Under Vehicle Monitoring System Specifications

1. Under vehicle monitoring system should employ line scan camera with at least 2048x2 (two thousand forty eight times two) pixel resolution. Camera should process scanning operation line by line. Camera should provide options of area scan and line scan operation modes.
2. Control panel should include a switch button for summer and winter operation modes. It should be able to switch off the internal ventilation if required.
3. Day and night vision display quality should be independent of ambient conditions such as orientation of the sun, shadow configuration, rain and fog. A clear display of the under vehicle image should be provided by the system. Displayed image provided by the system should be in black and white.
4. An under vehicle illumination system should be present to provide images at night as clear as of daytime. This illumination system should not be active at all the times; it shall be triggered on with the passage of vehicle and will go into stand-by mode after scanning the under vehicle. Vehicle detection procedure should employ at least a 2 (two) channel metal detector.
5. Under vehicle illumination cannot depend on only one LED, lamp or spotlight. In case of a failure of one of the light sources, illumination will not be interrupted and camera will continue performing its duty.
6. Illumination LEDs will be red colored. Luminosity of the LEDs should be adjustable automatically as 3 (three) separate groups. Luminosity of the LEDs will not change as day and night. Exposure will automatically be adjusted as day and night modes by computer. Settings will be sent to the PLC (GPIO) unit automatically as a new program which has been set at the real time by the computer.
7. System should include a water evacuation pump and a level float. Water pump and float should be placed in a 40*40*50 cm box made of metal. There should be a PNP Inductive Switch present inside the metal box as a second water level control apparatus in addition to the float. If water level rises for any reason, this switch should inform the PLC control system. In an extraordinary case of flood where water pump is insufficient, PLC should warn the operator and power off the camera and the entire system located underground, except the water pump.
8. Lid of the under vehicle monitoring box should be made of 10 mm st-42 steel plate. Lighting armature and shutter hole lid should be independent of each other. Mounting box should be supported by a 10 mm frame and should be covered by a 3 mm sheet metal. All mechanical components should have hot-dip galvanized coating against corrosion.
9. Separated fuses must be included for the each camera and the lighting system
10. After a maximum 2 (two) seconds of delay following the passage of vehicle’s rear edge by camera, under vehicle image, license plate, front view of the car and all other data should be displayed on the screen.
11. Vehicle scanning unit shall be activated by the command (trigger) generated by the vehicle detection unit before the passage of vehicle. System also should be able to be activated manually in case of failure of the vehicle detection unit.
12. For any vehicle passage speed between 5 (five) km/h and 60 (sixty) km/h, under vehicle image should be displayed clearly and entirely without any speed originated defects.

13. Under vehicle monitoring system should operate in integration with license plate recognition system.
14. Any partial area of the obtained image selected by the help of mouse and/or keyboard could be locally zoomed in/out. Previous and current under vehicle passage images could be matched and simultaneous zooming and image sliding should be able to be carried out on the matched images.

Vehicle License Plate Recognition System

1. License plate recognition operation should be carried out automatically by the system camera upon entrance of the vehicle into the monitored area. License plate recognition system should be able to operate independently of the under vehicle system. License plate recognition system should be able to be operated alone if the under vehicle system is not in use.
2. If recognition could not be done correctly due to the defects on the license plate surface, system should allow interruption of the user to enter the plate number manually.
3. License plate recognition camera used in the system should carry out its recognition task in day/night conditions and in bad weather conditions. The system should be recognize single or double line plates and separate different countries license plates. System should be identify the authorized plates in green, unauthorized plates in yellow and restricted plates in red color. This specification will be guaranteed by the company in written to the inspection committee during the inspection.
4. License plate recognition camera should have a cover case. The system should have 1280x960 pixel resolution IP camera and C mount lens and IP66 protection.
5. License plate recognition system should have an infrared featured day-night lighting armature. System should have 10/100Mbit Ethernet support. System should forward the license plate information to a independent server by TCP/IP. System should be operated properly without any support by any kind of video capture or I/O card.

General Specifications

1. Monitoring screen should be an LCD screen with dimensions of at least 22” (twenty two inches) System includes keyboard and mouse.
2. Processor should be i5.
3. To enable data transfer to outside, system computer should have at least 2 (two) USB ports and 1 (one) DWD-RW drive.
4. System should meet the minimum requirements of 1 TB HDD, 8 (eight) GB RAM and a graphics processor with 300 (three hundred) MHz core speed 1GB memory.
5. Software language should be in English.
6. System should have a user friendly interface.
7. All device components of the system which are located outdoors should have a water proof cover casing.
8. System should employ a separate fuse for the electric supply of each and every camera, lighting equipment and other equipment.
9. System should include a submersible water evacuation pump and a water reservoir box.
10. System should be capable of operating between the temperatures -20°C (twenty degrees below zero) and +50°C (fifty degrees above zero). This specification will be guaranteed by the company in written.

11. Information including date and time on vehicles that have passed within a chosen time interval should be able to be displayed as a list. Moreover, information including date and time on a certain vehicle's passes that happened within a chosen time interval should be able to be displayed as a list. Data obtained through this process should be available for filing and printing.
12. System should be able to record captured front view images including license plate and driver's seat areas of the vehicles that have entered during day or night conditions in PDF format.
13. Even if license plate recognition could not be processed for various reasons, front view images of the vehicle, which may have passed at any speed, should be displayed clearly and entirely on the screen.
14. After a maximum of 3 (three) seconds following a vehicle's pass, its license plate data, front view image, current under vehicle image and last recorded under vehicle image should be displayed together on the monitoring screen independently for inspection. User should be able to examine and compare current and the last recorded under vehicle images. On all those displayed images, any partial area selected by the help of mouse and/or keyboard could be locally zoomed in/out.
15. License plate data, front view image, current under vehicle image, last recorded under vehicle image or any partial area selected by the help of mouse and/or keyboard on one of those images should be able to be displayed in full-screen.
16. Standard display of the under vehicle image should be in black and white. If required for better examination, camera should be able to capture infrared image (actual image captured under red light), negative image (inverted black and white), or contoured edge image (violet and white).
17. Displayed images should stay on the screen until the next vehicle pass or examination approval of the current vehicle pass by the user. If no vehicle passes after a certain time limit, image from the license plate recognition camera should be displayed as on the monitoring screen as stand-by display in full-screen. Next car pass should activate the system to display new images.
18. Under vehicle images from a registered pass will be recorded in the database along with the related license plate data, front view image and date and time information. When an under vehicle image is recalled, it will be displayed along with those information.
19. For a vehicle first admission to the system registration, information concerning the unit that owns the vehicle, type of the vehicle, service type of the vehicle (governmental, civilian, private, safeguard, embassy, cafeteria, company etc.) will be recorded along with the date and time of the entrance and license plate data.
20. Data from a chosen time interval (all data and images of the admitted vehicles) should be available for filing and transferring to a digital media.
21. After filing and copying to digital media, it should be able to examine the data (all data and images of the admitted vehicles) on any computer without requiring special software.
22. 2 (two) different types of users should be defined on the system software as administrator and operator. Each operator or administrator should use the system by logging in with his/her own username and password. For multiple operators and administrators, each shall have different usernames and passwords. Given passwords could be changed by the users.
23. Authorizations of the first type users, operators, are filing visitor registrations for the vehicles that are not defined in the system, filing registrations of the vehicles admitted for the first time, monitoring and examining all the data for the admitted vehicles displayed by the system, approving or rejecting the

entry of vehicles, accessing and taking printed copies of all the images belonging to a vehicle that has been admitted before. Operators shall not be authorized to modify or delete any data recorded to the database or copy them to digital media.

24. Authorizations of the second type users, administrators, shall have no restrictions. (Except the restrictions specified in the next item.) Administrators shall be able to access, modify, delete and file any data recorded in the database, and copy them to a digital media at any time.
25. User details of the administrators concerning the data operations of deleting, modifying, filing and copying to digital media will be logged on the database in detail with operation's date and time specified and the logged data will be restricted to deleting and modifying by any type of users. Each and every administrator shall be able to display the logged user information.
26. System should be open to the integration of physical security equipment such as rising bollard and road block. For this purpose, an interface board with minimum 4 input dry contacts and minimum 4 output dry contactors will be supplied with the system. Barriers connected to the system should be controllable by mouse clicking the buttons on the LCD screen. In addition, there should be panic (alarm) button on the screen and by this button, a dry contact should be able to be conducted to the alarm system.
27. Electrical connections of the system shall be established in accordance with the provisions of current regulations and legislation in force.
28. System will be in operation continuously day and night.
29. System should be open to the integration of all kinds of new software and system parts that could be developed and produced through technological advances.
30. System should be protected against electromagnetic interference.
31. System should be able to be operated by only one user.
32. System should be free of manufacturing defects, component defects, fractures, cracks, painting defects or deformations; all components vulnerable to corrosion or humidity will be protected by paint or other coating materials.
33. All tools and utilities necessary for the operation of the system shall be provided with the system.
34. All survey and planning works should be carried out by the company.
35. Manufacturing and installation companies should hold ISO 9001:2015 , ISO 14001-2015 and OHSAS18001-2007 certificate of quality.