



# National Committee on Uniform Traffic Control Devices

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2       **National Committee on Uniform Traffic Control Devices (NCUTCD)**  
3       **Recommended Changes to Proposed Text for 11<sup>th</sup> Edition of the MUTCD**  
4       **Docket Number: FHWA-2020-0001**

5       **Federal Register Item Number:** 242-256

6       **NPA MUTCD Section Number:** Sections 2G.01 through 2G.26

7       **Legend:** Base text shown in proposal is the NPA “clean” proposed text.

- 8       • **NCUTCD recommendation for text to be added in final rule.**
- 9       • **NCUTCD recommendation for text to be deleted in final rule.**
- 10      • **NCUTCD recommendation for text to be moved/relocated in final rule.**
- 11      • **NPA text that was not previously approved by NCUTCD but is not approved.**
- 12      • Explanatory note: [Note that explains purpose of recommended change.]

13      The following pages present NCUTCD recommendations for changes to the MUTCD NPA  
14      proposed text, tables, and figures for Chapter 2G. Below is a short summary of the NCUTCD  
15      position for each section of this chapter. A more detailed summary is provided at the beginning  
16      of each section.

- 17      • NPA #242, Section 2G.01: Changes recommended based on Council action in spring 2021.
- 18      • Section 2G.02: NCUTCD agrees with NPA content (no changes recommended).
- 19      • NPA #243, Section 2G.03: Changes recommended based on Council action in spring 2021.
- 20      • NPA #244, Section 2G.04: Changes recommended based on Council action in spring 2021.
- 21      • NPA #245, Section 2G.05: Changes recommended based on Council action in spring 2021.
- 22      • Section 2G.06: NCUTCD agrees with NPA content (no changes recommended).
- 23      • NPA #246, Section 2G.07: NCUTCD agrees with NPA content (no changes recommended).
- 24      • Section 2G.08: NCUTCD agrees with NPA content (no changes recommended).
- 25      • Section 2G.09: NCUTCD agrees with NPA content (no changes recommended).
- 26      • Section 2G.10: NCUTCD agrees with NPA content (no changes recommended).
- 27      • NPA #247, Section 2G.11: Changes recommended based on Council action in spring 2021.
- 28      • Section 2G.12: NCUTCD agrees with NPA content (no changes recommended).
- 29      • Section 2G.13: NCUTCD agrees with NPA content (no changes recommended).
- 30      • Section 2G.14: NCUTCD agrees with NPA content (no changes recommended).
- 31      • Section 2G.15: NCUTCD agrees with NPA content (no changes recommended).
- 32      • Section 2G.16: NCUTCD agrees with NPA content (no changes recommended).
- 33      • NPA #248, Section 2G.17: NCUTCD agrees with NPA content (no changes recommended).
- 34      • Section 2G.18: Changes recommended based on Council action in spring 2018.
- 35      • NPA #249, Section 2G.19: Changes recommended based on Council action in spring 2021.
- 36      • NPA #250, Section 2G.20: Changes recommended based on Council action in spring 2021.
- 37      • NPA #251, Section 2G.21: Changes recommended based on Council action in spring 2021.
- 38      • NPA #252, Section 2G.22: NCUTCD agrees with NPA content (no changes recommended).
- 39      • NPA #253, Section 2G.23: NCUTCD agrees with NPA content (no changes recommended).

- NPA #254, Section 2G.24: Changes recommended based on Council action in spring 2021.
  - NPA #255, Section 2G.25: NCUTCD agrees with NPA content (no changes recommended).
  - NPA #256, Section 2G.26: Changes recommended based on Council action in spring 2021.

**Section 2G.01 Comments:** NCUTCD generally agrees with 2G.01 as presented in the NPA, with a minor revision of “bike” to “bicycle” to be consistent with other parts of the MUTCD.

## Section 2G.01 Scope

## Support:

Preferential lanes are lanes designated for special traffic uses such as high-occupancy vehicles (HOVs), light rail, buses, taxis, or bicycles. Preferential lane treatments might be as simple as restricting a turning lane to a certain class of vehicles during peak periods, or as sophisticated as providing a separate roadway system within a highway corridor for certain vehicles.

Preferential lanes might be barrier-separated (on a separate alignment or physically separated from the other travel lanes by a barrier or median), buffer-separated (separated from the adjacent general-purpose lanes only by a narrow buffer area created with longitudinal pavement markings), or contiguous (separated from the adjacent general-purpose lanes only by a lane line). Preferential lanes might allow continuous access with the adjacent general-purpose lanes or restrict access only to designated locations. Preferential lanes might be operated in a constant direction or operated as reversible lanes. Some reversible preferential lanes on a divided highway might be operated counter-flow to the direction of traffic on the immediately adjacent general-purpose lanes.

Preferential lanes might be operated on a 24-hour basis, for extended periods of the day, during peak travel periods only, during special events, or during other activities.

Open-road tolling lanes and toll plaza lanes that segregate traffic based on payment method are not considered preferential lanes. Chapter 2F contains information regarding signing of open-road tolling lanes and toll plaza lanes.

Managed lanes typically restrict access with the adjacent general-purpose lanes to designated locations only.

Under certain operational strategies, such as the occupancy requirement of an HOV lane changing in response to actual congestion levels, a managed lane is a special type of preferential lane (see Sections 2G.03 through 2G.07).

A managed lane operated on a real-time basis in response to changing conditions might be operated as an HOV lane for a period of time as needed to manage congestion levels.

Sections 2G.17 through 2G.19 contain additional information regarding signs for managed lanes that use tolling or pricing as a management strategy.

Section 9B.04 contains information regarding Preferential Lane signs for **bike** bicycle lanes.

### **Standard:**

**Unless otherwise provided, the provisions of this Chapter shall not apply to ~~bike~~ bicycle lanes.**

**Section 2G.02 Comments:** NCUTCD agrees with 2G.02 as presented in the NPA.

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90 **Section 2G.02 Sizes of Preferential and Managed Lane Signs**

91 **Standard:**

92     **Except as provided in Section 2A.11, the sizes of preferential and managed lane**  
93     **signs that have standardized designs shall be as shown in Table 2G-1.**

94     Support:

95         Section 2A.11 contains information regarding the applicability of the various columns in  
96         Table 2G-1.

97     Option:

98         Signs larger than those shown in Table 2G-1 may be used (see Section 2A.11).

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102 NCUTCD generally agrees with Table 2G-1 as presented in the NPA, but recommends revisions  
103 as follows:

- 104     • Add a new R3 series EXPRESS ONLY down arrow sign as depicted in Figure 2G-20
- 105     • Add the W3-9 TRAFFIC USING SHOULDER (times) sign as depicted in Figure 2G-32  
106         sheet 2

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Table 2G-1. Managed and Preferential Lanes Sign and Plaque Minimum Sizes

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Oversized
			Single Lane	Multi-Lane			
Preferential Lane Vehicle Occupancy Definition (post-mounted)	R3-10,10a	2G.04	30 x 42	30 x 42	36 x 60	78 x 96	78 x 96
Preferential Lane Periods of Operation (post-mounted)	R3-11 series	2G.05	30 x 42	30 x 42	36 x 60	78 x 96	78 x 96
Motorcycles Allowed (plaque)	R3-11P	2G.03	30 x 15	30 x 15	36 x 18	78 x 36	78 x 36
Preferential Lane Ahead or Ends (post-mounted)	R3-12, 12a, 12b, 12c, 12d, 12e	2G.06	30 x 42	30 x 42	36 x 60	48 x 84	48 x 84
Preferential Lane Ahead or Ends (post-mounted)	R3-12f, 12g		30 x 36	30 x 36	36 x 48	48 x 60	48 x 60
Preferential Lane Ahead (post-mounted)	R3-12h		36 x 48	36 x 48	48 x 66	60 x 84	60 x 84
Preferential Lane Operation (overhead)	R3-13,13a	2G.04	66 x 36	66 x 36	84 x 48	144 x 78	144 x 78
HOV Lane Operation (overhead)	R3-14,14a	2G.05	72 x 60	72 x 60	96 x 72	144 x 108	144 x 108
HOV Lane Operation (overhead)	R3-14b		72 x 60	72 x 60	96 x 72	120 x 96	120 x 96
Preferential Lane Operation (overhead)	R3-14c	2G.05	90 x 60	90 x 60	108 x 72	156 x 102	168 x 102
HOV Lane Ahead (overhead)	R3-15	2G.06	66 x 36	66 x 36	84 x 48	102 x 60	102 x 60
HOV Lane Begins XX Miles (overhead)	R3-15a	2G.06	78 x 48	114 x 72	144 x 84	150 x 108	150 x 108
HOV Lane Ends (overhead)	R3-15b,15c	2G.07	66 x 36	66 x 36	84 x 48	102 x 60	102 x 60
Preferential Lane Ahead or Ends (overhead)	R3-15d,15e	2G.07	42 x 36	42 x 36	54 x 48	72 x 60	72 x 60
Priced Managed Lane Vehicle Occupancy Definition (post-mounted)	R3-40	2G.17	—	—	54 x 66	54 x 66	66 x 78
Priced Managed Lane Ends (post-mounted)	R3-42,42b	2G.18	—	—	48 x 60	48 x 60	60 x 78
Priced Managed Lane Restriction Ends (post-mounted)	R3-42b	2G.18	—	—	48 x 60	48 x 60	60 x 78
Priced Managed Lane Ends Advance (post-mounted)	R3-42a	2G.18	—	—	48 x 66	48 x 66	60 x 84
Priced Managed Lane Restriction Ends Advance (post-mounted)	R3-42c	2G.18	—	—	48 x 66	48 x 66	60 x 84
Priced Managed Lane Vehicle Occupancy Definition	R3-43	2G.18	—	—	138 x 66	138 x 66	—
Priced Managed Lane (overhead)	R3-44	2G.18	—	—	90 x 84	90 x 84	—
Priced Managed Lane (overhead)	R3-44a	2G.18	—	—	132 x 84	132 x 84	—
Priced Managed Lane Ends (overhead)	R3-45	2G.18	—	—	90 x 66	90 x 66	—
Priced Managed Lane Restriction Ends (overhead)	R3-45a	2G.18	—	—	114 x 66	114 x 66	—
Priced Managed Lane Toll Rate	R3-48	2G.18	—	—	Varies	Varies	—

**Table 2G-1. Managed and Preferential Lanes Sign and Plaque Minimum Sizes**

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Oversized
			Single Lane	Multi-Lane			
Priced Managed Lane Toll Rate	R3-48a	2G.18	—	—	Varies	Varies	—
Part-Time Travel on Shoulder Operation	R3-51	2G.21	—	—	66 x 78	66 x 78	—
No Trucks (plaque)	R3-51aP	2G.21	—	—	66 x 12	66 x 12	—
No Trucks or Buses (plaque)	R3-51bP	2G.21	—	—	66 x 24	66 x 24	—
Emergency Stopping Only Other Times (plaque)	R3-51cP	2G.21	—	—	54 x 42	54 x 42	—
Part-Time Travel on Shoulder Variable Operation	R3-51d	2G.21	—	—	66 x 78	66 x 78	—
Part-Time Travel on Shoulder on Green Arrow	R3-51e	2G.21	—	—	66 x 78	66 x 78	—
Part-Time Travel on Shoulder Ends	R3-52	2G.21	—	—	66 x 72	66 x 72	—
Part-Time Travel on Shoulder Ends Advance	R3-52a	2G.21	—	—	66 x 72	66 x 72	—
Shoulder Must Exit Advance	R3-52b	2G.21	—	—	66 x 72	66 x 72	—
Part-Time Travel on Shoulder Begins Advance	R3-52c	2G.21	—	—	66 x 72	66 x 72	—
Begin Exit Lane	R3-56	2G.21	—	—	48 x 72	48 x 72	—
To Traffic on Shoulder (plaque)	R3-57P	2G.21	—	—	36 x 18	36 x 18	—
HOV (plaque)	W16-11P	2G.09	24 x 12	24 x 12	30 x 18	30 x 18	30 x 18
Preferential Lane Entrance Gore	E8-1	2G.10	—	—	48 x 96	48 x 96	—
Preferential Lane Intermediate Entrance Gore	E8-1a	2G.10	—	—	48 x 84	48 x 84	—
Preferential Lane Entrance Direction (overhead)	E8-2	2G.11	—	—	228 x 72	228 x 72	—
Preferential Lane Entrance Direction (post-mounted)	E8-2a	2G.11	—	—	186 x 108	186 x 108	—
Preferential Lane Entrance Advance	E8-3	2G.11	—	—	186 x 96	186 x 96	—
Preferential Lane Direct Exit Gore	E8-4	2G.15	—	—	60 x 78	60 x 78	—
Preferential Lane Intermediate Egress Direction	E8-5	2G.13	—	—	Varies x 90	Varies x 90	—
Preferential Lane Intermediate Egress Advance	E8-6	2G.13	—	—	Varies x 84	Varies x 84	—

Notes:

1. Larger signs may be used when appropriate
2. Dimensions in inches are shown as width x height

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112 **Section 2G.03 Comments:** NCUTCD generally agrees with 2G.03 as presented in the NPA, but  
113 recommends revising as follows:

- 114 • Revise “Periods of Operation signs” to “Preferential Lane Operation signs” (2 instances)
- 115 • Revise the fifth Standard statement on signs with limited lateral clearance to add “and/or over  
116 the shoulder” to encompass signs on shoulders, as they may be susceptible to being struck by  
117 vehicles on the shoulder
- 118 • Revise chapter and section references as needed

119

120 **Section 2G.03 Regulatory Signs for Preferential Lanes – General**

121 **Standard:**

122 When a preferential lane is established, the Preferential Lane regulatory signs (see  
123 Figure 2G-1) and pavement markings (see Chapter 3E) for these lanes shall be used to  
124 advise road users.

125 **Support:**

126 Preferential Lane (R3-10 series through R3-15 series) regulatory signs consist of several  
127 different general types of regulatory signs as follows (see Figure 2G-1):

- 128 A. Vehicle Occupancy Definition signs define the vehicle occupancy requirements  
129 applicable to an HOV lane (such as “2 OR MORE PERSONS PER VEHICLE”) or types  
130 of vehicles not meeting the minimum occupancy requirement (such as motorcycles or  
131 ILEVs) that are allowed to use an HOV lane (see Section 2G.04).
- 132 B. **Periods of Preferential Lane** Operation signs notify road users of the days and hours  
133 during which the preferential restrictions are in effect (see Section 2G.05).
- 134 C. Preferential Lane Advance signs notify road users that a preferential lane restriction  
135 begins ahead (see Section 2G.06).
- 136 D. Preferential Lane Ends signs notify users of the termination point of the preferential lane  
137 restrictions (see Section 2G.07).

138 **Standard:**

139 Regulatory signs applicable only to a preferential lane shall be distinguished from  
140 regulatory signs applicable to general-purpose lanes by the inclusion of the applicable  
141 symbol(s) and/or word(s) (see Figure 2G-1).

142 **Support:**

143 The symbol and word message displayed on a particular Preferential Lane regulatory sign  
144 will vary based on the specific type of allowed traffic and on other related operational constraints  
145 that have been established for a particular lane, such as an HOV lane, a bus lane, or a taxi lane.

146 **Option:**

147 Changeable message signs may supplement, substitute for, or be incorporated into static  
148 Preferential Lane regulatory signs where travel conditions change or where multiple types of  
149 operational strategies (such as variable occupancy requirements or vehicle types) are used and  
150 varied throughout the day or week, or on a real-time basis, to manage the use of, control of, or  
151 access to preferential lanes.

152 **Support:**

153 Figure 2G-1 illustrates examples of changeable messages incorporated into static Preferential  
154 Lane regulatory signs displaying open and closed status using lane-use control signal indications  
155 (see Chapter 4M4T). The LED sign legends are normally the variable text such as the open and  
156 closed lane legends.

157 **Standard:**

158 When changeable message signs (see Chapter 2L) are used as regulatory signs for  
159 preferential lanes, they shall be the required sign size and shall display the required letter  
160 height and legend format that corresponds to the type of roadway facility and design speed.

161 **Guidance:**

162 When Preferential Lane regulatory signs are used on conventional roads, the decision  
163 regarding whether to use a post-mounted or overhead version of a particular type of sign should  
164 be based on an engineering study that considers the available space, the existing signs for the

165 adjacent general-purpose traffic lanes, roadway and traffic characteristics, the proximity to  
166 existing overhead signs, the ability to install overhead signs, and any other unique local factors.

167 If overhead regulatory signs applicable only to a preferential lane are located in  
168 approximately the same longitudinal position along the highway as overhead signs applicable  
169 only to the general-purpose lanes, the signs for the preferential lane should be separated  
170 laterally from the signs for the general-purpose lanes to the maximum extent practical to  
171 minimize conflicting information, while maintaining their visual relationship to the lanes below  
172 necessitated by specific legend or arrows indicating lane assignment.

173 **Standard:**

174 **If used, overhead Preferential Lane (R3-13 series, R3-14 series, and R3-15 series)**  
175 **regulatory signs shall be installed on the side of the roadway where the entrance to the**  
176 **preferential lane is located and any appropriate adjustments shall be made to the sign**  
177 **message.**

178 **Option:**

179 Where a median of sufficient width is available, the R3-13 series and R3-15 series signs may  
180 be post  
181 mounted.

182 **Support:**

183 The sizes for Preferential Lane regulatory signs will differ to reflect the design speeds for  
184 each type of roadway facility. Table 2G-1 provides sizes for each type of roadway facility.

185 **Guidance:**

186 *The edges of Preferential Lane regulatory signs that are post-mounted on a median barrier  
187 should not project beyond the outer edges of the barrier, including in areas where lateral  
188 clearance is limited.*

189 **Option:**

190 Where lateral clearance is limited, Preferential Lane regulatory signs that are post-mounted  
191 on a median barrier and that are 72 inches or less in width may be skewed up to 45 degrees in  
192 order to fit within the barrier width or may be mounted higher, such that the vertical clearance to  
193 the bottom of the sign, light fixture, or structural support, whichever is lowest, is not less than 17  
194 feet above any portion of the pavement and shoulders.

195 **Standard:**

196 **Where lateral clearance is limited, Preferential Lane regulatory signs that are post-**  
197 **mounted on a median barrier and that are wider than 72 inches shall be mounted with a**  
198 **vertical clearance that complies with the provisions of Section 2A.1814 for overhead**  
199 **mounting if any portion of the sign extends over the roadway and/or over the shoulder.**

200 **Guidance:**

201 *On conventional roadways, Preferential Lane regulatory sign spacing should be determined  
202 by engineering judgment based on speed, block length, distances from adjacent intersections,  
203 and other site*

204 *specific considerations.*

205 **Support:**

206 Sections 2G.04 and 2G.05 contain provisions regarding the placement of Preferential Lane  
207 regulatory signs on freeways and expressways.

208 **Standard:**

209 **The signs illustrated in Figure 2G-1 that incorporate the diamond symbol shall be used**  
210 **exclusively with preferential lanes for high-occupancy vehicles to indicate the particular**

211 occupancy requirement and time restrictions applying to that lane. The signs illustrated in  
212 Figure 2G-1 that do not have a diamond symbol shall be used with preferential lanes that  
213 are not HOV lanes, but are designated for use by other types of vehicles (such as bus  
214 and/or taxi use).

215 The diamond symbol shall not be used on the bus, taxi, or bicycle Preferential Lane  
216 signs.

217 **Vehicle Occupancy Definition, Periods of Preferential Lane Operation, and Preferential**  
218 **Lane Advance regulatory signs for HOV lanes shall display the minimum allowable vehicle**  
219 **occupancy requirement established for each HOV lane, displayed immediately after the**  
220 **word message HOV.**

221 Support:

222 The agencies that own and operate HOV lanes have the authority and responsibility to  
223 determine how they are operated and the minimum occupancy requirements. Information about  
224 federal requirements for certain types of vehicles not meeting the minimum occupancy  
225 requirement to be eligible to use HOV lanes that receive Federal-aid program funding and about  
226 requirements associated with proposed significant changes to the operation of an existing HOV  
227 lane and certain vehicles are contained in the “Federal-Aid Highway Program Guidance on High  
228 Occupancy Vehicle (HOV) Lanes” (see Section 1A.[4405](#)).

229 Figures 2G-2 and 2G-3 illustrate the use of regulatory signs for the beginning, along the  
230 length, and at the end of contiguous or buffer-separated preferential lanes that provide  
231 continuous access with the adjacent general-purpose lanes.

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235 **Section 2G.04 Comments:** NCUTCD generally agrees with 2G.04 as presented in the NPA, but  
236 recommends revising “Periods of Operation signs” to “Preferential Lane Operation signs” (4  
237 instances).

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240 **Section 2G.04 Vehicle Occupancy Definition Signs (R3-10 Series, R3-13 Series)**  
241 **Standard:**

242 **The R3-10, R3-13, and R3-13a Vehicle Occupancy Definition signs (see Figure 2G-1)**  
243 **shall be used where agencies determine that it is appropriate to provide a sign that defines**  
244 **the minimum occupancy of vehicles that are allowed to use an HOV lane.**

245 **Guidance:**

246 *The Inherently Low Emission Vehicle (ILEV) (R3-10a) sign (see Figure 2G-1) should be used*  
247 *when it is permissible for a properly labeled and certified ILEV, regardless of the number of*  
248 *occupants, to use an HOV lane. When used, the ILEV signs should be post-mounted in advance*  
249 *of and at intervals along the HOV lane based upon engineering judgment and the placement of*  
250 *other Preferential Lane regulatory signs. The R3-10a sign is only applicable to HOV lanes and*  
251 *should not be used with other preferential lane applications.*

252 Support:

253 ILEVs are defined by the Environmental Protection Agency (EPA) as vehicles having no fuel  
254 vapor (hydrocarbon) emissions and are certified by the EPA as meeting the emissions standards  
255 and requirements specified in 40 CFR §88.311-93 and 40 CFR §88.312-93(c).

256       Section 2G.18 contains information regarding the legends of Vehicle Occupancy Definition  
257 signs for a priced managed lane that has an occupancy requirement for non-toll travel.

258 **Standard:**

259       **For barrier- or buffer-separated or contiguous preferential lanes where access between**  
260 **the preferential and general-purpose lanes is restricted to designated locations on freeways**  
261 **and expressways, an overhead Vehicle Occupancy Definition (R3-13 or R3-13a) sign shall**  
262 **be installed at least 1/2 mile in advance of the beginning of or initial entry point to an HOV**  
263 **lane. These signs shall only be displayed in advance of the beginning of or initial or**  
264 **intermediate entry point to HOV lanes.**

265       **For buffer-separated or contiguous HOV lanes where access is restricted to designated**  
266 **locations on freeways and expressways, the sequence of a post-mounted Periods of**  
267 **Preferential Lane Operation (R3-11a) sign (see Section 2G.05) followed by a post-mounted**  
268 **Vehicle Occupancy Definition (R3-10) sign shall be located at intervals not greater than 1/2**  
269 **mile along the length of designated gaps where vehicles are allowed to legally access the**  
270 **HOV lane, and within designated enforcement areas as defined by the operating agency.**

271       Option:

272       **For buffer-separated or contiguous HOV lanes where access is restricted to designated**  
273 **locations on freeways and expressways, the sequence of a post-mounted Periods of Preferential**  
274 **Lane Operation (R3-11a) sign (see Section 2G.05) followed by a post-mounted Vehicle**  
275 **Occupancy Definition (R3-10) sign may be located at intervals of approximately 1/2 mile along**  
276 **the length of the HOV lane.**

277       For barrier-separated HOV lanes on freeways and expressways, the sequence of a post-  
278 mounted Periods of Preferential Lane Operation (R3-11a) sign (see Section 2G.05) followed by a  
279 post-mounted Vehicle Occupancy Definition (R3-10) sign may be located at intervals of  
280 approximately 1/2 mile along the length of the HOV lane, at intermediate entry points, and at  
281 designated enforcement areas as defined by the operating agency.

282       **Standard:**

283       **For buffer-separated or contiguous HOV lanes where continuous access with the**  
284 **adjacent general purpose lanes is provided on freeways and expressways, the sequence of a**  
285 **post-mounted Periods of Preferential Lane Operation (R3-11a) sign (see Section 2G.05)**  
286 **followed by a post-mounted Vehicle Occupancy Definition (R3-10) sign, and ILEV (R3-**  
287 **10a) signs if appropriate, shall be located at intervals not greater than 1/2 mile along the**  
288 **length of the HOV lane.**

289       **Guidance:**

290       **On freeways and expressways, the signs within each Preferential Lane regulatory sign**  
291 **sequence should be separated by a minimum distance of 800 feet and a maximum distance of**  
292 **1,000 feet.**

293       **On conventional roads, the distance between Preferential Lane regulatory signs within each**  
294 **sequence should be determined by engineering judgment based on speed, block length, distances**  
295 **from adjacent intersections, and other site-specific considerations.**

296       **Standard:**

297       **For all types of direct access ramps that provide access to or lead to HOV lanes, a post-**  
298 **mounted Vehicle Occupancy Definition (R3-10) sign, and an ILEV (R3-10a) sign if**  
299 **appropriate, shall be used at the beginning or initial entry point for the direct access ramp.**

302 **Section 2G.05 Comments:** NCUTCD generally agrees with 2G.05 as presented in the NPA, but  
303 recommends revising as follows:

- 304 • Delete references to “full-time” and “part-time” since a “Full-time” or “Part-time”  
305 Preferential Lane Operation sign is not defined anywhere for Preferential Lane Operation  
306 signs and the usage of this term, in this context, is awkward and could lead to confusion
- 307 • Add clarifying text where these terms are deleted
- 308 • Revise chapter and section references as needed

310 **Section 2G.05 Preferential Lane Operation Signs (R3-11 Series, R3-14 Series)**

311 Support:

312 The standardized sizes of post-mounted Preferential Lane Operation (R3-11 series) signs are  
313 consistent to accommodate any future addition or removal of a single line of legend for each  
314 sign. Each size accommodates two lines of legend for the times of day and days of week that the  
315 regulation is in effect. Consistent sign sizes are beneficial for agencies when ordering sign  
316 materials, as well as when making legend changes to existing signs if changes occur to operating  
317 times or occupancy restrictions in the future.

318 Guidance:

319 Where the regulation is in effect during more than one time period of the day, such as during  
320 the morning and afternoon peak periods, the height of the R3-11 series signs should be suitably  
321 increased to accommodate the additional line(s) of legend.

322 **Standard:**

323 When used, the post-mounted Preferential Lane Operation (R3-11 series) signs shall be  
324 located adjacent to the preferential lane, and the overhead Preferential Lane Operation  
325 (R3-14 series) signs shall be mounted directly over the lane.

326 The legend format of the post-mounted Preferential Lane Operation (R3-11 series)  
327 signs shall have the following sequence:

- 328 A. Top Lines: Lanes applicable, such as “RIGHT LANE” or “2 RIGHT LANES”
- 329 B. Middle Lines: Eligible uses, such as “HOV 2+ ONLY” (or 3+ or 4+ if appropriate)  
330 or “BUSES ONLY” or other applicable uses or eligible turning movements
- 331 C. Bottom Lines: Applicable times and days, such as “7 AM – 9 AM” or “6:30 AM –  
332 9:30 AM, MON-FRI”

333 The legend format of the overhead Preferential Lane Operation (R3-14 series) signs  
334 shall have the following sequence:

- 335 A. Top Lines: Eligible uses, such as “HOV 2+ ONLY” (or 3+ or 4+ if appropriate) or  
336 “BUSES ONLY” or other applicable uses or eligible turning movements
- 337 B. Bottom Lines: Applicable times and days, with the time and day placed above the  
338 down arrow, such as “7 AM – 9 AM” or “6:30 AM – 9:30 AM, MON-FRI” (When  
339 the operating periods exceed the available line width, the hours and days of the  
340 week shall be stacked as shown for the R3-14a sign in Figure 2G-1.)

341 For preferential lane restrictions that are in effect on a full-time basis, the full-time  
342 Preferential Lane Operation (R3-11b, R3-11c, R3-11e, R3-11g, R3-14b, R3-14e or R3-14g)  
343 signs shall be modified to display no legend relative to the period of operation except as  
344 provided in Paragraph 7.

345 Option:

346 In lieu of using the full time removing the text from the Preferential Lane Operation signs,  
347 the legend 24 HOURS may be substituted for the times and days of the week on the part time

348 Preferential Lane Operation (R3-11, R3-11a, R3-11d, R311f, R3-14, R3-14d, and R3-14f) signs  
349 for preferential lane restrictions that are in effect on a full-time basis.

350 Support:

351 The 24 HOURS legend displayed on the R3-11c sign reinforces the full-time operation where  
352 several facilities in the same area have different hours of operation—some part-time, others full-  
353 time, or where the same lane changes from part-time to full-time operation somewhere along its  
354 length.

355 Standard:

356 **The full-time Preferential Lane Operation (R3-11b, R3-11c, R3-11e, R3-11g, R3-14b,**  
**R3-14e, R314g) signs without a legend, as described in paragraph 06, shall not be used**  
**where the preferential lane restriction is in effect only on a part-time basis.**

359 Option:

360 Where additional movements are allowed from a preferential lane by vehicles not meeting  
361 the preferential lane regulation on an approach to an intersection, the format and words used in  
362 the legend in the middle lines on the post-mounted Preferential Lane Operation (R3-11 series)  
363 signs and on the top line of the overhead Preferential Lane Operation (R3-14 series) signs may  
364 be modified to accommodate the allowable movements (such as “HOV 2+ AND RIGHT  
365 TURNS ONLY”).

366 The MOTORCYCLES ALLOWED (R3-11hP) plaque may be used where motorcycles,  
367 regardless of the number of occupants, are allowed to use an HOV lane.

368 Standard:

369 **If used, the MOTORCYCLES ALLOWED plaque shall be mounted below a post-**  
**370 mounted Preferential Lane Operation (R3-11, R3-11a, or R3-11b) sign.**

371 For all barrier- or buffer-separated or contiguous preferential lanes where access is  
372 restricted to designated locations, an overhead Preferential Lane Operation (R3-14 series)  
373 sign shall be used at the beginning or initial entry point on freeways, expressways, and at  
374 locations on conventional roadways where the preferential lane is not the outermost (far  
375 right or far left) lane of the roadway, and at any intermediate entry points or gaps in the  
376 barrier or buffer where vehicles are allowed to legally enter the access-restricted  
377 preferential lanes. For all barrier-separated and buffer-separated preferential lanes, post-  
378 mounted Preferential Lane Operation (R3-11 series) signs shall be used only as a  
379 supplement to the overhead signs on freeways, expressways, and at locations on  
380 conventional roadways where the preferential lane is not the outermost lane of the roadway  
381 at the beginning or initial entry point, or at any intermediate entry points or gaps in the  
382 barrier or buffer.

383 For buffer-separated or contiguous preferential lanes where continuous access with the  
384 adjacent general-purpose lanes is provided, including those where a preferential lane is  
385 added to the roadway (see Figure 2G-2 for HOV lanes) and those where a general-purpose  
386 lane transitions into a preferential lane (see Figure 2G-3 for HOV lanes), an overhead  
387 Preferential Lane Operation (R3-14 series) sign shall be used at the beginning or initial  
388 entry point of the preferential lane on freeways and expressways.

389 Option:

390 On conventional roads where preferential lane operations exist, R3-11 series post mounted  
391 signs may be used in lieu of or in addition to overhead R3-14 series signs, except where  
392 overhead signs are required as provided in Paragraph 14.

393        Additional overhead (R3-14 series) or post-mounted (R3-11 series) Preferential Lane  
394        Operation signs may be provided along the length of any type of preferential lane.

395        **Standard:**

396        **For all types of direct access ramps that provide access to or lead to preferential lanes, a**  
397        **post mounted Preferential Lane Operation (R3-11 series) sign shall be used at the**  
398        **beginning or initial entry point of the direct access ramp.**

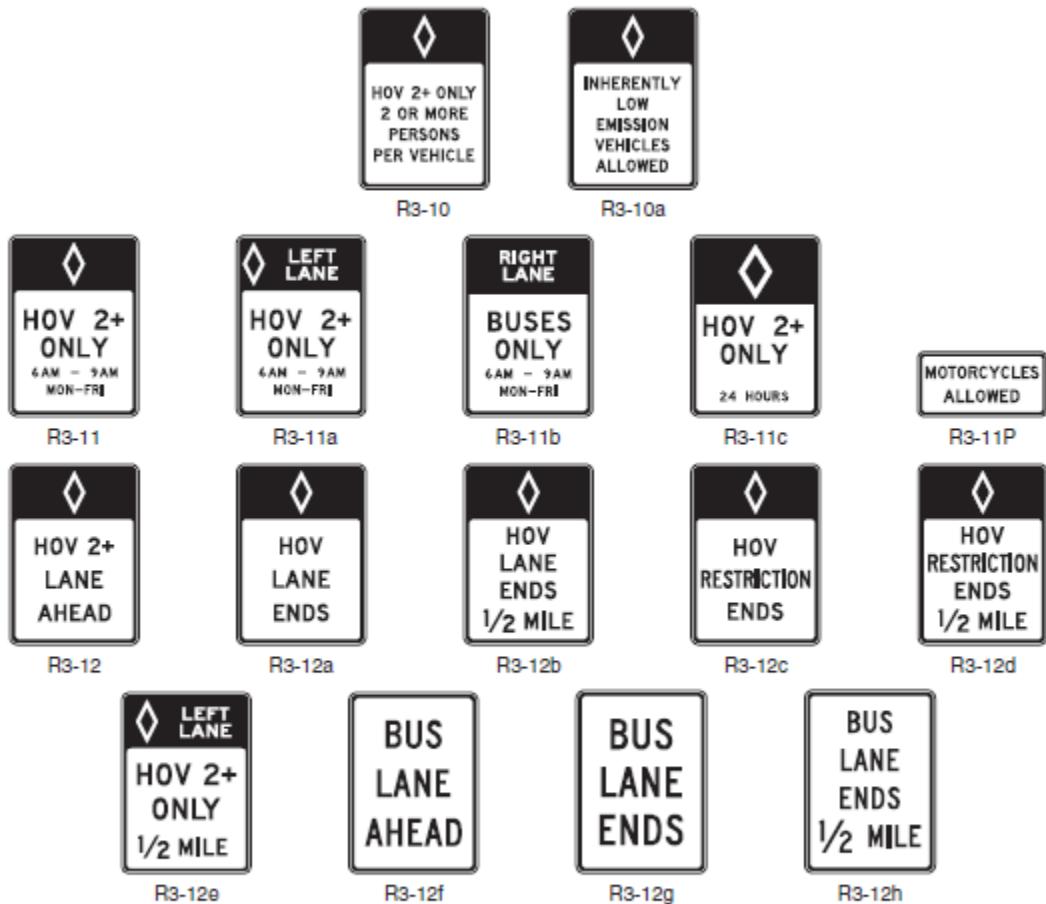
399        Option:

400        For direct access ramps to preferential lanes, an overhead Preferential Lane Operation (R3-14  
401        series) sign may be used at the beginning or initial entry point to supplement the required post-  
402        mounted signs.

403        Lane-use control signals (see Chapter [4M 4T](#)) may be used at access points to preferential  
404        lanes to indicate that a ramp or access roadway leading to the preferential lane or facility, or one  
405        or more specific lanes of the facility, are open or closed (see Figure 2G-15).

406

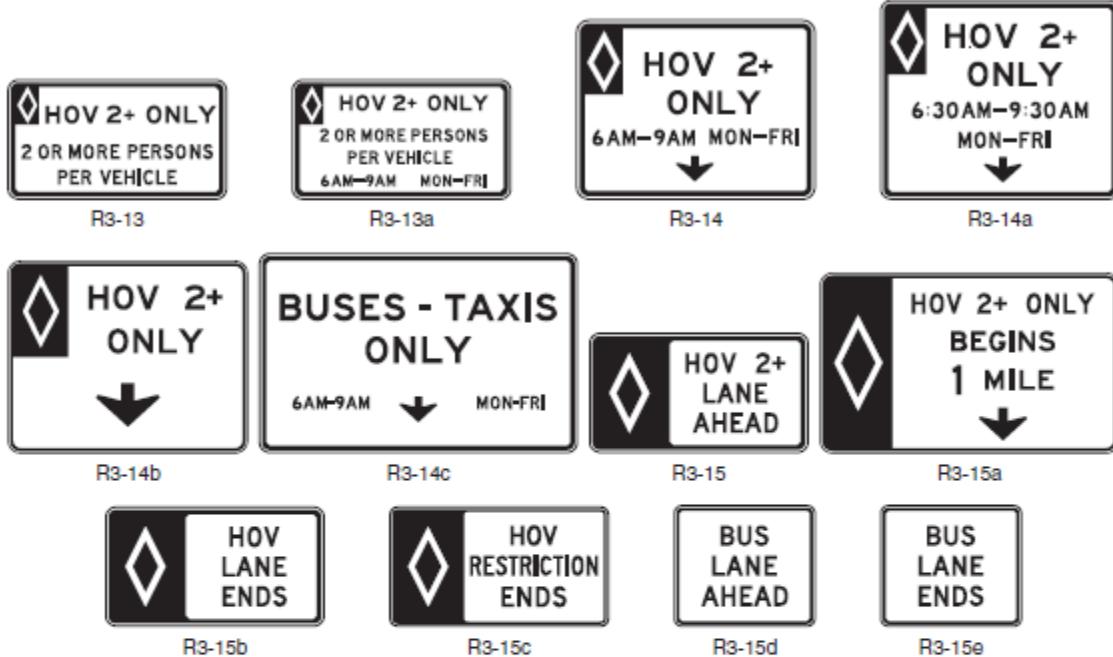
**Figure 2G-1. Preferential Lane Regulatory Signs and Plaques (Sheet 1 of 2)**  
**POST-MOUNTED PREFERENTIAL LANE SIGNS**

**Notes:**

1. The minimum vehicle occupancy requirement may vary for each facility (such as 2+, 3+, 4+).
2. The occupancy requirement may be added to the first line of the R3-12a, R3-12b, R3-12c, and R3-12d signs.
3. Some of the legends shown on these signs are for example purposes only. The specific legend for a particular application should be based upon local conditions, ordinances, and State statutes.

**Figure 2G-1. Preferential Lane Regulatory Signs and Plaques (Sheet 2 of 2)**

**OVERHEAD PREFERENTIAL LANE SIGNS**



A lane-use control signal may be incorporated into an overhead preferential lane regulatory sign to indicate the status of a reversible operation as shown in the following example:



**Notes:**

1. The minimum vehicle occupancy requirement may vary for each facility (such as 2+, 3+, 4+).
2. The occupancy requirement may be added to the first line of the R3-15b and R3-15c signs.
3. Some of the legends shown on these signs are for example purposes only. The specific legend for a particular application should be based upon local conditions, ordinances, and State statutes.
4. Where sufficient median width is available, the R3-13 series and R3-15 series signs may be post-mounted.

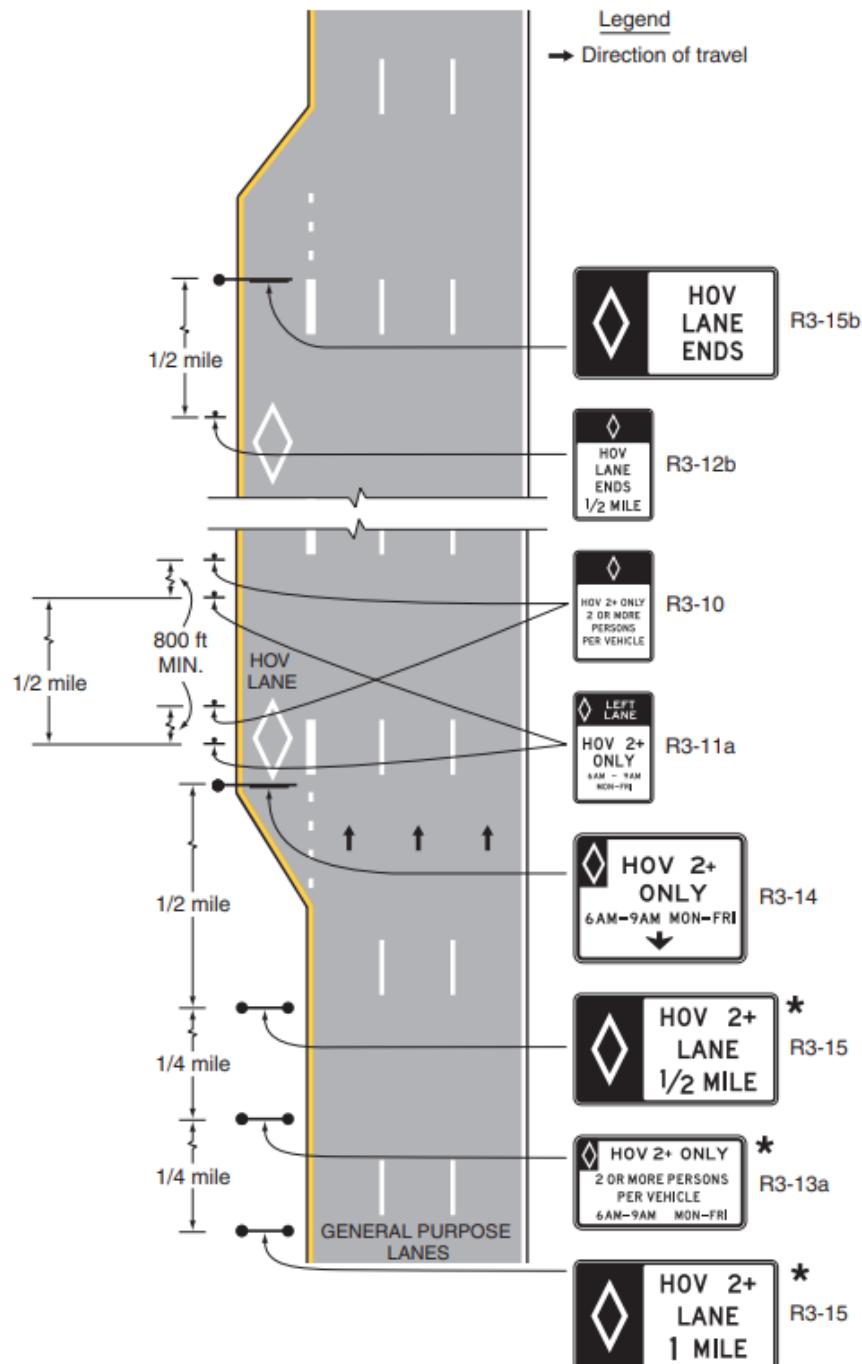
NCUTCD agrees with Figure 2G-2 as presented in the NPA.

**Figure 2G-2. Example of Signing for an Added Continuous-Access Contiguous or Buffer-Separated HOV Lane**

Notes:

1. The minimum vehicle occupancy requirement and hours of operation on the sign may vary for each facility
2. See Chapter 3D for pavement markings
3. Warning signs are not shown
4. Applicable to part-time or full-time HOV restriction
5. This roadway condition indicates the HOV lane will merge with the general purpose lanes upon termination
6. Sets of R3-10 and R3-11a signs should be placed following entrance ramps and at 1/2-mile intervals along the HOV lane

\* Where the median width is insufficient, post-mounted designs (R3-10, R3-11, and R3-12 series) may be used



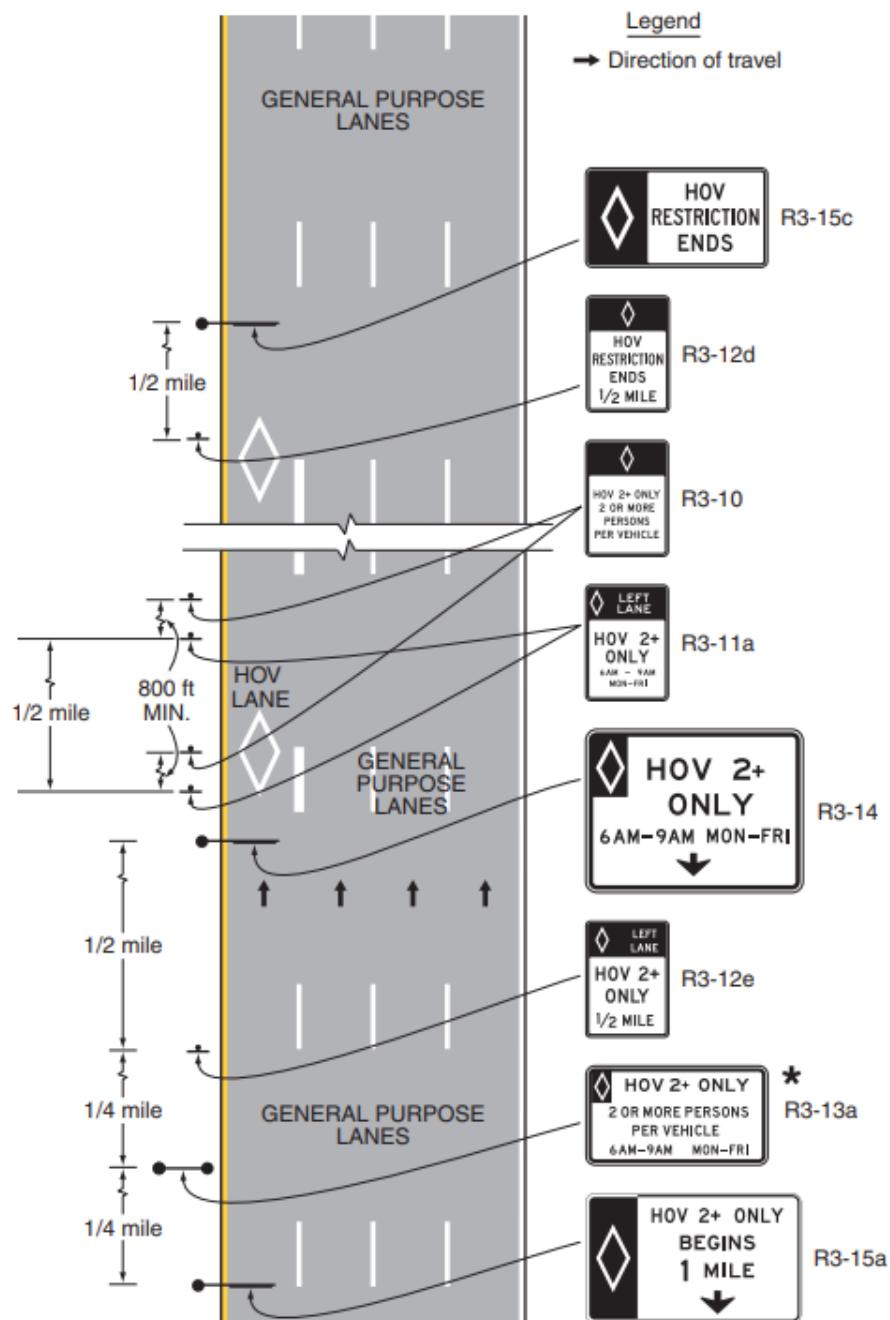
NCUTCD agrees with Figure 2G-3 as presented in the NPA.

**Figure 2G-3. Example of Signing for a General-Purpose Lane that Becomes a Continuous-Access Contiguous or Buffer-Separated HOV Lane**

Notes:

1. The minimum vehicle occupancy requirement and hours of operation on the sign may vary for each facility
2. See Chapter 3D for pavement markings
3. Applicable to part-time or full-time HOV restriction
4. This roadway condition indicates the HOV lane will become a general purpose lane upon termination of the restriction
5. Sets of R3-10 and R3-11a signs should be placed following entrance ramps and at 1/2-mile intervals along the HOV lane
6. This signing scheme can also be used for an HOV lane on the right-hand side of the roadway

\* Where the median width is insufficient, this sign may be mounted overhead



420 **Section 2G.06 Comments:** NCUTCD agrees with 2G.06 as presented in the NPA.

421

422 **Section 2G.06 Preferential Lane Advance Signs (R3-12, R3-12e, R3-12f, R3-15, R3-15a, R3-**

423 **15d)**

424 *Guidance:*

425 *The Preferential Lane Advance (R3-12, R3-12f, R3-15, and R3-15d) signs should be used*

426 *for advance notification of a barrier-separated, buffer-separated, or contiguous preferential lane*

427 *that is added to the general-purpose lanes (see Figure 2G-13).*

428 *The Preferential Lane Advance (R3-12e and R3-15a) signs should be used for advance*

429 *notification of a general-purpose lane that becomes a preferential lane (see Figure 2G-14).*

430 Option:

431 The legends on the R3-12f and R3-15d signs may be modified to suit the type of

432 preferential lane.

433 *Guidance:*

434 *On conventional roads, for general-purpose lanes that become preferential lanes, a post-*

435 *mounted (R3-12e) or overhead (R3-15a) Preferential Lane Advance sign should be installed in*

436 *advance of the beginning of or initial entry point to the preferential lane at a distance*

437 *determined by engineering judgment based on speed, traffic characteristics, and other site-*

438 *specific considerations. The distance selected should provide adequate opportunity for ineligible*

439 *vehicles to vacate the lane prior to the beginning of the restriction.*

440 *On freeways and expressways, for general-purpose lanes that become preferential lanes,*

441 *an overhead Preferential Lane Advance (R3-15a) sign should be installed at least 1 mile in*

442 *advance of the beginning of the preferential lane restriction.*

443 Option:

444 Additional post-mounted or overhead Preferential Lane Advance signs may be placed

445 farther in advance of or closer to the beginning or initial entry points to a preferential lane.

---

447 **Section 2G.07 Comments:** NCUTCD agrees with 2G.07 as presented in the NPA.

449

450 **Section 2G.07 Preferential Lane Ends Signs (R3-12a, R3-12b, R3-12c, R3-12d, R3-12g, R3-**

451 **12h, R3-15b, R3-15c, R3-15e)**

452 **Standard:**

453 **A post-mounted Preferential Lane Ends (R3-12b or R3-12h) sign shall be installed at**

454 **least 1/2 mile in advance of the termination of a preferential lane on freeways and**

455 **expressways.**

456 **Except as provided in Paragraph 7 of this Section, a post-mounted Preferential Lane**

457 **Ends (R3-12a or R3-12g) sign shall be installed at the point where a preferential lane and**

458 **restriction end and traffic must merge into the general-purpose lanes.**

459 **A post-mounted Preferential Lane Ends (R3-12d) sign shall be installed at least 1/2 mile**

460 **in advance of the point where a preferential lane restriction ends and the lane becomes a**

461 **general-purpose lane on freeways and expressways.**

462 **Except as provided in Paragraph 8 of this Section, a post-mounted Preferential Lane**

463 **Ends (R3-12c) sign shall be installed at the point where a preferential lane restriction ends**

464 **and the lane becomes a general-purpose lane.**

465 *Guidance:*

466        *On conventional roads, the distance at which Preferential Lane Ends signs are installed in*  
467        *advance of the termination of a preferential lane and/or restriction should be determined by*  
468        *engineering judgment.*

469        Option:

470        The legends on the R3-12g and R3-15e signs may be modified to suit the type of preferential  
471        lane.

472        An overhead Preferential Lane Ends (R3-15b or R3-15e) sign may be installed instead of or  
473        in addition to a post-mounted R3-12a or R3-12g sign at the point where a preferential lane and  
474        restriction ends and traffic must merge into the general-purpose lanes.

475        An overhead Preferential Lane Ends (R3-15c) sign may be installed instead of or in addition  
476        to a post  
477        mounted R3-12c sign at the point where the preferential lane restriction ends and the lane  
478        becomes a general-purpose lane.

---

481        **Section 2G.08 Comments:** NCUTCD agrees with 2G.08 as presented in the NPA.

#### 484        **Section 2G.08 Warning Signs on Median Barriers for Preferential Lanes**

485        Option:

486        When a warning sign applicable only to a preferential lane is installed on a median  
487        barrier with limited lateral clearance to the adjacent travel lanes or shoulders, the warning sign  
488        may have a vertically oriented rectangular shape. For a High Occupancy Vehicle lane, such signs  
489        may be used instead of using the HOV Plaque (W16-11P) (see Section 2G.09) with a standard  
490        diamond-shaped warning sign.

491        Standard:

492        **When a vertically oriented rectangular-shaped warning sign applicable only to a**  
493        **preferential lane is installed on a median barrier, the top portion of the sign shall be**  
494        **comprised of a white symbol or legend denoting the type of preferential lane (such as the**  
495        **diamond symbol for HOV or the legend BUS LANE) on a black background with a white**  
496        **border, and the bottom portion of the sign shall be comprised of the standard word**  
497        **message or symbol of the standard warning sign as a black legend on a yellow background**  
498        **with a black border (see Figure 2G-4).**

499        Guidance:

500        *Where lateral clearance is limited, such as when a post-mounted warning sign applicable*  
501        *only to a preferential lane is installed on a median barrier, the edges of the sign should not*  
502        *project beyond the outer edges of the barrier.*

503        Option:

504        Where lateral clearance is limited, warning signs applicable only to a preferential lane  
505        that are post mounted on a median barrier and that are 72 inches or less in width may be skewed  
506        up to 45 degrees in order to fit within the barrier width or may be mounted higher, such that the  
507        vertical clearance to bottom of the sign, light fixture, or its structural support, whichever is  
508        lowest, is not less than 17 feet above any portion of the pavement and shoulders.

509        Standard:

510        **Where lateral clearance is limited, Preferential Lane warning signs that are post-**  
511        **mounted on a median barrier and that are wider than 72 inches shall be mounted with a**

512 vertical clearance that complies with the provisions of Section 2A.18 for overhead  
513 mounting.

514

515

516 NCUTCD agrees with Figure 2G-4 as presented in the NPA.

**Figure 2G-4. Examples of Warning Signs and Plaques Applicable  
Only to Preferential Lanes**

**A - BARRIER-MOUNTED RECTANGULAR WARNING SIGNS**



W4-1L (modified)



W4-2L (modified)



W13-2 (modified)

**B - WARNING PLAQUE FOR USE ABOVE STANDARD DIAMOND-SHAPED WARNING SIGNS**



W16-11P

Note: An HOV lane example (diamond symbol) is illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) shall be displayed in white on the black background of the top portion of these signs.

517

518

519

520 **Section 2G.09 Comments:** NCUTCD agrees with 2G.09 as presented in the NPA.

521

522 **Section 2G.09 High-Occupancy Vehicle (HOV) Plaque (W16-11P)**

523

524 Option:

525 In situations where there is a need to warn drivers in an HOV lane of a specific condition,  
526 the HOV (W16-11P) plaque (see Figure 2G-4) may be used above a warning sign. The HOV  
527 plaque may be used to differentiate a warning sign applicable to the HOV lanes when the sign is

528 also visible to traffic on the adjacent general-purpose roadway. Among the warning signs that  
529 may be possible applications of the HOV plaque are the Advisory Exit Speed, Added Lane, and  
530 Merge signs.

531 The diamond symbol may be used instead of the word message HOV on the W16-11P  
532 plaque. When appropriate, the words LANE or ONLY may be used on this plaque.

533 Support:

534 Section 2G.08 contains information regarding warning signs that can be mounted on  
535 barriers for HOV or other types of preferential lanes.

---

537  
538 **Section 2G.10 Comments:** NCUTCD agrees with 2G.10 as presented in the NPA.  
539

## 540 **Section 2G.10 Preferential Lane Guide Signs – General**

541 Support:

542 Preferential lanes are used on freeways, expressways, and conventional roads. Except as  
543 otherwise provided, Sections 2G.10 through 2G.15 apply only to guide signs for preferential  
544 lanes on freeways and expressways.

545 *Guidance:*

546 *On conventional roads, guide signs applicable only to preferential lanes are ordinarily  
547 not needed, but if used they should comply with the provisions for guide signs in Chapter 2D and  
548 any principles for Preferential Lane guide signs in Sections 2G.10 through 2G.15 that  
549 engineering judgment finds to be appropriate for the conditions.*

550 Support:

551 Additional guidance and standards related to the designation, operational considerations,  
552 signs, pavement markings, and other considerations for preferential lanes are provided in  
553 Sections 2G.03 through 2G.07, and 2G.09, and Chapter 3E.

554 *Guidance:*

555 *The appropriate combinations of pavement markings and standard overhead and post-  
556 mounted regulatory, warning, and guide signs for a specific preferential lane application should  
557 be selected based on an engineering study.*

558 *If overhead signs applicable only to a preferential lane are located in approximately the  
559 same longitudinal position along the highway as overhead signs applicable only to the general-  
560 purpose lanes, the signs for the preferential lane should be separated laterally from the signs for  
561 the general-purpose lanes to the maximum extent practical to minimize conflicting information.*

562 *The Preferential Lane signs should be designed and located to avoid overloading the  
563 road user. The order of priority of guide signs should be Advance Guide, Preferential Lane  
564 Entrance Direction, and finally Preferential Lane Exit Destination supplemental guide signs.*

565 **Standard:**

566 **Signs applicable only to a preferential lane shall be distinguished from signs  
567 applicable to general purpose lanes by the inclusion of the applicable symbol(s) and/or  
568 word(s).**

569 Support:

570 The symbol and/or word message that appears on a particular guide sign applicable only  
571 to a preferential lane will vary based on the specific type of traffic allowed and on other related  
572 operational constraints that have been established for a particular lane, such as an HOV lane, a  
573 bus lane, or a taxi lane.

574 **Standard:**

575       For HOV lanes, the diamond symbol shall appear on each Advance Guide sign,  
576 Preferential Lane Entrance Direction sign, and Preferential Lane Entrance Gore sign, as  
577 shown in Figures 2G-5 through 2G-7 for the designated entry and exit points for barrier-  
578 and buffer-separated geometric configurations and direct access ramps to or from such  
579 lanes. The diamond symbol shall not be used with preferential lanes for other types of  
580 traffic, such as bus lanes or taxi lanes.

581       Signing for an HOV lane that is managed by means of varying the occupancy  
582 requirement in response to changing conditions shall also comply with these provisions.

583       The diamond symbol shall be displayed in the legend of each Preferential Lane  
584 guide sign at the designated entry and exit points for all types of HOV lanes (including  
585 barrier- and buffer-separated, contiguous, and direct access ramps) in order to alert  
586 motorists that there is a minimum allowable vehicle occupancy requirement for vehicles to  
587 use the HOV lanes. Guide signs shall not display the occupancy requirement for the  
588 preferential lane.

589       A combination of guide and regulatory signs shall be used in advance of and at the  
590 initial entry point and all intermediate entry points from general-purpose lanes or facilities  
591 to contiguous, barrier separated, and buffer-separated 1 preferential lanes where access  
592 between the preferential and general purpose lanes is restricted to designated locations.  
593 The regulatory signs shall comply with the provisions of Sections 2G.03 through 2G.07.

594       Regulatory signs alone shall be used in advance of, at the beginning of, and at  
595 periodic intervals along contiguous or buffer-separated preferential lanes that provide  
596 continuous access between the adjacent general-purpose lanes and the preferential lane  
597 (see Figures 2G-13 and 2G-14). The design and placement of the regulatory signs shall  
598 comply with the provisions of Sections 2G.03 through 2G.07.

599       Except as otherwise provided in Sections 2G.10 through 2G.13, guide signs  
600 applicable to a preferential lane with a vehicle occupancy requirement shall be  
601 distinguished from those applicable to general-purpose lanes by displaying the white  
602 diamond symbol on a black background at the left-hand edge of these signs.

603       Option:

604       When post-mounted guide signs applicable only to a preferential lane are installed on a  
605 median barrier with limited lateral clearance to the adjacent travel lanes or shoulders, the guide  
606 signs may have a vertically oriented rectangular shape.

607       Standard:

608       When vertically oriented rectangular shaped guide signs applicable only to a  
609 preferential lane are installed on a median barrier, the top portion of the signs shall be  
610 comprised of the applicable white symbol or white word message that identifies the type of  
611 preferential lane (such as the diamond symbol for an HOV lane) on a black background  
612 with a white border, and the bottom portion of the sign shall be comprised of the  
613 appropriate guide sign legend on a green background with a white border (see Figures 2G-  
614 3, 2G-6, and 2G-7).

615       Guidance:

616       *Where lateral clearance is limited, such as when a post-mounted Preferential Lane guide  
617 sign is installed on a median barrier, the edges of the sign should not project beyond the outer  
618 edges of the barrier.*

619       Option:

620        Where lateral clearance is limited, Preferential Lane guide signs that are 72 inches or less  
621 in width may be skewed up to 45 degrees in order to fit within the barrier width or may be  
622 mounted higher, such that the vertical clearance to the bottom of the sign, light fixture, or its  
623 structural support, whichever is lowest, is not less than 17 feet above any portion of the  
624 pavement and shoulders.

625        **Standard:**

626        **Where lateral clearance is limited, Preferential Lane guide signs that are post-**  
627 **mounted on a median barrier and that are wider than 72 inches shall be mounted with a**  
628 **vertical clearance that complies with the provisions of Section 2A.18 for overhead**  
629 **mounting.**

630        **Option:**

631        Lane-use control signals (see Chapter 4M) may be used at access points to preferential  
632 lanes to indicate that a ramp or access roadway leading to or from the preferential lane or facility,  
633 or one or more specific lanes of the facility, are open or closed.

634        Changeable message signs may supplement, substitute for, or be incorporated into static  
635 guide signs (see Figure 2G-6) where travel conditions change or where multiple types of  
636 operational strategies (such as variable occupancy requirements, vehicle types, or pricing  
637 policies) are used and varied throughout the day or week to manage the use of, control of, or  
638 access to preferential lanes.

639        **Standard:**

640        **When changeable message signs (see Chapter 2L) are used as guide signs for**  
641 **preferential lanes, they shall be the required sign size and shall display the required letter**  
642 **height and legend format that correspond to the type of roadway facility and design speed.**

643        **Advance Guide signs, Preferential Lane Entrance Direction signs, and Preferential**  
644 **Lane Entrance Gore signs for the initial entry point and intermediate entry points into a**  
645 **preferential lane from the general-purpose lanes on the same designated route shall not**  
646 **identify the entry point as an exit by using the word “EXIT” on the sign or on a plaque.**

647        **Guidance:**

648        *Advance Guide signs and Preferential Lane Entrance Direction signs for initial and*  
649 *intermediate entry points into a preferential lane should use the word “ENTRANCE,” such as*  
650 *“HOV LANE ENTRANCE” (see Figures 2G-5 and 2G-6) to convey the fact that vehicles are not*  
651 *leaving the designated route.*

652        *Preferential Lane Entrance Gore signs (see Figure 2G-7) at the initial entry point to a*  
653 *preferential lane should use the word “ENTRANCE.” Preferential Lane Entrance Gore signs at*  
654 *intermediate entry points to a barrier-separated preferential lane where the sign would be*  
655 *located immediately adjacent to and directly viewed by traffic in the preferential lane should not*  
656 *use the word “ENTRANCE.”*

657        **Standard:**

658        **When the entry point is on the left-hand side of the general-purpose lanes, a LEFT**  
659 **(E1-5aP) plaque (see Figure 2E-9) shall be added to the top left edge of the Advance Guide**  
660 **and Preferential Lane Entrance Direction signs. The LEFT plaque shall not be used on a**  
661 **preferential lane regulatory sign.**

666 NCUTCD agrees with Figure 2G-5 as presented in the NPA.

**Figure 2G-5. Example of an Overhead Advance Guide Sign for a Preferential Lane Entrance**



Note: An example of an HOV Lane (diamond symbol) sign is illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) is displayed in white on the black background of the left-hand portion of this sign.

E8-3

667

668

669

670

NCUTCD agrees with Figure 2G-6 as presented in the NPA.

**Figure 2G-6. Examples of Overhead or Post-Mounted Preferential Lane Entrance Direction Signs**



E8-2  
(overhead only)



E8-2a  
(post-mounted only)

A changeable message sign may be incorporated into an overhead preferential lane guide sign to indicate the status of a reversible operation as shown in the following example:



Lane Open



Lane Closed

Note: Examples of HOV Lane (diamond symbol) signs are illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) is displayed in white on the black background of the top left-hand portion of these signs.

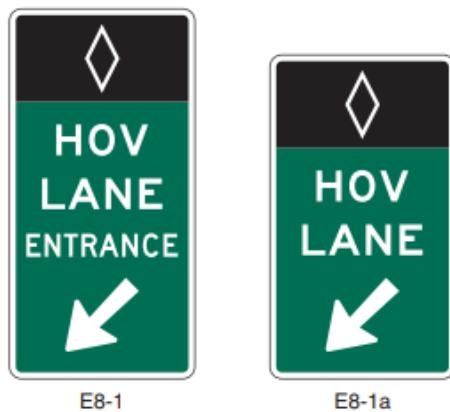
671

672

673  
674

NCUTCD agrees with Figure 2G-7 as presented in the NPA.

**Figure 2G-7. Entrance Gore Signs for Barrier-Separated Preferential Lanes**



Note: Examples of HOV Lane (diamond symbol) signs are illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) is displayed in white on the black background of the top portion of these signs.

675  
676

**Section 2G.11 Summary:** NCUTCD generally agrees with 2G.11 as presented in the NPA, but recommends revising as follows:

- Delete “and Entrance Direction” in the second Standard paragraph, as the Entrance Direction sign is now addressed in a subsequent Standard paragraph
- Add a Standard paragraph defining the layout of the bottom portion of the Entrance Direction sign to be consistent with sections 2E.23 and 2E.28 and Figure 2G-8
- Revise the first Guidance statement to clarify the use of Advance Guide signs
- Revise figure references and typographic errors as needed

686

**Section 2G.11 Signing for Initial Entry Points to Preferential Lanes Standard:**

Except where a buffer-separated or contiguous preferential lane is added or where a general purpose lane becomes a buffer-separated or contiguous preferential lane, and provides continuous access with the adjacent general-purpose lanes as illustrated in Figures 2G-2 and 2G-3, an Advance Guide sign shall be provided at least 1/2 mile prior to the initial entry point to all types of preferential lanes in any type of geometric configuration on freeways and expressways. A Preferential Lane Entrance Direction sign shall also be provided at the initial entry point. Advance Guide and Preferential Lane Entrance Direction signs for such entry points shall not include the word “EXIT” (see Section 2G.10).

Where a general-purpose lane becomes a preferential lane that does not provide continuous access with the adjacent general-purpose lanes, an Advance Guide sign shall also be provided at approximately 1 mile in advance of the initial entry point. The Advance Guide and Entrance Direction signs in this sequence shall include a panel at the bottom of the sign with a black legend and border on a yellow background displaying a down arrow and the word ONLY as illustrated in Figure 2G-8.

The bottom portion of the Entrance Direction sign shall be yellow with a black border and shall include a diagonally upward-pointing black directional arrow (left or right) for

707 **each lane dropped at the entrance, with the sign designed and placed so that each arrow is**  
708 **located over the approximate center of each lane being dropped. The word ONLY shall be**  
709 **positioned to the left or right respectively of the arrow.**

710 *Guidance:*

711 *Except as Unless an Advanced Guide Sign is required in Paragraph 2, an Advance Guide sign*  
712 *should also be installed and located approximately 1 mile in advance of the initial entry point to*  
713 *a preferential lane on freeways and expressways that restricts access to designated locations*  
714 *accessible from with the adjacent general-purpose lanes to designated locations on freeways and*  
715 *expressways.*

716 Option:

717 An Advance Guide sign may also be installed and located approximately 2 miles in advance  
718 of the initial entry point to a preferential lane that restricts access with the adjacent general-  
719 purpose lanes to designated locations.

720 **Standard:**

721 **For barrier-separated, buffer-separated, or contiguous preferential lanes where entry is**  
722 **restricted to only designated points on freeways and expressways, the Advance Guide and**  
723 **Preferential Lane Entrance Direction signs shall be mounted overhead.**

724 *Guidance:*

725 *Preferential Lane Exit Destination guide signs, identifying final destination and downstream exit*  
726 *locations accessible from the preferential lane (see Figures 2G-9, 2G-14, 2G-15, and 2G-17),*  
727 *should be installed in advance of the initial entry points to access-restricted preferential lanes*  
728 *(such as barrier- and buffer-separated). These signs should be located based on the priority of*  
729 *the message, the available space, the existing signs on adjacent general-purpose traffic lanes,*  
730 *roadway and traffic characteristics, the proximity to existing overhead signs, the ability to install*  
731 *overhead signs, and other unique local factors.*

732 **Standard:**

733 **Advance destination guide signs for preferential lanes shall include an upper section**  
734 **displaying a black legend that includes the type of preferential lane and the word “EXITS,”**  
735 **such as “HOV EXITS,” on a white background. For preferential lanes that incorporate a**  
736 **vehicle occupancy requirement, the white diamond symbol on a black background shall be**  
737 **displayed at the left-hand edge of this upper section (see Figure 2G-9).**

738 *Support:*

739 *Figure 2G-8 shows an example of signing for a general-purpose lane that becomes a*  
740 *preferential lane that does not provide continuous access with the adjacent general purpose lanes.*

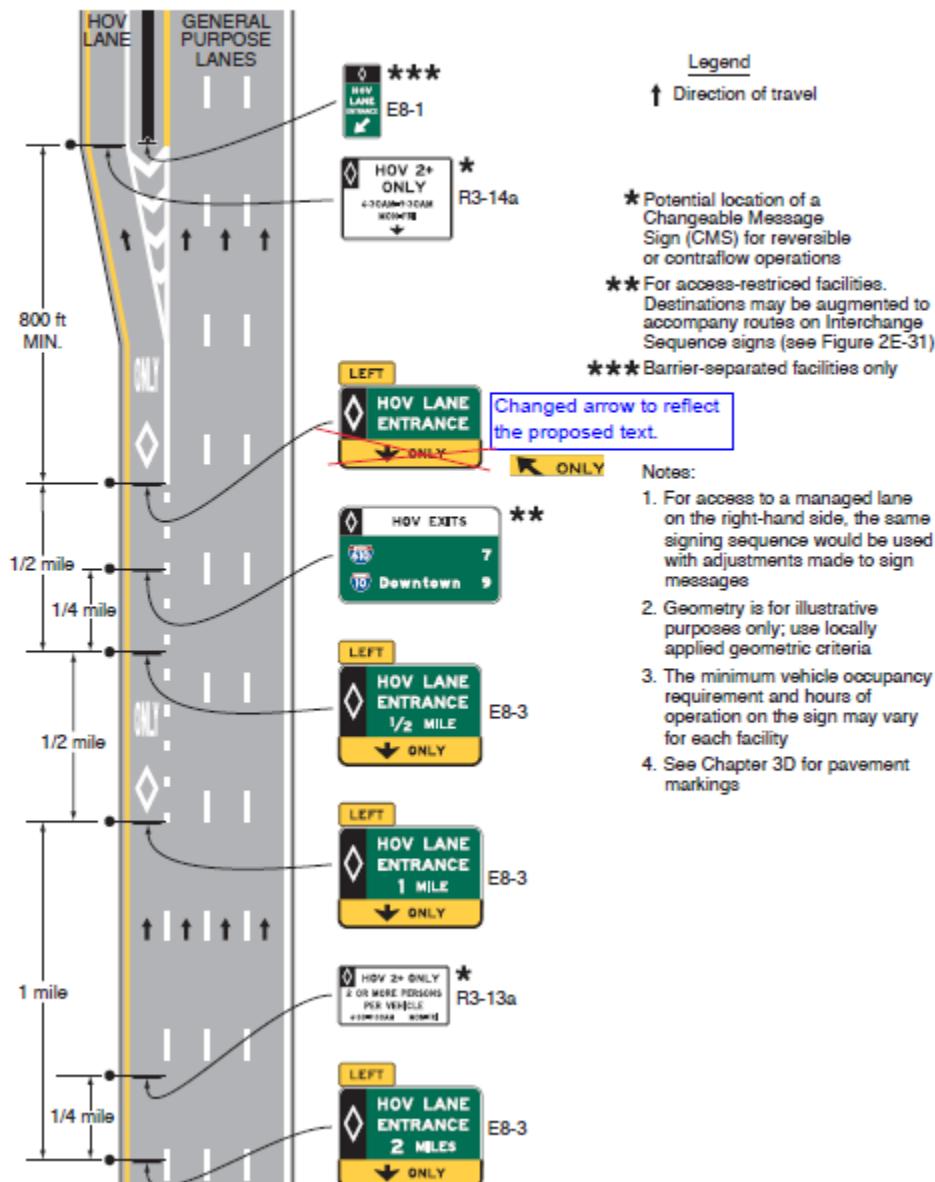
741 Figure 2G-9 shows an example of signs for the initial entry point to a preferential lane.

744 NCUTCD generally agrees with Figure 2G-8 as presented in the NPA, but recommends revising  
745 as follows:

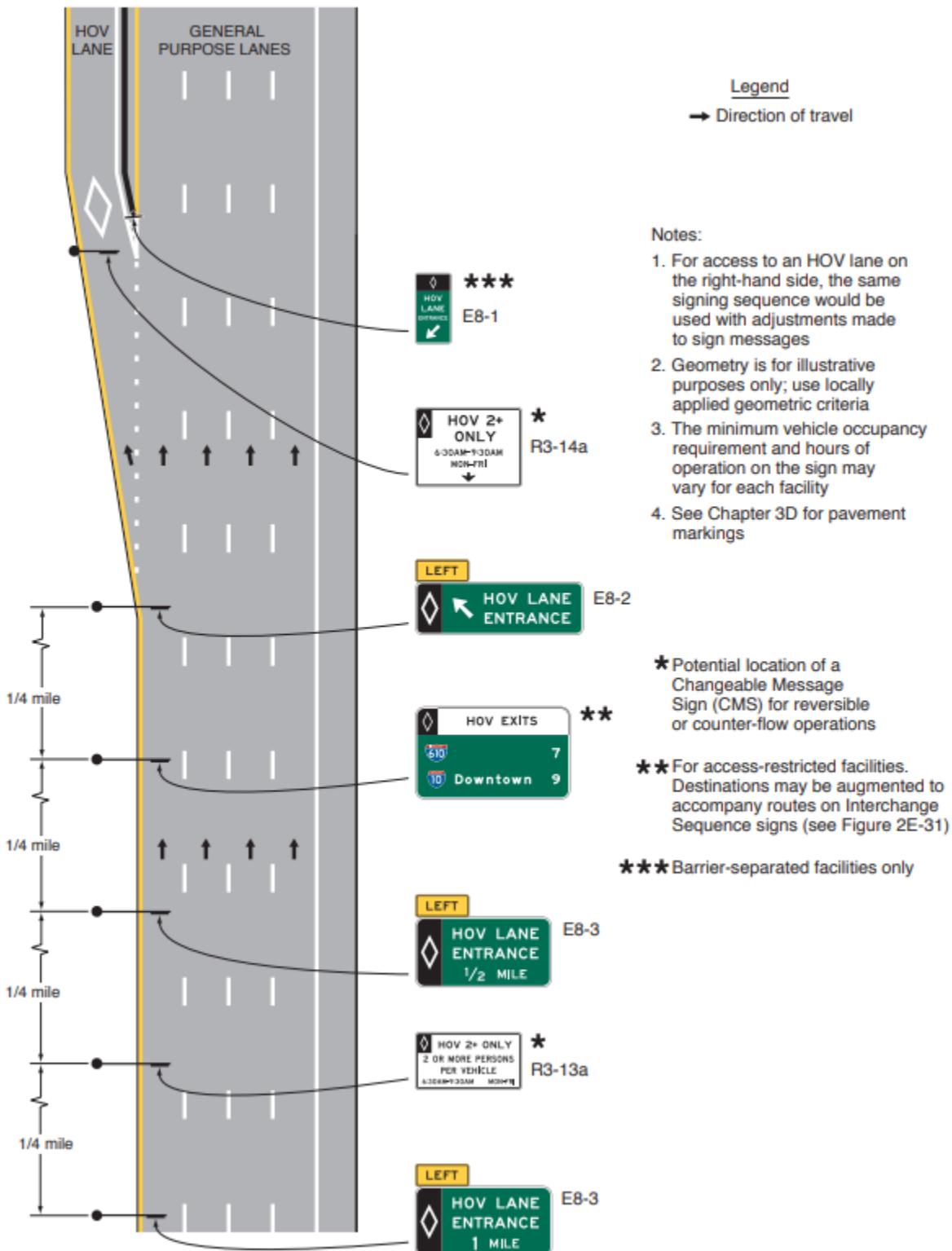
- 746 • Revise title to read: "Example of Advance Guide and Entrance Direction Signs for a General  
747 Purpose Lane that Becomes a Preferential Lane"
- 748 • Revise the arrow on the Entrance Direction sign to a Type A arrow pointing diagonally  
749 upward to the left

Example of Advance Guide and Entrance Direction Signs for a  
General Purpose Lane that becomes a Preferential Lane

Figure 2G-8. ~~Example of Signing for the Entrance to an Access-Restricted HOV Lane  
Where a General-Purpose Lane Becomes the HOV Lane~~



750  
751  
752

**Figure 2G-9. Example of Signing for an Entrance to Access-Restricted HOV Lanes**

755

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756

757 **Section 2G.12 Comments:** NCUTCD agrees with 2G.12 as presented in the NPA.

758

759 **Section 2G.12 Signing for Intermediate Entry Points to Preferential Lanes**

760 **Standard:**

761 **For barrier-separated, buffer-separated, and contiguous preferential lanes where**  
762 **entry is restricted only to designated points, an overhead Preferential Lane Entrance**  
763 **Direction sign shall be provided at intermediate entry points to the preferential lane from**  
764 **the general-purpose lanes.**

765 **Guidance:**

766 *For barrier- and buffer-separated preferential lanes where intermediate entry from the*  
767 *general-purpose lanes is provided via a separate lane or ramp (see Figure 2G-10), at least one*  
768 *Advance Guide sign should be provided in addition to the Preferential Lane Entrance Direction*  
769 *sign.*

770 *For access-restricted preferential lanes where intermediate entrance and egress are at*  
771 *the same4 designated access location, the Preferential Lane Entrance Direction sign should be*  
772 *located between 1/2 and 1/4 of the length of the designated entry area, as measured from the*  
773 *downstream end of the entry area (see Figure 2G-11).*

774 **Standard:**

775 **The Advance Guide signs, if used for intermediate entry points to a preferential lane**  
776 **from the general-purpose lanes, shall be overhead.**

777 **Option:**

778 Advance Guide signs may be provided at approximately 1/2 mile, 1 mile, and 2 miles in  
779 advance of intermediate entry points from the general-purpose lanes to a preferential lane.

780 **Standard:**

781 **Advance Guide and Preferential Lane Entrance Direction signs for intermediate**  
782 **entry points shall not include the word “EXIT” (see Section 2G.10).**

783 **Guidance:**

784 *Exit Destination guide signs, identifying the final destination and downstream exit*  
785 *locations accessible from the preferential lane, should be installed in advance of intermediate*  
786 *entry points from the general purpose lanes to access-restricted preferential lanes.*

787 **Support:**

788 Section 2G.11 contains information on the design and placement of Preferential Lane  
789 Exit Destination guide signs.

790 Figures 2G-10 and 2G-11 show examples of signs for various geometric configurations  
791 of intermediate entry to a barrier- or buffer-separated preferential lane where access is restricted  
792 to designated locations.

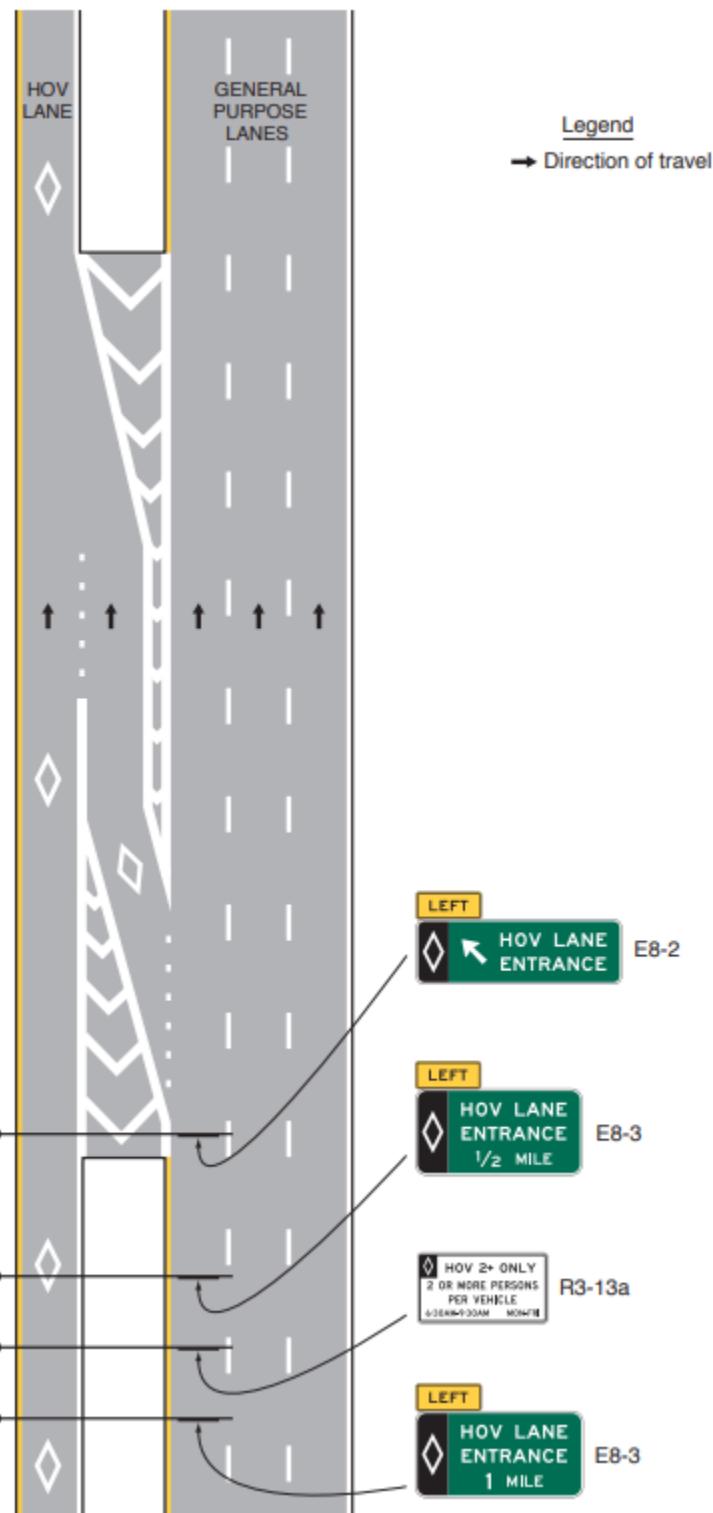
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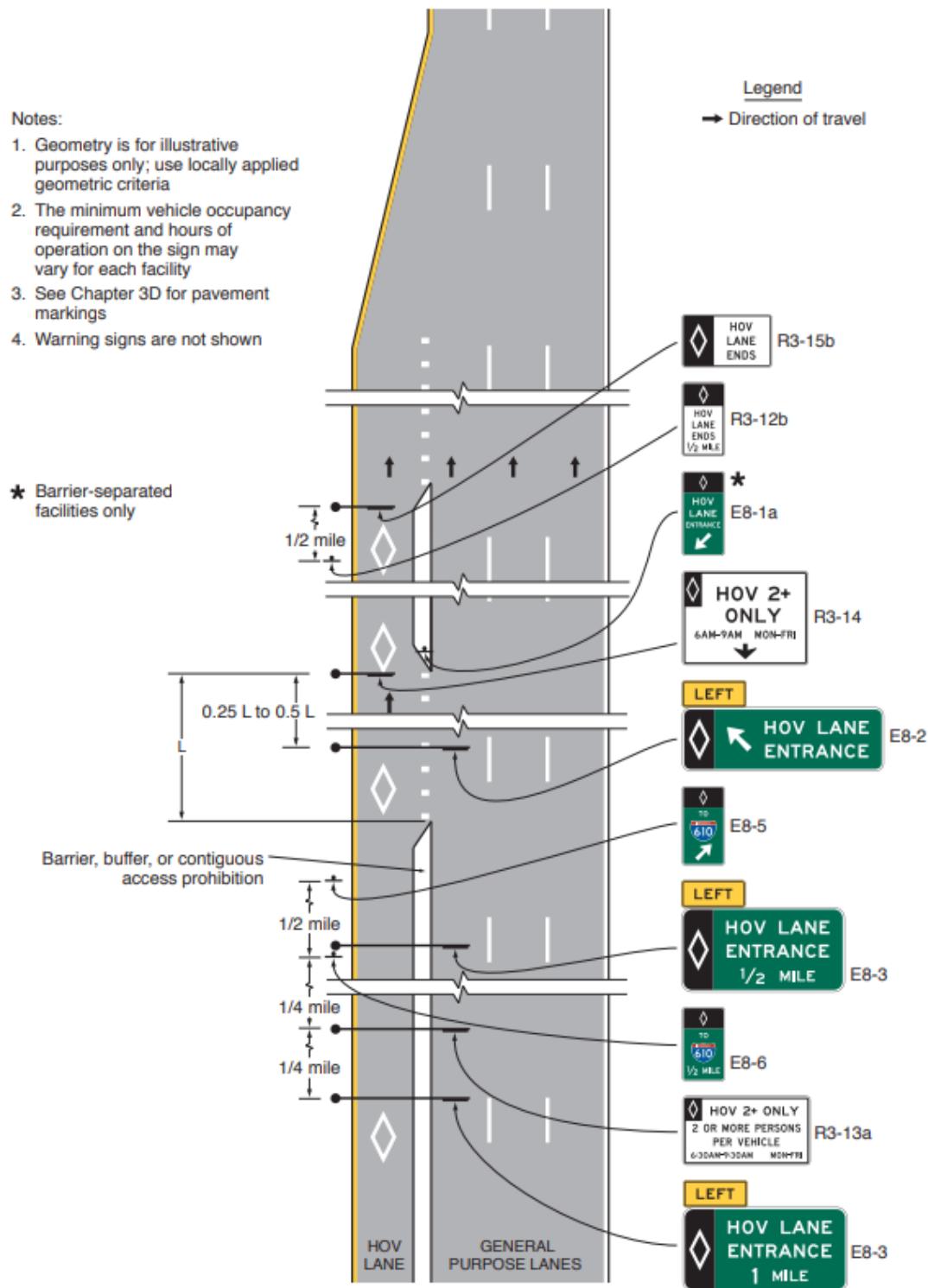
NCUTCD agrees with Figure 2G-10 as presented in the NPA.

**Figure 2G-10. Example of Signing for an Intermediate Entry to a Barrier- or Buffer-Separated HOV Lane**



NCUTCD agrees with Figure 2G-11 as presented in the NPA.

**Figure 2G-11. Example of Signing for the Intermediate Entry to, Egress from, and End of Access-Restricted HOV Lanes**



803 **Section 2G.13 Comments:** NCUTCD agrees with 2G.13 as presented in the NPA.

804

805 **Section 2G.13 Signing for Egress from Preferential Lanes to General-Purpose Lanes**

806 **Standard:**

807     **Except as provided in Paragraphs 4 and 5, for barrier-separated, buffer-separated,**

808     **and contiguous preferential lanes where egress is restricted only to designated points, post-**

809     **mounted Advance Guide and post-mounted Intermediate Egress Direction signs (see**

810     **Figure 2G-12) shall be installed in the median or on median barriers that separate two**

811     **directions of traffic prior to and at the intermediate exit points from the preferential lanes**

812     **to the general-purpose lanes (see Figure 2G-10).**

813     The legends of these signs shall refer to the next exit or exits from the general-

814     purpose lanes by displaying the appropriate destination information, exit number(s), or

815     both. The Intermediate Egress Direction signs for egress from the preferential lanes to the

816     general-purpose lanes shall not refer to the egress as an exit.

817     Support:

818         Section 2G.10 contains information on the design of post-mounted guide signs applicable

819         to a preferential lane when installed on a median barrier. Figures 2G-10 and 2G-13 show

820         examples of signs for various geometric configurations of intermediate egress from a barrier- or

821         buffer-separated preferential lane where access is restricted to designated locations.

822     Guidance:

823         *Where two or more adjacent preferential lanes are present in a single direction,*

824         *consideration should be given to the use of overhead guide signs to display the information*

825         *related to egress from the preferential lanes.*

826         *For barrier-separated and buffer-separated preferential lanes where egress from a*

827         *preferential lane to the general-purpose lanes is restricted only to designated points via a*

828         *separate lane or ramp, the Advance Guide and Intermediate Egress Direction signs for the*

829         *egress should be mounted overhead and a Pull- Through sign should be mounted with the*

830         *Intermediate Egress Direction sign (see Figure 2G-13).*

831     Standard:

832         **For preferential lanes that incorporate a vehicle occupancy requirement, the design**

833         **of the overhead Advance Guide and Egress Direction signs for intermediate egress from**

834         **the preferential lanes to the general-purpose lanes shall display a white diamond symbol on**

835         **a black background at the left-hand edge of the signs.**

836         The design of Pull-Through signs when used in conjunction with an Egress

837         Direction sign at an intermediate egress from the preferential lanes to the general-purpose

838         lanes shall be distinguished from those applicable to general-purpose lanes by inclusion of

839         an upper section with the applicable black legend on a white background, such as HOV

840         LANE. For preferential lanes that incorporate a vehicle occupancy requirement, the white

841         diamond symbol on a black background shall be displayed at the left-hand edge of this

842         upper section.

846 NCUTCD agrees with Figure 2G-12 as presented in the NPA.

**Figure 2G-12. Examples of Barrier-Mounted Guide Signs for an Intermediate Egress from Preferential Lanes**



Note: Examples of HOV Lane (diamond symbol) signs are illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) is displayed in white on the black background of the top portion of these signs.

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848

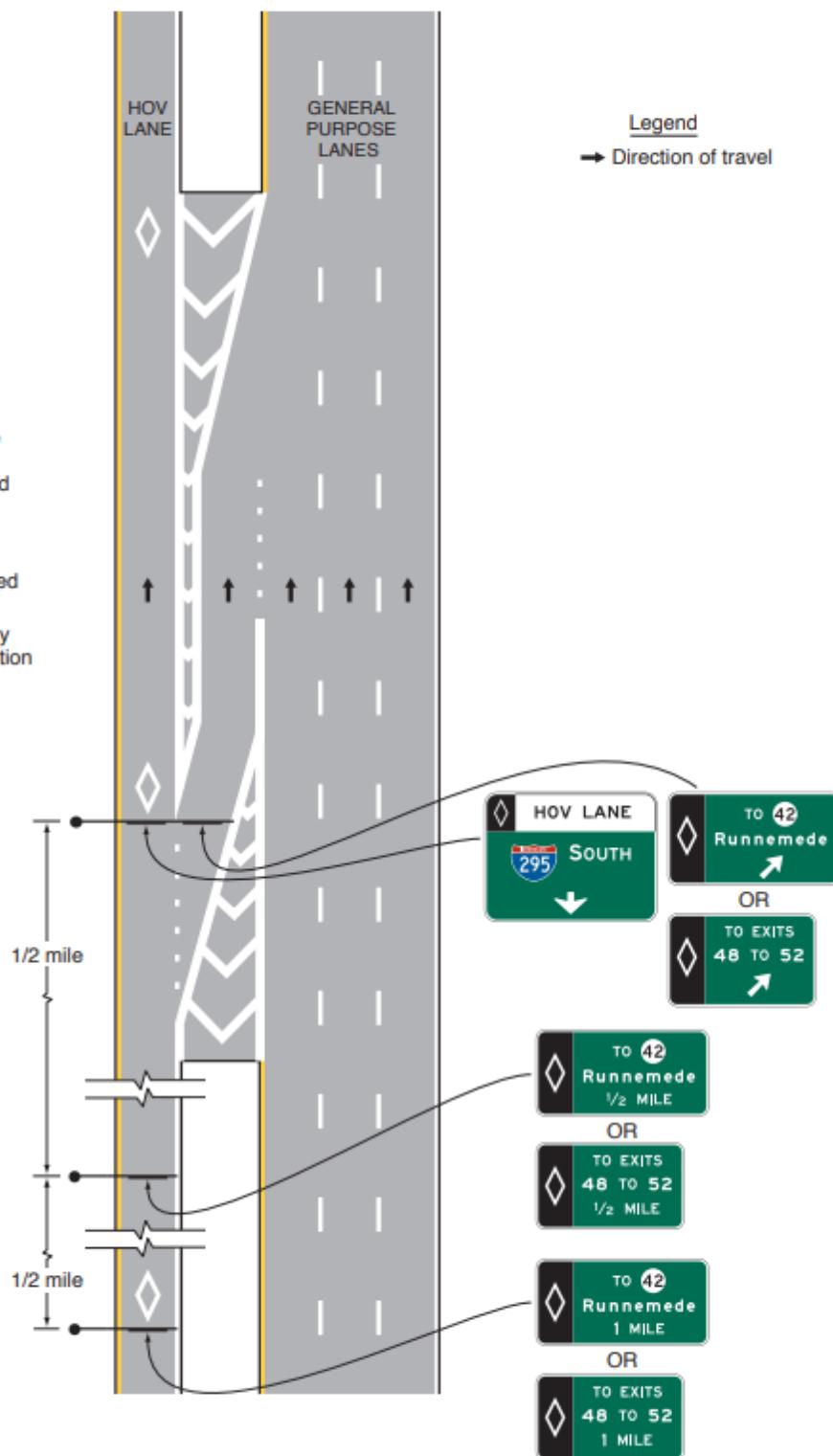
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NCUTCD agrees with Figure 2G-13 as presented in the NPA.

**Figure 2G-13. Examples of Signs for an Intermediate Egress from a Barrier- or Buffer-Separated HOV Lane**

Notes:

1. For an exit on the left-hand side from an HOV lane, the same signing sequence would be used with adjustments made to sign messages
2. Geometry is for illustrative purposes only; use locally applied geometric criteria
3. The minimum vehicle occupancy requirement and hours of operation on the sign may vary for each facility
4. See Sections Chapter 3D for pavement markings
5. Warning signs are not shown



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852

853 **Section 2G.14 Comments:** NCUTCD agrees with 2G.14 as presented in the NPA.

854

855 **Section 2G.14 Signing for Direct Entrances to Preferential Lanes from Another Highway  
856 Standard:**

857 **For direct access ramps to preferential lanes from a transit facility (such as a park -  
858 ride lot or a transit station or terminal) that is accessible from surface streets, advance  
859 guide signs shall be provided along the adjoining surface streets to direct traffic into and  
860 through the transit facility to the preferential lane (see Figure 2G-14).**

861 Support:

862 Figure 2G-14 provides examples of recommended uses and layouts of signs for HOV  
863 lanes for direct access ramps, park - ride lots, and access from surface streets.

864

865

866

867

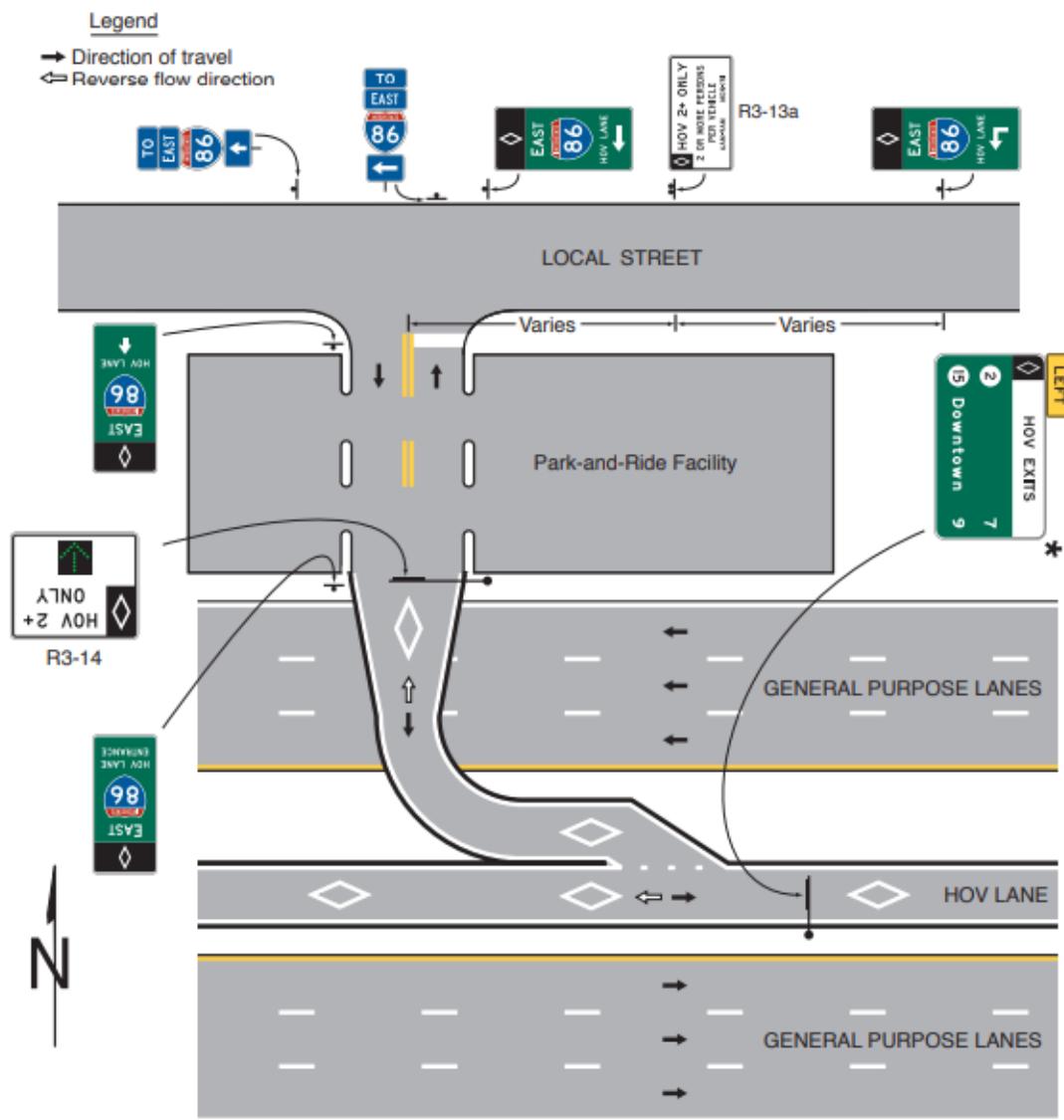
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869

870

NCUTCD agrees with Figure 2G-14 as presented in the NPA.

**Figure 2G-14. Example of Signing for a Direct Entrance Ramp to an HOV Lane from a Park-and-Ride Facility and a Local Street**



**Notes:**

1. The minimum vehicle occupancy requirement on the sign may vary for each facility
2. See Chapter 3D for pavement markings
3. Warning signs are not shown
4. Sign locations are approximate
5. Additional signs may be required to direct drivers from the surrounding streets into the park-and-ride lot and the HOV lane
6. Additional signs are required on the adjoining surface streets to inform non-HOVs that they should not enter the HOV facility
7. This figure illustrates a reversible HOV lane with a direct access ramp
8. The guide signs directing local street traffic to the HOV lane should include the word ENTRANCE when the direct access ramp does not traverse a park-and-ride facility

\* For access-restricted facilities; destinations may be augmented to accompany routes on Interchange Sequence signs (see Figure 2E-31)

873

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874

875 **Section 2G.15 Comments:** NCUTCD agrees with 2G.15 as presented in the NPA.

876

877 **Section 2G.15 Signing for Direct Exits from Preferential Lanes to Another Highway**

878

879 **Standard:**

880 For contiguous preferential lanes on the left-hand side of the roadway, Advance  
881 Guide signs, Exit Direction signs, and Exit Gore signs (see Figure 2G-15) specifically  
882 applicable to the preferential lanes shall be used for exits to direct access ramps, such as  
883 HOV lane ramps (see Figure 2G-16) or ramps to park - ride facilities.

884 The design of Advance Guide, Exit Direction, and Pull-Through signs for direct  
885 exits from preferential lanes shall be distinguished from those applicable to general-  
886 purpose lanes by inclusion of an upper section with the applicable black legend on a white  
887 background, such as HOV LANE (for Pull-Through signs) or HOV EXIT (for Advance  
888 Guide and Exit Direction signs). For preferential lanes that incorporate a vehicle  
889 occupancy requirement, the white diamond symbol on a black background shall be  
890 displayed at the left-hand edge of this upper section (see Figures 2G-16 and 2G-17).

891 *Guidance:*

892 Advance Guide and Exit Direction signs for exits to direct access ramps from a  
893 preferential lane should be mounted overhead. A Pull-Through sign over the preferential lane  
894 should be used with the Exit Direction sign at exits to direct access ramps.

895 **Standard:**

896 Post-mounted guide signs in a vertically oriented rectangular shape installed on a  
897 median barrier shall not be used for the Advance Guide and Exit Direction signs for exits  
898 to direct access ramps.

899 Because direct access ramps for preferential lanes at interchanges connecting two  
900 freeways are typically left-hand side exits and typically have design speeds similar to the  
901 preferential lane, overhead Advance Guide signs and overhead Exit Direction signs shall be  
902 provided in advance of and at the entry point to each freeway-to-freeway preferential lane  
903 ramp (see Figure 2G-17).

904 *Guidance:*

905 The use of guide signs for preferential lanes at freeway interchanges should comply with  
906 the provisions for guide signs established in Chapter 2E of this Manual.

907 **Support:**

908 Guide signs for direct access ramps for preferential lanes at interchanges connecting two  
909 freeways are similar to those for a connecting ramp between two freeway facilities.

910

911

912

913

914 NCUTCD agrees with Figure 2G-15 as presented in the NPA.

**Figure 2G-15. Exit Gore Sign for a Direct Exit from a Preferential Lane**



E8-4

Note: An example of an HOV Lane (diamond symbol) sign is illustrated. For other types of preferential lanes, the appropriate symbol or word message (see Section 2G.03) is displayed in white on the black background of the top portion of this sign.

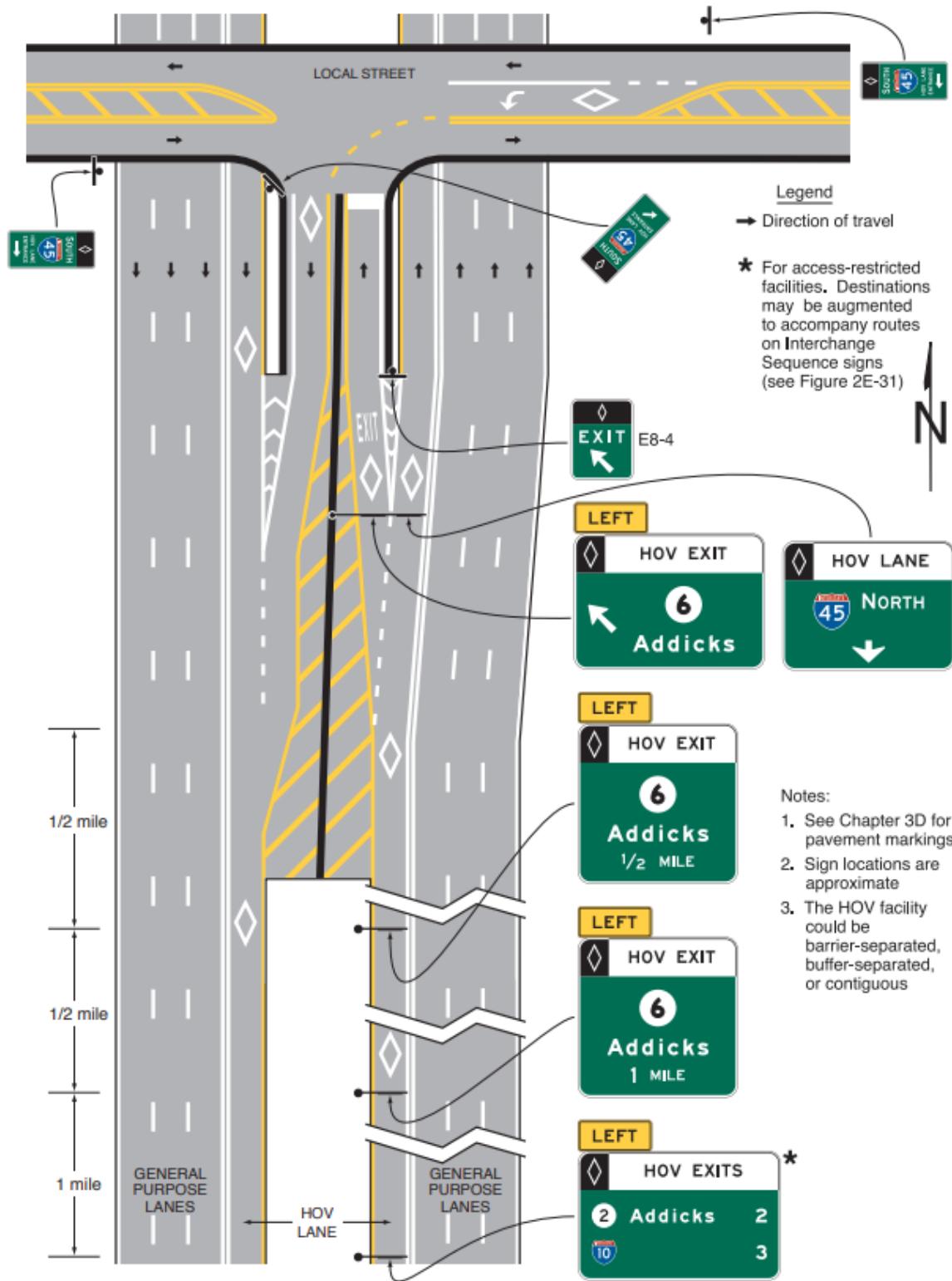
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916

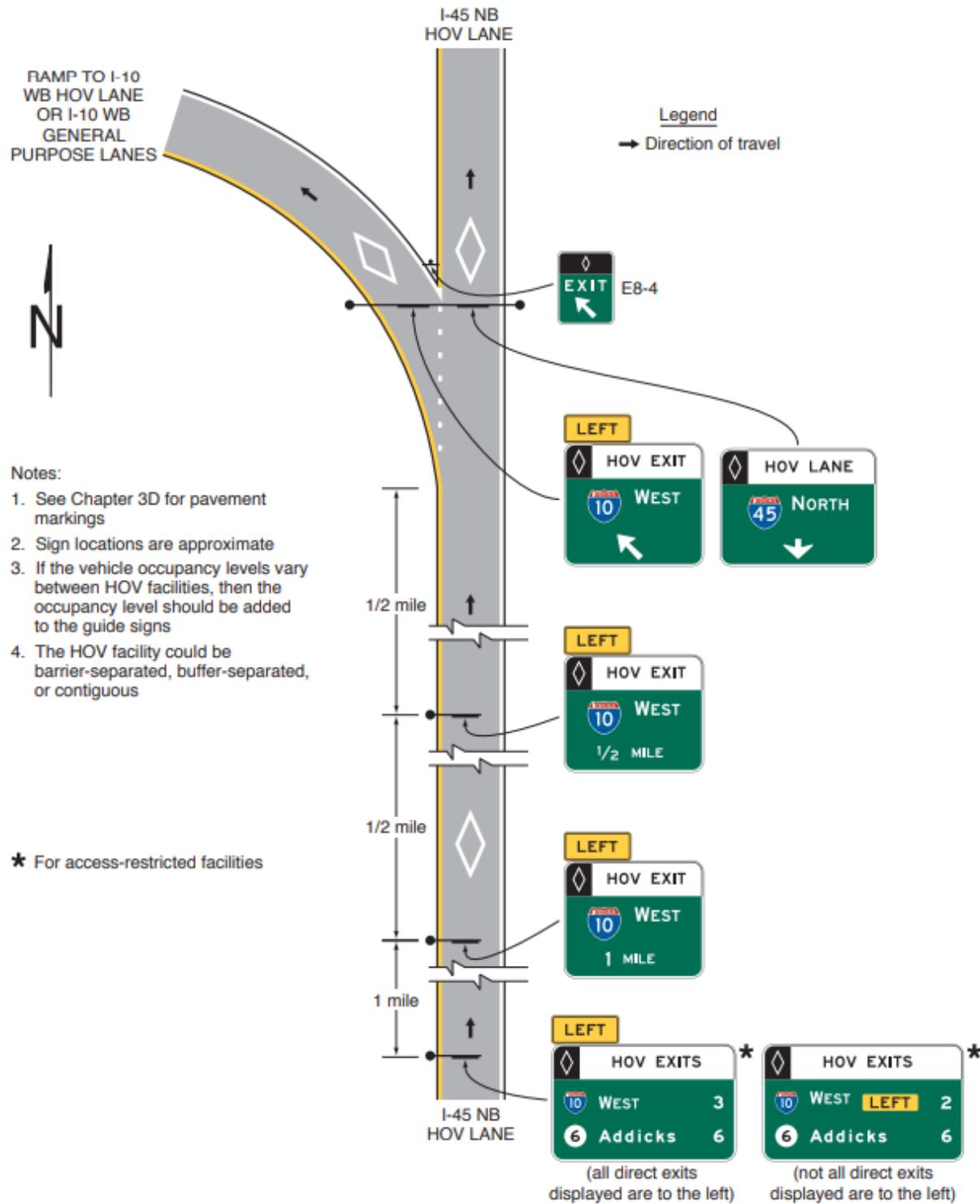
917

NCUTCD agrees with Figure 2G-16 as presented in the NPA.

**Figure 2G-16. Examples of Guide Signs for Direct HOV Lane Entrance and Exit Ramps**



**Figure 2G-17. Examples of Guide Signs for a Direct Access Ramp between HOV Lanes on Separate Freeways**



924  
925 **Section 2G.16 Comments:** NCUTCD agrees with 2G.16 as presented in the NPA.  
926

927 **Section 2G.16 Signs for Managed Lanes – General**

928 **Standard:**

929     The provisions of Sections 2G.03 through 2G.07 regarding regulatory signs for  
930     preferential lanes shall apply to managed lanes operated at all times or at certain times by  
931     varying vehicle occupancy requirements (HOV) or by using vehicle type restrictions as a  
932     congestion management strategy. Such managed lanes shall use changeable message signs  
933     or changeable message elements within static signs to display the appropriate regulatory  
934     sign messages only when they are in effect.

935     When certain types of vehicles (such as trucks) are prohibited from using a  
936     managed lane or when a managed lane is restricted to use by only certain types of vehicles  
937     during certain operational strategies, regulatory signs or regulatory panels within the  
938     appropriate guide signs that include changeable message elements shall be used to display  
939     the open/closed status of the managed lane for such vehicle types.

940     When the vehicle occupancy required for use of an HOV lane is varied as a part of a  
941     managed lane operational strategy, regulatory signs that include changeable message  
942     elements shall be used to display the required minimum vehicle occupancy in effect.

943 **Support:**

944     See Section 2G.18 for regulatory signs for managed lanes that use tolling or pricing as a  
945     congestion management strategy, either exclusively or with other management strategies.

---

947  
948 **Section 2G.17 Comments:** NCUTCD agrees with 2G.17 as presented in the NPA.  
949

950 **Section 2G.17 Signs for Priced Managed Lanes – General**

951 **Support:**

952     A priced managed lane is a managed lane that employs tolling or pricing, typically through  
953     electronic toll collection, to manage congestion levels and maintain a certain level of service for  
954     users of the facility. A priced managed facility typically provides a less congested alternative to  
955     adjacent lanes along the same designated route, or to a nearby facility, that experience recurring  
956     congestion during peak periods. A priced managed lane might allow non-toll travel by certain  
957     vehicles based on occupancy or other criteria. A variety of operational management strategies  
958     might be used in conjunction with tolling or pricing.

959     The number and combination of operational strategies that are applied to a managed lane to  
960     manage congestion or improve efficiency might be practically limited by the amount of  
961     information that can be legibly displayed on signs or in signing sequences and still be readily  
962     comprehended by road users. Such factors to consider when evaluating alternatives for managed  
963     lanes are locations of signs for general-purpose interchanges and for other roadway conditions,  
964     the number of intermediate access points between the managed and general-purpose lanes and  
965     the need to repeat the operational information, and the distance over which a signing sequence  
966     that displays all of the eligibility requirements can be displayed.

967     Because managed lanes have the capability to employ a variety of operational strategies on a  
968     changing basis, it is not practical to assign a naming convention to such lanes for the purpose of  
969     signing based on the specific operational management strategies, as is more readily

970 accomplished with other types of preferential lanes, such as HOV, Bus, or Bike lanes. Instead,  
971 the various requirements, restrictions, and eligibility criteria are more appropriately conveyed  
972 through a sequence of regulatory and guide signs with a more encompassing designation for the  
973 purpose of providing directional information.

974 As priced managed lanes have become prevalent as an operational strategy, it is important to  
975 maintain a uniform naming convention to distinguish those lanes that are an alternative to travel  
976 on adjacent general-purpose lanes on the same designated route to effectively communicate to  
977 motorists the range of basic requirements for similar facilities in different regions.

978 **Standard:**

979 **Priced managed lanes that are adjacent to general-purpose lanes along the same  
980 designated route shall be signed using the legend EXPRESS or EXPRESS LANE(S) as  
981 provided in this Chapter. This provision shall apply when any of the following operational  
982 strategies is used for a managed lane:**

- 983 A. All users of the managed lane are charged a fixed or variable toll;
- 984 B. General-purpose traffic using the managed lane is charged a fixed or variable toll,  
985 but HOV traffic is allowed to travel without being charged a toll on either a full- or  
986 part-time basis;
- 987 C. General-purpose traffic using the managed lane is charged 1 a fixed or variable toll,  
988 but HOV traffic is offered a discounted toll on either a full- or part-time basis; or
- 989 D. General-purpose traffic using the managed lane is charged a fixed or variable toll,  
990 but HOV traffic registered with a local program travels at a discounted toll or  
991 without being charged a toll on either a full- or part-time basis (a transponder or  
992 other identifier is typically required of HOVs to indicate registration in conjunction  
993 with electronic or visual enforcement and verification of vehicle occupancy).

994 The legends EXPRESS and EXPRESS LANE(S) shall not be used on signs for  
995 entrances to highways on which all lanes are managed and there are no adjacent general-  
996 purpose lanes on the same designated route. The legends EXPRESS and EXPRESS  
997 LANE(S) shall not be used on signs for a managed ramp connection that provides an  
998 alternative to a general-purpose ramp connection (see Figure 2F-13), except where the  
999 ramp leads directly to a managed lane as described in Section 2G.14. The legends  
1000 EXPRESS and EXPRESS LANE(S) shall not be used on signs for open-road tolling lanes  
1001 that bypass a conventional toll plaza (see Chapter 2F).

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1002  
1003  
1004 **Section 2G.18 Comments:** NCUTCD generally agrees with 2G.18 as presented in the NPA, but  
1005 recommends revising the Standard paragraph on Periods of Operation (R3-44 or R3-44a) signs to  
1006 Option, and revise content to allow installation of the sign anywhere along a managed lane in  
1007 accordance with NCUTCD recommendation 18A-GMI-02.

1008  
1009 **Section 2G.18 Regulatory Signs for Priced Managed Lanes**

1010 **Standard:**

1011 Except as otherwise provided in this Section, the provisions of Sections 2G.03  
1012 through 2G.07 regarding regulatory signs for Preferential lanes shall apply to priced  
1013 managed lanes operated at all times or at certain times with a toll payment requirement of  
1014 some or all vehicles to use the lane(s). Such managed lanes shall use changeable message

1015 signs or changeable message elements within static signs to display the appropriate  
1016 regulatory sign messages only when they are in effect.

1017 Regulatory signs for preferential lanes shall be appropriately modified for  
1018 adaptation to a priced managed lane, where applicable, as shown in Figure 2G-18.

1019 Regulatory signs shall be used to indicate the toll charged. If the toll varies,  
1020 regulatory signs that include changeable message elements, such as the R3-48 and R3-48a  
1021 signs that are shown in Figure 2G-18, shall be used to display the actual toll amount in  
1022 effect at any given time.

1023 When only vehicles with a registered ETC account are allowed to use a managed  
1024 lane where some or all vehicles are charged a toll, regulatory signs to indicate such a  
1025 restriction shall be provided and shall incorporate the pictograph adopted by the toll  
1026 facility's ETC payment system and the word ONLY (see Section 2G.18 for the  
1027 incorporation of such regulatory legends into the guide signs for the entrances to such  
1028 facilities). The display of the ETC system pictograph shall comply with the provisions of  
1029 Sections 2F.03 and 2F.04 as shown in Figures 2G-18 and 2G-19.

1030 When HOV traffic is allowed to use a priced managed lane without paying a toll and  
1031 registration in a local program is not required to receive the toll exemption, the Vehicle  
1032 Occupancy Definition (R3-10 or R3-13) signs (see Section 2G.04) shall be modified to delete  
1033 the diamond symbol to create priced managed lane Vehicle Occupancy Definition (R3-40  
1034 and R3-43) signs to indicate the minimum occupancy related to the management strategy  
1035 (see Figure 2G-18).

1036 ~~A priced managed lane Periods of Operation (R3-44 or R3-44a) sign (see Figure 2G-  
1037 ~~18~~) shall be installed at the beginning or initial entry point, and at any intermediate entry  
1038 ~~points where vehicles are allowed to legally enter an access-restricted priced managed lane.~~  
1039 Option:~~

1040 A priced managed lane Lane Restriction sign (R3-44 or R3-44a) sign (see Figure 2G-18)  
1041 may be installed anywhere along a priced managed lane.

1042 Standard:

1043 When the vehicle occupancy required for non-toll use of a managed lane is varied as  
1044 a part of a priced managed lane operational strategy, regulatory signs that include  
1045 changeable message elements shall be used to display the required vehicle occupancy in  
1046 effect for non-toll travel.

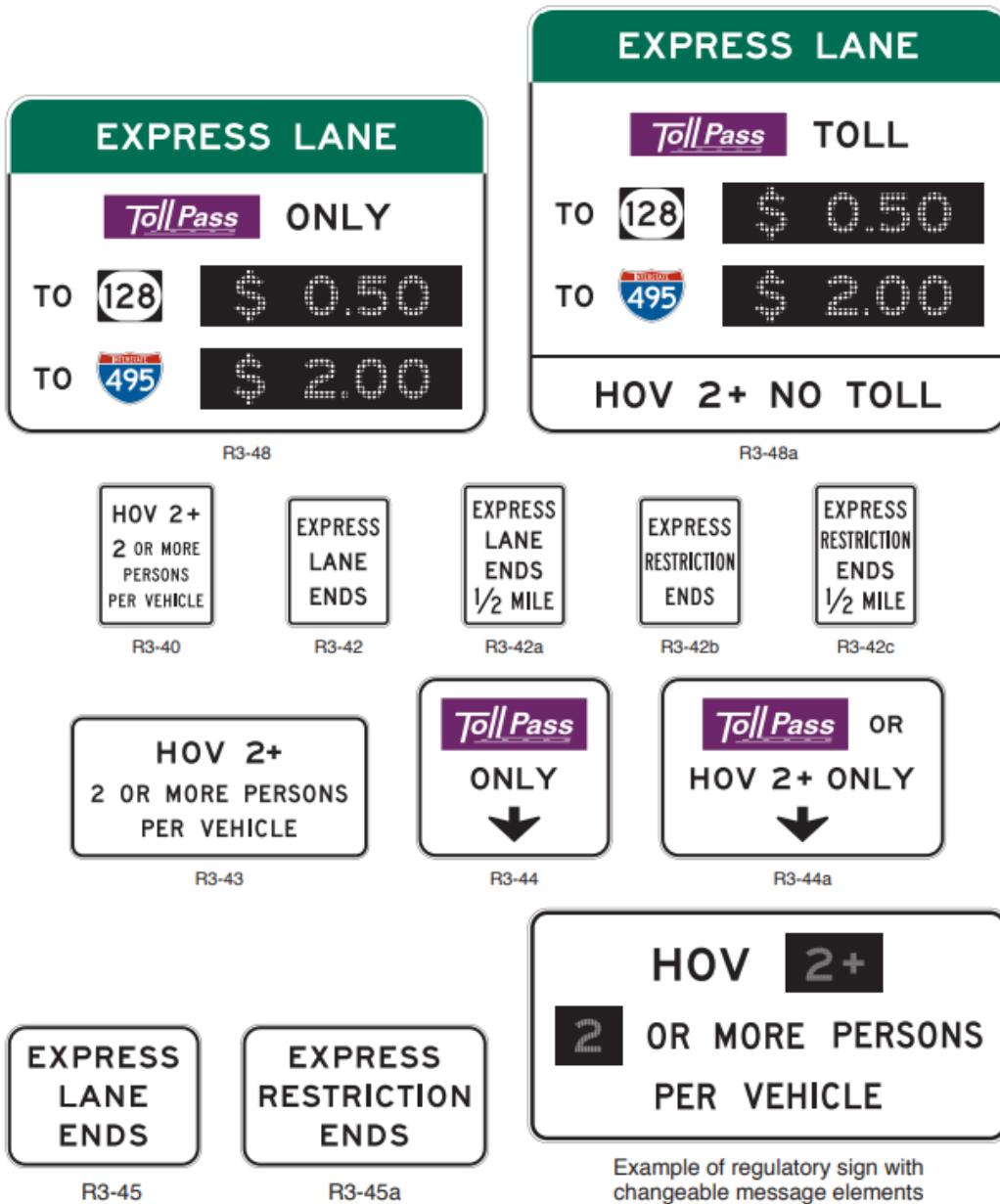
1047 Option:

1048 Where registration in a local program or ETC account is required for HOV traffic to  
1049 travel in a priced managed lane without being charged a toll or by being charged a discounted  
1050 toll, such information may be displayed on a separate sign within the sequence of the required  
1051 regulatory and guide signs.

1054

NCUTCD agrees with Figure 2G-18 as presented in the NPA.

Figure 2G-18. Regulatory Signs for Managed Lanes



Notes:

1. The ETC pictograph shown is an example only. The pictograph for the toll facility's adopted ETC system shall be used.
2. Changeable message sign elements shall be used for the numerals displayed for the variable tolls.

1055

1056

1057

1058 NCUTCD agrees with Figure 2G-19 as presented in the NPA.

**Figure 2G-19. Examples of Guide Signs for Entrances to Priced Managed Lanes**

**A - ENTRANCE TO A PRICED MANAGED LANE FROM A GENERAL PURPOSE LANE**



**B - DIRECT ENTRANCE TO A PRICED MANAGED LANE FROM A CROSSROAD**



Note: 1. The ETC pictographs shown are examples only. The pictograph for the toll facility's adopted ETC system shall be used.  
2. The examples shown are for facilities on which registration in a toll account program is required for toll payments.

1059

1060

1061 **Section 2G.19 Comments:** NCUTCD generally agrees with 2G.19 as presented in the NPA, but  
1062 recommends revising as follows:

- 1063 • Add a sentence to the end of the first Standard statement referring to “All-Electronic Tolling  
1064 (AET) or “Cashless Tolling”
- 1065 • Revise the first Option statement to change the optional ETC account information from a  
1066 separate sign to a header on an existing sign and allow greater use of pictographs
- 1067 • Add a Guidance paragraph after the first Option statement clarifying that suggested “billed  
1068 by mail” sign legend for optional ETC tolling in this Section is only an example and can  
1069 vary, which allows a greater range of communication methods to be included in the sign  
1070 message and provides more accommodation for continuing innovation and advances in  
1071 technology, and acknowledges opportunities for electronic or wireless notification and bill  
1072 payment as already used by a number of toll systems

1073

1074 **Section 2G.19 Guide Signs for Priced Managed Lanes**

1075 **Standard:**

1076 Except as otherwise provided in this Section, guide signs for barrier-separated, buffer-  
1077 separated, and contiguous managed lanes shall follow the specific provisions for  
1078 Preferential Lane guide signs contained in Sections 2G.10 through 2G.15. Except as  
1079 otherwise provided in this Section, guide signs for highways on which all lanes are  
1080 managed shall follow the general provisions for freeway and expressway guide signs as

1081 contained in Chapter 2E as a whole. Guide signs for highways on which all lanes are  
1082 managed and tolling or pricing is used as a management strategy shall follow the  
1083 applicable provisions for toll road guide signs as contained in Chapter 2F, in addition to  
1084 the general provisions of Chapter 2E.

1085 If fixed or variable tolls are used as an operational strategy for a managed lane, the  
1086 guide signs shall comply with the provisions of Sections 2F.03, 2F.04, and 2F.17 regarding  
1087 the use, size, and placement of ETC-account pictographs.

1088 Guide signs at the initial and intermediate entry points to a priced managed lane in  
1089 which all general-purpose passenger vehicles are allowed shall include the legend  
1090 EXPRESS LANE(S). Except as provided in Paragraph 5, the guide signs shall incorporate  
1091 the pictograph of the ETC account system into a header panel within the guide sign in  
1092 accordance with Sections 2F.03, 2F.04, and 2F.17. For a priced managed lane that allows  
1093 non-toll travel by HOV traffic without registration in a local program, the header panel  
1094 shall be modified to a regulatory format to display both the pictograph of the ETC account  
1095 system and the minimum occupancy requirement for non-toll travel with a black legend on  
1096 a white background (see Figure 2G-19).

1097 Guide signs at the initial and intermediate entry points to a managed lane that allows  
1098 only HOV traffic with either a fixed or variable occupancy requirement shall follow the  
1099 provisions of Sections 2G.10 through 2G.12 and 2G.14.

1100 If registration in a toll-account program is not required for travel in a managed lane in  
1101 which tolls are charged, then the ETC-account pictographs shall not be displayed on  
1102 primary guide signs directing traffic to the managed lane. In such cases, the purple header  
1103 panel shall be replaced with a warning header panel with a black legend and border on a  
1104 yellow background displaying the word TOLL as illustrated in Figure 2G-20. These  
1105 facilities are commonly referred to as All-Electronic Tolling (AET) or “Cashless Tolling”.

1106 Option:

1107 If the managed lane does not accept toll payments from an ETC account system and collects  
1108 tolls only by post-travel billing of registered vehicle owners, then the legend TOLL BILLED BY  
1109 MAIL ONLY may be displayed on a separate information sign within the sequence of primary  
1110 guide signs in advance of the entrance to the managed lane.

1111 If the managed lane accepts payments from registered ETC accounts, but does not require  
1112 registration to use the lane, then the pictographs of the accepted ETC account programs may be  
1113 displayed on a header panel that displays separate information sign within the sequence of  
1114 primary guide signs in advance of the entrance to the managed lane. The information sign may  
1115 also display the legend TOLL BILLED BY MAIL OR in addition to followed by the pictograph  
1116 of the accepted ETC account program.

1117 Guidance:

1118 *The “TOLL BILLED BY MAIL” language shown is an example only. The language*  
1119 *adopted by the toll agency’s rule making process should be used.*

1120 Support:

1121 Figure 2G-19 shows examples of Guide signs for entrances to priced managed lanes and  
1122 other ETC account-only toll facilities that incorporate header panels with ETC account  
1123 pictographs and regulatory legends.

1124 Figures 2G-21 through 2G-24 show examples of guide signs for various configurations of  
1125 initial and intermediate entrances to a priced managed lane.

1126 Guidance:

1127     *Exit Destination supplemental guide signs, identifying final destination and downstream exit*  
1128     *locations accessible from the managed lane (see Figure 2G-25), should be installed in advance*  
1129     *of the initial entry points to priced managed lanes. These signs should be located in accordance*  
1130     *with the provisions of Paragraph 6 of Section 2G.11.*

1131     *For managed lanes that are available as an alternative to travel on adjacent general-*  
1132     *purpose lanes on the same designated route, changeable message signs indicating the*  
1133     *comparative travel times or congestion levels using the managed lanes versus the general-*  
1134     *purpose lanes (see Figure 2G-26) should be installed in advance of the initial and intermediate*  
1135     *entry points to the managed lanes.*

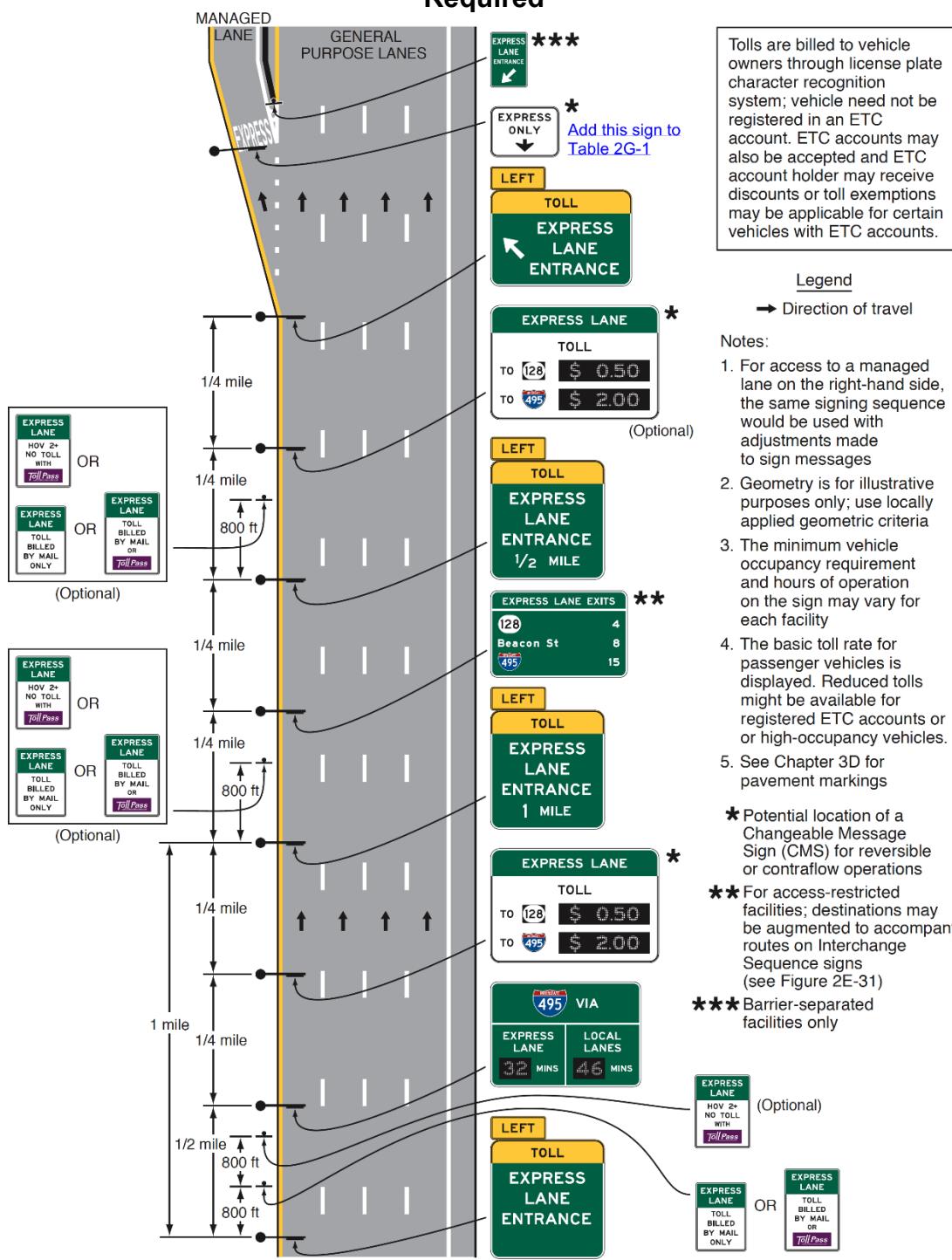
1136     Option:

1137         Changeable message signs may also be used on non-managed highways to display  
1138         comparative travel times or congestion levels for a nearby managed highway.

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1140

1141 NCUTCD generally agrees with Figure 2G-20 as presented in the NPA, but recommends  
 1142 revising the title from "Example of Signing for the Entrance to an Access-Restricted Priced  
 1143 Managed Lane for which Registration in a Toll Account is Not Required" to "Signing for the  
 1144 Entrance to an Access-Restricted Priced Managed Lane - NO ETC Account Required".

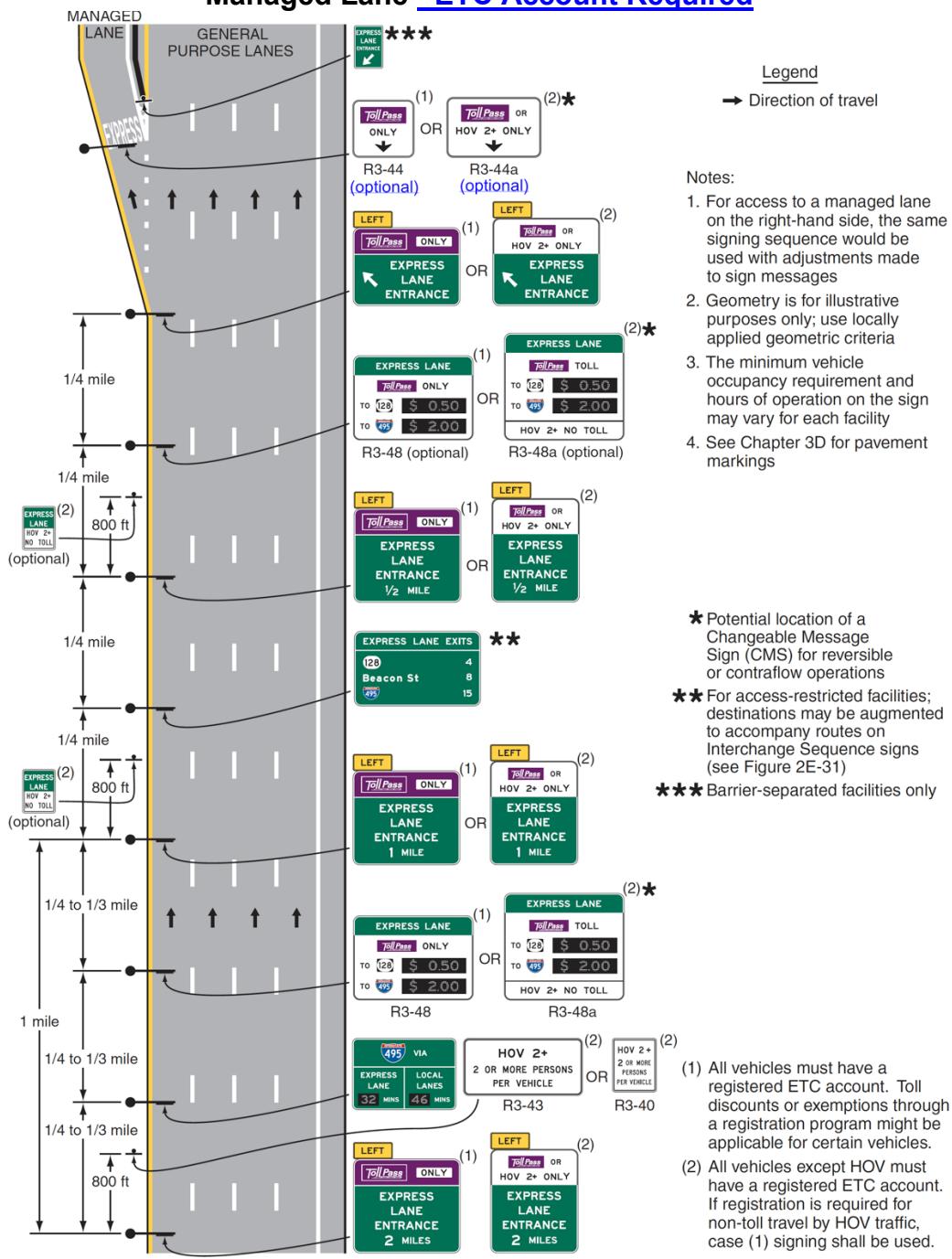
1145 **Figure 2G-20. Example of Signing for the Entrance to an Access-Restricted Priced  
 1146 Managed Lane ~~for which Registration in a Toll Account is Not~~ - NO ETC Account  
 1147 Required**



1150 NCUTCD generally agrees with Figure 2G-21 as presented in the NPA, but recommends  
 1151 revising as follows in accordance with NCUTCD recommendation 18A-GMI-02:

- Revise the title from “Example of Signing for the Entrance to an Access-Restricted Priced Managed Lane” to “Signing for the Entrance to an Access-Restricted Priced Managed Lane - ETC Account Required”
- Add “(optional)” to the R3-44 and R3-44a signs

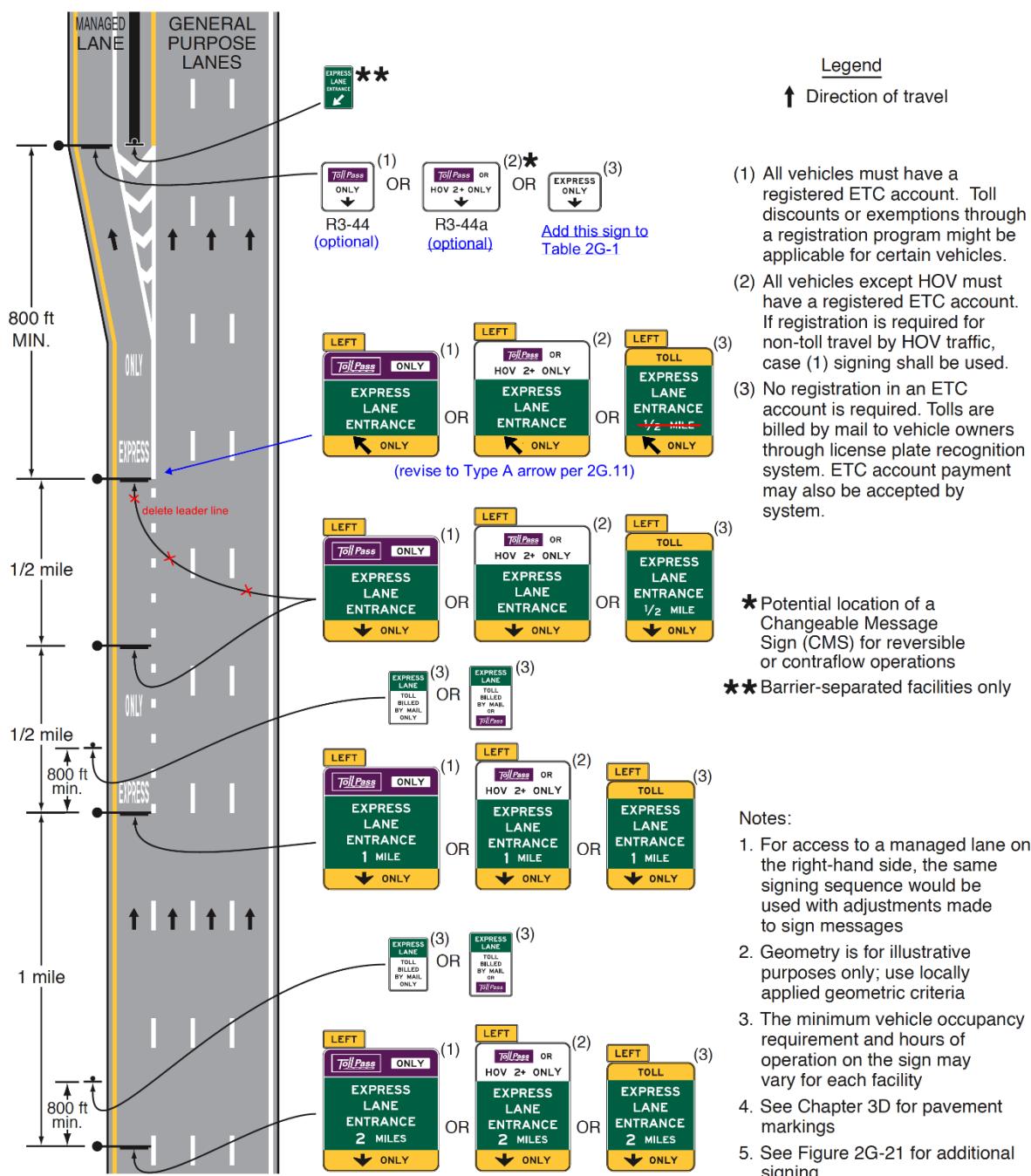
**Figure 2G-21. Example of Signing for the Entrance to an Access-Restricted Priced Managed Lane - ETC Account Required**



1158  
1159

1160 NCUTCD generally agrees with Figure 2G-22 as presented in the NPA, but recommends  
 1161 revising as follows in accordance with NCUTCD recommendation 18A-GMI-02:  
 1162 • Add “(optional)” to the R3-44 and R3-44a signs  
 1163 • Revise the Entrance Direction sign to use an upward diagonal Type A arrow  
 1164 • Fix layout error in in Entrance Direction sign (3)  
 1165

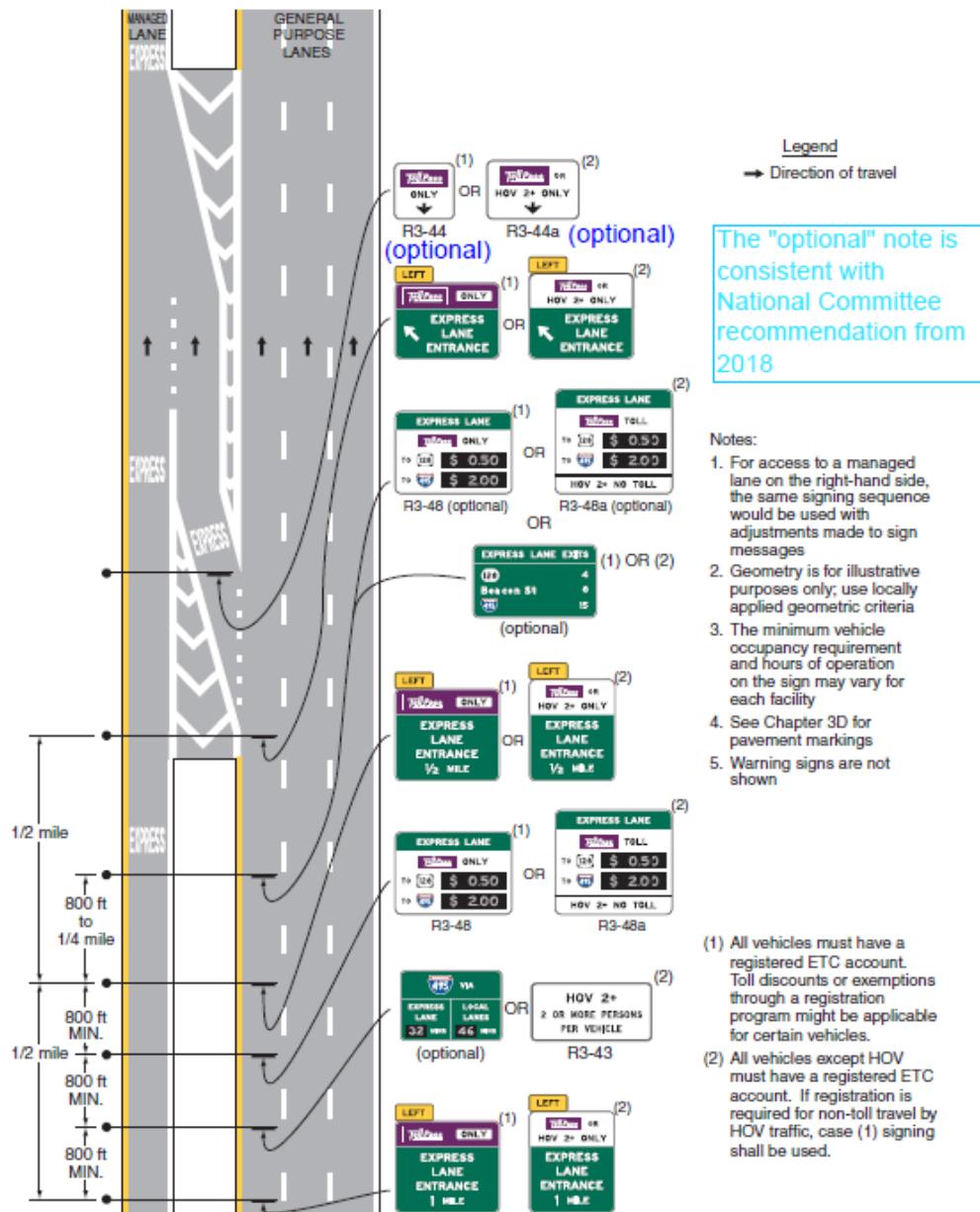
**Figure 2G-22. Example of Signing for the Entrance to an Access-Restricted Priced Managed Lane Where a General-Purpose Lane Becomes the Managed Lane**



1166  
 1167  
 1168

1169 NCUTCD generally agrees with Figure 2G-23 as presented in the NPA, but recommends  
 1170 revising as follows in accordance with NCUTCD recommendation 18A-GMI-02:  
 1171 • Add "(optional)" to the R3-44 and R3-44a signs

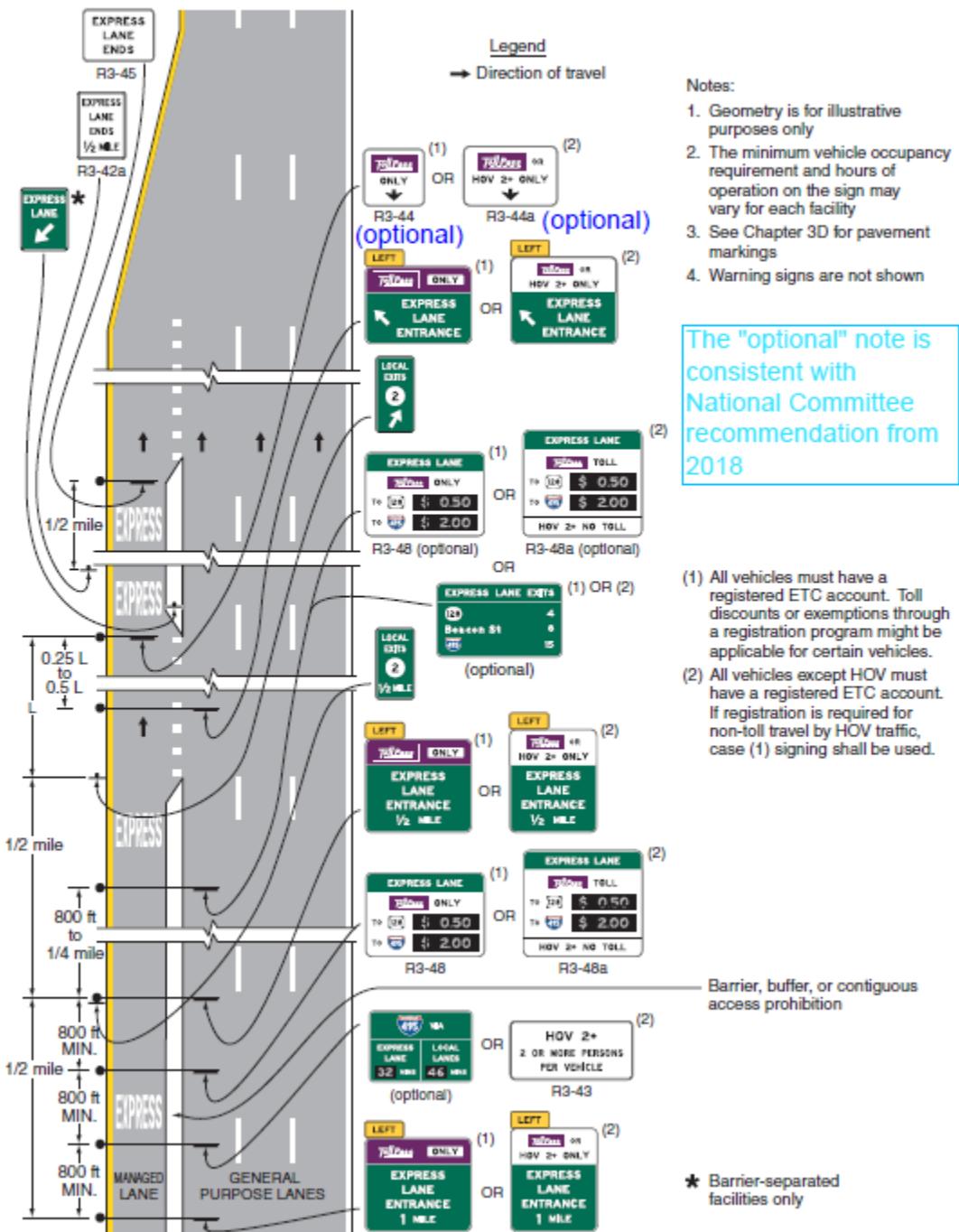
**Figure 2G-23. Example of Signing for an Intermediate Entry to a Barrier- or Buffer-Separated Priced Managed Lane**



1172  
 1173  
 1174

1175 NCUTCD generally agrees with Figure 2G-24 as presented in the NPA, but recommends  
 1176 revising as follows in accordance with NCUTCD recommendation 18A-GMI-02:  
 1177 • Add "(optional)" to the R3-44 and R3-44a signs

**Figure 2G-24. Example of Signing for the Intermediate Entry to, Egress from, and End of Access-Restricted Priced Managed Lanes**



1178  
 1179  
 1180

1181 NCUTCD agrees with Figure 2G-25 as presented in the NPA.

**Figure 2G-25. Example of an Exit Destinations Sign for a Managed Lane**



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1185

NCUTCD agrees with Figure 2G-25 as presented in the NPA.

**Figure 2G-26. Example of a Comparative Travel Time Information Sign for Preferential or Managed Lanes**



**Notes:**

1. The ETC pictograph shown is an example only. The pictograph for the toll facility's adopted ETC system shall be used.
2. CMS elements shall be used for the numerals displayed for the estimated travel times.

1186

1187

**Standard:**

The use and locations of guide signs for intermediate egress locations and direct exits from a priced managed lane (see Figure 2G-24 and Figures 2G-27 through 2G-29) shall comply with the provisions of Sections 2G.13 and 2G.15. The signs shall be suitably modified to display header messages of white legend on a green background that relate the guide sign legends to the managed lane(s) as appropriate in accordance with the following:

- A. Post-mounted or overhead-mounted Advance Guide signs for intermediate egress to the general purpose lanes shall include the legend LOCAL EXITS in a header panel within the guide signs, destination information or the exit number(s) for the next exit(s) accessible from the general purpose lanes, and the appropriate distance information to the location of the egress (see Figures 2G-24 and 2G-27).
- B. Post-mounted or overhead-mounted Intermediate Egress Direction signs shall include the legend LOCAL EXITS in a header panel within the signs, the

1200 destination information or the exit number(s) of the next exit(s) accessible from the  
1201 general-purpose lanes, and a diagonally upward-pointing directional arrow (see  
1202 Figures 2G-24 and 2G-27).

- 1203 C. For direct exits to another roadway, the legend EXPRESS EXIT shall be used on  
1204 the Advance Guide and Exit Direction signs (see Figure 2G-28).  
1205 D. For pull-through signs, the legend EXPRESS LANE(S) shall be used, either as a  
1206 header panel within the pull-through sign or as the principal legend of the sign  
1207 without a header panel (see Figures 2G-27, 2G-28, and 2G-29).

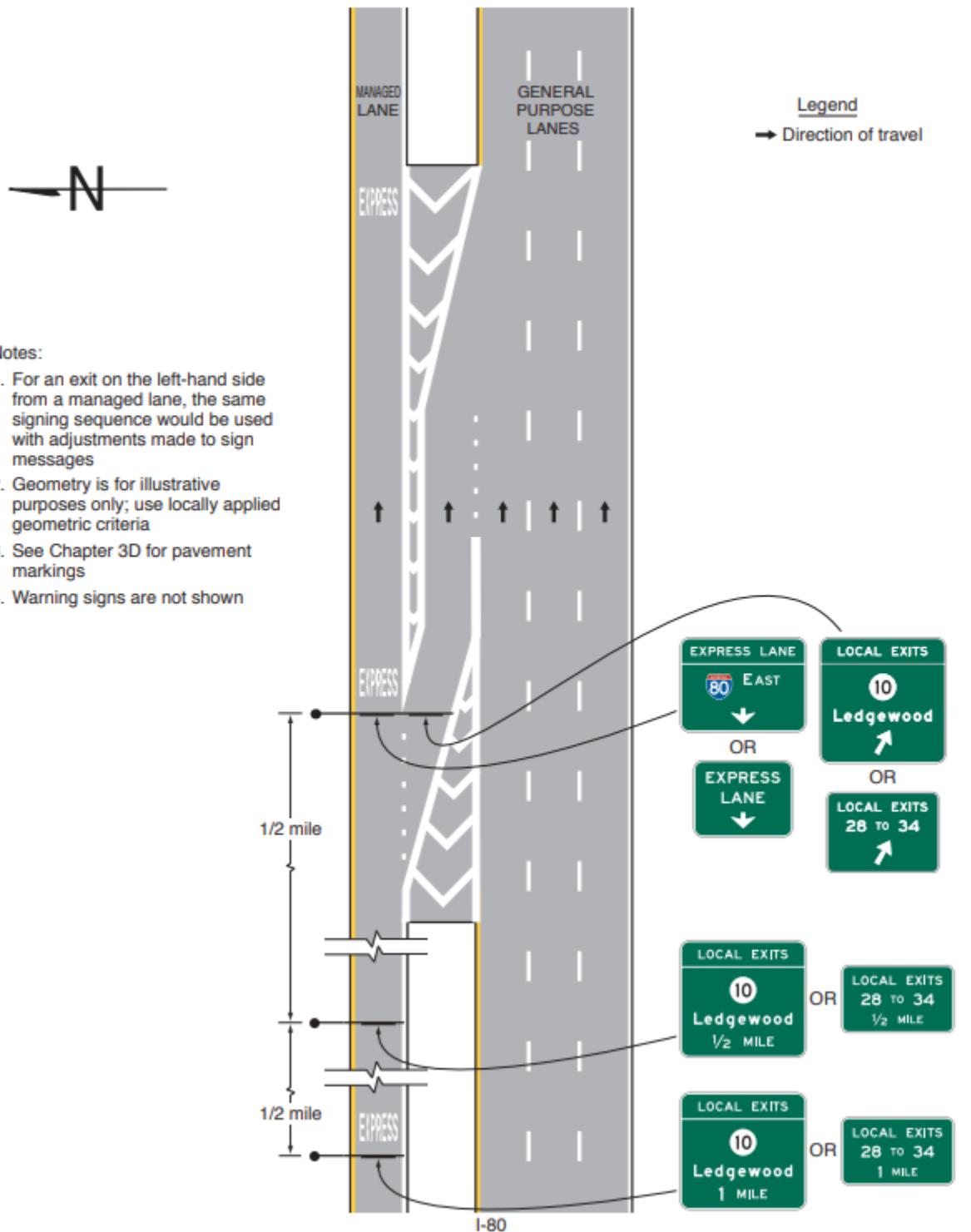
1208 Support:

1209 Section 2G.13 contains information on the use of overhead-mounted guide signs for  
1210 intermediate egress to the general-purpose lanes.

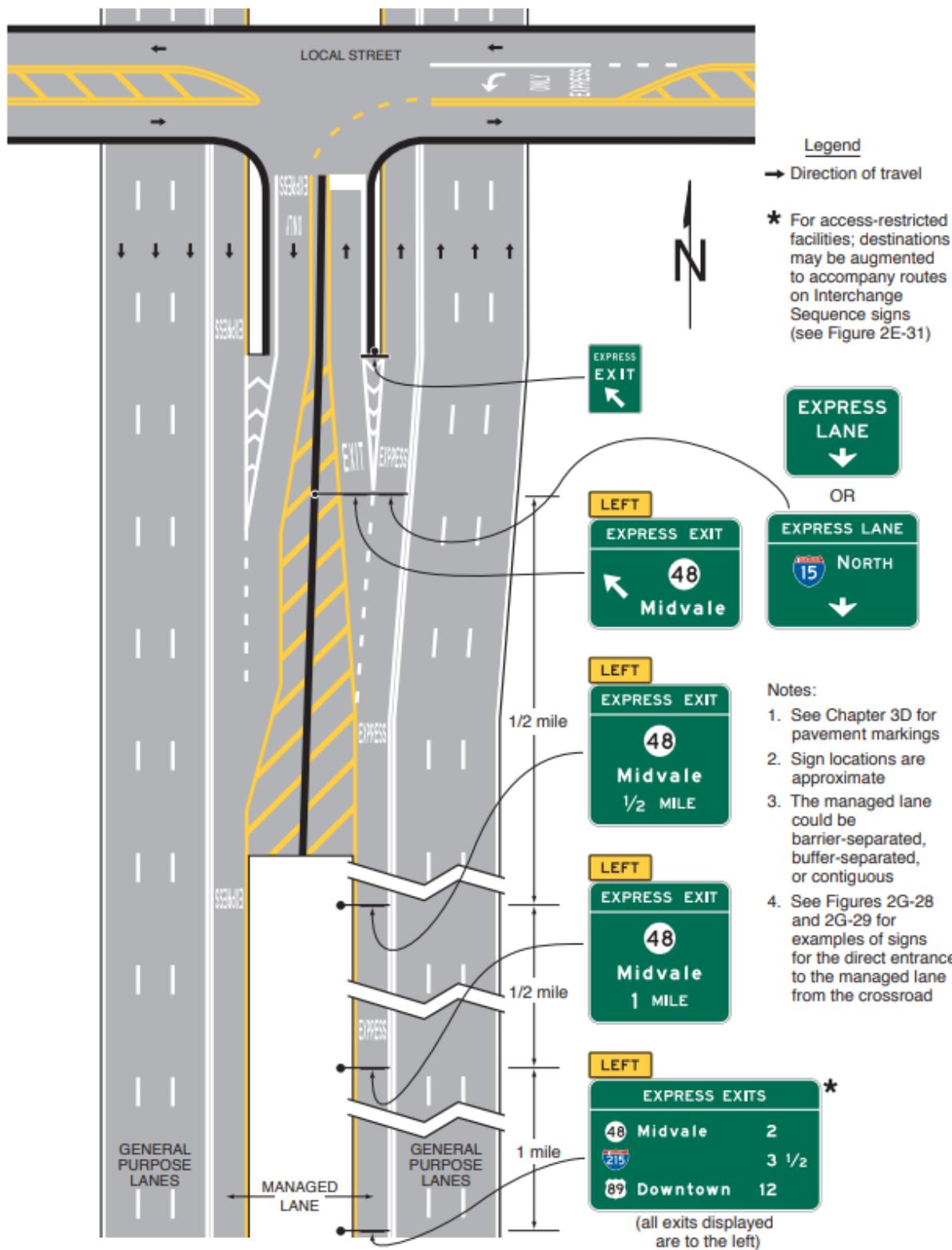
1211 Figures 2G-30 and 2G-31 show examples of guide signing for direct entrances to a priced  
1212 managed lane from a crossroad or surface street.

1213  
1214  
1215

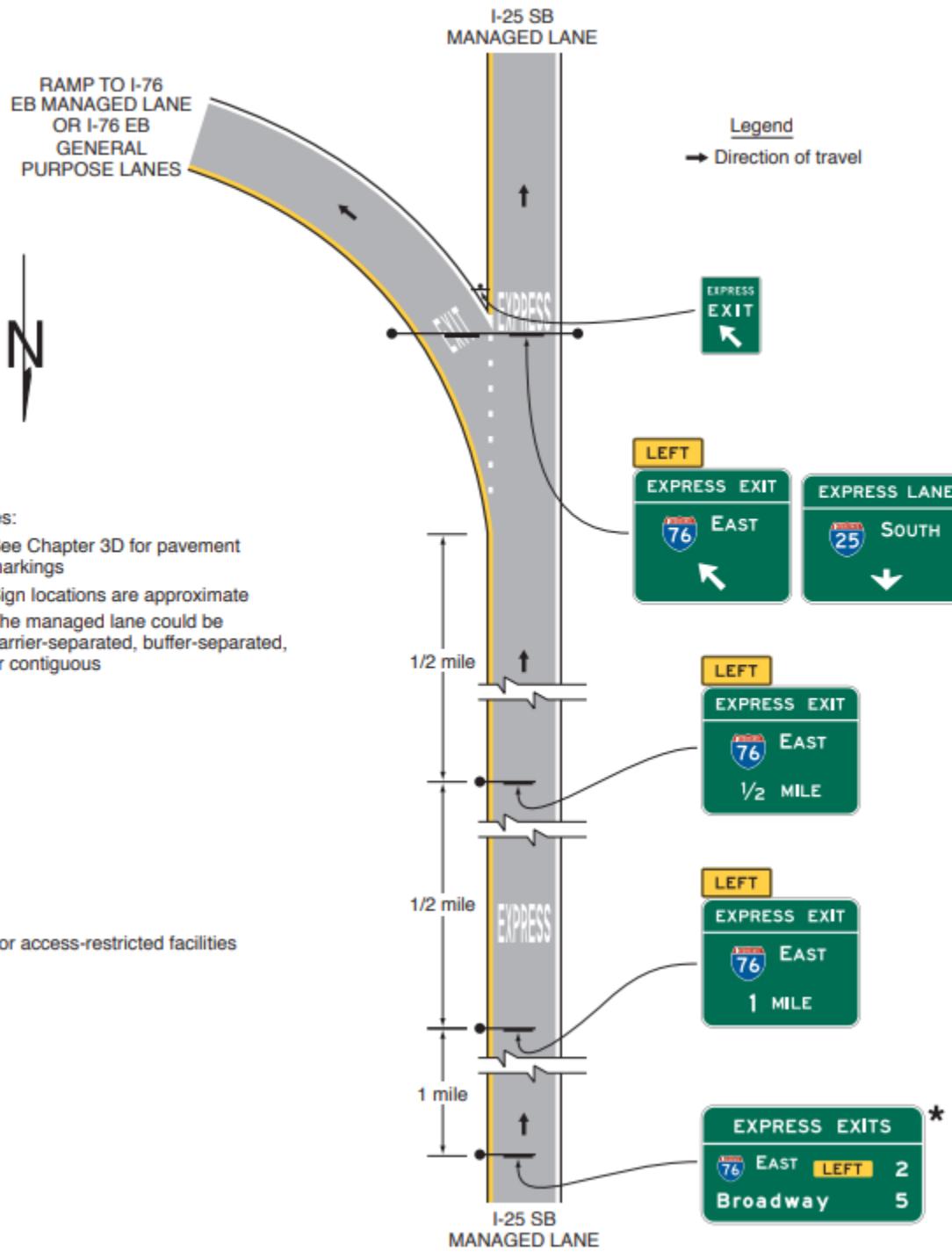
**Figure 2G-27. Examples of Guide Signs for an Intermediate Egress from a Barrier- or Buffer-Separated Managed Lane**



**Figure 2G-28. Examples of Guide Signs for Direct Managed Lane Entrance and Exit Ramps**

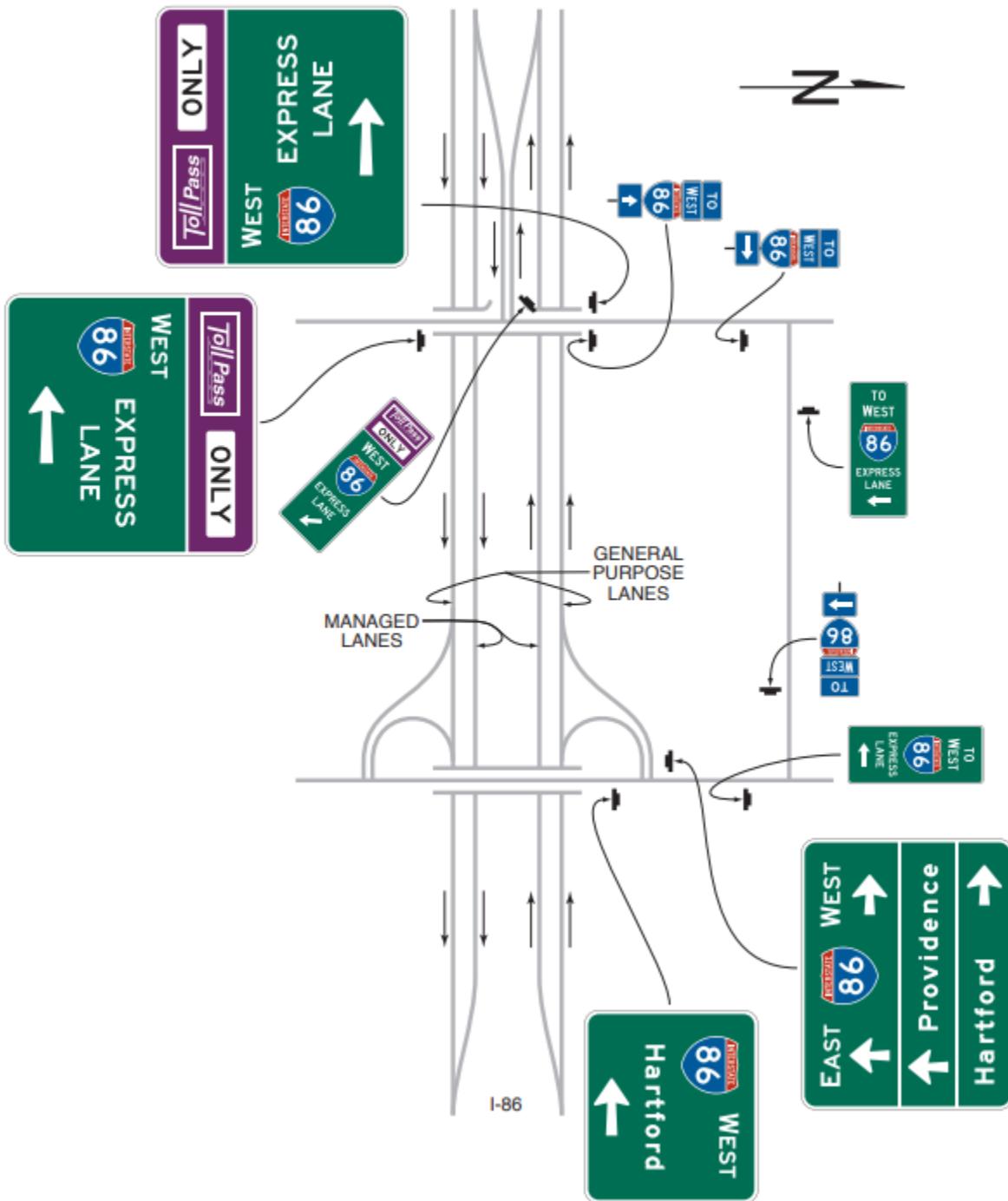


**Figure 2G-29. Examples of Guide Signs for a Direct Access Ramp between Managed Lanes on Separate Freeways**



NCUTCD agrees with Figure 2G-30 as presented in the NPA.

**Figure 2G-30. Examples of Guide Signs for a Direct Entrance Ramp to a Priced Managed Lane and Trailblazing to a Nearby Entrance to the General-Purpose Lanes**

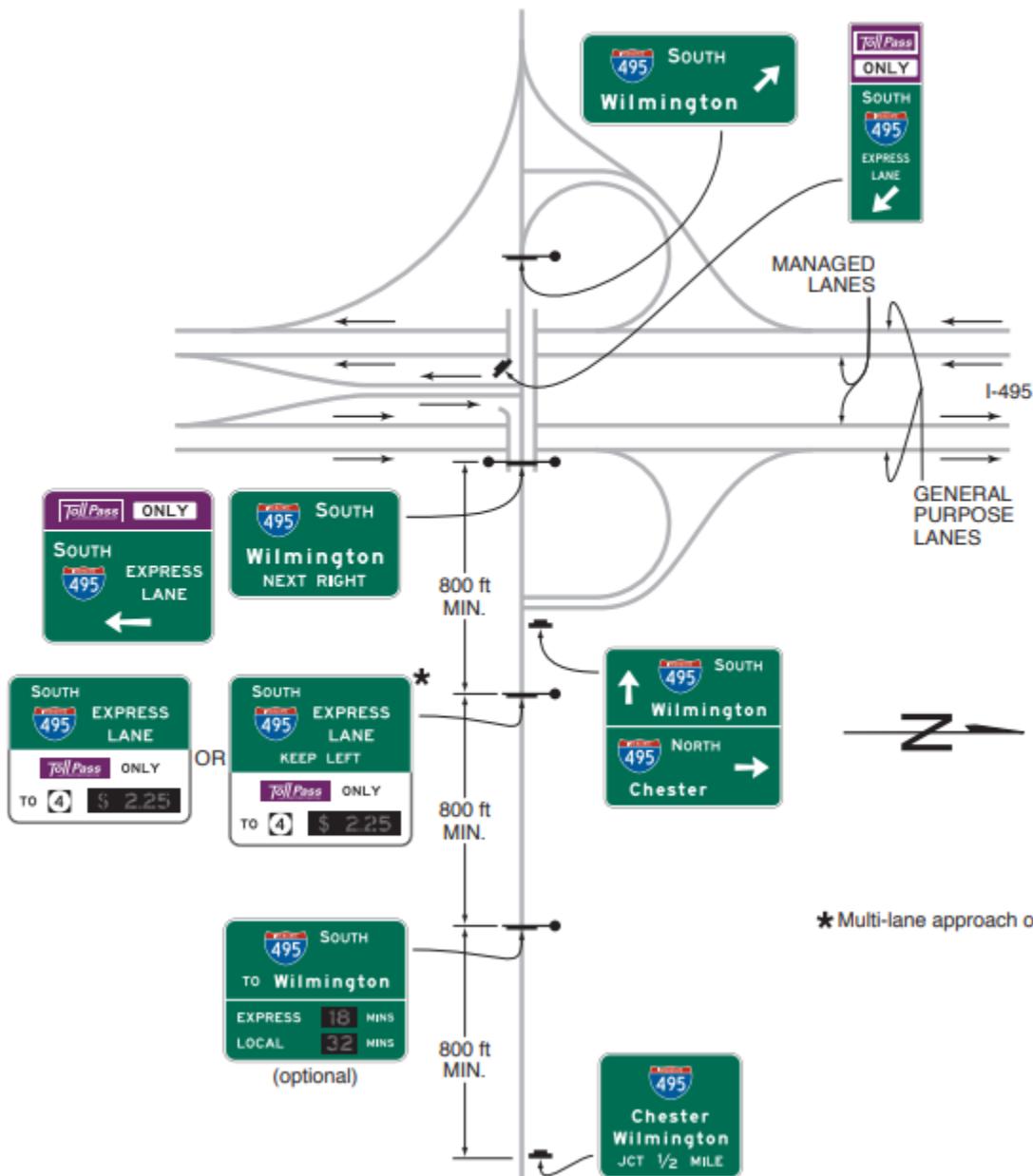


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NCUTCD agrees with Figure 2G-31 as presented in the NPA.

**Figure 2G-31. Examples of Guide Signs for Separate Entrance Ramps to General-Purpose and Priced Managed Lanes from the Same Crossroad**



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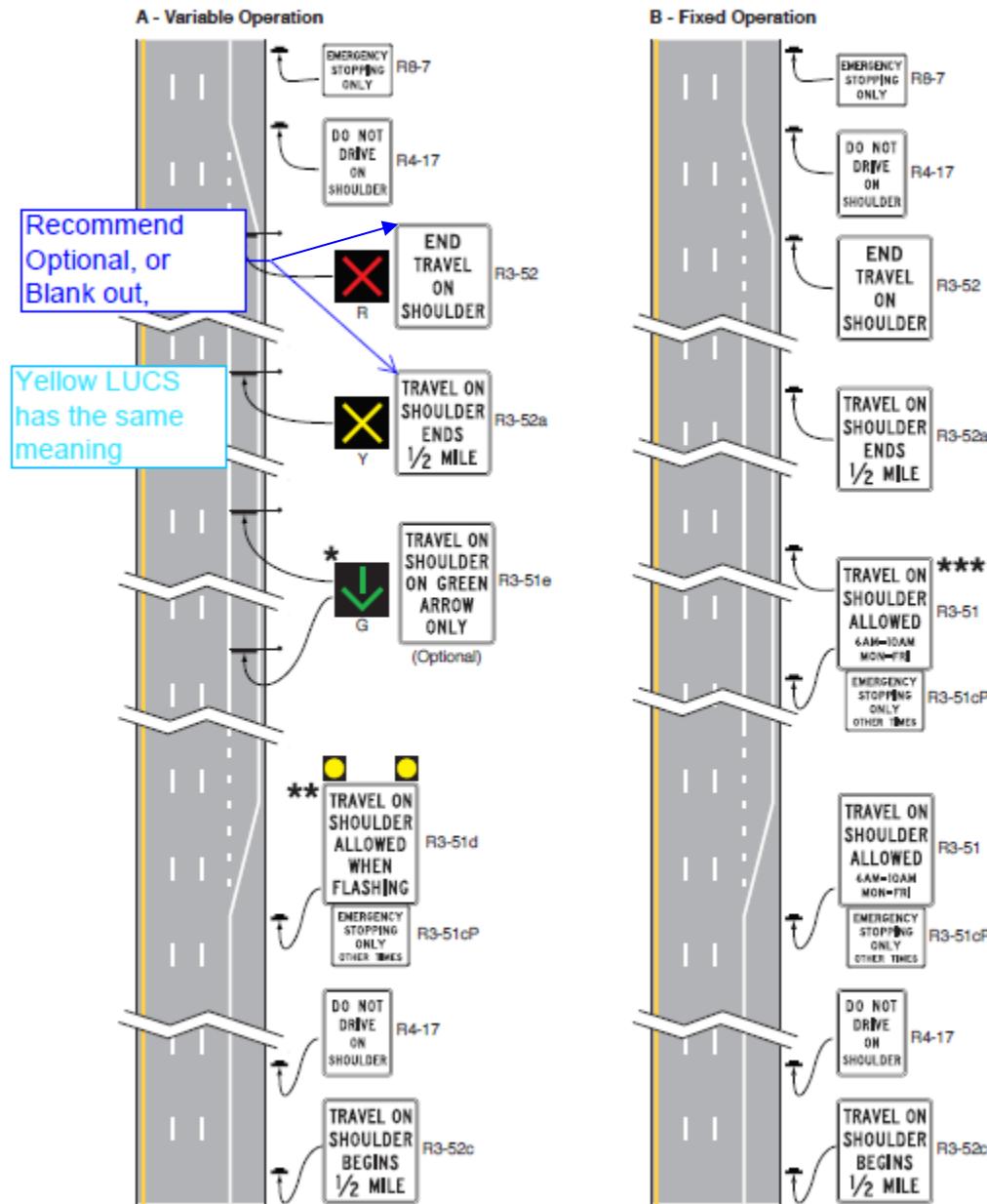
1242

1243  
1244 **Section 2G.20 Comments:** NCUTCD agrees with 2G.20 as presented in the NPA.  
1245  
1246 **Section 2G.20 Signs for Part-Time Travel on a Shoulder – General**  
1247 Support:  
1248     In some cases, paved shoulders are allowed to be used for driving use during peak periods to  
1249     manage congestion. Configurations might be on freeways and expressways, as well as on  
1250     conventional roads. Travel on the shoulder during these periods might be restricted to certain  
1251     classes of vehicles, such as buses or HOV, or might be open to general traffic. When the part-  
1252     time travel on a shoulder is limited to certain classes of vehicles, the signing is similar to that for  
1253     preferential lanes. Additional signing is typically used to advise road users that the shoulder is  
1254     not available for emergency use during these periods. Part-time travel on a shoulder might also  
1255     employ lane-use control signals and/or blank-out signs to inform traffic of the allowable use of  
1256     the shoulder. Depending on the design of exit ramp terminals and auxiliary lanes, guide signs  
1257     must account for exit maneuvers during both shoulder use conditions and might necessitate  
1258     changeable legend elements. However, additional guide signs are not normally necessary  
1259     specifically for the condition when the shoulder is used for travel. The pavement markings might  
1260     also be modified where travel allowed on the shoulder begins and ends.  
1261     Figure 2G-32 shows an example of signing for part-time travel on a shoulder.  
1262  
1263

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1265  
1266  
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NCUTCD generally agrees with Figure 2G-32 sheet 1 as presented in the NPA, but recommends revising the R3-52 and R3-52a signs for example A (variable operation) to be optional or blank-out.

Figure 2G-32. Example of Signing for Part-Time Travel on a Shoulder (Sheet 1 of 4)



\* Lane-use control signals (see Chapter 4T) located every 1/2 mile or less to reaffirm shoulder travel allowed (green arrow) or prohibited (Red X).

\*\* A post mounted TRAVEL ON SHOULDER ALLOWED WHEN FLASHING sign (R3-51d) with beacons may be used lieu of lane-use control signals at the same intervals.

\*\*\* The R3-51 sign located every 1/2 mile or less to affirm when travel on shoulder is allowed for fixed period applications.

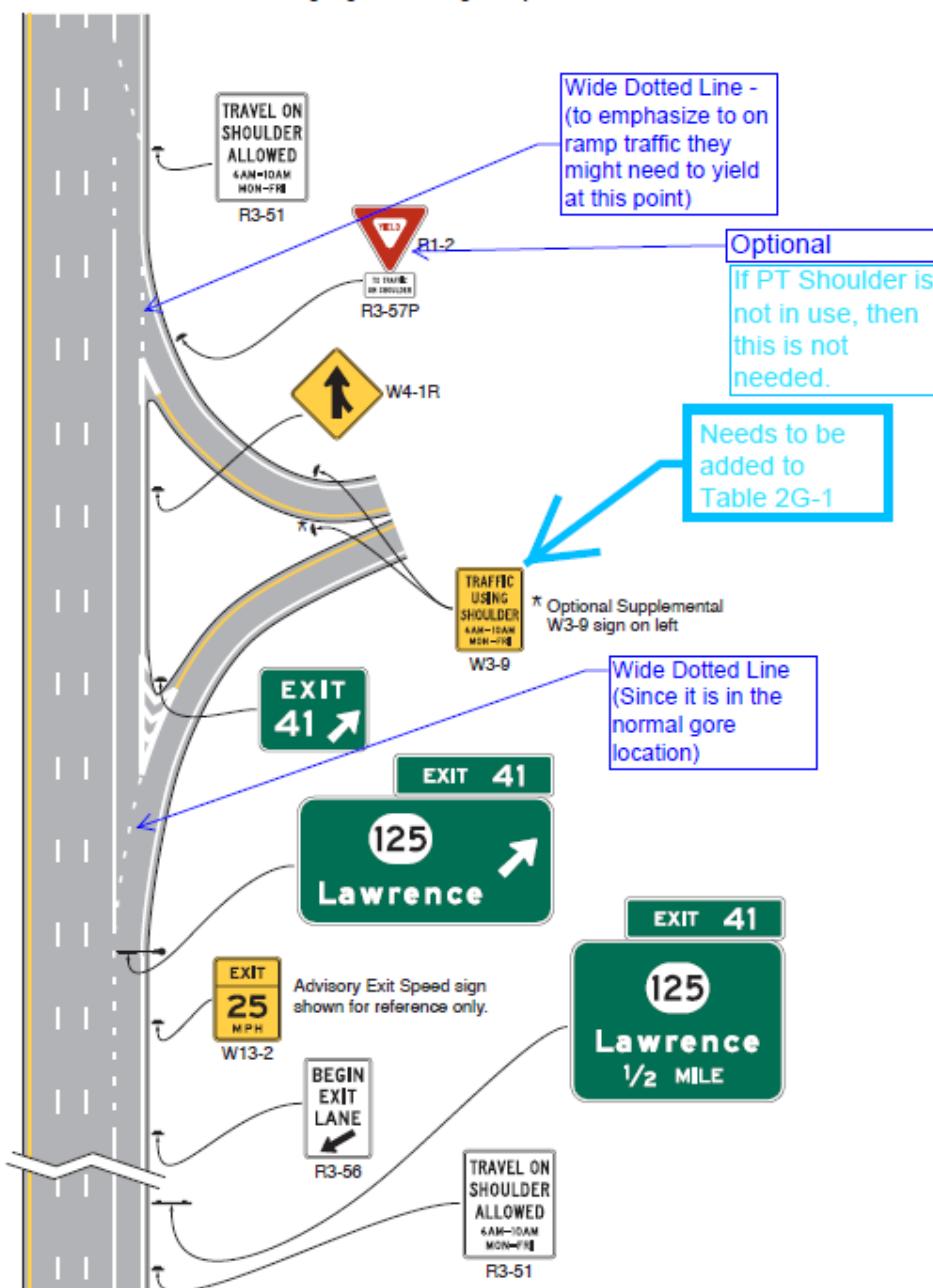
1268  
1269

1270 NCUTCD generally agrees with Figure 2G-32 sheet 2 as presented in the NPA, but recommends  
1271 revising as follows:

- 1272 • Label dotted lines at the exit and entrance gores to inform readers of the purpose of those  
1273 lines
- 1274 • Revise the Yield to Traffic on Shoulder sign assembly to note it may not be needed for part-  
1275 time shoulder travel

Figure 2G-32. Example of Signing for Part-Time Travel on a Shoulder (Sheet 2 of 4)

C - Signing at Interchange Ramps

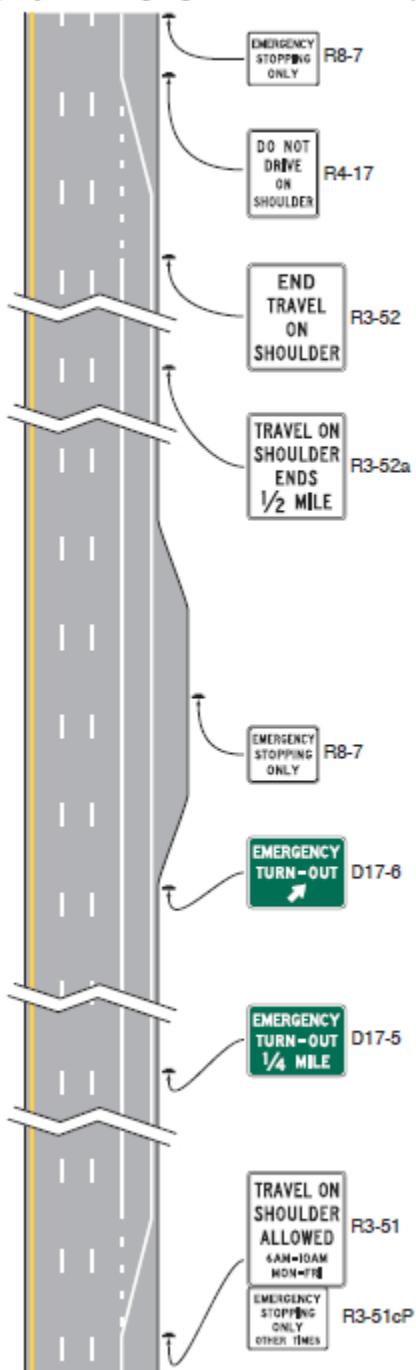


1276  
1277  
1278  
1279

1280 NCUTCD agrees with Figure 2G-32 sheet 3 as presented in the NPA.

Figure 2G-32. Example of Signing for Part-Time Travel on a Shoulder (Sheet 3 of 4)

D - Emergency Turnout Signing for Travel on Shoulder Applications



1281

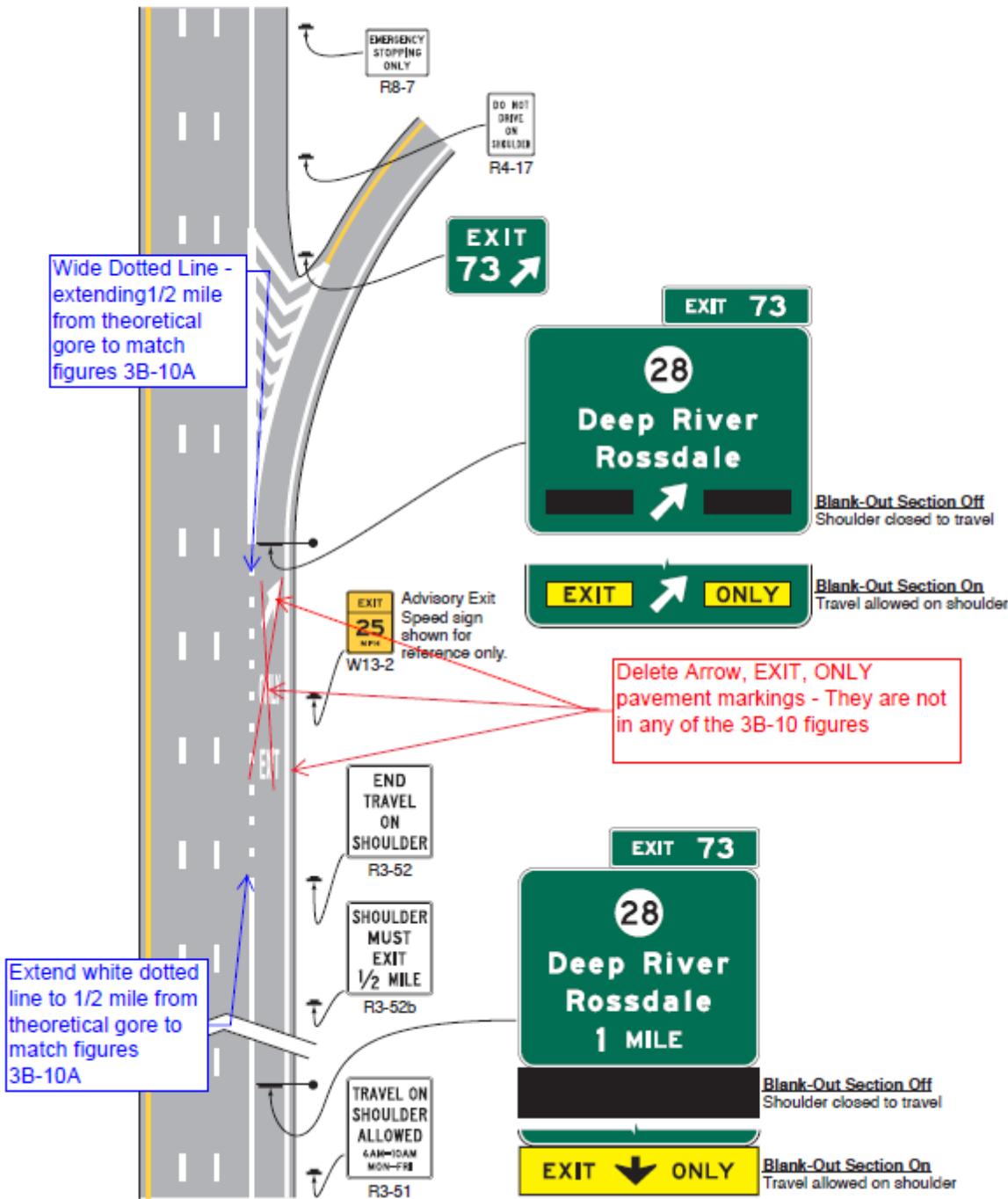
1282

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1284

1285 NCUTCD generally agrees with Figure 2G-32 sheet 4 as presented in the NPA, but recommends  
1286 revising markings to agree with Figure 3B-10.

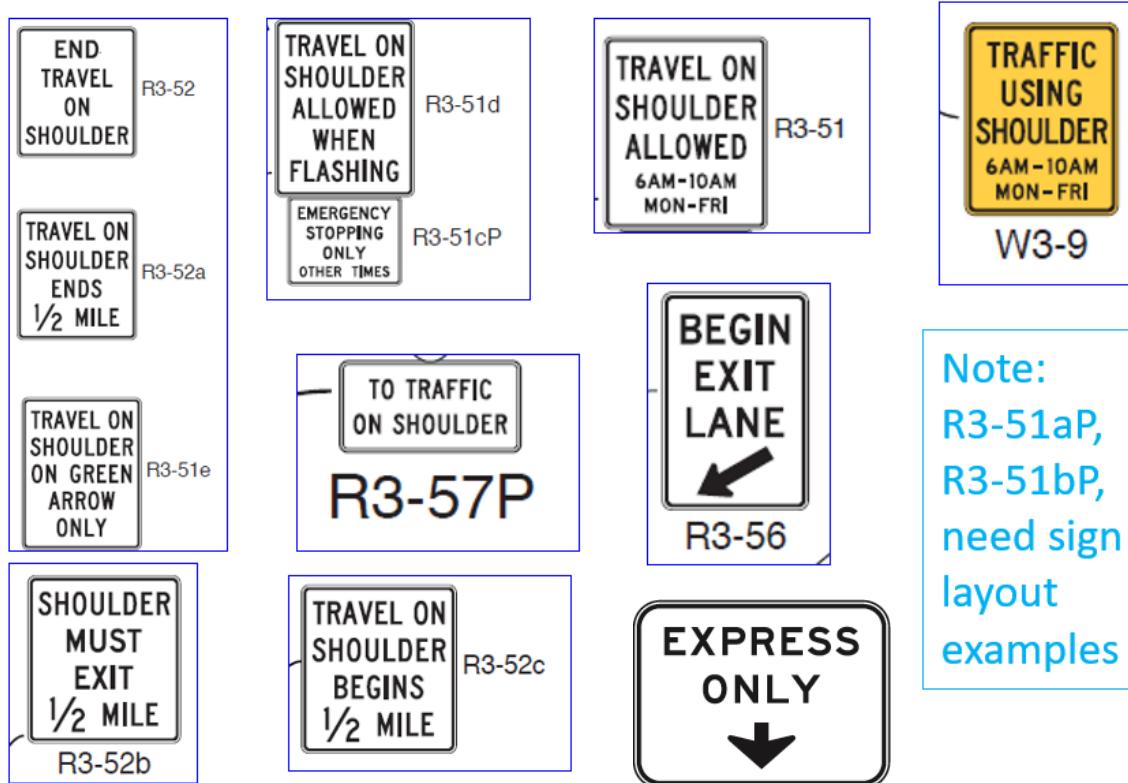
**Figure 2G-32. Example of Signing for Part-Time Travel on a Shoulder (Sheet 4 of 4)**  
E - Travel on Shoulder Ends at an Interchange Exit Ramp



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1288  
1289

1290 NCUTCD recommends adding a new Figure 2G-XX illustrating signs included in Table 2G-1  
1291 and the figures in Chapter 2G.  
1292

**Figure 2G-XX. Part-Time Travel on Shoulder Regulatory and Warning Signs**



1293  
1294  
1295 **Standard:**  
1296 A shoulder that has been opened to travel on a permanent, full-time basis shall be  
1297 considered a travel lane and shall be signed and marked in accordance with other  
1298 provisions of this Manual.

1299 Support:  
1300 Section 3E.04 contains provisions regarding the placement of markings on paved shoulders  
1301 that are open for part-time travel.

---

1302  
1303  
1304  
1305 **Section 2G.21 Comments:** NCUTCD generally agrees with 2G.21 as presented in the NPA with  
1306 minor editorial revisions.

1307  
1308 **Section 2G.21 Regulatory Signs and Plaques for Part-Time Travel on a Shoulder**  
1309 **Standard:**  
1310 Regulatory signs shall be used to notify road users of the periods of operation that  
1311 travel is allowed on a paved shoulder. The Part-Time Travel on Shoulder Operation (R3-

1312 **51) sign shall be used where traffic is allowed to travel on the shoulder during certain fixed**  
1313 **periods of operation. The Part-Time Travel on Shoulder Variable Operation (R3-51d) sign**  
1314 **with two flashing beacons (see Chapter 4S) mounted above it shall be used when the period**  
1315 **of operation is variable.**

1316 **If certain classes of vehicles are not allowed to use the shoulder during these periods,**  
1317 **then a Selective Exclusion (R3-51aP or R3-51bP) plaque shall be mounted below the R3-51**  
1318 **or R3-51d sign. If the travel on the shoulder is restricted to certain classes of vehicles, then**  
1319 **the regulatory signs shall display that information.**

1320 Option:

1321 The EMERGENCY STOPPING ONLY OTHER TIMES (R3-51cP) plaque may be mounted  
1322 below the R3-51 sign if the R3-51aP or R3-51bP plaque is not used.

1323 Guidance:

1324 The TRAVEL ON SHOULDER BEGINS ½ MILE (R3-52c) sign should be used in advance of  
1325 the location where part-time travel on shoulder first begins and followed by the DO NOT DRIVE  
1326 ON SHOULDER (R4-17) sign appropriately spaced downstream.

1327 Standard:

1328 Approximately ½ mile from where part-time travel on shoulder ends the TRAVEL ON  
1329 SHOULDER ENDS (R3-52a) sign shall be used. At the location provided for traffic to  
1330 transition from shoulder travel back to permanent highway lane travel, an END TRAVEL  
1331 ON SHOULDER (R3-52) sign shall be used. After this transition location a DO NOT  
1332 DRIVE ON SHOULDER (R4-17) sign shall be used.

1333 Guidance:

1334 Where a shoulder that allows part-time travel is interrupted by a deceleration lane for an  
1335 exit, the BEGIN EXIT LANE (R3-56) sign should be used at the beginning of the deceleration  
1336 lane where traffic is allowed to enter during the periods that travel is prohibited on the shoulder.

1337 Where turnouts are provided for emergency stopping during periods when travel is allowed  
1338 on the shoulder, the EMERGENCY STOPPING ONLY (R8-7) sign (see Section 2B.49) should be  
1339 used adjacent to the turnout.

1340 Where traffic on an entrance ramp is required to yield to traffic using the shoulder of the  
1341 freeway or expressway mainline during the periods when travel is allowed on the shoulder, the  
1342 TO TRAFFIC ON SHOULDER (R3-57P) plaque should be mounted below the Yield (R2-1R1-2)  
1343 sign (see Section 2B.08).

---

1346  
1347 **Section 2G.22 Comments:** NCUTCD agrees with 2G.22 as presented in the NPA.  
1348

## 1349 **Section 2G.22 Warning Signs for Part-Time Travel on a Shoulder**

1350 Guidance:

1351 The Traffic Using Shoulder (W3-9) sign should be used on a ramp that enters a freeway or  
1352 expressway on which part-time travel is allowed on the shoulder. When used, the W3-9 sign  
1353 should be located on the side of the ramp from which the shoulder traffic approaches (see Figure  
1354 2G-32).

1355 Option:

1356 The W3-9 sign may be used on a conventional road that is required to stop for or yield to the  
1357 through street or highway on which part-time travel is allowed on the shoulder.

1358

---

1359

1360 **Section 2G.23 Comments:** NCUTCD agrees with 2G.23 as presented in the NPA.

1361

1362 **Section 2G.23 Guide Signs for Part-Time Travel on a Shoulder**

1363 **Support:**

1364 Guide signs for part-time travel on a freeway or expressway shoulder generally consist of the  
1365 typical interchange guide sign sequence (see Chapter 2E). While specialized guide signs are not  
1366 normally necessary, modifications to the typical guide signs might be necessary, especially  
1367 where an interchange lane drop is created only during the periods when the shoulder is open to  
1368 travel.

1369 **Standard:**

1370 **Where an interchange lane drop is created only during the periods when a shoulder is**  
**open to travel, the Advance and Exit Direction guide signs (see Sections 2E.24 and 2E.26)**  
**shall be overhead mounted and shall be modified to include a blank-out or changeable**  
**EXIT ONLY message that complies with the provisions of Section 2E.29 and is displayed**  
**only during the periods that the shoulder is open to travel (see Figure 2G-32).**

1375 **Guide signs located in conjunction with part-time travel on a shoulder shall otherwise**  
**comply with the provisions of Chapters 2D and 2E.**

1376 **Guidance:**

1377 *Where turnouts are provided for emergency stopping during periods when travel is allowed  
1378 on the shoulder, the Emergency Turn-Out directional (D17-6) sign should be used as provided in  
1379 Section 2D.51.*

---

1381

1382

1383 **Section 2G.24 Comments:** NCUTCD generally agrees with 2G.21 as presented in the NPA with  
1384 minor editorial revisions.

1385

1386 **Section 2G.24 Lane-Use Control Signals for Part-Time Travel on a Shoulder**

1387 **Support:**

1388 Lane-use control signals (see Chapter 4T) are sometimes used for part-time travel on a paved  
1389 shoulder, in addition to signs, to indicate the allowable use of the shoulder.

1390 **Option:**

1391 Overhead lane-use control signals may be used above a shoulder on which part-time travel is  
1392 allowed.

1393 **Standard:**

1394 **Except as otherwise provided in this Section, lane-use control signals that are used for**  
**part-time travel on a shoulder shall comply with the provisions of Chapter 4T. When used**  
**for part-time travel on a shoulder, lane-use control signals shall not be required above the**  
**lanes adjacent to the shoulder. When used for part-time travel on a shoulder, a steady RED**  
**X signal indication shall be displayed when the shoulder is available for emergency**  
**stopping only and travel on the shoulder is otherwise prohibited.**

1400 **When part-time travel on shoulder is allowed for variable periods of operation, lane-use**  
**control signals (see Chapter 4T) shall be used and evenly spaced approximately every ½**  
**mile or less and centered over the shoulder to indicate when the shoulder is open or closed**  
**to vehicle travel. The lane use control signals shall display a green down arrow during**

1404 **times when travel is allowed on the shoulder, followed by a yellow X just before the**  
1405 **shoulder is to be closed to travel, and a red X when shoulder travel is discontinued.**  
1406 **Additionally, during the period when travel is allowed on the shoulder a lane-use control**  
1407 **signal that continuously displays a yellow X shall be used approximately ½ mile in advance**  
1408 **of the location where part-time travel on the shoulder ends, and then displays a red X**  
1409 **where the travel on shoulder ends. A lane-use control signal with a red X shall be displayed**  
1410 **at all times at the location where part-time travel on the shoulder ends.**

1411 **Option:**

1412 For part-time travel on shoulder with variable periods of operation, post-mounted TRAVEL  
1413 ON SHOULDER ALLOWED WHEN FLASHING (R3-51d) signs with flashing beacons may  
1414 be used in lieu of the lane-use control signals at the same intervals.

1415 The TRAVEL ON SHOULDER ON GREEN AROW ONLY (R3-51e) sign may be used  
1416 with a lane use control signal; mounted adjacent to the signal head, elsewhere on the signal  
1417 support, ground mounted next to, or in advance of, the signal.

---

1419  
1420 **Section 2G.25 Comments:** NCUTCD agrees with 2G.25 as presented in the NPA; however,  
1421 FHWA should be aware a steady YELLOW X signal indication for the end of queue application  
1422 may not be appropriate because drivers do not need to vacate the lane, they simply need to slow.  
1423 The Guidance note in Section 2G.26 regarding application of variable speed limit signs at known  
1424 congestion points does address this end of queue situation, but the MUTCD could be clearer in  
1425 recommending end of queue warning be implemented through variable speed limits, not through  
1426 lane-use control signal indications.

1427  
1428  
1429 **Section 2G.25 Lane-Use Control Signals for Active Lane Management on Freeways and**  
1430 **Expressways**

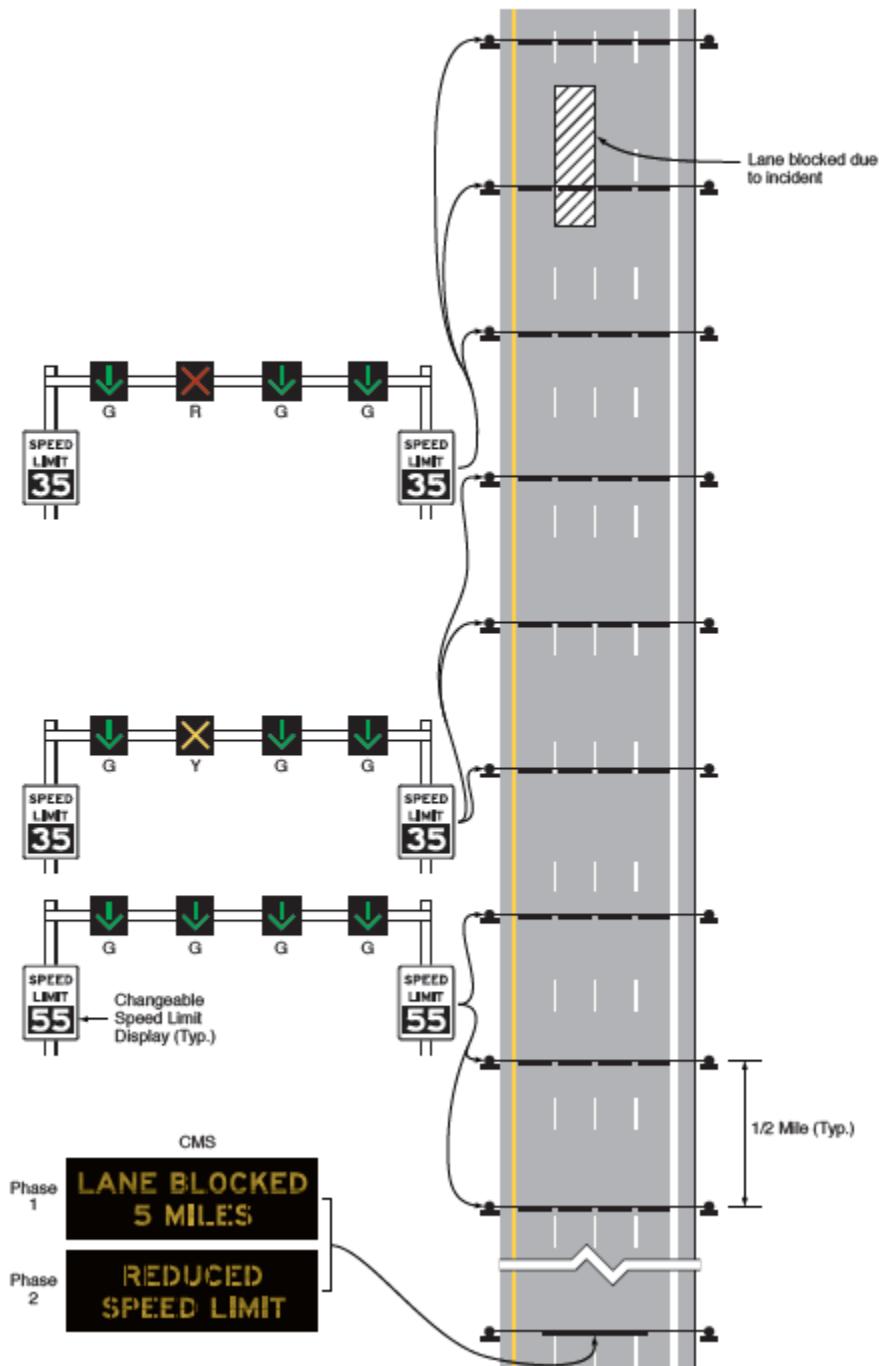
1431 Support:

1432 Active lane management is a component of active traffic management in which the use of  
1433 travel lanes and speed limits might be varied in real time in response to traffic conditions to  
1434 manage congestion. Active lane management might employ lane-use control signals (see Chapter  
1435 4T) and/or changeable message signs (see Chapter 2L). Figure 2G-33 shows an example of lane  
1436 use control signals and Variable Speed Limit signs for active lane management during an  
1437 incident.

1440

NCUTCD agrees with Figure 2G-33 as presented in the NPA.

**Figure 2G-33. Example of Lane-Use Control Signals and Variable Speed Limit Signs for Active Lane Management During an Incident**



1441

1442

#### Standard:

Except as otherwise provided in this Section, lane-use control signals that are used for active lane management shall comply with the provisions of Chapter 4T. When used for active lane management on a freeway or expressway, a steady YELLOW X signal

1447 **indication shall be displayed to warn road users to vacate the lane when the next**  
1448 **downstream lane-use control signal over the same lane is displaying a steady RED X signal**  
1449 **indication.**

1450 Option:

1451 A steady YELLOW X signal indication may be displayed on one or more lane use control  
1452 signals in advance of the steady YELLOW X signal indication required by Paragraph 2 as  
1453 conditions warrant to warn road users to vacate the lane.

1454 Support:

1455 Using too many YELLOW X signal indications could diminish the effectiveness of the  
1456 YELLOW X in conveying the lane is closed a short distance ahead and the road user needs to  
1457 vacate the lane soon.

1458 Standard:

1459 **When operated in conjunction with a temporary planned lane closure, lane-use control**  
1460 **signals shall only supplement the temporary traffic control devices as provided in Part 6 of**  
1461 **this Manual.**

1462 Guidance:

1463 Spacing of lane use control signals for active lane management on freeways and expressways  
1464 should be at ½-mile intervals. Closer spacing should be used where the viewing distance is  
1465 limited by the roadway geometry, overcrossings or other sight obstructions, or where traffic  
1466 entering from intervening interchange ramps is not adequately served by the ½-mile spacing.

1467 Combining lane-use control signals with overhead sign support structures should be  
1468 minimized to avoid overloading road users with too much information or conflicting or incorrect  
1469 messages, such as exclusive lane use or lane drop implied by the display of a DOWNWARD  
1470 GREEN ARROW below a guide sign.

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1472  
1473 **Section 2G.26 Comments:** NCUTCD agrees with 2G.26 as presented in the NPA with a minor  
1474 editorial revision.

## 1475 **Section 2G.26 Variable Speed Limits for Active Traffic Management on Freeways and** 1476 **Expressways**

1477 Support:

1478 Active traffic management on freeways and expressways might employ variable speed limits  
1479 as an element of an overall congestion management plan using changeable Speed Limit (R2-1)  
1480 signs (see Section 2B.22).

1481 Careful consideration is needed in locating Variable Speed Limit signs along the roadway  
1482 and potential positioning adjacent to Guide signs or Lane-Use Control signals so that the speed  
1483 displayed is clearly associated with the lane or lanes intended to be regulated and not other  
1484 adjacent lanes, ramps or roadways. This might result in the need to place Variable Speed Limit  
1485 signs on separate supports away from Guide and other signs or Lane-Use Control signals.

1486 Standard:

1487 **The regulatory speed displayed on a changeable Speed Limit sign shall comply with**  
1488 **Paragraph 2 of Section 2B.22 of this Manual and the “Standard Highway Signs”**  
1489 **publication.**

1490 Guidance:

1492        *The location and positioning of Variable Speed Limit signs should clearly associate the*  
1493        *speed displayed to the lane or lanes intended to be regulated such that it would not present a*  
1494        *conflict or confusion with other posted speed limit or advisory speeds for adjacent lanes, ramps*  
1495        *or roadways.*

1496        *In addition to the post-interchange Speed Limit sign (see Section 2E.38), the spacing of*  
1497        *changeable Speed Limit signs on freeways and expressways should be based on an engineering*  
1498        *study that considers such factors as recurring congestion, high-volume interchanges, weaving*  
1499        *sections, and other location-specific factors that are known to affect travel speeds. The*  
1500        *changeable Speed Limit signs should be placed far enough in advance of known congestion*  
1501        *points to adequately adjust the operating speed to minimize the extent of vehicle queuing.*