

CHAPTER 4

4 INTERFACE MANAGEMENT

4.1 INTRODUCTION

- 4.1.1 In conjunction with other associated Contractors the Contractor shall be responsible for all interface matters related to the design, manufacture, supply, testing & commissioning of the respective machine(s) under their scope of supply.
- 4.1.2 Major Interfacing Contractors for machinery and plant Contractor are (wherever applicable):
- Depot Civil Contractors (DC)
 - Depot Electrical & Mechanical Contractor (E&M/MEP)
 - Rolling Stock Contractor(s) (RS)
 - Track Contractor (TRW)
 - Signalling & Train control Contractor (STC)
 - Overhead Electrical Contractor (OHE)
 - Asset Maintenance Management System Contractor (*Refer Part 2 Section VI B Chapter 6C*)
 - h) Telecom & Radio (RAD) Contractor**
- 4.1.3 If any part of the execution of the Works for the Chennai Phase-II programme should require the Contractor to undertake coordinated interface works and/or exchange information with any other party or Contractor; then the Depot Machinery and Plant Contractor shall provide those services as part of their obligation of this Contract at no addition cost to CMRL. The appointed Interface Manager shall facilitate coordination of the same.
- 4.1.4 The Contractor shall apply best endeavours to resolve all interfaces applicable to the Contract and shall be proactive in seeking out interface issues and to identify their optimal solution.
- 4.1.5 It is foreseen that multiple rolling stock fleets (up to a maximum of three (3)) shall serve the Chennai Metro Phase-II network and shall be maintained at Madhavaram Depot. The Depot M&P Contractor is therefore required to coordinate the interface requirements of all fleets during design, manufacturing, testing & commissioning to ensure that all machines are cross-compatible with all fleet types (except for cases where it is explicitly stated otherwise in the machine specification).
- 4.1.6 Interface Responsibilities
- The responsibility for specification and provision of the requirements for the works that interface with Designated Contractors' equipment is tabulated in corresponding section of the document.
 - The requirements specified herein are by no means exhaustive and it remains the Contractors responsibilities to develop and execute jointly an Interface Plan after the commencement of the works and throughout the execution of works, to ensure that:
 - All interfacing issues between the two Contracts are satisfactorily resolved.
 - Supply, installation and testing of equipment and software are fully co-ordinated.
 - That all equipment supplied under the respective Contracts are fully compatible with each other, whilst meeting the requirements of the respective Specifications.
 - All the construction tolerances at the point of interface shall meet the requirements of the respective specifications relating to the interface points.
 - Interfacing Contractors shall mutually respect each other's project timelines with respect to the interface requirements.
 - Interfacing Contractors shall finalize their respective interface equipment only after clear agreement on interface requirements with the other designated Contractors.
 - Interfacing Contractors shall ensure that in any case, no equipment of their system shall be put

into production or installation without meeting the interface requirements spelt out in this Chapter and/or in the Technical Specification.

- h) Test procedures, troubleshooting manuals and any other documentation shall be updated with technical details from each Contractor and shall be submitted to CMRL.

4.1.7 Interface Management

- i. All Interfacing Contractors (which are listed under clause 4.1.2) with the exception of the Rolling Stock Contractor shall assume the role of Lead Interface Contractor.
- ii. Where the DM&P Contractor is not the Lead Interface Contractor, the DM&P Contractor's role is defined as a Participating Contractor with respect to interface management.
- iii. The Lead Interface Contractor shall be responsible to initiate, plan, coordinate and produce jointly with the Participating Contractors a list of all the required interfaces, interface design documents and shall produce interface progress reports. The Lead Interface Contractor shall also prepare and issue all interface meeting of minutes within 3 days of the meeting and provide bi-weekly interface progress reports to all the participating Contractors for information.
- iv. Participating Contractors shall collaborate fully with the Lead Interface Contractor in the development and finalization of the interface design, joint production of the interface documents and interface progress reports. Participating Contractors share responsibility of ensuring that the Lead Interface Contractor is able to submit a copy of the all-interface design documents (including the Detailed Interface Design (DID) deliverable) to the Engineer/CMRL for approval.
- v. The costs for all interface design and testing works shall be deemed to be included in the Contract sum of respective contracts regardless of the actual extent of effort required or expended by the Contractor.
- vi. The Contractors shall be fully responsible for the management and control of their respective SubContractors in relation to all interfacing activities carried out under the Contract.

4.2 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR & ROLLING STOCK (RS) CONTRACTOR

Table 4-1: DM&P Contractor & RS Contractor

Item	Responsibility DM&P Contractor	Responsibility of Each RS Contractor
1. Auto Train Wash Plant (ATWP)	a. Shall collect all relevant details i.e train dimensions (Front to Rear end including coupler) etc of RS for the effective design of Wash plant.	a. Shall provide details of RS dimensions as relevant to the design of Wash plant.
	b. Shall collect all relevant information and details of type of detergent and water suitable for RS with a view to avoid any damage to RS surface and design the Wash plant accordingly	b. Shall provide all relevant information and details regarding type of detergent and water suitable for the RS material with other instructions as relevant.
	c. Shall obtain any specific instruction	c. Shall provide specific details e.g infringement objects if any which may hindrance to the washing etc.
	d. Shall conduct joint test with RS Contractor that the wash plant is adapted and compliant to RS requirement.	d. Shall attend and provide necessary support to DM&P Contractor during wash plant testing and commissioning as necessary.
2. Battery Operated Railroad Shunter (BORRS)	a. Shall collect all relevant details regarding RS characteristics including weight for the effective design of BORRS	a. Shall provide all relevant details regarding RS characteristics including weight, dimensions etc.
	b. Shall collect all relevant information and details of type of coupler of RS and	b. Shall provide all relevant information and details of type of coupler of RS.

Item	Responsibility DM&P Contractor	Responsibility of Each RS Contractor
	design/provide the BORRS coupler with compatibility accordingly.	
	c. Shall demonstrate the testing and commissioning with coupling / uncoupling, shunting with 6 coupled car, braking with and without shunting load etc as per tender requirement.	c. Shall attend and provide necessary support to DM&P Contractor during BORRS testing and commissioning as necessary.
3. Synchronised Pit Jacks (SPJ)	a. Shall collect all relevant details regarding RS characteristics including weight, dimensions, lifting pad location and dimension, Bogie wheelbase, Bogie centre to centre, wheel profile etc for the effective design of Pit Jacks.	a. Shall provide all relevant details regarding RS characteristics including weight, dimensions, lifting pad location and dimension, Bogie wheel base, Bogie centre to centre, wheel profile etc
	b. Shall manufacture the equipment ensuring no infringement in the vertical plane below the lifting points.	b. Shall coordinate with Jacks Contractor to provide specific details as required.
	c. Shall demonstrate the testing and commissioning with lifting / lowering / holding etc as per tender with RS 3 car configuration.	c. Shall attend and provide necessary support to DM&P Contractor during Jacks testing and commissioning as necessary.
4. Synchronised Mobile Lifting Jacks (SMPJ) and Car Body Stands	a. Shall collect all relevant details regarding RS characteristics including weight, dimensions, lifting pad location and dimension etc for the effective design of Mobile Jacks and Car body stands.	a. Shall provide all relevant details regarding RS characteristics including weight, dimensions, lifting pad location and dimension etc.
	b. Shall manufacture the equipment ensuring no infringement in the vertical plane below the lifting points.	b. Shall coordinate with Jack and car body stand Contractor to provide specific details as required.
	c. Shall demonstrate the testing and commissioning of jacks with lifting / lowering / holding etc as per RS car configuration.	c. Shall attend and provide necessary support to DM&P Contractor during Jack and car body stand testing and commissioning as necessary.
5. Wheel Profile Measurement System (wayside)	a. Shall collect all relevant details regarding RS characteristics including weight, dimensions, wheelbase, Bogie centre to centre, wheel profile parameters etc for the effective design of WPMS.	a. Shall provide all relevant details regarding RS characteristics including weight, dimensions, wheelbase, Bogie centre to centre, wheel profile parameters etc .
	b. Shall manufacture the equipment ensuring no infringement of bogie component which may cause hindrance during measuring the profile parameters.	b. Shall coordinate with WPMS Contractor to provide specific details and drawings as required.
	c. Shall demonstrate the testing and commissioning with measuring wheel profile parameters etc as per tender with RS while in motion.	c. Shall attend and provide necessary support to DM&P Contractor during WPMS testing and commissioning as necessary.
6. Under floor Wheel Lathe (UFWL)	a. Shall collect the required design related data for Bogie, wheel profile and all relevant information	a. Shall provide the required design related data for Bogie, wheel profile and all relevant information to DE Contractor.

Item	Responsibility DM&P Contractor	Responsibility of Each RS Contractor
	b. Shall take into account RS specification and detailed parameters for designing machine.	b. Shall furnish to DM&P Contractor, all along the design stage, any update, accurate details to enable him to finalise the machine design.
	c. Shall manufacture the equipment ensuring no infringement of bogie component and shunter underframe component which may cause hindrance during rollover, profiling etc.	c. Shall coordinate with DM&P Contractor to provide and confirm specific details as required.
	d. Shall demonstrate the testing and commissioning as per tender requirement.	d. Shall attend and provide necessary support to DM&P Contractor during Wheel lathe testing and commissioning as necessary.
7. Bogie Wash Plant (BWP)	a. Shall collect all relevant details i.e dimensions etc of Bogie for the effective design of BWP.	a. Shall provide all relevant details i.e dimensions etc of Bogie for the effective design of BWP.
	b. Shall collect all relevant information and details of type of detergent and water, temperature to wash suitable for Bogie with a view to avoid any damage to Bogie surface and design the BWP accordingly.	b. Shall provide all relevant information and details of type of detergent and water, temperature to wash suitable for Bogie.
	c. Shall demonstrate the testing and commissioning of BWP as per tender requirement.	c. Shall attend and provide necessary support to BWP Contractor during testing and commissioning as necessary.
8. Diesel Operated Relief and Rescue vehicle (RRV) with Re-railing and Rescue devices	a. Shall collect all relevant details regarding RS characteristics including weight, dimensions for the effective design of RRV.	a. Shall provide all relevant details regarding RS characteristics including weight, dimensions etc.
	b. Shall collect all relevant information and details of type of coupler of RS and provide the RRV coupler with compatibility accordingly.	b. Shall provide all relevant information and details of type of coupler of RS.
	c. Shall demonstrate the testing and commissioning of RRV coupling and uncoupling test with RS, shunting upto 3 coupled car with RRV (pulling and pushing), braking etc.	c. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary.
	d. Shall demonstrate the testing and commissioning of all Re-railing and Rescue devices with and without RS as decided by Engineer/Employer at agreed site/location.	d. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary.
9. Bogie Turn Table (BTT)	a. Shall collect all relevant details regarding RS weight, bogie weight, Bogie dimensions, wheel profile etc of all types of Bogies for the effective design of BTTs and manufacture the BTTs accordingly.	a. Shall provide all relevant details regarding RS weight, bogie weight, Bogie dimensions, wheel profile etc
	b. Shall demonstrate the testing and commissioning of BTTs turning with and without bogie, alignment of BTTs after	b. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary.

Item	Responsibility DM&P Contractor	Responsibility of Each RS Contractor
	locking, rollover of train etc as decided by Engineer/ Employer.	
10. Bogie Manipulator (BFM)	a. Shall collect all relevant details for all types of bogies weight, Bogie dimensions (with wheel and without wheel) and frame weight and dimensions, etc for all types of bogies for the effective design of machine and manufacture the machine accordingly.	a. Shall provide all relevant details regarding bogie weight, Bogie dimensions (with wheel and without wheel) and frame weight and dimensions, etc.
	b. Shall demonstrate the testing and commissioning of BTTs turning with and without bogie, alignment of BTTs after locking, rollover of train etc as decided by Engineer/ Employer.	b. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary.
11. Bogie Testing Unit (BTU)	a. Shall collect all relevant details regarding bogie weight, dimensions, wheel profile, height etc of all types of Bogies for the effective design of BTU and manufacture the BTU accordingly.	b. Shall provide all relevant details regarding bogie weight, dimensions, wheel profile, height etc
	c. Shall demonstrate the testing and commissioning of BTU with bogie.	d. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary.
12. General	a. DM&P Contractor shall ensure all the interface requirements pertaining to RS Contractor are shared and agreed mutually.	a. RS Contractor shall ensure all the interface requirements pertaining to DM&P Contractor are shared and agreed mutually.
	b. DM&P Contractor shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing & Commissioning, Test report formats, Maintenance as applicable.	b. RS Contractor shall provide the necessary information and support as requested by DM&P Contractor.

4.3 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR AND TRACK WORKS (TW) CONTRACTOR

Table 4-2: DM&P Contractor and TW Contractor

Item	DM&P Contractor Responsibility	TW Contractor Responsibility
Under Floor wheel Lathe (UFWL). Synchronised Pit Jack - 3 car lifting (SPJ). Bogie Wash Plant (BWP). Bogie Turn Table (BTT)	a. DM&P Contractor shall provide drawings of equipment's to TW Contractor.	a. TW Contractor shall provide track geometry details to depot equipment Contractor.
	b. Marking on the track will be given by DM&P Contractor for UFWL / SPJ / BWP / BTT/BTU Contractor and coordinate with TW Contractor for gauge face matching of running rails with equipment.	b. TW Contractor shall lay the required type of track and coordinate with DM&P Contractor to ensure correct gauge face matching of equipment level with proposed track rail level with alignment of equipment / track. Track cutting as required shall be

Item	DM&P Contractor Responsibility	TW Contractor Responsibility
Bogie Testing Unit (BTU)		done by TW Contractor wherever applicable.
Automatic Train Wash Plant (ATWP)	a. DM&P Contractor shall provide drawings of ATWP to TW Contractor.	a. TW Contractor shall provide Track structure detail to DM&P Contractor including any other relevant specification, design drawings (to ensure ATWP - SOD requirement)
	b. Marking with respect to track will be given by DM&P Contractor for ATW Plant and coordinate with TW Contractor for SOD requirement.	b. TW Contractor shall lay the Train wash track and coordinate with DM&P Contractor as per SOD requirements.
Battery Operated Rail cum Road Shunter (BORRS) Diesel operated Relief and Rescue (RRV) with rerailling, rescue device	a. DM&P Contractor shall provide drawings of equipment to TW Contractor to ensure SOD requirement.	a. TW Contractor shall provide Track geometry (type, profile, track gradient, curve etc.) for Mainline & depot yard to DM&P Contractor to ensure SOD requirement.
Wheel profile measuring system - way side (WPMS)	a. DM&P Contractor shall provide drawings of WPMS to TW Contractor.	a. TW Contractor shall provide track geometry and relevant data / details and for Pit track / approach Embedded Track.
	b. Marking on the track will be given by DM&P Contractor for WPMS Contractor and coordinate with TW Contractor to ensure SOD.	b. TW Contractor shall coordinate with DM&P Contractor for installation of equipment on track and ensure SOD requirement.
General	Shall provide the necessary information and support as requested by Track Contractor.	Shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing & Commissioning, Test report formats, Maintenance as applicable.

4.4 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR AND DEPOT ELECTRICAL & MECHANICAL CONTRACTOR (E&M / MEP) CONTRACTOR

Table 4-3 : DM&P Contractor and E&M/ MEP Contractor

Item	DM&P Contractor Responsibility	MEP/E&M Contractor Responsibility
1.Auto Train Wash Plant (ATWP)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for ATWP.	a. Shall share the layout drawing and details required by ATWP Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P

Item	DM&P Contractor Responsibility	MEP/E&M Contractor Responsibility
		Contractor shall extend from this point to wash plant.
	b. Shall conduct joint test with MEP/E&M Contractor.	b. Shall attend and provide necessary support to DM&P Contractor before / during wash plant testing and commissioning as necessary.
	c. Shall provide and install pumps in UG tanks including electrical connection etc., all water pipe and cable laying from control room to wash plant and vise -versa.	c. Shall provide necessary support and cooperation.
	d. Shall verify the provision of cable containment with MEP/E&M Contractor. Also shall provide and lay cable (optical fibre etc) from wash plant to DCC.	d. Shall share the required layout drawing and details required by ATWP Contractor. Shall provide cable containment / provision for laying required cable from wash plant to DCC.
	e. Shall verify the freshwater inlet and supply	e. Shall provide the fresh water supply to wash plant
	f. Shall verify the provision of cable and piping containment with MEP/E&M Contractor. Lay water piping and cabling etc from Control room to Wash Plant bed & vice versa accordingly.	f. Shall share the required layout drawing and details required by ATWP Contractor. Shall provide cable & piping containment as per mutually agreed with DM&P Contractor.
2. Battery Operated Railroad Shunter (BORRS)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power for charging Shunter battery. In case if specific Isolator plug / socket required, same shall be arranged and provided by DM&P Contractor.	a. Shall share the layout drawing and details required by DM&P Contractor. Also provide the provisions for Electrical connection / input. Isolator socket of adequate rating shall be installed by MEP/E&M Contractor.
	b. Shall conduct joint test with MEP/E&M Contractor to check / verify the connection for charging.	b. Shall attend and provide necessary support to DM&P Contractor.
3. Synchronized Pit Jacks (SPJ)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for SPJ.	a. Shall share the layout drawing and details required by SPJ Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, and other electrical requirement. Power incoming cable and earthing up to and with main switch electrical panel only. DM&P Contractor shall extend from this point to control console including respective pits.
	b. Shall provide and install the sump pump with flexible pipe inside every pit for water drainage.	b. Shall coordinate and provide the drainage conduit opening in every pit which will be connected to depot / workshop drainage channel etc.
4. Synchronized Mobile Lifting Jacks(SMPJ)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load	a. Shall share the layout drawing and details required by SMLJ Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit

Item	DM&P Contractor Responsibility	MEP/E&M Contractor Responsibility
	current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for SMLJ.	breaker, and other electrical requirement. Power incoming cable and earthing up to and with main switch electrical panel only. DM&P Contractor shall extend from this point to control console including till respective jacks.
5. Wheel Profile Measurement System(wayside)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for WPMS.	a. Shall share the layout drawing and details required by WPMS Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P Contractor shall extend from this point to WPMS.
	b. Shall verify the provision of cable containment with MEP/E&M Contractor. Also shall provide and lay cable (optical fibre etc) from WPMS to DCC.	b. Shall share the layout drawing and details required by WPMS Contractor. Shall provide cable containment / provision for laying required cable from WPMS to DCC.
6. Under floor Wheel Lathe (UFWL)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for UFWL.	a. Shall share the layout drawing and details required by UFWL Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel inside PWL shed . DM&P Contractor shall extend from this point to wheel lathe.
	b. Shall provide and install the sump pump with flexible pipe for pit water drainage.	b. Shall coordinate and provide the drainage conduit opening in pit which will be connected to depot/workshop drainage channel etc.
7. Bogie Wash Plant (BWP)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for BWP.	a. Shall share the layout drawing and details required by BWP Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P Contractor shall extend from this point to BWP.
	b. Shall verify the freshwater inlet and supply	b. Shall provide the fresh water supply to wash plant
	c. Shall verify for the drainage of wastewater to depot ETP as applicable.	c. Shall provide the provision for the adequate drainage of wastewater to depot ETP.
8. Bogie Turn Table (BTT)	a. Shall verify for the drainage of pit water to depot ETP / drainage as applicable.	a. Shall provide the provision in the BTT pit for the adequate drainage of pit water to depot ETP / drainage as applicable.

Item	DM&P Contractor Responsibility	MEP/E&M Contractor Responsibility
9. Bogie Manipulator (BFM)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for BFM.	a. Shall share the layout drawing and details required by BFM Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P Contractor shall extend from this point to BFM.
10. Bogie Testing Unit (BTU)	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for BTU.	a. Shall share the layout drawing and details required by BTU Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P Contractor shall extend from this point to BTU.
	b. Shall verify for the drainage of pit water to depot ETP / drainage as applicable.	b. Shall provide the provision in the BTU pit for the adequate drainage of pit water to depot ETP/drainage.
11. EOT Cranes	a. Shall verify with MEP/E&M Contractor for the existing provision of the electrical power (w.r.t to machine starting and full load current, kW, including lighting, Earthing cable, Routing and location of the power point etc) for all EOT crane.	a. Shall share the layout drawing and details required by EOT crane Contractor. Also provide the provisions for the power input and earthing, cable routing, isolator, circuit breaker, lightning and other electrical requirement by DM&P Contractor. Power incoming cable and earthing upto and with main switch electrical panel only. DM&P Contractor shall extend from this point to EOT crane.
12. General	a. Shall ensure all the interface requirements pertaining to MEP/E&M Contractor are shared and agreed mutually.	a. Shall ensure all the interface requirements pertaining to DM&P Contractor are shared and agreed mutually.
	b. Shall provide the necessary information and support as requested by MEP/E&M Contractor	b. Shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing & Commissioning, Test report formats, Maintenance as applicable.

Note : It shall be noted that the scope of E&M/MEP is included with Depot civil contract. DM&P Contractor shall coordinate and Interface for all the required aspects as stated above (but not limited to) and other as necessary for the effective execution of project.

4.5 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR AND SIGNALLING TRAIN CONTROL (STC) CONTRACTOR

Table 4-4 : DM&P Contractor & STC Contractor

Item	DM&P Contractor Responsibility	STC Contractor Responsibility
1) Auto Train Wash Plant (ATWP)	a. Shall provide all details of train speeds and stopping locations under different situations of trains passing through the wash plant bed. Shall provide the potential free contact for train movement control over the wash plant bed.	a. Shall collect all details from DM&P Contractor regarding the movement of train through the wash plant bed for controlling speed, stopping location under different situations and design the train movement accordingly.
	b. Shall design wash plant for multiple RS in CMRL phase-II passing through, complete washing (front, rear, side) when required at wash plant bed.	b. Shall interface and coordinate as necessary for signalling aspects to enable ATWP to utilize for multiple RS washing.
2) Wheel Profile Measurement System (wayside)	a. Shall collect and as well as provide all details about WPMS configuration as required by STC Contractor. And design the WPMS accordingly	a. Shall coordinate and interface with DM&P Contractor.
	b. Shall design the WPMS for automatically identify the Train number, its orientation, type of trainset, wheel set number, bogie number etc	b. Shall coordinate with WPMS Contractor to provide specific details as required.
	c. Shall demonstrate the testing and commissioning with measuring wheel profile parameters etc as per tender with RS while in motion.	c. Shall attend and provide necessary support to DM&P Contractor during WPMS testing and commissioning as necessary.
3) General	Shall provide the necessary information and support as requested by STC Contractor.	Shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing & Commissioning, Test report formats, Maintenance as applicable.

4.6 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR AND OVERHEAD EQUIPMENT (OHE) CONTRACTOR

Table 4-5 : DM&P Contractor & OHE Contractor

Item	DM&P Contractor Responsibility	OHE Contractor Responsibility
1) Auto Train Wash Plant (ATWP)	a. Coordinate with OHE Contractor for OHE allowable clearance etc to ensure SOD requirement.	a. Shall provide relevant details to DM&P Contractor to design ATWP accordingly.
2) EOT cranes (Workshop) & Mobile Lifting Jacks	a. Shall interface with OHE Contractor for interlocking requirement while retractable OHE is in ON condition.	a. Shall coordinate with DM&P Contractor for necessary interlock.
	b. Shall coordinate with OHE Contractor and support.	b. Shall provide all hardware with cabling to implement Interlock for safe working.
	c. Shall demonstrate the testing and commissioning with Interlock between EOTs/MLJ and retractable OHE.	c. Shall attend and provide necessary support to DM&P Contractor during EOTs/MLJ testing and commissioning as necessary to ensure Interlock.
3) General	Shall provide the necessary information and support as requested by OHE Contractor.	Shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing &

Item	DM&P Contractor Responsibility	OHE Contractor Responsibility
		Commissioning, Test report formats, Maintenance as applicable.

4.7 INTERFACE SPECIFICATION: DEPOT MACHINERY & PLANT (DM&P) CONTRACTOR AND TELECOM & RADIO (RAD) CONTRACTOR

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Item	DM&P (RRV&CMV) Contractor Responsibility	Telecom & Radio (RAD) Contractor Responsibility
Diesel operated Relief and Rescue (RRV) with rerailling, rescue device. And Catenary / Overhead Maintenance Vehicle	b. Shall interface with RAD Contractor for the Radio device requirements (space proofing, power supply, installation etc) in the driver's cab and incorporate the same into design of Vehicle (s).	b. Shall share the details of onboard radio device, power input , location etc to DM&P Contractor.
	c. Shall install the Radio device in the driver's cab.	c. Shall supply the Radio device with all accessories and interconnecting /interface cables to DM&P Contractor. Also shall guide and support DM&P contractor to install Radio device successfully.
	d. Shall conduct testing jointly with RAD Contractor for the onboard Radio device.	d. Shall attend and provide necessary support to DM&P Contractor during testing and commissioning as necessary to ensure Interface fulfilled and radio device working accurately.
	e. Shall validate the joint maintenance procedures prepared by RAD Contractor.	e. Shall prepare and finalise the join maintenance procedure involving Radio device.
	f. Shall provide the necessary information and support as requested by RAD Contractor.	f. Shall prepare Detailed Interface document (DID) and shall ensure that it covers Design, Interface Hazard log, Construction, Testing & Commissioning, Test report formats, Maintenance as applicable

Note: For other tender item/machine Contractor shall ensure to deemed consider and perform the required interface with the other system Contractor as applicable for design, manufacturing, installation, testing commissioning etc of the works and shall deemed included in the quoted price.