AMERICAN SIGNAL COMPANY

American Signal ITS Cloud Manager Software
Sign System Software for Fleet Management, QDS, and SWZ

1. <u>General:</u>

The following specifications shall outline an expandable changeable message sign system central software. It shall be capable of operating both stationary and or portable NTCIP-compliant changeable message signs. It shall be capable of controlling a virtually unlimited number of signs via different communications media even within the same sign system. It shall be controlled using an Internet-connected device with an Internet browser.

2. <u>System Description:</u>

   2.1.   The variable message sign system may consist of portable and or stationary changeable message signs containing AMSIG Webb Express or ITS control firmware.
   2.2.   The communications subsystem may consist of cellular phone modems, fiber optic communications system or other; the remote user interface may consist of devices such as PC, tablet, or smartphone.

3. <u>System Operation:</u>

   3.1   The minimum user interface requirements are as follows: Internet-connected device with a compatible Internet browser program or application installed.

   3.2   The ITS Cloud Manager software is hosted by Amsig's servers in Atlanta, GA. There shall be no local installation required on the users' interface devices, except what may be necessary to allow for Internet connectivity and an Internet browser.

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3.3   The ITS Cloud Manager software shall not be written for any specific operating environment. A mouse, touch screen, or equivalent pointing device shall be required to access all of the features of the program. The program shall make use of standard menus and dialog boxes. All functions shall be menu driven and have a logical hierarchy arrangement. A user shall have the ability to cancel a commanded function at any time or return to a previous menu or screen.

3.4   ITS Cloud Manager shall include a username and password security system with five levels of control access: None, Read Only, Message Activate, Message Edit, and All. The user can create an unlimited number of login combinations with unique email addresses.

3.5   ITS Cloud Manager Program Overview

3.5.1   Main Menu - The Main Menu Bar shall provide access to the functions of the signs and the system. These functions shall include, but not be limited to, the following:
A. Admin Menu
    1. Messages - activation, creation, editing, deleting
    2. Notifications - group configuration
    3. Signs - grouping, telematics
    4. Users - creation, editing, deleting
    5. Account - password editing
    6. Help
B. Refresh - sign status and telematics
C. Logout

3.5.2   Sign Table - The Sign Table shall provide access to control of individual signs or sign groups. The Sign Table shall list all user-owned signs and sign groups, and will include each sign's ID, user-defined description, user-defined group assignment, and current or last-known battery voltage.

3.5.3   Map - The Map shall be provided by an Amsig-contracted third party (MapQuest, Google, etc.). The Map shall include pushpins for each user- defined sign, defined by either the signs' optionally installed GPS units or user- defined location.

3.6   ITS Cloud Manager Software Operation

3.6.1 ITS Cloud Manager shall provide commands and features including, but not limited to, the following functions:
A. Activating, editing, creating, saving, and uploading messages for display on the message signs.
B. Editing, creating, and saving Notification groups.
C. Telematics - each sign's message history, battery voltage history, estimated modem usage, polling history, notification history, current display content, and GPS coordinates (provided a compatible GPS device is installed), Vehicle Identification Number, firmware version number, and a link to the sign's individual control page.

3.6.2 The ITS Cloud Manager software shall employ as security a username and password to identify all users and determine which software functions the user has access to. The user shall be prompted to enter a user name and password to access any features or functions. User names and passwords shall be stored on the servers as encrypted files.

3.6.4 The sign programming software shall log all user operations and functions performed. All logs shall be time and date stamped. The logs shall be stored on the servers, and the software shall contain a feature for accessing those logs.