



MEMORANDUM

To: Mario Bizzio, P.E.

From: Fred Burkett, P.E. and Clif Tate P.E.
Kimley-Horn and Associates, Inc.

Date: December 11, 2019

Subject: Neptune Road PD&E – Osceola County, Florida
FPID: 445415-1
Design Variation Request
Segment 1: Partin Settlement Road to Old Canoe Creek Road

Description

Osceola County is conducting a Project Development and Environment (PD&E) study for improving Neptune Road, from Partin Settlement Road to US 192. While this is a county road, it is being processed similar to FDOT's Local Agency Program (LAP) with FDOT review throughout the process. Based on the LAP Manual (section 19.4), the FDOT Design Manual is to be used for design criteria and standards. This segment of the project meets all of these standards except for using 4-foot bicycle lanes (in addition to a 12-foot shared use path) instead of 7-foot buffered bicycle lanes. **This design variation request is for the Department to approve the use of 4-foot bicycle lanes plus 12-foot shared use paths (on both sides of Neptune Road) instead of providing 7-foot buffered bicycle lanes for this segment.**

Background

This section summarizes the County's decision-making process for determining the appropriate Typical Section for Neptune Road, from Partin Settlement Road to Old Canoe Creek Road.

Existing Conditions

- A 10-foot shared use path (Neptune Road Pathway) is on the south side of Neptune Road, from Partin Settlement Road to Ames Haven Road (1.9 miles) where it crosses to the north side of Neptune Road and extends east Old Canoe Creek Road (1.6 miles).

- Neptune Middle School (and its associated public recreational fields) is located on the north side of Neptune Road, approximately 0.3 miles east of Ames Haven Road. The pathway is also on the north side of Neptune Road at the school; however, it crosses to the south side of the road just west of the school via an unsignalized crossing at Ames Haven Road.
- Current use of the pathway is a wide cross-section of users, including older walkers, joggers, parents with strollers, and younger bicyclists and pedestrians. The County's Director of Parks and Public Lands indicated that students from Neptune Middle School often use the path to travel to Partin Triangle Park.
- Partin Triangle Park is located on the south side of Neptune Road approximately 0.6 miles east of Neptune Middle School, in the area where the pathway is on the north side of Neptune Road.
- No other bicycle or pedestrian facilities are located within this segment of Neptune Road.
- West of Partin Settlement Road, Neptune Road is a 4-lane divided roadway with 4-foot bicycle lanes, the Neptune Road Pathway (10-foot) is on the south side of the road and a 5-foot sidewalk is provided on the north side of the road.
- The existing right-of-way ranges from 60-feet to 110-feet; therefore, additional right-of-way will be needed for the improvements to Neptune Road.
- Osceola County has limited funding for improving their transportation system. Neptune Road is their highest priority; however, funds for full right-of-way needs and construction have not been identified.

Typical Sections Considered

- 4-lane divided roadway, buffered bicycle lanes, shared use path (12-foot) on one side of the road and 5-foot sidewalk on the other side
 - There was a safety concern about the pathway crossing the widened roadway and potential origins/destinations on the opposite side of the road from the pathway (i.e., residences and Partin Triangle Park).
 - There was a desire to provide an option for bicyclists to use a convenient pathway or the on-street bicycle lane.
- 4-lane divided roadway, 4-foot bicycle lanes, shared use paths (12-foot) on each side of the road
 - This typical section meets the County's design standards.
 - This typical section meets the Florida Greenbook standards.
 - This typical section better accommodates younger users accessing Neptune Middle School, its associated public recreational fields, Partin Triangle Park, and various residential developments along Neptune Road.
 - Shared use pathway users can cross at signalized intersections.
 - More advanced bicyclists will potentially utilize the 4-foot bicycle lanes.

- This typical section can be accommodated with a similar amount of right-of-way as the typical section with buffered bicycle lanes and a pathway only on one side (i.e., the other typical section considered and described above).

Preferred Typical Section

After considering the options, the County identified the typical section providing a 4-lane divided roadway, 4-foot bicycle lanes, and shared use paths (12-foot) on each side of the road as the preferred typical section. The Typical Section Package is included in **Attachment A**.

Design Variation Basis

This request is consistent with Section 122 Design Exceptions and Design Variations in the FDOT Design Manual.

Safety and Operational Performance

Bicycle and pedestrian counts along Neptune Road identified the highest volumes at the intersections with Henry Partin Road (26 east-west, and 11 north-south) Neptune Middle School (23 north-south and 0 east-west) and Old Canoe Creek Road (24 north-south and 3 east-west). With the location of Neptune Middle School on the north side of Neptune Road, many of these bicyclists and pedestrians are school age children. Providing the shared use path on both sides of the road is desired to provide separation of the children from traffic on Neptune Road. It is expected that the children will use the shared use paths instead of the bicycle lanes, which is expected to be safer for the children.

The operational performance for bicyclists and pedestrians are expected to be improved for the preferred typical section over conditions with buffered bicycle lanes and a shared use path on only one side of the road.

The operational performance for vehicles traveling the roadway may be negatively impacted if they provide a three-foot clearance of bicyclists in the 4-foot bicycle lanes. However, with the provision of the shared use paths on both sides of the road, the utilization of the 4-foot bicycle lanes is expected to be minimal. In addition, the bicycle lane widens to 5-feet through the intersections with separate right turn lanes. Thus, the actual impact to vehicular operational performance is expected to be minimal.

Level of Service

Per the FDOT Quality/Level of Service Handbook (2013), the level of service (LOS) for bicycles is based on two factors: 1) the existence of paved shoulders/bicycle lanes and 2) motorized vehicle volumes in the adjacent outside travel lane. Based on this methodology,

the proposed 4-foot bicycle lanes will provide the same LOS as 7-foot buffered bicycle lanes.

The LOS for vehicular traffic on the roadway will not be affected by the presence of 4-foot bicycle lanes or 7-foot buffered bicycle lanes.

Right-of-Way Impacts

For reasons described in the Background section describing the development of the preferred typical section, Osceola County desires to provide 12-foot shared use paths on both sides of this section of Neptune Road. The County also plans to provide a 10-foot buffer between the back of curb and the shared use path. Utilizing portions of this buffer to accommodate wider bicycle lanes is problematic because existing power transmission towers run along this segment of Neptune Road within the buffer, and the back of curb for the improved Neptune Road has been offset 4-feet from these poles for approximately 1.9 miles of this segment. Thus, providing 7-foot buffered bicycle lanes will require an additional 6-feet of right-of-way. The preferred alternative is expected to require nine residential relocations. The additional 6-feet or right-of-way is expected to add one additional residential relocation.

The additional right-of-way would also further impact two 4(f) properties (Neptune Middle School Sports Fields and Partin Triangle Park).

If 7-foot buffered bicycle lanes are provided, right-of-way will be required from a Chevron service station located at the northeast corner of Neptune Road at Partin Settlement Road. Currently, no right-of way is required from this property utilizing the 4-foot bicycle lanes.

Community Impacts

No community impacts are anticipated by providing 4-foot bicycle lanes with 12-foot shared use paths compared to providing 7-foot buffered bicycle lanes with 12-foot shared use paths.

Environmental Impacts

While providing 7-foot buffered bicycle lanes will have greater environmental impacts than providing 4-foot bicycle lanes, no significant environmental impacts are anticipated.

Costs

The construction costs for providing 7-foot buffered bicycle lanes instead of 4-foot bicycle lanes is estimated to be \$1.69 million. The additional right-of-way costs for providing 7-foot buffered bicycle lanes instead of 4-foot bicycle lanes is estimated to be \$2.54 million. Thus, the total cost for providing buffered bicycle lanes is estimated to be \$4.23 million.

Usability

This consideration includes usability by all modes of transportation, and long term and cumulative effects on adjacent sections of the roadway. As describe in the Background section above, Osceola County considered the usability of all modes of travel, as well as the travel by elementary students along the corridor in developing their preferred typical section. It is the opinion of the County that their preferred typical section provides the appropriate usability for the proposed improvement.

In addition, the adjacent segment of Neptune Road to the west has 4-foot bicycle lanes and Canoe Creek Road (south of its intersection with Neptune Road) has 4-foot bicycle lanes.

Conclusion and Recommendation

Based on the above reasons, the provision of 4-foot bicycle lanes plus 12-foot shared use paths on both sides of Neptune Road provides the appropriate balance of all design impacts. Furthermore, the provision of 7-foot buffered bicycle lanes is impractical as the proposed 4-foot bicycle lanes will connect to existing 4-foot bicycle lanes on Neptune Road (west of Partin Settlement Road) and Old Canoe Creek Road (south of Neptune Road).

It is recommended that the Department approve this design variation request for the use of 4-foot bicycle lanes plus 12-foot shared use paths instead of providing 7-foot buffered bicycle lanes.

This document has been digitally signed and sealed by:

**Leon F
Burkett** Digitally signed
by Leon F Burkett
Date: 2019.12.11
16:59:42 -05'00'

**Mario J
Bizzio** Digitally signed by
Mario J Bizzio
Date: 2019.12.18
09:50:37 -05'00'

Mario Bizzio, P.E.
FDOT District Design Engineer

Printed copies of this document are not considered signed and sealed. The signature must be verified on the electric documents.

Kimley-Horn
189 South Orange Ave., Suite 1000
Orlando, FL 32801
Tel: 407-898-1511
Certificate of Authorization 696
Vendor No: Fred Burkett, P.E. No. 45825



ATTACHMENT A

Typical Section Package

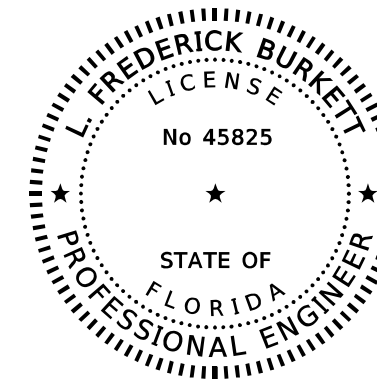
OSCEOLA COUNTY

TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 445415-1
 OSCEOLA COUNTY (92550000) (92540000)
 CR 525 (NEPTUNE ROAD)
 RECONSTRUCTION OF NEPTUNE ROAD FROM 2-LANE TO 4-LANE

THIS DOCUMENT HAS BEEN DIGITALLY
 SIGNED AND SEALED BY:

**Leon F
 Burkett** Digitally signed by
 Leon F Burkett
 Date: 2020.06.26
 10:37:30 -04'00'



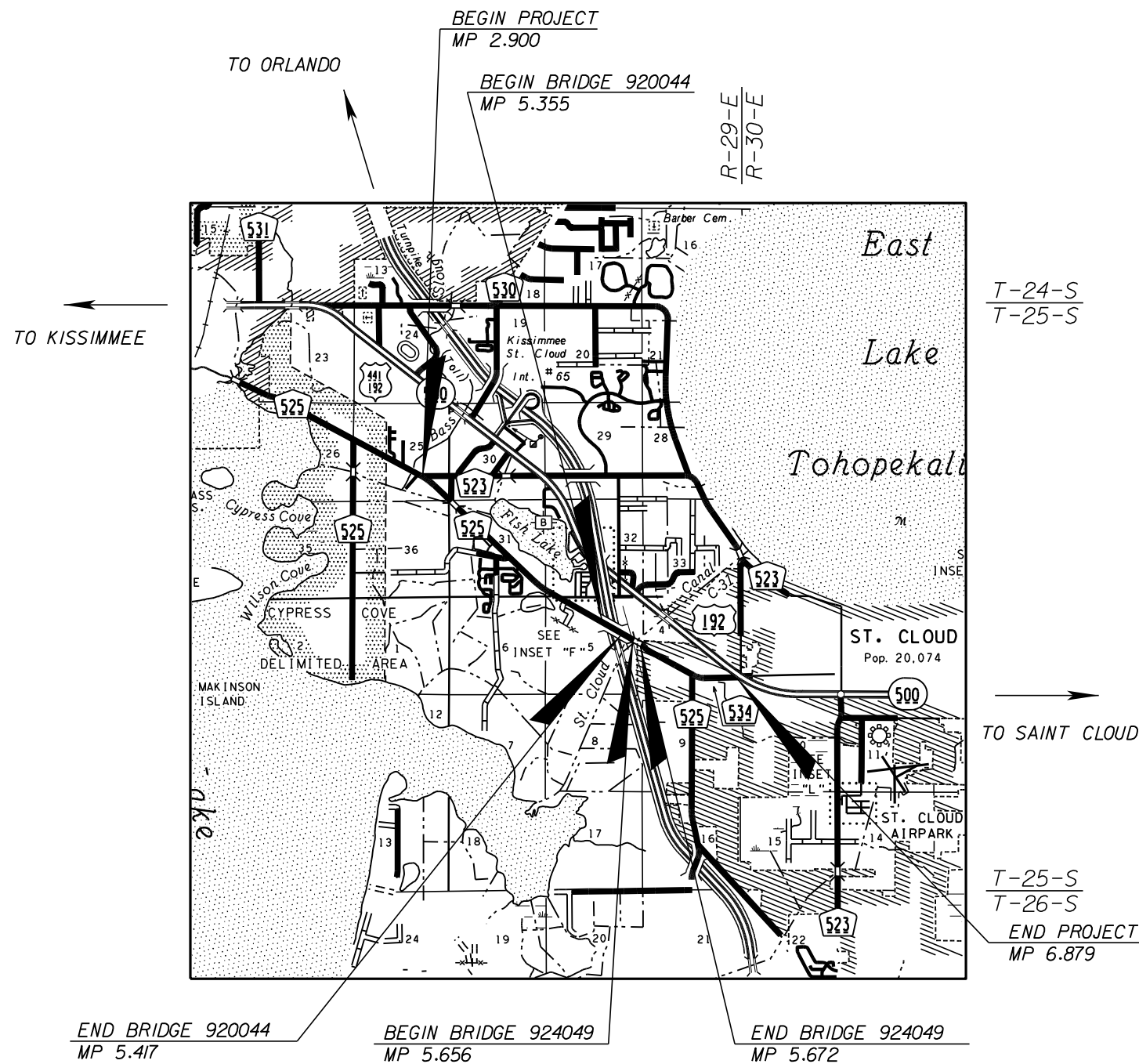
PRINTED COPIES OF THIS DOCUMENT ARE
 NOT CONSIDERED SIGNED AND SEALED.
 THE SIGNATURE MUST BE VERIFIED
 ON THE ELECTRIC DOCUMENTS.

KIMLEY-HORN
 189 SOUTH ORANGE AVE., SUITE 1000
 ORLANDO, FLORIDA 32801
 TEL: 407-898-1511
 CERTIFICATE OF AUTHORIZATION 696
 VENDOR NO:
 FRED BURKETT, P.E. NO. 45825

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE
 FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004 F.A.C.

TYPICAL SECTION PACKAGE

SHEET NO.	SHEET DESCRIPTION
1	COVER SHEET
2	TYPICAL SECTION NO. 1
3	TYPICAL SECTION NO. 2
4	TYPICAL SECTION NO. 3



FDOT CONCURRENCE

**Mario J
 Bizzio** Digitally signed
 by Mario J Bizzio
 Date: 2020.08.12
 09:59:56 -04'00'

MARIO BIZZIO, PE
 FDOT DISTRICT DESIGN ENGINEER

Digitally signed by: loreen,
 bobo@dot.state.fl.us
 DN: CN = loreen,
 bobo@dot.state.fl.us
 Date: 2020.08.12 10:36:
 03 -05'00'

LOREEN BOBO, PE
 FDOT DISTRICT DIRECTOR OF
 TRANSPORTATION DEVELOPMENT

**James S
 Stroz** Digitally signed by
 James S Stroz
 Date: 2020.08.12
 10:26:22 -04'00'

JIM STROZ, PE
 FDOT DISTRICT TRAFFIC
 OPERATIONS ENGINEER

OSCEOLA COUNTY APPROVAL

**Tawny
 H. Olore** Digitally signed
 by Tawny H.
 Olore
 Date: 2020.06.29
 15:54:42 -04'00'

TAWNY OLORE, PE
 EXECUTIVE DIRECTOR
 TRANSPORTATION & TRANSIT

2020.06.
 29
 15:38:03
 -04'00'

B. TODD HUDSON, PE
 COUNTY TRANSPORTATION
 ENGINEER

**Kathy
 Lee** Digitally signed
 by Kathy Lee
 Date:
 2020.06.30
 16:21:59 -04'00'

KATHY LEE, PE
 COUNTY TRAFFIC
 OPERATIONS ENGINEER

FINANCIAL PROJECT ID	SHEET NO.
445415-1	1

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL () C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
- () C2T : RURAL TOWN () C5 : URBAN CENTER
- (X) C3R : RESIDENTIAL () C6 : URBAN CORE
- () N/A : LA FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE () MAJOR COLL.
- () FREEWAY/EXPWY. () MINOR COLL.
- () PRINCIPAL ARTERIAL () LOCAL
- (X) MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- () STATE HIGHWAY SYSTEM
- (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- () 1 - FREEWAY
- () 2 - RESTRICTIVE W/Service Roads
- () 3 - RESTRICTIVE W/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE W/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

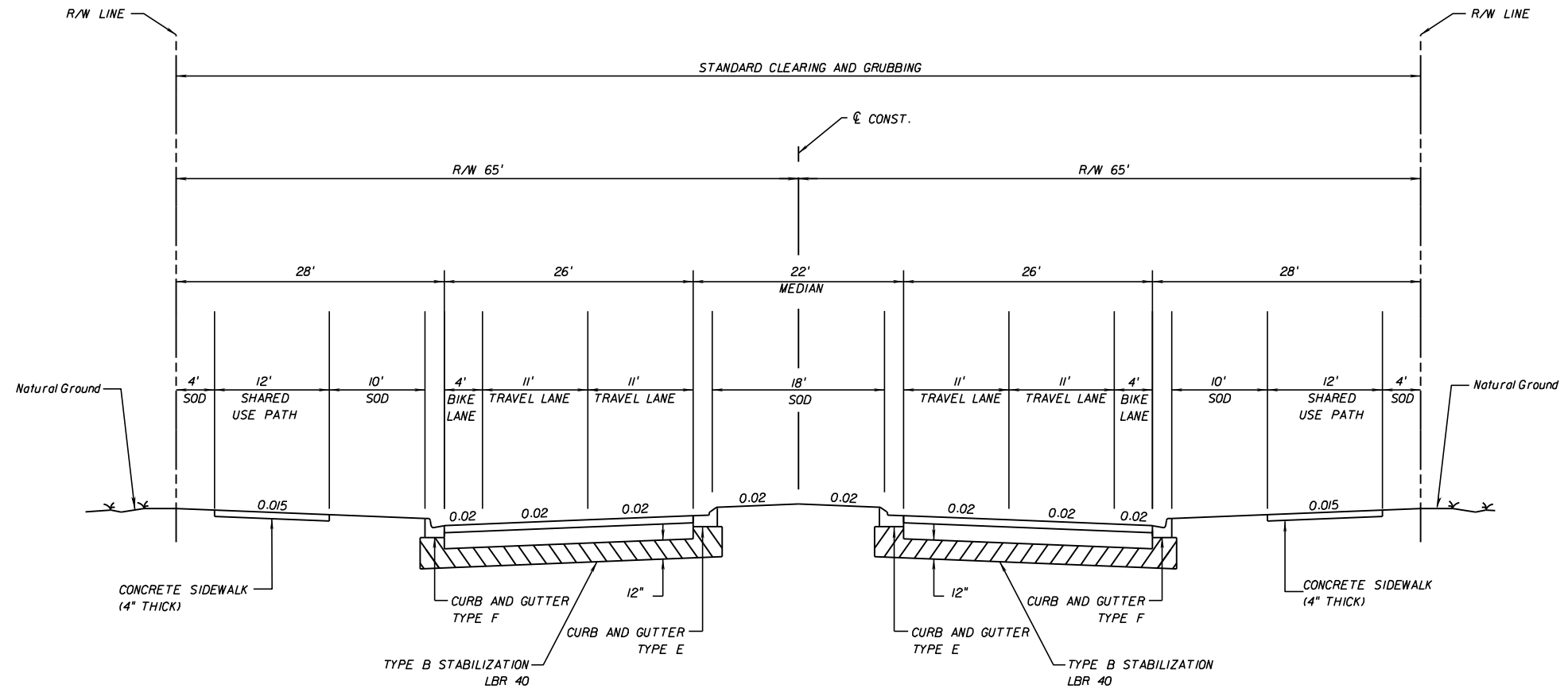
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.1 NEPTUNE ROAD



TYPICAL SECTION
CR 525
MP 2.9000 TO MP 6.342

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
 ESTIMATED OPENING YEAR = 2025 AADT = 30,000
 ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
 K = 9% D = 57.9% T (24 HOUR) = 5.11%
 DESIGN SPEED = 45 MPH
 POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	2

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL (X) C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
- () C2T : RURAL TOWN () C5 : URBAN CENTER
- () C3R : RESIDENTIAL () C6 : URBAN CORE
- () N/A : LA FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE () MAJOR COLL.
- () FREEWAY/EXPWY. (X) MINOR COLL.
- () PRINCIPAL ARTERIAL () LOCAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- () STATE HIGHWAY SYSTEM
- (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- () 1 - FREEWAY
- () 2 - RESTRICTIVE W/Service Roads
- () 3 - RESTRICTIVE W/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE W/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
- (X) 7 - BOTH MEDIAN TYPES

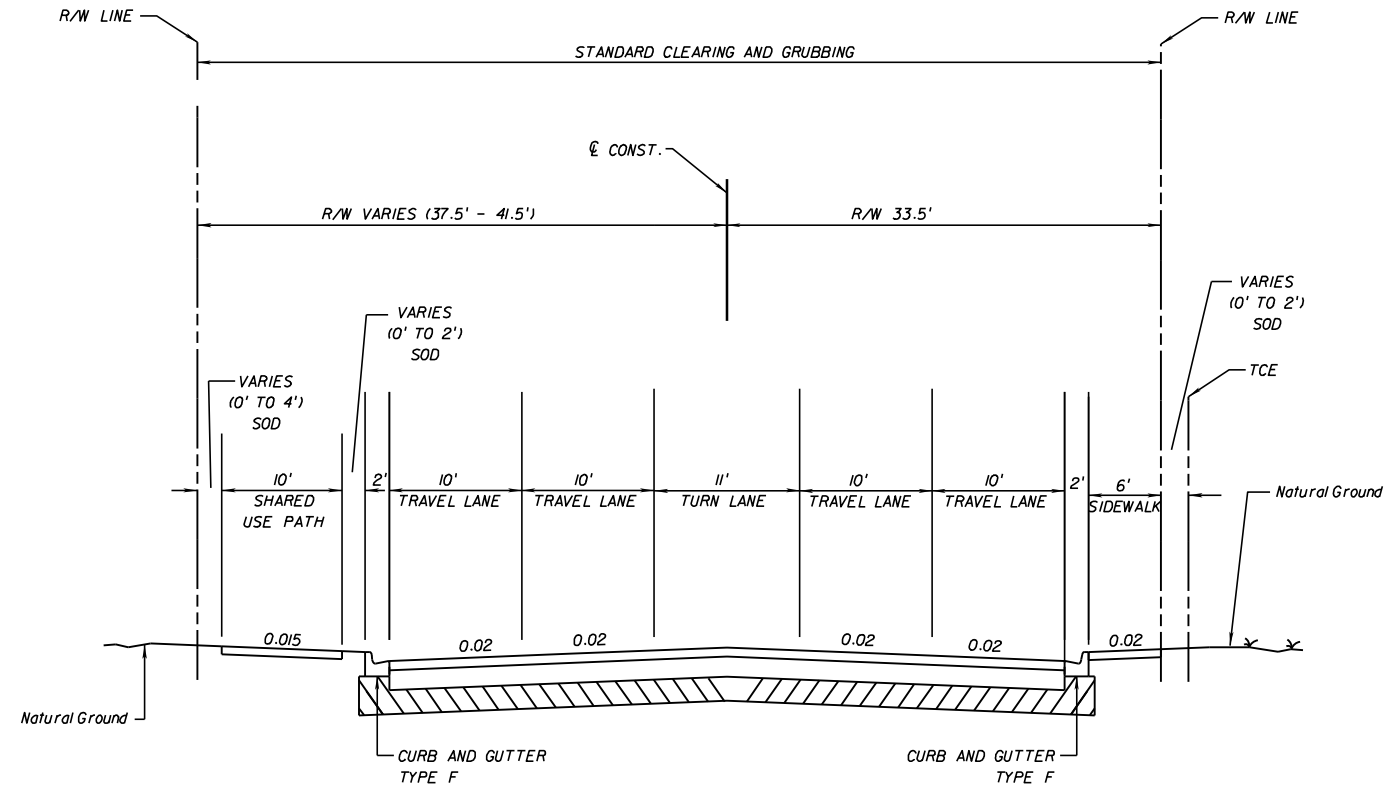
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.2 NEPTUNE ROAD



TYPICAL SECTION
CR 525
MP 6.342 TO MP 6.879

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 21,000
 ESTIMATED OPENING YEAR = 2025 AADT = 23,000
 ESTIMATED DESIGN YEAR = 2045 AADT = 27,000
 K = 9% D = 57.9% T (24 HOUR) = 5.11%
 DESIGN SPEED = 35 MPH
 POSTED SPEED = 35 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	3

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PROJECT CONTROLS

TYPICAL SECTION NO.3 NEPTUNE ROAD

CONTEXT CLASSIFICATION

- () C1 : NATURAL () C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
- () C2T : RURAL TOWN () C5 : URBAN CENTER
- (X) C3R : RESIDENTIAL () C6 : URBAN CORE
- () N/A : LA FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE () MAJOR COLL.
- () FREEWAY/EXPWY. () MINOR COLL.
- () PRINCIPAL ARTERIAL () LOCAL
- (X) MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- () STATE HIGHWAY SYSTEM
- (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

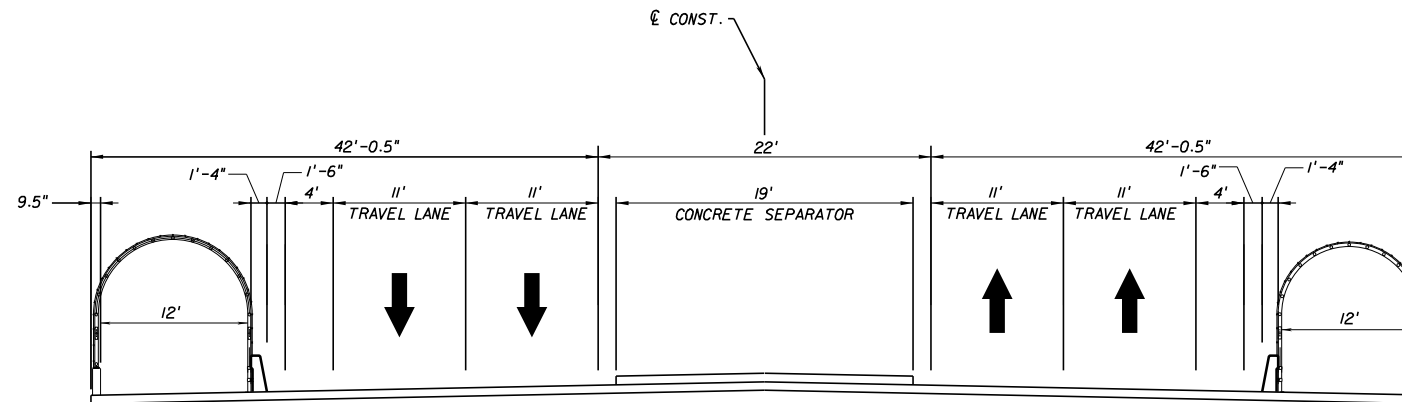
- () 1 - FREEWAY
- () 2 - RESTRICTIVE W/Service Roads
- () 3 - RESTRICTIVE W/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE W/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES



BRIDGE 924049
MP 5.656 TO MP 5.672

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
 ESTIMATED OPENING YEAR = 2025 AADT = 30,000
 ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
 K = 9% D = 57.9% T (24 HOUR) = 5.11%
 DESIGN SPEED = 45 MPH
 POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	4

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