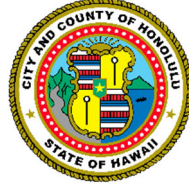


DEPARTMENT OF TRANSPORTATION SERVICES  
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December 14, 2020

**SUBJECT: Complete Streets Design Manual Update  
Section 6.6.5. Green Pavement Treatments**

In September of 2016, the City and County of Honolulu (City) published the Honolulu Complete Streets Design Manual (Manual) to provide guidelines for designing Honolulu's streets to serve the transportation needs of all users, whether traveling by foot, bike, public transit, or private vehicle. The Manual was developed, and continues to be used, by a wide array of stakeholders both within and external to the City, so periodic updates to the document are critical for consistency in roadway design and keeping up with industry best practice.

The 2016 version of the Manual provided general guidance on colored pavement treatments for bicycle facilities in Section 6.6.5. The attached revision to this section adds specificity and further identifies the appropriate locations for use of green pavement treatments, including preferred materials.

Honolulu Complete Streets Manual Section 6.6.5. (2016, page 160) will henceforth be replaced by the attached Section 6.6.5. Green Pavement Treatments (December 2020, pages 160a–160c). This revision will be a stand-alone addendum until the City revises the Manual in its entirety at a future date.

A handwritten signature in black ink, appearing to read "Jon Y. Nouchi".

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Nouchi, Jon  
Date: 2020.12.15  
16:50:06 -10'00'

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Jon Y. Nouchi  
Acting Director  
Department of Transportation Services

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Digitally signed by  
Sokugawa, Kathy K.  
Date: 2020.12.18  
11:48:57 -10'00'

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Kathy Sokugawa  
Acting Director  
Department of Planning & Permitting

A handwritten signature in black ink, appearing to read "Ross Sasamura".

Digitally signed by Sasamura, Ross  
Date: 2020.12.18 12:03:09 -10'00'

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Ross Sasamura, P.E.  
Director  
Department of Facility Maintenance

A handwritten signature in black ink, appearing to read "Mark Yonamine".

Digitally signed by Yonamine,  
Mark K  
Date: 2020.12.22 10:17:03 -10'00'

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Mark Yonamine, P.E.  
Director  
Department of Design & Construction

### 6.6.5. Green Pavement Treatments

Colored pavement treatments have various applications in the design of roadways, delineating and designating portions of the road for different modes of transport. They also have an added benefit of visually narrowing the width of the road, which encourages motorists to drive at slower speeds.

Green pavement treatments are applied to bicycle facilities to communicate bicycle priority and to mark potential conflict areas between bicyclists and motorists.

Green stripes are installed in front of driveways and at intersections crossing protected bicycle lanes, and within mixing zones where bicycle lanes merge with turning vehicle lanes. Each stripe has a length of 2 feet and a width that spans the width of the bicycle lane.

Green stripes should maintain a spacing of 4 feet at driveways and 6 feet across mixing zones. Stripes through intersections will vary in spacing and shall observe the City and County of Honolulu’s standard for crosswalk spacing at intersections.

**Figure 6-1a: Protected Bicycle Lanes Marked with Green Stripes at a Driveway**



*Pensacola Street. Credit: DTS*

**Figure 6-41b: Protected Bicycle Lanes with Green Stripes at an Intersection**



*South Street at Queen Street. Credit: DTS*

Figure 6-41c: Green Stripes Mark Conflict Area at a Mixing Zone



SE 52<sup>nd</sup> Street at Division Street in Portland, OR. Credit: Layne Wyse (Nelson\Nygaard Consulting Associates)

Figure 6-41d: Bicycle Lane Marked with Green Stripes at Intersection with Heavy Vehicular Turns



Kalakaua Avenue at Saratoga Road. Credit: Google Maps 2020 (rendered aerial image)

White stripes are painted on the edges of the green stripes to demarcate a path of travel for bicyclists and to facilitate predictable bicycle movements. A white stripe 6 inches in width is marked along the edge of the green stripes adjacent to traffic, at driveways and on both edges of the green stripes crossing through intersections and mixing zones.

While all driveways and intersections that encroach into a protected bicycle lane are treated with stripes, conventional bike lanes may only be treated at intersections where traffic turning volumes are particularly high.

Bike boxes, the ingress lane approaching a bike box (Figure 6-41e), and two-stage turn queue boxes (Figure 6-41f) are painted green to designate space for the preferential use of bicyclists. A sharrow (Figure 6-41g) may also be treated with a green paint background to differentiate it among other pavement markings.

The color of the green paint used in pavement treatments must comply with the chromaticity coordinates established by the FHWA. See FHWA's Interim Approval Memorandum 1A-14 for guidance.<sup>1</sup>

To ensure roadway safety, the material applied to the pavement should be carefully considered. Recommended materials include methyl methacrylate (MMA) with supplied aggregates for skid and slip resistance, and preformed thermoplastic panels applied by a heat source.

Figure 6-41f: Two-Stage Turn Queue Box



South Street at Pohukaina Street. Credit: DTS

Figure 6-41e: Bike Box



McCully Street at Kapiolani Boulevard. Credit: DTS

Figure 6-41g: Sharrow Enhanced with Green Pavement Treatment



Waialae Avenue. Credit: DTS

<sup>1</sup> For more information, see [https://mutcd.fhwa.dot.gov/resources/interim\\_approval/ia14/index.htm](https://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/index.htm).