**3. Block Message Formats**

All AB3418 messages use standard AB3418 framing. More information on AB3418 framing can be found in Standard Communications Protocol for Traffic Signals in California, Specification and Implementation Requirements.

(http://www.dot.ca.gov/hq/traffops/elecsys).

3.1 All Block Messages shall follow the following format.

Byte 1 - Start Flag 0x7E

Byte 2 - Controller Address 1 to 255

Byte 3 - Control Byte

0x13 – single address Unnumbered Information (UI) control byte

0x03 – broadcast Unnumbered Information (UI) control byte

0x33 – single address Unnumbered Poll (UP) control byte

Byte 4 - IPI (0xC0)

Byte 5 - Message

Variable Bytes - Packet Message Data (0 to n bytes)

Byte - 16-bit FCS MSB (most significant byte of the Frame Check Sequence,

bytes #2 to end of Packet Message Data)

Byte - 16-bit FCS LSB (least significant byte of the Frame Check Sequence)

Byte - End Flag 0x7E

3.2 The “Controller Address” (byte 2) in the block message is defined as follow:

Shifted the byte two bits to the left, and then add one to the result

Controller Address = (Local Address << 2) + 1

(master controller has the “controller address” assigned to 1,

broadcast address has the “controller address” assigned to 255,

controller #1 has the “controller address” assigned to 5,

controller #2 has the “controller address” assigned to 9,

etc...)

3.3 Byte Stuffing

If any of the bytes starting from byte 2 to end of Checksum byte contain the Flag

Sequence (0x7e) or Control Escape (0x7d) characters, they are replaced by the

2-byte sequences 0x7d5e and 0x7d5d, respectively.

3.4 Bit numbering

Bits of all quantities are numbered, from right to left, starting with bit 0.

The left-most bit of the contents of a memory location is bit 7.

3.5 The order of byte transmission of multiple-byte data (i.e. ‘data type’ int, short)

shall be from most significant byte (MSB) to least significant byte (LSB).