



CHENNAI METRO RAIL NEWS LETTER



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Progress of Underground works - Highlights

Tunnel boring machines from China prior to being shipped to Chennai.



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GENERAL:

1.Factory Acceptance Test for Tunnel Boring Machines:

- a) Two Tunnel Boring Machines (TBMs) will be shipped from China to Chennai during first half of December 2011, after which it will be taken to site for launching. These two TBMs will be launched at Washermenpet and Shenoy Nagar.
- b) Factory Acceptance Test of TBM for Nehru Park is completed and expected to arrive in the last week of December 2011.

2. FACTORY ACCEPTENCE TEST FOR PRECAST TUNNEL SEGMENT MOULD:

- a) Factory Acceptance Test of Precast Segment Moulds has already been completed in Korea and China
- b) The precast yard for tunnel segment is being set up at Vanagaram, Vayalanallur and Muttukadu.

3. Picnic Hotel at Chennai Central metro station has been demolished and taken over by CMRL.

4. Diaphragm wall construction are in progress at the following stations

- (i) Washermenpet (ii) Egmore (iii) May Day Park, (iv) KMC (V) Shenoy Nagar



Tunnel segment moulds ready for shipment



Pre-cast segment test in factory during FAT



Be sure
you put
your feet
in the
right
place,
then
stand firm.
A b r a h a m
L i n c o l n



Work at Casting Yard for Elevated Constructions

Safety:

Chennai Metro Rail Project gives utmost importance and emphasis to safety measures at all time and ensures safe working is adopted at all field activities.

Quality control and Assurance:

Multi level check procedure of testing is adopted in laboratory at casting yard with standard calibrated certified equipment & instruments, in order to achieve end product of required quality.

Stage I:

All the materials and ingredients used are tested, based on which procurement vendors are given approval for materials like Aggregates, Cement, Steel, High tensile steel, HDPE Pipes, Bearings etc.

Stage II:

The end product which is part of permanent works undergoes the following test and checks like, concrete compressive strength testing, Ultra sonic Pulse velocity testing, Pile integrity testing, Load testing of Super structure etc. On meeting all desired parameters work is given final acceptance.

Super structure:

Out of the various method of super structure construction, precast segmental box girder section methodology is adopted in Chennai metro rail project. Box girder section offers better resistance to torsion which is advantageous for sharp curve alignment geometrics and construction with long span can be adopted.

Construction Process:

Segment production/casting is done in casting yard which gives advantage of industrial like production of segment with better quality control, each of 3M length. Production of segment is taken up when foundation & substructure work is progressing along the alignment. This helps in reducing construction time and also super structure construction is accomplished without providing any scaffolding from ground and faster progress.

Segment Production is done by two different technique, short line casting and long line casting. Short line comprises form work of length of only one segment with the previously cast segment being moved in to position for match casting on a mobile carriage. Short line arrangement does not take much workspace. Long line method used for complete segment casting required for a span. This method requires more work space, but reduce the construction time.

Form work for segment casting



Match casting of segments



Reinforcement placing



Pumping of concrete





In **work preparation** pre-assembled reinforcement cage on jig is placed on the casting mould after which inner mould moving on rail is fixed. Concreting of segment is done with concrete mixer through concrete pump/ boom placer. On attaining 20MPa compressive strength for concrete , casted segment is lifted from casting bed for subsequent work preparation. Thereafter based upon requirement for erection at site, segments are mounted on low height trailer and shifted to site. Segments are lifted by winch mounted on launching girder. Slider beam which has lifted the segment thereafter moves and positions the segment to the required location within span length.

Launching girder is steel fabricated gantry which derives support from the pier cap on front side and deck slab of the previously erected span. It facilitates lifting, positioning and aligning of segment. After lifting of all segments typical 31m span is constituted by 11 segments. The first segment over the pier is positioned as per required level and alignment. Precast segment have joints that require special attention. Epoxy based compound is applied and temporary pressure is applied horizontally for jointing of segments. This seals the joints against moisture and additionally protects the tendon in the duct. After gluing of all segments, high tensile strands are treaded into the duct conduit of the segments. After inserting required number of strands, stressing is done with multiple pull jacks, during which desired value of stress and elongation is ensured to be achieved .By this method compressive forces are induced . Thereafter span unit is lowered over the permanent bearings. On completion of this activity span erection gets completed for said span and launching girder is moved to next span to repeat same work activities.

Progress of Depot work

The progress of depot works as on 30.11.2011 is given below:

Sl. No.	Description	Unit	Total quantity	Quantity executed
1	Earth filling	Cum	3,16,000	1,46,657
2	Installation of Prefabricated Vertical Drain (PVD)	RMT	20,43,700	10,07,217
3	Surcharge filling	Cum	4,22,354	79,934
4	Admn building (work pile)600mm	No.	226	226
5	Infrastructure shed, stabling shed, rolling stock and workshop (work pile) 500 mm	No.	932	70
6	Viaduct and ramp area 1000mm	No.	44	Nil

Stacking of segments



Transporting of segments to site



Segments lifted by launching girder



When we see persons of worth, we should think of equalling them; when we see persons of a contrary character, we should turn inwards and examine ourselves.

Confucius





Progress of civil works in Elevated Sections



We are
what we
repeatedly do.
Excellence,
then,
is not an act,
but a habit.

Aristotle



Progress from Koyembedu to Ashok Nagar as on 30 November, 2011

Item	Total Nos	Completed Nos
Piles	1083	920
Pile caps	244	181
Piers	249	153
Spans Erected	150	78

Progress from Ashok Nagar to St.Thomas Mount as on 30 November, 2011

Item	Total Nos	Completed Nos
Piles	350	261
Pile caps	89	57
Open foundations	89	52
Piers	178	85
Spans Erected	136	40

Progress from Little Mount to O T A as on 30 November, 2011

Item	Total Nos	Completed Nos
Piles	280	151
Pile caps	69	24
Open foundations	199	87
Piers	263	76
Spans Erected	75	8

Progress from OTA to Chennai Airport as on 30 November, 2011

Soil investigation is in progress.

Viaduct pier foundation at Little mount



Tie beam work at Alandur station



Soil test near OTA





Progress of works in Under Ground Sections

Name of Work	Status
UAA 01 Washermenpet, Mannadi, High Court, Chennai Central and Egmore UG stations , May Day Park as an Emergency escape and ventilation shaft and associated tunnels.	* soil investigation works have been completed. * Utility shifting work is in progress in all the stations. * Twenty two Diaphragm wall panels casted and guide wall work completed at May Day Park. * Nineteen Diaphragm wall panels casted at Washermenpet. * Guide wall work in progress at Mannadi and Central. Diaphragm work commenced at Egmore
UAA 02 Government Estate, LIC Building and Thousand Lights UG stations and Associated Tunnels	* Soil investigation completed in Government Estate, LIC and Thousand Light stations and from Govt estate to Thousand light * Utilities identification progress in LIC and Thousand light stations .
UAA 03 New Gemini, Teynampet, Chamiers Road and Saidapet UG stations and associated tunnels	* Soil investigation completed from Gemini station to saidapet station * Guide wall work in progress at Saidapet station. * Utility identification work in progress at Teynampet, Chamiers road and Saidapet stations. * Construction of TNHB water sump at Institute area and Construction work of PWD sump at Tod Hunter Nagar is in progress. * Diversion work for 600 mm dia water main is in progress at Chamiers road.
UAA 04 Nehru Park, Kilpauk Medical College and Pachaiaappa's College UG stations and associated tunnels	* Road diversion work near Sports Development Authority is in progress. * Thirty five panels have been completed for Station Diaphragm wall construction and 20 mt guide wall completed in Nehru Park. * Guide wall has been completed for 109 mt in KMC. * Casting yard work in progress.
UAA 05 Shenoy Nagar, Anna Nagar East, Anna Nagar Tower and Thirumangalam UG stations and Associated Tunnels	* Construction of 24 panels of diaphragm wall has been completed in Shenoy Nagar station. * Bore pile work were completed at the junction of top down and bottom up construction in Shenoy Nagar station. * 381m length of guide wall has been completed in Shenoy Nagar station. * Utility identification and diversion work is in progress.

Work in progress at Washermenpet station



Electrical box shifting at Anna Nagar Tower station



Guide Wall Work at Central



All the great things are simple, and many can be expressed in a single word: freedom, justice, honour, duty, mercy, hope.

**Winston
churchill**





Workshop on Earthing & Bonding

A workshop on earthing, bonding and protection against lightning was organized on 11.11.2011 in the Conference hall of CMRL. It is very essential to ensure that the various contractors understand and implement the earthing and bonding concept in their work from the view of safety.

The construction of railway electrical installations generally requires a concept for earthing and bonding including provisions for lightning protection for the safety of men working on the system, public using the system, safety of its own installation and neighbouring installations. The objective of earthing and bonding are: (1) Safety of persons (2) Protection of installations (3) Reliable operation of system duly considering the Electromagnetism Compatibility and reducing the Electromagnetic Interference (EMC / EMI).



The scope of this Earthing and Bonding concept in infrastructure is to ensure a consistent earthing design for the various railway infrastructure, duly following the relevant EN standards, Indian standards and IE rules and regulations.

M/s.Siemens consortium is the executing agency of the traction power supply and overhead equipment contract no. AEP-01 and also the coordinating agency for implementing

earthing and bonding in this project, gave a detailed presentation on earthing, bonding and lightning concept. In turn, the various contractors also presented their concept of earthing and bonding including protection against lightning which they are going to adopt and implement in this project.

Urban Transformation on Impact of Metro on the Surrounds Chennai

A presentation session on “Urban Transformation on Impact of Metro on the Surrounds Chennai” was presented on 24/11/11 at CMRL office, by the students (Urban Design - Masters Programme) of Center for Environmental



Planning and Technology (CEPT), Ahmedabad as a part of their regular course work. These students were involved in the Urban Design Project “Urban Transformation on Impact of Metro on the Surrounds Chennai” on Chennai Metro Rail Limited. This basically deals with the understanding of probable transformation that would happen as a result of Metro and hence guiding the development around in order to enhance public life. The major objectives are:(1)To ensure integrated development by comprehending the relationship between built form and public transportation systems (2) To design for traverse connections, its effects and implications along with linear development of the metro corridor (3) To address the emerging opportunities of investment along the metro corridor (4)To ensure social inclusively and accessibility in the influence area of Metro stations.

ations, its effects and implications along with linear development of the metro corridor (3) To address the emerging opportunities of investment along the metro corridor (4)To ensure social inclusively and accessibility in the influence area of Metro stations.

CMRL Compensatory planting works.

S No	Target	Planted in November	Planted So Far
1	15000	634	10144



Planting at Bharathi women's college