MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**TEMPORARY LANE SEPARATOR SYSTEM**

COS:CGB 1 of 3 APPR:CT:CRB:04-30-24

**a. Description.** This work consists of furnishing, installing, maintaining, and removing a prefabricated lane separator system as specified in this special provision. Use a temporary lane separator system to divide and channelize lanes of traffic throughout a project.

**b. Materials.** The lane separator system consists of three main components: A series of raised separator units, high target value vertical markers, and profile reflectors. Ensure the system is a *NCHRP 350* or a *MASH* compliant device. Furnish a letter from the *FHWA* confirming the selected system is eligible for federal aid reimbursement as a *NCHRP 350* or *MASH* compliant device.

1. Raised Separator Units. The raised separator consists of one or both basic units: a separator unit and an end unit. The separator cross section must furnish minimal resistance to vehicle tires and be designed to direct the vehicle back onto the intended path. In addition, ensure the separator units are designed to withstand traffic impacts.

A. Ensure raised separator units are a size and weight such that they are individually portable without requiring mechanical means. Ensure the sections are a maximum of 12 inches in width, and a maximum of 4 inches in height.

B. To increase target value in daylight hours, ensure the entire surface of the separator is colored to conform to the pavement markings that they supplement unless otherwise approved by the Engineer.

C. Ensure the raised separator units can receive a minimum of one reflecting element that conforms flush to the shape of the separator and color of the pavement markings it supplements.

D. Design each individual raised separator unit for the installation of a high target value marker that includes different types of markers, including tubular marker posts, elliptical delineators, and marker panels at a minimum.

E. Design the raised separator units to allow drainage through the lane separator installation. This may be accomplished by features on the unit itself, or by the recommended spacing of the units on the roadway.

The raised separator units may be interconnecting or free standing depending on the type of system furnished. Install the units at 2-inch spacing measured end to end. Design the raised units to encompass the entire length of lane separation until traffic is shifted back into its normal lanes. Do not intermix different types of lane separator systems on the same project.

2. High Target Value Markers. Ensure the type and color of high target value markers to be used on the project are approved by the Engineer prior to installation. Other types of high target value markers may be furnished with the Engineer’s approval.

A. High target value markers are safety orange in color with alternating white stripes, a maximum of 12 inches wide, and extend a minimum of 28 inches above the roadway. Each high target value marker must accommodate at least two 4-inch bands of Type IV reflective sheets of white and orange furnishing a minimum retro-reflective area of 50 square inches facing traffic. Ensure each high target value marker is securely attached to the raised separator unit in a manner that holds the marker in a vertical position and will restore the marker to the vertical position if struck by a vehicle. Ensure the marker is composed of an impact resistant material that consists of white and orange Type IV retro-reflective reboundable sheeting meeting the requirements of *ASTM D4956*. Install markers along the length of the separator system to furnish an on-center spacing at 25 foot spacing unless otherwise approved by the Engineer.

3. Profile Reflecting Elements. Furnish amber or crystal reflecting elements that match the color of the separator unit and markings to delineate the profile of the raised separator units at night. Design reflecting elements to adhere to the top and/or sides of the separator units or utilize snap-in arcs with at least seven reflecting elements on each side. Ensure all raised separator units are equipped with reflecting profile elements visible to all directions of oncoming traffic. The reflective elements must meet reflectivity requirements in *ASTM D4280* for Raised Pavement Markers and or have the following photometric performance data in millicandela per lux (mcd/lux) for the inclinationangle of 0 degrees:

|  |  |  |  |
| --- | --- | --- | --- |
| Angle of Observation -α | Entrance  Angle -β | Amber  (mcd/lux) | Crystal (white)  (mcd/lux) |
| 0.3 degrees | 5 degrees | 70 | 140 |
| 0.5 degrees | 10 degrees | 45 | 90 |
| 1.0 degrees | 10 degrees | 18 | 36 |
| 2.0 degrees | 15 degrees | 2.3 | 4.6 |

**c. Construction.** Install the lane separator system in accordance with the manufacturer’s recommendations at the locations detailed on the plans, or as directed by the Engineer.

1. Surface Preparation. Install the lane separator system on a smooth continuous paved surface. Repair defects such as potholes, uneven joints etc. prior to installation. Do not install the lane separator system over centerline corrugations, shoulder corrugations, or manhole covers. Remove all conflicting pavement markings, raised pavement markers and delineator posts in the location where the lane separator system is to be installed.

2. Raised Separator Units. Begin and end each run of the lane separator system with a tapered end unit if tapered end units are an option for the system. Interconnect and secure all raised separator units and end units prior to anchoring the system to the roadway. If the raised separator units are not required to be interconnected, install the units at 2-inch spacing measured end to end.

Use the anchoring option specified in accordance with the manufacturer’s recommended installation procedures or as directed by the Engineer. Use only anchors, hardware and other installation materials recommended by the manufacturer. Install each raised separator unit with the manufacturer recommended number of anchors and/or adhesive. Field conditions may require the installation of additional anchors and/or adhesive as directed by the Engineer. When installing the system on a new bridge deck, the installation method must meet manufacturer’s recommendations and be approved by the Engineer prior to installation.

3. Separator Unit Reflectors. Install reflecting profile elements on each raised separator unit. Ensure the reflecting profile elements are the same color as the pavement markings the lane separator is installed to supplement.

4. High Target Value Markers. Install high target value markers in the raised separator units at 25 foot spacing unless otherwise approved by the Engineer. Replace all high target value markers that are damaged, fail to rebound after contact, or have damaged sheeting resulting in a loss of reflectivity. Periodic cleaning of the markers may be required as directed by the Engineer. Do not intermix high target value markers of different types or colors on the same lane separator installation.

5. Maintain the lane separator system and all appurtenances for the duration of the contract. Remove any debris that collects on or around the lane separator system. Ensure the reflectivity of the target markers and the reflective elements on the raised separator sections is maintained; periodic cleaning may be required. Realign and secure any sections that shift or move due loss of adhesion or contact with traffic. Repair or replace all damaged components as directed by the Engineer.

6. Restoration. When the lane separator system is removed, the pavement upon which the system was installed will require repairs. Remove all mounting hardware and/or adhesive remaining on the pavement and repair any voids or other damage caused by installation of the system as per the manufacturer’s recommendations and or as directed by the Engineer.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit prices using the following pay items:

**Pay Item Pay Unit**

Lane Separator System, (color), Temp Foot

Lane Separator System, High Target Value Marker, Temp, Replacement Each

1. **Lane Separator System, (color), Temp** will be measured along and parallel to the centerline of the lane separator system, and includes all materials (ie, lane separator unit, reflectors, and high target value markers) costs for furnishing, installing, maintaining, cleaning, and removing the lane separator system for the duration of the contract. The specified color refers to the color of the raised separator units, and the reflectors installed on the raised separator units. **Lane Separator System, (color), Temp** also includes all costs for any required repairs to the pavement following removal of the system. Payment will be made for the maximum quantity in use at one time on the project, at the time of installation. If damage to the lane separator system occurs, repairs or replacement will be as directed by the Engineer.

2. **Lane Separator System, High Target Value Marker, Temp, Replacement** includes all costs for labor, materials, and equipment to replace a high target value marker that is damaged.