



CHENNAI METRO RAIL NEWS LETTER

VOLUME-I ISSUE-4



Golden Trophy Award by National Safety Council to MD,CMRL

Hon'ble Minister for Labour and Employment, Government of India presents Golden Trophy Award to MD, CMRL. CMRL – Track work Project and Larsen & Toubro (ATA-01 Track work) has been awarded the prestigious 1st level award "**Sarvashreshtha Suraksha Puraskar Award**" (Golden trophy) in the Construction Sector in India from NSCI (National Safety Council of India) for the year 2015.



The award which was earlier announced was presented during the Golden Jubilee Celebrations of NSCI held on 06.04.2016 at New Delhi. The Hon'ble Minister for Labour and Employment, Government of India presented the Golden shield and certificate to Thiru Pankaj Kumar Bansal, IAS., Managing Director/CMRL and Larsen & Toubro team.

This award recognizes and encourages excellence in Occupational Health and Safety Management Systems in Project Construction activities. The award is based on the Safety Performance and OHS Management Systems followed at site by the establishments during the assessment period of one year.



Being workmen intensive and precision activity oriented, track work project in Viaduct, Depot and Underground sections, special emphasis has been given to track workmen in safety.

Chairman
Thiru Rajiv Gauba, I.A.S.,

Secretary
Ministry of Urban Development
Government of India

Thiru Pankaj Kumar Bansal, I.A.S.,
Managing Director

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Tunneling Work Progress as on 30.04.2016

Package	TBM	From	To	Tunnelling length in mtr	Completed in mtr	Percentage completed
UAA 01	TBM 1	Washermentpet Metro	Egmore Metro	4445	3558	80.0
	TBM 2	Washermentpet Metro	Egmore Metro	4445	3352	75.4
	TBM 3	May Day Park	Central Metro	2080	2080	100
UAA 02	TBM 1	May Day Park	AG-DMS	3616	1835	50.7
	TBM 2	May Day Park	AG-DMS	3616	1700	47
UAA 03		Saidapet Metro	AG-DMS	5736	5736	100
UAA 04		Egmore Metro	Shenoy Nagar	6776	6776	100
UAA 05		Shenoy Nagar	Thirumangalam	5594	5594	100
Total				36308	30631	84.36



Fire Mock Drill in CMRL Admin building

A Mock Fire Drill was conducted in CMRL Admin Building on 30-04-16 to create awareness among the officers and staff of CMRL. Area fire extinguisher was demonstrated and fire unit from TNFRS also participated in this awareness drill.

As part of the fire awareness drill, Smoke detector, public announcements were triggered. All Lifts operated in CMRL building was activated to fire mode and was safely grounded in ground floor.

The Fire Extinguishers demonstrated on how to put out fire to CMRL/ Outsourced staff using CO2 and DCP extinguishers. Training was also given to Security persons to put off the fire in case of emergency. Automatic Fire extinguishing and other evacuation activities were carried out with announcements.



Security Training to Outsourced Security Personnel At Alandur Metro Station

As part of Safety and Security measures taken in CMRL, 54 outsourced newly inducted private security personnel of CMRL, who are doing frisking and baggage scanning at all the 7 metro stations were given 2 days training on security by the Police officers of Security Branch, CID, Tamil Nadu Police at Alandur Metro Station. The training will help them to do frisking and baggage scanning works efficiently.



35 outsourced housekeeping staff of CMRL were also trained on security matters by the officers from the Security Branch, CID, Chennai on 7th April



2016 at Alandur Metro station. The training will be useful for them to deduct any unauthorized or suspicious objects found in the CMRL metro premises or in the metro stations.

Both private security personnel and housekeeping staff were sensitized on the rules of CMRL by a Junior Engineer / Station Controller of CMRL. These trainings were given to them to make CMRL premises safe and free from the sabotage. To motivate the security personnel, the best trainee was awarded with memento.

Green Concept workshop at CMRL

A workshop on Go Green Concept was conducted as part of Green initiative scheme launched in CMRL on 22.04.16 as a part of World Earth day Celebrations. The workshop was conducted by Thiru P. Thanga Velu, former Addl. Director Horticulture Dept of Govt of Tamil Nadu. The workshop emphasized on the importance of Go Green Concept and also several concepts namely Terrace garden and its impact on the micro environment bringing conservation of Energy.



The workshop also highlighted the different techniques and methods used in Terrace Gardening, Different types of Green Plants and vegetables that can be used in Terrace Gardening and how terrace garden could reap rich benefits of Green culture and its effects of Conserving energy and its impact of ecological balance. Director (S&O) along with CGM (UG) and officers and staff of CMRL participated in the workshop.



Tamil New Year Metro Train Services

On account of Tamil New Year on 14-04-16, The First Train from Koyambedu Metro Station and Alandur Metro Station commenced at 06:00 Hrs and the Last Train departed from Koyambedu Metro Station and Alandur Metro Station at 22:00Hrs.

The Head way between the train services were 15 mins.



Progress of Civil Works in Elevated Sections as on 30.04.2016

Progress of flyover work at Vadapalani

Item	Total Nos	Completed Nos
Pile, Pile Caps, Piers, I Girder Casting Pier Caps	Completed	
I Girder Erection	78	69
Deck Slab	29	25



Vadapalani Flyover

Parking facilities – Access to Metro Rail Stations

Since the day of inauguration, Parking lot facility has been provided at 7 Metro stations of CMRL to facilitate commuters to park their two wheeler and Four Wheelers at station and use metro services.

The parking lots have been outsourced to the contractors M/s Om Security & Cleaning Services who are solely responsible for the safety and security of all the vehicles parked in parking lot and is liable to pay compensation in case of theft of vehicles or damage to vehicles.

CMRL supervises smooth operations and adherence to provisions made in contract by the contractors. So far a total of 44 no of staffs have been deployed for taking care of parking as well of cleaning services at CMRL stations.

Parking lots are available at Koyambedu, Arumbakkam, Vadapalani, Ashok Nagar, Ekkattuthangal and Alandur stations. There is parking place in CMBT bus stand. Metro Rail users are using the same parking facility. CMBT Metro Station is already a part of CMBT Bus Stand.

Parking Tariff		
Period	Car	Two Wheelers
0-3 hrs	10/-	5/-
3-6 hrs	20/-	10/-
6-12 hrs	30/-	15/-
More than 12 hrs	40/-	20/-
Beyond Business hrs	200/-	100/-

Monthly Parking Tariff		
Period	Car	Two Wheelers
One Month	500/-	250/-
Beyond Business hrs	200/-	100/-

* Business hrs - 0600 - 2200 hrs

Progress of works in Underground Sections as on 30.04.2016

Name of Work	Status of the Work
UAA 01 Washerment Metro, Mannadi, High Court, Central Metro, Egmore Metro & May Day Park	<ul style="list-style-type: none"> * Washerment Metro station: Station box - All public staircases, Ancillary building – Block work have been completed. Architectural finishing works are in progress at Station & Entry Exit. * Mannadi Station: Architectural works are in progress. Utility gallery walls have been completed. * High Court station: 216 /231 D - walls have been completed. All Firemen & Fire escape staircases are completed. Architectural finishing works are in progress. * Central Metro station: Station box D-walls has been completed. Station box - Concourse Slab excavation has been completed, 90% upper track slab excavation and 15% Base slab Excavation is in progress. * Egmore Metro station: Roof, Concourse, Base slab, Utility gallery construction have been completed. First floor slab construction , columns construction till roof slab are in progress in Ancillary Building. Architectural and MEP works are in progress.
UAA 02 Government Estate, LIC and Thousand Lights	<ul style="list-style-type: none"> * Government Estate station: 48 m of Roof slab for Entry “B” & 12m for Entry “A” completed. Block works, Platform wall & Slab works are under progress. * LIC station: Block works & Top slab under progress at Concourse level. * Thousand Lights station: Ancillary building footing works are completed & Columns are cast and Utility gallery works is under progress.
UAA 03 AG-DMS, Teynampet, Nandanam and Saidapet Metro	<ul style="list-style-type: none"> * AG – DMS Station – 41 no’s of D- wall panels of Entrances, 81.50m of Concourse slab and 17.30m of Base completed. * Teynampet Station – 70 no’s of D- wall panels of Entry / Exit structure and all 230 m of Roof slab and 151m of Concourse slab completed. * Nandanam Station - All 232 m of Roof slab and 105 m of Concourse slab completed. * Saidapet Station– 50 no’s of diaphragm wall panels of Entrances completed. * Saidapet Ramp– All 279m Base slab and 4106m Roof slab completed.
UAA 04 Nehru Park, Kilpauk and Pachaiyappa’s College.	<ul style="list-style-type: none"> * Nehru park station: 34 out of 38 nos of D-wall panels have been completed and excavation for roof slab is in progress at Entry B. Base slab works are in progress at Entry A,C. * Kilpauk Station: Above ground structural works are in progress at Entry A&D. Excavation for base slab work is in progress at Entry B. Architectural and MEP, Concourse False Ceiling and Utility restoration works are in progress in Station main box. * Pachaiyappa’s college: Architectural, MEP and Rooms wall tiling works are in progress. * Cross Passage Work (CP): 8 Out of total 11no of cross passages & 85% work completed in 2 CP’s. Grouting work in progress at remaining 1 CP’s.
UAA 05 Shenoy Nagar, Anna Nagar East, Anna Nagar Tower and Thirumangalam	<ul style="list-style-type: none"> * Shenoy Nagar station: Emergency staircase work is in progress. Architectural, MEP work and Utility restoration works are in progress. D-wall cutting for road restoration work is in progress. Roof slab , Staircase work in progress at Entry- Exit -01. Internal plastering work is in progress at Entry/Exit 02. Plastering work has been completed and Preparation for filing work is in progress at Entry/Exit 03. Roof slab work is in progress at Entry/Exit -04. * Anna Nagar East station: Ancillary building plastering work, Architectural and MEP works are in progress. * Anna Nagar Tower station: MEP & Architectural finish works are in progress and 40% Road restoration work has been completed. * Thirumangalam station: - Above ground structural block work and plastering works are in progress at Entry/Exit -01,02,03&04. Road restoration ,Architectural and MEP works are in progress * Thirumangalam Ramp: All civil works in Ramp has been completed. Restoration work is in progress.



Vent Shaft work in progress at Thirumangalam Station



Ancillary building work in progress at Shenoy Nagar Station



Upper track Plunge in Columns Encasing work in Progress at Central Metro



Base slab rebar work in progress at ES-01 at Washerment Station



Firemen Staircase work in progress at Anna Nagar East Station

Rolling Stock Work Progress as on 30.04.2016

Trains delivered to depot: A total of 33 trains including the 9 trains of import category, have been delivered to CMRL Koyambedu Depot.

Trains commissioned and conditionally accepted by CMRL

- * Nine trains have been issued with completion certificate and seven among these nine trains have been conditionally accepted by CMRL in June 2015.
- * The accepted 7 trains are put under revenue service of Stage-1 section of CMRL from June 2015. Maintenance activities on these 7 trains are carried out by CMRL Rolling Stock Maintenance Team and the warranty obligation is done by the contractor.

Trains under testing at CMRL facility: All other trains delivered to CMRL are under various stages of testing and commissioning in CMRL depot and mainline.

Maintenance of CMRL trains:

- * Preventive maintenance activities on these 7 trains are carried out by CMRL Rolling Stock Maintenance Team and corrective maintenance is done by the contractor.
- * Preventive maintenance activities include 72 hrs inspection, monthly maintenance, quarterly maintenance, half yearly maintenance and annual maintenance.
- * Trains are externally cleaned using automatic train washing plant every three days. Internal cleaning is done by outsourced agency every day.

Trains under manufacturing at Sricity:

- * Train 34, 35 & 36 have completed all Routine Static test at Alstom factory Sricity and final inspection for dispatch is under progress.
- * Trains 37 to 39 are under various stages of production, as per the schedule at Alstom factory, Sricity.



Employee of the Month Award - April 2016



Thiru. M. Suresh Kumar - Technician/Electronics

- * Successful completion of all Routine Static Tests of TS# 34 and in Sri City train manufacturing plant. Closing the open points of TS#02 and TS#10 for preparation as revenue operation trains.
- * Planning and undertaking few maintenance activities during monthly, quarterly and half yearly maintenance of Rolling stock.
- * Played an active role in Diesel Locomotive Bogies' Run-out & reversal, this is essential for improving the life of the wheels.



Welcome to CMRL Family !!

1	Thiru S. Pandian	Consultant (MW)
2	Thiru S. Panchatcharam	Consultant (Survey)

Progress of Elevated Station Works as on 30.04.2016

NA- Not Applicable

Stations		Guindy Metro		Nanganallur Road		ST Mount Metro	
S. No	Description	Total Nos	Completed	Total Nos	Completed	Total Nos	Completed
1	Pile cap			Completed			
2	Stub column	76	74	56	54	205	201
3	Plinth beam at street level (mt)	800	795	420	415	3900	3890
4	Footings	63	62	39	38	Completed	
5	Column above tie beam	94	92	53	51	228	222
6	Concourse level slab	Completed		1990	1920	11840	11600
7	Platform Level	Completed		1000	980	Completed	
8	Roof Slab	1000	930	550	530	NA	NA
9	Column above platform	NA	NA	32	30	NA	NA



St Thomas Mount Metro Station



Little Mount Station



Nanganallur Road Station

Certification of Appreciation & Cash Awards

* The following Rolling Stock employees were appreciated and cash award issued by CGM(E) towards tremendous effort put forth in order to interchange and reverse the bogies of diesel shunting loco for increase its wheels life.

* Thiru S.S.Bharani, JE(Mech), *Thiru T.Bangarusamy, JE(Elec),
 *Thiru V.Jamesarputharaj, JE(Stations)/SC/TO, *Thiru P.Anandraj, Tech(Mech),
 *Thiru A.Abdul Sathar, Tech(Elec), *Thiru G.Vishnu Perumal, Tech(Mech),
 *Thiru A.Jesuraja, Tech(Mech), *Thiru R.Kanagarasu, Tech(Elec),

*Selvi S. Jayashree, Tech(Mech),
 *Tmt R.Divya, Tech(Electronics),
 *Tmt S. Amala Selvi, Tech(Electronics),
 *Thiru S. Arul Kumar, Tech(Elec),
 *Thiru M.Suresh Kumar, Tech(Electronics),
 *Selvi S. Muthulakshmi, Tech(Electronics),
 *Thiru M.Sampath Kumar, Driver(Special Vehicle),
 *Thiru Ayyapan, Driver - Special Vehicle.



* The following Rolling Stock employees were appreciated and cash award issued by CGM(E) towards immense effort put forth to reduce the turning radius of RRC Coupler to avoid the unsafe movement in the public roads.

1. Thiru T. Bangarusamy, JE(Electrical)
2. Thiru M. Sampath Kumar, Driver (Special Vehicle)

* Cash award for Traffic controllers at OCC:
 Cash award was given to the following employees in recognition of their good work performed by them under difficult circumstances.

- * Thiru U.Muthu Kumar - Traffic Controller
- * Thiru T. Senthil Kumar - Traffic Controller

Different methods of construction used in Viaduct in CMRL

Chennai Metro Rail project will provide the people of Chennai with a fast, reliable, convenient, efficient, modern and economical mode of public transport, which is properly integrated with other forms of public and private transports including buses, sub urban trains and MRTS.

A total of 24.0 Km runs in the Underground Section covering Washermepet Metro, Mannadi, High Court, (Central Metro), Government. Estate, LIC, Thousand Lights, AG-DMS, Teynampet, Nandanam and Saidapet Metro. And in Corridor 2- Central Metro, Nehru Park, Kilpauk, Pachaiyappa's College, Shenoy Nagar, Anna Nagar East, Anna Nagar Tower and Thirumangalam.

In Phase 1 of the project, 45km metro network consists of two corridors namely,

Corridor	Length
Washermenpet to Airport	23.1 kms
Chennai Central to St Thomas Mount	22.0 kms
Total	45.1 kms

A total of 21.0 km runs in the Elevated Section covering Little Mount, Guindy Metro, Alandur, Nanganallur Road, Meenambakkam Metro and Airport in Corridor 1 and Koyambedu, CMBT, Arumbakkam, Vadapalani, Ashok Nagar, Ekkatuthangal and St Thomas Mount Metro in Corridor 2.

In the elevated section of the project, the Metro stations are connected by Viaduct. The viaducts consists of RCC piers, Pier Pedestal i.e. Segment, Tracks, 25 KV overhead electrical traction. In CMRL project, Viaducts are constructed using the following methods of construction namely,

Pre-cast Segments Launching by LG (Launching Girder)

Most of the CMRL spans of precast segments weighing approximately 40T are erected by LG (Weight 400 Tons). Barricading with suitable methods are made during the erection of spans. 1 span consists of 10 Segments that can be erected and stressed within a week.

In CMRL most of the segments were transported and erected during night/or road diverted span.



Pre-cast Segments Launching by LG (Launching Girder)

Balanced Cantilever method

The Balanced Cantilever method was used in the construction of CMRL Viaduct superstructure over existing kathipara flyover. The total length of bridge portion between the end bearings is 177.3m. The bridge was erected as cantilever started from two intermediate piers going on either side by individual segments of varying and constant dimensions.

The Segments are cast-in-situ and pre stressed as and when they are erected. The length of each cantilever spans is 36m to balance the span on either side of the pier.

This method is adopted due to busy road and diversion could not be possible. Several safety systems were adopted such as safety nets (3 layers), safety ladders and fall arresters to avoid any chance of accidents. Not even one hour traffic diverted was done during the entire period of construction.



Balanced Cantilever method
In-situ casting

Different methods of construction used in Viaduct in CMRL



Nose Launching Method

Nose Launching Method

Nose Launching Method was used for erection of open web composite girder at Guindy. The CMRL viaduct is crossing over busy southern railway tracks. The total length was 104.54m

The entire girder (both coupled) launched over the RCC piers by Nose launching method within 14 days. The construction of the Guindy viaduct crossing was very complex, as it has to be built over five lines of southern railways. About 30 trains, including important trains going towards south and north India, pass on these busy tracks every day. The train movement could not be stopped even for a single day.

Viaduct spans erected by Road Crane Method:

Most of the station platform girders (Pre cast PSC) were erected by road crane. After the 'I' Girder erection. Top RCC slabs were casted by using shifting / Deck sheets. This is suitable for small/Medium spans only. All girders were erected by cranes duly getting road blocks or south road diversion blocks (3hrs per day).

This method is suitable for precast I girders erection either for viaduct or station slabs. And where there is no (No Objection Certificate) NOC necessary and erection is not possible by Launching Girder (L.G) method.



Viaduct spans – I girders erected by Road Crane Method



Cast in situ method – Alandur Viaduct

Cast-in-situ Method

Cast in situ method is preferred where there is enough space for erection of staging. This method is used for cast in situ PSC Girder only where LG is not possible due to NOC problem and very acute curve alignment areas.(near air funnel areas).

Usually station slabs (cast in situ method) were casted by this method. It is a simple method. Cast in situ method was used in Alandur Viaduct.

Event Recorder and Energy Regeneration in CMRL Metro Trains

Event Recorder (EVR)

A special feature of CMRL Rolling Stock is an Event Recorder (EVR). All CMRL metro trains are fitted with EVRs. Each train has one EVR connected to the train control and management system (TCMS) network. The functions of the EVR are

- ✧ To record train data to act as a judicial recording unit
- ✧ Receive train data from the vehicle network.
- ✧ Fault monitoring and reporting in Driver's Display Unit (DDU)

The EVR is synonymous to a flight data recorder in aircraft (Black box). In addition, aircrafts have Cockpit voice recorder which records communication made by pilots. The footages of CCTV surveillance cameras in train are recorded by a separate system through network video recorder (NVR). An EVR can provide vital train data even after major unusual events. The digital output from EVR is protected against surges and transients in order to comply with the specifications of EN50155 and EN50121-3-2. All the digital signals are sampled periodically by the Event Recorder.



Crash Protected Memory

Regeneration of Energy

CMRL Rolling Stock is capable of regeneration of energy during braking mode. The train is equipped with Induction motor per axle in the Driver Motor coaches. These motors are controlled through VVVF drive. During braking mode of the train, the induction motors are utilized as generators and the same will feed back power to the overhead line. This re-generated power is instantaneously utilized for all auxiliary equipment inside the train and also the energy is used for other trains running in the same network.

All coaches have emergency buttons to alert the driver. A state of the art design, air-conditioned, light weight, made of stainless steel, with 3 phase AC drive and regenerative braking system. The cars will have Automatic Train Protection (ATP) and Automatic Train Operation (ATO). All the cars are provided with electrically operated bi-parting automatic sliding doors to ensure the safety of passengers. Besides, these cars will have electronic route map, Public Address system, Passenger Emergency Intercoms, Video surveillance and CCTV.

Each rake shall have two wheel chair parking location for the benefit of physically challenged persons. The cars will be equipped with gang ways to facilitate easy movement of passengers from one car to another. The cars will operate on 25 KV through an Overhead Catenary System.



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