



National Committee on Uniform Traffic Control Devices

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National Committee on Uniform Traffic Control Devices (NCUTCD) Recommended Changes to Proposed Text for 11th Edition of the MUTCD Docket Number: FHWA-2020-0001

- 1 **Federal Register Item Number:** 185 to 227, 647
2 **NPA MUTCD Section Number:** 2E.01 to 2E.59, Appendix A1
3 **Legend:** Base text shown in proposal is the NPA “clean” proposed text.
4 • [NCUTCD recommendation for text to be added in final rule.](#)
5 • [NCUTCD recommendation for text to be deleted in final rule.](#)
6 • [NCUTCD recommendation for text to be moved/relocated in final rule.](#)
7 • [NPA text that was not previously approved by NCUTCD but is now approved.](#)
8 • Explanatory note: [Note that explains purpose of recommended change.]

9 The following pages present NCUTCD recommendations for changes to the MUTCD NPA
10 proposed text, tables, and figures for Chapter 2E. Below is a short summary of the NCUTCD
11 position for each Section of this Chapter. A more detailed summary is provided at the beginning
12 of each Section.

- 13 NPA #185, All of Chapter 2E: Changes recommended based on Council action in spring 2021
14 NPA #186, Section 2E.01: Changes recommended based on Council action in spring 2021
15 No NPA Item, Section 2E.02: NCUTCD agrees with NPA content (no changes recommended)
16 No NPA Item, Section 2E.03: Changes recommended based on Council action in spring 2021
17 No NPA Item, Section 2E.04: NCUTCD agrees with NPA content (no changes recommended)
18 No NPA Item, Section 2E.05: There are no changes proposed by the NPA.
19 NPA #187, Section 2E.06: Changes recommended based on Council action in spring 2021
20 NPA #188, Section 2E.07: Changes recommended based on Council action in spring 2021
21 NPA #189, Section 2E.08: Changes recommended based on Council action in spring 2021
22 No NPA Item, Section 2E.09: There are no changes proposed by the NPA.
23 No NPA Item, Section 2E.10: There are no changes proposed by the NPA.
24 No NPA Item, Section 2E.11: Changes recommended based on Council action in spring 2021
25 NPA #190 and 647, Section 2E.12: Changes recommended based on Council action in spring 2021
26 No NPA Item, Section 2E.13: There are no changes proposed by the NPA.
27 NPA #191, Section 2E.14: Changes recommended based on Council action in spring 2021
28 NPA #192, Section 2E.15: Changes recommended based on Council action in spring 2021
29 NPA #193, Section 2E.16: Changes recommended based on Council action in spring 2021
30 NPA #194, Section 2E.17: Changes recommended based on Council action in spring 2021
31 NPA #195, Section 2E.18: Changes recommended based on Council action in spring 2021
32 No NPA Item, Section 2E.19: Changes recommended based on Council action in spring 2021
33 NPA #196, Section 2E.20: Changes recommended based on Council action in spring 2021
34 NPA #197, Section 2E.21: Changes recommended based on Council action in spring 2021
35 NPA #198, Section 2E.22: Changes recommended based on Council action in spring 2021

39 NPA #199, Section 2E.23: Changes recommended based on Council action in spring 2021
40 NPA #200, Section 2E.24: Changes recommended based on Council action in spring 2021
41 NPA #201, Section 2E.25: Changes recommended based on Council action in spring 2021
42 NPA #202, Section 2E.26: Changes recommended based on Council action in spring 2021
43 NPA #203, Section 2E.27: Changes recommended based on Council action in spring 2021
44 NPA #204, Section 2E.28: Changes recommended based on Council action in spring 2021
45 NPA #205, Section 2E.29: Changes recommended based on Council action in spring 2021
46 No NPA Item, Section 2E.30: Changes recommended based on Council action in spring 2021
47 NPA #206, Section 2E.31: Changes recommended based on Council action in spring 2021
48 NPA #207, Section 2E.32: Changes recommended based on Council action in spring 2021
49 NPA #208, Section 2E.33: Changes recommended based on Council action in spring 2021
50 NPA #209, Section 2E.34: Changes recommended based on Council action in spring 2021
51 NPA #210, Section 2E.35: Changes recommended based on Council action in spring 2021
52 NPA #211, Section 2E.36: Changes recommended based on Council action in spring 2021
53 NPA #212, Section 2E.37: Changes recommended based on Council action in spring 2021
54 NPA #213, Section 2E.38: Changes recommended based on Council action in spring 2021
55 No NPA Item, Section 2E.39: Changes recommended based on Council action in spring 2021
56 NPA #214, Section 2E.40: Changes recommended based on Council action in spring 2021
57 NPA #215, Section 2E.41: Changes recommended based on Council action in spring 2021
58 NPA #216, Section 2E.42: Changes recommended based on Council action in spring 2021
59 No NPA Item, Section 2E.43: Changes recommended based on Council action in spring 2021
60 No NPA Item, Section 2E.44: There are no changes proposed by the NPA.
61 NPA #217, Section 2E.45: Changes recommended based on Council action in spring 2021
62 No NPA Item, Section 2E.46: Changes recommended based on Council action in spring 2021
63 No NPA Item, Section 2E.47: Changes recommended based on Council action in spring 2021
64 NPA #218, Section 2E.48: Changes recommended based on Council action in spring 2021
65 NPA #219, Section 2E.49: Changes recommended based on Council action in spring 2021
66 NPA #220, Section 2E.50: Changes recommended based on Council action in spring 2021
67 NPA #221, Section 2E.51: Changes recommended based on Council action in spring 2021
68 NPA #222, Section 2E.52: Changes recommended based on Council action in spring 2021
69 NPA #223, Section 2E.53: Changes recommended based on Council action in spring 2021
70 NPA #224, Section 2E.54: Changes recommended based on Council action in spring 2021
71 NPA #225, Section 2E.55: Changes recommended based on Council action in spring 2021
72 NPA #226, Section 2E.56: Changes recommended based on Council action in spring 2021
73 NPA #227, Section 2E.57: Changes recommended based on Council action in spring 2021
74 No NPA Item, Section 2E.58: There are no changes proposed by the NPA.
75 No NPA Item, Section 2E.59: There are no changes proposed by the NPA.

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77

78 CHAPTER 2E. GUIDE SIGNS—FREEWAYS AND EXPRESSWAYS

79 **Chapter 2E Comment:** NCUTCD generally agrees with the organization and Section titles in
80 Chapter 2E in accordance with NCUTCD recommendation 11A-GMI-01, but recommends
81 revisions as follows:

- 82 • Add the subchapter title “Installation” for Sections 2E.19 through 2E.44
- 83 • Add a new Section at the end of the Installation subchapter titled “Guide Signing in Tunnels”
84 comprised of revised and relocated material from 2E.01
- 85 • Revise the titles of Section 2E.12, 2E.24, 2E.25, 2E.47, 2E.48; 2E.51, 2E.52 (details and
86 specific revisions listed in the Section list and in each affected Section)

87 **Chapter 2E Subchapter and Section Organization**

88 General

- 89 2E.01 Scope of Freeway and Expressway Guide Sign Standards
90 2E.02 Freeway and Expressway Signing Principles
91 2E.03 Guide Sign Classification
92 2E.04 Characteristics of Urban Signing
93 2E.05 Characteristics of Rural Signing
94 2E.06 Signing of Named Highways
95 2E.07 Designation of Destinations

96 Sign Design

- 97 2E.08 General
98 2E.09 Color of Guide Signs
99 2E.10 Retroreflection or Illumination
100 2E.11 Interchange Classification
101 2E.12 Size of Signs and Size and Style of Letters ~~and Signs~~
102 2E.13 Interline and Edge Spacing
103 2E.14 Sign Borders
104 2E.15 Amount of Legend on Guide Signs
105 2E.16 Abbreviations
106 2E.17 Symbols
107 2E.18 Arrows for Interchange Guide Signs

108 Installation

- 109 2E.19 Overhead Sign Installations
110 2E.20 Lateral Offset
- 111 Guide Signing for Interchanges
- 112 2E.21 Interchange Guide Signs
113 2E.22 Interchange Exit Numbering
114 2E.23 Advance Guide Signs (E1 Series)
115 2E.24 Interchange Sequence Signs (E9-1 ~~Series~~, E9-2 ~~Series~~)
116 2E.25 Exit Direction Signs (~~E4 Series~~)
117 2E.26 Exit Gore Signs and Plaque (E5-1 Series)
118 2E.27 Pull-Through Signs (E6-1 Series, E6-2 Series)
119 2E.28 Signing for Interchange Lane Drops
120 2E.29 Signing by Type of Interchange
121 2E.30 Minor Interchange
122 2E.31 Diamond Interchange
123 2E.32 Diamond Interchange in Urban Area
124 2E.33 Cloverleaf Interchange

128	2E.34	Cloverleaf Interchange with Collector-Distributor Roadways
129	2E.35	Partial Cloverleaf Interchange
130	2E.36	Collector-Distributor Roadways for Successive Interchanges
131	2E.37	Freeway-to-Freeway Interchange
132	2E.38	Freeway Split with Dedicated Lanes
133	2E.39	Signing for Option Lanes at Splits and Multi-Lane Exits
134	2E.40	Design of Overhead Arrow-per-Lane Guide Signs for Option Lanes
135	2E.41	Design of Freeway and Expressway Diagrammatic Guide Signs for Option Lanes
136	2E.42	Signing for Intermediate and Minor Interchange Multi-Lane Exits with an Option Lane
137	2E.43	Number of Signs at an Overhead Installation and Sign Spreading
138	2E.44	Closely Spaced Interchanges
139	<u>2E.XX</u>	<u>Guide Signing in Tunnels</u>
140	Other Guide Signs	
141	2E.45	Next Exit Plaques (E2-1P, E2-1aP)
142	2E.46	Post-Interchange Signs
143	2E.47	Post-Interchange Distance Signs (E7-1 Series , E7-2 Series , through E7-3 Series)
144	2E.48	Post-Interchange Travel Time Sign (E7-4 Series)
145	2E.49	Distance and Travel Time Sign and Comparative Travel Time Sign (E7-5, E7-6)
146	2E.50	Supplemental Guide Signs (E3 Series)
147	2E.51	Community Interchanges Identification Signs (E9-4 Series , E9-5 Series)
148	2E.52	NEXT XX EXITS Sign (E9-3 Series)
149	2E.53	Weigh Station Signing
150	2E.54	Route Signs and Trailblazer Assemblies
151	2E.55	Eisenhower Interstate System Signs (M1-10, M1-10a)
152	Signs for Route Diversion by Vehicle Class	
153	2E.56	Signs for Route Diversion by Vehicle Class
154	Signs for Intersections at Grade	
155	2E.57	Signs for Intersections at Grade
156	Interface with Conventional Roadways	
157	2E.58	Signing on Conventional Road Approaches and Connecting Roadways
158	2E.59	Wrong-Way Traffic Control at Interchange Ramps
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160		

GENERAL

Section 2E.01 Comments: NCUTCD recommends revising 2E.01 as follows:

- Delete all material in the Section after the end of the first Standard statement and relocate it to a new Section following 2E.44 addressing guide signs in tunnels
 - Minor editorial revisions as needed on the remaining content

Section 2E.01 Scope of Freeway and Expressway Guide Sign Standards

Support:

The provisions of this Chapter provide a uniform and effective system of signing for high-volume, high-speed motor vehicle traffic on freeways and expressways. The requirements and specifications for expressway signing exceed those for conventional roads (see Chapter 2D), but are less than those for freeway signing. Since there are many geometric design variables to be found in existing roads, a signing concept commensurate with prevailing conditions is the primary consideration. Section [1A.13](#) [1C.02](#) includes definitions of freeway and expressway.

Guide signs for freeways and expressways are primarily identified by the name of the sign rather than by an assigned sign designation. Guidelines for the design of guide signs for freeways and expressways are provided in the “Standard Highway Signs” publication (see Section 1A.14 1A.05).

Standard:

The provisions of this Chapter shall apply to any highway that meets the definition of freeway or expressway facilities.

[relocate all content in this section after this point to the new Section on tunnel guide signing]

Support:

The application of the provisions for freeway and expressway guide signs in tunnels can present unique challenges not encountered elsewhere due to the extended and continuous distances of constrained vertical and horizontal clearances in which to place signs. The effect of these constraints is particularly evident when there are interchange ramps or other geometric features inside the tunnel that warrant signs to provide adequate notice. Accordingly, it might not always be possible to employ the standardized layouts to all signs inside a tunnel. In addition, interchange guide signs might need to be limited to one destination only, with other destinations displayed separately on Supplemental guide signs (see Section 2E.50). Acceptable methods to modify the layout of a sign to limit the space required in a tunnel are provided in Paragraph 5 of this Section.

Option:

~~Overhead-mounted guide signs in tunnels may be modified in accordance with the following when needed to accommodate limited vertical clearance available for signs.~~

- ~~A. Some sign legend elements may be arranged side by side, such as by placing route shields to the left of the destination instead of above.~~
 - ~~B. The Exit Number plaque (see Section 2E.23) may be placed at the left edge of the sign instead of at the top edge the sign. The legend of the Exit Number plaque may use a reduced letter height of 6 inches for the word EXIT(S) and 12 inches for numerals and suffixes while maintaining the standard vertical layout.~~
 - ~~C. Destination and roadway names may be displayed in reduced letter heights of 13.33 inches or 10.67 inches, when determined acceptable based on consideration of reduced speeds, fewer visual distractions, and other relevant factors, while maintaining adequate space between the legend and edges of the sign to ensure legibility and quick recognition.~~

207 D. Unusually long destination and roadway names that cannot be adequately shortened or
208 otherwise acceptably abbreviated may be displayed using series D letters in lieu of Series
209 E(modified).

210 **Support:**

211 The visibility and retroreflectivity of sign sheeting inside tunnels can be reduced by the
212 accumulation of residue that results from being unexposed to environmental elements such as
213 rain.

214 **Guidance:**

215 *Overhead signs in tunnels should be illuminated to ensure adequate visibility between
216 scheduled maintenance and cleanings.*

217 *One or more Interchange Sequence signs (see Section 2E.24) should be used on the
218 approach to the tunnel entrance to display the distances to the next interchanges that have ramps
219 inside the tunnel or immediately following the exit from the tunnel.*

220 *Supplementary pavement markings, such as word, arrow, and/or route shield markings (see
221 Part 3), should be considered inside the tunnel in addition to the basic lane and edge line
222 markings.*

223 **Standard:**

224 *Applicability of the provisions of Paragraph 5 of this Section shall be limited to those
225 signs within the limits of the tunnel and not extended to the approaches to or departures
226 from the tunnel.*

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

231 **Section 2E.02 Freeway and Expressway Signing Principles**

232 **Support:**

233 The development of a signing system for freeways and expressways is approached on the premise that
234 the signing is primarily for the benefit and direction of road users who are not familiar with the route or
235 area. The signing furnishes road users with clear instructions for orderly progress to their destinations.
236 Sign installations are an integral part of the facility and, as such, are best planned concurrently with the
237 development of highway location and geometric design. For optimal results, plans for signing are
238 analyzed during the earliest stages of preliminary design, and details are correlated as final design is
239 developed. The excessive signing found on many major highways usually is the result of using a
240 multitude of signs that are too small and that are poorly designed and placed to accomplish the intended
241 purpose.

242 Freeway and expressway signing is to be considered and developed as a planned system of
243 installations. An engineering study is sometimes necessary for proper solution of the problems of many
244 individual locations, but, in addition, consideration of an entire route is necessary.

245 **Guidance:**

246 *Road users should be guided with consistent signing on the approaches to interchanges, when they
247 drive from one State to another, and when driving through rural or urban areas. Because geographical,
248 geometric, and operating factors regularly create significant differences between urban and rural
249 conditions, the signing should take these conditions into account.*

250 *Guide signs on freeways and expressways should serve distinct functions as follows:*

- 251 A. Give directions to destinations, or to streets or highway routes, at intersections or interchanges;
- 252 B. Furnish advance notice of the approach to intersections or interchanges;
- 253 C. Direct road users into appropriate lanes in advance of diverging or merging movements;
- 254 D. Identify routes and directions on those routes;

- 255 E. Show distances to destinations;
256 F. Indicate access to general motorist services, rest, scenic, and recreational areas; and
257 G. Provide other information of navigational value to the road user.
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260 **Section 2E.03 Comments:** NCUTCD generally agrees with 2E.03 as presented in the NPA, but
261 recommends several editorial revisions to section and chapter references.
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264 **Section 2E.03 Guide Sign Classification**

265 Support:

- 266 Freeway and expressway guide signs are classified and addressed as follows:
- 267 A. Interchange signs (see Sections 2E.21 through 2E.24 and 2E.26 through 2E.45),
268 B. Interchange Sequence signs (see Section 2E.24),
269 C. Post-Interchange signs (see Sections 2E.46 through 2E.48),
270 D. Community Interchanges Identification signs (see Section 2E.51),
271 E. NEXT XX EXITS plaques signs (see Section 2E.52), [revise to "signs" to agree with Section
272 title]
273 F. Weigh Station signs (see Section 2E.53),
274 G. Route signs and Trailblazer Assemblies (see Section 2E.54),
275 H. At-Grade Intersection signs (see Section ~~2E.56~~ 2E.57),
276 I. General Information signs (see Section 2H.04 Chapter 2H),
277 J. Reference Location signs (see Section ~~2H.05~~ 2H.11),
278 K. General Service signs (see Chapter 2I),
279 L. Rest and Scenic Area signs (see Section 2I.05),
280 M. Tourist Information and Welcome Center signs (see Section 2I.08),
281 N. Radio Information, Travel Information, and Roadside Assistance signs (
282 see Sections 2I.09 through 2I.13),
283 O. Carpool and Ridesharing signs (see Section ~~2I.11~~ 2I.14),
284 P. Specific Service signs (see Chapter 2J), and
285 Q. Recreational and Cultural Interest Area signs (see Chapter 2M).
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287 **Section 2E.04 Comments:** NCUTCD agrees with 2E.04 as presented in the NPA.
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289 **Section 2E.04 Characteristics of Urban Signing**

290 Support:

291 Urban conditions are characterized not so much by city limits or other arbitrary boundaries, as by the
292 following features:
293 A. Mainline roadways with more than two lanes in each direction;
294 B. High traffic volumes on the through roadways;
295 C. High volumes of traffic entering and leaving interchanges;
296 D. Interchanges closely spaced;
297 E. Roadway and interchange lighting;
298 F. Three or more interchanges serving the major city;
299 G. A loop, circumferential, or spur route serving a sizable portion of the urban population; and
300 H. Visual clutter from roadside development.

301 Operating conditions and road geometrics on urban freeways and expressways usually make special
302 sign treatments desirable, including:

- 304 A. Use of Interchange Sequence signs (see Section 2E.24);
305 B. Use of sign spreading to the maximum extent possible (see Section 2E.43);
306 C. Elimination of General or Specific Service signing (see Chapters 2I and 2J);
307 D. Reduction to a minimum of post-interchange signs (see Section 2E.46);
308 E. Display of advance signs at distances closer to the interchange, with appropriate adjustments in
309 the legend (see Section 2E.23);
310 F. Use of overhead signs on roadway structures and independent sign supports (see Section 2E.19);
311 G. Use of Overhead Arrow-per-Lane or Diagrammatic guide signs in advance of interchanges (see
312 Sections 2E.40 and 2E.41); and
313 H. Frequent use of street names as the principal message in guide signs.

314 Lower speeds which are often characteristic of urban operations do not justify lower signing
315 standards. Typical traffic patterns are more complex for the road user to negotiate, and large, easy-to-
316 read legends are, therefore, just as necessary as on rural highways.

318 **Section 2E.05 Comments:** NCUTCD agrees with 2E.05 as presented in the NPA.

320 **Section 2E.05 Characteristics of Rural Signing**

321 **Support:**

322 Rural areas ordinarily have greater distances between interchanges, which permits adequate spacing
323 for the sequences of signs on the approach to and departure from each interchange. However, the absence
324 of traffic in adjoining lanes and on entering or exiting ramps often adds monotony or inattention to rural
325 driving. This increases the importance of signs that call for decisions or actions.

326 **Guidance:**

327 *Where there are long distances between interchanges and the alignment is relatively unchanging,
328 signs should be positioned for their best effect on road users. The tendency to group all signing in the
329 immediate vicinity of rural interchanges should be avoided by considering the entire route in the
330 development of signing plans. Extra effort should be given to the placement of signs at natural target
331 locations to command the attention of the road user, particularly when the message requires an action by
332 the road user.*

334 **Section 2E.06 Comments:** NCUTCD agrees with 2E.06 as presented in the NPA.

335 **Section 2E.06 Signing of Named Highways**

336 **Guidance:**

337 *Signing of named highways on freeways and expressways should comply with the provisions of
338 Section 2D.56.*

339 **Support:**

340 Section 2M.10 contains information regarding memorial or dedication signing of routes, bridges, or
341 highway components.

342 **Section 2E.07 Comments:** NCUTCD recommends revising 2E.07 as follows:

- 343 • Minor editorial revisions in the first several paragraphs
- 344 • Relocate the final Support and Guidance paragraph to Section 2E.21, because the content in
345 the first part of this Section is oriented to guide signing on the freeway for destinations that
346 are far downstream, whereas the content in the subsequent paragraphs relates to guide

352 signing for a destination that can be reached by taking a certain exit, which are two very
353 different concepts

354

355 Section 2E.07 Designation of Destinations

356 **Standard:**

357 The direction of a freeway and the major destinations or control cities along it shall be clearly
358 identified through the use of appropriate destination legends (see Section ~~2D.37~~ 2D.36). Successive
359 freeway guide signs shall provide continuity in destination names and consistency with available
360 map information. At any decision point, a given destination shall be indicated by way of only one
361 route.

362 **Guidance:**

363 Control city legends should be used in the following situations along a freeway:

- 364 A. At interchanges between freeways;
- 365 B. At separation points of overlapping freeway routes;
- 366 C. On directional signs on intersecting routes, to guide traffic entering the freeway;
- 367 D. On Pull-Through signs; and
- 368 E. On the bottom line of post-interchange distance signs.

369 **Support:**

370 Continuity of destination names is also useful on expressways serving long-distance or intrastate
371 travel.

372 The determination of major destinations or control cities is important to the quality of service
373 provided by the freeway. Control cities on freeway guide signs are selected by the States and are
374 contained in the "Guidelines for the Selection of Supplemental Guide Signs for Traffic Generators
375 Adjacent to Freeways, 4th Edition/Guide Signs, Part II: Guidelines for Airport Guide Signing/Guide
376 Signs, Part III: List of Control Cities for Use in Guide Signs on Interstate Highways," published by and
377 available from the American Association of State and Highway Transportation Officials (see Section
378 ~~1A.14~~ 1A.05).

379 [relocate all material from this point to 2E.21]

380 In some instances the exit that provides the most direct or preferred access to one or more destinations
381 is different in opposing directions of travel due to the configuration of the crossroads, the density of
382 development on sections of the crossroads, etc.

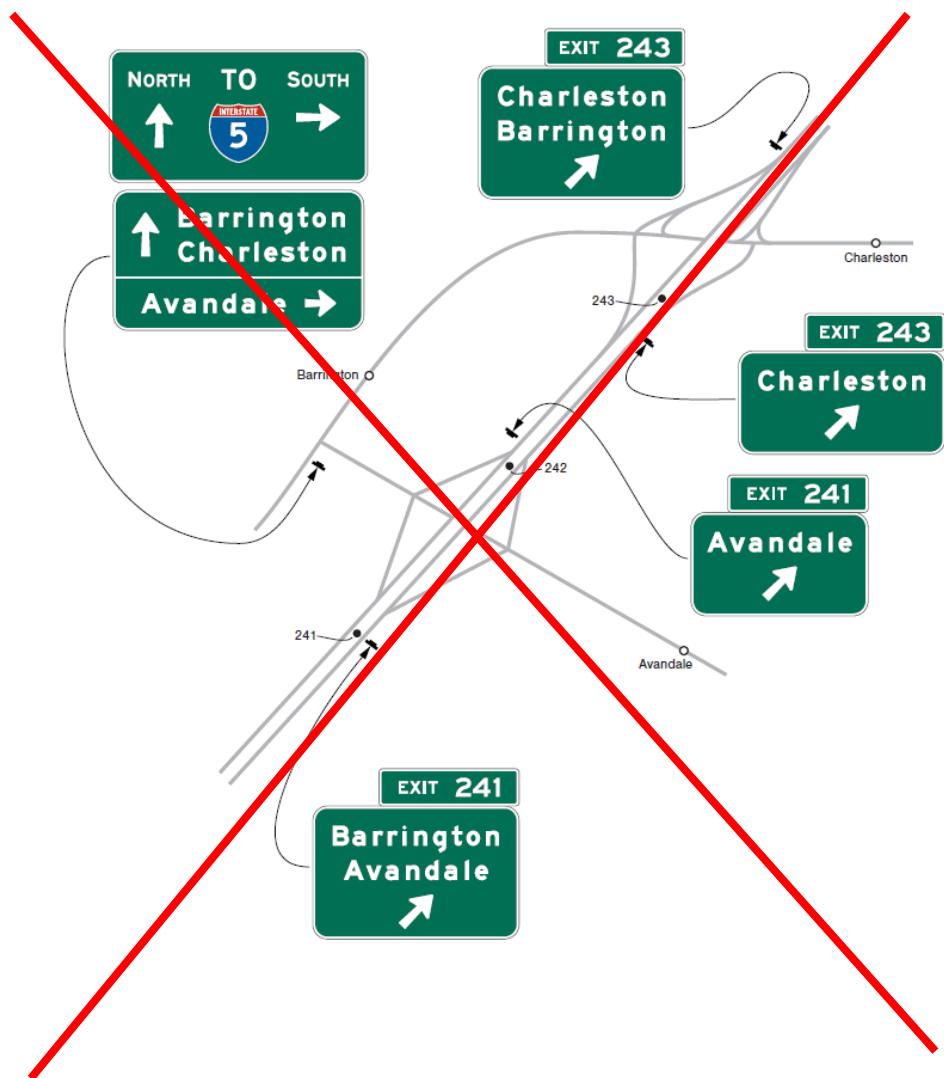
383 **Guidance:**

384 The guide signs for exits in each direction of travel should display the destinations with the most
385 direct or preferred access from that direction of travel even when this results in the destinations being
386 different for an exit in opposing directions of travel (see Figure 2E-1.)

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389 NCUTCD recommends revising Figure 2E-1 as follows:

- 390 • Revise the figure title from "Designation of Destinations for Interchanges in Destination
391 Guide Signing for Opposing Directions of Travel" to "Designation of Destinations for
392 Interchanges in Destination Guide Signing for Opposing Directions of Travel"
- 393 • Delete the existing figure as presented in the NPA, as the guide signs at the intersection on
394 the conventional roadway are superfluous to the purpose of this figure and add clutter and
395 distraction, the Avandale Exit 241 guide sign image is placed on the opposite side of the
396 freeway from its installed location, and the figure does not acknowledge that there is other
397 Advance Guide signing and Exit Gore signing that would be required
- 398 • Add a new Figure 2E-1 correctly depicting only the destination guide signing

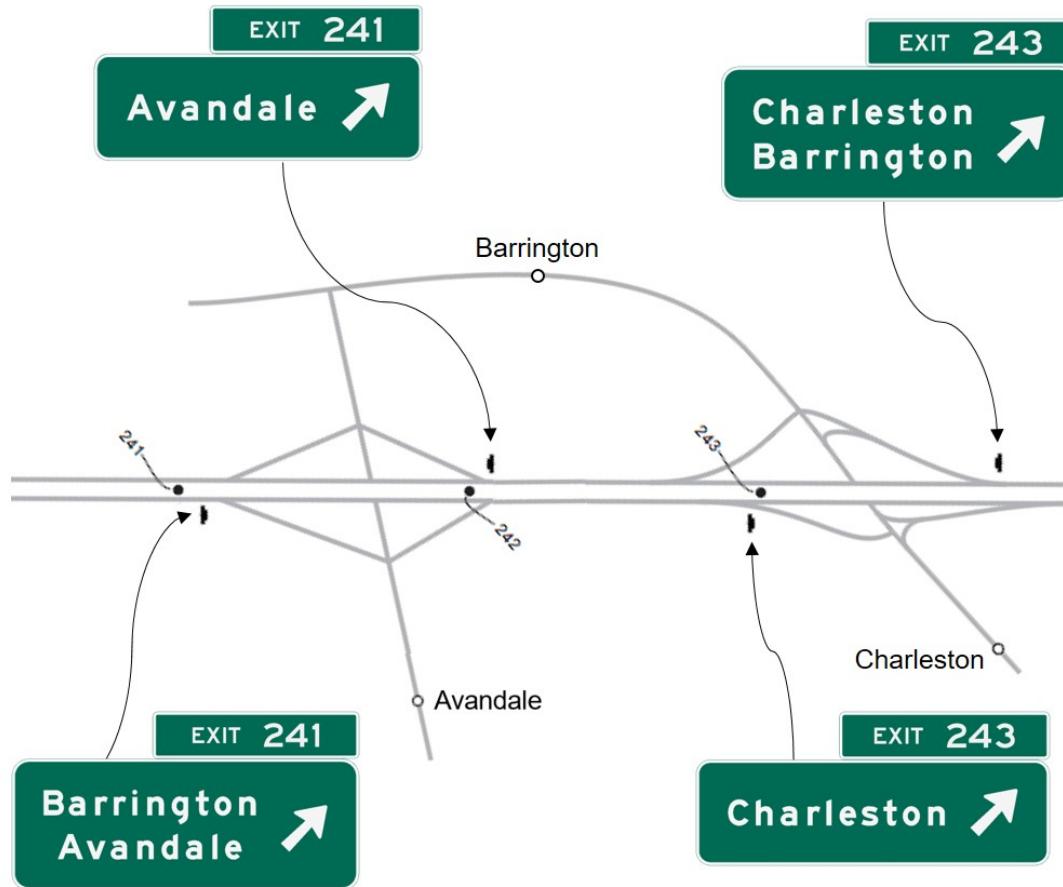
Figure 2E-1. Designation of Destination for Interchanges
in Opposing Directions of Travel



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Figure 2E-1. Destination Guide Signing for Opposing Directions of Travel

Note: Only the Exit Direction signs are shown for each interchange. Advance guide and Exit Gore signs are still required as provided in Sections 2E.23 and 2E.26.



SIGN DESIGN

Section 2E.08 Comments: NCUTCD agrees with 2E.08 as presented in the NPA.

Section 2E.08 General

Support:

Signs are designed so that they are legible to road users approaching them and readable in time to permit proper responses. Desired design characteristics include: (a) long visibility distances, (b) large lettering, symbols, and arrows, and (c) short legends for quick comprehension.

Section 2E.09 Comments: NCUTCD agrees with 2E.09 as presented in the NPA.

Section 2E.09 Color of Guide Signs

Standard:

Guide signs on freeways and expressways, except as otherwise provided in this Manual, shall have white letters, symbols, arrows, and borders on a green background.

Support:

Color requirements for route signs and trailblazers, signs with blank-out or changeable messages, signs for services, rest areas, park and recreational areas, and for certain miscellaneous signs are provided in the individual Sections dealing with the particular sign or sign group.

Section 2E.10 Comments: NCUTCD agrees with 2E.10 as presented in the NPA.

Section 2E.10 Retroreflection or Illumination

Standard:

Letters, numerals, symbols, arrows, and borders of all guide signs shall be retroreflectORIZED.

The background of all guide signs that are not independently illuminated shall be retroreflective.

Support:

Where there is no serious interference from extraneous light sources, retroreflectorized post-mounted signs usually provide adequate nighttime visibility.

On freeways and expressways where much driving at night is done with low-beam headlights, the amount of headlight illumination incident to an overhead sign display is relatively small.

Guidance:

Overhead sign installations should be illuminated unless an engineering study shows that retroreflectorization alone will perform effectively. The type of illumination chosen should provide effective and reasonably uniform illumination of the sign face and message.

Section 2E.11 Comments: NCUTCD generally agrees with 2E.10 as presented in the NPA, but recommends revising the word “alphabet” to “letter and numeral” to conform with terminology used in the titles of Tables 2E-2 and 2E-4, and delete the last sentence as unnecessary.

Section 2E.11 Interchange Classification

Support:

457 For signing purposes, interchanges are classified as major, intermediate, and minor. Minimum
458 alphabet letter and numeral sizes based on interchange classification are contained in Tables 2E-2 and 2E-
459
460 4. Descriptions of these classifications are as follows:
461 A. Major interchanges are subdivided into two categories: (a) interchanges with other expressways
462 or freeways, or (b) interchanges with high-volume multi-lane highways, principal urban arterials,
463 or major rural routes where the volume of interchanging traffic is heavy or includes many road
464 users unfamiliar with the area.
465 B. Intermediate interchanges are those with urban and rural routes not in the category of major or
466 minor interchanges.
467 C. Minor interchanges include those where traffic is local and very light, such as interchanges with
468 land service access roads. Where the sum of exit volumes is estimated to be lower than 100
469 vehicles per day in the design year, the interchange is classified as minor.

470 ~~The applicability of the alphabet sizes shown in the "Overhead" column of Tables 2E-2 and 2E-4 is
provided in Section 2E.12.~~

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- 472
- 473 **Section 2E.12 Comments:** NCUTCD recommends revising 2E.12 as follows. Note that
474 paragraph numbers have been assigned to this section due to the complexity of the revisions.
- 475 • Revise the Section title from “Size and Style of Letters and Signs” to “Size of Signs and Size
476 and Style of Letters”. []
- 477 • Delete the first part of Standard paragraph 4 and relocate to paragraph 6 in accordance with
478 the 2009 MUTCD. The NPA does not give a justification for the relocation. Returning this
479 paragraph to its original location allows the Section text to be presented in a more logical
480 order; e.g. how to determine message dimensions first and then determine outside sign
481 dimensions. []
- 482 • Delete the second part of Standard paragraph 4 entirely so there is no confusion about the
483 nominal loop height ratio when alternate alphabets are used, and nominal loop height is also
484 specified in the Standard Highway Signs publication. []
- 485 • Delete material in the Standard paragraph 5 specifying minimum letter heights, and delete
486 terms that are unclear or undefined. Tables 2E-2 through 2E-5 prescribe letter sizes and in all
487 instances are 8 inches or greater. The term “component of sign legend” is unclear. []
- 488 • Add the Standard material relocated from paragraph 4 to paragraph 6 in accordance with the
489 2009 MUTCD, and revise to more specifically identify what types of legends are included in
490 “Other word legends”, and revise section references. []
- 491 • Add a new Option Paragraph 8 comprising the Option statement from Appendix A1. This
492 paragraph establishes a new “Series E(modified)-Alternate” designation for the sign alphabet
493 commonly known as “Clearview 5-W”. []
- 494 • Add new Standard Paragraphs 9-11 comprising part of the Standard statement from
495 Appendix A1. This incorporates Standards governing the use of Series E(modified)-
496 Alternate lettering into the main body of the MUTCD in an appropriate location. []
- 497 • Add a new Standard paragraph 12 incorporating the prohibition on negative-contrast text in
498 Interim Approval IA-5 into the MUTCD. []
- 499 • Add a new Option paragraph 13 allowing the use of Series E(modified)-Alternate numerals.
500 Although the numerals in the Standard Alphabets avoid problems with size and fractions, the
501 use of Series E(modified)-Alternate numerals should not be prohibited, as inefficiencies in
502 sign design and manufacture could result. []
- 503 • Revise other paragraphs for section references as required. []

504 NCUTCD also recommends that FHWA add Series E(modified)-Alternate lettering to the
505 Standard Highway Signs publication, provide design and spacing for both what are commonly
506 referred to as “Series 5-W” and “Series 5-W-R” (a condensed spacing of Series 5-W), and state
507 that the Series 5-W-R spacing shall not be used except when replacing a sign on an existing sign
508 structure that has structural constraints which preclude use of Series 5-W lettering, or when
509 overlaying an existing sign panel that has width constraints which preclude use of Series 5-W
510 lettering.

511
512 **Section 2E.12 Size of Signs and Size and Style of Letters and Signs** [more clearly describes
513 the two major contents of the Section]

514 **Standard:**

515 [Par. 1] Except as provided in Section ~~2A.11~~ ~~2A.07~~, the sizes of freeway and expressway
516 guide signs that have standardized designs shall be as shown in Table 2E-1.

517 Support:

518 [Par. 2] Section ~~2A.11~~ ~~2A.07~~ contains information regarding the applicability of the various
519 columns in Table 2E-1.

520 Option:

521 [Par. 3] Signs larger than those shown in Table 2E-1 may be used (see Section ~~2A.11~~ ~~2A.07~~).

522 **Standard:**

523 ~~[Par. 4] All names of places, streets, and highways on freeway and expressway guide signs
524 shall be composed of lower-case letters with initial upper-case letters. The letters and the
525 numerals used shall be FHWA Standard Alphabet Series E (modified) as provided in the
526 “Standard Highway Signs” publication (see Section 1A.11). [relocate to paragraph 6] The
527 nominal loop height of the lower-case letters shall be 3/4 of the height of the initial upper-
528 case letter (see Paragraph 2 of Section 2D.05 for additional information on the specification
529 of letter heights). [delete so no confusion about loop height ratio] Other word legends shall be
530 composed of upper-case letters. Interline and edge spacing shall be as provided in Section
531 2E.13.) [relocate to paragraph 6]~~

532 [Par. 5] For all freeway and expressway signs that do not have a standardized design, the
533 message dimensions shall be determined first, and the outside sign dimensions secondarily.

534 ~~Word messages in the legend of expressway guide signs shall be in letters at least 8 inches
535 high for words composed of all upper-case letters. Larger lettering shall be used for major
536 guide signs at or in advance of interchanges and for all overhead signs. [covered in Tables
537 2E-2 through 2E-5]~~ Minimum numeral and letter sizes for expressway guide signs

538 ~~according to interchange classification, type of sign, and component of sign legend~~ shall be
539 as shown in Tables ~~2E-3~~ ~~2E-2~~ and ~~2E-4~~ ~~2E-3~~. Minimum numeral and letter sizes for

540 freeway guide signs ~~according to interchange classification, type of sign, and component of
541 sign legend~~ shall be as shown in Tables ~~2E-5~~ ~~2E-4~~ and ~~2E-6~~ ~~2E-5~~. [delete unclear term
542 “component of sign legend” and revise table references] ~~The minimum numeral and letter
543 sizes for overhead-mounted expressway and freeway guide signs shall be those shown in the
544 “Overhead” columns of Tables 2E-2 and 2E-4, respectively, except where a larger
545 minimum numeral or letter height is provided in the columns for the applicable type of
546 interchange (Major, Intermediate, or Minor).~~ [covered in Tables 2E-2 through 2E-5]

547 [Par. 6] All names of places, streets, and highways on freeway and expressway guide signs
548 shall be composed of lower-case letters with initial upper-case letters. The letters and the
549 numerals used shall be FHWA Standard Alphabet Series E (modified) as provided in the

550 **“Standard Highway Signs” publication (see Section 1A.11).** [relocate from first paragraph]
551 **Other word legends, including cardinal directions, action messages, and special characters,**
552 **shall be composed of upper-case letters.**). [relocate from paragraph and revise to identify
553 “other word legends”] Interline and edge spacing shall be as provided in Section **2E.13**
554 **2E.15.**

555 **[Par. 7]** Lettering size on freeway and expressway signs shall be the same for both rural
556 and urban conditions.

557 **Option:**

558 **[Par. 8]** Series E(modified)-Alternate lettering may be used in place of Series E(modified) for the
559 names of places, streets, and highways on freeway and expressway guide signs in accordance
560 with the provisions of paragraphs 9 to 13. [relocated from Appendix 1 and revised]

561 **Standard:**

562 **[Par. 9]** **The use of Series E(modified)-Alternate shall be limited to the display of names of**
563 **places, streets, and highways on freeway and expressway guide signs that would otherwise**
564 **use Series E(modified) lettering. Words shall be composed of lower-case letters with initial**
565 **upper-case letters.** [relocated from Appendix 1 and revised]

566 **[Par. 10]** **The design, nominal loop height, and spacing of Series E(modified)-Alternate**
567 **letters shall be as provided in the “Standard Highway Signs” publication (see Section 1A.05**
568 **of this Manual).** [relocated from Appendix 1 and revised]

569 **[Par. 11]** **Series E(modified)-Alternate shall not be used for any application other than as**
570 **provided in the three preceding paragraphs.** [relocated from Appendix 1 and revised]

571 **[Par. 12]** **Series E(modified)-Alternate shall not be used for negative contrast (black**
572 **lettering on white or colored background) signs or portion of signs.** [include IA-5 direction]

573 **Option:**

574 **[Par. 13]** **When Series E(modified)-Alternate lettering is used, numerals in the name of a place,**
575 **street, or highway may be composed of Series E(modified)-Alternate lettering.** [replaces
576 provisions in Appendix A1]

577 **Support:**

578 **[Par. 14]** Sign size is determined primarily in terms of the length of the message and the size of
579 the lettering necessary for proper legibility. Letter style and height, and arrow design have been
580 standardized for freeway and expressway signs to assure uniform and effective application.

581 **[Par. 15]** Designs for upper-case and lower-case FHWA Standard Alphabets, together with tables
582 of recommended letter spacing, are shown in the “Standard Highway Signs” publication (see
583 Section **1A.11** **1A.05**).

584 **Guidance:**

585 **[Par. 16]** *Freeway lettering sizes (see Tables 2E-4 and 2E-5) should be used when expressway*
586 *geometric design is comparable to freeway standards.*

587 **[Par. 17]** *Other sign letter size requirements not specifically identified elsewhere in this Manual*
588 *should be guided by these specifications. Abbreviations should be kept to a minimum, except as*
589 *provided in Section 2E.16.*

590 **Support:**

591 **[Par. 18]** A sign mounted over a particular roadway lane to which it applies might have to be
592 limited in horizontal dimension to the width of the lane, so that another sign can be placed over
593 an adjacent lane. The necessity to maintain proper vertical clearance might also place a further
594 limitation on the size of the overhead sign and the legend that can be accommodated.

595

- 596 NCUTCD recommends revising Table 2E-1 as follows:
597 • Revise the title to state “or” instead of “and”
598 • Delete all signs that do not have at least one dimension specified, as there is little reason to
599 include them in a table intended to establish sign sizes
600 • Add exit number plaques mentioned elsewhere in Chapter 2E
601 • Revise “Weigh Station (with arrow)” to “Weigh Station Exit Direction” to be consistent with
602 the sign name used elsewhere in the MUTCD

603
604 **Table 2E-1. Freeway ~~and~~ or Expressway Guide Sign and Plaque Sizes**
605
606

Sign or Plaque	Sign Designation	Section	Minimum Size
Advance Guide	E1-1	2E.23	Varies
Advance Guide	E1-2	2E.23	Varies
Advance Guide	E1-3	2E.23	Varies
Exit Number (plaque)			
1-, 2-Digit Exit Number	E1-5P	2E.23	114 x 30
3-Digit Exit Number	E1-5P	2E.23	132 x 30
1-, 2-Digit Exit Number (with single letter suffix)	E1-5P	2E.23	138 x 30
3-Digit Exit Number (with single letter suffix)	E1-5P	2E.23	156 x 30
1-, 2-Digit Exit Number (with dual letter suffix)	E1-5P	2E.23	168 x 30
3-Digit Exit Number (with dual letter suffix)	E1-5P	2E.23	186 x 30
Left (plaque)	E1-5aP	2E.23	72 x 30
Left Exit Number (plaque)			
1-, 2-Digit Exit Number	E1-5bP	2E.23	114 x 54
3-Digit Exit Number	E1-5bP	2E.23	132 x 54
1-, 2-Digit Exit Number (with single letter suffix)	E1-5bP	2E.23	138 x 54
3-Digit Exit Number (with single letter suffix)	E1-5bP	2E.23	156 x 54
1-, 2-Digit Exit Number (with dual letter suffix)	E1-5bP	2E.23	168 x 54
3-Digit Exit Number (with dual letter suffix)	E1-5bP	2E.23	186 x 54
Next Exit XX Miles (1 line)	E2-1P	2E.45	Varies x 24
Next Exit XX Miles (2 lines)	E2-1aP	2E.45	Varies x 36
Supplemental	E3-1	2E.50	Varies x XX
Supplemental	E3-2	2E.50	Varies x XX
Exit Direction	E4-1	2E.25	Varies x XX
Exit Direction	E4-2	2E.25	Varies x XX
Exit Direction	E4-3	2E.25	Varies x XX
Exit Gore (no exit number)	E5-1	2E.37	72 x 60
Exit Gore (with exit number)			
1-, 2-Digit Exit Number	E5-1a	2E.26	78 x 60
3-Digit Exit Number	E5-1a	2E.26	96 x 60
1-Digit Exit Number (with single letter suffix)	E5-1a	2E.26	90 x 60
2-Digit Exit Number (with single letter suffix)	E5-1a	2E.26	108 x 60
3-Digit Exit Number (with single letter suffix)	E5-1a	2E.26	126 x 60
1-Digit Exit Number (with dual letter suffix)	E5-1a	2E.26	120 x 60
2-Digit Exit Number (with dual letter suffix)	E5-1a	2E.26	138 x 60
3-Digit Exit Number (with dual letter suffix)	E5-1a	2E.26	156 x 60
Exit Number (plaque)			
1-, 2-Digit Exit Number	E5-1bP	2E.26	42 x 30

Sign or Plaque	Sign Designation	Section	Minimum Size
3-Digit Exit Number	E5-1bP	2E.26	60 x 30
1-Digit Exit Number (with single letter suffix)	E5-1bP	2E.26	48 x 30
1-Digit Exit Number (with dual letter suffix)	E5-1bP	2E.26	72 x 30
2-Digit Exit Number (with single or dual letter suffix)	E5-1bP	2E.26	72 x 30
3-Digit Exit Number (with single or dual letter suffix)	E5-1bP	2E.26	72 x 30
Narrow Exit Gore	E5-1c	2E.26	60 x 90*
Pull Through	E6-2	2E.27	Varies
Pull Through	E6-2a	2E.27	Varies
Post Interchange Distance	E7-1	2E.47	Varies
Post Interchange Distance	E7-2	2E.47	Varies
Post Interchange Distance	E7-3	2E.47	Varies
Post Interchange Travel Time	E7-4	2E.48	Varies
Distance and Travel Time	E7-5	2E.49	Varies
Comparative Travel Time	E7-6	2E.49	Varies
Interchange Sequence	E9-1	2E.24	Varies
Interchange Sequence	E9-2	2E.24	Varies
Next Exits (1 destination)	E9-3	2E.25	Varies
Next Exits (2 destinations)	E9-3a	2E.25	Varies
Community Interchanges (2 interchanges)	E9-4	2E.54	Varies
Community Interchanges (3 interchanges)	E9-5	2E.54	Varies
Exit Only (with arrow)	E11-1,1d	2E.28	174** x 36
Exit	E11-1a	2E.28	66 x 18
Only	E11-1b	2E.28	66 x 18
Exit Only	E11-1c	2E.28	120 x 18
Exit Only (with two arrows)	E11-1e,1f	2E.28	222** x 36
Left	E11-2	2E.28	60 x 18
Exit Gore Advisory Speed (plaque)	E13-1aP	2E.26	72 x 24
Exit Direction Advisory Speed	E13-2	2E.25	162 x 24
Interstate Route Sign (1 or 2 digits)	M1-1	2E.54	36 x 36
Interstate Route Sign (3 digits)	M1-1	2E.54	45 x 36
Off-Interstate Route Sign (1 or 2 digits)	M1-2,3	2E.54	36 x 36
Off-Interstate Route Sign (3 digits)	M1-2,3	2E.54	45 x 36
U.S. Route Sign (1 or 2 digits)	M1-4	2E.54	36 x 36
U.S. Route Sign (3 digits)	M1-4	2E.54	45 x 36
State Route Sign (1 or 2 digits)	M1-5	2D.11	36 x 36

Sign or Plaque	Sign Designation	Section	Minimum Size
State Route Sign (3 digits)	M1-5	2D.11	45 x 36
County Route Sign (1, 2, or 3 digits)	M1-6	2D.11	36 x 36
Forest Route (1, 2, or 3 digits)	M1-7	2D.11	36 x 36
Eisenhower Interstate System	M1-10,10a	2E.55	36 x 36
Junction	M2-1	2D.13	30 x 21
Combination Junction (2 route signs)	M2-2	2D.14	60 x 48*
Cardinal Direction	M3-1,2,3,4	2D.15	36 x 18
Alternate	M4-1,1a	2D.17	36 x 18
By-Pass	M4-2	2D.18	36 x 18
Business	M4-3	2D.19	36 x 18
Truck	M4-4	2D.20	36 x 18
To	M4-5	2D.21	36 x 18
End	M4-6	2D.22	36 x 18
Temporary	M4-7,7a	2D.24	36 x 18
Begin	M4-14	2D.23	36 x 18
Advance Turn Arrow	M5-1,2,3	2D.26	30 x 21
Lane Designation	M5-4,5,6	2D.27	36 x 24
Directional Arrow	M6-1,2, 2a,3,4,5,6,7	2D.28	30 x 21
Destination (1 line)	D1-1	2D.36	Varies x 24
Destination and Distance (1 line)	D1-1a	2D.36	Varies x 24
Destination (2 lines)	D1-2	2D.36	Varies x 42
Destination and Distance (2 lines)	D1-2a	2D.36	Varies x 42
Destination (3 lines)	D1-3	2D.36	Varies x 60
Destination and Distance (3 lines)	D1-3a	2D.36	Varies x 60
Distance (1 line)	D2-1	2D.43	Varies x 24
Distance (2 lines)	D2-2	2D.43	Varies x 36
Distance (3 lines)	D2-3	2D.43	Varies x 48
Street Name	D3-1,1a	2D.45	Varies x 18
Advance Street Name (2 lines)	D3-2	2D.46	Varies x 36
Advance Street Name (3 lines)	D3-2	2D.46	Varies x 48
Advance Street Name (4 lines)	D3-2	2D.46	Varies x 66
Park - Ride	D4-2	2D.48	36 x 48
National Scenic Byways	D6-4	2D.57	24 x 24
National Scenic Byways	D6-4a	2D.57	24 x 12
Weigh Station XX Miles	D8-1	2E.53	96 x 72 (F) 78 x 60 (E)

Sign or Plaque	Sign Designation	Section	Minimum Size
Weigh Station Next Right	D8-2	2E.53	108 x 90 (F) 84 x 72 (E)
Weigh Station <u>Exit Direction (with arrow)</u>	D8-3	2E.53	84 x 78 (F) 66 x 60 (E)
Crossover	D13-1,2	2D.52	78 x 42
Freeway Entrance	D13-3	2D.50	48 x 30
Freeway Entrance (with arrow)	D13-3a	2D.50	48 x 42
Combination Lane Use / Destination	D15-1	2D.38	Varies x 96
Next Truck Lane XX Miles	D17-1	2D.53	60 x 66
Truck Lane XX Miles	D17-2	2D.53	60 x 54
Slow Vehicle Turn-Out XX Miles	D17-7	2D.54	96 x 54

615 * The size shown is for a typical sign as illustrated in the figures in Chapters 2D and 2E.

616 The size should be determined based on the amount of legend required for the sign.

617 ** The width shown represents the minimum dimension. The width shall be increased as appropriate to match the
618 width of the guide sign.

619

620 Notes: 1. Larger signs may be used when appropriate

621 2. Dimensions in inches are shown as width x height

622 3. Where two sizes are shown, the larger size is for freeways (F) and the smaller
623 size is for expressways (E)

- 624 NCUTCD recommends revising Table 2E-2 as follows:
- 625 • Revise the title from “Minimum Letter and Numeral Sizes for Expressway Guide Signs
626 According to Interchange Classification” to “Expressway Guide Sign Minimum Letter and
627 Numeral Sizes According to Interchange Classification” to make it easier for a reader to
628 select the appropriate table
- 629 • Add a clarifying sentence at the top of the table to confirm which tables apply to freeways
630 and which apply to expressways
- 631 • Change “Type of Interchange” to “Interchange Classification” to be consistent with
632 terminology used in MUTCD text, and correct the section reference from 2E.32 to 2E.11
- 633 • Add a “post-mounted” column heading to better differentiate from the “overhead” column
- 634 • Add the word “Exit” before “Gore Signs” to be consistent with the name of the sign used
635 elsewhere in the MUTCD
- 636 • Refer to upper-case/lower-case text using only the height of the initial upper-case letter, and
637 add to the Minimum Size value a footnote reference to Sec. 2A.08 and 2E.12, as this should
638 reduce lower case text height errors during sign design (see NCUTCD comments on Chapter
639 2D), and because the lower-case letter heights shown are incorrect for Series E(modified)-
640 Alternate
- 641 • Remove the footnote that requires overhead signs to use letters larger than in the “overhead”
642 column where a larger size is shown for the interchange classification

Table 2E-2. Expressway Guide Sign Minimum Letter and Numeral Sizes for Expressway Guide Signs According to Interchange Classification

Tables 2E-2 and 2E-3 apply to Expressway guide signing. For Freeway guide signing, see Tables 2E-4 and 2E-5.

Type of Sign	Post-Mounted			Overhead *				
	Type of Interchange (see Section 2E.32) <u>Interchange Classification (see Section 2E.11)</u>							
	Major		Intermediate	Minor				
	Category a	Category b						
A. Advance Guide, Exit Direction, and Overhead Guide Signs								
Exit Number Plaques								
Words	10	10	10	8	10			
Numerals & Letters	15	15	15	12	15			
Interstate Route Signs								
Numerals	18	—	—	—	18			
1- or 2-Digit Shields	36 x 36	—	—	—	36 x 36			
3-Digit Shields	45 x 36	—	—	—	45 x 36			
U.S. or State Route Signs								
Numerals	18	18	18	12	18			
1- or 2-Digit Shields	36 x 36	36 x 36	36 x 36	24 x 24	36 x 36			
3-Digit Shields	45 x 36	45 x 36	45 x 36	30 x 24	45 x 36			
U.S. or State Route Text Identification (Example: US 56)								
Numerals & Letters	18	15	15	12	15			
Cardinal Directions								

First Letters	18	15	12	10	15
Rest of Word	15	12	10	8	12
Auxiliary and Alternative Route Legends (Examples: JCT, TO, ALT, BUSINESS)					
Words	15	12	10	8	12
Names of Destinations	<u>20</u> *	<u>16</u> *	<u>13.33</u> *	<u>10.67</u> *	<u>16</u> *
Upper-Case Letters	20	16	13.33	10.67	16
Lower-Case Letters	15	12	10	8	12
Distance Numbers	18	15	12	10	15
Distance Fraction Numerals	12	10	10	8	10
Distance Words	12	10	10	8	10
Action Message Words	10	10	10	8	10
B. <u>Exit Gore Signs</u>					
Words	10	10	10	8	—
Numerals & Letters	12	12	12	10	—

647

648

Note: Sizes are shown in inches and where applicable are shown as width x height

649

~~* Where a larger size is shown for the interchange classification of the interchange, that larger size is used for overhead-mounted guide signs for that interchange.~~

650

~~* Initial upper-case letter of a mixed-case legend (see Sec. 2A.08 and 2E.12)~~

651

652

653

- 654 NCUTCD recommends revising Table 2E-3 as follows:
- 655 • Revise the title from “Minimum Letter and Numeral Sizes for Expressway Guide Signs
656 According to Sign Type” to “Expressway Guide Sign Minimum Letter and Numeral Sizes
657 According to Sign Type” to make it easier for a reader to select the appropriate table
- 658 • Add a clarifying sentence at the top of the table to confirm which tables apply to freeways
659 and which apply to expressways
- 660 • Refer to upper-case/lower-case text using only the height of the initial upper-case letter, and
661 add to the Minimum Size value a footnote reference to Sec. 2A.08 and 2E.12, as this should
662 reduce lower case text height errors during sign design (see NCUTCD comments on Chapter
663 2D), and because the lower-case letter heights shown are incorrect for Series E(modified)-
664 Alternate

665

666

667 **Table 2E-3. Expressway Guide Sign Minimum Letter and Numeral
668 Sizes ~~for Expressway Guide Signs~~ According to Sign Type**

Tables 2E-2 and 2E-3 apply to Expressway guide signing. For Freeway guide signing, see Tables 2E-4 and 2E-5.

Type of Sign	Minimum Size
A. Pull-Through Signs	
Destinations — Upper Case Letters	13.33 *
Destinations — Lower Case Letters	10
Route Signs	
1- or 2-Digit Shields	36 x 36
3-Digit Shields	45 x 36
Cardinal Directions — First Letters	12
Cardinal Directions — Rest of Word	10
B. Supplemental Guide Signs	
Exit Number — Words	8
Exit Number — Numerals and Letters	12
Place Names — Upper Case Letters	10.67 *
Place Names — Lower Case Letters	8
Action Messages	8
Route Signs	
Numerals	12
1- or 2-Digit Shield	24 x 24
3-Digit Shield	30 x 24
C. Interchange Sequence or Community Interchanges Identification Signs	
Words — Upper Case Letters	10.67 *
Words — Lower Case Letters	8
Numerals	10.67
Fraction Numerals	8
Route Signs	
Numerals	12
1- or 2-Digit Shield	24 x 24
3-Digit Shield	30 x 24
D. Next XX Exits Sign	
Place Names — Upper Case Letters	10.67 *
Place Names — Lower Case Letters	8
NEXT XX EXITS — Words	8
NEXT XX EXITS — Number	12
E. Distance Signs	
Words — Upper Case Letters	8 *
Words — Lower Case Letters	6
Numerals	8
Route Signs	
Numerals	9
1- or 2-Digit Shield	18 x 18

Type of Sign	Minimum Size
3-Digit Shield	22.5 x 18
F. General Services Signs (see Chapter 2I)	
Exit Number — Words	8
Exit Number — Numerals and Letters	12
Services	8
G. Rest Area, Scenic Area, and Roadside Area Signs (see Chapter 2I)	
Words	10
Distance Numerals	12
Distance Fraction Numerals	8
Distance Words	8
Action Message Words	10
H. Reference Location Signs (see Chapter 2H)	
Words	4
Numerals	10
I. Boundary and Orientation Signs (see Chapter 2H)	
Words — <i>Upper-Case Letters</i>	8 *
Words — <i>Lower-Case Letters</i>	6
J. Next Exit and Next Services Signs	
Words and Numerals	8
K. Exit Only Signs	
Words	12
L. Overhead Arrow-Per-Lane	
See Table 2E-5	

Note: Sizes are shown in inches and where applicable are shown as width x height

* Initial upper-case letter of a mixed-case legend (see Sec. 2A.08 and 2E.12)

- 678 NCUTCD recommends revising Table 2E-4 as follows:
- 679 • Revise the title from “Minimum Letter and Numeral Sizes for Freeway Guide Signs
- 680 According to Interchange Classification” to “Freeway Guide Sign Minimum Letter and
- 681 Numeral Sizes According to Interchange Classification” to make it easier for a reader to
- 682 select the appropriate table
- 683 • Add a clarifying sentence at the top of the table to confirm which tables apply to freeways
- 684 and which apply to expressways
- 685 • Change “Type of Interchange” to “Interchange Classification” to be consistent with
- 686 terminology used in MUTCD text, and correct the section reference from 2E.32 to 2E.11
- 687 • Add a “post-mounted” column heading to better differentiate from the “overhead” column
- 688 • Add the word “Exit” before “Gore Signs” to be consistent with the name of the sign used
- 689 elsewhere in the MUTCD
- 690 • Refer to upper-case/lower-case text using only the height of the initial upper-case letter, and
- 691 add to the Minimum Size value a footnote reference to Sec. 2A.08 and 2E.12, as this should
- 692 reduce lower case text height errors during sign design (see NCUTCD comments on Chapter
- 693 2D), and because the lower-case letter heights shown are incorrect for Series E(modified)-
- 694 Alternate

**Table 2E-4. Freeway Guide Sign Minimum Letter and Numeral Sizes ~~for~~
~~Freeway Guide Signs~~ According to Interchange Classification**

Tables 2E-4 and 2E-5 apply to Freeway guide signing. For Expressway guide signing, see Tables 2E-2 and 2E-3.

Type of Sign	Post-Mounted				Overhead	
	Type of Interchange (see Section 2E.32) <u>Interchange Classification (see Section 2E.11)</u>					
	Major		Intermediate	Minor		
	Category a	Category b				
A. Advance Guide, Exit Direction, and Overhead Guide Signs						
Exit Number Plaques						
Words	10	10	10	10	10	
Numerals & Letters	15	15	15	15	15	
Interstate Route Signs						
Numerals	24/18	—	—	—	18	
1- or 2-Digit Shields	48 x 48/ 36 x 36	—	—	—	36 x 36	
3-Digit Shields	60 x 48/ 45 x 36	—	—	—	45 x 36	
U.S. or State Route Signs						
Numerals	24/18	18	18	12	18	
1- or 2-Digit Shields	48 x 48/ 36 x 36	36 x 36	36 x 36	24 x 24	36 x 36	
3-Digit Shields	60 x 48/ 45 x 36	45 x 36	45 x 36	30 x 24	45 x 36	
U.S. or State Route Text Identification (Example: US 56)						
Numerals & Letters	18	18/15	15	12	15	
Cardinal Directions						
First Letters	18	15	15	10	15	
Rest of Words	15	12	12	8	12	
Auxiliary and Alternative Route Legends (Examples: JCT, TO, ALT, BUSINESS)						
Words	15	12	12	8	12	
Names of Destinations	20 *	20 *	16 *	13.33 *	16 *	
Upper-Case Letters	20	20	16	13.33	16	
Lower-Case Letters	15	15	12	10	12	
Distance Numbers	18	18/15	15	12	15	
Distance Fraction Numerals	12	12/10	10	8	10	
Distance Words	12	12/10	10	8	10	
Action Message Words	12	12/10	10	8	10	
B. Exit Gore Signs						
Words	12	12	12	8	—	
Numerals & Letters	18	18	18	12	—	

698 Notes: 1. Sizes are shown in inches and where applicable are shown as width x height

699 2. Slanted line (/) signifies separation of desirable and minimum sizes

700 * Initial upper-case letter of a mixed-case legend (see Sec. 2A.08 and 2E.12)

701 NCUTCD recommends revising Table 2E-5 as follows:

- 702 • Revise the title from “Minimum Letter and Numeral Sizes for Freeway Guide Signs
703 According to Sign Type” to “Freeway Guide Sign Minimum Letter and Numeral Sizes
704 According to Sign Type” to make it easier for a reader to select the appropriate table.
- 705 • Add a clarifying sentence at the top of the table to confirm which tables apply to freeways
706 and which apply to expressways.
- 707 • Change “Type of Interchange” to “Interchange Classification” to be consistent with
708 terminology used in MUTCD text, and correct the section reference from 2E.32 to 2E.11.
- 709 • Add a “post-mounted” column heading to better differentiate from the “overhead” column
- 710 • Add the word “Exit” before “Gore Signs” to be consistent with the name of the sign used
711 elsewhere in the MUTCD.
- 712 • Refer to upper-case/lower-case text using only the height of the initial upper-case letter, and
713 add to the Minimum Size value a footnote reference to Sec. 2A.08 and 2E.12, as this should
714 reduce lower case text height errors during sign design (see NCUTCD comments on Chapter
715 2D), and because the lower-case letter heights shown are incorrect for Series E(modified)-
716 Alternate.
- 717 • Adjust the order of the footnotes and correct the references (The table as presented in the
718 NPA has two footnotes both designated with a single asterisk).
- 719 • Revise arrow-per-lane sign dimensions as follows. Arrow-per-Lane signs are significantly
720 larger than other forms of guide signing, as the sign must provide an arrow over each lane,
721 and because the through and option arrow heights occupy a large portion of the bottom of the
722 sign panel. Increased sign width and height greatly multiplies both weight and wind load to a
723 support structure and can require a new sign structure that can add costs of up to \$500,000
724 per installation as compared to other types of signs. This is a serious issue for agencies who
725 own and manage these highways. A human factors experiment conducted in 2014 concluded
726 that the height of arrows on Arrow-per-Lane signs using the dimensions in the NPA may be
727 much larger than is needed. Agencies have successfully used the revised dimensions for
728 arrow-per-lane signs with good legibility at a notable cost savings.
 - 729 o Revise the arrowhead width from 12” to 21.625”.
 - 730 o Revise the shaft width from 7.75” to 8”.
 - 731 o Revise the through and option arrow heights from 66” to 42”.
 - 732 o Revise the left, right, and split arrow heights from 55” to 36”.

Table 2E-5. Freeway Guide Sign Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Sign Type

Tables 2E-4 and 2E-5 apply to Freeway guide signing. For Expressway guide signing, see Tables 2E-2 and 2E-3.

Type of Sign	Minimum Size
A. Pull-Through Signs	
Destinations — Upper Case Letters	16 <small>*</small>
Destinations — Lower Case Letters	12
Route Signs	
1- or 2-Digit Shields	36 x 36
3-Digit Shields	45 x 36
Cardinal Directions — First Letter	15
Cardinal Directions — Rest of Word	12
B. Supplemental Guide Signs	
Exit Number Words	10
Exit Number Numerals and Letters	15
Place Names — Upper Case Letters	13.33 <small>*</small>
Place Names — Lower Case Letters	10
Action Messages	8
Route Signs	
Numerals	12
1- or 2-Digit Shield	24 x 24
3-Digit Shield	30 x 24
C. Interchange Sequence or Community Interchanges Identification Signs	
Words — Upper Case Letters	13.33 <small>*</small>
Words — Lower Case Letters	10
Numerals	13.33
Fraction Numerals	10
Route Signs	
Numerals	12
1- or 2-Digit Shield	24 x 24
3-Digit Shield	30 x 24
D. Next X Exits Sign	
Place Names — Upper Case Letters	13.33 <small>*</small>
Place Names — Lower Case Letters	10
NEXT X EXITS — Words	10
NEXT X EXITS — Number	15
E. Distance Signs	
Words — Upper Case Letters	8 <small>*</small>
Words — Lower Case Letters	6
Numerals	8
Route Signs	
Numerals	9

Type of Sign	Minimum Size
1- or 2-Digit Shield	18 x 18
3-Digit Shield	22.5 x 18
F. General Services Signs (see Chapter 2I)	
Exit Number Words	10
Exit Number Numerals and Letters	15
Services	10
G. Rest Area, Scenic Area, and Roadside Area Signs (see Chapter 2I)	
Words	12
Distance Numerals	15
Distance Fraction Numerals	10
Distance Words	10
Action Message Words	12
H. Reference Location Signs (see Chapter 2H)	
Words	4
Numerals	10
I. Boundary and Orientation Signs (see Chapter 2H)	
Words — Upper Case Letters	8 [*] —
Words — Lower Case Letters	6
J. Next Exit and Next Services Signs	
Words and Numerals	8
K. Exit Only Signs	
Words	12
L. Overhead Arrow-Per-Lane Signs**	
Arrowhead (Type D Directional Arrow)	21. <u>625</u>
Arrow Shaft Width	7. <u>75</u> 8
Arrow Height	
Through	66. <u>42</u>
Left Only	45. <u>36</u>
Right Only	45. <u>36</u>
Optional-Diverge (Through with Left or Right)	66. <u>42</u>
Optional-Split (Left and Right)	55. <u>36</u>
Vertical Separator Width	2
Vertical Space between Vertical Separator and Top of Nearest Arrow	8
Horizontal Space between Vertical Separator and Top of Nearest Through Arrow	15
Horizontal Space between Arrow Shaft and EXIT and ONLY Panels	12
EXIT and ONLY Panels	54 x 18
M. Diagrammatic Signs	
Arrowhead (Type D Directional Arrow)	13.5***

Lane Widths	5
Lane Line Segments	1 x 6
Spacing between Lane Line Segments	6

738

Type of Sign	Minimum Size
Stem Height to Upper Point of Departure	30
Horizontal Space between Arrowhead and Route Shield or Destination	12

739

740 * Initial upper-case letter of a mixed-case legend (see Sec. 2E.12)

741 ** Overhead Arrow-Per-Lane sign example layouts and design elements sizing are provided in the
742 Standard Highway Sign publication.

743 *** The size shown is the arrowhead width per lane depicted on the corresponding arrow shaft

744

745 * Overhead Arrow-Per-Lane sign example layouts and design elements sizing are
746 provided in the Standard Highway Sign publication.

747 Note: Sizes are shown in inches and where applicable are shown as width x height

748

749

750 **Section 2E.13 Comments:** NCUTCD agrees with 2E.13 as presented in the NPA.

751

752 **Section 2E.13 Interline and Edge Spacing**753 *Guidance:*754 *Interline spacing of upper-case letters should be approximately three-fourths the average of upper-case letter heights in adjacent lines of letters.*755 *The spacings to the top and bottom borders should be equal to the average of the letter height of the adjacent line of letters. The lateral spacing to the vertical borders should be essentially the same as the height of the largest letter.*

756

760

761 **Section 2E.14 Comments:** NCUTCD agrees with 2E.14 as presented in the NPA.

762

763 **Section 2E.14 Sign Borders**764 *Guidance:*765 *For guide signs larger than 120 x 72 inches, the border should have a width of 2 inches. For smaller guide signs, a border width of 1.25 inches should be used. On unusually large signs with oversized letter heights, route shields, or other legend elements, the border should be 2-½ inches wide and should not exceed 3 inches in width. In all cases, the width of the border should not exceed the stroke width of the lettering of the principal legend on the sign.*766 *Corner radii of sign borders should be approximately 1/8 of the minimum sign dimension on guide signs, except that the radii should not exceed 12 inches on any sign.*767 *Support:*768 *The "Standard Highway Signs" publication contains detailed information on border widths and corner radii for ranges of sign sizes.*769 *Option:*770 *The sign material in the area outside of the corner radius may be trimmed.*

771

772

773

779 **Section 2E.15 Comments:** NCUTCD generally agrees with 2E.15 as presented in the NPA,
780 with minor revisions for clarity.

781

782 **Section 2E.15 Amount of Legend on Guide Signs**

783 *Guidance:*

784 *No more than two destination names or street names should be displayed on any Advance Guide sign
785 or Exit Direction sign. A city name and street name on the same sign should be avoided. Where two or
786 three signs are placed on the same supports, destinations or street names should be limited to one per
787 sign, or to a total of three in the display. Sign legends should not exceed three lines of copy, exclusive of
788 the exit number and action or distance information.*

789 Support:

790 Where only one interchange serves a community, the intersecting street name is generally superfluous
791 to the city name on the Advance guide and Exit Direction signs. Where a community is served by
792 multiple interchanges, the city name is typically displayed on either the a NEXT XX EXITS (see Section
793 2E.52) sign or the a Community Interchanges Identification (see Section 2E.51) sign~~s are used to display
794 the city name. Each interchange is then identified by its intersecting roadway name on the Advance guide
795 and Exit Direction signs rather than by the city name. [revise for clarity]~~

796

797 **Section 2E.16 Comments:** NCUTCD agrees with 2E.16 as presented in the NPA.

800

Section 2E.16 Abbreviations

801 *Standard:*

802 *The use of abbreviations on freeway and expressway guide signs shall comply with the
803 provisions of Section 2D.07 of this Manual.*

804

805 **Section 2E.17 Comments:** NCUTCD generally agrees with 2E.17 as presented in the NPA with
806 very minor editorial revisions.

807

Section 2E.17 Symbols

808 Support:

809 Symbols are not normally displayed on freeway and expressway guide signs. One exception is the
810 Park – Ride Supplemental guide sign (see Section 2E.50), which displays the Carpool symbol. In some
811 cases, General Information symbols (see Chapter 2H) might be included in the legend of a guide sign to
812 shorten an unusually lengthy legend on the sign.

813 *Guidance:*

814 *When a General Information symbol is incorporated into the legend of a guide sign, all components
815 of the legend should be balanced in size and arrangement for maximum legibility. The General
816 Information (I series) sign, rather than the symbol alone, should be placed as a sign panel within the
817 guide sign so that adequate recognition of the symbol is provided by the border. The General
818 Information sign panel should be positioned to the left of the legend to which it applies. The size of the
819 General Information sign panel should be ~~the~~ similar in size to that specified for a route shield for the
820 type of guide sign on which it is displayed.*

827 **Section 2E.18 Comments:** NCUTCD recommends revising 2E.18 as follows:

- 828 • Delete the new Standard material that calls for directional arrows on post-mounted Exit
829 Direction signs to be at the bottom of the sign and centered under the legend. NCUTCD does
830 not agree with this change. This is inconsistent with accepted signing practice in many states
831 and contradicts the designs depicted in numerous figures in Part 2. Placing the arrow to the
832 side of the legend on a sign is consistent with human factors guidelines and can reinforce the
833 directionality of that arrow, similar to arrow placement on D1 and other signs.
834 • Add a reference to post-mounted Exit Direction signs to the Option statement, to allow the
835 arrow at the bottom at the discretion of the practitioner or agency.
836 • Other editorial revisions as appropriate.

838 **Section 2E.18 Arrows for Interchange Guide Signs**

839 **Standard:**

840 Arrows used on interchange guide signs shall be of the types shown in Figure 2D-2 2D-4 and
841 shall comply with the provisions of this Section and Section 2D.08.

842 Except on Overhead Arrow-per-Lane guide signs (see Section 2E.40) and on Exit Direction
843 signs for lane drops (see Section 2E.28), and except as provided in Paragraphs 3 and 4 4 and 5 of
844 this Section, directional arrows on all overhead and post-mounted Exit Direction signs shall point
845 diagonally upward and. Directional arrows on overhead Exit Direction signs shall be located on
846 the side of the sign consistent with the direction of the exiting movement. Directional arrows on
847 post-mounted Exit Direction signs shall be located at the bottom portion of the sign and centered
848 under the legend. [delete - if the last sentence is deleted, the preceding sentence can be restored to its
849 2009 MUTCD form]

850 Option:

851 On post-mounted Exit Direction signs and overhead Exit Direction signs that are located fully over
852 the tapered portion of the exit ramp at the theoretical gore, and where a directional arrow to the side of the
853 legend farthest from the roadway might create an unusually wide sign that limits the road user's view of
854 the arrow, the directional arrow may be placed at the bottom portion of the sign, centered under the
855 legend.

856 **Standard:**

857 Directional arrows on guide signs for multi-lane exits shall be positioned below the legend over
858 the approximate center of each lane to which the arrow applies (see Figures 2E-38 and 2E-43).

859 Down arrows shall only be used on overhead signs to indicate a lane to be followed and shall be
860 positioned over the approximate center of each lane pointing vertically downward toward the
861 approximate center of that lane. Down arrows shall be used only on overhead guide signs that
862 restrict the use of specific lanes to traffic bound for the destination(s) and/or route(s) indicated by
863 these arrows. Down arrows shall not be used unless an arrow can be located over and pointed to
864 the approximate center of each lane that can be used to reach the destination displayed on the sign.

865 If down arrows are used, having more than one down arrow pointing to the same lane on a
866 single overhead sign (or on multiple signs on the same overhead sign structure) shall not be
867 permitted.

868 Support:

869 Directional and down arrows for use on guide signs are shown in Figure 2D-4. Detailed drawings
870 and standardized sizes based on ranges of letter heights for these arrows are provided in the "Standard
871 Highway Signs" publication (see Section 1A.11 1A.05). Information on the dimensions for arrows used
872 in Overhead Arrow-per-Lane and Diagrammatic guide signing is also provided in the "Standard Highway
873 Signs" publication.

INSTALLATION

Section 2E.19 Comments: NCUTCD generally agrees with 2E.19 as presented in the NPA with minor editorial revisions.

Section 2E.19 Overhead Sign Installations

Support:

Specifications for the design and construction of structural supports for signs have been standardized by the American Association of State Highway and Transportation Officials (AASHTO). Overcrossing structures can often serve for the support of overhead signs, and might in some cases be the only practical location that will provide adequate viewing distance. Use of these structures as sign supports will eliminate the need for additional sign supports along the roadside. Conditions that might warrant the installation of overhead signs are given in Section 2A.17 2A.13 and throughout this Chapter. Vertical clearance of overhead signs is discussed in Section 2A.18 2A.14.

Section 2E.20 Comments: NCUTCD generally agrees with 2E.20 as presented in the NPA, but recommends revising as follows:

- Add a reference to new Section 1D.13 to the first Standard paragraph
 - Revise the third Guidance paragraph on sign supports, as the wording presented in the NPA could be read as contradicting itself

Section 2E.20 Lateral Offset

Standard:

Except where shielded by a rigid traffic barrier, the minimum lateral offset outside the usable roadway shoulder for post-mounted freeway and expressway signs or for overhead sign supports, either to the right-hand or left-hand side of the roadway, shall be 6 feet. This minimum clearance shall also apply outside of a curb. If located within the clear zone, the signs shall be mounted on crashworthy supports or shielded by appropriate crashworthy barriers (see Section 1D.13).

Guidance:

Where practical, a sign should not be less than 10 feet from the edge of the nearest traffic lane. Large guide signs especially should be farther removed, preferably 30 feet or more from the nearest traffic lane.

Where an expressway median is 12 feet or less in width, consideration should be given to spanning both roadways without a center support.

Where overhead sign supports cannot be placed sufficiently far away from the line of traffic or in an otherwise shielded site, they should either be designed to minimize the impact forces, or be adequately shielded by a traffic barrier of suitable design. Where an overhead sign support cannot be placed sufficiently far away from the line of traffic, it should either be designed to minimize the impact forces, or be adequately shielded by a traffic barrier of suitable design. [revise]

Standard:

Butterfly-type sign supports and other overhead non-crashworthy sign supports shall not be installed in gores or other unshielded locations within the clear zone.

Option:

Lesser clearances, but not generally less than 6 feet, may be used on connecting roadways or ramps at interchanges.

GUIDE SIGNING FOR INTERCHANGES

925 **Section 2E.21 Comments:** NCUTCD generally agrees with 2E.21 as presented in the NPA, but
926 recommends inserting the two paragraphs relocated from 2E.07, and revising these paragraphs to
927 add examples, improve readability, and delete unclear wording such as “the density of
928 development on sections of the crossroads”.

929

930 **Section 2E.21 Interchange Guide Signs**

931 **Support:**

932 For some applications, guide signing for interchanges depends upon the interchange classification as
933 described in Section 2E.11. Sections 2E.23, 2E.25, 2E.30, 2E.39, and 2E.42 contain provisions on guide
934 signing for interchanges that are based on interchange classification.

935 **Standard:**

936 The signs at interchanges and on their approaches shall include Advance guide signs and Exit
937 Direction signs. Consistent destination messages shall be displayed on these signs.

938 **Guidance:**

939 New destination information should not be introduced into the major sign sequence for one
940 interchange, nor should destination information be dropped.

941 Guide signs placed in advance of an interchange deceleration lane should be spaced at least 800 feet
942 apart.

943 Use of supplemental guide signing should be minimized as provided in Section 2E.50.

944 **Support:**

945 Figure 2E-2 shows the typical sequence of interchange guide signs.

946

947 In some instances the ~~exit~~ interchange that provides the most direct or preferred access to ~~one or more~~
948 ~~a destinations~~ is different in opposing directions of travel due to the configuration of the crossroads, ~~the~~
949 ~~density of development on sections of the crossroads~~, the fact that an interchange is a partial interchange,
950 etc. [insert from 2E.07 and revise]

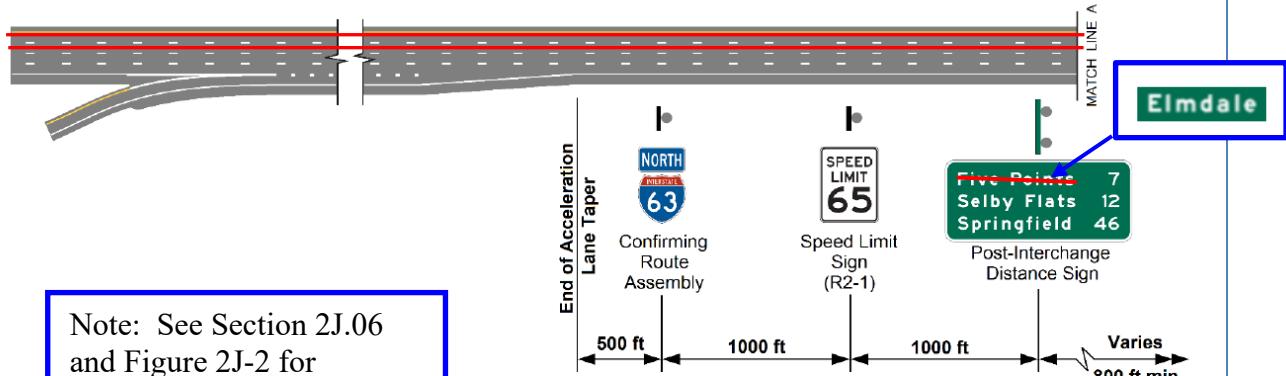
951 **Guidance:**

952 ~~The guide signs for exits in each direction of travel should display the destinations with the most~~
953 ~~direct or preferred access from that direction of travel even when this results in the destinations being~~
954 ~~different for an exit in opposing directions of travel (see Figure 2E-1). For each direction of travel, guide~~
955 ~~signing to a destination should be via the exit with the most direct or preferred access, even when this~~
956 ~~results in a destination being served by different interchanges for opposing directions of travel (see~~
957 ~~Figure 2E-1). [revise for clarity]~~

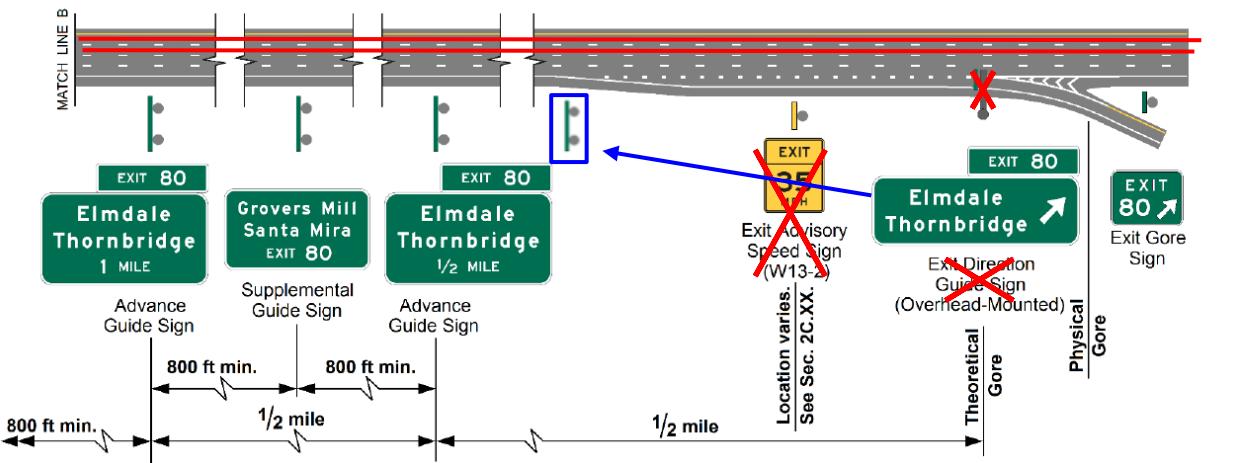
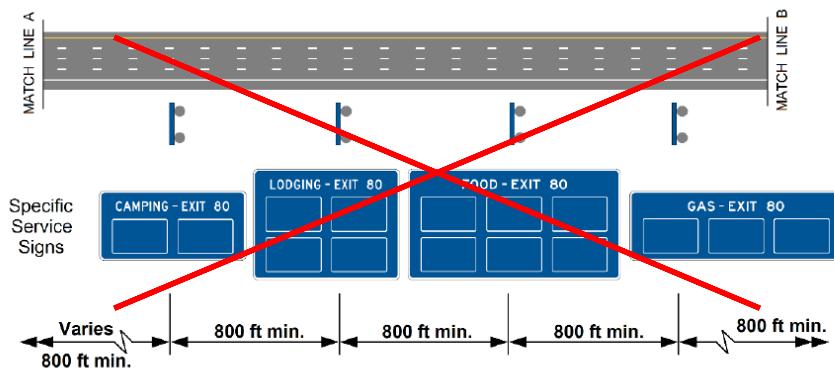
958

959 NCUTCD recommends revising Figure 2E-2 as follows:

- 960 • Revise the title to “Typical Sequence of Interchange Guide Signs” as used in the NPA text
- 961 • Reduce the roadway to two lanes, since a four-lane freeway (as shown) would likely have
962 very high traffic volumes and it would be unusual to use post-mounted signs for all the
963 Advance Guide signs as depicted
- 964 • Show the Exit Direction sign as post-mounted and relocate to the beginning of the taper, as
965 depicting the Exit Direction sign as overhead might lead readers think that an overhead
966 mounting is always required
- 967 • Delete the advisory speed sign as unnecessary on this figure (covered in Chapter 2C)
- 968 • Revise the first destination on the Post-Interchange Distance sign to “Elmdale 2”, as the top
969 line of the sign shall identify the next meaningful interchange per 2E.47
- 970 • Delete all the Specific Service signs and include a note stating “See Section 2J.06 and Figure
971 2J-2 for locations for Specific Service signs”, as Chapter 2J better addresses these signs

Figure 2E-2. Typical Post-Interchange and Advance Interchange Guide Sign Sequences**Typical Sequence of Interchange Guide Signs**

Note: See Section 2J.06
and Figure 2J-2 for
locations for Specific
Service signs



979
980 **Section 2E.22 Comments:** NCUTCD recommends revising 2E.22 as follows in accordance
981 with NCUTCD recommendation 18B-GMI-01:

- 982 • Replace the term “interchange number” with “interchange exit number” for clarity
983 throughout this Section, because as the NPA guidance clarifies, an interchange can have a
984 different exit number in opposing directions and as such, the interchange would not have a
985 unique number
- 986 • Revise the first Support statement by adding “assists road users in” reporting, and change
987 “reporting” to “responding” as responders would not be “reporting” an incident or “reporting
988 to” an incident
- 989 • Revise the second Standard paragraph to add “departure point” to clarify the term “exit” as
990 being the departure point from the mainline that is being numbered and not a downstream
991 ramp split, and delete “EXIT or EXITS” as this could be misinterpreted to mean either could
992 be used interchangeably
- 993 • Revise “impracticable” to “impractical” in the third Standard paragraph
- 994 • Revise the first Guidance statement for clarity, and delete line item 3 as it conflicts with the
995 rest of the guidance in this Section, specifically regarding the use of suffixes
- 996 • Revise the first two paragraphs in the third Standard statement to Guidance, as many states
997 have exits numbered in ways that do not comply with this new Standard statement, which
998 will result in those states not being in substantial conformance with a Standard, and revising
999 to Guidance allows some latitude
 - 1000 ○ In the second Standard paragraph revised to Guidance, add an exception for collector-
1001 distributor roadways to eliminate confusion
- 1002 • Delete “directly” from the final two Standard paragraphs in the third Standard statement,
1003 because some readers might literally interpret “directly” to mean “centered over the right
1004 edge”, resulting in inappropriate plaque placement
- 1005 • Add or revise references to other figures as needed
- 1006 • Editorial revisions as needed

1007 1008 **Section 2E.22 Interchange Exit Numbering**

1009 **Standard:**

1010 **Interchange exit numbering shall use the reference location sign exit numbering method. The**
1011 **consecutive exit numbering method shall not be used. The exit numbers shall correspond to the**
1012 **posted Reference Location or Enhanced Reference Location signs.**

1013 **Support:**

1014 Reference location sign exit numbering assists road users in determining their destination distances
1015 and travel mileage, assists road users in reporting their location in the event of an incident or breakdown,
1016 assists responders in responding to incidents, and assists highway agencies because the exit
1017 numbering sequence does not have to be changed if new interchanges are added to a route.

1018 Interchange exit numbering provides valuable orientation for the road user on a freeway or
1019 expressway. The feasibility of numbering interchanges or exits on an expressway will depend largely on
1020 the extent to which grade separations are provided. Where there is appreciable continuity of interchange
1021 facilities, interrupted only by an occasional intersection at grade, the numbering will be helpful to the
1022 expressway user.

1023 **Standard:**

1024 **Interchange exit numbering shall be used in signing each freeway interchange exit departure**
1025 **point from the mainline. Interchange exit numbers shall be displayed with each Advance Guide**

sign, Exit Direction sign, and Exit Gore sign. The exit number shall be displayed on a separate plaque on top of the Advance Guide or Exit Direction sign. The Exit Number (E1-5P series) plaques (see Figure 2E-10 2E-9) shall include the word **EXIT or EXITS EXIT(S)** and the appropriate exit number(s) in a single-line format.

Suffix letters shall only be used to supplement exit numbers where, from the same direction of travel on the freeway mainline, there is more than one exit at an interchange or where interchanges are so closely spaced that it is impracticable impractical to use separate exit numbers associated with the reference mile points of the freeway. The suffix letter shall also be included on the Exit Number plaque and shall be separated from the exit number by a space having a width of between 1/2 and 3/4 of the height of the suffix letter. The suffix letters assigned shall be in ascending alphabetical order starting with the letter A for ramps in the direction of travel with increasing exit numbers, and in descending alphabetical order ending in the letter A in the opposite direction of travel. Exit numbers shall not include the cardinal direction initials corresponding to the directions of the cross route. The minimum numeral and letter sizes shall be as given in Tables 2E-2 through 2E-5. If used, the interchange exit numbering system for expressways shall comply with the provisions prescribed for freeways.

Where suffix letters are used for exit numbering, an exit of the same number without a suffix letter shall not be used on the same route in the same direction. For example, if an exit is designated as EXIT 256 A, then there shall not be an exit designated as EXIT 256 on the same route in the same direction.

Guidance:

To the extent practicable, exit numbering should correspond to the nearest reference location sign number of the freeway at the point the crossroad of the interchange intersects the freeway mainline. The following are examples of proper numbering under various interchange scenarios

To the extent practical, exit numbering should be determined based upon the location of the crossroad with respect to reference location signs as given in the following examples:

[revise to agree with Guidance in item 1 below]

1. *If a crossroad intersects the mainline approximately at or after mile 15 and before mile 16, the interchange should be designated as EXIT 15, (see Drawing A of Figure 2E-3).*
2. *If the interchange crossroad is split into two roadways by direction where one direction of the crossroad is downstream of mile 18 and the other direction is upstream of mile 18, the interchange exit number should be EXIT 18 (see Drawings A and C of Figure 2E-3).*
3. *If there are three closely spaced interchanges, e.g. less than 1 mile apart, starting before mile 16 and ending before mile 17, the interchanges should be designated as EXIT 15, EXIT 16 and EXIT 17.* [delete - conflicts with the rest of the guidance in this Section, specifically regarding the use of suffixes]
4. *If there are multiple interchanges so closely spaced together that it is impractical to designate the exit numbers by the freeway mainline reference mile numbers, or doing so would tend to not meet driver expectations, suffix letters should be used as provided in this Section(see Drawings D and E of Figure 2E-3). [add figure references]*

Option:

Exit numbers may also be used with Supplemental guide signs, in compliance with Section 2E.50, and Motorist Service signs, in compliance with Chapters 2I and 2J.

Standard: Guidance: [revise to Guidance]

Where exit suffix letters are used and the number of exits ~~are~~ is not equal in both directions of travel, the exit suffix lettering for each direction ~~shall~~ should be based on the number of exits in that direction. For example, if in the northbound direction of a freeway there are three exits for interchange reference location sign number 25 and two exits in the southbound direction, the exit

1074 numbers northbound ~~shall~~ should be EXIT 25 A, EXIT 25 B and EXIT 25 C; and southbound ~~shall~~
1075 should be EXIT 25 B followed by EXIT 25 A (see Drawing ~~D~~ E of Figure 2E-3).

1076 Except as illustrated in Figure 2E-32 for Collector-Distributor Roadways, Exit numbers and
1077 suffix letters ~~shall~~ should only be used to designate individual exit departure points directly from the
1078 freeway mainline. Exit numbers and suffix letters ~~shall~~ should not be used for designating ramp
1079 splits into two ramps after leaving the mainline (see Drawings ~~A and D~~ B of Figure 2E-3). [add
1080 exception for collector-distributor roadways]

1081 **Standard:**

1082 The Exit Number (E1-5P Series through E1-5eP) plaque shall be positioned ~~directly~~ above the
1083 top right-hand edge of the sign for an exit to the right (see Figures 2E-2 and 2E-9). [delete “directly”
1084 and reference figures]

1085 Because road users might not expect an exit to the left and might have difficulty in maneuvering
1086 to the left, a Left Exit Number (E1-5fP through E1-5kP) plaque (see Figure 2E-9) shall be added
1087 ~~directly~~ above the top left-hand edge of the sign for all numbered left-hand exits (see Figures 2E-18
1088 and 2E-34 ~~2E-18~~). The word LEFT on the Left Exit Number plaque shall be a black legend on a
1089 yellow rectangular sign panel and shall be centered above the word EXIT.

1090

1091

1092 NCUTCD recommends revising Figure 2E-3 as follows:

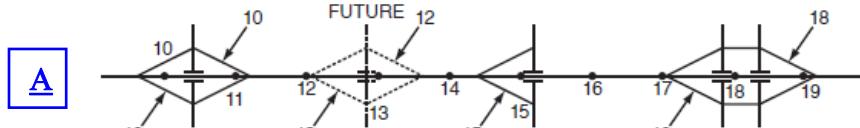
- 1093 • Add an example of a ramp split between the first and second examples presented in the NPA
1094 • Label the examples A-E for reference, since the NPA makes reference to letter designations
1095 for these drawings

1096

1097

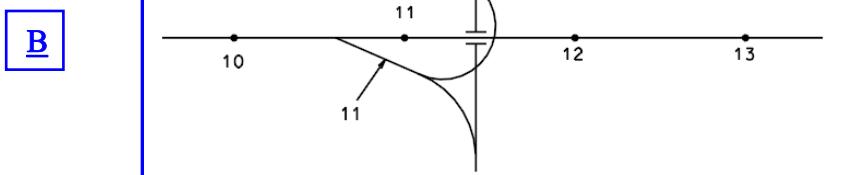
Figure 2E-3. Examples of Interchange Exit Numbering

1098

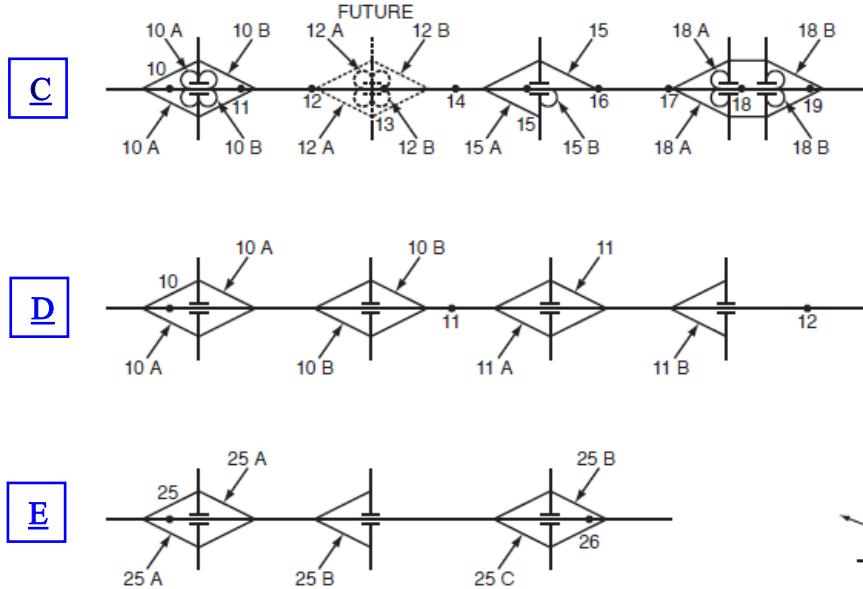


1099

1100



EXAMPLES OF EXIT NUMBERING WITH SUFFIXES



1101
1102 Support:
1103 Example exit number plaque designs are shown in Figure 2E-9. Figures 2E-9, 2E-12, 2E-13, 2E-35,
1104 and 2E-41 illustrate the incorporation of exit number plaques on guide signs.
1105 Figure 2E-4 provides an example of Interstate route loops and spurs around major metropolitan areas.
1106 The general plan for numbering interchange exits is shown in Figures 2E-5 through 2E-8. Figure
1107 2E-5 shows a circumferential route, which is a route that makes a complete circle around a city
1108 or town and usually has two interchanges (one on each side of the city or town) with each of the
1109 mainline routes that travel through the city or town. Figure 2E-6 shows a loop route, which is a
1110 route that departs from a mainline route and then rejoins the same mainline route at a subsequent
1111 point downstream, and Figure 2E-7 shows a spur route, which is a route that departs from a
1112 mainline route and never rejoins the same mainline route. For the purpose of Interstate route
1113 numbering, a three-digit Interstate route that provides connectivity between two different
1114 Interstate routes is defined as a loop. Figure 2E-8 shows two mainline routes that overlap each
1115 other.

1116 Standard:
1117 Regardless of whether a mainline route originates within a State or crosses into a State from
1118 another State, the southernmost or westernmost terminus within that State shall be the beginning
1119 point for interchange exit numbering.

1120 For circumferential routes, interchange exit numbering shall be in a clockwise direction. The
1121 numbering shall begin with the first interchange west of the south end of an imaginary north-south
1122 line bisecting the circumferential route, at a radial freeway or other Interstate route, or some other
1123 conspicuous landmark in the circumferential route near a south polar location (see Figure 2E-5).

1124 The interchange exit numbers on loop routes shall begin at the loop interchange nearest the
1125 south or west **mainline** junction and increase in magnitude toward the north or east **mainline**
1126 junction (see Figure 2E-6).

1127 Spur route interchanges shall be numbered in ascending order starting at the interchange
1128 where the spur leaves the mainline route (see Figure 2E-7).

1129 If a circumferential, loop, or spur route crosses State boundaries, the numbering sequence shall
1130 be coordinated by the States to provide continuous interchange exit numbering.

1131 Where numbered routes overlap, continuity of interchange exit numbering shall be established
1132 for only one of the routes (see Figure 2E-8). If one of the routes is an Interstate and the other route
1133 is not an Interstate, the Interstate route shall maintain continuity of interchange exit numbering.
1134

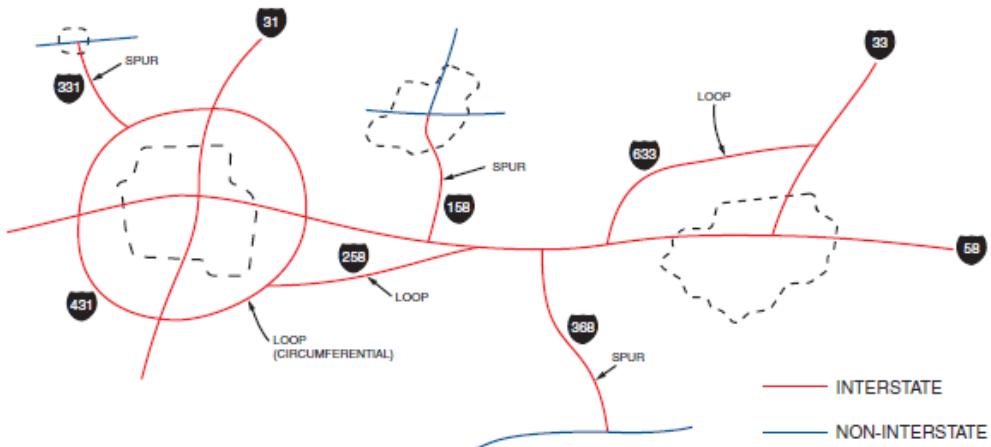
1135 *Guidance:*

1136 *The route chosen for continuity of interchange exit numbering should also have reference location
sign continuity (see Figure 2E-8).*

1140 NCUTCD agrees with Figure 2E-4 as presented in the NPA.

1141

1142 **Figure 2E-4. Examples of Interchange Loops and Spurs**



1144

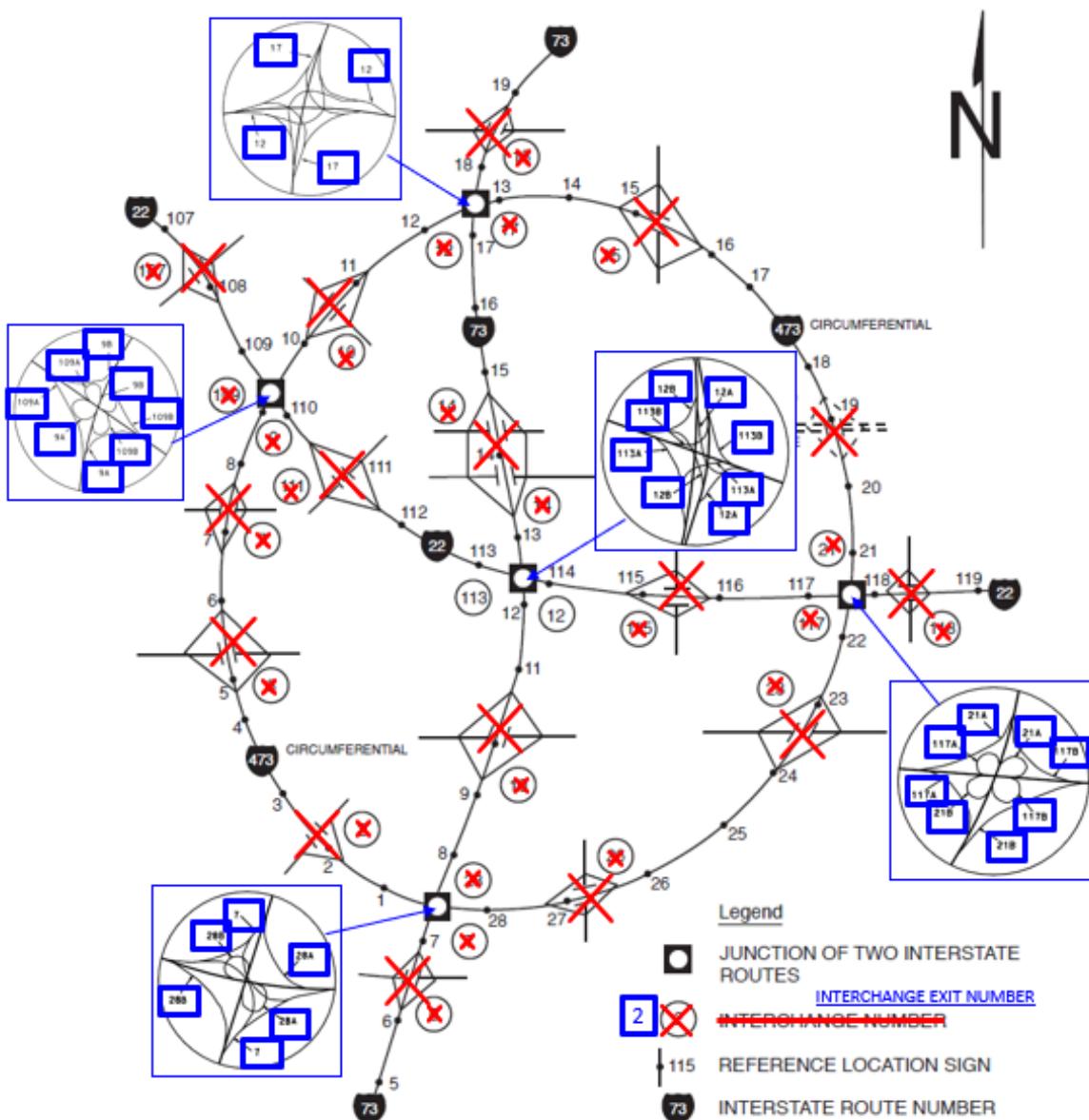
1145

1146

1147 NCUTCD recommends revising Figure 2E-5 as follows:

- 1148 • Add “Exit” in the title
- 1149 • Delete interchanges that are not freeway-to-freeway interchanges, since they are not relevant
- 1150 to the figure, they detract from the intended purpose of the figure; and Figure 2E-3 depicts
- 1151 exit numbering for these interchanges
- 1152 • Add boxes surrounding exit numbers for consistency
- 1153 • Revise “INTERCHANGE NUMBER to INTERCHANGE EXIT NUMBER” in the note

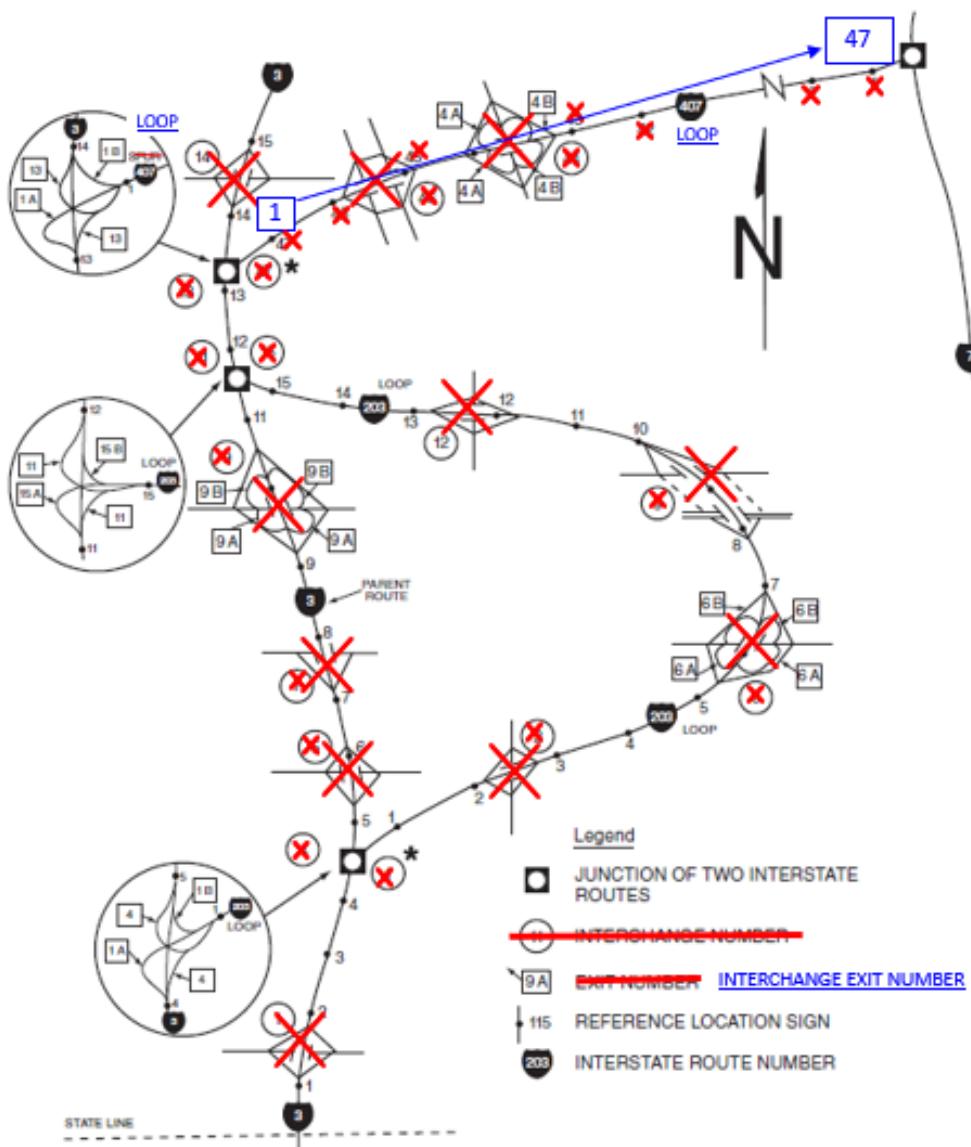
1155 **Figure 2E-5. Example of Interchange Exit Numbering for Mainline and**
1156 **Circumferential Routes**



1159

- 1160 NCUTCD recommends revising Figure 2E-6 as follows:
- 1161 • Add “Exit” in the title
- 1162 • Add “LOOP” to I-407 route shields and revise exit numbering consistent with loop routes,
- 1163 since I-407 as depicted would be a loop route
- 1164 • Delete interchanges that are not freeway-to-freeway interchanges, since they are not relevant
- 1165 to the figure, they detract from the intended purpose of the figure; and Figure 2E-3 depicts
- 1166 exit numbering for these interchanges
- 1167 • Add boxes surrounding exit numbers for consistency
- 1168 • Revise “INTERCHANGE NUMBER to INTERCHANGE EXIT NUMBER” in the note
- 1169

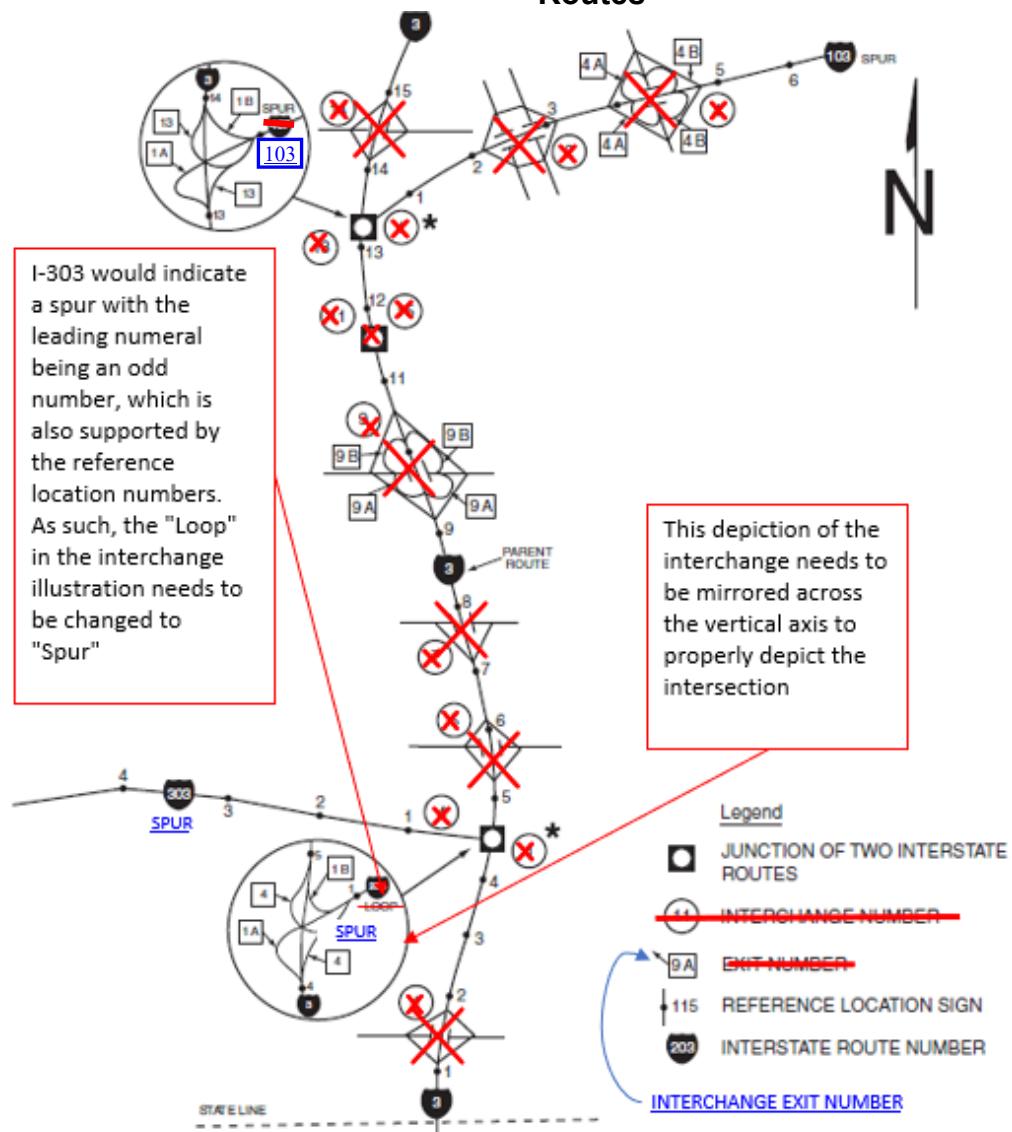
1170 **Figure 2E-6. Example of Interchange Exit Numbering for Mainline and Loop**
 1171 **Routes**



1172

- 1173 NCUTCD recommends revising Figure 2E-7 as follows:
- 1174 • Add "Exit" in the title
- 1175 • Delete interchanges that are not freeway-to-freeway interchanges, since they are not relevant
- 1176 to the figure, they detract from the intended purpose of the figure; and Figure 2E-3 depicts
- 1177 exit numbering for these interchanges
- 1178 • Add "SPUR" to I-303 route shields since I-303 as depicted would be a spur route
- 1179 • Revise the depiction of the lowermost freeway-to-freeway interchange to match the highway
- 1180 geometrics (mirror on vertical axis)
- 1181 • Add boxes surrounding exit numbers for consistency
- 1182 • Revise "INTERCHANGE NUMBER to INTERCHANGE EXIT NUMBER" in the note
- 1183

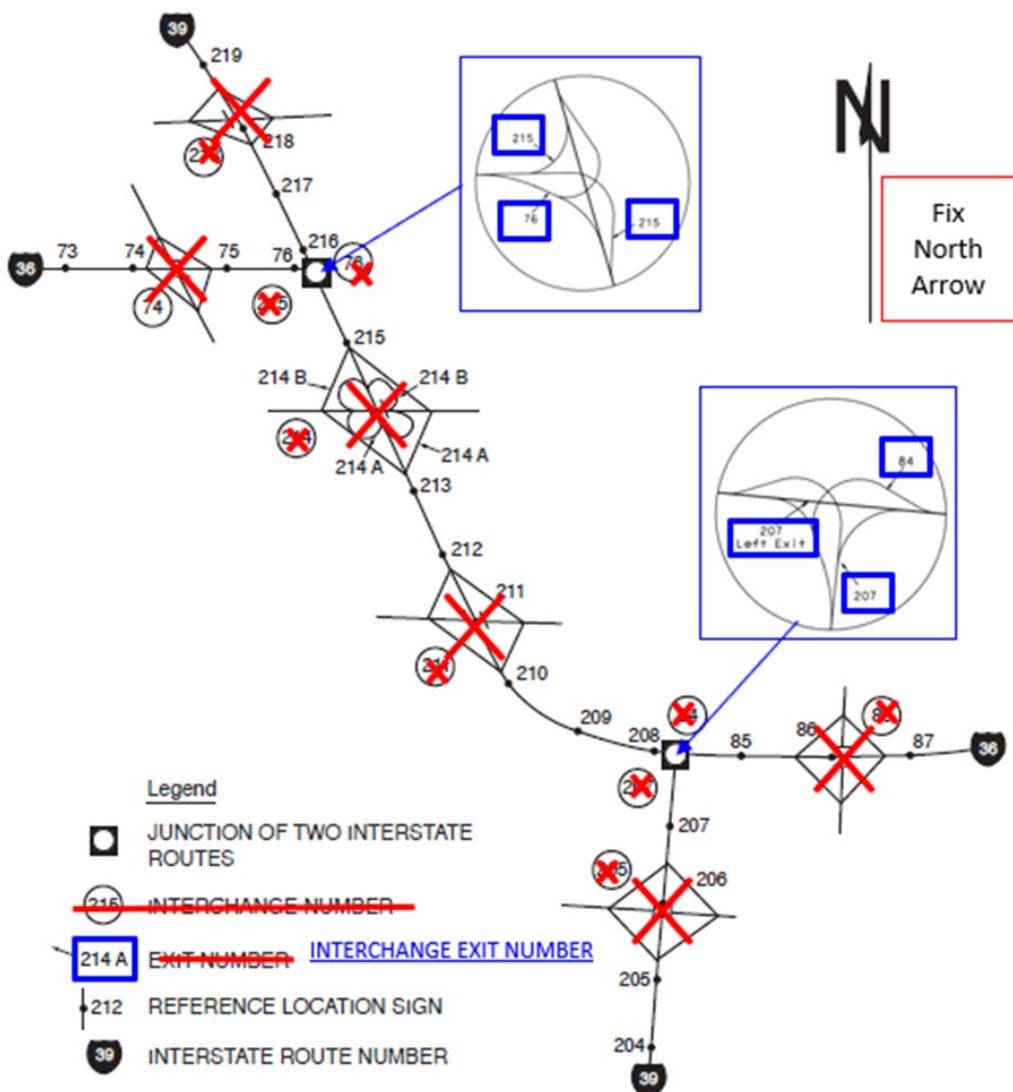
1184 **Figure 2E-7. Example of Interchange Exit Numbering for Mainline and Spur**
 1185 **Routes**



1187 NCUTCD recommends revising Figure 2E-8 as follows:

- 1188 • Add “Exit” in the title
- 1189 • Delete interchanges that are not freeway-to-freeway interchanges, since they are not relevant
- 1190 to the figure, they detract from the intended purpose of the figure; and Figure 2E-3 depicts
- 1191 exit numbering for these interchanges
- 1192 • Add boxes surrounding exit numbers for consistency
- 1193 • Fix North arrow
- 1194 • Revise “INTERCHANGE NUMBER to INTERCHANGE EXIT NUMBER” in the note

1195
1196 **Figure 2E-8. Example of Interchange Exit Numbering for Overlapping Routes**



1199
1200

1201
1202
1203

1204 **Section 2E.23 Comments:** NCUTCD recommends revising 2E.23 as follows:

- 1205 • Delete “less than” from the second Guidance paragraph, since Advance Guide signs should
1206 be located “well in advance of the exit point” and it is undesirable for an Advance Guide sign
1207 to be located less than 1/4 mile from the exit [redacted]
- 1208 • Delete the entire second sentence from the second Guidance paragraph, since distances in
1209 units of feet are not recommended or required on any other freeway guide signs, this [redacted]
1210 guidance introduces non-uniformity on distance units, and many road users may not be able
1211 to quickly assess whether (for example) ¼ mile is greater or less than 1000 feet [redacted]
- 1212 • Delete “directly” from the Standard paragraphs on left exit number plaques, because some
1213 readers might literally interpret “directly” to mean “centered over the left edge”, resulting in
1214 inappropriate plaque placement [redacted]
- 1215 • Add “at major interchanges” to the third Standard statement to be consistent with 2E.39
- 1216 • Delete “series” in the first Option statement since Interchange Sequence signs do not [redacted]
1217 necessarily occur in a series of two or more such signs, and there are instances in which one
1218 Interchange Sequence sign could stand alone [redacted]
- 1219 • Revise the second Guidance statement to delete references to “800 feet” or any specific
1220 distance, and instead refer to “insufficient distance” - the 800 feet between gores criterion has
1221 no logical basis and is arbitrary, basing the criterion on ‘insufficient distance’ better describes
1222 the conditions where Interchange Sequence signs are warranted instead of Advance Guide [redacted]
1223 Signs, and the language as proposed in the NPA could be interpreted to mean that every
1224 cloverleaf interchange should have Interchange Sequence signs [redacted]
- 1225 • Add an Option paragraph allowing the W16-16P or W16-16aP plaque above or below the
1226 Advance Guide sign consistent with the 2009 MUTCD [redacted]

1227 **Section 2E.23 Advance Guide Signs (E1 Series)**

1228 Support:

1229 An Advance guide sign (see Figure 2E-9) gives notice well in advance of the exit point of the
1230 principal destinations served by the next interchange and the distance to that interchange.

1231 **Standard:**

1232 **Except as provided in Paragraph 15 of this Section, and in Section 2E.24, at least one Advance**
guide sign shall be used for all interchange classifications.

1233 **Guidance:**

1234 *At major and intermediate interchanges (see Section 2E.11), at least two Advance guide signs should
1235 be used, placed at 1/2 mile and at 1 mile in advance of the exit. A third Advance guide sign should be
1236 placed at 2 miles in advance of the exit if spacing permits.*

1237 *At minor interchanges, the Advance guide sign should be located 1/2 to 1 mile from the exit gore.*

1238 **Support:**

1239 Sections 2E.29 through 2E.43 contain additional provisions regarding the number, location, and
1240 mounting of Advance guide signs for certain interchange configurations.

1241 **Guidance:**

1242 *Where an Advance guide sign is located less than 1/4 mile to 1/2 mile from the exit, the distance
1243 displayed should be to the nearest 1/4 mile. Where the distance to be displayed on an Advance guide sign
1244 is less than ¼ mile, the distance should be displayed in feet, rather than miles, to the nearest 100 feet.*
1245 [delete “less than” and references to foot distances]

1246 **Standard:**

1247 **Fractions of a mile, rather than decimals, shall be displayed in all cases.**

1248 **For numbered exits to the right, an Exit Number (E1-5P through E1-5eP) plaque (see Figure**
1249 **2E-9) shall be added to the top right-hand edge of the sign.**

1252 For numbered exits to the left, a Left Exit Number (E1-5fP through E1-5kP) plaque (see Figure
1253 2E-9) shall be added directly above the top left-hand edge of the sign (see Figures 2E-34 and 2E-18).
1254 [delete "directly"]

1255 For non-numbered exits to the left, a LEFT (E1-5mP) plaque (see Figure 2E-9) shall be added
1256 to the top left-hand edge of the sign.

1259 NCUTCD generally agrees with Figure 2E-9 as presented in the NPA, but suggests adding Exit
1260 Number plaques mentioned elsewhere in Chapter 2E.

1261 **Figure 2E-9. Examples of Interchange Advance Guide Signs, Exit Number
1262 Plaques, and LEFT Plaque**

1266 Support:

1267 Section 2E-22 contains additional information regarding exit numbering.

1268 Standard:

1269 Advance guide signs for multi-lane exits having an optional exit lane that also carries the
1270 through route at major interchanges (see Figures 2E-36, 2E-37, 2E-42, and 2E-43) and for splits
1271 with an option lane (see Figures 2E-38, 2E-39 and 2E-44) shall be Overhead Arrow-per-Lane or
1272 diagrammatic signs designed in accordance with Sections 2E.39 through 2E.41. [add "at major
1273 interchanges" to be consistent with 2E.39]

1274 Except as provided in Section 2E.36 2E.28, the legend on Advance guide signs shall contain the
1275 distance message. For each direction of travel, the legend on the Advance guide signs shall be the
1276 same as the legend on the Exit Direction sign, except that the last line shall be the distance message.
1277 The distance message shall read XX MILE(S) where exit numbers are used. Where exit numbers
1278 are not used, the distance message shall read EXIT XX MILE(S) for an interchange with one exit
1279 ramp, and EXITS XX MILE(S) for an interchange with two or more exit ramps.

1280 Option:

1281 Where the distance between interchanges is more than 1 mile, but less than 2 miles, the first Advance
1282 guide sign may be closer than 2 miles, but not placed so as to overlap the signing for the previous exit.
1283 Duplicate Advance guide signs or Interchange Sequence Series signs may be placed in the median on the
1284 opposite side of the roadway and are not included in the minimum requirements of interchange signing.
1285 [delete "series"]

1286 Guidance:

1287 ~~Where there is less than 800 feet between the theoretical gores of successive interchange entrance or
1288 exit ramps, Interchange Sequence Series signs (see Section 2E.24) should be used instead of Advance
1289 guide signs for the affected interchanges. Where there is insufficient distance between closely-spaced
1290 interchanges to permit the use of any Advance guide signs at the recommended spacing (see Section
1291 2E.21), Interchange Sequence signs should be used instead of Advance guide signs for the affected
1292 interchanges. [800 feet is arbitrary - revise to 'insufficient distance']~~

1293 The Advance guide signs for the last exit from a highway before it becomes a facility on which toll
1294 payments are required should include the LAST EXIT BEFORE TOLL (W16-16P) plaque (see Section
1295 2F.10 and Figure 2F-4). The plaque should be installed above the Advance guide signs, but below the
1296 Exit Number or LEFT plaque, if used.

1297 Option:

1298 If it is impractical to mount the W16-16P or W16-16aP plaque above the Advance Guide
1299 sign, the plaque may be mounted below the Advance Guide sign. [restore from 2009 MUTCD]

- 1301
-
- 1302
- 1303 **Section 2E.24 Comments:** NCUTCD recommends revising 2E.24 as follows:
- 1304 • Delete “Series” from the title because there is only one sign in each series.
- 1305 • Revise the first Guidance statement to delete references to “800 feet” or any specific
- 1306 distance, and instead refer to “insufficient distance” - the 800 feet between gores criterion has
- 1307 no logical basis and is arbitrary, basing the criterion on ‘insufficient distance’ better describes
- 1308 the conditions where Interchange Sequence signs are warranted instead of Advance Guide
- 1309 Signs, and the language as proposed in the NPA could be interpreted to mean that every
- 1310 cloverleaf interchange should have Interchange Sequence signs.
- 1311 • Delete the final sentence in the first Guidance statement since the order of paragraphs was
- 1312 changed in the NPA and this sentence is now actually referring to Paragraph 2 and the way
- 1313 that paragraph 2 has been revised in the NPA and as shown, this sentence is no longer
- 1314 needed.
- 1315 • Delete the first sentence in the first Standard paragraph, since the order of paragraphs was
- 1316 changed in the NPA and the first sentence is probably actually referring to Paragraph 2.
- 1317 There are situations in which only one Interchange Sequence sign is used or required. There
- 1318 is no need to specifically “call out” the situations in which only one Interchange Sequence
- 1319 sign is used.
- 1320 • Add “When used in a series of two or more Interchange Sequence signs” to the second
- 1321 sentence in the first Standard paragraph, since there are instances in which there may be only
- 1322 one Interchange Sequence sign. The NPA language would apply only when there is a series
- 1323 of two or more Interchange Sequence signs.
- 1324 • Add “If used in a series of two or more Interchange Sequence signs” to the second Guidance
- 1325 statement, since there are instances in which there may be only one Interchange Sequence
- 1326 sign. The NPA language would apply only when there is a series of two or more Interchange
- 1327 Sequence signs.
- 1328 • Revise section references as needed.
- 1329
- 1330 **Section 2E.24 Interchange Sequence Signs (E9-1 Series, E9-2 Series)**
- 1331 Support:
- 1332 Interchanges are sometimes closely spaced, particularly through large urban areas, so that typical
- 1333 guide signs cannot be adequately spaced. In such cases, Interchange Sequence signs identifying the next
- 1334 two or three interchanges can provide the necessary exit destination guidance.
- 1335 Guidance:
- 1336 Where there is less than 800 feet between the theoretical gores of successive interchange entrance or
- 1337 exit ramps, Interchange Sequence Series signs (see Section 2E.24) should be used instead of Advance
- 1338 guide signs for the affected interchanges.
- 1339 Where there is insufficient distance between closely-spaced interchanges to permit the use of any
- 1340 Advance guide signs at the recommended spacing (see Section 2E.21), Interchange Sequence signs
- 1341 should be used instead of Advance guide signs for the affected interchanges. [800 feet is arbitrary -
- 1342 revise to ‘insufficient distance’]
- 1343 If used, Interchange Sequence signs should be used over the entire length of a route in an urban area.
- 1344 Except as provided in Paragraph 3 of this Section, they should not be used on a single interchange basis.
- 1345 [delete - not needed]
- 1346 Support:

1347 Interchange Sequence signs generally supplement Advance guide signs. Signing of this type is
1348 illustrated in Figures 2E-10 and 2E-11, and is compatible with the sign spreading concept described in
1349 Paragraph 3 of Section 2E.43.

1350 **Standard:**

1351 ~~Except as provided in Paragraph 3, Interchange Sequence signs, shall be installed in a series.~~

1352 **Interchange Sequence signs shall display the next two or three interchanges by name or route**
1353 **number with distances to the nearest 1/4 mile. [delete]**

1354 **The When used in a series of two or more Interchange Sequence signs, the first Interchange**
1355 **Sequence sign in the series shall be located in advance of the first Advance guide sign for the first**
1356 **interchange. [add]**

1357 Where the exit direction is to the left, a LEFT (E11-2) sign panel (see Figure 2E-18 2E-17) shall
1358 be displayed on the same line immediately to the right of the interchange name or route number.

1359 Interchange Sequence signs shall not be substituted for Exit Direction signs.

1360 *Guidance:*

1361 *Interchange Sequence signs should be located in the median. If used in a series of two or more*
1362 *Interchange Sequence signs, After the first sign in of the series, Interchange Sequence signs should be*
1363 *placed approximately midway between interchanges. [add]*

1364 **Standard:**

1365 Interchange Sequence signs located in the median shall be installed at overhead sign height (see
1366 Section 2A.18 2A.14).

1367 Option:

1368 Interchange exit numbers may be displayed to the left of the interchange name or route number.

1371 NCUTCD agrees with Figure 2E-10 as presented in the NPA, but recommends using the figure
1372 title as presented in the figure reference.

1373 **Figure 2E-10. Examples of an Interchange Sequence Sign**

1377 NCUTCD agrees with Figure 2E-11 as presented in the NPA, but recommends using the figure
1378 title as presented in the figure reference.

1380 **Figure 2E-11. Example of Using of an Interchange Sequence Sign for Closely-
1381 Spaced Interchanges**

1384 **Section 2E.25 Comments:** NCUTCD recommends revising 2E.25 as follows:

- 1386 • Delete “E4 Series” from the title
- 1387 • Revise the second Guidance paragraph as follows:
 - 1388 ○ Revise “deceleration lane (see Figure 2E-14)” to “taper”
 - 1389 ○ Add “When mounted overhead, the Exit Direction sign should be installed over the
 - 1390 exiting lane in the vicinity of the theoretical gore.” to make the language consistent
 - 1391 with the illustrations in Figure 2E-14
- 1392 • Revise the final two paragraphs in the second Standard statement from “to” to “above” to be
- 1393 consistent with NPA proposed language in other Sections

- Delete “In the interest of sign spreading (see Section 2E.43), more than two signs on one structure should not be used” in the third Guidance statement, since it is inconsistent with Section 2E.43 which states “the Exit Direction sign should be the **only** guide sign used in the vicinity of the gore (other than the Exit Gore sign)”
- Add an Option paragraph allowing the W16-16P or W16-16aP plaque above or below the Advance Guide sign consistent with the 2009 MUTCD
- Revise numerous section references as needed

Section 2E.25 Exit Direction Signs (~~E4 Series~~)

~~[delete]~~

Support:

The Exit Direction sign (see Figure 2E-12) repeats the route and destination information that was displayed on the Advance guide sign(s) for the next exit, and thereby assures road users of the destination served and indicates whether they exit to the right or left for that destination.

Standard:

Exit Direction signs shall be used at major and intermediate interchanges. Populations or other similar information shall not be displayed on Exit Direction signs.

Guidance:

Exit Direction signs should be used at minor interchanges (see Section 2E.30).

Support:

Sections ~~2E.29, 2E.28, 2E.30, 2E.31, 2E.33, 2E.34, 2E.35, 2E.37, 2E.38, 2E.39, and 2E.41~~ ~~2E.40 through 2E.43~~ ~~2E.42~~ contain additional provisions regarding the use, location, and mounting of Exit Direction signs for certain interchange configurations. The placement location of the Exit Direction sign at the interchange depends on how it is mounted, (post-mounted or overhead), and whether there is a deceleration lane (see Figure 2E-14)

Guidance:

When post-mounted, the Exit Direction sign should be installed at the beginning of the taper deceleration lane (see Figure 2E-14). When mounted overhead, the Exit Direction sign should be installed over the exiting lane in the vicinity of the theoretical gore. If there is less than 300 feet from the upstream end of the deceleration lane beginning of the taper to the theoretical gore (see Figure 3B-8), the Exit Direction sign should be installed overhead over the exiting lane in the vicinity of the theoretical gore (See Figure 2E-14). [make consistent with Figure 2E-14]

Standard:

Except where Overhead Arrow-per-Lane guide signs are used (see Sections ~~2E.40 and 2E.42, and Paragraph 7 of this Section~~, where a through lane is being terminated (dropped) at an exit, the Exit Direction sign shall be placed overhead at the theoretical gore (see Figures 2E-18, 2E-19, ~~2E-26, 2E-34, 2E-33, 2E-42 through 2E-44, and 2E-48~~).

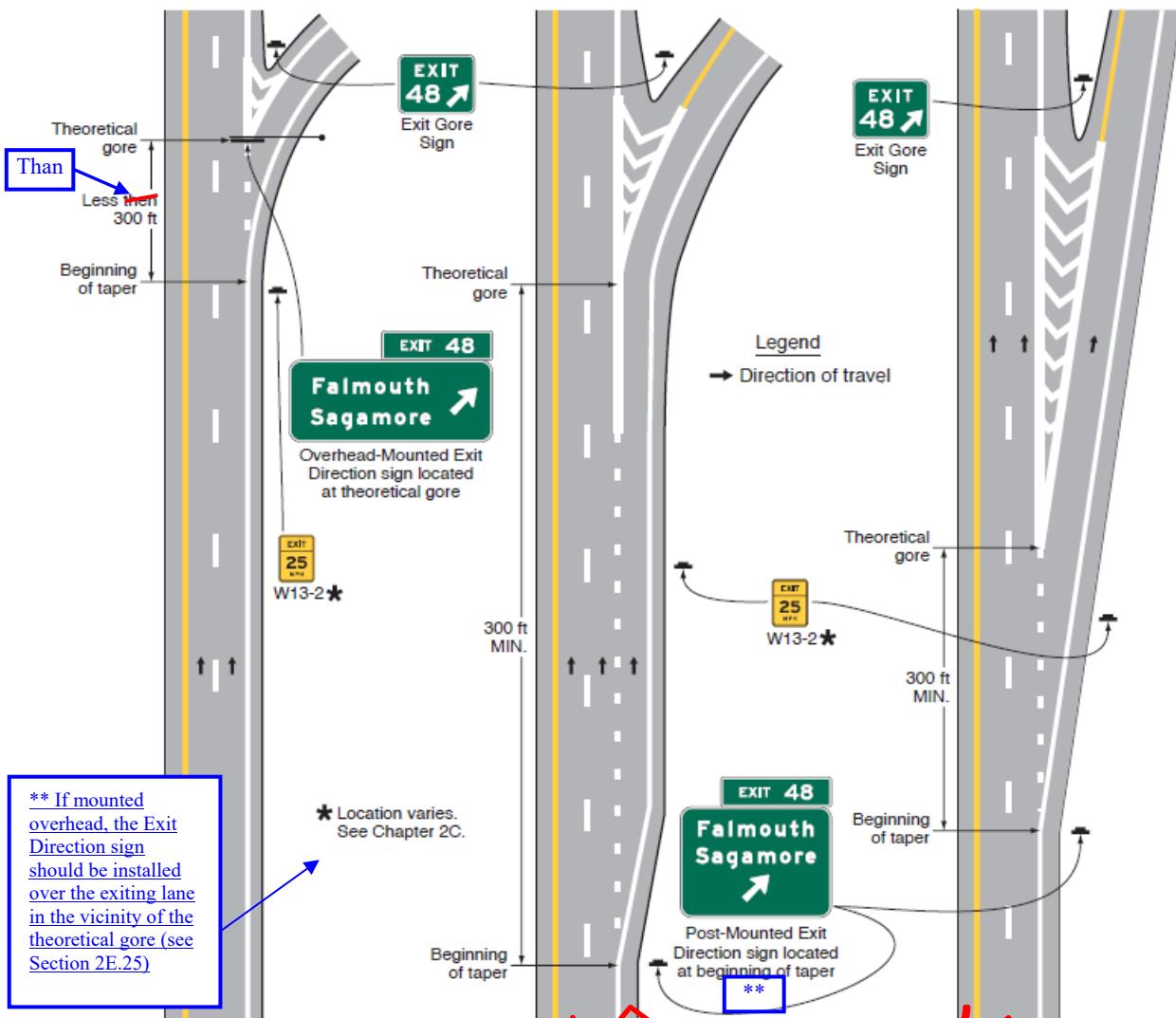
Except as provided in Paragraph 4 of Section 2E.40, where Overhead Arrow-per-Lane guide signs are used for the Advance guide sign(s) for a multi-lane exit having an optional exit lane that also carries the through route or for a split with an option lane (see Section 2E.40), an Overhead Arrow-per-Lane guide sign shall also be used instead of the Exit Direction sign and located near, but not downstream from, the point where the outside edge of the dropped lane begins to diverge from the main roadway (see Figures 2E-36 through 2E-38). The Overhead Arrow-per-Lane guide sign shall be designed in accordance with the provisions of Section 2E.40.

The following provisions shall govern the design and application of overhead Exit Direction signs:

- A. The sign shall display the Exit Number plaque (if exit numbering is used), the route number, cardinal direction, and destination, as applicable, with a diagonally upward-pointing directional arrow (see Figure 2E-12).

- 1462 NCUTCD recommends revising Figure 2E-14 as follows:
- 1463 • Revise the order of the three drawings so that they are in a more logical order (shortest
1464 deceleration lane to longest) by switching the center and right drawings
- 1465 • Add a double asterisk for a double asterisk footnote at the bottom of the figure that reads “If
1466 mounted overhead, the Exit Direction sign should be installed over the exiting lane in the
1467 vicinity of the theoretical gore (see Section 2E.25)”
- 1468 • Fix typo in dimension
- 1469

Figure 2E-14. Exit Direction Sign Placement



- 1470
- 1471
- 1472 **For numbered exits to the right, an Exit Number (E1-5P) plaque (see Figure 2E-9) shall be**
1473 **added to above the top right-hand edge of the sign.**
- 1474 For numbered exits to the left, a Left Exit Number (E1-5bP) plaque (see Figure 2E-9) shall be
1475 added to above the top left-hand edge of the sign.
- 1476 For non-numbered exits to the left, a LEFT (E1-5aP) plaque (see Figure 2E-9) shall be added to
1477 above the top left-hand edge of the sign. [revise “to” to “above” to be consistent]

1478 Support:
1479 Section 2E.22 contains additional information regarding exit numbering.

1480 *Guidance:*

1481 *At multi-exit interchanges, the Exit Direction sign should be located directly over the exiting lane for*
1482 *the first exit, in accordance with this Section. An Advance guide sign for the second exit should be*
1483 *installed at the same location, normally over the right-hand through lane. Only for those conditions*
1484 *where the through movement is not evident should a confirmatory message (Pull-Through sign as shown*
1485 *in Figure 2E-16) be used over the left-hand lane(s) to guide road users traveling through an interchange*
1486 *(see Section 2E.43 for additional information on sign spreading). In the interest of sign spreading (see*
1487 *Section 2E.43), more than two signs on one structure should not be used. Where the freeway or*
1488 *expressway is on an overpass, the Exit Direction sign for the second exit should be installed on an*
1489 *overhead support over the exit lane in advance of the gore point, as near as practicable to the theoretical*
1490 *gore. [delete as inconsistent with 2E.43]*

1491 *Where the freeway or expressway passes under the crossroad and the exit roadway is located beyond*
1492 *the overcrossing structure, the overhead Exit Direction sign for the second exit should be placed either on*
1493 *the overcrossing structure (see Figures 2E-29 through 2E-31) or on a separate structure located*
1494 *immediately in front of the overcrossing structure.*

1495 Option:

1496 Where extra emphasis of an especially low advisory ramp speed is needed, an EXIT XX MPH (E13-
1497 2) sign panel (see Figure 2E-13) may be placed at the bottom of the Exit Direction sign to supplement, but
1498 not to replace, the exit or ramp advisory speed warning signs.

1499 Warning Beacons in compliance with Paragraph 17 may be used with the E13-2 sign panel.

1500 **Standard:**

1501 **Where Warning Beacons are used in conjunction with the E13-2 sign panel within a guide sign**
1502 **(see Figure 2E-13), the nearest edges of the beacons shall be placed at least 12 inches from the edges**
1503 **of the E13-2 sign panel, from the edges of the guide sign, and from any other legend within the**
1504 **guide sign. The design and operation of Warning Beacons shall otherwise comply with the**
1505 **provisions of Chapter 4L of this Manual.**

1506 Option:

1507 In cases, where sight distance is restricted because of structures or unusual alignment, principally in
1508 urban areas, making it impossible to locate the Exit Direction sign without violating the required
1509 minimum spacing between major guide signs (see Section 2E.23), Interchange Sequence signs (see
1510 Section 2E.24) may be substituted for an Advance Guide sign.

1511 *Guidance:*

1512 *At the last exit from a highway before it becomes a facility on which toll payments are required, the*
1513 *LAST EXIT BEFORE TOLL (W16-16P) plaque (see Section 2F.10 and Figure 2F-4) should be installed*
1514 *above the Exit Direction sign, but below the Exit Number or LEFT plaque, if used.*

1515 Option:

1516 If it is impractical to mount the W16-16P or W16-16aP plaque above the Advance Guide
1517 sign, the plaque may be mounted below the Advance Guide sign. [restore from 2009 MUTCD]

1519

1520 **Section 2E.26 Comments:** NCUTCD generally agrees with 2E.26 as presented in the NPA, but
1521 recommends revising as follows: [redacted]

1522 • Add “or departs from a collector-distributor roadway” to the second Standard sentence to add
1523 this situation to the Standard [redacted]

1524 • Revise “interchange numbering” to “interchange exit numbering”

1525

1526 **Section 2E.26 Exit Gore Signs and Plaque (E5-1 Series)**

1527 Support:
1528 The Exit Gore sign (see Figure 2E-15) in the gore indicates the exiting point or the place of departure
1529 from the main roadway. Consistent application of this sign at each exit is important to provide adequate
1530 visibility of the departure of the exit roadway from the main roadway.

1531
1532 Standard:
1533 The gore shall be defined as the area located between the main roadway and the ramp just
1534 beyond where the ramp branches from the main roadway. An Exit Gore sign shall be located in the
1535 gore for each ramp that departs from the main roadway of a freeway or expressway, or departs
1536 from a collector-distributor roadway, and shall display the word EXIT (E5-1) if interchange exit
1537 numbering is not used or EXIT XX (E5-1a, E5-1c) if interchange exit numbering is used, and an
1538 appropriate upward slanting arrow. If suffix letters are used for exit numbering at a multi-exit
1539 interchange, the suffix letter shall also be included on the Exit Gore sign (E5-1a, E5-1c) or Exit
1540 Gore Number (E5-1bP) plaque and shall be separated from the exit number by a space having a
1541 width of between 1/2 and 3/4 of the height of the suffix letter. Breakaway or yielding supports shall
1542 be used.
1543 Guidance:

1544 The arrow should be aligned to approximate the angle of departure. Each gore should be treated
1545 similarly, whether the interchange has one exit roadway or multiple exits.

1546 Option:
1547 The Narrow Exit Gore (E5-1c) sign (see Figure 2E-15) may be used in gore areas of limited width
1548 where the width of the Exit Gore (E5-1a) sign would not permit sufficient lateral offset (see Section
1549 2A.21), such as for ramp departures that are nearly parallel to the main roadway where the Exit Gore sign
1550 would be mounted on a narrow island or barrier. Where the E5-1c sign is mounted at a height of 14 feet
1551 or more from the roadway, the directional arrow may point diagonally downward.
1552 Guidance:

1553 The E5-1c sign should not be used in gore areas where an E5-1a sign could be installed with
1554 sufficient lateral offset.

1555 Option:
1556 Where extra emphasis of an especially low advisory ramp speed is needed, the Confirmation
1557 Advisory Speed (W13-1aP) plaque (see Section 2C.59) indicating the advisory speed may be mounted
1558 below the Exit Gore sign (see Figure 2E-15) to supplement, but not to replace, the exit or ramp advisory
1559 speed warning signs.

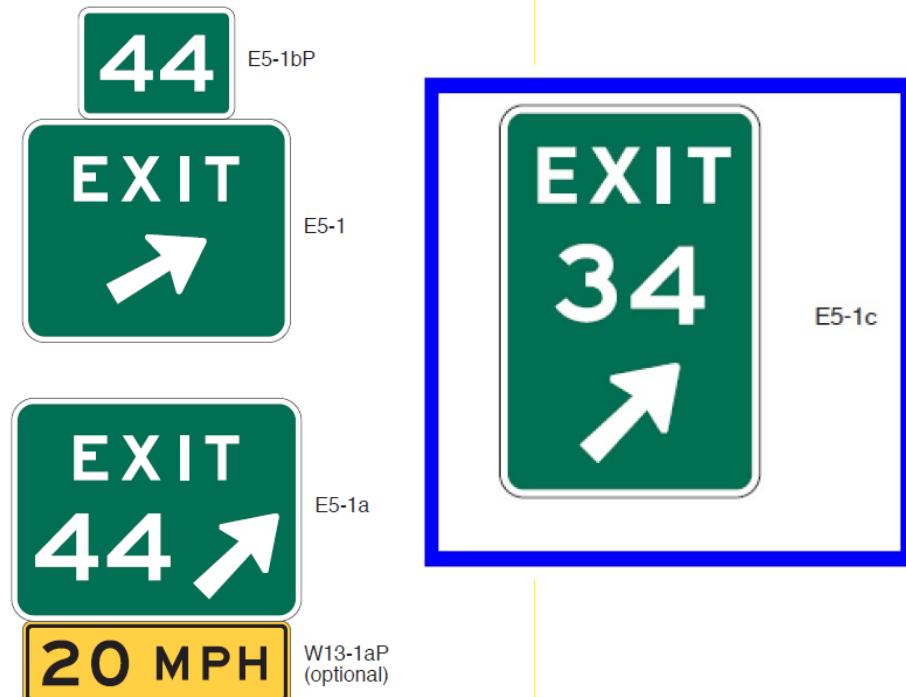
1560 To improve the visibility of the gore for exiting drivers, a Type 1 object marker (see Chapter 2C) may
1561 be installed 4 feet above the ground line on each sign support below the Exit Gore sign.

1562 An Exit Gore Number (E5-1bP) plaque (see Figure 2E-9 2E-15) may be installed above an existing
1563 Exit Gore (E5-1) sign when a non-numbered exit is converted to a numbered exit.

1564 Standard:
1565 An Exit Gore (E5-1a) sign shall be used when the replacement of an existing assembly of an E5-
1566 1 sign and an E5-1bP plaque becomes necessary.
1567
1568

1569 NCUTCD generally agrees with Figure 2E-15 as presented in the NPA, but recommends adding
1570 the E5-1c sign to the figure.
1571

Figure 2E-15. Exit Gore Signs and Plaques



1572
1573

1574
1575 **Section 2E.27 Comments:** NCUTCD generally agrees with 2E.27 as presented in the NPA, but
1576 recommends revising as follows:
1577

- Verify sign designations, as they are not consistent with Figure 2E-16
- Add “full width” to Guidance to distinguish from “partial width” Overhead APL signs in
1579 2E.42
- Add a new Standard paragraph requiring a route shield and cardinal direction for the through
1581 route
- Add an Option statement allowing control cities and down arrows

1582

1583 **Section 2E.27 Pull-Through Signs (E6-1 Series, E6-2 Series)**

1584 Support:

1585 Pull-Through (E6-1 series and E6-2 series) signs (see Figure 2E-16) are overhead guide signs
1586 intended for through traffic. [sign numbers do not match Figure 2E-16]

1587 *Guidance:*

1588 *Pull-Through signs should be used where the geometrics of a given interchange are such that it is not
1589 clear to the road user as to which is the through roadway, or where additional route guidance is desired.
1590 Pull-Through signs with down arrows should be used where the alignment of the through lanes is curved
1591 and the exit direction is straight ahead, where the number of through lanes is not readily evident, and at
1592 multi-lane exits where there is a reduction in the number of through lanes. Pull-Through signs should not
1593*

1594 be used at exits with option~~s~~ lanes which use full width Overhead Arrow-Per-Lane or Diagrammatic
1595 guide signs. [“full width” to distinguish from “partial width” Overhead APLs]

1596 **Standard:**

1597 **When used, Pull-Through signs shall display the route shield and the cardinal direction for**
1598 **the through route.**

1599 **Option:**

1600 When used, Pull-Through signs may display the control city and down arrows (see Section
1601 2E.18).

1602 [add Standard and Option statements]

1603 **Support:**

1604 Section 2E.28 and Sections 2E.39 through 2E.42 contain information regarding the use of Overhead
1605 Arrow-per-Lane or Diagrammatic guide signs at multi-lane exits where there is a reduction in the number
1606 of through lanes and a through lane becomes an interior option lane for through or exiting traffic.

1610 NCUTCD generally agrees with Figure 2E-16 as presented in the NPA, but recommends
1611 verifying sign designations as they are not consistent with Section 2E.27, and adding an example
1612 of a sign with down arrows, such as the I-480 Hamilton sign in Figure 2E-20.

1613 **Figure 2E-16. Pull-Through Signs**

1614 **Section 2E.28 Comments:** NCUTCD generally agrees with 2E.28 as presented in the NPA, but
1615 recommends revising as follows:

- 1616 • Split the Standard and Option statements into two subsections for Advance Guide Signs and
1617 Exit Direction signs to make clear which material applies to each sign type
- 1618 • Delete prescriptive wording on Exit Direction sign format, as this is inconsistent with the rest
1619 of Part 2 and covered elsewhere
- 1620 • Delete reference to the W9-7 in the final Guidance paragraph, since the deleted Guidance is
1621 inconsistent with Section 2C.50
- 1622 • Other minor editorial and reference revisions as needed

1623 **Section 2E.28 Signing for Interchange Lane Drops**

1624 **Standard:**

1625 The provisions of this Section shall only apply to lane drops at exits that do not have an optional
1626 exit lane. At exits that have an optional exit lane in addition to the dropped lane, the provisions of
1627 Sections 2E.39 through 2E.42 shall apply.

1628 Except as provided in Paragraph 13 15 of this Section, major guide signs for all lane drops at
1629 interchanges shall be mounted overhead. An EXIT ONLY sign panel shall be used for all
1630 interchange lane drops at which the through route is carried on the main roadway.

1631 **Advance Guide Signs:** Except on Overhead Arrow-per-Lane and Diagrammatic guide signs
1632 (See Sections 2E.39 through 2E.41), the EXIT ONLY (down arrow) (E11-1 or E11-1f) sign panel
1633 (see Figure 2E-17) shall be used on all ~~on-all~~ overhead Advance Guide signs of lane drops (see
1634 Figures 2E-18, 2E-19, and 2E-34). The number of arrows on each sign shall correspond to the

1640 number of dropped lanes at the location of each sign. Placement of the down arrow shall comply
1641 with the provisions of Section 2E.18. [label and edit]

1642 **Exit Direction Sign:** For lane drops, the ~~Exit Direction sign (see Section 2E.25 and Figure 2E-12)~~ shall be of the format shown in Figures 2E-18 and 2E-19. The bottom portion of the Exit
1643 Direction sign shall be yellow with a black border and shall include a diagonally upward-pointing
1644 black directional arrow (left or right) for each lane dropped at the exit. ~~, with~~ The sign shall be
1645 designed and placed so that each arrow is located over the approximate center of each lane being
1646 dropped. Except as provided in Paragraph 5.6 of this Section, the words EXIT and ONLY shall be
1647 positioned to the left and right, respectively, of the arrow on the E11-1d sign panel for a single-lane
1648 drop. For a two-lane drop, the words EXIT ONLY shall be located between the two arrows on the
1649 E11-1e sign panel. The number of arrows on the sign shall correspond to the number of dropped
1650 lanes at the location of the sign. [label, delete unnecessary wording, and edit]

1651 Option:

1652 Advance Guide sign: Where an existing sign structure length or adjacent signs constrain the width or
1653 placement of the Advance guide sign on that structure, the down arrow may be positioned to the right or
1654 left of the words EXIT ONLY, in lieu of between the words, to allow for the positioning of the arrow over
1655 the approximate center of the lane.

1656 Exit Direction sign: Where the width of the Exit Direction sign extends over the adjacent lane, the
1657 directional arrow may be placed to the right of the words EXIT ONLY for an exit to the right, or to the
1658 left of the words EXIT ONLY for an exit to the left, to allow for the positioning of the arrow over the
1659 dropped lane. [divide into two paragraphs by sign type]

1660 EXIT ONLY messages of either the combination of E11-1a and E11-1b, or the E11-1c sign panels
1661 may be used to retrofit existing signing to warn of a lane drop situation ahead.

1662 **Standard:**

1663 If used to retrofit an existing guide sign, the E11-1a and E11-1b sign panels (see Figure 2E-17)
1664 shall be placed on either side of a white down arrow on an Advance guide sign and on either side of
1665 a white directional arrow on an Exit Direction sign. The E11-1c sign panel, if used to retrofit an
1666 existing Advance guide sign, shall be placed between the lower destination message and the white
1667 down arrow.

1668 **Guidance:**

1669 Except as provided in Paragraph 9.10 of this Section for an auxiliary lane, Advance guide signs for
1670 lane drops within 1 mile of the interchange should not display the distance message.

1671 Where the dropped lane is an auxiliary lane that is provided between successive entrance and exit
1672 ramps of two separate interchanges and the distance between the two ramps is less than 1 mile, the first
1673 Advance guide sign in the sequence downstream from the entrance ramp should display the distance
1674 message (See Figures 2E-20 and 2E-21).

1675 Where the dropped lane carries the through route, signs should be used without the EXIT ONLY sign
1676 panel.

1677 **Support:**

1678 Figures 2E-20 and 2E-21 show examples of guide signs for a dropped auxiliary lane between
1679 separate interchanges using overhead and post-mounted guide signs. Figure 2E-22 shows guides signs
1680 used for an auxiliary lane that is ½ mile or longer.

1681 Sections 2E.39 through 2E.42 contain information on the signing of lane drops at exits that also have
1682 an option lane.

1683 Section 2B.23 contains information regarding regulatory signs that can also be used for freeway lane
1684 drop situations and Section 2C.43 contains information regarding warning signs that can also be used for
1685 freeway lane drop situations.

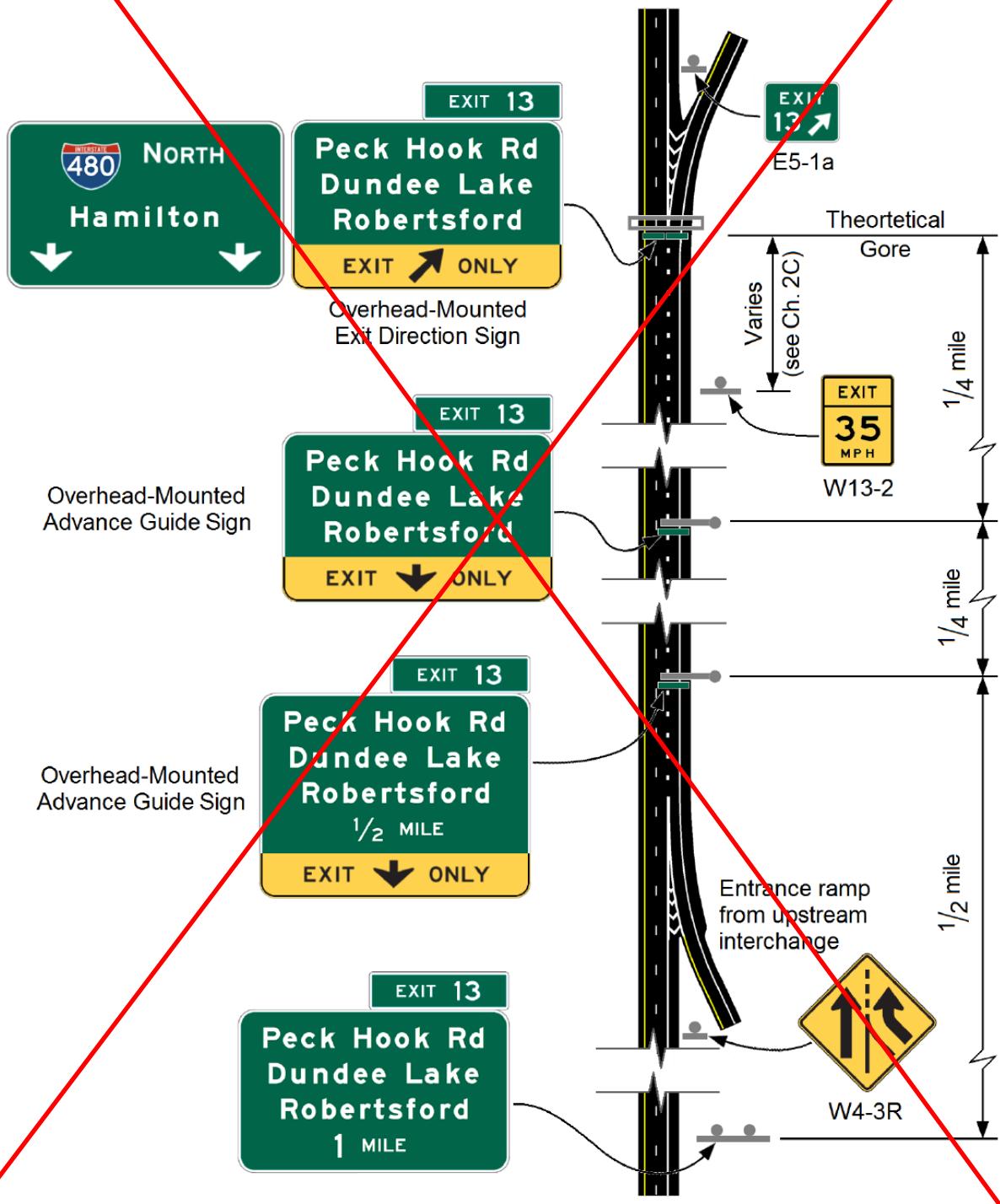
1686 NCUTCD agrees with Figure 2E-17 as presented in the NPA.

1687

Figure 2E-17. EXIT ONLY and LEFT Sign Panels

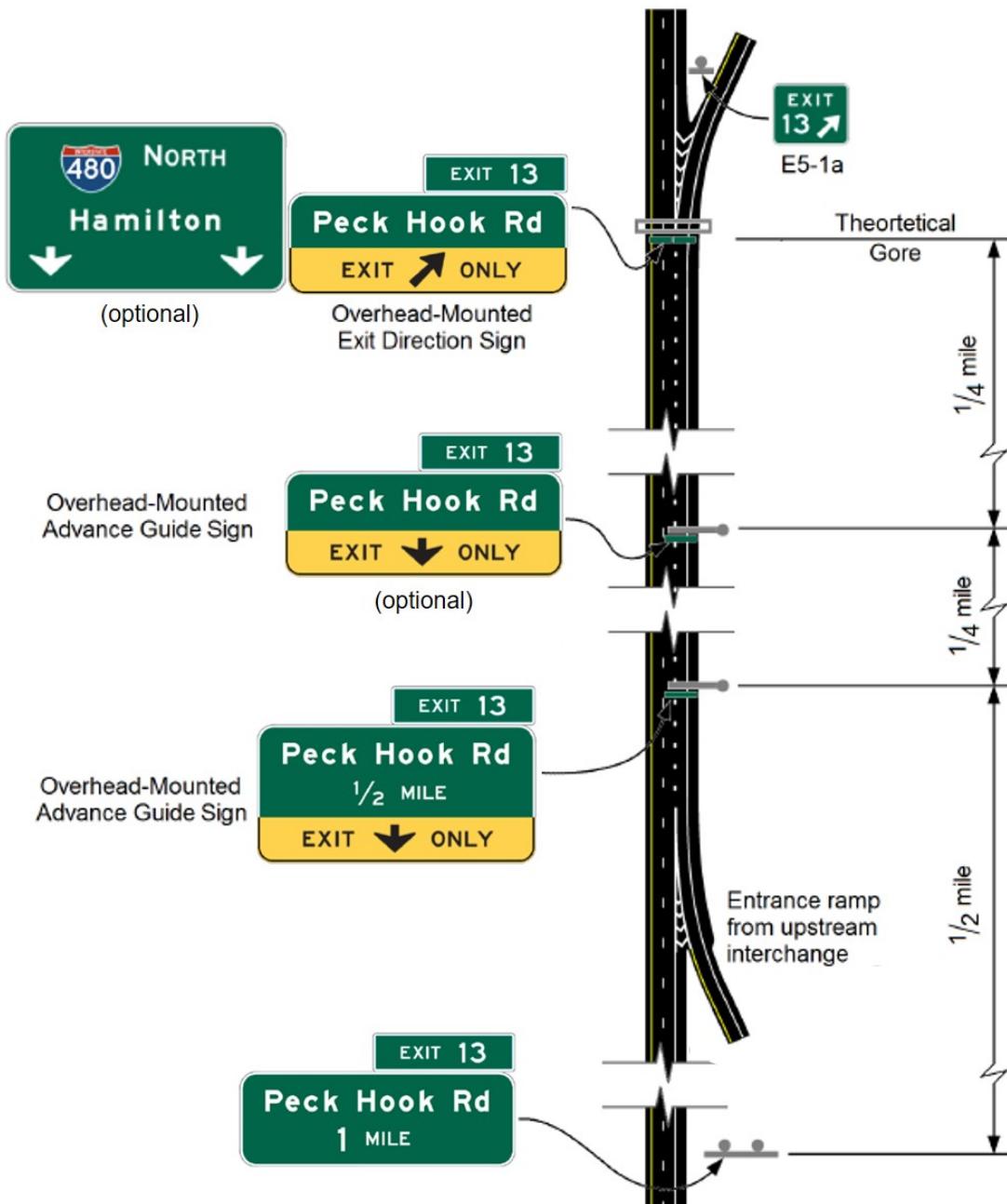
1691
1692
1693
1694 NCUTCD agrees with Figure 2E-18 as presented in the NPA.
1695
1696 **Figure 2E-18. Guide Signs for a Single-Lane Exit to the Left with a Dropped Lane**
1697
1698
1699
1700 NCUTCD agrees with Figure 2E-19 as presented in the NPA.
1701
1702 **Figure 2E-19. Guide Signs for a Single-Lane Exit to the Right with a Dropped Lane**
1703
1704
1705
1706
1707 NCUTCD recommends replacing Figure 2E-20 with a new figure to correct the following
1708 problems:
1709 • Signs display more than two destinations, which is discouraged by Section 2E.15
1710 • Signs display both a city name and a street name, which is discouraged by Section 2E.15
1711 • The Advance Guide sign at $\frac{1}{4}$ mile should be labeled as “Optional”
1712 • The Pull-Through sign should be labeled as “Optional”
1713 • The W4-3R and W13-2 signs are not needed on this figure (addressed in Chapter 2C)
1714
1715

Figure 2E-20. Example of Guide Signs for a Dropped Auxiliary Lane Between Separate Interchange Ramps



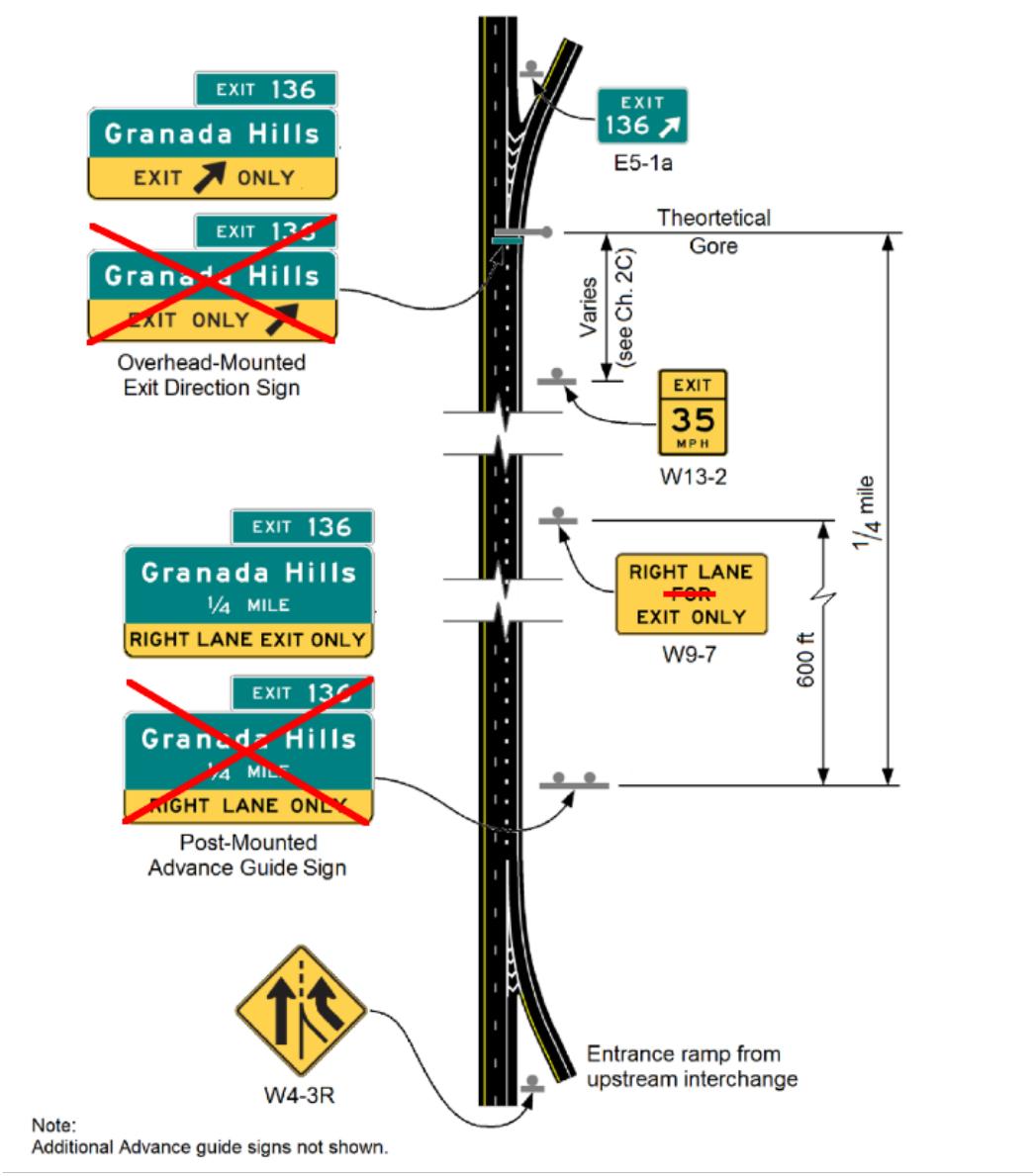
1716
1717
1718

Figure 2E-20. Example of Guide Signs for a Dropped Auxiliary Lane Between Separate Interchange Ramps



- 1721 NCUTCD recommends revising Figure 2E-21 as follows:
- 1722 • Revise the EXIT ONLY panel on the Exit Direction sign to place the arrow between the
- 1723 words EXIT and ONLY, as this is the “standard” application
- 1724 • Delete the “FOR” on the W9-7 in accordance with NCUTCD recommendations on Chapter
- 1725 2C
- 1726 • Revise the lower panel on the $\frac{1}{4}$ mile advance guide sign to read “RIGHT LANE EXIT
- 1727 ONLY” to be consistent with the revised W9-7 legend
- 1728

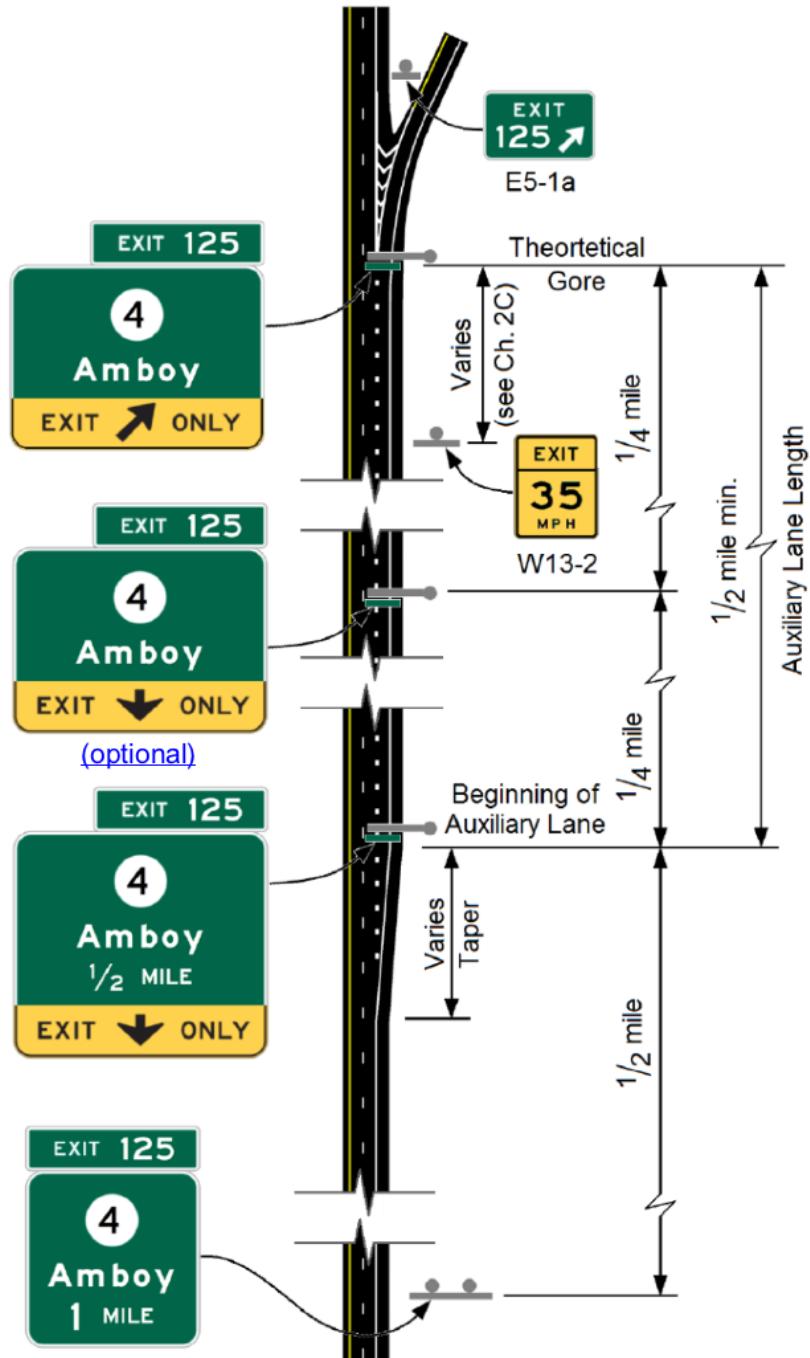
Figure 2E-21. Example of Post-Mounted Advance Guide and Supplemental Warning Signs for a Dropped Auxiliary Lane Between Separate Interchange Ramps



1729
1730
1731

1732 NCUTCD generally agrees with Figure 2E-22 as presented in the NPA, but recommends labeling
1733 the $\frac{1}{4}$ mile Advance Guide sign as optional.

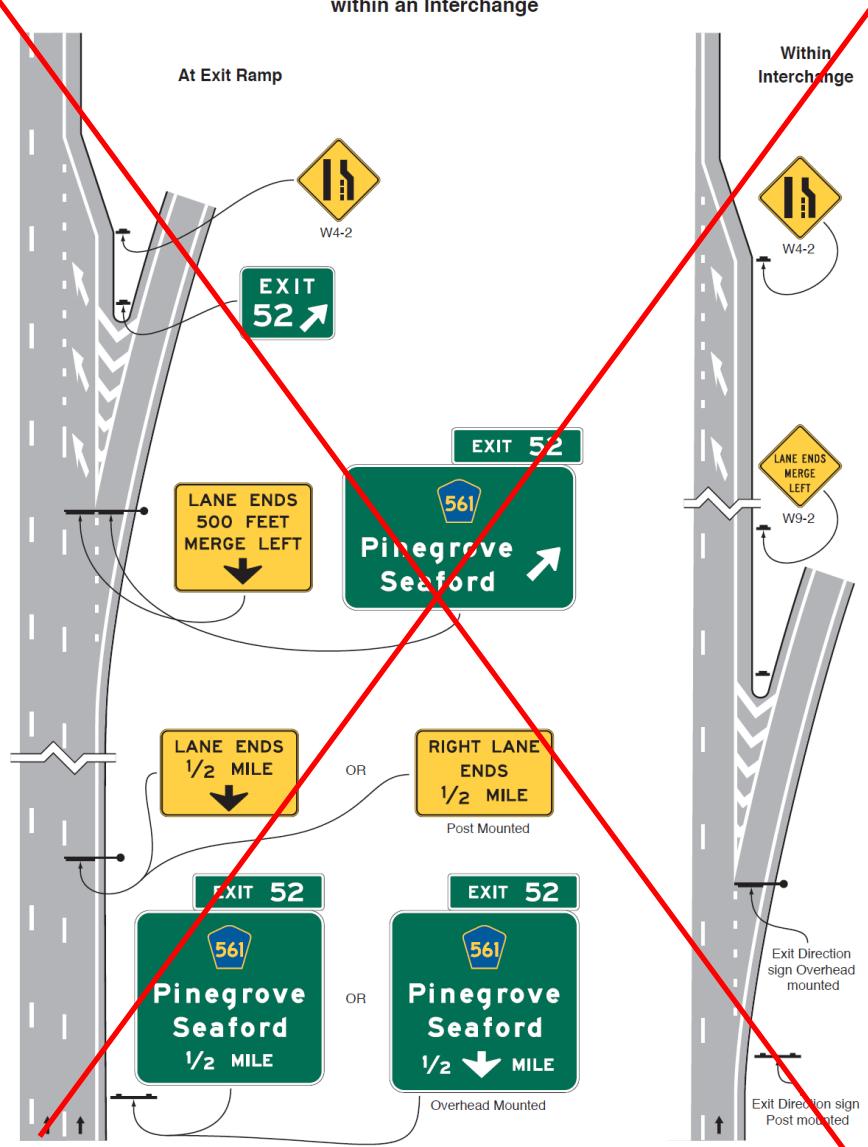
Figure 2E-22. Example of Guide Signs for an Auxiliary Lane One-Half Mile or Longer



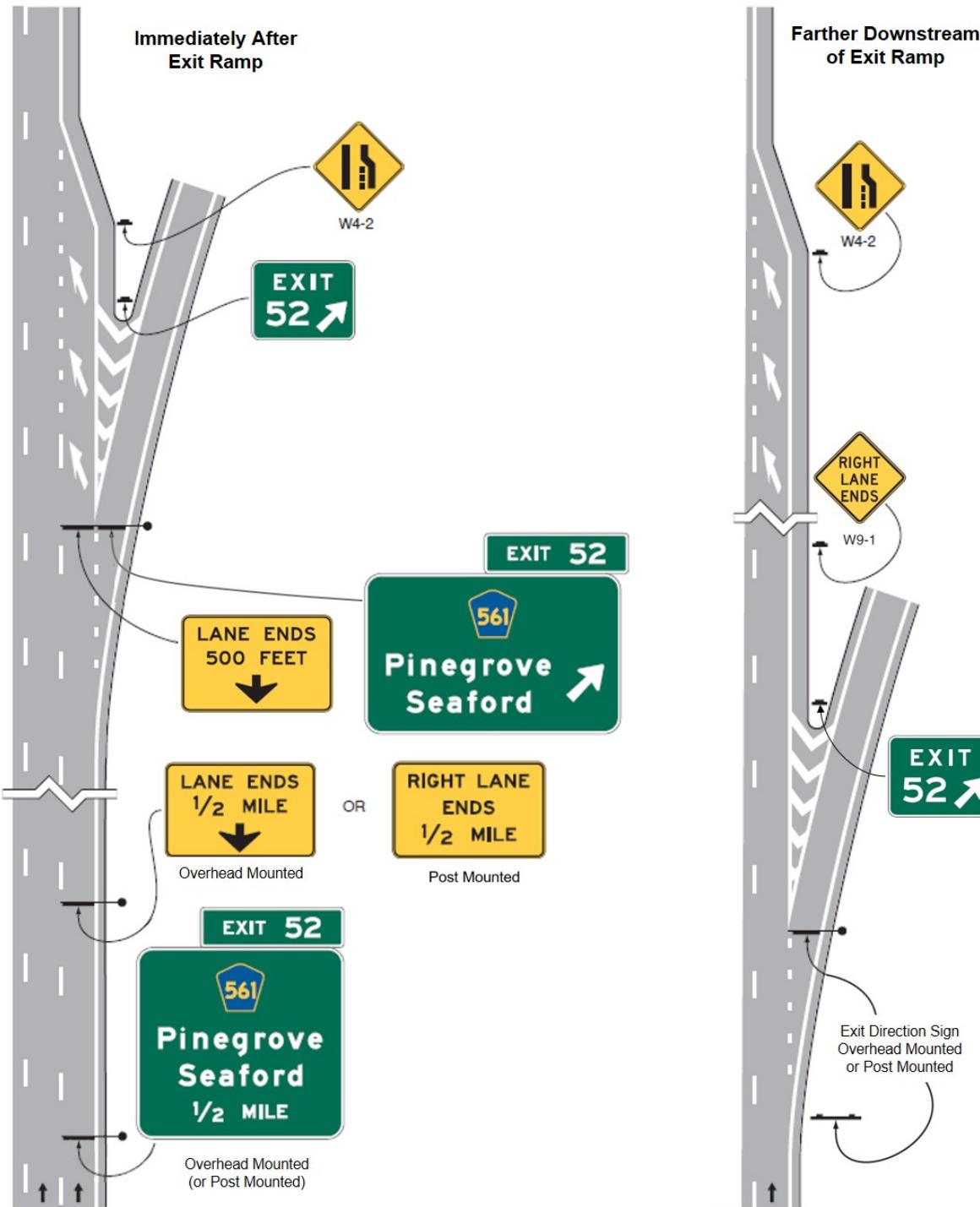
1734
1735
1736

- 1737 NCUTCD recommends replacing Figure 2E-23 with a new figure revised as follows:
- 1738 • Revise title to “Examples of Signing for Mainline Lane Terminations Downstream of an Exit
- 1739 Ramp”
- 1740 • Revise “At Exit Ramp” caption to “Immediately after exit ramp”
- 1741 • Revise “Within Interchange” caption to “Farther downstream from exit ramp”
- 1742 • Replace W9-2 with W9-1 for consistency with Chapter 2C
- 1743 • Revise overhead sign to read “LANE ENDS 500 FEET” and delete “MERGE LEFT”
- 1744 • Delete the overhead sign option with the arrow splitting the distance message
- 1745 • Revise the callout on the Exit Direction sign location in the right-hand example to reduce
- 1746 confusion
- 1747 • Show all signs and dimensions consistently with other Figures in other chapters of the
- 1748 MUTCD related to lane ends signing and markings

Figure 2E-23. Examples of Signing for Mainline Terminations
within an Interchange



**Figure 2E-23. Examples of Signing for Mainline Lane Terminations
Downstream of an Exit Ramp**



1752
1753
1754

1755 *Guidance:*
1756 *In limited cases in which conditions are so constrained that it is impossible to locate an Advance*
1757 *guide sign either overhead or partly over the dropped lane, precluding positioning of the down arrow as*
1758 *provided in Paragraph 5 of this Section, a sign panel displaying the legend RIGHT (LEFT) LANE ONLY*
1759 *in a black legend on a yellow background should be substituted for the EXIT ONLY panel on that sign.* ~~In~~
1760 *such cases, the Advance guide signs should be alternated with Right Lane for Exit Only (W9-7 series)*
1761 *signs (see Section 2C.43).* [delete as inconsistent with Section 2C.50]

1762 *Where a mainline lane is dropped immediately after an exit ramp, overhead and or post mounted*
1763 *warning signs should be used to warn traffic as shown in Figure 2E-23.*

1765
1766 **Section 2E.29 Comments:** NCUTCD agrees with 2E.29 as presented in the NPA with minor
1767 editorial revisions.

1768
1769 **Section 2E.29 Signing by Type of Interchange**

1770 Support:

1771 Road users need signs to help identify the location of the exit, as well as to obtain route, direction,
1772 and destination information for specific exit ramps. Figures 2E-26 through 2E-33 show examples of
1773 guide signs for common types of interchanges. The interchange layouts shown in most of the figures
1774 illustrate only the major guide signs for one direction of traffic on the freeway and on the exit ramps.
1775 Section ~~2D.45~~ 2D.49 contains information regarding the signing of the crossroad approaches and
1776 connecting roadways to freeways and expressways.

1777 *Guidance:*

1778 *The signing layout for all interchanges of the same type should be similar. For the purpose of*
1779 *uniform application, the significant features of the signing plan layout for each of the more frequent kinds*
1780 *types of interchanges (illustrated in Figures 2E-26 through 2E-33) should be followed as closely as*
1781 *possible. Even when unusual geometric features exist, variations in signing layout should be held to a*
1782 *minimum.*

1783 *Where a single interchange combines a different type of ramp configuration for each direction of*
1784 *travel, the main roadway major guide signing should be determined by the specific interchange type for*
1785 *that direction of travel.*

1786 Support:

1787 Figure 2E-24 shows an example of signing for a complex interchange that combines intermediate
1788 interchange ramps within a major interchange.

1789 Figure 2E-25 shows an example of signing for an interchange exit ramp with a downstream split.

1790

1791

1792 NCUTCD recommends replacing Figure 2E-24 with a new figure revised as follows:

- 1793 • Revise the basic signing condition to depict a standard through freeway and not a freeway
1794 termination
- 1795 • Remove signing for a second freeway, as it unnecessarily complicates the figure
- 1796 • Include exit numbering on the primary freeway
- 1797 • Revise and simplify leader lines so as not to be confused with roadway lines

1798
1799 Figure 2E-24. Example of Signing for an Intermediate Interchange
within a Major Interchange

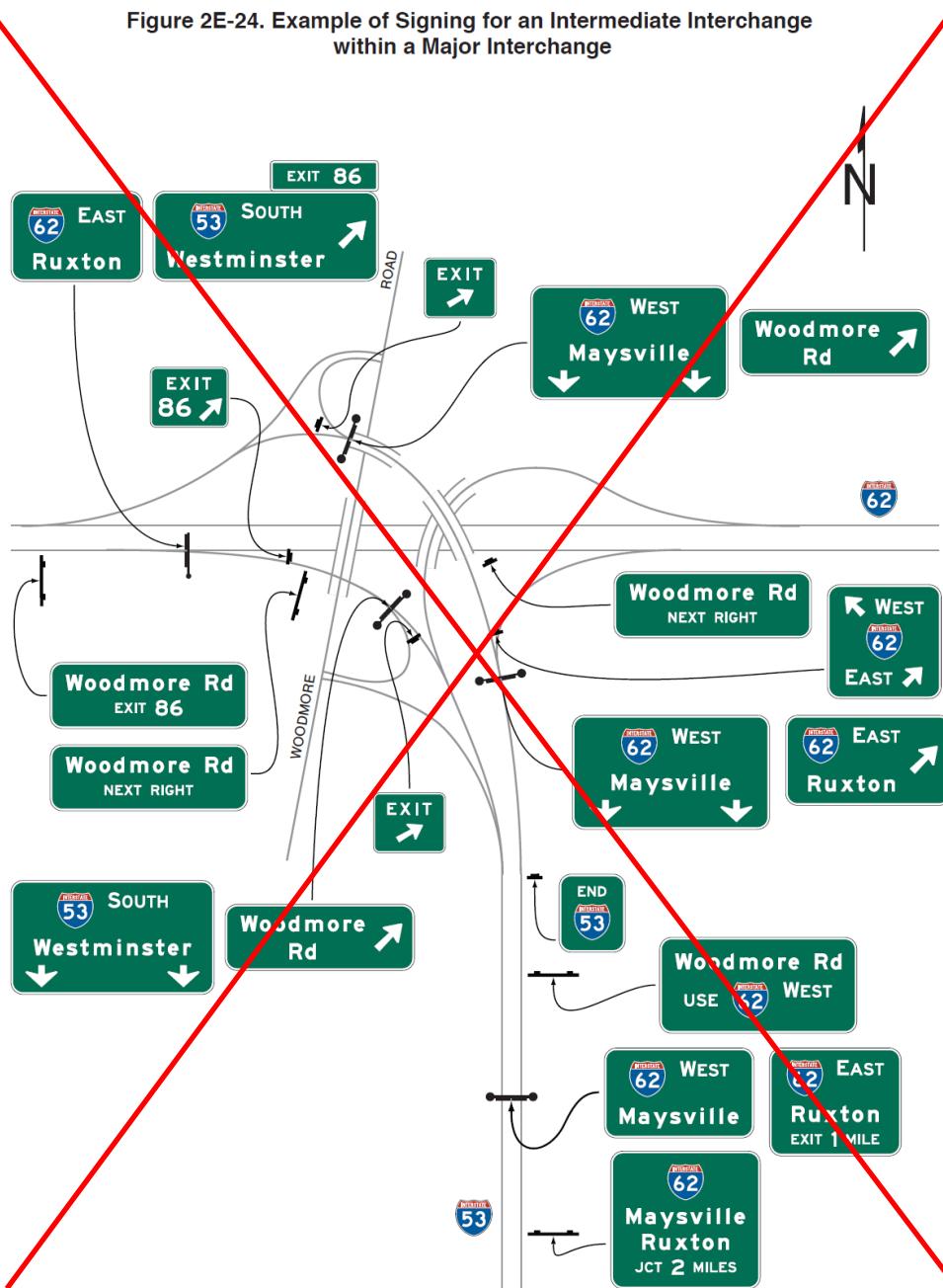
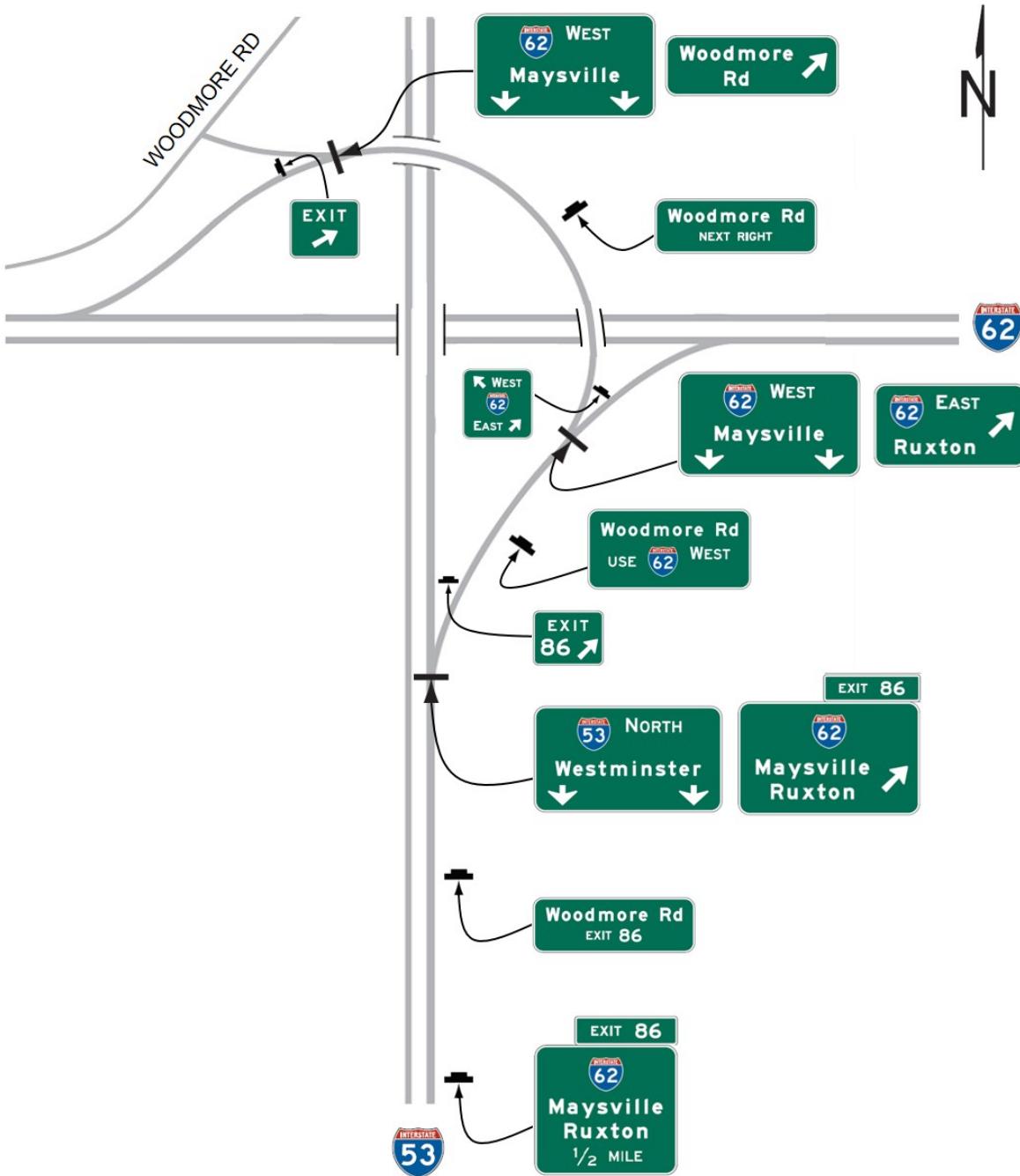


Figure 2E-24. Example of Signing for an Intermediate Interchange within a Major Interchange



1800
1801

1802 NCUTCD generally agrees with Figure 2E-25 as presented in the NPA, but recommends labeling
1803 the gore signs as optional.
1804

**Figure 2E-25. Examples of Signing for an Interchange Exit Ramp
with a Downstream Split (Sheet 1 of 2)**

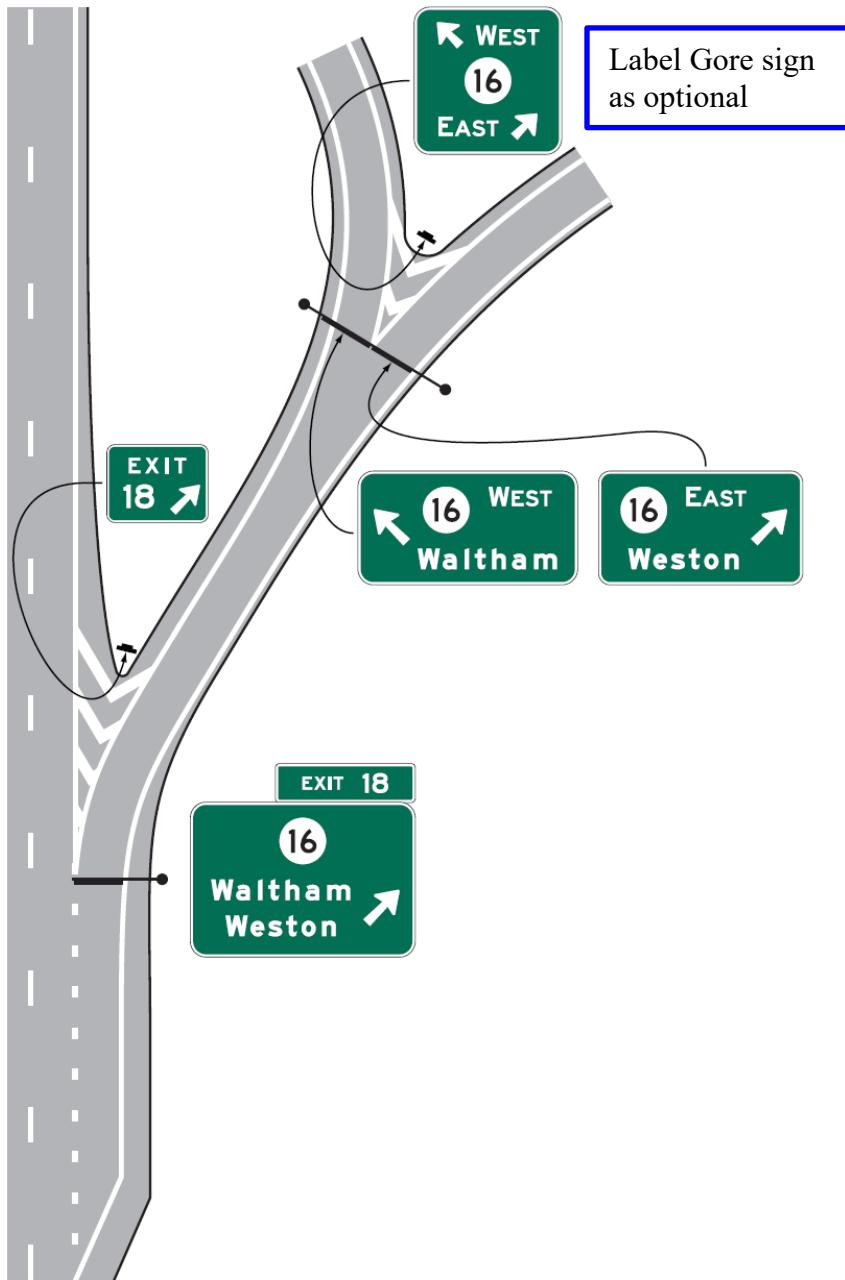
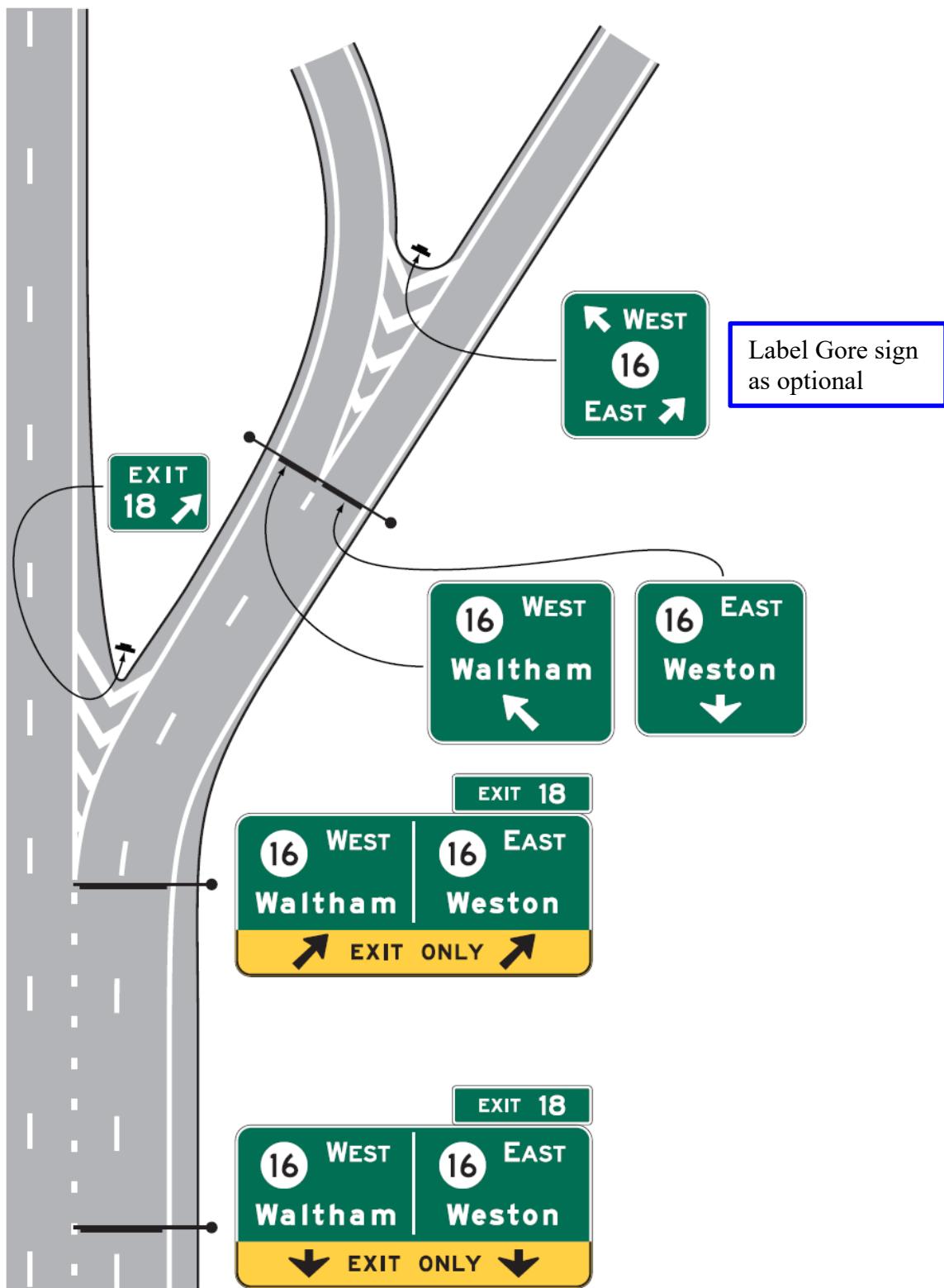


Figure 2E-25. Examples of Signing for an Interchange Exit Ramp with a Downstream Split (Sheet 2 of 2)



1806

1807

1808 **Section 2E.30 Comments:** NCUTCD agrees with 2E.30 as presented in the NPA with a minor
1809 figure reference revision.

1810

1811 **Section 2E.30 Minor Interchange**

1812 Option:

1813 Less signing may be used for minor interchanges because such interchanges customarily serve low
1814 volumes of local traffic.

1815 Support:

1816 Examples of guide signs for minor interchanges are shown in Figure 2E-26.

1817 **Standard:**

1818 **In accordance with the provisions of Sections 2E.23 and 2E.26, at least one Advance Guide sign
1819 and an Exit Gore sign shall be used at a minor interchange.**

1820 *Guidance:*

1821 *An Exit Direction sign in compliance with Section 2E.25 should also be used.*

1822

1823

1824

1825 NCUTCD generally agrees with Figure 2E-26 as presented in the NPA, but recommends revising
1826 “Examples” in the figure title to “Example” and correct the section reference to 2D.17.

1827

1828 **Figure 2E-26. Examples of Guide Signs for a Minor Interchange**

1829

1830

1831 **Section 2E.31 Comments:** NCUTCD agrees with 2E.31 as presented in the NPA with minor
1832 editorial revisions.

1833

1834 **Section 2E.31 Diamond Interchange**

1835 Support:

1836 *An Examples of guide signs for diamond interchanges are shown in Figure 2E-27.*

1837 The typical diamond interchange ramp departs from the main roadway such that a speed reduction
1838 generally is not necessary in order for a driver to negotiate an exit maneuver from the main roadway onto
1839 the ramp roadway. Section 2C.14 2C.12 contains the provisions for the use of an Advisory Exit Speed
1840 (W13-2) sign where a speed reduction is necessary.

1841 *Guidance:*

1842 *When a speed reduction is not necessary, an Advisory Exit Speed sign should not be used.*

1843 *The Advisory Exit Speed sign, if used, should be located along the deceleration lane or along the
1844 ramp such that it is visible to the driver far enough in advance to allow the driver to decelerate before
1845 reaching the curve associated with the exiting maneuver. Use and placement of the Advisory Exit Speed
1846 sign should otherwise comply with Section 2C.14 2C.12 of this Manual.*

1847 Option:

1848 A Stop Ahead (W3-1) or Signal Ahead (W3-3) warning sign may be placed, where engineering
1849 judgment indicates a need, along the ramp in advance of the cross street, to give notice to the driver (see
1850 Section 2C.36).

1851 *Guidance:*

1852 *When used on two-lane ramps, Stop Ahead or Signal Ahead signs should be used in pairs with one
1853 sign on each side of the ramp.*

1854 *Where the exit ramp allows traffic to turn in either direction onto the crossroad, a Destination (D1*
1855 *series) sign (see Section 2D.37 2D.36) should be placed along the ramp that include each destination*
1856 *displayed on the Advance, Exit Direction, and Supplemental guide signs along the main roadway for that*
1857 *exit.*

1858
1859 NCUTCD generally agrees with Figure 2E-27 as presented in the NPA, but recommends revising
1860 “Examples” in the figure title to “Example” and correct the section reference to read “See
1861 Figures 2D-16 through 2D.18...”.

1862
1863 **Figure 2E-27. Examples of Guide Signs for a Diamond Interchange**
1864
1865

1866
1867 **Section 2E.32 Comments:** NCUTCD agrees with 2E.32 as presented in the NPA with minor
1868 editorial revisions.

1869
1870 **Section 2E.32 Diamond Interchange in Urban Area**

1871 Support:

1872 An Examples of guide signs for diamond interchanges in an urban area are is shown in Figure 2E-
1873 28. This example includes the use of the Community Interchanges Identification sign (see Section
1874 2E.51), which might be useful if two or more interchanges serve the same community.

1875 In urban areas, street names are often displayed as the principal message in destination signs.

1876 Option:

1877 If interchanges are too closely spaced to locate the Advance Guide signs at the distances specified in
1878 Section 2E.23, they may be placed closer to the exit with the distances displayed adjusted accordingly.

1879
1880
1881 NCUTCD generally agrees with Figure 2E-28 as presented in the NPA, but recommends revising
1882 “Examples” in the figure title to “Example” and correct the section reference to read “See
1883 Figures 2D-16 through 2D.18...”.

1884
1885 **Figure 2E-28. Examples of Guide Signs for a Diamond Interchange in an Urban
1886 Area**

1887
1888
1889 **Section 2E.33 Comments:** NCUTCD agrees with 2E.33 as presented in the NPA with minor
1890 editorial revisions.

1891
1892 **Section 2E.33 Cloverleaf Interchange**

1893 Support:

1894 A cloverleaf interchange has two exits for each direction of travel. The exits are closely spaced and
1895 have common Advance Guide signs. An Examples of guide signs for cloverleaf interchanges are is
1896 shown in Figure 2E-29.

1897 Guidance:

1898 The Advance Guide signs should include two place names, one corresponding to each exit ramp, with
1899 the name of the place served by the first exit on the upper line.

1900 Standard:

1901 An overhead guide sign assembly shall be placed at the theoretical gore of the first exit ramp,
1902 with an Exit Direction sign for that exit and an Advance guide sign for the second exit, as shown in
1903 Figure 2E-29. The second exit shall be indicated by an overhead Exit Direction sign over the
1904 auxiliary lane.

1905 Interchanges with more than one exit from the main roadway shall be numbered as described
1906 in Section 2E.22 with an appropriate suffix.

1907 Diagrammatic signs shall not be used for cloverleaf interchanges except as otherwise provided
1908 in Section 2E.41.

1909 *Guidance:*

1910 Where the main roadway passes under the crossroad and the exit roadway is located beyond the
1911 overcrossing structure, placement of the overhead Exit Direction sign for the second exit should comply
1912 with Section 2E.25 (see Figure 2E-29).

1913
1914
1915 NCUTCD generally agrees with Figure 2E-29 as presented in the NPA, but recommends revising
1916 "Examples" in the figure title to "Example" and correct the section reference to read "See Figure
1917 2D-20...".
1918

1919 **Figure 2E-29. Examples of Guide Signs for a Full Cloverleaf Interchange**

1921
1922 **Section 2E.34 Comments:** NCUTCD generally agrees with 2E.34 as presented in the NPA, but
1923 recommends revising as follows:

- 1924 • Revise the first Guidance sentence on collector-distributor road signing for clarity
- 1925 • Other minor editorial revisions as needed

1926 **Section 2E.34 Cloverleaf Interchange with Collector-Distributor Roadways**

1927 Support:

1928 An Examples of guide signs for full cloverleaf interchanges with collector-distributor roadways are
1929 is shown in Figure 2E-30.

1930 *Guidance:*

1931 *Signaling on the collector-distributor roadways should be the same as the signaling on the main roadway*
1932 *of a cloverleaf interchange. Destination names and route numbers shown on the collector-distributor*
1933 *roadway signing should be the same as on the upstream Advance Guide signs on the main roadway.*

1934 Standard:

1935 **Exit Direction** signs at exits from the collector-distributor roadways shall be overhead and
1936 located at the theoretical gore of the collector-distributor roadway and the exit ramp.

1937 *Guidance:*

1938 Exits from the collector-distributor roadways should be numbered with an appropriate suffix. If the
1939 exits from a collector-distributor roadway are numbered, the Advance guide and Exit Direction signs on
1940 the main roadway should include, in addition to two place names, their corresponding exit number and
1941 suffixes with the plural EXITS in the Exit Number (E1-5P series) plaque. If only the exit from the main
1942 roadway is numbered, the Advance guide and Exit Direction signs on the main roadway should use the
1943 singular EXIT in the Exit Number plaque. If interchange exit numbering is not used, the Advance Guide
1944 signs on the main roadway should use the singular EXIT in the distance messages.

1948 NCUTCD generally agrees with Figure 2E-30 as presented in the NPA, but recommends revising
1949 “Examples” in the figure title to “Example” and correct the section reference to read “See Figure
1950 2D-20...”.

1951 **Figure 2E-30. Examples of Guide Signs for a Full Cloverleaf Interchange with**
1952 **Collector-Distributor Roadways**

1954
1955
1956 **Section 2E.35 Comments:** NCUTCD generally agrees with 2E.35 as presented in the NPA with
1957 minor editorial revisions.

1958 **Section 2E.35 Partial Cloverleaf Interchange**

1959 Support:

1960 An Examples-of guide signs for partial cloverleaf interchanges are-is shown in Figure 2E-31.

1961 Guidance:

1962 For a partial cloverleaf with only one exit roadway in a direction of travel, where the main roadway
1963 passes under the crossroad and the exit roadway is located beyond the overcrossing structure, the
1964 overhead Exit Direction sign should be placed either on the overcrossing structure (see Figure 2E-31) or
1965 on a separate structure located immediately in front of the overcrossing structure.

1966 Support:
1967 Partial cloverleaf interchanges with successive exit ramps from the same direction of travel are signed
1968 the same as cloverleaf interchanges for that direction of travel (see Section 2E.33).

1969
1970
1971
1972 NCUTCD generally agrees with Figure 2E-31 as presented in the NPA, but recommends revising
1973 “Examples” in the figure title to “Example” and correct the section reference to read “See Figure
1974 2D-19...”.

1975 **Figure 2E-31. Examples-of Guide Signs for a Partial Cloverleaf Interchange**

1976 **Section 2E.36 Comments:** NCUTCD generally agrees with 2E.36 as presented in the NPA, but
1977 recommends revising as follows:

- 1978 • Add a reference to 2J.09 for general and specific service signs
- 1979 • Delete the final Guidance paragraph referencing Chapter 2J, since adding the above reference
1980 is sufficient and more concise
- 1981 • Other minor editorial revisions

1982 **Section 2E.36 Collector-Distributor Roadways for Successive Interchanges**

1983 Support:

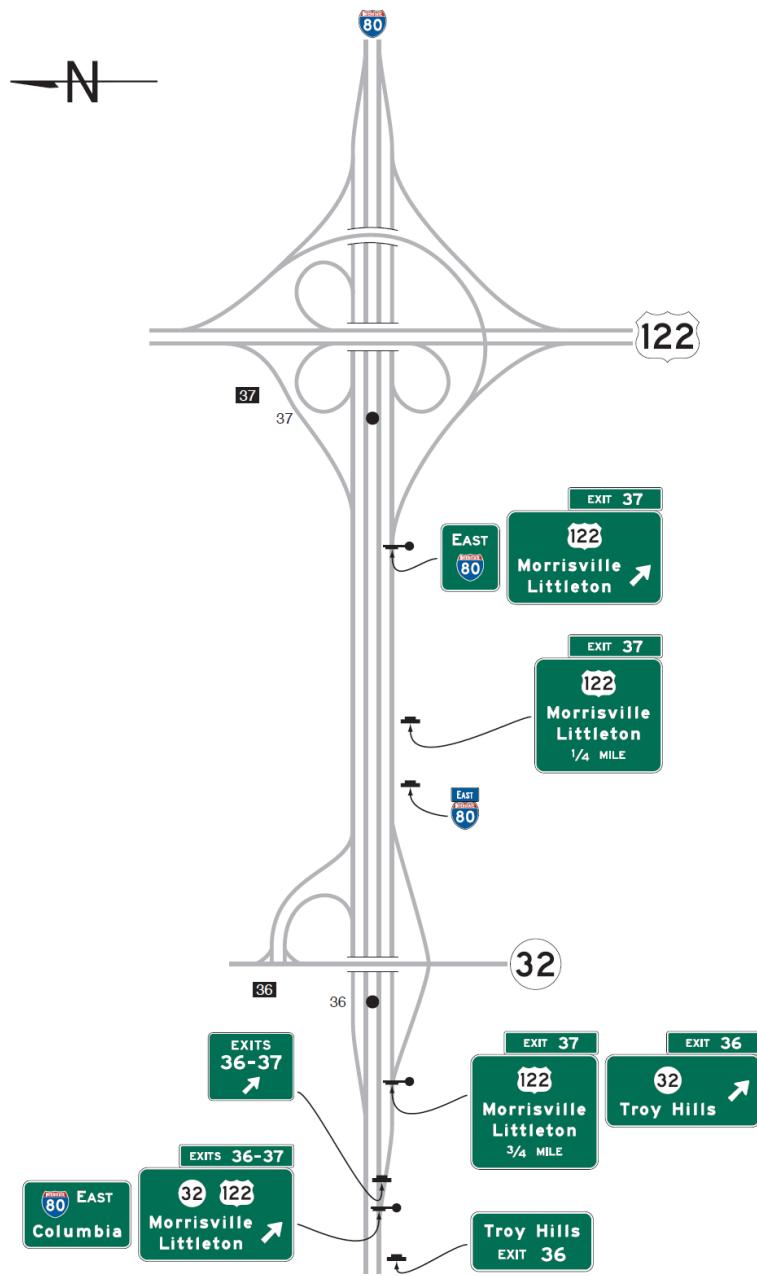
1984 Examples of guide signs for a collector-distributor roadway that provides access to multiple
1985 interchanges are shown in Figure 2E-32. For General Service signs and Specific Service signs, see the
1986 provisions in Section 2J.09. [add 2J.09 reference]

1987 Guidance:

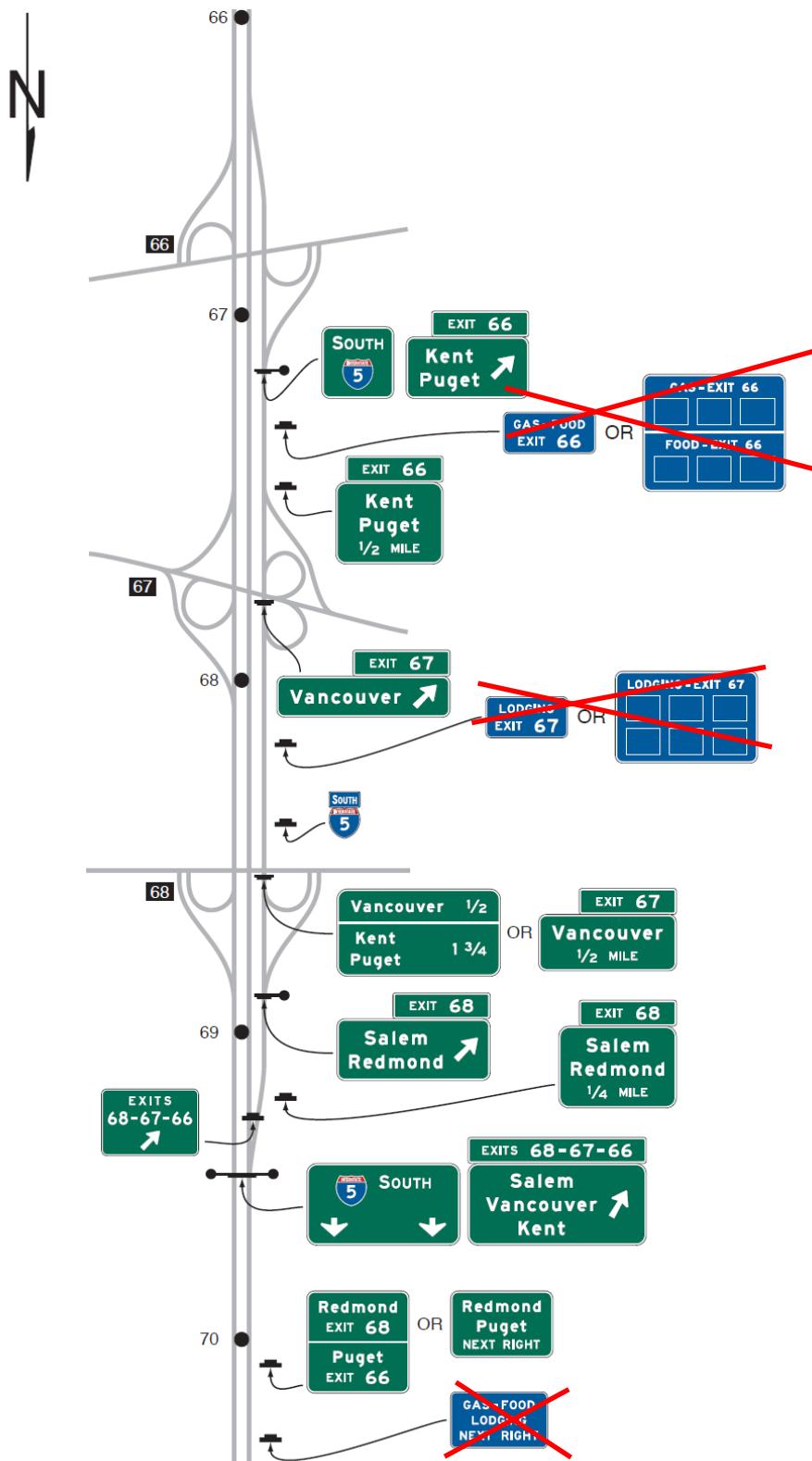
1988 Where access to successive interchanges is provided from a single collector-distributor roadway, the
1989 number of lines of destination information displayed on the major guide signs on the major roadway

1995 *approach to the collector-distributor roadway should comply with the provisions of Section 2E.15.*
1996 *Where additional destinations are ~~to be~~ displayed on the main roadway, those destinations should be*
1997 *displayed on Supplemental guide signs (see Section 2E.50) on the approach to the collector-distributor*
1998 *roadway.*
1999 *Where exit numbering is used, the exit numbers for exits accessed from the collector-distributor*
2000 *roadway should be displayed on the main roadway guide signs.*
2001 *An Exit Gore sign (see Section 2E.26) should be placed in the gore where *the* collector-distributor*
2002 *roadway departs from the main roadway.*
2003 *Interchange guide signing along the collector-distributor roadway should comply with the provisions*
2004 *for interchange signing in this Chapter.*
2005 *If services are available from more than one of the interchanges along the collector distributor*
2006 *roadway and those services are signed, then General Service signs should be used on the main roadway*
2007 *in compliance with the provisions of Chapter 2I of this Manual. Services signed along the collector-*
2008 *distributor roadway should use either General Service signs or Specific Service signs in compliance with*
2009 *the provisions of Chapters 2I and 2J of this Manual.* [delete as covered in revision above]
2010
2011
2012 NCUTCD generally agrees with Figure 2E-32 as presented in the NPA, but recommends revising
2013 as follows:
2014 • Revise “Example” in the figure titles to “Examples”
2015 • Delete the General Service signs and Specific Service signs from Sheet 2 because that
2016 signing is adequately illustrated in Figure 2J-4.
2017
2018 **Figure 2E-32. Examples of Guide Signs for Successive Interchanges with**
2019 **collector-Distributor Roadways (2 Sheets)**

S
Figure 2E-32. Example of Guide Signs for Successive Interchanges with Collector-Distributor Roadways (Sheet 1 of 2)



S
Figure 2E-32. Example of Guide Signs for Successive Interchanges with Collector-Distributor Roadways (Sheet 2 of 2)



2022

2023

2024 **Section 2E.37 Comments:** NCUTCD generally agrees with 2E.37 as presented in the NPA, but
2025 recommends revising as follows:

- Define “off-route movement” in the second Support paragraph, add figure references, and
2026 revise “expectancy” to “driver expectancy”
- Delete exception callouts for Sections 2E-40 and 2E-41 in the second Standard paragraph,
2027 since it duplicates the content of the subsequent sentence.

2030

2031 **Section 2E.37 Freeway-to-Freeway Interchange**

2032 **Support:**

2033 Freeway-to-freeway interchanges are major decision points where the effect of taking a wrong ramp
2034 cannot be easily corrected. Reversing direction on the connecting freeway or reentering to continue on
2035 the intended course is usually not possible. Figure 2E-33 shows examples of guide signs at a freeway-to-
2036 freeway interchange.

2037 **Guidance:**

2038 *The sign messages should contain only the route shield, cardinal direction, and the name of the next
2039 control city on the route. Arrows should point as indicated in Section 2D.08, except where Overhead
2040 Arrow-per-Lane or Diagrammatic signs are used in accordance with the provisions of Sections 2E.39
2041 through 2E.41.*

2042 **Support:**

2043 An off-route movement is the movement that does not follow the through route. At splits where the
2044 off-route movement is to the left or where there is an optional lane split (see Figures 2E-38, 2E-39 and
2045 2E-44), driver expectancy problems usually result. [add “off-route” and “driver expectancy”]

2046 At splits where the off-route movement is to the left, see Section 2E.22 for the use of the Left Exit
2047 Number (E1-5fP through E1-5kP) plaque. For freeway splits with an option lane and for multi-lane
2048 freeway-to-freeway exits having an option lane, see Section 2E.39 for use of Overhead Arrow-per-lane or
2049 Diagrammatic guide signs.

2050 **Standard:**

2051 The roadway for the off-route shall be signed as an exit. If exit numbering is used, the signs
2052 shall comply with the provisions of Section 2E.22. Distance messages on the Advance guide signs
2053 shall comply with the provisions of Section 2E.23.

2054 Overhead signs shall be used at a distance of 1 mile and at the theoretical gore of each
2055 connecting ramp, except as provided in Sections 2E.40 and 2E.41. When Overhead Arrow-per-
2056 Lane or Diagrammatic guide signs are used, they shall comply with the provisions of Sections 2E.40
2057 and 2E.41. [delete duplicate text]

2058 **Option:**

2059 The Advance guide signs at the 1/2-mile and 2-mile locations may also be overhead-mounted.

2060 **Guidance:**

2061 An Advisory Exit Speed (W13-2) sign should be used where an engineering study shows that it is
2062 necessary to display a speed reduction message for ramp signing (see Section 2C.14).

2063

2064 NCUTCD generally agrees with Figure 2E-33 as presented in the NPA, but recommends adding
2065 labels for I-17 on sheet 2 similar to sheet 1.

2066

2067 **Figure 2E-33. Examples of Guide Signs for a Freeway-to-Freeway Interchange**

2068

2069

2070

2071 **Section 2E.38 Comments:** NCUTCD generally agrees with 2E.38 as presented in the NPA, but
2072 recommends revising as follows in accordance with NCUTCD recommendation 11A-GMI-02:
2073

- 2074 • Revise the first Standard paragraph to Guidance
- 2075 • Revise the fourth Standard paragraph to Support

2076 **Section 2E.38 Freeway Split with Dedicated Lanes**

2077 **Standard:** *Guidance:*

2078 *Signing for a freeway splits with dedicated lanes shall should use the sign designs shown in Figure*
2079 *2E-34.*

2080 **Standard:**

2081 The arrows on each Advance Guide sign shall match the number of lanes present at the location
2082 of the Advance Guide sign.

2083 The signs for this application shall be mounted overhead. When arrows are used, each arrow
2084 shall be located over the approximate center of the lane to which it applies.

2085 Where one roadway of the split carries the through route, the other roadway of the split shall
2086 be signed as an exit. If exit numbering is used, the signs shall comply with the provisions of Section
2087 2E.22. Distance messages on the Advance guide signs shall comply with the provisions of Section
2088 2E.23.

2089 **Support:**

2090 The Section 2E.23 includes provisions on the number and location of Advance guide signs shall
2091 comply with the provisions of Section 2E.23.

2092 **Guidance:**

2093 *The Exit Direction and Pull-Through signs should be located at the theoretical gore.*

2094 *The Exit Direction and Pull Through signs should display down arrows if the alignment is straight or*
2095 *diagonally upward pointing directional arrows if the alignment is curved (see Section 2D.08).*

2096 **Standard:**

2097 The Exit Direction sign shall contain the EXIT ONLY (E11-I series) sign panel (see Section
2098 2E.28).

2100 NCUTCD agrees with Figure 2E-34 as presented in the NPA.

2103 **Figure 2E-34. Guide Signs for a Split with Dedicated Lanes**

2105 **Section 2E.39 Comments:** NCUTCD generally agrees with 2E.39 as presented in the NPA, but
2106 recommends revising as follows in accordance with NCUTCD recommendation 11A-GMI-02:
2107

- 2108 • Revise the first part of the Standard paragraph to Guidance, since there may be situations,
2109 such as urban areas with closely spaced interchanges, where it is impractical to use Overhead
2110 Arrow-per-Lane or diagrammatic signs
- 2111 • Revise the second (now first) Standard paragraph to add diagrammatic and arrow-per-lane
2112 alternatives for option splits
- 2113 • Revise the second Guidance paragraph to agree with Section 2E.42

2115 **Section 2E.39 Signing for Option Lanes at Splits and Multi-Lane Exits**

2116 **Support:**

2117 Some freeway and expressway splits or multi-lane exit interchanges contain an interior option lane
2118 serving both movements in which traffic can either leave the route or remain on the route, or choose
2119 either destination at a split, from the same lane.

2120 **Standard:** Guidance:

2121 On freeways and expressways, either the Overhead Arrow-per-Lane or Diagrammatic guide
2122 sign designs as provided in Sections 2E.40 and 2E.41 ~~shall~~ should be used for all multi-lane exits at
2123 major interchanges (see Section 2E.11) that have an optional exit lane that also carries the through
2124 route (see Figures 2E-36, 2E-37, 2E-42, and 2E-43). and [revise to Guidance]

2125 **Standard:**

2126 On freeways and expressways, either the Overhead Arrow-per-Lane or
2127 Diagrammatic guide sign designs as provided in Sections 2E.40 and 2E.41 shall be used for
2128 all splits that include an option lane (see Figures 2E-38 and 2E-44). Overhead Arrow-per-
2129 Lane or Diagrammatic guide signs shall not be used on freeways and expressways for any
2130 other types of exits or splits, including single-lane exits and splits that do not have an option
2131 lane. [add diagrammatic]

2132 *Guidance:*

2133 The Overhead Arrow-per-Lane guide sign design (see Section 2E.40) should also be considered for
2134 multi-lane exits with an option lane at intermediate interchanges (see Section 2E.11) based on such
2135 factors as the extent of the need to optimize the mainline operation by maximizing the usage of the option
2136 lane, the extent of the period(s) of the day during which the exiting volumes warrant the multi-lane exit
2137 arrangement, and the nature of the traffic that primarily uses the option lane during the high-volume
2138 periods.

2139 Signing for multi-lane exits at minor interchanges (see Section 2E.11) that have an optional exit lane
2140 or at intermediate interchanges that have an optional exit lane at which it has been determined that the
2141 Overhead Arrow-per-Lane guide sign design is not warranted should use ~~a combination of conventional~~
2142 ~~guide signing and regulatory lane use signing, signing~~ in accordance with the provisions of Section
2143 2E.42. [revise to agree with 2E.42]

2144 **Section 2E.40 Comments:** NCUTCD recommends revising 2E.40 as follows:

- 2145 • Revise the first Standard paragraph to delete “may be replaced” and add “continue to be
2146 used”, because the text as presented in the NPA could be misinterpreted as allowing an
2147 Arrow-per-Lane guide sign on the existing sign structure at the theoretical gore, which is not
2148 where an Overhead APL should be located
- 2149 • Revise the second Standard paragraph to agree with the preceding paragraphs and allow use
2150 of alternative signing as appropriate
- 2151 • Revise the second Option paragraph to delete references to “narrow lane marking tapers” as
2152 that term is unclear, and to better define when destination-by-lane signing should be used
- 2153 • Revise the third Standard statement as follows:
 - 2154 ○ Delete the requirement for one arrow per lane from the first sentence, as it is covered
2155 in list item A
 - 2156 ○ Add an exception referencing Section 2E.42 to list item A to address partial-width
2157 APL signs and note upward arrows can be straight or curved
 - 2158 ○ Split the last part of list item A on arrow position into a separate list item, so that the
2159 “Except as provided” clause does not affect “The shaft of the arrow...approximate
2160 center...” phrase
 - 2161 ○ Delete wording in list item B referencing degree of curvature, as the actual roadway
2162 curvature can be very gradual and all APL arrows use a standardized design

- 2165 ○ Delete the sentence in list item C referencing E11-1 panels, since Section 2E.38 states
 2166 “Where one roadway of the split carries the through route, the other roadway of the [redacted]
 2167 split shall be signed as an exit” and a split of two overlapping routes where neither of
 2168 the diverging routes is designated as an exit could not exist, and there are no figures [redacted]
 2169 in the MUTCD which illustrate a split where neither of the routes is designated as an
 2170 exit [redacted]
- 2171 ○ Delete wording in list item E referencing degree of curvature (see B above)
 2172 ○ Revise List item I to agree with wording in Section 2E.23

2173 **Section 2E.40 Design of Overhead Arrow-per-Lane Guide Signs for Option Lanes**

2174 Support:

2175 Overhead Arrow-per-Lane guide signs (see Figure 2E-35) are used where an option lane is present at
 2176 freeway and expressway multi-lane exit interchanges and splits. They display an upward-pointing arrow
 2177 above each lane that conveys the direction(s) of travel that the lane serves at the point of departure. At
 2178 locations where an option lane is present at a multi-lane exit or split, Overhead Arrow-per-Lane guide
 2179 signs have been shown to be superior to either conventional guide signs or Diagrammatic guide signs
 2180 because they convey positive direction about which destination and direction each approach lane serves,
 2181 particularly for the option lane, which is otherwise difficult to clearly sign.

2182 **Standard:**

2183 **Overhead Arrow-per-Lane guide signs as provided in Section 2E.39 shall be used at all new or
 2184 reconstructed freeway and expressway locations and at freeway and expressway locations where
 2185 replacement of ~~an~~ a series of existing overhead sign support structures is necessitated by
 2186 reconstruction, as described in Section 2E.39. Where used, the Overhead Arrow-per-Lane guide
 2187 sign at the exit or split shall be located at or in the immediate vicinity of the point where the exiting
 2188 lanes begin to diverge from the through lanes or, for a split, at the point where the approach lanes
 2189 begin to diverge from one another, preserving the relation of the arrows displayed on the sign to
 2190 their respective lanes. The Overhead Arrow-per-Lane guide sign at the exit shall not be located at
 2191 or near the theoretical gore.**

2192 **Option:**

2193 At existing or non-reconstructed locations where an overhead Exit Direction sign exists at the
 2194 theoretical gore, and the existing sign support structure is retained, the an overhead Exit
 2195 Direction sign may remain or may be replaced continue to be used on the existing sign support
 2196 structure in conjunction with a replacement of the advance signs using the Overhead Arrow-per-
 2197 Lane guide sign design. [clarify and reduces the chance of misinterpretation]

2198 **Standard:**

2199 If ~~an~~ existing Exit Direction and Pull-Through signs ~~are~~ ~~is~~ being retained at an interchange as
 2200 provided in Paragraph 4, an Overhead Arrow-per-Lane guide sign shall not be used at the location
 2201 of the Exit Direction and Pull-Through signs ~~at or in the vicinity of the theoretical gore. New~~
 2202 ~~installations of Exit Direction and Pull-Through signs shall not be permitted in conjunction with~~
 2203 ~~Overhead Arrow-per-Lane guide signs on new or reconstructed facilities.~~ [revise to agree with
 2204 preceding and allow alternatives]

2205 **Option:**

2206 For unusually long gore areas with narrow lane marking tapers, Where there is 800 feet or more
 2207 between the beginning of the lane diverge and the theoretical gore, signs indicating the destinations
 2208 allowed by each lane may be added in the vicinity of the theoretical gore to reinforce positive guidance
 2209 (See Figure 2E-39). [delete unclear wording and better define sign use]

2210 **Guidance:**

2212 Overhead Arrow-per-Lane guide signs should be located at approximately 1/2 mile and 1 mile in
2213 advance of the exit or split, and at approximately 2 miles in advance of the exit or split where space is
2214 available and conditions allow.

2215 **Standard:**

2216 Overhead Arrow-per-Lane guide signs used on freeways and expressways ~~shall include one~~
2217 ~~arrow above each lane and~~ shall be designed in accordance with the following criteria: [delete-
2218 covered in A]

- A. Except as provided in Section 2E.42 for partial width Overhead Arrow-per-Lane signs, the
~~The sign shall include an upward-pointing (vertical or curved) arrow for each lane of the~~
~~approach to the split or exit, and the [address partial width Overhead APL and arrows]~~
- B. AA. The shaft of each arrow shall be located over the approximate center of the lane to
~~which it applies. [split separately]~~
- B. Arrows for continuing through lanes shall be vertically upward pointing (see Figure 2E-36)
unless those lanes are on a significantly curved alignment beyond the theoretical gore, ~~in~~
~~which case the arrows for the continuing through lanes shall indicate the approximate~~
~~degree of curvature at the point of departure~~ (see Figure 2E-37). [delete curvature reference]
- C. The arrow for a lane that must exit shall be curved in the direction of the exit and shall be
accompanied by black-on-yellow EXIT (E11-1a) and ONLY (E11-1b) sign panels adjacent
to the lower end of the arrow shaft. ~~The E11-1a and E11-1b sign panels shall not be used~~
~~for a split of two overlapping routes where neither of the diverging routes is designated as~~
~~an exit.~~ Where the through lanes curve and the exit continues on a straight alignment,
upward-pointing vertical arrows shall be used for the exiting movement and curved arrows
for the through movement (see Figure 2E-37). [delete - could not exist]
- D. The arrow for an optional exit lane that also carries the through route shall have a single
shaft that bifurcates into a vertically upward-pointing arrow and a curving arrow
corresponding to the configuration of the through and exit lanes.
- E. For splits with an option lane, the arrow for the lane from which either direction of the split
can be accessed shall have a single shaft that bifurcates into two upward-pointing curving
arrows ~~showing the approximate degrees of curvature of the two roadways beyond the~~
~~theoretical gore~~ (see Figure 2E-38). [delete curvature reference]
- F. A vertical white line shall be used to separate the route shields and destinations for the two
diverging movements from each other.
- G. The distance to the exit or split shall be displayed below the off-movement destination on
the advance signs at the 1-mile and 2-mile locations.
- H. The number of lanes displayed on a sign shall correspond to the number of lanes at the
location of that sign. An advance sign shall not depict lanes that are added downstream of a
sign location.
- I. For numbered exits, the Exit Number (E1-5P) or Left Exit Number (E1-5bP) plaque shall
be used at the top of the sign in accordance with Section 2E.23. For ~~un~~non-numbered left
exits to the left, the a LEFT (E1-5ampP) plaque shall be ~~used at~~ added to the top left-hand
edge of the sign. [revise to agree with Section 2E.23]

2253 **Guidance:**

2254 Overhead Arrow-per-Lane guide signs used on freeways and expressways should be designed in
2255 accordance with the following additional criteria:

- A. No more than one destination should be displayed for each movement, and no more than two
destinations should be displayed per sign.
- B. The arrowhead(s) for the diverging movement should be positioned lower on the sign than the
arrowhead(s) for the movement that continues straight ahead, independent of which movement
carries the through route. Where the movements are freeway or expressway splits rather than
exits, the arrowheads should be positioned at approximately the same height on the sign.

- 2262 C. *Route shields, cardinal directions, and destinations should be positioned on the sign such that*
2263 *they are clearly related to the arrowhead(s) for the movement to which they apply.*
- 2264 D. *The cardinal direction should be placed adjacent to the route shield for exits or splits leading in a*
2265 *single cardinal direction.*
- 2266 E. *The vertical white line that is used to separate the route shields and destinations for the two*
2267 *diverging movements from each other should not descend below the top of the arrowheads for the*
2268 *through lanes, and should be positioned approximately halfway between the diverging*
2269 *arrowheads for the optional movement lane (see Figure 2E-35).*

2270 **Standard:**

2271 **Overhead Arrow-per-Lane guide signs shall not be used to depict a downstream split of an exit**
2272 **ramp on a sign located on the mainline.**

2273 **Support:**

2274 Specific guidelines for more detailed design of Overhead Arrow-per-Lane guide signs are contained
2275 in the "Standard Highway Signs" publication (see Section 1A.11).

2276 **Option:**

2277 Where extra emphasis of an especially low advisory ramp speed is needed, an EXIT XX MPH (E13-
2278 2) sign panel (see Figure 2E-13) may be placed below the applicable destination legend to supplement,
2279 but not to replace, the exit or ramp advisory speed warning signs.

2280 Warning Beacons in compliance with the provisions of Section 2E.25 may be used with the E13-2
2281 sign panel.

2282
2283
2284 NCUTCD agrees with Figure 2E-35 as presented in the NPA.
2285

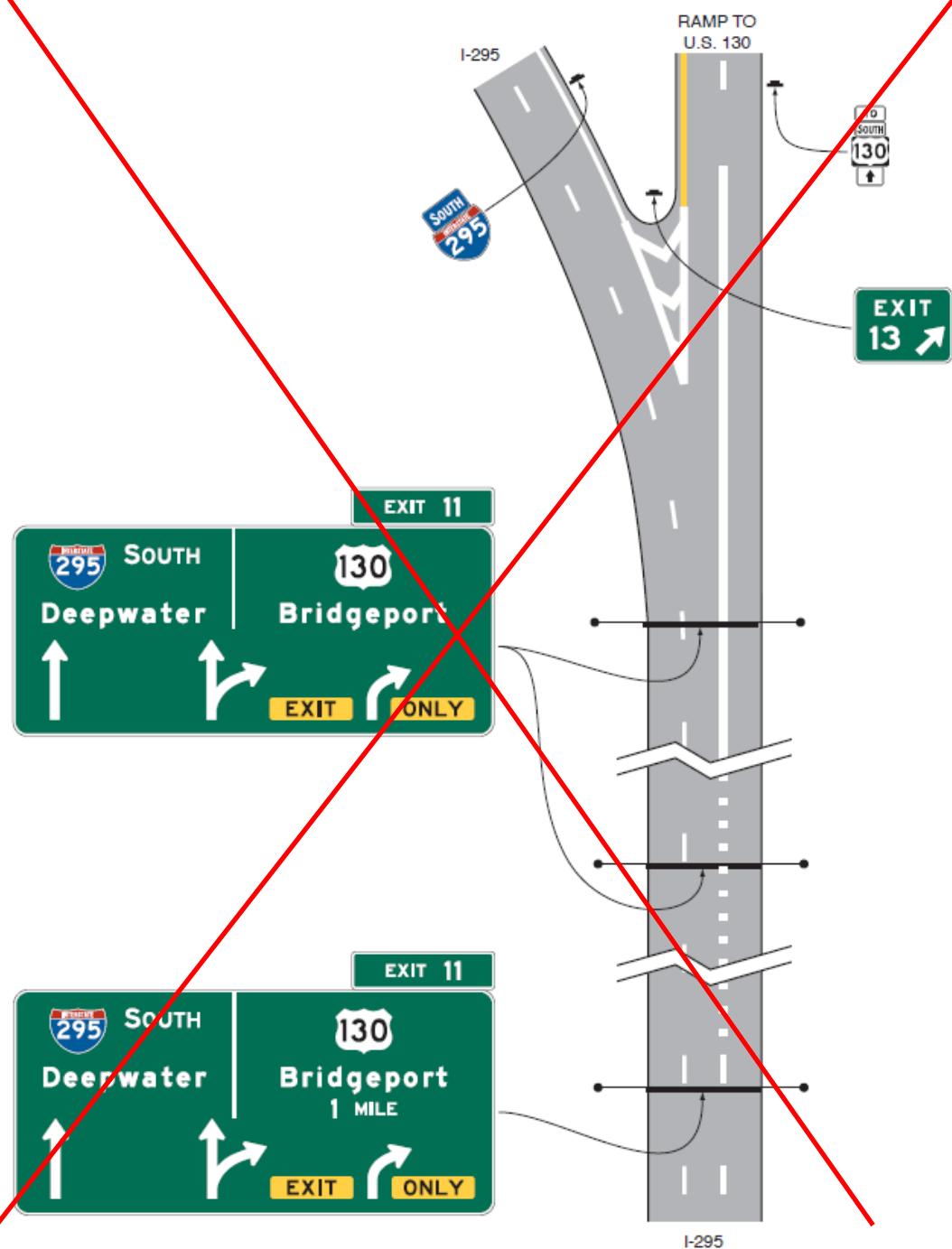
2286 **Figure 2E-35. Overhead Arrow-per-Lane Guide Sign for a Multi-Lane Exit with an**
2287 **Option Lane**

2288
2289
2290
2291 NCUTCD agrees with Figure 2E-36 as presented in the NPA.
2292

2293 **Figure 2E-36. Overhead Arrow-Per-Lane Guide Signs for a Two-Lane Exit to the**
2294 **Right with an Option Lane**

2298 NCUTCD recommends deleting Figure 2E-37 as presented in the NPA, as using curved arrows
2299 for a geometrically straight movement and straight arrows for a geometrically curved movement
2300 contradicts driver expectations, violates guidance for arrows elsewhere in the MUTCD, violates
2301 Standards in 2E.40, and is inconsistent with other Chapter 2E figures.
2302

Figure 2E-37. Overhead Arrow-per-Lane Guide Signs for a Two-Lane Exit to the Right
with an Option Lane (Through Lanes Curve to the Left)



2303
2304
2305

2306 NCUTCD recommends adding a new Figure 2E-37 based on Figure 2E-5 in the 2009 MUTCD,
2307 but revising the figure by deleting the TO auxiliary plaque and cardinal direction.

**Figure 2E-5. Overhead Arrow-per-Lane Guide Signs for a Two-Lane Exit to the Right
2E-37 with an Option Lane (Through Lanes Curve to the Left)**



2308
2309
2310

2311 NCUTCD agrees with Figure 2E-38 as presented in the NPA.
2312

2313 **Figure 2E-38. Overhead Arrow-Per-Lane Guide Signs for a Split with an Option
2314 Lane**

2317 NCUTCD recommends deleting Figures 2E-39 and 2E-40 as presented in the NPA and replacing
2318 with a single figure. There are very few differences in the roadway geometrics other than the fact
2319 that Figure 2E-40 has one more lane on the left than does Figure 2E-39. Both have narrow gores
2320 and the pavement markings for the option lane are virtually identical. Figure 2E-39 is labelled as
2321 a split with an option lane while Figure 2E-40 is labelled as a two lane exit with an option lane.
2322 “Split” is an undefined term in the MUTCD and the term is used inconsistently in Chapter 2E,
2323 such that the word “Split” appears to have different meanings in different passages. There do not
2324 seem to be sufficient differences in these two examples to justify two different figures and
2325 differences in signing for the two situations.

2326 Specific problems with Figure 2E-39:

- 2327 • The figure title is inconsistent between the NPA text and figure documents.
- 2328 • The multiple roadway segments with matchlines detracts from the illustration. The middle
2329 graphic is the essential graphic, which shows the APL sign as the Exit Direction sign and the
2330 overhead signs downstream as the additional signs for positive guidance. The middle graphic
2331 would be sufficient.
- 2332 • The Advance Arrow Per Lane signs violate the Standard in Section 2E.40 which states
2333 “Arrows for continuing through lanes shall be vertically upward pointing unless those lanes
2334 are on a significantly curved alignment beyond the theoretical gore”, since neither alignment
2335 is significantly curved beyond the theoretical gore.
- 2336 • The downstream sign for Camden/EXIT 30 should have an EXIT ONLY panel at the bottom.
- 2337 • The Exit Gore sign labelled E5-1c violates the Standard statement in Section 2E.26 which
2338 says, “An Exit Gore sign...shall display...an appropriate upward slanting arrow.” In
2339 Standard Highway Signs the E5-1c sign is shown with an upward slanting arrow.
- 2340 • “Theoretical Gore” is misspelled.

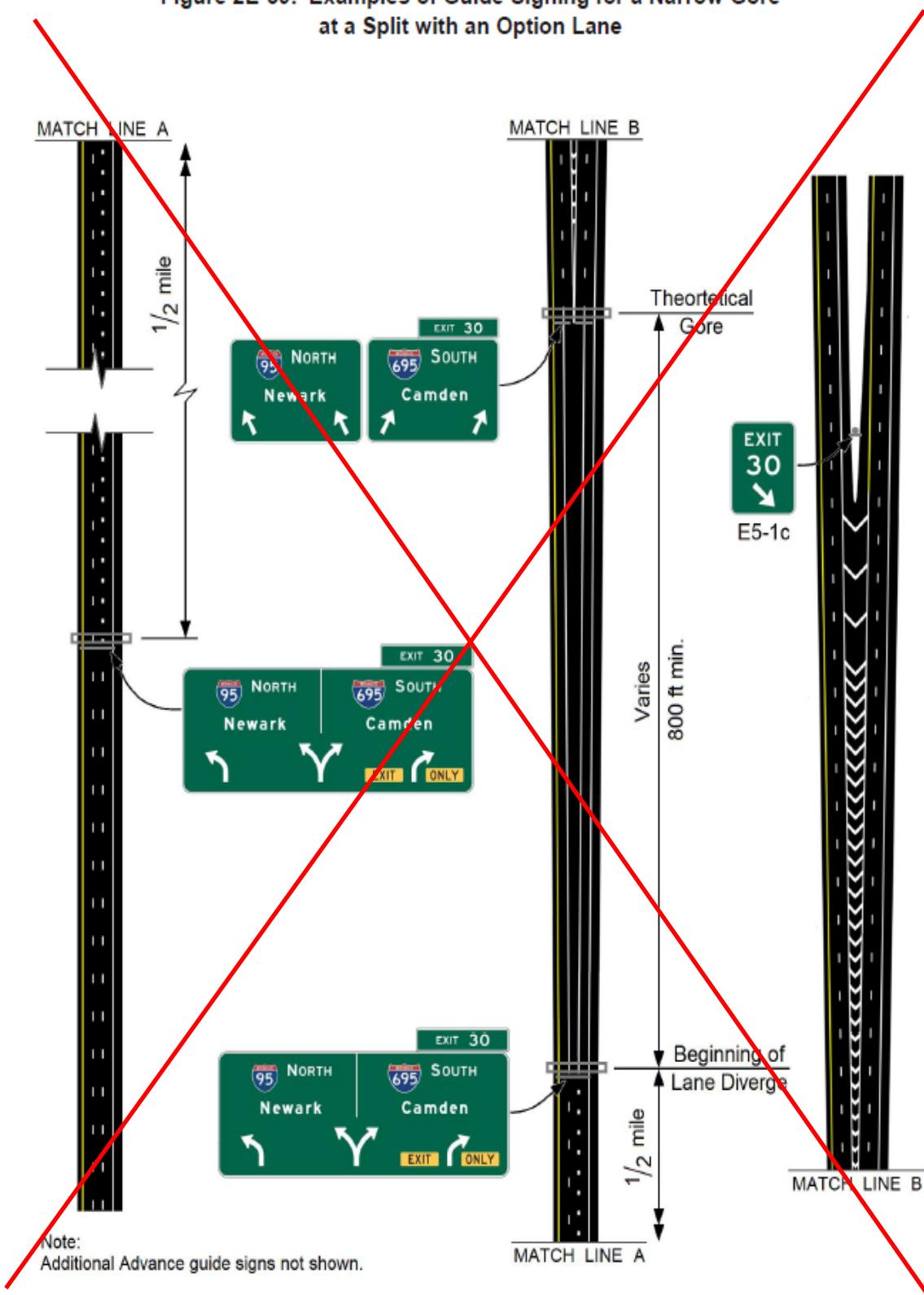
2341 Specific problems with Figure 2E-40:

- 2342 • The figure title is inconsistent between the NPA text and figure documents.
- 2343 • The multiple roadway segments with matchlines detracts from the illustration. The middle
2344 graphic is the essential graphic, which shows the APL sign as the Exit Direction sign and the
2345 overhead signs downstream as the additional signs for positive guidance. The middle graphic
2346 would be sufficient.
- 2347 • The downstream sign for Penniman/EXIT 9 should have an EXIT ONLY panel at the
2348 bottom.
- 2349 • The use of TO for a connection like this is inconsistent with general guide signing practice.
- 2350 • “Theoretical Gore” is misspelled.
- 2351 • Figure 2E-40 is not referenced in Chapter 2E as presented in the NPA.

2352 NCUTCD recommends adding a new Figure 2E-39 without the problems inherent in the NPA
2353 figures.

2355
2356
2357

Figure 2E-39. Examples of Guide Signing for a Narrow Gore at a Split with an Option Lane



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2360

Figure 2E-40. Examples of Guide Signing for a Narrow Gore at a Two-Lane Exit with an Option Lane

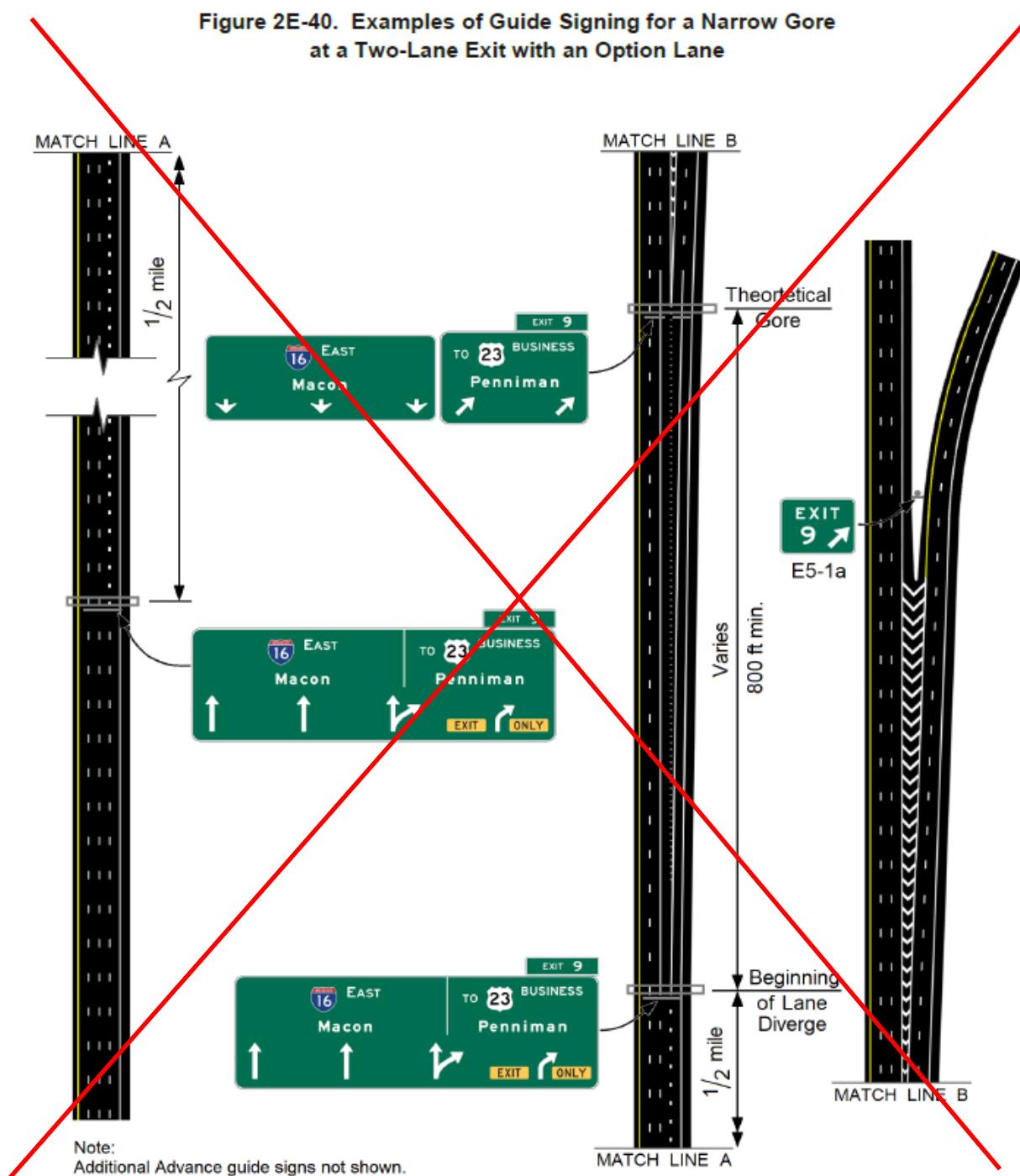
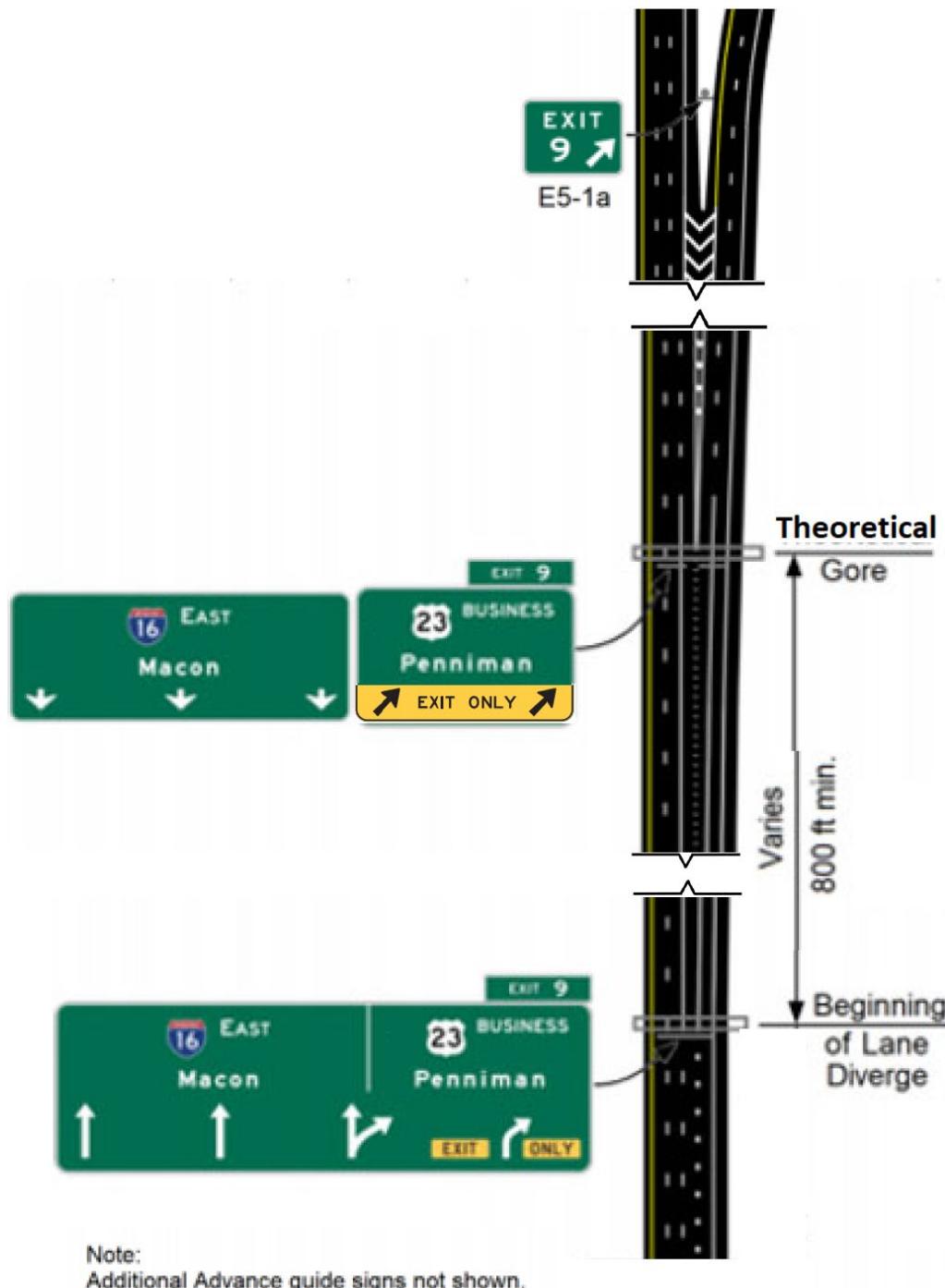


Figure 2E-XX Example of Guide Signing for a Narrow Gore at an Exit with an Option Lane



Note:
Additional Advance guide signs not shown.

2363

2364

2365 **Section 2E.41 Comments:** NCUTCD generally agrees with 2E.41 as presented in the NPA, and
2366 recommends retaining the Section, revising as follows:

- 2367 • Delete the second sentence in the first Support statement. Diagrammatic signs have not been
2368 shown to be less effective than conventional or Overhead Arrow-per-Lane guide signs. In [redacted]
2369 NCHRP Project 20-7 (155) a sign configuration using diagrammatic signs performed best,
2370 and better than a partial width Overhead Arrow-per-Lane sign. A paper presented at the 2015
2371 Transportation Research Board Annual Meeting (“Arrow-per-Lane Guide Sign Research,
2372 Revisited”) showed that in a human factors study a diagrammatic sign performed better than
2373 an Overhead Arrow-per-Lane sign when “correct lane choice” was the measure of
2374 effectiveness.

- 2375 • Revise the final sentence of the second Standard statement for clarity.

2376 NCUTCD also recommends revising dimensions for two-headed diagrammatic arrows shown in
2377 the “Standard Highway Signs” publication. Increasing the width of each lane and increasing the
2378 width of the black lane marking images would more clearly show the number of lanes on the [redacted]
2379 approach roadway, may result in longer legibility distances, and result in better understanding of [redacted]
2380 which destination(s) can be reached by each lane. These larger dimensions were used in NCHRP
2381 Project 20-7 (155).

2382

2383

2384 **Section 2E.41 Design of Freeway and Expressway Diagrammatic Guide Signs for Option 2385 Lanes**

2386 *Support:*

2387 Diagrammatic guide signs (see Figure 2E-41) are guide signs that show a simplified graphic view of
2388 the exit arrangement in relationship to the main highway. ~~While the use of such guide signs might be
2389 helpful for the purpose of conveying relative direction of each movement, Diagrammatic guide signs have
2390 been shown to be less effective than conventional or Overhead Arrow per Lane guide signs at conveying
2391 the destination or direction(s) that each approach lane serves, regardless of whether dedicated or option
2392 lanes are present.~~ [delete erroneous information on diagrammatic signs]

2393 *Standard:*

2394 **Diagrammatic guide signs shall be designed in accordance with the following criteria:**

- 2395 A. **The graphic legend shall be of a plan view showing the off-ramp arrangement.**
- 2396 B. **No other symbols or route shields shall be used as a substitute for arrowheads.**
- 2397 C. **They shall not be installed at the Exit Direction sign location (see Section 2E.25).**
- 2398 D. **The EXIT ONLY sign panel shall not be used on diagrammatic guide signs in advance of
2399 the interchange.**
- 2400 E. **For numbered exits, the Exit Number (E1-5P) or Left Exit Number (E1-5bP) plaque shall
2401 be used at the top of the sign in accordance with Section 2E.22. For unnumbered left exits,
2402 the LEFT (E1-5aP) plaque shall be used at the top left edge of the sign.**
- 2403 F. **The EXIT ONLY (E11-1e or E11-1f) sign panels shall be used on the Exit Direction sign at
2404 the theoretical gore, except at splits of two overlapping routes where neither of the routes is
2405 designated as an exit.**

2406 *Guidance:*

2407 *Diagrammatic guide signs used on freeways and expressways should be designed in accordance with
2408 the following additional criteria:*

- 2409 A. *The graphic should not depict deceleration lanes.*

- 2410 B. No more than one destination should be displayed for each movement, and no more than two
2411 destinations should be displayed per sign.
- 2412 C. The arrowhead for the diverging movement should be positioned lower on the sign than the
2413 arrowhead for the movement that continues straight ahead, independent of which movement
2414 carries the through route (see Figures 2E-42 and 2E-43). Where the movements are freeway or
2415 expressway splits rather than exits, the arrowheads should be positioned at approximately the
2416 same height on the sign (see Figure 2E-44).
- 2417 D. Arrow shafts should contain lane lines.
- 2418 E. Route shields, cardinal directions, and destinations should be positioned on the sign such that
2419 they are clearly related to the arrowhead(s), and the arrowhead for the off movement should
2420 point toward the route shield for the off movement.
- 2421 F. For exits or splits leading in a single direction, the cardinal direction should be placed adjacent
2422 to the route shield, and the destination should be placed below the route shield and cardinal
2423 direction.

2424 **Standard:**

2425 Diagrammatic guide signs shall not be used at cloverleaf interchanges for the purpose of
2426 depicting successive departures from the mainline or separate downstream departures from a
2427 collector-distributor roadway. The use of Diagrammatic guide signs at cloverleaf interchanges
2428 shall be limited to the following cases:

- 2429 A. Where the outer (non-loop) exit ramp of the cloverleaf is a multi-lane exit having an
2430 optional exit lane that also carries the through route; and
- 2431 B. At cloverleaf interchanges that include collector-distributor roadways, such as those
2432 illustrated in Figure 2E-30, that are accessed from the mainline by a multi-lane exit having
2433 an optional exit lane that also carries the through route. In this case, the Diagrammatic
2434 guide sign shall only show the configuration of the lanes at the exit point to the collector-
2435 distributor roadway and not the entire interchange configuration.

2436 Diagrammatic guide signs shall not be used to depict a downstream split of an exit ramp on a
2437 sign located on the main roadway. Diagrammatic guide signs located on the main roadway shall not
2438 be used to depict a downstream split of an exit ramp. [clarify]

2439 **Support:**

2440 Specific guidelines for more detailed design of Diagrammatic guide signs are contained in the
2441 “Standard Highway Signs” publication (see Section 1A.11).

2442 **Option:**

2443 Where extra emphasis of an especially low advisory ramp speed is needed, an EXIT XX MPH (E13-
2444 2) sign panel (see Figure 2E-13) may be placed below the applicable destination legend to supplement,
2445 but not to replace, the exit or ramp advisory speed warning signs.

2446 Warning Beacons in compliance with the provisions of Section 2E.25 may be used with the E13-2
2447 sign panel.

2449
2450 NCUTCD agrees with Figure 2E-41 as presented in the NPA.

2452 **Figure 2E-41. Diagrammatic Guide Sign for a Multi-Lane Exit with an Option Lane**

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2456 NCUTCD agrees with Figure 2E-42 as presented in the NPA.

2457 **Figure 2E-42. Diagrammatic Guide Signs for a Two-Lane Exit to the Right with an**
2458 **Option Lane**

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2461 NCUTCD agrees with Figure 2E-43 as presented in the NPA.

2462

2463 **Figure 2E-43. Diagrammatic Guide Signs for a Two-Lane Exit to the Right with an**
2464 **Option Lane (Through Lane Curve to the Left)**

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2467 NCUTCD generally agrees with Figure 2E-44 as presented in the NPA, but recommends
2468 correcting the leader lines from the topmost sign bridge to the topmost sign.

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2471 **Figure 2E-44. Diagrammatic Guide Signs for a Split with an Option Lane**

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2474 **Section 2E.42 Comments:** NCUTCD recommends revising 2E.42 as follows to provide greater
2475 clarity and a logical progression of text:

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2492 • Use the term “partial-width” instead of “modified” to describe these APL signs in accordance
2493 with Figure 2E-45

2494 • Extensively revise the first Guidance paragraph to describe where a partial-width APL is
2495 appropriate and clarify arrows as vertical or curved, since the text as presented in the NPA is
2496 unclear and easily subject to misinterpretation

2497 • Delete the “to avoid the implication that the through route is restricted to the option lane” text
2498 in the first Standard statement, as it is a Support statement in a Standard, and may not be
2499 supported by past NCHRP research and current Pooled Fund research

2500 • Add an Option paragraph immediately following the Standard allowing conventional signing
2501 where APL signs are not practical

2502 • Revise the following Option statement to allow the use of existing signs (similar to 2E.40)

2503 • Delete the first paragraph in the second Guidance statement, and add “When conventional
2504 signing is used” to the following paragraph to simplify the text

2505 • Delete “Where the modified Overhead Arrow-per-Lane guide signs are not used” from the
2506 final Guidance paragraph to allow more general use of R3-8 signs

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2508 **Section 2E.42 Signing for Intermediate and Minor Interchange Multi-Lane Exits with an**
2509 **Option Lane**

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Support:

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2507 *displayed for the exit movement should be clearly aligned with the arrows pointing in the direction of the*
2508 *exit and not with the arrow over the option lane depicting the through movement over the option lane.*

2509 **Standard:**

2510 **The through route and/or destination shall not be displayed on the modified partial width**
2511 **Overhead Arrow-per-Lane guide sign to avoid the implication that the through route is**
2512 **restricted to the option lane.** [delete - problematic]

2513 **Modified Partial width Overhead Arrow-per-Lane signs shall be located in compliance with**
2514 **the provisions of Section 2E.40 for unmodified full width Overhead Arrow-Per-Lane signs (see**
2515 **Figures 2E-46 and 2E-47).**

2516 **Option:**

2517 *For an intermediate or minor interchange that has a multi-lane exit with an option lane*
2518 *that also carries the through route, and neither a full width Overhead Arrow-per-Lane or*
2519 *Diagrammatic guide signing is practical, conventional signing as described in paragraphs 7 to 9*
2520 *of this Section may be used (see Figures 2E-48 and 2E-49). [add to allow alternative signing]*

2521 *When either full or partial width Overhead Arrow-per-Lane signing is used at At existing*
2522 *or non-reconstructed locations where an overhead Exit Direction sign exists at the theoretical*
2523 *gore, and the existing sign support structure is retained, the an overhead Exit Direction sign may*
2524 *remain or may be replaced continue to be used on the existing sign support structure in*
2525 *conjunction with a replacement of the advance signs using the modified partial width Overhead*
2526 *Arrow-per-Lane guide sign design (see Figures 2E-46 and 2E-47). [revise similar to 2E.40 to*
2527 *accommodate existing signs]*

2528 **Guidance:**

2529 *Where the modified Overhead Arrow-per Lane guide signs described in this Section are not used,*
2530 *signing for an intermediate or minor interchange that has a multi-lane exit with an option lane that also*
2531 *carries the through route should use the same basic principles as those for a conventional exit. In such*
2532 *cases,*

2533 *[Par. 07] When conventional signing is used, the option lane should not be signed on the Advance Guide*
2534 *signs. For such exits that involve the addition of an auxiliary lane that is not present at the Advance*
2535 *Guide sign locations, but do not involve a lane drop (see Figure 2E-49), a sequence of post-mounted or*
2536 *overhead-mounted Advance Guide signs should be used, located in accordance with the interchange*
2537 *classification (see Section 2E.11). The Exit Direction sign should be located at the theoretical gore and*
2538 *display a diagonally upward-pointing directional arrow above each lane that departs from the mainline*
2539 *alignment. The Exit Direction sign should not contain the EXIT ONLY legend.*

2540 *[Par. 08] For such interchanges that also have a lane drop (see Figure 2E-48), the Advance Guide*
2541 *and Exit Direction signs should follow the provisions of Section 2E.28. The Exit Direction sign should be*
2542 *located at the theoretical gore and should contain the EXIT ONLY (E11-1e) sign panel.*

2543 *Where the modified Overhead Arrow-per Lane guide signs are not used, the [Par. 09] The presence*
2544 *of the option lane should be conveyed by the use of post-mounted lane-use (R3-8 Series) signs (see*
2545 *Section 2B.22). When used, the R3-8 signs should be of an appropriate size for their application to*
2546 *optimize their conspicuity. The signs should be located in succession with the Advance Guide signs,*
2547 *where the option and exit lanes have developed (see Figure 2E-48). In cases where the exiting lane or*
2548 *lanes have not developed and the option lane is created by the addition of an auxiliary lane that exits, the*
2549 *R3-8 signs should be located only adjacent to where the lanes have been fully developed and not in*
2550 *advance of the lane or along its transition (see Figure 2E-49).*

2551 **Support:**

2552 *The use of a down arrow on overhead freeway or expressway guide signs has been shown to be*
2553 *misinterpreted by road users as an indication of a dedicated lane.*

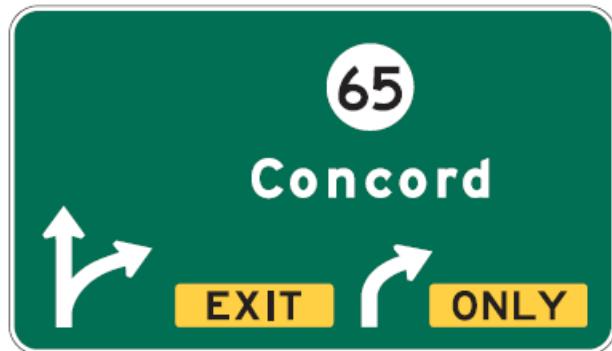
2554 **Standard:**

2555 Advance Guide signs that are mounted overhead shall not display a down arrow over an option
2556 lane.

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2559 NCUTCD agrees with Figure 2E-45 as presented in the NPA.
2560

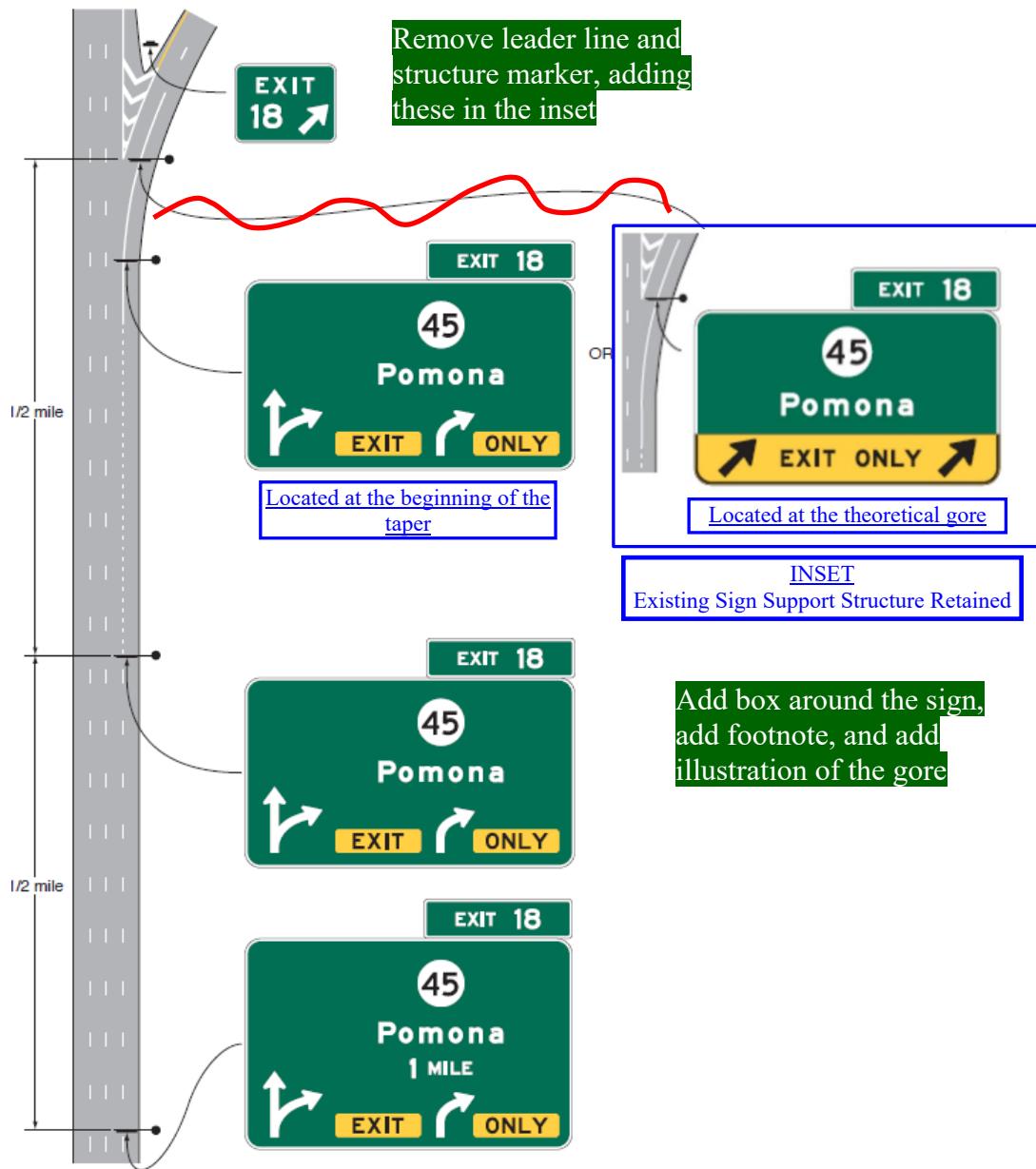
**Figure 2E-45. Partial Width Overhead Arrow-Per-Lane Guide Sign
for Intermediate or Minor Interchanges**



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2566 NCUTCD generally agrees with Figure 2E-46 as presented in the NPA, but recommends revising
2567 the alternative for “existing sign structure retained” to use an inset box instead of depicting on
2568 the same figure as the APL sign to improve clarity and reduce confusion.
2569

Figure 2E-46. Example of Signing for a Two-Lane Intermediate or Minor Interchange Exit with an Option Lane and a Dropped Lane using Partial-Width Overhead Arrow-Per-Lane signs

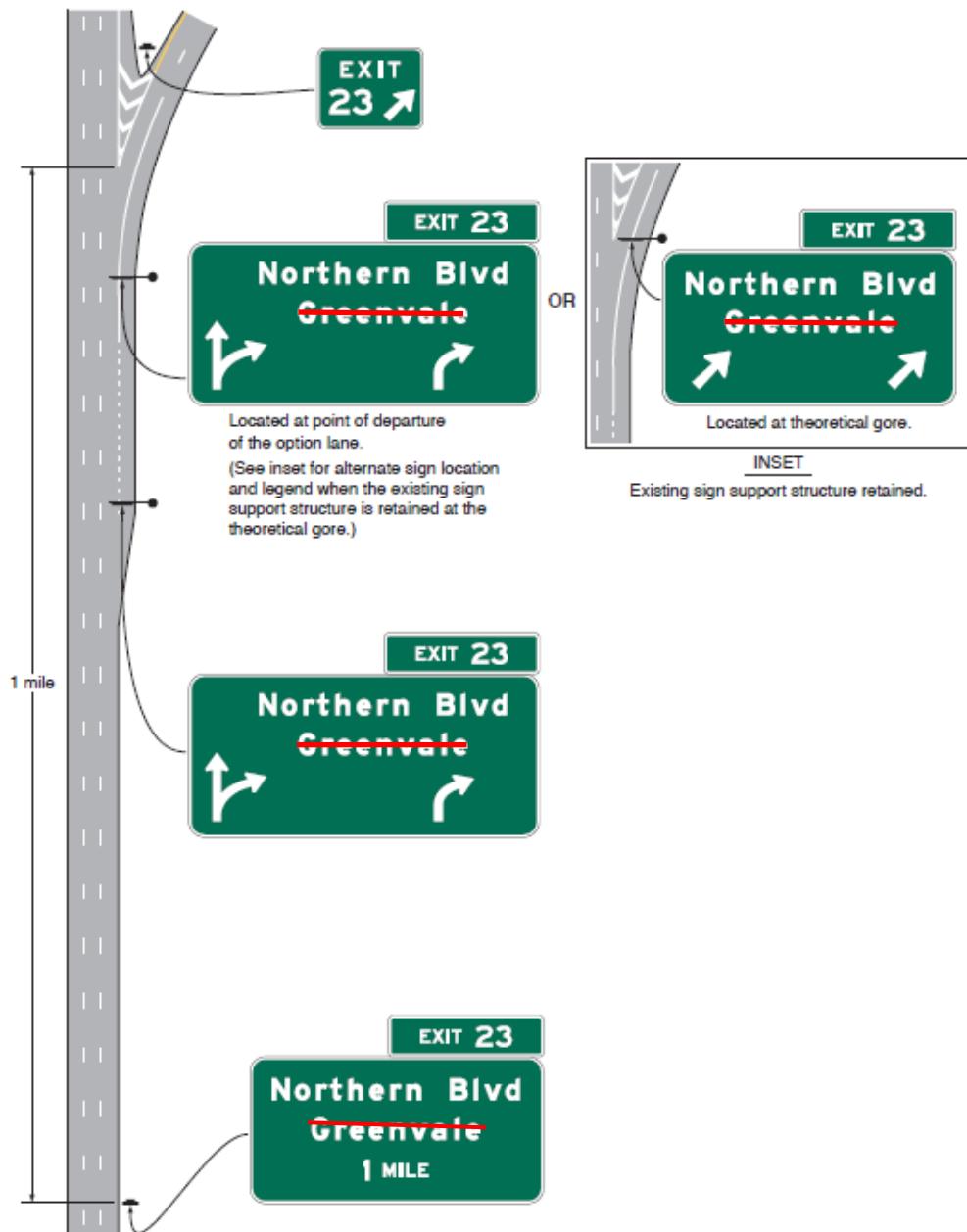


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2574 NCUTCD generally agrees with Figure 2E-47 as presented in the NPA, but recommends deleting
2575 the city name on the signs to agree with Section 2E.15 regarding mixing of street names and city
2576 names.

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Figure 2E-47. Example of Signing for a Two-Lane Intermediate or Minor Interchange Exit
with Option and Auxiliary Lanes using Partial-Width Overhead Arrow-Per-Lane signs



2580 NCUTCD agrees with Figure 2E-48 as presented in the NPA, but recommends revising the
2581 figure title to “Example of Conventional Signing for a Two-Lane Intermediate or minor
2582 Interchange Exit with an Option Lane and a Dropped Lane.”

2583

2584 **Figure 2E-48. Example of Conventional Signing for a Two-Lane Intermediate or**
2585 **minor Interchange Exit with an Option Lane and a Dropped Lane**

2586

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2589 NCUTCD generally agrees with Figure 2E-49 as presented in the NPA, but recommends revising
2590 the title to “Example of Conventional Signing for a Two-Lane Intermediate or Minor
2591 Interchange Exit with an Option Lane and an Auxiliary Lane” and deleting the city name on the
2592 signs to agree with Section 2E.15 regarding mixing of street names and city names.

2593

2594 **Figure 2E-49. Example of Conventional Signing for a Two-Lane Intermediate or**
2595 **Minor Interchange Exit with an Option Lane and an Auxiliary Lanes**

2596

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2598

2599 **Section 2E.43 Comments:** NCUTCD generally agrees with 2E.43 as presented in the NPA, but
2600 recommends revising as follows:

- 2601 • Delete “Except as provided otherwise for cloverleaf interchanges (see Section 2E.33)” from
2602 Guidance list item A, as other content in the Section addresses conditions at a cloverleaf
2603 interchange, and calling out only cloverleaf interchanges could add confusion
- 2604 • Other editorial revisions as needed

2605

2606 **Section 2E.43 Number of Signs at an Overhead Installation and Sign Spreading**

2607 *Guidance:*

2608 *If overhead signs are warranted, as set forth in Section 24.17 2A.13, the number of signs at these*
2609 *locations should be limited to only those essential in communicating pertinent destination information to*
2610 *the road user. Exit Direction signs for a single exit and the Advance Guide signs should have only one*
2611 *sign with one or two destinations. Regulatory signs, such as speed limits, should not be used in*
2612 *conjunction with overhead guide sign installations. Because road users have limited time to read and*
2613 *comprehend sign messages, there should not be more than three guide signs displayed at any one location*
2614 *either on the overhead structure or its support.*

2615 Option:

2616 At overhead locations, more than one sign may be installed to advise of a multiple exit condition at an
2617 interchange. If the roadway ramp or crossing roadway has complex or unusual geometrics, additional
2618 signs with confirming messages may be provided to properly guide the road user.

2619 Support:

2620 Sign spreading is a concept where major overhead signs are spaced so that road users are not
2621 overloaded with a group of signs at a single location. Figure 2E-50 illustrates an example of sign
2622 spreading.

2623 *Guidance:*

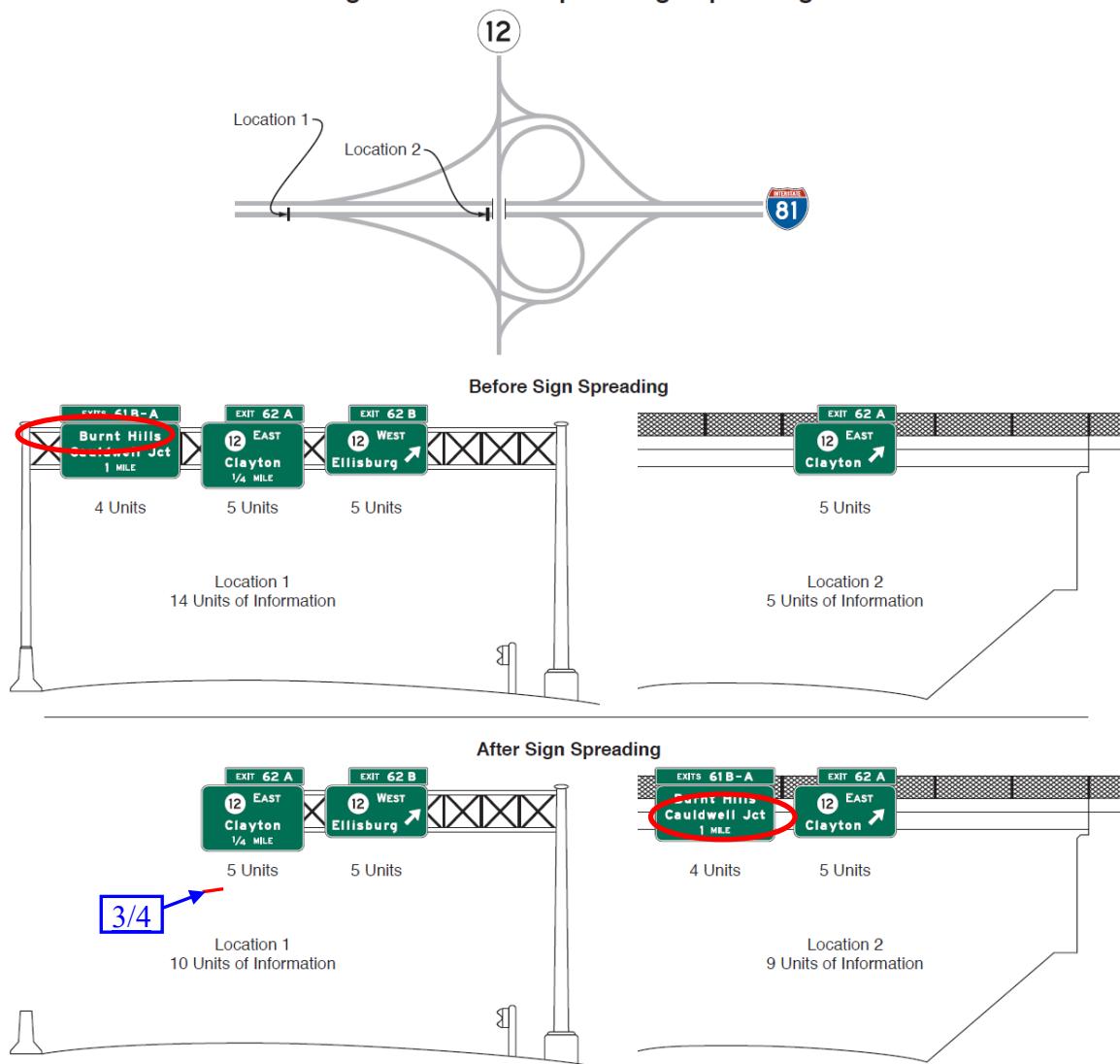
2624 *Where overhead signing is used, sign spreading should be used at all single-exit interchanges and to*
2625 *the extent possible at multi-exit interchanges. Sign spreading should be accomplished by use of the*
2626 *following:*

2627 A. Except as provided otherwise for cloverleaf interchanges (see Section 2E.33), the Exit
2628 Direction sign should be the only guide sign used in the vicinity of the gore (other than the Exit
2629 Gore sign). It should be located overhead near the theoretical gore and generally on an
2630 overhead sign support structure. [delete phrase re cloverleafs]

2631
2632 B. The Advance Guide sign to indicate the next interchange exit should be placed near the crossroad
2633 location. If the crossroad goes over the mainline, the Advance Guide sign should be placed on
2634 the overcrossing structure or on a separate structure immediately in front of the overcrossing
2635 structure.

2636
2637 NCUTCD generally agrees with Figure 2E-50 as presented in the NPA, but recommends
2638 reducing the width of the full-width exit number plaques and revising the distance on one sign.
2639

Figure 2E-50. Example of Sign Spreading



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2643 **Section 2E.44 Comments:** NCUTCD agrees with 2E.44 as presented in the NPA.

2644 **Section 2E.44 Closely Spaced Interchanges**

2645 Support:

2646 Section 2E.11 contains information regarding sign spreading where the Exit Direction sign and the
2647 Advance Guide sign for the next interchange are mounted overhead. Sign spreading is particularly
2648 beneficial where interchanges are closely spaced and overhead signing is used in conjunction with
2649 Interchange Sequence signs as provided in Paragraph 2.

2650 Guidance:

2651 *Interchange Sequence signs (see Section 2E-24) should be used at closely spaced interchanges.
When used, they should identify and show street names and distances for the next two or three exits as
shown in Figure 2E-11.*

2652 Standard:

2653 **Advance guide signs for closely spaced interchanges shall show information for only one
2654 interchange.**

2655 **New Section 2E.XX Comments:** NCUTCD recommends creating a new Section titled “Guide
2656 Signing in Tunnels” at the end of the “Installation” subchapter comprised of material relocated
2657 from Section 2E.01 and revised as follows:

- 2658 • Revise the first Support paragraph as follows:
 - 2659 ○ Relocate the wording “in tunnels” for clarity
 - 2660 ○ Delete text that references signs other than guide signs
 - 2661 ○ Replace “standardized” with “typical”, as sign layouts are generally illustrative
 - 2662 figures
 - 2663 ○ Other editorial revisions for clarity
- 2664 • Revise Option list item B as follows:
 - 2665 ○ Clarify placement of right-hand and left-hand exit number plaques
 - 2666 ○ Add “not less than” in front of letter heights to allow taller text if it can be
 - 2667 accommodated
 - 2668 ○ Delete “while maintaining the standard vertical layout” as there is no standard for this
- 2669 • Revise Option list item C as follows:
 - 2670 ○ List only a 10.67” minimum letter height to allow taller text if it can be
 - 2671 accommodated
 - 2672 ○ Delete “fewer visual distractions”, as it isn’t a controlling factor
- 2673 • Revise the second Support statement to clarify the specific issue of dirt and residue in a
- 2674 tunnel
- 2675 • Revise the first Guidance paragraph to list both external and internal sign illumination
- 2676 • Revise “exit from” to “end of” in the second Guidance paragraph, as the term “exit” is
- 2677 associated with an offramp, not a portal

2678 **Section 2E.XX Guide Signing in Tunnels**

2679 Support:

2680 The application – in tunnels - of the provisions for freeway and expressway guide signs in
2681 tunnels can present unique challenges not encountered elsewhere due to the extended and
2682 continuous distances of constrained vertical and horizontal clearances in which to place signs.
2683 The effect of these constraints is particularly evident when there are interchange exit ramps or

2690 other geometric features inside the tunnel that warrant signs to provide adequate notice require
2691 guide signing. Accordingly As a result, it might not always be possible to employ use the
2692 standardized typical layouts to all for guide signs inside a tunnel. In addition, interchange guide
2693 signs might need to be limited to one destination only, with other destinations displayed
2694 separately on Supplemental guide signs (see Section 2E.50). Acceptable methods to modify the
2695 layout of a sign to limit fit the space required available in a tunnel are provided in Paragraph 5 of
2696 this Section.

2697 Option:

2698 Overhead-mounted guide signs in tunnels may be modified in accordance with the following
2699 when needed to accommodate limited vertical clearance available for signs:

- 2700 A. Some sign legend elements may be arranged side by side, such as by placing route shields
2701 to the left of the destination instead of above.
- 2702 B. The Exit Number plaque (see Section 2E.23 2E.22) may be placed at the right edge of the
2703 sign for right exits or at the left edge of the sign for left exits instead of at the top edge of
2704 the sign. The legend of the Exit Number plaque may use a reduced letter height of not
2705 less than 6 inches for the word EXIT(S) and not less than 12 inches for numerals and
2706 suffixes while maintaining the standard vertical layout.
- 2707 C. Destination and roadway names may be displayed in reduced letter heights of 13.33
2708 inches or not less than 10.67 inches, when determined acceptable based on consideration
2709 of reduced speeds, fewer visual distractions, and other relevant factors, while maintaining
2710 adequate space between the legend and edges of the sign to ensure legibility and quick
2711 recognition.
- 2712 D. Unusually long destination and roadway names that cannot be adequately shortened or
2713 otherwise acceptably abbreviated may be displayed using series D letters in lieu of Series
2714 E(modified).

2715 Support:

2716 The visibility and retroreflectivity of sign sheeting inside tunnels can be reduced by the
2717 accumulation of residue that results from being unexposed to environmental elements such as
2718 rain. Unlike typical guide signs that are exposed to rain, guide signs in tunnels accumulate dirt
2719 and residue. The dirt and residue can reduce visual contrast between legend and background and
2720 reduce retroreflectivity of sign sheeting.

2721 Guidance:

2722 Overhead signs in tunnels should be illuminated have external or internal sign illumination
2723 to ensure adequate visibility between scheduled maintenance and cleanings.

2724 One or more Interchange Sequence signs (see Section 2E.24) should be used on the
2725 approach to the tunnel entrance to display the distances to the next interchanges that have exit
2726 ramps inside the tunnel or immediately following the exit from end of the tunnel.

2727 Supplementary pavement markings, such as word, arrow, and/or route shield markings (see
2728 Part 3), should be considered inside the tunnel in addition to the basic lane and edge line
2729 markings.

2730 Standard:

2731 Applicability of the provisions of Paragraph 5 of this Section shall be limited to those
2732 signs within the limits of the tunnel and not extended to the approaches to or departures
2733 from the tunnel.

2734

2735 OTHER GUIDE SIGNS

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2737

2738 **Section 2E.45 Comments:** NCUTCD agrees with 2E.45 as presented in the NPA.

2739

2740 **Section 2E.45 Next Exit Plaques (E2-1P, E2-1aP)**

2741 Option:

2742 Where the distance to the next interchange is unusually long, a Next Exit (E2-1P or E2-1aP) plaque
2743 (see Figure 2E-51) may be installed to inform road users of the distance to the next interchange.

2744 *Guidance:*

2745 *The Next Exit plaque should not be used unless the distance between successive interchanges is more
2746 than 5 miles.*

2747 *Where the Next Exit plaque is used, the E2-1P plaque should be used where the width of the Advance
2748 guide sign is equal to or greater than the width of the E2-1P plaque. The E2-1aP plaque should be used
2749 where the width of the E2-1P plaque exceeds the width of the Advance guide sign.*

2750 **Standard:**

2751 **The Next Exit plaque shall display the legend NEXT EXIT XX MILES. If the Next Exit plaque
2752 is used, it shall be placed below the Advance Guide sign nearest the interchange. It shall be
2753 mounted so as to not adversely affect the breakaway feature of the sign support structure.**

2754

2755

2756 NCUTCD agrees with Figure 2E-51 as presented in the NPA.

2757

2758 **Figure 2E-51. Next Exit Plaques**

2759

2760

2761 **Section 2E.46 Comments:** NCUTCD agrees with 2E.46 as presented in the NPA with minor
2762 editorial revisions.

2763

2764 **Section 2E.46 Post-Interchange Signs**

2765 *Guidance:*

2766 *If space between interchanges permits, as in rural areas, and where undue repetition of messages will
2767 not occur, a fixed sequence of signs should be displayed beginning 500 feet beyond the downstream end
2768 of the acceleration lane. At this point a Route sign assembly should be installed followed by a Speed
2769 Limit sign and a Distance sign, each at a spacing of 1,000 feet ([see Figure 2E-2](#)).*

2770 *If space between interchanges does not permit placement of these three post-interchange signs
2771 without encroaching on or overlapping the Advance Guide signs necessary for the next interchange, or in
2772 rural areas where the interchanging traffic is primarily local, one or more of the post-interchange signs
2773 should be omitted.*

2774 Option:

2775 Usually the Distance sign will be of less importance than the other two signs and may be omitted,
2776 especially if Interchange Sequence signs are used. If the sign for through traffic on an overhead assembly
2777 already contains the route sign, the post-interchange route sign assembly may also be omitted.

2778

2779

2780 **Section 2E.47 Comments:** NCUTCD generally agrees with 2E.47 as presented in the NPA, but
2781 recommends minor revisions in the title and section references.

2782

2783 **Section 2E.47 Post-Interchange Distance Signs (E7-1 [through Series](#), E7-2 [Series](#), E7-3**

2784 **Series)**

2785 **Standard:**

2786 **If used, the Post-Interchange Distance sign shall consist of a two- or three-line sign carrying the**
2787 **names of significant destination points and the distances to those points. The top line of the sign**
2788 **shall identify the next meaningful interchange with the name of the community near or through**
2789 **which the route passes, or if there is no community, the route number or name of the intersected**
2790 **highway (see Figure 2E-52).**

2791 **Support:**

2792 The minimum sizes of the route shields identifying a significant destination point are prescribed in
2793 Tables 2E-3 and 2E-5.

2794 **Option:**

2795 The text identification of a route may be displayed instead of a route shield, such as "U S XX,"
2796 "[State abbreviation] XX" (e.g., Del XX), or "County XX."

2797 **Guidance:**

2798 *If a second line is used, it should be reserved for communities of general interest that are located on*
2799 *or immediately adjacent to the route or for major traffic generators along the route.*

2800 **Option:**

2801 The choice of names for the second line, if it is used, may be varied on successive Distance signs to
2802 give road users maximum information concerning communities served by the route.

2803 **Standard:**

2804 **The third, or bottom line, shall contain the name and distance to a control city (if any) that has**
2805 **national significance for travelers using the route.**

2806 **Guidance:**

2807 *Distances to the same destinations should not be shown more frequently than at 5-mile intervals. The*
2808 *distances displayed on these signs should be the actual distance to the destination points and not to the*
2809 *exit from the freeway or expressway. The distance displayed for each community should comply with the*
2810 *provisions of Section 2D.44 2D.43.*

2811 NCUTCD agrees with Figure 2E-52 as presented in the NPA.

2812 **Figure 2E-52. Post-Interchange Distance Sign**

2813 **Section 2E.48 Comments:** NCUTCD generally agrees with 2E.48 as presented in the NPA, with
2814 minor editorial revisions to the title and text and reordering some of the content to present the
2815 information more logically.

2816 **Section 2E.48 Post-Interchange Travel Time Sign (E7-4 Series)**

2817 **Support:**

2818 At certain locations, it might be more meaningful to the recurrent road users to display the travel time
2819 rather than the distance to a destination. Such instances might be areas of adverse roadway conditions
2820 due to weather, such as in mountain passes or high elevations, or congestion that occurs during peak
2821 travel seasons, or recurring congestion.

2822 Section 2E.49 contains information on Comparative Travel Time signs for alternative routes.

2823 Section 2E.49 contains information on Distance and Travel Time signs for major junctions or
2824 interchanges.

2825 Section 2E.49 contains information on Comparative Travel Time signs for alternative routes.

2833 **Standard:**
2834 If used, the Post-Interchange Travel Time sign shall replace ~~of~~ the Post-Interchange Distance
2835 sign in the series of post-interchange signs (see Section 2E.47). [Relocated here because this is
2836 the Standard provision of greatest importance]

2837 The Post-Interchange Travel Time sign (see Figure 2E-53) shall comply with the provisions of
2838 Paragraph 1 of Section 2E.48 2E.47 with the following exceptions:

2839 A. The distance shall be replaced with a changeable message element to display the current
2840 travel time to the applicable destination; and

2841 B. The abbreviation MINS shall follow the changeable message element.

2842 If used, the Post-Interchange Travel Time sign shall be limited to locations that are susceptible
2843 to congestion on a recurring or otherwise frequent basis. If used, the Post-Interchange Travel Time
2844 sign shall replace of the Post-Interchange Distance sign in the series of post-interchange signs (see
2845 Section 2E.47). [relocate above]

2846 Travel times shall not be used on Interchange guide signs (see Section 2E.21).

2847
2848
2849 NCUTCD agrees with Figure 2E-53 as presented in the NPA.

Figure 2E-53. Post-Interchange Travel Time Sign



2850
2851
2852 **Section 2E.49 Comments:** NCUTCD agrees with 2E.49 as presented in the NPA with minor
2853 editorial revisions.
2854

2855 **Section 2E.49 Distance and Travel Time Sign and Comparative Travel Time Sign (E7-5,
2856 E7-6)**

2857 Support:

2858 Some locations might benefit from a travel time message displayed with the distance, or comparative
2859 travel times displayed for alternative routes to a common destination. These locations are typically in
2860 advance of a decision point where the road user can divert to an alternate route to avoid recurring
2861 congestion.

2862 Section 2E.48 contains information on Post-Interchange Travel Time signs.

2863 Section 2G.19 contains information on Comparative Travel Time signs for parallel lanes within the
2864 same highway route, such as for general-purpose lanes and managed lanes.

2865 **Standard:**

2866 The Distance and Travel Time sign (E7-5) shall display a major destination or junction, a
2867 distance message, and a travel time message, each on a separate line. The distance units shall be
2868 displayed in the distance message. The travel time shall be displayed in a changeable message
2869 element and the abbreviation MINS shall follow the changeable message element. The Distance
2870 and Travel Time sign shall not display distance and time to more than one destination or junction.

2871 The Comparative Travel Time sign (E7-6) shall display a major destination or junction and two
2872 alternative routes with travel time messages. Each alternative route and associated travel time
2873 message shall be on a separate line. The travel time shall be displayed in a changeable message
2874 element and the abbreviation MINS shall follow the changeable message element.

2875 Comparative travel times shall not be used to promote different modes of travel, such as
2876 personal vehicle highway travel compared with transit, or different forms of transit.

2877 Guidance:

2878 *Where used, the Distance and Travel Time sign should be located between interchanges and away*
2879 *from the sequence of interchange guide signs sequence or other major signs. The Distance and Travel*
2880 *time sign should desirably be located in advance of an urbanized area where interchanges become more*
2881 *closely spaced and/or in advance of a circumferential or other alternative route(s) where traffic the road*
2882 *user can decide to divert depending on the destination.*

2883 *Where used, the Comparative Travel Time sign should be located in advance of the sequence of*
2884 *interchange guide signs sequence to provide adequate time for the road user to decide whether to reroute.*

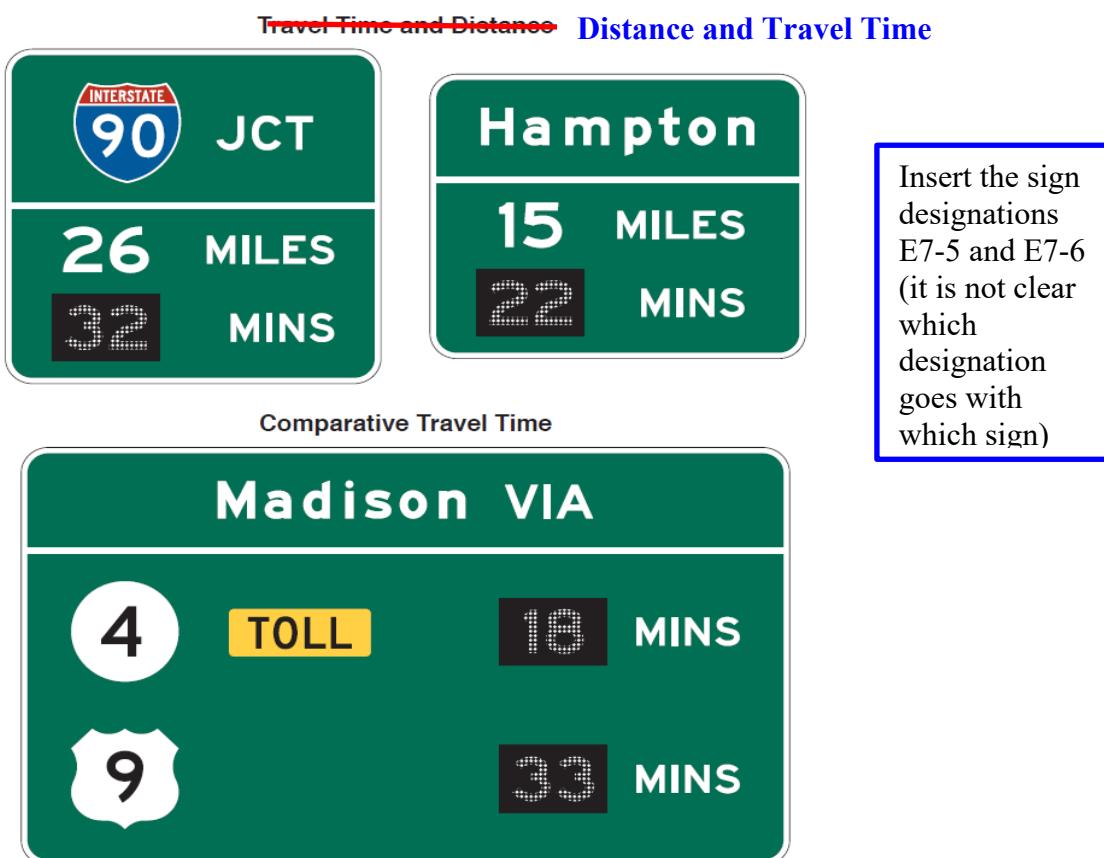
2885 Support:

2886 Figure 2E-54 shows examples of the application of the Distance and Travel Time sign and the
2887 Comparative Travel Time sign.

2888
2889 NCUTCD generally agrees with Figure 2E-54 as presented in the NPA, but recommends revising
2890 as follows:

- Revise title to “Travel Time Signs”
- Revise the label for the upper signs to “Distance and Travel Time”
- Add sign designations

2895 **Figure 2E-54. Travel Time Signs**



2899 **Section 2E.50 Comments:**

2900 General comments:

- 2901 • Roadway agencies have placed pictographs on guide signs for decades. If this option is
prohibited, agencies will likely be in nonconformance with the MUTCD because it is
unlikely that agencies using pictographs will remove them. The political pressures by
governmental bodies and institutions to retain their identities on these signs will be high.
- 2905 • Research on pictographs revealed very little negative impact when one pictograph was added
to a guide sign, but distraction increased significantly when three pictographs were displayed.
NCUTCD recommends revising 2E.50 as follows. Note that paragraph numbers have been
assigned to this section due to the complexity of the revisions.
- 2909 • Delete Guidance paragraph 2, as supplemental guide signs are commonly used at many
interchanges.
- 2911 • Change “information” to “names” in Guidance paragraph 5 to be consistent with other text in
the statement.
- 2913 • Delete Standard paragraph 8, as it conflicts with Guidance elsewhere in the Section and
could result in political pressure to accommodate four destinations on most or all
supplemental signs.
- 2916 • Add an Option statement as paragraph 11A consistent with Option text in the 2009 MUTCD
describing pictographs.
- 2918 • Add a Guidance statement as paragraph 11B recommending only one pictograph per sign
based on research findings.
- 2920 • Delete Standard paragraph 12 prohibiting pictographs on supplemental guide signs.
- 2921 • Revise a section reference in paragraph 13.
- 2922 • Add a new Standard paragraph 13A consistent with Standard text in the 2009 MUTCD
defining dimensions for pictographs.
- 2924 • Delete the second sentence in Standard paragraph 14, as it is addressed in new Standard
paragraph 13A.
- 2926 • Add a new Standard paragraph 14A requiring compliance with Section 1A.04.

2928 **Section 2E.50 Supplemental Guide Signs (E3 Series)**

2929 Support:

2930 [Par. 1] Supplemental guide signs can be used to provide information regarding destinations accessible
from an interchange, other than places displayed on the standard interchange signing. However, such
Supplemental guide signing can reduce the effectiveness of other more important guide signing because
of the possibility of overloading the road user’s capacity to receive visual messages and make appropriate
decisions. For agencies that have adopted Specific Service Signs for attractions, many destinations are
more appropriately signed as attractions. “The AASHTO Guidelines for the Selection of Supplemental
Guide Signs for Traffic Generators Adjacent to Freeways” is incorporated by reference in this section (see
Page i for AASHTO’s address).

2938 Guidance:

2939 [Par. 2] *Because most interchanges will not have a need for Supplemental guide signs, consideration of*
their use should be limited to situations where there is a demonstrated need to sign for more than the two
primary destinations from an interchange that are displayed on the Advance guide and Exit Direction
signs. [delete - inaccurate]

2943 [Par. 3] A Supplemental guide sign should not be installed unless a destination meets the criteria
2944 established by the State or agency policy. States and other agencies should adopt an appropriate policy
2945 for installing supplemental signs using the "AASHTO Guidelines for the Selection of Supplemental Guide
2946 Signs for Traffic Generators Adjacent to Freeways." In developing policies for such signing, such items
2947 as population, amount of traffic generated, distance from the route, and the significance of the
2948 destination, should be taken into account.

2949 [Par. 4] No more than one Supplemental guide sign should be used on each interchange approach.

2950 [Par. 5] A Supplemental guide sign (see Figure 2E-55) should display no more than two destinations and
2951 no more than three lines of destination information names. Destination names should be followed by the
2952 interchange number (and suffix), or if interchanges are not numbered, by the legend NEXT RIGHT or
2953 SECOND RIGHT or both, as appropriate. The Supplemental guide sign should be installed as an
2954 independent guide sign assembly.

2955 [Par. 6] Where two or more Advance guide signs are used, the Supplemental guide sign should be
2956 installed approximately midway between two of the Advance guide signs. If only one Advance guide sign
2957 is used, the Supplemental guide sign should follow it by at least 800 feet. If the interchanges are
2958 numbered, the interchange number should be used for the action message.

2959 [Par. 7] A Supplemental guide sign should not be installed in the same location with or where it will
2960 detract from guide signs for a different interchange.

2961 Standard:

2962 [Par. 8] ~~No more than four supplemental traffic generator destinations shall be signed from
2963 a single interchange along the main roadway (see Paragraphs 3 and 4 regarding the
2964 number of Supplemental guide signs at an interchange and the number of destinations
2965 displayed on a Supplemental guide sign).~~ [delete]

2966 [Par. 9] Supplemental guide signs shall not be placed at the same location as Advance guide, Exit
2967 Direction, or other signs related to ~~that~~ an exit or interchange.

2968 [Par. 10] Guide signs for park – ride facilities shall be considered as Supplemental guide signs (see
2969 Figure 2E-56).

2970 [Par. 11] Guide signs for recreational or cultural interest destinations (see Chapter ~~2K 2M~~) shall be
2971 considered as Supplemental guide signs, except where the interchange provides direct access to
2972 such a destination and is instead displayed on the Advance guide and Exit Direction signs.

2973 Option:

2974 [Par. 11A] A pictograph (see definition in Section 1C.02) may be used on a Supplemental Guide sign in
2975 conjunction with a destination that is associated with governmental agencies, military bases, universities,
2976 or other government-approved institutions.

2977 Guidance:

2978 [Par. 11B] When used, no more than one pictograph should be displayed on a Supplemental Guide sign.

2979 Standard:

2980 [Par. 12] ~~Pictographs shall not be displayed on Supplemental guide signs, except as provided in
2981 Paragraphs 13 and 14 of this Section for the Park – Ride Supplemental guide sign.~~

2982 Guidance:

2983 [Par. 13] The use of a transit pictograph and/or the carpool symbol on the Park – Ride Supplemental
2984 guide sign should comply with the provisions of Paragraph 5 of Section ~~2D.46~~ 2D.48.

2985 Standard:

2986 [Par. 13A] The maximum dimension (height or width) of a pictograph shall not exceed two times
2987 the upper-case letter height of the destination legend and shall not exceed the size of a route shield
2988 on the guide sign. If used, the pictograph shall be located to the left of the destination legend it
2989 represents, except as provided in Paragraph 14 for the park-ride Supplemental Guide sign.

2990 [Par. 14] When a transit pictograph is displayed on the Park – Ride Supplemental guide sign, it
2991 shall be located on the same line as the carpool symbol, if used, above the word legend. ~~The~~

2992 ~~maximum dimension (height or width) of the pictograph shall not exceed two times the upper case~~
2993 ~~letter height of the PARK-RIDE legend.~~

2994 [Par. 14A] Pictographs shall otherwise comply with the provisions of Section 2A.04.

2998 NCUTCD agrees with Figure 2E-55 as presented in the NPA.

3000 **Figure 2E-55. Supplemental Guide Sign for a Multi-Exit Interchange**

3003 NCUTCD agrees with Figure 2E-56 as presented in the NPA.

3005 **Figure 2E-56. Supplemental Guide Sign for a Park-Ride Facility**

3009 **Section 2E.51 Comments:** NCUTCD agrees with 2E.51 as presented in the NPA with minor
3010 editorial revisions.

3012 **Section 2E.51 Community Interchanges Identification Signs (E9-4 Series, E9-5 Series)**

3013 Support:

3014 For suburban or rural communities served by two or three interchanges, Community Interchanges
3015 Identification (see Figure 2E-57) signs reduce the amount of information displayed on the Advance guide
3016 and Exit Direction signs by eliminating repetition of the same destinations for separate interchanges (see
3017 Figure 2E-58). [NCUTCD recommends deleting or replacing Figure 2E-58]

3018 Guidance:

3019 In these cases, the name of the community followed by the word EXITS should be displayed on the top
3020 line; the lines below should display the destination, road name or route number, and the corresponding
3021 distances to the nearest 1/4 mile.

3022 The sign should be located in advance of the first Advance guide sign for the first interchange within
3023 the community.

3024 The legend displayed on the Advance guide and Exit Direction signs for each interchange should be
3025 consistent with the interchange names displayed on the Community Interchanges Identification sign. The
3026 name of the community displayed on the Community Interchanges Identification signs should be omitted
3027 from the legends of the Advance guide and Exit Direction signs.

3028 Option:

3029 If interchanges are not conveniently identifiable or if there are more than three interchanges to be
3030 identified, the NEXT XX EXITS sign (see Section 2E.52) may be used.

3033 NCUTCD agrees with Figure 2E-57 as presented in the NPA.

3035 **Figure 2E-57 Example of a Community Interchanges Identification Sign**

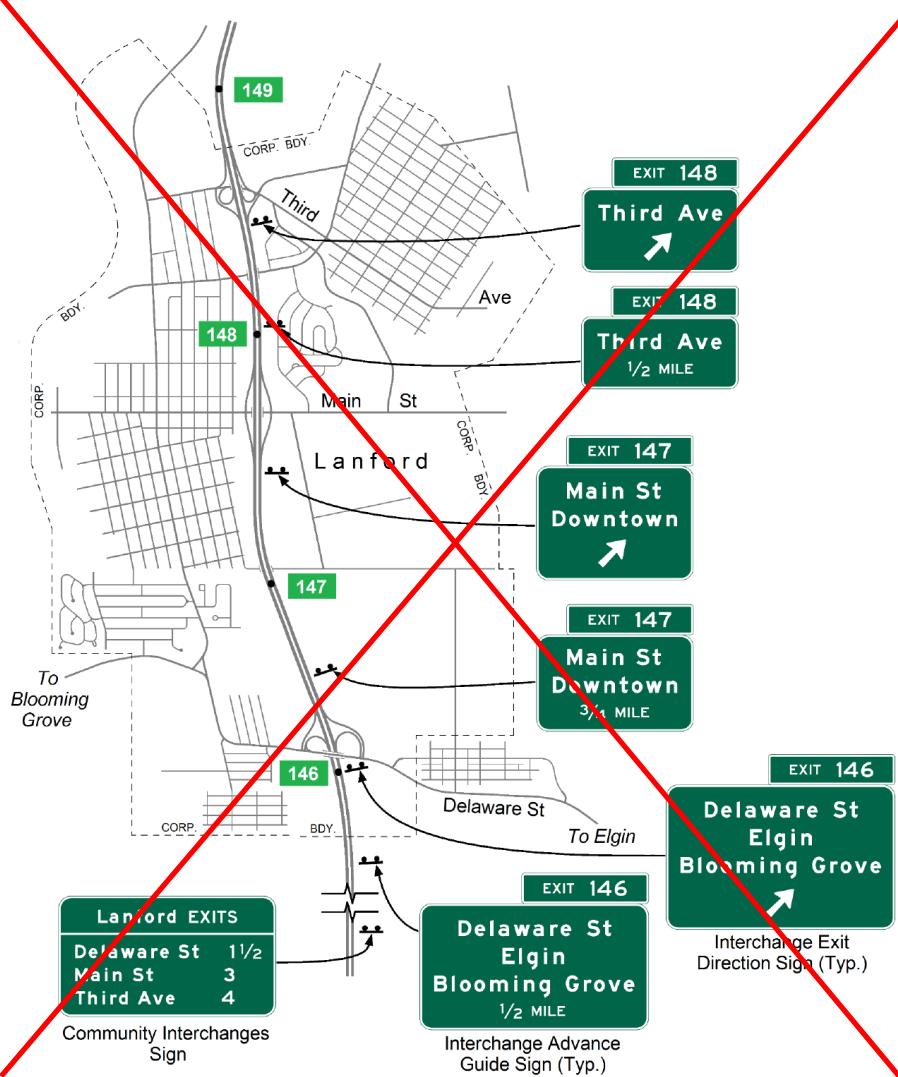
3040 NCUTCD recommends deleting Figure 2E-58 as presented in the NPA and replacing with a new
3041 figure. [REDACTED]

3042 Problems with Figure 2E-58 as presented in the NPA:

- Some signs have three destinations or mix street names and city names, which violates
3044 Section 2E.15.
- Showing “Third Ave” may be misinterpreted as a recommendation or requirement to use
3046 words instead of numbers for numbered streets, roads, or avenues.

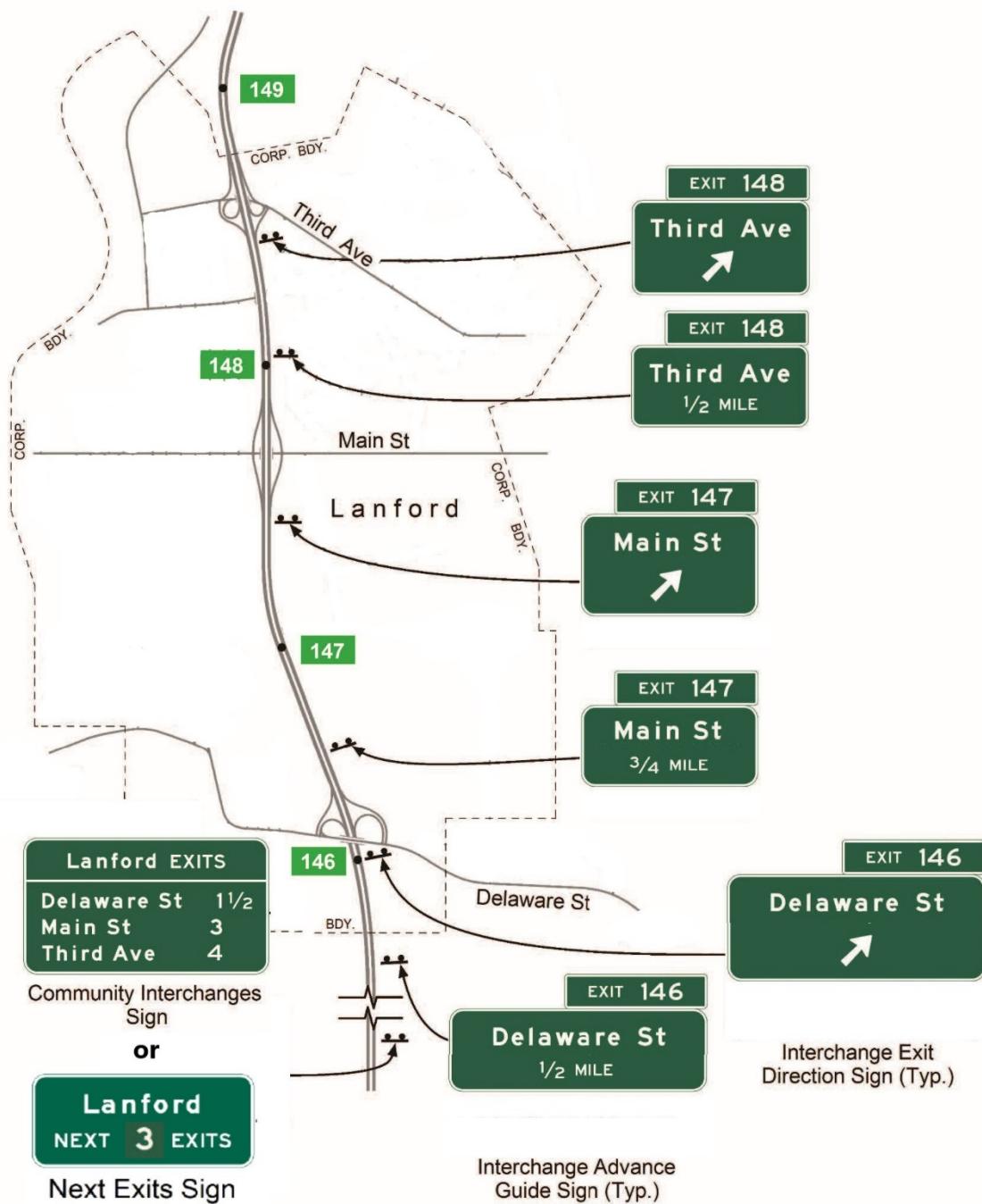
3047 NCUTCD recommends adding a new Figure 2E-58 titled “Examples of Use of a Community
3048 Interchanges Sign and a Next Exit Sign” depicting the use of either a Community Interchanges
3049 or Next Exits sign without (some of) the problems inherent in the NPA figure.

3051 Figure 2E-58. Example of Use of a Community Interchanges Sign



3055

Figure 2E-YY. Examples of Use of a Community Interchanges Sign and a Next Exit Sign



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Section 2E.52 Comments: NCUTCD agrees with 2E.52 as presented in the NPA with minor editorial revisions.

3060

3061

Section 2E.52 NEXT XX EXITS Sign (E9-3-Series)

Support:

3064 Many freeways or expressways pass through historical or recreational regions, or urban areas served
3065 by a succession of several interchanges.

3066 Option:

3067 Such regions or areas may be indicated by a NEXT XX EXITS ([E9-3 series](#)) sign (see Figure 2E-59)
3068 located in advance of the Advance Guide sign or signs for the first interchange ([see Figure 2E-60](#)).

3069 [NCUTCD recommends deleting or replacing Figure 2E-60]

3070 *Guidance:*

3071 *The sign legend should identify the region or area followed by the words NEXT XX EXITS.*

3072 *The legend displayed on the Advance Guide and Exit Direction signs for each interchange should not
3073 display the region or area name that is displayed on the NEXT XX EXITS sign.*

3074
3075 NCUTCD agrees with Figure 2E-59 as presented in the NPA, but recommends adding the E9-3
3076 designation to the sign.

3077 **Figure 2E-59. Example of a Next Exits Sign**

3078
3079 NCUTCD recommends deleting Figure 2E-60 as presented in the NPA.

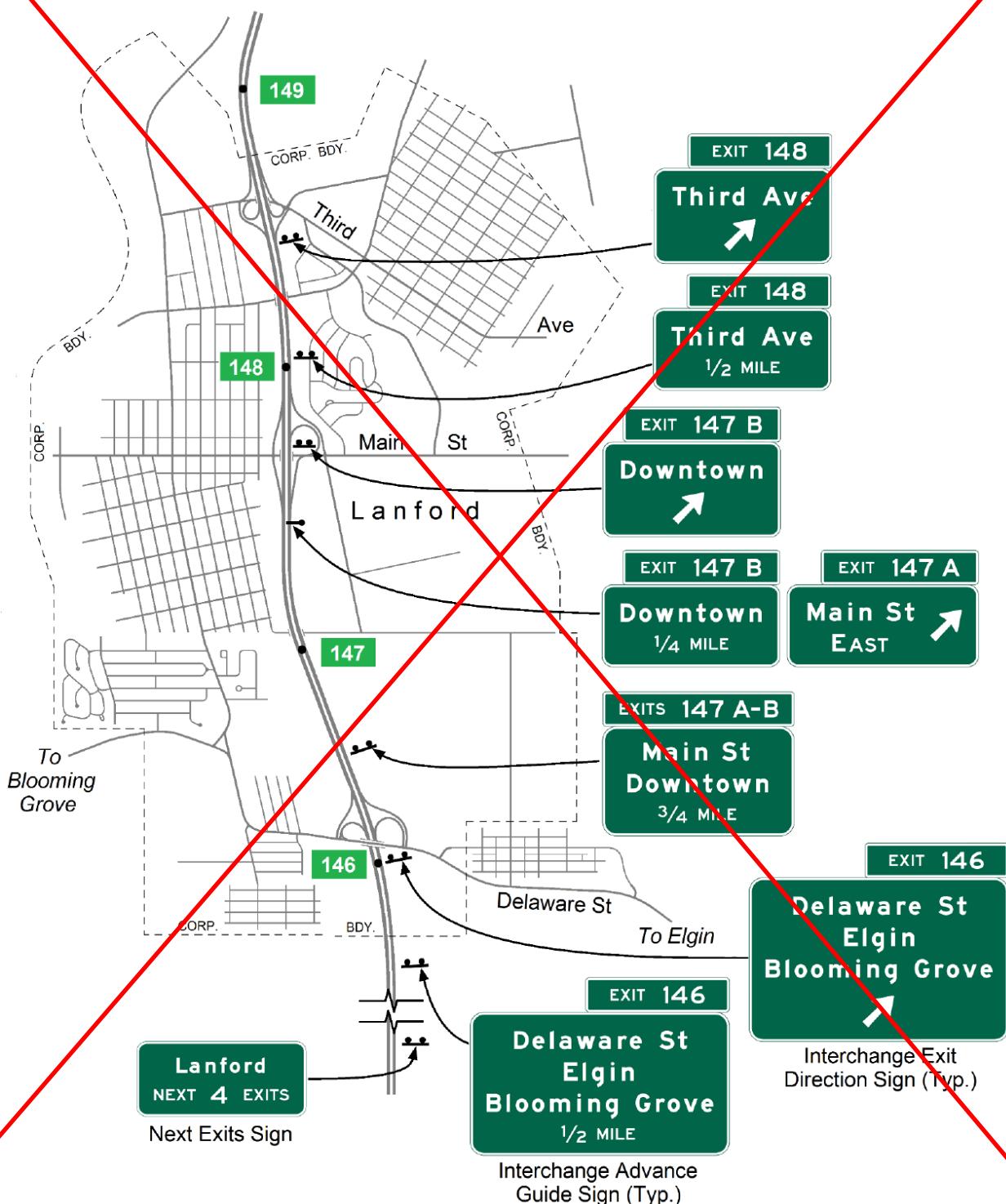
3080 Problems with Figure 2E-60:

- 3081
- 3082 • The likelihood of incorrect use of Next Exits signs seems low. The NCUTCD-recommended
3083 new version of Figure 2E-58 could address both Next Exits and Community Interchanges
3084 signs.
 - 3085 • Some signs have three destinations or mix street names and city names, which violates
3086 Section 2E.15.
 - 3087 • Showing “Third Ave” may be misinterpreted as a recommendation or requirement to use
3088 words instead of numbers for numbered streets, roads, or avenues.
 - 3089 • The figure depicts cardinal directions, but is missing a north arrow.
 - 3090 • Although the MUTCD has no provisions specifying the location of the cardinal direction on a
3091 guide sign, the Main St EAST Exit Direction sign is inconsistent with Exit Direction signs
3092 throughout this Chapter.
 - 3093 • Signing Exit 147 B only as “Downtown” is questionable because some road users may not
3094 realize that this is also Main Street West.

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Figure 2E-60. Example of Use of a Next Exits Sign



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3112 **Section 2E.53 Comments:** NCUTCD recommends revising 2E.53 as follows:

- 3113 • Delete the second sentence of the first Support paragraph because permanent signing is
3114 generally not installed for a temporary facility
- 3115 • Add “or Inspection” to the second Support paragraph because many of these facilities are
3116 now designated as inspection stations
- 3117 • Add the WEIGH STATION NEXT RIGHT sign to list item B in the first Standard statement
- 3118 • Add an Option paragraph allowing omitting the weigh station exit gore sign where overhead
3119 signing is provided
- 3120 • Revise the Option and second Standard statement to allow alternate sign legends to better
3121 identify the purpose of the station
- 3122 • Add a specific reference to the D8-1 or D8-2 sign for placement of open/closed messages
- 3123 • Revise the final Guidance statement for placement of open/closed messages to be consistent
3124 with Section 2D.51

3125

3126 **Section 2E.53 Weigh-Inspection Station Signing**

3127 **Support:**

3128 Independent facilities or areas have been added along many highways where certain commercial
3129 vehicles are directed to stop to be weighed and / or inspected. **These areas are sometimes permanent,**
3130 **such as in a roadside area, or temporary mobile facilities deployed along the roadway.**

3131 The general concept for signing permanent Weigh or Inspection Stations is similar to Rest Area
3132 signing (see Section 2I.05) because in both cases traffic using either area remains within the highway
3133 right-of-way.

3134 **Standard:**

3135 The standard sequence of signs for a Weigh Station on an expressway or Freeway shall include
3136 four basic signs (see Figure 2E-59 2E-61):

- 3137 A. Advance Weigh Station Distance (D8-1) sign, with the distance 1 MILE displayed,
- 3138 B. Advance Weigh Station Distance (D8-1) sign, with the distance ½ MILE displayed **or**
Weigh Station Next Right (D8-2) sign,
- 3139 C. Weigh Station Exit Direction **at** (D8-3) sign, and
- 3140 A. Weigh Station Exit Gore Sign (same legend as the Exit Direction (D8-3) sign).

3141 **Option:**

3142 When an overhead Weigh Station Exit Direction sign is provided, the Weigh Station Exit Gore sign
3143 may be omitted.

3144 Where State law requires trucks of a certain weight to enter the weigh station, a Weigh Station (R13-
3145 1) regulatory sign (See section 2B.60) may be added to the sign sequence as shown in Figure 2E-61.

3146 **Where only commercial vehicle inspections are conducted in the inspection area and vehicles are not**
weighed, the WEIGH STATION legend of the D8 series signs may be replaced with the alternate legend,
COMMERCIAL VEHICLE INSPECTION AREA. Where the location conducts only one specific type
3147 of inspection, the D8 sign series Weigh Station legend may be replaced by an alternative legend such as
3148 “INSPECTION”, “AGRICULTURE”, “PORT OF ENTRY” or other appropriate legend to match the
3149 specific type of inspection conducted at the station.

3150 **Standard:**

3151 When the WEIGH STATION legend of the D8 series signs is replaced with an alternative
3152 **COMMERCIAL VEHICLE INSPECTION AREA** legend as provided for in this Section, the
3153 WEIGH STATION legend of the R13-1 sign shall be replaced with the alternate legend
INSPECTION AREA.

3158 **A sign or plaque with a changeable legend display that displays either OPEN or CLOSED shall**
3159 **be included with a D8-1 sign or a D8-2 sign in the signing sequence to indicate when trucks are**
3160 **required to enter the weigh station.**

3161 *Guidance:*

3162 *The Weigh Station ~~Advance~~ Next Right sign (D8-2) or the Advance Weigh Station ~~Advance~~ Distance sign (D8-1)*
3163 *should display, either ~~within the sign border~~ on the sign or on a supplemental plaque or sign panel, the changeable*
3164 *legend OPEN or CLOSED.*

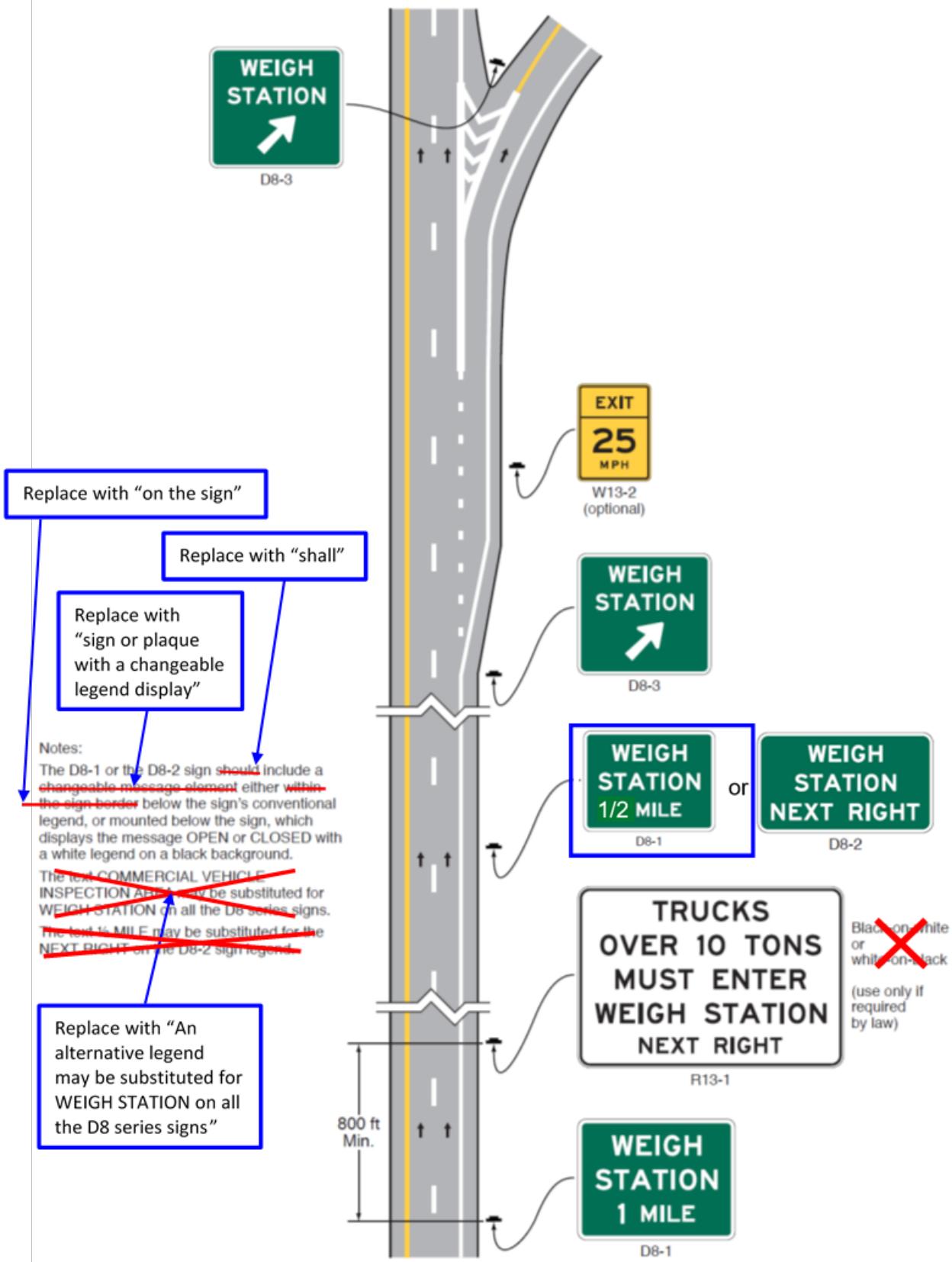
3165 Support:

3166 Weigh ~~Station~~ and Commercial Vehicle Inspection Area sign layouts for freeway and expressway
3167 applications are shown in the “Standard Highway Signs” publication (see Section 1A.11). An example of
3168 weigh station signing for use on freeways and expressways is shown in Figure 2E-61.

3172 NCUTCD recommends revising Figure 2E-61 as follows:

- 3173 • Add a D8-1 with ½ MILE distance next to the D8-2 as an acceptable alternate
- 3174 • Delete the note adjacent to the R13-1 sign that allows white on black to be consistent with
3175 Section 2B.67
- 3176 • Revise the first note as follows:
 - 3177 ○ Delete the words “within the sign border” and replace with “on the sign”
 - 3178 ○ Revise the word “should” to “shall” to conform with the text
 - 3179 ○ Revise “changeable message element” to “sign or plaque with a changeable
3180 legend display” to conform with the text
- 3181 • Revise the second note to read “An alternative legend may be substituted for WEIGH
3182 STATION on all the D8 series signs”
- 3183 • Delete the final note

Figure 2E-61. Example of Weigh Station Signing on Freeways



3185

3186

3187 **Section 2E.54 Comments:** NCUTCD agrees with 2E.54 as presented in the NPA.

3188

3189 **Section 2E.54 Route Signs and Trailblazer Assemblies**

3190 *Guidance:*

3191 *Route signs (see Figure 2E-62) should be incorporated as cut-out shields or other distinctive shapes*
3192 *on large directional guide signs. Where the Interstate shield is displayed in an assembly or on the face of*
3193 *a guide sign with U.S. or State Route signs, the Interstate numeral should be at least equal in size to the*
3194 *numerals on the other Route signs. The use of independent Route signs should be limited primarily to*
3195 *route confirmation assemblies.*

3196 *Route signs and auxiliary plaques showing junctions and turns should be used for guidance on*
3197 *approach roads, for route confirmation just beyond entrances and exits, and for reassurance along the*
3198 *freeway or expressway. When used along the freeway or expressway, the Route signs should be enlarged*
3199 *to a 36 x 36-inch minimum size for routes with one or two digits and to a 45 x 36-inch minimum size for*
3200 *routes with three digits as shown in the “Standard Highway Signs” publication (see Section 1A.11).*
3201 *When independently mounted Route signs are used in place of Pull-Through signs (see Section 2E.27),*
3202 *they should be located just beyond the exit.*

3203 *Option:*

3204 The standard Trailblazer Assembly (see Section 2D.34) may be used on roads leading to the freeway
3205 or expressway. Component messages of the Trailblazer Assembly may be incorporated into a single sign
3206 in accordance with the provisions of Section 2D.12. Independently mounted Route signs may be used
3207 instead of Pull-Through signs as confirmation information.

3208 *Support:*

3209 Section 2H.07 contains information regarding the design of signs for Auto Tour Routes.

3210

3211

3212 NCUTCD agrees with Figure 2E-62 as presented in the NPA.

3213

3214 **Figure 2E-62. Interstate, Off-Interstate, and U.S. Route Signs**

3215

3216 *Option:*

3217 The commonly used name or trailblazer route sign for a toll highway (see Chapter 2F) may be
3218 displayed on non-toll sections of the Interstate Highway System at:

- 3219 A. The last exit before entering a toll section of the Interstate Highway System;
- 3220 B. The interchange or connection with a toll highway, whether or not the toll highway is a part of the
3221 Interstate Highway System; and
- 3222 C. Other locations within a reasonable approach distance of toll highways when the name or
3223 trailblazer symbol for the toll highway would provide better guidance to road users unfamiliar
3224 with the area than would place names and route numbers.

3225 The toll highway name or route sign may be included as a part of the guide sign installations on
3226 intersecting highways and approach roads to indicate the interchange with a toll section of an Interstate
3227 route. Where needed for the proper direction of traffic, a trailblazer for a toll highway that is part of the
3228 Interstate Highway System may be displayed with the Interstate Trailblazer Assembly.

3229 *Support:*

3230 Chapter 2F contains additional information regarding signing for toll highways.

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3234 **Section 2E.55 Comments:** NCUTCD agrees with 2E.55 as presented in the NPA.

3235 **Section 2E.55 Eisenhower Interstate System Signs (M1-10, M1-10a)**

3236 Option:

3237 The Eisenhower Interstate System (M1-10 and M1-10a) signs (see Figure 2E-63) may be used, in accordance with Paragraphs 2 and 3 of this Section, on Interstate highways at periodic intervals and in rest areas, scenic overlooks, or other similar roadside facilities on the Interstate Highway System.

3238 **Standard:**

3239 If used, the M1-10a sign shall be used only in rest areas or other similar facilities where the sign
3240 can be viewed by occupants of parked vehicles or by pedestrians. The M1-10a sign shall not be
3241 installed on Interstate highway mainlines, ramps, or other roadways where it can be viewed by
3242 vehicular traffic.

3243 The M1-10 and M1-10a signs shall not be used as part of a Junction, Advance Route Turn,
3244 Directional, or Trailblazer Assembly, or as part of a guide sign or similar assembly providing
3245 direction to a route or destination.

3246 NCUTCD agrees with Figure 2E-63 as presented in the NPA.

3247 **Figure 2E-63. Eisenhower Interstate System Signs**

3248 **SIGNS FOR ROUTE DIVERSION BY VEHICLE CLASS**

3249 **Section 2E.56 Comments:** NCUTCD agrees with 2E.56 as presented in the NPA.

3250 **Section 2E.56 Signs for Route Diversion by Vehicle Class**

3251 Support:

3252 On some highways, a physical condition or highway feature might limit certain types or classes of vehicles from proceeding along that route through the site of that condition beyond which those vehicles are otherwise allowed. Examples include a restriction on taller legal height vehicles through a tunnel with a low clearance; a restriction of hazardous materials through a tunnel or over a bridge; and a restriction on wider vehicles, such as large trucks, over a viaduct with narrow lanes. In such cases, the restricted vehicles might be diverted along another route to reach a destination beyond the location of the limiting condition.

3253 Guidance:

3254 Where certain vehicles are prohibited at a downstream location along a route and those vehicles must divert to reach a through destination beyond that location, regulatory, warning, and/or guide signs advising those vehicle operators of the diversion should be installed in advance of the decision point to leave the through route for the diversion route.

3255 Option:

3256 The interchange and pull-through guide signs for the last point at which restricted vehicles must exit may be modified to incorporate regulatory and/or warning panels with word legends, as shown in Figure 2E-64, to display the regulations and/or warning messages relative to the vehicle class restriction.

3257 Standard post-mounted regulatory and warning signs, such as the No Hazardous Materials (R14-3) or Advance Low Clearance (W12-2) signs, may be used as provided elsewhere in this

3282 Manual at independent locations to supplement the regulatory and warning signs and panels
3283 referenced in Paragraphs 2 and 3 of this Section.

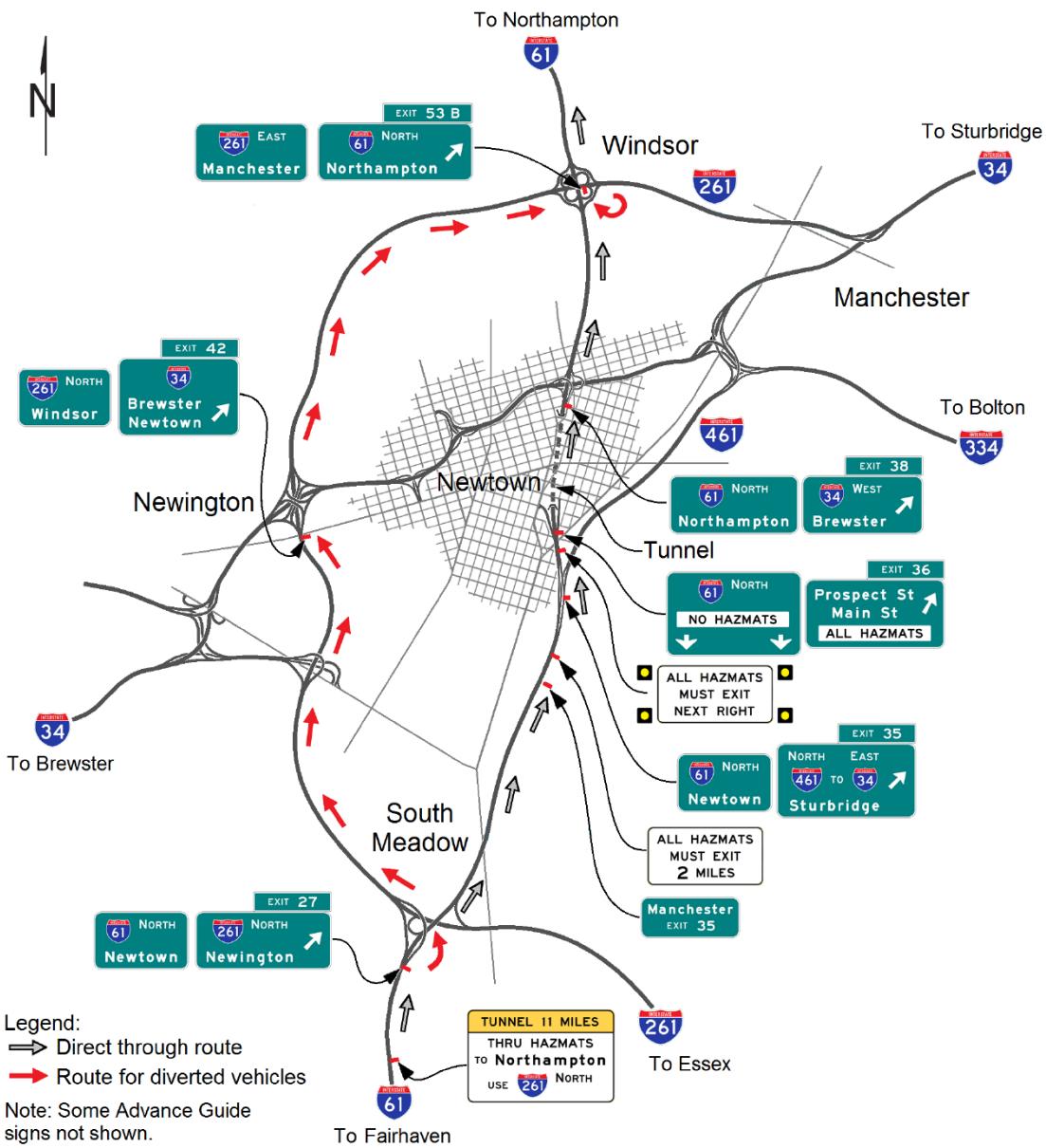
3284 Support:

3285 An example of signing for a route diversion by vehicle class is shown in Figure 2E-62 2E-64.
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3287

3288 NCUTCD agrees with Figure 2E-64 as presented in the NPA.
3289

Figure 2E-64. Example of Signing for Route Diversion by Vehicle Class



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SIGNS FOR INTERSECTIONS AT GRADE

3294 **Section 2E.57 Comments:** NCUTCD recommends revising 2E.57 to delete the Option
3295 statement, because exit numbers are not appropriate for an at-grade intersection with [redacted]
3296 conventional turning movements, the use of the term EXIT violates driver expectancy, and this
3297 signing may be infeasible where there are numerous intersections. [redacted]

3298

3299 **Section 2E.57 Signs for Intersections at Grade**

3300 *Guidance:*

3301 *If there are intersections at grade within the limits of an expressway, guide sign types provided in
3302 Chapter 2D should be used. However, such signs should be of a size compatible with the size of other
3303 signing on the expressway.*

3304 Option:

3305 Where an expressway route with grade-separated interchanges is interrupted by a short segment of at-
3306 grade intersections, exit numbering, if used, may be maintained through that segment for the major
3307 intersections to provide continuity in navigation and signing between the grade-separated segments (see
3308 Figure 2E-63).

3309

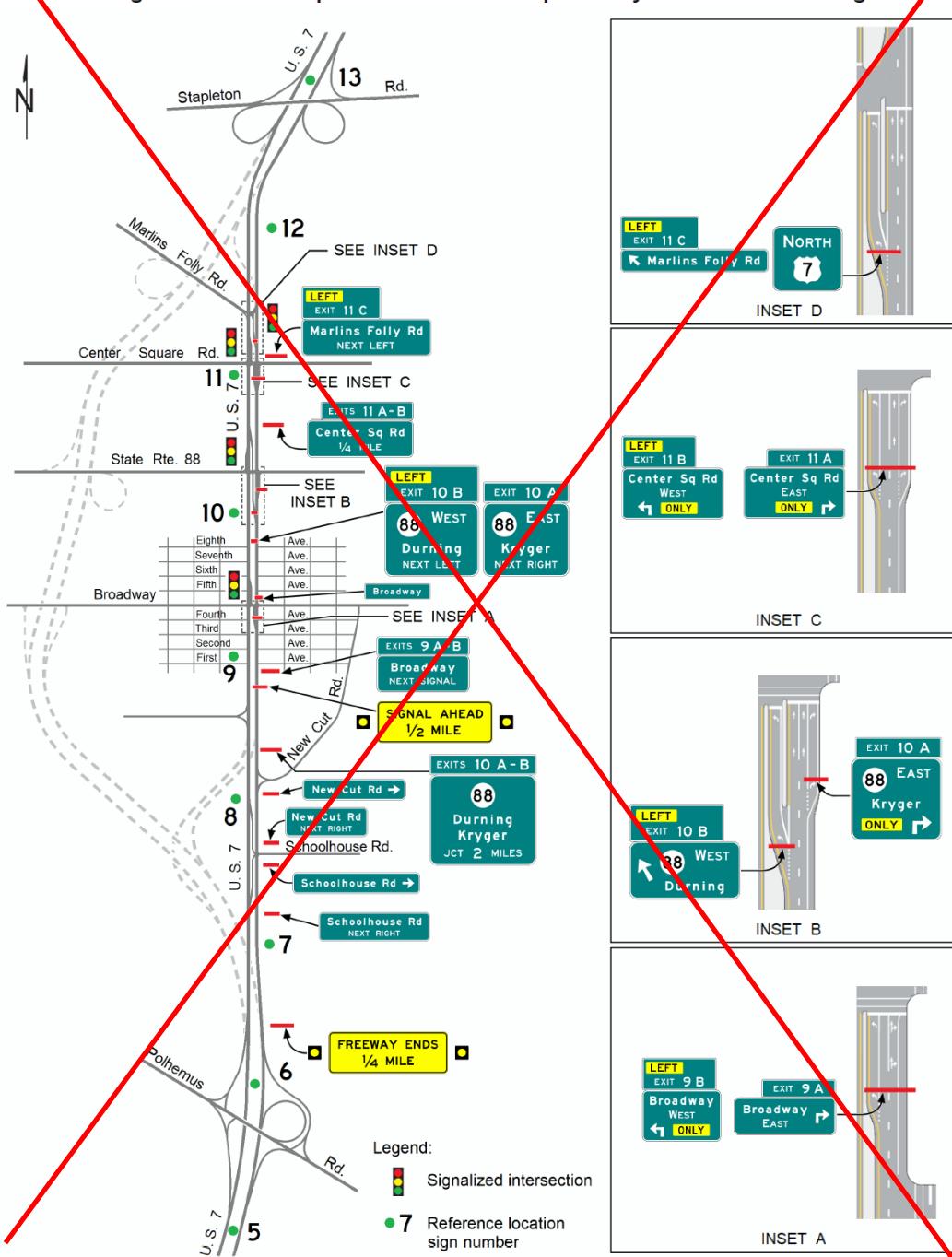
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3312 NCUTCD recommends deleting Figure 2E-65 as presented in the NPA, because exit numbers are
3313 not appropriate for an at-grade intersection with conventional turning movements, the use of the
3314 term EXIT violates driver expectancy, and this signing may be infeasible where there are
3315 numerous intersections.

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Figure 2E-65. Example of an At-Grade Expressway with Exit Numbering



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INTERFACE WITH CONVENTIONAL ROADWAYS

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3321 **Section 2E.58 Comments:** NCUTCD agrees with 2E.58 as presented in the NPA.

3322

Section 2E.58 Signing on Conventional Road Approaches and Connecting Roadways

3323 Support:

3324 Section 2D.45 contains information regarding the signing on conventional roads on the approaches to
3325 interchanges and the signing on connecting roadways.

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3329 **Section 2E.56 Comments:** NCUTCD agrees with 2E.59 as presented in the NPA.

3330

Section 2E.59 Wrong-Way Traffic Control at Interchange Ramps

3331 Support:

3332 Section 2B.41 contains information regarding the use of regulatory signs to deter wrong-way
3333 movements at intersections of freeway or expressway ramps with conventional roads, and in the area
3334 where entrance ramps intersect with the mainline lanes.

3335 Section 2D.46 contains information regarding the use of a Directional assembly or a guide sign to
3336 mark the entrance to a freeway or expressway from a conventional road.

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