

Cochin Smart Mission Limited (CSML)

Cochin Smart Mission Limited
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TnD No.: CSML/ TND / 2018 /64 /059

Dt: 18/06/2018

To:

All participating Bidders

Dear Sir,

Sub:- Minutes of the Pre Bid Meeting & ADDENDUM-I for the Request for Proposals (RFP) for Implementation of Integrated Traffic Management System in Kochi Under Smart City Mission -Reg.

Ref: (1) Tender ID: 2018_KMRL_195508_1

(2) RFP: CSML/Mobility/RFP/001 Dated: 09/03/2018

Other Ref:- (1) CORRIGENDUM 6- TnD No.: CSML/ TND / 2018 /64 /058 Date: 16/06/2018
(2) CORRIGENDUM -5- TnD No.: CSML/ TND / 2018 /64 /053 Date: 31/05/2018
(3) CORRIGENDUM -4- TnD No.: CSML/ TND / 2018 /64 /041 Date: 15/05/2018
(4) CORRIGENDUM -3- TnD No.: CSML/ TND / 2018 /64 /029 Date: 19/04/2018
(5) CORRIGENDUM -2- TnD No.: CSML/ TND / 2018 /64 /015 Date: 02/04/2018
(6) NIT Revised- NIT No. CSML/Mobility/RFP/001 Date: 13/03/2018
(7) CORRIGENDUM -1- TnD No.: CSML/ TND / 2018 /64 /005 Date: 05/03/2018
(8) Notice inviting Tender -NIT No. CSML/Energy/RFP/001 Date: 23/02/2018

With reference to the above, the **Minutes of the Pre Bid Meeting & ADDENDUM-I** in respect of the above mentioned Request for Proposal (RFP) is herewith enclosed. Bidders shall make note of the same and submit their proposals accordingly.

Sd/-

**Encl: 1) Minutes of the Pre Bid Meeting
2) ADDENDUM-I**

**Managing Director
Cochin Smart Mission Limited**

Cochin Smart Mission Limited (CSML)

**Minutes of the Pre-Bid meeting held at 10th Floor CSML office, on 20-03-2018 at 3:00 PM
for the RFP for Implementation of Integrated Traffic Management System in Kochi Under
Smart City Mission.**

Attendees of the Pre Bid Meeting

Sl. No.	Name	Designation	Organization
Representatives of Authority			
1	Mrs. Raji	General Manager	Cochin Smart Mission Ltd (CSML)
2	Mr. Abdul Kalam	Additional General Manager	KMRL
3	Mr. Adarsha Kumar	Deputy General Manager	KMRL
4	Mr. Ajay kumar S	Team Leader	PMC- Smart City Kochi
5	Mrs. Surabhi Kureel	Project Manager	PMC- Smart City Kochi
6	Mr. Vinoba Sunder Singh	Transport Expert	PMC- Smart City Kochi
7	Mr. Korath Mathew	ICT Expert	PMC- Smart City Kochi
8	Mr. M Ganeshan	Urban Finance Specialist	PMC- Smart City Kochi
9	Mrs. Renuka	Construction Manager	PMC- Smart City Kochi
10	Ms. Usha Jyothi G	Procurement Expert	PMC- Smart City Kochi
11	Mr. Arun Savi	Senior Manager	PMC- Smart City Kochi
Representatives of firm / agency present			
1	Mr. Sujesh.PC	Territory head	Godrej and Boyce Manufacturing Company Ltd.
2	Mr.Ranjith SS	Senior Manager	Godrej and Boyce Manufacturing Company Ltd.
3	Mr. Girish K Khatri	GM-Sales	Technosys Security System Pvt. Ltd.
4	Mr. K Prabhakaran	Director	Oracle India Pvt Ltd
5	Mr.Akhilesh Avanish	Director	Oracle
6	Mr. Nagaraj Gorthe	Director-CEA	Oracle
7	Mr. Raoiv Mathew		Oracle

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Sl. No.	Name	Designation	Organization
8	Sooraj PN		Honeywell Automation india ltd
9	Vikram Shorey	KA Manager	Dahua India Pvt Ltd
10	Sanjay Singh	Manager-Ge Sales	Dahua Technology India Pvt Ltd.
11	Jlssmon Palatty	BDM	Dahua Technology India Pvt Ltd
12	Jobin PJ	Regional Manager	ESOS system solution pvt ltd
13	Mohsin Khan	Key Accounts Manager	3M India Ltd
14	Neha Salma	Senior Executive Sales	Quess infra solutions
15	Rajesh Krishnan	CEO	ITS Planners and Engineers
16	Binu Kadavy	CEO	Kadavy system & solution Thrissur
17	Jeevith Vashishtha		FLIR ITS
18	Ayush Agarwal	Head –Business Development	ITS Planners and Engineers
19	Sibin Punathedath	Project Engineer	CMS Computers ltd
20	Sivaram R	SRC	Oasys cyber pvt ltd
21	M.P Venkadesh	Manager -Operations	Vaan infra pvt ltd
22	Suresh Kumar KK	General Manager	BOSCH Bengaluru
23	Ninesh James		Inspira Enterprise
24	Lalnunsangi Nutel	Manager-BD	Recon/Teamax smart Industry India pvt ltd
25	Anoop G.S	Engineer	KELTRON
26	Rajkumar S. L.	Senior Engineer	KELTRON
27	Manoj	Assistant Vice-President	Inspiron

On behalf of Managing Director CSML, General Manager CSML welcomed the representatives of authority & representative of the firms / agencies to the Pre-Bid Meeting.

The following clarifications are issued to the queries received through email.



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
1	Revised details: Sl. No. 9- “Tender document fee”	2	Rs.17770 (Rupees Seventeen Thousand seven Hundred seventy only) through online e tendering payment gateway only	Rs.15000(Rupees fifteen thousand only) through online e tendering payment gateway only-Which is correct	“ Tender document fee ” is : Rs.17,770 (Rupees Seventeen Thousand Seven Hundred Seventy only) through online e tendering payment gateway only (https://etenders.kerala.gov.in)
2	Revised details: Sl. No. 11- “Bid Document Downloading Start Date”	2	5th march 2018 from 14:00 Hours	9th march 2018 Which is Correct	“ Bid Document Downloading Start Date ” details indicated at Page 2, Sl. No. 11 of RFP is correct and prevails. I.e. Bid Document Downloading Start Date ” is : 9 th March 2018
3	Revised details: Sl. No. 14- “Last date of online submission of bids”	2	5th April 2018 till 17:30hrs	Not available Please provide	“ Last date of Online Submission of Bids ” details indicated at Page 2, Sl. No. 14 of RFP is modified. Please refer latest dated Corrigendum published on following websites. www.csml.co.in , www.kochimetro.org and www.etenders.kerala.gov.in , - under organization name – “Kochi Metro Rail Ltd”.

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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
4	Revised details: Sl. No. 15- “Last date of submission of EMD and Power of Attorney (Hard copy)”	2	6th april 2018 till 15:00hrs	5th april 2018 till 17:30 hrs which is correct	“Last date of submission of EMD and Power of Attorney (Hard copy)” details indicated at Page 2, Sl. No. 15 of RFP is modified. Please refer latest dated Corrigendum published on following websites. www.csml.co.in , www.kochimetro.org and www.etenders.kerala.gov.in , - under organization name – “Kochi Metro Rail Ltd”.
5	Revised details: Sl. No. 16- “Date and time for opening of Bids”	2		9th April 2018, at 16:00 Hrs. Which is Correct	“Date and time for opening of Bids” details indicated at Page 2, Sl. No. 16 of RFP is modified. Please refer latest dated Corrigendum published on following websites. www.csml.co.in , www.kochimetro.org and www.etenders.kerala.gov.in , - under organization name – “Kochi Metro Rail Ltd”.

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6	1.1.2. Consortium Sl. No. iv a)	9	IV (a) Number of members in a consortium shall not exceed 3 (Three) including the Lead Member	Request to please allow 4 members consortium	No change. Clause No. 1.1.2 of Sl. No. iv a), Page 9 holds good.
7	1.1.2. Consortium Sl. No. iv g)	11	Lead member should have minimum 51% share in Consortium. Consortium agreement to be submitted.	We request to remove the capping of lead member share for creating a win-win consortium.	No change. Clause No. 1.1.2 of Sl. No. iv g), Page 11 holds good
8	1.1.3 Sub-Contracting	11	Sub-Contracting is not allowed for this RFP	(i) We request to allow sub-contracting as it is difficult for a company to supply and install all elements and manage for the required period.	No change. Clause No. 1.1.3, Page 11 holds good
				(ii) We request you to consider sub-contract for foundation and civil work of poles on road	
9	1.4.3. Financial Proposal Evaluation	21	Financial Proposal Evaluation	Requesting to change: Method of Selection - QCBS For Quality and Cost based Evaluation (QCBS), the following formula will be used for the evaluation of the bids. The scores will be calculated as: $B_n = 0.3 \cdot T_n + (0.7) \cdot (C_{min} / C_b \cdot 100)$ Where i. B_n = overall score of bidder under consideration (calculated up to	No change. Clause No. 1.4.3, Page 21 holds good



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				two decimal points).ii. Tn = Technical score for the bidder under consideration. iii. Cb = Actual price quoted by the bidder. iv. Cmin = Lowest price among the financial proposals under consideration. Technically Qualified Bidder after receiving 70% marks in TQ parameters must have to demonstrate their concept in front of Technical committee with Live DEMO of their materials with solutions offered and their points should be included while finalizing the bidder as L1 through Quality and Cost Base Selections (QCBS) format, i.e. 70% on technical Parameters with solutions and 30% on financial parameters, instead of Financial cost as L1.Result: This above will get the best of performed bidder to secure as L1 and get the best possible solutions in implementation of the project within timeline.	
10	1.4.3 Financial Proposal Evaluation,	21	d) Technically qualified bidder who has quoted lowest price, after arithmetic correction will be declared as L1 bidder.	Please confirm that GST and Taxes also considered for commercial Evaluation. Which means to declare as L1=Unit Price+GST?	Yes.

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	Sl. No. d)				
11	1.4.4 Pre-Qualification Criteria Sl. No. PQ1; Legal Entity	22	The Sole Bidder or the Lead Member of consortium should be registered in India under Companies Act 1956/2013 or as amended and should have been in operation for at least 3 years as on date of submission of the bid.	<p>(i) Kindly confirm A global registered co. With relevant experience can be part of the consortium.</p> <p>(ii) This is a very critical implementation for the city and as such the criteria for qualification has to be stringent to ensure participation of serious and competent agencies. We recommend to revise the criteria as - "Legal Entity - The Sole Bidder or the Lead Member of consortium should be registered in India under Companies Act 1956/2013 or as amended and should have been in operation for at least 10 years as on date of submission of the bid. The consortium member should also be registered in India under Companies Act 1956/2013 or as amended for at least 5 years as on date of submission of the bid."</p>	<p>No change.</p> <p>Clause No. 1.4.4, Sl. No. PQ1; Legal Entity at Page 21 holds good</p>

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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
12	1.4.4 Pre-Qualification Criteria Sl. No. PQ2; Turnover	22	PQ 2 – Turnover – The Sole Bidder or the Lead Member of consortium should have average annual Turnover of Rs. 9 Crore for last 3 audited financial years (2014-15, 2015-16 and 2016- 17) ending March 2017. – Certificate from the Statutory Auditor; Annual Audit Reports	(i) As the submission is in APRIL 2018 Kindly consider 2017-18 provisional balance sheet turnovers.	3 audited financial years (2014-15, 2015-16 and 2016- 17) holds good. Certificate from Chartered Accountant; and Annual Audit Reports required. Also Refer Sl. No.2 of Addendum-1
				(ii) As detailed in the RFP the estimated cost for the works is 30 crores. The capabilities of the Sole Bidder or the Lead Member of consortium should be assessed based on their experience of executing similar works for the estimated value of the works. We recommend to revise the criteria as - "Turnover - The Sole Bidder or the Lead Member of consortium should have average annual Turnover of Rs. 30 Crore for last 3 audited financial years in IT/ITES/ITMS/e-Governance (2014-15, 2015-16 and 2016-17) ending March 2017."	
				(iii) Considering the value of the ATCS/Traffic Signals project, we request you to kindly remove the turnover criteria for the consortium partners.	



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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				(iv) Kindly modify it to: The Sole Bidder or the Lead Member of consortium should have average annual Turnover of Rs. 9 Crore for last 3 audited financial years (2014-15, 2015- 16 and 2016-17) ending March 2017. – Certificate from CA; Annual Audit Reports	
13	1.4.4 Pre-Qualification Criteria Sl. No. PQ3; Experience	22 & 23	PQ 3 – Experience – The Sole Bidder or Lead Member or any member of its consortium should have successfully supplied and implemented (1) at least 1 (One) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 24 Crores OR (2) at least 2 (Two) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores OR (3) at least 3 (Three) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores in last 5 (Five) financial years (FY 2012-	(i) Project cost for option 2 & option 3 is same – Less than Rs15Crores. For better participation it is suggested to amend this requirement as below – 1) 1 ITMS project with project cost not less than 24Crores 2) 2 ITMS projects with project cost not less than 12 Crores 3) 3 ITMS projects with project cost not less than 8 Crores (ii) Requesting the department to:i) Kindly consider certain changes in that criteria as not many System Integrators (SI) completes this much BOQ (Value of projects) in ITMS projects across India nor many projects were completed also. Certain relaxations required in this for	Modified. Refer Sl. No.3 of Addendum-1

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			<p>13, 2013-14, 2014-15, 2015-16 and 2016-17).</p> <ul style="list-style-type: none"> • Copy of Work Order(s) • Copy of completion certificate(s) 	<p>better competition among bidders. ii) Options among citation for 2 or 3 projects for cost of projects are similar which again is contradictory as per statements. Please look into this and required corrigendum. Suggestions: i) Cost of projects with successful completion certificate required, as citation of similar projects is to be changed as a) at least 1 project of ITMS with project value of Rs 15 CRs or b) at least 2 project of ITMS with project value of Rs 8 CRs</p> <p>(iii) There is an typographical error for three projects experience IT should be 12 Cr.</p> <p>(iv) Please also include financial year 2017-18 in the same.</p> <p>(v) Request to Modify the clause as: The Sole Bidder or Lead Member or any member of its consortium should have successfully supplied and implemented or project under implementation</p>	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>(1) at least 1 (One) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 20 Crores OR</p> <p>(2) at least 2 (Two) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores OR</p> <p>(3) at least 3 (Three) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 5 Crores in last 5 (Five) financial years (FY 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17).</p> <ul style="list-style-type: none">•Copy of Work Order(s)•Copy of completion certificate(s)•In case of incomplete project, certificate from CA is required <p>Project Implemented or Implementing under JV is also be considered</p>	
				<p>(vi) Not many ITMS tenders have been implemented in India hence we request to amend the criteria as - "Experience - The Sole Bidder or Lead Member or any</p>	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				member of its consortium should have successfully supplied and implemented (1) at least 1 (One) Integrated Traffic Management System (ITMS)/CCTV Surveillance / ATCS / ICT with the project cost not less than Rs. 24 Crores OR (2) at least 2(Two) Integrated Traffic Management System (ITMS)/CCTV Surveillance / ATCS / ICT with the project cost not less than Rs. 12 Crores OR (3) at least 3 (Three)Integrated Traffic Management System (ITMS) /CCTV Surveillance / ATCS / ICT with the project cost not less than Rs. 8 Crores in last 7 (Seven) financial years (FY2012-13, 2013-14, 2014-15, 2015-16 and 2016-17)."	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				(vii) We understand that the value of projects (15 cr) mentioned under option 2 & 3 of referred clause is the value of project put together. Please confirm.	<p>The value of projects mentioned under (2) & (3) of clause 1.4.4 Pre-Qualification Criteria Sl. No. PQ3; Experience is the value of each project and not the aggregate value of projects put together.</p> <p>However refer Modified clause of 1.4.4 Pre-Qualification Criteria Sl. No. PQ3; Experience for more clarity.</p> <p>Refer Sl. No.3 of Addendum-1</p>
14	1.4.4 Pre-Qualification Criteria Sl. No. PQ3; Experience	22 & 23	Documents Required – Copy of completion Certificate	As ITMS project is a recent phenomenon and most of these projects are still under implementation phases, copy of works order needs to be considered for all on-going projects	Ongoing projects not considered. Only projects completed will be considered. Hence Copy of completion Certificate requested to be submitted along with the Bid.
15	1.4.4 Pre-Qualification Criteria Sl. No. PQ3;	22 & 23	The Sole Bidder or Lead Member or any member of its consortium should have successfully supplied and implemented (1) at least 1 (One) Integrated Traffic	We request that the credential of Partner / OEMs may also be considered for evaluation as most of them have implemented many projects and their experience is proven.	<p>The experience and technical credentials of consortium member will be considered for evaluation.</p> <p>If the OEM is the Lead Member or any</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	Experience		<p>Management System (ITMS) with the project cost not less than Rs. 24 Crores OR</p> <p>(2) at least 2 (Two) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores OR</p> <p>(3) at least 3 (Three) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores in last 5 (Five) financial years (FY 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17).</p>	Page 22, Can the subsidiary of OEM quote as lead bidder quoting references of the Parent company of its affiliates	member of its consortium their, experience and technical credentials will be considered for evaluation.
16	1.4.4 Pre-Qualification Criteria Sl. No. PQ5; Certifications	23	Certifications - The Sole Bidder or the Lead Member of consortium should have a valid ISO 9001:2008 or similar quality certification.	(i) As this work involves integration of multiple systems we suggest the criteria to be amended as - "Certifications - The Sole Bidder or the Lead Member of consortium should have a valid ISO 9001:2015; ISO 27001:2013 and CMMI Level - 5 certification."	Modified. Refer Sl. No.4 of Addendum-1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>(ii) Suggestions: ISO 9001:2008 with ISO 14001:2015 (Environmental management System) and ISO 27001:2013 (certification for compliance in related scope for supply, installations, commissioning and maintenance of ITMS)</p> <p>(iii) We request to consider ISO certification from any member of consortium partner also.</p>	
17	1.4.5. Technical Evaluation Criteria (Supporting documents to be attached) Point 1	24	Financial Capability - Annual Turnover - Prime bidder's average annual turnover for the period FY 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 15 Marks Sole Bidder / Lead Bidders with 9 crore or more turnover will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with turnover of Rs. 4.5 Crores will get 7.5 Marks	To ensure participation of only eligible and competent bidders we recommend the criteria to be amended as - "Financial Capability - Annual Turnover - Prime bidder's average annual turnover for the period FY 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 15 Marks Sole Bidder / Lead Bidders with 30 crore or more turnover will be awarded 15 marks and other bidders will be allocated marks proportionately .E.g. Bidder with turnover of Rs. 15 Crores will get 7.5 Marks"	Modified. Refer Sl. No.5 of Addendum-1



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
18	1.4.5. Technical Evaluation Criteria (Supporting documents to be attached) Point 2	24	Experience of implementing Integrated Traffic Management System (ITMS) system in India Sole bidder / any member of Consortium having implemented 2 or above Integrated Traffic Management System (ITMS) system will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of 1 Integrated Traffic Management System (ITMS) system will get 7.5 marks	(i) Request to modify the clause as: Experience of implementing Integrated Traffic Management System (ITMS) system in India or abroad. Sole bidder / any member of Consortium having implemented or under implementation phase 2 or above Integrated Traffic Management System (ITMS) system will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of 1 Integrated Traffic Management System (ITMS) system will get 7.5 marks In case of incomplete project, certificate from CA is required Project Implemented or Implementing under JV is also be considered	No change. Clause No. 1.4.5, point 2 at Page 24 holds good
				(ii) We request to consider global experience also for ITMS.	
				(iii) Control Center with Surveillance system for advance traffic management system, integrated traffic management system, highway traffic management	



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				system, toll plaza systems are as good as the one mentioned in the RFP. Therefore, same may also be included.	
				(iv) To ensure participation of only eligible and competent bidders we recommend the criteria to be amended as - "Financial Capability - Annual Turnover - Prime bidder's average annual turnover for the period FY 2012-13, 2013-14, 2014-15, 2015-16 and 2016-17 1 Sole bidder / any member of Consortium having implemented 4 or above Integrated Traffic Management System (ITMS) /CCTV Surveillance / ATCS/ ICT system will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of 2 Integrated Traffic Management System (ITMS) /CCTV Surveillance / ATCS/ ICT system will get 7.5 marks"	



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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				(v) We request you to amend that "Experience of implementing Integrated Traffic Management System (ITMS) system in India/Abroad"	
19	1.4.5. Technical Evaluation Criteria (Supporting documents to be attached) Point 3	24	Experience in Supply & Implementation of VA Signals (Copy of the Client Certificate as a proof has to be attached) Sole bidder / any member of Consortium having carried out 20 VA Signals or above will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of 10 VA Signals will get 7.5 marks	(i) Experience in Supply & Implementation OR Maintenance of VA Signals Copy of the Client Certificate as a proof has to be attached (ii) Request to modify the clause as: Experience in Supply & Implementation or under implementation of VA Signals Copy of the Client Certificate as a proof has to be attached or In case of incomplete project, certificate from CA is required Sole bidder / any member of Consortium having carried out 20 VA Signals or above will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of 10 VA Signals will get 7.5 marks Project Implemented or Implementing	Modified. Refer Sl. No.6 of Addendum-1



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				<p>under JV is also be considered</p> <p>(iii) Instead of restricting the experience to VA signals, the experience shall be asked for ATCS/VA/Control Room managed junctions. Hence we request to kindly modify' the clause to following:</p> <p>Sole bidder / any member of Consortium having carried out 20 ATCS/VA/Control room managed signals or above will be awarded 15 marks and other bidders will be allocated marks proportionately.</p>	
20	1.4.5. Technical Evaluation Criteria (Supporting documents to be attached) Point 4	24	<p>Experience of implementing Control Centre with Surveillance system Copy of the Client Certificate as a proof has to be attached.</p> <p>Sole bidder / any member of Consortium having implemented Control Centre with Surveillance system in 2 cities or above will be awarded 15 marks and other bidders will be allocated marks proportionately.\</p>	(i) Request to modify the clause as: Experience of implementing Control Centre with Surveillance system. Copy of the Client Certificate as a proof has to be attached or In case of incomplete project, certificate from CA is required. Sole bidder / any member of Consortium having implemented or under implementation of Control Centre with Surveillance system in 2 cities or above will be awarded 15 marks and other	<p>Modified.</p> <p>Refer Sl. No.7 of Addendum-1</p>



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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			E.g. Bidder with experience of implementing 1 Control Centre with Surveillance system will get 7.5 marks	<p>bidders will be allocated marks proportionately.</p> <p>E.g. Bidder with experience of implementing 1 Control Centre with Surveillance system will get 7.5 marks</p> <p>Project Implemented or Implementing under JV is also be considered</p>	
				(ii) Please include Experience of implementing OR Maintenance of Control Centre with Surveillance system/VMS/ATCS Copy of the Client Certificate as a proof has to be attached	
21	1.4.6. Eligible Goods and Services, and OEM Criteria Sl. No. a.	25	The Bidder shall quote only one specific make and model from only one specific OEM, for each of the goods.	We request to allow for multiple options for OEM selection till this meets the technical criteria. This is allowing the bidder for better price negotiation with OEMs.	No change. Clause No. 1.4.6 under Sl. No. a, Page 25 holds good
22	1.4.6. Eligible Goods and Services, and OEM Criteria	25	All the OEMs should have authorized presence in India either directly or through channel partner(s) as on the date of release of RFP.	Kindly consider OEM Should have presence in India as a company from last 12 years minimum and OEM should have service center in India from last 10 years	No change. Clause No. 1.4.6 under Sl. No. c, Page 25 holds good

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	Sl. No. c.				
23	1.4.6. Eligible Goods and Services, and OEM Criteria Sl. No. d.	25	The OEM for all active components should give a declaration that products or technology quoted are neither end-of-sale nor end-of-life as on the date of installation and commissioning and are not end-of-support till the successful completion of O&M period of the project as Annexure 2.4 in the RFP	(i) Pls define the active components. (ii) Exemption from it may kindly be provided, because normally life of electronic equipment is considered as 3 years and it may be about to obsolete in another few months, with the introduction of better technology. Therefore, an undertaking from bidder may be sought which states that the present or better product will be supplied if the first one will achieve end of life or sale.	Refer Sl. No.8 of Addendum-1 Except for the modifications made in Addendum, other terms and conditions remain unaltered.
24	1.6. Performance Bank Guarantee Sl. No. a).	27	a) Within fifteen (15) working days from the date of issuance of LOA, the Successful Bidder shall at his own expense submit unconditional and irrevocable Performance Bank Guarantee (PBG) an amount equivalent to 10% of contract value to AUTHORITY.	(i) We request you to consider Performance Bank Guarantee (PBG) an amount equivalent to 5% of contract value to AUTHORITY. (ii) We request you to allow at least 30 days from the date of issuance of LOA	No change. Clause No. 1.6 under Sl. No. a), Page 27 holds good

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
25	1.7. Right to Vary Quantity Sl. No. b).	28	If AUTHORITY does not procure any subject matter of procurement or procures less than the quantity specified in the bidding documents due to change in circumstances, the bidder shall not be entitled for any claim or compensation except otherwise provided in the bidding document.	Negative variation shall be limited to 5%. Please confirm.	No change. Clause No. 1.7 under Sl. No. b), Page 27 holds good
26	2.1.Preamble Para 3.	31	One of the proposed projects of the Kochi Smart City Module 4 (intelligent traffic management), the ITMS project was reconstituted as a Pan city project as it would be effective only if it was focused to a larger network than consider only 7 identified junctions of the ABD (Area Based Development) Area.	2.2 The no. of RLVD junctions are only Four. Can you please clarify is the number of junction is Seven or Four for the RLVD system?	The proposed RLVD junctions are Four (4) as indicated in Sl. No. 1.07 and 1.08 of BOQ
27	2.1.Preamble Para 4, point 4.	31	Traffic Surveillance Cameras Through PTZ cameras for Violation detection and Incident management.	Can you please clarify is the violation detection and incident management is manual process?	The planned Incident management are indicated in Sl. No. 12 of Addendum-1 . Refer the same for more details / clarifications
				What are violation detections are planned?	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				What are indecent management are planned? Suggestion: Lot of Edge based analytics for object detection, crowd detection, Loitering kind of analytics can be automatically triggered from the camera	
28	2.2. Component Deployment Table	32	Violation Cameras	Along with PTZ camera, RLVD and VA signals, violation cameras are asked separately which has no functional and technical specification in RFP and also no line item. You are requested to clarify the exact requirement of violation cameras and what are the analytics will be used in violation cameras because for violation, ANPR functionality is required for violation cameras.	
			Sl=> 1 Junction name=> High Court Junction No.of Arms =>3 Violation Cameras=>2	Can you please clarify what is the purpose of Violation cameras?	
29	2.2. Component Deployment	32	Sl=> 1 Junction name=> High Court Junction No.of Arms =>3 Violation Cameras=>2 RLVD=>Yes	(i) Can you please clarify the how many lanes per Arm? Similar clarification required for all the RLVD junctions. This information helps us to come out	Kindly refer the Junction wise details already indicated in the table under “Clause 2.2 Component Deployment”

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	Table			optimized design and bill of material for the RLVD system	(at page 32).
			RLVD	(ii) Under location section, RLVD system is asked at 4 junctions where ARMS are clearly mentioned but at how many lanes RLVD system needs to be deployed is not clear. You are requested to define the lanes per junction.	
30	2.2. Component Deployment Last para	34	A traffic control Centre is proposed to house a Video wall, servers for handling the various equipment feeds and area traffic management software and an automation Centre for challenging of violations. There control Centre is proposed to be linked to the equipment on field through available MPLS VPN Fiber network.	Kindly confirm whether it is mandatory to provide the MPLS connectivity or bidders choice to propose different connectivity like MPLS, 4G. as per system design.	Modified. Refer Sl. No.9 of Addendum-1
				Please provide details regarding last mile connectivity, available network- its distance from existing nodes.	The Bidder is urged to carry out a reconnaissance and ascertain the same
				Can you please clarify the functional and technical specification of the Video Wall?	For more details / clarifications refer Sl. No.14 of Addendum-1
				Can you please clarify is the traffic control center and the data center together planned in the same place?	Data center is the part of Traffic control center

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				Can you please clarify how many operators work stations are planned?	
31	-	-	Non-VA signals	Please clarify if fixed-time signals should be provided at these locations	No separate non VA signals are envisaged
32	2.2. Component Deployment and 2.3.3 – Area Traffic Management	34 & 36	The Control Center is proposed to be linked to the equipment on field through available MPLS VPN fiber Network · Ideally the existing MPLSS VPN Fiber network	(i) Description under 2.2 & 2.3.3 gives the impression that bidder has to use readily available MPLS VPN fiber Network however under Clause 2.5.2/Maintenance, it mentions that “All communication charges should be borne by the bidder for 5 Years”. Please clarify whether network is in the scope of bidder or not	Network is not in the bidder’s scope. Only the payment for its use is to be borne by the bidder and is included in the scope of bidder. Bidder should use the available networks such as BSNL, AIRTEL, RELIANCE etc.
33	2.3.3 – Area Traffic Management Para 3	36	Ideally the existing MPLSS VPN fiber network has to be utilized.	(ii) Pls clarify if Authority shall provide access to existing MPLS network and if the network is available in all traffic signals. (iii) This sentence is ambiguous. Could you please clarify if the existing fiber network could be utilized or not?	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
34	2.3.3 – Area Traffic Management Para 1	35	The Traffic Signal Controller should be capable of being operated in either Fixed Time mode, Demand Actuated Mode, Forced Flash Mode etc.	We understand that the preparation of an ITS Masterplan is underway for the Greater Cochin Development Area (GCDA). The ITS Masterplan could suggest potential enhancements to the ATCS system, including the ability to run in full ATCS mode rather than just VA. In this context, please clarify if the traffic signal controller should support full ATCS mode.	For more details / clarifications refer Sl. No.10 of Addendum-1
				This is a major loophole. No ATCS compatibility is specified for the Traffic Signal Controller. Also, ATCS is not defined anywhere in the document. Ideally, all terminologies shall be defined in the document and the compatibility specified.	
35	2.3.3 Area Traffic Management Para 2	35	"For Kochi it is recommended that the detectors through video analytics is pursued (as part of the VA signal system)"	ITMS/Area Traffic Management must be ATCS framework like CoSiCoSt / SCATS / BELTRAC / Others but not just basic VA technology.	For more details / clarifications refer refer Sl. No.10 of Addendum-1 and Sl. No.11 of Addendum-1
36	2.3.1 – Vehicle Actuated	35	2.3.1: The vehicle detection should be ideally Radar or Video Analytic based.	These two clauses are inconsistent with each other. We request you to modify 2.3.3	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	Signals & 2.3.3 – Area Traffic Management -	-	2.3.3: For Kochi it is recommended that the detectors through video analytics is pursued (as part of the VA signal system).	to the following: For Kochi it is recommended that the detectors through radar or video analytics are pursued (as part of the VA signal system).	
			Vehicle Actuated Signals says 'The vehicle detection should be ideally Radar of Video Analytic based	Though these statements are slightly contradictory there is nothing serious.	
			The vehicle detection should be ideally Radar or Video Analytic based Virtual Loop detectors (through Video Analytics). For Kochi, it is recommended that the detectors through video analytics is pursued (as part of VA Signal System)	However, under clause 2.7.1- VA Traffic Signals-Page 41, Vehicle detection is mentioned as "vis wireless infrared/Radar". Please clarify whether non-intrusive black & white camera based virtual loop detector is acceptable or not.	Any non-intrusive system is allowed. Refer "Key Features" and in "Table 1.1 Controller Specifications" of Appendix 1 of Addendum 1
			-	Traffic detectors: In order to improve the accuracy of ATCS signal timing optimization algorithm, it is suggested that the traffic detector should record WiFi or Bluetooth MAC address of devices in passing vehicles enabling the ATCS software to estimate travel times and use that data for signal timing optimization calculations.	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
37	2.3.3 Area Traffic Management Para 3	35	<p>Communication Network: The communication network is the intermediate part which helps to communicate between the central control station and remote end junction controller.</p> <p>After analyzing the overall traffic flow in a corridor or a in a city the central control station updates the time plan to each and every junction controller through Internet Protocol based network communication link. Ideally the existing MPLSS VPN fibre network has to be utilized.</p>	Since the RFP scope is to implement Vehicle Actuated Signals, the functionality provided for the central Control system is for ATCS technology. This is a different system. Hence request the authority to kindly confirm whether the scope of this RFP includes ATCS/ VA signals at the mentioned 21 junctions.	RFP calls for an adaptive system. VA signals that can adapt to function under ATCS
				This is very critical. The supplier can get away with delivering something of his will. Concept of dynamic signal synchronization is not specified. Also, system generated reports are not listed anywhere.	For more details / clarifications refer Sl. No.10 of Addendum-1
38	2.3.3 Area Traffic Management Para 4	36	<p>Central Control System: The Central control system (CCS) consists of ATCS Server, Operator Consoles, external storage device, projection system etc. All traffic signal controllers are connected to the CCS over fibre network.</p>	The Vehicle Actuated signals at each junctions works independently. Analyzing the traffic flow in a corridor is actually the feature of ATCS technology. Request the authority to kindly clarify whether ATCS is to be implemented instead of VA signals at this 21 junctions.	<p>No Change. Clause 2.3.3 Para 4 holds good.</p> <p>RFP calls for an adaptive system. VA signals that can adapt to function under ATCS</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
39	2.3.3 Area Traffic Management Para 4	36	'The status of individual junction controller, their loaded timing plan, and stage utilization timings can be viewed and modified at a glance from this central location'.	This also is very critical as the operation specified is through manual intervention. Ideally, the signal time updates should be based on powerful algorithms running at the Central Server that is capable of evaluating the traffic scenario in real-time and respond to the traffic network demand. There is all possibility that you will not be delivered an Adaptive Traffic Control System.	For more details / clarifications refer Sl. No.10 of Addendum-1
40	2.3.5 RLVD	36	The RLVD Cameras are installed primarily to capture two key violations i.e. over speeding and red signal light jumping. The camera uses Digital Technology to capture images of offending vehicles	Speed Accuracy: Since, Red Light Violation Detection system will also be used for the purpose of prosecution and to have evidence of Violation, which may be required to be shown in the Court of Law. To achieve an efficient and reliable result, the system should have defined accuracy mentioned as +/-5KMPH. Certification for the Speed in RLVD system: Since, Red Light Violation Detection system will also be used for the purpose of prosecution and to have evidence of Violation, which may be required to be shown in the Court of Law. It is seen that, untill and unless, it is not certified by an authorized Indian	Modified. Refer Sl. No.13 of Addendum-1 Except for the modifications made in Addendum, other terms and conditions remain unaltered.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				Government Body, the evidence result will not be accepted in the Court of Law against the violation. Hence, to achieve an efficient and reliable result, the system should be certified by a third party authorized Indian Government Body.	
			It works in 24x7 modes in whole year (provided power supply and connectivity is maintained).	Can you please clarify what is UPS power backup requirement for RLVD system? Our suggestion is to have two hour UPS power backup. However the no. of hours UPS backup power considered based on the raw power availability at the Kochi.	
41	2.3.7 Control Centre	37 & 38	The City Traffic Management Center (CTMC) is the hub of the transportation management system	Is interior work is on bidder's scope or CSML scope	<p>Interior work of Control Centre is on bidder's scope.</p> <p>For more details / clarifications refer Sl. No.14 of Addendum-1</p> <p>Except for the modifications made in Addendum, other terms and conditions remain unaltered.</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			All these information will be used to produce road user information and transmitted to appropriate places.	It is imperative that the software supports transmission of traveler information in industry standard formats. Hence, could this please be rephrased as: All these information will be used to produce road user information and transmitted to appropriate places using industry standard data formats such as Datex-II or UTMC XML?	For more details / clarifications refer Sl. No.14 of Addendum-1 Except for the modifications made in Addendum, other terms and conditions remain unaltered.
				To include- Video wall, Controller & Software should be from same OEM	
42	2.3.7 Control Centre Last para	39	Depending on the scope of application the capacity of server can be decided. Ideally it would be useful to have a one month back up of data.	Can you please clarify is one month backup of data is applicable to traffic surveillance camera feed as well as for the traffic challans created form RLVD system? Our Suggestion is to have one month data backup for the Surveillance camera feed and other camera feed and three months data backup for the Challan data	No Change. Last para of Clause 2.3.7 holds good

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
43	2.5.2 Maintenance	40	All electronic equipment must come with a AMC of minimum 2 years. 3 years is preferable. Beyond this the bidder should go into AMC with the equipment suppliers or vendors to continue the AMC for a total period of 5 years. - The Bidder should maintain all other equipment including rust proofing and painting for the 5 year period.	(i) Most of the products use to have one year of warranty, but by purchasing extended warranty pack or other methods it can be extended. Therefore, AMC aspect may kindly be left to the bidder as he will provide the service for 5 years.	No Change. Clause 2.5.2 at page 40 holds good
			- Power charges has to be borne by the bidder for 5 years.	(ii) We understand that power connection shall be arranged by client. We also request that the recurring power charges to be paid by CSML. Please confirm. (iii) We request the client to bear the initial and recurring expenses towards power connection for the sensors	
			-	(iv) Please provide power backup requirement in hours for each of the systems: VA & Pelican: PTZ Camera: Violation Camera: RLVD:ANPR:VMS:	The Bidder needs to ascertain the backup requirements to ensure the prescribed SLA.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			-	(v) Please provide clarity as the bidder need to use available network provided by client as per clause mentioned in RFP, refer sr no.4 if bidder need to consider please provide which line item of price schedule to be considered for quoting this	No change – The bidder has to bear the communication charges for the ITMS system. The cost towards the same shall be deemed to be included in the quoted rates of item No.'s 2.1 to 2.5 of Bill of quantities quoted towards Operation and Maintenance of ITMS system during O& M period of 5 years.
			- All communication charges should be borne by the bidder for 5 years.	e) Please elaborate the meaning of communication charges. We request that the recurring communication charges shall be paid by CSML. Please confirm.	Communication charges include all charges for communication between various units for operations. Recurring communication charges shall be paid by the Contractor.
44	2.7.1 - VA Traffic Signals	40 to 50	Specifications of VA signals Key features: VDC 4107(Vehicle Detector Card) · GIO4105(General Input Output) · Vehicle detection vis wireless infrared/radar · Should be fully customized to integrate with other ITS system such as Variable Message Sign(VMS), Flood warning System ·	44.1 Specifications provided for VA Controller are inadequate and does not include critical parameters such as-Inter & Intra conflict monitoring - Mode of operation: Manual / Fixed / Vehicle Actuated/Semi Actuated/ ATCS -GPS interface for synchronization -LCD-Keypad interface	Modified. Refer Sl. No.15 of Addendum-1 The detailed specifications for the Traffic Signals and the ATCS are provided in Appendix 1 of Addendum 1 .



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Microprocessor based(32bit processor for all cards) · Opto-isolated inter-board communication · 12 Channel detector Card · Drive PCB - 16 Drive lines for LED Aspects · Operating Voltage – 230vts & 24VDC/as per system requirements · Cabinet – 3U rack mounted · ILC 4101 controls the lamp output as commanded by APU4100 · Controller Enclosure – 4 Door Controller panel provided with an Exhaust Fan · Connection Interface – Bluetooth · Current monitoring System – Conducts power consumption monitoring · LED & Halogen based Aspects compatibility – must be tested with current monitoring(CMB) · Vehicle detection – wireless radar/Infrared detection	-Police Panel Control with Lamps OFF/Forced Flash/Auto-Manual-Step/4 Hurry Call -Number of Lamp output/drive capability -Lamp output voltage (matching with LED retrofit input Voltage) -ATCS Compatibility with SCOOT or SCAT or COSICOST -Maximum number of Signal Groups/Stages/Signal Plans/Day plans/Week Plan/Holiday Plans etc - Signal Sequencing - Programmable parameters Most of the Key feature under specifications of VA Signals pertains to some specific manufacturer & his card numbers/facilities while significance / need of requirement is missing at many places (like integration with VMS / Flood warning System, all () cards 32bit, inter board communication, operating voltage 230volts & 24vdc, Bluetooth interface etc)	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		40 & 41	<p>Specifications of VA signals</p> <p>Key features:</p> <ul style="list-style-type: none"> Vehicle actuated (VA) control. VDC 4107(Vehicle Detector Card) Fixed time control GIO4105(General Input Output) Phase oriented controller. Dynamic real time adaptive operations (DRAS) Vehicle detection via wireless infrared/radar Flexible control center communication link supported i.e.- Based GPRS/EDGE,3g/fiber optic leased line/4G sim based Remote controller firmware updating Should be Fully customized to integrate with other intelligent transportation systems (ITS) i.e. 	<p>44.2 VDC 4107(Vehicle Detector Card), GIO4105(General Input Output), Dynamic real time adaptive operations (DRAS), 12 channel detector cards</p> <p>(i) The no. VDC 4107(Vehicle Detector Card) Should be deleted as this is proprietary</p> <p>(ii) We assume that the intent of this clause is to ensure that the controller is capable of reading data from detectors (regardless of whether the controller has a separate detector card or not). In this context, could this be rephrased as follows: 24 open-contact (open collector/dry contact) interfaces for detector data input?</p> <p>(iii) It seems purely vendor specific</p> <p>(iv) The Vehicle Presence Detection Sensors as per clause 2.3.3 should be video based analytics and the specifications must be based upon deliverables & functionalities of the</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The specifications indicated in RFP for, (i) VDC 4107(Vehicle Detector Card), (ii) GIO4105 (General Input Output), (iii) Dynamic real time adaptive operations (DRAS) and (iv) 12 channel detector cards are deleted. The modified specification of VA Signals are provided in Appendix 1 of Addendum 1 Under “Key Features”</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			<p>variable message signs (VMS), flood warning system , video detection system CCTV red light camera speed detection</p> <ul style="list-style-type: none"> • Incorporation with Anti-theft technology • Microprocessor based (32-bit processor for all cards) • Compact design • Multiple protections • Multiple conflict monitors • Opto - isolated inter board communication • 12 channel detector cards • Controller should be compatibility to (Emergency Vehicle Priority) EVP system 	<p>solution but not a vendor specific product like as quoted "VDC 4107 (Vehicle Detector Card)". It should ideally be quoted as Video/Thermal (far Infrared) Camera Based Vehicle Presence Detection Sensors for VA/ATCS.</p> <p>(v) Following specifications are vendor specific and most of the vendors doesn't comply with the following. - VDC 4107(Vehicle Detector Card) - GIO4105 (General Input Output) Kindly allow to use alternative technology with other make.</p> <p>(vi) Asked requirement are Specific OEM references, only one OEM can meet this.</p> <p>(vii) As a prominent entity in the domain for over 17 years, we believe that most of the Controllers available in the market today may not be compatible to this specification provided here. Hence request the authority to kindly remove the clauses from the specification.</p>	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>Please confirm.</p> <p>(viii) VDC 4107 is manufacture specific(Could be BEL Product number)</p> <p>(ix) The no. GIO4105 (General Input Output) Should be deleted as this is proprietary</p> <p>(x) Asked requirement GIO4105 (General Input Output) are Specific OEM references, only one OEM can meet this.</p> <p>(xi) GIO4105 (General Input Output) It seems purely vendor specific</p> <p>(xii) The mentioned Cards under VA Traffic Signals (VDC 4107(Vehicle Detector Card) GIO4105 (General Input Output) 12 channel detector cards) are OEM/Vendor specific which restricts other OEM/Vendors to bid. We request you to kindly remove the requirement.</p> <p>(xiii) Dynamic real time adaptive operations (DRAS)-Asked requirement are Specific OEM references, only one OEM can</p>	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>meet this.</p> <p>(xiv) Dynamic real time adaptive operations (DRAS)-Functional features of DRAS is unknown; may be a vendor specific solution</p> <p>(xv) 12 channel detector cards: 4/6/8/or 12 channel detector cards</p> <p>(xvi) 12 channel detector cards: Why 12-channel? Please specify the number of detector channels to be supported by the controller, not the number of channels per card.</p>	
		40 & 41		<p>Vehicle actuated (VA) control</p> <p>(xvii) Request the specifications to be kept generic, references specific to certain make / model to be removed</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification of VA Signals are provided in Appendix 1 of Addendum 1 Under “Key Features”</p>
		40, 41 & 42		<p>Vehicle actuated (VA) control</p> <p>(xviii) EN 12675- Functional Safety requirement, traffic signal controller EN 60439 Safety & Electrical</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification is included</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				requirement, EN 50293 Road traffic signal system, Electromagnetic Compatibility EN 623 S1 Road traffic signal system, Harmonization document. - EN certified VA Controller	Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1
		40 & 41		(xix) Phase oriented controller: 16 Signal Gr.Controlller	Modified. Refer Sl. No.15 of Addendum-1 A phase/stage oriented controller with 16 signal controller has been included Under “Key Features” and in “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1
		40 & 41		(xx) Phase oriented controller: Most vendors in India provide stage based controllers rather than phase based controllers. Stage based controllers are more flexible in terms of configuration during usage. Moreover, this is inconsistent with Features #4 on page 42 which states "Min 8 Phases / stages	Modified. Refer Sl. No.15 of Addendum-1 A phase/stage oriented controller has been included in Appendix 1 of Addendum 1 Under “Key Features”

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				per plan". Could this be changed as follows: Stage based controller?	
		41		(xxi) Drive PCB: 16 Drive lines for LED Aspects- Should be modular to support 16 Gr.	This is agreed
		41		(xxii)Microprocessor based (32-bit processor for all cards) (i) 32 bit Processor for CPU; (Dual CPU) (ii) The technology has been improved and we request you to allow OEMs to provide better solution. (iii) Why would one need a 32-bit processor in all the cards? A controller would have a number of cards fulfilling low level functions such as lamp driving and I/O. Such cards would not need a 32-bit processor, and the processing requirement on those cards is a dependent upon the controller design. We request you to remove the requirement for having 32-bit	Modified. Refer Sl. No.15 of Addendum-1 The 32 bit specification is for the main function of data processing. ` The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				processors on all the cards.	
		41		(xxiii) Compact design (i) Rack with 16 signal Group, suitable for 19" rack fitment. (ii) Compact design – Very vague	Modified. Refer Sl. No.15 of Addendum-1 This can be as per the bidder's design suiting to the equipment / component to be housed in - IP 65 Compliant The modified specification is included Under "Table 1.1 Controller Specifications" of Appendix 1 of Addendum 1 ie. IP 65 Compliant
		41		(xxiv) Multiple protections (i) Should have Safety CPU to Control software verification, Program Operation, Data pass word protection, Conflict Matrix, Supply voltage monitoring, signal output voltage, current monitoring (ii) Multiple protections – What are the protections? Very vague	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included in "Key Features" Under "1 Specifications of VA Signals" of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		41		<p>(xxv) Multiple conflict monitors</p> <p>Multiple Independent green conflict supervision</p>	<p>Multiple conflict monitors includes Independent green conflict supervision.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The specification is included in “Key Features” Under “1 Specifications of VA Signals” of Appendix 1 of Addendum 1</p>
		41		<p>(xxvi) Remote controller firmware updating</p> <p>This is a dangerous functionality. A remote firmware update could potentially result in a dangerous state of the signal. It is strongly recommended that signal controller firmware is only updated on-street in the presence of a qualified ITS engineer. Could this clause be please removed?</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The specification indicated in RFP on “Remote controller firmware updating” is deleted.</p> <p>Refer “Key Features” Under “1 Specifications of VA Signals” of Appendix 1 of Addendum 1</p>
		41		<p>(xxvii) Should be Fully customized to integrate with other intelligent transportation systems (ITS) i.e. variable message signs (VMS), flood</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification is included</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>warning system , video detection system CCTV red light camera speed detection</p> <p>This clause does not make any sense whatsoever. Integration of other ITS sub-systems such as VMS, CCTV etc with ATCS takes place at the ATCS server level. Please move this clause to the list of technical specifications required for ATCS software (currently in page 50).</p>	Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1
		41		<p>(xxviii) Opto - isolated inter board communication</p> <p>Inter-board communication is parameter of the controller design. How a controller is designed and functions internally should not be specified in the tender. (Moreover, serial communication between boards can communicate data at higher rates than opto-isolated interfaces). Please remove this clause.</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The specification indicated in RFP on ‘Opto - isolated inter board communication’ is deleted.</p> <p>The modified specification of VA Signals are provided in Appendix 1 of Addendum 1 Under “Key Features”</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		41	Traffic Controller Specifications: Processor – Advanced processing Unit (APU) containing 32 bit microprocessor chip	44.3 Traffic Controller Specifications: Controller processing requirement (i) Keeping in mind the ITS Masterplan that will require the proposed system to be open and extensible, the controller will need to support running of custom local control logic. With this in mind, please specify that the controller should have alt least 128MB of RAM/flash memory.	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1
		41	Traffic Controller Specifications: Communication Ports – RS232, USB, Ethernet, RS 485- Multi drop.	44.4 Traffic Controller Specifications: Communication Ports (i) Purpose of these ports shall be specified. It appears that RS485 is over-specified.	No change. Specifications holds good.
		41	Traffic Controller Specifications: Programming facility - Through central monitoring station or Through Any Laptop, Mobile facility	44.5 Traffic Controller Specifications: Programming facility (i) It is extremely unsafe to program a controller remotely. A qualified ITS	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under “Table 1.1 Controller

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				engineer should be present on-street to ensure that the programmed plans are safe to run on the ground. Please change the clause such that only on-street programming facility should be possible and remove programming facility, if available on the controller, should be disabled.	Specifications of Appendix 1 of Addendum 1
		42	Traffic Controller Specifications: Input voltage - 230 V ac ± 10 and frequency 50 ± 5 Hz, DC I/P 24V	44.6 Traffic Controller Specifications: Input voltage (ii) Please change to: 230 V ac ± 10 and frequency 50 ± 5 Hz or DC I/P 24V	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under "Table 1.1 Controller Specifications" of Appendix 1 of Addendum 1
		42	Traffic Controller Specifications: Operating voltage - 230vts and 24V DC / as per system requirement	44.7 Traffic Controller Specifications: Operating voltage (i) Please change to: 230 V AC or 24V DC / as per system requirement	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under "Table 1.1 Controller Specifications" of Appendix 1 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		42	Traffic Controller Specifications: Remote Monitoring / Synchronization: Should be compatible with remote configuration for corridor synchronization between junctions and traffic controller	44.8 Traffic Controller Specifications: Remote Monitoring / Synchronization: (i) How and not clear?	Through ATCS software or equivalent.
		42	Traffic Controller Specifications: Cabinet : 3-U Rack Mounted, powder-coated with RJ-45 sockets	44.9 Traffic Controller Specifications: Cabinet (i) The cabinets should be IP65 rated. Please add this clause. (ii) Asked requirement are Specific OEM references, only one OEM can meet this. (iii) This looks like a vendor specific clause. How a cabinet space is internally organised has no bearing on controller functionality. Also, why should the controller have RJ-45 sockets? The vendor may choose to house communications	Modified. Refer Sl. No.15 of Addendum-1 This can be as per the bidder's design suiting to the equipment / component to be housed in. Bidder is required to provide an IP65 compliant cabinet The modified specification is included Under " Table 1.1 Controller Specifications " of Appendix 1 of Addendum 1 ie. IP 65 Compliant.



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				equipment inside the cabinet. Please remove this clause.	
		42	Traffic Controller Specifications: Features <ol style="list-style-type: none"> 1. Programmable Year Calendar: Min. 20 Holidays (can be customized) 	44.10 Traffic Controller Specifications: Features <ol style="list-style-type: none"> 5. In built diagnostics – <ol style="list-style-type: none"> (i) What are the diagnostics and the action taken. Very vague. 	Diagnostics and the report on diagnostics will be the prerogative of bidder. The bidder should provide the diagnostics that the system will conduct.
		42	<ol style="list-style-type: none"> 2. Programmable Day (7 days) 3. Min 12 cycle plans per day (excluding manual police control plan) 4. Min 8 Phases / stages per plan 5. In built diagnostics 6. In built data logging/Fault log capacity to 10 Years 7. ILC 4101 controls the lamp output as commanded by APU4100 8. Health report features. 	44.11 Traffic Controller Specifications: Features <ol style="list-style-type: none"> 6. In built data logging/Fault log capacity to 10 Years – <ol style="list-style-type: none"> (i) This is a wrong specification. Instead, number of records should be specified (ii) 1. Please move this clause to ATCS software functional specifications (currently in page 50). ATCS controllers' usually send fault data back to the ATCS software. 2. Please change the time period of data storage to 3 years 	Modified. Refer Sl. No.15 of Addendum-1 The time period for data storage is reduced to 3 years The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		42	9. Vehicle actuation 10. Conflict Management 11. In built port for Emergency Vehicle priority	44.12 Traffic Controller Specifications: Features 7. ILC 4101 controls the lamp output as commanded by APU4100 (i) For point 7, the no. Should be deleted as this is proprietary (ii) Manufacturer specific (could be BEL Product number) (iii) The mentioned specifications and other one for Traffic Signal are very specific to vendor/s. Better technologies are in place. Therefore, same may kindly be modified and allow us to use alternative technology with other vendor. (iv) ILC4101 and apu4100 are vendor specific (v) This appears to be a vendor specific clause. Please remove it. (vi) The mentioned "ILC 4101 controls the lamp output as commanded by	Modified. Refer Sl. No.15 of Addendum-1 The specifications namely, "ILC 4101 controls the lamp output as commanded by APU4100" is deleted. The modified specification of Traffic Controller Specifications: Features Under "Table 1.1 Controller Specifications" are provided in Appendix 1 of Addendum 1 .

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>APU4100" under VA Traffic Signals are OEM/Vendor specific which restricts other OEM/Vendors to bid. We request you to kindly remove the requirement.</p> <p>(vii) Asked requirement are Specific OEM references, only one OEM can meet this.</p>	
		42		<p>44.1 Traffic Controller Specifications: Features</p> <p>8. Health report features –</p> <p>Not clear. Very vague</p>	Bidder is allowed to provide the specific report as agreed upon by the Employer.
		42		<p>Controller functionality</p> <p>Keeping in mind the ITS Masterplan that will require the proposed system to be open and extensible, please clarify if the controller should be programmable so that the controller provides a scripting/programming environment to implement and run custom local control algorithms that use real-time detector data connected to the controllers?</p>	This element has been brought out in "Table 1.1 Controller Specifications" of Appendix 1 of Addendum 1 .

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		42	Traffic Controller Specifications: Humidity: 95% Humidity at 40°C Non-Condensing	44.2 Traffic Controller Specifications: Continued Humidity: (i) Humidity 0-99 % (Non condensing)	No Change. However, any better specification would be reviewed for acceptance as agreed upon by the Employer.
		43	Traffic Controller Specifications: Controller Enclosure: IP 65 Complaint, 4 DOOR Controller panel box provided with an exhaust fan 4DDOOR	44.3 Traffic Controller Specifications: Continued Controller Enclosure: (i) Controller Enclosure: IP 65 Complaint, Single DOOR Controller panel box provided with an exhaust fan and separate access to police panel. (ii) Asked requirement are Specific OEM references, only one OEM can meet this. (iii) 1. What is the difference between controller enclosure and controller cabinet? Please combine the two. 2. Why does the controller need 4 doors? Why does it need an exhaust	Modified. Refer Sl. No.15 of Addendum-1 Bidder is required to provide the IP65 compliant Controller enclosure. The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				fan - most existing controller cabinets in India, and indeed Kerala, work without an exhaust fan and they work fine. Please remove these clauses.	
		43	Traffic Controller Specifications: Logging capacity - Fault /event storage capacity /average 10 events /day data storage capacity 7 years (max)	44.4 Traffic Controller Specifications: Continued Logging capacity (i) Compliance to standards or capacity 7 years (max). Contradicting with Sl.No.5.m above where the capacity is specified for 10 years (ii) Faults are logged in the ATCS server rather than controllers. Please reduce the logging requirements to three weeks. (iii) Please confirm the storage period for VA	Modified. Refer Sl. No.15 of Addendum-1 The time period for data storage is reduced to 3 years at the control centre The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		43	Traffic Controller Specifications: Connection interface: USB /Bluetooth	44.5 Traffic Controller Specifications: Continued Connection interface: (i) This is a redundant clause. Communication ports are already listed on page 41. Please remove this.	Modified. Refer Sl. No.15 of Addendum-1 The specification namely, “Connection interface” is deleted. The modified specification is in “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1
		43	Traffic Controller Specifications: Lamp status monitoring: Fuse blown detection green conflict detection double lamp detection lamp failure detection	44.6 Traffic Controller Specifications: Continued Lamp status monitoring: (i) Please remove double lamp detection	Modified. Refer Sl. No.15 of Addendum-1 The specific requirement mentioned in RFP, namely, “double lamp detection lamp failure detection” is deleted. The modified specification is included Under “Table 1.1 Controller Specifications” of Appendix 1 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		43	Traffic Controller Specifications: Current monitoring system: Conducts power consumption monitoring	44.7 Traffic Controller Specifications: Continued Current monitoring system: (i) Please remove this clause	Modified. Refer Sl. No.15 of Addendum-1 The specific requirement mentioned in RFP, namely on “ Current monitoring system ” is deleted. Refer “ Table 1.1 Controller Specifications ” of Appendix 1 of Addendum 1
		43	Traffic Controller Specifications: LED and halogen based aspects compatibility (brands and models) – Must be tested with current monitoring (CMB) to ensure lamp conflict and missing detection system is functional	44.8 Traffic Controller Specifications: Continued LED and halogen based aspects (i) Halogen based aspects are not specified in the document. All modern traffic signals use LED signal aspects. This is over specified or specific to certain manufacturer. (ii) Please remove this clause	Modified. Refer Sl. No.15 of Addendum-1 Halogen based aspects are deleted. Refer Appendix 1 of Addendum 1 Under “ Table 1.1 Controller Specifications ” The detailed specifications for the LED signal aspects are provided in Appendix 1 of Addendum 1 Under “ Table 1.2 Signal Head specifications General ” and “ Table 1.3 Signal Lamp specifications ”

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		43	<p>Traffic Controller Specifications:</p> <p>Vehicle Actuated Signals</p> <p>Vehicle detection: wireless radar/infrared detections</p>	<p>44.9 Traffic Controller Specifications: Continued</p> <p>Vehicle detection: wireless radar/infrared detections</p> <p>(i) Contradictory to specifications in Not clear what is meant by this specification</p> <p>(ii) The RFP specifies for Video based detection. Contradicting specification</p> <p>(iii) Please clarify what this means. Would compatibility with wireless radars through their standard open contact interfaces suffice? Moreover, this clause is redundant considering that fact that 12-channel detector cards are mentioned below. Please remove this clause.</p> <p>(iv) Asked requirement are Specific OEM references, only one OEM can meet this.</p> <p>(v) Specifications provided is for wireless infrared/radar technology and not for</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>Vehicle detection aspects are modified. The details are provided in Appendix 1 of Addendum 1 Under “Table 1.1 Controller Specifications”</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>Virtual loop based Vehicle detection camera (black & white camera with RS-485 output), as envisaged under Clause 2.3.2/2.3.3 on page 35. Please include the specs of Vehicle detection camera with virtual loop facility</p> <p>(vi) This is redundant. Please remove</p> <p>(vii) radar/infrared detections/Camera Based</p> <p>(viii) The Vehicle detection technology has now been improved and moved on from "Wireless Radar/Infrared detections" to "Video based technology" which is advanced and cheaper compared to Radar/Infrared technology which is now obsolete. You are requested to incorporate Video based technology.</p> <p>(ix) Microwave radar specifications: Specifications for microwave radar detectors are missing. Please provide the technical specifications.</p>	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>Traffic detectors:</p> <p>Considering weather conditions in Kochi, it is suggested that thermal imaging based video detectors are specified instead of ordinary video based detectors</p>	
		43	<p>Traffic Controller Specifications:</p> <p>Communication methods from controller to control center - GPRS/leased line fiber optic /4G Sim based</p>	<p>44.10 Traffic Controller Specifications: Continued</p> <p>Communication methods from controller to control center</p> <p>(i) This is not the concern of the controller. Usually, there will be a modem/adaptor that will convert the available communication media (e.g. fiber, 4G to Ethernet) and the controller will connect to an Ethernet interface. Please modify the clause such that the controller should communicate to ATCS software over TCP/IP using and Ethernet interface.</p> <p>(ii) An open and extensible system</p>	

Modified.

Refer [SI. No.15 of Addendum-1](#)

Communication methods from controller to control center aspects are modified. The details are provided in [Appendix 1 of Addendum 1](#) Under ["Table 1.1 Controller Specifications"](#)

Please note, ISO 27001-2013 is specified.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				should use components that conform to commonly used ITS data standards for communication. Keeping this in mind, the controller should support one of the commonly used international standards such as UTMC/UG405, NTCIP or OCIT for communication between the controller and the ATCS software.	
		44	Traffic Controller Specifications: Communication and SMS module - Fault alert SMS to mobile device	44.11 Traffic Controller Specifications: Continued Communication and SMS module (i) Please move this clause to ATCS software functional specifications.	Modified. Refer Sl. No.15 of Addendum-1 The specific requirement mentioned in RFP, namely on “ Communication and SMS module ” is deleted. Refer “ Table 1.1 Controller Specifications ” of Appendix 1 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications										
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required											
		44	LED Specifications for Signal Head: <table><tr><th>Item</th><th>Specifications</th></tr><tr><td>Power supply</td><td>230 V ac ±10 and frequency 50 ±5Hz,</td></tr><tr><td>Standards</td><td>EN 12368 complaint</td></tr><tr><td>Convex Tinted Lens</td><td>Available</td></tr></table>	Item	Specifications	Power supply	230 V ac ±10 and frequency 50 ±5Hz,	Standards	EN 12368 complaint	Convex Tinted Lens	Available	44.12 LED Specifications for Signal Head: power supply (i) Please modify this so that we can use DC driver LEDs.	Modified. Refer Sl. No.15 of Addendum-1 Power supply aspects are modified. The details are provided in Appendix 1 of Addendum 1 Under “Table 1.2 Signal Head specifications General”		
Item	Specifications														
Power supply	230 V ac ±10 and frequency 50 ±5Hz,														
Standards	EN 12368 complaint														
Convex Tinted Lens	Available														
		44	<table><tr><td>Fuse and Transients</td><td>Available</td></tr><tr><td>Operating Temperature</td><td>-10°C Celsius</td></tr><tr><td>Turn Off/Turn On Time</td><td>75 ms max</td></tr><tr><td>Total Harmonic Distortion</td><td><20%</td></tr><tr><td>Electromagnetic interference</td><td>Meets FCC Title 47, Subpart B, Section 15 Regulation</td></tr></table>	Fuse and Transients	Available	Operating Temperature	-10°C Celsius	Turn Off/Turn On Time	75 ms max	Total Harmonic Distortion	<20%	Electromagnetic interference	Meets FCC Title 47, Subpart B, Section 15 Regulation	44.13 LED Specifications for Signal Head: Standards: (i) EN12368 Certified (ii) The provision of LED signal heads shall be to the specifications detailed in EN12368 (European standard) or other equivalent International Standards. The LED signal heads are to be compliant with Class A (-15 to + 60) for use in a class A environment,	Standards aspects shall be EN12368 Compliant. The details are provided in Appendix 1 of Addendum 1 Under “Table 1.2 Signal Head specifications General”
Fuse and Transients	Available														
Operating Temperature	-10°C Celsius														
Turn Off/Turn On Time	75 ms max														
Total Harmonic Distortion	<20%														
Electromagnetic interference	Meets FCC Title 47, Subpart B, Section 15 Regulation														



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Sl. No.	Pre-Bid Queries					Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification		Change Requested/ Clarification required	
		-	Blowing Rain/Dust Spec	MIL 810F complaint	44.14 LED Specifications for Signal Head: Diameter of LED aspects Please specify the diameter of LED aspects. IRC allows 200mm and 300mm depending on site conditions.	Diameter of LED aspects has been included. The details are provided in Appendix 1 of Addendum 1 Under “Table 1.2 Signal Head specifications General”
			Minimum Luminous Intensity	Red 250		
			(measured at intensity	Amber 250		
				Green 250		
		44	Dominant Wavelength (nm)	Red 630	44.15 LED Specifications for Signal Head: Total Harmonic Distortion	No change.
				Amber 590		
				Green 490		
		44	Lamp conflict compatibility system	Compatible with lamp failure and conflict detection	44.16 LED Specifications for Signal Head: Electromagnetic interference: (i) EMC acc. To EN50293; Protection class : Safety Class II acc. To EN 60598 (ii) Specifications are very specific and most of the vendors doesn't comply with it. Please allow us to use alternative technology with other vendor.	EN certifications for Electromagnetic Interference is required. The details are provided in Appendix 1 of Addendum 1 Under “Table 1.2 Signal Head specifications General”

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		44		44.17 LED Specifications for Signal Head: Blowing Rain/Dust Spec: <ul style="list-style-type: none"> (i) IP 65 (ii) Please remove this clause (iii) Specifications are very specific and most of the vendors doesn't comply with it. Please allow us to use alternative technology with other vendor. 	Modified. Refer Sl. No.15 of Addendum-1 Bidder is required to provide the IP65 compliant Signal Head. The modified specification is included Under Appendix 1 of Addendum 1 Under "Table 1.2 Signal Head specifications General"
		44		44.18 LED Specifications for Signal Head: LED Retrofit Specifications – <ul style="list-style-type: none"> - Operating: -10°C Celsius - Minimum Luminous – 250Cd for Red/Amber/Green - Intensity of Full Aspect – 260Cd(Red)/380Cd(Amber)/100Cd(Green)/260Cd (Ped RED/GRN) Description of many of the items under respective row is incomplete and contradicts with inputs provided in table on page No 45	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under "Table 1.2 Signal Head specifications General" and "Table 1.3 Signal Lamp specifications" of Appendix 1 of Addendum 1



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>- Retrofit/Housing size (300mm OR 200mm) material(Polycarbonate/MS) and colour is not mentioned - Minimum intensity mentioned(250Cd) does not qualify for EN12368 compliance - Wavelength mentioned for Green(490nm) does not qualify for EN12368 compliance - Operating Temperature range mentioned includes all classes of Temperature under EN12368 - Retrofit Input power is not mentioned - IP rating is not mentioned - Fuse is not a necessity if drive card has built-in overload/short-circuit protection.</p>	
		44		<p>44.19 LED Specifications for Signal Head:</p> <p>Minimum Luminous Intensity (measured at intensity point) (nm):</p> <p>Red 250</p> <p>Amber 250</p> <p>Green 250</p> <p>Luminous intensity-RED> 400 CD, : Color acc. 613.5 - 631nm</p> <p>AMBER> 400 CD, : Color acc. 585 - 597nm</p> <p>GREEN> 400 CD, : Color acc. 498.5 - 508nm</p>	

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		44 & 45		<p>44.20 LED Specifications for Signal Head: intensity</p> <p>(i) provide a luminosity of intensity of 400 Cd, have a medium intensity distribution, a luminous uniformity of 1:10, phantom class 5. The LED shall be single source type having the typical consumption of 11+2 watts for green LED, 9+2 watts for red LED and 9+2 watts for amber LED or less than this.</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification is included Under "Table 1.3 Signal Lamp specifications " of Appendix 1 of Addendum 1</p>
		45	<p>Operating Temperature range::</p> <p>Red LED :: -40° C to +85° C</p> <p>AMBER LED :: -40° C to +85° C</p> <p>Green LED :: -40° C to +85° C</p> <p>Pedestrian Red / Green:: -40° C to +85° C</p>	<p>44.21 LED Specifications for Signal Head: Operating Temperature range::</p> <p>In city like Cochin which is tropical, temperature neither goes down below 0° C nor crosses 55° C ; thus asking for -40°C ~ +85°C is insignificant or a typo error. Requesting you to change it from "-40°C ~ 85°C" to "0°C ~ 55°C"</p> <p>Please change to 0° C to +85° C</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification is included Under "Table 1.3 Signal Lamp specifications " of Appendix 1 of Addendum 1</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		45	Vehicle actuation Camera: <ul style="list-style-type: none"> Temperature Range: from -30°C to +60°C Humidity: 0 to 95% non-condensing. 24 vehicle presence zones 4 bike presence regions 8 inverse direction zones 	44.22 Vehicle actuation Camera <ul style="list-style-type: none"> (ii) For Hot Countries like India, Its important to have higher /extended temperature ratings like -34 to +74 Degree Celcius. To have -30C in places like Kochi is immaterial but to have +74Degree Celcius is very essential when the camera are installed on roads where the contact/surface temperatures for housings would increase to 65 degrees. (iii) 24 presence zone & 4 data zones ; Detection Outputs 16 via, optical ETH interface (iv) Bike is ambiguous: motorbike or push bike? Solution should be able to differentiate between motorized & non-motorized transport as mo-bike (two wheeler) is different from push bike (bicycle). For India and place like Kochi, there is a high concentration of two wheelers and 	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>Details such as Temperature Range and vehicle presence zones and bike presence regions are modified.</p> <p>(bike refers to motorbikes, Scooters and bicycles)</p> <p>The details are provided in Appendix 1 of Addendum 1 Under “1.4 Vehicle Actuation Camera”</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				bicyclist population on roads. There should be at least 8 bicycle presence zones.	
				(v) Temperature and Humidity – Compliance to standards or certification not summoned	Temperature and Humidity – Compliance shall be as per Industry standards
		45	Camera Details: <ul style="list-style-type: none"> Camera Type: wireless infrared/radar technology <ul style="list-style-type: none"> Long wave Infrared (7 – 14 Micrometer) Resolution: QVGA Frame Rate: 30 FPS Lens Type: Wide Angle Focal Distance :7.5mm Compression: H.264, MPEG4, MJPEG (dual stream) 	44.23 Camera Type, Lens type <ul style="list-style-type: none"> (i) Camera Type: CMOS type 1/4" color (640X840 pixels- VGA) (ii) Once the camera technology defined in clause 2.3.3 & 2.7.1 as thermal camera (7-14 micrometers), the term "Camera Type: wireless infrared / radar technology" is confusing. A true thermal (7-14 micrometers on energy spectrum) camera based detection sensors cannot be termed as infrared or radars anymore. It needs to be only "thermal camera based detection 	Modified. Refer Sl. No.15 of Addendum-1 Camera Type and Lens type details are modified. Focal distance specification is deleted. The details are provided in Appendix 1 of Addendum 1 Under "1.5 Camera Details"

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>sensors"</p> <p>(iii) The Vehicle detection technology has now been improved and moved on from "Wireless Radar/Infrared detections" to "Video based technology" which is advanced and cheaper compared to Radar/Infrared technology which is now obsolete. You are requested to incorporate Video based technology.</p> <p>(iv) Long wave Infrared (7 – 14 Micrometer)- NA</p> <p>(v) Resolution: (640X840 pixels- VGA); 25FPS</p> <p>(vi) o Lens Type: Wide Angle</p> <p>(vii) Focal distance - 2.1mm, Detection distance- 0-25m</p>	

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Sl. No.	Pre-Bid Queries				Clarifications					
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required						
		46	Power Supply, Outputs & Communications: "Standards: o Protection Grades: Housing = IP68, Connectors = IP67"	These are very basic terms and infect no standards for prestigious KOCHI. We request you to incorporate global/Indian industry accepted Standards like: 1. Aluminum Housing (hard anodized) 2. Minimum Regulatory standard: EMC 2004/108/EC, RoHS 2011/65/EU 3. Shock & Vibration: NEMA TS2 specs 4. Protection Grades Housing = IP68, Connectors = IP67 5. Temperature Range From -34°C to +74°C (-29°F to 165°F) 6. Embedded/Edge technology: on-board analytics 7. Warranty: 10 years on thermal sensor core & minimum 6 years components (hardware) 8. MTBH: >150,000 hours 9. A reference & test certificates to prove its a true thermal (7-14 micrometers) sensor, with 30 FPS as per RFP.	No change, IP protection grades already indicated in the RFP holds good. Same is reproduced in Appendix 1 of Addendum 1 Under "1.6 Power Supply, Outputs & Communications"					
		46	Timers <table border="1"><thead><tr><th>Item</th><th>Specifications</th></tr></thead><tbody><tr><td>Digit height</td><td>510 mm</td></tr><tr><td>Digit width</td><td>93.98 mm</td></tr></tbody></table>	Item	Specifications	Digit height	510 mm	Digit width	93.98 mm	(i) Specifications are very specific and most of the vendors doesn't comply with it. There are better technologies. Therefore, same may kindly be modified and allow us to use alternative technology with the liberty
Item	Specifications									
Digit height	510 mm									
Digit width	93.98 mm									



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Sl. No.	Pre-Bid Queries				Clarifications		
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification			Change Requested/ Clarification required	
			Segment width	38.1 mm	to provide improvised and non-vendor specific ones.	Addendum 1	
		46	Wavelength	630 nm for red LED	Specifications of Timers (ii) Specifications provided under CDT are inadequate and nonstandard, pertaining to a specific manufacturer and his datasheet with non -specific inputs - Digit Size/dimension is nonstandard. Typically Timers are specified as 2 ½ digit with 5"/8"/12" digit height and works only in Traffic Controllers' Fixed Time mode of operation - Type of LED(SMT/Through hole)& Size(3mm/5mm) is - Type of Timer(Vehicular/Pedestrian) is not mentioned. - Input sensing time is not mentioned - Sense Input Voltage(230VAC, same as retrofit) is not mentioned - 525mn wavelength mentioned does not fall under GREEN colour spectrum - Mounting details not provided - Power consumption not mentioned - Standard & colour type for Luminous intensity of 150Cd/m2 at		
				525 nm for green LED			
				Luminous intensity			150 cd/m² @ 10 cm distance from the surface
				Power supply			230v AC
				Internal power supply			5 Vdc (7A) - for CDC countdown and red 7 - segment LED'S
							12 Vdc (4A) - for 7 -segment green LED'S. Both using switching power supplies
				Communication Countdown Mode			Users RS485 communication with controller (up to 1.2 km)
				Wireless Countdown Mode			Users Xbee band with controller (up to 1 km near line of sight)
				Cabinet size (2 digit)			(635) x (508) x (93.98) mm
			Microprocessor	8 bit microcontroller			





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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		41 & 47	Controller should be compatibility to (Emergency Vehicle Priority) EVP system	<p>(i) Specification of Emergency Vehicle Priority System is missing in the document. It is understood that implementation of the priority system is planned only in next phase. However, unless otherwise the requirements are specified in this document you may come across compatibility issues in future. In fact, it is possible to have the ESV priority by adding a couple of lakhs per intersection.</p> <p>(ii) Please specify the proposed EVP technology (e.g. DSRC, RFID etc.) for local communication that is to be supported by the controller.</p> <p>(iii) Alternatively, please note that EVP is often accomplished using GPS devices that transmit real-time location data back to the ATCS server. If it is envisaged that GPS will be used for emergency vehicle location, please remove this clause from the controller requirements and add this to the functional</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The requirement is included Under “1.10 Emergency Vehicle priority system” of Appendix 1 of Addendum 1</p> <p>Providing EVP system is not envisaged in this RFP. However, the system should be compatible for the EVP system provided in future. We have included a section of ATCS which includes the functional requirement of EVP. It shall comply to the same.</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>requirements for the ATCS software.</p> <p>(iv) The Vehicle Signal Priority may not be a part of the traffic signal controllers. This can be achieved through installing RFID/ other sensors/ by other means. Hence requesting the authority to kindly remove the clause.</p>	
			<p>Traffic Controller Specifications:</p> <p>Features</p> <p>11. In built port for Emergency Vehicle priority</p>	<p>1. Please specify the type of port for EVP priority 2. Alternatively, please note that EVP is often accomplished using GPS devices that transmit real-time location data back to the ATCS server. If it is envisagd that GPS will be used for emergency vehicle location, please remove this clause from the controller requirements and add this to the functional requirements for the ATCS software.</p>	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Junction Signal Management Software. Emergency vehicle priority system compatibility post	Emergency Vehicle Priority (EVP) can be provided using GPS data as well. In this case, the controller will not need a specific port, but the ATCS system should be capable of providing priority using GPS feed received by the ATCS server. Please confirm that the ATCS system should also support centrally integrated GPS based EVP.	
			-	It is also recommended that the traffic signal controller time update shall be GPS based	Not necessarily, if the traffic signal is connected to the control centre the time could be drawn from the control centre
		47	Traffic Light Controller Software The software is client-server based which enable the viewer to configure through web browser. 1. Software should be able to control the junction remotely from centralized control station.	(i) This clause actually pertains to the ATCS software rather than controller software. Please rephrase this accordingly.	Edge processors will also include traffic light controller software. Refer Sl. No.15 of Addendum-1 The 'Traffic Light Controller Software' features are modified. The same is included Under "1.8 Traffic Light Controller Software" of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			2. Software should be scalable to configure more signals without modifying the software just by adding the hardware.	<p>(ii) Traffic Light Software - Software should be able to control the junction remotely from centralized control station: No mention about the ATCS features.</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The 'Traffic Light Controller Software' features and 'ATCS features' are described Under "1.8 Traffic Light Controller Software" and "1.9 Area Traffic Control System Application Software" of Appendix 1 of Addendum 1</p>
				<p>The software is client-server/CLOUD based which enable the viewer to configure through web browser.</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The 'Traffic Light Controller Software' features are modified.</p> <p>The same is included Under "1.8 Traffic Light Controller Software" of Appendix 1 of Addendum 1</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Junction Signal Management Software. Online monitoring: 3. Ethernet and GPRS interfacing capability	Please change to "Ethernet interfacing capability". It is an odd thing to ask for GPRS interfacing capability for the central ATCS software.	Online monitoring requirement is modified. Refer Sl. No.15 of Addendum-1 The modified requirement is included Under The same is included Under “1.8 Traffic Light Controller Software” of Appendix 1 of Addendum 1
			Junction Signal Management Software. Online monitoring: 4. Online monitoring of synchronization of corridor in GUI to ensure proper synchronization and validation	Mode of Operation Vehicle Actuated and Auto-pan: ATCS operation is not mentioned. Hope the RFP is of ATCS	
			Junction Signal Management Software. Online monitoring: 7. Online system status such as phase, Road and Timings, utilized green Time in case of vehicle actuated signaling, vehicle occupancy can be viewed in GUI (Graphical User Interface).	No mention about ATCS features. ‘Vehicle Occupancy’ may be wrongly specified. This may be ‘Average detector occupancy’	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Junction Signal Management Software. Online monitoring: 8. Since the traffic flow various frequently, the control software should be capable of changing cycle time dynamically based on the traffic density (locally and centrally)	Please change to "Since the traffic flow various frequently, the control software should be capable of changing cycle time dynamically based on input from traffic detectors (locally and centrally)", so that this is technically correct (specified detectors don't measure traffic density)	No change – Please read the word “Density” as a word describing the quantum of traffic numbers and not its technical meaning.
		48	Junction Signal Management Software. Online monitoring: 10. Power alerts should be created in case of low battery	Detailed description on Type of software platform (Scoot/Scat/cosisost) its architecture various algorithms required features and compliances table etc.is missing. Under online monitoring it demands power alerts in case of low battery which pertains to solar based system whereas the entire system as per RFP document is 230VAC operated with UPS back up please clarify	The software is kept generic as any reference to a particular architecture would limit the use of other options that are available in the international market. The solar option has not been envisaged, however, if the bidder has a better solution then the operating power shall be suiting to provide the required output and complying to functional requirements.
		48	Cables Description:	(i) 19Core & 2.5Sqmm for all type is not a requirement for LED based traffic Signal. Please review & clarify	The cable conductor size for 3 core, 6 core, 12-core and 19-core cable is 2.5 sq.mm.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			3Core/6Core/12Core/19Core Size: 2.5Sqmm/2.5Sqmm/2.5Sqmm/2.5Sqmm	(ii) Cables Specifications - The cable conductor size specified for 6 core, 12-core and 19-core cable is 2.5 sq.mm. As LED signal lights have low current requirement the conductor size of the cables can be changed to either 1 sq.mm. This would give a saving on the overall cost.	Refer Sl. No.15 of Addendum-1 and "Table 1.5 Cable specifications" of Appendix 1 of Addendum 1
		50	In-station Unit Server i) Suitable Windows based high-end system with adequate storage and back up facility. ii) System should have the capacity to maintain and archive 7 days data from 200 plus Junctions.	(i) I am assuming that in station server means the central ATCS server. Please confirm. Please modify the clause to allow Windows or Linux operating systems (ii) Linux is acclaimed to be a preferred software platform in comparison to Windows in security systems. Hence, we request you to kindly incorporate Linux system as well along with Windows.	Modified. Refer Sl. No.15 of Addendum-1 The modified specification is included Under "1.17 In station Unit Server" of Appendix 1 of Addendum 1 Also refer ATCS features included Under "1.9 Area Traffic Control System Application Software" of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>(iii) It not clear what data are to be archived. Keeping in mind the ITS Masterplan, it is important to archive processed traffic detector data (flow and occupancy) and signal timing data for a period of three years for offline analysis and modelling. Please add the requirement for traffic detector data archive.</p> <p>Seven days is too less a time period for any sort offline historic trend analysis and transport modelling. The system should have the facility to store data for three years. Please modify the clause accordingly.</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The modified specification is included Under “1.17 In station Unit Server” of Appendix 1 of Addendum 1</p>
		-	-	<p>1. It is suggested that the ATCS software should support compensation along with bus priority. Compensation logic in ATCS will give back the lost green time to other approaches after priority has been given to a particular approach due to the presence of a bus. Implementing bus priority with</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The ATCS features are more elaborately drawn out. Bus priority is not a requirement but compatibility to bus priority is a requirement.</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				compensation will reduce congestion for the general traffic.	The modified specification is included Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1
		-	-	<p>(i) A number of traffic signals specified in this tender are in close proximity. Traffic signal timings at one junction will have an impact on the traffic at adjacent junctions. Given this, could you please specify ATCS signals that are capable of traffic signal timing synchronization between junctions, rather than VA signals?</p> <p>(ii) The description of traffic control system does not confirm that the requirement is for fully adaptive traffic control system. Please confirm if you need a central traffic control system which automatically without human interference decides the signal timings and sends them to traffic controllers in field</p>	<p>Modified.</p> <p>Refer Sl. No.15 of Addendum-1</p> <p>The ATCS features are more elaborately drawn out.</p> <p>The modified specification is included Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				(iii) Do you need only vehicle actuated traffic control system which has central monitoring & manual control facility or a Fully adaptive traffic control system.	
		-	-	3. It is suggested that the ATCS algorithm should be able to run signals in VA mode with a common cycle time specified centrally for a group of junctions. This will enable signal timing coordination between adjacent signals.	Modified. Refer Sl. No.15 of Addendum-1 The ATCS features are more elaborately drawn out. The modified specification is included Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1 This is the requirement of the ATCS specified. It is envisaged that the VA signals with edge processing will be stand-alone but will also be amenable to be taken over by the central ATC
			-	No. of vehicle detectors and signal heads not specified.	The Specification / BOQ clearly specifies the junctions and the number of arms. The number of Vehicle detectors and signal heads can

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
					be arrived at.
		-	!	Visors Please clarify if the traffic signal lamps should have visors	Modified. Refer Sl. No.15 of Addendum-1 visors are required and same is indicated in Appendix 1 of Addendum 1 Under "Table 1.2 Signal Head specifications General"
45	2.7.2 PTZ Camera	51	PTZ camera -Technical specifications 4. Focal Length: 7mm to 329mm 5. Optical Zoom: 47X or Better	(i) 30x optical Zoom with focal length 4.5 to 135mm will be able to detect object at 1800 meter (25px/meter) and identify 180 meter (250px/meter) with clear line of sight. (ii) 30X OPTICAL ZOOM with 16x digital zoom is sufficient for city surveillance applications. 47X OPTICAL ZOOM (7-329mm) will increase the camera cost. (iii) Thus, in order to have economical solution, requesting you to amend the clause focal length to 4.3~4.5 to	Optical Zoom: 47X or Better with 2MP resolution as indicated in RFP holds good. The same is retained in Addendum also. However specific requirement of focal length is deleted. Bidder shall provide camera suiting to the requirements indicated. For more details refer Sl. No.16 of Addendum-1 "Table 2.1 PTZ Camera Technical Specifications" of Appendix 2 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				135mm having 30x optical Zoom.	
			PTZ camera -Technical specifications 9. True WDR: 120dB or Better	During video surveillance, there is variation in illuminance due to bright light sources. WDR value with 90db value will render better and good quality image as compared with camera non TWDR. Request you to amend it to WDR 90db As per IEC62676 Part 5	No change. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.16 of Addendum-1 “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
			PTZ camera -Technical specifications 14. Tilt Rotation: From -15° to 90° (auto reverse)	All the major OEM in the market provides - 90° to +3° (auto flip). Thus, in order to have economical solution, requesting you to amend the clause to with range -90° to 90° (auto flip)	Modified. Refer Sl. No.16 of Addendum-1 The modified specification is included Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
			PTZ camera -Technical specifications 16. Preset Positions 300 or more	All the major OEM in the market provides Pre-set Positions 256. Thus, in order to have economical solution, requesting you to amend the clause	



Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			PTZ camera -Technical specifications 20. EIS: should be available	Camera has inbuilt Auto exposure feature, Intelligent Auto Exposure overcomes backlight and front light fluctuations to provide usable images. Request you to make clause generic EIS/Auto exposure	No Change - EIS should be available. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.16 of Addendum-1 “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
		52	PTZ camera -Technical specifications 23. Fps: 25	Kindly increase FPS to 60 , 60 fps @ 2MP will help city to get more frames and image details	Modified. Refer Sl. No.16 of Addendum-1 “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
			PTZ camera -Technical specifications 36. Working Temperature: -30°C to 65°C (-22°F to 149°F)	In lieu with city video surveillance camera , 60°C is sufficient for City applications, Request you to amend the same	Modified. Refer Sl. No.16 of Addendum-1 The modified specification is included Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			PTZ camera -Technical specifications 38. Protection Level: IP66, IK10,surge protection and voltage transient protection	As Inbuilt IR Camera has IR Bubble So Whole Camera Body is not IK rated, Kindly amend the clause with IP66 Rated.	Modified. Refer Sl. No.16 of Addendum-1 IK10, surge protection and voltage transient protection rating has been deleted. The modified specification is included Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
			PTZ camera -Technical specifications Smart Detection: Intrusion Detection, Line Crossing Detection, Audio Exception Detection, Region Entrance Detection, Region Exiting Detection, Unattended Baggage Detection, Object Removal Detection	Kindly add Crowd detection and Object counting. It will help city to monitor crowd flow Tourist areas and other crowd situations pose considerable security and safety challenges. Video Surveillance helps police and security forces respond more effectively when people or properties are Threatened. Wherever crowds gather – at tourist sights, public transportation facilities, stadiums, street demonstrations, etc. – video surveillance can help authorities quickly detect potential threats.	Crowd detection is not a requirement of Traffic Surveillance. However for modified specifications Refer Sl. No.16 of Addendum-1 Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		53	PTZ camera -Technical specifications Smart Tracking: Manual Tracking, Auto Tracking, Event Tracking	<p>Auto tracking feature will be helpful in quiet scene only to track the concerned object. As city having busy scene all the time, so this feature will not work with accuracy.</p>	<p>This is a specific demand from the authorities to detect rash driving. Hence required.</p> <p>For more details Refer Sl. No.16 of Addendum-1</p> <p>Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1</p>
			-	<p>Kindly add security features of Camera: Three level Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control, Digest authentication, User access log and online firmware upgrade,TLS1.0/1.2 with AES256 encryption, SSL, Trusted platform module, DES, 3DES , IP addresses which have never been successfully logged in and had more than 3 failed log-in attempts during the last 20 seconds are blocked.</p>	<p>ISO 27001 -2013 is included</p> <p>Refer Sl. No.16 of Addendum-1</p> <p>The modified specification is included Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1</p>

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
		53	PTZ camera -Technical specifications	There are certain serial nos. missing. Please clarify.	Modified. Refer Sl. No.16 of Addendum-1 The Sl. No.s are included Under “Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1
46	2.7.3 Fixed Camera	54	Fixed Camera Technical Specifications 3. Minimum Illumination 0.005 Lux @ (F1.2, AGC ON), 0.007 Lux @ (F1.4, AGC ON), 0 Lux with IR	Kindly consider color lux 0.008	No change. Minimum Illumination Specifications indicated in RFP holds good. The same is retained in Addendum also.
			Fixed Camera Technical Specifications 4. Shutter speed =>1/3s ~ 1/100,000s	Shutter speed of 1/15000 is sufficient for surveillance and RLVD system. The standard OEM comes with 1/10000 to 1/15000 shutter speed. The mentioned shutter speed restrict the standard OEM to participate, because this is not a standard shutter speed. Hence request you to change the shutter speed to 1/10000 and above.	Modified. Refer Sl. No.16 of Addendum-1 The specific requirement mentioned in RFP, namely on “Shutter speed” is deleted. For modified specification refer “Table 2.2 Fixed Camera Technical Specifications” of Appendix 2 of

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
					Addendum 1 Vendors to consider optimal shutter speeds for capture of speeds upto 120 kph.
			Fixed Camera Technical Specifications 5. Lens: 5~90mm - Motorized Zoom Autofocus Lens	kindly consider 9-40mm lens with auto back focus feature Motorized Zoom feature will move the fixed camera scene	No change. Lens and Optical zoom specifications indicated in RFP holds good. The same is retained in Addendum also.
			Fixed Camera Technical Specifications 6. Optical Zoom: 18X or Better	Kindly remove optical zoom as Motorized Zoom feature will move the fixed camera scene The fixed camera and RLVD system does not require this feature. Hence request you to remove this from RFP	Bidder shall provide Fixed camera suiting to the requirements indicated. For more details refer Sl. No.16 of Addendum-1 "Table 2.2 Fixed Camera Technical Specifications" of Appendix 2 of Addendum 1
			Fixed Camera Technical Specifications 13. Frame Rate: 25 FPS(1920 X 1080)	Kindly increase FPS to 60, 60 fps will help city to get more frames and image details Kindly add camera with minimum 3 streams fully configurable. Minimum 2 streams configure at 2MP @ 50/60FPS and 1 Stream	Frame Rate: 25 Fps (1920 X 1080) or better is required. The same is retained in Addendum. Refer Sl. No.16 of Addendum-1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				<p>Mj-peg</p> <p>The RLVD system needs to capture both speed and red light violation. 60 FPS is better and recommended for Speed. Hence request you to change to 60 FPS</p>	<p>“Table 2.1 PTZ Camera Technical Specifications” of Appendix 2 of Addendum 1</p> <p>Modified.</p> <p>Refer Sl. No.16 of Addendum-1</p> <p>The specific requirement mentioned in RFP, namely on “IP protection Level & Operating conditions” are modified.</p> <p>For modified specification refer “Table 2.2 Fixed Camera Technical Specifications” of Appendix 2 of Addendum 1</p>
			<p>Fixed Camera Technical Specifications</p> <p>24. IP protection Level => IP67</p>	<p>IP66 protection level is sufficient and all the RFP specifications also also IP66. Hence request you to change the specification to IP66 and above</p> <p>Kindly consider IP66 Rated housing</p>	
			<p>25. Operating conditions=>-30°C – 60 °C</p>	<p>Operating temperature is 50 Degree C is sufficient and the same is asked in most of the RFP. Hence request you to change the operating temperature to -20°C – 50 °C or better</p>	
47	2.7.4 Variable Message Sign	56	System Requirements – Sl. No 1 to 3	<p>No Input on Module LED Type -No Input on Module LED pixel pitch - No Input on Number of LEDs per pixel - No Input on Display area - No Input on VMS Size - No Input on VMS Mounting Structure</p>	<p>Variable Message sign technical specifications are already included in page 56 to 59 under the heading “2.7.4 Variable Message Sign”.</p> <p>For additional details included Refer</p>

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			-	Variable Message sign technical specifications are missing. Can you please provide the VMS technical specification	Sl. No.17 of Addendum-1
			-	I think the VMS system should support English, Hindi and Malayalam . Please confirm.	Modified. The specification on “ Mounting structure, language support, display, size of VMS, Certifications required, Security requirement of 128 bit or more & Operating conditions ” are additionally included. ISO 27001 2013 standards is being called for. For additional details included Refer Sl. No.17 of Addendum-1
			-	P10 DIP (1R/1G/1B) Full colour displays are recommended. The pitch of the display is not mentioned in the tender. For VMS applications on roads P10 DIP is recommended for the displays.	
			-	The size of the VMS is not mentioned in the tender. Size the locations mentioned here are major junctions and entry exit points to the city, the ideal size of the display will be 3.84 * 1.92m	
			-	Certifications required - CE, FCC, CB, RoHS. These certifications are safety testing certifications and required as a part of regulatory compliance. Certifications of this kind not only ensures quality but also	

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				ensures electronic and electrical safety which is very important as there displays are installed on the roads and public places	
			-	As VMS is for display of information to the public, it is very important that there is high level of data encryption (128 bit or more) to avoid any hacking into the software. Otherwise VMS with low level data encryption is very easy for hackers to decode and display unwanted messages/images/videos in the public. There also is a possibility of hacking into the police control server if a hacker can get into VMS. The recent case of video going viral in one of the metro stations is a current example of low level of data encryption. Inorder to prevent any such unwanted event happening please specify a minimum level of data encryption, current clause does not specify the minimum level. It is recommended to have 128 bit data encryption.	

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Sl. No.	Pre-Bid Queries				Clarifications
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			-	It shall be capable to integrate with other Intelligent Transport Solutions as and when required on availability of protocols. It should have the ability to integrate common content wherever possible.	While the feature is not envisaged in the current RFP, it would be necessary to have features that VMS system can adapt into as the requirements arise.
			-	Critical Recommendation for VMS Many smart cities have already installed automated real time VMS for traffic management in India, which involve least or nil manual intervention. As per current clause a person will have to continuously send messages to VMS which will be very cumbersome, person dependent and unmanageable after some time. Request current clause to be amended to as " The system should also be capable to display warnings, traffic rerouting, live congestion, live journey time, alternate route suggestion, route guidance on real time automated manner as well as manually through PC/Laptop and emergency messages to motorist by using local PC/Laptops." This will reduce manual	For Modified/additional details of Variable Message Sign , Refer Sl. No.17 of Addendum-1 Except for the modifications/ additions made in Addendum, other terms and conditions remain unaltered.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				dependance and make smarter use of VMS in same investment.	
48	-	-	-	<p>Proof of Concept: Real time automated display of information is key aspect of VMS. This must be tested on ground during technical evaluation for compliance and acceptance of bid hence Proof of Concept (PoC) must be introduced in the technical evaluation of Variable Message Signages. PoC should demonstrate automated below listed live functionality without any manual data input- a. Traffic data i. Live Journey time ii. Live Congestion updates iii. Alternate route suggestion b. Live weather updates i. Temperature, Wind speed c. Real time Air Quality data d. Emergency message system through android app e. Static messages i. Safety messages ii. Public messages f. Auto brightness and other features as per the RFP We recommend 1 week PoC to be added as part of technical evaluation and acceptance criteria for VMS.</p>	<p>For Modified details of Variable Message Sign, Refer Sl. No.17 of Addendum-1 Except for the modifications / additions made in Addendum, Technical evaluation Criteria of Clause 1.4.5 and other terms and conditions remain unaltered.</p>

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
49	2.7.5 RLVD Technical Specifications – RLVD Specifications	60	1. Objective b) Generate sufficient evidential proof that the offence has taken place. The system must have in-built tool to facilitate the user to compose detail evidence by stitching video clips from any IP camera in the junction (including but not limited to the red light violation detection camera, evidence camera), and any other surveillance cameras in the vicinity of the spot of incidence. The entire evidence should be watermarked and encrypted to stand the court of law.	Overview Camera is more than enough to showcase the evidences. Stitching of videos clips from many IP cameras may lead to tampering of evidence. Hence, requesting you to remove this requirement.	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, under “ 1. Objective Sl. No. b) ” is modified. For modified specification refer “ Table 3.1 RLVD system Technical Specifications ” of Appendix 3 of Addendum 1
50		60	1. Objective c) To penalize the offenders by issuing Challans to them against the offence with sufficient visual evidence of the offence.	Please clarify whether there are any existing systems for challan. If yes please confirm whether the integration details will be provided by the respective vendor.	An automatic challanning system does not exist in the project area covered under this RFP.
			2. RLVD sub - system is made of the following Components a) Standard IP camera for License	For license plate capture of 2 and 3 wheeler vehicles, 1.3 MP is not sufficient. Generally, min. 2 MP is more than sufficient to perform ANPR functionality. Also, at page 70, 2 MP is	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			<p>Plate Capture:: Standard ONVIF compliant Minimum 1.3 MP IP cameras with 5- 50 MM megapixel lens. The Camera should be able to stream MJPEG video at 25 fps for 1.3 MP resolutions. The system should support all standard brands of cameras satisfying the given specification. One camera should cover at least 3.0 meter width of lane, and capture the license plates of vehicles which violates the traffic /signal and moving at a speed of 0 to 60 km/hr.</p>	<p>asked for ANPR Camera. Hence, we request you to amend the requirement from "1.3 MP" to" 2 MP". We request you to kindly keep speed limit "upto 120 kmph" speed for ANPR & RLVD system in order to prosecute the vehicles that travels at high speed in night time specially.</p>	<p>in RFP, under "2. RLVD sub - system is made of the following Components of Sl. No. a) ,b) and d)" are modified.</p> <p>For modified specification refer "Table 3.1 RLVD system Technical Specifications" of Appendix 3 of Addendum 1</p>
		60 & 61	<p>2. RLVD sub - system is made of the following Components</p> <p>b) Standard IP camera to capture evidential proof At least 2.0 MP IP camera with 5-50 mm megapixel lens is to be used to capture at least 3 snaps showing clearly that the vehicle is crossing the stop line even when the signal</p>	<p>Since single image captured from the evidence camera shows Traffic Light status, Zebra Crossing / Stop line, vehicle and its number plate visible in the single image, which can be shown as an evidence of violation in the court of law, for which min. 2MP resolution is not sufficient and at least 5 MP is required with lens size 3-12 mm. Hence, we request you to kindly change the</p>	



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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			is RED.	evidence camera resolution from min. 2MP to 5MP or better which also does not affect Bandwidth requirement.	
		61	2. RLVD sub - system is made of the following Components d) IR –illuminator The IR-illuminator is required to capture license plate at night time when there is not sufficient illumination at site. The IR- illuminator should be external and should not consume more than 80W to illuminate a lane.	For IR Illuminator, at page 62, 80W power consumption is asked whereas, at page 74, 24W power consumption is asked, which is contradictory. Requesting you to keep 80W as power consumption which is generally required for IR Illuminator. Also, there is no as such synchronization is required between ANPR camera and IR illuminator, hence requesting you to remove the requirement.	
		63	3.Functionality a)It synchronizes among the RED light Status camera, License plate camera and Evidential proof capture camera and store the record in Database with License plate image, image of the vehicle, and at least 3 snaps showing clearly that the vehicle is crossing the stop line while the signal is RED. This can be corroborated with the video	Please confirm who will provide SMS gateway and SMS package services? Is	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, under “ 3. Functionality Sl. No. a) ” is modified by deleting the specific requirement on “ intimating the incidence in real time through SMS/MMS to designated Cell phone ” For modified specification refer



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			clip archived in the VMS system at the control room. It should be able to intimate the incidence in real time through SMS/MMS to designated Cell phone , so that this facility can be used to alert the traffic personnel posted at the next traffic intersection.		“Table 3.1 RLVD system Technical Specifications” of Appendix 3 of Addendum 1
		63	3. Functionality c) The system should provide facility to search for the cases of violations occurred during any specific span of time, and provide a statistical analysis of the number of such incidences occurring during various days of the month, various months of the year in graphical forms. A report of all such incidences should be automatically generated by the system in a spreadsheet (.xls format), and can be automatically emailed to designated officials.	Please confirm who will provide Email gateway and services?	No Change –The specifications / requirements indicated under “3. Functionality Sl. No. c)” is required.. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.18 of Addendum-1 “Table 3.1 RLVD system Technical Specifications” of Appendix 3 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			f) The system should capture standard vehicle's number plates with an accuracy of at least 70% at day time and at least with an accuracy of 60% at night time.	We request you to keep overall reading accuracy be 80% during day time and 70% or better during night time on all vehicles including two & four wheelers, which is visible by human eye for English Alphanumeric number plates excluding cursive fonts for standard and non-standard number plates.	<p>Modified.</p> <p>Refer Sl. No.18 of Addendum-1</p> <p>The specific requirement mentioned in RFP, under “3. Functionality Sl. No. f), g) and h)” are modified.</p> <p>For modified specification refer “Table 3.1 RLVD system Technical Specifications” of Appendix 3 of Addendum 1</p> <p>vehicle's number plates capturing standard is modified pertaining to Sl. No. f)</p> <p>The number of days to be stored is 1 month as indicated in Addendum for Sl. No. g)</p> <p>RLVD incident storage shall be 10000 no's for Sl. No. h)</p>
		64	g) The system should be able to show Live video in multiple Matrix layouts for all the cameras in the system at real time. At least 1x1, 2x2, 3x3, 1+5, 1+7 views must be supported.	Is continuous recording from RLVD camera also required? If Yes, please provide number of days to be stored.	
		64	h) Additionally, the system should be able to store license plates numbers of at least 10,000 suspected vehicles at a time and should generate an Alert is any one of the vehicles is found crossing the stop line (irrespective whether the signal is GREEN or RED) in form of Video popup at the Monitor and/or SMS on Cell phones. SMS on Cell phones	We understand that RLVD incident storage shall be 10000 no's	

Sl. No.	Pre-Bid Queries				Clarifications
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			should be sent using cellular network only.		
51	AUTOMATIC NUMBER PLATE RECOGNITION SOFTWARE	68	8. Centralized Video Management Module 1. Continuous recording of every lane video irrespective of presence of vehicle.	Please confirm how many days recording shall be stored from ANPR camera's.	Recordings will have to be stored for 30 days. Refer "Table 3.2 ANPR Software Specifications" of Appendix 3 of Addendum 1
		69	ANPR Camera & IR Specs For the RLVD System 1. The Camera, IR, Lens, Housing cabinet should be from same OEM	It will restrict one OEM, Hence request you remove it should be from same OEM. If the OEM meets the required RFP specification then it should be considered. There are no such OEMs who manufacture IR and camera together. You are suggested to remove this clause. Request you to accept the different OEM Component such as external IR Illuminator. Because all component available with single OEM is preferable to particular OEM. So Requesting you to accept the same	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on "The Camera, IR, Lens, Housing cabinet should be from same OEM" are deleted. For modified specification refer "Table 3.3 ANPR Camera & IR Specifications For the RLVD System" of Appendix 3 of Addendum 1

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	ANPR Camera & IR Specs For the RLVD System	69	ANPR Camera & IR Specs For the RLVD System 2. Should have head light filter mechanism	This is depending on the Lux level of the camera; hence request you remove this point. The built-in feature of camera should take care of this.	No Change –The specifications / requirements indicated on “ Should have head light filter mechanism and Head light compensation mechanism ” are required. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.18 of Addendum-1 “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1
			ANPR Camera & IR Specs For the RLVD System 3. Head light compensation mechanism	This is depending on the Lux level of the camera; hence request you remove this point. Which is already mentioned in the camera Lux level specification	
			ANPR Camera & IR Specs For the RLVD System 4. Should come with 1/2 inch sensor - image clarity increases and covers more area	The 1/2 Inch sensor is outdated, hence please specify 1/2 inch and above	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on “ Should come with 1/2 inch sensor - image clarity increases and covers more area ” are modified. For modified specification refer “Table 3.3 ANPR Camera & IR Specifications For the RLVD System”

Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
					of Appendix 3 of Addendum 1
			ANPR Camera & IR Specs For the RLVD System 6. 12 - 40mm Lens	The Standard Lens size for ANPR system is 5-50mm or 8-50mm. Please refer all the RFP release so for hence please specify 5-50mm or better	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on “ 12 - 40mm Lens ” is deleted. For modified specification refer “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1
	AUTOMATIC NUMBER PLATE RECOGNITION SOFTWARE ANPR Camera & IR Specs For the RLVD System	70 to 73	Image Sensor =>1/1.9" Progressive CMOS	(i) The 1/2 Inch sensor is outdated, hence please specify 1/2 inch and above (ii) The mentioned 1/1.9" Progressive CMOS is not a standard format. Standard format is 1/3". We request you to kindly amend the requirement with standard format.	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on “ Image Sensor ” is modified. For modified specification refer “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Focal Length =>f = 12 ~ 40 mm	(i) The Standard Lens size for ANPR system is 5-50mm or 8-50mm. Please refer all the RFP release so for hence please specify 5-50mm or better	<p>Modified.</p> <p>Refer Sl. No.18 of Addendum-1</p> <p>The specific requirement mentioned in RFP, on “Focal Length”, “Aperture” & “Field of view” is deleted.</p> <p>For modified specification refer “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1</p>
			Aperture =>F2.36 ~ F2.44	(i) Aperture F 2.36~F2.44 is not standard. F 1.4 to F1.6 is standard with all OEM. Hence request you to change to F1.4 or better, so that more standard OEM shall participate	
			Field of view 10.2° ~ 30° (Horizontal) 8° ~ 22° (Vertical) 12° ~ 38° (Diagonal)	(i) Field of view could change based on the field conditions like position of gantry/cantilever for the ANPR system and road width etc. Hence request you to remove this parameter	
			WDR Technology :: WDR Pro 100db of better	(i) 100 dB WDR is not required because ANPR Cameras works in a limited field of view and supported by IR illuminator in night time. Hence, requesting you to keep WDR	No Change –The specifications / requirements indicated on “ WDR Technology ” are required. Specifications indicated in RFP holds good. The same is retained in

Sl. No.	Pre-Bid Queries				Clarifications
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				requirement "min. 90 DB" only	Addendum also. Refer Sl. No.18 of Addendum-1 "Table 3.3 ANPR Camera & IR Specifications For the RLVD System" of Appendix 3 of Addendum 1
			Pan/tilt/zoom Functionalities :: ePTZ: 48x digital zoom (4x on IE plug-in, 12x built in)	(i) ANPR camera works in a limited field of view, hence this functionality is not required and should be removed. (ii) This feature is not required for the Fixed box cameras.	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on "Pan/tilt/zoom Functionalities" is deleted. For modified specification refer "Table 3.3 ANPR Camera & IR Specifications For the RLVD System" of Appendix 3 of Addendum 1
			Pan/tilt/zoom Functionalities	The ANPR once fixed with the angle after calibration for optimum number plate detection, they setup shall be modified. Hence this feature is not required. Please remove this feature. it adds additional cost to the project.	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Maximum Frame Rate 30 fps @ 1920 x1080 60 fps @ 1920 x1080 (In one-stream mode only) (In both compression mode)	(i) It is better to have 60 FPS, because the camera also used for Speed detection. The user should have flexibility to change the frame rate and resolution for individual streams. Hence please change the Frame rate to 60 FPS and individual streams can be user configurable	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on “ Maximum Frame Rate ”, “ Maximum Streams ” is modified. For modified specification refer “ Table 3.3 ANPR Camera & IR Specifications For the RLVD System ” of Appendix 3 of Addendum 1
			Maximum Streams 2 simultaneous streams	(i) Now all the cameras comes with 4 Streams and each stream can be individually configurable. Hence change to 4 streams	
			Dynamic Range :: 100 Db or better	(i) The ANPR once fixed with the angle after calibration for optimum number plate detection, they setup shall be modified. Hence this feature is not required. Please remove this feature. it adds additional cost to the project.	Modified. Refer Sl. No.18 of Addendum-1 The specific requirement mentioned in RFP, on “ Dynamic Range ” is deleted. For modified specification refer “ Table 3.3 ANPR Camera & IR Specifications For the RLVD System ” of Appendix 3 of Addendum 1

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			Compression :AAC, G.711, G.726	(i) The Audio standard G.711 more than enough for the Audio Alarms. Hence request you to change to G.711 or G.726	No Change –The specifications / requirements indicated on “Compression” are required. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.18 of Addendum-1 “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1
			Interface :: External microphone input, Audio output, Video motion detection :: Triple-window video motion detection, Alarm Triggers :: Video motion detection, manual trigger, digital input, periodical trigger, system boot, recording notification, camera tampering detection, audio detection	i) These features are not required in ANPR system. Requesting you to remove the requirement.	No Change –The specifications / requirements indicated on “Interface” “Video motion detection” and Alarm Triggers are required. Specifications indicated in RFP holds good. The same is retained in Addendum also. Refer Sl. No.18 of Addendum-1 “Table 3.3 ANPR Camera & IR Specifications For the RLVD System” of Appendix 3 of Addendum 1



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			<p>Safety Certifications :: CE, LVD, FCC Class B, VCCI, C-Tick, UL</p>	<p>(i) Requesting you to keep the certification as CE/FCC/UL which is generally asked for ANPR cameras. The standard certifications are CE,UL and FCC class B. Hence request you remove all others</p> <p>(ii) C-Tick certificate is for Electromagnetic Compatibility (EMC), C Tick are a subset of the CE for EMC. CE certificate is much more extensive than C Tick as it covers a broad range of product safety. Request you to remove C-Tick from certification.</p>	<p>Modified.</p> <p>Refer Sl. No.18 of Addendum-1</p> <p>The specific requirement mentioned in RFP, on “Safety Certifications”, “Operating temperature” and “IR Illuminator” is modified.</p> <p>For modified specification refer Table 3.3 ANPR Camera & IR Specifications For the RLVD System of Appendix 3 of Addendum 1</p>
			<p>Operating temperature:</p> <p>Starting Temperature: 0°C ~ 60°C (32°F ~ 122°F)</p> <p>Working Temperature: -10°C ~ 60°C (14°F ~ 122°F)</p>	<p>Operating temperature is 50 Degree C is sufficient and the same is asked in most of the RFP. Hence request you to change the operating temperature to -20°C – 50 °C or better</p>	
			<p>IR Illuminator 2 x 24W IR Illuminators with min 100 meters range @10 dig beam range. IP66 & IK10 compliance. IR illuminators should be part of same camera system with proper camera</p>	<p>ANPR system requires only one IR illuminator and it can be built-in in the camera or external. Please refer RFP released so for. Hence request you change to one IR illuminator with min 100 meter, it</p>	

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	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			sync.	could be built-in camera/ external	<p>Modified.</p> <p>Refer Sl. No.19 of Addendum-1</p> <p>The requirement on “Audible Alarm for Pelican Signal” is included.</p> <p>For details refer “4.3 Audible Alarm for Pelican Signal” of Appendix 4 of Addendum 1</p>
			-	<p>Audible Alarm for Pelican controller -All pedestrian crossings shall have an audible alarm system which switches on at the beginning of the pedestrian green phase and switches off at the end of the pedestrian green phase: This is under-specified. The Pelican controller need to generate four tones (1) Idling time – Red signal and no demand registered (2) Wait time – Red signal and demand registered (3) Safe Crossing time – Pedestrian Green signal (4) Do not cross time – Safe crossing time expired. Pedestrians on the road shall clear the road. Additional interface (Smart Cane / RFID) for differently able to demand for more crossing time will be an added feature.</p>	
52	2.7.6 Pelican Signals	75 to 77	-	<p>A number of the proposed pelican signals are situated close to ATCS signals. Please confirm that the pelican signals should be connected to ATCS software so that signal timing synchronization can be achieved across normal signals and pelican signals?</p>	<p>Pelican signals to be connected to the Control Centre</p> <p>Refer Sl. No.19 of Addendum-1</p> <p>For details refer “4.1 Features” of Appendix 4 of Addendum 1</p>

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			-	<p>Metro data integration: Considering future extensibility requirements in mind, future pelican signals could be located near Metro stations. At such pelican signals, the pedestrian phase could run for a longer duration immediately after the arrival of a metro train during peak hours. Please confirm that the ATCS system, integrated with pelican signals, should be capable of accepting a data feed from Metro's traveller information system API and dynamically change the timing of pedestrian phase?</p>	Metro data integration is not envisaged at the moment but could be integrated at a later date
			-	<p>LED based traffic lamps can also be operated on solar energy as these require 24VDC for operating the same. · Temperature withstand wide variations of ambient temperature +10 to 70 deg Celsius · Power source solar – 24+/-10DC · Power factor >0.9 · Operating Temperature -10 to +70Deg Celsius</p> <p>Detailed specs of Pelicon Controller mentioning input/output voltages and other feature/capability is missing - Please clarify</p>	<p>Modified.</p> <p>Refer Sl. No.19 of Addendum-1</p> <p>For details refer “Table 4.1 LED Display” of Appendix 4 of Addendum 1</p>

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				whether Pelicon Controllers are solar based or 230VAC operation as mentioned under power source on pg 77? - Power factor is applicable for AC inputs only whereas LED Input for RED/GREEN combined PED is mentioned as 24VDC. - Operating temperature input is contradictory	
			LED Signal display units	LED display unit specifications Please clarify why the LED specifications are different for pelicans and other traffic signals? Kindly suggest the same technical specifications for LEDs for both types of traffic signals.	
				Pelican Signal – Combined Red and Green There is no any certification for as such product, thus request to ammend with Regular EN12368 certified lights with Pedestrain Symbols.	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
53	2.7.6 Pelican Signals Street Furniture (Signal Poles)	77	Six Meters long 100mm GI Class B pole with FRP pole cap, Junction box and bend GI pipe for cable entry. For vehicular and pedestrian signals mounted 3.0 meters above the ground. Nine meters long 125mm GI Class B Cantilever pole with 3 meters horizontal over hang, junction box and bend GI pipe for cable entry. For vehicular signals at 3.0 meters height on the bottom portion and 7.0meters height on overhang portion.	FRP pole cap pertains to a specific manufacturer and is not a standard. Input on Type of pole Foundation along with length of pole below ground level, base plate, surface treatment/ finish/colour etc. to be made available in typical drawing format	Modified: Refer Sl. No.19 of Addendum-1 For details refer “4.6 Signal Pole” of Appendix 4 of Addendum 1
54	-	-	-	CCC platform: The description about the functionality required in the CCC software is completely missing. Could you please provide the functional requirements for the CCC software?	Refer Sl. No.15 of Addendum-1 The requirements is indicated Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1
	-	-	-	ATCS platform: Considering future extensibility requirements, please clarify if the ATCS server software should support the following functionalities? 1. The ability to dynamically change signal plans based on	

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				user-configured rules that use near-real-time traffic signal data 2. The ability to deploy alternate, custom, traffic control algorithms	
	-	-	-	ATCS platform: Considering future extensibility requirements, please clarify if the ATCS software should be capable of exporting data and having integration with commonly used transport modelling software?	
	-	-	-	In-station (ATCS) software The ATCS system should be able to generate operational alerts enabling traffic managers in the control centre so that they can implement manual interventions to ATCS control. In this regard, please confirm if the following types of alerts should be generated by the ATCS system? 1. The system should be able to automatically detect traffic congestion and generate alerts 2. The system should be able to continuously compare near-real-time traffic detector data, compare it against average	Yes Refer Sl. No.15 of Addendum-1 The requirements is indicated Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				data for the given time of the day and day of the week (traffic data profile), and generate alerts if abnormal data are detected	
	-	-	-	In-station (ATCS) software Considering future extensibility requirements, please clarify if the ATCS system should be able to use travel time data from ANPR (and similar technologies such as WiFi, Bluetooth and RFID) devices to dynamically modify/optimize traffic signal timings?	Not envisaged in the present RFP.
	-	-	-	In-station (ATCS) software Considering future extensibility requirements, please clarify if the ATCS system should support industry standard communication protocols such as UTM/UG405, NTCIP or OCIT for communication between ATCS software and traffic signal controllers?	ISO 27001-2013 is being called for. Refer Sl. No.15 of Addendum-1 The requirements is indicated Under “1.9 Area Traffic Control System Application Software” of Appendix 1 of Addendum 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	-	-	-	In-station (ATCS) software Considering future extensibility requirements, please clarify if the ATCS system should be provide APIs for integration with other ITS systems in the eco-system that use industry standard communication standards for system-to-system communication such as UTM XML, NTCIP (XML), Datex-II or tpegML (for traveller information)?	
	-	-	-	In-station (ATCS) software or CCC platform Considering future extensibility requirements, please clarify if the ATCS system should be able to automatically set messages on VMS boards for providing dynamic route guidance?	Not envisaged in the present RFP.
	-	-	-	In-station (ATCS) software or CCC platform Considering future extensibility requirements, please clarify if the ATCS system (or the ITMS platform) need to be able to access near-real-time operational data from the bus ITS system (for KSRTC,	Yes Refer Sl. No.15 of Addendum-1 The requirements is indicated Under “1.9 Area Traffic Control System Application Software” of Appendix 1

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				KUSRTC, private and Metro Feeder buses) and dynamically alter signal timings to implement concepts such as Priority Bus Corridors (PBC)?	of Addendum 1
	-	-	-	<p>Automatic Traffic Counters-cum-Classifiers (ATCC)</p> <p>1. Keeping in mind the ITS Masterplan, it is important to obtain detailed traffic flow data from a small number of locations on major streets. Such data is critical to building and calibrating offline traffic models. Keeping this in mind, please add adequate number of mid-link ATCCs. 2. The ATCS software should be capable of accessing and storing ATCC data in the data archive. 3. The ATCS system should be able to continuously monitor ATCC data, compare against the average values for the given time of the day and day of the week, and generate alerts 4.The ATCS software should also be able to make use of near-real-time ATCC data to dynamically change signal timings. Do the junctions mentioned in the tender currently have signals? If yes, could the contractor re-</p>	<p>For details Refer Sl. No.15 of Addendum-1</p> <p>The requirements is indicated Under “1.9 Area Traffic Control System Application Software”of Appendix 1 of Addendum 1</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				use existing on-street components where possible?	
	-	-	<p>Payment Terms</p> <p>1. 90% payment of the supply value of equipment will be made on submission of following documents: a. Certificate from the Purchaser / Employer of having receipt of Performance Bank Guarantee. b. Invoice in duplicate. c. Certificate from purchaser/ consignee indicating successful Installation, testing, commissioning, Training of equipment along with necessary operational training to its staff at the site as indicated in purchase order. d. Insurance Copy (transit plus storage). e. Packing list.</p> <p>2. Out of 10% Balance amount: a) 5% will be released at the end of first year of DLP period after deducting if any charges for delay in attending fault, as penalty and b) 5% will be released at the end of second year of DLP and Final</p>	<p>As the work has high CAPEX Cash flow is negative. We request you to allow running bill after installation of each junction or to amended as Payment Terms 1. 15% payment of the supply value as advance against the submission of the performance security. 2. 65% payment of the supply value of equipment will be made on submission of following documents: a. Certificate from the Purchaser / Employer of delivery of the equipment at site. b. Invoice in duplicate. c. Insurance Copy (transit plus storage). d. Packing list. 3. 10% payment against certificate from purchaser/ consignee indicating successful Installation, testing, commissioning, Training of equipment along with necessary operational training to its staff at the site as indicated in purchase order. 4. Out of 10% Balance amount: a) 5% will be released at the end of first year of DLP period after deducting if any charges for delay in attending fault, as penalty and b)</p>	<p>Modified.</p> <p>Refer Sl. No. 20, 21 and 22 of Addendum-1</p>



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			Acceptance Certificate after deducting any charges for delay in attending fault, as penalty. 3. Payment of O & M charges shall be made on quarterly basis at the end of the quarter against the consignee's certificate indicating that firm has successfully maintained the equipment during the claim period. Payment should be followed strictly as per terms and conditions of Tender Documents and Tax as applicable will be deducted.	5% will be released at the end of second year of DLP and Final Acceptance Certificate after deducting any charges for delay in attending fault, as penalty. 3. Payment of O & M charges shall be made on	
55	14.1 14.1 Payment terms:	86	Payment Terms 1. 90% payment of the supply value of equipment will be made on submission of following documents: a. Certificate from the Purchaser / Employer of having receipt of Performance Bank Guarantee. b. Invoice in duplicate. c. Certificate from purchaser/ consignee indicating successful Installation, testing, commissioning, Training of equipment along with necessary operational	Request to modify the clause as: 1. 30% payment of the supply value of equipment will be made on after 30% implementation completed. 2. Next 30% payment of the supply value of equipment will be made on after 60% implementation completed. 3. Next 35% payment of the supply value of equipment will be made on after Go-Live.	Modified. Refer Sl. No. 20, 21 and 22 of Addendum-1



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
			training to its staff at the site as indicated in purchase order. d. Insurance Copy (transit plus storage). e. Packing list.	4. Balance 5% will be released at the end of first year.	
			2. Out of 10% Balance amount: a) 5% will be released at the end of first year of DLP period after deducting if any charges for delay in attending fault, as penalty and b) 5% will be released at the end of second year of DLP and Final Acceptance Certificate after deducting any charges for delay in attending fault, as penalty. 3. Payment of O & M charges shall be made on quarterly basis at the end of the quarter against the consignee's certificate indicating that firm has successfully maintained the equipment during the claim period. Payment should be followed strictly as per terms and conditions of Tender Documents and Tax as applicable will be deducted.	Please modify as follows: 90% payment of the supply value of equipment will be made on submission of following documents: a. Certificate from the Purchaser / Employer of having receipt of Performance Bank Guarantee. b. Invoice in duplicate. c. Insurance Copy (transit plus storage). d. Packing list.	
				Payment Terms mentioned on Page no. 90 is contradictory to payment terms mentioned on page no. 86. Request you to kindly clarify on the same.	
56	3.2.2 – payment	90	Payment Terms	There are two payment terms mentioned on the referred pages of tender document.	



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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
	terms			Please clarify which one stands valid for subject tender. Further, we also understand that payment for O&M shall be released quarterly. Please clarify.	
		Page 86 (Cl. 14.1) & Page 90 (Cl. 3.2.2)	75% of Contract Rate/25% of Contract Rate /5% of Contract Rate	Inputs provided under clause 14.1/a,b,c on page 86 and under clause 3.2.2 on page 90 are different. Please clarify	
57	GCC 3.13	97	Risk Purchase In case the Successful Bidder fails to deliver the project due to inadvertence, error, collusion, incompetency, termination, misconstruction or illicit withdrawal, the MANAGING DIRECTOR, CSML reserves the right to procure the same or similar services from the alternate sources at risk, cost and responsibility of the Successful Bidder.	Request you to kindly remove this clause.	No Change. Clause 3.13 at Page 97 holds good.
58	-	-	-	2. We will be grateful if the required functional specifications can be summarized in a compliance matrix that the bidders can fill out. This will eliminate any ambiguity in the functional specifications requested by	No Change. Existing Clauses of RFP holds good unless otherwise specified.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
				the consultant and give confidence to the bidders that the solution proposed by them is compliant.	
59	BOQ & drawings	-	3Arm/4Arm/Pelicon Junction Typical layout with itemized quantities	Typical Junction layout with itemized quantities of LED Aspects, Timers, Detection Cameras, Standard/Cantilever Poles etc. as well as Control Room items shall provide level playing field for all prospective bidders. Kindly provide the requested details	Details provided in Page 32 of RFP under 2.2 Component Deployment
60	-	-	-	Specifications & BOQ for ICT Product (servers, storage, backup, security, recording, video wall, workstations, desktops, printers, command control centre equipments, field network equipments) are missing, please provide the same	For specifications / details refer Clause No. 2.3.7. Control Centre, Under "2. Scope of Work and Terms of Reference". Also Refer Sl. No.14 of Addendum-1 BOQ item of work is to be quoted under item No. 1.09.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
60	-	-	-	Limitation OF Liability: The RFP is silent on the Limitation Of Liability of the System Integrator. Request you to kindly add that "contained, the total liability of the SI, is restricted to the total value of the contract and SI is not liable for any third party claims."	Modified. Refer Sl. No.23 of Addendum-1
61	-	-	-	Request for Addition In RFP, there is no BOM or Price Bid format is mentioned. We request you to kindly incorporate the BOM.	Please refer “ Annexure 3.2 Financial Proposal Format & Instructions ”. As indicated Bill of Quantities (BOQ) is uploaded separately as Microsoft excel file. Bidder should provide all prices in this BOQ excel file as per instructions detailed in Annexure 3.2
62	-	-	-	Additional Clause Please provide us the terms / applicable charges for Reinstatement and Right Of Way.	Reinstatement costs are as per prevailing approved KMC / PWD / National Highway rates. The Contractor shall bear all costs associated with road cutting, all restoration etc complete.

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Sl. No.	Pre-Bid Queries				Clarifications
	RFP Document Reference (Clause No.)	RFP Document Reference (Page No.)	Content of the RFP requiring clarification	Change Requested/ Clarification required	
63	-	-	Last Date of submission of Online Bids	<p>Extension of Due Date of Bid Submission</p> <p>Keeping in view of the scope of work and reply to pre-bid queries we request you to kindly extend the due date of bid submission We would request for an extension of time for tender submission by at least 2 weeks from the date of submission. We hope, you would grant our request in order to ensure fair & competitive participation in the tender.</p>	<p>Modified.</p> <p>Refer latest Corrigendum Published on website. www.csml.co.in, www.kochimetro.org and www.etenders.kerala.gov.in, - under organization name – “Kochi Metro Rail Ltd.</p>

Firm / agency are hereby once again reminded that, offer / proposal shall be submitted keeping in mind the clarifications & addendum issued.

Sd/-
Managing Director
Cochin Smart Mission Limited

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ADDENDUM-I

For

Request for Proposals (RFP) for Implementation of Integrated Traffic Management System in Kochi Under Smart City Mission

(Tender ID: 2018_KMRL_195508_1)

(RFP: CSML/Mobility/RFP/001

Dated: 09/03/2018)

Pursuant to **Clause 1.1.7 of Instruction to Bidders**, following addenda is issued and it shall form part of the RFP proposal / Bid document.

1	<p>In Clause No. 1.3.2. Bid submission Instructions, in para 4 of Technical Proposal, Under “1. Instruction to Bidders”, Page 15– ‘Sentence published as’ “Pre-Qualification Proposal along with supporting documents should be submitted through online bid submission process <u>and also in Hard Copy as mentioned in the NIT.</u></p> <p><u>‘to be read as’</u></p> <p>“Pre-Qualification Proposal along with supporting documents should be submitted through online bid submission process. <u>Hard copy of Original Bank guarantee (towards EMD) and Power of attorney shall be submitted in the Tender Box at CSML Office, 10th Floor, Revenue Towers, Park Avenue, Ernakulam – 682011 before the due date and time as per NIT / latest Corrigendum if any.”</u></p>
2	<p>In Clause No. 1.4.4. Pre-Qualification Criteria-- Sl. No. PQ2-Turnover, under the column “Specific Requirements” at Page 22– ‘Sentence published as’</p> <div data-bbox="277 1514 1474 1650" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>The Sole Bidder or the Lead Member of consortium should have average annual Turnover of Rs. 9 Crore for last 3 audited financial years (2014-15, 2015-16 <u>a5nd</u> 2016-17) ending March 2017.</p> </div> <p><u>‘to be read as’</u></p> <div data-bbox="277 1745 1474 1881" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>“The Sole Bidder or the Lead Member of consortium should have average annual turnover of Rs.9 crores for last 3 audited financial years (2014-15, 2015-16 <u>and</u> 2016-17) ending March 2017.</p> </div>

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3	<p>In Clause No. 1.4.4. Pre-Qualification Criteria- Sl. No. PQ3 Experience, under the column “Specific Requirements” at Page 22 & 23– <u>‘Sentence published as’</u></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>“The Sole Bidder or Lead Member or any member of its consortium should have successfully supplied and implemented (1) at least 1 (One) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 24 Crores OR (2) at least 2 (Two) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores OR (3) at least 3 (Three) Integrated Traffic Management System (ITMS) with the project cost not less than <u>Rs. 15 Crores</u> in last 5 (Five) financial years (FY <u>2012-13</u>, 2013-14, 2014-15, 2015-16 and 2016-17)”</p> </div> <p><u>‘to be read as’</u></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>“The Sole Bidder or Lead Member or any member of its consortium should have successfully supplied and implemented (1) at least 1 (One) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 24 Crores OR (2) at least 2 (Two) Integrated Traffic Management System (ITMS) with the project cost not less than Rs. 15 Crores <u>each</u> OR (3) at least 3 (Three) Integrated Traffic Management System (ITMS) with the project cost not less than <u>Rs. 12 Crores each</u> in last 5 (Five) financial years (FY 2013-14, 2014-15, 2015-16, 2016-17 and <u>2017-18</u>)”</p> </div>
4	<p>In Clause No. 1.4.4. Pre-Qualification Criteria of Sl. No. PQ5- Certifications, Under “1. Instruction to Bidders”, Page 23– <u>‘Sentence published as’</u> “The Sole Bidder or the Lead Member of consortium should have a valid ISO 9001:<u>2008 or similar quality certification.</u>”</p> <p><u>‘to be read as’</u></p> <p>“The Sole Bidder or the Lead Member of consortium should have a valid ISO 9001:<u>2015 and ISO 27001:2013</u>. Also, the Lead bidder (System Integrator) should be CMM level 5I/<u>ISO 9001:2015 certified.</u>”.</p> <p>Also, Sl.No.7 of Annexure 1.1 - Check-list for the Pre-Qualification Proposal, at page 100-<u>‘Sentence published as’</u> “Valid copy of the ISO 9001:<u>2008 or higher certification</u>”</p> <p><u>‘to be read as’</u></p> <p>“Valid copy of ISO 9001:<u>2015 and ISO 27001:2013 certifications</u>. Also CMM level 5I/<u>ISO 9001:2015 certifications</u>”.</p>

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5	<p data-bbox="269 258 1495 331">In Clause No. 1.4.5. Technical Evaluation Criteria- Turnover, under the column “Criteria” at Page 24– <u>‘Sentence published as’</u></p> <div data-bbox="277 373 1479 514"><p data-bbox="285 394 1471 468">Financial Capability - Annual Turnover - Prime bidder’s average annual turnover for the period FY <u>2012-13, 2013-14, 2014-15, 2015-16 and 2016-17</u></p></div> <p data-bbox="277 531 456 562"><u>‘to be read as’</u></p> <div data-bbox="277 604 1479 745"><p data-bbox="285 625 1471 699">Financial Capability - Annual Turnover - Prime bidder’s average annual turnover for the period FY <u>2014-15, 2015-16 and 2016-17</u></p></div>
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6

In Clause No. 1.4.5. Technical Evaluation Criteria-Table pertaining to ‘Experience in Supply & Implementation of VA Signals’, under the columns “Criteria” and “Method of allotting marks for technical score” at Page 24– ‘Sentences published as’

Criteria	Maximum Marks (Weightages)	Method of allotting marks for technical score
Experience in Supply & Implementation of <u>VA Signals</u> Copy of the Client Certificate as a proof has to be attached	15 Marks	Sole bidder / any member of Consortium having carried out <u>20 VA Signals</u> or above will be awarded 15 marks and other bidders will be allocated marks proportionately.\ E.g. Bidder with experience of <u>10 VA Signals</u> will get 7.5 marks

‘to be read as’

Criteria	Maximum Marks (Weightages)	Method of allotting marks for technical score
Experience in Supply & Implementation of <u>ATCS / VA Managed Signals</u> Copy of the Client Certificate as a proof has to be attached	15 Marks	Sole bidder / any member of Consortium having carried out <u>20 ATCS / VA Managed Signals</u> or above will be awarded 15 marks and other bidders will be allocated marks proportionately. E.g. Bidder with experience of <u>10 ATCS / VA Managed Signals</u> will get 7.5 marks

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7	<p>In Clause No. 1.4.5. Technical Evaluation Criteria-Table pertaining to ‘Experience of implementing Control Centre with Surveillance system’, under the columns “Criteria” and “Method of allotting marks for technical score” at Page 24– <u>‘Sentences published as’</u></p>		
Criteria	Maximum Marks (Weightages)	Method of allotting marks for technical score	
<p>Experience of implementing <u>Control Centre with Surveillance system</u></p> <p>Copy of the Client Certificate as a proof has to be attached.</p>	15 Marks	<p>Sole bidder / any member of Consortium having implemented <u>Control Centre with Surveillance system</u> in 2 cities or above will be awarded 15 marks and other bidders will be allocated marks proportionately.\</p> <p>E.g. Bidder with experience of implementing 1 <u>Control Centre with Surveillance system</u> will get 7.5 marks</p>	
<u>‘to be read as’</u>			
Criteria	Maximum Marks (Weightages)	Method of allotting marks for technical score	
<p>Experience of implementing <u>Control Centre with either (i) ATCS or (ii) V A Signals or (iii) Surveillance system</u></p> <p>Copy of the Client Certificate as a proof has to be attached.</p>	15 Marks	<p>Sole bidder / any member of Consortium having implemented <u>Control Centre with either (i) ATCS or (ii) VA Signals or (iii) Surveillance system</u> in 2 cities or above will be awarded 15 marks and other bidders will be allocated marks proportionately.</p> <p>E.g. Bidder with experience of implementing 1 <u>Control Centre with either (i) ATCS or (ii) VA Signals or (iii) Surveillance system</u> will get 7.5 marks</p>	

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8	<p>In Clause No. 1.4.6. Eligible Goods and Services, and OEM Criteria of Sl. No. d, Under “1. Instruction to Bidders”, Page 25– ‘Sentence published as’ “The OEM for all active components should give a declaration that products or technology quoted are neither end-of-sale nor end-of-life as on the date of installation and commissioning and are not end-of-support till the successful completion of O&M period of the project as Annexure 2.4 in the RFP”</p> <p><u>‘to be read as’</u></p> <p>“The OEM should give a declaration that all products or technology quoted are neither end-of-sale nor end-of-life as on the date of installation and commissioning and are not end-of-support till the successful completion of O&M period of the project as Annexure 2.4 in the RFP”</p>
9	<p>In Clause No. 2.2. Component Deployment, Under “2. Scope of Work and Terms of Reference.”, Page 34– ‘Sentence published as’ “The control centre is proposed to be linked to the equipment on field through available MPLS VPN Fibre network.”</p> <p><u>‘to be read as’</u></p> <p>“The control centre is proposed to be linked to the equipment on field through available MPLS VPN Fibre network <u>or through 4G or any other option that is specific to the system design.</u>”</p>
10	<p>In Clause No. 2.3.3. Area Traffic Management, Under “2. Scope of Work and Terms of Reference”, Page 35– ‘Sentence published as’</p> <p>“The Traffic Signal Controller should be capable of being operated in either Fixed Time mode, Demand Actuated Mode, <u>Forced Flash Mode etc</u>”</p> <p><u>‘to be read as’</u></p> <p>“The Traffic Signal Controller should be capable of being operated in either Fixed Time mode, Demand Actuated Mode, <u>or as part of an ATCS system.</u></p> <p><u>After analysing the overall traffic flow in a corridor or an area through appropriate software, the central control station updates the optimised time plan dynamically to each and every junction controller through Internet Protocol based network communication link</u></p> <p><u>The status of individual junction controller, and reports on the flow and optimizations can be obtained at the control centre”</u></p>

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11	<p>In Clause No. 2.3.3. Area Traffic Management, Under “2. Scope of Work and Terms of Reference”, Page 35– ‘<u>Sentence published as</u>’</p> <p>“For Kochi it is recommended that the <u>detectors</u> through video analytics <u>is pursued (as part of the VA signal system)</u>”</p> <p><u>‘to be read as’</u></p> <p>“For Kochi it is recommended that the <u>vehicle detection is</u> through video analytics <u>or Radar technology or Thermal imaging (non-intrusive system as part of the VA signal system)</u>”</p>
12	<p>In Clause No. 2.3.4. PTZ and Fixed Camera’s, Under the heading “2.3. Description of Equipment”, in “2. Scope of Work and Terms of Reference.”, Page 36– ‘<u>Sentence published as</u>’ “<u>Traffic Surveillance cameras essentially provide a bird’s eye view of the traffic situation. Live feeds from the cameras installed at strategic locations at intersections, are obtained at the TMC and traffic violations can be booked immediately. These cameras can also be used to monitor any unforeseen situation at any location such as major accidents, traffic disruption due to any security considerations. Appropriate immediate action can then be taken by the traffic police.</u>”</p> <p><u>‘to be read as’</u></p> <p>“<u>Apart from Traffic Surveillance cameras providing a bird’s eye view of the traffic situation, most modern day camera’s come with edge analytic features that enable the detection of over speeding, lane changing, stop line violation and rash driving. These camera’s coupled with Automatic Number Plate Recognition can help in booking violations automatically. Live feeds from the cameras installed at strategic locations also through manual means can book helmetless driving, driving without seat belt, talking on mobile while driving etc. These cameras can also be used to monitor any unforeseen situation at any location such as major accidents, traffic disruption due to any security considerations. Appropriate immediate action can then be taken by the traffic police.</u>”</p>
13	<p>In Clause No. 2.3.5. RLVD, Under “2. Scope of Work and Terms of Reference”, Page 36– ‘<u>Sentence published as</u>’</p> <p>“The RLVD Cameras are installed primarily to capture two key violations i.e. over speeding and red signal light jumping. The camera uses Digital Technology to capture images of offending vehicles”</p> <p><u>‘to be read as’</u></p> <p>“The RLVD Cameras are installed primarily to capture two key violations i.e. over speeding and red</p>

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	<p>signal light jumping. The camera uses Digital Technology to capture images of offending vehicles. <u>Appropriate certifications by an Indian competent authority will be needed to enable the system to be acceptable by the court of law.</u></p>
14	<p>In Clause No. 2.3.7. Control Centre, Under “2. Scope of Work and Terms of Reference”, Page 37– ‘Sentence published as’</p> <p>“It integrates the following components,</p> <ul style="list-style-type: none"> • <u>Traffic signals – Receiving real time information/data</u> • <u>Traffic Surveillance camera – Beaming live images</u> • <u>RLVD camera Recording and beaming traffic violation data</u> • <u>VMS to give real time traffic information to public</u> • Challaning of Violations” <p><u>‘to be read as’</u></p> <p>“It includes the following functions,</p> <ul style="list-style-type: none"> • <u>Receiving real time information/data from VA traffic feeds including storage of the same</u> • <u>Provide control of traffic signal controller from the Control Center to enable corridor management/ATCS overrides</u> • <u>Processing of ANPR camera images</u> • <u>Traffic Surveillance camera – Beaming live images to allow for manual capture of violations,</u> • <u>A video wall for observation and discussion of traffic management, violations and incidents for appropriate actions</u> • <u>Provide controls for the PTZ camera’s</u> • <u>RLVD traffic violation data processing and storage</u> • <u>VMS to give real time traffic information to public</u> • <u>Run the ATCS software to optimize traffic flow</u> • Challaning of Violations” <p><u>It is planned to have a video wall 2X3 matrix LED 55 inch cubes</u></p> <p><u>It is proposed to include 8 manual control desks with monitors to control the Surveillance cameras for</u></p>

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	<p><u>violation detections</u></p> <p><u>The control centre will include servers or be provided with an enterprise to control the Video wall, the Traffic signals, and the violation detection camera's (PTZ & edge processed data), the RLVD system, the VMS, and run the ATCS software.</u></p> <p><u>The control centre will include an Automated Challaning centre.</u></p> <p><u>The data from the Cameras and devices shall be transmitted on dedicated MPLS VPN using GPON, 4G or Wi-Fi with inbuilt redundancy to the SaaS based Solution Management System located in the cloud which should be minimum Tier III certified. All software solutions which are part of the ITMS should be provided as a SaaS hosted in a tier III data center with DRC. State of the art AI and big data analysis shall ensure that Cameras, VMS, RLVD, Sensors, IoT are functioning in a controlled efficient manner. The ITMS solution shall be tested and audited by a competent third party appointed by the client.</u></p> <p><u>The solution should be interoperable, following standards of Indian IT Act 2000, ITAA 2008 and Information Technology (Amendment) Act, 2015.</u></p> <p><u>It should extent API for integration with smart city command control center.</u></p> <p><u>The scope of works for the bidder includes interior layout planning and interior design of Command & Control Centre.</u></p>
15	<p>Clause No. 2.7.1. VA Traffic Signals, under the heading "2.7 Broad Specifications", in "2. Scope of Work and Terms of Reference", Page 40– 50 is <u>'Deleted'</u>.</p> <p><u>Replaced by</u></p> <p><u>"Appendix-1"</u> of the Addendum</p>
16	<p>Clause No. 2.7.2. PTZ Camera and clause 2.7.3 Fixed Camera, under the heading "2.7 Broad Specifications", in "2. Scope of Work and Terms of Reference", Page 51– 55 is <u>'Deleted'</u>.</p> <p><u>Replaced by</u></p> <p><u>"Appendix-2"</u> of the Addendum 1</p>

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17	<p>In Clause No. 2.7.4. Variable Message Sign, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 56– 59 at the end, the following details <u>‘Added’</u></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><u>“ Specifications for VMS</u></p> <p>Mounting on Cantilever Gantries mounted on the Left Footpath.</p> <p>Dimensions: About 4 meters by 2 meters</p> <p>Display: LED - P10 DIP (1R/1G/1B) Full colour displays.</p> <p>Certifications required - CE, FCC, CB, RoHS</p> <p>Security: High level data encryption (128 bit or More)</p> <p>Language Support : English, Malayalam and Hindi”</p> </div>
18	<p>Clause No. 2.7.5. RLVD, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 60– 74 is <u>‘Deleted’</u>.</p> <p><u>Replaced by</u></p> <p><u>“Appendix-3”</u> of the Addendum 1</p>
19	<p>Clause No. 2.7.6. Pelican Signals, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 75– 77 is <u>‘Deleted’</u>.</p> <p><u>Replaced by</u></p> <p><u>“Appendix-4”</u> of the Addendum 1</p>

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20	<p>Clause No. 14 Payment terms. Under “3. General Conditions of Contract (GCC) Page 86– <u>‘Sentences published as’</u></p> <ol style="list-style-type: none"> 1. “90% payment of the supply value of equipment will be made on submission of following documents: <ol style="list-style-type: none"> a) Certificate from the Purchaser / Employer of having receipt of Performance Bank Guarantee. b) Invoice in duplicate. c) Certificate from purchaser/ consignee indicating successful Installation, testing, commissioning, Training of equipment along with necessary operational training to its staff at the site as indicated in purchase order. d) Insurance Copy (transit plus storage). e) Packing list. 2. Out of 10% Balance amount: a) 5% will be released at the end of first year of DLP period after deducting if any charges for delay in attending fault, as penalty and b) 5% will be released at the end of second year of DLP and Final Acceptance Certificate after deducting any charges for delay in attending fault, as penalty”. 3. Payment of O & M charges shall be made on quarterly basis at the end of the quarter against the consignee's certificate indicating that firm has successfully maintained the equipment during the claim period. Payment should be followed strictly as per terms and conditions of Tender Documents and Tax as applicable will be deducted. <p><u>‘Deleted’</u></p>
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**Clause No. 3.2.2 Payment terms. Under “3. General Conditions of Contract (GCC) Page 90 TO 92–
‘Sentences published as’**

3.2.2 Payment Terms

The employer will make the payment to the items of VA Signals, Pelican Signals, PTZ cameras, Traffic Violation cameras, RLVD system including all equipment at Traffic Management Centre on the following terms-

75% of contract Rate	After supply of to site & submission of third party inspection certificates & acceptance.
20% of contract Rate	After installing as per tender specification.
5% of contract Rate	On successful completion and commissioning of the system in section.

Replaced by

3.2.2 Payment Terms

The employer will make the payment to the items of VA Signals, Pelican Signals, PTZ cameras, Traffic Violation cameras, RLVD system including all equipment at Traffic Management Centre on the following terms-

40% of contract Rate	After supply of equipment / materials to site on production of invoices, insurance & submission of third party inspection certificates & acceptance.
20% of contract Rate	After laying / installing as per specification.
30% of contract Rate	On successful testing, completion and commissioning of the system. (GO-LIVE)
10% of contract Rate	After completion of one year defects liability period after GO-LIVE

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Conditions to be fulfilled for receipt of payment upon supply of equipment / materials to site after third party inspection & acceptance:

- a) The materials are in-accordance with the specification;
- b) Such equipment / materials have been delivered to site, and are properly stored and Protected against damage or deterioration to the satisfaction of the Engineer. The contractor shall store the bulk material in measurable stacks;
- c) The Contractor's records of the requirements, orders, receipt and use of materials are kept in a form approved by the Engineer and such records shall be available for inspection by the Engineer;
- d) The contractor has submitted with his monthly statement the estimated value of the materials on site together with such documents as may be required by the Engineer for the purpose of valuation of the materials and providing evidence of ownership and payment thereof;
- e) Ownership of such materials shall be deemed to vest with the Employer for which the Contractor has submitted an Indemnity Bond in an acceptable format; and
- f) The quantities of materials are not excessive and shall be used within a reasonable time as determined by the Engineer.

The payment of other items will be made as per BOQ as and when they are completed.

The bidder shall submit the Interim payment certificates (Running bills) on a monthly basis along with all the necessary supporting documents during execution period.

Payment of O & M charges shall be made on quarterly basis at the end of the quarter against the consignee's certificate indicating that firm has successfully maintained the equipment during the claim period. Payment should be followed strictly as per terms and conditions of Tender Documents and Tax as applicable will be deducted.

A retention amounting to 5 % (Five percent) of the gross amount of each running bill will be deducted at the time of certifying interim payment, for the due execution and completion of the work including operation & maintenance under Contract. This retention amount is liable to be forfeited, partly or wholly, if the Contractor fails to carry out the assignment or to keep up the desired rate of progress as per Contract.

The retention amount will be released on the successful completion of the work including operation and maintenance as certified by the competent authority.

The contractor to submit final bills along with 'as built drawings' otherwise, final bills will not be

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	<p>entertained and final bills will be considered as incomplete and returned. The Employer shall pay the amount certified in the Final Payment Certificate within 60 days from the date of issue of the Final Payment Certificate.</p> <p>If the Contractor or his workmen or servants knowingly or unknowingly break, damage, deface, injure or destroy any part of the fixed or part of unfixed development in which they may be working, or any building, road, fence, enclosure or grass land or cultivated ground contiguous to the premises on which the work or any part thereof is being executed, or if any damage shall be done to the work while it is in progress, from any cause whatever, or if any damage of any kind is done to the plant material incorporated in the work, or if any imperfections become apparent in it within Twelve months (12 months) of the Completion of work (ie. After GO-LIVE), by the Site-In-Charge or other competent authority, the Contractor shall make good the same at his own expense, or in default, the Site-In-Charge or other competent authority may cause the same to be made good by other workmen, and deduct the expenses (of which the certificate of the Site-In-Charge or other competent authority shall be final) from any sums that may be due or may thereafter become due to the Contractor, or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof.</p>
22	<p>At the end of Clause No. 3.2.2 Payment terms. Under “3. General Conditions of Contract (GCC) Page 92 following additional– <u>‘Clause 3.2.3 is added’</u></p> <p><u>‘Added clause is’</u></p> <p>“3.2.3 Retention Money</p> <p>(i) A retention amounting to 5 % (Five percent) of the gross amount of each bill will be deducted at the time of certifying interim payment, for the due execution and completion of the work including operation & maintenance under Contract. This retention amount is liable to be forfeited, partly or wholly, if the Contractor fails to carry out the assignment or to keep up the desired rate of progress as per Contract.</p> <p>The retention amount will be released on the successful completion of the work including operation and maintenance as certified by the competent authority.</p>
23	<p>Clause No. 3.14 Limitation of liability. Under “3. General Conditions of Contract (GCC) Page 97– <u>‘Added</u></p> <p><u>‘Added clause is’</u></p>

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	<p>“3.14. Limitation of Liability:</p> <p>Limitation of Contractor’s Liability towards the Authority:</p> <ul style="list-style-type: none"> a. Neither Party shall be liable to the other Party for any indirect or consequential loss or damage (including loss of revenue and profits) arising out of or relating to the Contract. b. Except in case of gross negligence or wilful misconduct on the part of Master System integrator (MSI) or on the part of any person or company acting on behalf of MSI in carrying out the Services, <p>MSI, with respect to damage caused by MSI to CSML / KMC /Authority’s property, shall not be liable to Authority / CSML / KMC :</p> <ul style="list-style-type: none"> i) for any indirect or consequential loss or damage; and ii) For any direct loss or damage that exceeds the total payments payable under the Contract to MSI hereunder, <p>This limitation of liability shall not affect MSI liability, if any, for damage to Third Parties caused by MSI or any person or company acting on behalf of MSI in carrying out the Services or any obligation of the Licensee to indemnify the Authority with respect to intellectual property rights infringement claims. ”.</p>
24	<p>Annexure 3.1 - Financial Proposal Cover Letter at Page 112 & 113–</p> <p>(ii) <u>‘Deleted’.</u></p>
25	<p>In Financial Proposal – excel file of Bill of Quantities (BOQ) . item No. 1, Paragraph published as</p> <p><i>“Design, manufacture, Supply, delivery of ITMS equipments to project site with allied accessories including all taxes & duties, transportation, loading unloading, handling charges, Installation and commissioning etc complete as per <u>scope of work , specifications and terms of reference detailed in Technical specifications</u>”</i></p> <p><u>Replaced by</u></p> <p><i>“Design, manufacture, Supply, delivery of ITMS equipments <u>including softwares, to Traffic Management Control Centre</u> with allied accessories including all taxes & duties, transportation, loading unloading, <u>insurance</u>, handling charges, Installation <u>testing</u> and commissioning etc complete as per <u>Section 2. Scope of Work and Terms of Reference / Technical specifications including all road cutting charges, connectivity works and integration etc complete</u>”</i></p>

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26	<p>In Financial Proposal – excel file of Bill of Quantities (BOQ) . item No. 1.05, Paragraph <u>published as</u> <i>“Supply, Installation commissioning of PTZ Cameras <u>4 mega pixel</u> IP based with night vision”</i></p> <p><u>Replaced by</u></p> <p><i>“Supply, Installation commissioning of PTZ Cameras <u>2 mega pixel</u> IP based with night vision”</i></p>
27	<p>In Financial Proposal – excel file of Bill of Quantities (BOQ) . item No. 1.09, Paragraph <u>published as</u> <i>“Supply, Installation commissioning of All equipment at Traffic Management Control Centre Center Excluding building”</i></p> <p><u>Replaced by</u></p> <p><i>“Supply, Installation testing and commissioning of all equipments <u>including softwares and all connected accessories at Traffic Management Centre including interiors of Control Centre (Excluding building construction) as per Section 2. Scope of Work and Terms of Reference / Technical specifications including integration etc complete including all road cutting charges etc complete,</u></i></p>
27	<p>In Financial Proposal – excel file of Bill of Quantities (BOQ) . item No. 2, Paragraph <u>published as</u> <i>“Operation, Maintenance (including servicing) of ITMS equipments & accessories including its Repairs , hand holding services as indicated & detailed in the <u>Section VI Works Requirements / Technical specifications</u>”</i></p> <p><u>Replaced by</u></p> <p><i>“Operation, Maintenance (including servicing) of ITMS equipments & accessories including its Repairs , <u>cost towards, power and communication charges,general maintainance costs of Control Centre training, hand holding services as indicated & detailed in section 2. Scope of Work and Terms of Reference / Technical specifications</u>”</i></p>

Bidders shall make note of the same & submit their Proposals accordingly.

Sd/-
Managing Director
Cochin Smart Mission Limited

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Appendix-1 Of Addendum-1

Clause No. 2.7.1. VA Traffic Signals, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 40– 50 is Replaced by following:

RFP Clause No.2.7.1 VA Traffic Signals / ATCS

1.1 Specifications of VA signals

Key features:

- a. Vehicle actuated (VA) control.
- b. Fixed time control
- c. Phase/Stage oriented controller with 16 signal controller.
- d. Vehicle detection via wireless infrared / radar / thermal /Video Analytics
- e. Flexible control center communication link supported i.e.-Based GPRS/EDGE,3g/fiber optic leased line/4G sim based
- f. Incorporation with Anti-theft technology
- g. Microprocessor based
- h. Compact design
- i. Multiple protections (Data Password, Safety, Conflict Matrix, Supply voltage, data verifications etc.
- j. Multiple conflict monitors (includes Independent green conflict supervision)
- k. System should be compatibility to (Emergency Vehicle Priority) EVP system/ Bus priority system

1.2 Traffic Controller Specifications:

Table 1.1 Controller specifications

Parameter	Required Specifications
Processor	Advanced processing Unit (APU) containing 32 bit microprocessor chip or better for the main function of data processing/128 MB Ram or Flash Memory
OS	Linux / Windows (embedded)
Communication Ports	RS232, USB, Ethernet, RS 485- Multi drop.
Drive PCB	16 Drive lines for LED Aspects
Programming facility	Should be programmable and be adaptable to communicate and take inputs from future systems that may be installed in the Greater Kochi area or Kerala. Through central monitoring station or Through Any Laptop, Mobile facility
Protection	Auto shutdown on over/under voltage/current and Auto Start Up on Restoration
Input Voltage	230 V ac ± 10 and frequency 50 ± 5 Hz or DC I/P 24V
Operating Voltage	230vts or 24V DC / as per system requirement
Certifications	EN certified for controller safety, Electrical and Electromagnetic interference.
Remote Monitoring / Synchronization	Should be compatible with remote configuration for corridor synchronization between junctions and traffic controller

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Parameter	Required Specifications
Features	<ol style="list-style-type: none"> 1. Programmable Year Calendar: Min. 20 Holidays (can be customized) 2. Programmable Day (7 days) 3. Min 12 cycle plans per day (excluding manual police control plan) 4. Min 8 Phases / stages per plan 5. In built diagnostics 6. In built data logging/Fault log capacity to 3 Years 7. Health report features. 8. Vehicle actuation 9. Conflict Management 10. Police Panel Control <p>Different controllers may treat these items differently; hence it is acceptable to have minor variances in these features.</p>
Temperature	0°C to 55°C
Humidity	95% Humidity at 40°C Non-Condensing
Construction	Weather Proof, Vandal Proof, Dust and Splash Proof Steel Cabinet Passivated and Painted with cable entry points and separate access to police panel controls.
Controller Cabinet	IP 65 Compliant
Logging capacity	Fault /event storage capacity /average 10 events Per day. The data in control centre should be stored for 3 years
Vehicle detection	Infrared wireless /Video analytics/Radar/Thermal imaging
Communication methods from controller to control center	Controller should communicate with the control centre through TCP/IP via GPRS/leased line fiber optic /4G Sim based/ should adhere to ISO 27001-2013
MIS & Dashboard	Facility to be set up Specifically to monitor the System from TMC.

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1.3 LED Specifications for Signal Head:

LED Retrofit Specifications:

Table 1.2 Signal Head specifications General

Item	Specifications
Power supply	230 V ac ± 10 and frequency 50 ± 5 Hz/ Or DC
Standards	EN 12368 compliant, IP 65 protection, EN Certified for Electrical and Electromagnetic Interference
Convex Tinted Lens	Available, with Visors
Diameter of LED aspect	200-300 mm
Turn Off/Turn On Time	75 ms max
Total Harmonic Distortion	<20%
Lamp conflict compatibility system	Compatible with lamp failure and conflict detection

Table 1.3 Signal Lamp Specifications

Description	RED LED	AMBER LED	GREEN LED
LED Type	SMT /Through hole	SMT / Through hole	SMT / Through hole
Viewing angle	23.5 to 30°	23.5 to 30 °	23.5 to 30 °
Total Number of LED's	128 minimum	128 minimum	60 minimum
Color Wave length	630 nm	590 nm	500 nm
Intensity(mcd)	2240-7100	2800-7100	4500-9000
Operating Temperature range	0° C to +85° C	0° C to +85° C	0° C to +85° C
MTBF(design life cycle)	10 Years	10 Years	10 Years
Intensity of full aspect	260 Cd Minimum	380 Cd Minimum	400 Cd Minimum

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1.4 Vehicle actuation Camera:

- Temperature Range: from 0°C to +60°C
- Humidity: 0 to 95% non-condensing.
- 24 vehicle presence zones 8 bike presence regions 8 inverse direction zones

1.5 Camera Details:

- Camera Type: wireless infrared/radar technology/Thermal / Video
- Lens Type: Wide Angle (if applicable)
- Compression: H.264, MPEG4, MJPEG (dual stream)

1.6 Power Supply, Outputs & Communications:

- Input Power 230 v ac ± 10 and frequency 50 ± 5 Hz Or 12-42 VDC Or 12-30 VDC
- Power Consumption ≤ 4.8 W
- IP-addressable - Yes

Protection Grades: Housing = IP68, Connectors = IP67

1.7 Timers

Table 1.4 Timer Specifications

Item	Specifications
Wavelength	630 nm for red LED
	525 nm for green LED
Luminous intensity	150 cd/m ² @ 10 cm distance from the surface
Power supply	230v AC
Internal power supply	5 Vdc (7A) - for CDC countdown and red 7 -segment LED'S
	12 Vdc (4A) - for 7 -segment green LED'S. Both using switching power supplies

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Wireless Countdown Mode	Users Xbee band with controller (up to 1 km near line of sight)
Cabinet size (2 digit)	As per OEM supply
On board internal memory	64 Kbyte

1.8 Traffic Light Controller Software

The software should be client-server / Cloud based which would enable the viewer to configure through web browser

1. Software should be able to control the junction remotely from centralized control station.
2. Software should be scalable to configure more signals without modifying the software just by adding the hardware.
3. Software should allow for fixed time signal for VA operations
4. Software should interface with the Area Traffic Control System to control the traffic signal remotely

Online monitoring:

1. Health of the system: Voltage and current of Battery, solar and Power supply.
2. Failure: Vehicle detector.
3. Ethernet interfacing capability.
4. Online monitoring of synchronization of corridor in GUI to ensure proper synchronization and validation
5. Remote configure, monitor and controlling Application: This Application is used configure system parameters such as Day plans, No of phases, Phase data ,phase Timings , Mode of operation (Vehicle actuated and Auto Plan) ,vehicle sensor , Manual and Hurry call mode phase data, Holiday calendar etc.
6. Application can be used to control the junction when there is critical situations such as VIP movements by using Hurry call (1, 2, 3, 4), Blink and Junction off. Using Hurry call we can Green for a Particular path.
7. Online system status such as phase, Road and Timings, utilized green Time in case of vehicle actuated signaling, vehicle occupancy can be viewed in GUI (Graphical User Interface).
8. Since the traffic flow varies frequently, the control software should be capable of changing cycle

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time dynamically based on the traffic density (locally and centrally)

9. Able to diagnose the disconnected Junction near real time
10. Power alerts should be created in case of low battery
11. Controller & Online Monitoring System must be compatible to the EVP which is to be proposed.

1.9 Area Traffic Control System Application Software

Objective of the ATCS is to minimize the stops and delays in a road network to decrease the travel time with the help of state-of-the-art technology. The adaptive traffic control system shall operate in real time with the capacity to calculate the optimal cycle times, effective green time ratios, and change intervals for all system traffic signal controllers connected to it. These calculations will be based up on assessments carried out by the ATCS application software running on a Central Computer based on the data and information gathered by vehicle detectors at strategic locations placed for the VA signal systems.

The ATCS application software shall run on WINDOWS/LINUX platform.

The bidder may include a type of ATCS software that is particular to the vehicle detection proposed in the design of the traffic signal and vehicle sensor locations selected.

The broad understanding is that the Traffic controller and the Control center servers/enterprise should be amenable to the the ATCS software that is being selected for Deployment.

The ATCS application software shall typically do the following:

- Identify the critical junction of a corridor based on maximum traffic demand and saturation.
- The critical junction cycle time shall be used as the corridor cycle time i.e. cycle time common to all intersection in that corridor.
- Stage optimization to the best level of service shall be carried out based on the traffic demand.
- Cycle optimization shall be carried out by increasing or decreasing the common corridor cycle time based on the traffic demand within the constraints of Minimum and Maximum designed value of cycle time.
- Offset correction shall be carried out in runtime to minimize number of stops and delays along the corridor

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for the priority route. Offset deviation measured using distance and speed between successive intersections shall be corrected within 5 cycles at a tolerance of +/- 5 seconds maximum.

- The system shall have provision to configure priority for upstream signals as default. The ATCS software shall continuously check the traffic demand for upstream and downstream traffic and automatically assign the priority route to the higher demand direction.
- Develop appropriate stage timing plans for each approach of every intersection under the ATCS, based on real time demand
- Propose timing plans to every intersection under the ATCS in every Cycle
- Verify the effectiveness of the proposed timing plans in every cycle by comparing the predicted stage time and actually executed stage time for each stage
- Identify Priority routes
- Dynamically Synchronize traffic in the Priority routes
- The system should be able to accommodate/integrate with bus priority and the bus ITMS that is being planned for the city if they are implemented.
- Should be able to integrate with other intelligent transportation systems (ITS) i.e. variable message signs (VMS), flood warning system , video detection system, CCTV, red light violation camera, speed detection and any other expansion of the system in the future
- Manage and maintain communication with traffic signal controllers under ATCS
- Maintain database for time plan execution and system performance
- Maintain error logs and system logs
- Generate Reports on request
- Graphically present signal plan execution and traffic flow at the intersection on desktop
- Graphically present time-space diagram for selected corridors on desktop

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- Graphically present network status on desktop
- Make available the network status and report viewing on Web

1.10 Emergency Vehicle priority system

The basic objective of emergency vehicle prioritization is to manipulate traffic signals in the path of an emergency Vehicle, stopping conflicting traffic and allowing the emergency vehicle right-of-way, to help reduce response. The ATCS software should lend itself to an EVP corridor instruction.

1.11 Audible Alarms

All pedestrian crossings shall have an audible alarm system which switches on at the beginning of the pedestrian green phase and switches off at the end of the pedestrian green phase. The alarm shall ring continuously during the green phase and shall ring intermittently for 5 seconds before switching off. The sound level of the alarm shall be higher than the ambient noise level.

1.12 Cables

Table 1.5 Cable specifications

Description	3 – core	6 - core	12- core	19-core
Conductor material	Copper	Copper	Copper	Copper
Size	2.5 mm square (min)	2.5 mm square (min)	2.5 mm square (min)	2.5 mm square (min)
Insulation	PVC Type A	PVC Type A	PVC Type A	PVC Type A
Shield	Al - Mylar tape	Al- Mylar tape	Al-Mylar tape	Al-Mylar tape
Armour	GI WIRE armoured	GI WIRE armoured	GI WIRE armoured	GI WIRE armoured
Outer Sheath	PVC Compound type – ST	PVC Compound type - ST	PVC Compound type - ST	PVC Compound type – ST

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Test in accordance with Standard / Specification	Test method as per IS 10810- 1984	Test method as per IS 10810-1984	Test method as per IS 10810-1984	Test method as per IS 10810-1984
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1.13 Earthing

Shall comply, with IS 3043

1.14 Trenching and Ducting

Cables to be taken across roads shall be encased in high quality HDPE ducts. These ducts shall be provided ideally by horizontal drilling under the existing road.

1.15 Power Source

230 V AC /50 Hz/ Single phase power from the public utility grid would be available at each location.

1.16 Backup Power

The backup system shall have the capacity to operate the OU for a minimum of 4 hours. The backup power system requirement shall be as follows:

Table 1.6 Backup specifications

Storage Battery Type	Sealed maintenance free, lead acid battery
Storage Battery Voltage	24 V
Storage Battery Capacity	80 AH (min)
Storage" Battery Maxi Depth of discharge	80%

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1.17 In station Unit Server

- i) Suitable Windows / Linux based high-end system with adequate storage and back up facility.
- ii) System should have the capacity to maintain and archive 3 year data from VA signals, 1 year data of ANPR cameras and 1 month video feeds from all the different types of camera's. The storage facility should be expandable to 10 times the proposed system to take into account future requirements.
- iii) Should have necessary hardware to enable communication with each outstation of unit using Ethernet interface, OFC/4G.
- iv) Should also have facility for TCP/IP connectivity to each OU

1.18 Work Station

- v) Latest Configuration desktop with high speed data and graphics storage device, high resolution graphics monitor, graphics printer, windows operating system, network with the server.
- vi) Should have GUI application software that shall be capable of:
- vii) Database operation
- viii) OU Monitoring
- ix) OU programming
- x) MIS report production
- xi) Application software shall be upgraded as and when new versions are made available

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Appendix-2 Of Addendum-1

Clause No. 2.7.2. PTZ Camera and clause 2.7.3 Fixed Camera, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 51– 55 is Replaced by following:

RFP Clause No.2.7.2 PTZ Camera

2.1 PTZ camera -Technical specifications

PTZ camera's fitted at junctions will essentially be used for manual violation detection, observations of incidents etc.

Table 2.1 PTZ camera Technical specifications

Sl. No.	Description	Requirement
1	Resolution	2MP, 1920 × 1080 OR BETTER
2	Image sensor	1/3" progressive scan CMOS or Better
3	Minimum Illumination	Color: 0.05 Lux @ (F1.6, AGC ON), B/W: 0.01Lux @ (F1.6, AGC ON), IR: 0 Lux
4	Optical Zoom	47X or Better
5	Digital zoom	16X or better
6	True WDR	120dB or Better
7	PAN Rotation	360 Degrees
8	PAN Speed	Pan Manual Speed: 0.1°~160°/s, Pan Preset Speed: 240°/s
9	Tilt Rotation	From -15° to 90° (auto reverse) or From -90° to 90° (auto Flip)
10	Tilt Speed	Tilt Manual Speed: 0.1°~120°/s, Tilt Preset Speed: 200°/s
11	Preset Positions	256 or more
12	Privacy Mask	24 privacy masks programmable
13	IR Range	180 mtrs or Better
14	Optical Defog	should be available
15	EIS	should be available

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Sl. No.	Description	Requirement
16	Image Enhancement	3D DNR, EIS, HLC Smart IR
17	Video Compression	H.265, MJPEG
18	Fps	25 Fps or better
19	Application programming	Open-ended API, support ONVIF, PSIA
20	Patrolling	8 patrols, up to 32 presets per patrol
21	Alarm I/O	7 In/2 Out
22	Protocols	IPv4/IPv6, HTTP, HTTPS, 802.1X, QoS, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, ICMP, DHCP, PPPoE
23	SD Memory Card	Support up to 128GB Micro SD/SDHC/SDXC card, Support Edge recording
24	Web Browser	IE 7+, Chrome 18 +, Firefox 5.0 +, Safari 5.02 +, support multi-language
25	Power	High-PoE&24 VAC
26	Working Temperature	0°C to 60°C
27	Protection Level	IP66
28	Certification/Standards	CE, FCC, EN, UL, ROHS & ISO 27001-2013
29	SMART FEATURES	
a	Smart Detection	Intrusion Detection, Line Crossing Detection, Audio Exception Detection, Region Entrance Detection, Region Exiting Detection
b	Smart Tracking	Manual Tracking, Auto Tracking, Event Tracking
c	ROI encoding	Support 24 areas with adjustable levels
d	Bracket	Suitable bracket to be provided

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2.7.3 Fixed Camera

2.2 Fixed Camera -Technical Specifications

Fixed camera's will essentially be used for automatic violation detection, such as speeding, lane changing etc to provide alerts and provide captured photographs for the ANPR system. However, if required they should be available for manual violation detection or incident detection as well.

Table 2.2 Fixed Camera Technical Specifications

Sl. No.	Description	Requirement
1	Resolution	2MP, FULL HD (1920x1080) or better
2	Image sensor	1/3" Progressive Scan CMOS or Better
3	Minimum Illumination	0.005 Lux @ (F1.2, AGC ON), 0.007 Lux @ (F1.4, AGC ON), 0 Lux with IR
4	Lens	5~90mm - Motorized Zoom Autofocus Lens
5	Optical Zoom	18X or Better
6	True WDR	120dB or Better
7	Video Compression	H.264, MJPEG
8	Frame Rate	25 Fps(1920 X 1080) or better
9	Image Enhancement	BLC/3D DNR/ROI/Defog/EIS
10	Protocols	TCP/IP, UDP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP, SMTP, SNMP, IGMP, 802.1X, QoS, IPv6, Bonjour
11	Standard	ONVIF(PROFILE S,PROFILE G),PSIA,CGI,ISAPI
12	On-board storage	Built-in Micro SD/SDHC/SDXC slot, up to 128 GB
13	IP Protection Level	IP66
14	Operating Conditions	0°C – 60 °C
15	Power Supply	12 V DC \pm 10%, PoE (802.3af)
16	IR Distance	180 meters or Better

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Sl. No.	Description	Requirement
17	SMART FEATURES	
a	Behavior Analysis	Line crossing detection, Intrusion detection, Region entrance, Region exiting, Parked Vehicle, Object removal. (to be programmed – at the edge or at the control centre - to provide an alert for Overspeeding and indiscriminate lane changing at speed)
b	Statistics	Object Counting (Entrance and Exit object number is accounted and showed on screen in real time)
c	Bracket	Suitable bracket to be provided

2.3 Speed and Rash driving Detection Camera's and Automatic Challaning

Apart from the fixed camera's with ANPR fixed at junctions it is also proposed to include speed and rash driving systems at a few mid-block locations (8 locations). Camera's similar to RLVD camera's must be installed for over speeding and lane changing detection (automatic alert in the camera that would use the evidence camera to take 3 photographs for challaning purposes with the vehicles number plate being read out through the ANPR software

2.4 AUTOMATIC NUMBER PLATE RECOGNITION SOFTWARE

The ANPR System shall enable monitoring of vehicles at entry/exit locations. The system shall support real-time detection of vehicles at the deployed locations, recording each four-wheeler, reading its number plate, database lookup from central server and triggering of alarms/alerts based on the vehicle status and category as specified by the database. The system usage shall be privilege driven using password authentication.

Description

1. Vehicle Detection and Video Capture Module :- The System should automatically detect a vehicle in the camera view using video detection and activate license plate recognition

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a. The System shall automatically detect the license plate in the captured video feed in real-time.
b. The system shall perform OCR (optical character recognition) of the license plate characters (English alpha-numeric characters in standard fonts and Malayalam fonts if possible).
c. The System shall store JPEG image of vehicle and license plate and enter the license plate number into DBMS like MySQL, PostgreSQL etc. database along with date timestamp and site location details.
d. System should be able to detect and recognize the English (and if possible Malayalam) alpha numeric License plate in standard fonts and formats of all four wheelers including cars, HCV, and LCV.
e. The system shall be robust to variation in License Plates in terms of font, size, contrast and colour and should work with good accuracy
f. The system shall be robust to variation in License Plates in terms of font, size, contrast and colour and should work with good accuracy.
2. Vehicle Detection by Colour
a. The system shall detect the color of all vehicles on best effort basis, in the camera view during daytime and label them as per the predefined list of configured system colors. The system will store the color information of each vehicle along with the license plate information for each transaction in the database.
b. The system shall have options to search historical records for post event analysis by the vehicle color or the vehicle color with license plate and date time combinations.
3. Alert Generation
a. The system should have option to input certain license plates according to the hot listed categories like "Wanted", "Suspicious", "Stolen", etc. by authorized personnel.
b. The system should be able to generate automatic alarms to alert the control room personnel for further action, in the event of detection of any vehicle falling in the hot listed categories.

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4. Vehicle Status Alarm Module	
a.	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).
b.	The Instantaneous and automatic generation of alarms. In case of identity of vehicle in any category which is define by user.
5. Vehicle Log Module	
a.	The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigations.
b.	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.
i.	Report of vehicle flow at each of the installed locations for Last Day, Last Week and Last Month.
ii.	Report of vehicles in the detected categories at each of the installed locations for Last Day, Last Week and Last Month.
iii.	Report of Vehicle Status change in different Vehicle Categories.
c.	The system shall have Search option to tune the reports based on license plate number, date and time, site location as per the need of the authorities.
d.	The system shall have option to save custom reports for subsequent use. The system shall have option to export report being viewed to common format for use outside of the ANPRS or exporting into other systems.
e.	The system should provide advanced and smart searching facility of License plates from the database. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2-character distance).

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6. Vehicle Category Editor	
a.	The system should have option to input certain license plates according to category like "Wanted", "Suspicious", "Stolen", and "Expired" etc. by Authorized personnel.
b.	The system should have an option to add new category by authorized personnel.
c.	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".
d.	System should have option to specify maximum time to retain vehicle records in specific categories.
7. Central Management Module	
The Central Management Module shall run on the ANPRS Central Server in control booth. It should be possible to view records and edit hotlists from the Central Server.	
8. Centralized Video Management Module	
Besides recording the snaps & video clips of every license plate extracted, it is also required that a centralized video management software is also supplied to achieve the below:-	
1.	Continuous recording of every lane video irrespective of presence of vehicle.
2.	Such recording schedules can be continuous, event based, schedule based, trigger based etc.
3.	Archive Search using dates, time, event etc.
4.	High Availability/Redundancy of Recording & Database.

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- | | |
|--|--|
| 5. Health monitoring module - To allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices. The health monitoring module shall provide a real-time overview of alarm status or technical problems while allowing for immediate visual verification and troubleshooting. | |
| 6. Virtual Matrix – To allow viewing of live video in different layouts on operator screen. | |

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Appendix-3 Of Addendum-1

Clause No. 2.7.5. RLVD, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 60– 74 is Replaced by following:

RFP Clause No. 2.7.5 RLVD

3.1 Technical Specifications for Red-light Violation detection(RLVD) system

Table 3.1 RLVD System Technical Specifications

Sl. No	Specifications	
1	Objective	
a)	Capture the License Plate of the vehicles crossing the Stop line when the signal is Red. The system should have both provisions to detect red light status by taking the signal feed from the traffic signal controller as well as by video analytics method using another camera (Evidence Camera) focused at the red light. The Evidence camera should also be used for evidence snap generation.	
b)	The entire evidence should be watermarked and encrypted to stand the court of law.	
c)	To penalize the offenders by issuing Challans to them against the offence with sufficient visual evidence of the offence.	
d)	To preserve the records for future analysis so that corrective actions are to be taken to curb the tendency of people to commit such offences.	
2	RLVD sub – system Elements	
a)	Standard IP camera for License Plate Capture:	Standard ONVIF compliant Minimum 2 MP IP cameras with 5-50 MM megapixel lens. The Camera should be able to stream MJPEG video at 25 fps for 2 MP resolutions. The system should support all standard brands of cameras satisfying the given specification. One camera should cover at least 3.0 meter width of lane, and capture the license plates of vehicles which violates the traffic signal and moving at a speed of 0 to 120 km/hr.

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		Camera should provide http URL to take full resolution snapshots of the scene within 0.2 sec while the continuous video streaming is on.
		The video clip for the violating vehicle captured by this camera must be archived with user defined watermarked text message so that it can be searched by the user to investigate the incidence.
b)	Standard IP camera to capture evidential proof	At least 1.3 MP IP camera is to be used to capture at least 3 snaps showing clearly that the vehicle is crossing the stop line even when the signal is RED. (this camera could be the same camera as the incident detection camera if such a facility is available with the camera)
c)	Provision for Traffic Controller Integration	The system must have capability to take feed from Traffic Controller to know signal status. This is essential if the evidence generation camera goes out of order for any reason or the user chooses not to install this additional camera.
d)	IR –illuminator	The IR-illuminator is required to capture license plate at night time when there is not sufficient illumination at site. The IR-illuminator should not consume more than 80W to illuminate a lane.
e)	RLVD Software	RLVD software should be deployable in standard servers running either Windows or Linux Operating system, and should have open interface to be integrated with the Challan generating sub-system and the traffic signal controller system. Challan generating system and the RLVD software should interact on open interface so that

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		each of the systems can be chosen independently.
3	Functionality	
a)	It synchronizes among the RED light Status camera, License plate camera and Evidential proof capture camera (could be multifunctional cameras) and store the record in Database with License plate image, image of the vehicle, and at least 3 snaps showing clearly that the vehicle is crossing the stop line while the signal is RED.	
b)	The system should generate Alarms at control room software if any signal is found not turning RED within a specific duration of time.	
c)	The system should provide facility to search for the cases of violations occurred during any specific span of time, and provide a statistical analysis of the number of such incidences occurring during various days of the month, various months of the year in graphical forms. A report of all such incidences should be automatically generated by the system in a spreadsheet (.xls format), and can be automatically emailed to designated officials.	
d)	The system should provide facility to privileged users to manually check the entry in database and edit the numbers if necessary, before the numbers are fed to the Challan generating sub-system. An audit trail should be maintained to record such editing activities.	
e)	The System should also record the video of all the cameras/selected cameras using a predefined and user configurable schedule. The recorded video can be searched using the following filters:	
	i. Appearance of a particular license plate.	
	ii. When the signal is RED	
	iii. When the signal is GREEN	
	iv. During any given date-time span.	

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f)	The system should capture standard vehicle's number plates with an accuracy of at least 80% at day time and at least with an accuracy of 75% at night time.	
g)	The system should be able to show Live video in multiple Matrix layouts for all the cameras in the system at real time. (storage of the same for one month will be required)	
h)	Additionally, the system should be able to store license plates numbers of at least 10,000 suspected vehicles at a time and should generate an Alert is any one of the vehicles is found crossing the stop line (irrespective whether the signal is GREEN or RED) in form of Video popup at the Monitor.	

Table 3.2 ANPR Software Specifications

3.2 AUTOMATIC NUMBER PLATE RECOGNITION SOFTWARE	
The ANPR System shall enable monitoring of vehicles at entry/exit locations. The system shall support real-time detection of vehicles at the deployed locations, recording each four-wheeler, reading its number plate, database lookup from central server and triggering of alarms/alerts based on the vehicle status and category as specified by the database. The system usage shall be privilege driven using password authentication.	
Description	
1. Vehicle Detection and Video Capture Module :- The System should automatically detect a vehicle in the camera view using video detection and activate license plate recognition	
a.	The System shall automatically detect the license plate in the captured video feed in real-time.
b.	The system shall perform OCR (optical character recognition) of the license plate characters (English alpha-numeric characters in standard fonts and Malayalam fonts if possible).

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c.	The System shall store JPEG image of vehicle and license plate and enter the license plate number into DBMS like MySQL, PostgreSQL etc. database along with date timestamp and site location details.
d.	System should be able to detect and recognize the English (and if possible Malayalam) alpha numeric License plate in standard fonts and formats of all four wheelers including cars, HCV, and LCV.
e.	The system shall be robust to variation in License Plates in terms of font, size, contrast and colour and should work with good accuracy
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2. Vehicle Detection by Colour	
a.	The system shall detect the color of all vehicles on best effort basis, in the camera view during daytime and label them as per the predefined list of configured system colors. The system will store the color information of each vehicle along with the license plate information for each transaction in the database.
b.	The system shall have options to search historical records for post event analysis by the vehicle color or the vehicle color with license plate and date time combinations.
3. Alert Generation	
a.	The system should have option to input certain license plates according to the hot listed categories like “Wanted”, “Suspicious”, “Stolen”, etc. by authorized personnel.
b.	The system should be able to generate automatic alarms to alert the control room personnel for further action, in the event of detection of any vehicle falling in the hot listed categories.
4. Vehicle Status Alarm Module	

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a.	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).
b.	The Instantaneous and automatic generation of alarms. In case of identity of vehicle in any category which is define by user.
5. Vehicle Log Module	
a.	The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigations.
b.	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.
i.	Report of vehicle flow at each of the installed locations for Last Day, Last Week and Last Month.
ii.	Report of vehicles in the detected categories at each of the installed locations for Last Day, Last Week and Last Month.
iii.	Report of Vehicle Status change in different Vehicle Categories.
c.	The system shall have Search option to tune the reports based on license plate number, date and time, site location as per the need of the authorities.
d.	The system shall have option to save custom reports for subsequent use. The system shall have option to export report being viewed to common format for use outside of the ANPRS or exporting into other systems.
e.	The system should provide advanced and smart searching facility of License plates from the database. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2-character distance).

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6. Vehicle Category Editor	
a.	The system should have option to input certain license plates according to category like "Wanted", "Suspicious", "Stolen", and "Expired" etc. by Authorized personnel.
b.	The system should have an option to add new category by authorized personnel.
c.	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".
d.	System should have option to specify maximum time to retain vehicle records in specific categories.
7. Central Management Module	
The Central Management Module shall run on the ANPRS Central Server in control booth. It should be possible to view records and edit hotlists from the Central Server.	
8. Centralized Video Management Module	
Besides recording the snaps & video clips of every license plate extracted, it is also required that a centralized video management software is also supplied to achieve the below:-	
1. Continuous recording of every lane video irrespective of presence of vehicle. Recordings will have to be stored for 30 days	
2. Such recording schedules can be continuous, event based, schedule based, trigger based etc.	
3. Archive Search using dates, time, event etc.	
4. High Availability/Redundancy of Recording & Database.	

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5. Health monitoring module - To allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices. The health monitoring module shall provide a real-time overview of alarm status or technical problems while allowing for immediate visual verification and troubleshooting.	
6. Virtual Matrix – To allow viewing of live video in different layouts on operator screen.	

Table 3.3 ANPR Camera & IR Specifications For the RLVD System

3.3 ANPR Camera & IR Specs For the RLVD System	
1.	Should have head light filter mechanism
2.	Head light compensation mechanism
3.	Should come with 1/2 inch (or better) sensor - image clarity increases and covers more area
4.	IP 66 Housing
Features	Description
Image Sensor	1/3 " Progressive CMOS
Maximum Resolution	1920x1080 (2MP)
Auto-iris	P-iris (DC-iris reserved)
WDR Technology	WDR Pro 100db or better

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Day/Night	Removable IR-cut filter for day & night function
Minimum Illumination	Illumination Threshold:
	300 Lux @ IR On
	600 Lux @ IR Off
On-board Storage	SD/SDHC/SDXC card slot
Video	
Compression	H.264 & MJPEG
Maximum Frame Rate	25 fps or better@ 1920 x1080 on user configurable streams
	(In both compression mode)
Maximum Streams	4 simultaneous streams
S/N Ratio	50 dB or better
Video Streaming	Adjustable resolution, quality and bitrate
Image Settings	Time stamp, text overlay, flip & mirror; Configurable brightness, contrast, saturation, sharpness, white balance, exposure control, gain, backlight compensation, privacy masks, scheduled profile settings; 3D noise reduction, EIS, video rotation, snapshot focus
Audio	
Audio Capability	Two-way Audio (full duplex)
Compression	AAC, G.711 or G.726

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Network	
Users	Live viewing for up to 10 clients
Protocols	IPv4, IPv6, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, IGMP, SMTP, FTP, DHCP, NTP, DNS, DDNS, PPPoE, CoS, QoS, SNMP, 802.1X, UDP, ICMP, ARP, SSL, TLS
Interface	10 Base-T/100 BaseTX Ethernet (RJ-45)
ONVIF	Supported
Video Motion Detection	Triple-window video motion detection
Alarm Triggers	Video motion detection, manual trigger, digital input, periodical trigger, system boot, recording notification, camera tampering detection, audio detection
Alarm Events	Event notification using digital output, HTTP, SMTP, FTP and NAS server, SD Card
	File upload via HTTP, SMTP, FTP, NAS server and SD card
General	
Smart Focus System	RBF (Remote Back Focus)
Connectors	RJ-45 for Network/PoE connection
	Audio input/output
	BNC Video output
	AC 24V power input

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	DC 12V power input
	Digital input*2
	Digital output*1
	RS485
LED Indicator	System power and status indicator
Power Input	DC 12V/AC 24V
	IEEE 802.3af PoE
Power Consumption	Max. 9.2 W (DC 12V)
	Max. 15.4 W (AC 24V)
	Max. 12.2 W (PoE)
Safety Certifications	CE, FCC Class B, UL
Operating Temperature	Starting Temperature: 0°C ~ 60°C (32°F ~ 122°F)
	Working Temperature: 20°C ~ 50°C or better
IR Illuminator	80W IR Illuminator with min 100 meters range. IP66 & IK10 compliance. IR illuminators should be part of same camera or an external system with proper camera sync.
Outdoor Housing & Mount	IP66,IK10

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Appendix-4 Of Addendum-1

Clause No. 2.7.6. Pelican Signals, under the heading “2.7 Broad Specifications”, in “2. Scope of Work and Terms of Reference”, Page 75– 77 is Replaced by following:

RFP Clause No. 2.7.6 Pelican Signals

Technical Specifications for Pelican Signals

4.1 Features

- Programmable inter green period
- Programmable Minimum vehicle green period
- Programmable flashing pedestrian RED / GREEN at the termination of pedestrian green
- Programmable flash
- Solid state signal output switching
- Heavy duty industrial grade push button
- Pole mountable MS weather proof cabinet
- Minimum vehicle green: 3 to 150 sec
- Pedestrian Green : 3 to 30 sec
- Pedestrian flash green/Red: 3 to 15 sec
- All red : 3 to 15 sec
- Amber: 3 to 15 sec
- Flash rate: 60flashes per minute
- Pelican Signals to be connected to the Control Centre.

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4.2 Optical Output

Power consumption: Led based traffic signal light consumes less than 15 watts(between 6 to 15 Watts) compared to conventional 100watt filament bulbs. Thus not only this uses less energy but also saves cost towards electricity bills. LED based Traffic lamps can even be operated by solar energy as these require 24V DC for operating the same. Energy saving is up to 80% to 90%.

Long life: The main advantage of LED's long life and low power consumption. Normally it has life of 100000hours compared to approximately 1000 hours for filament bulbs. A ratio of 1:100

No maintenance: practically any maintenance is required due to long life of LED's as compared to frequent replacement of bulb in bulb based traffic lamps. There is no maintenance cost.

Safety: Due to no failure and better visibility of LED's there are no accidents and jams. The high reliability greatly reduces the possibility if traffic accidents which are likely in the case of possible failure of filament bulbs

Compact design: the tight sealed design of the unit resist dust, moisture, wind and traffic introduced vibrations.

Temperature: Withstand wide variations of ambient temperature. 0 to +60°C

4.3 Audible Alarms for Pelican Signals

The Pelican Signals shall have an audible alarm system which switches on at the beginning of the pedestrian green phase and switches off at the end of the pedestrian green phase. The alarm shall ring continuously during the green phase and shall ring intermittently for 5 seconds before switching off. The sound level of the alarm shall be higher than the ambient noise level.

4.4 LED Signal display units

- 300mm Lamp Housing with Visor
- Black Polycarbonate
- Flexible Mounting
- LED Lamp Heads

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- Shall Comply EN-12368-2000 Specifications

Table 4.1 LED Display

Description	RED LED	AMBER LED	GREEN LED
LED Type	SMT /Through hole	SMT / Through hole	SMT / Through hole
Viewing angle	23.5 to 30°	23.5 to 30 °	23.5 to 30 °
Total Number of LED's	128 minimum	128 minimum	60 minimum
Color Wave length	630 nm	590 nm	500 nm
Intensity(mcd)	2240-7100	2800-7100	4500-9000
Operating Temperature range	0° C to +85° C	0° C to +85° C	0° C to +85° C
MTBF(design life cycle)	10 Years	10 Years	10 Years
Intensity of full aspect	260 Cd Minimum	380 Cd Minimum	400 Cd Minimum

4.5 Power Source:

Input Voltage : 230V AC, 50 Hz, Single phase

Battery bank : 24V, VRLA SMF

Autonomy : 4 hours

Charge control unit : Micro controller based

Recurring Expenses : Yes

Low: Power Consumption: Led based traffic signal light consumes less than 15Watts between

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4.6 Signal Poles

- Six Meters long 100mm GI Class B pole with, Junction box and bend GI pipe for cable entry. For vehicular and pedestrian signals mounted 3.0 meters above the ground.

The following typical drawing is included for reference.

