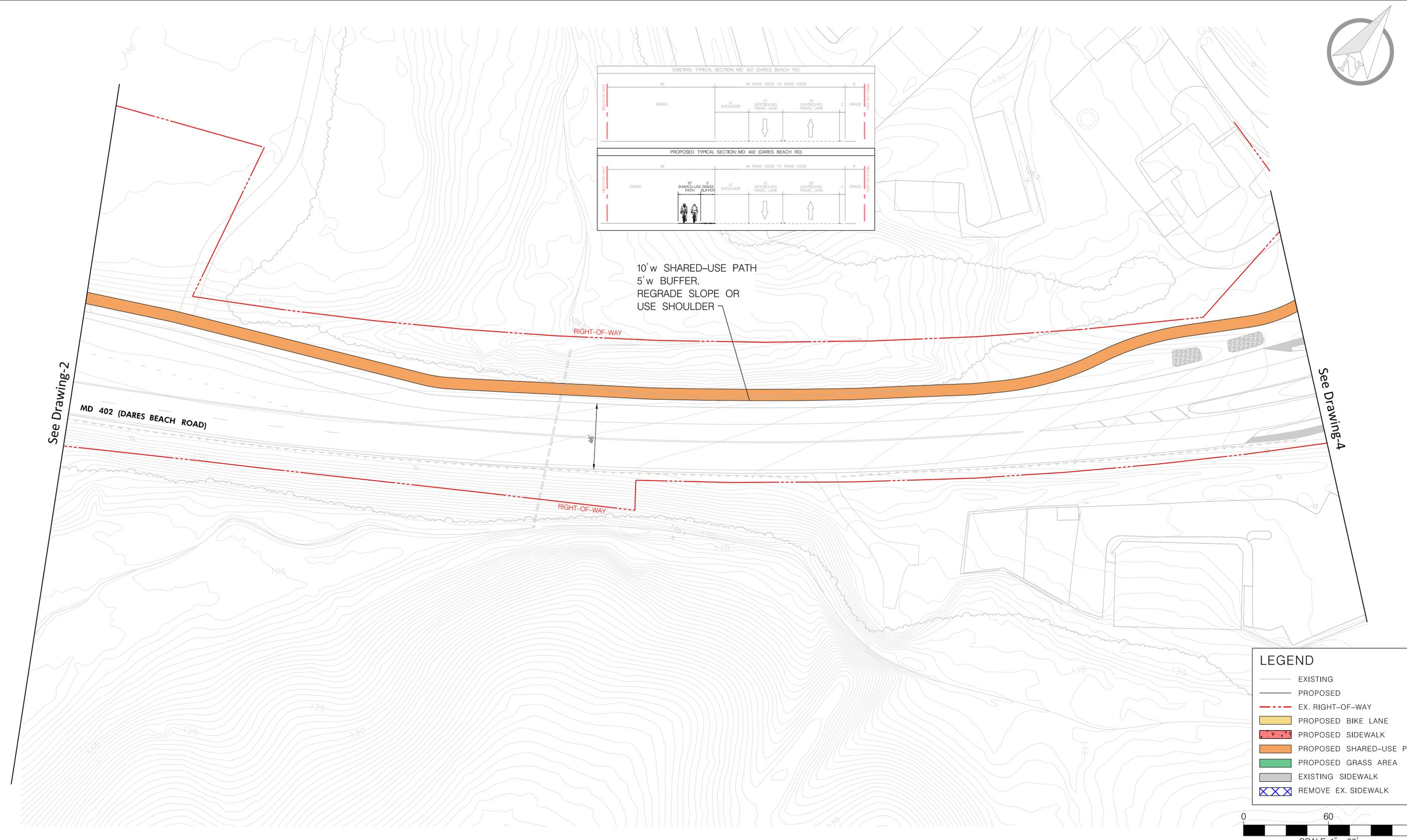
See Drawing-1

See Drawing-3





10'w SHARED-USE PATH  
5'w BUFFER.  
REGRADE SLOPE OR  
USE SHOULDER

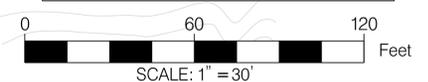


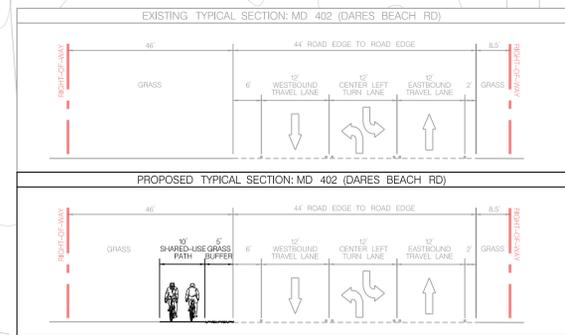
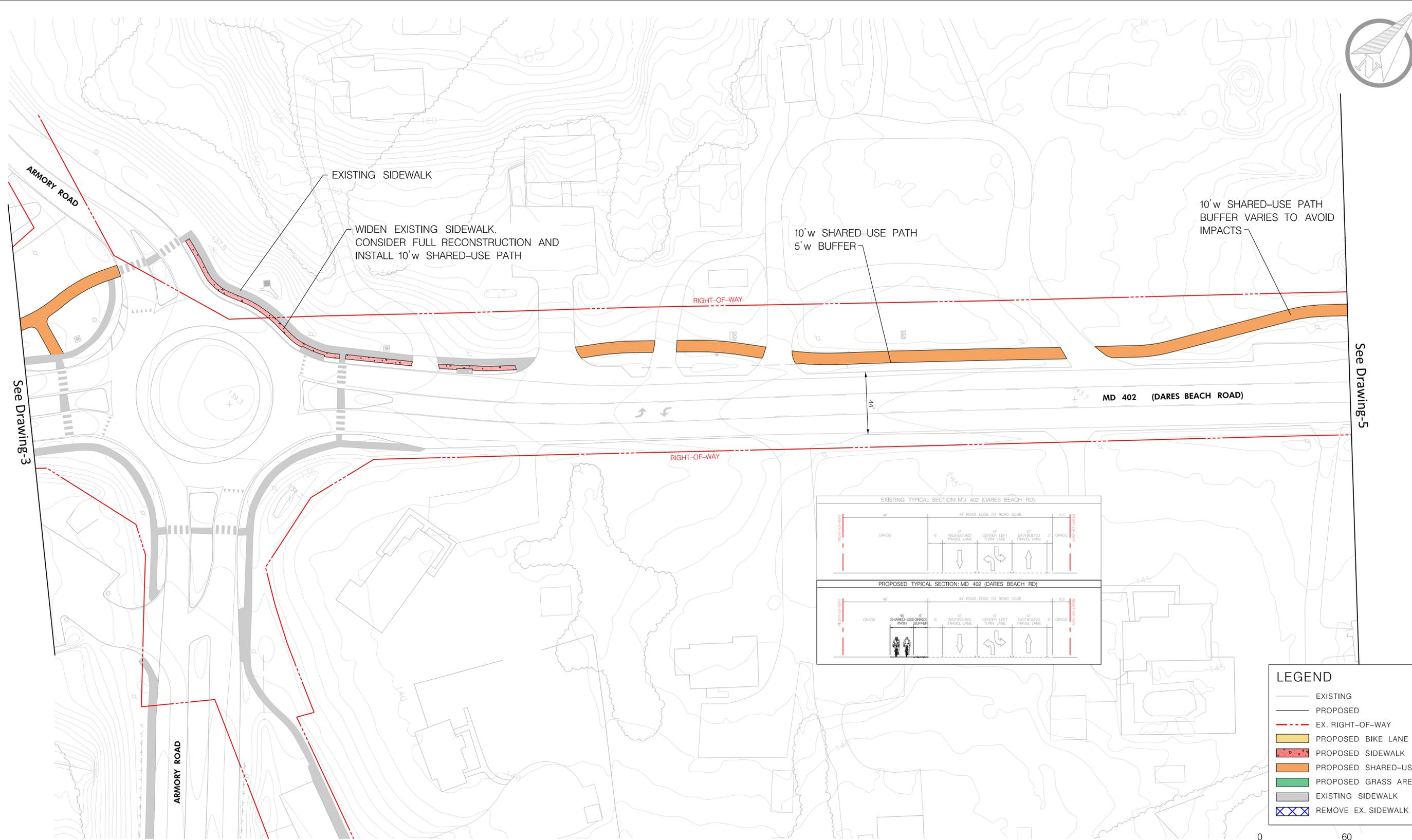
See Drawing-2

See Drawing-4

**LEGEND**

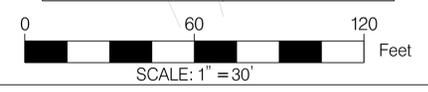
- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK





**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK





**FUTURE DEVELOPMENT**  
**BARGO LLC.**

NOTE: COORDINATE WITH DEVELOPMENT

BOARD OF EDU.  
CALVERT CO.

10'w SHARED-USE PATH  
5'w BUFFER

USE EX. SIDEWALK

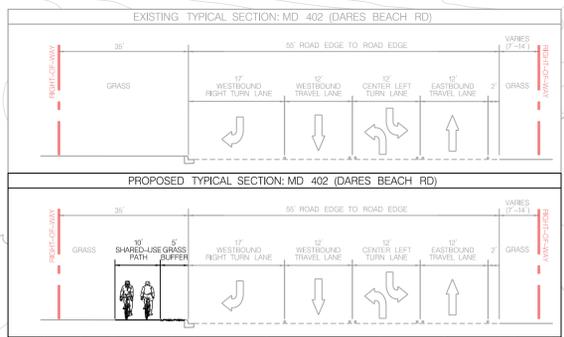
RIGHT-OF-WAY

MD 402 (DARES BEACH ROAD)

See Drawing-4

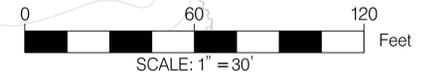
See Drawing-6

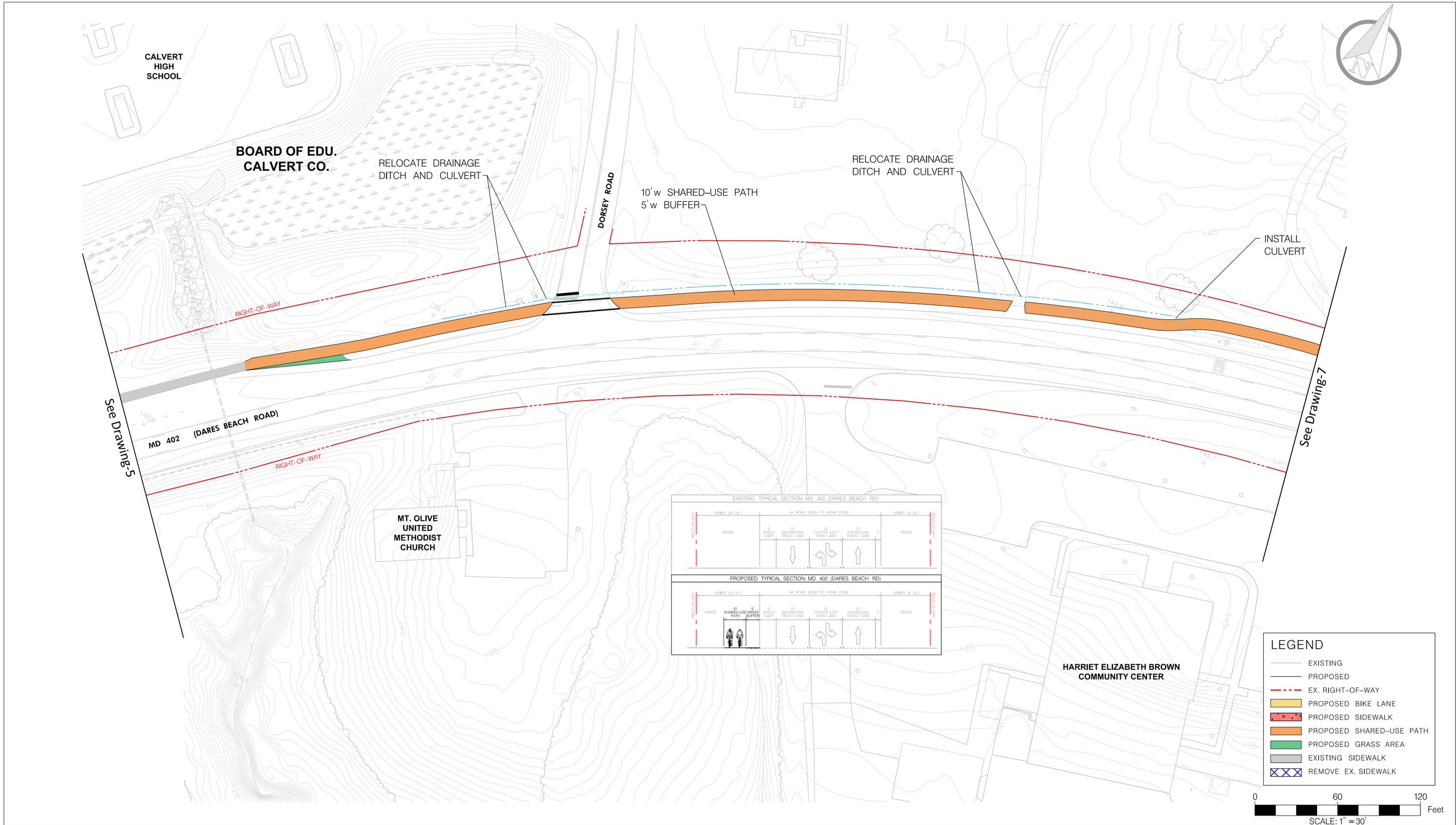
ADDITIONAL PED.  
CROSSING TREATMENTS  
TO BE DETERMINED

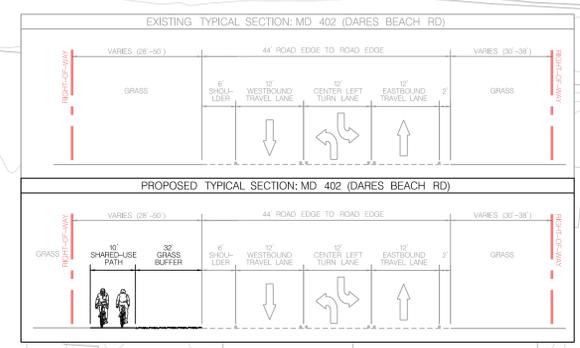
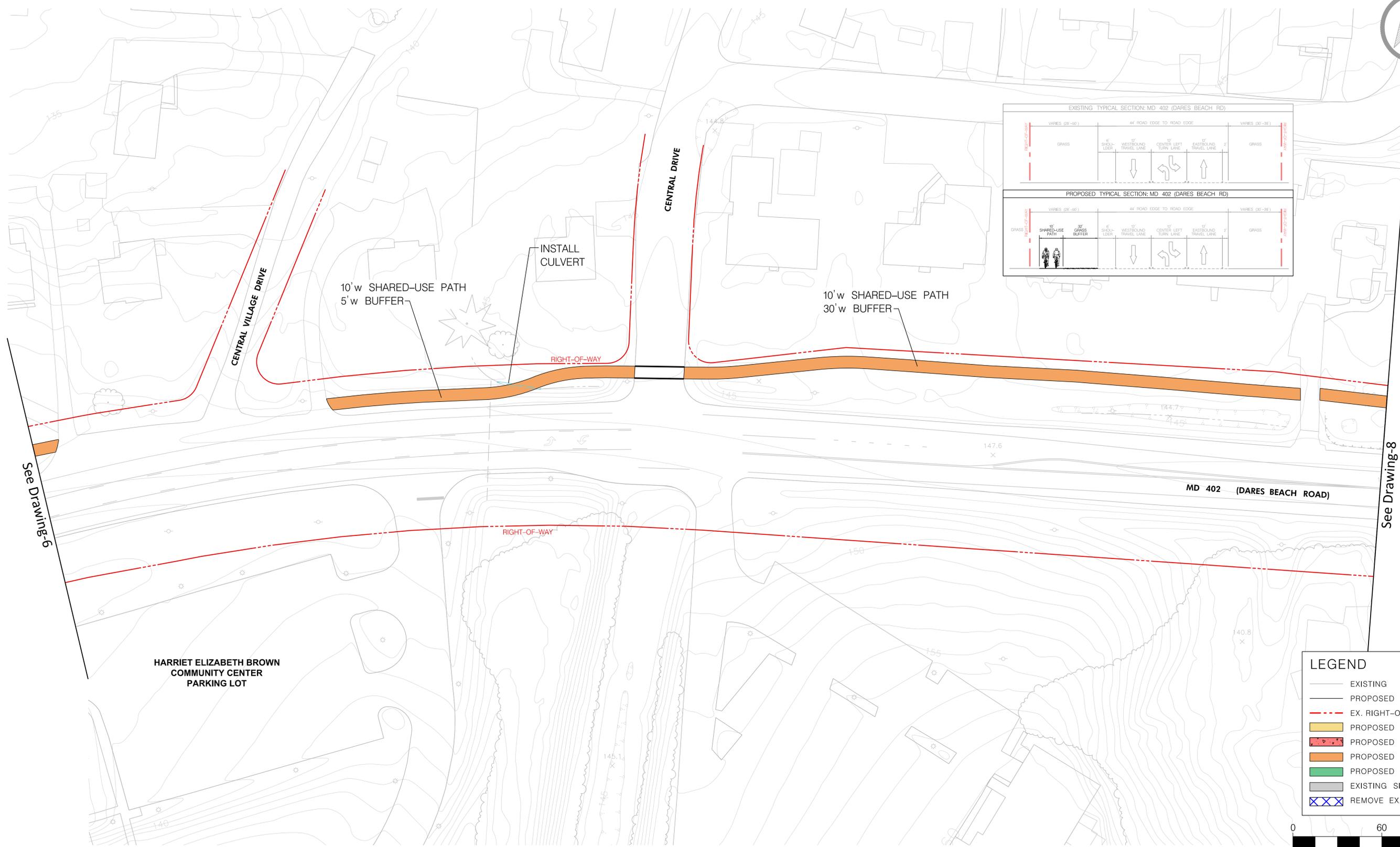


**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK





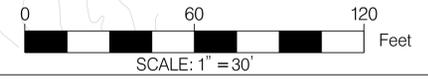


See Drawing-6

See Drawing-8

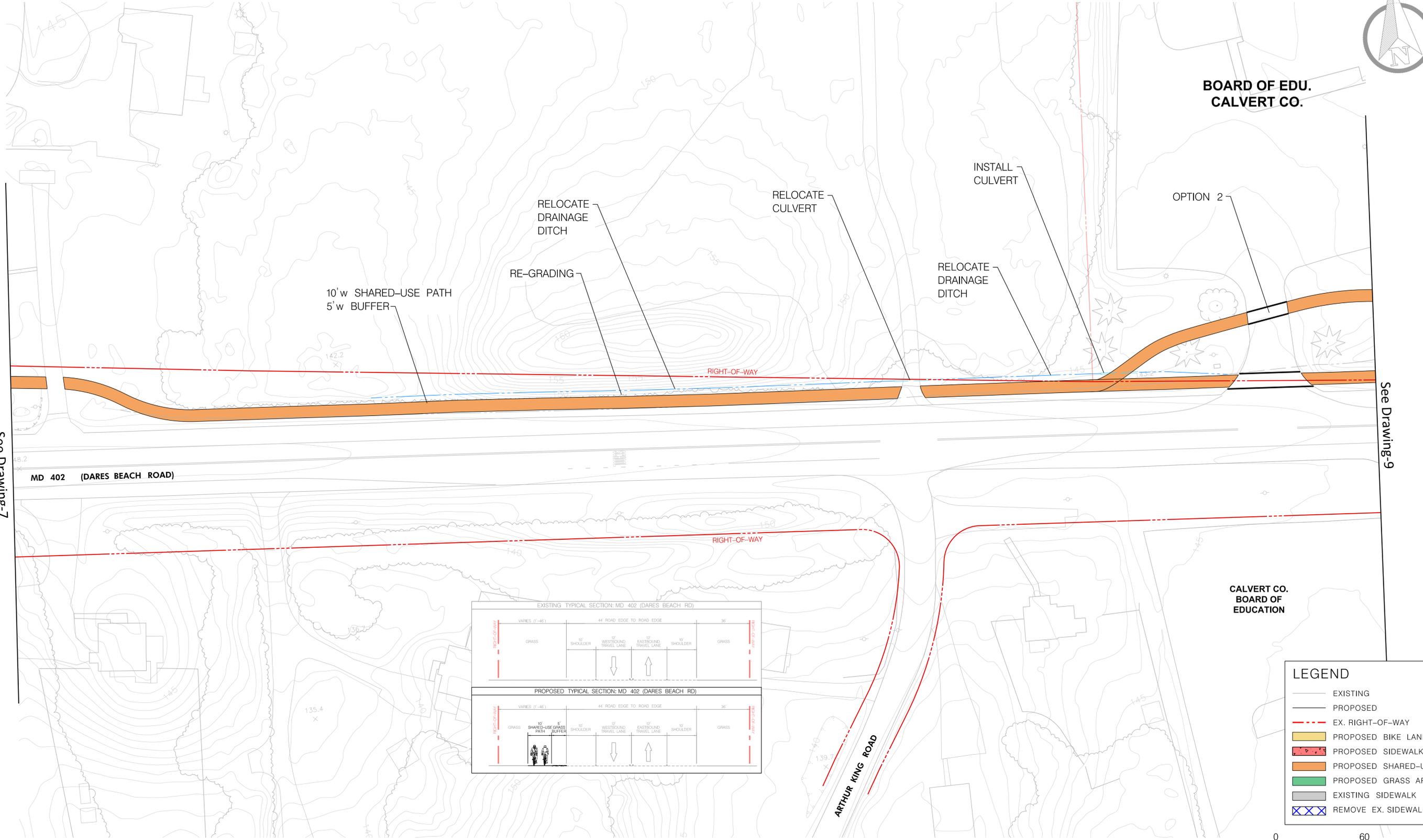
**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK





BOARD OF EDU.  
CALVERT CO.

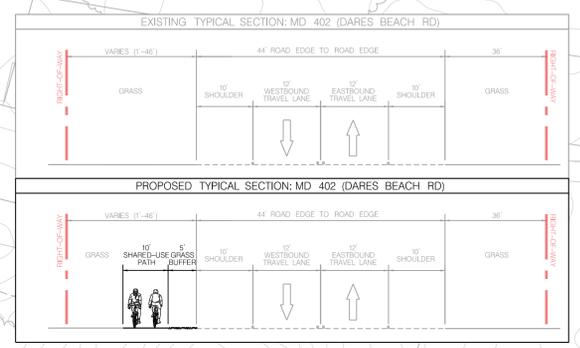


See Drawing-7

See Drawing-9

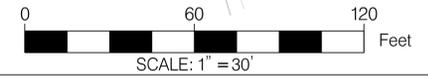
MD 402 (DARES BEACH ROAD)

CALVERT CO.  
BOARD OF  
EDUCATION



**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**DARES BEACH ROAD**  
 April 1, 2022

**Drawing-8**  
**Mead & Hunt**



BOARD OF EDU.  
CALVERT CO.

CALVERT  
ELEMENTARY  
SCHOOL

OPTION 2  
10'w SHARED-USE  
PATH

10'w SHARED-USE PATH  
5'w BUFFER

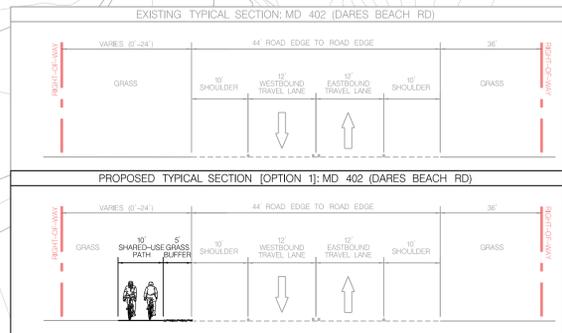
INSTALL PRECAST  
CONC. COVER OVER  
CONC. DRAINAGE  
DITCH

RIGHT-OF-WAY

MD 402 (DARES BEACH ROAD)

RIGHT-OF-WAY

TOBACCO  
RIDGE ROAD



**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK



See Drawing-8

See Drawing-10



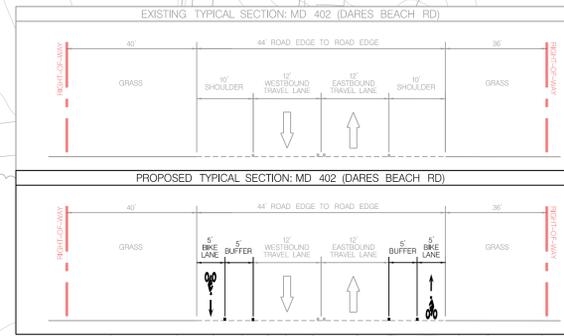
**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**DARES BEACH ROAD**  
April 1, 2022

**Drawing-9**  
**Mead & Hunt**



CALVERT  
ELEMENTARY  
SCHOOL

BOARD OF EDU.  
CALVERT CO.



10' w SHARED-USE PATH  
5' w BUFFER

ADDETON DRIVE

RIGHT-OF-WAY

TO DARES BEACH

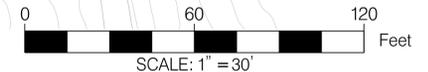
MD 402 (DARES BEACH ROAD)

ADDITIONAL CROSSING  
TREATMENTS TO BE  
DETERMINED

5' w BIKE LANES  
APPROX. 5' w  
BUFFERS TO  
DARES BEACH

**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK
- REMOVE EX. SIDEWALK

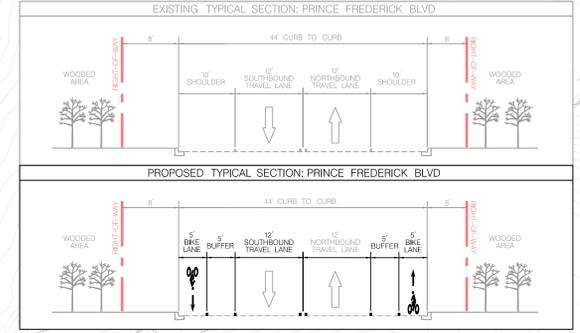
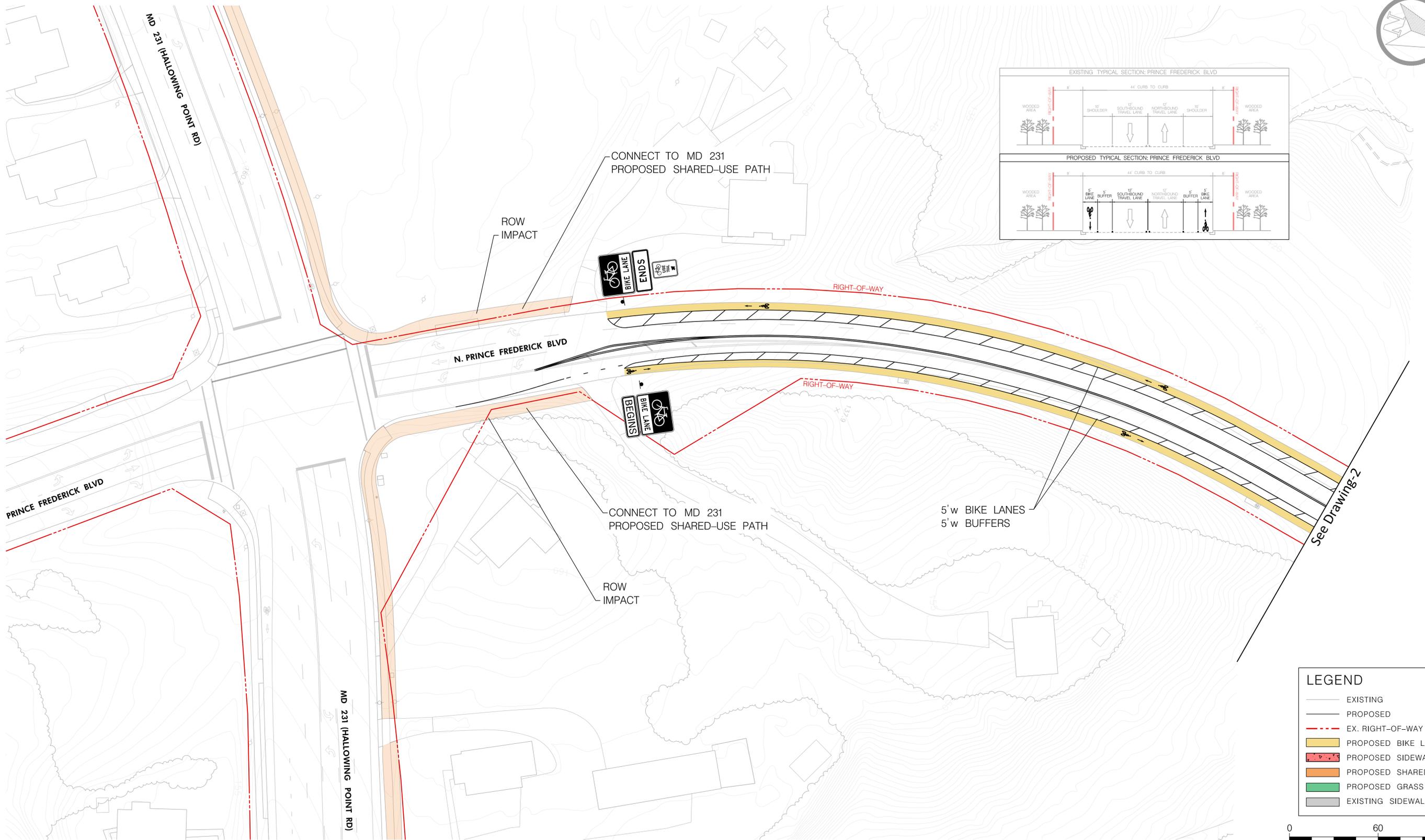
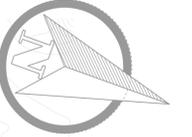


See Drawing-9



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**DARES BEACH ROAD**  
 April 1, 2022

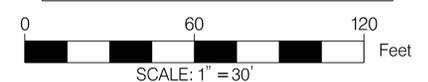
**Mead & Hunt**  
 Drawing-10

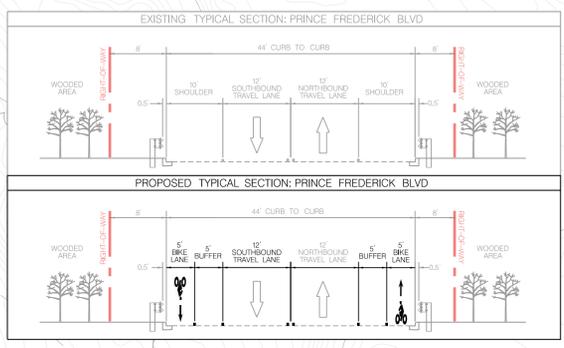
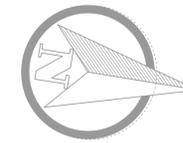


See Drawing 2

**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





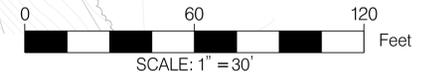
See Drawing-1

See Drawing-3

5' w BIKE LANES  
5' w BUFFERS

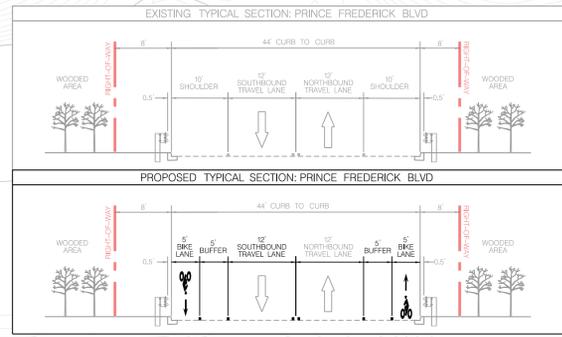


LEGEND	
	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



CALVERT COUNTY  
**Calvert County Bikeways Plan**  
PRINCE FREDERICK BLVD.  
April 1, 2022

**Mead & Hunt**  
Drawing-2



See Drawing-2

See Drawing-4

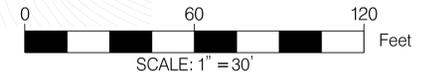


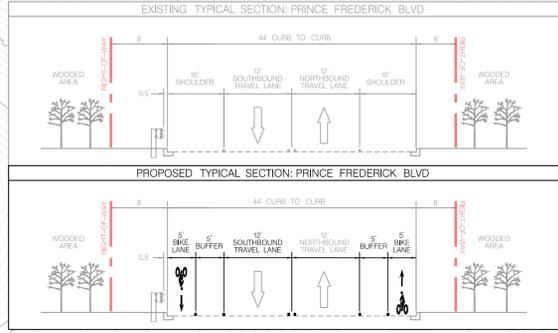
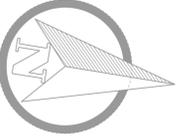
5'w BIKE LANES  
5'w BUFFERS

WALMART

**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- · - · - PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





See Drawing-3

See Drawing-5

5' w BIKE LANES  
5' w BUFFERS

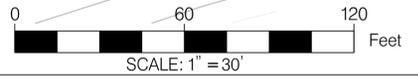
SMCN

PRINCE FREDERICK BLVD

CALVERT VILLAGE SHOPPING MALL

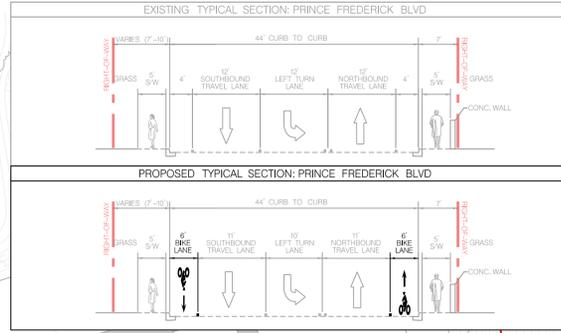
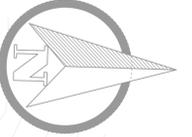
**LEGEND**

	EXISTING
	PROPOSED
	EX. RIGHT-OF-WAY
	PROPOSED BIKE LANE
	PROPOSED SIDEWALK
	PROPOSED SHARED-USE PATH
	PROPOSED GRASS AREA
	EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
**PRINCE FREDERICK BLVD.**  
 April 1, 2022

**Drawing-4**  
**Mead & Hunt**



OUTDATED ROW: DOES NOT SHOW ADJUSTED ROW FOR ROUNDABOUT CONSTRUCTION

OPTIONAL: UPGRADE 6' w SIDEWALK TO 10' w SIDE PATH AND WIDENING EX. CROSSWALKS

5' w BIKE LANES NO BUFFER

TIE INTO EX. SIDEWALK

OPTIONAL: UPGRADE: 6' w SIDEWALK TO 10' w SIDE PATH

TIE INTO EX. SIDEWALK

TIE INTO EX. SIDEWALK

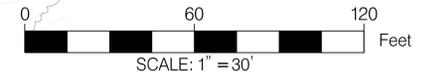
OPTIONAL: UPGRADE 6' w SIDEWALK TO 10' w SIDE PATH AND WIDENING EX. CROSSWALKS

TIE INTO EX. SIDEWALK

OPTIONAL: UPGRADE: 6' w SIDEWALK TO 10' w SIDE PATH

**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



CALVERT VILLAGE SHOPPING CENTER

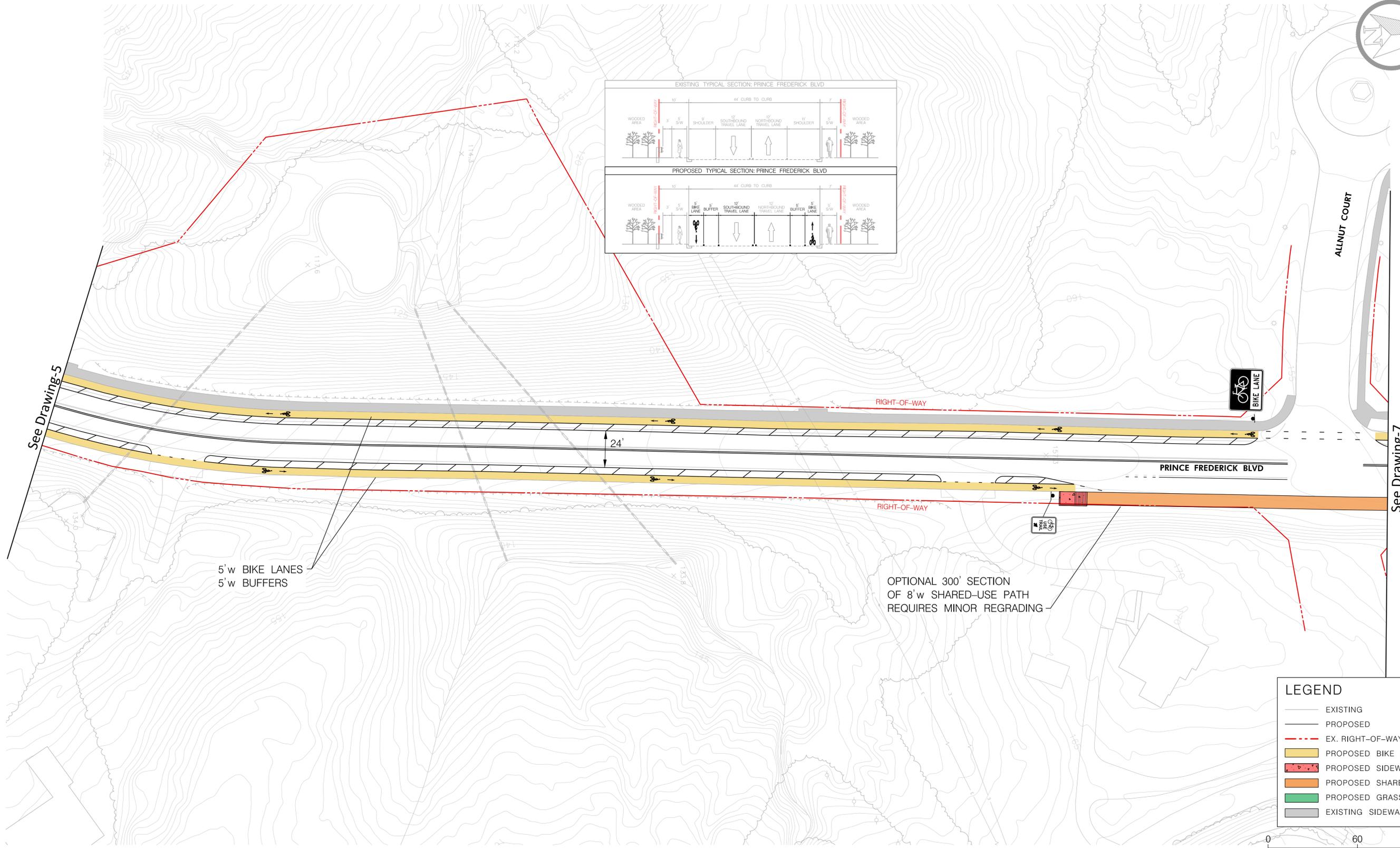
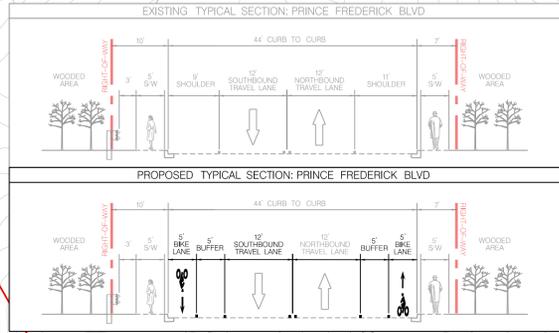
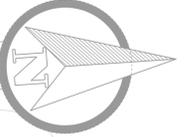
DARS BEACH ROAD

RADIO DRIVE

See Drawing-4

See Drawing-6





See Drawing-5

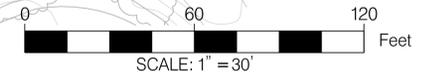
See Drawing-7

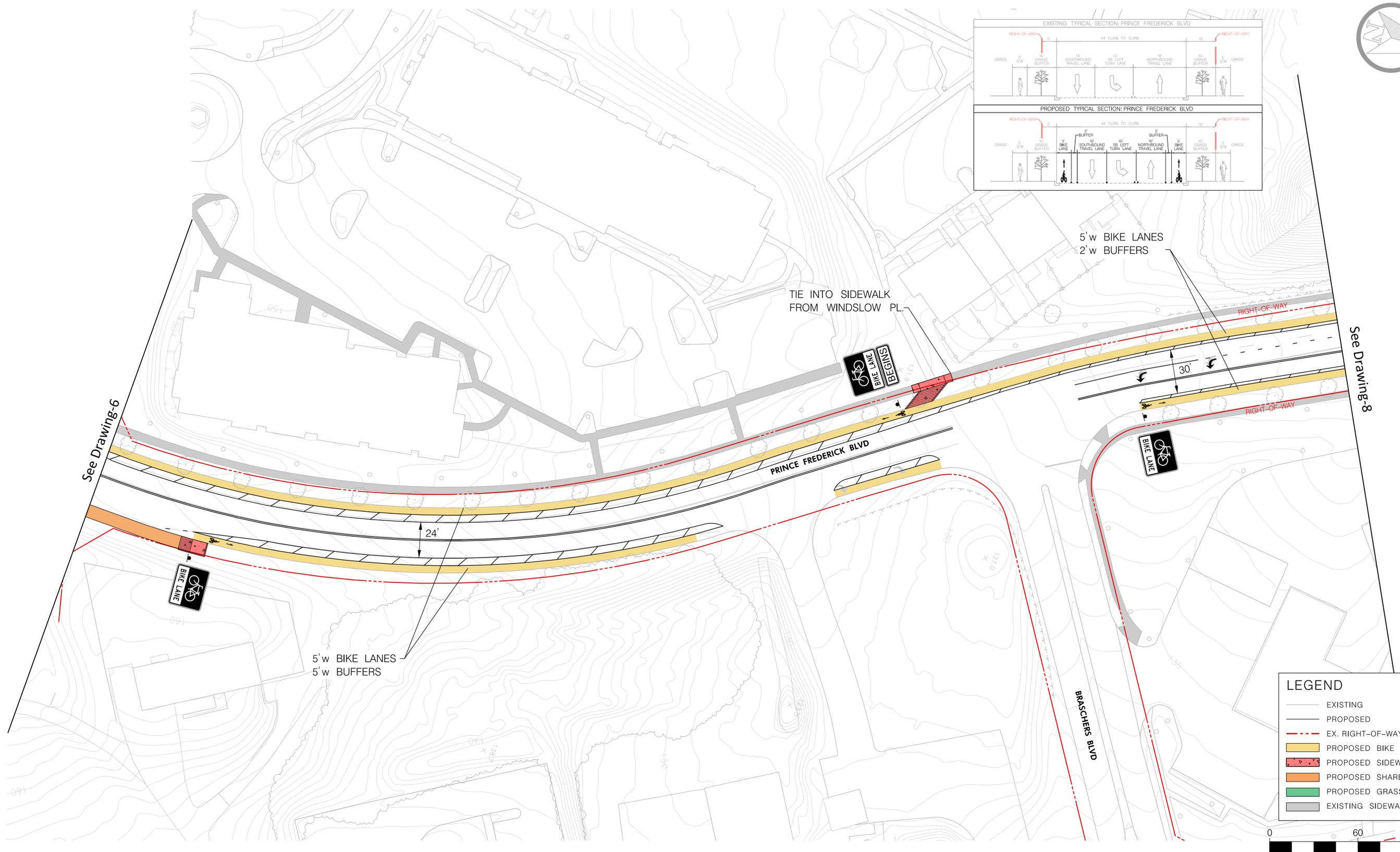
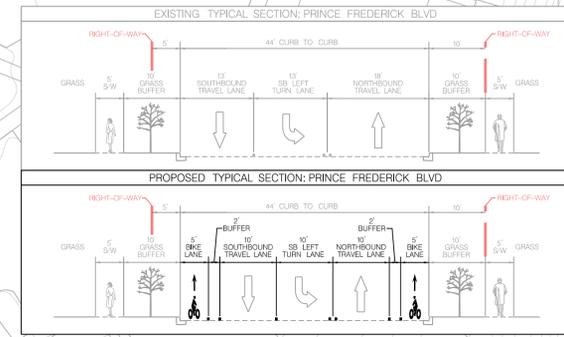
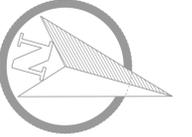
5'w BIKE LANES  
5'w BUFFERS

OPTIONAL 300' SECTION  
OF 8'w SHARED-USE PATH  
REQUIRES MINOR REGRADING

**LEGEND**

—	EXISTING
—	PROPOSED
- - -	EX. RIGHT-OF-WAY
■	PROPOSED BIKE LANE
■	PROPOSED SIDEWALK
■	PROPOSED SHARED-USE PATH
■	PROPOSED GRASS AREA
■	EXISTING SIDEWALK



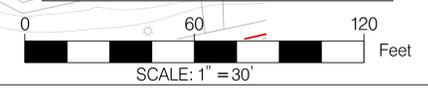


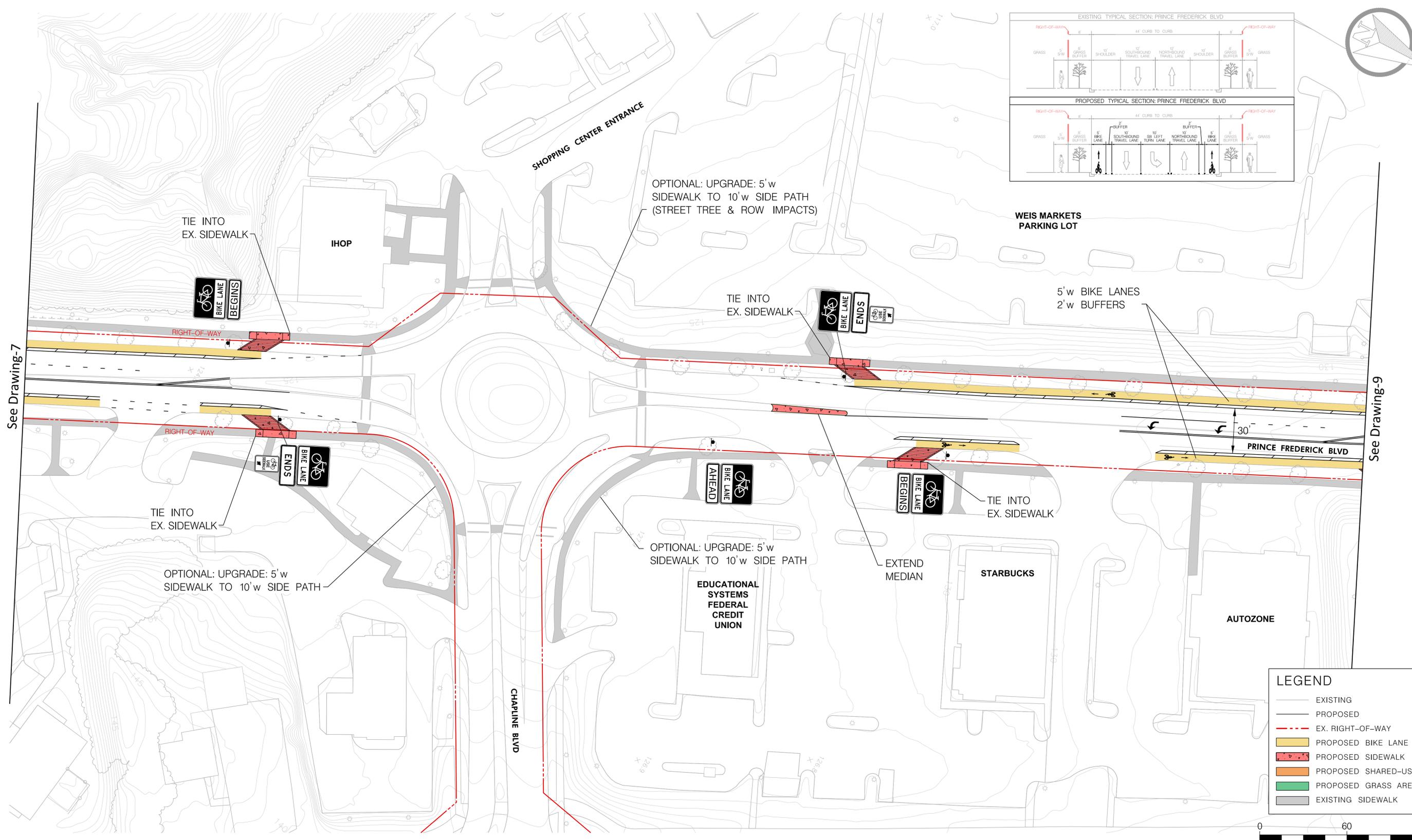
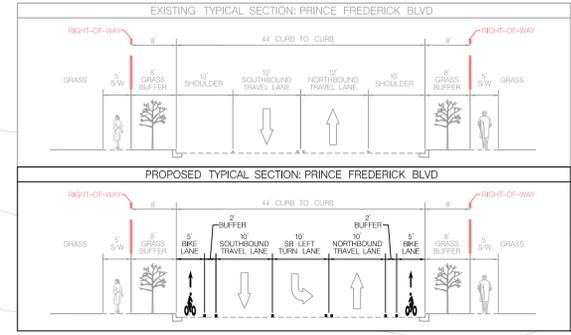
See Drawing-6

See Drawing-8

**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



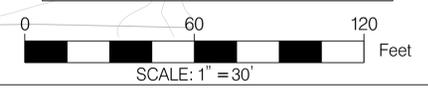


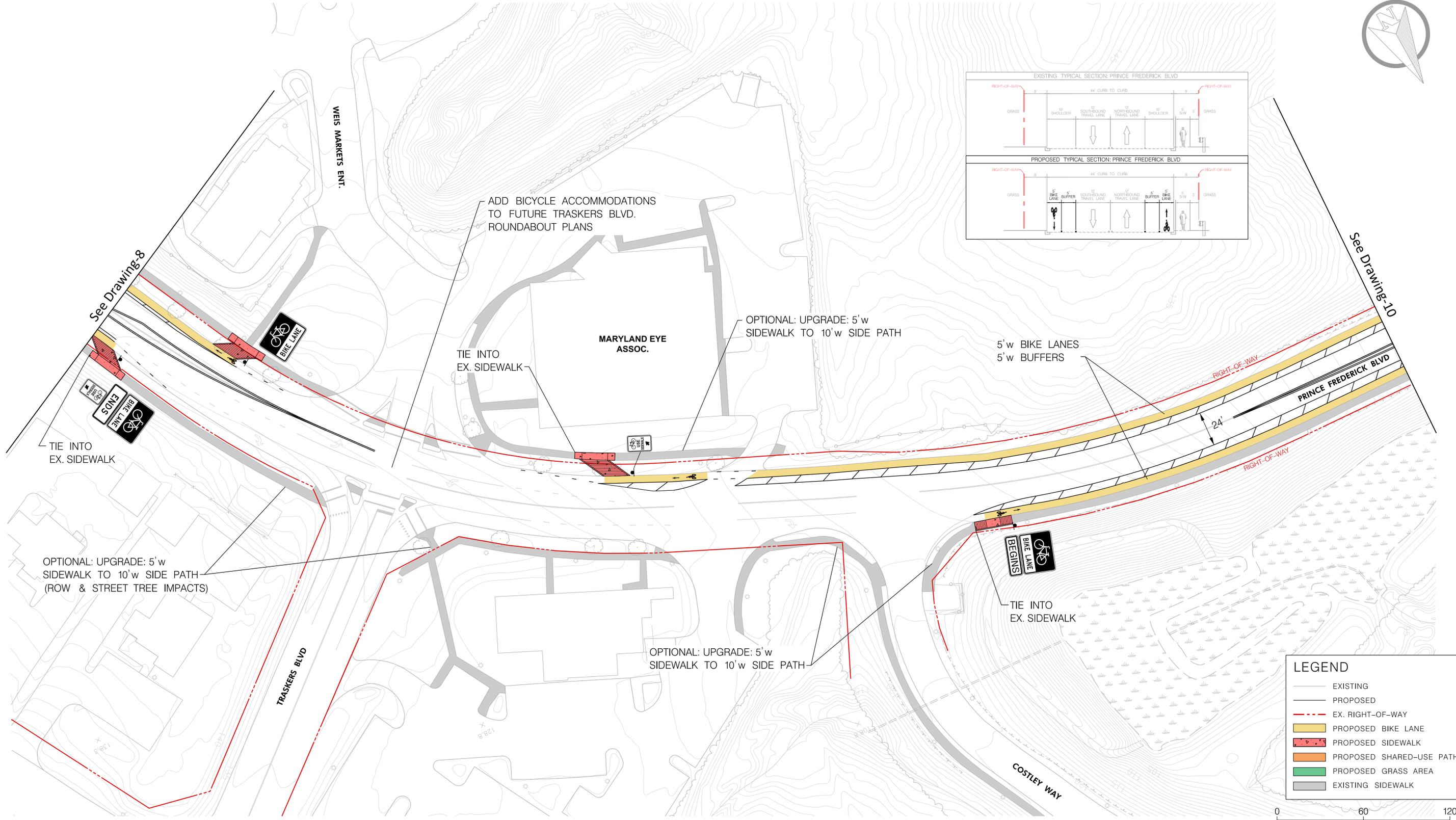
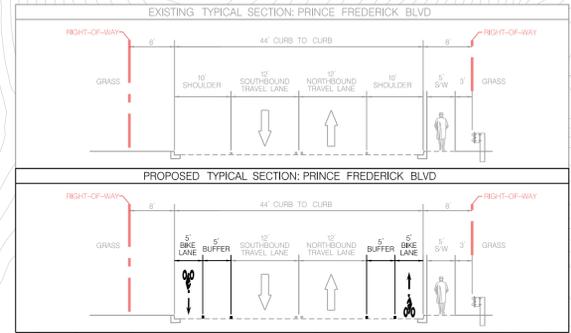
See Drawing-7

See Drawing-9

**LEGEND**

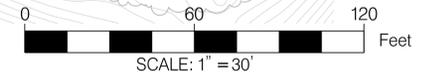
- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK

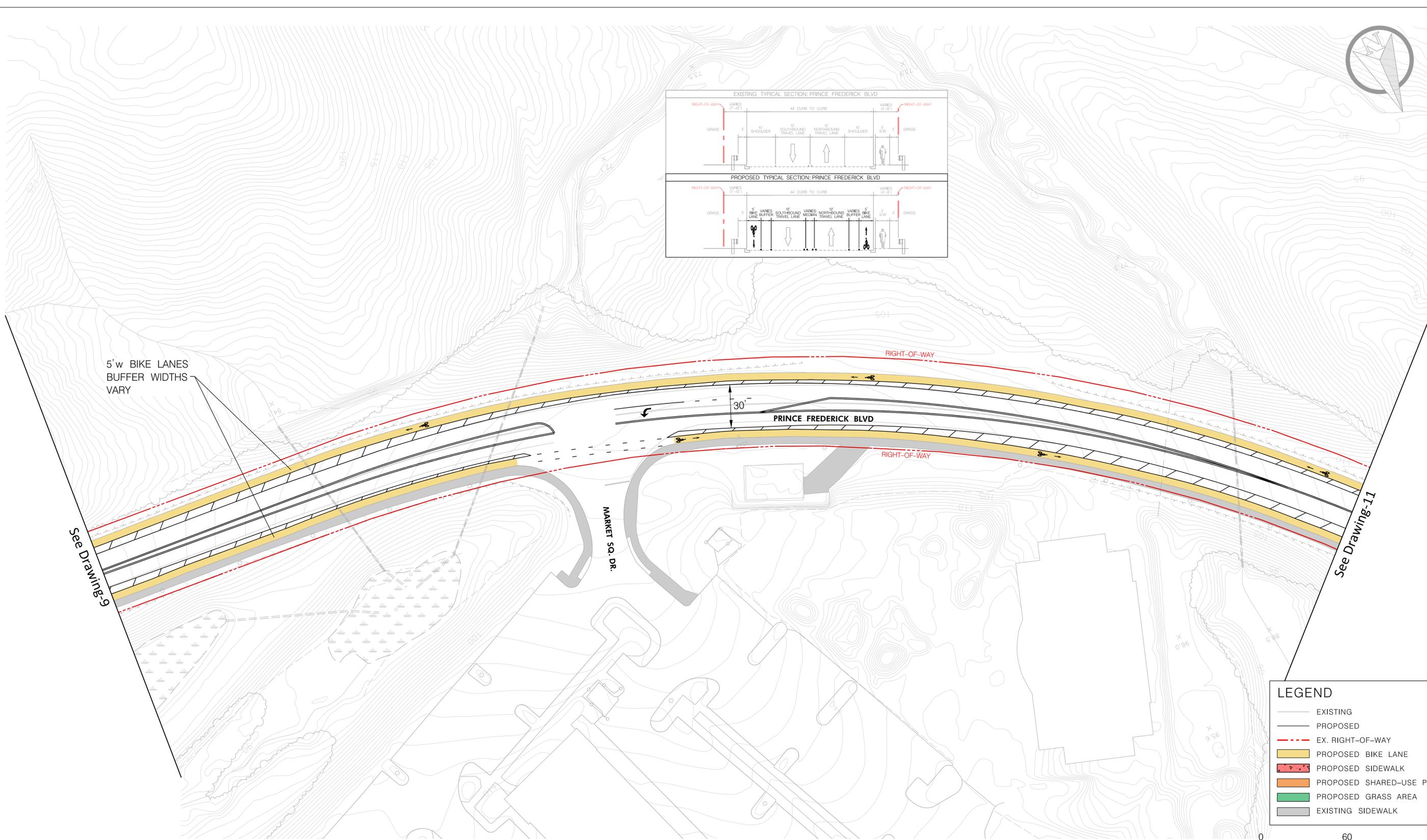
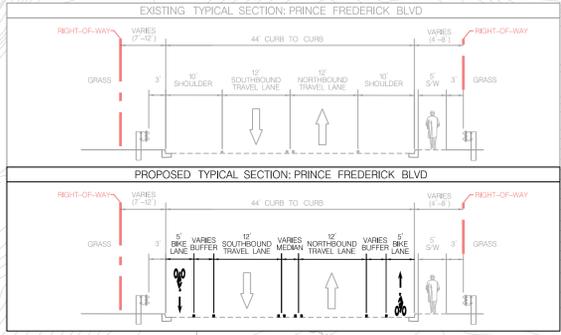




**LEGEND**

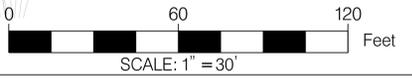
- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK

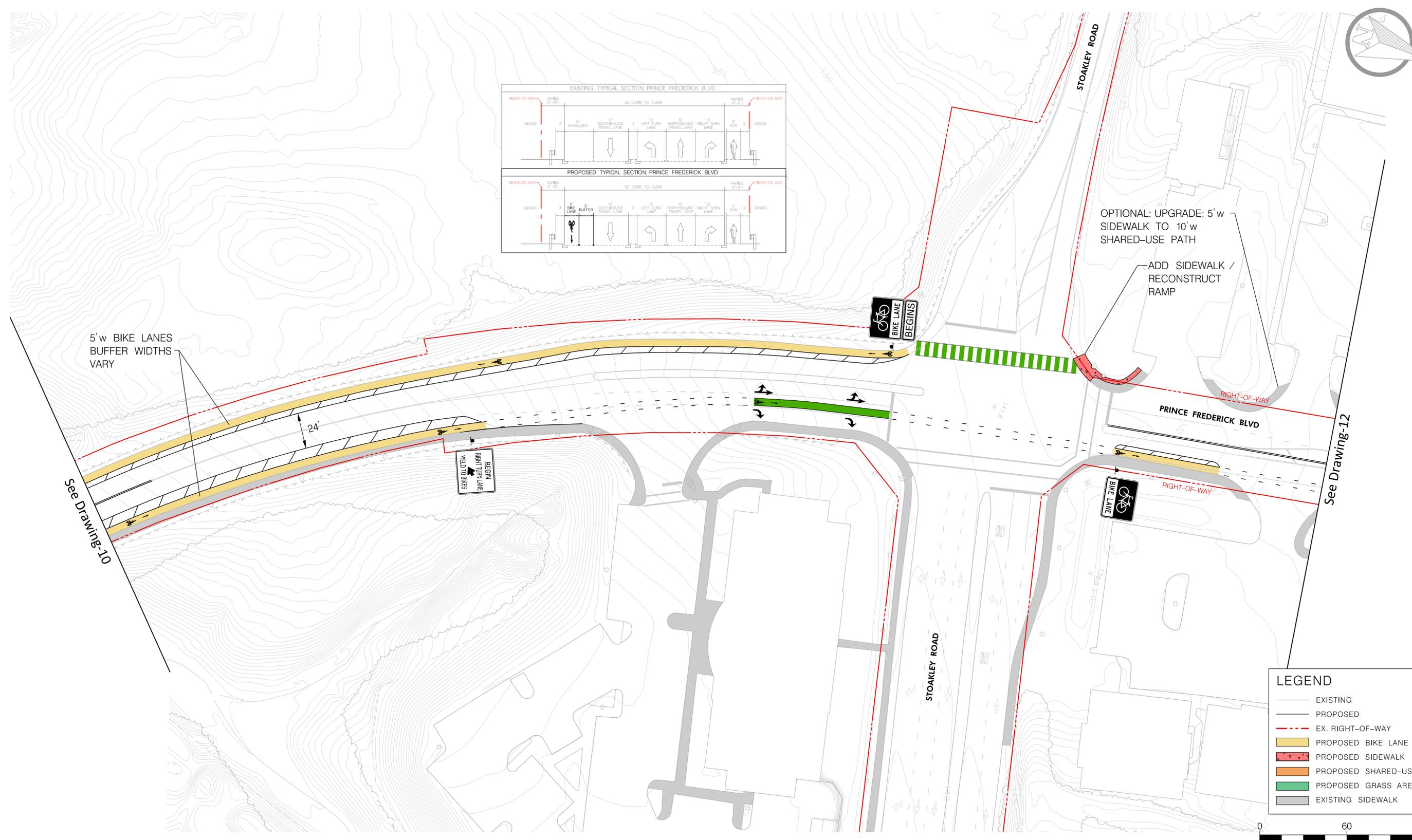
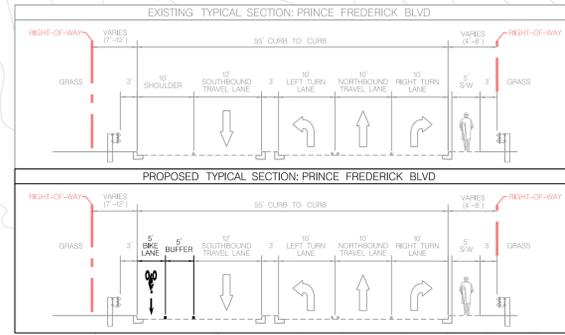
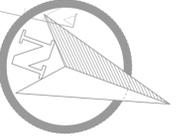




**LEGEND**

- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





5' w BIKE LANES  
BUFFER WIDTHS  
VARY

See Drawing-10

24'

BEGIN  
RIGHT TURN LANE  
YIELD TO BIKES

BIKE LANE  
BEGINS

BIKE LANE

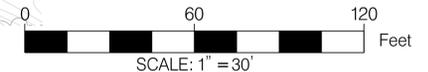
OPTIONAL: UPGRADE: 5' w  
SIDEWALK TO 10' w  
SHARED-USE PATH

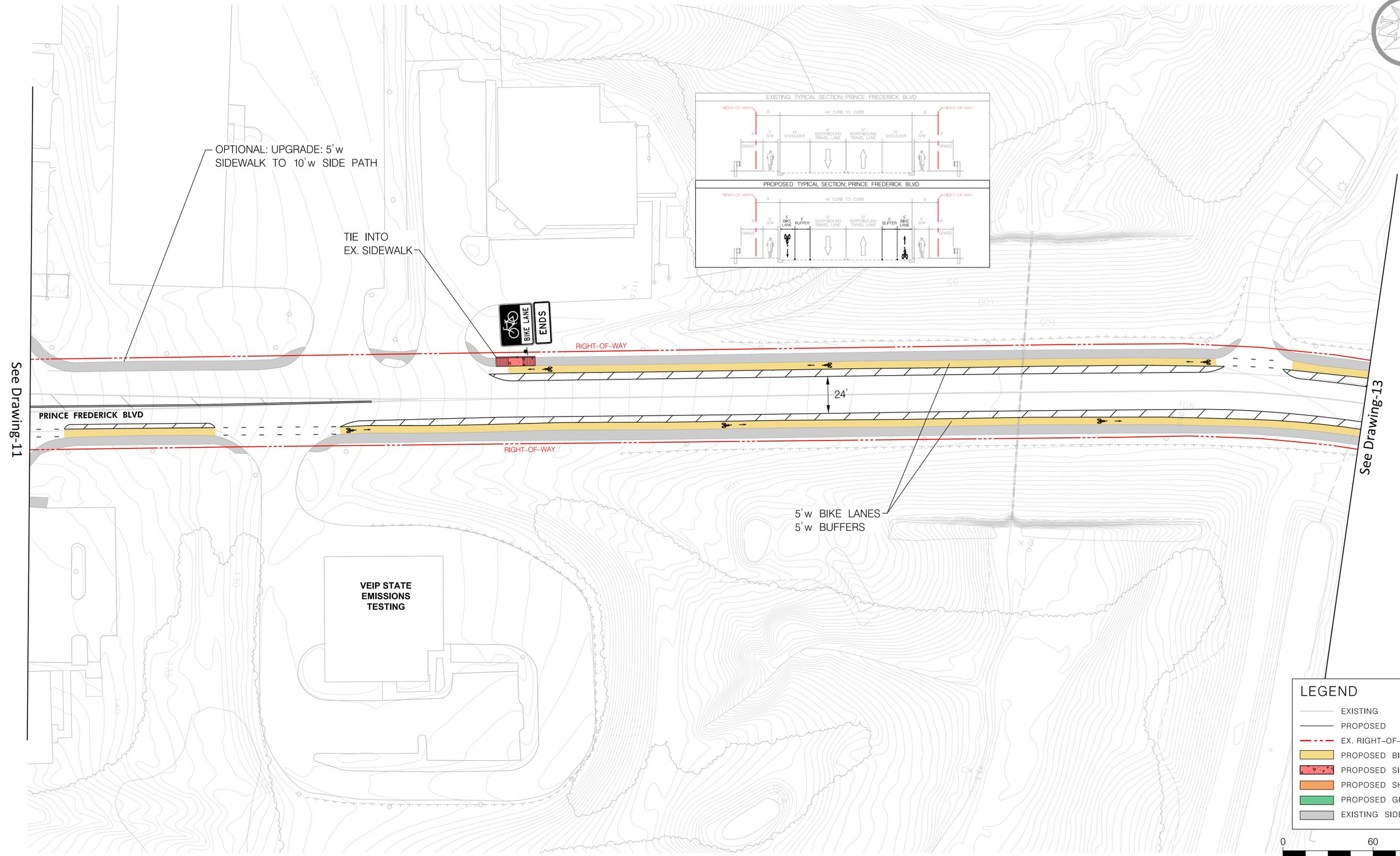
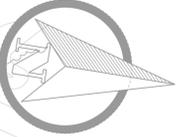
ADD SIDEWALK /  
RECONSTRUCT  
RAMP

See Drawing-12

**LEGEND**

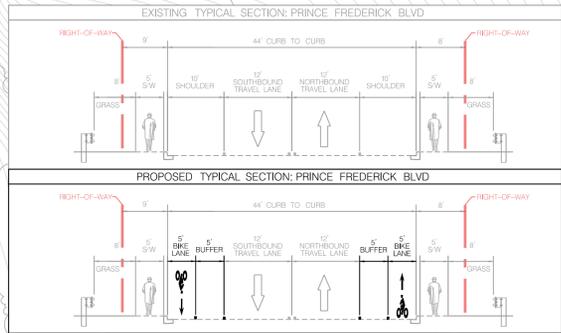
- EXISTING
- PROPOSED
- - - EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





OPTIONAL: UPGRADE: 5' w  
SIDEWALK TO 10' w SIDE PATH

TIE INTO  
EX. SIDEWALK



See Drawing-11

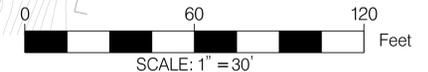
See Drawing-13

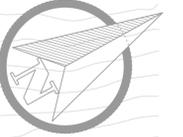
VEIP STATE  
EMISSIONS  
TESTING

5' w BIKE LANES  
5' w BUFFERS

**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK





EDWARD T. HALL  
AQUATIC CENTER

OPTIONAL: UPGRADE: 5' w  
SIDEWALK TO 10' w SIDE PATH

TIE INTO  
EX. SIDEWALK



TIE INTO  
EX. SIDEWALK

BAYSIDE  
PRE-OWNED  
SUPER CENTER

OPTIONAL: UPGRADE: 5' w  
SIDEWALK TO 10' w SIDE PATH

5' w BIKE LANES  
5' w BUFFERS

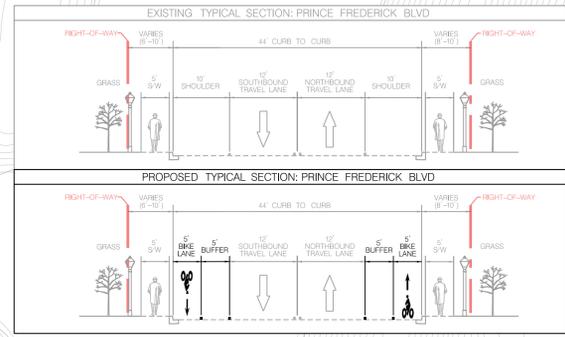
PRINCE FREDERICK BLVD

RIGHT-OF-WAY

RIGHT-OF-WAY

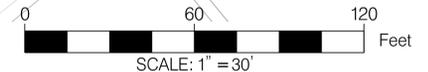
24'

See Drawing-12



**LEGEND**

- EXISTING
- PROPOSED
- EX. RIGHT-OF-WAY
- PROPOSED BIKE LANE
- PROPOSED SIDEWALK
- PROPOSED SHARED-USE PATH
- PROPOSED GRASS AREA
- EXISTING SIDEWALK



**CALVERT COUNTY**  
**Calvert County Bikeways Plan**  
 PRINCE FREDERICK BLVD.  
 April 1, 2022

**Mead & Hunt**  
 Drawing-13

Appendix C  
Cost Estimates

# PRINCE FREDERICK BLVD - BIKEWAY CONCEPT

ITEM	SHA CODE	CATEGORY & ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	AMOUNT
		<b>Category 1 - Preliminary</b>				
		0% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$0
		<b>Category 2 - Grading</b>				
201	201030	Class 1 Excavation	CY	\$30.00	165	\$4,950
202	210025	Removal of existing pavement	CY	\$35.00	5	\$175
203	210026	Removal of existing sidewalk	CY	\$100.00	4	\$400
					3	\$5,525
		<b>Category 3 - Drainage</b>				
		0% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$0.00
		<b>Category 4 - Structures</b>				
					CATEGORY TOTAL	\$0
		<b>Category 5 - Paving</b>				
501	500000	Green paint	SF	\$1.00	1,670	\$1,670
502	549001	5 inch white pavement marking paint lines	LF	\$0.30	28,987	\$8,696*
503	549003	5 inch yellow pavement marking paint lines	LF	\$0.30	0	\$0
504	585412	12 inch white reflective thermoplastic pavement marking lines	LF	\$2.00	450	\$900
505	585424	24 inch white reflective thermoplastic pavement marking lines	LF	\$7.00	50	\$350
506	585627	Preformed thermoplastic pavement marking legend and arrows	SF	\$25.00	275	\$6,875
507	504530	3 inch superpave asphalt mix for surface	TON	\$80.00	34	\$2,720
508	520111	4 inch graded aggregate base course	SY	\$9.00	2,722	\$24,498
					CATEGORY TOTAL	\$45,709
		<b>Category 6 - Shoulders</b>				
601	600000	Bike Ramp	EA	\$1,500.00	19	\$28,500
602	634300	Type A curb and gutter - 12 inch gutter pan 8 inch depth	LF	\$35.00	110	\$3,850
603	655105	5 inch concrete sidewalk	SF	\$7.00	210	\$1,470
					CATEGORY TOTAL	\$33,820
		<b>Category 7 - Landscaping</b>				
		5% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$4,253
		<b>Category 8 - Traffic</b>				
801	801130	Square perforated tubular steel sign post	EA	\$50.00	36.00	\$1,800
802	801135	Square perforated tubular steel anchor bases	EA	\$100.00	36.00	\$3,600
803	801605	Sheet Aluminum Signs	SF	\$50.00	240.00	\$12,000
						\$0
					CATEGORY TOTAL	\$17,400
					SUB TOTAL	\$106,707
				CONSTRUCTION CONTINGENCY	10%	\$10,671
				RIGHT-OF-WAY/EASEMENTS	N/A	
				TOTAL		\$117,377
				CONSTRUCTION SUBTOTAL		\$120,000
				DESIGN (5%)	\$	6,000
				ESTIMATED TOTAL	\$	126,000.00

\* = Cost incidental to base project  
 \*reduced by 25% to account for base project

# MD 402 (DARES BEACH RD) - BIKEWAY CONCEPT

ITEM	SHA CODE	CATEGORY & ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	AMOUNT
		<b>Category 1 - Preliminary</b>				
		35% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$267,897
		<b>Category 2 - Grading</b>				
201	201030	Class 1 Excavation	CY	\$30.00	990	\$29,700
202	202065	Common borrow	CY	\$30.00	3,490	\$104,700
203	210026	Removal of existing sidewalk	CY	\$100.00	58	\$5,800
					CATEGORY TOTAL	\$140,200
		<b>Category 3 - Drainage</b>				
		15% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$114,813.00
		<b>Category 4 - Structures</b>				
						\$0
					CATEGORY TOTAL	\$0
		<b>Category 5 - Paving</b>				
501	585412	12 inch white reflective thermoplastic pavement marking lines	LF	\$2.00	1,025	\$2,050
502	585424	24 inch white reflective thermoplastic pavement marking lines	LF	\$7.00	20	\$140
503	504530	3 inch superpave asphalt mix for surface	TON	\$80.00	741	\$59,280
504	520111	4 inch graded aggregate base course	SY	\$9.00	60,000	\$540,000
					CATEGORY TOTAL	\$601,470
		<b>Category 6 - Shoulders</b>				
601	600000	ADA Ramp	EA	\$1,250.00	19	\$23,750
					CATEGORY TOTAL	\$23,750
		<b>Category 7 - Landscaping</b>				
		12% of Categories 2, 4, 5, 6			CATEGORY TOTAL	\$91,850
		<b>Category 8 - Traffic</b>				
801	800000	Rapid Flash Beacon (Solar Powered)	LS	\$20,500.00	1.00	\$20,500
802	801130	Square perforated tubular steel sign post	EA	\$50.00	36.00	\$1,800
803	801135	Square perforated tubular steel anchor bases	EA	\$100.00	36.00	\$3,600
804	801605	Sheet Aluminum Signs	SF	\$50.00	220.00	\$11,000
					CATEGORY TOTAL	\$36,900
					SUB TOTAL	\$1,276,880
			CONTINGENCY		30%	\$383,064
			RIGHT-OF-WAY/EASEMENTS		N/A	
					TOTAL	\$1,659,945
					CONSTRUCTION TOTAL	\$1,660,000
			DESIGN (10%)		\$	166,000
			<b>ESTIMATED TOTAL</b>		<b>\$</b>	<b>1,826,000.00</b>

# TOWN CENTER BLVD., DUNKIRK AND APPLE WAY - BIKEWAY CONCEPT

ITEM	SHA CODE	CATEGORY & ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	AMOUNT
<b>Category 1 - Preliminary</b>						
35% of Categories 2, 4, 5, 6						CATEGORY TOTAL \$62,202
<b>Category 2 - Grading</b>						
201	202065	Common borrow	CY	\$30.00	92	\$2,760
202	210010	Removal of existing curb	LF	\$8.00	165	\$1,320
203	210025	Removal of existing pavement	CY	\$35.00	18	\$630
204	210026	Removal of existing sidewalk	CY	\$100.00	45	\$4,500
CATEGORY TOTAL						\$9,210
<b>Category 3 - Drainage</b>						
5% of Categories 2, 4, 5, 6						CATEGORY TOTAL \$8,886
<b>Category 4 - Structures</b>						
CATEGORY TOTAL						\$0
<b>Category 5 - Paving</b>						
501	549001	5 inch white pavement marking paint lines	LF	\$0.30	16,491	\$4,947
502	549003	5 inch yellow pavement marking paint lines	LF	\$0.30	12,810	\$3,843
503	549007	10 inch yellow pavement marking paint lines	LF	\$0.35	966	\$338
504	585412	12 inch white preformed thermoplastic pavement marking lines	LF	\$2.00	752	\$1,504
505	585424	24 inch white preformed thermoplastic pavement marking lines	LF	\$7.00	112	\$784
506	585627	Preformed thermoplastic pavement marking legend and arrows	SF	\$25.00	382	\$9,550
507	504530	3 inch superpave asphalt mix for surface	TON	\$80.00	135	\$10,800
508	520111	4 inch graded aggregate base course	SY	\$9.00	11,000	\$99,000
CATEGORY TOTAL						\$130,766
<b>Category 6 - Shoulders</b>						
601	600000	ADA Ramp	EA	\$1,500.00	11	\$16,500
602	634300	Type A curb and gutter - 12 inch gutter pan 8 inch depth	LF	\$35.00	335	\$11,725
603	655105	5 inch concrete sidewalk	SF	\$7.00	1,360	\$9,520
CATEGORY TOTAL						\$37,745
<b>Category 7 - Landscaping</b>						
5% of Categories 2, 4, 5, 6						CATEGORY TOTAL \$8,886
<b>Category 8 - Traffic</b>						
801	801130	Square perforated tubular steel sign post	EA	\$50.00	27.00	\$1,350
802	801135	Square perforated tubular steel anchor bases	EA	\$100.00	27.00	\$2,700
803	801605	Sheet Aluminum Signs	SF	\$50.00	180.00	\$9,000
CATEGORY TOTAL						\$13,050
SUB TOTAL						\$270,746
CONTINGENCY					15%	\$40,612
RIGHT-OF-WAY <sup>1</sup> /EASEMENTS			SF	\$20.00	645	\$12,900
TOTAL						\$311,358
CONSTRUCTION SUBTOTAL						\$320,000
DESIGN (15%) \$						48,000
<b>ESTIMATED TOTAL \$</b>						<b>368,000.00</b>

# FERRY LANDING RD/DUNKIRK PARK ACCESS - BIKEWAY CONCEPT

ITEM	SHA CODE	CATEGORY & ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	AMOUNT	
<b>Category 1 - Preliminary</b>							
35% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$21,987
<b>Category 2 - Grading</b>							
201	202065	Common borrow	CY	\$30.00	341	\$10,215	
						CATEGORY TOTAL	\$10,215
<b>Category 3 - Drainage</b>							
15% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$9,423.00
<b>Category 4 - Structures</b>							
						CATEGORY TOTAL	\$0
<b>Category 5 - Paving</b>							
501	585412	12 inch white reflective thermoplastic pavement marking lines	LF	\$2.00	85	\$170	
502	585627	Preformed thermoplastic pavement marking legend and arrows	SF	\$25.00	130	\$3,250	
503	504530	3 inch superpave asphalt mix for surface	TON	\$80.00	57	\$4,560	
504	520111	4 inch graded aggregate base course	SY	\$9.00	4,625	\$41,625	
						CATEGORY TOTAL	\$49,605
<b>Category 6 - Shoulders</b>							
601	600000	ADA Ramp	EA	\$1,500.00	2	\$3,000	
						CATEGORY TOTAL	\$3,000
<b>Category 7 - Landscaping</b>							
12% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$7,538
<b>Category 8 - Traffic</b>							
801	801130	Square perforated tubular steel sign post	EA	\$50.00	8.00	\$400	
802	801135	Square perforated tubular steel anchor bases	EA	\$100.00	8.00	\$800	
803	801605	Sheet Aluminum Signs	SF	\$50.00	54.00	\$2,700	
						CATEGORY TOTAL	\$3,900
						SUB TOTAL	\$105,668
					CONTINGENCY	50%	\$52,834
RIGHT-OF-WAY <sup>1</sup> /EASEMENTS			SF	\$20.00	1,770	\$35,400	
						TOTAL	\$158,503
						CONSTRUCTION TOTAL	\$160,000
						DESIGN (10%)	\$ 16,000
						<b>ESTIMATED TOTAL</b>	<b>\$176,000</b>

# WARD RD - BIKEWAY CONCEPT

ITEM	SHA CODE	CATEGORY & ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	AMOUNT	
<b>Category 1 - Preliminary</b>							
35% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$170,292
<b>Category 2 - Grading</b>							
201	201030	Class 1 Excavation	CY	\$30.00	861	\$25,830	
202	202065	Common borrow	CY	\$30.00	1,787	\$53,610	
203	210026	Removal of existing sidewalk	CY	\$100.00	55	\$5,500	
CATEGORY TOTAL						\$84,940	
<b>Category 3 - Drainage</b>							
15% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$72,982
<b>Category 4 - Structures</b>							
401	400000	Retaining wall	LS	\$40,000.00	1	\$40,000	
402	400000	Pedestrian bridge (30LF)	LS	\$45,000.00	1	\$45,000	
CATEGORY TOTAL						\$85,000	
<b>Category 5 - Paving</b>							
501	585412	12 inch white reflective thermoplastic pavement marking lines	LF	\$2.00	450	\$900	
502	585424	24 inch white reflective thermoplastic pavement marking lines	LF	\$7.00	30	\$210	
503	504530	3 inch superpave asphalt mix for surface	TON	\$80.00	373	\$29,840	
504	520111	4 inch graded aggregate base course	SY	\$9.00	30,212	\$271,908	
CATEGORY TOTAL						\$302,858	
<b>Category 6 - Shoulders</b>							
601	600000	ADA Ramp	EA	\$1,250.00	11	\$13,750	
CATEGORY TOTAL						\$13,750	
<b>Category 7 - Landscaping</b>							
12% of Categories 2, 4, 5, 6						CATEGORY TOTAL	\$58,386
<b>Category 8 - Traffic</b>							
801	801130	Square perforated tubular steel sign post	EA	\$50.00	18.00	\$900	
802	801135	Square perforated tubular steel anchor bases	EA	\$100.00	18.00	\$1,800	
803	801605	Sheet Aluminum Signs	SF	\$50.00	97.00	\$4,850	
CATEGORY TOTAL						\$7,550	
SUB TOTAL						\$795,758	
CONTINGENCY					40%	\$318,303	
RIGHT-OF-WAY <sup>1</sup> /EASEMENTS			SF	\$20.00	7,700	\$154,000	
TOTAL						\$1,114,061	
CONSTRUCTION TOTAL						\$1,120,000	
DESIGN (15%)						\$ 167,109	
<b>ESTIMATED TOTAL</b>						<b>\$ 1,287,109</b>	