

**ANNEXURE TO ADDENDUM**

**Item A (Refer SN. 4, 5 & 6 above)**

No.	Subject	Requirement	Single Entity	Joint Venture/ Consortium			Documentation
				(existing or intended)			
				All Parties Combined	Each member	Any one member	
<b>1.0</b>	<b>Eligibility</b>						
1.1	<b>Nationality</b>	Nationality in accordance with ITB 4.3	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.2	<b>Conflict of Interest</b>	No conflicts of interest in accordance with ITB 4.2	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N/A	Letter of Bid
1.3	<b>Agency Eligibility</b>	Not being ineligible to the Agency financing, as described in ITB 4.3	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N/A	Statement of Integrity (appendix to Letter of Bid)
1.4	<b>Government Owned Entity of the Borrower country</b>	Meet conditions of ITB 4.3	Must meet requirement	Existing or intended JVA must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
<b>2.0</b>	<b>Historical Contract Non-Performance</b>						
2.1	<b>History of Non-Performing Contracts</b>	Non-performance of a contract <sup>1</sup> did not occur as a result of contractor’s default in the past five (5) years.	Must meet requirement <sup>2</sup>	Must meet requirement	Must meet requirement <sup>2</sup>	N/A	Form CON-2

<sup>1</sup>Non-performance, as decided by the Employer, shall include all contracts where (a) non-performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Non-performance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Non-performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

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2.2	<b>Suspension Based on absence of Bid Security</b>	Not under suspension based absence of a Bid Security pursuant to ITB 4.4 or withdrawal of a Bid pursuant ITB 19.9.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Application Submission Form
2.3	<b>Pending Litigation</b>	Applicant's financial position and prospective long term profitability still sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Applicant	Must meet requirement	N/A	Must meet requirement	N/A	Form CON - 2
<b>3.0</b>	<b>Financial Situation and Performance</b>						
3.1	<b>Financial Capabilities</b>	(i)The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as <b>INR 112 Million</b> (or USD equivalent on the day of bid submission) for the subject contract(s) net of the Bidder's other commitments.	Must meet requirement	Must meet requirement	Must meet requirement as per their % share	N/A	Form FIN-3.1 and FIN-3.3

<sup>2</sup>This requirement also applies to contracts executed by the Bidder as JV member.

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<b>i-a.</b>	<b>Bid Capacity</b>	<p>Evaluation of Bid Capacity The Bidders will be qualified only if their available bid capacity is more than INR 2000 Million. Available bid capacity will be calculated based on the following formula: <b>Available Bid Capacity= 2*A*N - B</b> Where, A = Maximum of the value of Works executed in any one year during the last five financial years reckoned up to <b>31st March 2016</b> (updated to base date price level assuming 5% inflation per year compounded annually for Indian project and 2% for foreign project.) N = Number of years prescribed for completion of the present work B = Value of existing commitments as on first day of the month of this Bid submission i.e. for on-going construction works during next <b>156</b> weeks. Proportionate value will be taken if it falls during the financial year.</p>	Must meet requirement	Must meet requirement	N/A	N/A	Form FIN-3.4

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		<p><b>Note:</b></p> <p><b>1. The available bid capacity should be more than the INR 2000 Million.</b></p> <p><b>2. A certificate issued from a chartered accountant certifying A and B value must be enclosed with the Technical bid</b></p>					
		(ii) The Bidder shall also demonstrate, to the satisfaction of the Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.	Must meet requirement	Must meet requirement	N/A	N/A	Form FIN - 3.4
		<p>iii) The audited balance sheets for the last 5 (five) years (FY 2011-12, 12-13, 13-14, 14-15 &amp; 15-16) shall be submitted and must demonstrate the current soundness of the Applicant's financial position and indicate its prospective long-term profitability.</p> <p>The Bidder should be a Profit (Net) making firm and should have made profit during any two of the last 5</p>	Must meet requirement	N/A	Must meet requirement	N/A	Form FIN - 3.1, with attachments

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		financial years i.e. (FY 2011-12, 12-13, 13-14, 14-15 & 15-16)					
(ii-b)	<b>Net Worth</b>	Net worth of Bidder ending <b>31.03.16</b> should be minimum <b>INR 200Million</b> . In case of JV, Net worth will be evaluated only for the lead member.	Must meet requirement	N/A	N/A	Must meet requirement (for Lead Member only)	Form FIN - 3.1
3.2	<b>Average Annual Construction Turnover</b>	Minimum average annual construction turnover of <b>INR 1350 Million</b> (or USD equivalent) equivalent calculated as total certified payments received for contracts in progress and/or completed within the last 5 (five) years Note: 1. Last five years shall be 2011-12 to 2015-16. In case of Companies, which follows Financial Year as Calendar Year (January to	Must meet requirement	Must meet requirement	Must meet requirement as per their % share	N/A	Form FIN - 3.2

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				All Parties Combined	Each member	Any one memb er	
		December), data for the year 2015 shall be treated equivalent to the data of FY 2015-16 and so on.					
3.3	<b>Corporate Debt Restructuring</b>	The bidder having undergone Corporate Debt Restructuring (CDR) in last five years must submit their banker's certificate stating that their account with the bank is "standard account" as on 31/03/2016.	Must Submit	N/A	Must Submit	N/A	In case bidder has not under gone CDR then as sole bidder/all members in case of JV must submit undertaking to the effect of not having under gone

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							CDR
<b>4.0</b>	<b>Experience</b>						
4.1	<b>General Construction Experience</b>	The Tenderers will be qualified only if they have <b>10 Years of Experience</b> in the field of "The Design, Manufacturing, Supply, Installation, Testing and Commissioning of Elevators & Escalator" as on date of tender submission in above key activities	Must meet requirement	N/A <b>Must meet requirement</b>	<del>Must meet requirement</del> <b>Must meet requirement as per their Role In JV/Consortium</b>	N/A	Form EXP - 4.1
4.2 (a)	<b>Specific Construction &amp; Contract Management Experience</b>	The Design, Manufacturing, Supply, Installation, Testing and Commissioning of Elevators and/or Escalator for Metro, Airport and Sub-urban Railways/ <b>Railways</b> completed in last 10 years as mentioned below :- a) Should have <b>Completed</b> more than INR 1600Million from a single contract comprising of Elevators and/or Escalators  Or	Must meet requirement	N/A <b>Must meet requirement</b>	<del>Must meet requirement</del> <b>Must meet requirement as per the role in JV/ Consortium</b>	N/A	Form EXP 4.2(a)

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		<p>b) Should have <b>Completed</b> more than INR 1000Million each from two contracts of Elevator and/or Escalator</p> <p align="center">Or</p> <p>c) Should have <b>Completed</b> more than INR 800Million each from three contracts of Elevator and/or Escalator</p> <p>If the sole Tenderer or any / all members of JV / JVA / Consortium part constituting the Tenderer is / are from foreign, then the member responsible for manufacturing &amp; supplying of Elevators/Escalator should have an international experience of manufacturing and supplying minimum 44Nos of similar Elevators and 64Nos of similar Escalator each in at least two countries</p>					



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		excluding the country of the origin. Similar Elevators/Escalator implies Elevators/Escalator for Airport, Metro, Sub-urban Railways/ Railways					
4.2 (b)	<b>Maintenance Contract &amp; Experience</b>	The bidder must have successfully carried out post DLP AMC of 130Nos of Elevators and 193Nos of Escalator during last 5 Year for airport, Metro, sub-urban railways as on date of tender submission. <b>Starting 1st March 2006 to 31 March. 2016.</b>	Must meet requirement	Must meet requirement	N/A	Lead Member Must Meet Requirement <i>Responsible Member Must Meet Requirement</i>	Form EXP 4.2(b)

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4.2 (c)	<b>Quality &amp; EHS Qualification Criteria</b>	1. The Bidder must have Environmental Management Certificate ISO: 14001 2. The Bidder must have Quality Management Certificate ISO: 9001/ DNV/ TUV/ JAS-ANZ/ equivalent 3. The Bidder must have Health and Safety Certificate OHSAS: 18001 The bidder must agree to deploy at least one key personnel having Social & Environment expertise of minimum ten years in sites management measure pertain to Social & Environment issues.	Must meet requirement	Must meet requirement	N/A	Must meet requirement (Lead Member)	Form PER-2 (for CV of EHS personnel)

**Notes:**

The tenderer shall submit details of work executed by them in the Performa of **Annexure-I** for the works to be considered for qualification of work experience criteria. Documented proof such as completion certificates from client clearly indicating the natural scope of work, actual completion cost and actual date of completion for such work should be submitted. **The offers submitted without this documentary proof shall not be evaluated.**

Value of successfully completed portion of any ongoing work up to date of tender submission will also be considered for qualification of work experience criteria.

For completed works, value of work done shall be updated to tender submission date assuming 5% inflation for Indian Rupees every year and 2% for foreign currency portions per year. **For the purpose of evaluation of work experience, all prices will be converted to Indian Rupees using the Exchange (selling) rates for those currencies at the close of business of the Reserve Bank of India at 31st December of each year for the works completed in respective year. For the works completed in the latest year before 31st of December of current year, the exchange rates of foreign currency shall be applicable 28 days before the tender submission date.**

In case of joint venture / Consortium, full value the work, if done by the same joint venture or any of members of the Joint Venture shall be considered. If the work done by them in any other JV/consortium, value of work as per his percentage & scope of participation in that JV shall be considered.

**5. Domestic Preference (Deleted)**

*Not Applicable*

In case applicant claims experience for a project undertaken as a member of JV, the particular firm's position in the JV needs to be clearly brought out in the client's certificate or Joint Venture MOU/ Agreement.

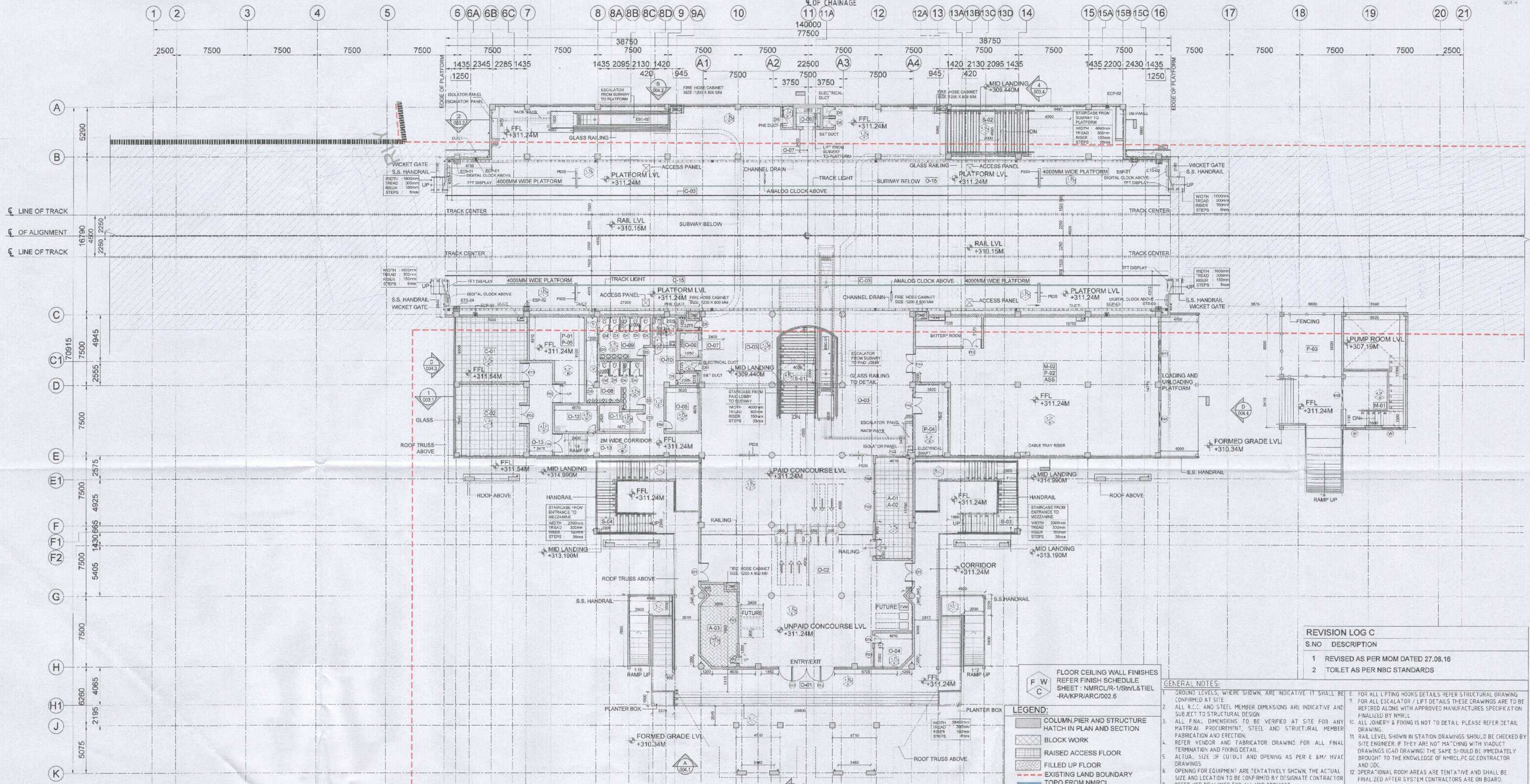
The applicant shall clearly identify the following to meet the experience requirement:

Type of Services Rendered		Lead Partner	Partner-1	Partner-2
Design/ Design Verification & Detail Engineering	Elevators			
	Escalators			
Manufacture	Elevators			
	Escalators			
Supply	Elevators			
	Escalators			
Installation, Testing and Commissioning	Elevators			
	Escalators			

The experience will be considered as per the participation of the applicant in the JV or Association of the completed work.

**KHAPRI METRO STATION**  
CH:18260.0M  
X=287146528.7  
Y=2328846460.4

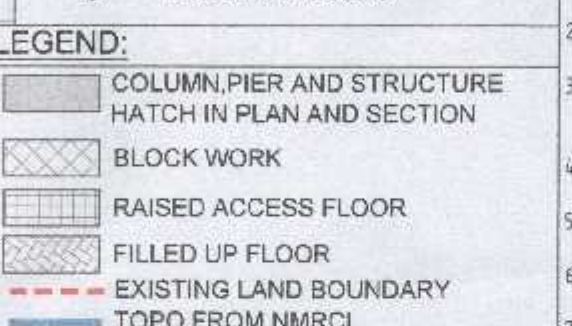
TOWARDS AUTOMOTIVE SQUARE



**REVISION LOG C**

S.NO	DESCRIPTION
1	REVISED AS PER MOM DATED 27.08.16
2	TOILET AS PER NBC STANDARDS

FLOOR CEILING WALL FINISHES REFER FINISH SCHEDULE SHEET : NMRC/R-1/SH/L&TIEL-RA/KPR/ARC/002.6



**GENERAL NOTES:**

- GROUND LEVELS, WHERE SHOWN, ARE INDICATIVE IT SHALL BE CONFIRMED AT SITE.
- ALL R.C.C. AND STEEL MEMBER DIMENSIONS ARE INDICATIVE AND SUBJECT TO STRUCTURAL DESIGN.
- ALL FINAL DIMENSIONS TO BE VERIFIED AT SITE FOR ANY MATERIAL PROCUREMENT, STEEL AND STRUCTURAL MEMBER FABRICATION AND ERECTION.
- REFER VENDOR AND FABRICATOR DRAWING FOR ALL FINAL TERMINATION AND FIXING DETAIL.
- ACTUAL SIZE OF DUCT/UT AND OPENING AS PER E/AM/ HVAC DRAWINGS.
- OPENING FOR EQUIPMENT ARE TENTATIVELY SHOWN, THE ACTUAL SIZE AND LOCATION TO BE CONFIRMED BY DESIGNATE CONTRACTOR AND DOK.
- REFER MEP DRAWINGS FOR ALL MEP SERVICES.
- FOR ALL LIFTING HOODS DETAILS REFER STRUCTURAL DRAWING.
- FOR ALL ESCALATOR / LIFT DETAILS THESE DRAWINGS ARE TO BE REFERRED ALONG WITH APPROVED MANUFACTURER'S SPECIFICATION FINALIZED BY NMRC.
- ALL JOINERY & FIXING IS NOT TO DETAIL PLEASE REFER DETAIL DRAWING.
- RAIL LEVEL SHOWN IN STATION DRAWINGS SHOULD BE CHECKED BY SITE ENGINEER. IF THEY ARE NOT MATCHING WITH YADUCL TERMINATION AND FIXING DETAIL.
- OPERATIONAL ROOM AREAS ARE TENTATIVE AND SHALL BE FINALIZED AFTER SYSTEM CONTRACTORS ARE ON BOARD.

Street Room Schedule	Street Room Schedule	Street Room Schedule	Street Room Schedule	
Number	Name	Area(sq.m)	Number	
A-01	Station Control Room	43.00	O-05	Store Room
A-02	Access Fare Office	31.00	O-06	Lift
A-03	Ticket Counter	56.00	O-07	Lift Lobby
C-02	Telecom Equipment Room	56.00	O-08	Genits Toilet
C-03	Platform Screen Doors	1430.665	O-09	Ladies Toilet
O-01	Station Entrance & Lobby Space	13.50	O-10	PMO
O-02	Unpaid Concourse Area	20.81	O-11	Cleaners room
O-03	Paid Concourse Area	4000.00		
O-04	Security Room	3000.00		

**WINDOW:**

TYPE	WIDTH	SILL	LVL	LINTEL	LVL	HEIGHT	GL	COMMENTS
FG1	4380	1000	2500	1500	1	FIXED GLAZING		
FG2	3000	1000	2500	1500	3	FIXED GLAZING		
FG3	2000	1000	2500	1500	1	FIXED GLAZING		
W	2000	1000	2500	1500	4	ALUMINIUM FRAME FIXED GLAZING		

**VENTILATOR:**

TYPE	WIDTH	SILL	LVL	LINTEL	LVL	HEIGHT	GL	COMMENTS
V	1000	3000	4600	1500	2	ALUMINIUM FRAME WITH LOUVERS		

**DOORS:**

TYPE	WIDTH	SILL	LVL	LINTEL	LVL	HEIGHT	SWING	SUB. LVL	ROAD	LVL	MEZZ	LVL	COMMENTS
D1a	2000	00	2300	2300	TWO WAY	0	1	0	0	0	DOUBLE LEAF 180 MIN. FIRE RATED DOOR		
D1b	1800	00	2300	2300	TWO WAY	0	2	0	0	0	DOUBLE LEAF ALUMINIUM GLASS DOOR		
D2	1000	00	2300	2300	TWO WAY	0	1	0	0	0	DOUBLE LEAF		
D3	900	00	2300	2300	ONE WAY	0	3	0	0	0	SINGLE LEAF FLUSH DOOR / FRP		
D3a	900	00	2300	2300	ONE WAY	0	3	0	0	0	SINGLE LEAF FLUSH DOOR / FRP		
D3b	900	00	2300	2300	ONE WAY	0	1	0	0	0	SINGLE LEAF FLUSH DOOR WITH VISION PANEL		
D4	750	00	2300	2300	ONE WAY	0	9	0	0	0	SINGLE LEAF FLUSH DOOR / FRP		
D5	750	200	1900	1900	ONE WAY	6	7	0	0	0	SINGLE LEAF FLUSH DOOR / FRP		
D6	1500	00	2300	2300	TWO WAY	0	2	0	0	0	SINGLE LEAF 2 X WITH TOUGHENED GLASS DOOR		

**NOTES:**

- ALL DIMENSIONS ARE IN MM ALL LEVELS IN METERS UNLESS OTHERWISE MENTIONED
- DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS INTEGRATION & FULL COMPLIANCE OF CONTRACT PROVISIONS IN RESPECT OF DESIGN ANALYSIS & DRAWINGS RESTS WITH THE DESIGN CONSULTANT.

THE RESPONSIBILITY OF OVERALL CORRECTNESS OF DESIGN AND DRAWINGS RESTS WITH THE DDC. FORWARDED FOR APPROVAL AND ISSUE OF GOOD FOR CONSTRUCTION DRAWINGS.

SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>
DATE: 05.09.16	DATE: 06.09.16	DATE: 05.09.16	DATE: 06.09.16
NAME: KALAI	NAME: ANJSHA	NAME: NELLAIKUMAR	NAME: RAJENDRAN
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN CHECKED INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ARE RECOMMENDED FOR 'GOOD FOR CONSTRUCTION'.

SIGN: \_\_\_\_\_

DATE: \_\_\_\_\_

NAME: \_\_\_\_\_

**LEGEND:**

- ECP - Emergency Call Point
- ETS - Emergency Tripping System
- ESP - Emergency Stop Plunger
- P.I.D.S - Passengers Information Display System

**GOOD FOR CONSTRUCTION**

**NAGPUR METRO RAIL PROJECT**

Metro House, 28/2, CK Naidu Marg, Anand Nagar, Civil Lines, Nagpur - 440 001  
Phone No: 07122554217

CLIENT: NAGPUR METRO RAIL CORPORATION LTD.

STATION: KHAPRI METRO STATION

TITLE: ROAD LEVEL PLAN

DRG NO: NMRC/R-1/SH/L&TIEL-RA/KPR/ARC/002.1

SCALE: 1:200

DATE: 06.09.16

STATUS: GOOD FOR CONSTRUCTION

REVISION NO: C

**ARCHITECTURAL**

**NAGPUR METRO**

**DETAILED DESIGN CONSULTANTS**

**L&T Infra Engineering**  
4th & 5th Floor, Triton Square (SKCL Building), C3-C7, Thiru Vi-Ka Industrial Estate, Gundy, Chennai - 600 932 Tel: 044 - 22509999 Fax: 91-44-22509600 E-mail: lnt@lnt.com

**RAJENDRAN ASSOCIATES**  
No.105, 4th Main Road, Gandhi Nagar, Adyar, Chennai - 600 020 Tel: 044 - 24430326, 42059263 E-mail: nmrc@rajendranassociates.com

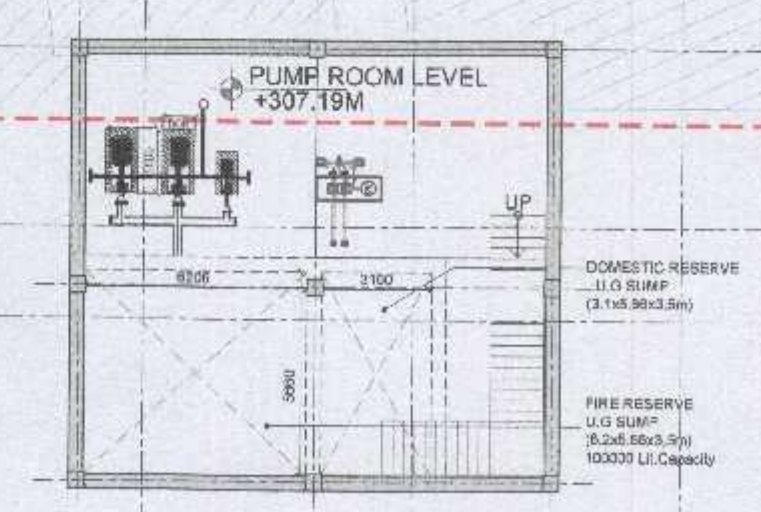
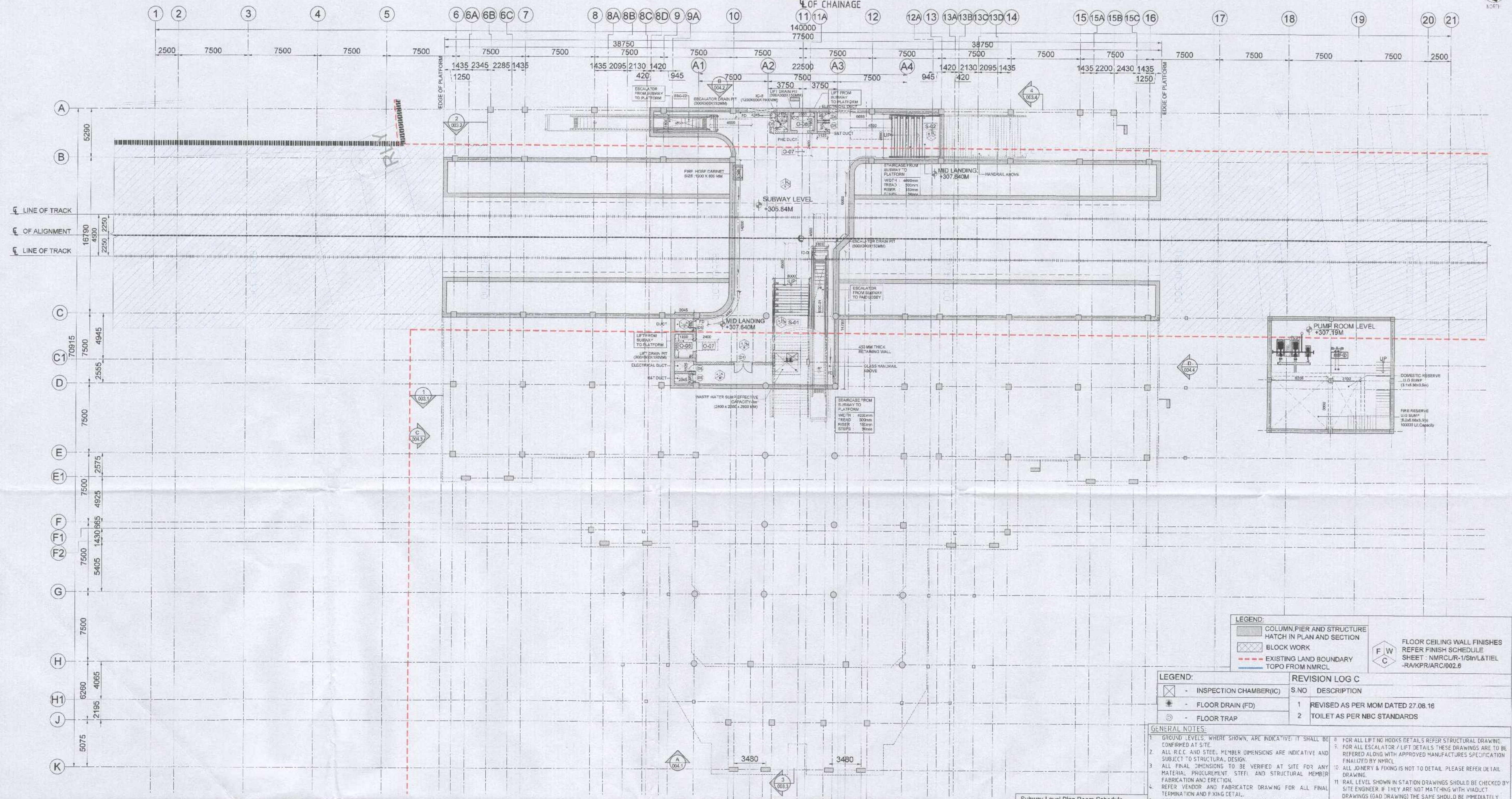
**GENERAL CONSULTANTS FOR NAGPUR METRO RAIL PROJECT**

Church House, Above SBI Bank, First Floor, CK Naidu Marg, Anand Nagar, Civil Lines Nagpur - 440001

**SYSTRA ASCOM 2egis**

TOWARDS AUTOMOTIVE SQUARE

KHAPRI METRO STATION  
CH:18260.0M  
X=297146528.7  
Y=2328846460.4



**LEGEND:**

- COLUMN PIER AND STRUCTURE HATCH IN PLAN AND SECTION
- BLOCK WORK
- EXISTING LAND BOUNDARY TOPO FROM NMRC

**F W C** FLOOR CEILING WALL FINISHES REFER FINISH SCHEDULE SHEET - NMRC/LR-1/STN/L&TIEL -RA/KPR/ARC/002.6

**LEGEND:**

- INSPECTION CHAMBER(IC)
- FLOOR DRAIN (FD)
- FLOOR TRAP

REVISION LOG C	
S.NO	DESCRIPTION
1	REVISED AS PER MOM DATED 27.08.16
2	TOILET AS PER NBC STANDARDS

- GENERAL NOTES:**
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  - ALL JOINERY & FIXING IS NOT TO DETAIL. PLEASE REFER DETAIL DRAWING.
  - RAIL LEVEL SHOWN IN STATION DRAWINGS SHOULD BE CHECKED BY SITE ENGINEER. IF THEY ARE NOT MATCHING WITH VIADUCT DRAWINGS (GAD DRAWING) THE SAME SHOULD BE IMMEDIATELY BROUGHT TO THE KNOWLEDGE OF NMRC/PC/CC CONTRACTOR AND L&T.
  - OPERATIONAL ROOM AREAS ARE TENTATIVE AND SHALL BE FINALIZED AFTER SYSTEM CONTRACTORS ARE ON BOARD.

**Subway Level Plan Room Schedule**

Number	Name	Area(sq.m)
0-06	Lift	-
S-0	Staircase	-
ESC-0	Escalator	-

**DOORS:**

TYPE	WIDTH	SILL LVL	LINTEL LVL	HEIGHT	SWING	SUB. LVL	ROAD LVL	MEZZ LVL	COMMENTS
D1	2000	00	2300	2300	TWO WAY	2	0	0	DOUBLE LEAF ALUMINIUM GLASS DOOR
D5	750	230	1900	1900	ONE WAY	6	7	0	SINGLE LEAF FLUSH DOOR / FRP

Note: 200mm FLOOR FINISH SUBWAY LEVEL ONLY

- NOTES:**
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  - DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED

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DATE: 06.09.16	DATE: 06.09.16	DATE: 06.09.16	DATE: 06.09.16
NAME: KALAI	NAME: ANUSHA	NAME: NELLAIKUMAR	NAME: RAJENDRAN
DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY

**DETAILED DESIGN CONSULTANTS**

**L&T Infra Engineering**  
4th & 5th Floor, Triton Square (SKL Building), C3-C7, Thiru. Vi-Ka Industrial Estate, Gundy, Chennai - 600 032 Tel: 044 - 22509999 Fax: 91-44-22509600 E-mail: lnti@lnti.com

**RAJENDRAN ASSOCIATES**  
No.105, 4th Main Road, Gandhi Nagar, Adyar, Chennai - 600 020 Tel: 044 - 24430326, 42059263 E-mail: nmrc@rajendranassociates.com

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**GENERAL CONSULTANTS FOR NAGPUR METRO RAIL PROJECT**

Churo House, Above SBI Bank, First floor, CK Naidu Marg, Anand Nagar, Civil Lines Nagpur - 440001

**SYSTA AECOM egis WITES**

B. RAJENDRAN (CHIEF ARCHITECT) P.N.S.S. Sastry (PROJECT LEADER)

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN CHECKED INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ARE RECOMMENDED FOR 'GOOD FOR CONSTRUCTION'.

**PROJECT**

NOC BY NMRC

JGM/DES-STATIONS

DGM/S&T

DGM/IE&M/TRACT

GM/DES

**GOOD FOR CONSTRUCTION**

**NAGPUR METRO RAIL PROJECT**  
Metro House, 28/2, CK Naidu Marg, Anand Nagar, Civil Lines, Nagpur - 440 001  
Phone No. 07122554217

CLIENT: NAGPUR METRO RAIL CORPORATION LTD.

STATION: KHAPRI METRO STATION

TITLE: SUBWAY LEVEL PLAN

DRG NO: NMRC/LR-1/STN/L&TIEL-RA/KPR/ARC/002.2

SCALE: 1:200 STATUS: GOOD FOR CONSTRUCTION

DATE: 06.09.16

REVISION NO: C

**NAGPUR METRO**

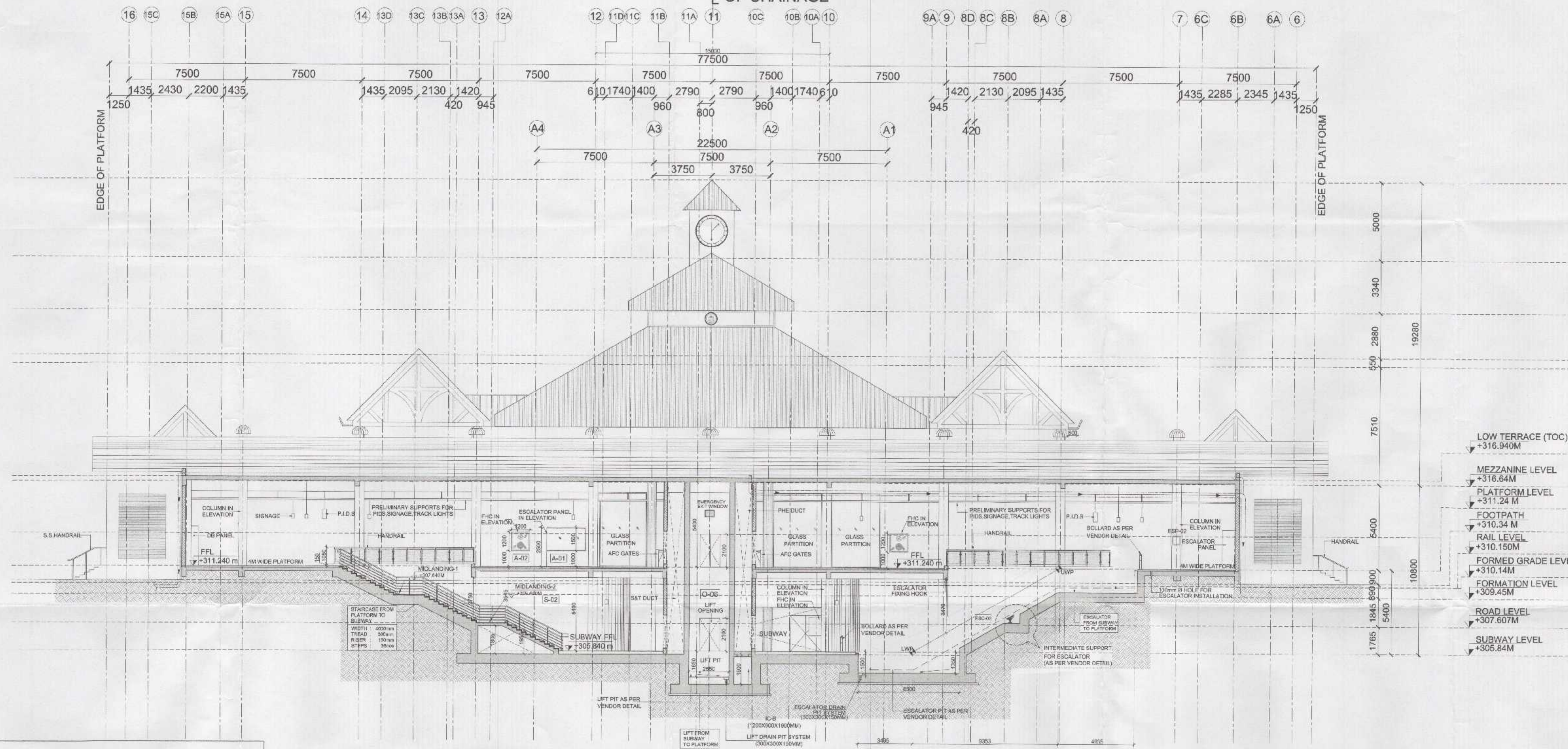
**GOOD FOR CONSTRUCTION**

Signature: *[Signature]* DATE: 09/09/2016

TOWARDS AUTOMOTIVE SQUARE

**KHAPRI METRO STATION**  
CH: 18260.0M

CL OF CHAINAGE



- GENERAL NOTES:**
- GROUND LEVELS, WHERE SHOWN, ARE INDICATIVE. IT SHALL BE CONFIRMED AT SITE.
  - ALL R.C.C. AND STEEL MEMBER DIMENSIONS ARE INDICATIVE AND SUBJECT TO STRUCTURAL DESIGN.
  - ALL FINAL DIMENSIONS TO BE VERIFIED AT SITE FOR ANY MATERIAL PROCUREMENT, STEEL AND STRUCTURAL MEMBER FABRICATION AND ERECTION.
  - REFER VENDOR AND FABRICATOR DRAWING FOR ALL FINAL TERMINATION AND FIXING DETAIL.
  - ACTUAL SIZE OF CUTOUT AND OPENING AS PER E & M/ HVAC DRAWINGS.
  - THE OPENING FOR EQUIPMENT ARE TENTATIVELY SHOWN, THE ACTUAL SIZE AND LOCATION TO BE CONFIRMED BY DESIGNATE CONTRACTOR.
  - REFER MEP DRAWINGS FOR ALL MEP SERVICES.
  - FOR ALL LIFTING HOOKS DETAILS REFER STRUCTURAL DRAWING.
  - FOR ALL ESCALATOR / LIFT DETAILS THESE DRAWINGS ARE TO BE REFERRED ALONG WITH APPROVED MANUFACTURERS SPECIFICATION FINALIZED BY NMRC.
  - ALL JOINERY & FIXING IS NOT TO DETAIL PLEASE REFER DETAIL DRAWING.
  - RAIL LEVEL SHOWN IN STATION DRAWINGS SHOULD BE CHECKED BY SITE ENGINEER. IF THEY ARE NOT MATCHING WITH VIADUCT DRAWINGS (GAD DRAWING) THE SAME SHOULD BE IMMEDIATELY BROUGHT TO THE KNOWLEDGE OF NMRC, PC, GC, CONTRACTOR AND DDC. OPERATIONAL ROOM AREAS ARE TENTATIVE AND SHALL BE FINALIZED AFTER SYSTEM CONTRACTORS ARE ON BOARD.

Room Number	Name
A-01	Station Control Room
A-02	Excess Fare Office
Q-26	LIR
S-02	Staircase
ESC-02	Escalator

**LEGEND:**

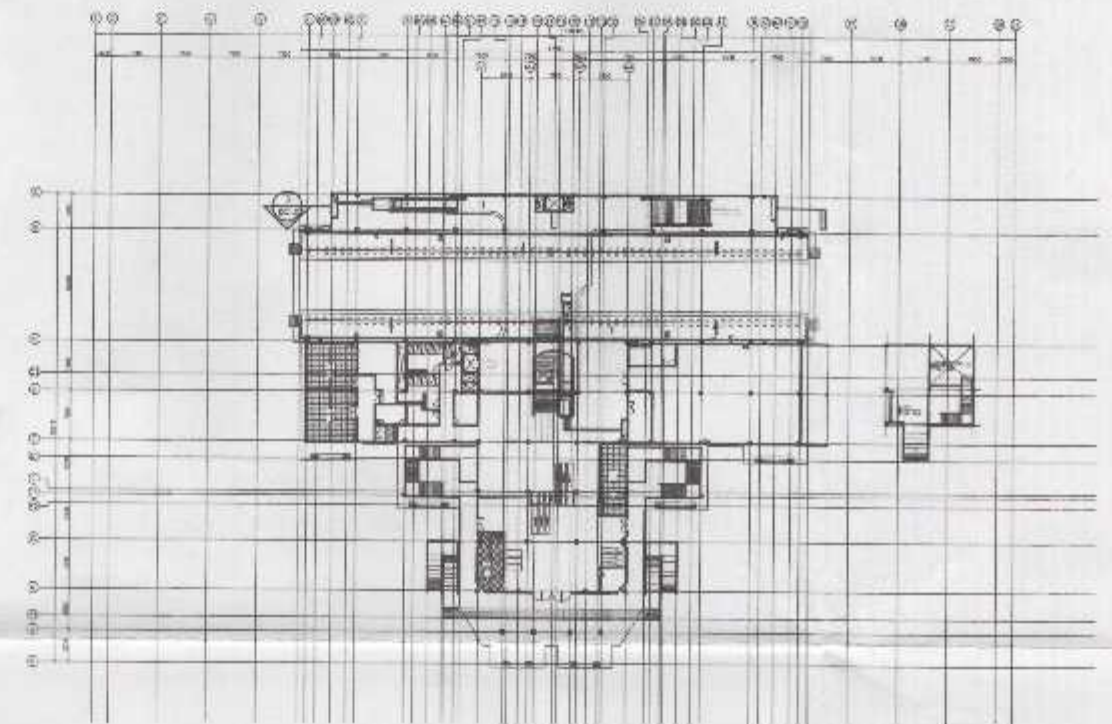
- COLUMN, PIER AND STRUCTURE HATCH IN PLAN AND SECTION
- BLOCK WORK
- LWP LOWER WORKING POINT
- UWP UPPER WORKING POINT

**REVISION LOG C**

S.NO	DESCRIPTION
1	REVISED AS PER MOM DATED 27.08.16
2	TOILET AS PER NBC STANDARDS

**MEP LEGEND:**

- ECP - Emergency Call Point
- ETS - Emergency Tripping System
- ESP - Emergency Stop Plunger
- FHC - Fire Hose Cabinet
- P.I.D.S - Passengers Information Display System



KEY PLAN

**NOTES:**

- ALL DIMENSIONS ARE IN MM ALL LEVELS IN METERS UNLESS OTHERWISE MENTIONED
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED

REV NO	DATE	DESCRIPTION	SIGN
C	06.09.16	REVISED AS PER GC COMMENTS	
B	18.08.16	REVISED AS PER GC COMMENTS	
A	02.06.16	ISSUED AS GOOD FOR CONSTRUCTION	
1	23.04.16	ISSUED FOR CHAINAGE REVISION	
0	11.03.16	ISSUED FOR APPROVAL PURPOSE	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS INTEGRATION & FULL COMPLIANCE OF CONTRACT PROVISIONS IN RESPECT OF DESIGN ANALYSIS & DRAWINGS RESTS WITH THE DESIGN CONSULTANT.

SIGN	DATE	SIGN	DATE	SIGN	DATE	SIGN	DATE
	06.09.16		06.09.16		06.09.16		06.09.16

DRAWN BY: NAME: ANUSHA  
DESIGN BY: NAME: NELLAIKUMAR  
CHECKED BY: NAME: RAJENDRAN  
APPROVED BY: NAME: RAJENDRAN

**DETAILED DESIGN CONSULTANTS**

<b>L&amp;T Infra Engineering</b> 4th & 5th Floor, Triton Square (SKCL Building), C3-C7, Thiru Vi-Ka Industrial Estate, Guindy, Chennai - 600 032 Tel: 044 - 22509959 Fax: 91-44-22509600 E-mail: info@lnti.com	<b>RAJENDRAN ASSOCIATES</b> No 105, 4th Main Road, Gandhi Nagar, Adyar, Chennai - 600 020 Tel: 044 - 24430326, 42059263 E-mail: nmrc@rajendranassociates.com
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BRAJENDRAN (CHIEF ARCHITECT) P.N.S.S. Sastry (PROJECT LEADER)

THE RESPONSIBILITY OF OVERALL CORRECTNESS OF DESIGN AND DRAWINGS RESTS WITH THE DDC. FORWARDED FOR APPROVAL AND ISSUE OF GOOD FOR CONSTRUCTION DRAWINGS.

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN CHECKED INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ARE RECOMMENDED FOR 'GOOD FOR CONSTRUCTION'.

SIGN: \_\_\_\_\_  
DATE: \_\_\_\_\_  
NAME: \_\_\_\_\_

**GENERAL CONSULTANTS FOR NAGPUR METRO RAIL PROJECT**  
Church House, Above SBI Bank, First floor, CK Naidu Marg, Anand Nagar, Civil Lines Nagpur - 440001

**SYSTRA AECOM egis RITES**

NOC BY NMRC	PROJECT: NAGPUR METRO RAIL PROJECT
JGM/DES-STATIONS	Metro House, 28/2, CK Naidu Marg, Anand Nagar, Civil Lines, Nagpur - 440 001 Phone No: 07122554217
DGM/S&T	CLIENT: NAGPUR METRO RAIL CORPORATION LTD.
DGM/IE&M/TRACT)	STATION: KHAPRI METRO STATION
GM/DES	TITLE: LONGITUDINAL SECTION - 2
	DRG NO: NMRC/R-1/Stn/L&TIEL-RA/KPR/ARC/003.2
	SCALE: 1:150 STATUS: GOOD FOR CONSTRUCTION
	REVISION NO: C
	DATE: 06.09.16

**GOOD FOR CONSTRUCTION**

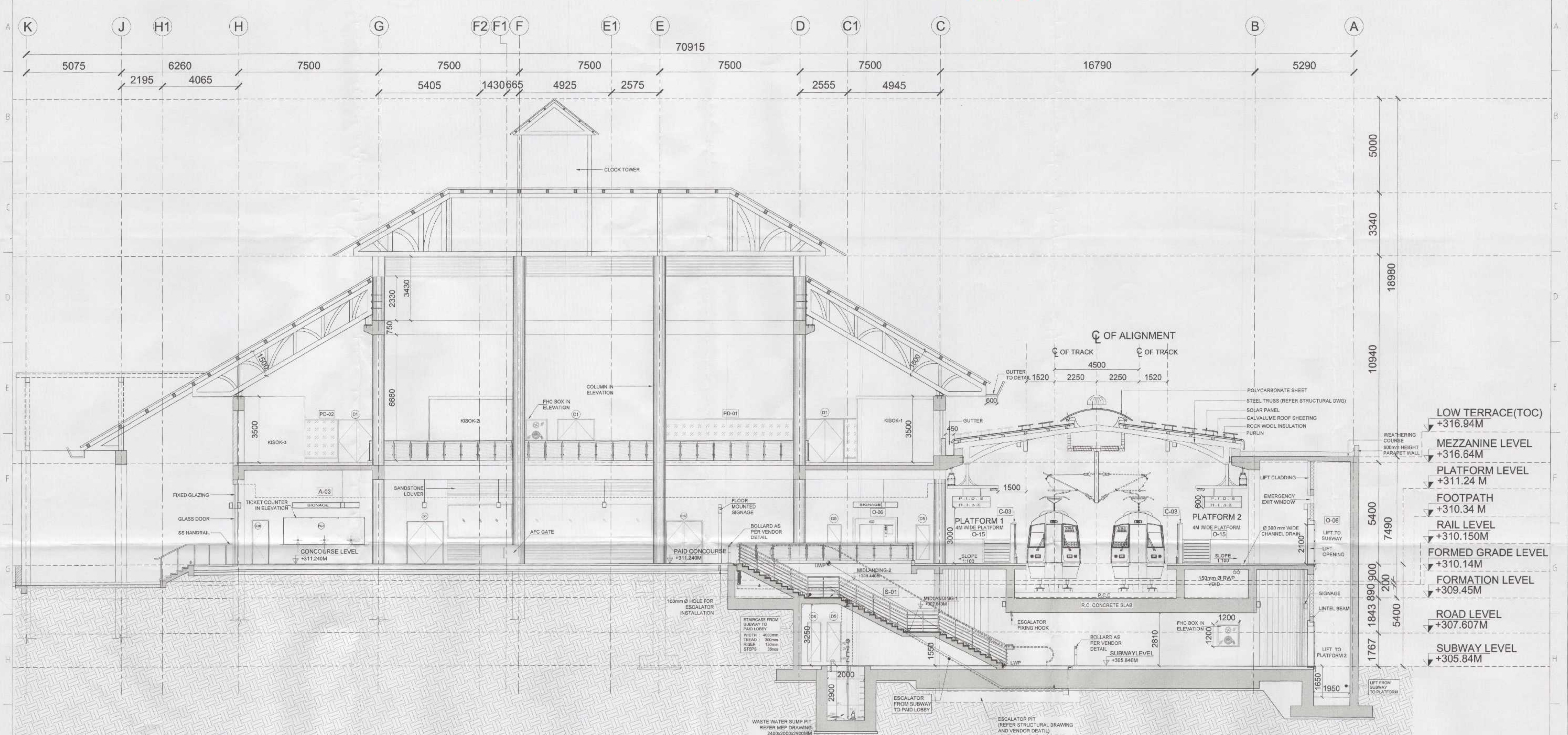
Signature: Pradeep Duggirala  
Date: 09/09/2016

**NAGPUR METRO**

ARCHITECTURAL

Item B4

ORIGINAL DRAWING SIZE A1



- LOW TERRACE(TOC) +316.94M
- MEZZANINE LEVEL +316.64M
- PLATFORM LEVEL +311.24 M
- FOOTPATH +310.34 M
- RAIL LEVEL +310.150M
- FORMED GRADE LEVEL +310.14M
- FORMATION LEVEL +309.45M
- ROAD LEVEL +307.607M
- SUBWAY LEVEL +305.84M

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SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>	SIGN: <i>[Signature]</i>
DATE: 06.09.16	DATE: 06.09.16	DATE: 06.09.16	DATE: 06.09.16
NAME: KALAI	NAME: ANUSHA	NAME: NELLAIKUMAR	NAME: RAJENDRAN
DRAWN BY	DESIGN BY	CHECKED BY	APPROVED BY

**DETAILED DESIGN CONSULTANTS**

<b>L&amp;T Infra Engineering</b> 4th & 5th Floor, Triton Square (SKCL Building), C3-C7, Thiru Vi-Ka Industrial Estate, Guindy, Chennai - 600 032 Tel 044 - 22509999 Fax 91-44-22509600 E-mail: lntielchn@lntiel.com	<b>RAJENDRAN ASSOCIATES</b> No.105, 4th Main Road, Gandhi Nagar, Adyar, Chennai - 500 020 Tel. 044 - 24.430326, 42059263 E-mail: nmrc@rajendranassociates.com
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**LEGEND:**

- COLUMN PIER AND STRUCTURE HATCH IN PLAN AND SECTION
- BLOCK WORK
- LWP LOWER WORKING POINT
- UWP UPPER WORKING POINT

TYPE	WIDTH	SILL LVL	LINTEL LVL	HEIGHT	SWING	COMMENTS
D1	2000	00	2300	2300	TWO WAY	DOUBLE LEAF ALUMINIUM GLASS DOOR
D2	750	200	2300	1900	ONE WAY	SINGLE LEAF FLUSH FRP
FD2	1800	00	2300	2300	TWO WAY	SINGLE LEAF 120 MIN. FIRE RATED DOOR
FD3	900	00	2300	2300	ONE WAY	DOUBLE LEAF 120 MIN. FIRE RATED DOOR WITH VISION PANEL

THIS DRAWING INCLUDING ITS DESIGN AND DETAILING HAS BEEN CHECKED INDEPENDENTLY AND FOUND SUITABLE FOR THE EXECUTION PURPOSE AND ARE RECOMMENDED FOR 'GOOD FOR CONSTRUCTION'.

SIGN: \_\_\_\_\_  
DATE: \_\_\_\_\_  
NAME: \_\_\_\_\_

**GENERAL CONSULTANTS FOR NAGPUR METRO RAIL PROJECT**

Church House, Above SBI Bank, First floor, CK Naidu Marg, Anand Nagar Civil Lines Nagpur - 440001

**SYSTA AECOM** **egis** **WRITES**

Number	Name
C-03	Platform Screen Doors
O-06	Lift
O-15	Platform
S-01	Staircase

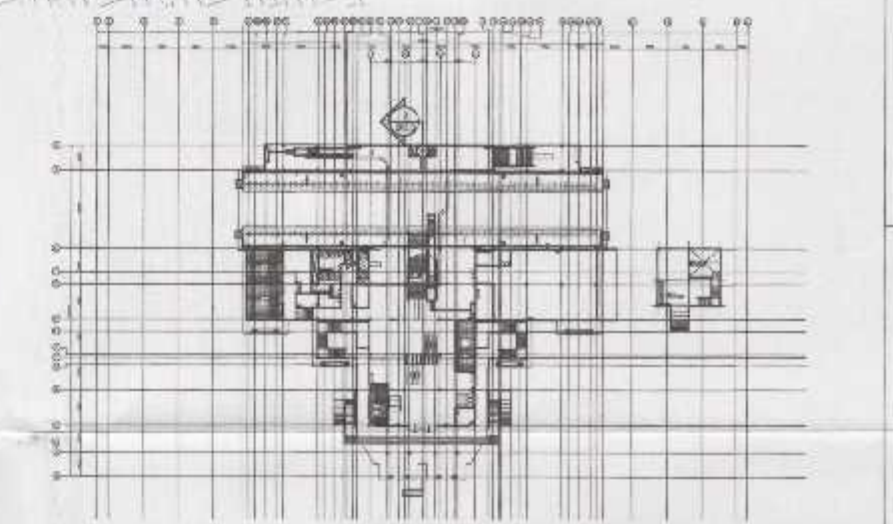
**MEP LEGEND:**

- ECP - Emergency Call Point
- ETS - Emergency Tripping System
- ESP - Emergency Stop Plunger
- FHC - Fire Hose Cabinet
- P.I.D.S - Passengers Information Display System

S.NO	DESCRIPTION
1	REVISED AS PER MOM DATED 27.08.16
2	TOILET AS PER NBC STANDARDS

**WINDOW:**

TYPE	WIDTH	SILL LVL	LINTEL LVL	HEIGHT	COMMENTS
FGT	4380	1000	2600	1600	FIXED GLAZING



**GOOD FOR CONSTRUCTION**

**NAGPUR METRO RAIL PROJECT**

Metrol House, 28/2, CK Naidu Marg, Anand Nagar Civil Lines, Nagpur - 440 001 Phone No. 07122554217

CLIENT: NAGPUR METRO RAIL CORPORATION LTD.

STATION: KHAPRI METRO STATION

TITLE: CROSS SECTION - 3

DRG NO: NMRC/R-1/Sfn/L&TIEL-RA/KPR/ARC/003.3 REVISION NO: C

SCALE: 1:100 STATUS: GOOD FOR CONSTRUCTION

DATE: 06.09.16

**NAGPUR METRO**

plot scale 1:50mm



**Annexure-IX-A**

**SITE OFFICE & OFFICE EQUIPMENTS**

Contractor shall provide furnished site office, as per the drawing and specifications, for the use of Site Engineer and his supporting staff; at least at one locations; as per Specifications. Total built up area min. 125Sqm

- (a) Fully furnished 1nos of, Air Conditioned Office of built up area not less than 125Sqm each with all infrastructure, Power Supply, Parking, furniture, office equipment i.e. Desktops, Telephone, FAX, all indoor & outdoor safety equipment/gadgets etc. attached with a Pantry, as per requirement & direction of NMRCL/Engineer. Tentative requirements of Office Furniture & equipment is enclosed below, but it is not exhaustive and Engineer may alter the requirement up to reasonable extent as and when required time to time.
- (b) The office equipment, furniture, safety equipment /gadgets should be new.
- (c) The successful bidder has to provide following to NMRCL or its designated Engineer for the proper Management & supervision of construction work: - One nos of AC SUV i.e Innova / Xylo with driver for 24 hours. The maximum running of each vehicle shall be 4000 Km/ Per Month. The maintenance expenses, wages of drivers, insurance, POL, Toll, Parking & other running expenses of these vehicles shall be borne by successful bidder.
- (d) The vehicle should be registered in Nagpur as a Taxi not earlier than 01.09.2015

## Part 2. Section VII A (GS)

**2.3 IT Requirement of Employer**

- 1.1.1 Employer is in the process of implementing an Enterprise wide IT system project titled "Digital Project Management Platform". The objective of the IT project is to develop a working environment that enables higher efficiency and effectiveness, not only in internal functions, but also across the entire ecosystem of the Employer including Contractors. The IT project envisaged following application stack:
- (a) Collaborative document control and management services (using Bentley ProjectWise and AssetWise solution)
  - (b) Scheduling services (using Oracle Primavera P6 Enterprise Project Portfolio Management (EPPM))
  - (c) Project Management with progress and performance reporting (using Primavera P6 & Unifier solution)
  - (d) Progress and performance reporting with visualization (using RIB iTWO )
  - (e) Enterprise wide ERP SAP implementation
- 1.1.2 The proposed IT system has been conceptualized for facilitating preservation of important artifacts (plans, drawings, notes, documents, reports etc.) in a secure and manageable environment in digitized format. Appropriate triggers shall generate dashboards and management reports every time an event causes a substantial shift in the project risk or a deviation in processes is developed. The envisaged system would expedite decision-making, ensure better planning and coordination between different functions, better data management, effective reporting, knowledge management etc. Program management shall provide senior management with critical information related to various contracts, activities and funds in the form of management dashboards with inbuilt triggers to ensure timely decision-making. Clause 1.1.6 details out the bidder's expected involvement on NMRCL's Digital platform
- 1.1.3 The effective use of such IT platform requires availability of system at all requisite locations i.e. with Employers' various offices, Engineer's offices, Contractors' end, major sub-contractors' end, design consultant ends etc. with certain definite users' rights. Data uploading by various authorized and trained users is key to effective implementation of the IT system. It is expected that contractor would have previously worked on the similar packages also it is understood that such envisaged IT platform is already a part of detailed scope of work of successful bidder. However, NMRCL has conceptualized the creation of a 5D BIM platform which would be the single collaborative environment among all stakeholders including contractors, General consultants, detailed design consultants etc. for efficient & seamless flow of information.
- 1.1.4 In view of the above, the Contractor shall be required to:
- (a) Follow and comply the system guidelines to be issued by Employer/GC
  - (b) Comply all the software system competency.
  - (c) Upload / definition of Project Plans as per the template and using software defined by the Employer/GC;
  - (d) Maintenance and updating of uploaded Project Plans in software used by the Employer/GC;
  - (e) Upload of drawings / designs created by the Contractor as per the classification and on the software platform defined by the Employer/GC;
  - (f) Key contract related communication and progress related data as per processes defined on the software platform deployed by the Employer/GC
  - (g) Asset details need to be updated in the system in the format prescribed by the Employer/GC;

Bidder is expected to review section 2.3.6 for more details for bidder's expected involvement on NMRCL's Digital platform

1.1.5 Employer and its IT Implementation Agency shall render necessary assistance for the training of contractor staff.

1.1.6 Bidder will need to be accessing NMRCL's digital platform for at least the mentioned functions as applicable as per bidder's respective scope of work. However the function list is indicative and precise activities from bidder on NMRCL's digital platform will be updated and communicated to bidder on time to time basis.

Following are the deliverables in form of collaboration with 5D BIM by Bidder:

1.1.6.1 Creation of 3D engineered intelligent Models using discipline specific modelling/engineering applications.

1.1.6.2 Creating 2D drawings in CAD – plan, section, elevation and other relevant details (based on specific engineering disciplines) to be accessed by the contractors for construction.

1.1.6.3 Bidder need to comply with the following requirements in regards to the production of all the CAD (3D/2D) data files and building information modeling (BIM) work.

#### 1.1.6.3.1 Model file production principles

- 1) Bidder need to follow British Standard BS 1192:2007+A2:2016 for Collaborative production of architectural, engineering and construction information - Code of practice as a guide for drawing practice, convention, CAD data structure and translation.
- 2) Bidder need to model all design and construction information as an individual discipline model and then collaborate it in single master 3D composite model, using object based software, allowing for 2D models to be extracted as required.
- 3) Bidder need to create and share details of individual components of 3D models for each discipline involved.
- 4) Bidder need to share all individual discipline models as well the collaborated single master model through the Engineering Information Collaboration System for review by GC/NMRCL. Clash detection and resolution process will run in this composite area. All 3D model data together with all 2D drawing extractions needs to be spatially coordinated with the Geospatial System. UTM/WGS84 coordinate system needs to be followed for proper geo-referencing of all the engineered 3D models that will be created.

#### 1.1.6.3.2 Model file composition

- 1) Bidder need to generate model files using seed files/template (2D and 3D). Seed files/template will standardize all the new drawings that one creates. It will standardize the same global origin, color table, cell library attachments, working units, views etc.
- 2) Model files needs to contain one model view and one sheet view
- 3) All graphical elements need to be placed in the model view
- 4) Model files need to have a title box placed in the sheet view
- 5) All model files need to be created at 1:1 scale

#### 1.1.6.3.3 Model Outputs

- 1) Within the engineering collaboration system the central premise is that only approved data is shared. Each discipline WIP area can only reference data from the shared area i.e. approved data. When this data comes together in the composite model it can be fully coordinated and composite renditions can be produced in 3D.

#### 1.1.6.3.4 Model Reviews

- 1) Bidder needs to ensure that the level of complexity and granularity for each discipline CAD model is appropriate for the stage of Works.
- 2) Bidder needs to ensure that all disciplines integrate and coordinate their outputs in terms of both spatial and functional provision. This shall be demonstrated through the extensive use of coordinated design review sessions which shall include for the coming together of all relevant discipline models into a common master model (model composite) where engineering assurance and coordination checks shall take place.

#### 1.1.6.3.5 Existing Infrastructure data sets

- 1) Bidder need to model existing infrastructure and systems in sufficient detail as to provide integration with the works under contract
- 2) Bidder need to clearly highlight the unresolved areas of non-coordination in structure/services/finishes/clashes on the drawings and the model at all times in case of existing infrastructure data sets
- 3) Bidder need to report back to the owner any discrepancy with the existing data for their action

#### 1.1.6.3.6 Coordination and integration – Drawing Packages

- 1 Within the BIM environment each of the disciplines need to reference other models in a timely manner for coordination purposes. The head of each discipline group shall decide the extent and nature of supporting discipline data that shall be displayed in each of their own discipline drawing submissions. Clash detection software routines needs to be run on the multi-discipline model and on combined master models and any clashes resolved. The reports of which will be submitted on request of the Engineer
- 2 Specific drawing packages are required from each discipline. The drawings need to comprise of 2D extractions of the 3D models from the engineering collaboration system.
- 3 All CAD drawings need to be comprised of 2D models extracted from the 3D master model. Any subsequent design scheme changes that are required to be fully coordinated shall be modeled in 3D and the drawing extraction re-run to produce revised plots.
- 4 All plot composition files need to be checked as prescribed by the workflow setup in the engineering collaboration system before submission to the Engineer.

1.1.6.4 The bidder shall take full advantage of the 3D object attributes available in the BIM environment to prove cost, constructional logic, fabrication, and program as required by the NMRCL/GC. Engagement modality expected for Project Management works including 4D & 5D BIM requirements: -

1. Bidder shall allocate a Project Coordinator who would be a single-point contact for NMRCL for monitoring day-to-day progress on the Project.
2. Bidder will access the web-based Project Monitoring application (Primavera) of NMRCL
3. Bidder will have to create Work Breakdown Structure (WBS) for its scope of work in the master project prepared and released by NMRCL on Primavera.

4. Bidder will have to create all the relationships between various activities to generate a Critical Path Network on Primavera.
  - J The project plan will be detailed to reflect the planned construction progress as per the 3D BIM model. This is must, as Primavera plan will get linked to 3D BIM collaborated intelligent model to reflect and review time based planned progress of project on a BIM model. Bidder's project plan on NMRCL Primavera platform will be required at this level.
5. Once the network has been scheduled and baseline by NMRCL/GC, the Project Coordinator will have to provide periodical updates for various activities.
6. Bidder will also be required to furnish key cost / budget details along with resources on NMRCL's Primavera platform. Level of details for time plan, cost, and resources from bidder will be communicated to bidder at appropriate stage.
7. During the execution stage bidder will be required to operate on NMRCL's Primavera platform to reflect minimum details towards work performed, progress achieved, resources consumed, forecast dates, forecast resources, remaining work along with any other key details as Required by NMRCL / GC. NMRCL will be communicating on level of details as well frequency of such interactions at appropriate stage.
8. Bidder shall update and revise their work program on the integrated master schedule of the project subject to directions & approval from NMRCL.
9. Bidder will be required to periodically capture actual progress visualization of respective package work using suitable technology which can be updated in 5D BIM platform.

1.1.6.5 In order to adopt 5D BIM platform bidder need to follow Employer's Information Requirement (EIR) Document which will be prepared by Owners Support Office (OSO) in consultation with General Consultant (GC) and handed over to the Bidder. The EIR will enlist the standards, methods and procedures that one has to follow in order to be BIM Compliant. EIR will have details such as CAD standards, BIM standards, Asset Dictionary, Asset Classes, file naming convention, layer naming convention, Attribute Standards, etc.

1.1.6.6 SAP ERP (Component of Digital Project Platform):

In order to adopt SAP ERP platform contractor will be required to follow Employer's Information Requirement (EIR) Document which will be prepared by OSO in consultation with General Consultant (GC) and handed over to the contractor. The EIR will enlist the standards, methods, procedures and data related to defined functionality coverage in SAP ERP.

1.1.6.7 Minimum login credentials (as decided by NMRCL) per bidder will be provided by NMRCL to the bidder to access NMRCL digital platform as per clause 1.1.3. In case, bidder envisages more user licenses for their internal data preparation through their internal user (like detailed drawing or project plan preparation by multiple users) which is required for finalizing data to be entered in NMRCL's digital platform, then it will be bidder's responsibility to ensure own licenses. However the access to NMRCL's digital platform will be through provided user credential only.

1.1.6.8 The engineering collaboration platform will be provided by NMRCL and is mandated for the structure and the controlled sharing of the information created during the process.

## ANNEXURE TO ADDENDUM

### Item E (Refer SN. 44 above)

#### Training Programme

Contractor shall submit a training programme for imparting training to Employer's staff with batches of approximately 15 persons for Escalator systems in following areas.

Sl. No.	Description	Total Period (Trainer <b>Trainee</b> Working days)	Remarks
1	Design of Escalators	15	<del>During the Design Stage</del>
2	Manufacturing facilities, Testing methods and procedures, Working Mass Rapid Transit System installations. Short Module course on System description, architecture, etc. for Escalators. Training in O & M in operational MRTS where similar system functions.	5	During manufacturing at factory premises and other locations.
3	Installation and site testing practices for Escalators	25	During installation and commissioning phase
4	Escalator control & monitoring system, troubleshooting, fault diagnosis, emergency handling, etc.	30	At existing installations of NMRCL
5	Overall view of Escalator system, Operation and maintenance practices for Escalators, Maintenance infrastructure, PM & CM, CBM (vibration etc.)	100	At suitable locations

## ANNEXURE TO ADDENDUM

### Item F (Refer SN. 46 above)

#### Training Programme

Contractor shall submit a training programme for imparting training to NMRCL employees with batches of approximately 15 trainees for Lift systems in following areas:

Sl. No.	Description	Total Period (Trainer <b>Trainee</b> Man-Days)	Remarks
1	Manufacturing facilities, Testing methods and procedures, Working MRTS installations. Short Module course on System description, architecture etc, for Elevators	15	During manufacturing at factory premises and other locations.
2	Installation and site testing practices for Lifts	20	During installation & commissioning phase
3	Operation and maintenance practices for Lifts including trouble shooting, fault diagnosis and emergency handling.	110	At suitable locations

Terms & Conditions and Broad scope of work for comprehensive annual maintenance contract

1. **Scope of Work:**

“Comprehensive Annual Maintenance Contract (inclusive of staff, labour, consumables, assemblies and spares) for 130Nos of Lifts.

- A. All scheduled checks as per OEM periodicity. All consumable like oil/lubes and other items at frequency of OEM. All safety check, test of parts brake, rope, pulley as per the OEM and/or the Maharashtra State Lifts Inspector.
- B. Repair of equipment/ parts.
- C. Replacement of items/spares card etc. as per requirement of repair.

2. **Contract Period:** The contract period as per BOQ. (5Years)

3. **Service Hours :** 365 days x 24hrs

4. **Response Time:** 30Mins.

5. **Minor Fault rectification Time:** 02Hours.

6. **Major Fault rectification Time; 24Hours.**

When replacement/repair of component from factory is required – 02weeks. Any extension of this shall be agreed by the Employer’s representative.

7. **Price Variation clause:** The price variation clause is not applicable in this contract.

8. **Performance Security:** - The Contractor shall furnish performance security to the NMRCL a security in the form of a Bank Guarantee for an amount equal to 10% of the residual annual maintenance contract value as shown in table given herewith.

The Bank Guarantee has to be from a Scheduled Commercial Bank based in India and the form of Performance Security provided in the Tender document, shall be used. **Bank Guarantees (BGs) to be submitted by suppliers/contractors should be sent directly to the concerned authorities by the issuing Bank under Registered Post A.D.**

The performance security is to be deposited 30 days prior to start of AMC Contract or alternately performance bank guarantee on the main contract will be released on submission of the maintenance contract BG. The PBG for the subsequent years will be released only after obtaining BG for the next years for residual contract value. And finally will be released after 03 months from the date of completion of the contract.



9. **Deployment of Staff:** The Contractor will have to engage well trained staff as and when required, to ensure a regular preventive maintenance as well as the corrective/breakdown maintenance as per the requirement to ensure trouble free service throughout the CAMC period of 5Years.
10. **Payment:** The payment shall be made on a quarterly basis after satisfactory completion of work. The general maintenance and servicing report along with periodic performance Monitoring report for the entire Elevator system and breakdown reports shall be submitted in triplicate which shall be also signed by the NMRCL's representative. The Contractor will submit Monthly & Quarterly reports giving details of Preventive & Corrective Maintenance carried out in each month. Such reports are to be sent by 7<sup>th</sup> of the next month.
11. **Advance Payment:** No advance of any type shall be paid.
12. **Lift License:-** Contractor is responsible to getting initial licenses and their periodical renewal from time to time, from respective lift Inspector.
13. **Availability, Reliability & Maintainability:** Contractor shall maintain the Elevators in such a way so that the following parameters are achieved.
- |  |        |
|--|--------|
| Availability<br>(Operating Hrs.-unavailable Hrs.)/Operating Hrs.                         | 99.99% |
| Reliability<br>(Total operating hrs. /No. of Failure)<br>(Calls except external reasons) | 1200   |
| Maintainability<br>(Time under corrective maintenance/No. of faults)                     | 4      |
14. **Agreement:** Prior to the completion of DLP period, the contractor will have to enter into an agreement with the NMRCL. Until a final agreement is executed, the Letter of Acceptance shall constitute a binding contract between the contractor and the NMRCL.

S.No	year	Year No	AMC Cost (Per Unit per year) Rs. Lac	Pwf @ 5%	Net Present Value NPV Rs. Lac	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year	13th year	14th year	15th year
1	2016-17	1 DLP	0	<b>1.0000</b>	0.00													
2	2017-18	2 DLP	0	<b>0.9524</b>	0.00													
3	2018-19	3	3.5	<b>0.9070</b>	3.17	3.50												
4	2019-20	4	3.55	<b>0.8638</b>	3.07	3.38	3.55											
5	2020-21	5	3.6	<b>0.8227</b>	2.96	3.27	3.43	3.60										
6	2021-22	6	3.65	<b>0.7835</b>	2.86	3.15	3.31	3.48	3.65									
7	2022-23	7	3.7	<b>0.7462</b>	2.76	3.04	3.20	3.36	3.52	3.70								
8	2023-24	8	3.75	<b>0.7107</b>	2.67	2.94	3.09	3.24	3.40	3.57	3.75							
9	2024-25	9	3.8	<b>0.6768</b>	2.57	2.84	2.98	3.13	3.28	3.45	3.62	3.80						
10	2025-26	10	3.85	<b>0.6446</b>	2.48	2.74	2.87	3.02	3.17	3.33	3.49	3.67	3.85					
11	2026-27	11	3.9	<b>0.6139</b>	2.39	2.64	2.77	2.91	3.06	3.21	3.37	3.54	3.71	3.90				
12	2027-28	12	3.95	<b>0.5847</b>	2.31	2.55	2.67	2.81	2.95	3.09	3.25	3.41	3.58	3.76	3.95			
13	2028-29	13	4	<b>0.5568</b>	2.23	2.46	2.58	2.71	2.84	2.98	3.13	3.29	3.46	3.63	3.81	4.00		
14	2029-30	14	4.05	<b>0.5303</b>	2.15	2.37	2.49	2.61	2.74	2.88	3.02	3.17	3.33	3.50	3.67	3.86	4.05	
15	2030-31	15	4.1	<b>0.5051</b>	2.07	2.28	2.40	2.52	2.64	2.78	2.91	3.06	3.21	3.37	3.54	3.72	3.90	4.10

Table-1

The contractor has to do the maintenance of the lift under this contract. In addition to obligations under the Conditions of Contract, the Contractor shall provide maintenance services for specified period (5 Years) after defect liability period for all the Lifts supplied under the Contract.

Maintenance work shall include attending to all service calls regarding unscheduled trouble or breakdown and also all such items of work described in approved Maintenance Schedule of OEM and/or Regulatory Authorities in the state of Maharashtra as per the followings:

1. All defects shall be remedied either when observed on the weekly service call or on an attendance to a service call. Service shall include all work necessary to maintain the entire Lift system in good working order at all times.
2. The Contractor shall maintain adequate quantity of consumable and contingent spare parts as per agreed list at site in order to minimize the shut down time due to repairs and maintenance.

All parts rendered defective, including replacement of indicator lamps and programmable circuit board, shall be replaced by the Contractor. The list of these consumable and contingent spares should be submitted for Notice of no objection at the same time as the submission of the Preventive Maintenance Schedule (PM) & Corrective Maintenance (CM) procedure, as mentioned in 17.1.10.

The Mandatory spares as per the approved list will be handed over by the Contractor to the employer at the time of taking over of equipment / section in proportionate quantity and AMC Spares in proportionate quantity shall be maintained by contractor at contractor's own store at a location approved by employer during AMC Period. The balance AMC spares (balance after actual consumption, the contractor has to take written permission for using AMC spares from employer otherwise it will be assumed that the contractor has not used AMC spares and shall be liable to return these spares after completion of AMC) shall be the property of the employer and if any additional spares are required the contractor shall arrange the same without any extra payment. Mandatory spares (if any) provided to the Employer under the Contract will not normally be released to the Contractor for AMC purpose

3. The Contractor shall dispatch competent personnel to rectify stoppages at any time during the day or night when being called on by the Employer within a time of half an hour (maximum). Repairs shall be carried out on a 24 hours per day, 7 days per week basis until the faulty unit is put back in service.
4. The Contractor shall carry out periodic testing and examination of equipment safety devices as may be required by the provisions of any enactment in force relating thereto or of any enactment, regulations or by-laws of any local or other duly constituted authority which may be applicable to such tests and to provide such copies of the test certificates, duly signed by a Registered Lift "Engineer/Engineer's Representative" and Registered Lift Contractor, as may be required. A master schedule of such planned tests shall be submitted to the Employer at least two months before commencement of the AMC.
5. The Contractor shall provide quarterly and half-yearly reports on the condition of the equipment in an agreed format. Such reports shall include event logs and performance data collected from the associated indicative panel stored on diskettes or other agreed medium, over the reporting period. Such data shall enable off-line individual and fleet statistical analysis to be performed on a Personal Computer.
6. A report in duplicate shall be sent to the Employer immediately following every call out, indicating the time of call out visit, cause, remedial action taken and the time that the service was restored. The monthly summary of failure report along with the analysis given details of nature of fault, remedial action taken etc in the approved format shall be provided.
7. Reports on routine visits are not required except where necessary to draw attention to defects of a minor nature which could not be rectified during the routine visit. Records of each routine visit and call-out visit, together with details of the work done or action taken, shall be entered on a log book which shall be provided by the Contractor and retained in the location as decided by

the “Engineer/Engineer’s Representative”.

8. Before the expiry of the Defects Liability Period, the Contractor shall perform a loading test for each Lift to re-confirm that the function of the system is being met and shall undertake corrective adjustment if necessary. This test may be incorporated into the half-yearly equipment survey maintenance works.
9. The Contractor shall provide a maintenance plan and a major component replacement programme for review and acceptance by the “Engineer/Engineer’s Representative” 90 days before the programmed commencement of the AMC Period.
10. The Maintenance service shall include all Preventive/Scheduled & Corrective Maintenance. In this context, the Contractor shall submit a PM Schedule and CM procedure for Notice of no objection, 3 months before the commencement of the AMC.
11. In order to ensure that the system will meet the RAM targets and Customer Service requirements using the minimum resources, the Contractor shall conduct a detailed Maintenance Requirement Analysis to derive a complete list of preventive maintenance schedules and procedures under the Contract. The Maintenance Requirement Analysis shall identify for each system function the potential functional failures, the failure consequences and the appropriate maintenance approach. RAM analysis shall be submitted quarterly during 5 years AMC.

Based on the Maintenance Requirement Analysis, the Contractor shall indicate in the Maintenance Plan, the final preventive maintenance programme, the proposed skill and manning level, spares level and special tools required. The proposal shall be fully traceable to the maintenance Requirement Analysis output.

The Maintenance Requirement Analysis shall be submitted as part of the maintenance plan, under the main contract tender submission. However, tenderers will be allowed to defer submission of this Analysis, latest 12 months before the commencement of the AMC Period, by presenting formal written request for such deferral.

12. Accommodation for Emergency Service Report Centre  
An Office of approximately 10sq.m will be provided by the Employer as the emergency service report centre. The Premise will be located at one of the stations on each corridor/ section as determined by the Employer.

## **13.2 Employer’s Maintenance Strategy**

### **1. Maintenance Strategy**

The Contractor shall ensure that the system designed, installed and commissioned is supportable throughout the service life of the System to address, as a minimum, the following:

Design errors in the System;  
Operational changes;  
Environment changes; and  
Changes in infrastructure.

According to the maintenance strategy, all equipment and infrastructure supplied for the "Project" must be designed for minimum or no maintenance. Maintenance activities required must be capable of being performed with little or no impact on the train service. In addition, the maintenance work systems shall ensure safety of personnel and equipment.

2. The Contractor, upon noticing any defects, deficiency in quality and quantity of spares and materials shall without delay, arrange for alternative source of supply and submit his proposal to the "Engineer/Engineer's Representative" for review.

### 13.3 Maintenance during AMC

During the 5 years" AMC period, the contractor shall carry out all type of preventive and breakdown maintenance. The preventive maintenance would be done during non-traffic hours whereas breakdown maintenance would be done whenever breakdown occurs. The contractor should post his supervisor and maintenance staff at a key places (4-5 Places in the NMRCL network) on the stations as determined by the Employer.

The acceptable response & attention time also needs to be mentioned for minor & major breakdowns.

1. Maintenance Management System (MMS) and Maintenance Arrangement  
During non-operation time, sections of line will be closed for maintenance work. The minimum time for possession periods is 6 hours. Ideally, this time shall be the free time available for maintenance.
2. Competency of Personnel
3. During the AMC the Contractor shall depute sufficient trained and competent personnel for maintenance purpose.

Such persons shall have their generic competence established and must demonstrate their specific competence and knowledge in the particular systems, environment and procedures.

The Contractor shall provide evidence of specific competence and knowledge, which shall include:

- ) assessment and certified training in particular applications and operations;
- ) recording of competence and work in the license holders logbook; and

J Receiving or in receipt of sufficient and current exposure to the area of work that the holder is licensed for.

Routine spot checks on licensing may be carried out from time to time by the "Engineer/Engineer's Representative" qualified personnel on the proficiency of the Contractor staff.

In the event of a failure, the Contractor shall undertake the management and investigation necessary to identify and rectify the cause.

4. Testing and Re-commissioning of System and Equipment
5. In the event of a failure requiring modifications to the System, the Contractor shall undertake any testing and re-commissioning required. Any such modification shall be submitted for review by the "Engineer/Engineer's Representative".
6. Temporary Alterations to Restore Service
7. The Contractor shall undertake any temporary modifications necessary to maintain service. Any such modification shall be submitted for notice of no objection by the "Engineer/Engineer's Representative".
8. Discrepancies between Installation and Design Records
9. Should the Contractor discover inconsistencies between the maintenance drawings and documentation and the installed equipment, the Contractor shall correct all such errors within two weeks.
10. Communications  
The Contractor shall ensure that adequate communication facilities are provided to its staff during the AMC.
11. Location of Staff  
The Contractor shall be responsible for locating staff such that the Contractor meets its obligations.
12. Storage of Equipment and Materials during the Maintenance Period  
The Contractor shall ensure that no equipment is stored along the trackside.  
The Employer will provide defined storage locations for the support of the different levels of Maintenance.  
The Contractor shall satisfy himself and the "Engineer/Engineer's Representative" that the storage locations for equipment and materials will meet the performance requirements of this PS.
13. Maintenance Regimes  
The Contractor shall produce a maintenance regime for the equipment that shall comprise two constituent parts, corrective and routine / preventive maintenance. Corrective maintenance shall be available 24 hours per day, able to respond to all foreseeable circumstances.  
The maintenance regime shall cover all parts and equipment of the system designed, installed and commissioned by the Contractor.

The Contractor shall take into account the requirements of the operations and maintenance when determining and proposing its maintenance regime.

14. Scope and Hours of Coverage

The regime and structure of corrective maintenance shall be robust in design. The Contractor shall provide full 24 hour On-Call coverage and shall be such that initial response and rectification of failure are in accordance with the following:

- Assistance for first line corrective maintenance within 30 minutes, upon request of first line maintainer;
- 24 hour from notification for second line maintenance where spare parts replacement is involved; and
- Within 2 weeks including transportation time for third line maintenance where replacement or repair of component from factory is involved. Any extension to this time shall be agreed with the "Engineer/Engineer's Representative" and a replacement provided.

All elements of First Line preventative maintenance shall be carried out and completed during non-traffic hours without interrupting train services. Similarly, all elements of second line & third line maintenance also needs to be completed during non-traffic hours.

15. Failure Investigations

The Contractor shall conduct failure investigations. Disputes between the Contractor and other Contractors will be resolved by the "Engineer/Engineer's Representative".

The Contractor shall make available to the Employer all test and failure data as required.

## ANNEXURE TO ADDENDUM

### Item H (Refer SN. 18)

#### SCHEDULE OF KEY DATES FOR ELEVATOR TENDER

KEY DATES FOR ELEVATOR TENDER			
1	Commencement Date/NTP/LOA		Dec-16
2	Submission of Preliminary Design for all Elevators	KD1	Jan-17
3	Submission of Definitive Design for all Elevators	KD2	Feb-17

Key Dates for Elevator Installation & Commissioning:					
S.No.	Name of Reach	KD3 Delivery at Site	KD4 Installation, Testing & Commissioning	KD5 Taking Over & Integrated Testing	Expected Revenue Operating Date (ROD)
1	Khapri-Airport South	Mar-17	Jul-17	Aug-17	Sep-17
2	Airport-Congress Nagar	Dec-17	Apr-18	May-18	Jun-18
3	Kasturchand Park-Automative Square	May-19	Oct-19	Nov-19	Dec-19
4	Lokmanya Nagar-Jhansi Rani Square	Mar-18	Jul-18	Aug-18	Sep-18
5	Nagpur Railway Station- Prajapati Nagar	Dec-18	Apr-19	May-19	Jun-19
6	Sitabuldi-Zero Mile	May-19	Oct-19	Nov-19	Dec-19



**SCHEDULE OF KEY DATES FOR ESCALATOR TENDER**

<b>KEY DATES FOR ESCALATOR TENDER</b>			
<b>1</b>	<b>Commencement Date/NTP/LOA</b>		<b>Dec-16</b>
<b>2</b>	<b>Submission of Preliminary Design for all Elevators</b>	<b>KD1</b>	<b>Jan-17</b>
<b>3</b>	<b>Submission of Definitive Design for all Elevators</b>	<b>KD2</b>	<b>Feb-17</b>

<b>Key Dates for Escalator Installation &amp; Commissioning:</b>					
<b>S.No.</b>	<b>Name of Reach</b>	<b>KD3 Delivery at Site</b>	<b>KD4 Installation, Testing &amp; Commissioning</b>	<b>KD5 Taking Over &amp; Integrated Testing</b>	<b>Expected Revenue Operating Date (ROD)</b>
<b>1</b>	Khapri-Airport South	Mar-17	Jul-17	Aug-17	Sep-17
<b>2</b>	Airport-Congress Nagar	Dec-17	Apr-18	May-18	Jun-18
<b>3</b>	Kasturchand Park-Automotive Square	May-19	Oct-19	Nov-19	Dec-19
<b>4</b>	Lokmanya Nagar-Jhansi Rani Square	Mar-18	Jul-18	Aug-18	Sep-18
<b>5</b>	Nagpur Railway Station- Prajapati Nagar	Dec-18	Apr-19	May-19	Jun-19
<b>6</b>	Sitabuldi-Zero Mile	May-19	Oct-19	Nov-19	Dec-19

## ANNEXURE TO ADDENDUM

### Item J (refer SN. 7 above)

#### 4.6 Personnel

#### Form PER-1: Proposed Personal

#### MINIMUM KEY STAFF REQUIREMENT

S.No.	Designation	Number
A	Chief Project Manager	1
B	Project Manager	2
C	Deputy Project Manager (DPM)	2
D	Design Engineer	2
E	Production Engineer	2
F	Elevator Specialist	1
G	Escalator Specialist	1
H	Installation Specialist	2
I	SHE Organisation	As per SHE
J	Teams for each corridor comprising of all necessary Engineers and Technical staff	2 Teams

- a) Chief Project Manager & Project Manager- Graduate having minimum 10 years of total experience out of which 5 years should be in projects of similar nature.
- b) Deputy Project Manager - Graduate having minimum 8 years of total experience out of which 4 years should be in projects of similar nature.
- c) Design Engineer, Production Engineer, Elevator Specialist and Escalator Specialist- Graduate having minimum 5 years of total experience out of which 3 years of relevant experience in project of similar nature.
- d) Installation Specialist- Graduate/Diploma having minimum 5 years of total experience out of which 3 years should be in projects of similar nature.
- e) SHE Organisation- As per the qualification and experience given in General Instruction-NMRCL/SHE/GI/002 of SHE manual (shall include an Accident prevention Officer).

Please note that In case NMRCL judges that the continuation of any person of the Bidder including its subcontractor(s) is not in the interest of the project, a written notice will be given to Bidder who will promptly remove the person within a week. NMRCL can withdraw the approval of such persons if continuation of the person is judged by NMRCL.

The Bidder shall submit the Site Organization Chart with narrative description and the relationship between Head Office and the Site Management clearly indicating the distribution of authority and responsibility between Head Office and Site Management.

**NOTE- Please submit the CV of above Key Personals in the form PER-2.**

WE HEREBY confirm that this is minimum project specific mobilization and these will be suitably augmented, as required for achieving the tender requirements and key dates.

SIGNATURE OF THE BIDDER

Terms & Conditions and Broad scope of work for comprehensive annual maintenance contract

1. **Scope of Work:**

“Comprehensive Annual Maintenance Contract (inclusive of staff, labour, consumables, assemblies and spares) for 193Nos of Escalator.

- A. All scheduled checks as per OEM periodicity. All consumable like oil/lubes and other items at frequency of OEM. All safety check, test of parts brake, rope, pulley as per the OEM and/or the Maharashtra State Escalator Inspector.
- B. Repair of equipment/ parts.
- C. Replacement of items/spares card etc. as per requirement of repair.

2. **Contract Period:** The contract period as per BOQ. (5Years)

3. **Service Hours :** 365 days x 24hrs

4. **Response Time:** 30Mins.

5. **Minor Fault rectification Time:** 02Hours.

6. **Major Fault rectification Time; 24Hours.**

When replacement/repair of component from factory is required – 02weeks. Any extension of this shall be agreed by the Employer’s representative.

7. **Price Variation clause:** The price variation clause is not applicable in this contract.

8. **Performance Security:** - The Contractor shall furnish performance security to the NMRCL a security in the form of a Bank Guarantee for an amount equal to 10% of the residual annual maintenance contract value as shown in table given herewith.

The Bank Guarantee has to be from a Scheduled Commercial Bank based in India and the form of Performance Security provided in the Tender document, shall be used. **Bank Guarantees (BGs) to be submitted by suppliers/contractors should be sent directly to the concerned authorities by the issuing Bank under Registered Post A.D.**

The performance security is to be deposited 30 days prior to start of AMC Contract or alternately performance bank guarantee on the main contract will be released on submission of the maintenance contract BG. The PBG for the subsequent years will be released only after obtaining BG for the next years for residual contract value. And finally will be released after 03 months from the date of completion of the contract.

9. **Deployment of Staff:** The Contractor will have to engage well trained staff as and when required, to ensure a regular preventive maintenance as well as the corrective/breakdown maintenance as per the requirement to ensure trouble free service throughout the CAMC period of 5Years.
10. **Payment:** The payment shall be made on a quarterly basis after satisfactory completion of work. The general maintenance and servicing report along with periodic performance Monitoring report for the entire Elevator system and breakdown reports shall be submitted in triplicate which shall be also signed by the NMRCL's representative. The Contractor will submit Monthly & Quarterly reports giving details of Preventive & Corrective Maintenance carried out in each month. Such reports are to be sent by 7<sup>th</sup> of the next month.
11. **Advance Payment:** No advance of any type shall be paid.
12. **Escalator License:-** Contractor is responsible to getting initial licenses and their periodical renewal from time to time, from respective Escalator Inspector.
13. **Availability, Reliability & Maintainability:** Contractor shall maintain the Escalator in such a way so that the following parameters are achieved.
- |  |        |
|--|--------|
| Availability<br>(Operating Hrs.-unavailable Hrs.)/Operating Hrs.                         | 99.99% |
| Reliability<br>(Total operating hrs. /No. of Failure)<br>(Calls except external reasons) | 1200   |
| Maintainability<br>(Time under corrective maintenance/No. of faults)                     | 4      |
14. **Agreement:** Prior to the completion of DLP period, the contractor will have to enter into an agreement with the NMRCL. Until a final agreement is executed, the Letter of Acceptance shall constitute a binding contract between the contractor and the NMRCL.

S.No	year	Year No	AMC Cost (Per Unit per year) Rs. Lac	Pwf @ 5%	Net Present Value NPV Rs. Lac	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year	13th year	14th year	15th year
1	2016-17	1 DLP	0	<b>1.0000</b>	0.00													
2	2017-18	2 DLP	0	<b>0.9524</b>	0.00													
3	2018-19	3	3.5	<b>0.9070</b>	3.17	3.50												
4	2019-20	4	3.55	<b>0.8638</b>	3.07	3.38	3.55											
5	2020-21	5	3.6	<b>0.8227</b>	2.96	3.27	3.43	3.60										
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7	2022-23	7	3.7	<b>0.7462</b>	2.76	3.04	3.20	3.36	3.52	3.70								
8	2023-24	8	3.75	<b>0.7107</b>	2.67	2.94	3.09	3.24	3.40	3.57	3.75							
9	2024-25	9	3.8	<b>0.6768</b>	2.57	2.84	2.98	3.13	3.28	3.45	3.62	3.80						
10	2025-26	10	3.85	<b>0.6446</b>	2.48	2.74	2.87	3.02	3.17	3.33	3.49	3.67	3.85					
11	2026-27	11	3.9	<b>0.6139</b>	2.39	2.64	2.77	2.91	3.06	3.21	3.37	3.54	3.71	3.90				
12	2027-28	12	3.95	<b>0.5847</b>	2.31	2.55	2.67	2.81	2.95	3.09	3.25	3.41	3.58	3.76	3.95			
13	2028-29	13	4	<b>0.5568</b>	2.23	2.46	2.58	2.71	2.84	2.98	3.13	3.29	3.46	3.63	3.81	4.00		
14	2029-30	14	4.05	<b>0.5303</b>	2.15	2.37	2.49	2.61	2.74	2.88	3.02	3.17	3.33	3.50	3.67	3.86	4.05	
15	2030-31	15	4.1	<b>0.5051</b>	2.07	2.28	2.40	2.52	2.64	2.78	2.91	3.06	3.21	3.37	3.54	3.72	3.90	4.10

Table-1

The contractor has to maintain the escalator under this contract. In addition to obligations under the Conditions of Contract, the Contractor shall provide maintenance services for specified period (5 Years) after defect liability period for all the Escalator supplied under the Contract.

Maintenance work shall include attending to all service calls regarding unscheduled trouble or breakdown and also all such items of work described in approved Maintenance Schedule of OEM and/or Regulatory Authorities in the state of Maharashtra as per the followings:

1. All defects shall be remedied either when observed on the weekly service call or on an attendance to a service call. Service shall include all work necessary to maintain the entire Escalator system in good working order at all times.
2. The Contractor shall maintain adequate quantity of consumable and contingent spare parts as per agreed list at site in order to minimize the shut down time due to repairs and maintenance.

All parts rendered defective, including replacement of indicator lamps and programmable circuit board, shall be replaced by the Contractor. The list of these consumable and contingent spares should be submitted for Notice of no objection at the same time as the submission of the Preventive Maintenance Schedule (PM) & Corrective Maintenance (CM) procedure, as mentioned in 17.1.10.

The Mandatory spares as per the approved list will be handed over by the Contractor to the employer at the time of taking over of equipment / section in proportionate quantity and AMC Spares in proportionate quantity shall be maintained by contractor at contractor's own store at a location approved by employer during AMC Period. The balance AMC spares (balance after actual consumption, the contractor has to take written permission for using AMC spares from employer otherwise it will be assumed that the contractor has not used AMC spares and shall be liable to return these spares after completion of AMC) shall be the property of the employer and if any additional spares are required the contractor shall arrange the same without any extra payment. Mandatory spares (if any) provided to the Employer under the Contract will not normally be released to the Contractor for AMC purpose

3. The Contractor shall dispatch competent personnel to rectify stoppages at any time during the day or night when being called on by the Employer within a time of half an hour (maximum). Repairs shall be carried out on a 24 hours per day, 7 days per week basis until the faulty unit is put back in service.
4. The Contractor shall carry out periodic testing and examination of equipment safety devices as may be required by the provisions of any enactment in force relating thereto or of any enactment, regulations or by-laws of any local or other duly constituted authority which may be applicable to such tests and to provide such copies of the test certificates, duly signed by a Registered Escalator "Engineer/Engineer's Representative" and Registered Escalator Contractor, as may be required. A master schedule of such planned tests shall be submitted to the Employer at least two months before commencement of the AMC.
5. The Contractor shall provide quarterly and half-yearly reports on the condition of the equipment in an agreed format. Such reports shall include event logs and performance data collected from the associated indicative panel stored on diskettes or other agreed medium, over the reporting period. Such data shall enable off-line individual and fleet statistical analysis to be performed on a Personal Computer.
6. A report in duplicate shall be sent to the Employer immediately following every call out, indicating the time of call out visit, cause, remedial action taken and the time that the service was restored. The monthly summary of failure report along with the analysis given details of nature of fault, remedial action taken etc in the approved format shall be provided.
7. Reports on routine visits are not required except where necessary to draw attention to defects of a minor nature which could not be rectified during the routine visit. Records of each routine visit and call-out visit, together with details of the work done or action taken, shall be entered on a log book which shall be provided by the Contractor and retained in the location as decided by

the “Engineer/Engineer’s Representative”.

8. Before the expiry of the Defects Liability Period, the Contractor shall perform a loading test for each Escalator to re-confirm that the function of the system is being met and shall undertake corrective adjustment if necessary. This test may be incorporated into the half-yearly equipment survey maintenance works.
9. The Contractor shall provide a maintenance plan and a major component replacement programme for review and acceptance by the “Engineer/Engineer’s Representative” 90 days before the programmed commencement of the AMC Period.
10. The Maintenance service shall include all Preventive/Scheduled & Corrective Maintenance. In this context, the Contractor shall submit a PM Schedule and CM procedure for Notice of no objection, 3 months before the commencement of the AMC.
11. In order to ensure that the system will meet the RAM targets and Customer Service requirements using the minimum resources, the Contractor shall conduct a detailed Maintenance Requirement Analysis to derive a complete list of preventive maintenance schedules and procedures under the Contract. The Maintenance Requirement Analysis shall identify for each system function the potential functional failures, the failure consequences and the appropriate maintenance approach. RAM analysis shall be submitted quarterly during 5 years AMC.

Based on the Maintenance Requirement Analysis, the Contractor shall indicate in the Maintenance Plan, the final preventive maintenance programme, the proposed skill and manning level, spares level and special tools required. The proposal shall be fully traceable to the maintenance Requirement Analysis output.

The Maintenance Requirement Analysis shall be submitted as part of the maintenance plan, under the main contract tender submission. However, tenderers will be allowed to defer submission of this Analysis, latest 12 months before the commencement of the AMC Period, by presenting formal written request for such deferral.

12. **Accommodation for Emergency Service Report Centre**  
An Office of approximately 10sq.m will be provided by the Employer as the emergency service report centre. The Premise will be located at one of the stations on each corridor/ section as determined by the Employer.

## **13.2 Employer’s Maintenance Strategy**

### **1. Maintenance Strategy**



The Contractor shall ensure that the system designed, installed and commissioned is supportable throughout the service life of the System to address, as a minimum, the following:

Design errors in the System;  
Operational changes;  
Environment changes; and  
Changes in infrastructure.

According to the maintenance strategy, all equipment and infrastructure supplied for the "Project" must be designed for minimum or no maintenance. Maintenance activities required must be capable of being performed with little or no impact on the train service. In addition, the maintenance work systems shall ensure safety of personnel and equipment.

2. The Contractor, upon noticing any defects, deficiency in quality and quantity of spares and materials shall without delay, arrange for alternative source of supply and submit his proposal to the "Engineer/Engineer's Representative" for review.

### **13.3 Maintenance during AMC**

During the 5 years" AMC period, the contractor shall carry out all type of preventive and breakdown maintenance. The preventive maintenance would be done during non-traffic hours whereas breakdown maintenance would be done whenever breakdown occurs. The contractor should post his supervisor and maintenance staff at a key places (4-5 Places in the NMRCL network) on the stations as determined by the Employer.

The acceptable response & attention time also needs to be mentioned for minor & major breakdowns.

1. Maintenance Management System (MMS) and Maintenance Arrangement  
During non-operation time, sections of line will be closed for maintenance work. The minimum time for possession periods is 6 hours. Ideally, this time shall be the free time available for maintenance.
2. Competency of Personnel
3. During the AMC the Contractor shall depute sufficient trained and competent personnel for maintenance purpose.

Such persons shall have their generic competence established and must demonstrate their specific competence and knowledge in the particular systems, environment and procedures.

The Contractor shall provide evidence of specific competence and knowledge, which shall include:

- ) assessment and certified training in particular applications and operations;
- ) recording of competence and work in the license holders logbook; and

) Receiving or in receipt of sufficient and current exposure to the area of work that the holder is licensed for.

Routine spot checks on licensing may be carried out from time to time by the "Engineer/Engineer's Representative" qualified personnel on the proficiency of the Contractor staff.

In the event of a failure, the Contractor shall undertake the management and investigation necessary to identify and rectify the cause.

4. Testing and Re-commissioning of System and Equipment
5. In the event of a failure requiring modifications to the System, the Contractor shall undertake any testing and re-commissioning required. Any such modification shall be submitted for review by the "Engineer/Engineer's Representative".
6. Temporary Alterations to Restore Service
7. The Contractor shall undertake any temporary modifications necessary to maintain service. Any such modification shall be submitted for notice of no objection by the "Engineer/Engineer's Representative".
8. Discrepancies between Installation and Design Records
9. Should the Contractor discover inconsistencies between the maintenance drawings and documentation and the installed equipment, the Contractor shall correct all such errors within two weeks.
10. Communications  
The Contractor shall ensure that adequate communication facilities are provided to its staff during the AMC.
11. Location of Staff  
The Contractor shall be responsible for locating staff such that the Contractor meets its obligations.
12. Storage of Equipment and Materials during the Maintenance Period  
The Contractor shall ensure that no equipment is stored along the trackside.  
The Employer will provide defined storage locations for the support of the different levels of Maintenance.  
The Contractor shall satisfy himself and the "Engineer/Engineer's Representative" that the storage locations for equipment and materials will meet the performance requirements of this PS.
13. Maintenance Regimes  
The Contractor shall produce a maintenance regime for the equipment that shall comprise two constituent parts, corrective and routine / preventive maintenance. Corrective maintenance shall be available 24 hours per day, able to respond to all foreseeable circumstances.  
The maintenance regime shall cover all parts and equipment of the system designed, installed and commissioned by the Contractor.

The Contractor shall take into account the requirements of the operations and maintenance when determining and proposing its maintenance regime.

14. Scope and Hours of Coverage

The regime and structure of corrective maintenance shall be robust in design. The Contractor shall provide full 24 hour On-Call coverage and shall be such that initial response and rectification of failure are in accordance with the following:

- Assistance for first line corrective maintenance within 30 minutes, upon request of first line maintainer;
- 24 hour from notification for second line maintenance where spare parts replacement is involved; and
- Within 2 weeks including transportation time for third line maintenance where replacement or repair of component from factory is involved. Any extension to this time shall be agreed with the "Engineer/Engineer's Representative" and a replacement provided.

All elements of First Line preventative maintenance shall be carried out and completed during non-traffic hours without interrupting train services. Similarly, all elements of second line & third line maintenance also needs to be completed during non-traffic hours.

15. Failure Investigations

The Contractor shall conduct failure investigations. Disputes between the Contractor and other Contractors will be resolved by the "Engineer/Engineer's Representative".

The Contractor shall make available to the Employer all test and failure data as required.