ERRATA for ADOT Freeway Management System Design Guidelines, May 2009

Ordered by appearance in the text.
Last updated 02/02/2012.

Page 1-6, Chapter 7 Freeway Dynamic Message Signs
Insert **7.3 Replacing bridge fascia mounted DMS**

Page 3-3, Third paragraph, second sentence.
Change the sentence "In addition, the designers' continued involvement through construction as part of post design services is desired." to
The designers' continued involvement through construction as part of post design services may be required.

Page 4-1, Section 4.2.
Change the section "The trunkline conduit system shall be located inside and along the edge of the freeway's right-of-way line. Generally, the trunkline conduit should be located as far from the main line edge of pavement as feasible so that future widening of the mainline freeway will not impact it. The likelihood of future earthwork and re-grading decreases when approaching the right-of-way. Thus, the trunkline conduit system is less likely to be disturbed by this work.

The designer will have to exercise engineering judgment as to the preferred location for the trunkline conduit system, considering factors such as slopes, cross-section, proximity to retaining walls, sound walls, and landscaping and irrigation systems. Maintenance force access to the trunkline conduit system usually at pull boxes, should also be considered. The trunkline conduits should be offset from the actual right-of-way fence, where feasible to avoid repeated maintenance wheel-loads. Several figures are included to illustrate these design concepts. (See Figures 4.1, 4.2, 4.3, 4.4, 4.5, and 4.8.)

When the freeway is on an embankment section, considerations must be given to placing field equipment, controller cabinets, etc., at the top of the slope to provide visibility of the FMS equipment from the cabinet, even though the trunkline remains adjacent to the right-of-way line. In any case, trunkline should not be placed below slopes" to

The trunkline conduit system shall be located within the freeway's right-of-way line. Due to theft concerns, the FMS Conduit should be as close to the right-of-way line as possible while still being visible from the road and in front of sound walls or barriers. The designer shall exercise engineering judgment as to the preferred location for the trunkline conduit system, considering factors such as slopes, cross sections, proximity to retaining or sound walls, vulnerability to theft, and maintaining landscaping irrigation systems. Maintenance force access to the trunkline conduit system usually at pull boxes, should also be

considered. Where feasible the trunkline conduit system, should be positioned to avoid repeated wheel-loads. Several figures are included to illustrate these design concepts. (See Figures 4.1, 4.2, 4.3, 4.4, 4.5, and 4.8.)

When the freeway is on an embankment section, considerations must be given to placing field equipment, controller cabinets, etc., at the top of the slope to provide visibility of the FMS equipment from the cabinet. In any case, the trunkline conduit system shall not be placed below the slopes.

Page 4-19, Section 4.6, second paragraph, line 1.
Change the sentence "No PVC inner duct is permitted" to **No PVC or fabric inner duct is permitted.**

Page 4-21, Section 4.7, seventh paragraph, line 1.
Change the sentence "Delineators are not required to mark pull box locations" to **Delineators shall not be used to mark pull box locations.**

Page 4-21, Section 4.7.1, first paragraph.
Change the paragraph "Two types of FMS in-ground pull boxes, No.9 and No. 7 with extension are illustrated in Figure 4.9, 4.10, and 4.11. See the FMS Standard Details for additional detailing of pull boxes. Pole mounted and bridge mounted pull boxes are also described in this section." to
Two types of FMS in-ground pull boxes, No.9 and No. 7 with extension are illustrated in Figure 4.9, 4.10, and 4.11. Designers are required to run conduit from No. 9 pull box to No. 9 pull box and avoid the use of a No. 7 pull box with extension except when approved by the Engineer. In addition to in-ground pull boxes, pole mounted and bridge mounted pull boxes are also described in this section.

Page 5-1, First paragraph. (No change from Sept 24, 2009 Errata.)
Change the paragraph "Data from vehicle detection technology is used in real time for FMS applications and may also be stored for planning purposes. The FMS gathers and uses real-time traffic data including speed, occupancy, vehicle identification, and volume. Recorded data is also useful for non-real time traffic planning purposes such as monitoring traffic trends and generating other traffic related statistics. This guide does not address detector data collection for traffic planning purposes." to
Data from vehicle detection technology is used in real time for FMS applications and is stored for planning purposes. The FMS gathers and uses real-time traffic data including speed, occupancy, vehicle identification, and volume. Recorded data is also useful for non-real time traffic planning purposes such as monitoring traffic trends and generating other traffic related statistics.

Page 5-1, Section 5.1, first paragraph.

Change the paragraph "The principal vehicle detection system for the ADOT FMS has been loop detectors that are either sawcut into the pavement surface or installed beneath the PCCP pavement. At certain locations (usually in retrofit or loop failure situations) nonintrusive detection systems have been installed rather than saw cutting in-pavement loop detectors" to

The standard vehicle detection system for the ADOT FMS has been loop detectors that are either sawcut into the pavement surface or installed beneath the Portland Cement Concrete Pavement (PCCP). At certain locations, such as on a bridge where loops cannot be saw cut, non intrusive detection systems may be installed with Engineer approval.

Page 6-5, Section 6.3, third paragraph.

Change the paragraph "For FMS system implementation, 480-volt power is generally distributed from a load center to each equipment cabinet and stepped down from 480-volts to 120-volts with a step-down transformer located adjacent to the cabinet. A type IV load center cabinet is preferred because it offers the opportunity for both voltage types. Conductor wires shall be size 2 or smaller for FMS applications, #4 or smaller is preferred." to

For FMS system implementation, 480-volt power is generally distributed from a load center to each equipment cabinet and stepped down from 480-volts to 120-volts with a step-down transformer located adjacent to the cabinet. A type IV load center cabinet is preferred because it offers the opportunity for both voltage types. Conductors shall be size #4 or smaller for urban applications. Long runs of heavy gauge wire should be avoided because they are most vulnerable to theft. The designer shall use the lightest gage wire that is approved by the Engineer. All FMS devices in close proximity to a TI should be powered from one load center such as a Type IV. DMS signs and/or CCTV cameras that are some distance from a TI should have a separate load center.

Page 7.5, Seventh paragraph.

Insert a new section **7.3.1 Replacing bridge fascia mounted DMS.**

The spacing of the existing vertical posts and the existing mounting supports on the bridge fascia may differ from the spacing indicated on the ADOT standard drawings. If the vertical post spacing and the mounting supports differ, the designer shall coordinate with the ADOT TTG PM to order DMS without factory drilled holes in the Z bars. In addition, the designer shall include language in the special provisions that requires the contractor to field drill the holes in the Z bars to match the existing vertical post spacing on the existing structure. The designer shall indicate in the special provision that drilling of the holes in the field shall be incidental to the item and will neither be measured nor paid.

Page 8-2, fourth paragraph. (No change from Sept 24, 2009 Errata.)
Change the paragraph "The designer should coordinate with ADOT TTG to determine the type (barrel, dome) and mount (top, pendant) of the state furnished camera planned for each particular location. ADOT currently uses the barrel type camera for all installations due to maintenance cleaning problems associated with dome cameras placed outdoors. Cameras are typically mounted on an ultra-stable *Modified Type T* pole (See ADOT *Standard Drawing TS 4.14*). The pole shall be engineered by the contractor to resist vibration and allow no more than one inch of defelection in an 80 mph wind with 30% gust factor at the top of the pole. The camera moutn should be secure and consistent with the high standards for the pole. Once the design has been approved, the CCTV pole location should be marked in the field and approved by the engineer prior to construction. Figure 8.1 depicts a typical CCTV pole and cabinet configuration." to

The designer should coordinate with ADOT TTG to determine the type (barrel, dome) and mount (top, pendant) of the state furnished camera planned for each particular location. ADOT currently uses the barrel type camera for all installations due to maintenance cleaning problems associated with dome cameras placed outdoors. Cameras are typically mounted on an ultra-stable *Modified Type T* pole (See ADOT *Standard Drawing TS 4.14*).

The pole shall withstand 80 mph wind with 30% gust factor. The pole top deflection shall not exceed 1 inch in a 30 mph wind.

The camera mount should be secure and consistent. The CCTV pole location should be marked in the field and approved by the engineer prior to construction. Figure 8.1 depicts a typical CCTV pole and cabinet configuration

Page 8-3, Figure 8.1, Pole Design Note. (No change from Sept 24, 2009 Errata.)
Change the note "Pole and Associated Mounting Hardware Shall Be Designed to Support a 100 lbs. Camera Unit Assembly With a 4 Square Feet Projected Wind Area 2 Feet Above the Top of the Pole. Pole and Associated Hardware Shall Be Designed for Ultimate Wind Loading of 80 MPH Plus 30% Gust Factor, with deflection of CCTV Camera not to exceed one inch." to

Pole and Associated Mounting Hardware Shall Be Designed to Support a 100 lbs. Camera Unit Assembly With a 4 Square Feet Projected Wind Area 2 Feet Above the Top of the Pole. The pole shall withstand 80 mph wind with 30% gust factor. The pole top deflection shall not exceed 1 inch in a 30 mph wind.