

APPENDIX-II





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DELHI METRO RAIL CORPORATION LTD.

CONTRACT NO: RSWC/SPD-175

CONTRACT NO: RSWC/SPD-175: Repainting of Complete Saloon and Cab Interior including roof ceiling, door panels and hatch covers of RS-1 Metro Trains of DMRC Ltd.

Employer's Requirement

DELHI METRO RAIL CORPORATION LTD.

**5thFLOOR, A-WING, METRO BHAWAN,
FIRE BRIGADE LANE, BARAKHAMBA ROAD,**

NEW DELHI 110001

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Employer's requirement

1.0 Objective:

The objective of the contract is "**Repainting of Complete Saloon and Cab Interior of RS-1 cars at Shastri Park Depot, Najafgarh Depot and Yamuna Bank Depot of DMRC Ltd**" as per scope of work mentioned in of Employer's Requirement. In full recognition of this objective and with full acceptance of the obligations, liabilities and risks which may be involved, the Tenderer/contractor shall undertake the execution of the Works.

2.0 General:

- 2.1 The tenderer shall execute "**Repainting of Complete Saloon and Cab Interior including roof ceiling, door panels and hatch covers of RS-1 cars at Shastri Park Depot, Najafgarh Depot and Yamuna Bank Depot of DMRC Ltd**" in accordance with Employer's Requirements, Bill of Quantity and the other requirements of the Contract.
- 2.2 This contract is for the "**Re-painting of 280 nos. Saloon Interior & 140 nos. Cab Interior of RS-1 DMRC Trains**".

3.0 SCOPE OF WORK:

- 3.1 The tenderer/contractor shall execute the work i.e. "**Re-painting of Saloon & Cab Interior of RS-1 DMRC Trains for Shastri Park Depot, Najafgarh Depot & Yamuna Bank Depot**" including all man power, machine, tools, material, consumables, transport etc. This scope of work covers supply of skilled manpower along with safety aprons required for work at their own cost.
- 3.2 **Re-painting of Saloon & Cab Interior of RS-1 DMRC Trains** to be carried out at Shastri Park Depot, Najafgarh Depot & Yamuna Bank Depot during general working hours i.e. between 09:30 hrs to 17:30 hrs. The manpower can also be deployed during OFF days / holidays / night hours as per site requirements for which nothing shall be paid extra.
- 3.3 The detailed break up of activities and sub-activities with proposed distribution of responsibilities between DMRC and tenderer/contractor will be as under:

S. No.	Description	Responsibility
01.	Planning of train for Re-painting of RS-1 DMRC Trains ".	DMRC
02.	The job card for a work is to be executed by tenderer/contractor and shall be issued to	DMRC & Tenderer/

	concerned DMRC's supervisor under whom tenderer/contractor staffs work. However, tenderer/contractor's supervisor shall also counter-sign the job card to attest the start of time of job in the respective depot. Time of start of work will be used for calculation of delay in work at the end. DMRC decision on calculation of delay time will be final.	contractor
03.	Planning and placement of train at appropriate location.	DMRC
04.	Removal of all stickers and advertisement from the side walls & cubicle walls.	Tenderer/contractor
05.	Removal of sidewalls in Optional 40 cars, if required. During Removal, if sidewalls got damaged then same has to be replaced with new sidewalls free of cost.	Tenderer/contractor
06.	Joint Survey for area calculation of each type of defect to be done as per the check sheet - 1.	DMRC & Tenderer/contractor
07.	The job of painting shall be carried out as per the Working Procedure mentioned in Para. No. 3.4.	DMRC & Tenderer/contractor
08.	<p>The water borne paint should be used for above said work. Detailed specification of putty, primer and paint for Saloon Interior and Cab Ceiling except partition door and saloon doors is as follows:-</p> <p>a) Paint: WB Urethane PU WB AG SG 180 (NCS 01000N)</p> <p>b) Putty:- 3M Scotchkote light Weight Body Filler</p> <p>c) Primer:- WB Epoxy Primer EA9 WB</p> <p>d) Manufacturer:- M/s 3M</p> <p>Detailed specification of putty, primer and paint for Cab Interior (except roof ceiling) is as follows:</p> <p>a) Paint: WB Urethane PU WB AG SG 180 (grey (NCS 5500N))</p> <p>b) Putty:- 3M Scotchkote light Weight Body Filler</p> <p>c) Primer:- WB Epoxy Primer EA9 WB</p>	Tenderer/contractor

	<p>d) Manufacturer:- M/s 3M</p> <p>Detailed specification of putty, primer and paint for Saloon door is as follows:</p> <p>e) Paint: WB Urethane PU WB AG SG 180 (NCS 01000N)</p> <p>f) Putty:- 3M Scotchkote light Weight Body Filler</p> <p>g) Primer:- WB Epoxy Primer EA9 WB</p> <p>h) Manufacturer:- M/s 3M</p>	
09.	All used consumables i.e. cloth, masking tape, containers etc. to be disposed properly by tenderer/contractor at a suitable place as advised by DMRC representative.	Tenderer/ Contractor
10.	Assembly of sidewalls in optional 40 cars, if required.	Tenderer/ Contractor
09.	Final Joint Inspection as per check-sheet – 2.	DMRC/ Tenderer/ contractor
10.	Pasting of stickers and car numbers	Tenderer/ contractor

3.4: Procedure of IN-SITU REPAINTING OF ALL INTERIOR FRP AND ALUMINIUM PANELS OF CARS

(Note: This procedure does not cover surfaces where the FRP is structurally damaged. Such surfaces may require extra efforts for repairing them.)

1. SCOPE

- 1.1 This procedure is for in-situ repainting of faded and paint peeled-off locations on the FRP surfaces of the rail car interiors. The defects may have occurred due to aging, abrasion (due to rubbing of commuter bodies) and impact of heavy or sharp objects.
- 1.2 The procedure covers repainting of surfaces where the damage is limited to the top coating layers and the FRP itself is not damaged. The defects should be such that it requires no filling, or minimal filling.
- 1.3 This procedure also covers application of paint layers on all FRP and Aluminium surfaces, including on side covings, ceiling panels and diffuser grilles (for which special paint spray guns/nozzles may be required).

- 1.4 The procedure is applicable to FRP panels that have originally been painted after being manufactured by hand laying or any other processes. It does not apply to panels that have been manufactured by processes where the final surface finish and colour is achieved during the FRP curing process itself, e.g. RTM, SMC etc.
- 1.5 This procedure is for only surface cosmetic repairs, and does not cover repair of any structural defects developed in the FRP panels.
- 1.6 None of the FRP/Aluminium panels will be removed from the car for repainting work.

2. APPROACH

- 2.1 On surfaces where paint has peeled off, crevices are to be first filled with polyester filler compound. One layer of epoxy primer and two layers of PU paint are to be applied on paint faded and paint peeled-off locations. It is understood that with time the paint shade of FRP and Aluminium panels has changed, so in order to match the colour and to achieve 10-15 years of further life, on all undamaged locations also at least two layers of PU paint is to be applied.
- 2.2 The coatings and paint has to be applied in such a manner that it strongly bonds with the FRP surface and becomes its integral part. It should not peel off under adverse utilization environments, or due to unintentional impact forces faced during service life.
- 2.3 The pre-requisites of proper bonding between the FRP surface and the different layers of coatings are- (i) Surfaces on which the coatings are applied should be moisture and grease free, (ii) Surfaces should be sanded to make them rough so that the coating layer holds on tightly after drying, and (iii) Various application and drying timings specified for different types of layers of coating materials should be strictly followed.
- 2.4 For filling purposes, if putty is used, it is recommended not to apply it directly over the damaged surface; instead it should be sandwiched between two layers of epoxy primer. On the other hand, polyester fillers have good bonding properties, so they can be directly applied over the FRP surface. This saves application of an additional initial layer of primer over the damaged surface, thus

resulting in overall repair time saving, as the primer drying time is 6 hours or more.

3. DEFECTS

- 3.1 Type-1: There is no visible defect on the surface; only the painted surface colour shade has changed with ageing. Such surfaces will be cleaned, roughened and coated with two layers of paint as per procedure described at S.N. 5.1, 5.4, 5.5 and 5.6 below.
- 3.2 Type-2: There is no need of any filling. For example, the paint has faded because of rubbing, or shallow scratch marks are there, etc. Such surfaces will be cleaned, roughened and coated with epoxy primer and two layers of paint as per procedure described at S.N. 5.1, 5.3, 5.4, 5.5 and 5.6 below.
- 3.3 Type-3: Minor filling is required. For example, in paint cracking, flaking or peeling, areas having deep scratches and pin-holes, locations where FRP bare surface visible, etc. Such surfaces will be cleaned, roughened, filled and coated with epoxy primer and two layers of paint as per procedure described at S.N. 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6.

4. WORK CONDITIONS

- i) Temperature of work place should be 15-35 °C.
- ii) Humidity should be below 60% or when the surface to be coated is less than 3°C above the dew point.
- iii) There should be no direct sun light in the working area.
- iv) Working space should be closed to prevent outside dust from entering the area.
- v) Workers should be skilled.
- vi) Primer shall be applied to spray to produce a smooth uniform film.

5. PROCEDURE

Remarks

5.1 CLEANING, DRYING, MARKING AND MASKING

- i) All surfaces to be degreased using a | Cleaning solvent to

<p>suitable degreaser solvent like 3M General Purpose Adhesive cleaner.</p>	<p>be specified by tenderer/contractor.</p>
<p>ii) All surfaces should be dried using a clean dry rug.</p>	
<p>iii) Surfaces where FRP top layer has become visible, moisture should be dried using a hot air dryer.</p>	<p>Applies to Type-3 defects.</p>
<p>iv) Inspect the car interior surfaces and locate the defects. Mark the Type-2 and Type-3 defects by different colour marker pens. Record the defects on a data sheet, show defects on interior panels sketches and take photos.</p>	
<p>v) Mask the areas adjacent to the surfaces where repainting is to be done.</p>	
<p>vi) Areas below repainting surfaces, where run-offs of the coating wet liquids are expected to drop, should also be protected.</p>	
<p>5.2 FILLING</p>	
<p>i) Sanding is to be done with 220/320 grit abrasive paper.</p>	<p>- For Type-3 defects only.</p>
<p>ii) Clean the roughened surfaces with pressurized air and dry rug.</p>	
<p>iii) Fill depressions with 3M Light weight polyester Body filler (a two component material comprising a base component and a activator component.) till above the desired level of contour. Let it dry as per manufacturer's instructions. Heat slightly with a hot air gun to allow it to shrink before sanding the surface to make it level.</p>	<p>Apply within the pot life time. May need 2 hours or more of drying time.</p>
<p>iv) Filling pin holes and smoothening of</p>	<p>Apply within the pot</p>

undulations will need some low viscosity filler, or putty. Apply it with a spatula and fill till above surface (putty tends to shrink on drying). Let it dry for appropriate time.

life time. May need 2 hours or more of drying time.

- v) Thickness of 3M Light weight polyester Body filler will depend on the extent and type of damage but shall not exceed 2 mm.
- vi) If damage is more than 2mm then FRP repair to be done.

5.3 APPLY ONE LAYER OF EPOXY PRIMER (WFT 120-150 µm and DFT 50-60 µm)

- For Type-2 and Type-3 defects.

- i) Sand the filled high spots till they flush with the adjacent surfaces. Roughen the surfaces using coarse 220/320/400 grit abrasive paper.
- ii) Clean the surface with pressurized air and dry rag, surfaces shall then be wipe out with a track rag to ensure a completely clean surface.
- iii) Prepare primer mixture of requisite quantity and to desired viscosity as per instructions.
- iv) Spray a layer of primer over all roughened areas needing repainting. Spray primer over one Aluminium and one FRP test pieces. WFT to be checked and recorded immediately after application of primer. Let it dry as per instructions. During drying period the car should remain locked.

Primer to be applied within the pot life time.

May need 6 hours or more of drying time. Accelerated drying by heater to be done only if permitted.

5.4 APPLY FIRST LAYER OF PU PAINT (WFT 120-150 µm and DFT 50-60 µm)

- For Type-1, Type-2 and Type-3 defects.

- i) Roughen the dried epoxy surface with 400 grit fine abrasive paper. After

sanding, clean surfaces with pressurized air and dry rug.

- ii) Prepare PU paint of requisite viscosity by mixing its constituents in specified proportions.
- iii) Spray first layer of paint over the roughened epoxy primer layer. Spray paint over second Aluminium test piece and the first FRP test piece. WFT to be checked and recorded immediately after application. Close the car and let the paint dry.
- iv) Record the Type 2 and Type 3 defects attended areas in data sheet and take photos.

PU paint to be applied within the pot life time.

May need 6 hours or more of drying. Forced drying at 50 °C may be done to reduce drying time.

5.5 **APPLY SECOND LAYER OF PU PAINT (WFT 120-150 µm and DFT 50-60 µm)**

- For Type-1, Type-2 and Type-3 defects.

- i) For Type-2 and Type-3 defects, after drying of the first PU paint layer, roughen the PU paint surface with 400 grit abrasive paper.
- ii) For Type-1 surfaces also, roughen with 400 grit abrasive paper.
- iii) After sanding, clean surfaces with pressurized air and dry rug.
- iv) Prepare PU paint of requisite viscosity by mixing its constituents in specified proportions.
- v) Spray second layer of paint over the roughened first paint layer. Spray paint over second Aluminium test piece and the FRP test piece. WFT to be checked and recorded immediately on application. Close the car and let the paint dry.

PU paint to be applied within the pot life time.

May need 6 hours or more of drying. Forced drying at 50 °C may be done to reduce drying time.

5.6 **Use of Polishing Techniques to rectify Minor Finish Defects:**

Area of dry spray and minor surface defects evident in the dry/cured finish can be minimized by buffing using a soft head.

Once the finish colour is sufficiently dry/cured recognized techniques, used in final stages of conventional coach/car refinishing operations, shall be employed to achieve acceptable rectification of imperfections in the livery finish, care shall be exercised to ensure excessive pressure is avoided as over polishing can raise the gloss level.

Note: The polishing is not mandatory. It may be adopted on case to case basis if mutually agreed by all relevant parties.

5.7 **VISUAL INSPECTION**

Check for defects such as full coverage of paint, shade difference, finger prints, scratch marks, undulations, bubbles, peeling, pin holes etc. If any defect is found, the location will need repetition of the repainting process starting from first step of surface preparation. All coatings will have to be removed including the primer layer.

To be checked under illumination of 800 lux minimum, for which additional lighting arrangement may be needed.

5.8 **DFT, GLOSS AND ADHESION MEASUREMENTS**

- i) Aluminium test pieces (set of 2 per car) to be used for measuring the DFT of primer layer and PU layers. For this 150 mm x 100 mm aluminium sheets should be used; one piece to be coated with epoxy primer only and the second with 2 layers of PU paint.

Acceptance criteria:
Epoxy primer DFT- 50-60 µm
2 layers of PU paint DFT- 100-120 µm

ii)	Gloss to be measured at 4 locations on each car at actual re-painted panels.	Acceptance criteria: Semi gloss (40-70%)
iii)	FRP test pieces of size 150 mm x 100 mm (1 per car) to be coated with 1 layer of epoxy primer and 2 layers of PU paint to measure adhesion. Cross-cut test should be conducted on the test piece using a cross hatch cutter.	Acceptance criteria: Adhesion rating not less than ISO Class 1 or ASTM Class 4B

6. TIME

6.1 Expected break-up of time for completing repainting of one car is-

Cleaning, drying and marking	
Masking	8 hours
Surface preparation	
Applying polyester filler and putty and drying	4 hours
Epoxy primer application and drying	8 hours
1st layer of PU paint application and drying	8 hours
2nd layer of PU paint application and drying	8 hours
Visual inspection, DFT, gloss and adhesion measurement	<u>4 hours</u>
TOTAL	40 hours

6.2 Drying times can be reduced if forced drying is permitted by the primer/paint manufacturer and heaters are employed to raise the interior temperature.

7. CONSUMABLES

7.1 Following consumables will be needed-

Marker pens	
Masking cloth, paper and tape	
Degreasing solvent	Chemical composition to be specified.

Aluminium test pieces FRP test pieces	For measuring DFT and adhesion.
Epoxy primer PU paint Low shrink polyester filler Putty	Shelf life, pot life, touch dry and hard dry to be specified. Mixing ratio of constituents and viscosity to be specified.

P220, P320 and P400 grit sanding disks
P220, P320 and P400 grit abrasive pads
Cleaning rag

Any other item(s) considered necessary by the tenderer/contractor or DMRC for carrying out the work satisfactorily.

8. TOOLS

8.1 Following tools will be needed-

Compressor	Specs to be provided.
Paint spray gun Pressurized air gun Hot air gun	Pressure, nozzle size, airflow rate, heat etc. to be mentioned.
Disk sander machine Weighing machine	Specs to be provided.
Mixing stirrer Spatula and putty knife	
Heaters	Of sufficient capacity to raise the car interior temperature to 50 °C.

Torch

Lights

WFT meter

DFT meter

Gloss meter

Cross hatch cutter

Camera

Any other item(s) considered necessary by the tenderer/contractor or DMRC for carrying out the work satisfactorily.

For providing 800 lux inside car in conjunction with normal car lights.

9. RECORDS

- 9.1 Car-wise, records of dates and times of various activities undertaken should be maintained. Prior to undertaking the work, sample blank recording sheets should be submitted to DMRC and got approved.
- 9.2 To judge the volume of work for Type 2 and Type 3 defects (in terms of area attended), joint (DMRC and tenderer/contractor) recording of defects noticed at the beginning (at SN 5.1.iv stage) and after attending the defects (at SN 5.4.iv stage) will be done.
- 9.3 Batch no. and shade of paint should be same for a single car/unit/train.

10. PRECAUTIONS

- i) Coatings (epoxy primer and PU paint) should have fire resistance properties applicable for use in metro railcars. They should preferably be of the same make, composition and shade that were originally used to paint the FRP panels. (List of coatings originally used in the Delhi Metro railcar contract is attached.)
- ii) Every day, before starting the work, and before application of

each layer of coating, record the car interior temperature and humidity. Start coating only if the work conditions are permissible.

- iii) Repainting repair should be undertaken one step at a time on a complete car. For example, the sanding work in a car should be completed on all locations before applying any coating, or a particular type of coating should be applied in one go on all defective surfaces of the complete car, etc. It should not happen that at one location of a car a paint coating is drying and on another location surface preparation is going on.
- iv) Before application of each layer of coatings, thorough sanding should be done on the entire surface to ensure proper bonding between the FRP and different layers of primer, paint and filler materials. Usually plain surfaces are machine sanded and curved surfaces are manually sanded; it should be ensured that all surfaces get roughened and no area is missed (more precaution is needed in manual sanding).
- v) Strictly follow the shelf life, pot life, touch dry and hard dry timings mentioned for the filler materials, primer and PU paint by the manufacturers.
- vi) Whenever a particular type of coating has been applied on all surfaces of the car, the car should be locked and vestibules blocked till completion of the drying time. No individual should go inside the car when drying is taking place. Paint manufacturer specified drying times should be strictly adhered to.
- vii) If accelerated heating is being done, the inside car temperature should be recorded every ½ hour till the drying of paint is complete. It should be ensured that temperature does not rise beyond 55 °C.

3.4 Present location of RS-1 Metro Trains are as given below:

Name of DMRC Depot	No. of RS-1 Trains	Remarks
Shastri Park Depot	39	Qty of Trains/may be changed among depots
Najafgarh Depot	25	
Yamuna bank Depot	06	
Total	70	

- 3.5 Tenderer/contractor shall make survey of sites before start of work in any depot & shall assess the requirements for the modification, in consultation to DMRC. Requirement assessed shall be brought to knowledge of DMRC. All arrangements of the assessed requirements will be done by tenderer/contractor, on his own expense, prior to start of job on train. However, DMRC shall provide source of electricity, if required.
- 3.6 Required tools and machines i.e. compressor, spray gun, pipe etc. and material like paint, putty, primer, consumables etc. for execution of above work to be arranged by tenderer/contractor at his own cost including transportation. Personal Protective Equipments to be used during the work shall be arranged by the tenderer/contractor on his own cost for every individual deployed for the work in DMRC premises (i.e. hand gloves, face mask, safety shoes & any other PPE as per the requirement of the work etc.).
- 3.7 Suitable light arrangements like hand-held bulbs or tubes for artificial lightning will be under scope of the tenderer/contractor. Tenderer/contractor shall visit the site to assess the requirements of lights, prior to start of the work, and shall intimate DMRC for the requirements, in advance.
- 3.8 Existing procedures to bring the outside material inside DMRC premises is to be followed by the tenderer/contractor for bringing any material, tool, equipment etc. Inside DMRC premises.
- 3.9 Any damage to electrical equipment due to sudden tripping of electric supply will not be DMRC responsibility.
- 3.10 The entire work will have to be completed in all respect within contract period.
- 3.11 Trained staff to be deployed for execution of the work. Experienced certificate duly attested by the firm has to be submitted to DMRC before start of the work for every individual deployed in DMRC premises. Tenderer/contractor will be solely responsible for safety & security of engaged staff, material, machine, equipments, tools etc at site. Tenderer/contractor has to submit the Indemnity Form available in depots for the manpower used to DMRC mentioning the responsibility of personal safety of his staff on the firm itself.
- 3.12 Tenderer/contractor shall submit One (1) good quality passport size photograph along with the valid identity card to DMRC for all the manpower deployed for the work. Entry/exit of manpower inside DMRC premises will be strictly as per the existing procedures of entry/exit of manpower applied to external

firms/tenderer/contractors. Un-authorized person will not be allowed to enter or work during entire contract period.

- 3.13 DMRC shall nowhere be held responsible for the theft/damage of the tenderer/contractor's equipments. However, DMRC will provide the space to keep the equipments when not in use by the staff.
- 3.14 Tenderer/contractor shall take extreme care while doing the job on the train. Any damage to DMRC train/property by tenderer/contractor/tenderer/contractor's staff shall be liable for penalty equivalent to the cost of damage to the property/equipment, failing to which tenderer/contractor is liable to be prosecuted under rules.
- 3.15 Tenderer/contractor must follow the 'Guidelines for tenderer/contractor staff to work inside Depot & Train'.
- 3.16 At the end of contract, tenderer/contractor hand over the machinery and tools to DMRC purchased against Non-recurring cost.

4.0 Completion Time of each re-painted train set:

- 4.1 Re-painting of Saloon Interior & Cab Interior of RS-1 DMRC Trains will be carried out in 14 days from the date of issuance of job card for each train.

5.0 Inspection cum Work Completion Certificate:

- 5.1 After successful completion of the work, an inspection cum work completion certificate will be issued by DMRC authorized representative. Joint Final Inspection of work will be done as per the check sheet-2.

6.0 Payment:

- 6.1 On-account payment will be made after satisfactory completion of the work train set wise or part thereof as preferred by the contractor, the contractor shall submit the bill along with detailed activities carried out as per BOQ recorded in Measurement sheets, required documents as per Employer requirement and necessary documents related to Finance & labour laws.
- 6.2 Bills, correct in all respect, shall be submitted to Sr.DGM/RS or DGM/RS of respective depot in duplicate along with supporting documents.

Duly verified bill will be submitted by the respective depot to the office of DGM/RS/SPD who will arrange payment through DGM/Finance, DMRC.

7.0 Penalty:

- 7.1 If the Tenderer/contractor fails to provide satisfactory services as per terms and conditions of the contract, the Employer shall have the right to impose penalty on his discretion and recover/adjust the penalty money from the dues payable to the Agency/ Tenderer/contractor or the contract may be terminated with the discretion power of Engineer-In-charge.
- 7.2 **Penalty per train set @ Rs. 2000/-(Rs. Two Thousand only)/ day** will be imposed, if the delivery of Re-painted train set is delayed more than fourteen calendar days from the date of issue of Job card, Subject to the maximum of 15% of the contract value.

8.0 Warranty Period:

- 8.1 Warranty period of Re-painting of Saloon Interior & Cab Ceiling of RS-1 DMRC Trains is **two year** from the date of issue of 'Inspection cum work completion certificate'.
- 8.2 The standard of Re-painting of Saloon Interior & Cab Ceiling of RS-1 DMRC Trains should be such that it should not deteriorate due to varying weather condition like rain summer, winter etc. & regular cleaning activities performed inside the trains, as per the existing procedures. If painting gets deteriorate during the warranty period, the tenderer/contractor is bound to rework/repaint the same on his own cost, including transportation involved, if any. Fresh inspection cum work completion certificate will issued for the reworked/repainted train after re- inspection. Defect Liability Period (DLP) of the reworked/repainted train will be RESTARTED from the date of issuing of fresh Inspection Certificate for the repainted/reworked train for 02 years. DMRC decision for the deteriorated work during DLP will be considered final.

9.0 Location of Work place: Location and contract person details of places, where Repainting work to be carried out are as given below:

9.1 Shastri Park Depot:

Address: Shastri Park Train Depot, Eastern Approach Road, Shastri Park, Delhi-110053,

Contact person: Sh. Anupam Yadav, DGM/RS/SPD, Mob. No. 9650297913

9.2 Najafgarh Depot:

Address: Najafgarh Train Depot (Opp. Sai Baba Mandir), Najafgarh, New Delhi-110043,

Contact person: Sh. Vijendra Chaudhary, Sr. DGM/RS/NJFD, Mob. No. 9871378096

9.3 Yamuna Bank Depot:

Address: Yamuna Bank Train Depot, Yamuna Bank, Delhi-110092,

Contact person: Sh. Jaibeer Singh, DGM/RS/YBD, Mob. No. 9810998379.

10.0 SAFETY DO'S AND DON'T'S

The premises are having High Voltage Over Head Electric Lines, High Voltage Equipments on Train and Depot, the movement of Trains in the depot, Rail Track, Sophisticated Equipments etc which can cause major injury, electrocution, death to the personnel and thus requirements for safety observance are very high.

The following rules /guidelines must be followed to ensure personal safety as well as depot safety:

10.1 While moving in the Depot

- Do not cross the track, always use the walkway provided adjacent to the track for accessing the Stabling Lines
- Do not cross in front of energized train (when its head light is glowing)
- Do not put your leg or other body part in between of any points
- Do not move idle on track
- Do not move under high tension line with long bar and rods
- Be careful of high tension overhead line
- Be careful of movement of points while crossing the track near point machine
- Be careful of uneven way due to spreading of ballast
- Always response to horn (whenever heard of horn just check around)

10.2 While working in the train

- Do not board/jump off moving train (doesn't matter how slow it is)
- Do not go under the train (when it is energized)
- Do not touch any part or equipment mounted under the train
- Do not touch or disturb any set up or equipment in any open boxes/cubicle
- Do not direct water jet towards high tension overhead line
- Do not clamp safety belt with overhead line (while working on the roof)
- Do not run on slippery area or wet floor
- Do not try to access any of the roof platform other than the designated gate/door
- Do not try to access the roof platform without any prior permission
- Do not jump from the train in inspection bay line (use ladder with proper clearance from the train) as train floor is very high at inspection bay
- Do not put ladder or other working platform beyond yellow line (marked on the floor of Inspection Bay Line)
- During external washing of train at IBL, OHE line of the track on which train is and of adjacent line must be isolated
- Always wear safety belt while working on the roof and belt must be properly secure (not with OHE)
- Before accessing the roof, isolation of overhead line must be ensured by checking status of discharged rod hanging
- Be careful while working on roof (for slippery roof & sharp edges)
- Be careful of other activities happening around
- Report any damage caused (to train or other property) or any other suspicious object to PPIO In charge or INSPECTION Supervisor

10.3 Safety and Environmental Procedure

The cleaning and wax-polishing agency should:

- Obtain authorization to work from the person-in-charge of Depot Control Centre/PPIO.
- Fix a "Not to Go" target at each end of the train.
- Scrubbing, rubbing and polishing machines shall be operated by trained persons only. When it is not feasible to use scrubbing machine, wax-polishing machine, rubbing machine, hand brushing is to be carried out.
- Do not operate any equipment of the train.
- Do not work on train when it is moving.
- Report any damage arising from cleaning work to the authorized representative of Employer.
- While cleaning and washing the roof, proper safety to be taken and safety belts to be used.

Guidelines for tenderer/contractor staff to work inside Depot

(Other than train cleaning tenderer/contractor):

- a. DMRC's supervisor/Section in charge who is supervising the tenderer/contractor works, hereby called as DMRC supervisor, will be preliminary responsible for safe completion of work.
- b. Tenderer/contractor is solely responsible for timely completion of work.
- c. The job card for a work to be executed by tenderer/contractor shall be issued by PPIO to concern DMRC's supervisor under whom tenderer/contractor staff is to work.
- d. The job card shall be closed by DMRC's supervisor after completing the job by tenderer/contractor. In case of job requiring more than one day, incomplete job card with progress on date shall be submitted to PPIO by DMRC' s supervisors for monitoring.
- e. Tenderer/contractor shall submit after discussion with DMRC, a detailed procedure for working on site/method statement (format enclosed) for clear understanding of specific work. DMRC's supervisor shall give relevant information on specific works which are very technical / train related to tenderer/contractor for preparing method statement.
- f. The method statement shall be reviewed by DMRC's supervisor and it's implication especially from safety point shall be brought forward. In case of safety hazard of higher degree e.g. working near OHE, working at very huge height/confined space, review at AM's / higher-level officer shall also be done.
- g. Briefing by DMRC's supervisor to tenderer/contractor staff regarding safe working/work execution etc shall be done prior to starting of work.
- h. Declaration for understanding safety implementation / Indemnity to be taken from tenderer/contractor (format enclosed) by DMRC's supervisor who is supervising the tenderer/contractor works.
- i. Prior information to concerned department (e.g. OHE/DCC/OCC/PPIO etc) for execution of work shall be planned by DMRC's supervisors.
- j. Vehicle /Lorry movement, if required, vehicle entry and movement from one location to another location shall be discussed in advances by tenderer/contractor supervisor and DMRC's supervisors. For vehicle/crane movement near OHE.

Form –“I”

INDEMNITY

(To be filled by tenderer/contractor staff individually)

I hereby agree and undertake that I have understood all the safety rules and procedures and I will abide by all safety rules and procedure. I declare that I will be responsible for any safety violations/ accident etc. DMRC will not be responsible in case of any accident / incident and will not compensate financially or otherwise.

Name of Indemnifier

Signature of Indemnifier

Name of Tenderer/contractor

Signature of Tenderer/contractor