QUALITATIVE REQUIREMENTS OF UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS)

A. Specifications of UVSS

1. The UVSS should be able to capture a very high resolution and complete composite under body image of any vehicle passing over it using a single high resolution area – Scan GigE IP camera without requiring the vehicle to stop.

2. The UVSS should be able to handle vehicles moving at different speeds ranging from 0-40 km/hr while the composite image captured by the system should be automatically and dynamically adjusted according to the speed of the vehicle using multiple loop- based sensor / IR sensor

3. The composite imaging camera should be a high quality, color Area Scan, GigE type, with minimum XGA resolution of 1024 X 768 or above. The minimum specification of this area- scan camera shall be:

    a. Camera type : Gigabit Ethernet Progressive Area-Scan Color Camera

    b. Sensor : 1/3" CCD

    c. Horizontal / Vertical Resolution 1024 X 768 Pixels or better

    d. Frame Rate: Minimum 50 fps at full resolution

    e. Camera Certification CE, FCC with 30 fps

    f. Suitable Camera Casing

4. The UVSS should be capable of producing a clear and undistorted image of the vehicle's underside, even when a vehicle has completely stopped over the UVSS unit, i.e. it must be able to create a seamless and perfect composite image of the underside irrespective of the vehicle stopping or moving in a non-uniform manner over the scanner.

5. The UVSS must have a feature to magnify the composite images (current and past), in order to facilitate a closer view of any part of

the composite image.

6. The underside illumination must be adequate and obtained through any state-of-art, long-life LED lighting modules. It should not use Halogen or CFL type lighting elements for illumination of the underside.

7. The UVSS should be able to dynamically and automatically adjust the brightness and contrast of the composite image, so as to ensure good quality images, irrespective of the different external lighting conditions.

8. The UVSS should also provide a feature to capture the image of the driver captured through a suitable driver view camera.

9. The UVSS should give a real-time output of all the data simultaneously, i.e. the composite image, driver photos, vehicle front image and license Plate display (If Applicable) & all should be display on the monitor almost instantaneously.

10. The UVSS must have a built –in software diagnostics capability, to facilitate any distant software support to be offered offline.

11. The UVSS applications and operating software should be based on windows/ Linux platform it must have a user friendly GUI with provision for multiple users logging for events and search facility.

12. The UVSS system must have a facility for backup of all transactions to any usual backup / storage media and also should be able to printout reports.

13. The UVSS underground camera should be enclosed in a suitable all –weather –proof housing of IP 67/66 equivalent or higher standard.

14. The Operating System should be Windows / Linux

15. The overall installed unit should be properly designed, and its structure should be able to withstand a total vehicle load of up to 40 tons at any given point over the structure, more particularly at the center of the unit, so as not suffer any accidental physical damage to the unit and components under the pit cover. A suitable pit Ventilation

system should be provided to cool the UVSS during high temperatures. The installed unit should have automatic wiper system.

16. The front end of the software should be designed on Microsoft .NET / Linus technology.

17. The back end database should be on latest version of SQL server.

18. The UVSS should have open protocol for integration with other security systems and also networking for any remote monitoring requirements.

19. The end of the day report should export the driver and the number plates image directly to a Microsoft excel sheet for further use or reference.

20. The UVSS should also provide a feature to capture the image of the driver for all RHs driven vehicle, captured through a suitable driver view camera.

21. The UVSS must have a feature to magnify the composite images (current and past), so as to facilitate a closer and zoom-up view of it.

22. **Minimum Specification of Driver Image Camera**

a. Sensor type shall be CCD/ CMOS

b. Pixel rate : 2MP

c. Video format shall be NTSC / PAL

d. Resolution shall be 520 TV lines or better

e. Power supply : 12 V DC

f. Mechanical Structure : Structural Steel / Checqured with Rust Free Stainless Steel top

g. Camera and light enclosure shall be Minimum IP 66 rated

23. **The Processing Unit should have**

a. 8 GB RAM or better

b. 2TB HDD or better

c. Latest Inter Core i7 processor or better

d. Minimum 22" Display Monitor, Keyboard, Mouse

e. Software for full functioning of the system

24. Sensor unit shall have Inductive loop sensor / IR Sensors

25. Suitable Lighting Unit should be LED 220V AC

26. Operating temperature : -10^{O}C to +55^{O}C

27. IP 66 or better

B. <u>Specification for Automated License Plate Recognition System (ALPRS)</u>

1. The system should automatically detect a Four Wheeler approaching the installed location my means of inductive loops.

2. On detection of vehicle approach, the system would activate the license plate video capture cameras.

3. The system shall automatically detect the license plate in the captured video feed in real-time.

4. The system shall perform OCR (Optical Character Recognition) of the license plate charters (English alpha –numeric characters in standard fonts)

5. The system shall store JPEG image of vehicle and license plate and enter the license plate number into SQL Server or any other user specified database along with date timestamp and site location details

6. System should be able to detect and recognize the English alpha numeric license plate in all standard fonts and formats of all four wheelers including cars, HCV, LCV.

7. The system processing should be real time i.e. Instant the recognition of license number plates.

8. The system should be able to process and read number plates of vehicles with speed even up to 40 km/hr.

9. The system should store video clip of the vehicle approaching and

leaving the location.

10. The system should have option to input certain license plates according to category like "Wanted", "Suspicious", "Stolen", "Expired" etc. by authorized personnel. On successful recognition of the number plate, system should be able generate automatic alarm to alert the control room for vehicles which have been marked as "Wanted", "Suspicious", "Stolen", "Expired". System should have provision/ expansion option to add more categories for future need.

11. System shall have option to be integrated with other access control hardware/ software on site.

12. The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigation.

13. The system should be able to generate suitable MIS reports that will provide meaningful data to concerned authorities and facilitate optimum utilization of resources. These reports shall include:

    a) Report of vehicle flow at each of the installed locations for Last Day, Last Week, Last Month.

    b) Report of vehicles in the detected categories at each of the installed locations for Last Day, Last Week, Last Month.

    c) Report of vehicle status change in different Vehicle Categories.

14. The system shall have option to save custom reports for subsequent use.

15. The system shall have option to export report being viewed to common format for use outside of the ALPRS or exporting into other systems.

16. The system should provide advanced and smart searching facility of license plates from the data base. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2 character distance).

17. The system should have option to add new category by authorized personnel.

18. The system should have option to update vehicle status in specific category by authorized personnel e.g: On retrieval of stolen vehicle, system entry should be changed from "Stolen" to "Retrieved".

19. System should provide an option for advanced users to tune the system parameters.

20. The system should have option to configure site locations and data management settings.

21. The Central Management Module shall run on the ALPRS Central Server in control room.

22. The system should work in both day and night conditions with good accuracy.

23. The hardware specification for the ALPRS should be a minimum of below:

Camera	Interface	IP
	Format	HDTV 1080 or better
	Resolution	2 Megapixel or better
	Shutter Speed	1/50 to 1/10000 or better
	Operating Temperature (^{O}C)	-10 ^{O}C to +55^{O}C
	Frame Rate	25/30 FPS
Lens	Vertical	5-50mm
	Electronic IRIS Control	DC Type
	Mount	C/CS
	Image Format	¼"/ 1/3" / ½"
IR Illuminator	Wavelength	850nm (Semi Convert)
	IR Illuminator Range	10 – 15m
	Environment Protection	IP 65/ IP 66
Filters	IR Filter	
Camera Housing	Environment protection Housing	IP 65/ IP 66
Processing Unit	Processor	Latest Intel Core i7 processor
	RAM	8 GB
	Hard Disk Capacity	2 TB
	Display Monitor	19" Flat
Speed Limit		40 km / Hr

Installation and Mounting		Pole Mounted
Integration	Capable of integration with the overall architecture of surveillance and access control system	

24. Power Supply – The complete system shall operate on 230V AC±10% suitable UPS to meet the power requirement with backup of up to 1 hour should be provided.

25. Miscellaneous – The firm should provide the following documents/literature (in English language along with the equipment's)

a. Technical manual with full description of the item

b. Users handbook

c. Literature on care and preservation technique/methods

d. Details regarding periodical checks to be carried out by the user for serviceability of the equipment.

26. The vendor should impart detailed training free of cost to sufficient personnel at the place(s) specified by the Department.

27. The supplier should have well-equipped office / workshop for maintenance with qualified engineers in repairs/ service. If the equipment needs repairs it should be carried out within 10 days from the date of receipt of intimation.

28. Supplier should have direct authorization from the OEM to participate in the tender. Necessary authorization documents should be made available in this regard. The name of the OEM along with the contact telephone numbers, addresses, fax numbers & E-mail address may be available for confirmations with the OEM about the status of the supplier.

29. Periodical service minimum once in three months during warranty period.

30. Minimum 3 years warranty for the equipment and for other all accessories.

31. The Firm should provide AMC for a period of 5 years after the warranty period should be enclosed with the tender proposal.

32. AMC should be express as percentage of total product value (TPV) separately for each year of AMC.

33. Tenders will be evaluated based on the net liability to the department which includes Product cost and AMC cost.

34. The supplier should install/dismantle the system free of cost during the warranty period as per the interest of Police Department.