

PROJECT DESCRIPTION

Improved pedestrian and bicycle connectivity is desired along Maryland (MD) 611 (Stephen Decatur Highway) in Worcester County, Maryland. This Shared Use Path Feasibility study specifically addresses the location from United States Route (US) 50 (Ocean Gateway) to Assateague Island. The general project study area is shown in Figure 1.

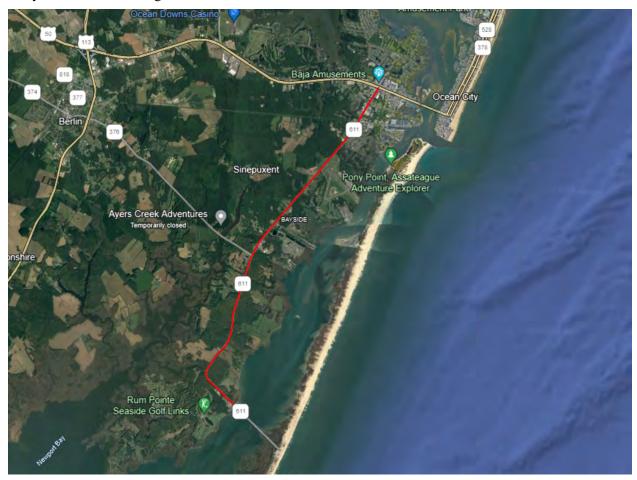


Figure 1: Project Study Area

EXISTING CONDITIONS

The State Highway Administration (SHA) classifies MD 611 as a Rural Minor Arterial. The posted speed limit along MD 611 between US 50 and Sunset Avenue is forty (40) miles per hour (mph). The posted speed limit along MD 611 between Sunset Avenue and the National Seashore Visitor Center is fifty (50) mph. Full movement signalized intersections are located at MD 611 and US 50, as well as MD 611 and Sunset Avenue. All other intersections utilize traffic signs for movement.

A Priority Funding Area (PFA) is defined as an existing community and place designed by local governments indicating where they want state investment to support future growth. For the state of

Page 2

Maryland, the Maryland Department of Planning (MDP) has established these areas and has indicated that the northern end of this project at US 50, MD 611 and Assateague Road falls under a PFA area and it is adjacent to a PFA Comment Area at MD 611 and Sea Oaks Lane and Snug Harbor Road. The following figures show the MDP Priority Funding maps with the highlighted yellow areas indicating a PFA.

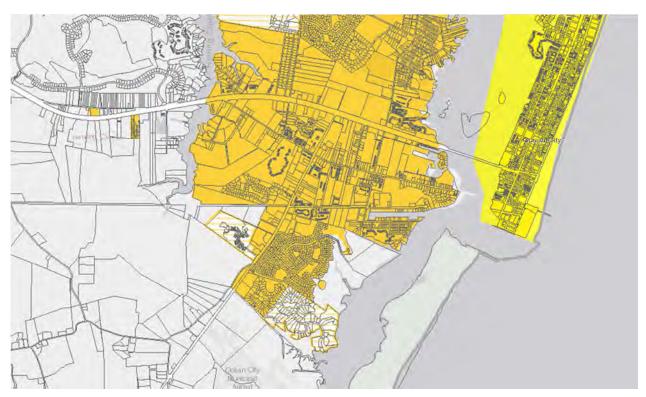


Figure 2: MDP Priority Funding Areas (PFA) - MD 611 from US 50 to Airport Road



Figure 3: MDP Priority Funding Areas (PFA) - MD 611 from Landings Boulevard to Assateague Road

The land use surrounding the intersection of US 50 and MD 611 is commercial with numerous businesses, shopping centers, hotels, and restaurants. MD 611 from US 50 to Assateague Island has a few businesses and numerous residential developments off MD 611. The anticipated bicycle and pedestrian users would be traveling from these points of interest to the various residential housing complexes and businesses along MD 611 or all the way south to Assateague Island. The existing shoulder along MD 611 frequently acts as a bike lane which is also used by pedestrians traveling along the roadway. Existing pedestrian facilities are mostly non-existent; however, some exist along US 50 to the intersection of US 50 and MD 611 at the northern end of the project limits and along MD 611 at the National Seashore Visitor Center at the southern end of the project limits. There are no marked or high visibility crossings of MD 611 from US 50 to the Visitor Center.

Table 1: Existing Conditions

Road	Configuration	Road Classification	Speed Limit	AADT (2022)	Existing Bike & Pedestrian Facilities	Lane Measurement (Feet)
MD 611 (Stephen Decatur Highway) NB	Through, Shoulder/Turning Lane	Rural Minor Arterial	50	9950	No	Through: $\sim 10\text{-}12$ Shoulder: $\sim 0\text{-}12$
MD 611 (Stephen Decatur Highway) SB	Through, Shoulder/Turning Lane	Rural Minor Arterial	50	7770	No	Through: ~ 10-12 Shoulder: ~ 0-12

Page 4

PROPOSED CONCEPT

This report presents a recommended concept for providing a shared-use path connecting the existing bicycle shared-use path at the National Seashore Visitor Center to the path at US 50 and MD 611 intersection. The proposed shared-use path will cross MD 611 at the National Seashore Visitor Center and run along the northbound side of MD 611 until it reaches US 50. In accordance with the American Association of State Highway Transportation Officials (AASHTO) - Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004), the path will be 10 feet wide (minimum 8 feet in constrained areas) and will be 5 feet from the proposed back of curb or 15 feet from the existing edge of roadway where no curb and gutter is present. The path will traverse around most above ground utilities and structures. Drainage swales that the proposed path will cover are required to be removed or relocated. Curb and gutter will be placed along a portion of MD 611. It is recommended that underground utilities be investigated to ensure they will not be affected by the path construction. American with Disabilities (ADA) compliant ramps will be installed at all intersections and necessary driveway entrances. Crosswalk pavement markings will be implemented at all intersections and driveway entrances. It is recommended to investigate leading pedestrian signals (LPS) for the signalized intersections so that the pedestrians are more visible and are given amble time to cross the intersections. All driveway entrances that are affected by the path will be paved with either asphalt or concrete. Traffic sign relocation and tree removal is anticipated.

Please see Appendix A for the proposed alignment.

COST ESTIMATES

Costs for the proposed concept are primarily generated by the shared-use path construction. The work also includes ADA ramp improvements with Detectable Warning Systems (DWS) installation and the placement of pavement marking such as crosswalks and stop bars. Tree removal, sign relocation and sign installation are anticipated, but were not quantified in this report. A proposed use of boardwalk path instead of asphalt in specific areas was also quantified which resulted in two different estimates, one with boardwalk incorporated and one without boardwalk. The proposed sites for the boardwalk are subject to change. Given the scope, minor changes to the roadway, and anticipated drainage efforts, the total cost for the concept without boardwalk is expected to be just over \$6.2 million after factoring in contingency and overhead. This does not explicitly include any right-of-way (ROW) acquisition that may be required or utility relocation. Given the scope, minor changes to the roadway, and anticipated drainage efforts, the total cost for the concept with boardwalk is expected to be just over \$11.38 million after factoring in contingency and overhead. This does not explicitly include any right-of-way (ROW) acquisition that may be required or utility relocation.

Please see Appendix B for the detailed cost estimate.

PEDESTRIAN / ADA / BICYCLE

There is an overall lack of pedestrian and bicycle infrastructure throughout the project study area. Pedestrians are forced to walk along the road or on the shoulder when present since there is no sidewalk infrastructure except for the intersection of US 50 and MD 611 and within the National Seashore Visitor Center property. Additionally, there is no crossing infrastructure for pedestrians to safely cross MD 611 at any point within the study area. There are bicycle symbol pavement markings periodically along the shoulders on both sides of MD 611 for cyclists, however, the shoulders are not consistent, and the frequency of the markings are limited. The proposed concept will provide an off-road shared-use path trail with crosswalks and infrastructure for pedestrians and cyclists to safely navigate MD 611 and cross to the National Seashore Visitor Center.

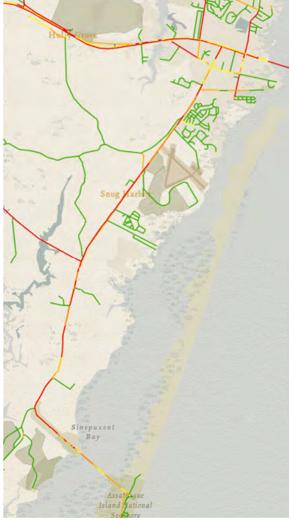


Figure 4: MDOT SHA Bicycle LTS

In March 2022, the Maryland Department of Transportation released the Bicycle Level of Traffic Stress (LTS) map. MD 611 is categorized as Level 4 for the majority of the project study area (the red portions in Figure 4). Level 4 has a target audience of "strong and fearless" and a bicycle facility type of "no bike facility or bike lane on a major roadway".

At the intersection of US 50 and MD 611, there are ADA accessible ramps, crosswalks, and pedestrian refuge islands on the eastern portion of the intersection. The southern crosswalk connects to a path that continues east and connects the points of interest while the northern pedestrian ramp connects to a sidewalk that continues both east and west.

The proposed concept seeks to provide the highest level of comfort and safety for cyclists, which is achieved by limiting the number of road crossings and keeping the path on the anticipated side of road. However, due to the width requirements of a shared-use path there will be the need for ROW easements and possible movement of utilities.

The existing site conditions along MD 611 were determined based on support materials including field observations, aerial photos, right-of-way plats, and SHA's Highway Location Reference. Note that no surveys were completed for this study and would need to be conducted to support further design efforts.

WETLAND AND STREAM IMPACTS

There are 12 United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) / Maryland Department of Natural Resources (MDNR) wetlands within the proposed shared-use path or within proximity to it. In addition to the wetlands and watercourse anticipated impacts, the project falls within the Critical Area and will require Critical Area Commission approval. While MDOT SHA has an existing Memorandum of Understanding (MOU), it is recommended that early coordination with the Critical Area Commission is undertaken as a full commission review may be required.

STORMWATER MANAGEMENT CONCEPT

The SWM study area is 65.19 acres, with an initial imperviousness of 61%; therefore, the project is classified as Redevelopment. A total of 8.98 acres of new impervious area will be added within the proposed MDOT SHA right-of-way, while no impervious area will be removed. The impervious area requiring treatment (IART) for the project is 9.31 acres. Environmental Site Design (ESD) will be provided to the maximum extent practicable. The soil types on the project site are of predominantly C (~45%) and D (~55%) hydrologic soil groups. Existing land uses were determined to be Impervious Area and a mixture of Urban Open Space (Good Condition), and Cultivated Fallow with Crop Residue (Good Condition). Proposed land uses will be Impervious Area and Urban Open Space (Good Condition). The computed ESD volume (ESDv) required for treatment is 66,890 CF with a target Pe of 1.8 inches. The required storage for 2-year flood (Qp2) management is estimated at 19,853 CF. 10-year flood (Qp10) management is not required for Worcester County.

SWM along the open sections of roadway will be provided via up to fifty-three (53) roadside grass swales. Grass swales proposed along the west side of MD 611 will provide treatment for existing MDOT SHA impervious area to compensate for new impervious areas elsewhere on the project site. Grass swales proposed along the east side of MD 611 will provide treatment for both existing and new MDOT SHA impervious area.

The fifty-three (53) proposed grass swales will provide treatment for 13.74 acres of MDOT SHA impervious area, which exceeds the IART of 9.31 acres by 4.43 acres. To meet IART, it was necessary to set the proposed paved shared-use path draining to the grass swales that are proposed along the east side of MD 611. The total ESD volume captured and treated by the fifty-three (53) proposed ESD facilities is 70,064 CF, which meets the ESDv target (66,890 CF) for the site.

Although site SWM requirements are met by the concept SWM strategy, it is likely that variance will be needed on the Point-of-Investigation level, which will be determined in future design stages. Additional variances from SWM quality and/or quantity control requirements may be required if future site investigations discover conditions which limit the application or sizing of the concept ESD facilities. These items include existing drainage system elevation and condition, existing utilities, wetland impacts, etc.

Please see Appendix C for the proposed stormwater management locations.

RIGHT-OF-WAY

The right-of-way (ROW) lines that have been provided in Appendix A in the concept drawing and have been estimated based on plats and MERLIN Online (Maryland's Environmental Resource and Land Information Network) and will need to be verified upon further design development. Along much of MD 611 the ROW line is located behind the drainage ditches that are a few feet behind the edge of roadway. The majority of the proposed concept will fit within the existing ROW; however, it is anticipated that the total amount of new MDOT SHA right-of-way dedication required to construct all proposed roadway

Page 7

improvements and associated SWM facilities are approximately 19.56 acres.

STRUCTURES

The proposed concept does not propose any new structures subject to MDOT SHA Office of Structures (OOS) review and there are no MDOT SHA structures within the study area.

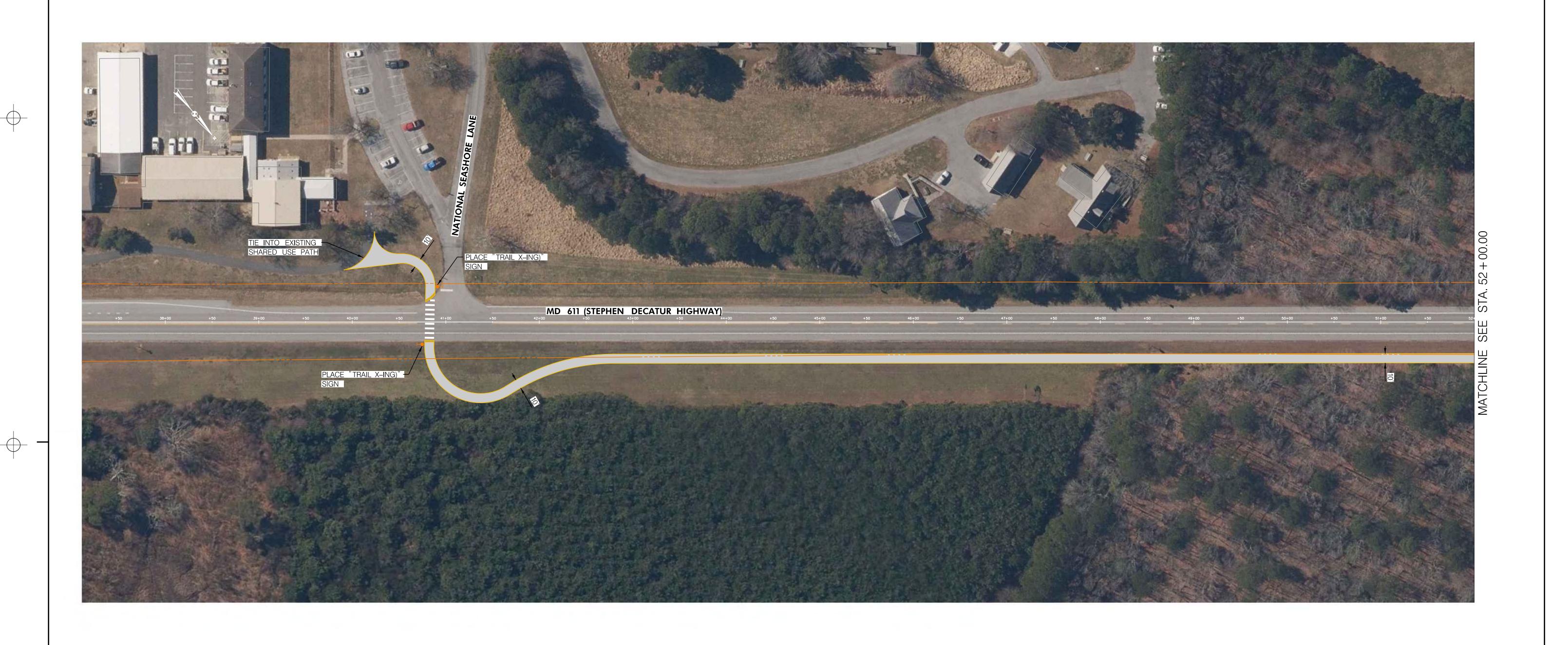
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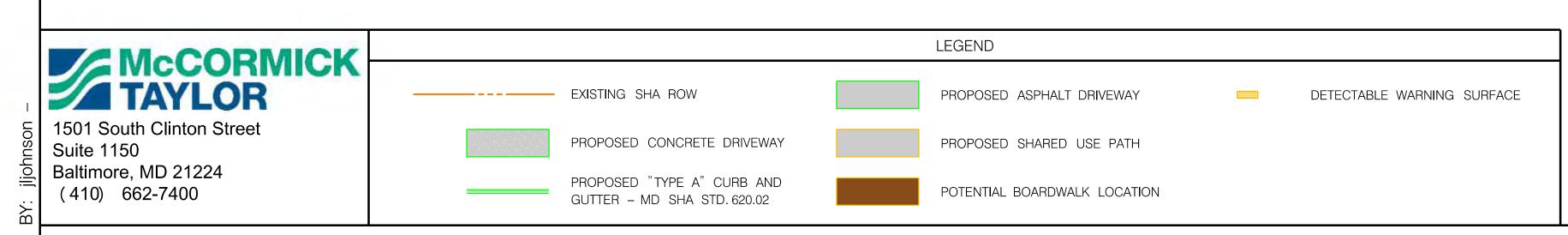
There are existing utilities poles located along MD 611 which periodically switch from one side of the street to the other. It is not anticipated that the poles will need to be moved to account for the proposed shared use path, ADA ramps, and crosswalks. Potential impacts to existing underground utilities (gas lines, water lines, sanitary sewer lines, etc.) were not specifically evaluated as part of this study but gas lines are present in areas where the proposed path is located. While significant impacts to underground utilities are not anticipated, appropriate utility assessment of existing service connections and other subsurface utility infrastructure will need to be completed. Utility surface feature modification for the proposed concept will be limited to only adjustments necessary for the safe bicycle and pedestrian operations through the corridor using the existing roadway geometry and lane configurations.

DESIGN CONSIDERATIONS

There are several options that can be explored to help further understand what design elements are needed to ensure pedestrians are safe and guided properly. It is recommended to investigate leading pedestrian signals (LPS) for the signalized intersections along MD 611 so that pedestrian users are highly visible and are given amble time to cross and to conduct a traffic study to determine signal optimization and the need for traffic signs along the shared use path. Due to the placement of the proposed shared-use path, the location of stop bars at multiple intersections would need to be relocated and should be evaluated. The proposed shared use path is currently placed over many existing drainage swales along MD 611 which is the reason for the installation of curb and gutter for stormwater drainage. An investigation should be held to determine if a boardwalk path design could be utilized to allow water to drain through the path to the swales, or if the swales could be filled or relocated.

APPENDIX A: PROPOSED ALIGNMENT







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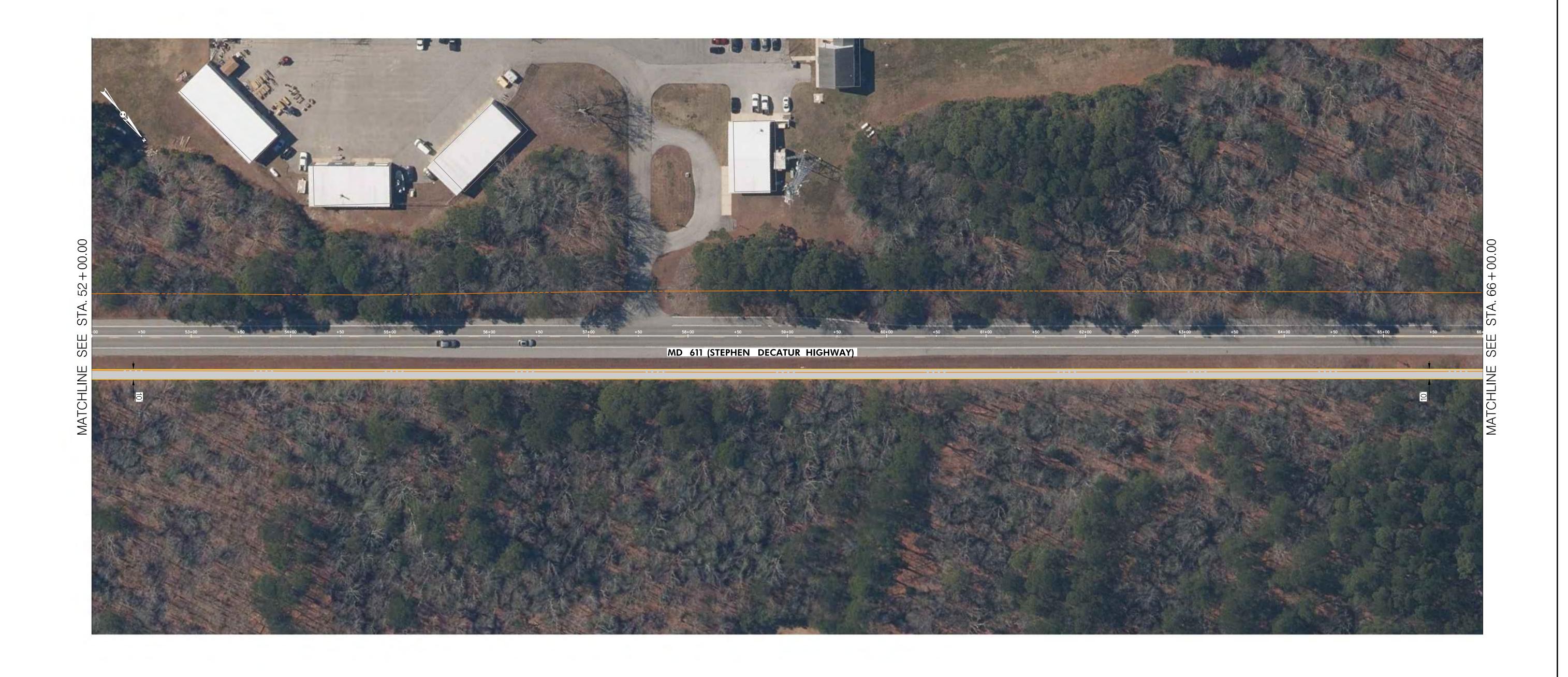
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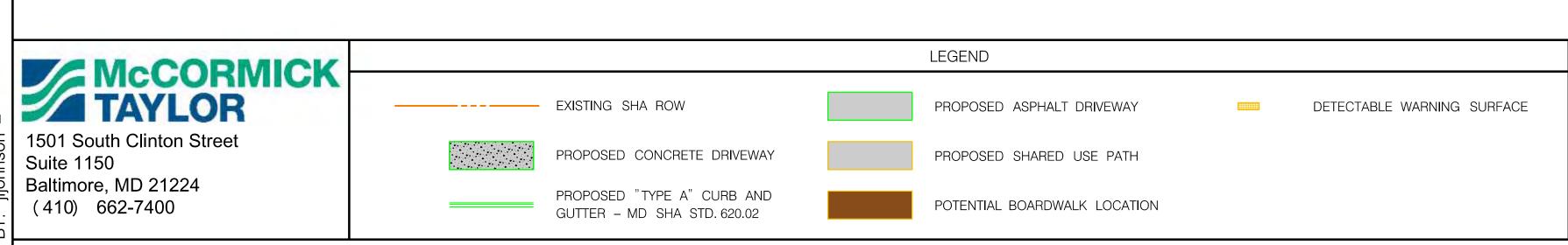
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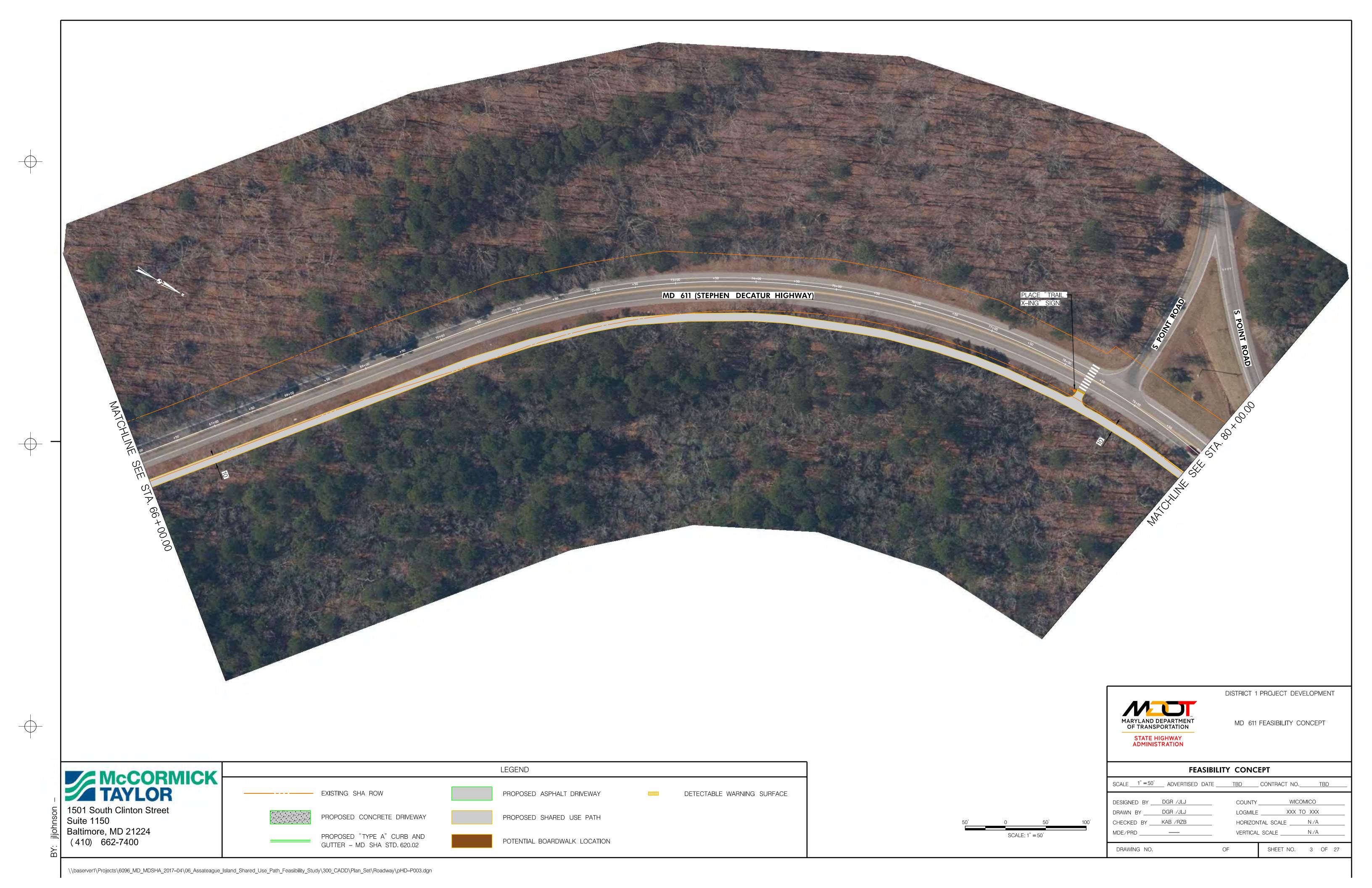
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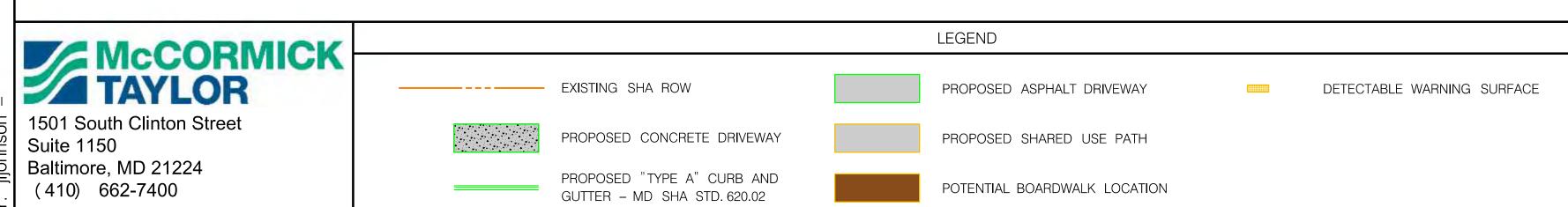
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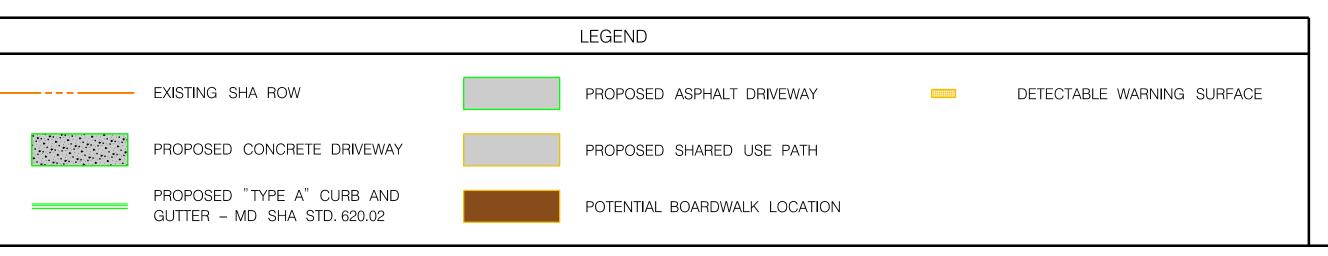
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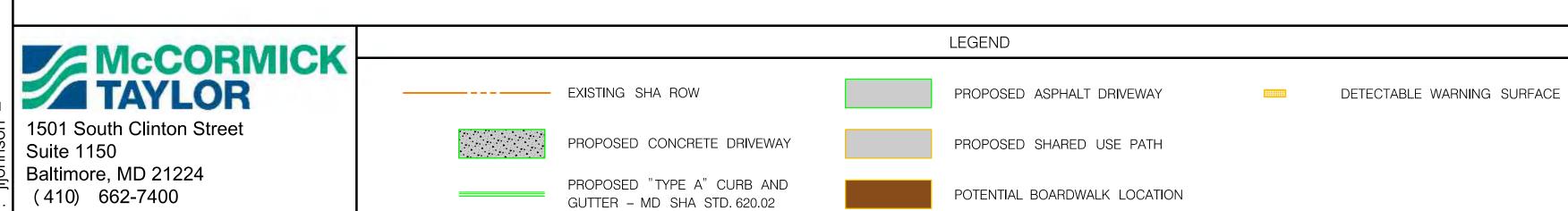
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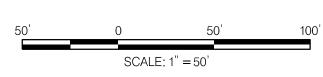
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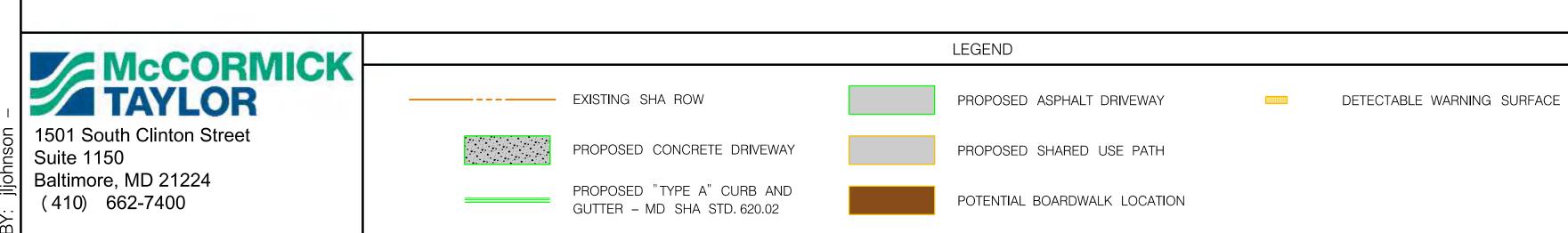
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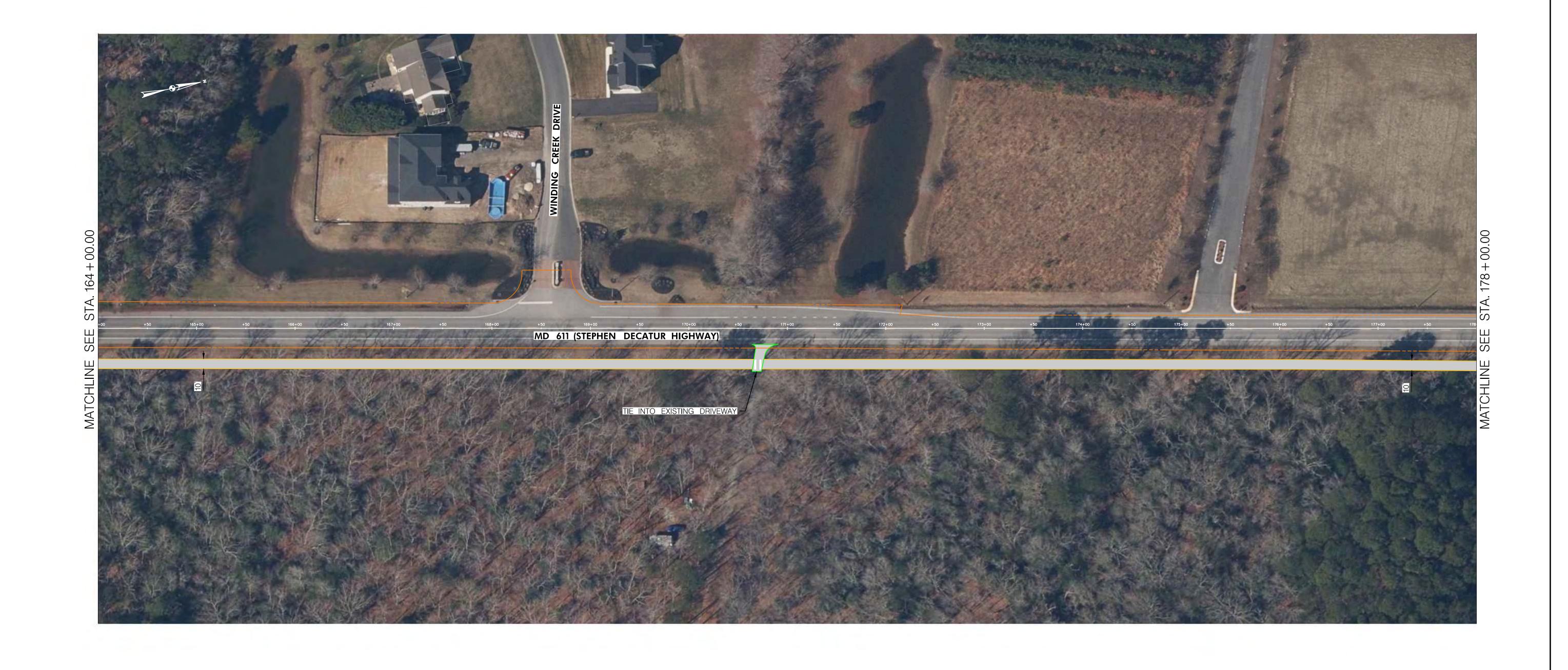
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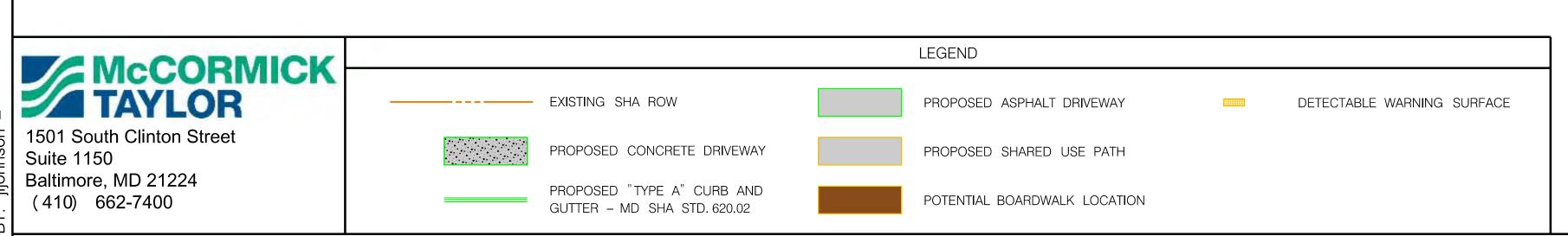
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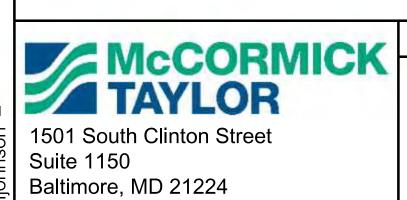
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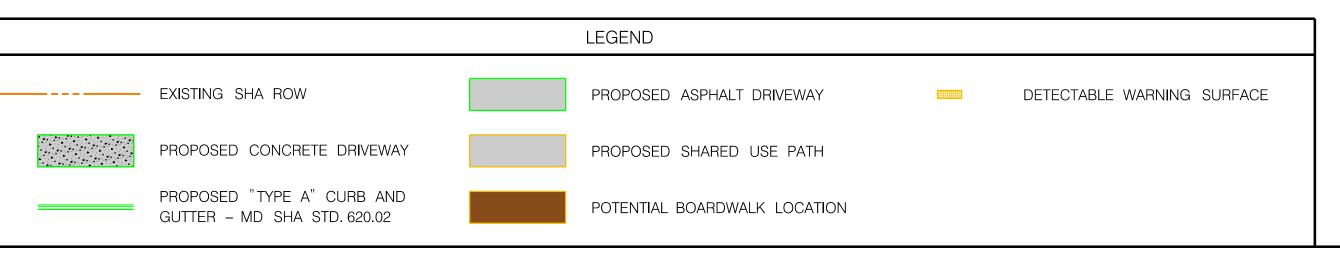
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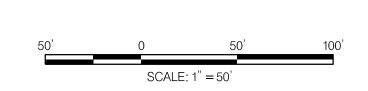
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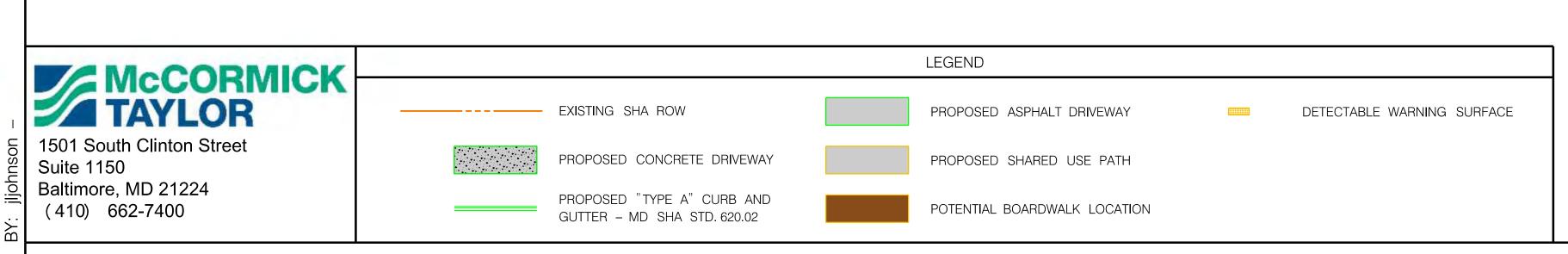
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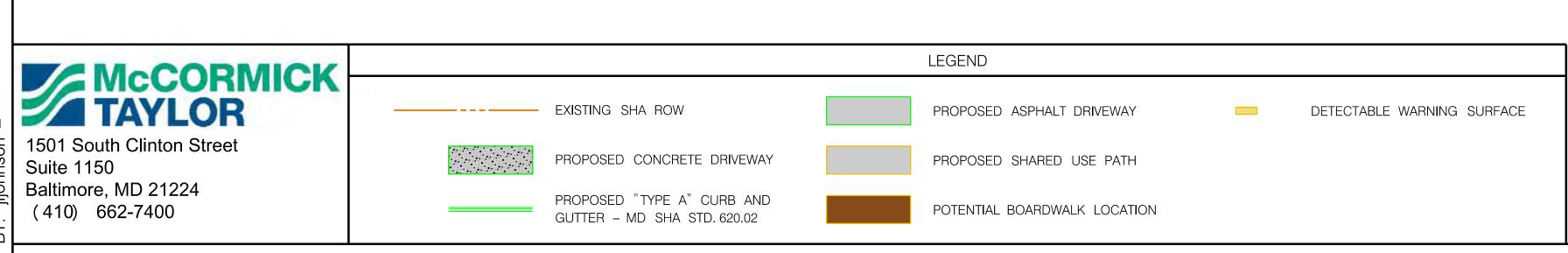
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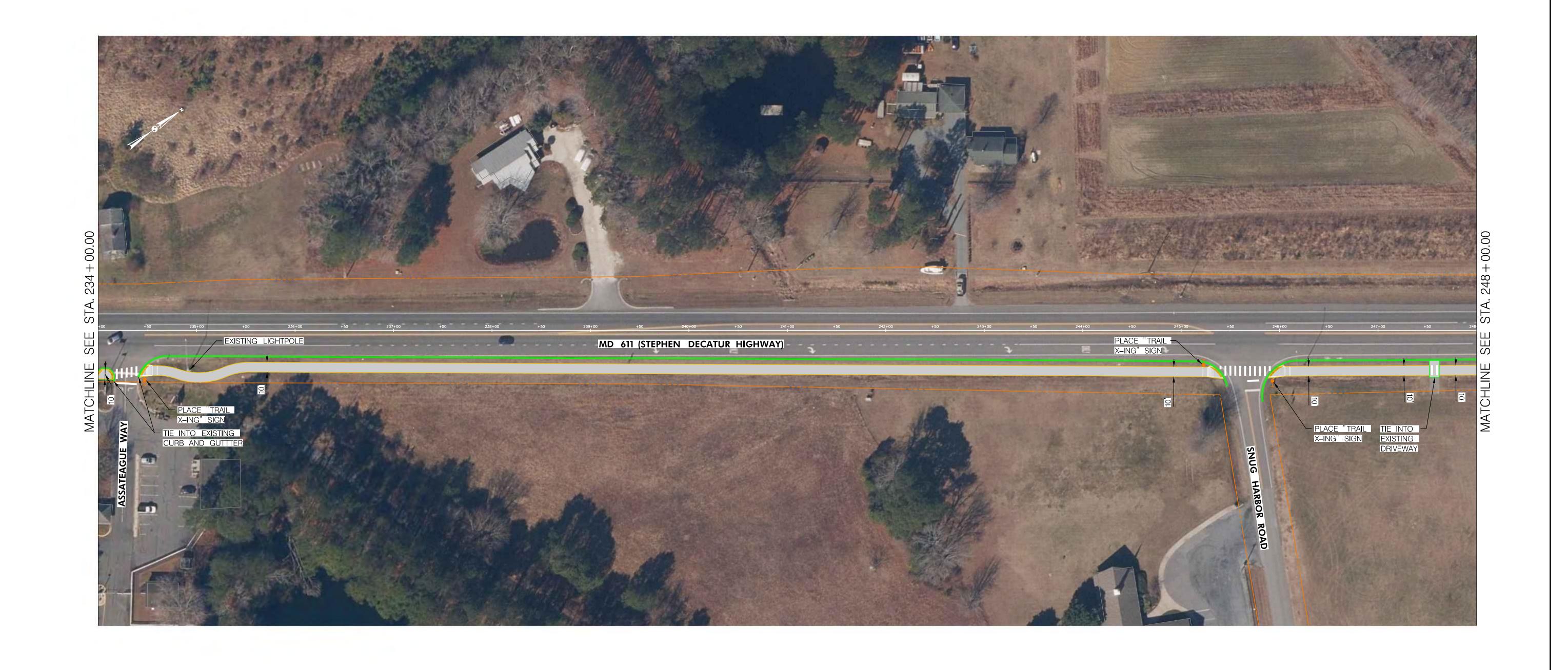
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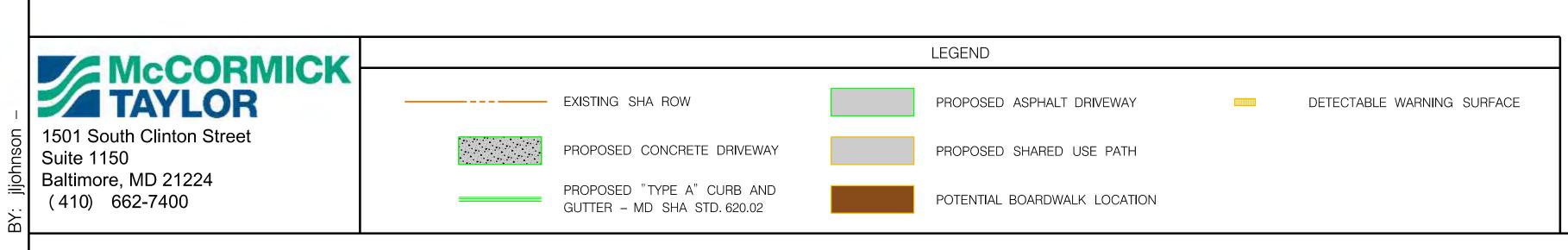
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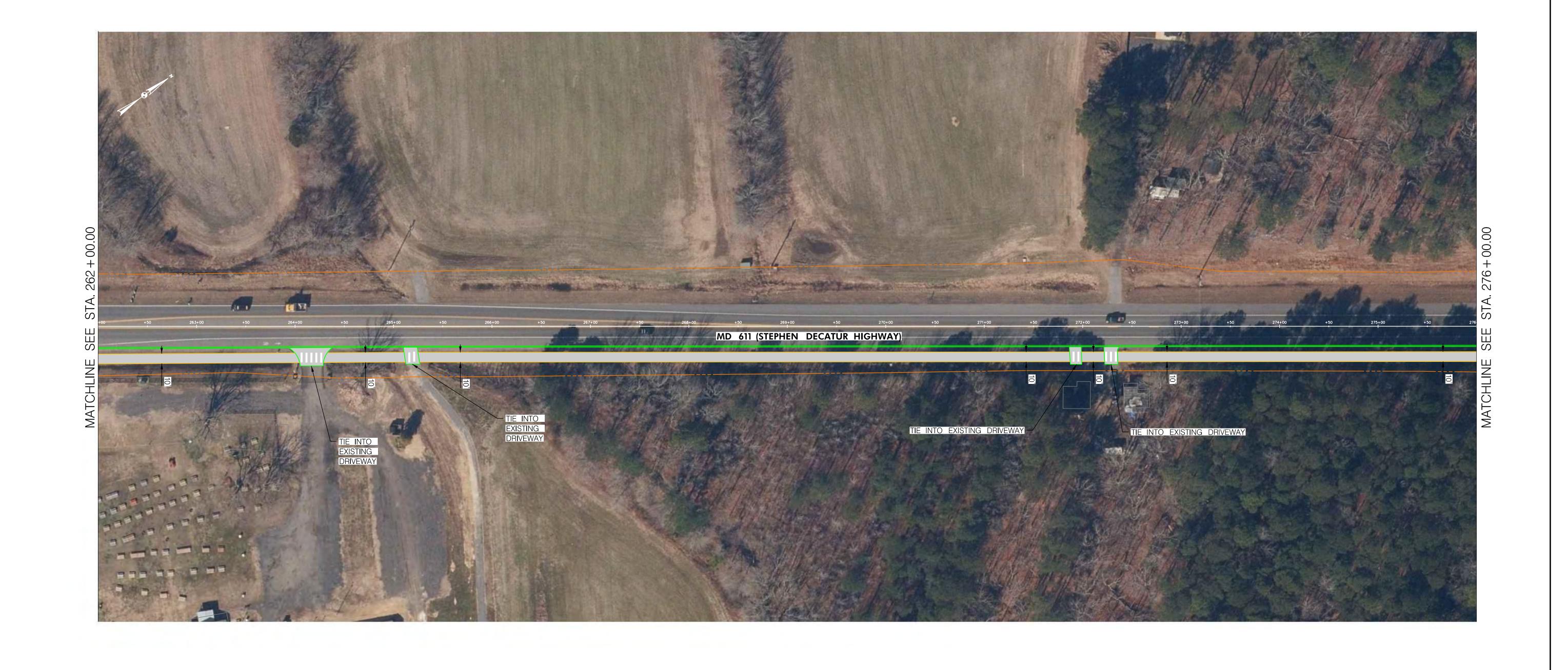
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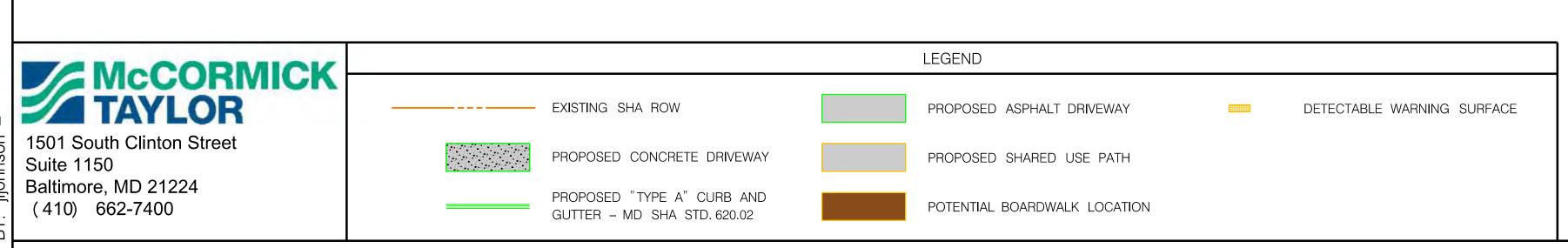
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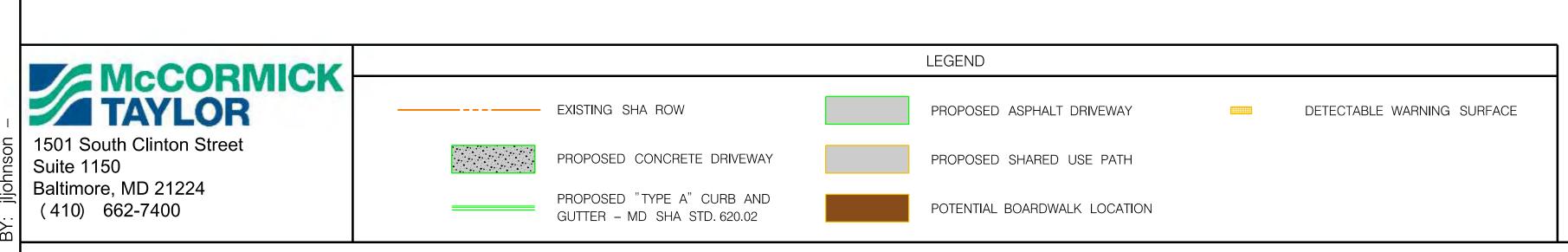
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DISTRICT 1 PROJECT DEVELOPMENT MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

MD 611 FEASIBILITY CONCEPT

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DRAWING NO.		OF	SHEET NO. 18 OF 27

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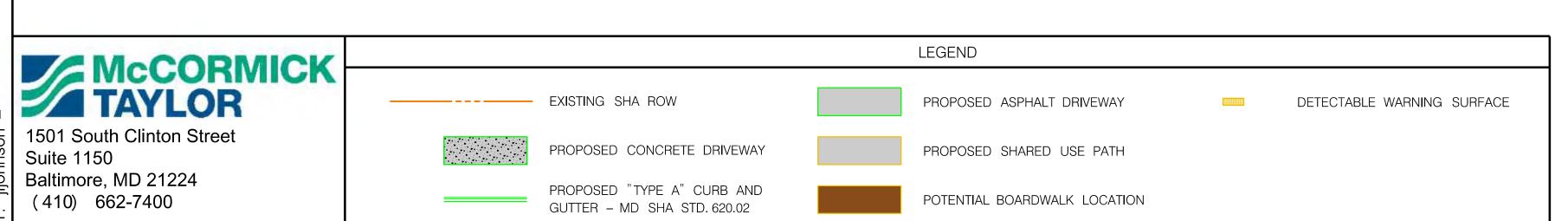
DISTRICT 1 PROJECT DEVELOPMENT

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MD 611 FEASIBILITY CONCEPT

	FEASIBIL	ITY CONC	EPT	
SCALE 1" = 50'	ADVERTISED DATE _	TBD	CONTRACT NO	TBD
DRAWN BY	DGR /JLJ DGR /JLJ KAB /RZB	LOGMILE HORIZON	WICOI XXX TO XTAL SCALE SCALE	N/A
DRAWING NO.		OF	SHEET NO.	19 OF 27





DRAWING NO.

DISTRICT 1 PROJECT DEVELOPMENT

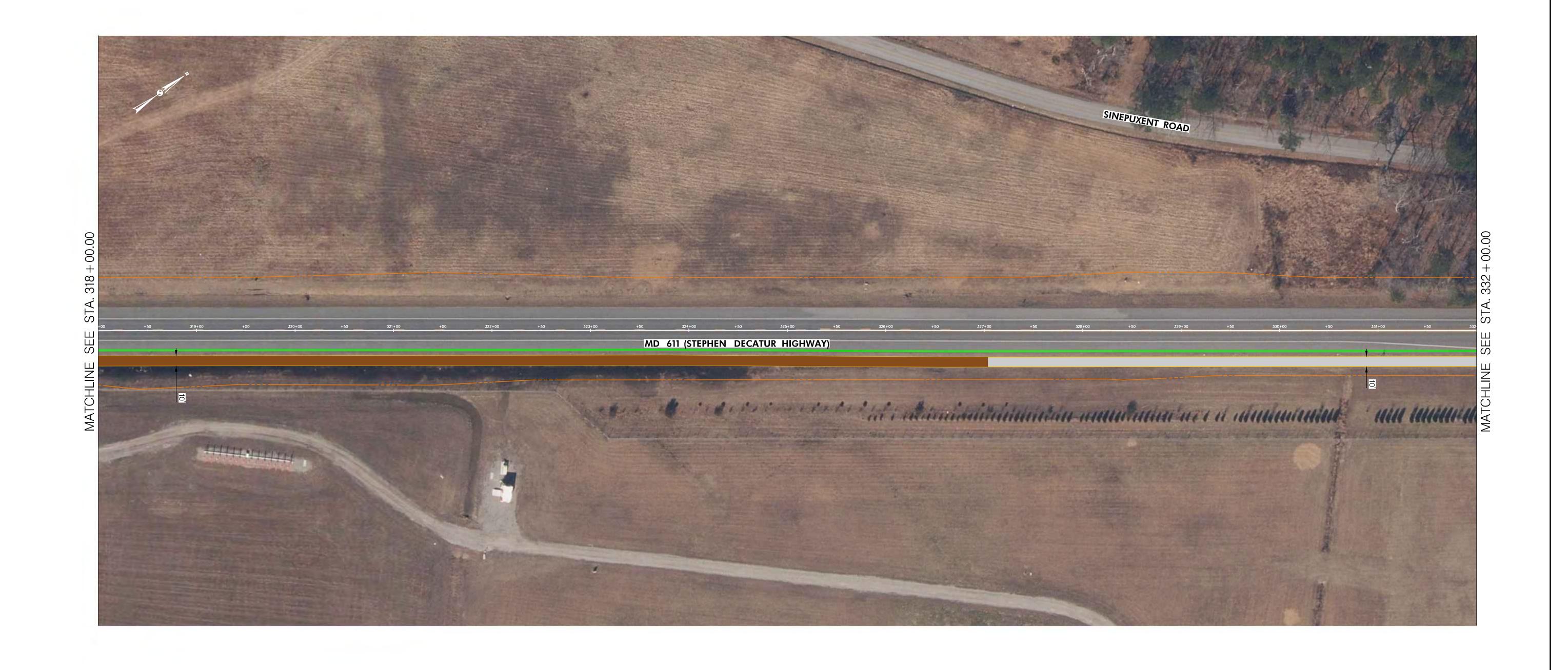
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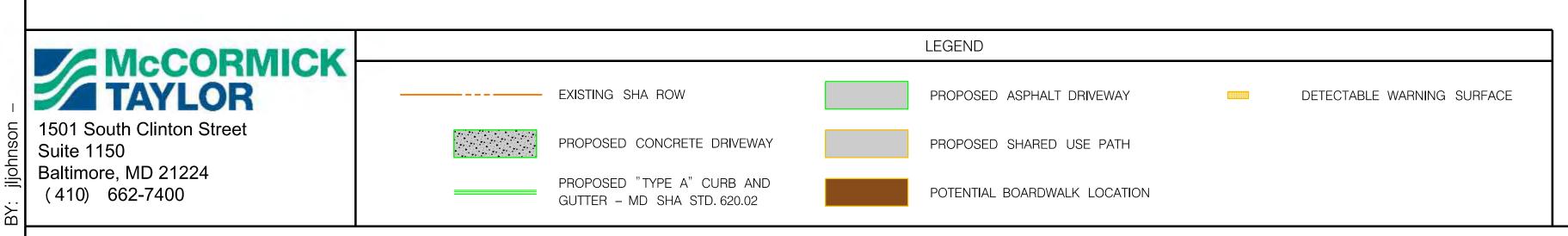
SHEET NO. 20 OF 27

	FEASIBILITY	CONCEPT
SCALE 1" = 50'	ADVERTISED DATE	TBD CONTRACT NO. TBD
CHECKED BY	DGR /JLJ	COUNTY WICOMICO LOGMILE XXX TO XXX HORIZONTAL SCALE N/A VERTICAL SCALE N/A

BY: iljohnson –

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DISTRICT 1 PROJECT DEVELOPMENT

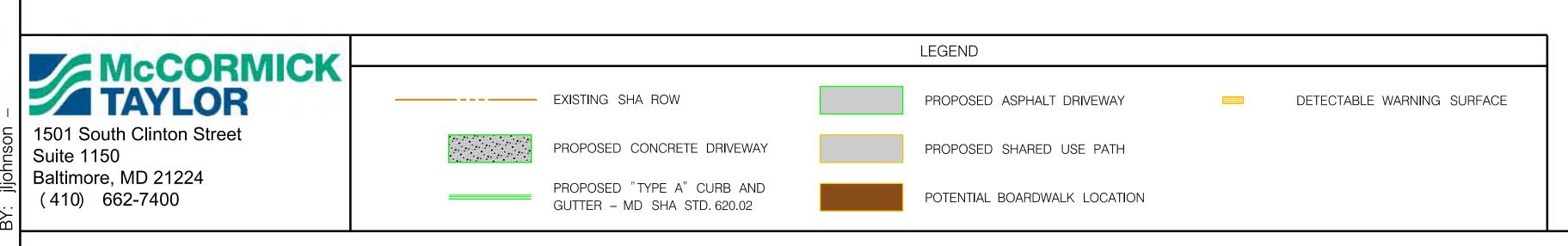
MD 611 FEASIBILITY CONCEPT

SHEET NO. 21 OF 27

	FEASIBILIT	TY CONCEPT
SCALE 1" = 50'	ADVERTISED DATE	TBD CONTRACT NO. TBD
DESIGNED BY DRAWN BY CHECKED BY MDE/PRD		COUNTY WICOMICO LOGMILE XXX TO XXX HORIZONTAL SCALE N/A VERTICAL SCALE N/A

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CHECKED BY KAB /RZB

SCALE: 1" = 50'

DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

HORIZONTAL SCALE N/A

N/A

VERTICAL SCALE ____

FEASIBILITY CONCEPT

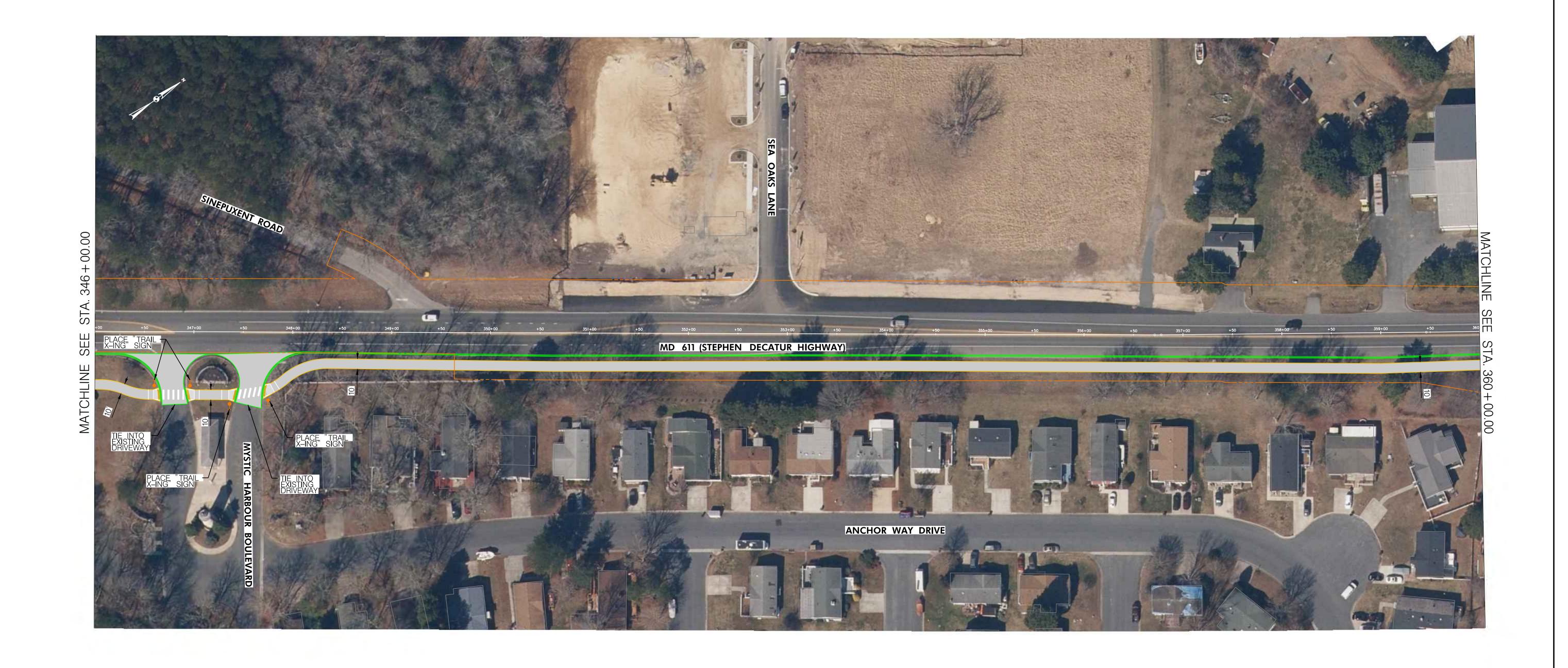
SCALE 1" = 50' ADVERTISED DATE TBD CONTRACT NO. TBD

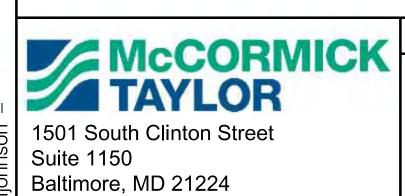
DESIGNED BY DGR /JLJ COUNTY WICOMICO

DRAWN BY DGR /JLJ LOGMILE XXX TO XXX

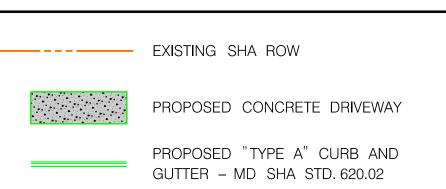
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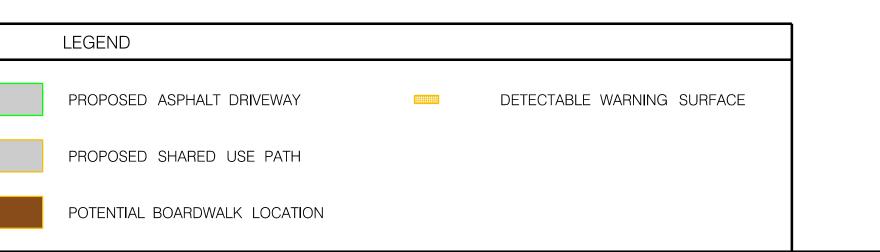
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(410) 662-7400







DRAWING NO.

SCALE: 1" = 50'

DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

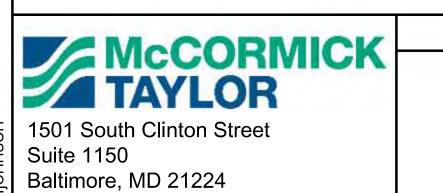
SHEET NO. 23 OF 27

	FEASIBILITY	CONCEPT		
CALE 1" = 50'	ADVERTISED DATE	TBD CONTR	RACT NO	TBD
ESIGNED BY	DGR /JLJ	COUNTY	WICOMIC	0
RAWN BY	DGR /JLJ	LOGMILE	XXX TO X	XX
CHECKED BY	KAB /RZB	HORIZONTAL SO	CALEN	/A
MDE/PRD		VERTICAL SCAL	EN	/A

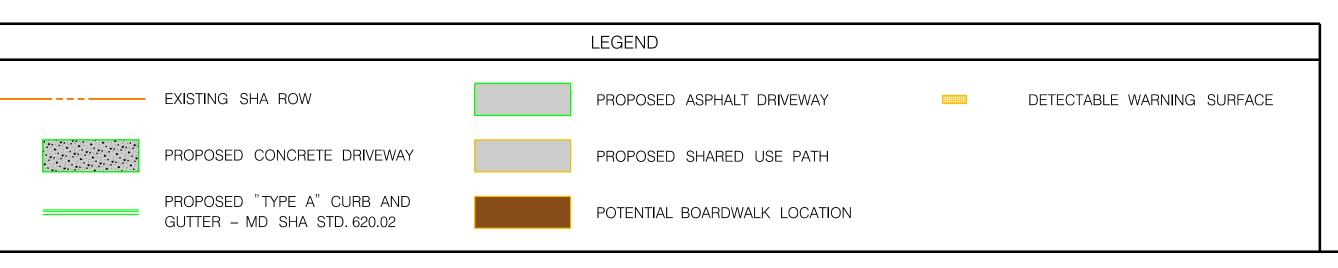
BY: jljohnson –

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(410) 662-7400



SCALE: 1" = 50'

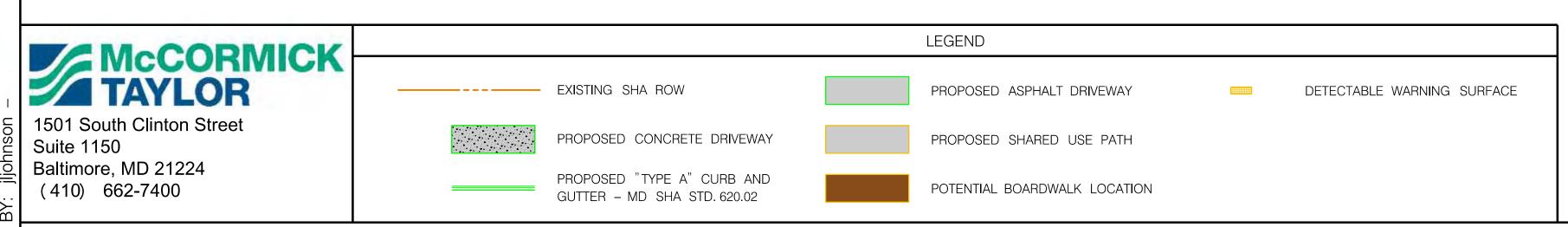
DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

	FEASIBI	LITY CONC	EPT	
SCALE 1" = 50'	ADVERTISED DATE	TBD	CONTRACT NO	TBD
DESIGNED BY DRAWN BY CHECKED BY MDE/PRD	DGR /JLJ	LOGMILE HORIZON	WICO XXX TO XX TO X	N/A
DRAWING NO.		OF	SHEET NO.	24 OF 27





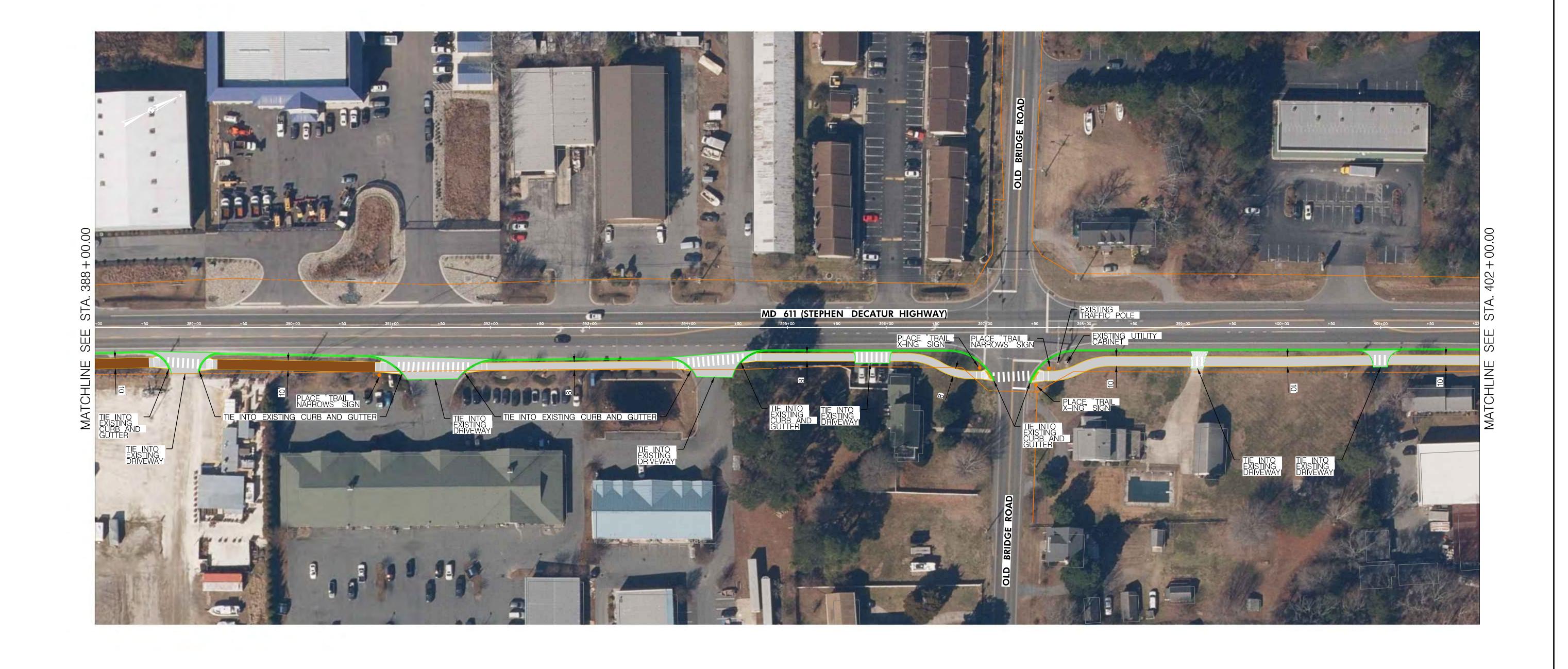


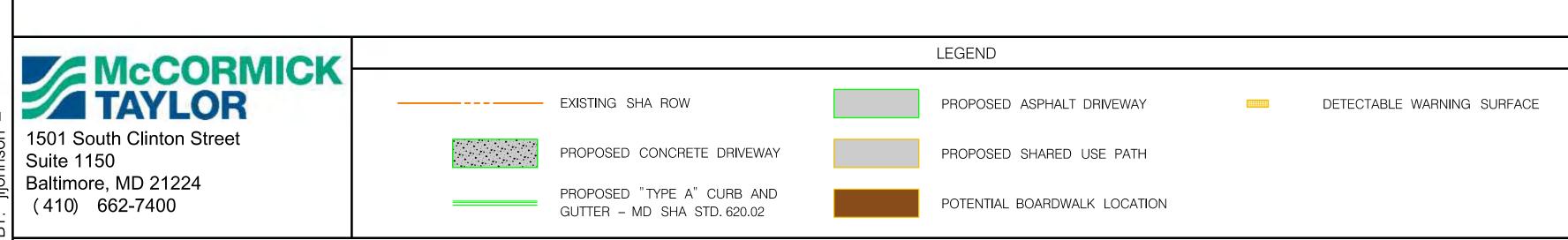
DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

	FEASIBILI	TY CONC	EPT	
SCALE 1" = 50'	ADVERTISED DATE	TBD	CONTRACT NO	TBD
DRAWN BY	DGR /JLJ DGR /JLJ KAB /RZB	LOGMILE HORIZON	WICON XXX TO ITAL SCALE SCALE	XXX N/A
DRAWING NO.		OF	SHEET NO.	25 OF 27

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SCALE: 1" = 50'

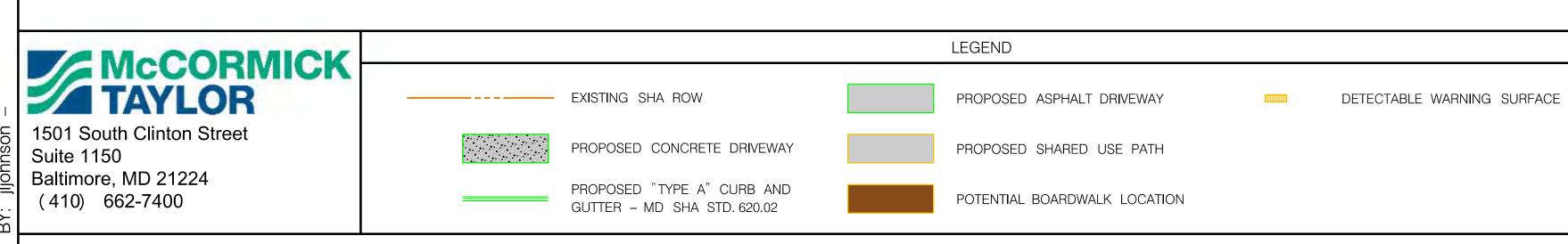
DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

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FEASIBILITY CONCEPT				
SCALE1" = 50'	ADVERTISED DATE	TBD	CONTRACT NO	TBD
DESIGNED BYDO DRAWN BYDO CHECKED BYKA	OGR /JLJ AB /RZB	LOGMILE HORIZON	WICO XXX TO TAL SCALE SCALE	N/A
DRAWING NO.	0	F	SHEET NO.	26 OF 27





SCALE: 1" = 50'

DISTRICT 1 PROJECT DEVELOPMENT

MD 611 FEASIBILITY CONCEPT

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FEAS	SIBILITY CONCEPT
SCALE 1" = 50' ADVERTISED D	DATE TBD CONTRACT NO. TBD
DESIGNED BY DGR /JLJ DRAWN BY DGR /JLJ CHECKED BY KAB /RZB MDE/PRD	COUNTY WICOMICO LOGMILE XXX TO XXX HORIZONTAL SCALE N/A VERTICAL SCALE N/A
DRAWING NO.	OF SHEET NO. 27 OF 27

MD 611 Feasibility Study
Page 11

APPENDIX C: PROPOSED STORMWATER MANAGEMENT LOCATIONS



Page C1



Page C2



Page C3



Page C4



Page C5



Page C6



Page C7



Page C8



Page C9





Page C11



Page C12

