Environmental and Social Monitoring Report

First Quarterly Report
(January 2015 – March 2015)

India: Jaipur Metro Rail Line 1-Phase B Project

Prepared by Jaipur Metro Rail Corporation Limited for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 31 March 2015)

Currency unit	-	Indian Rupee (INR)
INR 1.00	=	$ 0.0159
$1.00	=	INR 62.5908

ABBREVIATIONS

ADB	-	Asian Development Bank
ADF	-	Asian Development Fund
CEC	-	Continental Engineering Corporation
CSC	-	Construction Supervision Consultant-
ES	-	Environmental Specialist
DMRC	-	Delhi Metro Rail Corporation
EMP	-	Environmental Management Plan
EA	-	Execution Agency
EIA	-	Environmental impact Assessment
EARF	-	Environmental assessment and review framework
ESMS	-	Environmental and social management system
EMR	-	Environmental Monitoring Report
GPR	-	Ground penetrating radar
HSO	-	Health and Safety Officer
IEE	-	Initial environmental examination
IPP	-	Indigenous People Plan
JMRC	-	Jaipur Metro Rail Corporation
PAM	-	Project Administration Manual
PCAG	-	Public Consultation and Addressing of Grievances
RP	-	Resettlement Plan
SHE	-	Safety Health & Environment Management Plan
SPS	-	Safeguard Policy Statement
VMR	-	Vibration Monitoring Results

WEIGHTS AND MEASURES

km	-	Kilometer
m	-	Meter

NOTES

In this report, "$" refers to US dollars

CONTENTS

6. Layout plan if casting yard and labour camp
7. Monthly status report of Heritage consultant

EXECUTIVE SUMMARY

1. This report is the 1st quarterly report on environmental and social safeguards compliance of the Jaipur Metro Rail Line -1 Phase B Project. It covers the period from January 2015 to March 2015. Line 1-Phase B of the project inlcude constrcution of 2.3 km underground portion from Chandpole to Badi Chaupar, with two stations. Line 1–Phase B is being financed by ADB and expected to be completed by March 2018 at a cost of Rs 1126 Crore.

2. Jaipur Metro Rail Corporation (JMRC) is the Executing Agnecy for the Project. The sole civil works contract package under the project was awarded to Continental Engineering Corporation (CEC) in September 2013. The General Consultant overseeing the design and supervision of physical works is Delhi Metro Rail Corporation Limited (DMRC). Progress in construction works as of March 2015 are: i) production of main rings in casting yard has started; ii) civil works for Chandpole launching shaft is complete and Tunnel Boring Machine (TBM) – 1 is commissioned; iii) refurbishment of TBM – 2 is nearly completion; iv) guide wall and D-wall construction and removal of archaeological artifacts for Chhoti Chaupar station is ongoing; and v) initial utility shifting activities and tree transplantation activities are ongoing in Badi Chaupar station. Tunneling with TBM-1 from Chandpole station is planned to start in July 2015. As of March 2015, total physical and financial accomplishment are about 8% and 10%, respectively.

3. The environmental and social safeguards of the project are being implemented in compliance with the loan covenants, project agreement and contractor is complying with the proposed mitigation measures described in the Environmental Management Plan (EMP); Safety, Health and Environment (SHE) Manual and the contract specifications.The implementation of environmental and social safeguards are being monitored at Project Management and General Consultant (GC) level. With exception of few issues the project is being implmented in compliace with project requirements.

4. A baseline study carried out on heritage structures located in the project area found that 6% of the structures are in critically unstable condition and need immediate remedial measures, 56% are in partly unstable condition and require remedial measures before tunneling works begin and 38% are in stable condition. These conditions of the structures have prevailed for the past few decades and are not related to the project.

5. For structures located around the Chaupars (station sites) where construction works are ongoing proactive measures of providing propping support to unstable structures is being carried out by the contractor under instructions of the ‘engineer’ (General Consultants). Inaddition regular monitoring of weak structures through installation of crack, tilt and vibration meters and building settlement markers is also being done.

6. The project has minor social and resettlement impacts such as the acquisition of a strip of private land (10 by 10 meters) outside Chandpole station and the tunnel construction start point, as the shops on that strip are blocking traffic. JMRC has identified and acquired land from the government of Rajasthan across the street to relocate the three shops affected. Shop and land owners have been consulted and have agreed to relocate. When the work of Phase 1B started it was found that 6 temples falling in the station box area of Chhoti Chaupar and Badi Chaupar where digging is necessary for construction of stations, hence this required immediate relocation. For the purpose of smooth construction work and traffic

flow around the construction site, JMRC in consultation with local agencies got prepared Traffic diversion plan. The numbers of temples falling in the area of entry/exit structures and traffic diversion were finalizes and 7 additional temples i.e three at Chhoti Chaupar and four at Badi Chaupar were identified which were falling in the design of entry/exit structure and traffic diversion scheme. Necessary measures are being taken for relocation of such identified temples. 6 Temples of Chhoti Chaupar being relocated at Old Atish market. 7 temples of Badi Chaupar will be relocated in Tanwar Ji Ka Nauhra.

7. Utility shifting related excavation works in Chhoti Chaupar station have caused damage to pillars supporting two verandahs, hence requiring the verandah's to be dismantled. The contractor will rebuild the verandahs under JMRC guidelines. Three shops were affected and had to close for four days during the dismantling works. Shop owners were consulted and compensation to all the four shopkeepers were paid by JMRC on behalf of Construction agency for their loss of income as per the recommendations given by the 'Engineer'. However, one shopkeeper refused to accept the compensation amount. The request of said shopkeeper has been sent to 'Engineer' for further comments

8. On excavation work being undertaken at Chhoti Chaupar under supervision of Heritage consultant M/s Abha Narain lambah Associates, another layer of kund was discovered which also revealed 4 historic tunnels which were laid as water inlet and outlet channels to the kund functioning at that time. At some point these channels were left defunct when infrastructure services were being laid in the city criss crossing under the roads. One of the tunnels in the north direction has been unearthed all the way up to 80 metres and one can walk through the tunnel. Complete documentation, videography and photography has been conducted with a view of recreating it at later stage.

9. The construction works are proceeding in accordance with the provisions of the EMP such as review of monitoring report format, regulatory compliance action plan and camp layout review and approval by the GC. The environmental monitoring plan is successfully being implemented by the JMRC through an independent instrumentation company engaged by executing agency with the approval of 'Engineer'.

10. JMRC and DMRC officials have regularly been meeting with the local people and business associations in the project area to inform them about the construction works. Measures have been taken to address concerns of the local businesses such as stopping of work and providing proper pathways for customers during festivals. All reports and information on the project is disclosed on the JMRC website. In addition JMRC has a full-time Public Relation Officer dealing with media/press issues and also maintains a face book page and twitter account for disclosing project information and responding to queries and concerns from the general public. Inspite of all these measures, some members of the public are still concerned about the impacts of the project on structures and the cultural value of Jaipur city. To deal with this JMRC will conduct another round of consultation with concerned stakeholders to clearly explain theprecautionary measures being taken to protect the heritage structures particularly to people whodo not have access to the internet.

11. Various proactive measures are being taken to implement project in compliance with requirements, prevent damages to heritage structures, coordinate with relevant agencies, communicate with the public and address grievances of the local public. Areas such as public communications, documentation and reporting need further enhancement.

12. The actions recommendations during previous monitoring period have been implemented. There were no significant environmental impacts observed during the reporting

period and a few short-comings on follow-up with regulatory agencies, regular technical support by supervision consultant enviornmental expert, public communications, documentation and reporting were observed for which necessary corrective measures have to be taken.

1. INTRODUCTION

A. Purpose of the Report

13. The objective of environmental monitoring is to allow ADB and the Jaipur Metro Rail Corporation (JMRC) gather information to: i) evaluate the environmental management plan (EMP) progress by establishing compliance status, ii) detect and correct non-conformances, iii) identify unanticipated impacts and implement necessary mitigation measures, and iv) provide evidence to support enforcement of penalty provisions of the civil works contract to deter non-compliance.

14. Environmental monitoring and disclosure of quarterly or semi-annual monitoring reports is an ADB requirement for environmental category-A projects like Jaipur Metro Rail Line-1 Phase B. Environmental monitoring is part of project implementation process to be complied by both ADB and JMRC. The preparation and submission of the quarterly or semi-annual monitoring reports is the responsibility of JMRC while supervision to provide guidance is the role of ADB.

15. As many sensitive heritage structures of the Pink City exist above the metro underground alignment it was agreed during project preparation that quarterly environmental monitoring reports will be prepared and disclosed for this project. However, since tunneling works which is the key activity that poses risks to the heritage structures have not begun until March 2015 and significant physical construction works started only in July 2015, it was agreed with ADB that first monitoring report will be submitted for six month period. Accordingly first semi-annual monitoring report (July 2014 – December 2014) has been submitted to ADB and disclosed on ADB and JMRC websites. This report is the first quaterly environment and social monitoring report for reporting period January 2015 to March 2015.

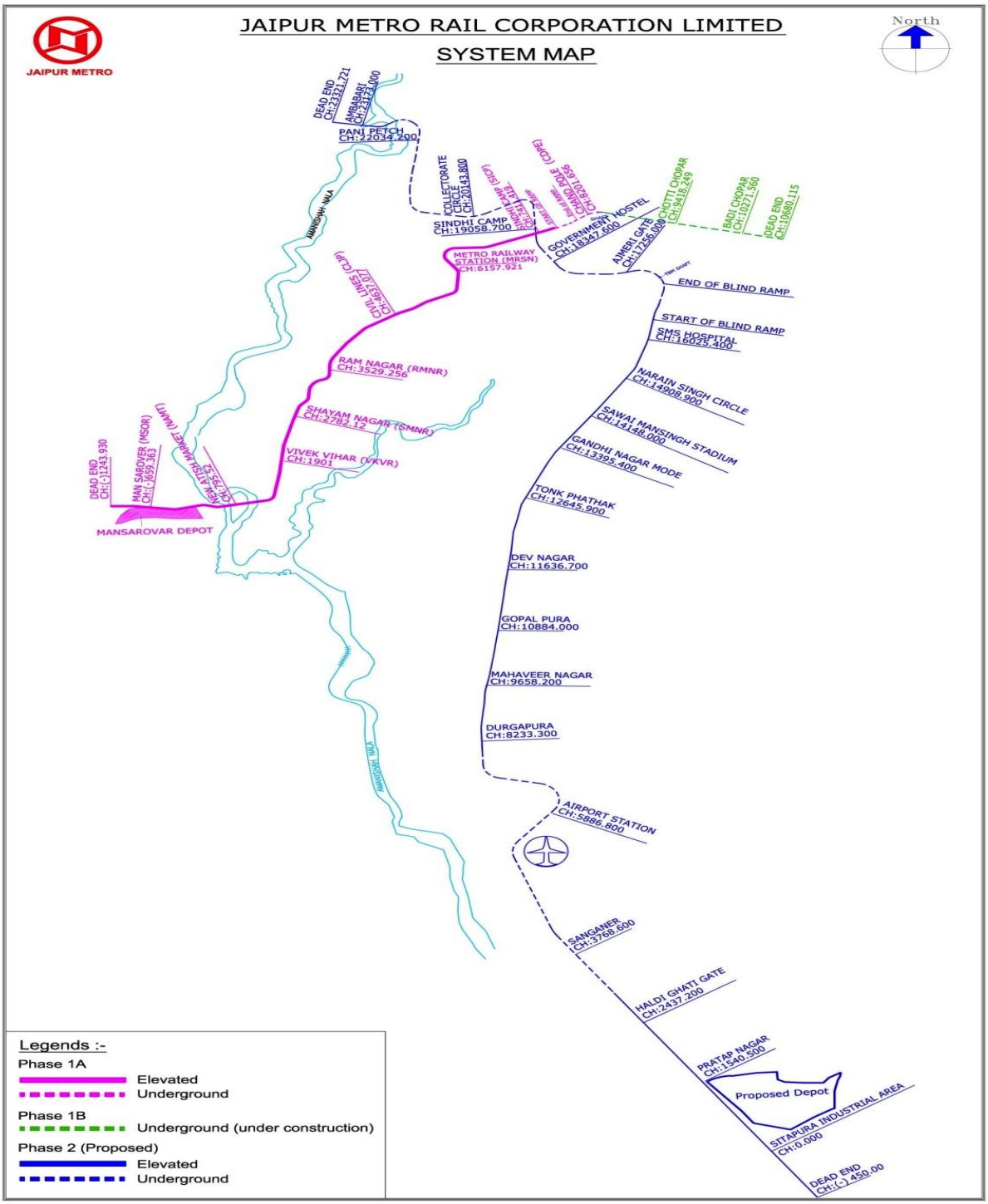
B. Project Description

16. Jaipur, the capital of the Indian state of Rajasthan, is one of the fastest growing cities in India. The fast paced industrial and commercial development has resulted in a steep rise in travel demand, but the city's existing public transport infrastructure is inadequate in terms of capacity and service. With the growing economy, passengers are shifting to private modes of transport, as evident in the rise in vehicle ownership, aggravating congestion and pollution. The modal share for public transport was 19% in 2009—one of the lowest in cities with more than 3 million inhabitants in India[1].

17. In 2009, Jaipur Development Authority developed a comprehensive mobility plan, seeking to provide an overall transport plan, up to 2031, that emphasizes the preeminence of public transport for the movement of people, not just vehicles, and integrating land use with transport networks. The plan recommended, among others, the development of high capacity metro lines along the east–west corridor of 12 km from Mansarovar to Badi Chaupar, and the north–south corridor of 23 km from Ambabadi to Sitapura. In January 2010, the government of Rajasthan established the Jaipur Metro Rail Corporation (JMRC) to implement the metro rail lines. Line 1- Phase A (9.7 km elevated portion from Mansarovar to Chandpole) and Line 1-Phase B (2.3 km underground portion from Chandpole to Badi Chaupar, with two stations).

[1] http://www.adb.org/sites/default/files/project-document/79730/46417-001-rrp.pdf

18. Line 1 – Phase B is being financed by ADB and expected to be completed by March 2018 at a cost of Rs1126 Crore[2]. Figure 1 show the system map of the Project.



Source: JMRC

Figure 1. JMRC Project System Map

[2]https://www.jaipurmetrorail.in/Present%20Status

C. Project Implementation Arrangement

19. The Government of Rajasthan acting through the Urban Development and Housing Department and Jaipur Metro Rail Corporation (JMRC) is the executing agency of the Project. JMRC has established an environment safeguard cell to look after implementation and monitoring of the safeguards measures associated with the Project. It constitute six officials of JMRC. Organization structure of Safeguards Cell is show in Figure 2.

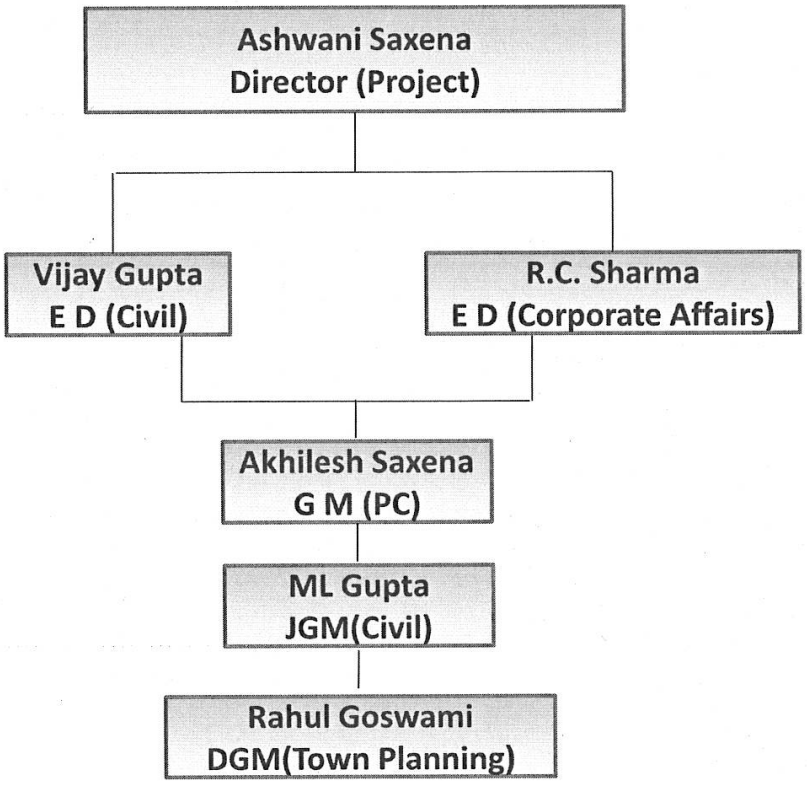


Figure 2: Organization Structure of Safeguards Cell of JMRC

D. Project Implementation Progress

20. As of March 2015, total physical and financial accomplishment are about 8% and 10%, respectively. The status of various construction activities is provided in the Table 1. Photolog demonstrating the progress of works is provided in Appnedix 1.

Table 1: Status of Construction Works as of March 2015

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr><td>1</td><td>Earthworks:

Earthwork is to be done for construction of Launching shaft at Chandpole, construction of underground stations at Chhoti Chaupar and Badi Chaupar by cut</td><td>
<table>
<tr><th>Location</th><th>Estimated quantity (in cum)</th></tr>
<tr><td>Chandpole</td><td>8000</td></tr>
<tr><td>Chhoti Chaupar</td><td>120000</td></tr>
<tr><td>Badi</td><td>120000</td></tr>
</table>
</td><td>
<table>
<tr><th>Location</th><th>% Completion</th></tr>
<tr><td>Chandpole</td><td>100%</td></tr>
<tr><td>Chhoti Chaupar</td><td>3.66%</td></tr>
<tr><td>Badi Chaupar</td><td>1%</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr>
<td></td>
<td>&cover method. During the tunnelling earth will be excavated with Tunnel Boring Machine (TBM).</td>
<td>
<table>
<tr><td>Chaupar</td><td></td></tr>
<tr><td>Tunnelling Work</td><td>180000</td></tr>
<tr><td>Cut & cover</td><td>60000</td></tr>
</table>
</td>
<td>
<table>
<tr><td></td><td></td></tr>
<tr><td>Tunnelling Work</td><td>0%</td></tr>
<tr><td>Cut & cover</td><td>0%</td></tr>
</table>
</td>
</tr>
<tr>
<td>2</td>
<td>Spoils Disposal:
<table>
<tr><td>Location</td><td>Estimated quantity (in cum)</td></tr>
<tr><td>Chandpole</td><td>7000</td></tr>
<tr><td>Chhoti Chaupar</td><td>1100</td></tr>
<tr><td>Badi Chaupar</td><td>1100</td></tr>
<tr><td>Tunnelling Work</td><td>0</td></tr>
<tr><td>Cut & cover</td><td>0</td></tr>
</table>
</td>
<td>1. Sumel
2. Govindpura/Ropada
3. Mathuradaspura
4. Langariyawas</td>
<td>➢ Jaipur Development Authority has allotted following soil disposal sites vide letter dated 01.09.2014
1. Sumel
2. Govindpura/Ropada
3. Mathuradaspura
➢ Jaipur Nagar Nigam has allotted following soil disposal sites vide letter dated 08.09.2014:
1. Langariyawas
➢ Spoil disposed at different disposal sites during the reporting period is as under:
<table>
<tr><td>Location</td><td>Estimated quantity (in cum)</td></tr>
<tr><td>Sumel</td><td>7000</td></tr>
<tr><td>Govindpura/ Ropada</td><td>0</td></tr>
<tr><td>Mathuradaspura</td><td>5390</td></tr>
<tr><td>Langariyawas</td><td>0</td></tr>
</table>
</td>
</tr>
<tr>
<td>3</td>
<td>Vegetation and Plant Clearing:
Some trees are coming in the metro route in launching shaft at Chandpole, station box and in entry exit at Chhoti Chaupar and Badi Chaupar. These trees are to be cut or relocated with the prior approval of District Collector.</td>
<td>• Location of the trees as per survey which are to be cut or located as under:
<table>
<tr><th>Location</th><th>Trees</th></tr>
<tr><td>Metro route</td><td>90</td></tr>
<tr><td>Entry/Exit at Chhoti Chaupar & Badi Chaupar</td><td>35</td></tr>
<tr><td>Ancillary Building area at Chhoti Chaupar</td><td>20*</td></tr>
</table>
*Permission from District Collector is pending.</td>
<td>Approval Letter to cut 35 trees is given by Collector, Jaipur on 02.03.2015 and the copy is placed in Appendix 5.
Details of trees cut or transplanted is as under:
<table>
<tr><th>Location</th><th>Trees</th></tr>
<tr><td>Metro route</td><td>52</td></tr>
<tr><td>Entry/Exit at Chhoti Chaupar & Badi Chaupar</td><td>0</td></tr>
<tr><td>Ancillary Building area at Chhoti Chaupar</td><td>0</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr><td></td><td></td><td>The tree species include Gulmohar, Banyan tree & Pipal tree.
The trees are being transplanted at Ghat ki Guni.</td><td></td></tr>
<tr><td>4</td><td>Utility Shifting:

Utility shifting is an important activity for underground station work.

Underground electric cables, water supply lines and telecom lines are to be realigned at chandpole for launching shaft and underground station at Chhoti Chaupar and Badi Chaupar.</td><td><table><tr><td>Chandpole – Launching shaft</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td>Chhoti Chaupar</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td>Badi Chaupar</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr></table></td><td>Status during reporting period is as under:

<table><tr><td colspan="2">Chandpole – Launching shaft</td></tr><tr><td>Electric cables</td><td>100%</td></tr><tr><td>Water supply lines</td><td>100%</td></tr><tr><td>Telecom lines</td><td>100%</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Electric cables</td><td>100%</td></tr><tr><td>Water supply lines</td><td>Work in Progress</td></tr><tr><td>Telecom lines</td><td>100%</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Electric cables</td><td>Work in Progress</td></tr><tr><td>Water supply lines</td><td>Work in Progress</td></tr><tr><td>Telecom lines</td><td>Work in Progress</td></tr></table></td></tr>
<tr><td>5</td><td>Traffic Management and Diversion:

For the construction of launching shaft at Chandpole, underground stations at Chhoti Chaupar and Badi Chaupar, traffic is to be diverted.

Project specific traffic management plan has been developed and the same has been approved by Jaipur Traffic Authority.</td><td>Chandpole Launching Shaft

Traffic from Station Road to Jhotwara Road has been diverted via Pareek College Road.

Chhoti Chaupar

Direct access from Chandpole Bazar to Tripolia Bazar. Traffic is diverted via Nahargarh Road – Gangauri Bazar – Cheeni Ki Burj.

Badi Chaupar

Traffic Diversion Plan is under preparation</td><td>Chandpole Launching Shaft

Traffic Management & diversion is continuing.

Chhoti Chaupar

Traffic Management & diversion is continuing. JMRC is aiming for opening the traffic blockade on Chandpole side by end of June 2015 and on Tripolia Side by end of July 2015.

Badi Chaupar

Traffic Diversion Plan is under preparation</td></tr>
</table>

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr><td>6</td><td>Launching shaft:

Launching shaft is to be constructed for tunnel boring machine. A launching shaft has diaphragm wall/concrete wall and it is built to be permanent. Once the access shaft is completed, Tunnel Boring Machine will be lowered to the bottom and excavation will start. Launching shaft is the main entrance & exit of the tunnel until project is complete.

Launching shaft is rectangular in shape and constructed with reinforce cement concrete M50 grade. Walls of launching shaft are 800 mm thick. Dimension of launching shaft at Chandpole is 24m X 20m and a depth of 14m.</td><td>Chandpole</td><td>Launching shaft work has been completed.</td></tr>
<tr><td>7</td><td>Tunnel Boring Machine

Tunnel boring machine will be used in excavating and advancing tunnels through any type of ground strata for the complete tunnelling work.

The underlying principle of the EPB method is that the excavated soil or muck itself is used to provide continuous support to the tunnel face by balancing earth pressure against the forward pressure of the machine.

As the shield advances at the face, the cutter head on the TBM rotates through the earth. The excavated soil is then mixed together with a special foam material that actually alters its viscosity or thickness and transforms it into flowing material. The use of a foaming agent to break down muck into a liquefied form provides some obvious</td><td>The main activities of these TBMs are as under:

<table><tr><th colspan="2">TBM 1</th></tr><tr><td>Refurbishment</td><td></td></tr><tr><td>Lowering in launching shaft</td><td></td></tr><tr><td>Tunneling work</td><td>3750 meter</td></tr><tr><th colspan="2">TBM 2</th></tr><tr><td>Refurbishment</td><td></td></tr><tr><td>Lowering in launching shaft</td><td></td></tr><tr><td>Tunneling work</td><td>3750 meter</td></tr></table></td><td><table><tr><th colspan="2">TBM 1</th></tr><tr><td>Refurbishment</td><td>100%</td></tr><tr><td>Lowering in launching shaft</td><td>100%</td></tr><tr><td>Tunneling work</td><td>Initial drive commenced</td></tr><tr><th colspan="2">TBM 2</th></tr><tr><td>Refurbishment</td><td>100%</td></tr><tr><td>Lowering in launching shaft</td><td>nil</td></tr><tr><td>Tunneling work</td><td>Nil</td></tr></table></td></tr>
</table>

S.N.	Activities	Location	Status
	benefits. The muck is then stored and controlled in a pressurized chamber located inside the cutter head, and is used to apply support and balance pressure to the tunnel face during the excavation process. The foam acts as a lubricant that conditions the soil to a suitable fluidity, in effect reducing the risk of clogging in the pressurized chamber head or muck storage area. A screw conveyor then removes excess fluidized muck in controlled volumes from behind the cutter head and in front of the "Pressure bulkhead", synchronizing the screw conveyor with the actual speed of the tunnel boring machine, and equalizing the actual volume of soil travelling into and out of the machine and establishes earth pressure balance during excavation, thereby also reducing the risk of surface or ground settlement. The performance of the EPBV machine, however, largely depends on the actual properties of the excavated muck. The soil may be coarse sands, gravel or stiff clays. The EPB TBM also has the unique capability of placing a continuous ring of segment liners from within the tail shield of the machine inside the tunnel as it advances. These concrete segments provide critical additional reinforcement and support and accomplish all tunnel construction in one pass. Tunnelling works from Chandpole to Badi Chaupar will be done by the two TBMs.		

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr><td></td><td>Diameter of the cutting head of TBM is 6.55 meter. The tunnel size is of 5.60 meter internal diameter.</td><td></td><td></td></tr>
<tr><td>8</td><td>Segment casting:

Internal lining of the tunnel will be done by precast reinforced cement concrete segments. The segments are to be constructed with M 50 concrete having outer diameter of 6.35 meter. One ring comprises 6 segments.</td><td>Segment casting will be done at casting yard in Bhankarota.

<table><tr><td>Rings</td><td>3200 (19200 segments)</td></tr></table></td><td>Rings casted are as under:

<table><tr><td>Rings</td><td>0%</td></tr></table></td></tr>
<tr><td>9</td><td>Guide wall and D wall at Chhoti Chaupar & Badi Chaupar stations:

For the construction of D-Wall initially guide walls are constructed so as to keep the D-Wall in proper alignment.

Guide walls are constructed with reinforce cement concrete of M20 grade. The thickness of guide wall is about 600 mm and depth is 1.5 m.

Diaphragms walls are constructed with reinforce cement concrete of M35 grade. The thickness of diaphragms wall is about 800 mm and depth is about 26 m.</td><td><table><tr><td>Location</td><td>Length (m)</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr></table></td><td><table><tr><td>Location</td><td>% Completion</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Guide Wall</td><td>56% (331)</td></tr><tr><td>D-Wall</td><td>34% (202)</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Guide Wall</td><td>5% (31)</td></tr><tr><td>D-Wall</td><td>0</td></tr></table></td></tr>
<tr><td>10</td><td>Roof Slabs at Chhoti Chaupar & Badi Chaupar Station

Stations are to be constructed with top down method. Top slab, roof slab, concourse slab & base slab are to be constructed.</td><td><table><tr><td>Location</td><td>Area (sqm)</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Top slab</td><td>4600</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Top slab</td><td>4600</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr></table></td><td><table><tr><td>Location</td><td>Area (sqm)</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Top slab</td><td>0</td></tr><tr><td>Roof slab</td><td>0</td></tr><tr><td>Concourse</td><td>0</td></tr><tr><td>Base slab</td><td>0</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Top slab</td><td>0</td></tr><tr><td>Roof slab</td><td>0</td></tr><tr><td>Concourse</td><td>0</td></tr><tr><td>Base slab</td><td>0</td></tr></table></td></tr>
</table>

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr><td>11</td><td>Establishment of construction camp:

➢ A construction camp for labourers has been established near to casting yard area in November 2014.</td><td>Casting Yard, Bhankrota

<table><tr><td>Number of blocks</td><td>9</td></tr><tr><td>Total Camp Area</td><td>6227 sq.m</td></tr><tr><td>Capacity</td><td>9X48</td></tr><tr><td colspan="2">Facilities to be provided</td></tr><tr><td>Bathing room</td><td></td></tr><tr><td>Dining room</td><td></td></tr><tr><td>urinal& toilet</td><td></td></tr><tr><td>Drinking water with cooling facility</td><td></td></tr><tr><td>fans</td><td></td></tr><tr><td>playground</td><td></td></tr></table></td><td>Completed.

<table><tr><td>Number of blocks</td><td>9</td></tr><tr><td>Area of each block</td><td>692 sqm</td></tr><tr><td>Workers staying</td><td>190</td></tr><tr><td colspan="2">Facilities installed</td></tr><tr><td>Bathing room</td><td>yes</td></tr><tr><td>Dining room</td><td>yes</td></tr><tr><td>urinal& toilet</td><td>yes</td></tr><tr><td>Drinking water with cooling facility</td><td>yes</td></tr><tr><td>fans</td><td>yes</td></tr><tr><td>playground</td><td>yes</td></tr></table></td></tr>
<tr><td>12</td><td>Other Facilities:

➢ Batching Plant,
➢ Laboratory,
➢ RO Plant
➢ Chiller Plant
➢ Diesel Generating Set
➢ Briquette Boiler</td><td>Following facilities are provided at casting Yard, Bhankrota:

<table><tr><th>Item</th><th>Capacity</th></tr><tr><td>Batching Plant</td><td>(i) 30 cum/hr
(ii) 60 cum/hr</td></tr><tr><td>Quality Control Laboratory</td><td>Installed</td></tr><tr><td>RO Plant</td><td>2 kl/hr</td></tr><tr><td>Chiller Plant</td><td>100 TR</td></tr><tr><td>Diesel Generating Set</td><td>500 KVA</td></tr><tr><td>Briquette Boiler</td><td>2 TPH</td></tr></table></td><td>Completed.</td></tr>
<tr><td>13</td><td>Establishment and operation of quarry/ borrow area:

For the construction work following material is sourced:</td><td>Quarry area and borrow area of construction material is as under:</td><td>Volume of the material extracted is as under:</td></tr>
</table>

<table>
<tr><th>S.N.</th><th>Activities</th><th>Location</th><th>Status</th></tr>
<tr>
<td></td>
<td>

Sand
Aggregate
Cement
Steel

</td>
<td>
<table>
<tr><th>Material</th><th>Quarry / borrow area</th></tr>
<tr><td>Sand</td><td>Banas</td></tr>
<tr><td>Aggregate</td><td>Shakun, Lakher</td></tr>
<tr><td>Cement</td><td>Lafarge</td></tr>
<tr><td>Steel</td><td>SAIL, VIZAG,TATA</td></tr>
</table>
</td>
<td>
<table>
<tr><th>Material</th><th>Volume (MT)</th></tr>
<tr><td rowspan="2">Sand</td><td>3912.94</td></tr>
<tr><td>6639.64 *</td></tr>
<tr><td rowspan="2">Aggregate</td><td>5445.20</td></tr>
<tr><td>9394.10*</td></tr>
<tr><td rowspan="2">Cement</td><td>1846.39</td></tr>
<tr><td>3165.29*</td></tr>
<tr><td rowspan="2">Steel</td><td>355.30</td></tr>
<tr><td>731.00*</td></tr>
</table>
* Up to date quantity
</td>
</tr>
</table>

2. COMPLIANCE TO SAFEGUARDS PROVISIONS IN AGREEMENTS UNDER THE PROJECT

A. Compliance to Loan Agreement

21. The environmental and social safeguard requirements are explicit provided in the Loan Agreement 3062-IND between ADB and State of Rajasthan through the Urban Development and Housing Department (UDH) and Jaipur Metro Rail Corporation (JMRC). These loan agreement provisions and compliance status are provided in Table 2.

Table 2: Status of Compliance to Environmental Provisions of the Loan Agreement

S.N.	Environmental Provision	Compliance Status
1	**Schedule 4. Item 7(a):** <u>Conditions for awards of contracts, commencement of Works</u> 7. As condition for award of any contract under the project the EA shall ensure the following: a. JMRC shall not award any Works contract which involves environmental impacts until JMRC incorporated the relevant provisions from the EMP and SHE into the Works contract,	Complied. SHE (Safety, Health and Environment) Manual and Environmental Management Plan (EMP) is a part of bidding document. Section 6 of Contract Agreement includes condition of contract on SHE and EMP, requiring the Contractor to implement the EMP and comply with requirements of SHE.
2	**Schedule 4. Item 8:** <u>Conditions for award of contracts; commencement of Works</u> 8. "As a condition for commencement of Works contract under the Project which involves environmental impacts and if it requires	Complied. The project did not require an environmental clearance, as railways including metro projects in India are not

	environmental clearances, the State thorough the JMRC shall ensure that the final approval of environmental clearances including the EIA, SHE, from appropriate *authority* has been obtained."	included in the EIA Notification 2006 of GoI.
3	**Schedule 5. Item 3:** <u>Environment</u> 3. "The Borrower shall ensure or cause the State through JMRC to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project facilities comply with (i) all applicable laws and regulations of the Borrower and State relating to environment, health, and safety including SHE; (ii) the Environmental Safeguards; and (iii) all measures and requirements set forth in the EIA and the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report."	Being complied. ➢ Requirements on permits and clearance are being followed. ➢ SHE is strictly being complied with. ➢ Requirements of EIA and EMP are being implemented.
4	**Schedule 5. Item 4(a):** <u>Land Acquisition and Involuntary Resettlement</u> 4 (a) Where the need arises, the Borrower shall ensure or cause the State through JMRC to ensure that all land and all rights-of-way required for the Project, and all Project facilities are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (i) all applicable laws and regulations of the Borrower and State relating to land acquisition and involuntary resettlement; (ii) the Involuntary Resettlement Safeguards; and (c) all measures and requirements set forth in the respective RP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Being complied. All land acquisition and resettlement activities are implemented as per provisions of Indian Law.
5	**Schedule 5. Item 4 (b)** <u>Land Acquisition and Involuntary Resettlement</u> 4 (b) Without limiting the application of the	Being complied.

	Involuntary Resettlement Safeguards, or the RP, the Borrower shall ensure or cause the State through JMRC to ensure that no physical or economic displacement takes place in connection with the Project until: (a) compensation and other entitlements have been provided to affected people in accordance with the RP; and (b) a comprehensive income and livelihood restoration program has been established in accordance with the RP.	Compensation and other entitlements are being provided to affected people in accordance with applicable laws by JMRC.
6	**Schedule 5. Item 5** <u>Indigenous Peoples</u> 5. Where the need arises, the Borrower shall ensure or cause the State through JMRC to ensure that the preparation, design, construction, implementation and operation of the Project, and all Project facilities comply with (a) all applicable laws and regulations of the Borrower and the State relating to indigenous peoples; (b) the Indigenous Peoples Safeguards; and (c) all measures and requirements set forth in the respective IPP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Not applicable. No issues on Indigenous peoples have arisen during the reporting period.
7	**Schedule 5. Item 6(a) & 6(b)** <u>Human and Financial Resources to Implement Safeguards Requirements</u> 6 (a) "The Borrower shall ensure or cause the State through JMRC to ensure that all necessary budgetary and human resources to fully implement the EMP, and the RP and the IPP as required" 6 (b) "The Borrower shall ensure or cause the State through JMRC to ensure that at least one expert each is designated to supervise implementation of the EMP, and the RP and the IPP as required"	Being complied. ➢ Safeguards cell comprising of 06 officers has been established in JMRC since 2013. ➢ A JV of M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates has been engaged as Heritage Consultant through ICB. ➢ The Heritage Consultant is to monitor the heritage structures lying along the metro route of Phase 1B. ➢ JMRC has also engaged 3 senior Archaeological Consultants to supervise the excavation of Chhoti

		Chaupar and Badi Chaupar. ➢ Safeguards experts are part of the PMC (DMRC) team and civil works contractor team. ➢ Adequate budget allocation has been made for implementation of safeguards activities.
8	**Schedule 5. Item 7(a)** <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 7 (a) "comply with the measures and requirements relevant to the contractor set forth in the EIA, the EMP, SHE, the RP and the IPP as applicable (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report.	Being complied. Safeguards experts are part of the PMC (DMRC) and civil works contractor teams are implementing safeguard measures. Adequate budget allocation is being made for implementation of safeguards activities.
9	**Schedule 5. Item 7(b)** <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts</u>. 7 (b) "make available a budget for all such environmental and social measures"	Being complied.
10	**Schedule 5. Item 7(c)** <u>Safeguards-Related Provisions in Bidding Documents and Works Contract.</u> 7 (c) "provide the JMRC with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks if any, or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA, the EMP, and the RP and the IPP if any;"	Being complied. Appropriate measures are being and will be taken to address these issues, as they arise.
11	**Schedule 5. Item 8(a)** <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts</u>. 8 (a) submit quarterly Safeguards Monitoring	Being complied.

	Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission"	First semi-annual report for July 2014 to December 2014 has already been disclosed on ADB and JMRC website. This report is the 1st quarterly report (Jan 2015 - March 2015) on environmental and social safeguards compliance.
12	**Schedule 5. Item 8(b)** <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 8 (b) "if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the EMP, SHE, and RP and IPP as applicable, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan.	Being complied.
13	**Schedule 5. Item 8(c)** <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 8 (c) Report any breach of compliance with the measures and requirements set forth in the EMP, SHE and the RP or the IPP if any, promptly after becoming aware of the breach.	Being complied.
14	**Schedule 5. Item 9** 9. The Borrower shall ensure or cause the State through JMRC to ensure that no proceeds of the Loan under the Project are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of ADB's Safeguard Policy Statement (2009).	Being complied
15	**Schedule 5. Item 10** <u>Other Social Measures</u> 10. The EA shall ensure that civil works contracts under the Project follow all	Complied. ➢ Various awareness programmes have been conducted during the

	applicable labor laws of the Borrower and State and that these further include provisions to the effect that contractors; (i) carry out HIV/AIDS awareness programs for labor and disseminate information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction; and (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, equal pay for equal work), health, safety, welfare, sanitation, and working conditions. Such contracts shall also include clauses for termination in case of any breach of the stated provisions by the contractors.	reporting period. ➢ HIV/AIDS awareness programme have been conducted on the eve of world AIDS Day on 1st December 2014. ➢ Monthly environmental training, physical training and general housekeeping training are conducted in line with India Government's Swachha Bharat Abhiyan. Details of Awareness Programs and Meetings are provided in Appendix 2
16	**Schedule 5. Item 11** 11. The EA shall ensure the safety and status of the heritage sites and structures involved in the Project site at its own cost and in this regard ensure all appropriate steps included as detailed in the PAM.	Being complied. ➢ In the bidding document, provision has been made to conduct Baseline Building condition survey, wherein the structural stability of structures lying on 30 m on either side of the route alignment of Phase 1B was recorded so as to help monitor any changes which may occur during construction. ➢ JMRC through CEC (AIMIL) got the Building Condition Survey before commencement of execution work at site. ➢ For the purpose of monitoring heritage structures along with the metro route alignment of Phase 1B, JMRC has engaged Heritage Consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehandale & Associates (JV). ➢ Mitigation and preventive measures are being taken up by M/s CEC in order to avoid any damage.
17	**Schedule 5. Item 12** <u>Gender</u>	

	12. The EA shall ensure that the Project is undertaken in conformity with the stakeholder communication strategy as agreed between ADB, the Borrower, State, and JMRC and referred in the PAM.	Being complied.

B. Compliance to Project Administration Manual

22. The Project Administration Manual[3] (PAM), describes how the JMRC will implement the project and deliver the results on time, with quality, within budget, and in accordance with government and Asian Development Bank (ADB) policies and procedures. The PAM is mandatory and serves as the main document describing implementation details. The status of implementing the safeguards requirements set out in PAM are provided in Table 3.

Table 3: Compliance to PAM

SN	Details	Compliance Status
1.	**Section VII.** **Safeguards** **40. Implementation of SHE and EIA.** The safeguards cell within JMRC will coordinate and ensure that all environment safeguard requirements under the project are met. The SHE and EIA report including site specific EMP will be included in the contract documents. The contractors must include in their bid adequate budget for implementation of all items in the SHE and EIA. The safeguards cell through the project management consultant (Delhi Metro Rail Corporation) will monitor and report on the environmental compliance of contractors with the SHE and EIA and ensure proper implementation of the grievance and redress mechanism. Key implementation activities for each stage of the project are as follows:	Being complied. Sample monthly monitoring report is provided in Appendix 3.
2.	**(i)Pre-construction**: All contractors will complete the following activities no later than 30 days from the issuance of Notice to Proceed: 1. Submit appointment letter and resume of the Contractor's Health and Safety Officer (HSO) who will be the on-site focal person for environment safeguards;	Being complied. HSO's CV was submitted on 9 May 2014 and it was approved was GC 15 May 2014.

[3] http://www.adb.org/sites/default/files/project-document/79731/46417-001-pam.pdf

SN	Details	Compliance Status
	2. HSO will engage CSC-Environment Specialist, and JMRC safeguards cell to a meeting to discuss in detail the SHE and EIA seek clarification and recommend corresponding revisions if necessary;	SHE and EIA have been discussed in detail by HSO with CSC-Environment Specialist, and JMRC safeguards cell. Details of meetings provided in Appendix 2.
	3. HSO will request CSC-ES copy of monthly monitoring formats and establish deadlines for submission;	Formats for Monthly Monitoring Report has been finalize with CSC-Environment Specialist. Monitoring report is being sent on monthly basis in prescribed format. Sample monthly report is provided in Appendix3.
	4. HSO will submit for CSC-ES approval an action plan to secure all permits and approvals needed during construction stage such as for operation of crushers and hot mix plants, transport and storage of hazardous materials, waste disposal sites, use of ground water etc.	HSO has submitted plan and action is being taken accordingly.
	5. HSO will submit for approval of CSC-ES the construction camp layout before its establishment where camps are required, and	Camp has been constructed as per approved layout diagram. Appendix 6.
	6. Before start of construction, the contractor will post signs in and around the construction site with information on the names, positions, contact numbers, and addresses of key people for receiving grievances	Adequate relevant signage has been displayed. Photolog is in Appendix 1.
3.	**(ii)Construction**: The JMRC safeguards cell through the PMC will monitor the Contractor's compliance to the SHE and EIA. In case of non-conformances, the safeguards cell will recommend corrective measures and ensure their timely implementation. If any unanticipated impacts become apparent, the safeguards cell will inform ADB. If required the EIA report will be updated, and mitigation measures and resources to address the new impacts will be identified	Being complied.
4.	**(iii)Post-construction**: The safeguards cell through the PMC will certify works completed in accordance with SHE and EIA and ensure all construction sites are satisfactorily rehabilitated and restored or otherwise recommend withholding of payments	Not yet due. Will be done in accordance with SHE & EIA.

SN	Details	Compliance Status
5.	**41. PMC Environmental Specialist:** JMRC will ensure PMC (Delhi Metro Rail Corporation) to provide an Environmental Specialist who will, full time during construction, to monitor compliance by the contractor to the SHE and EIA in support of JMRC safeguard cell. The key qualification and experience consist of (a) minimum of a Master's Degree in Environmental Impact Assessment (EIA) or Environmental Engineering orrelated subjects; and (b) experience of minimum of 5 years of working experience in conducting Environmental Assessments, implementing and/or supervising environment management activities in infrastructure projects. The objective is to ensure contractor's compliance to the Safety Health and Environment (SHE) Guidelines and EIA in accordance with the requirements of the ADB Safeguard Policy Statement (SPS) 2009 as well as relevant policies of the Government of India. The main output is the Quarterly monitoring report during the construction period. The responsibilities include:	Not complied. Mr. S.A. Verma, AGM/DMRC/Delhi is designated by PMC as its Environmental Specialist to monitor compliance by the Contractor for SHE and EIA. His assistants are doing full time monitoring in Jaipur.
6.	• Review EIA report including site specific EMP and SHE guidelines to understand the environmental issues in the project area and mitigation and monitoring requirements of the project.	Complied. EIA, EMP and SHE guidelines have been reviewed.
	• Update the site specific EMP if there are any significant changes in the project scope or environmental conditions to incorporate all new environmental issues and mitigation measures	Being complied. EMP will be updated as per requirements.
	• Prepare monitoring checklists/ templates for daily or weekly monitoring on implementation of the SHE and site specific EMP by the contractor.	Complied. Site specific monitoring checklists/ templates for daily or weekly monitoring on implementation of the SHE and EMP has been prepared.
	• Organize a consultation meeting with JMRC safeguards cell, contractors Health and Safety Officers (HSO), Site Engineer and Heritage Expert before the start of physical works to clarify roles and responsibilities of each party. After start of physical works organize a coordination meeting at least every quarter to provide updates, clarify and follow up on pending issues etc.	Being complied. A consultation meeting between JMRC's Safeguard Cell, Contractor, Health and Safety Officers (HSO), Site Engineer and Heritage Expert held before the start of physical work to clarify roles and responsibilities of each party.

SN	Details	Compliance Status
		Coordination meetings in between JMRC's Safeguard Cell, Contractors, Health and Safety Officers (HSO), Site Engineer and Heritage Expert are being held regularly.
	• Where necessary organize technical training programs to enhance the field level staff's understanding on environmental issues such as health impacts of dust and noise, waste/debris disposal and management, safety issues etc.	Being complied. Environmental training programs are conducted on regular basis. The training is conducted by contractor's HSO. If required additional training will be provided by third party agencies on environmental issues. Details of training sessions are provided in Appendix 2.
	• Monitor implementation of the SHE and site specific EMP by the contractor on a daily or weekly basis. In doing so complete the daily or weekly monitoring checklists.	Being complied. Monitoring of implementation of SHE and site specific EMP are being done by Contractor's HSO on regular basis. SHE meeting is held with participation from JMRC, DMRC and Contractor and sub contractors to ensure compliance and implementation of SHE requirements and EMP.
	• Provide site based technical advice to the contractors where necessary during construction activities	Site based technical advice to the contractors is being given by DMRC experts.
	• Co-ordinate with the contractor's site engineers on monitoring and data collection on noise and vibration generated during tunnelling works and operation of heavy machinery	PMC's environment team is coordinating with contractor's site engineers on monitoring and data collection on noise and vibration generated during operation of heavy machinery. It will also be monitored during tunnelling works.
	• Coordinate with the Heritage Expert on getting data on monitoring and status of heritage structures above ground.	PMC's environment team is coordinating with the Heritage Expert on getting data on monitoring and status of heritage structures above ground.
	• Facilitate the functioning of the Grievance Redress Mechanism and maintain proper records of all environment related grievances and details on how they were addressed.	A system is in place to facilitate the functioning of the Grievance Redress Mechanism and maintain proper records of all environment related grievances and details on how they are addressed.

SN	Details	Compliance Status
	• Prepare quarterly Environmental Monitoring reports based on monitoring site visits, completed checklists and quarterly meetings for submission to JMRC safeguards cell and ADB. Amongst other environment safeguard issues, the monitoring report must cover: ➢ compliance to the SHE and site specific EMP by the contractor ➢ vibration monitoring activities conducted by contractor's engineers ➢ grievances redress mechanism ➢ monitoring and status of heritage sites above ground	Noted for compliance. ➢ For compliance of the SHE and site specific EMP by the contractor regular visit is being done by the Environmental team of CSC. ➢ For monitoring of the vibration during the construction instrumentation has been done by M/s CEC as per approval given by CSC. The monitoring will be done by a third party agency i.e. M/s. AIMIL. ➢ Grievances redress mechanism is in place. ➢ For monitoring the status of heritage site above the ground a Heritage Consultant i.e. M/s Abha Narain Lambah Associates and M/s Shashank Mehandale and Associates (JV) has been appointed by JMRC. During the tunneling the team of heritage consultant will be at site to monitor the status of buildings and heritage structures along the metro route.
7.	**42. Monitoring of Heritage Structures** JMRC through DMRC will retain at its own cost the current Heritage architect as the Heritage site expert during construction of the underground metro section. The expert will be responsible for conducting a baseline survey of heritage sites above the metro alignment and conducting regular monitoring of the status of the heritage sites throughout the construction period. The expert will be responsible for coordinating necessary procedures if any historical/traditional artifacts are found during tunneling works. He/she will also provide advice on technical measures during construction to prevent damages to the heritage structures. In the event of any damage to a heritage structure he/she will immediately alert JMRC and recommend appropriate mitigation or restoration measures. Key outputs are: (a) Monthly monitoring report; (b) No damage on heritage structures; and	Being complied. ➢ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shshank Mehendale & Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B. ➢ JMRC has also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. ➢ Heritage Consultant got conducted Baseline survey for

SN	Details	Compliance Status
	(c) in the event of damage, implementation of immediate restoration and mitigation measures. The main responsibilities are:	existing building's condition along the metro route and has submitted Building Inventory report. ➢ Structural survey of buildings along the metro route has also conducted and submitted report, wherein they categorized buildings under 3 categories 1. Unstable Structures requiring preventive propping and immediate demolition/ evacuation. 2. Part of structure unstable requiring propping & partial replacement /demolition. 3. No major instability. These reports have been shared with ADB and concerned local agency who will be further taking necessary action.
8.	• At least one month before the start of construction activities conduct a baseline survey of all heritage structures above the metro alignment and record detailed information including, but not limited to: list of heritage structures with details on location and distance from the metro alignment, exact height of structures above ground, existence of cracks/ damages prior to start of construction, detailed photographs etc.	Complied. ➢ Before the start of construction activity, Building Condition Survey of all structure along the metro route with photograph of existing cracks and damages was conducted by CEC through AIMIL. ➢ Before the start of construction activity, Baseline Survey of all the structure along the metro route with detailed photographs was conducted by Heritage Consultant i.e. M/s Abha Narain Lambah Associates and M/s Shashank Mehandale and Associates (JV). ➢ Based on the reports and survey submitted by Heritage consultant, CEC is regularly monitoring status of buildings and the status is reported through daily and weekly reports.
	• Monitor the condition of the heritage structures on a monthly basis throughout the construction period and compare the status with the baseline status to ensure that there are no changes from the baseline condition.	
	• Coordinating necessary procedures if any historical/traditional artifacts are found during tunnelling works.	
	• Provide advice on technical measures during construction to prevent damages to the heritage structures.	

SN	Details	Compliance Status
	• In the event of observation in any damage to any heritage structure/s immediately alert JMRC and recommend appropriate mitigation or restoration measures.	➢ Heritage Consultant entrusted to advice on measures during construction to prevent damages to the heritage structures. ➢ Heritage Consultant is submitting monitoring report on monthly basis to record activities implemented and monitoring findings to JMRC.
	• Provide technical advice on and supervise the mitigation or restoration activity.	
	• Prepare a monitoring report on a monthly basis to record activities implemented and monitoring findings and submit to JMRC safeguards cell as well the Environmental Specialist. Findings of the report will be included in the quarterly environmental monitoring report that will be prepared by the environmental specialist.	
9.	**Section VII- Safeguards** **b) Social – Involuntary resettlement.** 44. If any changes or additional land requirements or involuntary resettlement impacts are identified, a resettlement plan will be prepared in accordance with the ADB *Safeguard Policy Statement (2009)* and the same is further approved by ADB before award of related civil works contract and implemented before commencement of the relevant section of the civil works contract as applicable.	Being complied. When the work of Phase 1B started it was found that 6 temples falling in the station box area of Chhoti Chaupar and Badi Chaupar where digging is necessary for construction of stations, hence this required immediate relocation. For the purpose of smooth construction work and traffic flow around the construction site, JMRC in consultation with local agencies got prepared Traffic diversion plan.. The numbers of temples falling in the area of entry/exit structures and traffic diversion were finalizes and 7 additional temples i.e three at Chhoti Chaupar and four at Badi Chaupar were identified which were falling in the design of entry/exit structure and traffic diversion scheme. Necessary measures are being taken for relocation of such identified temples. 6 Temples of Chhoti Chaupar being relocated at Old Atish market. 7 temples of badi Chaupar will be relocated in Tanwar Ji Ka Nauhra.

SN	Details	Compliance Status
10	**Section VII - Safeguards** **c) Social – Indigenous people** 45. In case of any adverse impacts if identified during implementation on indigenous people, the JMRC will ensure that the Indigenous Peoples Plan (IPP) is prepared in accordance with the ADB *Safeguard Policy Statement (2009)* and the same is further approved by ADB before award of related civil works contract and implemented before commencement of the relevant section of the civil works contract as applicable.	Not Applicable.
11	**Section VIII - Gender and Social Dimensions** **47 Gender consultation and participation** Meaningful consultations that are gender inclusive and responsive will be carried out as early as in the project preparation stage and will be carried out on an ongoing basis throughout the project cycle. JMRC shall ensure that the bidding documents provide clauses to ensure that all civil works contractors comply with labor laws by not employing child labor; encouraging the employment of the poor, particularly women; and not offering different wages to men and women on work of equal value.	Complied. This provision is a part of the bidding document.
12	**Section VIII - Gender and Social Dimensions** **49. HIV and AIDS** JMRC will ensure that all civil works contractors (i) carry out awareness programs for labor on the risks of sexually transmitted diseases/AIDS and human trafficking; and (ii) disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction. Contracts for the project will include specific clauses on these undertakings, and compliance will be strictly monitored by JMRC.	Complied. Periodically awareness about HIV/AIDS is discussed in morning tool box talk and apart from this the medical officer visits the labour camp and explains the risk of sexually transmitted disease on periodic basis. Appendix 2.

SN	Details	Compliance Status
13	**Section VIII - Gender and Social Dimensions** **50. Health**. JMRC shall ensure that contractors provide adequately for the health and safety of construction workers and further ensure that bidding documents include measures on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking.	Complied. Various type of awareness programme has been conducted during the said period like HIV/AIDS awareness programme on the eve of world AIDS Day on 1st December 2014. Apart from this monthly environmental training, physical training and general housekeeping training are conducted in line with India Government's Swatch Bharat Abhiyan.
14	**Section VIII - Gender and Social Dimensions** **51. Labor** JMRC shall ensure that: i. civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites; ii. people directly affected by the projects are given priority to be employed by the contractor; iii. contractors do not differentiate wages between men and women for work of equal value; and iv. specific clauses ensuring these will be included in bidding documents. The construction supervision consultants monitor the provisions.	Complied. ➢ Civil work contractor is complying with all applicable labour laws and regulations. ➢ No child labour is employed. ➢ Preference is being given to people directly affected by the project. ➢ Complying with equal remuneration Act. ➢ Specific clause for ensuring labour law etc. has been included in the bidding document.
15	**Section IX - Performance Monitoring, Evaluation, Reporting and Communication** **B. Monitoring.** **Disclosure of Environmental Assessments and Monitoring Reports** ADB and JMRC will disclose on their respective websites the EIA Report. The quarterly monitoring reports will also be disclosed on the ADB website.	Being complied. EIA report has already been disclosed on ADB and JMRC websites. The link to JMRC site is given below:

SN	Details	Compliance Status
		https://www.jaipurmetrorail.in/pdf/EIA_Final_April_2014.pdf First Semi Annual Monitoring Report has been disclosed on the websites of ADB and JMRC. https://www.jaipurmetrorail.in/pdf/First%20Environment%20and%20Social%20Monitoring%20Report.pdf
16	**Section IX - Performance Monitoring, Evaluation, Reporting and Communication** **B. Monitoring** **55. Safeguards monitoring - Resettlement** If impact is identified during project implementation, a monitoring system will be established based on the ADB *Safeguard Policy Statement (2009)* and Government of India regulations.	Being complied. All resettlement and relocation issues will be settled on mutually agreed terms.
17	**Section IX - Performance Monitoring, Evaluation, Reporting and Communication** **B. Monitoring** **56. Indigenous People** If impact is identified during project implementation, a monitoring system will be established based on the ADB *Safeguard Policy Statement (2009)* and Government of India regulations.	No impact is identified.
18	**Section IX - Performance Monitoring, Evaluation, Reporting and Communication** **B. Monitoring** **58. Grievance Redress Mechanism** Grievances related to the implementation of the project, particularly regarding the land acquisition and R&R will be acknowledged, evaluated, and responded to the complainant with corrective actions. Any grievance regarding the land acquisition and R&R is received by OSD (Land), JMRC and is addressed through the decision of the "Negotiation Committee".	Being complied JMRC regularly conducts meetings with project affected people. And maintains proper documentation to track their redressal.

C. Compliance to the Civil Works Contract Agreement

23. The contractor is liable to comply with the safeguards clauses included in the contract agreement. Table 4 below provides an update on the status of safeguards compliance by the civil works contractor.

Table 4: Compliance to the safeguards Clauses of the Civil Work Contract

S.N.	Description	Compliance Status
1	**GCC Sub Clause 4.8** **Safety Procedures** The Contractor shall: a) comply with all applicable safety regulations, b) take care for safety of all persons entitled to be on the Site, c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons, d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and e) Provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and the owners and occupiers of adjacent land.	Being complied. Contractor is taking adequate measures to comply with regulations on safety of workers.
2	**GCC Sub-Clause 6.7** **Health and Safety** The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against	Being complied. Contractor is taking adequate measures as per the provision of SHE, which is also a part of bidding document. HSO is also working as accident prevention officer.

S.N.	Description	Compliance Status
	accidents. This person shall be qualified for this responsibility, and shall have the authority to Issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority. The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.	 Being complied.
	PCC Sub-Clause 4.8 and 6.7 **Safety Procedures and Health & Safety** "The Contractor shall throughout the execution of the Works including the carrying out of any testing, commissioning (including Integrated Testing and Commissioning), or remedying of any defects: (a) take full responsibility for the adequacy, stability, safety and security of the Works, Plant, Rolling Stock, Contractor's Equipment, Temporary Works, operations on Site and methods of manufacture, installation, construction and transportation; (b) have full regard for the safety of all persons on or in the vicinity of the Site (including without limitation persons to whom access to the Site has been allowed by the Contractor), comply with all relevant safety regulations, including provision of safety gear, and insofar as the Contractor is in occupation or otherwise is using areas of the Site, keep the Site and the Works (so far as the same are not completed and occupied by the Employer) in an orderly state appropriate to the avoidance of injury to all persons and shall keep the Employer indemnified against all injuries to such persons; (c) provide and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required	 Being complied. Adequate health and safety measures are being implemented as per the provision of SHE, which is also a part of bidding document.

S.N.	Description	Compliance Status
	by the Engineer or by laws or by any relevant authority for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the Site; and (d) where any work would otherwise be carried out in darkness, ensure that all parts of the Site where work is being carried out are so lighted as to ensure the safety of all persons on or in the vicinity of the Site and of such work. Contractor is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Contractor's price shall be inclusive of all the necessary costs to meet the prescribed safety standards. Precaution shall be taken by the Contractor to ensure the health and safety of his staff and labour. The Contractor shall, in collaboration with and to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as per the Engineer's requirement and will ensure complete compliance with relevant clauses of Employer's Health, Safety and Environment Manual (SHE Manual). The Contractor's Site Safety Plan shall be developed from his Outline Safety Plan as per Employer's Requirements and SHE Manual of the Employer. The Contractor shall appoint a member of his staff at the Site to be responsible for maintaining the safety, and protection against accidents, of personnel on the Site. This person shall be qualified for his work and shall have the authority to issue instructions and take protective measures to prevent accidents.	
	Safety Precautions Within 8 weeks of the date of Notice to	

S.N.	Description	Compliance Status
	Proceed, the Contractor shall submit a detailed and comprehensive contract-specific Site Safety Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual). The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with Sub-Clauses 4.8 and 6.7 of the General Conditions of Contract.	Being complied. Contractor has submitted site specific Safety plan and the same have been approved by CSC.
	GCC Sub-Clause 4.18 **Protection of the Environment** The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values indicated in the Employer's Requirements, and shall not exceed the values prescribed by applicable laws.	Being complied.
	PCC Sub-Clause 4.18 **Protection of the Environment** The Contractor shall be responsible and liable for any stoppage, closure or suspension of the works due to any contravention of statutory requirements relating to the protection of the environment and shall indemnify and keep indemnified the Employer in this regard. The Contractor's Site Environmental Plan shall be developed from his Employer's Safety. Health and Environmental Manual (SHE Manual), as per the Employer's Requirements and Special Conditions of Contract. Nothing extra shall be payable to the Contractor on this account and his Bid price shall be inclusive of expenditure	Being complied.

S.N.	Description	Compliance Status
	required to be incurred for working as per SHE Manual. Outline Environmental Plan means the environmental plan forming part of the Tender, setting out, in summary form, the Contractor's proposed means of complying with his obligations in relation to environmental quality. Site Environmental Plan means the site environmental plan including all supplements thereto, or any amended or varied version thereof, as submitted by the Contractor in accordance with Employer's Safety, Health and Environmental Manual (SHE Manual), this Clause and which has received the Engineer's consent. The Site Environmental Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with this Clause. The Contractor is required to make himself aware of all the requirements of the Employer's SHE Manual in this regard and comply with them. Within 8 weeks of the date of the Notice to Proceed, the Contractor shall submit a detailed and comprehensive Site Environmental Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual), and shall include such further material, which the Contractor considers necessary and relevant. Upon the Engineer notifying his consent to the Site Environmental Plan, or any supplemental part thereof, the Contractor shall adhere to the principles and procedures contained in such document save to the extent that the Engineer may give his consent to any amended or varied version thereof. The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to monitor and conduct tests to verify that the Site Environmental Plan is being properly and fully implemented."	

3. COMPLIANCE TO THE ENVIRONMENTAL MANAGEMENT PLAN

24. The environmental management plan (EMP) for the project was provided in Annexure 4 of the EIA report and also attached to the contract documents. As per EMP, five (05) environmental management activities were required to be implemented during the pre-construction stage (PC 1 – PC5); ten (10) activities are required to be implemented during the construction stage (C1.0 – C1.4, C.1.4.1 and C2 – C6); and three (03) activities are required to be implemented during the operation stage (O1 – O3). The following Table 5 lists out the status of activities during the pre-construction and construction stage as of March 2015.

Table 5: Status of Compliance to the EMP

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		PRE-CONSTRUCTION STAGE			
PC1	Contractor Preparatory Works (Upon issuance of Notice to Proceed)	The Contractor will complete the following activities no later than 30 days upon issuance of Notice to Proceed			
		1) Submit appointment letter and resume of the Contractor's Health and Safety Officer (HSO) and environmental focal person to CSC.	Yes. Mr. Ramaraju has been appointed as Contractor's HSOand he is working full time on site. CV were submitted to CSC.		
		2) HSO will engage CSC-Environment Specialist to a meeting to discuss in detail the EMP, seek clarification and recommend corresponding revisions if necessary	Yes. EMP and SHE have been discussed with CSC-Environment Specialist.		
		3) HSO will request CSC-ES copy of monthly monitoring formats and establish deadlines for submission.	Yes. Formats and schedule of monthly monitoring reports has been finalized. Sample attached in Appendix 3 & 4.		
		4) HSO will submit for CSC-ES approval an action plan to secure all permits and approvals needed to be secured during construction stage which include but not limited to-	Yes.		
		i). operation of crushers and hot mix plants,	Partial. No crushers and hot mix plant established by contractor. However the permit for the	Action plan for securing permits and approvals is still under preparation.	Application for permit for batching plant to be submitted immediately.

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
			batching plant has not been secured yet.		
		ii) transport and storage of hazardous materials (e.g. fuel, lubricants, explosives),	Yes		
		iii) waste disposal sites and disposal management plan,	No, under process	Action plan for securing permits and approvals is still under preparation. Application for securing consent for storing hazardous waste at site will be processed along with CTE/CTO application.	Application will be submitted to State Pollution Control Board.
		iv) temporary storage locations,	Yes		
		v) water use, and	Permission has been obtained from state authority for extraction of ground water for drinking purpose at Chhoti Chaupar. Application will be submitted for extraction of ground water for construction purpose to concerned authority.	Action plan for securing permits and approvals is still under preparation.	Action plan for securing approvals to be submitted by contractor. Application will be submitted in the second quarter of 2015-16
		vi) emission compliance of all vehicles. Arrangements to link with government health programs on hygiene, sanitation, and prevention of communicable diseases will also be included in the action plan.	Yes.		
		5) HSO will submit for approval of CSC-ES the construction camp layout before its	Yes, Construction camp has been		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		establishment.	established as per approved layout plan.		
PC2	Coordinate with the Jaipur Development Authority on Traffic Management Plan to avoid nuisance from traffic congestion	The Contractors will discuss and coordinate the implementation of the traffic re-routing scheme particularly in Chhoti Chaupar and Badi Chaupar when it starts the cut and cover activities and the hauling and disposal of excavated materials to the Ambabari village. At the minimum, the traffic management plan will have the following components: construction traffic, ensuring access to properties, accommodating pedestrians, parking, access by construction vehicles, faulty traffic lights and problem interchanges, use of public roads, parking provision during construction, use of residential streets and traffic diversion due to temporary road closures, and construction and use of temporary access roads.	Yes, Proper traffic management plan is in place in coordination with government agencies.		
PC3	Community Liaison to avoid complaints and/or address complaints if any	To ensure that ongoing feedback is provided on the progress of the JMRP together with feedback on the environmental management performance of the project. Contractor will provide a minimum of two (2) weeks notification to directly affected residents, businesses and other relevant groups of the intended construction commencement date. In providing a mechanism for communication between the contractor and the community and informing the public of construction details (timing, expected impacts), the concessionaire will undertake consultation and information activities.	Yes		
PC4	Ground staking to address chance find of artifacts	At least 30 days before the start of tunneling, the Contactor with supervision from the Archeology Department will employ a ground penetrating radar (GPR), detect the presence of buried artifacts along the tunnel alignment.	Yes. GPR survey has already been submitted and has been uploaded on		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		The Contractor, in behalf of the JMRC, will coordinate with the Archeology Department to designate an on-site representative during the entire duration of the project.	JMRC website. https://www.jaipurmetrorail.in/pdf/2015.04.16%20GPR%20Recieved%20from%20CEC.pdf JMRC is coordinating with Archeology Department for excavation work.		
PC5	Briefing on working near heritage resource to avoid damages to heritage resources and avoid cultural conflicts	All workers will undergo a briefing with the Archeology Department to ensure safeguarding of heritage resource and cultural/religious practices. A proof of compliance to this requirement to include the name of participants and date and location of briefing will form part of the monthly report to the CSC.	Yes. Briefing is being carried out by the Archaeological Consultant namely Mr. R.D. Singh, Dr. S.K. Sharma and Mr. P.K. Jain engaged by JMRC on regular basis.		
		CONSTRUCTION STAGE			
C1.0	Avoid damage to the following heritage resources during tunnel boring namely Chandpole Gate, IsarLat, Jantar Mantar, Hawa Mahal, Chhoti Chaupar, and	No heritage resources are inadvertently damaged during construction.	Yes. No heritage resources are inadvertently damaged during construction.	Complying through instrumentation & online monitoring of structures of historic importance.	

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	Badi Chaupar.				
C1.1	To avoid ground settlement under the Chandpole Gate during tunnel boring	The contractor will ensure that no inadvertent damage is incurred to the Chandpole gate. Estimated settlement under the Chandpole gate is less than 5mm. The contractor will ensure that the design value is not exceed and the trigger value = 3.5mm and Allowable value = 4.2 meters are implemented. Tilt meters will be installed at key positions on the gate to ensure the 2/1000 design value is observed with trigger and allowable values of 1.4/1000 and 1.7/1000, respectively Crack meters will be installed at key positions to ensure design value of 3.0mm is not exceeded with 2.1mm trigger value and 2.5 mm allowable value The contractor will immediately cease all operation if any of the trigger values are breached. The CSC will advise the contractor mitigation measures and practices to control settlement, tilt, and cracks to include but not limited to structural reinforcement and operation parameters of the TBM. The contractor will ensure that no structural damage is incurred and cosmetic damages are repaired under the supervision and control of the Jaipur Archeology Department.	Yes. ➢ Under passing scheme prepared by M/s Omikron Kappa, of Greece, structural consultant of M/s CEC has been proof checked by M/s Ayesa of Spain. ➢ Structural consultant of Heritage consultant has also given his comments on the under passing scheme of M/s CEC. ➢ Under passing scheme of chandpole gate has also been proof checked by IIT Delhi. ➢ Work will be done as per approved method statement & GCC		
C1.2	To avoid cosmetic and structural damages to the structures along the underground	Expected vibration at the Chandpole Gate during tunneling is 0.682 mm/s which is lower that internationally accepted 5mm/s. However, to b on the safe side and as practice in DMRC, the Contractor is to ensure that vibration levels at the Chadpole Gate foundation will not exceed 2.0 mm/s	Not yet due. Online monitoring will be done when the TBM will pass through the Chandpole Gate.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	metro alignment along Chandpole Bazar and Tripola Bazar due to vibration from the tunnel boring machine				
C1.3	To minimize surface noise from excavating equipment in Chhoti and Badi Chaupar and avoid disturbance to patients in the Pink City Hospital near Chandpole, Chaudary Hospital, Majaraja School at the corner of Chhoti Chaupar. To avoid damage and nuisance to Jantar Mantar, and Hawa Mahal.	The contractor will ensure that noise from construction activities does not result to exceedances of relevant limits prescribed in the Indian Ambient Air Quality Standards for Commercial Area and Silence Zone. Mitigation measures to be implemented by the Contractors are: 1) liaise with local residents on how to best minimize construction noise along the Chhoti and Badi Chaupars. 2) local residents and shop owners should be informed of the nature and duration of intended activities prior to commencement and kept updated as to changes in the management and mitigation plan 3) equipment compounds will be located off-site 4) noise barriers will be installed at critical work areas particularly around the Chaupars 5) enclose especially noisy activities if above the noise limits 6) employ transportable noise screens between noise sources and identified noise sensitive areas for the duration of noisy construction activities 7) maximize the possibility of scheduling noisy activities at the same time to minimize the duration of exposure Noise from vehicles particularly for hauling of	Yes, Only newly manufactured equipment & regular servicing of equipment is being used in construction. Noise monitoring is being done and necessary mitigation measures are taken as required.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		excavated materials to the dump site will be controlled through strict adherence to operating and maintenance instructions, routing of heavy vehicles way from noise sensitive areas whenever possible, conform with speed limits, and construction vehicles will only use routes specified in the traffic management plan.			
C1.4	To ensure careful demolition and proper restoration of Chhoti and Badi Chaupars	The project calls for the demolition of the Chhoti and BadiChaupars and its restoration to its original condition as a requirement from Jaipur Development Authority. The demolition and restoration will be under the supervision and control of these agencies.	Yes, ➢ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B. ➢ JMRC has also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. ➢ The work will be done as per		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
			approved method statement. Also the work will be done under the supervision of said agencies.		
C1.4.1	To address Chance heritage finds during the cut and fill operations	Please refer to FIDIC Sec. 4.24 Fossils. Recording (including chain of custody) will be made by the contractor to be validate by the CSC, and expert verification will be made by the Jaipur Archeology Department. Temporary work stoppage in the immediate area of the chance find for up to 72 hours to allow for the on-site representative of Archeology Department to visit the site to make an assessment and provide instructions. Work in the areas adjacent to the chance find will continue as provided in the detailed design.	Yes During the excavation of Chhoti Chaupar, Gomukhs were extracted & were handed over to Archeological & Museum department, Government of Rajasthan.		
C2	To avoid the following issues from spoil disposal activities: generation of sediment laden runoff from the work site during monsoon; Contamination of disposal sites from construction debris;	A spoil management plan will be implemented that details the location of spoil disposal sites, transporting soil, and disposing of soil. The Contractor will perform the following: 1) disposed spoils on permitted sites as instructed by the JMRC 2) ensure the adequacy of the disposal site to handle the volume of spoils the will be generated 3) Prepare, submit and seek approval from the CSC a spoil dump plan that provides the: i) dump size, layout, and form, ii) means of controlling water and wind erosion, iii) measures to prevent spoil dump contamination, vehicular, and public access. 4) Explore the possibility of using spoil materials to rehabilitate borrow pits to 5) All hauling vehicles should be maintained at an acceptable working order and serviced	Yes, Are being disposed in the approved area only. All other conditions are also being fulfilled.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	Community hazard of uncollected and improperly disposed materials.	regularly 6) Haul vehicles should be routed away from noise sensitive areas 7) Speed limit in built up areas is 40 km/h 8) All haul vehicles should be covered or soil sprayed with water before leaving the site specially during windy condition 9) Spoil dumps shall have slopes no steeper that 1V:2.5H 10) Final shaping, top soiling, and immediate revegetation 11) No vehicles are to be allowed to enter in revegetated spoils dump			
C3	To avoid depletion of groundwater and competition with existing groundwater users due groundwater Extraction for the construction works	The Contactor shall secure permission for groundwater extraction from CGWA pertinent groundwater authorities before establishing bore wells. Water conservation and recycling will be observed in all aspects of constructions to include water main breaks, watering roads for dust control, spraying concrete, equipment cleaning and site clean-up.	Partial,	Application has already been submitted to concerned authority	
C4	To avoid nuisance from temporary damage or shifting in utilities particularly buried water pipes and electrical lines and disruption of essential services	The Contractor will ensure that the public will be minimally affected when constructing in close proximity to essential services through: 1) coordinate and secure necessary permits for utility shifting with the Jaipur Development Authority and other service utility agencies to locate al services prior to construction in any particular area 2) inform residents of planned interruptions through local media, fliers, and public address system 3) all planned interruptions schedules will be submitted to the safeguards cell JMRC no	Yes, Care is taken to avoid inconvenience to uses by shifting as per instruction of concerned authorities.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		later than 10 working days before the interruption 4) all affected landowners, tenants, institutions, and businesses to be notified in writing prior to commencement and kept updated in changes of schedule 5) in the event of unforeseen disruptions, the contractor will take all reasonable actions to have the service promptly restored 6) relevant utility agencies will be informed of the construction proximity to essential service line and be kept on standby in the event of unforeseen disruption All unplanned interruption will be immediately reported to the safeguards cell within 24 hour through an incident report.			
C5	To address occupational health and safety issues of the construction workers and local community	The contractor will comply with the occupational health and safety requirements as provided in SHE.	Yes		
C6	Implementation of Cleanup Operations and Restoration and Rehabilitation	Contractor shall prepare site restoration plans, which shall be subject for review and approval by the CSC, JMRC Safeguard Cell, Jaipur Development Authority and the Archeology Department to ensure consistency with zoning and town plans. The clean-up and restoration operations are to be implemented by the Contractor prior to demobilization. All spaces excavated and not occupied by the foundation or other permanent works shall be refilled with earth up to surface of surrounding ground.	Not yet due.		

4. ACTIVITIES UNDERTAKEN FOR PROTECTION AND MONITORING OF HERITAGE STRUCTURES

A. Findings in Badi Chaupar and Chhoti Chaupar

25. Under Jaipur Metro Rail Project Phase 1B, an underground Metro line is under construction from Chandpole to Badi Chaupar. While Metro tunnel will be constructed using Tunnel Boring Machines, the two underground Metro Stations at Chhoti Chaupar and Badi Chaupar will need to be constructed by cut and cover method, requiring excavation from top to bottom.

26. To enable construction of underground stations at Chhoti Chaupar and Badi Chaupar, the dismantling of existing Chaupars and excavation underneath was necessary. In this regard, historical background of Chaupars was studied and after detailed discussion it was decided that digging at Chaupars will be done with utmost care and heritage elements, if any, will be handed over to Albert Museum for safe keeping.

27. Careful dismantling and excavation of Chhoti Chaupar and Badi Chaupar was done. During the excavation, an old water tank was found under each Chaupar which were shown to the Joint Committee on Metro and Monumental Heritage and also to the renowned heritage consultant Ms. Abha Narain Lambah.

28. After seeing the water tank found at Chhoti Chaupar, which was unearthed first, Ms. Abha Narain Lambah submitted a report with following recommendations :-

1. To undertake detailed measured drawings survey, photographs and video documentations to create thorough and accurate database for future.
2. Excavation under supervision of professional experienced archaeologist, preferably retired archaeologist from ASI.
3. Proper documentation numbering of historical elements.
4. As the insitu restoration is not possible therefore, reconstruction should be undertaken under the supervision of archaeologist
5. Artifacts like Gomukhs may be kept in custody of State Archaeology department.

29. State Government also asserted over the recommendations made by Heritage Consultant.

30. Thereupon, dismantling of old water tank was done under the supervision of Shri R D Singh, Dr. S K Sharma and Shri P K Jain, archaeology/restoration experts specially engaged by JMRC for the purpose. As agreed, 8 Gomukhs of Chhoti Chaupar were handed over to Superintendent, Albert Hall Museum, Department of Archaeology and Museums, GoR.

31. During the dismantling, the above-named archaeology/restoration experts of JMRC observed that two ‘masonary nullahs’ were crossing under the tank. As advised by them, further excavation was carried out and some more steps and a second bottom of the tank were found as a lower layer. Detailed documentation of the ‘masonary nullahs’, steps and second bottom of the tank has been done.

32. Site was inspected by the key expert of heritage consultants, Ms. Abha Narain Lambah and reported that the site and historic records both reveal two layers of historic layering in the Chaupars, an older 18th century layer with a deeper tank and more steps, and a later 19th century layer with a central fountain and marble *gowmukhas* lining the edge of the tank.

33. The consultant observed that the present design of the station at Chhoti Chaupar has been kept well below the ground to accommodate the reinstating of the water tank, even if it is reconstructed to the lower, 18th century layer. There is thus in the station design, adequate flexibility to reinstate the tanks as per historic levels.

34. On excavation work being undertaken at Chhoti Chaupar, it was revealed that there are 4 historic tunnels in which were laid as water inlet and outlet channels to the kund fucntioning at that time. At some point these channels were closed when infrastucture services were being laid in the city criss crossing under the roads. One of the tunnels in the north direction has been unearthed all the way upto 80 metres and one can walk through the tunnel. The other tunnels are in the process of being excavated.

35. The tunnels would probably connect to Jal Mahal or the Talkatora reservoirt and is in a well preserved state with arched masonry and lime plastered lined walls. It has also been instructed in the site meetings to keep the rubble masonryfor future use and stack the usable material properly.

36. It has been decided to explore the possibility of re-aligning the exit staircase in a manner without disturbing the function of the station designed to pass through the tunnel and expose the commuters and public to an important layer of history which has been lying buried for so many years. The Heritage consultant's detailed report is attached herewith as Appendix-7.

37. Consultant also opined that retaining the tunnel within the station box is not feasible; it would be worthwhile to explore the possibility of recreating architectural drawings and graphic models of these tunnels along the exhibit display within the concourse.



B. D-Wall Construction

38. The D-walls (Diaphragm Walls) act as a structural member for the station box. Prior to the commencement of the D-walls, the utilities are diverted. The construction of D-walls is executed through grabbing machines after completion of the guide wall which act as the guide for the excavation. During the operations the grabbing machines removes the soil, the soil is stabilized using Polymud to avoid the collapse of soil. After reaching the desired level, the grabbing operations are stopped and the reinforcement cage is lowered into the excavated area and concrete is poured through tremie.

39. To monitor the impact of the operations we have provided tilt meters, crack meter and settlement meters to measure the impact and report any abnormality in the reading. Aprat from the above, to protect the existing verandahs, we have done the propping and jacking and also in the shops identified as critical.

C. Chandpole Gate Tunnel Underpass Scheme

40. Chandpole Gate is coming right in the center of alignment, attracting maximum settlement, but original drawings relating to its foundation were not available. Therefore, the foundation of Chandpole Gate has been physically examined by a team of engineers, by making several trial pits around the gate.

41. For the determination of the structure's foundation, special survey was carried out by CEC and nine trial pits were executed in certain locations near the gate.

42. The foundation of Chandpole Gate has been found to be in a sound condition which can sustain the impact of tunnel-making underneath.

43. To assess the ground settlement due to tunneling by TBM & its effect on structural safety of Chandpole Gate, a detailed 3D analysis has been carried out by M/s Omikron Kappa – Indus Consultrans JV and a detailed report submitted.

44. As per this report, considering that Chandpole gate is in category "Slight" according to the pre-condition survey, "negligible" damage is expected for settlements <6.7mm and angular distortion <1/750. As already derived from the 3D analysis, the maximum calculated settlements and angular distortion are 5mm and 1/1200 respectively, values which are related with "negligible" damage even in the case of "High" vulnerable structures.

45. Considering all the above, a set of values were established for the displacement and deflection of the Chandpole Gate, as presented in the following table.

Measurement	Trigger Level	Alarm Level	Limit values
Settlements	4mm	5mm	6mm
Angular Distortion	1/1400	1/1200	1/1000

46. On the advice of Archaeology & Museums Department, the work of further examination/proof check of underpassing scheme of Chandpole Gate was assigned to

Indian Institute of Technilogy (IIT) Delhi. After conducting the proof check of underpassing scheme of Chandpole Gate, IIT Delhi has reported that analysis and other details given in the report are in order. The scheme of Chandpole Gate underpassing by Tunnel Boring Machines is considered safe as it will have no impact on the stability of existing Chandpole Gate.

D. Results of the Ground Penetrating Radar

E.1 Introduction

47. Ground penetrating radar survey is a non-destructive geophysical method that produces a continuous cross-sectional profile or record of subsurface features, without drilling, probing, or digging. Ground penetrating radar (GPR) profiles are used for evaluating the location and depth of buried objects and to investigate the presence and continuity of natural subsurface conditions and features. It is a high-resolution geophysical method, which is based on the propagation of high frequency electromagnetic waves. The GPR method images structures in the ground that are related to changes in dielectric properties. In sediments, the water content primarily causes the changes in dielectric properties.

48. The equipment used for the scanning includes SIR-3000 (GPR) of Geophysical Survey Systems Inc. (GSSI), USA, 100 MHz paired antenna with other peripherals as shown in the Figure 2.

Figure 2: Equipments used for GPR survey

E.2 Methodology

49. GPR model SIR-3000 of GSSI, USA was used for the survey along with 100 MHz paired antenna (with fiber optic) for scanning down to depth of 22m or so as it was indicated that the average depth of the tunnel bottom would be around 16m or so. The use of 100 MHz pair antenna provides good resolution down to a depth of 22-25m but it does not provide good resolution in the upper layers where there could be a number of utilities. The resolution within first 5m or so becomes poor using 100 MHz pair antenna alone and therefore, nothing can be inferred down to a depth of 5m. It becomes imperative to use 400 MHz to detect utilities which are normally available within first 3-4m. The same was also demonstrated during the survey. A part of the entire stretch was also taken up for utility survey. The results of the same have also been provided towards the

end of the report. As the objective of the work was to scan the subsurface for different litho units down to a depth between 15-22m, 100 MHZ paired antenna was used.

50. The methodology adopted for the study includes:

- Geophysical survey using Ground Penetration Radar (GPR) with 100 MHz paired antennae for subsurface scanning
- Processing and assimilation of GPR surveys using RADAN software of the scans collected using 100 MHz pair antennae

E.3 Study Area

51. In order to prioritize the scanning work, the entire stretch between Chandpole & Badi Chaupar has been sub-divided into following sectors:

Sector-1: Along the tunnel alignment for the stretch between Chandpole Metro station to Chhoti Chaupar.
Sector-2: Chhoti Chaupar Metro station.
Sector-3: Along the tunnel alignment for the stretch between Chhoti Chaupar to Badi Chaupar.

E.4 Conclusion

52. Survey using Ground Penetration Radar with 100 MHz paired antenna has provided scanning down to a depth of 22m.

53. The interpretation of all these scans shows that two distinct layers exits upto the scanned depth for the entire stretch between Chandpole and Badi Chaupar. This is depicted in the scans provided at Figure 10 to 27 of the report. The 3-dimensional model (surface and block) provides variation in terms of depth for the two layers. The drill hole core too in the area indicates presence of two layers of silty sand/sandy silt as defined by grain size analysis of the soil as per geotechnical report. A small portion in the entire stretch indicates more reflective zone which could be on account of anomalous material such as presence of metallic substance, high moisture content or an object.

54. A part of the entire stretch was also taken up for utility survey. This indicates the importance of GPR survey for locating utilities before excavating the area. This helps in planning the excavation work without damaging the existing utilities.

55. The summary report of the GPR done for the project is available online at JMRC webportal.

5. SUMMARY OF ENVIRONMENTAL MONITORING

A. Summary of Inspection Activities

56. A total of 07SHE Walk inspections were conducted by the CSC-ES during the reporting period. The nature of the SHE inspections are weekly and Geologist inspections of the site for a cause which included responding to complaints including the settlement of shop foundations due to utility restoration. Further details on the inspections carried out and key findings are provided in Table 6.

Table 6: Field Inspections carried out during reporting period

Date of Inspection	Location	Participants	Key Findings
16.01.2015	Casting yard	04	Safety & Environment
23.01.2015	Chandpole	12	Safety & Environment
30.01.2015	Casting yard	04	Safety & Environment
06.02.2015	Casting yard	09	Safety & Environment
27.02.2014	Chhoti Chaupar	08	Safety & Environment
13.03.2015	Casting yard	04	Safety & Environment
27.03.2015	Casting yard	05	Safety & Environment

Note: Sample copy of SHE Walk attached with annexure.

B. Monitoring of Cracks, Settlements of Structures

57. The entire area where the stations as well as the tunnels underpasses fall under heritage structures. In order to observe the conditions and behaviors of the structures during the operations, monitoring is being done through instrumentations.

58. **Location and Quantity of Instrument which is installed:** Chandpole area we have installed Inclinometer in the D-Wall of Shaft area.In Chhoti Chaupar station area we have installed some building instruments and their quantity is mentioned below.

SN	Instrument Name	Location	Total Quantity
1	Inclinometer	Chandpole Shaft Area	3
2	Tilt Meter	Chhoti Chaupar	35
3	Crack Meter	Chhoti Chaupar	58
4	Optical Target	Chhoti Chaupar	70
4	Building Settlement Point	Chhoti Chaupar	48
5	Pavement Settlement Point	Chhoti Chaupar	12

59. **Monitoring Frequency at Station, C&C and Launching Shaft**

SN	INSTRUMENT	FREQUENCY
1	Inclinometer	Once daily during excavation then once weekly

2	Soil Settlement Marker	Once daily during excavation then once weekly
3	Pavement Settlement Marker	Once daily during excavation then once weekly
4	Crack Meter	Once daily during excavation then once weekly
5	Tilt Meter	Once daily during excavation then once weekly

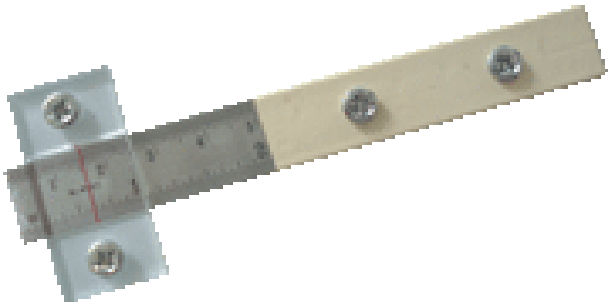
Note: Monitoring frequency may be changed depending upon whether any deformation is observed.

60. **InclinometerModel AIM-741 or equivalent:** The purpose of inclinometer monitoring is to observe and monitor any lateral movements within structures or strata and analysis whether remedial works are required to subdue any such movements.

61. **Tilt meter-Model AIM-5410 or equivalent:**Portable tilt meters are mainly used to monitor buildings, structures, utilities, etc. as well as the inclination and rotation of retaining walls, dams, piers, piles, etc. It may also be used to evaluate the performance of bridges, struts and the stability of structures in land slide areas.

62. The EAN-70 portable tilt meter system consists of three components: tilt plate, tilt meter, and readout unit.

63. **Crack meter- Model AIM-100SC or equivalent:**The crack meter is suitable for measuring structured cracks ranging from 0.5 to 100 mm with a hairline cursory markin two directions i.e. vertical and horizontal.. The advantages of this instrument are: reliable and accurate, simple to install, simple to operation and low cost. This is very simple and accurate instrument to monitor the hair crack. The mechanical crack meter is made of polycarbonate transparent sheet with graduated marks. The both sheets will be assembled on crack with the help of fasteners.



64. **Bi- Reflex Target:**

65. The bi-reflex target is one of the surveying equipment to measure deformations and settlements of the structures surrounding the construction site. It is rugged prcise and low cost with an accurancy of +/- 0.1mm.

Vibration Monitoring:

66. **Need for Vibration Monitoring:** The construction of underground rail and road infrastructures in metropolitan and cosmopolitan cities are mostly through developed area under challenging soil conditions. The alignment of structure is passing through densely inhabited areas with many heritage structures falling in the zone of influence of construction activities.

67. Construction vibration sources generate elastic waves in soil and have a wide range of energy, displacement, velocity and acceleration transmitted on the ground. These may be harmful to adjacent and remote structures, sensitive instruments and people. Their effects range from serious disturbance of working conditions for sensitive devices and people, to visible structural damage.

68. It is important to assess the dynamic effect before the beginning of construction activities and at the time of construction. Therefore monitoring of construction vibrations have to be started prior to the beginning of construction works at a site and be continued during construction to provide the safety and serviceability of sound and vulnerable structures.

69. It is required to carry out base line monitoring to determine the Pear Particle Velocity and their respective frequency band that are persisting even before carrying out any construction activities. The recorded values shall form the base line and shall be compared to the corresponding values recorded during construction activities and the influence of construction may be determined accordingly.

Methodology:

70. **About the Equipment:**The equipment used for monitoring ground vibrations should be able to evaluate the parameters of vibrations in all three planes i.e. Longitudinal, Transverse and Vertical. Kelunji Echo, Seismic Recorder is used for the present monitoring requirement. This equipment can be universally used for many seismic monitoring applications, including earthquake monitoring (permanent or portable installations), structural monitoring, as well as blast and other vibration monitoring.

71. The equipment consists of Geophones and Kelunji Echo Seismic Recorder which is able to monitor the effect of vibration on all three planes. It is equipped with three geophones, capable of picking up signals in all the three planes described above. It is able to perform full field analysis of the event to evaluate the peak pulse velocity, peak frequency, peak acceleration and peak displacement.

72. The Echo is simple to use, easy to install and maintain, and light and robust enough to enable use of single equipment for monitoring different locations of the same structure or different structures. Ethernet based communications such as VSAT, ADSL, and some radios allows easy configuration of networks for data telemetry. GSM, GPRS, CDMA & PSTN are also supported.

73. The core Echo, by using it a built-in GPS timing system, can act as a Network Time Server for synchronizing other NTPv4 enabled timing-critical equipment. From this core base, the Echo can be expanded with an internal tri-axial accelerometer, external 3-channel sensor interface, internal PSTN modem, LCD panel, Compact Flash memory, or any combination of these optional modules. Every Echo comes supplied with eqWave software for waveform analysis and manipulation. EqWave runs on most computing platforms that run a Java Virtual Machine, including Windows, Unix, Linux and MacOS X. Echo seismic data is recorded in PC-SUDS file format, stored in a standard file system. A logical hierarchy is implemented for simple copying to PC using a CF-USB reader or via FTP. In telemeter applications, ES &S produces a range of software to compliment the Echo. Collectively known as eqSuite, the programs automatically process Echo data for on-screen display and archiving, raises event alerts, and prepares data for interactive refinement.

Table 7: Vibration Monitoring

Station/ Tunnel	Location (Shop/House No.)	Land Mark	Structure Id (BCS)	Category
Chhoti Chaupar	Shop No. 189	Infront Corner Column	CP-CC-UP-0071	Very Severe

Station/ Tunnel	Location (Shop/House No.)	Land Mark	Structure Id (BCS)	Category
CP to CC Tunnel	Up Line Wall Design No. 31 Left Wall while entering the wall 30 cm. In & 40 cm. from Corner (near CP-0016)	Chandpole Wall UP	CP-0016	Very Severe
CP to CC Tunnel	Up Line Small Gate near Noor Bhai Pahalwan Shop aprox 3.5 mtr before & 30 cm. in From Small Gate.	Chandpole Gate	CP-CC-DN-0154	Severe
Chhoti Chaupar	Up Line Verandah of Shop No.379 Left Col. From Shop Just before 25 CM. From Left Col. Direction L-R for distance. (RHS Col. Of Shop No. 380).	Infront Corner Column	CC-BC-DN-0001	Very Severe

Photograph of the location where Vibration Monitoring Reading has been taken.

C. Noise Monitoring

74. Noise level survey was conducted by 3rd party J.M.Enviro Pvt. at the project site at all site stations Day & Night shifts of Bhankrota, Chandpole launching shaft Area, Pink City Hospital, Chhoti Chaupar, Maharaja school, Chaudhry Hospital, Krishna temple, Hawa Mahal, and Jantar Mantar.

75. It is found from the results that no noise level exceedance was recorded at all site stations both day time and night time of Bhankrota, Chandpole launching shaft area, Pink City Hospital, Chhoti Chaupar, Maharaja school, Chaudhry Hospital, Krishna temple,

Jantar Mantar, and Hawa Mahal. In the month of May,2014 the noise level at Maharaja School and Hawa Mahal were found marginally higher side. Results are summarised in Table 8 and 9 and also show graphically in figures below. Complete monitoring reports are provided in Appnedix 7.

Table 8: Noise Monitoring Results (Day time)

Date	Leq day dB(A)							
	Location							
	Casting Yard	Chandpole	Maharaja School	Chaudhri hospital	Pinkcity Hospital	Krishna Hospital	Jantar Mantar	Hawa Mahal
15.01.2015 to 18.01.2015	53.26	59.74	57.34	57.28	60.69	59.61	N/A	N/A
24.02.2015 to 28.02.2015	54.53	59.19	59.66	56.00	55.84	58.43	57.1	58.67
24.03.2015 to 28.03.2015	60.7	62.1	65.42	57.94	54.26	57.64	55.95	58.17

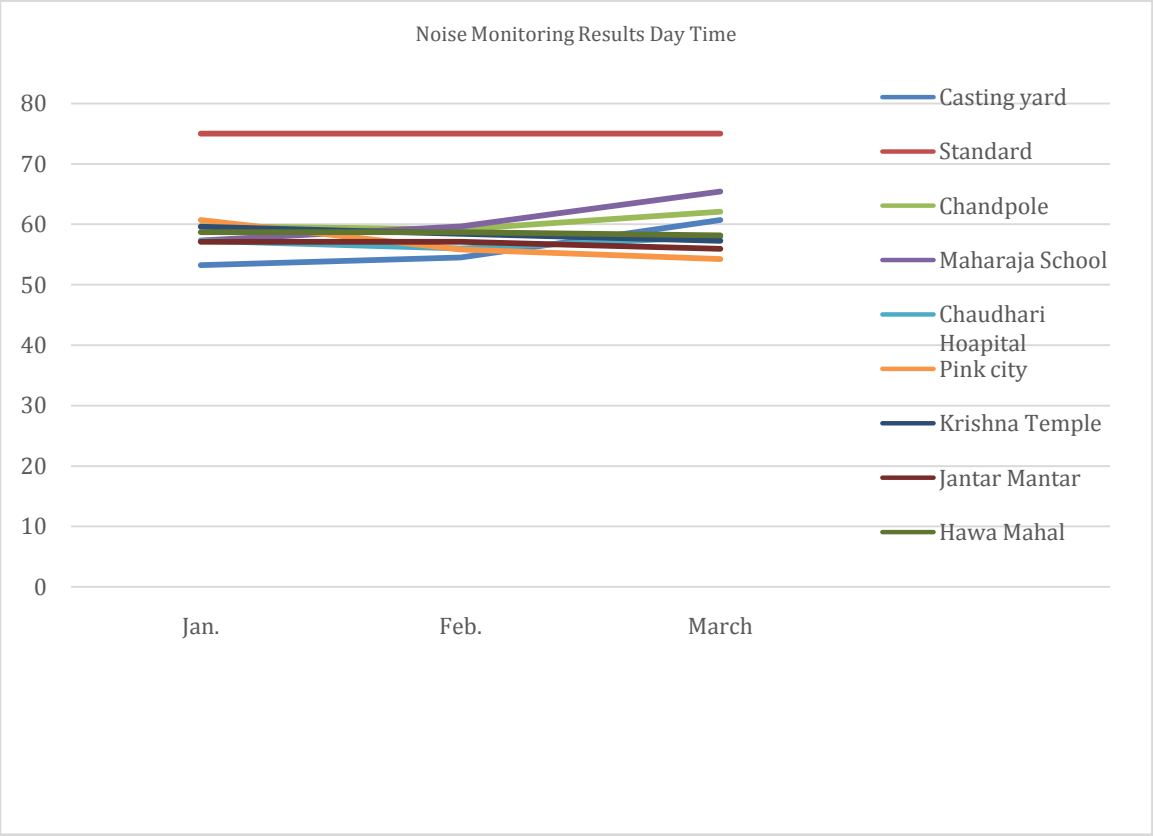
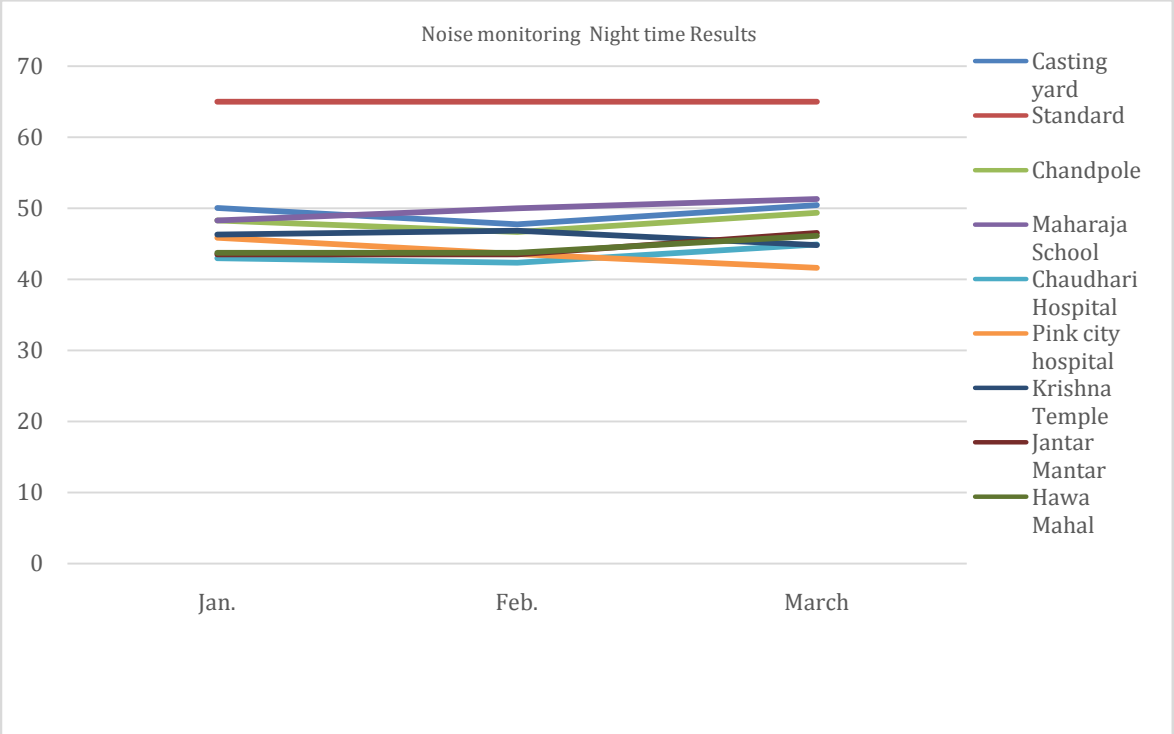


Table 9: Noise Monitoring Results (Night time)

Date	Leq Night dB(A)							
	Location							
	Casting Yard	Chand pole	Maharaja School	Chaudhri hospital	Pinkcity Hospital	Krishna Temple	Jantar Mantar	Hawa Mahal
15.01.2015 to 18.01.2015	50.06	48.32	48.29	42.97	45.88	46.33	N/A	N/A
24.02.2015 to 28.02.2015	47.76	46.70	50.02	42.36	43.58	46.85	43.51	43.77
24.03.2015 to 28.03.2015	50.45	49.41	51.34	44.91	41.63	44.85	46.53	46.16



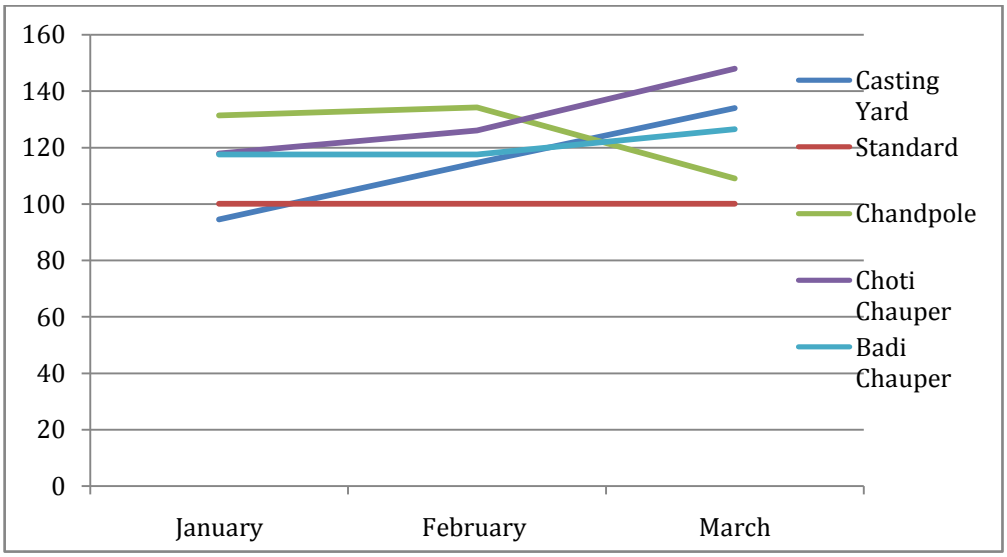
D. Air Quality

76. The ambient status of five major air pollutants viz. Total Suspended Particulate Matter (TSPM); PM_{10}, Sulphur Dioxide (SO2), Oxides of Nitrogen (NOx) and Carbon Monoxide (CO) representing the quality of pollution level have been assessed by monitoring air quality at three locations viz. Casting Yard,Chandpole lunching shaft, Chhoti Chaupar& Badi Chaupar. The air quality monitoring results indicate that PM_{10} concentration exceeds the limits specified by CPCB for all excavated site area, except in the month of December at casting yard when it is below the prescribed limit. However the concentration of PM_{10} was within baseline concentration valve of 180 $\mu g/m^3$ (2012 monitoring). The reason for higher concentration could be due to soil excavation, movement of construction machineries, and internal roads which was dusty. Rest of the three parameters was noted within the limits.

77. It is also observed from the monitoring reports that in the month of December the PM-10 was found continuously decreased due to action of sprinkling of water to control dusty site.To control the air pollution, contractor have breached the water sprinkling and cleaning of dust once work finished. The testing results are summarised in Table 10. Complete monitoring reports are provided in Appendix 7.

Table-10: Air Quality Monitoring Results

Date	PM $_{10}$ (Unit µg/m3)			
	Location			
	Casting Yard	Chandpole	Chhoti Chaupar	Badi Chaupar
16/01/2015 to 18/01/2015	94.50	131.32	117.89	N/A
24.02/2015 to 28/02/2015	114.00	134.20	126.03	117.54
24.03/2015 to 28/03/2015	134.00	109.00	147.93	126.43



78. **Air Pollution Control:** The mitigation measures, which have adopted to reduce the air pollution are: all transportation of construction materials should be covered manner. To minimize dust emission due to handling of aggregate and cement at site, there are two time sprinkling of water on the internal roads. Vehicle speed restriction of 5-10 km/hrs have been followed at site, tyre washing facility have provided for cleaning of vehicles at Chandpole.

E. Water Quality

79. Four water samples were collected from nearby bore wells during July 2014 and October 2014 to check the quality of the water. Quarterly water analysis results are compared with IS 10500:2012 and found within permissible limited. Results are summarised in Table 11 and monitoring reports are provided in Appnedix 4.

Table 11: Water Quality Monitoring Results

Sr. No	Parameters	Units	Results			
Sample Identification			Casting Yard		Chandpole	
1.	pH(at 25 ºC)		6.76	7.94	7.36	7.67
2.	Turbidity	NTU	2.0	2.0	2.0	1.0
3.	Conductivity	µs/cm	1012.00	897.00	1694.00	1554.00
4.	Total Dissolved Solids	mg/L	718.00	580.00	1096	1013.00
5.	Total Suspended Solids	mg/L	1.60	1.20	1.70	1.20
6.	Oil and GHrease	mg/L	nill	nill	N ill	nill
7.	Dissolve Oxygen	mg/L	5.60	5.20	4.90	5.20

6. SOCIAL AND RESETTLEMENT IMPACTS

A. Impacts on Structures

A.1 Shifting of Temples

80. When the work of Phase 1B started it was found that6 temples fallingin the station box area of ChhotiChaupar and BadiChaupar where digging is necessary for construction of stations, required immediate relocation.Three of these temples are at ChhotiChaupar& another three at BadiChaupar, as under:

1. Hanuman Mandir (Chhoti Chaupar)
2. Shiv Mandir (Chhoti Chaupar)
3. Rojgareshwar Mandir (Chhoti Chaupar)
4. Shiv Mandir (Badi Chaupar)
5. Ganesh Mandir (Badi Chaupar)
6. Hanuman Mandir (Badi Chaupar)

The number of temples falling in the area of entry/exit structures & traffic diversion and their relocation plan will be finalised after the design of entry/exit structures is finalized.

81. As per the decision taken by High Power Committee chaired by Chief Secretary GoR, an office order was issuedon 16.10.2014, that GAD land at Tripolia Bazar i.e. Tanwar Ji ka Nauhra (around 200 mt from Chhoti Chaupar) which has two courtyards admeasuring 542 sqmt and 645 sqmt respectively be handed over to Jaipur Metro Rail Corporation for relocation of 6 temples and development of Two Wheeler Parking, respectively.

82. The possession of the land has already been taken over by JMRC from Public Works Department on 17.11.2014.

83. Out of the 6 temples in station box area, 4 have already applied for registration to Devasthan Department under Government of Rajasthan. Rest 2 temples namely Rozgareshwar Temple and Shiv Temple at Chhoti Chaupar have not registered themselves and hence the District Collector under relevant Act will be taking necessary action to relocate them at the earliest. As of 31 March 2015 none of these temples have been relocated.

Figure a: Location of Tanwar Ji Ka Nauhra (Land identified for temple relocation)

84. As the planning and designing of station at Chhoti Chaupar and Badi Chaupar progressed, 7 additional temples were identified which etiher infringed the entry exit strcuture or came in mid of the traffic diversion scheme. The detail of the additional temples is as below:

1. Barah ling Mahadev (Chhoti Chaupar)
2. Rameshwar Mahadev (Chhoti Chaupar)
3. Bajrangbali Mandir (Chhoti Chaupar)
4. Peepleshwar Mahadev (Badi Chaupar)
5. Mahadev Ji/Mataji/Hanuman Mandir (Badi Chaupar)
6. Mahadev Mandir (Badi Chaupar)
7. Mahadev/Hanuman Mandir (Badi Chaupar)

85. Proper documentation and measurement have been taken and recorded for all the temples.

86. Apart from Tanwar Ji Ka Nauhra land, another land at old Atish Market has been identified, in which planning for relocation is under process. All matters related to compensation and relocation of temples at Chhoti & Badi Chaupar are being dealt with at the level of Collector, Jaipur.

B. Land Acquisition and Resettlement

87. For the purpose of easing the traffic diversion near Sanjay Circle, Chandpole, JMRC has processed for acquisition of 3 shops located at Sansar Chand Road. Details are given below.

Sl.No.	Shop Detail	Name of Shop Owner	Name of Shopkeeper	Area (sq.m)
1	Shekhawat Rajput Dhaba (Part of Shop No. 12)	Mohd. Salim, S/o Yaseen Khan	Mukut Bihari, Satynarayan, S/o Banshilal Mehra	7.49
2	Bharat Cold Drink (Part of Shop No. 12)			3.90
3	Shiv Pan Bhandar (Part of Shop No. 12)		Bihari Lal S/o Nandlal Saini	1.30
4	DCB ATM	Smt. Mamta Kanwar W/o Sohan Singh Shekhawat	DCB Bank	5.46

88. Considering the time required for land acquisition process per new Land Acquisition Act of GOI, it was agreed and decided by JMRC (in consultation and discussion with shop owners)to resettle the shop owners on the other side of the road near Chandpole station. Besides resettling shops, JMRC also agreed to provide assistance during relocation process including any loss of income during the relocation process. Shop owners also agreed that new shops will be rented to same shopkeepers who are currently running these shops.

89. The shopowners have given their consent to the proposal.JMRC is in the process of getting written consents from shopowners and shifting will be done in consutations with shop owners before start of work near these shops.

7. PUBLIC CONSULTATIONS AND ADDRESSING OF GRIEVANCES

A. Public Consultations carried out

90. Consultations are being held regularly with the local people in the project area including relevant government agencies, the business associations in the project are such as the Chandpole Bazaar Vyapar Mandal and Tripolia Bazaar Vyapar Mandal.

91. JMRC has taken all possible measures to ensure that following concerns are regularly addressed:

a) Heritage character of Jaipur
b) Traffic diversion during construction
c) Inclusion of all key stakeholders

92. During the period of this report (January 2015-March 2015) following consultations were held:

Table 12: Consultations held during the reporting period

Date	Venue	Participants	Detail of discussion held	Action Taken
14.01.2015	At Tripoliya bazar	Representatives of Chandpole Vyapar Mandal lead by Sh. Subhash Goel, President Vypar Mandal	Regarding general work progress update, lighting on verandah.	The issue was coordinated with concerned officials and agency was directed for more lighting in the verandah
17.01.2015	Near Choti Chaupar construction site	With representatives from Vypar Mandal lead by Sh. Rastogi, Secretary	Regarding strengthening of shops by means of propping and other measures	Construction agency was instructed to review the status of the shops indicated by vyapar mandal representative
10.02.2015	Near Tripolia Bazar construction site	Representative from Tripolia and Chandpole Vyapar mandal	Cleaning of verandah from debris of construction, General work progress	All suggestions made by representatives were discussed upon and necessary decisions were taken and acted upon.
25.02.2015	At Choti Chaupar	Representative from Tripolia Bazar	Regarding cut on Water supply line during construction, cleaning of verandah	Issue was discussed, necessary instruction were given to the agency.
21.03.2015	At Tripolia Bazar construction site	Representative from Tripolia and Chandpole Vyapar mandal	Regarding general progress	Representatives were informed about the general progress and deadlines set for completion of work.

Note: The matters related to compensation and relocation of temples at Chhoti & Badi Chaupar are being dealt at the level of Collector, Jaipur and therefore record of such meetings are not available with JMRC.

B. Complaints and Requests Received

93. During the period of reporting (January to March 2015) no grievances and requests application was received from the local people in the project area.

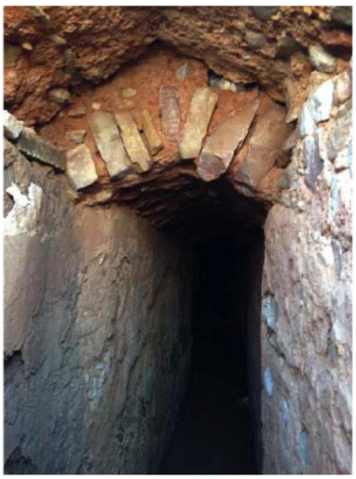
Table 13: Record of complaints/requests received during the reporting period

S. No.	Date of Receiving	Name and Address of Person	Subject	Through	Date of Reply	Status
1.	20.03.2014	Sh. Lakshi Kant, 101, Nawal Kishore Temple, Tripolia Bazar, Jaipur	Regarding apprehension over prospective damage which may occur due to Metro underground construction	Prime Minister's Office	20.04.2015	Matter disposed of at JMRC end

8. UNANTICIPATED SAFEGUARDS ISSUES

94. **Discovery of new layer of kund and tunnels at Chhoti Chaupar.** After a detailed documentation of tankat Chhoti Chaupar was done. Gaumukhs from Chhoti Chaupar tank were carefully taken out and handed over to Archaeology & Museum Department as per the decision that was taken in the meeting chaired by Hon'ble CM. Then the dismantling of Chhoti Chaupar commenced. The paving stones were removed and kept in old police head quarters for safe storage of these materials till the same are used at the time of recreation of this tank. Further dismantling of this tank was done under the supervision of archeology consultants of JMRC. When the flooring was removed from Chhoti Chaupar tank, a deeper layer of Kund (water tank) was found below the water tank layer with stone paving. This deeper tank is having 7 steps all around and 4 water channels (tunnels) on its four sides.

New layer of kund at Chhoti Chaupar



Tunnel at Chhoti Chaupar

95. In addition to the earlier levels of a stepped water tank, further excavation work revealed:

- a deeper layer of the square shaped kund measuring 13.1mt x 13.1 mt
- 7 additional steps that run all around the tank
- Four tunnels openings in the cardinal directions, the East (Tripolia bazar) and West (Chandpole) tunnels are arcuated openings, the South side (Kishanpole) tunnel has a flat lintel and the North side opening has a slab at top which is rounded at base.
- Lime concrete finishing on steps.

96. **Additional Temples infringing station area at Chhoti Chaupar and Badi Chaupar**. As the planning and work of the station at Chhoti Chaupar and Badi Chaupar progressed, in addition to 6 identified temples at both the chaupars, 7 more temples were identified which either infringed station box area or the traffic diversion plan prepared by JMRC in consultation with local agencies. Collector, Jaipur is looking into the matter and is in consultation with affected temple owners for their relocation and compensation

97. **Collapse of Verandahs**.

Due to exceptionally loose soil underneath, two verandah pillars got settled and verandah roof got tilted in front of shop no. 370-371 of Tripolia Bazar on 07.02.2015, when a trench was being dug adjacent to the verandahs for shifting a PHED pipeline. No one has got hurt and there is no damage to any shops. All protective measures were taken to contain any further damage to the verandahs. The two affected verandahs had to be dismantled and will now be reconstructed. To avoid recurrence of such incidence in future, following action has been taken:

(a) Plan of shifting the PHED pipelines has been reviewed and revised. Accordingly, instead of putting these pipelines underground at the edge of Verandah, these pipelines will now be put at the road level during construction period and later on shifted to utility duct which will be constructed as part of station building.

(b) Additional support in the form of steel props will be provided in front of all the 100 shops in front of which construction work is to be done at Chhoti Chaupar.

(c) The construction company and the General Consultants have been directed to ensure presence of a senior manager at the work site at all times.

9. CONCLUSION

A. Summarize the overall Progress of Implementation of safeguard Measures[4]

98. The implementation of environmental management measures in this project face some difficulties but it can be concluded that the overall progress of implementing environmental and social safeguard measures show a highly satisfactory level. Table 14shows a comparative scenario of implementing environmental management measures for each package.

Table 14: Overall Progress

Site Safety	Workers Safety	Protection of Environment	Protection of Heritage structures	Statutory Approvals	Filling of Checklists	Overall Rank
2	1	1	2	2	1	2

B. Problems Identified and Actions Recommended

99. During the previous reporting period (July 2014-December 2014) some of the issues have been identified such as impacts on heritage structures and the heritage look of the city, consultation and communication with affected communities and shopkeepers, full time monitoring of environment safeguardsby the PMC, proper documentations and record keeping, information disclosure. Then DMRC and Contractor are advised to perform their works to comply with environmental regulations and to the mitigation measures. And then proper supervision has been given wherever needed.

100. As a result, during the current monitoring period, it has been observed that adequate measures have been taken to minimize the impacts on heritage structures, and consultation and coordination with communities and shopkeepers. Table 15 present the actions that areproposed in the previous monitoring report and actionstaken to address these problems:

Table 15: Status of Actions Suggested in previous Monitoring Report

Action Recommended	Measures Taken	Remarks
Seek advice from the heritage consultants and also consult the Department of Archaeology (Government of Rajasthan) to preserve heritage structures including ancient water tanks.	JMRC has engaged three heritage consultants and seeking their advice to preserve heritage structures. The work has been carried out in consultation with heritage consultants. JMRC also consulted Archeological Department to seek their advice and	Continuous follow up required during the implementation of project.

[4]Overall sector environmental management progress could be described in qualitative terms or be evaluated based on a ranking system, such as the following:

1. Very Good
2. Good
3. Fair
4. Poor
5. Very Poor

Additional explanatory comments should be provided as necessary.

	heritage structures are being preserved in coordination with Archeological Department of Rajasthan.	
Follow-up with regulatory / government agencies to get pending approvals/permits.	JMRC together with DMRC and Contractor is coordinating with regulatory agencies to get pending NOCs/Permits.	Expedite process to get pending clearance on priority basis.
PMC's environmental specialist to provide technical support and guidance to the contractor and JMRC on full time basis	DMRC has deputed junior expert to the site to provide technical support to contractor and JMRC.	Full time environmental specialist is required at site. JMRC to take action on priority.
Appoint a consultant for community mobilization and more effecting community liaison particularly with regard to heritage issues, safety issues, utility shifting and anticipated temporary suspension of services. He will also facilitate Consultation with concerned stakeholders to clearly explain particularly to people who do not have access to the internet, the precautionary measures being taken to protect the heritage structures and to retrieve the lost layers of history.	A JV of M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates has been engaged as Heritage Consultant through ICB. JMRC has also engaged 3 senior Archaeological Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. These consultants together with JMRC are responsible for maintaining regular communications with communities and stakeholders.	Continuous follow up required.
Improvements in maintenance of records and reporting of interactions and communication with the stakeholders.	Records of the stakeholder and community interactions are being maintained at Contractor, DMRC and JMRC end.	
Extra precaution will need to be taken during tunneling works under the Chandpole gate	JMRC is taking extra precautions. To this end, prior to commencing tunneling under Chandpole gate, under passing scheme has been got proof checked with the help of IIT Delhi. Tunneling work under Chandpole Gate is expected to commence in the month of July 2015.	

101. Finally, according to the field observations and investigations it was able to identify that the most of the environmental requirements are being complied with regulations. Actions such as regular follow up with regulatory agencies to get pending permits; mobilization of full time environmental staff from supervision consultant side, and contineous coordination with shopkeepers and tample authorities to relocate the temples and shopsrequired immediate followup.

APPENDICES

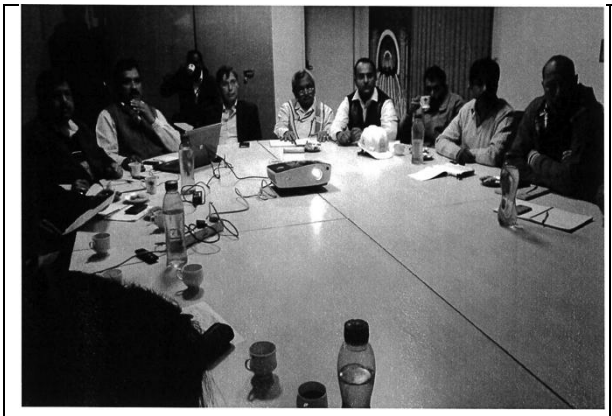
1. Photolog
2. Record of SHE Training
3. Sample format of Monthly SHE report
4. Environment Quality Monitoring Report
5. Tree Cutting approval
6. Layout Plan of casrting yard and labour camp
7. Monthly status report of heritage consultant.

Appendix 1: Photolog of Progress

D-Wall Cage Febrication at Chhoti Chaupar

D-Wall Grabbling at Chhoti Chaupar

Excavation of Base Slab at Chandpole Launching Shalft



Monthly SHE Committee meeting held on 19 Dec 2014

Tilting of TBM-1 Tail Shield

Water Sprinkling through Tank

Manual Water Sprinkling at site

Air Monitoring Setup

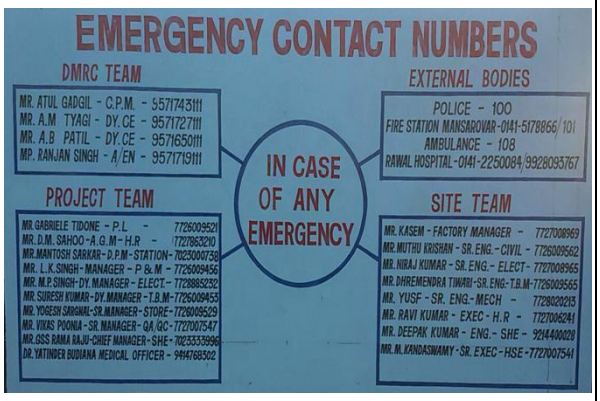
Air Monitoring Setup

Environment Training Session

Environment Training on Site

Physical Training on Site

During Swach Bharat Abhiyan



Emergency Contact Numbers are displayed at works sites

Color Coded Dustbins on Site

Appendix 2: Record of SHE Trainings

1. Details of SHE training conducted in the month of January 2015

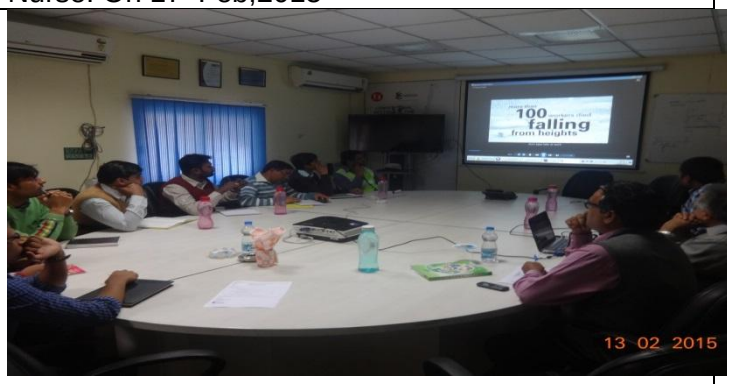
SN	DATE	LOCATION	TOPIC	No. of person	TRAINING PERIOD
1.	15.01.2015	Chandpole	Fire Fighting training	20	1.20 Hrs
2.	16.01.2015	Casting Yard	Driving Training	21	6.00 Hrs
3.	29.01.2015	Chandpole	Scaffolding Training	18	1.05 Hrs
4.	30.01.2015	Casting yard	Environment	20	0.45Hrs.

2. Details of SHE training conducted in the month of February 2015

SN	DATE	LOCATION	TOPIC	No. of person	TRAINING PERIOD
1	06.02.2015	Chhoti Chaupar	Hot Work Training	37	0.30 Hrs
2	07.02.2015	Chhoti Chaupar	Excavation	31	0.30 Hrs
3	09.02.2015	Chhoti Chaupar	Safe use of Hand Tool	35	1.05 Hrs
4	10.02.2015	Casting yard	Hot Work	35	0.45 Hrs
5	11.02.2015	Chhoti Chaupar	General Safety Rule & Regulation	40	0.30 Hrs
6	13.02.2015	Chandpole	Swaine flu	31	1.05 Hrs
7	13.02.2015	Chhoti Chaupar	Importance & appropriate use of PPE's	36	1.15 Hrs
8	17.02.2015	Casting yard	Source of dust & its effects on human body.	20	0.45Hrs
9	18.02.2015	Chandpole	Power tools safety	29	0.30Hrs
10	18.02.2015	Chhoti Chaupar	Power Tool & safety	26	0.45 Hrs
11	20.02.2015	Chhoti Chaupar	CPR Training	28	1.05 Hrs
12	21.02.2015	Chandpole	CPR Training	34	1.05 Hrs
13	23.02.2015	Casting yard	Safe use of Hand & Power Tool	43	1.05 Hrs
14	25.02.2015	Chandpole	PPAE's	30	0.30Hrs

Swaine flu training conducted by Mr. Shobag Singh Male Nurse. On 13th Feb,2015

Importance & appropriate use of PPE's conducted by Mr K.Swamy Sr.Exe.SHE on 13th Feb,2015

	
Source of dust & its effects on human body conducted by Mr.S.K.Dewedi on 17th feb,2015	Swaine flu training conducted by Mr. Manish Male Nurse. On 17thFeb,2015
	
Behavior based SHE Training program Conducted by Mr. S. Grover External SHE Auditor	Behavior based SHE Training program Conducted by Mr. S. Grover External SHE Auditor

3. Details of SHE training conducted in the month of March 2015

Casting yard

SN	Date	TOPICS	ATTENDENCE
01	13.03.2015	Hot weather condition	19
02	23.03.2015	Lifting operation	37
		Total	56

Chandpole

SN	Date	TOPICS	ATTENDENCE
01	04.03.2015	Hot work safety	20
02	09.03.2015	Lifting & Rigging	8
03	18.03.2015	Power tool & its maintenance	33
04	21.03.2015	Handling of electrical power tool	15
05	23.03.2015	Lifting operation	37
06	28.03.2015	BBS & PPE's	15
		Total	128

Chhoti Chaupar

SN	TOPICS	CONDUCTED BY	ATTENDENCE
01	Manual Material Handling	Rajnish	19
02	Fire Safety	Rajnish	19
03	Dismantling of Archaeological Structure	Kandaswamy M	13
		Total	51

Badi Chaupar

SN	TOPICS	CONDUCTED BY	ATTENDENCE
01	PPE'S Use & Care	Partha Banerjee	22
02	General Environmental Guideline, Sources of Air pollution & mitigation measure	Partha Banerjee & S.K.Dewedi	19
		Total	41

Appendix 3: Sample Format of Monthly SHE Report

CONTINENTAL ENGINEERING CORPORATION

MONTHLY SAFETY, HEALTH & ENVIRONMENTAL REPORTMARCH- 2015

	PREPARED BY	REVIEWED BY	APPROVED BY
NAME	S.K. Dewedi	GSSRamaRaju	Gabriele Tidone,
DESIGNATION	Senior Environment Engineer	Chief SHE Manager	Project leader
DATE	07/04/2015	07/4/15	09/04/15

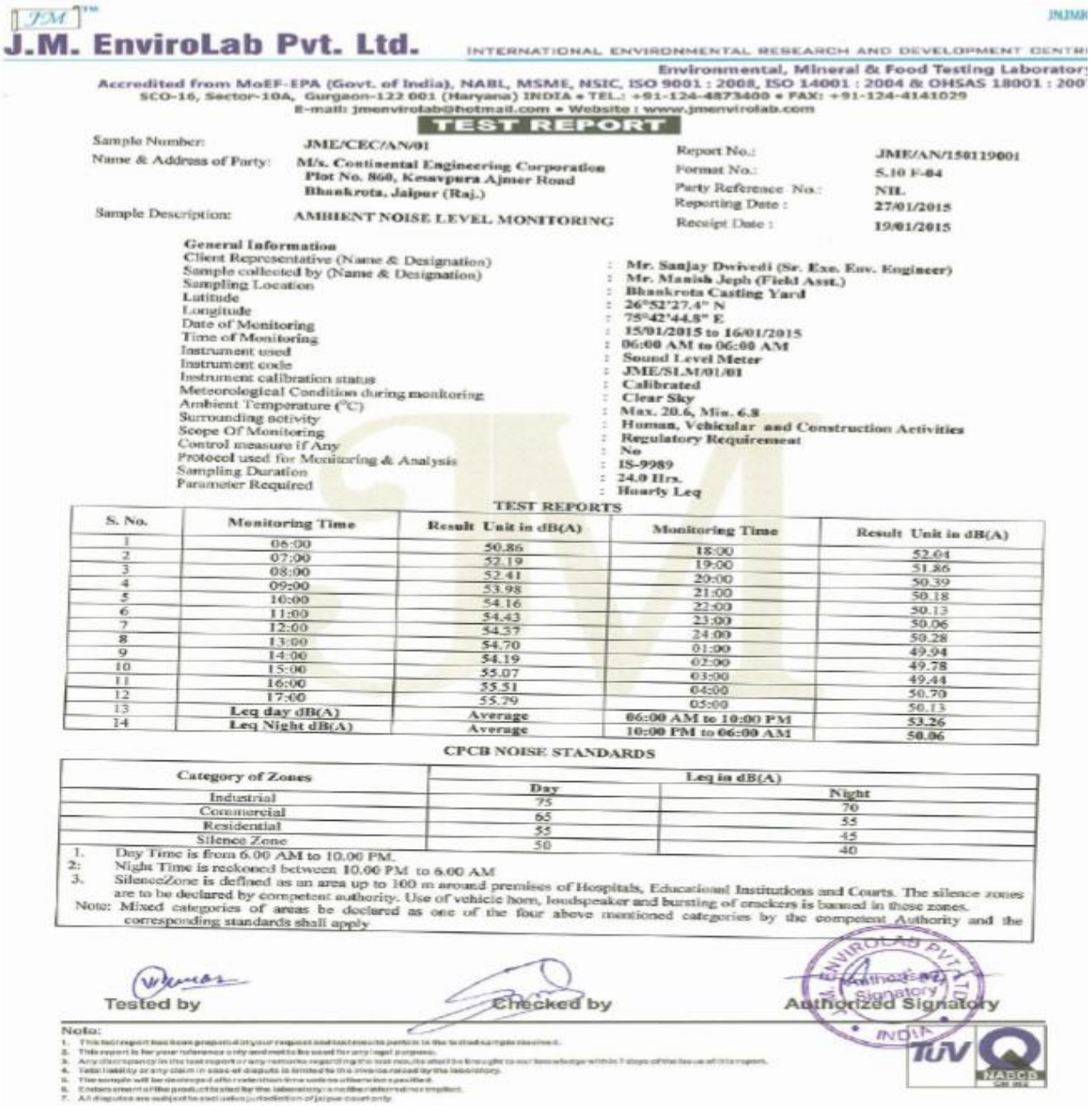
DESIGN AND CONSTRUCTION OF TUNNEL BETWEEN CHANDPOLE AND BADI CHOUPER AND REVERSAL LINE BY SHIELD TBM,UNDERGROUND METRO STATION AT CHOTI CHOUPER AND BADI CHOUPER BY CUT & COVER METHOD ON EAST-WEST CORRIDOR OF JAIPUR METRO (PHASE 1B) AT JAIPUR, RAJASTHAN, INDIA

CONTRACT NO: JMRC 1B

MONTHLY SAFETY,HEALTH & ENVIRONMENTAL REPORT MARCH ,2015

SHE SUBMITTAL

Appendix 4: Results of Environmental Quality (Air, Water and Noise) Monitoring



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Environmental, Mineral & Food Testing Laboratory

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SCO-16, Sector-10A, Gurgaon-122 001 (Haryana) INDIA • TEL.: +91-124-4873400 • FAX: +91-124-4141029

E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number: JME/CEC/AN/01

Name & Address of Party: M/s. Continental Engineering Corporation, Plot No. 860, Kesavpura Ajmer Road, Bhankrota, Jaipur (Raj.)

Sample Description: AMBIENT NOISE LEVEL MONITORING

Report No.: JME/AN/150119001

Format No.: S.10 F-04

Party Reference No.: NIL

Reporting Date : 27/01/2015

Receipt Date : 19/01/2015

General Information

Client Representative (Name & Designation)	: Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)
Sample collected by (Name & Designation)	: Mr. Manish Jeph (Field Asst.)
Sampling Location	: Bhankrota Casting Yard
Latitude	: 26°52'27.4" N
Longitude	: 75°42'44.8" E
Date of Monitoring	: 15/01/2015 to 16/01/2015
Time of Monitoring	: 06:00 AM to 06:00 AM
Instrument used	: Sound Level Meter
Instrument code	: JME/SLM/01/01
Instrument calibration status	: Calibrated
Meteorological Condition during monitoring	: Clear Sky
Ambient Temperature (°C)	: Max. 20.6, Min. 6.8
Surrounding activity	: Human, Vehicular and Construction Activities
Scope Of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Protocol used for Monitoring & Analysis	: IS-9989
Sampling Duration	: 24.0 Hrs.
Parameter Required	: Hourly Leq

TEST REPORTS

S. No.	Monitoring Time	Result Unit in dB(A)	Monitoring Time	Result Unit in dB(A)
1	06:00	50.86	18:00	52.04
2	07:00	52.19	19:00	51.86
3	08:00	52.41	20:00	50.39
4	09:00	53.98	21:00	50.18
5	10:00	54.16	22:00	50.13
6	11:00	54.43	23:00	50.06
7	12:00	54.37	24:00	50.28
8	13:00	54.70	01:00	49.94
9	14:00	54.19	02:00	49.78
10	15:00	55.07	03:00	49.44
11	16:00	55.51	04:00	50.70
12	17:00	55.79	05:00	50.13
13	Leq day dB(A)	Average	06:00 AM to 10:00 PM	53.26
14	Leq Night dB(A)	Average	10:00 PM to 06:00 AM	50.06

CPCB NOISE STANDARDS

Category of Zones	Leq in dB(A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM
3. SilenceZone is defined as an area up to 100 m around premises of Hospitals, Educational Institutions and Courts. The silence zones are to be declared by competent authority. Use of vehicle horn, loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

Tested by

Checked by

Authorized Signatory

Note:

1. This test report has been prepared at your request and test results pertain to the tested sample received.
2. This report is for your reference only and not to be used for any legal purposes.
3. Any discrepancy in the test report or any remarks regarding the test results shall be brought to our knowledge within 7 days of the issue of this report.
4. Total liability of any claim in case of dispute is limited to the invoice raised by the laboratory.
5. The sample will be destroyed after retention time unless otherwise specified.
6. Endorsement of the product tested by the laboratory is neither stated nor implied.
7. All disputes are subject to exclusive jurisdiction of jaipur court only.

JM/MK1

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E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number:	JME/CEC/AN/02	Report No.:	JME/AN/150119002
Name & Address of Party:	M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)	Format No.:	5.10 F-04
		Party Reference No.:	NIL
		Reporting Date :	27/01/2015
Sample Description:	AMBIENT NOISE LEVEL MONITORING	Receipt Date :	19/01/2015

General Information

Client Representative (Name & Designation)	: Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)
Sample collected by (Name & Designation)	: Mr. Kamlesh Yadav(Field Coordinator)
Sampling Location	: Chandpole Lauching Shaft Area
Latitude	: 26°55'36.1" N
Longitude	: 75°48'27.9" E
Date of Monitoring	: 16/01/2015 to 17/01/2015
Time of Monitoring	: 06:00 AM to 06:00 AM
Instrument used	: Sound Level Meter
Instrument code	: TES 1350A
Instrument calibration status	: Calibrated
Meteorological Condition during monitoring	: Clear Sky
Ambient Temperature (°C)	: Max 20.6, Min. 7.0
Surrounding activity	: Human, Vehicular and Construction Activities
Scope Of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Protocol used for Monitoring & Analysis	: IS-9989
Sampling Duration	: 24.0 Hrs.
Parameter Required	: Hourly Leq

TEST REPORTS

S. No.	Monitoring Time	Result Unit in dB(A)	Monitoring Time	Result Unit in dB(A)
1	06:00	53.96	18:00	60.30
2	07:00	58.25	19:00	59.59
3	08:00	61.11	20:00	59.40
4	09:00	61.13	21:00	53.33
5	10:00	61.92	22:00	50.82
6	11:00	60.74	23:00	49.79
7	12:00	60.86	24:00	47.62
8	13:00	61.61	01:00	46.25
9	14:00	61.53	02:00	46.14
10	15:00	60.80	03:00	47.24
11	16:00	61.38	04:00	48.27
12	17:00	59.87	05:00	50.40
13	Leq day dB(A)	Average	06:00 AM to 10:00 PM	59.74
14	Leq Night dB(A)	Average	10:00 PM to 06:00 AM	48.32

CPCB NOISE STANDARDS

Category of Zones	Leq in dB(A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM
3. SilenceZone is defined as an area up to 100 m around premises of Hospitals, Educational Institutions and Courts. The silence zones are to be declared by competent authority. Use of vehicle horn, loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

Tested by | Checked by | Authorized Signatory

Note:

1. This test report has been prepared at your request & not test results pertain to the tested sample as above.
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6. Environment of the product tested by the laboratory is neither informed nor implied.
7. All disputes are subject to exclusive jurisdiction of labour courts only.

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E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number:	JME/CEC/AN/05	Report No.:	JME/AN/150119005
Name & Address of Party:	M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)	Format No.:	5.10 F-04
		Party Reference No.:	NIL
		Reporting Date :	27/01/2015
Sample Description:	AMBIENT NOISE LEVEL MONITORING	Receipt Date :	19/01/2015

General Information

Client Representative (Name & Designation)	: Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)
Sample collected by (Name & Designation)	: Mr. Kamlesh Yadav(Field Coordinator)
Sampling Location	: Chhoti Chaupar at nearby maharaja school
Latitude	: 26°55'30.0" N
Longitude	: 75°49'02.7" E
Date of Monitoring	: 17/01/2015 to 18/01/2015
Time of Monitoring	: 06:00 AM to 06:00 AM
Instrument used	: Sound Level Meter
Instrument code	: TES1350A
Instrument calibration status	: Calibrated
Meteorological Condition during monitoring	: Clear Sky
Ambient Temperature (°C)	: Max. 20.2, Min. 6.6
Surrounding activity	: Construction, Human & Vehicular Activities
Scope Of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Protocol used for Monitoring & Analysis	: IS-9989
Sampling Duration	: 24.0 Hrs.
Parameter Required	: Hourly Leq

TEST REPORTS

S. No.	Monitoring Time	Result Unit in dB(A)	Monitoring Time	Result Unit in dB(A)
1	06:00	52.45	18:00	56.79
2	07:00	59.87	19:00	55.15
3	08:00	60.47	20:00	52.47
4	09:00	60.87	21:00	50.31
5	10:00	60.81	22:00	48.62
6	11:00	61.35	23:00	47.91
7	12:00	61.59	24:00	48.35
8	13:00	56.74	01:00	46.57
9	14:00	58.13	02:00	46.53
10	15:00	56.65	03:00	47.77
11	16:00	56.26	04:00	49.40
12	17:00	57.58	05:00	51.15
13	Leq day dB(A)	Average	06:00 AM to 10:00 PM	57.34
14	Leq Night dB(A)	Average	10:00 PM to 06:00 AM	48.29

CPCB NOISE STANDARDS

Category of Zones	Leq in dB(A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM
3. SilenceZone is defined as an area up to 100 m around premises of Hospitals, Educational Institutions and Courts. The silence zones are to be declared by competent authority. Use of vehicle horn, loudspeaker and bursting of crackers is banned in these zones.

Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

Tested by | Checked by | Authorized Signatory

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TEST REPORT

Sample Number	**JME/CEC/A/01**	Report No.	**JME/A/150119001**
Name & Address of Unit	**M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)**	Format No.	**5.10 F-04**
		Party Reference No.	**NIL**
		Reporting Date	**27/01/2015**
Sample Description	**AMBIENT AIR QUALITY MONITORING**	Receipt Date	**19/01/2015**

General Information

Client Representative (Name & Designation)	:	**Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)**
Sample Collected by (Name & Designation)	:	**Mr. Manish Jeph (Field Coordinator)**
Sampling Location	:	**Bhankrota Casting Yard**
Latitude	:	**26°52'27.5" N**
Longitude	:	**75°42'44.3" E**
Instrument Used	:	**RDS**
Instrument Code	:	**JME/RDS/01/13**
Instrument Calibration Status	:	**Calibrated**
Meteorological Condition during monitoring	:	**Clear Sky**
Date of Monitoring	:	**15/01/2015 to 16/01/2015**
Time of Monitoring	:	**09:30 to 09:20**
Actual duration of Monitoring (Minutes)	:	**1250.4**
Ambient Temperature (°C)	:	**Max. 21.6, Min. 7.2**
Surrounding Activity	:	**Human, Construction & Vehicular Activities**
Scope of Monitoring	:	**Regulatory Requirement**
Control measures if Any	:	**No**
Sampling & Analysis Protocol	:	**IS-5182**
Parameter Required	:	**TSPM, PM_{10}, NO_2, SO_2 & CO**

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	*NAAQS
1	Particulate Matter (PM10)	IS:5182 (P-23), 2006	94.50	µg/m3	100
2	Nitrogen Dioxides (NO2)	IS: 5182 (P-6), 1975 Reaffirmed-1988	23.20	µg/m3	80
3	Sulphur Dioxide (SO2)	IS: 5182 (P-2), 2001	12.01	µg/m3	80
4	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	0.58	mg/m3	4
5	Total Suspended Particulate Matter (TSPM)	IS: 5182(P-4, 1999)	291.00	µg/m3	--

*NAAQS-National Ambient Air Quality Standards, Schedule-VII [Rule 3(3B)][Part-II Sec.3(i)] 16.11.2009

Tested by | Checked by | Authorized Signatory

ENVIROLAB PVT. LTD. INDIA Authorized Signatory

Note:

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TEST REPORT

Sample Number	**JME/CEC/A/03**	Report No.	**JME/A/150119003**
Name & Address of Unit	**M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)**	Format No.	**5.10 F-04**
		Party Reference No.	**NIL**
		Reporting Date	**27/01/2015**
Sample Description	**AMBIENT AIR QUALITY MONITORING**	Receipt Date	**19/01/2015**

General Information

Client Representative (Name & Designation)	:	**Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)**
Sample Collected by (Name & Designation)	:	**Mr. Ashok Sharma (Field Coordinator)**
Sampling Location	:	**Chhoti Chaupar**
Latitude	:	**26°55'30.0" N**
Longitude	:	**75°49'02.7" E**
Instrument Used	:	**RDS**
Instrument Code	:	**JME/RDS/01/13**
Instrument Calibration Status	:	**Calibrated**
Meteorological Condition during monitoring	:	**Clear Sky**
Date of Monitoring	:	**17/01/2015 to 18/01/2015**
Time of Monitoring	:	**10:05 to 10:15**
Actual duration of Monitoring (Minutes)	:	**1353.00**
Ambient Temperature (°C)	:	**Max. 20.2, Min. 6.6**
Surrounding Activity	:	**Human, Construction & Vehicular Activities**
Scope of Monitoring	:	**Regulatory Requirement**
Control measures if Any	:	**No**
Sampling & Analysis Protocol	:	**IS-5182**
Parameter Required	:	**TSPM, PM_{10}, NO_2, SO_2 & CO**

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	*NAAQS
1	Particulate Matter (PM_{10})	IS:5182 (P-23), 2006	117.89	µg/m3	100
2	Nitrogen Dioxides (NO_2)	IS: 5182 (P-6), 1975 Reaffirmed-1988	28.98	µg/m3	80
3	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	13.24	µg/m3	80
4	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	0.64	mg/m3	4
5	Total Suspended Paticulate Matter (TSPM)	IS: 5182(P-4, 1999)	378.00	µg/m3	--

*NAAQS-National Ambient Air Quality Standards, Schedule-VII [Rule 3(3B)][Part-II Sec.3(i)] 16.11.2009
*BDL-Below Detection Limit, DL- Detectable Limit

Tested by

Checked by

ENVIROLAB PVT. LTD. Authorized Signatory INDIA

Authorized Signatory

Note:
1. This test report has been prepared at your request and test results pertain to the tested sample received.
2. This report is for your reference only and not to be used for any legal purpose.
3. Any discrepancy in the test report or any remarks regarding the test results shall be brought to our knowledge within 7 days of the issue of this report.
4. Total liability on any claim in case of dispute is limited to the invoice raised by the laboratory.
5. The sample will be destroyed after retention time unless otherwise specified.
6. Endorsement of the product tested by the laboratory is neither inferred nor implied.
7. All disputes are subject to exclusive jurisdiction of Jaipur court only.

TÜV NABCB

J.M. EnviroLab Pvt. Ltd. INTERNATIONAL ENVIRONMENTAL RESEARCH AND DEVELOPMENT CENTRE

Environmental, Mineral & Food Testing Laboratory

Accredited from MoEF-EPA (Govt. of India), NABL, MSME, NSIC, ISO 9001 : 2008, ISO 14001 : 2004 & OHSAS 18001 : 2007

SCO-16, Sector-10A, Gurgaon-122 001 (Haryana) INDIA • TEL.: +91-124-4073400 • FAX: +91-124-4141029

E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number	JME/CEC/A/02	Report No.	JME/A/150119002
Name & Address of Unit	M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)	Format No. Party Reference No. Reporting Date	5.10 F-04 NIL 27/01/2015
Sample Description	AMBIENT AIR QUALITY MONITORING	Receipt Date	19/01/2015

General Information

Client Representative (Name & Designation)	:	Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)
Sample Collected by (Name & Designation)	:	Mr. Kamlesh Yadav (Field Coordinator)
Sampling Location	:	Chandpole Launching Area
Latitude	:	26°55'35.7" N
Longitude	:	75°48'28.2" E
Instrument Used	:	RDS
Instrument Code	:	JME/RDS/01/13
Instrument Calibration Status	:	Calibrated
Meteorological Condition during monitoring	:	Clear Sky
Date of Monitoring	:	16/01/2015 to 17/01/2015
Time of Monitoring	:	11:10 to 09:25
Actual duration of Monitoring (Minutes)	:	1175.00
Ambient Temperature (°C)	:	Max. 20.6, Min. 7.0
Surrounding Activity	:	Human, Construction & Vehicular Activities
Scope of Monitoring	:	Regulatory Requirement
Control measures if Any	:	No
Sampling & Analysis Protocol	:	IS-5182
Parameter Required	:	TSPM, PM_{10}, NO_2, SO_2 & CO

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	*NAAQS
1	Particulate Matter (PM_{10})	IS:5182 (P-23), 2006	131.32	µg/m3	100
2	Nitrogen Dioxides (NO_2)	IS: 5182 (P-6), 1975 Reaffirmed-1988	35.21	µg/m3	80
3	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	14.76	µg/m3	80
4	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	0.69	mg/m3	4
5	Total Suspended Particulate Matter (TSPM)	IS: 5182(P-4, 1999)	406.00	µg/m3	--

*NAAQS-National Ambient Air Quality Standards, Schedule-VII [Rule 3(3B)][Part-II Sec.3(i)] 16.11.2009

*BDL-Below Detection Limit, DL- Detectable Limit

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Checked by

Authorized Signatory

Authorized Signatory

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SCO-16, Sector-10A, Gurgaon-122 001 (Haryana) INDIA • TEL.: +91-124-4873400 • FAX: +91-124-4141029

E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number:	JME/JMRC/W/02	Report No.:	JME/W/150119002
Name & Address of Party:	M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
Sample Description:	WATER (One water sample from Borewell)	Reporting Date :	27/01/2015
Sampling Location :	Bhankrota Casting Yard (Labour colony)	Receipt Date	19/01/2015
Client Representative (Name & Designation) :	Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)	Sampling Date :	19/01/2015
Sample collected by (Name & Designation) :	Mr. Kamlesh Kumar yadav (Field Coordinator)	Type of Sampling :	Grab
Latitude:	26°52'20.2" N	Preservation :	Refrigerated
Longitude :	75°42'51.5" E	Sample Quantity:	2.0 Ltr.
Sampling & Analysis Protocol:	IS-10500, APHA 22nd Edition 2012	Parameter Required :	As per work Order

TEST REPORTS

S. No.	Parameter	Protocol	Result	Unit	Limits of IS: 10500-2012	
					Desirable Limit (Max)	Permissible Limit in the Absence of Alternate Source (Max)
1	pH (at 25°C)	APHA 22nd Edition, 4500-H+B	7.94	-	6.5 to 8.5	No Relaxation
2	Turbidity	APHA 22nd Edition,2130(B)	2.0	NTU	1	5
3	Total Dissolved Solids	APHA 22nd Edition, 2540 C	580.00	mg/l	500	2000
4	Total Suspended Solid	APHA 22nd Edition,2540 D	1.20	mg/l	--	--
5	Oil and Grease	APHA 22nd Edition, 5520, E	BDL (DL 0.40 mg/l)	mg/l	--	--
6	Dissolve oxygen	APHA 22nd Edition, 4500, OB	5.20	mg/l	--	--
7	Conductivity	APHA 22nd Edition, 2150 B	897.00	µs/cm	--	--

L-Below Detection Limit, *DL-Detectable Level

Tested by

Checked by

J.M. ENVIROLAB PVT. LTD. Authorised Signatory INDIA

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TUV NABCB QM 302

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E-mail: jmenvirolab@hotmail.com • Website : www.jmenvirolab.com

TEST REPORT

Sample Number:	JME/JMRC/W/01	Report No.:	JME/W/150119001
Name & Address of Party:	M/s. Continental Engineering Corporation Plot No. 860, Kesavpura Ajmer Road Bhankrota, Jaipur (Raj.)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
Sample Description:	WATER (One water sample from Borewell)	Reporting Date :	27/01/2015
Sampling Location :	Chandpole launching area	Receipt Date	19/01/2015
Client Representative (Name & Designation) :	Mr. Sanjay Dwivedi (Sr. Exe. Env. Engineer)	Sampling Date :	19/01/2015
Sample collected by (Name & Designation) :	Mr. Kamlesh Kumar yadav (Field Coordinator)	Type of Sampling :	Grab
Latitude:	26°55'36.1" N	Preservation :	Refrigerated
Longitude :	75°48'27.9" E	Sample Quantity:	2.0 Ltr.
Sampling & Analysis Protocol:	IS-10500, APHA 22nd Edition 2012	Parameter Required :	As per work Order

TEST REPORTS

S. No.	Parameter	Protocol	Result	Unit	Limits of IS: 10500-2012	
					Desirable Limit (Max)	Permissible Limit in the Absence of Alternate Source (Max)
1	pH (at 25°C)	APHA 22nd Edition, 4500-H+B	7.67	-	6.5 to 8.5	No Relaxation
2	Turbidity	APHA 22nd Edition,2130(B)	1.0	NTU	1	5
3	Total Dissolved Solids	APHA 22nd Edition, 2540 C	1013.00	mg/l	500	2000
4	Total Suspended Solid	APHA 22nd Edition,2540 D	1.20	mg/l	--	--
5	Oil and Grease	APHA 22nd Edition, 5520, E	BDL (DL 0.40 mg/l)	mg/l	--	--
6	Dissolve oxygen	APHA 22nd Edition, 4500, OB	5.20	mg/l	--	--
7	Conductivity	APHA 22nd Edition, 2150 B	1554.00	µs/cm	--	--

*BDL-Below Detection Limit, *DL-Detectable Level

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Appendix 5: Approval for Tree Cutting

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कार्यालय जिला कलेक्टर एवम् जिला मजिस्ट्रेट, जयपुर

www.jaipur.nic.in

क्रमांकः आर–1( )14/पेड/1301 दिनांकः 2-3-15

निर्देशक (प्रोजेक्ट)
जयपुर मेट्रो रेल कॉरपोरेशन लि0
जयपुर।

विषयः– जयपुर मेट्रो के फेज प्रथम बी में आ रहे पेडों को काटने/पुर्नरोपण की स्वीकृति के संबंध में।

प्रसंगः– आपका पत्र क्रमांकः एफ.7 (C-55)JMRC/Tree-1B/2013-14/1457 दिनांकः 01.12.2014 के संबंध में।

उपयुक्त विषयान्तर्गत प्रासंगिक पत्र द्वारा जयपुर मेट्रो रेल के फेज प्रथम बी योजना में छोटी–बडी चौपड कार्नर पर निर्माण में बाधित 35 पेडों को काटने/पुर्नरोपण की अनुमति के संबंध में तहसीलदार जयपुर से रिपोर्ट प्राप्त की गई। जिसके अनुसार निर्माण में बाधित 35 पेडों को काटने/शिफ्ट करने की अनुमति दिया जाना उचित बताया गया है।

अतः निर्देशानुसार तहसीलदार जयपुर की रिपोर्ट अनुसार जयपुर मेट्रो रेल के फेज प्रथम बी योजना में छोटी–बडी चौपड कार्नर पर निर्माण में बाधित 35 पेडों को काटने/पुर्नरोपण की अनुमति इस शर्त पर दी जाती है कि काटे/शिफ्ट किये जाने वाले 35 पेडों की एवज में उपर्युक्त स्थल पर 35X5=175 पेड लगाये जावेगें तथा काटे गये पेड की लकडी की नीलामी से प्राप्त राशि संबंधित तहसील कार्यालय में भू–राजस्व 0029 मद में जमा कराया जावेगा।

(राजीव जैन)
अति0 कलक्टर –प्रथम,
प्रभारी अधिकारी राजस्व शाखा,
जयपुर

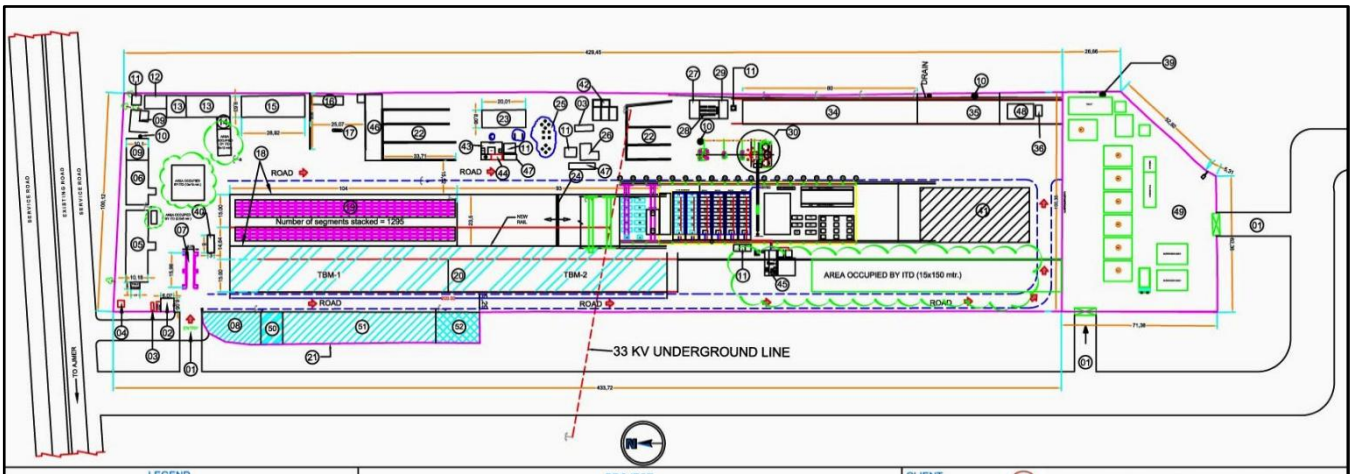
क्रमांकः आर–1( )14/पेड/ दिनांकः

प्रतिलिपिः– तहसीलदार जयपुर को उनके पत्र क्रमांकः आरए/2015/76 दिनांकः 24.02.2015 के सन्दर्भ में उपरोक्तानुसार पालना हेतु प्रेषित है।

(राजीव जैन)
अति0 कलक्टर –प्रथम,
प्रभारी अधिकारी राजस्व शाखा,
जयपुर

☎ 0141-2209001(O) 0141-2209000(Fax) Email:- dm-jaip-rj@nic.in

Appendix 6: Approved layout Plan for Casting Yard and Labour Camp



LEGEND

01) - RAIL
02) - BOUNDARY
03) - 33KVA UNDER GROUND LINE
04) - ROAD
05) - BATCHING PLANT FOUNDATION
05) - AREA OCCUPIED BY ITD

PROJECT

Design and Construction of Tunnel between Chandpole and Badi Chouper and reversal line by Shield TBM, Underground Metro Stations at Choti Chouper and Badi Chouper by Cut & Cover Method on East–West Corridor of Jaipur Metro (Phase 1B) at Jaipur, Rajasthan, India

01) - ENTRANCE	12) - MECHANICAL STORE	23) - CEMENT STOCK GODOWN	34) - STEEL STOCKING YARD	45) - BOILER
02) - SECURITY	13) - GENERAL STORE	24) - 15 TONS GANTRY CRANE (23.5 mtr.)	35) - REINF. STEEL YARD FOR SITE	46) - SCRAP YARD
03) - GENSET	14) - LUBRICANTS STOCK GODOWN	25) - 60 CUM BATCHING PLANT	36) - SCRAP YARD	47) - CONTAINER
04) - TRANSFORMER	15) - WORK SHOP	26) - PANEL ROOM FOR BATCHING PLANT	37) - LIGHT POLES	48) - BAR THREADING MACHINE
05) - CEC OFFICE	16) - DIESEL TANK	27) - CANTEEN	38) - LABOUR COLONY	49) - LABOUR CAMP
06) - DMRC OFFICE	17) - DIESEL PUMP	28) - LABOUR REST AREA	39) - NEW BORE WELL	50) - SAND BLASTING
07) - WEIGH BRIDGE	18) - GANTRY RAILS	29) - TOILETS	40) - WHEEL WASH BAY	51) - JMRC INVENTORY YARD
08) - PARKING	19) - SEGMENTS STOCKING AREA	30) - 30 CUM BATCHING PLANT	41) - SPACE FOR CUT WOOD TREES	52) - TBM
09) - Q.C. LABORATORY	20) - TBM REFURBISHMENT AREA	31) - 10 TONS EOT CRANE (25.10 mtr.)	42) - SEDIMENTATION TANK	
10) - BORE WELL	21) - FENCING	32) - PRECAST SEGMENT FACTORY SHED	43) - CHILLAR PLANT	
11) - WATER TANK	22) - AGGREGATES STOCK AREA	33) - EOT RAILS	44) - RO PLANT	

CLIENT	JAIPUR METRO RAIL CORPORATION LTD.
ENGINEER	DELHI METRO RAIL CORPORATION LTD.
CONTRACTOR	CONTINENTAL ENGINEERING CORPORATION

CASTING YARD LAYOUT (AREA OCCUPIED BY ITD LOCATED)

APPROVED BY:-	CHECKED BY:-	DRAWN BY:-
DATE:- 08.09.2014	REV:- 3	SCALE:- 1:1600
DRAWING NO.:- 04	SHEET NO:-	SHEET SIZE:-

Appendix-7: Monthly status report by Heritage Consultant