



**National Committee on  
Uniform Traffic Control Devices**

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**National Committee on Uniform Traffic Control Devices**  
**RWSTC**

RWSTC agenda item III.5, January 2014

**TECHNICAL COMMITTEE:** R&W Signs Technical Committee

**DATE OF ACTION (TASK FORCE):** 6-11-13, revised 12-22-13 following sponsor comments

**RWSTC APPROVAL:** 6-27-13

**TRANSMITTAL TO SPONSORS:** November 2013

**RWSTC APPROVAL DATE:** 1-8-14

**COUNCIL APPROVAL:** 1-10-14

**ORIGIN OF REQUEST:** EV Task Force  
Randy McCourt – chair  
Tom Heydel Rich Meredith  
Lee Roadifer Michael Moule  
Mark Bott Bob Canfield

**TOPIC:** **Electrical Vehicle (EV) Signs**

**AFFECTED SECTIONS OF MUTCD:** **Section 2B.46, 2B.47 and Figure 2B-24**

**SUMMARY:**

Electric vehicle (EV) parking signs have been emerging throughout the country with little uniformity, consistency, or any study of recognition of the best way to convey the restrictions and regulations intended. FHWA provided interim approval of a symbol for EV and there has been substantial activities by states in implement EV initiatives including the provision of uniform signing. The task force objective was to find the best, more consistent and uniform signs for reserving parking for charging EVs both on-street and off-street.

37 **RESEARCH:**

38 The following publications have been reviewed relative to these added requirements:

- 39
- 40 • *Traffic Control Devices Pooled Fund Study: Design and Evaluation of Selected*
  - 41 *Symbol Signs – Phase II Final Report*, FHWA, by SAIC, May 2008.
  - 42 • *“Traffic Control Devices Pooled Fund Study: Design and Evaluation of Selected*
  - 43 *Symbol Signs – Phase II Final Report*, FHWA, by SAIC, November 2010.
  - 44 • *Interim Approval for Optional Use of an Alternative Electric Vehicle Charging*
  - 45 *General Services Symbol Sign*, FHWA, HOTO-1, April 1, 2011.
  - 46 • *Ready Set Charge – A Guide to EV-Ready Communities*, Association of Bay
  - 47 *Area Governments*, 2011.
  - 48 • *Lessons Learned – The EV Project EVSE Signage*, US Department of Energy,
  - 49 *by ECOTality*, April 2012.
  - 50 • *Zi-128 EV Internationally recognized Symbol Final Approval*, British Columbia
  - 51 *Ministry of Transportation and Infrastructure*, November 2012.
  - 52 • *Zero-Emissions Vehicle Signage Information*, redacted from the 2012 ZEV Action
  - 53 *Plan*, State of California, Governor’s Office of Planning and Research, October
  - 54 *2012*; as part of California Traffic Control Devices Committee meeting December
  - 55 *6, 2012*.
  - 56 • *Electric Vehicle Sign Comprehension*, CE454 Urban Transportation Studies
  - 57 *Group Project*, Portland State University, December 2012.
  - 58 • *Bill ESSB 5849*, Washington State House of Representatives Office of Program
  - 59 *Research*, Transportation Committee, March 2013.
  - 60 • *Evaluation of Electric Vehicle Signage*, Portland State University, June 2013.

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64 **DISCUSSION:** On April 1, 2011 FHWA issued interim approval for the use

65 of an Alternative Electric Vehicle Charging General Service Symbol Sign.

66 The content of that approval focuses on the D9-11 series type sign and

67 section 2I.02. However, the appropriate application of the sign is wayfinding

68 not regulation of on-street and off-street parking spaces for sites open to

69 public travel. The use of a blue sign to regulate parking space designation is not

70 appropriate. This issue has been taken up by several western states, Canada and is

71 relevant given the emerging development of EVs. However, most of these efforts

72 represented individual or narrow committee recommendations without substantive

73 research to determine what is the most recognizable message for this task – similar to

74 the work done between 2008 and 2010 by FHWA as part of the pooled fund studies to

75 determine the general service sign.



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77 Following discussion of this topic at RWTC meetings in June 2012 and January 2013,

78 the task force worked with Portland State University to conduct two human factors

79 evaluations to determine what sign had the best recognition through research, making

80 use of prior studies and sign messages. The first effort was undertaken by students to

81 independently assess (through a class project overseen by Dr. Chris Monsere) if there

82 was confusion in the messaging. It was found that there was confusion. This led to a

83 more detailed human factors survey effort conducted by students (through a class  
84 project overseen by Dr. Kelly Clifton, led by Deanna George & Benjamin Stolt) that  
85 emulated the pooled fund research effort to guide the development of the most  
86 recognizable sign.

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88 The December 2012 PSU studies were cursory human factors efforts but it provided the  
89 following general findings:

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- 91 1. More is less - no sign should have multiple plaques unless they are addressing  
92 separate issues (like pay to park and EV). The two word reserved parking  
93 seemed to fare well although several of the surveys compared it to conditions  
94 that it was not intended to address.
- 95 2. The EV symbol did well and had a 87% recognition that the symbol did NOT  
96 include hybrids.
- 97 3. If limits to parking are to be for charging activity - the word charging will need to  
98 be included.
- 99 4. No parking as a sign to indicate restricted parking for EV appears to be confusing  
100 between surveys with ranging results - mixed messaging
- 101 5. When it is not simply reserved EV parking (the MUTCD prototype from the  
102 handicap parking example seems to work well there), how multiple components  
103 are assembled for EV vs general parking, charging vs not charging, time limits,  
104 pay to park needs more consideration

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106 The June 2013 PSU Study was a more detailed effort focused on the EV parking sign  
107 concepts for on-street and off-street parking, providing the following findings:

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- 109 1. Use of no parking symbols to restrict parking for EVs confuses road users as to  
110 the message to park or not park
- 111 2. Use of the words "charging only" clarified the regulatory requirement that a  
112 vehicle must be charging (not just an EV) to utilize the space
- 113 3. The use multiple colored signs seemed to have higher recognition (green and  
114 black on white) which may outweigh the costs/complexity of multiple color  
115 production
- 116 4. Use of arrows on these signs confused users
- 117 5. The two signs below had the best recognition for addressing EV parking  
118 restrictions for off-street and on-street conditions. Key findings include:



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- The use of the black EV symbol outperformed the blue or green for the reserved parking

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- Based upon recognition of other signs with CHARGING ONLY messaging, replacing the arrow that is shown on the comparable R7-8 disabled person parking sign
  - While the two hour parking sign performed well, a further test or consideration of an all green or replacing the blue EV symbol with a black regulatory equivalent would be subject to RWSTC committee consideration.

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The Technical Committee recommended use of green for the symbols over black for consistency in color and simplicity in sign preparation. Based upon the available research and studies conducted the following text is recommended for the MUTCD.

137 **RECOMMENDED WORDING**

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139 **RECOMMENDED WORDING:**

140 **Note: Proposed changes to the MUTCD are shown in underline red and removed text are shown in ~~strikethrough red~~. Changes shown following sponsor comments are shown in yellow below**

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143 **Insert the following new text shown in red to Section 2B.46 in paragraph 1 between signs 13 and 14:**

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146 **Section 2B.46 Parking, Standing, and Stopping Signs (R7 and R8 Series)**

147 Support:

148 01 Signs governing the parking, stopping, and standing of vehicles cover a wide variety of

149 regulations, and only general guidance can be provided here. The word "standing" when used on

150 the R7 and R8 series of signs refers to the practice of a driver keeping the vehicle in a stationary

151 position while continuing to occupy the vehicle. Typical examples of parking, stopping, and

152 standing signs and plaques (see Figures 2B-24 and 2B-25) are as follows:

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1. NO PARKING ANY TIME (R7-1);
  2. NO PARKING X:XX AM TO X:XX PM (R7-2, R7-2a);
  3. NO PARKING EXCEPT SUNDAYS AND HOLIDAYS (R7-3);
  4. NO STANDING ANY TIME (R7-4);
  5. XX HOUR PARKING X:XX AM – X:XX PM (R7-5);
  6. NO PARKING LOADING ZONE (R7-6);
  7. NO PARKING BUS STOP (R7-7, R7-107, R7-107a);
  8. RESERVED PARKING for persons with disabilities (R7-8);
  9. VAN ACCESSIBLE (R7-8P);
  10. Pay Station (R7-20);
  11. Pay Parking (R7-21, R7-21a, R7-22);
  12. Parking Permitted X:XX AM TO X:XX PM (R7-23);
  13. Parking Permitted XX HOUR(S) XX AM – XX PM (R7-23a);
  14. RESERVED PARKING for charging electric vehicles (R7-24)

167 15. XX HOUR Parking for charging electric vehicles (R7-25)

168 **Note: Renumber sequence below**

- 169 16. XX HR PARKING X:XX AM TO X:XX PM (R7-108);  
170 17. NO PARKING ANYTIME/XX HOUR PARKING X:XX AM – X:XX PM (R7-200, R7-200a);  
171 18. TOW-AWAY ZONE (R7-201P, R7-201aP);  
172 19. THIS SIDE OF SIGN (R7-202P);  
173 20. EMERGENCY SNOW ROUTE NO PARKING IF OVER XX INCHES (R7-203);  
174 21. NO PARKING ON PAVEMENT (R8-1);  
175 22. NO PARKING EXCEPT ON SHOULDER (R8-2);  
176 23. No Parking (R8-3, R8-3a);  
177 24. EXCEPT SUNDAYS & HOLIDAYS (R8-3bP);  
178 25. ON PAVEMENT (R8-3cP);  
179 26. ON BRIDGE (R8-3dP);  
180 27. ON TRACKS (R8-3eP);  
181 28. EXCEPT ON SHOULDER (R8-3fP);  
182 29. LOADING ZONE (R8-3gP);  
183 30. X:XX AM TO X:XX PM (R8-3hP);  
184 31. EMERGENCY PARKING ONLY (R8-4);  
185 32. NO STOPPING ON PAVEMENT (R8-5);  
186 33. NO STOPPING EXCEPT ON SHOULDER (R8-6); and  
187 34. EMERGENCY STOPPING ONLY (R8-7).

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189 **Insert the following new text shown in red in Section 2B.47 between paragraphs 17 and 18**  
190 **of the MUTCD:**

191 **Section 2B.47 Design of Parking, Standing, and Stopping Signs**

192 Support:

193 01 Discussions of parking signs and parking regulations in this Section apply not only to parking,  
194 but also to standing and stopping.

195 **Standard:**

196 02 **The legend on parking signs shall state applicable regulations. Parking signs**  
197 **(see Figures 2B-24 and 2B-25) shall comply with the standards of shape, color, and**  
198 **location.**

199 03 **Where parking is prohibited at all times or at specific times, the basic design for**  
200 **parking signs shall have a red legend and border on a white background (Parking**  
201 **Prohibition signs), except that the R8-4 and R8-7 signs and the alternate design for**  
202 **the R7-201aP plaque shall have a black legend and border on a white background, and**  
203 **the R8-3 sign shall have a black legend and border and a red circle and slash on a**  
204 **white background.**

205 04 **Where only limited-time parking or parking in a particular manner are permitted,**  
206 **the signs shall have a green legend and border on a white background (Permissive**  
207 **Parking signs).**

- 208 *Guidance:*  
209 05 *Parking signs should display the following information from top to bottom of the sign, in the*  
210 *order listed:*
- 211 A. *The restriction or prohibition;*
  - 212 B. *The times of the day that it is applicable, if not at all hours; and*
  - 213 C. *The days of the week that it is applicable, if not every day.*
- 214 06 *If the parking restriction applies to a limited area or zone, the limits of the restriction should*  
215 *be shown by arrows or supplemental plaques. If arrows are used and if the sign is at the end of a*  
216 *parking zone, there should be a single-headed arrow pointing in the direction that the regulation*  
217 *is in effect. If the sign is at an intermediate point in a zone, there should be a double-headed*  
218 *arrow pointing both ways. When a single sign is used at the transition point between two parking*  
219 *zones, it should display a right and left arrow pointing in the direction that the respective*  
220 *restrictions apply.*
- 221 07 *Where special parking restrictions are imposed during heavy snowfall, Emergency Snow Route*  
222 *(R7-203) signs (see [Figure 2B-24](#)) should be installed. The legend will vary according to the*  
223 *regulations, but the signs should be vertical rectangles, having a white background with the*  
224 *upper part of the plate a red background.*
- 225 **Standard:**
- 226 08 **Where parking spaces that are reserved for persons with disabilities are designated**  
227 **to accommodate wheelchair vans, a VAN ACCESSIBLE (R7-8P) plaque shall be mounted**  
228 **below the R7-8 sign. The R7-8 sign (see [Figure 2B-24](#)) shall have a green legend and**  
229 **border and a white wheelchair symbol on a blue square, all on a white background.**  
230 **The R7-8P plaque (see [Figure 2B-24](#)) shall have a green legend and border on a white**  
231 **background.**
- 232 *Option:*
- 233 09 *To minimize the number of parking signs, blanket regulations that apply to a given district*  
234 *may, if legal, be posted at district boundary lines.*
- 235 10 *As an alternate to the use of arrows to show designated restriction zones, word messages*  
236 *such as BEGIN, END, HERE TO CORNER, HERE TO ALLEY, THIS SIDE OF SIGN, or BETWEEN*  
237 *SIGNS may be used.*
- 238 11 *Where parking is prohibited during certain hours and time-limited parking or parking in a*  
239 *particular manner is permitted during certain other time periods, the red Parking Prohibition and*  
240 *green Permissive Parking signs may be designed as follows:*
- 241 A. *Two 12 x 18-inch parking signs may be used with the red Parking Prohibition sign*  
242 *installed above or to the left of the green Permissive Parking sign; or*
  - 243 B. *The red Parking Prohibition sign and the green Permissive Parking sign may be combined*  
244 *(see [Figure 2B-24](#)) to form an R7-200 sign on a single 24 x 18-inch sign, or an R7-200a*  
245 *sign on a single 12 x 30-inch sign.*
- 246 12 *At the transition point between two parking zones, a single sign or two signs mounted side by*  
247 *side may be used.*
- 248 13 *The words NO PARKING may be used as an alternative to the No Parking symbol. The*  
249 *supplemental educational plaque, NO PARKING, with a red legend and border on a white*  
250 *background, may be used above signs incorporating the No Parking symbol.*



251 14 Alternate designs for the R7-107 sign may be developed such as the R7-107a sign (see [Figure](#)  
252 [2B-24](#)). Alternate designs may include, on a single sign, a transit logo, an approved bus symbol,  
253 a parking prohibition, the words BUS STOP, and an arrow. The preferred bus symbol color is  
254 black, but other dark colors may be used. Additionally, the transit logo may be displayed on the  
255 bus face in the appropriate colors instead of placing the logo separately. The reverse side of the  
256 sign may contain bus routing information.

257 15 To make the parking regulations more effective and to improve public relations by giving a  
258 definite warning, a TOW-AWAY ZONE (R7-201P) plaque (see [Figure 2B-24](#)) may be appended to,  
259 or incorporated in, any parking prohibition sign. The Tow-Away Zone (R7-201aP) symbol plaque  
260 may be used instead of the R7-201P word message plaque. The R7-201aP plaque may have  
261 either a black or red legend and border on a white background.

262 *Guidance:*

263 16 *If a fee is charged for parking and a midblock pay station is used instead of individual parking*  
264 *meters for each parking space, pay parking signs should be used. Pay Parking (R7-22) signs*  
265 *(see [Figure 2B-24](#)) should be used to define the area where the pay station parking applies. Pay*  
266 *Station (R7-20) signs (see [Figure 2B-24](#)) should be used at the pay station or to direct road*  
267 *users to the pay station.*

268 **Standard:**

269 17 **If the pay parking is subject to a maximum time limit, the appropriate time limit**  
270 **(number of hours or minutes) shall be displayed on the Pay Parking (R7-21 or R7-21a)**  
271 **and Pay Station (R7-20) signs.**

272 *Guidance:*

273 *18 Where parking spaces are reserved for charging electric vehicles, a*  
274 *RESERVED PARKING for charging electric vehicles-(R7-24) sign (see [Figure](#)*  
275 *2B-24) should be installed adjacent to the designated space.*

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277 *19 Where on-street parking spaces are reserved for charging electric*  
278 *vehicles and have time restrictions, XX HOUR Parking for charging electric*  
279 *vehicle (R7-25) sign (see [Figure 2B-24](#)) should be installed adjacent to the*  
280 *designated space.*

281 **NOTE: Re-sequenced the paragraph numbering below**

282 *Option:*

283 ~~2048~~ In rural areas (see [Figure 2B-25](#)), the legends NO PARKING ON PAVEMENT (R8-1) or NO  
284 STOPPING ON PAVEMENT (R8-5) are generally suitable and may be used. If a roadway has  
285 paved shoulders, the NO PARKING EXCEPT ON SHOULDER sign (R8-2) or the NO STOPPING  
286 EXCEPT ON SHOULDER sign (R8-6) may be used as these signs would be less likely to cause  
287 confusion. The R8-3 symbol sign or the word message NO PARKING (R8-3a) sign may be used to  
288 prohibit any parking along a given highway. Word message supplemental plaques may be  
289 mounted below the R8-3 or R8-3a sign. These word message supplemental plaques may include  
290 legends such as EXCEPT SUNDAYS & HOLIDAYS (R8-3bP), ON PAVEMENT (R8-3cP), ON BRIDGE  
291 (R8-3dP), ON TRACKS (R8-3eP), EXCEPT ON SHOULDERS (R8-3fP), LOADING ZONE (with arrow)  
292 (R8-3gP), and X:XX AM TO X:XX PM (with arrow) (R8-3hP).

293 ~~2149~~ Colors that are in compliance with the provisions of [Section 2A.10](#) may be used for color  
294 coding of parking time limits.

295 *Guidance:*  
296 ~~2220~~ *If colors are used for color coding of parking time limits, the colors green, red, and black*  
297 *should be the only colors that are used.*  
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**Add the following graphics to Figure 2B-24:**



R7-24



R7-25

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**The two following paragraphs are not intended for inclusion in the MUTCD. The two paragraphs are presented for information only as the National Committee and FHWA consider this Technical Committee Recommendation.**

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R7-24 is shown as a vertical rectangular white sign with a green border and the words "RESERVED PARKING" in green on two lines above a green electric vehicle charging symbol with the words "CHARGING ONLY" below in green. The sign can be applied to individual spaces which are accompanied by a charging station for electric vehicles.

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R7-25 is shown as a vertical rectangular white sign with a green border and a black letter "P" inside a green circle. The words "2 HOUR" (or alternatively the desired time restriction) in white on a green background as shown. A green electrical vehicle charging station symbol is below the time restriction. The words "CHARGING ONLY" are below in green. The sign can be applied to individual spaces which are accompanied by a charging station for electric vehicles.

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**EV TASK FOR VOTE:**

**For: unanimous**

**Opposed:**

**Abstentions:**

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**RWSTC Vote: 6-27-13**

**For: Unanimous**

**Opposed:**

**Abstentions:**

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**RWSTC Vote: 1-8-14**

**For: Unanimous**

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335 **Council Vote: 1-10-14**

336 **For: Unanimous**

337 **Opposed:**

338 **Abstentions:**

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340 C:NCUTCD/June 2013/McCourt/Electric Vehicle – EV signs revised 6-27-13, revised 12-

341 22-13 following sponsor comments formatted 1-2-14, approved by RWSTC 1-8-14

342 following sponsor comments, approved by COUNCIL 1-10-14