

APPENDIX H

Approved Design Variation Request

Submittal/Approval Letter

To: Mario Bizzio, P.E.
District Design Engineer

Date: January 4, 2018

Financial Project ID: 430136-1-22-01 New Construction RRR
 Federal Aid Number: N/A
 Project Name: Malabar Road (SR 514) from East of Babcock Street (SR 507) to US 1
 State Road Number: 514 Co./Sec./Sub.: 70/180/000
 Begin Project MP: 3.060 End Project MP: 6.698
 Full Federal Oversight: Yes No
 Request for Design Exception , Design Variation

(For Design Exception or Variations Requiring Central Office Approval)

Re-submittal: Yes No Original Ref# _____ - _____ - _____

Requested for the following element(s):

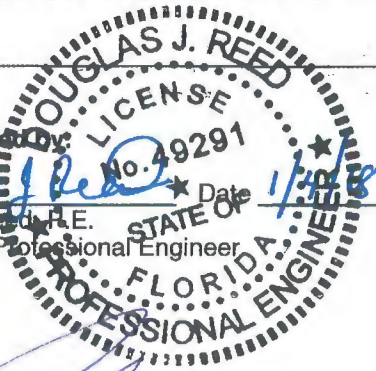
- Design Speed Lane Widths Shoulder Widths Bridge Widths
 Structural Capacity Vertical Clearance Grades Cross Slope
 Superelevation Horizontal Alignment Vertical Alignment Stopping Sight Distance
 Horizontal Clearance Other: Border Width

This Design Variation is recommended for substandard border width from Corey Road (MP 5.084) to Marie Street (MP 6.129), a distance of 1.045 miles.

The proposed border width criterion is to provide a minimum of 39 feet of the standard 40 feet on the north side, and a minimum of 22 feet of the standard 40 feet on the south side.

Recommended By:

Douglas J. Reed No. 49291 * Date 1/10/18
 Douglas J. Reed, P.E.
 Responsible Professional Engineer



Approvals:

<p><u>[Signature]</u> Date <u>1/10/18</u> District Design Engineer</p> <p>N/A _____ Date _____ State Roadway Design Engineer</p> <p>N/A _____ Date _____ State Chief Engineer</p>	<p>N/A _____ Date _____ District Structures Design Engineer</p> <p>N/A _____ Date _____ State Structures Design Engineer</p> <p>N/A _____ Date _____ FHWA Division Administrator</p>
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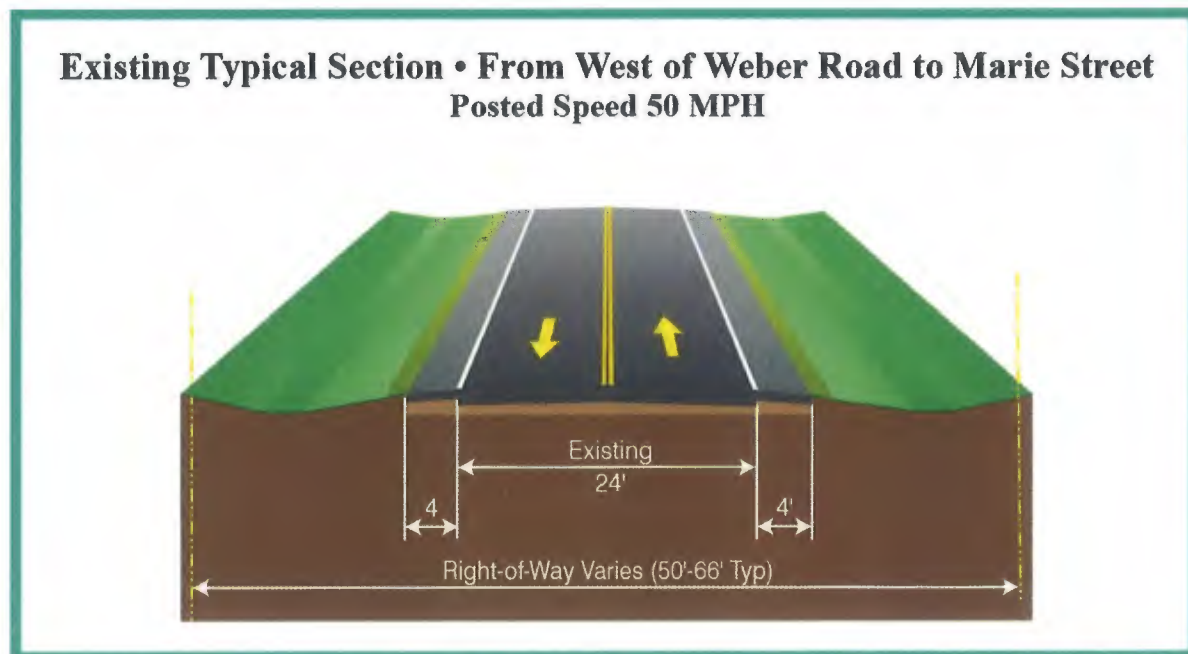
Project Description

This project involves the reconstruction of SR 514 (Malabar Road) from SR 507 (Babcock Street) to US 1. The proposed improvements include widening, construction of a shared-use path and sidewalks, and roundabouts at Corey Road and Marie Street.

SR 514 (Malabar Road) is classified as an urban minor arterial. The existing roadway between Corey Road and Marie Street is a two-lane undivided rural roadway with a 50-mph posted speed within 50 to 66-feet of right-of way **Exhibit 1**. Narrow drainage ditches are located adjacent to the existing roadway shoulder, and the existing right-of-way is 50 to 66 feet wide, including 9-foot to 17-ft borders. The roadway is proposed to be reconstructed as a two-lane rural roadway offset within the right-of-way to allow for a 10-foot shared-use path to be constructed on the north side, as in **Exhibit 2**. The prominent land uses within the segment are the Brevard County Environmentally Endangered Lands (EEL) Malabar Scrub Sanctuary on the north side of Malabar Road, and the Malabar Disc Golf Park on the south side as shown in the Preliminary Concept Plans in **Appendix A**. Low-density residential, the Malabar Fire Station #99, Elhoim Christian Church, and vacant parcels are also found within this segment.

The alignment is a best fit alignment such that there are right-of-way impacts to both sides, including the Malabar Scrub Sanctuary and the Malabar Disc Golf Park.

Exhibit 2 – Existing Typical Section

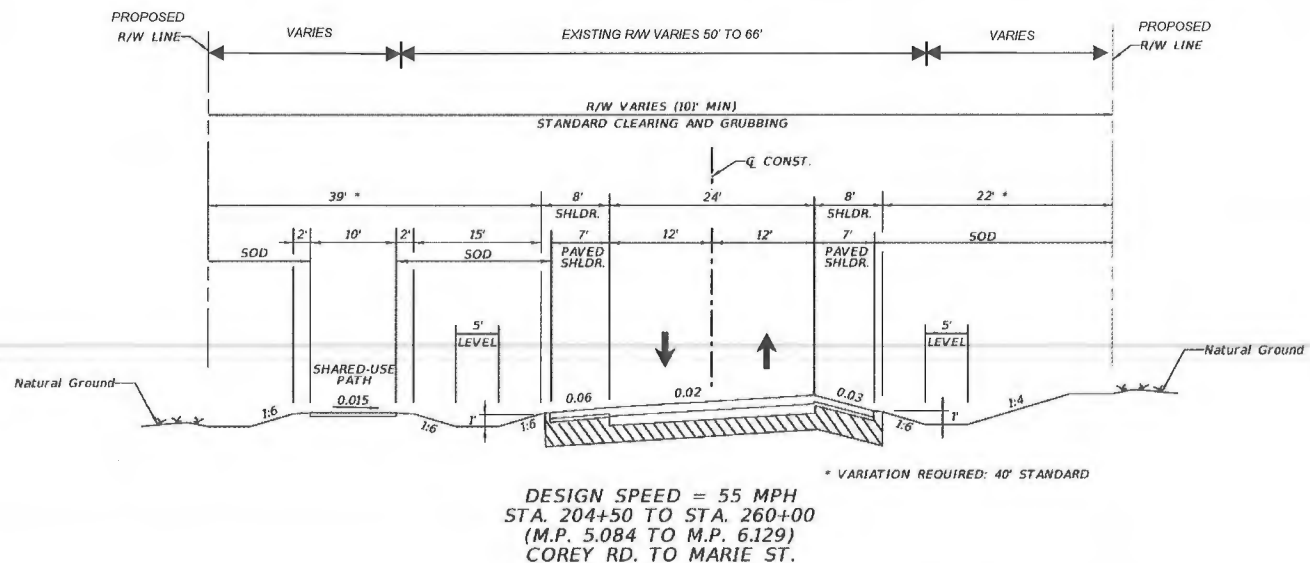


Description of Substandard Element

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The proposed typical section includes a 39-foot border on the north side, and a 22-foot border on the south side, as shown in **Exhibit 2**, however, the FDOT Plans Preparation Manual (PPM) requires 40-feet. The Typical Section Package is included in **Appendix B**. Right-of-way will be required in varying widths from both sides of Malabar Road.

Exhibit 2 – Proposed Typical Section



Standard Design Criteria versus Proposed Criterion

FDOT Criteria: The PPM Volume 2 Section 2.5 indicates that on arterials and collector highways with flush shoulders with a design speed above 45 mph, the minimum border width is 40 feet (PPM Table 2.5.3).

American Association of State Highway and Transportation Officials (AASHTO) Criteria: AASHTO’s “A Policy on Geometric Design of Highways and Streets”, 2011 6th Edition, does not specifically address border widths on two-lane undivided arterials. However, Section 7.7.2.11, Page 7-22, recommends that: “If at all practical, the right-of-way should be wide enough to permit the use of median and borders of not less than 4.5 m [15 ft] (see Figure 7-5A).”

Proposed Criteria: While the FDOT Plans Preparation Manual (PPM) requires a 40-foot border width, the proposed typical section includes a 39-foot border on the north side, and a 22-foot border on the south side.

Reason the Standard Design Criteria are Not Appropriate

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The FDOT met with the Brevard County Environmentally Endangered Lands (EEL) Malabar Scrub Sanctuary staff on numerous occasions to present the PD&E Alternatives and gather input. The EEL staff had numerous concerns about scrub jay impacts, Malabar Scrub Sanctuary property firebreak, rare plant species, maintaining a shared-use trail, and the amount of ROW needed from the Malabar Scrub Sanctuary. Different roadway typical sections were evaluated along various alignments in an effort to meet the purpose and need of the project while reducing impacts to the adjacent parcels. At the end of the analysis, a series of best-fit alignments and a new Recommended Alternative was selected by the FDOT which reduced the amount of impacts to the Malabar Scrub Sanctuary. The Recommended Alternative will have 0.34-acre impact between Corey Road and Marie Street. The FDOT presented the Recommended Alternative to the Brevard County EEL Selection and Management Committee on August 25, 2017. During the Design phase, when ROW impacts are more accurately defined, the FDOT will coordinate further with Brevard County EEL and the FDEP Acquisition and Restoration Council (ARC), who has the ultimate approval of land acquisition.

The FDOT also met with the Town of Malabar concerning how the project would impact the Disc Golf Course. The Town of Malabar provided a Statement of Significance for the Disc Golf Park; stating that significant ROW impacts would leave the course unplayable as an 18-hole course without enough land to redesign in its current location. The Disc Golf Park is a revenue generator for the Town through events held at the park. The FDOT incorporated the Town's comments into their analysis and the Recommended Alternative will have 0.12 acre of impacts to the Malabar Disc Golf Course. These impacts will be to the parking area and will not affect the disc golf course itself. The Malabar Disc Golf Course has a Grant Award Agreement on the property. The property was purchased with grant money from the FDEP. During the Design phase, when ROW impacts are more accurately defined, the FDOT will coordinate further with the Town and the FDEP Florida Communities Trust (FCT).

Justification for Proposed Criterion

The proposed border width of 39 feet on the north side is only 1 foot shy of the 40-foot standard. The proposed border width of 22 feet on the south side is 18-feet shy of the standard. However, the 22-foot border in conjunction with the 8-foot shoulder accommodates the required safety feature of a 30-foot clear zone per PPM standards. These proposed border widths have been incorporated into the Recommended Alternative design concept shown in **Appendix A**, and reviewed by and accepted by the Brevard EEL staff and Selection and Management Committee and the Town of Malabar as a compromise to minimize impacts to both parks. Border width criteria listed in the PPM is intended to enable a designer, with little consideration of the actual area topography or possible design considerations, to establish a

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uniform right-of-way limit in a new corridor that will provide sufficient room for the facility's present construction and potential future expansion. This section of roadway is an established highway in an urban area where traffic volumes are projected to grow at a flat rate such that the need for additional lanes is not projected in the design year. The Town of Malabar prefers to keep the section two lanes. Providing the additional width to meet PPM requirements would result in opposition to the project by Brevard County EEL staff and Selection and Management Committee and the Town of Malabar.

Narrow drainage ditches are located adjacent to the existing roadway shoulder, and the existing right-of-way is 50 to 66 feet wide, including 9-foot to 17-ft borders. Compared to the existing condition, the proposed typical section will improve the roadside conditions with flatter front and back slopes, increase the border width from and increase the overall right-of-way width to a minimum of 101 feet.

Out of the total 110 reported crashes between January 1, 2008 and December 31, 2012 (see **Appendix C**), 42 crashes or 38.9% were rear-end collisions, 18 crashes or 16.7% were angle collisions, and the third-highest type of crash along this segment of Malabar Road (SR 514) involved moving vehicles running into a ditch or culvert, with a total of 10 occurrences or 9.3%. More than half of these incidents, or 52%, were the direct result of careless driving. The second-highest contributing cause was failure to yield the right-of-way at 17%, and the third-highest cause was improper driving at 5.6%. There have been no crashes that are attributed to a deficiency in border width at these locations. It is not expected that these border widths have or will have an adverse impact on the operation of the facility. The full border width at these locations is not justified and would add no significant improvement to traffic safety. The crash data reveals that 9.3% of the crashes for the entire corridor from east of Babcock Street (SR 507) to US 1 involved a motor vehicle running into a ditch/culvert. However, the segment under consideration is less than 30% of the overall project length. Therefore, the percentage of crashes involving a motor vehicle running into a ditch/culvert is expected to be considerably less than 9.3%.

The proposed border widths are adequate for the required design features such as clear zone, signing, drainage, roadside barriers and fencing. The proposed border width is also adequate for construction and maintenance. Where the larger transmission poles leave the Malabar Road right-of-way and follow Glatter Road to the east, any remaining smaller utility poles can be relocated to the north side of Malabar Road, where the border width is greater. There is also additional room along the south side near the Glatter Road turnout and within Pond N. Non-frangible items may need to be protected with guardrail. The geometry of the proposed roadway and drainage systems are being designed to minimize impacts to the neighboring properties and traveling public.

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Summary and Recommendation

It is recommended that this Design Variation be approved for the following reasons:

- The border width will be an improvement from the existing condition.
- The 30-foot PPM Clear Zone will be met.
- Crash data from 2008-2012 shows only a small percentage of crashes could be attributed to a vehicle running off the existing road within the segment from Corey Road to Marie Street.
- The FDOT met with the Brevard County Environmentally Endangered Lands (EEL) Malabar Scrub Sanctuary staff and the Town of Malabar on numerous occasions to present the PD&E Alternatives and gather input. Both entities and the FDOT staff have agreed to the current typical section.
- Providing additional border width can be evaluated further in final design in locations where additional parcel/land acquisition is proposed for stormwater management facilities.

Recommended by: Douglas J. Reed (Florida P.E. #49291)

Consultant Firm:

Atkins

Date: November 27, 2017 .

482 South Keller Road

Orlando, Florida, 32810

Certification of Authorization License No. 24

The official record of this report is the electronic file signed and sealed under Rule 61G15-23.003, F.A.C.

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Appendix A: Typical Section Package

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Appendix B: Recommended Alternative Preliminary Concept Plans

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Appendix C: Crash Data