

GOVERNMENT OF ARUNACHAL PRADESH
OFFICE OF THE DIRECTOR GENERAL OF POLICE
PHQ, ITANAGAR

NO.PHQ /RSC/62/2021-22

Dated, Itanagar, the 1st March'2022

Limited Tender Notice

The Director General of Police, Arunachal Pradesh Itanagar invites sealed tender in two bids system (Technical & Financial) from the manufacturers/ authorized dealers /agents /suppliers of reputed/ registered firms of Arunachal Pradesh for better sales service in view of Govt. policy of Vocal for Local and Atma Nirbhar Bharat for entering into contract for installation of New Traffic Signal lights System (ATCS) along with required instruments at various locations in Capital Complex for Traffic & Road Safety purpose in Arunachal Pradesh. The sealed tender will be received up to 1030 hrs on 08/03/2022 and will be opened on same day at 1130hrs. The tenderers or their representative may remain present themselves at the time of opening of tender.

The tender papers containing full details with specifications and terms and conditions can be downloaded from our website www.arunpol.nic.in. on payment of tender fee @ Rs.1000/- (Rupees one thousand) only (non-refundable) through a bank draft in favour of the Head of office i.e AIGP (E), Arunachal Pradesh, PHQ, Itanagar payable at SBI, Itanagar, on any working day from 01 /03/2022 to 07/03/2022 and no other mode of payment will be accepted. Incomplete tenders are liable to be rejected.

Sd/-

Director General of Police
Arunachal Pradesh
PHQ, Itanagar.

(Not to be published)

Memo NO.PHQ /RSC/62/2021-22

Dated Itanagar, the 1st March'2022

Copy to:-

1. The In-charge Computer Cell, PHQ, Itanagar may upload the Tender Notice in the website of Arunachal Pradesh Police www.arunpol.nic.in.
2. Notice Board.
3. Office Copy.



Superintendent of Police (Traffic & RS)
Arunachal Pradesh
PHQ, Itanagar

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Road Safety & Traffic
PHQ, Itanagar
Arunachal Pradesh

GOVERNMENT OF ARUNACHAL PRADESH
OFFICE OF THE DIRECTOR GENERAL OF POLICE
PHQ, ITANAGAR

NO.PHQ /RSC/62/2021-22

Dated Itanagar, the 1st March'2022

TERMS & CONDITIONS

1. The Director General of Police, Arunachal Pradesh Itanagar invites sealed tender in two bid system (Technical & Financial) from the manufacturers/ authorized dealers /agents /suppliers of reputed/ registered firms of Arunachal Pradesh for better sales service for entering into contract for installation of New Traffic Signal light System (ATCS) along with required instruments in various location at Capital Complex for Traffic & Road Safety purpose for Arunachal Pradesh. The sealed tender will be received up to 1030 hrs on 08/03/2022 and will be opened on same day at 1130 hrs. The tenderers or their representative may remain present themselves at the time of opening of tender. The estimated cost of tender is Rs. 30.00 lakhs. The tender papers containing full details with specifications and terms and conditions can be downloaded from our website www.arunpol.nic.in. on payment of tender fee @ Rs. 1000/- (Rupees one thousand) only (Non-refundable) through a bank draft in favour of the Asstt. Inspector General of Police (E), Arunachal Pradesh, Itanagar payable at S.B.I. Itanagar on any working day from 1000 hrs to 1600 hrs w.e.f. 01/03/2022 to 07/03/2022. No other mode of payment will be accepted.
2. All the tenders must be accompanied with Earnest Money of Rs. 60,000/- (Rupees sixty thousand) only and without it, tenders will be summarily rejected. The tenderers are required to pledge NSC/KVP in the form of earnest money security deposit in the name of the Head of office i.e. AIGP (E) PHQ Itanagar from which the work is being allotted to them. The tenderers within the state of Arunachal Pradesh should purchase the NSC/KVP from the post office located in Arunachal Pradesh as per Govt. order No.DSS/Accts/2/99-2000 dated 17/3/2011. Bid security (Earnest Money) also may be purchased in the form of account payee, Demand Draft, Fixed Deposit Receipt, Banker Cheque or Bank Guarantee from any of the commercial Banks in an acceptable form located in Arunachal Pradesh.
3. The Tender Documents must be provided in 02 (two) covers:-
 1. **Cover-1:-** It shall contain scanned copies of eligibility document as under.
 - i) Technical bid along with its specifications leaflet, brochure, catalogue/literature, if any, of each tendered item.
 - ii) Tender documents duly completed and signed but without indication of the rates "Quoted".
 - iii) Earnest Money must be attached as per above mentioned in Sl No. 2. They must submit copy of registration certificate of MSME.
 - iv) Attested copy of PAN card/ firm registration/ GST Registration/ Valid Trading license. Letter of authority in respect of authorized distributors or manufacturer of Adaptive Traffic Signal Controller / dealership etc.
 - v) Financially soundness certificate issued by C.A. and bidder should be authorized distributor or manufacturer of Adaptive Traffic Signal Controller (CDAC Technology) & 10+ years experience company in traffic signal work (Enclose-PAN No./TIN No. & work order copies), bidder should be ISO 9001, 2015 Certified Company, C.E. certificate & IP 65 test report for traffic signal lights systems (Enclosed all relevant documents).
 - vi) Bidder should have a team of at least 2 Traffic Signal Engineer (Electronic/Electrical/ Telecommunication), Electrical licence. The team of Engineer for operation and maintenance of traffic control system with local team of authorized dealer/distributor in Arunachal Pradesh. Tenderer should be authorized distributor/ manufacturer for Govt. approved urban traffic Control system technology and equivalent.
 - vii) Bidder should have completed installation of CDAC road traffic signals equivalent or above of Rs. 50.00 lakhs in single city. Any other relevant document which the firm wishes to submit.
 - viii) OEM should have one service center and ISO certification. The items should not be of Chinese origin in any way and preference will be given for "Make in India" products.
 - ix) TOT agreement with CDAC for traffic controller.
 - x) The DGP AP reserves the right to cancel the tender / contract at any time without assigning any reason thereof. There can be further increase or decrease in quantity of intersections.
 - xi). Bidder should submit the Affidavit (Non- Judicial Stamp paper of Rs. 100) that the bidder shall install the new Traffic Signal Light System (If required by the concerned department at the same rate & terms & condition up to next 2 (Two) years. That neither the bidder nor the OEM/ Manufacturer/ Principal supplier has been debarred/blacklisted by any State/ Board/ Corporation/ Central Govt. Department/PSU/ Autonomous Bodies at the time of submitting the tender. The Affidavit/ declaration is to be submitted in the technical bid.

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2. **Cover-2:-** It shall contain documents on "Financial Bid" and shall be opened only of those bidders who have been declared technically qualified by the committee. The criteria for eligibility and qualifications are to be met by the bidders such as minimum level of experience/past performance (if any), facilities and financial position etc. The date of opening of "Financial Bid" will be intimated to the firms which are found technically qualified in due course of time.

GENERAL INSTRUCTIONS:

1. The tenders received after scheduled date & time will not be entertained. The tenderers or their representative may remain present at the time of opening of tenders.
2. Rates must be clearly written in figures as well as in words.
3. There should not be any cutting/over writing.
4. The firms will have to submit all original documents (as mentioned in cover-1) including EMD, cost of tender documents in the office of Superintendent of Police (Traffic & RS), Police Headquarters, Itanagar, Arunachal Pradesh on 08/03/2022 at 1140 hrs. The experience certificate (if any) must contain name designation, address, Phone No., eMail ID of issuing officer. The certificate should be countersigned by concerned office head/deptt. head.
5. In case tender opening day is declared as holiday or bandh call at Itanagar, the tenders shall be received up to next working day till 1030 hrs and opened on the same day at 1140 hrs. The bidders should keep checking the website for any addendum/corrigendum to the notice/bidding documents till the date of submission of bids and the bidder should incorporate the same in his bid documents.
6. Conditional bids of tenderers/firms and the bids not meeting the qualifying criteria on the date of receipt of bids shall be summarily rejected. Bids will be opened as per time & schedule mentioned.
7. Before submission of bids, bidders must ensure that scanned copy of all the necessary documents have been attached with bid. The department will not be responsible for delay in submission due to any reason(s). All the required information for the bid must be filled up and submitted.
8. The details of EMD and other documents specified in the tender documents should be same as submitted (scanned copies), otherwise tender will be summarily rejected. Technical compliance statement should be enclosed along with technical bid clearly specifying deviation, if any for all specifications mentioned in the tender.
9. Successful tenders will be required to deposit 5% of the total value of the articles to be supplied as security money within 10 days from the date of issue of letter of acceptance of tender or bid security may be kept for said purpose. The successful tenderers will have to enter in to a "DEED OF AGREEMENT" stipulating the Terms & conditions of the contract. Security money will be subject to forfeiture in case of non fulfilment of any or all the Terms & conditions of contract. Earnest Money of the successful tenderers will be forfeited to the Government in case of failure to furnish security money and execution of "DEED OF AGREEMENT".
10. Successful tenderers have to do supply, Installation & commissioning of Traffic Signal light system in capital complex within 45 days from the date of issue of supply order with survey of the suitable location for said purpose as per direction of the authority of the concerned department. In case of failure to do supply/installation of the said items, the firm is liable to be blacklisted.
11. Any breakages or loss of any item(s) in route or in transit will be at the supplier's risk. If any item is found damaged or otherwise unacceptable at the time of delivery / inspection, the suppliers will be required to remove the same from RSC Store, PHQ, Itanagar Arunachal Pradesh at their own cost within 15 days. Rate should be quoted F.O.R. RSC store PHQ/ designated location at Itanagar, Arunachal Pradesh by Road Transport (freight paid) with complete installation. Rates quoted other than F.O.R. RSC store, PHQ, Itanagar; Arunachal Pradesh shall not be accepted. No packing or forwarding charges will be allowed. Any Entry Tax/Custom duty charge (where or as applicable) may be charged by the tenderers & shown separately along with tendered rate of the article. Tenders will remain valid up to 31/03/2024.
12. The GST will be mentioned against each item as applicable for further action as required. Payment will be made to the supplier directly on completion of supplies/installation and on receipt of stores. Documents/Vouchers/R.R.S bill etc. routed through bank will not be accepted.
13. Tenders should be addressed to the undersigned by designation and not by name. The sealed envelope containing the tender should be subscribed as "Tender for supply/installation of said purpose for Road Safety & Traffic, Arunachal Pradesh Police for the year 2021-22 and be sent by registered post or be put in the tender box kept in the office of RSC, PHQ, Itanagar during the office hours.

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14. Consignment will be dispatched by the firm after payment of freight charges at source. Freight to pay consignment will not be accepted. The Director General of Police, Arunachal Pradesh, and Itanagar reserves the right to reject the lowest or all or any of the tenders without assigning any reason thereof. The tenders must also accompany with attested copy of Tax Registration Certificate with TIN and valid attested trading license issued by the competent authority of Arunachal Pradesh for the items tendered and rates quoted by them. Tenders must be legible and clear in all respect, else the tender shall be liable to be rejected.
15. Name of the articles with their description and specifications are enclosed herewith at Annexure-A. The letter of authority in respect of authorized distributors/dealership must be furnished along with the tender as applicable. The Director General of Police of Arunachal Pradesh shall have the right to ask the firms to demonstrate their items before the items are accepted. The equipments to be supplied/ installed shall be on warranty for a period of 02(Two) year from the date of acceptance. Tenderers must submit the AMC separately.
16. Tenderer (s) having past experience of supplying/installation of said items to any police organization, paramilitary forces etc. shall be given preference on production of performance certificate from such organization. The items where the tenders have an existing and valid rate contract with DGS & D, authenticated copy of such rate contract should be furnished along with the tender. Tenders accompanied with more than two varieties of items and rates for each item shall not be entertained. Once the item is approved no change of shade, pattern or quality specifications will be entertained even on the plea of non-availability of raw materials or alternative offers of the same quality.
17. In case of any dispute, legal jurisdiction will be at Itanagar, Arunachal Pradesh. Bidder should tender on unconditional percentage basis rate (including charges of all taxes, supply, installation and commissioning and warranty up to 2 (Two) years. In case of any query the tenderers may contact SP (Traffic & RS) and In-charge Road Safety Cell, PHQ, Itanagar.


Superintendent of Police (Traffic & RS)

Arunachal Pradesh

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ANNEXURE-I

Technical Specification – Automatic Traffic Control Systems

1. Road Traffic Signal Controller

The Traffic Signal Controller equipment is a 32 bit microcontroller based controller with solid state traffic signal lamp switching module and a conflict monitoring facility to ensure that conflicting, dangerous or disallowed traffic signal displays are not shown.

Site specific configuration data shall be stored in a non-volatile memory device (FLASH memory) easily programmable at the site through keypad or laptop. A minimum of 512KB flash memory and 128KB RAM shall be provided. Volatile memory shall not be used for storing the junction specific plans or signal timings.

All timings generated within a traffic signal controller shall be digitally derived from a crystal clock which shall be accurate to plus or minus 100 milliseconds.

The controller shall provide a real time clock (RTC) with battery backup that set and update the time, date and day of the week from the GPS. The RTC shall have minimum of 10 years battery backup with maximum time tolerance of 1 sec per day.

The controller shall have the facility to update the RTC time from ATCS server, GPS and through manual entry.

The controller shall be capable of communicating with the ATCS server through Ethernet on a managed leased line network or any other appropriate stable communication network.

1.1 Police Panel


The controller shall provide the following facilities in a separate panel with provision for lock and key arrangements for use by the Traffic Police.

Four Hurry Call switches: The Hurry Call mode will provide the means to force the controller to a defined stage, without violating safety clearances. A preemption input may be used to demand the Hurry Call mode to give right of way to emergency vehicles. It should be possible to configure the Hurry Call switches to any stage as per site requirements

One Forced Flash Switch: Activation of this switch should force the signal to Flashing Amber / Flashing Red.

One Auto / Manual Switch: Activation of this switch should enable manual operation of the controller. Deactivation of the manual switch shall continue from the current stage without interruption.

One Manual Advance Pushbutton Switch: In manual operation mode, the stages appear in the sequence specified in the signal plan timetable. Activating the pushbutton switch shall terminate the currently running stage and start the next, without violating safety clearances.


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One Junction OFF Switch: Activating this switch should put OFF all signal lamps. On deactivation of the switch the traffic signal controller shall resume its normal operation without violating any safety clearances.

1.2 Modes of Operation

The traffic signal controller shall have the following modes of operation:

Fixed Time

In fixed time (pre-timed) mode the traffic signal controller shall execute stage timings according to the site-specific timetable maintained in the traffic signal controller FLASH memory. Inputs from vehicle detectors shall be ignored in this mode and no preemption shall be made on any stage. Cycle time remains constant in every cycle execution for a given time period.

Vehicle Actuation with All Stages Pre-emption

In the vehicle actuation with all stage preemption mode, the traffic signal controller shall execute stage timings as per demand from vehicle detectors within the constraints of Minimum Green, Maximum Green running period for the stage and Cycle time stored in the traffic signal controller FLASH memory. Preemption shall be possible for all demand actuated stages. Cycle time may vary in every cycle execution.

Semi-Actuation

In the semi-actuation mode, the traffic signal controller shall execute stage timings in the vehicle actuated stages as per demand from vehicle detectors within the constraints of Minimum Green, Maximum Green running period for the stage and Cycle time stored in the traffic signal controller FLASH memory. All other stages shall execute the Maximum green time configured for the stage. Preemption shall be possible for all demand actuated stages. Cycle time may vary in every cycle execution.


Stage Skipping

The traffic signal controller shall not execute the stage enabled for skipping when there is no vehicle demand registered for the stage till clearance amber time of the previous stage.

Emergency Vehicle Prioritization

The traffic signal controller shall have facility for signal pre-emption of emergency vehicles without violating safety clearances.

Vehicle Actuation with Fixed Cycle length


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In vehicle actuation with fixed cycle length mode, the traffic signal controller shall execute stage timings as per demand from vehicle detectors within the constraints of Minimum Green, Maximum Green running period for the stage and Cycle time shall be maintained constant during a given timeslot. Preemption for all demand actuated stages except for Priority Stage shall be possible.

Full ATCS (FATCS)

In FATCS mode, the traffic signal controller shall execute stage timings as per demand within the constraints of Minimum Green, Maximum Green running period for the stage and Cycle time specified by the Central Computer during every cycle switching. Preemption for all demand actuated stages except Priority Stage shall be possible in this mode.

The traffic signal controller shall identify a communication failure with the central computer within a specified time period. In such an event the signal plan timings shall be executed from the local timetable stored in the traffic signal controller FLASH memory. Fallback mode of the traffic signal controller shall be vehicle actuated. On restoration of the communication with central computer, the traffic signal controller shall automatically resort to FATCS mode.

The traffic signal controller shall accept commands for remote selection / de-selection of the following from the Central Computer at TMC.

- Hurry Call
- Flashing Amber / Flashing Red
- Junction Off

If not reverted to the normal operation within the time period listed below, the traffic signal controllers shall timeout the commands and operate normally.

- Hurry Call – 5 Minutes
- Flashing Amber / Flashing Red – 30 Minutes
- Junction Off – 30 Minutes

The traffic signal controller shall report the following to the Central Computer through the communication network every cycle or on an event as appropriate.

- Green time actually exercised for each approach (stage preemption timing) against the Green running period set for the approach by the Central Computer
- Mode of Operation
- Lamp failure, if any
- Output short circuit, if any
- Detector failure, if any

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1.3 Operating Parameters

Phases - The controller shall have facility to configure 32 Phases either for vehicular movement, filter green, indicative green, pedestrian movement or a combination thereof.

It shall be possible to operate the filter green (turning right signal) along with a vehicular phase. The filter green signal shall flash for a time period equal to the clearance amber period at timeout when operated with a vehicular phase.

The pedestrian phase signal shall be configured for flashing red or flashing green aspect during pedestrian clearance.

It shall be possible to configure any phase to the given lamp numbers at the site.

Stages – The controller shall have facility to configure 32 Stages.

Cycle Plans – The controller shall have facility to configure 24 Cycle Plans and the Amber Flashing / Red Flashing plan. It shall be possible to define different stage switching sequences in different cycle plans. The controller shall have the capability for a minimum of 32 cycle-switching per day in fixed mode of operation.

Day Plans – The controller shall have facility to configure each day of the week with different day plans. It shall also be possible to set any of the day plans to any day of the week. The controller shall have the capability to configure 20 days plans.

Special Day Plans – The controller shall have facility to configure a minimum of 20 days as special days in a calendar year.

Starting Amber – During power up the controller shall initially execute the Flashing Amber / Flashing Red plan for a time period of 3 Seconds to 10 Seconds. The default value of this Starting Amber is 5 Seconds. Facility shall be available to configure the time period of Starting Amber within the given limits at the site.

Inter-green – Normally the inter-green period formed by the clearance Amber and Red extension period will be common for all stages. However, the controller shall have a facility to program individual inter-green period from 3 Seconds to 10 Seconds.

Minimum Green – The controller shall allow programming the Minimum Green period from 5 Seconds to 10 Seconds without violating the safety clearances. It should not be possible to preempt the Minimum Green once the stage start commencing execution.

All Red – Immediately after the Starting Amber all the approaches should be given red signal for a few seconds before allowing any right of way, as a safety measure. The controller shall have programmability of 3 Seconds to 10 Seconds for All Red signal.

Signal lamps monitoring – The controller shall have inbuilt circuitry to monitor the lamp status

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Green – Green Conflict Monitoring – The controller shall have a facility to list all conflicting phases at an intersection. The controller should not allow programming of these conflicting phases in a Stage hardware failure leading to a conflict condition (due to faulty devices or short circuit in the output) shall force the signal into Flashing Amber / Flashing Red.

Cable less Synchronization – It shall be possible to synchronize the traffic signal controllers installed in a corridor in the following modes of operation, without physically linking them and without communication network. GPS enabled RTC shall be the reference for the cable less synchronization.

- Fixed Time mode with fixed offsets
- Vehicle Actuated mode with fixed offsets

1.4 Input / Output

The controller shall have maximum 64 individual output for signal lamp switching, configurable from 16 to 64 lamps.

The signal lamps shall be operating on 24VDC / 12VDC $\pm 10\%$

Detector Interface

A minimum of 16 vehicle detector inputs shall be available in the controller.

All detector inputs shall be optically isolated and provided with LED indication for detection of vehicle.

Communication Interface

The traffic signal controller shall support Ethernet interface to communicate with the ATCS server

Power Saving

The traffic signal controller shall have a facility to regulate the intensity of signal lamps during different ambient light conditions thereby saving energy. Pulse Width Modulation (PWM) based intensity control shall be used for the power saving.


Real-time Clock (RTC)

The GPS receiver for updating time, date and day of the week information of the traffic signal controller should be an integral part of the traffic signal controller.

The traffic signal controller shall update the date, time and day of the week automatically from GPS during power ON and at scheduled intervals.

Manual entry for date, time and day of week shall be provisioned for setting the traffic signal

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controller RTC (Real Time Clock).

It shall be possible to set the RTC from the Central Server when networked.

Keypad (optional)

The traffic signal controller shall have a custom-made keypad or should have provision for plan upload and download using PC/laptop/Central Server.

Operator Display (optional)

The traffic signal controller shall optionally have a LED backlit Liquid Crystal Display (LCD) as the operator interface.

TECHNICAL SPECIFICATION FOR ROAD TRAFFIC SIGNAL CONTROLLER

| Sl. No | SPECIFICATION | Description |
|--------|------------------------------------|---|
| 1. | CPU | 32 Bit Micro-controller |
| 2. | PROGRAM MEMORY | Minimum of 512K Flash and 128K RAM |
| 3. | REAL TIME CLOCK (RTC) | Onboard RTC with 10 Years of Battery Backup and tolerance of +/- 1 sec per day. |
| 4. | RTC UPDATE METHOD | Through ATCS and GPS |
| 5. | GPS SUPPORT | On Board GPS |
| 6. | TIME RESOLUTION | 100m Sec |
| 7. | CONTROLLER TYPE | Fixed Time & Vehicle Actuated (VA) |
| 8. | USER INTERFACE (DISPLAY & SWITCH) | <ul style="list-style-type: none">• Minimum of 2 Line 16 Character LCD Display for showing the current working status and to view the Configured parameters• Minimum of a single Push button Switch for Navigating to the next page for displaying |

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| | | <p>Configured Traffic Plan parameters.</p> <ul style="list-style-type: none"> • By Default, controller displays current running status page on display • For every key press display should show next pages with configured parameters till the last page then roll over. • If key is inactive for certain configured time period it should show the default page of current running status. |
| 9. | CONTROLLER OUTPUT SWITCHING | <ul style="list-style-type: none"> • 24 VDC 5A MOSFET based • Common Negative switching |
| 10 | NO OF OUTPUTS | 16 to 64 Scalable in group of 16 |
| 11 | POLICE CONTROL PANEL KEYS | <ul style="list-style-type: none"> • Lamp OFF • Forced Flash • Manual selection • Manual Advance • 4 Hurry-calls(for Emergency Vehicle Priority) |
| 12 | VEHICLE DETECTOR INPUT | <ul style="list-style-type: none"> • Minimum of 16 optically isolated inputs for Vehicle detection • Compatible to Inductive loop sensors, Camera Based detectors and Radar based detectors |
| 13 | STATUS MONITORING AND DEBUGGING | Using RS232 port |
| 14 | LOG FILE RETRIEVAL | Using Ethernet port |
| 15 | SIGNAL PLAN CONFIGURATION | Through Laptop /PC locally and ATCS server remotely |
| 16 | WORKING VOLTAGE | 24 V DC +-10% |
| 17 | OPERATING MODES | <ul style="list-style-type: none"> • Pre-timed (TOD) • Vehicle Actuated (VA) <ul style="list-style-type: none"> ○ VA with all stage pre-emption ○ VA with fixed cycle length ○ Semi-actuated mode ○ Stage Skipping ○ ATCS • Lamps OFF • Forced Flash • Manual • Hurry Call (for Emergency Vehicle Priority input) • Transit Signal Priority (TSP) for BRTS • Cable less Synchronization in Pre-timed and Vehicle Actuated modes |

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| | TRAFFIC PARAMETERS | PLAN | <ul style="list-style-type: none"> • Minimum 32 – Phases • Minimum 32 – Stages • Minimum 24 – Cycle Plan • Minimum 20 – Day Plan • Minimum 04 – Week Plan • Minimum 20 – Special Day Plan • Minimum 04 - Season Plans • Minimum 10 - Conflict Plan • Minimum 04 - Hurry Call • Minimum 16 - Vehicle detector input |
| 18 | PROGRAMMABLE TIMINGS | | Programmable timings from Minimum to maximum <ul style="list-style-type: none"> • Start Amber : 3 – 10 Seconds <ul style="list-style-type: none"> • All RED : 3 – 10 " • Stage AMBER : 2 – 10 " • RED Extension : 0 – 10 " • Min. GREEN time : 2 – 10 " • Manual Min. GREEN : 2 – 10 " • Cycle Offset : 0 – 300 " • Gap Count : 0 – 10 " • Stage Time : 10 – 255 " |
| 19 | CYCLE TRANSITIONS | | Minimum of 32 cycle transitions per day in Pre-timed mode and unlimited cycle transitions per day in VA Mode |
| 20 | SIGNAL SEQUENCE | | <ul style="list-style-type: none"> • Straight through RED – GREEN – AMBER - RED • Filter Green LINKED RED – GREEN - GREEN FLASH – LINKED RED • Indicative Green LINKED RED - GREEN or GREEN FLASH - LINKED RED • Pedestrian RED – GREEN - RED FLASH or GREEN FLASH or RED - RED |
| 21 | EVENT LOGS | | Minimum of 500 events should be stored in EEPROM and all events should be viewed from PC/Laptop <ul style="list-style-type: none"> • Power On/OFF • Mode Change • Time update • Plan commit • RTC status • Conflict status |

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| | | <ul style="list-style-type: none"> • Vehicle Detector status • Lamp Status • Lamp Intensity Change |
| 22 | SAFETY FEATURES | <ul style="list-style-type: none"> • Inter/Intra Lamp Group Conflict Monitoring |
| 23 | SELF DIAGNOSTIC | <ul style="list-style-type: none"> • RTC check • Memory check • Plan validity check <p>If any of the above check got failed system should halt the operation and indicate the failure on LCD display</p> |
| 24 | POWER SAVING FEATURES | <ul style="list-style-type: none"> • Pulse Width Modulation (PWM) based Intensity control • Configurable Dim time and Bright time • Configurable 4 level of intensity |
| 25 | CABINET CONSTRUCTION | <ul style="list-style-type: none"> • MS powder coated with industrial gray colour and IP 54 protections • Pedestal or Pole Mountable |
| 26 | ENVIRONMENTAL CONDITIONS | <ul style="list-style-type: none"> • Temperature : 0°C to +55° C • Relative Humidity : 95% • RH Non- condensing at +40 degree C |
| 27 | CERTIFICATION | Environmental certification as per the standard IEC 60068 |
| 28 | ADDITIONAL FEATURES | Contractor may specify any Additional features if any. |
| 29 | ATCS COMPATIBILITY | <ul style="list-style-type: none"> ➤ Compatible ATC software ➤ RJ45 Ethernet port to communicate with ATCS ➤ Remote commands for <ul style="list-style-type: none"> • Lamp OFF • Forced Flash • Hurry Call • RTC update • Signal Plan update |

2. ROAD TRAFFIC SIGNAL ASPECTS (Vehicular and Pedestrian)

2.1 LEDs based Road Vehicular Traffic Signal Aspects is consisting of three components – Polycarbonate Signal head including power LED retrofit Kit with sun visor. Traffic Signal Aspects is an optical system which produces a light pattern of specified size, color and shape for providing control information to vehicle drivers. Road Vehicular Traffic Signal Aspects shall be energy efficient Traffic Signal aspect and compliance with European and Indian Standard.

2.2 LEDs based Pedestrian Signal Aspects is consisting of three components –

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Polycarbonate Signal head including power LED retrofit Kit with sun visor. Pedestrian Signal Aspects is an optical system which produces a light pattern of specified size, color and shape for providing control information to Pedestrian. Pedestrian Signal Aspects shall be energy efficient Traffic Signal aspect and compliance with European and Indian Standard.

2.3 Technical Specifications of Road Traffic Signal Aspects [Vehicular and Pedestrian]

| | | | | | | |
|---|---|-------------|--------------|--------------|-------------|--------------|
| Technical specs | RED | AMBER | GREEN Arrow | GREEN Ball | P.RED | P. GREEN |
| OPTICAL CHARACTERISTICS | | | | | | |
| Technology | LEDs | | | | | |
| TYPE | Power LED | | | | | |
| Color | Red | Amber | Bluish Green | Bluish Green | Red | Bluish Green |
| Color Wave length | 615 – 635nm | 580 – 595nm | 490 – 500nm | 490 – 500nm | 615 – 635nm | 490 – 500nm |
| LED Aspect diameter | 300mm diameter | | | | | |
| Minimum luminous Intensity of LED Aspects | 400cd | | | | | |
| TECHNICAL CHARACTERISTICS | | | | | | |
| Operating Voltage | 230V AC +/- 10% / 12V DC / 24V DC | | | | | |
| Operating Frequency | 50Hz ± 5% | | | | | |
| Maximum power consumption | < 12Watt | | | | | |
| LED Operating Temperature | 0°C to +60° C | | | | | |
| LED module ingress | IP 65 | | | | | |
| Constructional integrity | Comply | | | | | |
| GENERAL | | | | | | |
| Signal head color | BLACK / Grey or as required by customer | | | | | |
| Signal head Material | Ultra Violet stabilized molded Poly Carbonate or Mild Steel as required by Customer | | | | | |
| Lens | Ultra Violet stabilized molded Poly Carbonate | | | | | |
| Dimming | Auto dimming (Optional) on demand | | | | | |
| TEST, DECLARATIONS & MARKING | | | | | | |
| LED manufacturer and Signal head manufacturer | ISO 9001 : 2015 Certificate | | | | | |
| Marking and labeling | CE marking (EN 12368) Certificate | | | | | |
| LED Module | IP65 Test Report | | | | | |

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3. Count Down Timer

3.1 Vehicular Count Down Timer shall be full color and capable to show message and reverse counting to alert motorist in better way. It shall be configurable with vehicular traffic signal Aspects in such a way that it can automatically sense and self-learn timings and display MESSAGE AND REVERSE COUNTING;

"STOP" with Reverse Counting in Red Color while Traffic Signal turns RED.

"WAIT" with Reverse Counting in Amber Color while Traffic Signal turns AMBER

"GO" with Reverse Counting in Green Color while Traffic Signal turns GREEN.

3.2 Pedestrian Count Down Timer shall be full color and capable to show message and reverse counting to alert Pedestrian in better way. It shall be configurable with Pedestrian signal Aspects in such a way that it can automatically sense and self-learn timings and display MESSAGE AND REVERSE COUNTING;

"WAIT" with Reverse Counting in Red Color while Pedestrian Signal turns RED.

"WALK" with Reverse Counting in Green Color while Pedestrian Signal turns GREEN

3.3 Technical Specifications of Vehicular Count Down Timer [Vehicular and Pedestrian]

| | |
|----------------------------|-----------------------------------|
| Technical specs | Full Color Count Down Timer |
| OPTICAL CHARACTERISTICS | |
| Technology | LEDs |
| TYPE | Power LED |
| Color | RGB |
| Modular Resolution | 32*16 |
| Module Size | 320mm x 160mm |
| Minimum luminous Intensity | $\geq 6500\text{cd /m}^2$ |
| LED per Pixel | 1 LED |
| Display Area | 320mm x 320mm or customized |
| Full Color | Full Color |
| Pixel Pitch | 10mm |
| LED Encapsulation | SMD |
| Refresh Rate | $\geq 3840\text{ Hz}$ |
| MTBF | $\geq 10000\text{ hours}$ |
| TECHNICAL CHARACTERISTICS | |
| Operating Voltage | 230V AC +/- 10% / 12V DC / 24V DC |

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| | |
|----------------------------|--|
| Operating Frequency | 50Hz ± 5% |
| Maximum power consumption | < 25 Watt |
| LED Operating Temperature | 0°C to +60° C |
| LED module ingress | IP 65 |
| Constructional integrity | Comply |
| FUNCTIONAL CHARACTERISTICS | |
| Operating Mode | <p>Self-Learning – Count down timer is equipped with micro controller. It automatically senses traffic signals, and learn timing, verify and display message with timing from 3rd cycle on ward unless there is no change in timings or switched OFF traffic signals.</p> <p>VA Mode – Vehicular Actuated, count down shall be also provided with RS 485 communication (Optional). It gets data from controller and accordingly it shall display message and time.</p> <p>Fixed Time Mode. Count down timer can also get data and display message and timer as per command of Controller.</p> |
| Language | Capable to Display data in Local Language or National Language |
| Picto / Image | Capable to display pictographs images. |
| Remote Control | Capable to operate remotely from Control and Command Centre (Optional feature) |
| Communication | Multi – communication interfaces |
| Configurable | <p>Full Color Count Down Timer is configurable with Vehicular Traffic Signal and Pedestrian Signals</p> <p>Vehicular Configuration mode; display following data “STOP” with Reverse Counting in Red Color while Traffic Signal turns RED. “WAIT” with Reverse Counting in Amber Color while Traffic Signal turns AMBER “GO” with Reverse Counting in Green Color while Traffic Signal turns GREEN.</p> <p>Pedestrian Configuration mode; Display following data “WAIT” with Reverse Counting in Red Color while Pedestrian Signal turns RED. “WALK” with Reverse Counting in Green Color while Pedestrian Signal turns GREEN</p> |
| GENERAL | |
| Enclosure color | BLACK / Grey or as required by customer |

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| | |
|-------------------------------|--|
| Enclosure Material | Mild Steel with black color powder coating for outdoor application |
| Lens | No Lens, |
| Dimming | Auto dimming (Optional) on demand |
| TEST, DECLARATIONS & MARKING | |
| Count Down Timer Manufacturer | ISO 9001 : 2015 Certificate |
| Marking and labeling | CE marking (EN 12368) Certificate |
| Count Down Timer | IP65 Test Report |

4. Poles for Traffic Signals

There are two types of Poles being considered for Traffic Control systems i.e. Standard Pole and Cantilever Pole.

4.1 Technical Specifications of Standard Pole

| Material | |
|------------------------|--|
| Material | GI Class 'B' Pipe |
| Standard | ISI mark |
| Dimensions | |
| Height | 4000mm |
| Diameter | 114mm |
| Wall thickness | 4.5mm +/- 10% |
| Base plate | |
| Size | 300mm x 300mm |
| Wall thickness | 12mm |
| Color | |
| Color | Yellow color recommended or as per client's requirement. |
| Paint | Spray paint (Outdoor application) with two coats of primer |
| Foundation | |
| Foundation type | Surface mount on RCC foundation |
| Foundation Accessories | J Bolt 4 x 500 mm |

4.2 Technical Specifications of Cantilever Pole

| Material | |
|------------|-------------------|
| Material | GI Class 'B' Pipe |
| Standard | ISI mark |
| Dimensions | |

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| | |
|------------------------|--|
| Height | 6000mm |
| Diameter | 141mm |
| Wall thickness | 4.5mm +/- 10% |
| Overhang Arm Length | 3000 - 4500mm |
| Overhang Arm Diameter | 115mm |
| Base plate | |
| Size | 500mm x 500mm |
| Wall thickness | 20mm |
| Color | |
| Color | Yellow color recommended or as per client's requirement. |
| Paint | Spray paint (Outdoor application) with two coats of primer |
| Foundation | |
| Foundation type | Surface mount on RCC foundation |
| Foundation Accessories | J Bolt 6 x 750mm |

5. Cables for Traffic Control Systems

No's of core : 6 and 12 core 1.5 sq. mm 3 Core 2.5 sq. mm

Materials : PVC insulated and PVC sheathed armored cable with copper conductor of suitable size as specified in BOQ

Certification : ISI Marked

Standards : Indian Electricity Act and Rules

IS: 1554 : PVC insulated electric cables (heavy duty)

5.1 Technical Specification of Cables 3 core x 2.5sq. mm Copper armoured

Cables are ISI Marked and as per ISI specifications for Power Supply Cables

| | |
|-----------------------------|--|
| Type | 3 core 2.5 sq. mm, Copper, Armoured, underground cable |
| Conductor material | Bare Copper |
| Insulating material | PVC type – A |
| Insulation thickness | 0.80 mm |
| No. Of cores/pairs/triads | as per requirement |
| Maximum outer diameter | 16.40 mm +/- 1.00 mm |
| Tolerance | +/- 05 % of the ordered Length |
| Test & applicable standards | IS:8130, is:5831, is:3975 & IS:1554 part1 |

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| | |
|-----------------------------|---------------------------------|
| Sp. Information/ highlights | C.R. at 20 deg.C:<12.1 ohm/km |
| Other details | Insulation res:>100 mega ohm/km |

5.2 Technical Specifications for 1.5 Sq. mm un armoured Control Cables

| | |
|-----------------------------|---|
| Type | 1.5 sq. mm Multicore (4, 6, & 12), Copper, unrmoured, underground cable |
| Conductor material | Bare Copper |
| Insulating material | PVC type – A |
| Insulation thickness | 0.80 mm |
| No. Of cores/pairs/triads | as per requirement |
| Maximum outer diameter | 16.40 mm + /- 1.00 mm |
| Tolerance | +/- 05 % of the ordered Length |
| Test & applicable standards | IS:8130,is:5831,is:3975 & IS:1554 part-1 |
| Sp. Information/ highlights | C.R. at 20 deg. C:<12.1 ohm/km |
| Other details | Insulation res:>100 mega ohm/km |

6. HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

This specification includes but is not limited to high density polyethylene, primarily intended for use of electrical cable laying either buried or above grade.

| Technical Specifications | |
|-----------------------------|---|
| Material Grade | HDPE DWC |
| Size | 63 mm OD |
| Color | Black |
| Surface Finishing | Color Coated |
| Test & applicable standards | ISI Mark, IS4984/2016 |
| Sp. Information/ highlights | PE63, PN4 Polyethylene (PE) pressure Pipe |
| Other details | Supplied in Coil length |

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Estimate with Bill of Materials

| Price Schedule_Automatic Traffic Control Systems | | | | | |
|---|--|-------|------------|---------------|--------|
| Project: Supply, Installation, Testing & Commissioning of Automatic Traffic Control Systems at 2Way Junction, Itanagar, Arunachal Pradesh | | | | | |
| Bill of Materials | | | | 2Way Junction | |
| Sr. No. | Item Description | UoM | Unit Price | Qty | Amount |
| 1 | Supply of Traffic Signal Controller with Mild Steel Cabinet including components & wiring and all other related parts. As per Technical Specifications sheet. | Nos | | 1 | |
| 2 | Supply of 12" (300mm diameter) 4 Section Traffic Signal Aspects (Red / Amber/ Green Straight / Green Right) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 6 | |
| 3 | Supply of Count Down Timer Full Matrix for Traffic Signals capable to display Message "STOP" / "WAIT" / "GO" and reverse counting in same color order of Traffic Signals - RED / AMBER / GREEN in Mild Steel housing including Electronic systems. As per Technical Specifications sheet | Nos | | 2 | |
| 4 | Supply of 12" (300mm diameter) 2 Section Pedestrian Signal Aspects (Red - Man Stop Sign and Green - Man Walk animation) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 2 | |
| 5 | Supply of Count Down Timer Full Matrix for Pedestrian Signals capable to display Message "WAIT" / "WALK" and reverse counting in same color order of Pedestrian Signals - RED / GREEN in Mild Steel housing including electronic systems. As per Technical Specifications sheet | Nos | | 2 | |
| 6 | Supply of MS Standard Pole 6mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Nos | | 2 | |
| 7 | Supply of MS Cantilever Pole 7.5mtrs vertical with overhang arm 4.5mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Set | | 2 | |
| 8 | Supply of Copper un armoured Cable 12 core x 2 sq mm flexible multithread wire. As per ISI Standard and Industrial Grade | R/Mtr | | 200 | |

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| | | | | | |
|---------------|---|------------|--|-----|--|
| 9 | Supply of Copper un armoured Cable 6 core x 1.5 sq mm flexible multithread wire. As per ISI Standard and industrial Grade | R/Mtr | | 80 | |
| 10 | Supply of HDPE Pipe 63mm 4kg pressure. As per ISI Standard and industrial grade | R/Mtr | | 150 | |
| 11 | Supply of Battery Back up Systems per junction backup time 4 -6 hours including battery bank and hybrid inverter future - upgradable with solar Power systems with Mild steel battery box and related accessories | set | | 1 | |
| 12 | Trenching/Road cutting/manual molling/digging including laying of 12 core cable underground and refilling the road surface | R/Mtr | | 150 | |
| 13 | Erection of Standard Pole including RCC pole foundation and civil work and related activities | civil work | | 2 | |
| 14 | Erection of Cantilever Pole including RCC pole foundation and civil work and related activities | civil work | | 2 | |
| 15 | Erection of Traffic Signal Controller including RCC plinth foundation or Pole mounting of Traffic Signal Controller | civil work | | 1 | |
| 16 | Installation / Electrical work and labour work including fixing of Traffic Signal Aspects, Count down Timer, controller, wiring and testing commissioning of the complete system | Job work | | 1 | |
| Subtotal in ₹ | | | | | |
| Add GST@ 18% | | | | | |
| Grand total ₹ | | | | | |

| Price Schedule_Automatic Traffic Control Systems | | | | | |
|--|--|-----|------------|--------------|--------|
| Project: Supply, Installation, Testing & Commissioning of Automatic Traffic Control Systems at Tri Junction, Itanagar, Arunachal Pradesh | | | | | |
| Bill of Materials | | | | Tri Junction | |
| Sr. No. | Item Description | UoM | Unit Price | Qty | Amount |
| 1 | Supply of Traffic Signal Controller with Mild Steel Cabinet including components & wiring and all other related parts As per Technical Specifications sheet. | Nos | | 1 | |
| 2 | Supply of 12" (300mm diameter) 4 Section Traffic Signal Aspects (Red / Amber/ Green Straight / Green Right) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 9 | |

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|----|--|------------|--|-----|--|
| 3 | Supply of Count Down Timer Full Matrix for Traffic Signals capable to display Message "STOP" / "WAIT" / "GO" and reverse counting in same color order of Traffic Signals - RED / AMBER / GREEN in Mild Steel housing including electronic systems. As per Technical Specifications sheet | Nos | | 3 | |
| 4 | Supply of 12" (300mm diameter) 2 Section Pedestrian Signal Aspects (Red - Man Stop Sign and Green - Man Walk animation) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 6 | |
| 5 | Supply of Count Down Timer Full Matrix for Pedestrian Signals capable to display Message "WAIT" / "WALK" and reverse counting in same color order of Pedestrian Signals - RED / GREEN in Mild Steel housing including electronic systems. As per Technical Specifications sheet | Nos | | 6 | |
| 6 | Supply of MS Standard Pole 6mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Nos | | 4 | |
| 7 | Supply of MS Cantilever Pole 7.5mtrs vertical with overhang arm 4.5mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Set | | 3 | |
| 8 | Supply of Copper un armoured Cable 12 core x 2 sq mm flexible multithread wire. As per ISI Standard and Industrial Grade | R/Mtr | | 200 | |
| 9 | Supply of Copper un armoured Cable 6 core x 1.5 sq mm flexible multithread wire. As per ISI Standard and industrial Grade | R/Mtr | | 100 | |
| 10 | Supply of HDPE Pipe 63mm 4kg pressure. As per ISI Standard and industrial grade | R/Mtr | | 200 | |
| 11 | Supply of Battery Back up Systems per junction backup time 4 -6 hours including battery bank and hybrid inverter future - upgradable with solar Power systems with Mild steel battery box and related accessories | set | | 1 | |
| 12 | Trenching/Road cutting/manual molling/digging including laying of 12 core cable underground and refilling the road surface | R/Mtr | | 200 | |
| 13 | Erection of Standard Pole including RCC pole foundation and civil work and related activities | civil work | | 4 | |
| 14 | Erection of Cantilever Pole including RCC pole foundation and civil work and related activities | civil work | | 3 | |
| 15 | Erection of Traffic Signal Controller including RCC plinth foundation or Pole mounting of Traffic Signal Controller | civil work | | 1 | |

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| | | | | |
|---------------|--|----------|---|--|
| 16 | Installation / Electrical work and labour work including fixing of Traffic Signal Aspects, Count down Timer, controller, wiring and testing commissioning of the complete system | Job work | 1 | |
| Subtotal in ₹ | | | | |
| Add GST @ 18% | | | | |
| Grand total ₹ | | | | |

| Price Schedule_Automatic Traffic Control Systems | | | | | |
|---|--|-----|------------|---------------|--------|
| Project: Supply, Installation, Testing & Commissioning of Automatic Traffic Control Systems at 4way Junction, Itanagar, Arunachal Pradesh | | | | | |
| Bill of Materials | | | | 4Way Junction | |
| Sr. No. | Item Description | UoM | Unit Price | Qty | Amount |
| 1 | Supply of Traffic Signal Controller with Mild Steel Cabinet including components & wiring and all other related parts) As per Technical Specifications sheet. | Nos | | 1 | |
| 2 | Supply of 12" (300mm diameter) 4 Section Traffic Signal Aspects (Red / Amber/ Green Straight / Green Right) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 12 | |
| 3 | Supply of Count Down Timer Full Matrix for Traffic Signals capable to display Message "STOP" / "WAIT" / "GO" and reverse counting in same color order of Traffic Signals - RED / AMBER / GREEN in Mild Steel housing including electronic systems. As per Technical Specifications sheet | Nos | | 4 | |
| 4 | Supply of 12" (300mm diameter) 2 Section Pedestrian Signal Aspects (Red - Man Stop Sign and Green - Man Walk animation) in polycarbonate moulded compact & slim designed signal head housing including LED retrofit kit. As per Technical Specifications sheet | Set | | 8 | |
| 5 | Supply of Count Down Timer Full Matrix for Pedestrian Signals capable to display Message "WAIT" / "WALK" and reverse counting in same color order of Pedestrian Signals - RED / GREEN in Mild Steel housing including electronic systems. As per Technical Specifications sheet | Nos | | 8 | |
| 6 | Supply of MS Standard Pole 6mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Nos | | 4 | |

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| | | | | | |
|---------------|---|------------|--|-----|--|
| 7 | Supply of MS Cantilever Pole 7.5mtrs vertical with overhang arm 4.5mtrs including foundation accessories and other related activities. As per Technical specification sheet. | Set | | 4 | |
| 8 | Supply of Copper un armoured Cable 12 core x 2 sq mm flexible multithread wire. As per ISI Standard and Industrial Grade | R/Mtr | | 300 | |
| 9 | Supply of Copper un armoured Cable 6 core x 1.5 sq mm flexible multithread wire. As per ISI Standard and industrial Grade | R/Mtr | | 100 | |
| 10 | Supply of HDPE Pipe 63mm 4kg pressure. As per ISI Standard and industrial grade | R/Mtr | | 250 | |
| 11 | Supply of Battery Back up Systems per junction backup time 4 -6 hours including battery bank and hybrid invertor future - upgradable with solar Power systems with Mild steel battery box and related accessories | set | | 1 | |
| 12 | Trenching/Road cutting/manual molling/digging including laying of 12 core cable underground and refilling the road surface | R/Mtr | | 275 | |
| 13 | Erection of Standard Pole including RCC pole foundation and civil work and related activities | civil work | | 4 | |
| 14 | Erection of Cantilever Pole including RCC pole foundation and civil work and related activities | civil work | | 4 | |
| 15 | Erection of Traffic Signal Controller including RCC plinth foundation or Pole mounting of Traffic Signal Controller | civil work | | 1 | |
| 16 | Installation / Electrical work and labour work including fixing of Traffic Signal Aspects, Count down Timer, controller, wiring and testing commissioning of the complete system | Job work | | 1 | |
| Subtotal in ₹ | | | | | |
| Add GST@ 18% | | | | | |
| Grand total ₹ | | | | | |

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