



National Committee on Uniform Traffic Control Devices

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Item No.: 20B-TTC-03

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NCUTCD Proposal for Changes to the Manual on Uniform Traffic Control Devices

TECHNICAL COMMITTEE: Temporary Traffic Control Technical Committee
ITEM NUMBER: 20B-TTC-03
TOPIC: Shoulder Work
ORIGIN OF REQUEST: Tim Baughman
AFFECTED SECTIONS OF THE MUTCD: Sections 6C.08, 6G.05, 6G.07
Table 6H-1
Notes for Figure 6H-1
Notes for Figure 6H-3, Figure 6H-3
Notes for Figure 6H-4, Figure 6H-4
Notes for Figure 6H-5, Figure 6H-5
Notes for Figure 6H-6, Figure 6H-6
Notes for Figure 6H-32, Figure 6H-32
Notes for Figure 6H-33, Figure 6H-33
Figure 6H-44
TASK FORCE MEMBERS: Ryan Lancaster (chair), Tim Cox, Neil Boudreau, David Church, Tom Hicks, Dave Royer, Tim Stroth, Jim Bragdon, Todd Lohman, Gene Edmonds, Fred Hanscom, Gene Putman, Charles Adams, Jim Harkness, Matt Briggs, Laura Huizinga, Craig Rhodes, David Church, Tom Macchione, Tim Baughman

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DEVELOPMENT HISTORY:

- Approved by Task Force: 06/17/2020
- Approved by Technical Committee: 06/17/2020
- Approved by NCUTCD Council: MM/DD/YYYY

This is a proposal for recommended changes to the MUTCD that has been developed by a technical committee of the NCUTCD. The NCUTCD is distributing it to its sponsoring organizations for review and comment. Sponsor comments will be considered in revising the proposal prior to NCUTCD Council consideration. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, or options. If approved by the NCUTCD Council, the recommended changes will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only through the federal rulemaking process.

20 **SUMMARY:**

21 The proposed changes are for several sections and typical applications in Part 6 regarding
22 shoulder work. Most concern clarifications and corrections to enhance consistency within Part 6.
23 There are proposals to modify typical applications 1, 3, 4, 5, 6, 32, 33, and 44. Also, a couple
24 typographical errors in Part 6 are proposed to be corrected.

25
26 **DISCUSSION**

27 Proposed revisions to Part 6 are described in order of appearance.

28
29 *Tapers*

30 There is typographical error in the first line of Section 6C.08, P10. “Activity” is spelled “a
31 ctivity.” It is proposed that this be corrected.

32
33 *Type of Temporary Traffic Control Zone Activities*

34 *Section 6G.05*

35 The section addresses work affecting pedestrian and bicycle facilities. The shoulder work
36 described in paragraph 06 seems out of place in this section and is better covered by Section
37 6G.06, 6G.07, and 6G.08. The last sentence of Section 6G.05, P06 is relevant to work affecting
38 pedestrian and bicycle facilities and is retained.

39
40 *Section 6G.07*

41 In Section 6G.07, P01 conflicts with P09. P01 indicates that the section applies to “short-term
42 through long-term stationary operations” while P09 refers to typical applications that include
43 “mobile work on shoulders.” It is proposed that paragraph 01 be deleted to remove the conflict.

44
45 Then it is proposed that Section 6G.07, P04 be moved in front of Section 6G.07. This is for the
46 sake of continuity. Moving P04 to P01 introduces the idea of warning road users that a shoulder
47 is closed. Then P02 makes this a requirement where road users could perceive the paved
48 shoulder as a lane open to traffic. P03 then warns users on freeways or expressways that there is
49 no pull-off for disabled vehicles.

50
51 In the paragraph moved from P04 to P01, it is recommended that “When an improved shoulder is
52 closed on a high-speed roadway, it should be treated as a closure of a portion of the road system
53 ...” This should apply to any road, regardless if the shoulder is improved or not. It is proposed
54 to remove “improved” and “high-speed.”

55
56 In the same paragraph, it is recommended that road users should be warned that the shoulder is
57 closed “...throughout a specified length of the approaching TTC zone. The sign(s) should read
58 *SHOULDER CLOSED (W21-5a) with distances indicated.*” Because this addressed extensively
59 in Section 6G.07, P03 and is redundant here, it is proposed that this guidance be deleted.

60
61 Section 6G.07, P03, recommends that if road users cannot perceive the end of the shoulder
62 closure, a plaque should be placed below the SHOULDER CLOSED with the message NEXT
63 XX FEET or MILES. It is proposed that this note be modified to read “..., stated to the nearest
64 500 feet or whole mile as appropriate ...” Further, it is proposed to replace “can be perceived”
65 with “is not readily visible” for human factors reasons.

66
67 The last sentence of Section 6G.07, P03, recommends that “On multi-lane, divided highways,
68 signs advising of shoulder work or the condition of the shoulder should be placed only on the
69 side of the affected shoulder.” However, as suggested in the paragraph moved to P01, “When a
70 shoulder is closed, it should be treated as a closure of a portion of the road system.” When
71 working on divided, high-speed roadways such as freeways and expressways, it is normal
72 practice to install advance warning signs on both sides of the travelway as shown in Figures 6H-
73 33, 6H-34, 6H-36, 6H-37, 6H-38, 6H-39, 6H-42, 6H-44, and 6H-45. It is proposed that this
74 sentence be made a new paragraph and be modified to recommend signs on right and left sides of
75 freeways or expressways.

76
77 It is proposed that Section 6G.07, P09 be modified to include expressways.

78
79 *Table 6H-1*

80 It is proposed to modify the title of typical application 5 to include expressways.

81
82 *Typical Application 1*

83 An editorial revision is proposed for note 1 to indicate that the one traffic control device shown
84 in the typical application be placed on the left side of a divided highway when the work space is
85 in the median.

86
87 It is proposed that new guidance be added, following note 1, that when working on a freeway or
88 expressway, advance warning should be placed on both shoulders.

89
90 In note 2, the second sentence is redundant and it proposed that it be removed.

91
92 Note 4 suggests that all signs and channelizing devices may be eliminated for short-term, short
93 duration, or mobile operations. Since channelizing devices are not shown on this typical and
94 only one advance warning is shown, it is proposed that “and channelizing devices” be deleted
95 from the note, and “all signs” be made singular. Also in note 4, “operation” in the note needs to
96 be plural.

97
98 *Typical Application 3*

99 Note 1 recommends that “A SHOULDER WORK sign should be placed on the left side of the
100 roadway for a divided or one-way street only if the left shoulder is affected.” Divided highways
101 are covered by typical application 5 so it is proposed to delete “divided” from note 1. A slight
102 modification is proposed to read “The SHOULDER WORK sign ...” and “... one-way street if
103 only the left shoulder ...”

104
105 Note 4 provides an option for “short duration operations of 60 minutes or less”. However, short
106 duration is defined in Section 6G.02, P02, D as “up to 1 hour.” Typical application 4 addresses
107 short-duration or mobile operations, so it’s proposed to delete note 4 and add a new note after
108 note 7 to “See Figure 6H-4 for short duration and mobile operations.”

109
110 Deletion of note 4 eliminates the need for notes 5 and 6.

111

112 In Figure 6H-3, the uppermost SHOULDER WORK sign (first SHOULDER WORK sign in the
113 southbound direction, assuming up is north) is redundant and should be removed.

114
115 *Typical Application 4*

116 It is proposed that a new standard be added before note 1, similar to typical applications 17 and
117 35 reading “Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating,
118 or strobe lights.”

119
120 Note 3 provides an option of replacing ROAD WORK AHEAD sign with a ROAD WORK
121 NEXT XX MILES sign for work more than 2 miles. This is substituting the advance warning
122 sign with a guide sign. The guide sign should supplement, not replace, the advance warning
123 sign. It is proposed to modify note 3 to indicate that the ROAD WORK NEXT XX MILES sign
124 may be used before the ROAD WORK AHEAD sign.

125
126 The addition of a new note before note 1 makes the last half of note 4 unnecessary.

127
128 In the title for Figure 6H-4, “Short Duration” is hyphenated and the hyphen needs to be removed
129 for consistency. In the figure, a ROAD WORK NEXT XX MILES sign added with the text
130 “(optional)” beneath it to correspond with note 3.

131
132 *Typical Application 5*

133 It is proposed that the typical application title on the notes page and figure be modified to include
134 expressways.

135
136 To correspond with Figure 6F-4 and Section 6F.37, note 1 should be revised to read RIGHT
137 (LEFT) SHOULDER CLOSED.

138
139 Note 2 recommends that if drivers cannot see a pull-off area, the length of the shoulder closure
140 should be provided in feet or miles. To clarify the note, several revisions are suggested including
141 adding that the distance be provided to the nearest 500 feet or whole mile, as appropriate.

142
143 The sign spacing dimensions in Figure 6H-5 are proposed to be revised to indicate ordinary A-B-
144 C placement.

145
146 In Figure 6H-5, the first shoulder closed assembly is a RIGHT SHOULDER CLOSED warning
147 sign with a XX FT supplemental plaque. To conform with Section 6F.37, P02, the warning sign
148 legend is proposed to be revised to RIGHT SHOULDER CLOSED AHEAD (W21-5b) with no
149 plaque.

150
151 As it was proposed above in modifying Section 6G.07, P03, it is proposed in Figure 6H-5 that
152 the SHOULDER CLOSED signs be shown on both left and right shoulders of this
153 freeway/expressway.

154
155 *Typical Application 6*

156 To stress its importance, it is proposed that note 12 be moved to before note 1.

157

158 A new standard after note 2 is proposed to reference typical applications 10 or 12 if the roadway
159 is not low volume and low speed.

160
161 For continuity, it is proposed that note 13 be moved to before note 11 so that it follows note 10
162 which also relates to vehicle warning signals.

163
164 In note 7 for typical application 6, “The shadow vehicle may be omitted if a taper and
165 channelizing devices are used.” However, the shadow vehicle in Figure 6H-6 is labeled as a
166 work vehicle. It is proposed that the label be changed to shadow vehicle. And since a taper and
167 channelizing devices are illustrated in the figure, it is proposed that this vehicle be labeled as
168 “(optional)”.

169
170 *Typical Application 32*

171 In typical application 32 for a high-speed highway, the use of a shoulder is necessary to delineate
172 the arrow board, regardless of the shoulder width or whether it is paved or not. It is proposed
173 that note 2 be deleted.

174
175 In Figure 6H-32, by deleting note 2 as proposed above, the label “(see Note 2)” needs to be
176 deleted.

177
178 *Typical Application 33*

179 In typical application 33 for a divided highway, the use of a shoulder is necessary to delineate the
180 arrow board, regardless of the shoulder width or whether it is paved or not. It is proposed that
181 note 3 be deleted.

182
183 In Figure 6H-33, by deleting note 3 as proposed above, the labels “(see Note 3)” need to be
184 deleted.

185
186 *Typical Application 44*

187 In Figure 6H-44, the shoulder tapers are indicated as optional. Because the shoulder tapers are
188 necessary to delineate the arrow boards, it is proposed that the label “(optional)” be deleted.

189
190 **RECOMMENDED MUTCD CHANGES**

191 The following present the proposed changes to the current MUTCD within the context of the
192 current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and
193 proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously
194 approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double
195 underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background
196 comments may be provided with the MUTCD text. These comments are indicated by [black font
197 in brackets highlighted light blue].

198
199

200 **PART 6. TEMPORARY TRAFFIC CONTROL**

201 **CHAPTER 6C. TEMPORARY TRAFFIC CONTROL ELEMENTS**

202
203
204 **Section 6C.08 Tapers**

205 [Section 6C.08 has 16 paragraphs. Only the support statement in paragraph 10 is shown]

206 Support:

207 10 A shoulder taper might be beneficial on a high-speed roadway where shoulders are part of
208 the activity area and are closed, or when improved shoulders might be mistaken as a driving lane.
209 In these instances, the same type, but abbreviated, closure procedures used on a normal portion
210 of the roadway can be used.

211
212 **CHAPTER 6G. TYPE OF TEMPORARY TRAFFIC CONTROL ZONE ACTIVITIES**

213
214 **Section 6G.05 Work Affecting Pedestrian and Bicycle Facilities**

215 Support:

216 01 It is not uncommon, particularly in urban areas, that road work and the associated TTC will
217 affect existing pedestrian or bicycle facilities. It is essential that the needs of all road users,
218 including pedestrians with disabilities, are considered in TTC zones.

219 02 In addition to specific provisions identified in Sections 6G.06 through 6G.14, there are a
220 number of provisions that might be applicable for all of the types of activities identified in this
221 Chapter.

222 *Guidance:*

223 03 *Where pedestrian or bicycle usage is high, the typical applications should be modified by*
224 *giving particular attention to the provisions set forth in Chapter 6D, this Chapter, Section 6F.74,*
225 *and in other Sections of Part 6 related to accessibility and detectability provisions in TTC zones.*

226 04 *Pedestrians should be separated from the worksite by appropriate devices that maintain the*
227 *accessibility and detectability for pedestrians with disabilities.*

228 05 *Bicyclists and pedestrians should not be exposed to unprotected excavations, open utility*
229 *access, overhanging equipment, or other such conditions.*

230 06 ~~*Except for short duration and mobile operations, when a highway shoulder is occupied, a*~~
231 ~~*SHOULDER WORK (W21-5) sign should be placed in advance of the activity area. When work*~~
232 ~~*is performed on a paved shoulder 8 feet or more in width, channelizing devices should be placed*~~
233 ~~*on a taper having a length that conforms to the requirements of a shoulder taper.*~~ Signs should
234 be placed such that they do not narrow any existing pedestrian passages to less than 48 inches.

235 07 *Pedestrian detours should be avoided since pedestrians rarely observe them and the cost of*
236 *providing accessibility and detectability might outweigh the cost of maintaining a continuous*
237 *route. Whenever possible, work should be done in a manner that does not create a need to detour*
238 *pedestrians from existing routes or crossings.*

239 **Standard:**

240 08 **Where pedestrian routes are closed, alternate pedestrian routes shall be provided.**

241 09 **When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone,**
242 **the temporary facilities shall be detectable and shall include accessibility features**
243 **consistent with the features present in the existing pedestrian facility.**

246 **Section 6G.07 Work on the Shoulder with No Encroachment**

247 **Support**

248 ~~01—The provisions of this Section apply to short-term through long-term stationary operations.~~

249 **Guidance**

250 01 When a shoulder is closed, it should be treated as a closure of a portion of the road system
251 because road users expect to be able to use it in emergencies. Road users should be given ample
252 advance warning that shoulders are closed for use as refuge areas. The work space on the
253 shoulder should be closed off by a taper or channelizing devices with a length of 1/3 L using the
254 formulas in Tables 6C-3 and 6C-4. [Moved and modified from paragraph 04]

255 **Standard**

256 **02 When paved shoulders having a width of 8 feet or more are closed, at least one**
257 **advance warning sign shall be used. In addition, channelizing devices shall be used to close**
258 **the shoulder in advance to delineate the beginning of the work space and direct motor**
259 **vehicle traffic to remain within the traveled way.**

260 **Guidance**

261 *03 When paved shoulders having a width of 8 feet or more are closed on freeways and*
262 *expressways, road users should be warned about potential disabled vehicles that cannot get off*
263 *the traveled way. An initial general warning sign, such as ROAD WORK AHEAD (W20-1),*
264 *should be used, followed by a RIGHT or LEFT SHOULDER CLOSED (W21-5a) sign. Where the*
265 *downstream end of the shoulder closure extends beyond the distance that ~~can be perceived~~ is not*
266 *readily visible by road users, a supplementary plaque bearing the message NEXT XX FEET*
267 *(W16-4P) or MILES (W7-3aP), stated to the nearest 500 feet or whole mile as appropriate,*
268 *should be placed below the SHOULDER CLOSED (W21-5a) sign. ~~On multi-lane, divided~~*
269 *~~highways, signs advising of shoulder work or the condition of the shoulder should be placed only~~*
270 *~~on the side of the affected shoulder.~~*

271 ~~04—When an improved shoulder is closed on a high-speed roadway, it should be treated as a~~
272 ~~closure of a portion of the road system because road users expect to be able to use it in~~
273 ~~emergencies. Road users should be given ample advance warning that shoulders are closed for~~
274 ~~use as refuge areas throughout a specified length of the approaching TTC zone. The sign(s)~~
275 ~~should read SHOULDER CLOSED (W21-5a) with distances indicated. The work space on the~~
276 ~~shoulder should be closed off by a taper or channelizing devices with a length of 1/3 L using the~~
277 ~~formulas in Tables 6C-3 and 6C-4. [Modified and moved to paragraph 01]~~

278 04 When shoulder work occurs on a freeway or expressway, advance warning signs should be
279 placed on both the right and left sides of the roadway.

280 *05 When the shoulder is not occupied but work has adversely affected its condition, the LOW*
281 *SHOULDER (W8-9) or SOFT SHOULDER (W8-4) sign should be used, as appropriate.*

282 *06 Where the condition extends over a distance in excess of 1 mile, the sign should be repeated*
283 *at 1-mile intervals.*

284 **Option:**

285 *07 In addition, a supplementary plaque bearing the message NEXT XX MILES (W7-3aP) may*
286 *be used. Temporary traffic barriers may be needed to inhibit encroachment of errant vehicles into*
287 *the work space and to protect workers.*

288 **Standard:**

289 **08 When used for shoulder work, arrow boards shall operate only in the caution mode.**

290
291

292 Support:
293 09 A typical application for stationary work operations on shoulders is shown in Figure 6H-3.
294 Short duration or mobile work on shoulders is shown in Figure 6H-4. Work on freeway [or](#)
295 [expressway](#) shoulders is shown in Figure 6H-5.

CHAPTER 6H. TYPICAL APPLICATIONS

Table 6H-1. Index to Typical Applications

Typical Application Description	Typical Application Number
Work Outside of the Shoulder (see Section 6G.06)	
Work Beyond the Shoulder	TA-1
Blasting Zone	TA-2
Work on the Shoulder (see Sections 6G.07 and 6G.08)	
Work on the Shoulders	TA-3
Short Duration or Mobile Operation on a Shoulder	TA-4
Shoulder Closure on a Freeway or Expressway	TA-5
Shoulder Work with Minor Encroachment	TA-6
Work Within the Traveled Way of a Two-Lane Highway (see Section 6G.10)	
Road Closed with a Diversion	TA-7
Roads Closed with an Off-Site Detour	TA-8
Overlapping Routes with a Detour	TA-9
Lane Closure on a Two-Lane Road Using Flaggers	TA-10
Lane Closure on a Two-Lane Road with Low Traffic Volumes	TA-11
Lane Closure on a Two-Lane Road Using Traffic Control Signals	TA-12
Temporary Road Closure	TA-13
Haul Road Crossing	TA-14
Work in the Center of a Road with Low Traffic Volumes	TA-15
Surveying Along the Center Line of a Road with Low Traffic Volumes	TA-16
Mobile Operations on a Two-Lane Road	TA-17
Work Within the Traveled Way of an Urban Street (see Section 6G.11)	
Lane Closure on a Minor Street	TA-18
Detour for One Travel Direction	TA-19
Detour for a Closed Street	TA-20
Work Within the Traveled Way at an Intersection and on Sidewalks (see Section 6G.13)	
Lane Closure on the Near Side of an Intersection	TA-21
Right-Hand Lane Closure on the Far Side of an Intersection	TA-22
Left-Hand Lane Closure on the Far Side of an Intersection	TA-23
Half Road Closure on the Far Side of an Intersection	TA-24
Multiple Lane Closures at an Intersection	TA-25
Closure in the Center of an Intersection	TA-26
Closure at the Side of an Intersection	TA-27
Sidewalk Detour or Diversion	TA-28
Crosswalk Closures and Pedestrian Detours	TA-29
Work Within the Traveled Way of a Multi-Lane, Non-Access Controlled Highway (see Section 6G.12)	
Interior Lane Closure on a Multi-Lane Street	TA-30
Lane Closure on a Street with Uneven Directional Volumes	TA-31
Half Road Closure on a Multi-Lane, High-Speed Highway	TA-32
Stationary Lane Closure on a Divided Highway	TA-33
Lane Closure with a Temporary Traffic Barrier	TA-34
Mobile Operation on a Multi-Lane Road	TA-35
Work Within the Traveled Way of a Freeway or Expressway (see Section 6G.14)	
Lane Shift on a Freeway	TA-36
Double Lane Closure on a Freeway	TA-37
Interior Lane Closure on a Freeway	TA-38
Median Crossover on a Freeway	TA-39
Median Crossover for an Entrance Ramp	TA-40
Median Crossover for an Exit Ramp	TA-41
Work in the Vicinity of an Exit Ramp	TA-42
Partial Exit Ramp Closure	TA-43
Work in the Vicinity of an Entrance Ramp	TA-44
Temporary Reversible Lane Using Movable Barriers	TA-45
Work in the Vicinity of a Grade Crossing (see Section 6G.18)	
Work in the Vicinity of a Grade Crossing	TA-46

298 **Notes for Figure 6H-1 – Typical Application 1**
299 **Work Beyond the Shoulder**

300 *Guidance:*

- 301 1. *If the work space is in the median of a divided highway, ~~the~~ the advance warning sign*
302 *should ~~also~~ be placed on the left side of the directional roadway.*
303 2. When shoulder work occurs on a freeway or expressway, advance warning signs should
304 be placed on both the right and left sides of the roadway.

305 *Option:*

- 306 23. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as
307 the SHOULDER WORK sign. ~~The SHOULDER WORK sign may be used for work~~
308 ~~adjacent to the shoulder.~~
309 34. The ROAD WORK AHEAD sign may be omitted where the work space is behind a
310 barrier, more than 24 inches behind the curb, or 15 feet or more from the edge of any
311 roadway.
312 45. For short-term, short duration or mobile operations, all the signs ~~and channelizing~~
313 ~~devices~~ may be eliminated if a vehicle with activated high-intensity rotating, flashing,
314 oscillating, or strobe lights is used.
315 56. Vehicle hazard warning signals may be used to supplement high-intensity rotating,
316 flashing, oscillating, or strobe lights.

317 **Standard:**

- 318 **67. Vehicle hazard warning signals shall not be used instead of the vehicle's high-**
319 **intensity rotating, flashing, oscillating, or strobe lights.**

320
321

322 **Notes for Figure 6H-3 – Typical Application 3**
323 **Work on the Shoulders**
324

325 *Guidance:*

- 326 1. ~~A The SHOULDER WORK sign should be placed on the left side of the roadway for a~~
327 ~~divided or a one-way street only if only the left shoulder is affected.~~

328 *Option:*

- 329 2. The Workers symbol signs may be used in ~~stead of~~ addition to SHOULDER WORK
330 signs.
331 3. The SHOULDER WORK AHEAD sign on an intersecting roadway may be omitted
332 where drivers emerging from that roadway will encounter another advance warning sign
333 prior to this activity area.
334 ~~4. For short duration operations of 60 minutes or less, all signs and channelizing devices~~
335 ~~may be eliminated if a vehicle with activated high intensity rotating, flashing,~~
336 ~~oscillating, or strobe lights is used.~~
337 ~~5. Vehicle hazard warning signals may be used to supplement high intensity rotating,~~
338 ~~flashing, oscillating, or strobe lights.~~

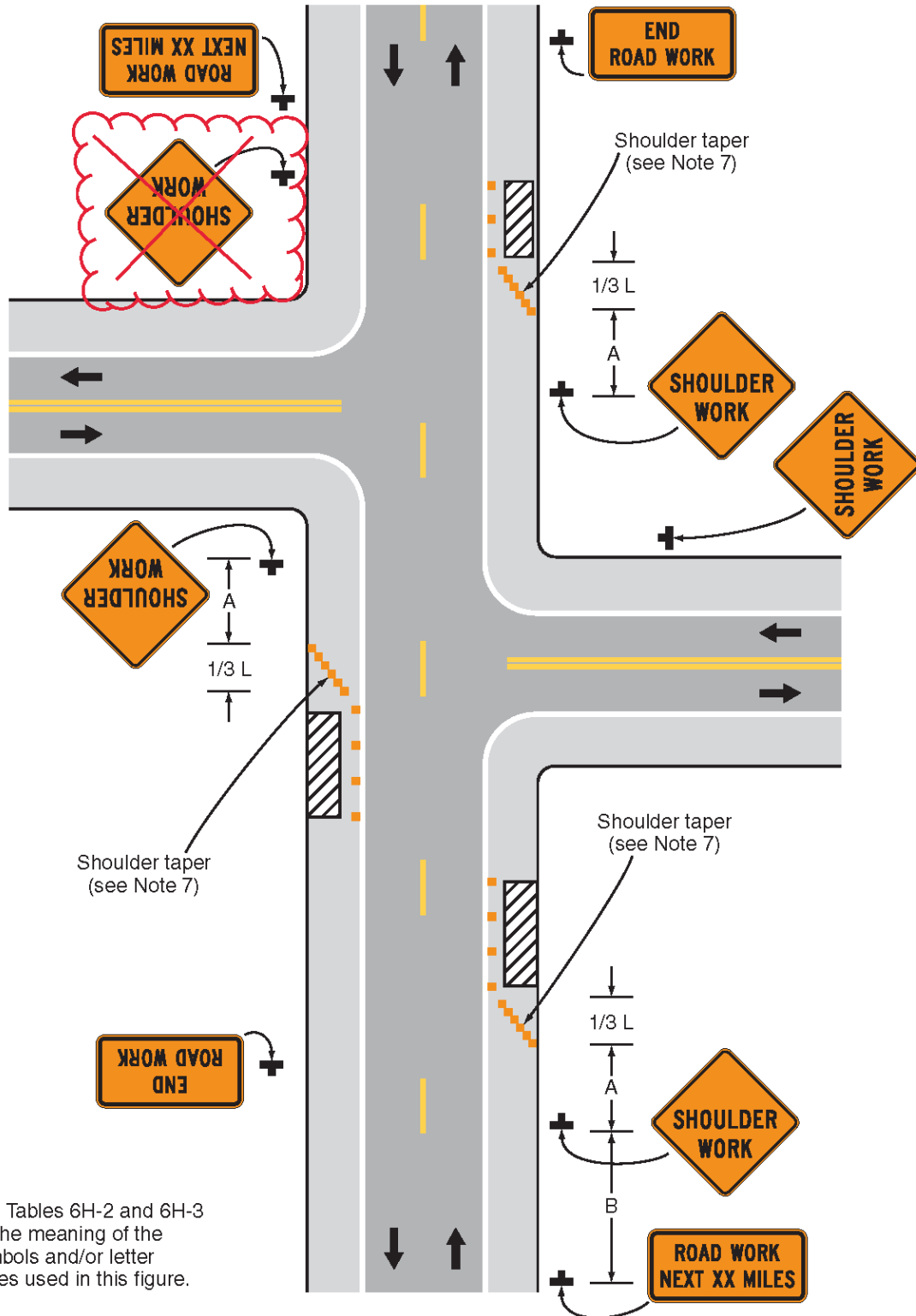
339 **Standard:**

- 340 ~~6. Vehicle hazard warning signals shall not be used instead of the vehicle's high-~~
341 ~~intensity rotating, flashing, oscillating, or strobe lights.~~
342 **74. When paved shoulders having a width of 8 feet or more are closed, at least one**
343 **advance warning sign shall be used. In addition, channelizing devices shall be used**
344 **to close the shoulder in advance to delineate the beginning of the work space and**
345 **direct vehicular traffic to remain within the traveled way.**

346 Support:

- 347 5. See Figure 6H-4 for short duration and mobile operations.

Figure 6H-3. Work on the Shoulders (TA-3)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 3

349 Notes for Figure 6H-4 – Typical Application 4
350 Short Duration or Mobile Operation on a Shoulder

351 **Standard:**

- 352 **1. Shadow and work vehicles shall display high-intensity rotating, flashing,**
353 **oscillating, or strobe lights.**

354 *Guidance:*

- 355 ~~1~~2. *In those situations where multiple work locations within a limited distance make it*
356 *practical to place stationary signs, the distance between the advance warning sign and*
357 *the work should not exceed 5 miles.*
358 ~~2~~3. *In those situations where the distance between the advance signs and the work is 2*
359 *miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK*
360 *AHEAD sign.*

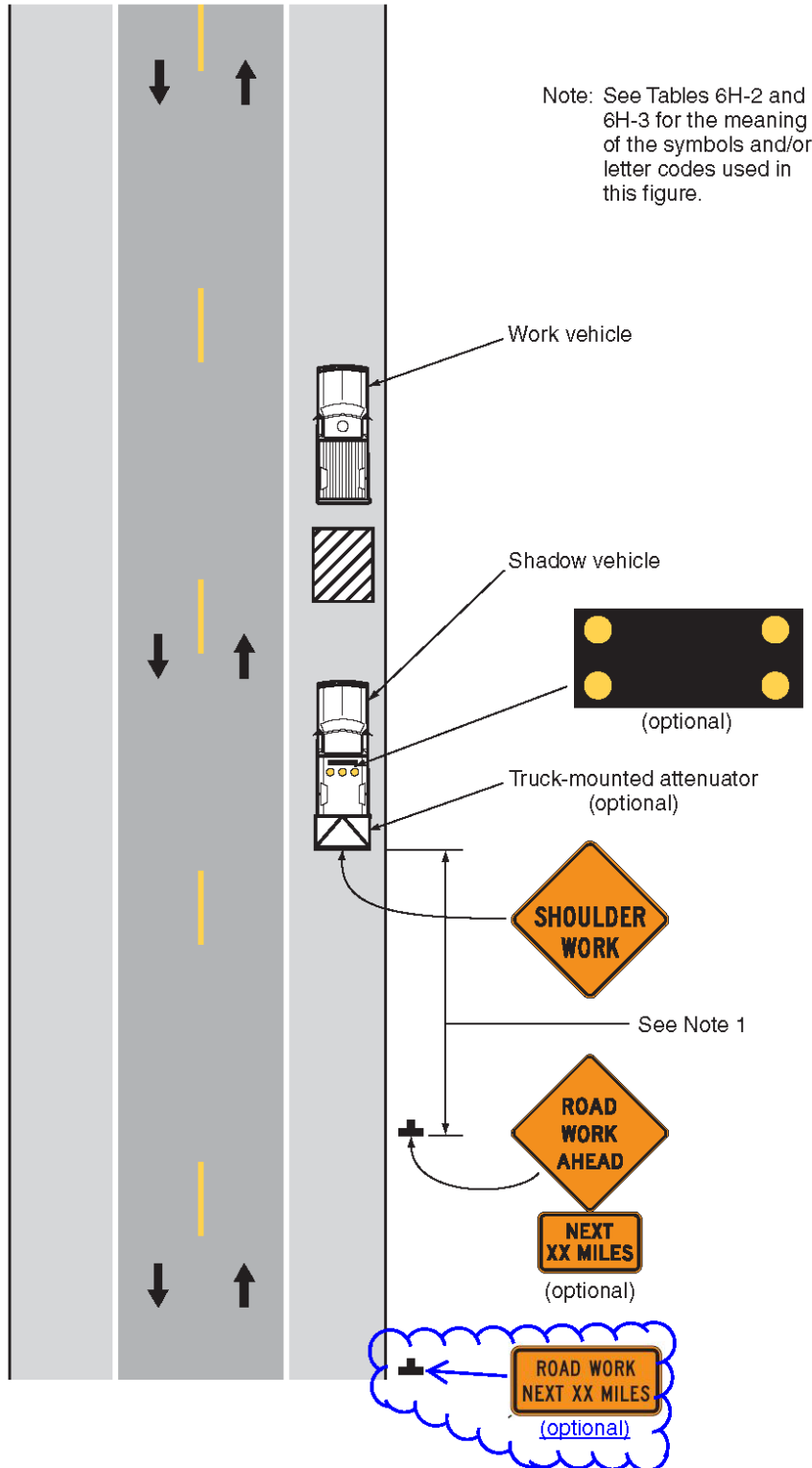
361 *Option:*

- 362 ~~3~~4. The ROAD WORK NEXT XX MILES sign may be used ~~instead of~~ before the ROAD
363 WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.
364 ~~4~~5. Stationary warning signs may be omitted for short duration or mobile operations. ~~if the~~
365 ~~work vehicle displays high-intensity rotating, flashing, oscillating, or strobe lights.~~
366 ~~5~~6. Vehicle hazard warning signals may be used to supplement high-intensity rotating,
367 flashing, oscillating, or strobe lights.

368 **Standard:**

- 369 ~~6~~7. **Vehicle hazard warning signals shall not be used instead of the vehicle's high-**
370 **intensity rotating, flashing, oscillating, or strobe lights.**
371 ~~7~~8. **If an arrow board is used for an operation on the shoulder, the caution mode shall**
372 **be used.**
373 ~~8~~9. **Vehicle-mounted signs shall be mounted in a manner such that they are not**
374 **obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be**
375 **covered or turned from view when work is not in progress.**

Figure 6H-4 Short Duration or Mobile Operation on a Shoulder (TA-4)



Typical Application 4

377 **Notes for Figure 6H-5 – Typical Application 5**
378 **Shoulder Closure on a Freeway or Expressway**

379 *Guidance:*

- 380 1. RIGHT (LEFT) SHOULDER CLOSED signs should be used on limited-access highways
381 where there is no opportunity for disabled vehicles to pull off the roadway.
- 382 2. If drivers cannot see a pull-off area beyond the closed shoulder, ~~information regarding~~
383 a plaque indicating the length of the shoulder closure should be provided below the
384 warning sign nearest the closure ~~in feet or miles, as appropriate~~ with the legend NEXT
385 XX FT or NEXT XX MILES stated to the nearest 500 feet or whole mile.
- 386 3. The use of a temporary traffic barrier should be based on engineering judgment.

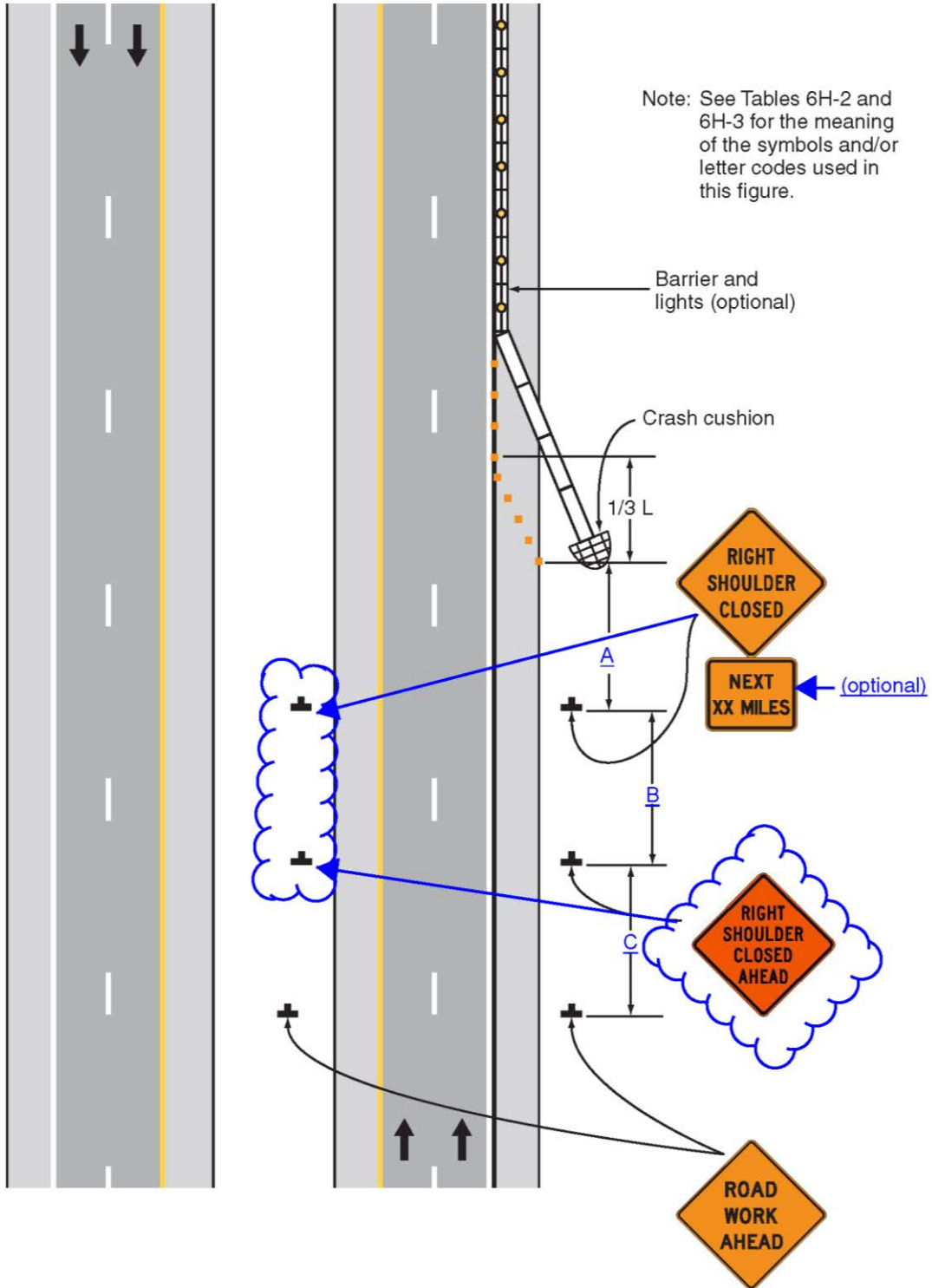
387 **Standard:**

- 388 4. **Temporary traffic barriers, if used, shall comply with the provisions of Section**
389 **6F.85.**

390 *Option:*

- 391 5. The barrier shown in this typical application is an example of one method that may be
392 used to close a shoulder of a long-term project.
- 393 6. The warning lights shown on the barrier may be used.

Figure 6H-5. Shoulder Closure on a Freeway or Expressway (TA-5)



Typical Application 5

Notes for Figure 6H-6 – Typical Application 6

1. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights. [Moved from note 12]

Guidance:

- ~~2.~~ All lanes should be a minimum of 10 feet in width as measured to the near face of the channelizing devices.
- ~~3.~~ The treatment shown should be used on a minor road having low speeds. For higher-speed traffic conditions, a lane closure should be used.

Standard:

4. If the roadway is not low volume and low speed, then one lane shall be closed using the information illustrated in Figure 6H-10 or Figure 6H-12.

Option:

- ~~3.~~ For short-term use on low-volume, low-speed roadways with vehicular traffic that does not include longer and wider heavy commercial vehicles, a minimum lane width of 9 feet may be used.
- ~~4.~~ Where the opposite shoulder is suitable for carrying vehicular traffic and of adequate width, lanes may be shifted by use of closely-spaced channelizing devices, provided that the minimum lane width of 10 feet is maintained.
- ~~5.~~ Additional advance warning may be appropriate, such as a ROAD NARROWS sign.
- ~~6.~~ Temporary traffic barriers may be used along the work space.
- ~~7.~~ The shadow vehicle may be omitted if a taper and channelizing devices are used.
- ~~8.~~ A truck-mounted attenuator may be used on the shadow vehicle.
- ~~9.~~ For short-duration work, the taper and channelizing devices may be omitted if a shadow vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.
- ~~10.~~ Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Standard:

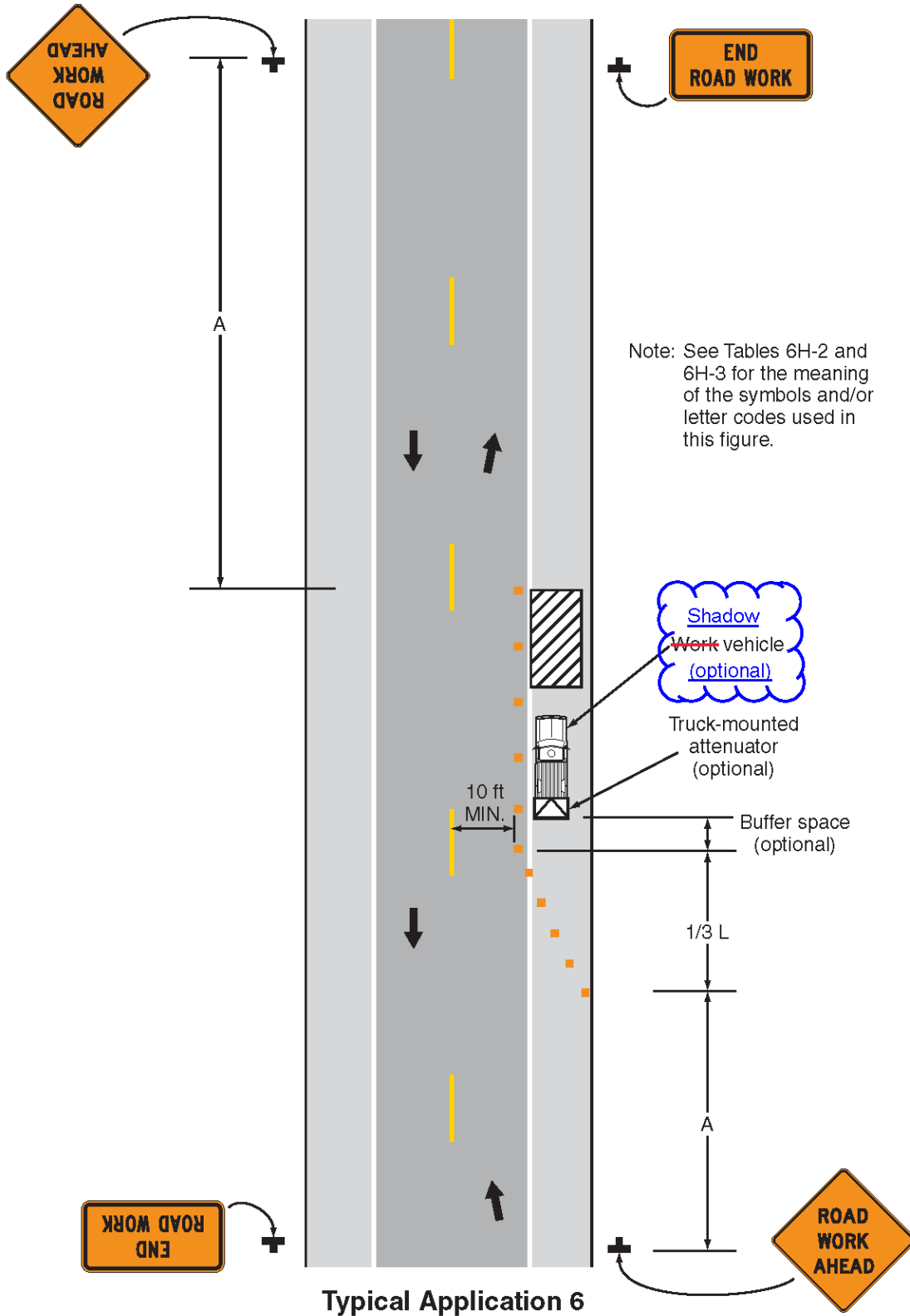
13. Vehicle hazard warning signals shall not be used instead of the vehicle’s high-intensity rotating, flashing, oscillating, or strobe lights. [Moved from note 13]

~~14.~~ Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.

~~12. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights. [Moved to before note 1]~~

~~13. Vehicle hazard warning signals shall not be used instead of the vehicle’s high-intensity rotating, flashing, oscillating, or strobe lights. [Moved to note 10a]~~

Figure 6H-6. Shoulder Work with Minor Encroachment (TA-6)



Typical Application 6
Shoulder Work

432 Notes for Figure 6H-32 – Typical Application 32
433 Half Road Closure on a Multi-Lane, High-Speed Highway

434 **Standard:**

- 435 1. Pavement markings no longer applicable shall be removed or obliterated as soon
436 as practical. Except for intermediate-term and short-term situations, temporary
437 markings shall be provided to clearly delineate the temporary travel path. For
438 short-term and intermediate-term situations where it is not feasible to remove and
439 restore pavement markings, channelization shall be made dominant by using a
440 very close device spacing.

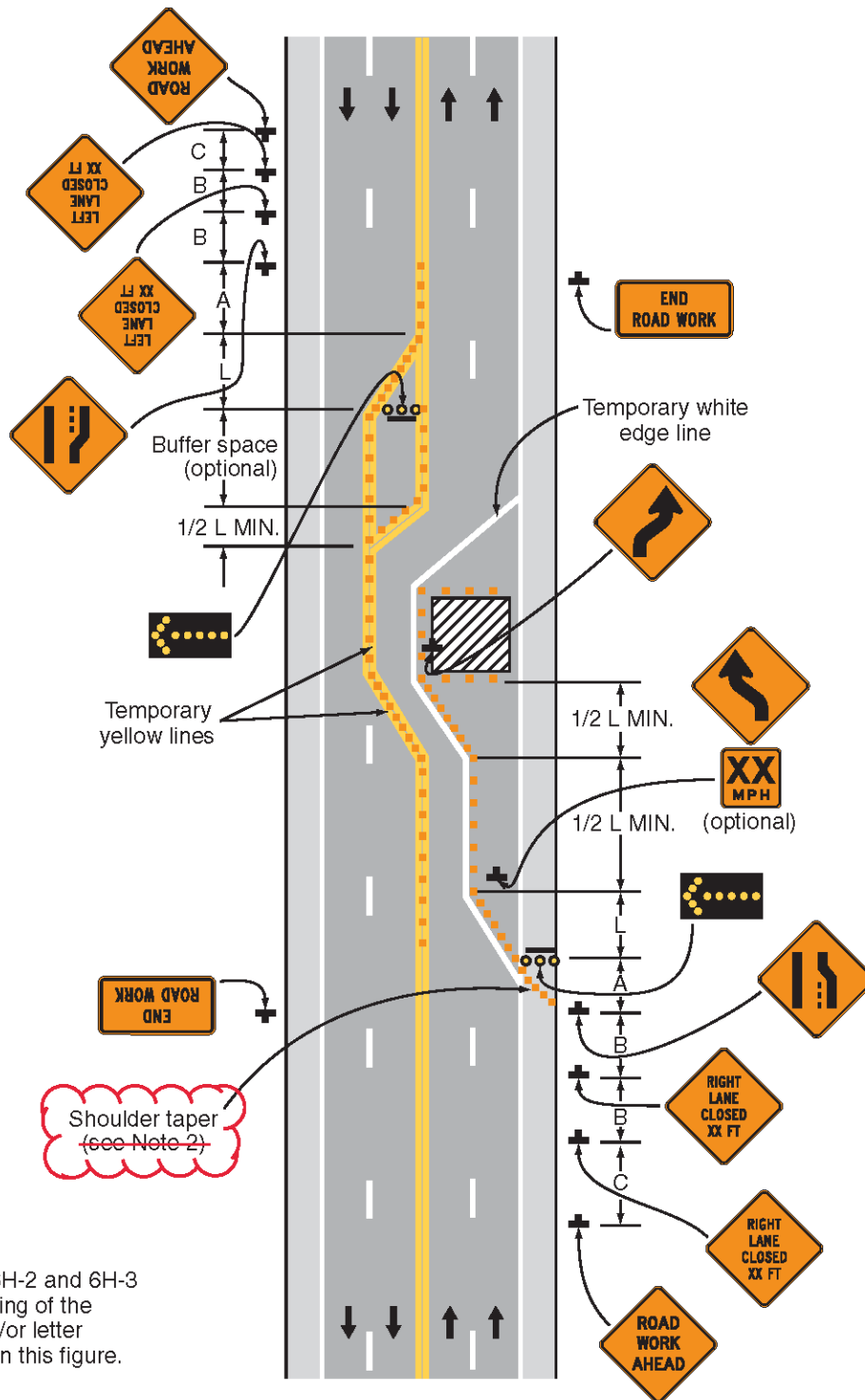
441 *Guidance:*

- 442 ~~2. When paved shoulders having a width of 8 feet or more are closed, channelizing devices~~
443 ~~should be used to close the shoulder in advance of the merging taper to direct vehicular~~
444 ~~traffic to remain within the traveled way.~~
445 ~~3~~2. Where channelizing devices are used instead of pavement markings, the maximum
446 spacing should be $1/2 S$ feet where S is the speed in mph.
447 ~~4~~3. If the tangent distance along the temporary diversion is less than 600 feet, a Double
448 Reverse Curve sign should be used instead of the first Reverse Curve sign, and the
449 second Reverse Curve sign should be omitted.

450 *Option:*

- 451 ~~5~~4. Positive protection devices may be used per Section 6F.84a. [Approved by Council
452 01/10/2020]
453 ~~5~~65. Warning lights may be used to supplement channelizing devices at night.
454 ~~6~~76. A truck-mounted attenuator may be used on the work vehicle and/or the shadow
455 vehicle.

Figure 6H-32. Half Road Closure on a Multi-Lane, High-Speed Highway (TA-32)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 32

Notes for Figure 6H-33 – Typical Application 33
Stationary Lane Closure on a Divided Highway

Standard:

1. This information also shall be used when work is being performed in the lane adjacent to the median on a divided highway. In this case, the LEFT LANE CLOSED signs and the corresponding Lane Ends signs shall be substituted.
2. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed as needed.

Guidance:

~~3. When paved shoulders having a width of 8 feet or more are closed, channelizing devices should be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.~~

Option:

4. A truck-mounted attenuator may be used on the work vehicle and/or shadow vehicle.
5. Additional positive protection devices may be used per Section 6F.84a. [Approved by Council 01/10/2020]

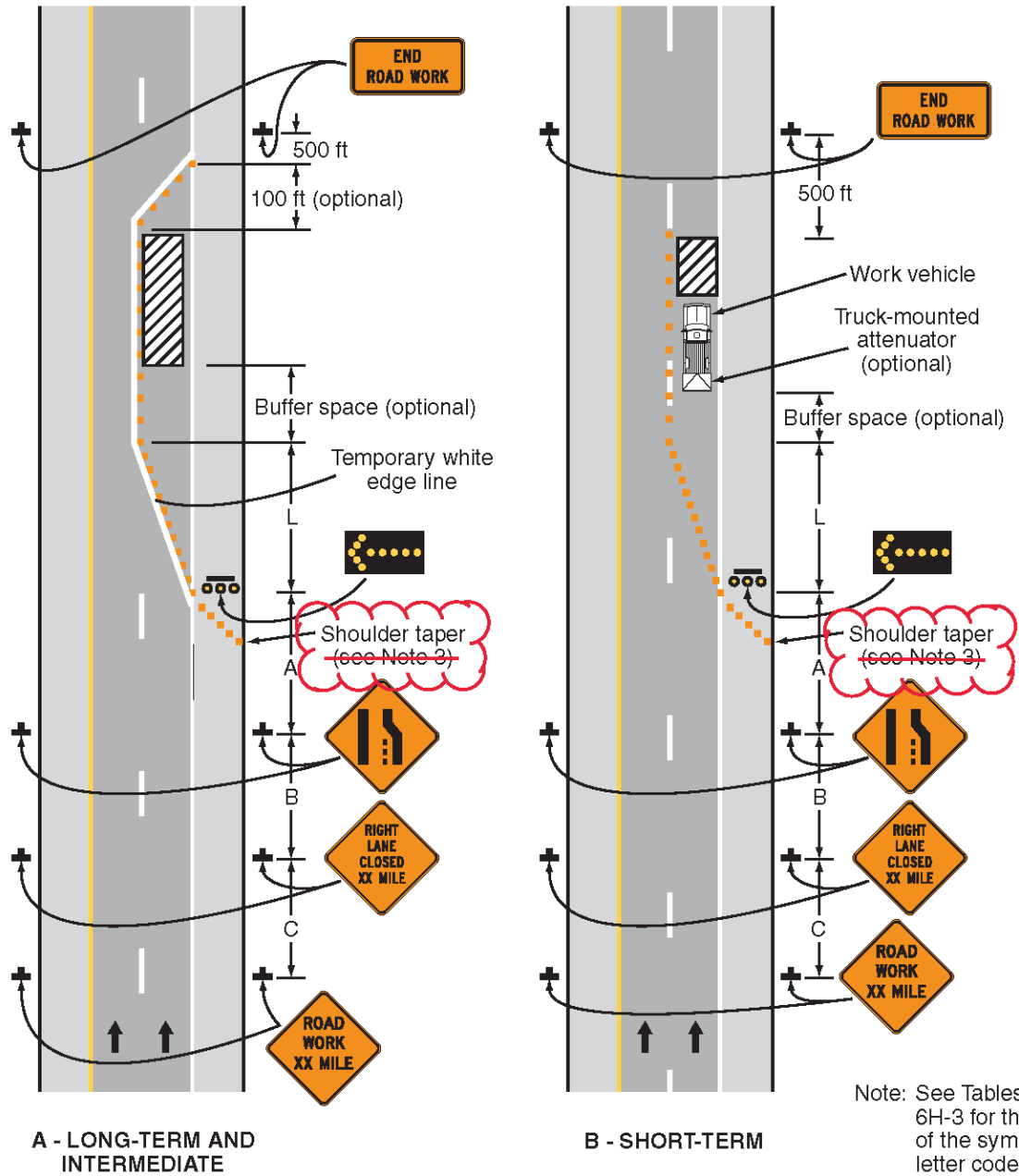
Support:

6. Where conditions permit, restricting all vehicles, equipment, workers, and their activities to one side of the roadway might be advantageous.

Standard:

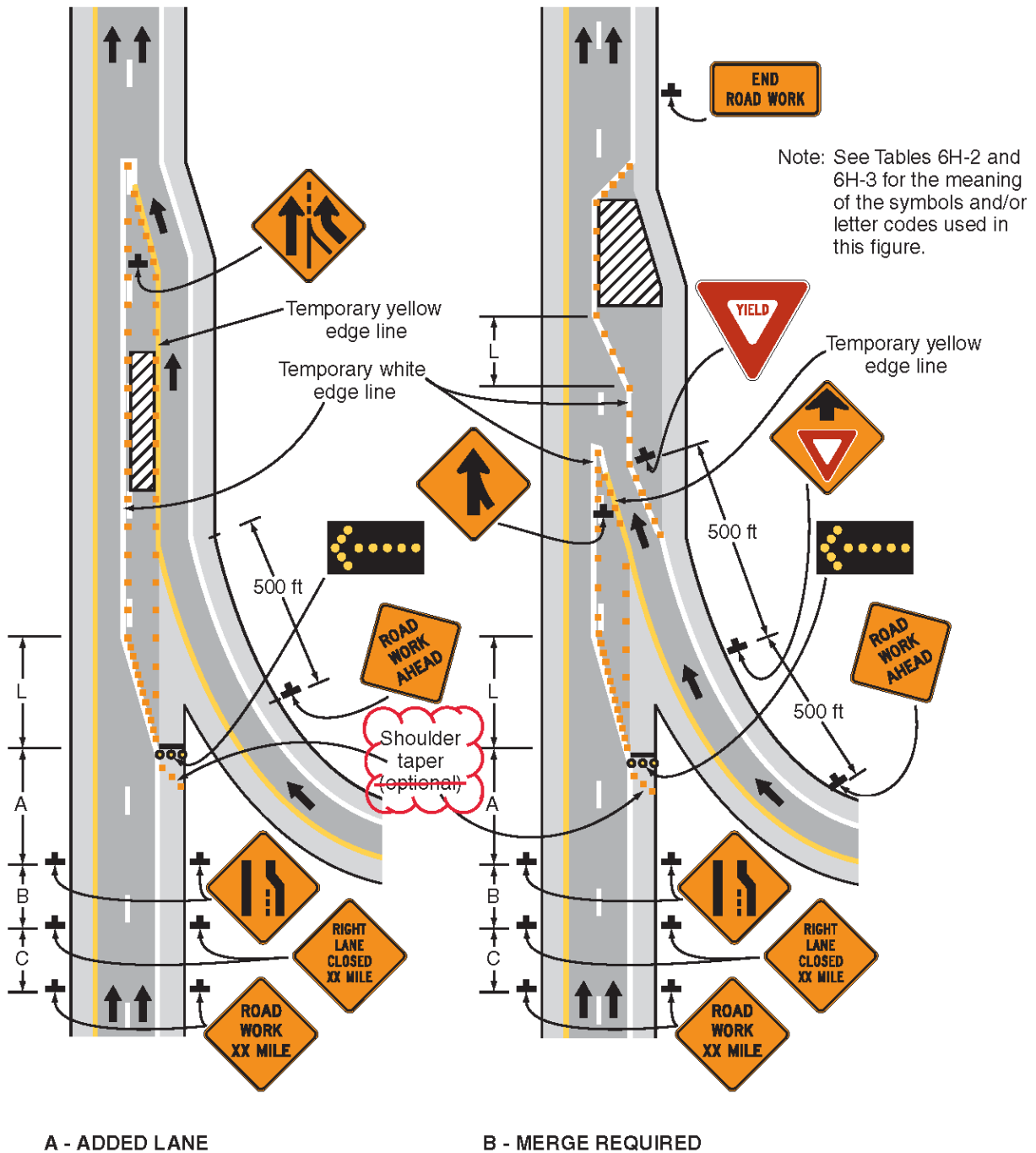
7. An arrow board shall be used when a freeway lane is closed. When more than one freeway lane is closed, a separate arrow board shall be used for each closed lane.

Figure 6H-33. Stationary Lane Closure on a Divided Highway (TA-33)



Typical Application 33

Figure 6H-44. Work in the Vicinity of an Entrance Ramp (TA-44)



Typical Application 44