TEXAS DEPARTMENT OF TRANSPORTATION

DEPARTMENTAL SPECIFICATION

152MHz School Zone Paging System

TO-7000

1.0 Scope

This specification sets the minimum acceptable requirements, materials and workmanship for a School Flasher system that is activated using existing pager technology.

2.0 Software

The Pager Activated School Flasher System software shall be capable of operation on central office computer running Microsoft Windows. The software shall be user friendly and intuitive in format and shall employ a "Windows" style interface and shall include suitable prompts and verifications as well as help screens.

2.1 Group Programming

The software shall be capable of programming up to 99 different groups. A group will be comprised of school flasher locations that share common daily, weekly and annual programs. Each group shall be capable of accommodation up to 99 different school flasher location addresses. The programming of each group shall include an alpha-numeric name that is entered by the user, a group number that is automatically assigned by the software, the telephone number for dialing the pager carrier and the PIN number shall be used for all school flasher locations.

A function shall be provided that will enable and disable the Group programming. This feature will eliminate the possibility of making a program change inadvertently. The user shall be able to scroll through the Group entries and print a list of the Groups without enabling the Group Programming.

The software shall allow the operator to add a group, delete a group, list the groups by name and list the groups by number. Print capability shall be provided when listing the groups by name or number. It shall be possible to scroll through the Group programming by accessing a Next and/or Previous function.

2.2 Location Programming

The programming of each location shall include the location name, location type, group number and a unique location ID number. The software shall automatically assign the unique location ID number. Each new location type shall be automatically added to a pull down list eliminating the need to re-enter the same location type more than once. A function shall be provided that will enable and disable the Location programming. This feature will eliminate the possibility of making a program change inadvertently. The user shall be able to scroll through the Location entries without enabling the Location programming.

The software shall allow the operator to add a location, delete a location, list the location by name and list the locations by group number. Print capability shall be provided when listing the locations by name or number. It shall be possible to scroll through the Location programming by accessing a Next and/or Previous function.

2.3 Week Plan Programming

Each group described above shall have up to nine (9) different week plans with twenty-four (24) program steps per plan. Each week plan shall include the following:

Day/s of the Week:	WDY	=	Monday through Friday
	EDY	=	every day
	WND	=	weekend days
	Mon. to Fri.	=	Individual days of the week
	WDY - Mon.	=	weekdays except Monday
	WDY - Tue.	=	weekdays except Tuesday
	WDY - Wed.	=	weekdays except Wednesday
	WDY - Thu.	=	weekdays except Thursday
	WDY - Fri	=	weekdays except Friday

Time of day displayed in: Hours, Minutes, AM or PM

ON/OFF Commands:
ON
OFF
ON (time delay to) OFF (1 minute to 12 hours)
OFF (time delay to) OFF (1 minute to 5 days)

Provisions shall be made to edit or delete any week plan step. It shall also be possible to copy the program from any week plan to any other week plan and copy from any group to any other group. Print capability shall be provided for any group and week plan combination.

The week plans program screen shall include an "Error Check" function. When accessed, this function shall search all of the week plans for errors in the program. An error is defined as one of the following conditions:

ON command followed by and ON command
OFF command followed by and OFF command
ON timed command with another program step within the duration time of the ON time
OFF timed command with another program step within the duration time of the OFF time.

The error check display will tell the operator the Group name, the week plan number, a description of the error found and the step numbers where the error occurs.

2.4 Annual Programming

The software shall run one of the Week plans for each Group number as the default plan. The software shall run this default plan throughout the year unless instructed otherwise by using an Annual plan.

The software shall be capable of executing up to 99 separate Annual plans to any year in advance. Each Annual plan shall be programmed by entering the start date (month/date/year), the group number and week plan number to run. The software shall be capable of running any Week plan as short as one (1) day or as long as twelve (12) months. It shall be possible to begin and Annual plan, delete any plan and display all of the Annual plans. Print capability shall be provided for the Annual plans.

2.5 Display Today's Plan

At midnight each day the software will search its program and compile a program for that day. This program shall be displayed when the Display Today's Plan function is accessed from the main menu.

The display shall show the month, day, year, all groups by name, week plan numbers in effect for each group, annual plan numbers in effect for each group and the daily program. It shall be possible for the operator to view the daily program for any day in the future by changing the month, day and year displayed. It shall be possible for the operator to sort the daily program by the time of day and group name. Print capability shall be provided for any plan displayed.

2.6 Program Override

The main menu shall include a Program Override function that when accessed will allow the operator to select a program (i.e.: all groups, all locations, off) that will run the system until midnight of the same day. This feature will allow the state to initiate another program to account for daily operational changes due to inclement weather, special holidays or any unforeseen event.

2.7 Manual Control

It shall be possible to manually control any Individual flasher location, or and entire group of school flashers from the computer. The operator shall have the ability to build a manual control page list of up to six Group/Location/ON, OFF or OFF (timed) commands. Once the manual control list page is complete, the operator shall be able to send all manual commands with one call to the pager carrier. The school flasher affected by this operation shall remain in the manual state until the next program is received or until the timed duration expires.

2.8 Exiting the Program

The operator shall have to execute at least three (3) functions in order for the program to be shut down. At the last screen in this process, the computer shall display a distinct warning that the location flashers will not operate if the program is exited. The operator shall have the option of completing the shut down procedure or returning to the program.

2.9 Communications Set-Up

The communications set-up of the software shall allow the operator to enter and/or change the pager carrier phone number and PIN number. The software shall also allow the operator to select the appropriate baud rate for the pager carrier from a pull down menu.

2.10 Technician Page

The software shall have the capability of automatically calling a technician pager and sending an alphanumeric message to a technician if the system detects a malfunction in the pager carrier service. The technician pager phone number, PIN number and alphanumeric message shall be programmable from the set-up screen. A function shall be provided for testing the technician pager.

2.11 Verification of Page Message

The pager activated school flasher system shall have the ability to verify that the message sent to the pager carrier was broadcast over the pager network successfully. The software shall have a screen that will list the last 100 pages that were verified by the system. This list shall include the time, date and message that was that was verified. Print capability shall be provided for this verification list.

When the school flasher message is sent to the pager carrier, the software will start a verification time. If the software receives verification that the pager carrier has broadcast the message successfully within the verification tie, the verification timer is reset. If the software does not verify that the pager carrier has broadcast the message successfully within the verification time, the software will reset the timer and automatically send the message again. This verification process shall be repeated until the school flasher message is verified or until the number of attempts has expired. The total number of attempts shall be selectable from three (3) to nine (9).

The verification timer shall be selectable for sixty (60) seconds to one hundred eighty (180) seconds in fifteen (15) second increments.

The technician message described in paragraph 1.10 shall be automatically sent after the third school flasher message fails to be verified and after the last school flasher message fails to be verified.

2.12 Verification Count

In order to overcome the possibility that a school flasher controller in the field may not receive a message, the system shall be able to send and verify one, two or three messages. The number of verified messages shall be selectable by the operator. By sending and verifying multiple messages, the probability of a field controller not receiving the message is reduced significantly.

2.13 Verification Enable/Disable

The operator shall have the option of enabling and disabling the verification process. If the operator chooses to disable the verify feature, the software shall display a warning.

2.14 Software Training

The vendor shall provide software usage training at a time agreed upon by the vendor and a TxDOT representative.

3.0 School Flasher Controller

The school flasher control unit shall be a wireless pager module able to receive commands generated by a school flasher-programming device through a local pager service. It shall be compatible with commercial 152MHz frequency range alphanumeric paging services using POCSAG/FLEX protocol. Controller programming software shall be provided to set and reset the CAPCODE and frequency in the pager module.

The pager module shall work as a radio modem for the school flasher controller. When the pager module receives a message, it will pass the message to the controller unit for decoding. All addressing (except CAPCODE), timing and on/off command decisions shall be made by the school flasher controller and not by the pager module.

3.1 Time Switch Enclosure

The time switch shall be enclosed in a dust resistant housing. The housing shall have an inverted "T" screw hole mount. The bottom two holes shall be 2 5/16 inches apart from center to center. The top hole shall be 5.75 inches from its center perpendicular to the line connecting the bottom holes at their centers. The top hole shall be 1 to 1.5 inches from the top of the box. The maximum overall outside dimension of the clock's housing shall be 10.25 inches high by 6.25 inches wide by 7.5 inches deep.

3.2 Electrical

The controller units shall be capable of operating on either 12V DC +/- 2V DC or an AC power source between 95 and 135V AC. The AC and DC power supply must be an integral part of the controller circuit board due to the fact that many flasher cabinets do not have AC power outlets.

A separate power supply module, similar to those used for calculators and battery chargers, is not acceptable.

3.3 Power Back-up System

A means shall be provided to maintain timekeeping and the program when the line power source (120VAC or 12VDC) is lost. This back-up system shall maintain timekeeping and the program for not less than 5 days at 25C when fully charged, and shall go on line automatically and resume normal operation with the relay either energized or de-energized based on the last command received.

The controller shall keep track of any duration time and relay output condition during a power failure. If the duration time did not expire during the power failure, the controller will keep the relay in the same condition when power is restored. If the duration time did expire during the power failure, the controller will change the condition of the relay when the power is restored.

The device used for the back-up system, the indicators and relay output shall be off to conserve back-up power.

3.4 Manual Operation

The controller shall be equipped with a push button switch that will allow a technician to manually activate and/or deactivate the relay output. The relay shall remain in the manual condition until the next program is received.

3.5 Indicators

The controller shall be equipped with a push button switch that will allow a technician to manually activate and/or deactivate the relay output. The relay shall remain in the manual condition until the next program is received.

3.6 Controller Addressing

It shall be possible to program a unique address on each controller board by setting two (2) DIP switches. One DIP switch shall be used to set the group address (01-99) and another DIP switch shall be used to set the Location address (01-99). This unique address will allow the operator at the computer to control any school flasher individually or as a part of a complete group.

Group and/or individual addressing programmed in the pager module is not acceptable. The pager module is used strictly as a radio modem.

3.7 Output Relay

The controller shall have a SPDT relay output rated at 15 amps resistive at 120VAC.

4.0 Warranty

The school flasher programming device software, hardware and the controller units shall be warranted to be free from defects in material and workmanship for a period of two years for the date of shipment. Any warranty service required shall be promptly performed at the manufacture's facility or the manufacture's authorized service agency. The successful Vendor shall pay shipping charges for equipment returned for warranty repair to and from TxDOT via normal surface transportation means.

Service information shall be available to TxDOT consisting of at least schematics, parts locators and parts lists.

5.0 Test and Acceptance

The apparent low bidder shall be required to supply a complete working system to TxDOT for testing and evaluation. This working system shall include a computer preloaded with the software, a verification controller unit, six field controller units and any other equipment or supplies necessary for TxDOT to adequately test and evaluate the system. The bidder shall set-up the computer, the verification controller unit and the six field controller units at a location identified by TxDOT. The bidder will train TxDOT personnel on how to program and operate the pager activated school system. TxDOT will supply a telephone line for the testing period. The bidder will make as necessary arrangements with a local pager carrier and be responsible for the cost of the pager carrier service for the duration of the test and evaluation. The test and evaluation will take up to 6 days at which time the equipment may be picked up by the bidder or shipped to the bidder freight collect.

Upon telephone or written notification, the bidder must deliver this equipment to TxDOT within 60 calendar days. Failure to comply with these requirements will render the bidder non-responsive.