

## TRAFFIC DEPARTMENT USOR - 2018

Sr. No.	Code No.	Item Description	Unit	Rate in Rs.
	<b>R2-RT-ATC-1</b>	<b>ATC - CONTROLLER</b>		
1	R2-RT-ATC 1.1	Supply of Type 4 controller (13-16 phases) TELVENT make with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc. Controller shall support ITACA Traffic management system in Mumbai.	Nos	779015
2	R2-RT-ATC 1.2	Supply of Type 4 controller (13-16 phases) of equivalent to TELVENT make with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc. Controller shall support and integrated with ITACA Traffic management system in Mumbai.	Nos	855448
3	R2-RT-ATC 1.3	Supply of Type 5 controller (17-20 phases) M/s TELVENT make with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc. Controller shall support ITACA Traffic management system in Mumbai.	Nos	847736



4	R2-RT-ATC 1.4	Supply of Type 6 controller (over 21 phases)M/s TELVENT make with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc. Controller shall support ITACA Traffic management system in Mumbai.	Nos	916457
5	R2-RT-NATC 1.5	Supply of Microprocessor based Automatic traffic signal controller with housed in a water proof, dust proof & dust tight cabinet with internal locking arrangement , Police panel etc., incorporating the following – minimum 16 timing plans & 12 phases, 7 day clock, with 16 groups with minimum 48 lines with conflict management facility and GPS clock system.	Nos	120806
6	R2-RT-ATC 1.6	Supply of S.S 304 controller cabinet for ATC controllers with canopy construction having sheet of thickness 1.6mm with IP 55 protection as per attached drawing.	Nos	54518
7	R2-RT-NATC 1.7	Supply of controller cabinet for Non ATC controllers of M.S. Sheet material of 2 mm thickness with I.P.-55 protection having size of 600X300X1200 mm (WXDXH)	Nos	32015
8	R2-RT-ATC 1.8	Installation,testing and commissioning of all types of ATC controller	Nos	19054
9	R2-RT-ATC 1.9	Removal of ATC Controller Cabinet	Nos	5706
10	R2-RT-ATC 1.10	Sealing of controller with bitumen / foam for achieving IP 55 protection.	Nos	7132
11	R2-RT-NATC 1.11	Installation & commissioning of Non ATC Traffic Signal Controller Including all Fittings on PCC foundation.( Excluding PCC foundation).	Nos	4564



12	R2-RT-NATC 1.12	Installation and commissioning of Non-ATC controller on pole as specified	Nos	1904
13	R2-RT-NATC 1.13	Removal of NON ATC signal controller from foundation or pole	Nos	2224
14	R2-RT-NATC 1.14	Supply of digital count down timer for non-ATC Signal Junctions ( EN 12966 ) Graphic Type	Nos	25960
15	R2-RT-NATC 1.15	Installation and commissioning of countdown timer for non-ATC Signal Junctions	Nos	763
16	R2-RT-NATC 1.16	Supply of count down timer (2 1/2 digit 8" digit height dual colour) for non-ATC Signal Junctions as per latest IS, BS or equivalent standards	Nos	17818
17	R2-RT-NATC 1.17	Removal of count down timer from pole as specified	Nos	192
18	R2-RT-ATC 1.18	Earthing Pit with 50 mm dia. G.I. pipe, 1000 mm long GI pipe (Class B or better) earth pit as per IS 3043. The earth pit shall be provided with watering pipe (Class B) with wire meshed funnel, 25x6 GI strip / 8 SWG GI wire up to chamber (wire or strip size as per fault level), disconnecting links with 450 x 450 mm (clear) RCC chamber & heavy duty 3mm thick CI chequered plate cover with hinge & stainless steel bolts. Bentonite/ Charcol & Salt shall be provided for earth pits. Excavation, backfilling, removal of excess soil is included in the scope	Nos	8202
	<b>R2-RT-ATC-2</b>	<b>ATC - PCBs</b>		
19	R2-RT-ATC 2.1	Supply of M/s TELVENT make Group Card TGRY-306/5 latest version	Nos	35349
20	R2-RT-ATC 2.2	Supply of M/s TELVENT make TCE Card TCE-486/3	Nos	43166
21	R2-RT-ATC 2.3	Supply of M/s TELVENT make Micro-1 Card TMRY-478/3 V6	Nos	39426



22	R2-RT-ATC 2.4	Supply of M/s TELVENT make Micro-2 Card TMRY-478/3 V7	Nos	37631
23	R2-RT-ATC 2.5	Supply of M/s TELVENT make Input/Input Card EERY-274/2 V2	Nos	43272
24	R2-RT-ATC 2.6	Supply of M/s TELVENT make Input/Output Card ESRY-384/4V2	Nos	26627
25	R2-RT-ATC 2.7	Supply of M/s TELVENT make SMPS Card FAY-267/12 V1.3	Nos	36848
26	R2-RT-ATC 2.8	Supply of M/s TELVENT make REY Card REY42-544	Nos	66851
27	R2-RT-ATC 2.9	Supply of M/s TELVENT make RESY Card RESY-42/542 V2	Nos	40514
28	R2-RT-ATC 2.10	Supply of M/s TELVENT make Back Plane Mother Board Card-BPRY-311/3 V2	Nos	11791
29	R2-RT-ATC 2.11	Supply of M/s TELVENT make Back Plane Mother Board Card-BSRY-312/2 V2	Nos	8495
30	R2-RT-ATC 2.12	Supply of M/s TELVENT make Main Rack 6 U, depth 80 mm with division for detectors and guides for RMY32, without bus	Nos	39914
31	R2-RT-NATC 2.13	Supply of audible beeper unit with all require accessories.	Nos	2973
32	R2-RT-NATC 2.14	Installation and commissioning of audible beeper unit.	Nos	377
33	R2-RT-NATC 2.15	Removal of audible beeper unit.	Nos	165
34	R2-RT-ATC 2.16	Supply, Installation and commissioning of Push button assembly including display / instruction board as per drawing	Nos	12031
35	R2-RT-NATC 2.17	Removal of Push button assembly	Nos	713
	<b>R2-RT-ATC-3</b>	<b>ATC - PIPING</b>		
36	R2-RT-NATC 3.1	Supply of single 120mm (OD)/103.5 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes conforming to the IS 14930 (Part-II) including supply of necessary sockets, couplings etc.	Mtr	224



37	R2-RT-NATC 3.2	Laying of single 120mm (OD)/ 103.5mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes including pull wire along with necessary sockets, couplings etc. and as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	14
38	R2-RT-NATC 3.3	Supply of single 63 mm (OD)/ 47 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes conforming to the IS 14930 (Part-II) including supply of necessary sockets, couplings etc.	Mtr	91
39	R2-RT-NATC 3.4	Laying 63 mm (OD)/47 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes including pull wire along with necessary sockets, couplings etc. as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	8
40	R2-RT-NATC 3.5	Supply of single 50 mm (OD)/ 37 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes conforming to the IS 14930 (Part-II) including supply of necessary sockets, couplings etc.	Mtr	73
41	R2-RT-NATC 3.6	Laying 50 mm (OD)/ 37mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipes including pull wire along with necessary sockets, couplings etc. as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	8
42	R2-RT-NATC 3.7	Supply of 100 mm Dia. Class 'A' G.I. pipe including Supply of necessary accessories such as G.I. couplers etc.	Mtr	1050
43	R2-RT-NATC 3.8	Laying of 100 mm Dia. Class 'A' G.I. pipe with provision of Pull Boxes etc. as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	142



44	R2-RT-NATC 3.9	Supply of 65 mm Dia. Class 'A' G.I. pipe including Supply of necessary accessories such as G.I. couplers etc.	Mtr	649
45	R2-RT-NATC 3.10	Laying of 65 mm Dia. Class 'A' G.I. pipe, with provision of Pull Boxes etc. as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	85
46	R2-RT-NATC 3.11	Supply of 50 mm Dia. Class 'A' G.I. pipe including Supply of necessary accessories such as G.I. couplers etc.	Mtr	472
47	R2-RT-NATC 3.12	Laying of 50 mm Dia. Class 'A' G.I. pipe, with provision of Pull Boxes etc. as per drawing no. RT-NATC-3.2A & RT-NATC-3.2B	Mtr	72
48	R2-RT-NATC 3.13	Removal of existing all types of Class 'A' G.I. pipe G.I. Pipe excluding excavation.	Mtr	64
49	R2-RT-NATC 3.14	Removal of existing single 120mm (OD)/ 103.5 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipe excluding excavation.	Mtr	34
50	R2-RT-NATC 3.15	Removal of existing single 50 mm (OD)/ 37 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipe excluding excavation.	Mtr	34
51	R2-RT-NATC 3.16	Removal of existing single 63 mm (OD)/ 47 mm (ID) double walled corrugated High Density Poly Ethylene (HDPE) Pipe excluding excavation.	Mtr	34
	<b>R2-RT-ATC-4</b>	<b>ATC - SIGNAL / CCTV / VIDEO DETECTION POLES</b>		
52	R2-RT-ATC 4.1	Supply of Galvanised Iron Class B Traffic Signal straight pole of 6 mtr height as per Specification	Nos	14369



53	R2-RT-ATC 4.2	Supply of Galvanised Iron Class B Traffic Signal cantilever pole of as per Specification	Nos	40627
54	R2-RT-ATC 4.3	Supply of Galvanised Iron Class B straight pole of 8.75 mtr height as per Specification	Nos	39190
55	R2-RT-ATC 4.4	Supply of Galvanised Iron Class B straight pole of 11 mtr height as per Specification	Nos	39735
56	R2-RT-ATC 4.5	Supply of Galvanised Iron Class B straight pole of 7 mtr height as per Specification	Nos	20334
57	R2-RT-ATC 4.6	Supply of Galvanised Iron Class B straight pole of 8.75 mtr height WITH CCTV camera accessories as per Specification	Nos	62724
58	R2-RT-ATC 4.7	Supply of Traffic Signal swing type cantilever pole of as per Specification	Nos	46920
59	R2-RT-ATC 4.8	Supply of G.I. Class B swing arm of 4mtr length for swing type Cantilever pole as per Specification	Nos	15755
60	R2-RT-ATC 4.9	Supply of G.I. Class B fix base of 5mtr height for Cantilever pole as per Specification	Nos	25119
61	R2-RT-ATC 4.10	Supply of G.I. Class B extended arm of 4mtr length for Cantilever pole as per Specification	Nos	15755
62	R2-RT-NATC 4.11	Supply of Traffic signal Straight pole of 6 mtr, inner dia 100 mm from resistant to peeling with base plate size of ( LXWXT) 200mm X200mmX10 mm painted with redoxide and double coat with synthetic enamel paint of yellow colour assembly G.I., class B, as per technical specification	Nos	13062





63	R2-RT-NATC 4.12	Supply of Traffic signal Cantilever pole Class B having inner diameter of 100 mm or more with a height of 6m including extension arm assembly having outer diameter of 75mm with arm span of 4 mtr length and base plate of size 300mm X 300mm with thickness of 6 mm welded at the bottom of the pole base as per technical specification & drawings.	Nos	26722
64	R2-RT-NATC 4.13	Supply of Straight pole 100mm dia assembly G.I., class B, 3 mtr length as per technical specification & drawings.	Nos	5945
65	R2-RT-NATC 4.14	Supply of Traffic signal Straight pole assembly G.I., class B 6 mtr. Height and 100 mm dia, with base plate 200mmX200mmX12mm at bottom for solar flasher unit as per technical specification.	Nos	9910
66	R2-RT-ATC 4.18	Supply of Polycarbonate pole cap suitable for NB 100 mm without terminal chassis and terminals as per drawing	Nos	417
67	R2-RT-ATC 4.19	Supply, Installation and commissioning of Electrical interface housing cable termination of cantilever pole as per drawing	Nos	1268
68	R2-RT-ATC 4.20	Supply of Cast Iron Brackets for mounting signal light aspect on pole as per drawing	Nos	654
69	R2-RT-ATC 4.21	Supply of standard neoprene rubber gasket suitable for cantilever pole door and at cable entry portion of straight pole and cantilever pole	Nos	168
70	R2-RT-ATC 4.22	Supply, Installation and commissioning of Pole Cap Termination Assembly for straight pole as per drawing	Nos	1709





71	R2-RT-ATC 4.23	Fixing of Traffic Signal fix type and swing type Cantilever pole extension arm	Nos	2853
72	R2-RT-ATC 4.24	Removal of Traffic signal straight pole	Nos	4993
73	R2-RT-ATC 4.25	Removal of Traffic signal cantilever pole with extension arm or camera pole assembly	Nos	9272
74	R2-RT-ATC 4.26	Removal of Traffic signal pole cantilever pole extension arm	Nos	2853
75	R2-RT-ATC 4.27	ELI Test for Poles and incoming electric Supply of Signal Junction with FLUKE Meter and submission of ELI Test Report	Nos	2853
	<b>R2-RT-ATC-5</b>	<b>ATC - JUNCTION BOX &amp; POWER SUPPLY BOX</b>		
76	R2-RT-NATC 5.1	Supply of 2 mm thick 310 mm x 215 mm x 100 mm MS junction box including providing cover with provision to adjust overall height, knock outs on four sides to accept cables of specified sizes and including elmex connector, gland, cable terminations etc	Nos	1140
77	R2-RT-NATC 5.2	installation of 2 mm thick 310 mm x 215 mm x 100 mm MS junction box as described above	Nos	183
78	R2-RT-NATC 5.3	Removal / dismantling of existing Jn. Box	Nos	142
79	R2-RT-NATC 5.4	Supply of power supply box 600mm X 400mm X 300mm (HXWXD), with canopy made in welded construction of S.S. 304 material having sheet of thickness 1.6mm with IP 55 protection as per technical specification and as per requirement of power supply authority	Nos	13516
80	R2-RT-NATC 5.5	Installation & commissioning of power supply box.	Nos	2310



81	R2-RT-NATC 5.6	Removal / dismantling of existing power supply box (M.S./S.S.)	Nos	278
82	R2-RT-NATC 5.7	Supply & installation of new anchor fastener of S.S.material of 8 mm dia and length of 100mm with removal of existing fixed studs	Nos	254
83	R2-RT-NATC 5.8	Supply, Installation, Testing and commissioning of Police Panel Box(inclusive of Rotary Switch & Push Button) of Non-ATC Controller	Nos	694
84	R2-RT-NATC 5.9	Supply & Installation of junction box cover for NON ATC	Nos	64
	<b>R2-RT-ATC-6</b>	<b>ATC - SIGNAL HEAD</b>		
85	R2-RT-ATC 6.1	Supply of 300 mm dia – single source – LED retrofit - Red (blow) as per Specification	Nos	6490
86	R2-RT-ATC 6.2	Supply of 300 mm dia – single source – LED retrofit - Amber (blow) as per Specification	Nos	6490
87	R2-RT-ATC 6.3	Supply of 300 mm dia – single source – LED retrofit - Green (arrow/U- Turn) EN-12368 as per Specification	Nos	7725
88	R2-RT-ATC 6.4	Supply of 300 mm dia – single source – LED retrofit - Red (ped. standing) EN-12368 as per Specification	Nos	6490
89	R2-RT-ATC 6.5	Supply of 300 mm dia – single source – LED retrofit - Green (ped.walking) EN-12368 as per Specification	Nos	7725
90	R2-RT-ATC 6.6	Supply of 300 mm dia – single source – LED retrofit - Amber (arrow) EN-12368 as per Specification	Nos	6490
91	R2-RT-ATC 6.7	Supply of 300 mm dia - No Right Turn/No Left turn/No Straight/No 'U' Turn aspects by using UV stabilized ink on face plate EN-12368 as per Specification	Nos	3974



92	R2-RT-ATC 6.8	Supply of Polycarbonate LED Signal head housing 300 mm dia. as per ATC technical specification and drawing alongwith brackets & accessories etc. (For all type of LED Retrofit)	Nos	4000
93	R2-RT-NATC 6.9	Supply of 300 mm dia – signal LED retrofit - Red (blow) with minimum light output 260Cd and maximum power consumption 10W ±10%, with IP-65 protection	Nos	3415
94	R2-RT-NATC 6.10	Supply of 300 mm dia – signal aspect – LED retrofit - Amber (blow) with minimum light output 260Cd and maximum power consumption 10W±10%, with IP-65 protection	Nos	3500
95	R2-RT-NATC 6.11	Supply of 300 mm dia – signal aspect – LED retrofit - Green (arrow/U- Turn) with minimum light output 100Cd and maximum power consumption 4W±10%, with IP-65 protection	Nos	4098
96	R2-RT-NATC 6.12	Supply of 300 mm dia – signal aspect – LED retrofit - Red (ped. standing) with minimum light output 65Cd and maximum power consumption 4W±10%,with IP-65 protection	Nos	3304
97	R2-RT-NATC 6.13	Supply of 300 mm dia – single aspect – LED retrofit - Green (ped.walking) with minimum light output 45Cd and maximum power consumption 4W±10%,with IP-65 protection	Nos	3927
98	R2-RT-NATC 6.14	Supply of 300 mm dia – signal aspect – LED retrofit - Amber (arrow) with minimum light output 100Cd and maximum power consumption 4W±10%,with IP-65 protection	Nos	3500



99	R2-RT-ATC 6.15	Installation of Polycarbonate LED Signal aspect of 300 mm dia. on standard traffic signal straight pole	Nos	389
100	R2-RT-ATC 6.16	Installation of Polycarbonate LED Signal aspect of 300 mm dia. On standard traffic signal cantilever pole	Nos	784
101	R2-RT-ATC 6.17	Removal of Polycarbonate LED Signal aspect of 300 mm dia. on standard traffic signal straight pole	Nos	392
102	R2-RT-ATC 6.18	Removal of Polycarbonate LED Signal aspect of 300 mm dia. On standard traffic signal cantilever pole	Nos	713
	<b>R2-RT-ATC-7</b>	<b>ATC - CABLES</b>		
103	R2-RT-ATC 7.1	Supply of PVC insulated armoured cable - 1.5 Sq.mm. 2 core copper conductor	Mtrs	68
104	R2-RT-ATC 7.2	Supply of PVC insulated armoured cable - 2.5 Sq.mm. 3 core copper conductor	Mtrs	111
105	R2-RT-ATC 7.3	Supply of PVC insulated armoured cable - 1 Sq.mm. 8 core copper conductor	Mtrs	150
106	R2-RT-ATC 7.4	Supply of PVC insulated armoured cable - 1.5 Sq.mm. 8 core copper conductor	Mtrs	166
107	R2-RT-ATC 7.5	Supply of PVC insulated armoured cable - 1 Sq.mm. 16 core copper conductor	Mtrs	288
108	R2-RT-ATC 7.6	Supply of PVC insulated armoured cable - 1.5 Sq.mm. 16 core copper conductor	Mtrs	229
109	R2-RT-ATC 7.7	Supply of PVC insulated armoured cable - 1.5 Sq.mm. 30 core copper conductor	Mtrs	554
110	R2-RT-ATC 7.8	Supply of PVC insulated armoured cable - 1.5 Sq.mm. 2 Pair copper conductor	Mtrs	129



111	R2-RT-ATC 7.9	Supply of CAT-6 cable for CCTV application armoured	Mtrs	30
112	R2-RT-ATC 7.10A	Supply of OFC 6 Core (Single mode ) armoured	Mtrs	35
113	R2-RT-ATC 7.10B	Supply of OFC 6 Core (multi mode) armoured	Mtrs	68
114	R2-RT-ATC 7.11	Splicing of OFC Cable (Per pair)	Nos	364
115	R2-RT-ATC 7.12A	Single mode Patch Cord for OFC cable (1 mtr )	Nos	944
116	R2-RT-ATC 7.12B	Single mode Patch Cord for OFC cable (3 mtr )	Nos	1298
117	R2-RT-ATC 7.12C	Single mode Patch Cord for OFC cable ( 5 mtr )	Nos	1593
118	R2-RT-ATC 7.12D	Single mode Patch Cord for OFC cable (10 mtr )	Nos	2124
119	R2-RT-ATC 7.13	Installation of CAT-6 cable	Mtrs	18
120	R2-RT-ATC 7.14	Laying of signal cables (all types including communication cables with multi pairs as described above) in trenches, existing ducts / G.I. Pipes including ferruling, testing etc. but excluding any cable joint, excavation etc.	Mtrs	38
121	R2-RT-ATC 7.15	Relaying of signal cables (all types including communication cables with multi pairs as described above) in existing trenches, ducts / G.I. Pipes including ferruling, testing etc. but excluding any cable joint, excavation etc.	Mtrs	29
122	R2-RT-ATC 7.16	Removal of signal cables (all types including communication cables with multi pairs as described above) in existing trenches, ducts / G.I. Pipes including ferruling, testing etc. but excluding any cable joint, excavation etc.	Mtrs	25
123	R2-RT-NATC 7.17	Supply of cable jointing Kit and joining of 1.5 sq.mm copper conductor control cable	Nos	2239



124	R2-RT-NATC 7.18	Supply of cable jointing Kit and joining of 2.5 Sq.mm. 3 Core copper conductor control cable	Nos	2338
125	R2-RT-ATC 7.19	Supply of cable jointing Kit (IP 68 Enclosure) and joining of 1 Sq.mm. 8 core copper conductor control cable	Nos	3041
126	R2-RT-NATC 7.20	Supply of cable jointing Kit and joining of 1.5 Sq.mm. 8 core copper conductor control cable	Nos	1446
127	R2-RT-ATC 7.21	Supply of cable jointing Kit (IP 68 Enclosure) and joining of 1 Sq.mm. 16 core copper conductor control cable	Nos	4731
128	R2-RT-NATC 7.22	Supply of cable jointing Kit and joining of 1.5 Sq.mm. 16 core copper conductor control cable	Nos	1644
129	R2-RT-NATC 7.23	Supply of cable jointing Kit and joining of 1.5 Sq.mm. 30 core copper conductor control cable	Nos	2140
130	R2-RT-ATC 7.24	Supply of cable jointing Kit and joining of 1.5 Sq.mm. 2 Pair copper conductor cable (IP68 Enclosure)	Nos	2686
131	R2-RT-ATC 7.25	Supply of XLPE insulated - 1.5 Sq.mm. 2 core copper conductor	Mtrs	65
132	R2-RT-ATC 7.26	Supply of XLPE insulated - 2.5 Sq.mm. 3 core copper conductor	Mtrs	106
133	R2-RT-ATC 7.27	Supply of XLPE insulated - 1 Sq.mm. 8 core copper conductor	Mtrs	154
134	R2-RT-ATC 7.28	Supply of XLPE insulated - 1.5 Sq.mm. 8 core copper conductor	Mtrs	159
135	R2-RT-ATC 7.29	Supply of XLPE insulated - 1 Sq.mm. 16 core copper conductor	Mtrs	268
136	R2-RT-ATC 7.30	Supply of XLPE insulated - 1.5 Sq.mm. 16 core copper conductor	Mtrs	276
137	R2-RT-ATC 7.31	Supply of XLPE insulated - 1.5 Sq.mm. 30 core copper conductor	Mtrs	534
138	R2-RT-ATC 7.32	Supply of XLPE insulated - 1.5 Sq.mm. 2 Pair copper conductor	Mtrs	129



	<b>R2-RT-ATC-8</b>	<b>ATC - FLASHERS</b>		
139	R2-RT-NATC 8.1	Supply of Blinker Controller with adjustable flash rate having interface to solar panel of 12 Volts D.C. supply with sufficient power rating with battery charge regulator (without battery, cabinet and Solar Panel)	Nos	5976
140	R2-RT-NATC 8.2	Installation, testing & commissioning of above flasher unit (solar Blinker Controller) excluding foundation, installation of cabinet, battery, panel etc.	Nos	821
141	R2-RT-NATC 8.3	Supply of Solar Panel 12V / 50 Watt	Nos	6229
142	R2-RT-NATC 8.4	Supply of Solar Panel 12V / 70Watt	Nos	8812
143	R2-RT-NATC 8.5	Supply of Solar Panel 12V / 100 Watt	Nos	15871
144	R2-RT-NATC 8.6	Supply of Solar Panel 12V / 150 Watt	Nos	19046
145	R2-RT-NATC 8.7	Supply of Battery 12V / 50 AH	Nos	7172
146	R2-RT-NATC 8.8	Supply of Battery 12V / 65 AH	Nos	8537
147	R2-RT-NATC 8.9	Supply of Battery 12V / 100 AH	Nos	11616
148	R2-RT-NATC 8.10	Supply of Battery 12V / 150 AH	Nos	20959
149	R2-RT-NATC 8.11	Supply of solar battery cabinet suitable for 50 AH Battery.	Nos	5816
150	R2-RT-NATC 8.12	Supply of solar battery cabinet suitable for 65 AH Battery.	Nos	5816
151	R2-RT-NATC 8.13	Supply of solar battery cabinet suitable for 100 AH Battery.	Nos	5816
152	R2-RT-NATC 8.14	Supply of solar battery cabinet suitable for 150 AH Battery.	Nos	9140
153	R2-RT-NATC 8.15	Installation, testing and commissioning of all types of solar Panel as described above.	Nos	1712
154	R2-RT-NATC 8.16	Removal of already installed solar panel as described above	Nos	771
155	R2-RT-NATC 8.17	Installation, testing and commissioning of batteries as described above.	Nos	642





156	R2-RT-NATC 8.18	Removal of already installed batteries as described above.	Nos	642
157	R2-RT-NATC 8.19	Installation, testing and commissioning of all types of solar battery cabinet as described above.	Nos	642
158	R2-RT-NATC 8.20	Removal of already installed solar battery cabinet as described above including battery.	Nos	642
	<b>R2-RT-ATC-9</b>	<b>ATC - VEHICLE DETECTION CAMERA -TRAFICAM/FLIR CAMERA</b>		
159	R2-RT-ATC 9.1	Traficam Wide Angle Lens (Ref. No 10-6090A) - Vehicle Presence Detection Sensor, 1/4" black & white CMOS type, no video stream	Nos	106869
160	R2-RT-ATC 9.2	Traficam Narrow Angle Lens (Ref. No 10-6091A) - Vehicle Presence Detection Sensor, 1/4" black & white CMOS type, no video stream	Nos	106869
161	R2-RT-ATC 9.5	TrafiCam X-stream BPL version, wide angle (Ref. No 10-7000): Integrated camera and detector offering vehicle presence detection and traffic data collection with video streaming (MJPEG, MPEG-4 or H.264)	Nos	166098
162	R2-RT-ATC 9.6	TrafiCam X-stream BPL Version, narrow angle (Ref. No 10-7001): Integrated camera and detector offering vehicle presence detection and traffic data collection with video streaming (MJPEG, MPEG-4 or H.264)	Nos	166098
163	R2-RT-ATC 9.7	1TI - 4 outputs (Ref. No 10-6078)	Nos	13640
164	R2-RT-ATC 9.8	4TI - 16 outputs (Ref. No 19-6077)	Nos	31546
165	R2-RT-ATC 9.10	TI x-stream BPL - 16 outputs (Ref. No 10-6085), for TrafiCam Xstreams, TrafiRadar & ThermiCam	Nos	64379
166	R2-RT-ATC 9.11	TI xp. BPL - expansion board (Ref. No 10-6044)	Nos	25752



167	R2-RT-ATC 9.12	Power Supply Unit (24V-48V AC/DC )	Nos	4696
168	R2-RT-ATC 9.13	FLUX , 1 server license of the Traficon Management Software (Ref. No- 10-0076)	Nos	373314
169	R2-RT-ATC 9.14	IMUX , 1 server license of the Traficon streaming server (Ref. No-10-0086)	Nos	430747
170	R2-RT-ATC 9.15	Traficon Engineer's On Site Support Charges per day, excluding additional travel expenses i.e. hotel, flights, meals and local transport at actuals	day	57560
171	R2-RT-ATC 9.16	Preventive and corrective maintace of vehicle detector cameras per cameras as per Technical specifications	Nos	749
	<b>R2-RT-ATC-10</b>	<b>ATC - CONTROL ROOM RELATED</b>		
172	R2-RT-ATC 10.1	Supply, installation, testing and commissioning of 3 kVA UPS along with batteries providing 30 minutes back up for 3 kVA UPS including MS powder quoted battery rack	Nos	81302
173	R2-RT-ATC 10.2	Supply, installation, testing and commissioning of 5 kVA UPS along with batteries providing 30 minutes back up for 5 kVA UPS including MS powder quoted battery rack	Nos	199556
174	R2-RT-ATC 10.3	Supply, installation, testing and commissioning of 8 kVA UPS along with batteries providing 30 minutes back up for 8 kVA UPS including MS powder quoted battery rack	Nos	286754
175	R2-RT-ATC 10.4	Supply, installation, testing and commissioning of 10 kVA UPS along with batteries providing 30 minutes back up for 10 kVA UPS including MS powder quoted battery rack	Nos	286754



176	R2-RT-ATC 10.5	Supply, installation, testing and commissioning of 10 kVA UPS along with batteries providing 120 minutes back up for 10 kVA UPS including MS powder quoted battery rack	Nos	585044
177	R2-RT-ATC 10.6	Supply, installation, testing and commissioning of 8 ports 10/100/1000 Base T and 2x 1G SFP LAN Ethernet Switch	Nos	33693
178	R2-RT-ATC 10.7	Removal of already installed LAN Ethernet Switch	Nos	142
179	R2-RT-ATC 10.8	Supply & installation of System clock with GPS	Nos	53537
180	R2-RT-ATC 10.10	Supply and installation of HP Laserjet Printer (Black & White)	Nos	9444
181	R2-RT-ATC 10.14.A	Supply & installation of PC upgrades additional RAM of 2GB	Nos	2950
182	R2-RT-ATC 10.14.B	Supply & installation of PC upgrades additional RAM of 4GB	Nos	5310
183	R2-RT-ATC 10.14.C	Supply & installation of PC upgrades additional RAM of 8GB	Nos	7670
184	R2-RT-ATC 10.15	Supply of Keyboard	Nos	472
185	R2-RT-ATC 10.16	Supply of optical Mouse	Nos	413
186	R2-RT-ATC 10.17	Antivirus (Total Security including Internet) Renewal/ updates validity for 2 years	Nos	2943
187	R2-RT-ATC 10.18	Server for ITACA - HPE ProLiant DL580 Gen10 Server, for 3 Years 24x7 Onsite Warranty	Nos	897835



188	R2-RT-ATC 10.19	Server for CCTV HP ProLiant DL380p Gen8 (1) Intel® Xeon® E5-2643 (3.3GHz/ 4-core/10MB/8 GT-s QPI/130 W) Processor/ 10MB (1x10MB) Level 3/ 16 GB RAM PC3L-10600R (DDR3-1333) Registered DIMMS/HP Smart Array P420i/ZM (RAID 0/1/1+0)/ 8 SFF SAS/SATA HDD Bays; includes 6 SFF hard drive blanks/(1) HP 460W Common Slot Gold Hot Plug Power Supply (92% Efficient)/ 3 Years 24x7 Onsite Warranty	Nos	871847
189	R2-RT-ATC 10.20	Memory for CCTV - 1 TB SATA 2.5" HDD (Hot swappable) - For archiver Server	Nos	17948
190	R2-RT-ATC 10.23	Supply, intallation of Operator terminal Intel Processor based PC with i7 processor, 1TB HDD, 16GB RAM, 20.5 inch LED Monitor, 4 GB graphic card with NVIDA facility, with the Licencse copy of operating System, Mocrosoft office.	Nos	118144
191	R2-RT-ATC 10.24	Supply, intallation of HP Workstations Z220 SFF/Intel i7/8 GB/500 GB/Win 10 64 Bit/1 GB Graphic Card/3 Years Onsite Warranty	Nos	136112
192	R2-RT-ATC 10.26	Supply of A3/A4 Digital Copier /scanner with Network Printer with feeder.	Nos	170398
193	R2-RT-ATC 10.27	OEM remotely support for ITACA issues	HOU R	33897
194	R2-RT-ATC 10.28	Monthly Operation & Maint of Control Room as per Tech Specification	Nos	307058



195	R2-RT-ATC 10.29	Monthly Preventive & Corrective Comprehensive Maintenance of Optimus Server ITACA and Data Server as per Tech Spec.	Nos	26053
196	R2-RT-ATC 10.31	Monthly Preventive & Corrective Comprehensive Maintenance of Air Conditioner Spilt per unit	Nos	2327
197	R2-RT-ATC 10.33	Monthly Comprehensive Maintenance of Barco Video Wall per Cube	Nos	50246
198	R2-RT-ATC 10.34	Monthly Operation and Maintenance of MCGM Fault Management Centre as per Technical Specification	Nos	93048
199	R2-RT-ATC 10.35	Monthly Preventive and Corrective Comprehensive Maintenance of FMS Server	Nos	7444
200	R2-RT-ATC 10.36	Monthly Preventive and Corrective Comprehensive Maintenance of Operator terminals/Personal Computer per unit	Nos	2046
201	R2-RT-ATC 10.37	Monthly Preventive and Corrective Comprehensive Maintenance of UPS per unit	Nos	4838
202	R2-RT-ATC 10.38	Monthly Preventive and Corrective Comprehensive maintenance of Scanner EPSON GT 15000	Nos	1860
203	R2-RT-ATC 10.40	Monthly Preventive and Corrective Comprehensive Maintenance of HP Laserjet Printers per unit	Nos	317
204	R2-RT-ATC 10.41	Monthly Preventive and Corrective Comprehensive maint of Laptops per unit	Nos	2046
205	R2-RT-ATC 10.43	Comprehensive Maint of Canon A3/A4 Digital Copier /scanner with Network Printer with feeder.	Nos	3164
206	R2-RT-ATC 10.44	Storage Depot Maintenance and Inventory Management as per Tech Specs	Month	390801



207	R2-RT-ATC 10.47	Providing and fixing copper refrigerant pipework and AC units of max 2TR capacity, complete with clamping upto max length of 20 ft per set with insulation for Control Room	Set	113188
208	R2-RT-ATC 10.52	Internal plastic paint	SQF	41
209	R2-RT-ATC 10.61	Providing new chair with gas lift handle to match with existing design of chair	Nos	7776
210	R2-RT-ATC 10.64	Review of ITACA System	Nos	1691752
211	R2-RT-ATC 10.65	Rent for 12 Mtr Maclifton for CCTV and Video Detection Cameras per shift ( 8 hrs Shift)	Nos	11073
	<b>R2-RT-ATC-11</b>	<b>ATC - CCTV CAMERA</b>		
212	R2-RT-ATC 11.1	Supply of Outdoor PTZ Infrared IP High Definition camera, Image sensor : 1/2.8" Progressive Scan CCD/CMOS, Video resolution: FHD 1920x1080, Lens : 30 X (4.3-129 mm or better), min. illumination: 0.3 lux for color and 0.01 lux for B/W, video compression: H.264/MPEG-4, Motion JPEG, SNR >50 dB, IP v4/ v6 network, Housing : Vandal Proof, IP 66, Rugged, wide dynamic range > 80 dB, PAN: 360 deg. , Tilt: min 180 deg., Zoom: min 30x optical & 12x digital; Embedded comprehensive Intelligent Video Analytic with Up to 40 zones (multi-segment polygons and lines) 60 VCA filter rules in total should include minimum filters like Object: Enter, Exit, Appear, Disappear, Stop, Direction, AutoTrack Dwell, Speed, Unauthorized Access, Counting Line, Color Filter, Object Classification, Logical Rules; PTZ Object Autotracking, fit with VCAfollow;	Nos	172863



213	R2-RT-ATC 11.2	Installation, testing and commissioning of Outdoor Pan Tilt Zoom Integrated Dome Network Camera as mentioned above along with extension arm, if required.	Nos	10698
214	R2-RT-ATC 11.3	Removal of camera as described above including brackets fixing, cabling, configuration etc all complete	Nos	7846
215	R2-RT-ATC 11.4	Supply, Installation and commissioning of extension arm of 1000mm for CCTV camera (As per drawing )	Nos	1975
216	R2-RT-ATC 11.5	Supply, Installation and commissioning of extension arm of 300mm for CCTV camera (As per drawing)	Nos	1383
217	R2-RT-ATC 11.6.A	Supply of Enterprise VMS application software package. Shall include Software Protection Key, 1 Master Server Enterprise license, 8 Enterprise camera licenses, 2 Review Clients, Multisite (Up to 5 sites), Transcoding, Virtual Matrix. The Enterprise license is mandatory for sites with more than 150 cameras OR if Dual recording, Failover, ESM or Redundancy is required.	Nos	412339
218	R2-RT-ATC 11.6.B	Supply of VMS software camera License for ENTERPRISE Master server system	Nos	13745
219	R2-RT-ATC 11.6.C	Supply of Review/ Smart client License	Nos	18899
220	R2-RT-ATC 11.6.D	VMS Maintenance and support services per year	Nos	1178112
221	R2-RT-ATC 11.7	Installation, testing and commissioning of Master recorder VMS software with per camera review license and per camera license.	Nos	288512





222	R2-RT-ATC 11.8	Quarterly CCTV cleaning cost per camera	Nos	312
223	R2-RT-ATC 11.9	Monthly Preventive and Corrective Maintenance of per CCTV/ANPR of camera	Nos	3281
224	R2-RT-ATC 11.10	CCTV Server Comprehensive Maintenance Yearly	Nos	180454
225	R2-RT-ATC 11.11	Junction box with accessories as per drawing	Nos	14582
226	R2-RT-ATC 11.12	Encoder for analog CCTV camera	Nos	37866
227	R2-RT-ATC 11.13	Supply of 48 ports 10/100/1000 Base T and 4 x 10G SFP+ ports Ethernet Switch for CCTV	Nos	218671
228	R2-RT-ATC 11.14	20 Mtrs. VGA Cable with connectors	Nos	1415
229	R2-RT-ATC 11.15	Emergency Vehicle (one utility vehicle with maintenance team and tools) Monthly cost to be operated as per instruction of Engineer	Nos	204734
230	R2-RT-ATC 11.16	Technical Suport in TPHQ/ Disaster Control Room per shift	Nos	83531
231	R2-RT-ATC 11.17	Supply of Automatic Number Plate Recognition Camera (Infra-red) outdoor 2.8~12mm bullet camera with VCA as overview camera	Nos	91915
232	R2-RT-ATC 11.18.A	Supply of Speed and vehicle classification radar sensor	Nos	90754
233	R2-RT-ATC 11.18.B	Installation & Commissioning of Speed and vehicle classification radar sensor	Nos	16015
234	R2-RT-ATC 11.19.A	Supply of Additional illuminator for ANPR	Nos	46070
235	R2-RT-ATC 11.19.B	Installation & Commissioning of Additional illuminator for ANPR	Nos	8130
236	R2-RT-ATC 11.20.A	Supply of ANPR license with Processing Unit with Central Control Software	Nos	96650
237	R2-RT-ATC 11.20.B	Installation & Commissioning of ANPR license with Processing Unit with Central Control Software	Nos	17056



238	R2-RT-ATC 11.21.A	Supply of Road side processing unit with Processor, storage, communication modem, battery charger, watch dog module and IP66 casing, cabling, mounting brackets and fixtures	Nos	230349
239	R2-RT-ATC 11.21.B	Installation & Commissioning of Road side processing unit with Processor, storage, communication modem, battery charger, watch dog module and IP66 casing, cabling, mounting brackets and fixtures	Nos	40650
	<b>R2-RT-ATC-12</b>	<b>ATC - VARIABLE MESSAGING SIGNBOARDS</b>		
240	R2-RT-ATC 12.1	As per EN 12966 of size 2.88 mtrs x 1.44 mtrs display area ( outer cabinet size of 3.18 x 1.74 mtrs) 20mm pitch , Red Amber dual color full graphic display with 2 years warranty & 15 years life	Nos	1299998
241	R2-RT-ATC 12.2	As per EN 12966of size 2.88 mtrs x 1.44 mtrs display area ( outer cabinet size of 3.18 x 1.74 mtrs) 20mm pitch , full color full graphic display with 2years warranty & 15 years life	Nos	1376468
242	R2-RT-ATC 12.5	Supply of VMS pole assembly as pec ATC Tech specifications as per & drawing	Nos	319892
243	R2-RT-ATC 12.6	Supply of VMS gantry assembly as pec ATC Tech specifications as per & drawing	Nos	338199
244	R2-RT-ATC 12.7	Removal of VMS and its assembly	Nos	39942
245	R2-RT-ATC 12.8	Removal of VMS pole / Gantry its assembly	Nos	49928
246	R2-RT-ATC 12.9	Integration of Travel time information system with ATC Itaca software	Nos	2165334
247	R2-RT-ATC 12.10	Monthly Preventive & Corrective Maintenance of VMS and its travel	Nos	12570



		time accessories per VMS		
248	R2-RT-ATC 12.11	SITC of Blue traffic Sensor with IP 67 casing, mounting brackets, power cable and accessories and battery charger module	Nos	254491
249	R2-RT-ATC 12.12	SITC of Traffic data warehouse system with VMS interface and system support	Nos	4414026
250	R2-RT-ATC 12.13	SITC of Server hardware, Operating system and network setup for upto 15 cameras / travel time information application.	Nos	267524
	<b>R2-RT-ATC-13</b>	<b>ATC - PREVENTIVE &amp; CORRECTIVE MAINTENANCE, SITC OF JUNCTIONS &amp; MISCELLANEOUS ITEMS</b>		
251	R2-RT-NATC 13.1	Lumpsum charges per signal for Monthly Preventive & Corrective Maintenance of Road Traffic Signals – Isolated junctions.	Nos	9986
252	R2-RT-NATC 13.2	Lumpsum charges per Flashing Beacon (non solar) for Monthly Preventive & Corrective Maintenance of Flashing Beacons.	Nos	713
253	R2-RT-NATC 13.3	Lumpsum charges per Flashing Beacon (solar) for Monthly Preventive & Corrective Maintenance of Flashing Beacons.	Nos	891
254	R2-RT-NATC 13.4	Supply, installation, Testing & commissioning along with an arrangement for Power supply, a typical 4-arm junction complete in all respect	Nos	2281961
255	R2-RT-NATC 13.5	Supply, installation, Testing & commissioning along with an arrangement for Power supply, a typical 3-arm junction complete in all respect	Nos	1711471



256	R2-RT-NATC 13.6	Supply, installation, Testing & commissioning along with an arrangement for Power supply, a typical pedestrian crossing junction complete in all respect	Nos	1140981
257	R2-RT-NATC 13.7	Supply, installation, Testing & commissioning a typical 3-arm flashing beacon (solar) complete in all respect	Nos	186706
258	R2-RT-NATC 13.8	Supply, installation, Testing & commissioning a typical pedestrian crossing flashing beacon (solar) complete in all respect	Nos	124470
259	R2-RT-NATC 13.9	Painting of Signal Junction Hardware (Non ATC)	Nos	6420
260	R2-RT-NATC 13.10	Cleaning of Signal Junction.	Nos	3566
261	R2-RT-NATC 13.11	Lump sum charges per signal for Monthly Preventive & Corrective Maintenance of Road Traffic Signals (ATC)	Nos	8015
262	R2-RT-NATC 13.12	Review of Signal Junction with proper Traffic Engineering and Changing Cycle Time, Phase, Plan etc. in co-ordination with Traffic Police and MCGM Engineer once in a year	Nos	196858
263	R2-RT-ATC 13.13	Creation of input for junction in ITACA, link calibration and system validation complete in all for each junction	Nos	31990
	<b>R2-RT-ATC-14</b>	<b>ATC- CIVIL WORKS</b>		
264	R2-RT-14.1	Supply & application of primer to the Road Traffic Signal Controller foundation two coats as per technical specification.	Nos	190
265	R2-RT-14.2	Supply & application of the yellow & purple coloured strips to the Controller foundation of Road Traffic Signal Controller as per technical Specification and drawing no.	Nos	1232



		RT.14.2.		
266	R2-RT-14.3	Supply & painting of Junction Name, junction Number, no sticking of bills with Black Paint to the Road Traffic Signal Controller cabinet of M.S. material as per Technical Specification and drawing no. RT.14.2 & RT.14.3.	Nos	273
267	R2-RT-14.4	Supply & Painting Junction Number, Meter Number/consumer number etc with Black Paint to the Road Traffic Signal Controller Power supply box of M.S. material as per Technical Specification.	Nos	238
268	R2-RT-14.5	Supply & painting of Junction Name, Installation Number, no sticking of bills etc with Carving letters on Green colour retro-reflective sheeting of approved make vide MORTH specification and as per MCGM Technical Specification and drawing no. RT.14.2 & RT.14.3 to the Road Traffic Signal Controller cabinet.	Nos	639
269	R2-RT-14.6	Supply & Painting Junction Number, Meter Number etc with Carving letters on Green colour retro-reflective sheeting of approved make vide MORTH specification and as per MCGM Technical Specification and drawing no. RT.14.2 & RT.14.3. to the Road Traffic Signal Controller Power supply box.	Nos	568
270	R2-RT-14.7	Supply & painting of yellow coloured circles on straight poles & cantilever poles as per technical specification and drawing no. RT.14.5 & RT.14.6.	Nos	108



271	R2-RT-14.8	Supply & Painting of pole numbers to the Road Traffic Signal poles in the yellow circle with black paint as per technical specification and drawing no. RT.14.5 & RT.14.6.	Nos	138
272	R2-RT-14.9	Supply & Painting controller cabinet with two coats of synthetic enamel paint over a coat of Zinc chromate primer as per technical specification and directions of the Engineer-in-Charge.	Nos	831
273	R2-RT-14.10	Supply & Painting power supply box cabinet with two coats of synthetic enamel paint over a coat of Zinc chromate primer as per technical specification and directions of the Engineer-in-Charge.	Nos	562
274	R2-RT-14.11	Supply & Painting straight pole with two coats of synthetic enamel paint over a coat of Zinc chromate primer as per technical specification and directions of the Engineer-in-Charge.	Nos	419
275	R2-RT-14.12	Supply & Painting cantilever pole with two coats of synthetic enamel paint over a coat of Zinc chromate primer as per technical specification and directions of the Engineer-in-Charge.	Nos	1199
276	R2-RT-14.13	Excavation of trench for traffic signals and VMS boards cables and conduiting as per requirement of the signal junction up to the depth of 1000mm below the ground surface and width 500mm in the Carriage way (Asphalt/ Mastic Asphalt/ paver block) including refilling of the trench in carriage way and removal of debris as per the MCGM guidelines.	Cum	2514



277	R2-RT-14.14	Excavation of trench for traffic signals and VMS boards cables and conduiting as per requirement of the signal junction up to the depth of 1000mm below the ground surface and width 500mm in the Carriage way (Cement Concrete) including refilling of the trench in carriage way and removal of debris as per the MCGM guidelines.	Cum	4400
278	R2-RT-14.15	Excavation of trench for traffic signals and VMS boards cables and conduiting as per requirement of the signal junction up to the depth of 600mm below the ground surface and width 500mm in the footpath/soft soil including refilling of the trench in footpath and removal of debris as per the MCGM guidelines.	Cum	1508
279	R2-RT-14.16	Cutting of two rows RCC/PQC carriageway slabs upto slab depth by special RCC Cutting machine (Diamond Cutter) for laying duct with double cut.	Mtr	6650
280	R2-RT-14.17	Excavate and install brick built or equivalent sectional chamber to be 450mm (L)X 450mm (B) X 600 mm(D) to tie into proposed 120 mm ducts/65mm G.I. Pipe in footpath include permanent reinstatement and backfill material as per MCGM technical specification and drawing no. RT.14.17.	Nos	11785





281	R2-RT-14.18	Excavate and install brick built or equivalent sectional chamber to be 450mmX 450mmX 1000 mm to tie into proposed 120 mm ducts/65mm G.I.Pipe in footpath include permanent reinstatement and backfill material as per MCGM technical specification and drawing no. RT.14.17.	Nos	13670
282	R2-RT-14.19	Excavate and install brick built or equivalent sectional chamber to be 560mm (L)X 450mm (B) X 600 mm(D) to tie into proposed 120 mm ducts/65mm G.I.Pipe in footpath include permanent reinstatement and backfill material as per MCGM technical specification and drawing no. RT.14.19	Nos	12413
283	R2-RT-14.20	Excavate and install brick built or equivalent sectional chamber to be 560mm (L)X 450mm (B) X 1000 mm(D) to tie into proposed 120 mm ducts/65mm G.I.Pipe in footpath include permanent reinstatement and backfill material as per MCGM technical specification and drawing no. RT.14.19	Nos	14141
284	R2-RT-14.21	Supply and installation of FRP chamber cover without frame 510mm (L)X 510mm (B) X 35mm thick as per EN 124 grade B to take load 12.5 MT as per drawing no. RT.14.21	Nos	5976
285	R2-RT-14.22	Supply and installation of FRP chamber cover without frame 620mm (L)X 510mm (B) X 35mm thick as per EN 124 grade B to take load 12.5 MT as per drawing no. RT.14.21	Nos	6744



286	R2-RT-14.23	Supply and installation of M.S. chamber cover frame to accommodate the chamber cover of size 510mm (L)X 510mm (B) X 35mm thick as per drawing no. RT.14.23	Nos	1030
287	R2-RT-14.24	Supply and installation of M.S. chamber cover frame to accommodate the chamber cover of size 620mm (L)X 510mm (B) X 35mm thick as per drawing no. RT.14.23	Nos	1135
288	R2-RT-14.25	Erecting straight pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/or above ground level having dia. Of 300mm only, as per technical specification and drawing no. RT-14.25	Nos	7882
289	R2-RT-14.26	Erecting cantilever pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/or above ground level having dia. Of 450mm only, as per technical specification and drawing no. RT-14.26	Nos	12315
290	R2-RT-14.27	Providing and laying RCC foundation of concrete M25 grade square in shape above and below ground level and installation of straight VMS gantry rested on foundation as shown in drwg. and as per technical specification. The rate shall also include cost of excavation, centering, shuttering, reinforcement, PCC 1:2:4, and grouting of foundation bolt, etc. complete as per drawing no. RT-ATC-12.5	Nos	75441



291	R2-RT-14.28	Providing and laying RCC foundation of concrete M25 grade square in shape above and below ground level and installation of cantilever VMS gantry rested on foundation as shown in drwg. and as per technical specification. The rate shall also include cost of excavation, centering, shuttering, reinforcement, PCC 1:2:4, and grouting of foundation bolt, etc. complete as per drawing no. RT-ATC-12.6	Nos	91649
292	R2-RT-14.29	Installation and assembly of all camera poles as per drawing in M20 C.C foundation (Ref no. RT-14.29) (Excluding supply of pole and related accessories)	Nos	6783
293	R2-RT-14.30	Construction of signal controller foundation upto 600mm height above ground level and 600 mm below ground level on C.C. M20 grade pedestal, having size (LXBXH) with fixing of SS304 nut bolts for controller cabinet & Power supply box cabinet as per MCGM technical specification and drawing no. RT-14.30 etc.complete	Nos	7517
294	R2-RT-14.31	Providing steel barricading as shown in drawing no. RT-14.31 and details of material used for fabricating are: - GI pipe round/square 1- 1/2 " B grade - GI pipe round/square 1 " B grade - MS rod square & others - 1.6 mm GI sheet ( 1400 mm x 700 mm ) - 3" dia wheel assembly - 4 nos. - Powder coating with lettering.	Nos	29320



	<b>R2-RT-ATC-15</b>	<b>ATC NEW ITEMS -I</b>		
295	R2-RT-ATC 15.1	Supply of 25 Watt Speaker, horn type construction, weather proof, Voice Range - 0.6 Km, Rated 25 W Max with approved colour coats.	Nos	1317
296	R2-RT-ATC 15.2	Supply of 16 Watt Speaker, horn type construction, weather proof, Voice Range - 0.6 Km, Rated 25 W Max with approved colour coats.	Nos	1151
297	R2-RT-ATC 15.3	Supply of 60 Watt Amplifier: Power Output: 75W Max. 50W RMS at 10% THD, 45W RMS at 5% THD, Signal to Noise Ratio: 55dB 4 microphone inputs, 1 Aux input, with high quality reputed make having facility to accept USB drives.	Nos	11210
298	R2-RT-ATC 15.4	Supply 120 Watt Amplifier: Power Output: 120W Max. 5 Mic & 2 Aux Inputs, Outputs: Preamp 200mV/600, Frequency Response: 50-15,000Hz 3dB 4 microphone inputs, 1 Aux input, with high quality reputed make having facility to accept USB drives.	Nos	15930
299	R2-RT-ATC 15.5	Supply Audio IP Controller Dual Core Cortex Processor, minimum 1 GB DDR III, 4 GB Flash, Wired/Wireless Network Compatibility, USB Dongle Slot, HDMI, VGA, USB, SATA Port with suitable operating system.	Nos	36743
300	R2-RT-ATC 15.6	Supply Server INTEL processor of Quad cored type having minimum RAM of 16 GB with minimum hard disk of 4TB extendable 32 TB of reputed make accommodate and process the data for about 300 locations (25 locations	Nos	283836



		for the current contract) .		
301	R2-RT-ATC 15.7	Supply RCA Cable 2 Core Multistrand Shielded Cable of reputed make with RCA Connectors on Both ends	Nos	1972
302	R2-RT-ATC 15.8	Supply Wireless Mic Wireless handheld microphone alone with receiver	Nos	8113
303	R2-RT-ATC 15.9	Supply SIP Phone Resolution 480X272 Colour TFT LCD, Dual Switch auto sensing, 10/100/1000 Gigabit network ports, POE, Bluetooth, USB Integrated Real time applications	Nos	22769
304	R2-RT-ATC 15.10	Supply junction Box 24 inches X inches X 8 inches box vertically mounted on a SS stand with concrete foundation	Nos	15465
305	R2-RT-ATC 15.11	Supply Central Management Software Location License: Central Management Software for the above system shall be supplied with all the protocol and right to use the protocol for further expansion / modification / alteration etc. The software shall allow pre-recording of messages and remote selection of locations.	Nos	21196
306	R2-RT-ATC 15.12	Installation, Commissioning & Maintenance during defect liability period of one year including technical support etc.	Nos	28497
307	R2-RT-ATC 15.13	Supply of Gantry for 2 Lane	Nos	96270
308	R2-RT-ATC 15.14	Supply of Gantry for 3 Lane	Nos	108896
309	R2-RT-ATC 15.15	Installation of Gantry for 2/3 Lane	Nos	27816
310	R2-RT-ATC 15.16	Supply of SS-304 JB of Local Processing Unit as per drawing alongwith accesaries and frame	Nos	103722



311	R2-RT-ATC 15.17	Providing Power supply 1 KW Single phase with wooden plank, MCCB etc. from power supply company	Nos	4749
312	R2-RT-ATC 15.18	Supply of Charge Regulator 24 V/ 10 Amps	Nos	4250
	<b>R2-RT-ATC-16</b>	<b>ATC NEW ITEMS -II</b>		
313	R2-RT-ATC 16.1	Supply, Installation and commissioning of trolley to the signal pole	Nos	16786
314	R2-RT-ATC 16.2	Supply and commissioning of battery operated portable signal (Two Arm)	Nos	241900
315	R2-RT-ATC 16.3	Supply and commissioning of battery operated portable signal (Three Arm)	Nos	273760
316	R2-RT-ATC 16.4	Supply and commissioning of battery operated portable signal (Four Arm)	Nos	302080
317	R2-RT-ATC 16.5	Construction of foundation of ANPR gantry concrete M20 grade rectangle in shape (LXWXH) (1100mmX600mmX600mm) above and below ground level	Nos	17922
318	R2-RT-ATC 16.6	Construction of Power Supply Box foundation upto 600mm height above ground level and 600 mm below ground level on C.C. M20 grade pedestal	Nos	6476
319	R2-RT-ATC 16.7	Construction of Foundation Junction box for Local Processing Unit for ANPR Camera	Nos	12956
320	R2-RT-ATC 16.8	Supply of Fix base of conventional signal cantilever pole (R2-RT-NATC 4.12) and painted with traffic yellow colour including transportation	Nos	17470
321	R2-RT-ATC 16.9	Supply of extended arm of conventional signal cantilever pole (R2-RT- NATC 4.12) and painted with traffic yellow colour including transportation etc.	Nos	7744



322	R2-RT-ATC 16.10	Supply & installation of FRP junction box of size 300 X 200 X 125 mm as per relevant IS standard with IP 56 protection including providing cover with provision to adjust overall height, knock outs on four sides to accept cables of specified sizes and including elmex connector, gland, cable terminations etc.	Nos	979
323	R2-RT-ATC 16.11	Supply, installation & Testing Chemical earthing which includes Chemo MF Earthing electrodes field with SSC compound, seal from both the end having dia 80 mm length 1000mm, terminal 50 * 6 mm, MOC-SDGI with soil resistivity improvement powder with moister booster compound by manually digging process fixing of FRP earthing chamber cover, connection of earthing Pit to grip with each other & accessories i.e. cables, lux, nuts, bolts, GI strips (25X3) 1 mtr etc. as directed by engineer.	Nos	7558
324	R2-RT-ATC 16.12	Supply & installation of FRP Chamber Cover Frame of size 620 (L) X 620(B) X72 (W) mm suitable of FRP cover size 510 X 510 X35 mmas per EN 124:2004 for 12.5 MT load capacity	Nos	2152
325	R2-RT-ATC 16.13	Supply & installation of FRP Chamber Cover size 510 X 510 X35 mmas per EN 124:2004 for 25 MT load capacity	Nos	6608
326	R2-RT-ATC 16.14	Supply & installation of FRP Chamber Cover Frame of size 620 (L) X 620(B) X72 (W) mm suitable of FRP cover size 510 X 510 X45 mmas per EN 124:2004 for 25 MT load capacity	Nos	2282





	<b>R2-RT-ATC-17</b>	<b>ATC NEW ITEMS -III</b>		
327	R2-RT-ATC 17.1	Painting of straight pole by Silver Aluminium. The existing paint of the exterior surface of pole shall be made smooth by using emery paper. Then surface shall be painted with red oxide one layer & two layer of silver aluminium with preferred make or as instructed by Engineer.	Nos	767
328	R2-RT-ATC 17.2	Painting of cantilever pole by Silver Aluminium. The existing paint of the exterior surface of pole shall be made smooth by using emery paper. Then surface shall be painted with red oxide one layer & two layer of silver aluminium with preferred make or as instructed by Engineer.	Nos	1475
329	R2-RT-ATC 17.3	Supply of Upgrade Kit from Lamp to LED for existing 3x2 Barco Video Wall with controller at TPHQ Control Room.with two years warranty.	Nos	8142000
330	R2-RT-ATC 17.4	Installation & Commissioning charges with half day onsite training	Nos	236000
331	R2-RT-ATC 17.5	Comprehensive Maintenance Charges for 3x2 Video wall for 3rd , 4th and 5th year	Nos	1274400
332	R2-RT-ATC 17.6	Supply of Upgrade Kit from Lamp to LED for existing 2x2 Barco Video Wall at MCGM Control Room.	Nos	5793800
333	R2-RT-ATC 17.7	Installation & Commissioning charges with half day onsite training ( for 2x2)	Nos	118000
334	R2-RT-ATC 17.8	Comprehensive Maintenance Charges for 2x2 Video wall for 3rd , 4th and 5th year	Nos	849600
335	R2-RT-ATC 17.9	Supply, Installation, Testing & Commissioning of 48 Port 10G switch	Nos	2875365



336	R2-RT-ATC 17.10	Supply, Installation, Testing & Commissioning of 24 Port 1G switch	Nos	1177426
337	R2-RT-ATC 17.11	Supply, Installation, Testing & Commissioning of Network Management Software with 10000 Node Supported with Future Expansion Capacity	LS	9331440
338	R2-RT-ATC 17.12	Supply, Installation, Testing & Commissioning SAN storage of Minimum 350 TB Usable OR 30 days Continuous Recording 1080P@25FPS for 250 Nos Cameras with future expansion facility	LS	7504800
339	R2-RT-ATC 17.13	Supply, Installation, Testing & Commissioning 42 U Rack with Require IPDU and Rack mount KVM Switch with 17" Integrated Display	Nos	72530
340	R2-RT-ATC 17.14	Supply, Installation, Testing & Commissioning LED TV 55 inch for other Applications	Nos	59000
341	R2-RT-ATC 17.15	Supply, Installation, Testing & Commissioning of Video Management and incident management software per camera with Redundancy (1:1) & basic Video analytics and Marathi/Hindi language capability and Capability of third Party Integration with ANPR, RLVD, Speed and Sound detection AND RTO/VAHAN Data for e-challan System.	Nos	32657



342	R2-RT-ATC 17.16	Supply, Testing & Commissioning of Red Light Violation Detection System with ANPR Solution (For Per Lane) (With Single Processor Unit support up to 3 ANPR Cameras) (Module : Including Camera + Local Processing Unit + IR Illuminator)	Nos	1383255
343	R2-RT-ATC 17.17	Supply, Testing & Commissioning of Single Channel Encoder for Analog Camera Connection	Nos	37983
344	R2-RT-ATC 17.18	Supply, Testing & Commissioning of Indoor 2 MP IR Dome Camera for Control Room	Nos	31329
345	R2-RT-ATC 17.19	TrafiOne 195 (Ref No 10-7070) Thermal Camera based Vehicle, Bicycle & Pedestrians detection sensor. Focal Plane Array (FPA) uncooled VOx microbolometer LWIR sensor, 8 to 14 micro m wavelength. 9fps 160X120 resolution RTSP thermal black&white streaming video (H.264, MPEG-4, MJPEG). Wi-Fi monitoring capabilities (optional) & Visual HD stream (optional)	Nos	213938
346	R2-RT-ATC 17.20	FLUX embedded clustering library license	Nos	28716
347	R2-RT-ATC 17.21	FLUX embedded database license	Nos	28716
348	R2-RT-ATC 17.22	TrafiSense 390 BPL Version Wide Angle 7.5mm lens: integrated thermal camera and detector for vehicle and bike detection or Data Collection. Thermal Streaming video 30fps. Long wave Infrared (7 – 14 µm) Compression H.264, MPEG-4, MJPEG (dual stream)	Nos	373314



349	R2-RT-ATC 17.23	TrafiSense 325 BPL Version Medium Narrow Angle 13mm lens: integrated thermal camera and detector for vehicle and bike detection only. Thermal Streaming video 30fps. Long wave Infrared (7 - 14 $\mu$ m) Compression H.264, MPEG-4, MJPEG (dual stream)	Nos	373314
350	R2-RT-ATC 17.24	TI Xstream BPL Version, 2nd Generation.(NEW HARDWARE), supports TrafiOne	Nos	84714
351	R2-RT-ATC 17.25	TrafiRadar BPL version Vehicle Presence Sensor: Combination of a video sensor and radar for: Stop bar and advance detection, Traffic adaptive systems & Dilemma zone protection.	Nos	430747
352	R2-RT-ATC 17.26	Supply of EcoTrafiX controller 32 D1 E5, standard metal enclosure, supplied with 24 phases and capability of extension up to 32 phases which supports ITACA Traffic management system in Mumbai. EcoTrafiX controller proposal includes: Op.P1-KIT Rack detectors EcoTrafiX (detectors not included) Op.G1-KIT 48 Digital Entry EcoTrafiX Op.I1-KIT 8 Digital Exit EcoTrafiX	Nos	929722
353	R2-RT-ATC 17.27	OEM site support for ITACA issues, one Engineer 2 weeks, including travelling and boarding expenses	Nos	667585
354	R2-RT-ATC 17.28	Upgrade of FMS server system on Widows 8 or higher version. (The existing FMS server is installed on Windows XP). Only remote works: installation, testing and commissioning. Works on site excluded	Nos	6112196



355	R2-RT-ATC 17.29	Upgrade of Optimus 7.0. Only remote works: installation, testing and commissioning. Works on site excluded.	Nos	2778271
356	R2-RT-ATC 17.30	Supply of FRP Chamber Cover size 513 X 513 X30 mm as per BS EN 124 :1994 for 12.5 MT load capacity	Nos	4956
357	R2-RT-ATC 17.31	Supply of FRP Chamber Frame Size 606 X 606 X52 mm for the cover 513 X 513 as per BS EN 124 :1994 for 12.5 MT load capacity	Nos	1652
358	R2-RT-ATC 17.32	Supply of FRP Chamber Cover size 536 X 536 X45 mm as per BS EN 124 :1994 for 25 MT load capacity	Nos	5900
359	R2-RT-ATC 17.33	Supply of FRP Chamber Frame Size 665 X 665 X78 mm for the cover 536 X 536 as per BS EN 124 :1994 for 25 MT load capacity	Nos	2006
360	R2-RT-ATC 17.34	Supply of FRP Chamber Cover size 513 X 663 X30 mm as per BS EN 124 :1994 for 12.5 MT load capacity	Nos	5900
361	R2-RT-ATC 17.35	Supply of FRP Chamber Frame Size 606 X 756 X52 mm for the cover 513 X 663 as per BS EN 124 :1994 for 12.5 MT load capacity	Nos	2118
362	R2-RT-ATC 17.36	Supply of FRP Chamber Cover size 537 X 687 X45 mm as per BS EN 124 :1994 for 25 MT load capacity	Nos	6490
363	R2-RT-ATC 17.37	Supply of FRP Chamber Frame Size 654 X 804 X74 mm for the cover 537 X 687 as per BS EN 124 :1994 for 25 MT load capacity	Nos	2254
364	R2-RT-ATC 17.38	Installation of FRP Chamber Frame & Cover of all sizes.	Nos	779



	<b>R2-RT-TRAFFIC 15</b>	<b>TRAFFIC PLANNING ITEMS</b>		
365	R2-RT-15-01	Providing and fixing guard stone section 23 cm x 23 cm x 75 cm fair dressed surface as specified and embedded in M-10 C.C bed 20cm thick around including two coats of white wash on exposed surfaces etc. complete	NOS	2089
366	R2-RT-15-02	Removing any type of C.C. tapered kerbs from the existing island etc. & transporting the same any where in the city or suburbs & stacking the same nearby as directed.	MTR	100
367	R2-RT-15-03	Providing / Laying C.C M10 in traffic island etc. wherever necessary giving the appearance of chequered tiles required with proper finish in order to have a non slippery surface including curing & vibrating by mechanical means etc. complete as directed	CUM	6619
368	R2-RT-15-03- A	Removing RCC parabolic dividers from the road & transporting the same anywhere in Gr, Mumbai limit, stacking the same as directed.	MTR	490



369	R2-RT-15-04	<p>Providing, casting and fixing (any where in city or suburban limit) precast reinforced parabolic dividers in C.C.M 25, Type-5 as per drg. No. EET&amp;C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) including providing, bending, fixing of reinforcement as per drawing, fixing the dividers on site in C.M. 1:2 for cushioning and jointing, filling the gap between dividers with C.C. M-15, curing, painting the exposed surface with road marking paint grade I (confirming to IS- 164) in two coats of approved colour including excavation in road portion and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc. as directed by the engineer. The rate is inclusive of all lift and leads, transportation required for the work.</p>	MTR	6403
370	R2-RT-15-05	<p>Providing, casting, fixing (anywhere in city or suburban limit) precast type 1 (both side taper) dividers in C.C.M 25 as per drg. No. EET&amp;C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) including fixing the dividers on site in C.M 1:2 for cushioning and jointing, curing, painting the exposed surface with road marking paint grade I (Conforming to IS-164) in two coats of approved colour, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work</p>	MTR	3149





371	R2-RT-15-06	Casting & supplying (any where in city or suburban limit) precast type 1(both side tapper) dividers in C.C.M 25 as per drg. No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) etc. as directed by the engineer. The rate is inclusive of all lift & leads, transportation required for the work.	MTR	882
372	R2-RT-15-07	Providing, casting, fixing (anywhere in city or suburban limit) precast type 2 (single side tapper) dividers in C.C. M-25 as per drg. No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) including fixing the dividers on site in C.M 1:2 for cushioning and jointing, curing, painting the exposed surface with road marking paint grade I (Conforming to IS-164) in two coats of approved colour, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work	MTR	1220
373	R2-RT-15-08	Casting & supplying (any where in city or suburban limit) precast type 2 (Single side tapper) dividers in C.C.M 25 as per drg No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) etc. as directed by the engineer. The rate is inclusive of all lift & leads, transportation required for the work.	MTR	759



374	R2-RT-15-09	Providing, casting, fixing (anywhere in city or suburban limit) type 4 (Both side chamfered) dividers in C.C. M-25 as per drg. No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) including fixing the dividers on site in C.C. M-10 for cushioning and jointing, curing, painting the exposed surface with road marking paint grade I (Conforming to IS-164) in two coats of approved colour, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work	MTR	1241
375	R2-RT-15-10	Fixing C.C. tapered kerbs of type-1 as per Drg. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads etc complete as directed	MTR	616



376	R2-RT-15-11	Fixing C.C. tapered kerbs of type-2 as per Drg. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads etc complete as directed	MTR	461
377	R2-RT-15-12	Fixing C.C. tapered kerbs of type-3 as per Drg. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads etc complete as directed	MTR	231



378	R2-RT-15-13	Fixing C.C. tapered kerbs of type-4 as per Drg. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads etc complete as directed	MTR	486
379	R2-RT-15-14	Fixing R.C.C parabolic dividers available on site as per Drg . EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) painting the exposed surface with road marking paint grade-I (confirming to IS-164) in two coats of approved colour including excavation in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads etc complete as directed	MTR	1351



380	R2-RT-15-15	Providing cast-in-situ tapering kerbs of C.C.M 25 type 1 on roads as per drg No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) finished neatly with C.M 1:2 painting the exposed surface with two coats of road marking paint grade-I (confirming to IS- 164) of approved colour and quality, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work.	MTR	1204
381	R2-RT-15-16	Providing cast-in-situ tapering kerbs of C.C.M 25 type 2 on roads as per drg No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) finished neatly with C.M 1:2 painting the exposed surface with two coats of road marking paint grade-I (confirming to IS- 164) of approved colour and quality, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work.	MTR	927



382	R2-RT-15-17	<p>Providing cast-in-situ tapering kerbs of C.C.M 25 type 3 on roads as per drg No. EET&amp;C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) finished neatly with C.M 1:2 painting the exposed surface with two coats of road marking paint grade-I (confirming to IS- 164) of approved colour and quality, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work.</p>	MTR	453
383	R2-RT-15-18	<p>Providing cast-in-situ tapering kerbs of C.C.M 25 type 4 on roads as per drg No. EET&amp;C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) finished neatly with C.M 1:2 painting the exposed surface with two coats of road marking paint grade-I (confirming to IS- 164) of approved colour and quality, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work.</p>	MTR	939



384	R2-RT-15-19	Providing, casting, fixing (anywhere in city or suburban limit) type 3 (C.C Studs) dividers in C.C.M 25 as per drg. No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) including fixing the dividers on site in C. C.M -10 for cushioning and jointing, curing, painting the exposed surface with road marking paint grade I (Conforming to IS-164) in two coats of approved colour, including excavation in road portion and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer. The rate is inclusive of all lift and leads, transportation required for the work.	MTR	841
385	R2-RT-15-20	Casting & supplying (any where in city or suburban limit) precast type 3 dividers in C.C.M 25 as per drg No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) etc. as directed by the engineer. The rate is inclusive of all lift & leads, transportation required for the work.	MTR	602
386	R2-RT-15-21	Casting & supplying (any where in city or suburban limit) precast type 4 dividers in C.C.M 25 as per drg No. EET&C/Gen/013/03/ty dt. 11.12.03 (Revised on 15.06.06) etc. as directed by the engineer. The rate is inclusive of all lift & leads, transportation required for the work.	MTR	747





	<b>R2-RT-TRAFFIC 16</b>	<b>TRAFFIC PLANNING ITEMS</b>		
387	R2-RT-16-01	Providing, fabrication and fixing M.S. railing of 10 Gauge, 40mm X 40mm square pipe railing with 18mm X18 mm square intermediate support, 65mm X 65mm square main supports with M.S. pedestal (base - 1type) and M.S. cap- (type-1) including cutting, welding, riveting, oil painting with navy blue colour or any other approved colour shade as directed and fixing in cement concrete foundation as shown vide Sr.No. 2f-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material /debries and restoring damaged portion of footpath, etc. as directed. (without advertisement panel)	MTR	7596
388	R2-RT-16-01-A	Extra Over: Add for providing Aluminium Pedestal and Aluminium Caps in place of M.S. Pedestal and M.S. Cap if provided.	MTR	249
389	R2-RT-16-01-B	Add for providing FRP Pedestal and FRP Caps in place of M.S. Pedestal and M.S. Cap if provided.	MTR	499
390	R2-RT-16-01-C	Add for application for Rusticide for removal of rust and providing rust preventing treatment of electrometric Alkaline Polymerie, rust preventing solution as per Manufacturer's specification. Coating with rusticide and polyurethene primer and paint.	MTR	1210
391	R2-RT-16-01-D	Add for providing advertisement panel for advertisement, If provided.	MTR	233



392	R2-RT-16-02	Providing, fabricating and fixing M.S. railing of 10 Gauge, Dia. 40mm circular railing with Dia. 18mm circular intermediate support, Dia. 65mm circular main supports with M.S. pedestal (base-I-type) and M.S. cap-(type-I) including cutting, welding, riveting oil painting with navy blue colour or any other approved colour shades as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of street Furniture (Vol.I) published by MCGM including removal of surplus material/debris material. debries and restoring damaged portion of footpath etc. as directed (without advertisement panel)	MTR	7121
393	R2-RT-16-02-A	Extra Over: Add for providing Aluminium Pedestal and Aluminium Caps in place of M.S. Pedestal and M.S. Cap if provided.	MTR	249
394	R2-RT-16-02-B	Add for providing FRP Pedestal and FRP Caps in place of M.S. Pedestal and M.S. Cap if provided	MTR	499
395	R2-RT-16-02-C	Add for application for Rusticide for removal of rust and providing rust preventing treatment of electrometric Alkaline Polymerie, rust preventing solution as per Manufacturer's specification. Coating with rusticide and polyurethene primer and paint	MTR	1210
396	R2-RT-16-02-D	Add for providing advertisement panel for advertisement, If provided.	MTR	233



397	R2-RT-16-03	<p>Providing, fabrication and fixing Stainless Steel railing of 10 Gauge of 304 grade stainless steel having minimum nickel content of 10% (laboratory testing certificate shall be provided for used material) 40mm X 40mm square pipe railing with 18mm X 18 mm square intermediate support 65mm X 65mm square, main support with stainless steel pedestal (base-I type) and stainless steel cap (type-I) including cutting welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No.2F-A1 in catalogue of steel Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/ debris and restoring damage portion of footpath etc. as directed.</p>	MTR	18297
398	R2-RT-16-04	<p>Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content of 10% (laboratory testing certificate shall be provided for used material), 40mm X 40mm square pipe railing with 18mm X 18mm square intermediate support, 65mm X 65mm square main supports with Stainless Steel pedestal (base-I type) and Stainless Steel cap (type-I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M including removal of surplus material/debris and restoring damaged portion.</p>	MTR	18530



		(footpath, etc. directed (with advertisement panel)		
399	R2-RT-16-05	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% ( Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal( base-I type) and Stainless Steel cap (type-I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.	MTR	16764
400	R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material) dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal( base-I type) and Stainless Steel cap (type-I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries	MTR	16997



		and restoring damaged portion of footpath, etc. as directed(with advertisement)		
401	R2-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1241
402	R2-RT-16-08	Providing, fabricating & erecting Street Name Board (type 2S-A-1) as per the design incorporated in the catalogue of street Furniture (Volume-II) Published by M.C.G.M. Vertical pole shall Hot dip galvanised M.S. Square pipe of size 75x75x3.5mm thk. Signage plaque (box) shall be Hot dip galvanised M.S. angle frame covered with 4mm thk aluminum composite panel. The signage plaque shall be fixed to the vertical pole with 40x10mm thk size MS support plate. Both the boxes shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of 10 years, the reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pole shall be fixed to the ground by means of a properly designed foundation of size 750x750x900mm.	NOS	22712



403	R2-RT-16-09	<p>Providing, fabricating and erecting on site Street Name Board (of type 2S-A-1 and 2S-F) as per the design incorporated in the catalogue of street Furniture (Volume-II). Published by M.C.G.M., Vertical pole shall be Hot dip galvanised M.S. Square pipe of size 75mm x 75mm x 3.5mm thick Signage plaque (box) shall be of size 900mm x 600mm made of Hot dip galvanised M.S. angle frame of size 50mm x 50mm x 6 mm thick covered with 4mm thk aluminum composite panel on both sides, The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The reflective of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pole shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm.</p>	NOS	16539
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404	R2-RT-16-10	<p>Providing, fabricating and erecting on site Street Name Board (of type 2S-A-1 and 2S-F) as per the design incorporated in the catalogue of street Furniture (Volume- II). Published by M.C.G.M. Vertical pole shall be Hot dip galvanised M.S. Square pipe of size 75mm x 75mm x 3.5mm thick. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of 10 years, the reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pole shall be fixed to the ground by means of properly designed foundation of size 750mmx750mmx900mm</p>	NOS	16539
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405	R2-RT-16-11	<p>Providing, fabricating &amp; fixing M.S. Square Bollards of 100x100mm, 10 Gauge (type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-I) Published by MCGM, with steel pedestal and steel cap as per designs (3F-A1),(3F-A1.1),(3F-A1.2) &amp; (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, reveting &amp; polishing. The foundation shall either be with base plate of 200x200x6mm thick, 16mm dia J Bolts or embedding pipe in foundation by providing 20mm Diax6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). The assembly shall be treated with Rusticide solution of approved company &amp; applied with Polyurethane primer &amp; Paint to resist rusting of material (the treatment shall be given as Per Manufacture's specifications &amp; certificate) to that effect shall be submitted along with Guarantee Certificate), Further it shall be painted with finish enamel paint, steel grey colour (having 90% black content).</p>	NOS	9816
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406	R2-RT-16-12	<p>Providing, fabricating &amp; fixing M.S.circular Bollards of 100mm dia, 10 Gauge (type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-I) Published by MCGM with steel pedestal &amp; steel cap as per designs (3FA.1),(3F-A1.1),(3F-A1.2)&amp;(3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, reveting, polishing. The foundation shall either be with base plate of 200x200x6mm thk,16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Diax6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). The assembly shall be treated with RustIcide solution of approved company &amp; applied with Polyurethane primer and Paint to resist rusting of material (the treatment shall be given as per Manufacture's specifications and certificate to that effect shall be submitted along with Guarantee Certificate). Further it shall be painted with matt finish enamel paint, steel grey colour (having 90% black content).</p>	NOS	9344
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407	R2-RT-16.13	<p>SQUARE PIPE Steel Bollards: Providing, fabricating and fixing .Square Steel Bollards of 100mm x 100mm, Square Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-I) Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3FA1.1), (3F-A1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thk, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles, removing debris etc. Complete as per specifications and as directed by the Engineer.</p>	NOS	19735
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408	R2-RT-16-14	<p>Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.</p>	NOS	16062
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409	R2-RT-16-15	<p>Providing, fixing &amp; erecting on site Junction Name Board / Chowk (type 2S-D), as per the design incorporated in the catalogue of street Furniture published by M.C.G.M., Vertical pole shall be Hot dip galvanised M.S. Square pipe of size 100mm x 100mm x 3.5mm thick. Signage plaque (box) shall be of size 900mm x 900mm made of M.S.L angle frame of size 50mm x 50mm x 6mm thick covered with 4mm thick aluminum composite panel on both sides, The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The reflective of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pole shall be fixed by means of a properly designed foundation of size 750mm x 750mm x 900mm.</p>	NOS	35459
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410	R2-RT-16-16	<p>Providing, fixing &amp; erecting on site Junction Name Board (type 2S-E2) as per the design incorporated in the catalogue of street Furniture published by M.C.G.M., Vertical pole shall be M.S. Square pipe of size Hot dip galvanised 100mm x 100mm x 3.5mm thick. Signage plaque (box) shall be of size 900mm x 900mm made of Hot dip galvanised M.S.L angle frame of size 50mm x 50mm x 6mm thick covered with 4mm thick aluminum composite panel on both sides, The top open end of the vertical pole shall be closed with Hot dip galvanised MS Plate of size 100mm x 100mm x 3.5mm thick. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or boarder to be pasted using transparent electro cuttable film. The reflective of sheet shall have guarantee of 10 years. The vertical posts shall be fixed to the ground by means of properly designed foundation of size 750x750x900mm.</p>	NOS	32929
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411	R2-RT-16-17	<p>Providing, fixing &amp; erecting on site Junction Name Board (type 2S-E1) as per the design incorporated in the catalogue of street Furniture published by M.C.G.M. Vertical pole shall be Hot dip galvanised M.S. Square pipe of size 100mm x 100mm x 3.5mm thick. Signage plaque (box) shall be of size 900mm x 900mm made of Hot dip galvanised M.S.L angle frame of size 50mm x 50mm x 6mm thick covered with 4mm thick aluminum composite panel on both sides. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 CODE. Letters or borders to be pasted using electro cuttable film. The reflective of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical posts shall be fixed by means of properly designed foundation of size 750x750x900mm.</p>	NOS	30484
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412	R2-RT-16-18	<p>Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-18, Signage plaque (box) shall be of size 1350mm x 900mm made of hot dip galvanised ISMC angle 75mm x 40mm &amp; bracing of 50mmx6mm hot dip galvanised MS plate, covered with 4 mm thick aluminum composite panel on both sides of the box assembly; shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The sign board shall be fixed to two vertical post made of ISMC 150x75mm hot dip galvanized channel. The reflectivity of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mmx750mmx900mm.</p>	NOS	37751
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413	R2-RT-16-19	<p>Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-19, Vertical poles shall be made of ISMC of 150x75hot dip galvanised post, Signage plaque (box) shall be of size 900mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm &amp; bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly &amp; shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer.</p>	NOS	44943
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414	R2-RT-16-20	<p>Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-20, Vertical poles shall be made of ISMC of 150x75hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 2400mm made of hot dip galvanised ISMC 75mm x 40mm &amp; bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly &amp; shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer.</p>	NOS	64067
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415	R2-RT-16-21	<p>Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm &amp; bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with 4 mm aluminum composite panel on both sides of the box assembly &amp; shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer.</p>	NOS	52403
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416	R2-RT-16-22	<p>Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-22, Vertical poles shall be made of ISMC of 150x75hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 2400mm made of hot dip galvanised ISMC 75mm x 40mm &amp; bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly &amp; shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer.</p>	NOS	64067
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417	R2-RT-16-23	<p>Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. MCGM Logo/Social message shall be printed directly on Type XI in UV printer &amp; laminated for 10 Years reflectivity warranty. The reflectivity of sheet shall have warranty of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground &amp; 450mmx450mmx200mm above ground.</p>	NOS	8743
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418	R2-RT-16-24	<p>Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground &amp; 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.</p>	NOS	10903
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419	R2-RT-16-25	<p>Mandatory Board (600mm dia) hanging on pole - Providing, Fabricating, Erecting on site Mandatory &amp; Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume-II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of 4mm thick fibre reinforced plastic box covering both sides of pole. The circumferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years shown in the drawing complete as per specification and as directed by the Engineer.</p>	NOS	6469
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420	R2-RT-16-26	<p>Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm dia. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground &amp; 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.</p>	NOS	15798
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421	R2-RT-16-27	<p>Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground &amp; 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.</p>	NOS	12031
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422	R2-RT-16-28	Circular tree guard : Providing, fabrication and fixing M.S. Circular tree guard with circular pipe of 10 gauge, 50mm Dia Circular vertical post, 40mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap- (type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or any other approved colour shade as directed and fixing in cement concrete foundation including cement concrete paver block lining including removal of surplus material/debries and restoring damaged portion of footpath etc. as directed.(Design details vide Drg.No.4F-A1.1, 4F-A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by M.C.G.M.)	NOS	17176
423	R2-RT-16-29	Hexagonal tree guard No.4F-tgu-B : Providing, fabrication and fixing M.S. Hexagonal tree guard with circular pipe of 10 gauge, 50mm Dia Circular vertical post, 40mm Dia circular horizontal support, 18mm Dia circular intermediate support with M.S. cap-(type- I) logo panel etc including cutting welding, riveting, oil painting with navy blue colour any other approved colour shade as directed and fixing in cement concrete foundation including cement concrete paver block lining including removal of surplus material/debries and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-B1 in the catalogue of street Furniture (Vol.I)	NOS	19845



		published by M.C.G.M.)		
424	R2-RT-16-30	Square tree guard : Providing, fabrication and fixing M.S. Square tree guard with circular pipe of 10 gauge, 50mm Dia Circular vertical post, 40mm Dia circular horizontal support, 18mm Dia circular intermediate support with M.S. cap-(type-I) logo panel etc including cutting welding, riveting, oil painting with navy blue colour any other approved colour shade as directed and fixing in cement concrete foundation including cement concrete paver block lining including removal of surplus material/debries and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-C1 in the catalogue of street Furniture (Vol.I) published by M.C.G.M.)	NOS	18245
425	R2-RT-16-31	St. Street Pole benches 6F-D-RO1,6F-DRO2 and 6F-D-RO3 : Providing, fabrication and fixing stainless steel railing of 10 gauge 304 grade material having minimum nickel contain not less than 10% (laboratory testing certificate shall be provided for used material) 50mm Dia circular pipe back rest with 100mm Dia circular seat, supporting of including cutting welding riveting, polishing as directed and fixing in cement concrete foundation including removal of surplus material /debris and restoring damaged portion of footpath , etc. (design details vide Drg.No.6F-D-RO1 and 6F-D in the catalogue of street Furniture (Vol.I)	MTR	12944



		published by M.C.G.M) Rate includes per Meter per back rest pipe		
426	R2-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	727



427	R2-RT-16-33	<p>Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick without primer coat (tack coat) on asphalt road surface. All labour materials with special aggregates etc, as specified in B.S. part-I &amp; II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in White /Yellow colour.</p>	SQM	662
428	R2-RT-16-34	<p>Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 - DO III Dt 11.06. 1997 . The minimum reflective area of 13 SqCm on NOS side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and</p>	NOS	427



		complete as directed by the engineer.'		
429	R2-RT-16-35	Supplying/ fixing of One Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 SqCm on NOS side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	NOS	420



430	R2-RT-16-36	<p>Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection molded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm<sup>3</sup> when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection molding process. - The flexible median marker shall have U shaped florescent yellow color retro-reflective sheeting with minimum exposed reflective area 285 mm<sup>2</sup>. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2012 and ASTM D4956-11.</p>	NOS	455
431	R2-RT-16-37	<p>Washing of Zebra crossing painting, dividers, kerb stones, medians, etc by scrubbing with wire brush, scrappers etc including necessary surface preparation using cleaning, dedusting, etc complete as per technical specification and directions of the Engineer-in-charge</p>	SQM	70



432	R2-RT-16-38	Providing and fixing kerb stones by using natural stones properly dressed in required size and shape (Cuboid, Cuboid with champher)	CUM	7140
433	R2-RT-16-39	Supplying Ready Mix Paint for Road Marking (Grade I) confirming to IS 164:1981 with up-to-date amendments, White per litre including necessary surface preparation, cleaning, dedusting, etc. complete as per technical specifications and as directed by Engineer In Charge.	LTR	204
434	R2-RT-16-40	Supplying Ready Mix Paint for Road Marking (Grade I) confirming to IS 164:1981 with up-to-date amendments, Black per litre including necessary surface preparation, cleaning, dedusting, etc. complete as per technical specifications and as directed by Engineer In Charge.	LTR	204
435	R2-RT-16-41	Supplying Ready Mix Paint for Road Marking (Grade I) confirming to IS 164:1981 with up-to-date amendments, Golden Yellow per litre including necessary surface preparation, cleaning, dedusting, etc. complete as per technical specifications and as directed by Engineer In Charge.	LTR	204
436	R2-RT-16-42	Removing of existing Sign Boards of any type and size and transporting the same to Municipal offices	KG	6





437	R2-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The reflection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	9431
438	R2-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1551
439	R2-RT-16-45	Cleaning of Cautionary/Mandatory Sign Board once by removing dust, dirt & grease by soap water and drying all assembly framework and surfaces. All necessary equipments such as Ladder, Tools, Soap material/Detergent including transportation etc as directed by the Engineer In Charge	NOS	215



440	R2-RT-16-46	Cleaning of Street Name/Junction Sign Board once by removing dust, dirt & grease by soap water and drying all assembly framework and surfaces. All necessary equipments such as Ladder, Tools, Soap material/Detergent including transportation etc as directed by the Engineer In Charge	NOS	215
441	R2-RT-16-47	Cleaning of Free standing Information Sign Board once by removing dust, dirt & grease by soap water and drying all assembly framework and surfaces. All necessary equipments such as Ladder, Tools, Soap material/Detergent including transportation etc as directed by the Engineer In Charge	NOS	215
442	R2-RT-16-48	Cleaning of Overhead Direction Sign Board once by removing dust, dirt & grease by soap water and drying all assembly framework and surfaces. All necessary equipments such as Ladder, Tools, Soap material/Detergent including transportation, Crane etc as directed by the Engineer In Charge	NOS	1476
443	R2-RT-16-49	Removing Rust, Applying red oxide coating & Painting with enamel paint on the vertical pipe and back support frames of Cautionary/Mandatory Sign board as directed by the Engineer In Charge	NOS	1667
444	R2-RT-16-50	Removing Rust, Applying red oxide coating & Painting with enamel paint on the vertical pipe and back support frames of Cautionary/Mandatory Sign board as directed by the Engineer In Charge	NOS	1667



445	R2-RT-16-51	Removing Rust, Applying red oxide coating & Painting with enamel paint on the vertical pipe and back support frames of Free Standing Informatory Sign board as directed by the Engineer In Charge	NOS	2778
446	R2-RT-16-52	Removing Rust, Applying red oxide coating & Painting with epoxy paint on the vertical pipe and back support frames of Cautionary/Mandatory Sign board as directed by the Engineer In Charge	NOS	1927
447	R2-RT-16-53	Removing Rust, Applying red oxide coating & Painting with epoxy paint on the vertical pipe and back support frames of street name /junction Sign board as directed by the Engineer In Charge	NOS	1927
448	R2-RT-16-54	Removing Rust, Applying red oxide coating & Painting with epoxy paint on the vertical pipe and back support frames of Free Standing Informatory Sign board as directed by the Engineer In Charge	NOS	1927
449	R2-RT-16-55	Repairing Mandatory sign board which are damaged/stolen/bruised & fixing with a new sign board of 600mm Circle made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications & ASTM D 4956-09 standards pasted on 3mm ACP which shall be rivetted onto the existing back support frame by removing the existing sign board. The border & images shall be developed using electro cut film/screen printing. The item shall incl transportation, load, lift including rivetting, bolting, welding, gas cutting and fixtures etc as directed by the Engineer In Charge	NOS	2513



450	R2-RT-16-56	<p>Repairing Cautionary sign board which are damaged/stolen/bruised &amp; fixing with a new sign board of 900mm Triangle made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications &amp; ASTM D 4956-09 standards pasted on 4mm ACP which shall be fixed onto the existing back support frame by removing the existing sign board. The border &amp; images shall be developed using electro cut film/screen printing. The item shall incl transportation, load, lift including rivetting, bolting, welding, gas cutting and fixtures etc as directed by the Engineer In Charge.</p>	NOS	2513
451	R2-RT-16-57	<p>Repairing Street Name sign board which are damaged/stolen/bruised &amp; fixing with a new sign board of 900mm x 600mm made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications &amp; ASTM D 4956-09 standards pasted on 4mm ACP which shall be rivetted onto the existing back support frame by removing the existing sign board. The message &amp; borders shall be developed using electro cut overlay film as per the colour specifications laid down by MCGM. The incl transportation, load, including rivetting, bolting, welding, gas cutting and fixtures etc as directed by the Engineer In Charge</p>	NOS	3769



452	R2-RT-16-58	<p>Repairing Junction Name sign board which are damaged/stolen/bruised &amp; fixing with a new sign board of 900mm x 900mm made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications &amp; ASTM D 4956-09 standards pasted on 4mm ACP which shall be rivetted onto the existing back support frame by removing the existing sign board. The message &amp; borders shall be developed using electro cut overlay film as per the colour specifications laid down by MCGM. The item shall incl transportation, load, lift including rivetting, bolting, welding, gas cutting and fixtures etc as directed by the Engineer In Charge</p>	NOS	5653
453	R2-RT-16-59	<p>Replacing Free standing direction sign board which are damaged/stolen/bruised &amp; fixing with a new sign board made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications &amp; ASTM D 4956-09 standards pasted on 4mm ACP which shall be rivetted onto the existing back support frame by removing the existing sign board. The message &amp; borders shall be developed using electro cut overlay film as per the colour specifications laid down by MCGM. The item shall incl transportation, load, lift including rivetting, bolting, welding, gas cutting and fixtures etc as per site condition and as directed by the Engineer In Charge</p>	SQM	6979



454	R2-RT-16-60	Repairing overhead Name sign board which are damaged/stolen/bruised & fixing with a new sign board of 900mm x 900mm made out of Type XI retro reflective sheeting confirming to IRC 67-2012 specifications & ASTM D 4956-09 standards pasted on 4mm ACP which shall be rivetted onto the existing back support frame by removing the existing sign board. The message & borders shall be developed using electro cut overlay film as per the colour specifications laid down by MCGM. The item shall incl transportation, load, lift including rivetting, bolting, welding, gas cutting and fixtures etc as directed by the Engineer In Charge	SQM	8652
455	R2-RT-16-61	Replacing Vertical Pipe for Street Name Board - 75x75x3.5mm Square Pipe, 3m length Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	3712
456	R2-RT-16-62	Replacing Back Support Frame for Street Name Board - 50x50x6mm Angle, 7.2m length Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	4949



457	R2-RT-16-63	Replacing Vertical Pipe for Junction Name Board - 100x100x3.5mm Square Pipe, 3m length Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	4261
458	R2-RT-16-64	Replacing Back Support Frame for Junction Name Board - 75x75x6mm Angle, 9m length Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	9348
459	R2-RT-16-65	Replacing Vertical Pipe for Cautionary/Mandatory Board - 50x50x3.5mm Square Pipe, 2.7m length Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	1100



460	R2-RT-16-66	Replacing Structural Steel Components/Spare parts/Sections of Cautionary/ Mandatory/ Street Name/ Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	962
461	R2-RT-16-67	Replacing Back Support Frame for Cautionary/Mandatory Board - 25x25x3mm Square Pipe, 2.7m length Structural Steel Components/Spare parts/Sections of Cautionary/ Mandatory/ Street Name/ Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	412
462	R2-RT-16-68	Replacing Bottom Base Plate for Shoulder Mounted Sign - 200x200x6mm Structural Steel Components/Spare parts/Sections of Cautionary/Mandatory/Street Name/Junction Name etc with new hot dip galvanised MS sections of 85 microns as per the specifications laid down below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	275
463	R2-RT-16-69	Replacing Vertical Pipe for OH Sign - 350 NB, 8mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	81578





464	R2-RT-16-70	Replacing horizontal beam Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	10660
465	R2-RT-16-71	Replacing Vertical beam for OH Sign- 40 NB, 3.6 mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	594
466	R2-RT-16-72	Replacing Back Support Frame for OH Sign - 50x50x6mm Angle Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	72127
467	R2-RT-16-73	Replacing Upper Base plate for OH Sign - 600mm Dia, 25mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	8377



468	R2-RT-16-74	Replacing Lower base plate for OH Sign - 600mm Dia, 10mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	4273
469	R2-RT-16-75	Replacing 32 Dia Foundation Bolt-1.188 mm Dia, 32 mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	1134
470	R2-RT-16-76	Replacing Jointing plate for OH Sign - 600mm Dia, 12mm thick Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	8050
471	R2-RT-16-77	Replacing 12th Stiffner Plate for OH Sign Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	163



472	R2-RT-16-78	Replacing 10th Stiffner Plate for OH Sign Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	189
473	R2-RT-16-79	Replacing 6 th Stiffner Plate for OH Sign Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	15
474	R2-RT-16-80	Replacing 250 x 400, 6mm thk Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	8546
475	R2-RT-16-81	Replacing 12 Dia bolt for OH Sign Steel Components/Spare Parts/Sections of Overhead Direction Sign boards with new hot dip galvanised steel sections as per Specifications mentioned below including rivetting, bolting, welding, gas cutting and fixtures etc	NOS	151

