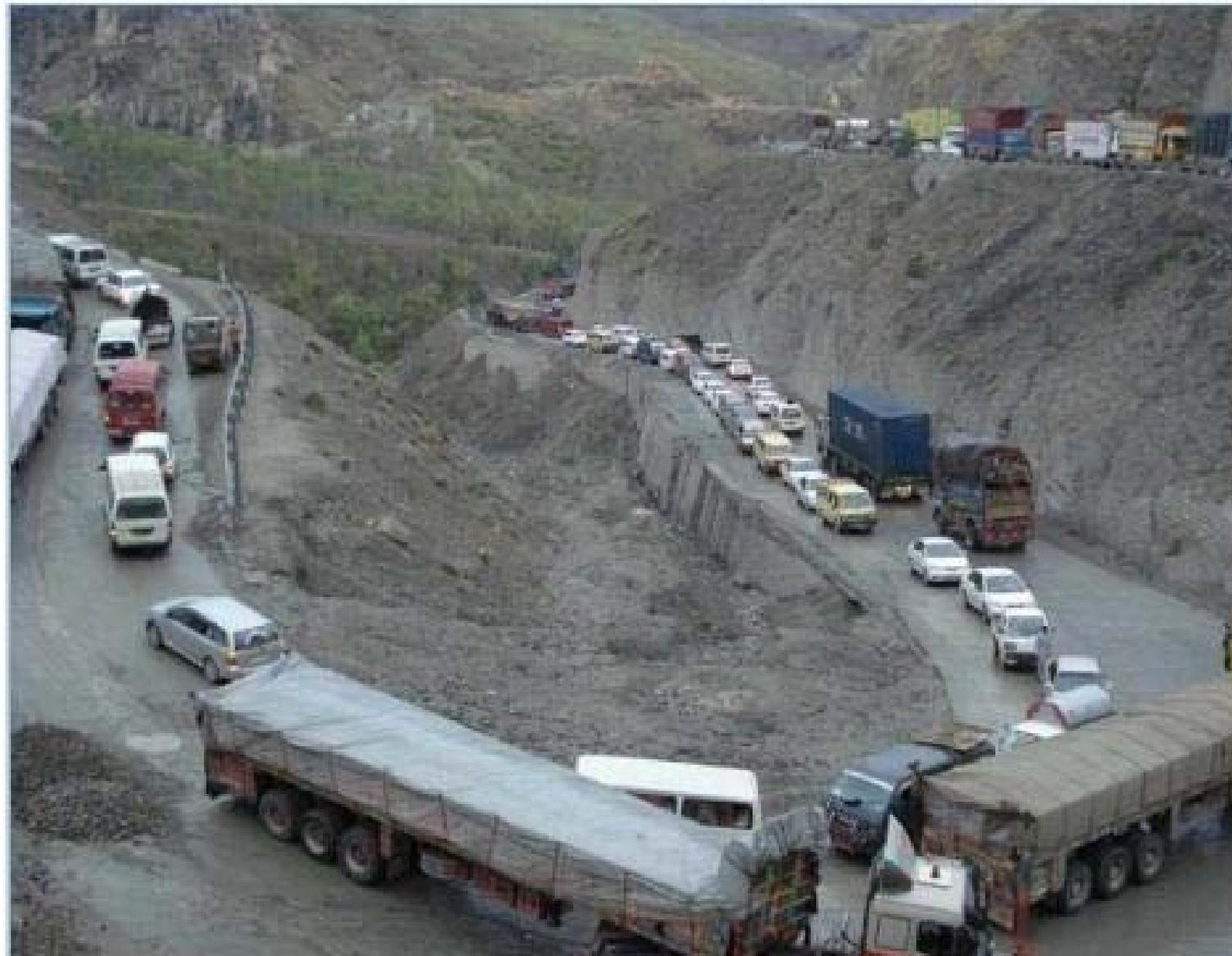




**USAID** | **PAKISTAN**  
FROM THE AMERICAN PEOPLE



**STRENGTHENING & IMPROVEMENT OF PESHAWAR - TORKHAM ROAD  
KHYBER AGENCY, FATA**

**MONTHLY PROGRESS REPORT # 15**  
February 2014

# TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>LOCATION MAP .....</b>  | <b>1</b>  |
| <b>SUMMARY .....</b>   | <b>2</b>  |
| <b>1 INTRODUCTION .....</b>  | <b>4</b>  |
| 1.1 PROJECT BACKGROUND .....   | 5         |
| 1.2 SCOPE OF WORK.....   | 6         |
| 1.3 GENERAL CONTRACT DATA .....  | 7         |
| 1.4 SECTIONS DATA .....  | 8         |
| 1.5 ALIGNMENT SKETCHES.....  | 9         |
| 1.6 TYPICAL CROSS SECTIONS OF ROAD .....   | 14        |
| <b>2 M&amp;E SERVICES &amp; PROGRESS OF ACTIVITIES.....</b>                                | <b>17</b> |
| 2.1 M&E CONSULTANTS MAJOR ACTIVITIES DURING THE REPORTING MONTH – FEBRUARY 2014 .....      | 18        |
| 2.2 MATTERS REQUIRING ATTENTION .....  | 19        |
| 2.2.1 <i>PROJECT COST ESTIMATES – ADDITIONAL COSTS</i> .....                               | 19        |
| 2.2.2 <i>COMPLEXITY IN MAINTAINING TRAFFIC ON DIVERSIONS</i> .....                         | 19        |
| 2.2.3 <i>DELAY IN UTILITIES IDENTIFICATION / SHIFTING FROM CONSTRUCTION CORRIDOR</i> ..... | 19        |
| 2.2.4 <i>ENVIRONMENTAL COMPLIANCE</i> .....  | 20        |
| 2.3 SECTION WISE ACTIVITIES STATUS .....   | 21        |
| <b>3 CIVIL WORKS PROGRESS STATUS.....</b>  | <b>23</b> |
| 3.1 SECTION - I CUMULATIVE MILESTONE WISE PROGRESS STATUS .....                            | 24        |
| 3.2 SECTION - I PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS.....                        | 25        |
| 3.3 SECTION - I CULVERTS PHYSICAL PROGRESS STATUS .....                                    | 26        |
| 3.4 SECTION - II CUMULATIVE MILESTONE WISE PROGRESS STATUS.....                            | 27        |
| 3.5 SECTION - II PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS.....                       | 29        |
| 3.6 SECTION - II CULVERTS PHYSICAL PROGRESS STATUS .....                                   | 30        |
| 3.7 SECTION - III CUMULATIVE MILESTONE WISE PROGRESS STATUS.....                           | 31        |
| 3.8 SECTION - III PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS.....                      | 34        |
| 3.9 SECTION - III (LOOP NO. 1) PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS .....        | 35        |
| 3.10 SECTION - III CULVERTS PHYSICAL PROGRESS STATUS .....                                 | 36        |
| 3.11 BRIDGE NO. 2 PHYSICAL PROGRESS STATUS.....  | 37        |
| 3.12 BRIDGE NO. 10 PHYSICAL PROGRESS STATUS.....   | 38        |
| <b>4 QUALITY TEST REPORTS.....</b>   | <b>39</b> |
| 4.1 EMBANKMENT FORMATION FIELD DENSITY TESTS REPORT .....                                  | 40        |
| 4.2 SUB-GRADE FIELD DENSITY TESTS REPORT.....  | 40        |
| 4.3 SUBBASE FIELD DENSITY REPORT .....   | 41        |
| 4.4 WATER BOUND MACADAM FIELD DENSITY TESTS REPORT .....                                   | 41        |
| 4.5 ASPHALTIC BASE COURSE QUALITY TESTS REPORT .....                                       | 42        |
| 4.6 ASPHALTIC BASE COURSE LAYER CORES COMPACTION REPORT .....                              | 43        |
| 4.7 ASPHALTIC BASE COURSE CORES THICKNESS REPORT.....                                      | 44        |
| 4.8 SUBBASE MATERIAL QUALITY TESTS REPORT .....  | 45        |
| 4.9 WATER BOUND MACADAM QUALITY TESTS REPORT .....   | 45        |
| 4.10 AGGREGATE QUALITY TESTS FOR CONCRETE REPORT .....                                     | 46        |
| 4.11 AGGREGATE QUALITY TESTS FOR ASPHALTIC BASE COURSE .....                               | 47        |
| 4.12 SUMMARY OF CONCRETE COMPRESSIVE STRENGTH.....   | 48        |

|          |   |           |
|----------|---|-----------|
| <b>5</b> | <b>ENVIRONMENTAL COMPLIANCE MONITORING .....</b>            | <b>53</b> |
| <b>6</b> | <b>APPENDICES .....</b>                                     | <b>64</b> |
| 6.1      | CONTRACTOR IPC's (SECTION-I) .....                          | 65        |
| 6.2      | CONTRACTOR IPC's (SECTION-II) .....                         | 65        |
| 6.3      | RECORD OF COORDINATION MEETINGS / JOINT SITE VISITS .....   | 66        |
| 6.4      | MOBILIZATION OF M&E STAFF .....                             | 67        |
| 6.5      | ORGANIZATION CHART FOR CMEP OFFICE, PESHAWAR .....          | 69        |
| 6.6      | ORGANIZATION CHART FOR ROAD COMPONENT OF CMEP PROJECT ..... | 70        |
| <b>7</b> | <b>PROJECT PHOTOGRAPHS .....</b>                            | <b>71</b> |

### ALIGNMENT OF PESHAWAR - TORKHAM ROAD (N-5)



## SUMMARY

Peshawar – Torkham road is an integral part of National Highway (N-5), a vital piece of the nation’s infrastructure, which connects Pakistan with Afghanistan at Torkham border and plays an important role in the economic activities as well as providing timely logistic support to the security agencies deployed in Khyber Agency. The project “Strengthening & Improvement of Peshawar Torkham Road” is funded with United State Agency for International Development (USAID) grant amounting to USD and implemented by FATA Secretariat as project proponent through Frontier Works Organization (FWO) as EPC (Engineer, Procure, and Construct) Contractor.

The 46 KM Peshawar – Torkham road (PTR) has been split into multiple sections for designing / construction purposes due to inherited site specific conditions such as live traffic corridor, gigantic hilly terrain, safety and security restrictions etc. Work on section – I of the project was initiated by FWO on October 15, 2012.

During the reporting month, the contractor team fully utilized the available 24 working days. FWO was constantly pressed for demonstrating good environmental practice in conformity with the construction environmental management plan.

The overall certified payment upto the end of February 2014 is US \$ 8.042 Million for section – I and US \$ 661,911 for section - II. No IPC was processed by the Contractor during the reporting month.

Major physical construction activities in each section are presented as under:

### **SECTION – I (KM: 0+000 To 9+000)**

Section – I of the project can be declared complete with respect to earthwork, Sub Base, Aggregate Base Course / WBM, Asphaltic Base Course, Asphaltic Wearing Course, Culverts and pavement marking etc, and switched on for all kind of traffic. Retaining walls progress remains frozen at 93.5% by the end of the reporting month. Works on construction of longitudinal drains and rural link roads are in progress.

### **SECTION – II (KM: 9+000 To 14+000)**

| <b><u>WORK ITEM</u></b>         | <b><u>SEC – II</u></b> |
|---------------------------------|------------------------|
| ○ Earthwork:                    | 81.50 %                |
| ○ Sub Base:                     | 55.10 %                |
| ○ Water Bound Macadam:          | 30.43 %                |
| ○ Asphaltic Base Course:        | 26.09 %                |
| ○ Asphaltic Wearing Course:     | 17.39 %                |
| ○ Culverts:                     | 81.12 %                |
| ○ Retaining Walls/Breast Walls: | 49.90 %                |

- PIL of section-II has been approved by USAID.
- Bulk earthwork and roadway excavation continued along with construction of 17 No's cross drainage structures & 1850 M (cumulative) retaining/breast walls.
- Traffic continually plying on diversions / detours.

### **SECTION – III (KM: 14+000 To 19+000)**

| <b><u>WORK ITEM</u></b>         | <b><u>SEC – III</u></b> |
|---------------------------------|-------------------------|
| ○ Earthwork:                    | 68.00 %                 |
| ○ Sub Base:                     | 59.32 %                 |
| ○ Aggregate Base Course/WBM:    | 59.57 %                 |
| ○ Asphaltic Base Course:        | 48.94 %                 |
| ○ Asphaltic Wearing Course      | NIL                     |
| ○ Culverts:                     | 58.84 %                 |
| ○ Retaining Walls/Breast Walls: | 22.70 %                 |

- PIL of Section - III has been approved by USAID.
- Construction continued on 16 No's cross drainage structures & 1000 M (cumulative) retaining walls in section – III.
- Traffic continually plying on diversions / detours.

### **SECTION – IV (KM: 19+000 To 24+000) AND SECTION – V (KM: 24+000 To 33+000)**

- Revised PC-1 preparation under progress with FWO/ NESPAK.
- Work continued to finalize the conceptual design for the section – V of the project.
- Earthwork including massive roadway excavation & sub-base paving work in section – IV & V continued.
- Work continued on construction of 04 No's culverts in section - V.
- Traffic continually plying on diversions / detours.

### **BRDIGES AND MULTICELL CULVERTS FALLING IN DIFFERENT SECTIONS**

- PIL approval for 02 bridges & 02 multicell culverts in progress at USAID.
- Casting of 15 No's post tensioned concrete girder and 04 No's pile caps completed during the reporting month. Similarly, 06 No's pier shaft at pier/ column have also been completed up to the end of the reporting month.
- Test pile boring/ concreting completed at bridge No: 12 (KM: 27+350) and 10 No's working pile construction at bridge No.10 (KM: 23+750) are in progress. Similarly 01 No post tensioned concrete girder casted up to the end of the reporting month.
- 06 No's reinforced concrete walls completed for multi-cell culvert at KM: 11+190 while fabrication of rebars for 02 No's walls in progress by the end of reporting month.
- Reinforced concrete base slab completed for multi-cell culvert at KM: 22+925.

# INTRODUCTION

## 1.1 PROJECT BACKGROUND

The Federally Administered Tribal Area (FATA) Secretariat of the Government of Pakistan (GoP) under the Quick Impact Projects (QIPs) in the Khyber Agency has inked an agreement with USAID for financial assistance in the form of a Grant for Strengthening and Improvement of 46 KM long existing two-lane, two-way carriageway from Peshawar to Torkham (N – 5). The Project will support the GoP in improving accessibility to the remotely located areas of Khyber agency and enhance logistic support to law enforcing agencies, besides assisting trade between Pakistan and Afghanistan. The Sponsoring agency for the Peshawar Torkham Road Project is FATA secretariat, headed by Additional Chief Secretary FATA. The Executing agency is Frontier Works Organization (FWO).

**Table: 1**

| Civil Works Package Features |  |                              |                               |                               |                               |                               |                               |
|------------------------------|--|------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Physical Limits              | Peshawar to Torkham  |                              |                               |                               |                               |                               |                               |
| Feature                      | Section – I  | Section – II                 | Section – III                 | Section – IV                  | Section – V                   | Section – VI                  | Section – VII                 |
| Kilometers                   | 0+000 to 9+000   | 9+000 to 14+000<br>(Revised) | 14+000 to 19+000<br>(Revised) | 19+000 to 24+000<br>(Revised) | 24+000 to 33+000<br>(Revised) | 33+000 to 37+000<br>(Revised) | 37+000 to 46+000<br>(Revised) |
| Black Top                    | Total 12.3 meter (7.3 meter carriageway & 2.5 meter structural shoulders on either side) |                              |                               |                               |                               |                               |                               |
| Completion Period            | 807 Calendar Days  |                              |                               |                               |                               |                               |                               |

## **1.2 SCOPE OF WORK**

The project involves widening, strengthening and improvement of the existing two lane carriageway, including construction of new cross drainage structures, bridges, rigid pavements and earth retaining structures spread over 46 KM. At a first stage, the FATA Secretariat has undertaken to contract out section – I of the project from KM: 0 +000 To KM: 9 + 000. Length of each package varies according to topographical features and live traffic conditions along the project route.

Being an EPC form of contract, FWO is fully responsible for design and construction of the project in conformity with the NHA's specifications and standard engineering practices. NESPAK is providing design and quality control services to FWO. While AGES Consultants has been entrusted with the Construction Monitoring and Evaluation Services including Quality Assurance and Environmental Monitoring of the project on behalf of the USAID Pakistan Mission.

### 1.3 GENERAL CONTRACT DATA

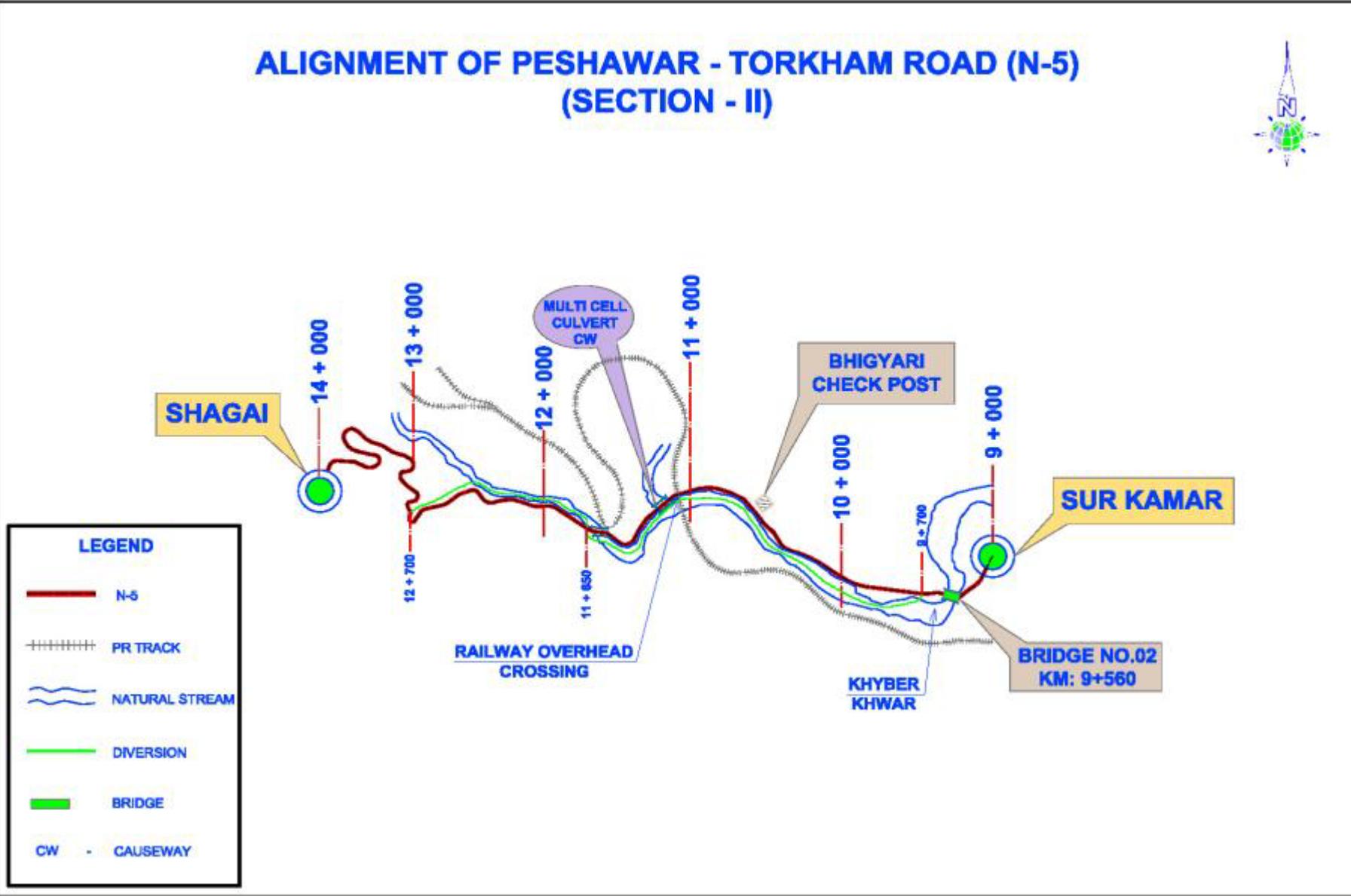
|     |  |  |
|-----|--|--|
| 1.  | Name of Project                                | <b>Strengthening and Improvement of Peshawar<br/>Torkham Road (N-5) Khyber Agency FATA</b> |
| 2.  | Project Construction Cost                      | <b>US \$ 67 Million</b>  |
| 3.  | Donor Agency                                   | <b>USAID PAKISTAN</b>  |
| 4.  | Donor's Agency Representative                  | <b>Engr. Farhat Ali Shah Banori, USAID/COR</b>   |
| 5.  | Sponsoring Agency                              | <b>FATA Secretariat, Peshawar</b>  |
| 6.  | Sponsoring Agency Representative               | <b>Mr. Roshan Mahsud, Project Director, PMU FATA</b>                                       |
| 7.  | Executing Agency                               | <b>Frontier Works Organization (FWO)</b>   |
| 8.  | Executing Agency Representative                | <b>Col. Zahid (Project Director FWO)</b>   |
| 9.  | M&E Consultants                                | <b>AGES Consultants</b>  |
| 10. | M&E Consultants Representative                 | <b>Engr. Aziz-ul- Haq, Project Manager</b>   |
| 11. | Time for Completion                            | <b>807 Calendar Days</b>   |
| 12. | Mode of Construction Contract                  | <b>EPC (Engineer, Procure and Construct) Contract</b>                                      |
| 13. | Chronology                                     |  |
|     | Signing of MoU (USAID–FATA–NHA)                | <b>Sep 18, 2012</b>  |
|     | Signing of Consultancy Contract (USAID – AGES) | <b>Sep 30, 2012</b>  |
|     | M&E Consultants Mobilization                   | <b>Oct 01, 2012</b>  |
|     | Project Date of Commencement                   | <b>Oct 15, 2012</b>  |
|     | Project Date of Completion                     | <b>Dec 31, 2014</b>  |

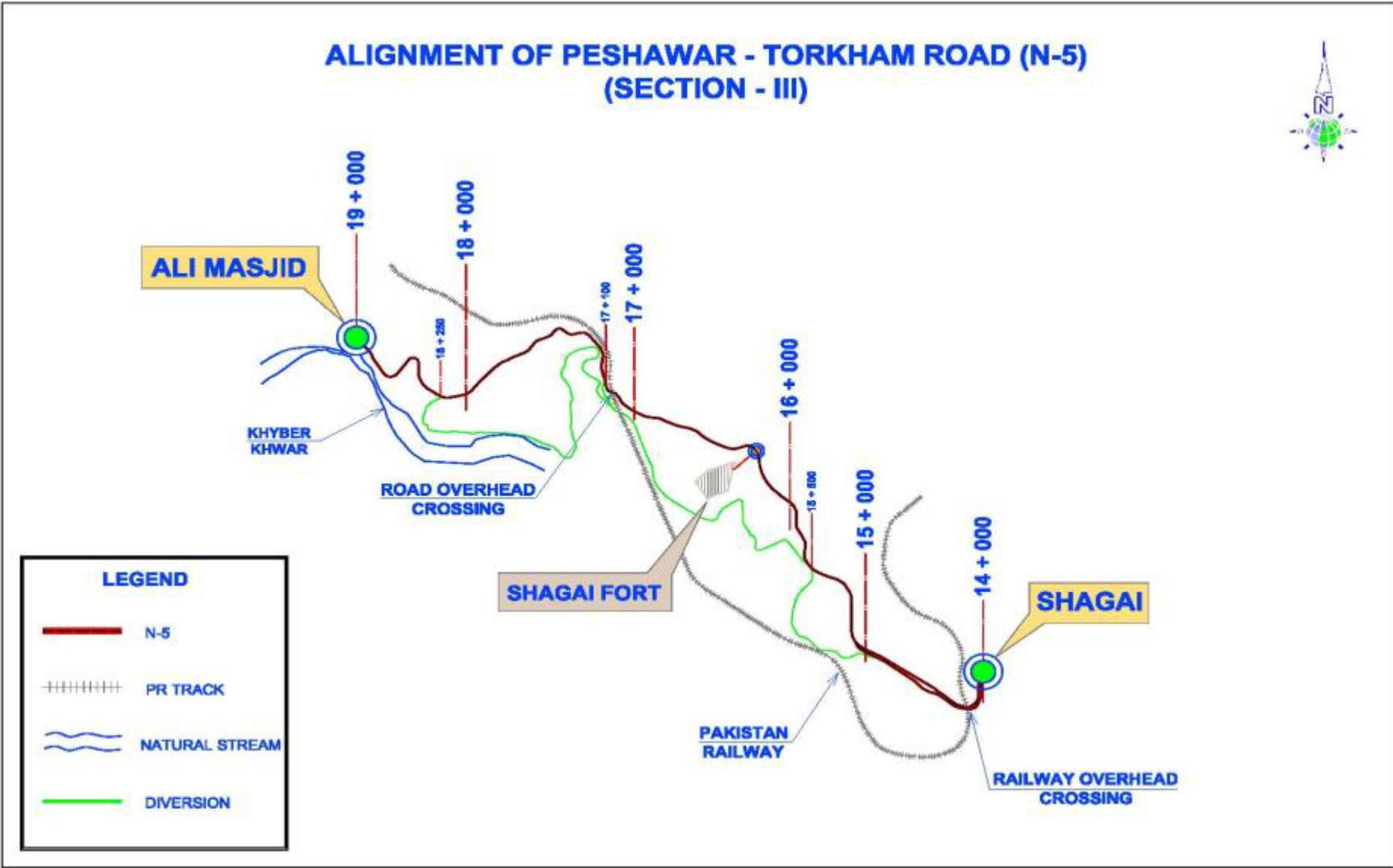
**1.4 SECTIONS DATA**

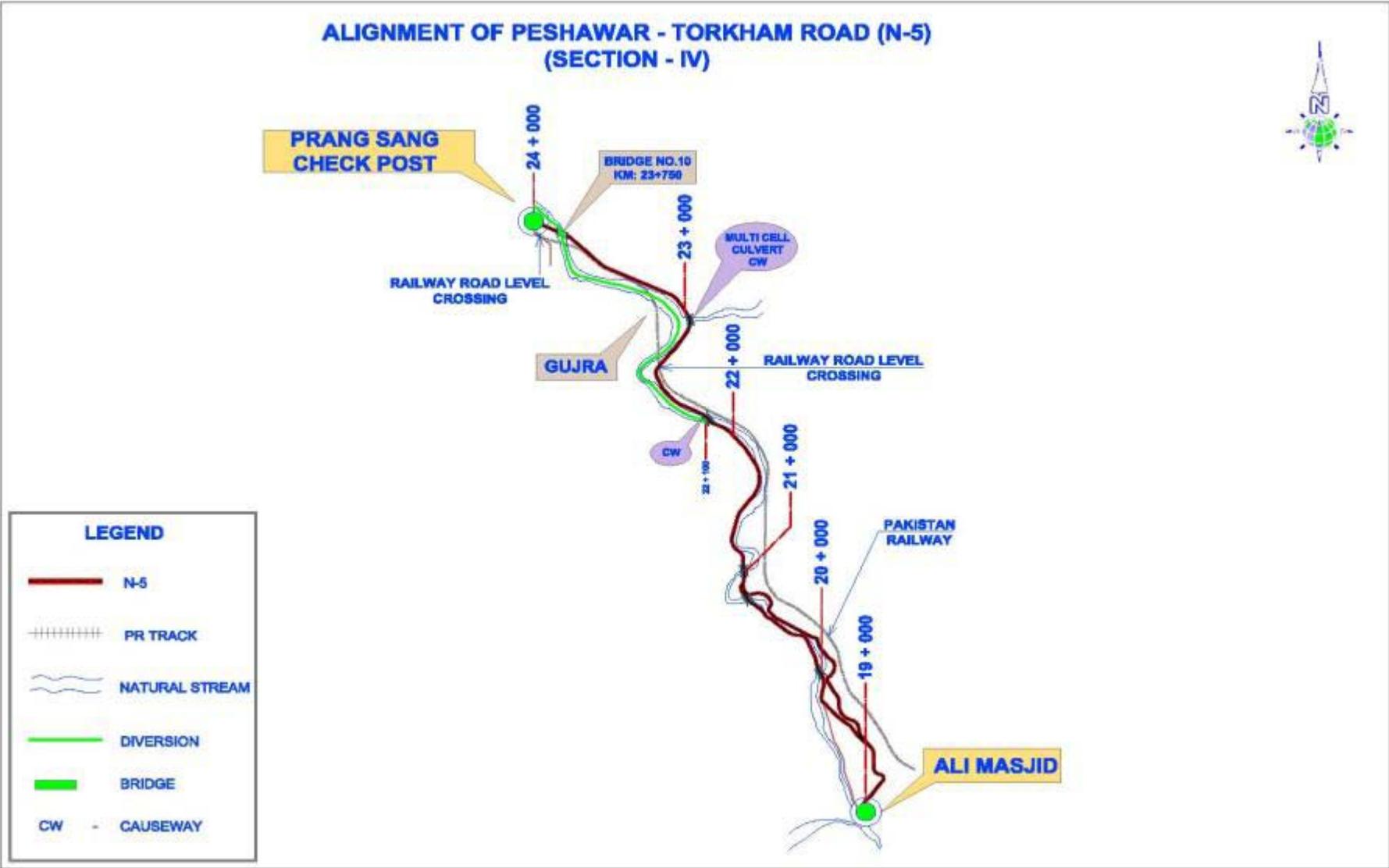
- |                                       |   |
|---------------------------------------|---|
| 1. Name of Package                    | <b>Section – I (CH: KM: 0+000 to CH: KM: 9+000)</b>     |
| 2. PC-1 Cost (Section – I)            | <b>Rs. 937.939 Million (PIL Cost: US \$ 9.978 M)</b>    |
| 3. Approval of PC – 1 (Section – I)   | <b>Nov 20, 2012</b>                                     |
|                                       |   |
| 1. Name of Package                    | <b>Section – II (CH: KM: 9+000 to CH: KM: 14+000)</b>   |
| 2. PC-1 Cost (Section – II)           | <b>Rs. 985.266 Million (PIL Cost: US \$ 9.383 M)</b>    |
| 3. Approval of PC – 1 (Section – II)  | <b>Oct 08, 2013</b>                                     |
|                                       |   |
| 1. Name of Package                    | <b>Section – III (CH: KM: 14+000 to CH: KM: 19+000)</b> |
| 2. PC-1 Cost (Section – III)          | <b>Rs. 989.320 Million (PIL Cost: US \$ 9.512 M)</b>    |
| 3. Approval of PC – 1 (Section – III) | <b>Dec 20, 2013</b>                                     |

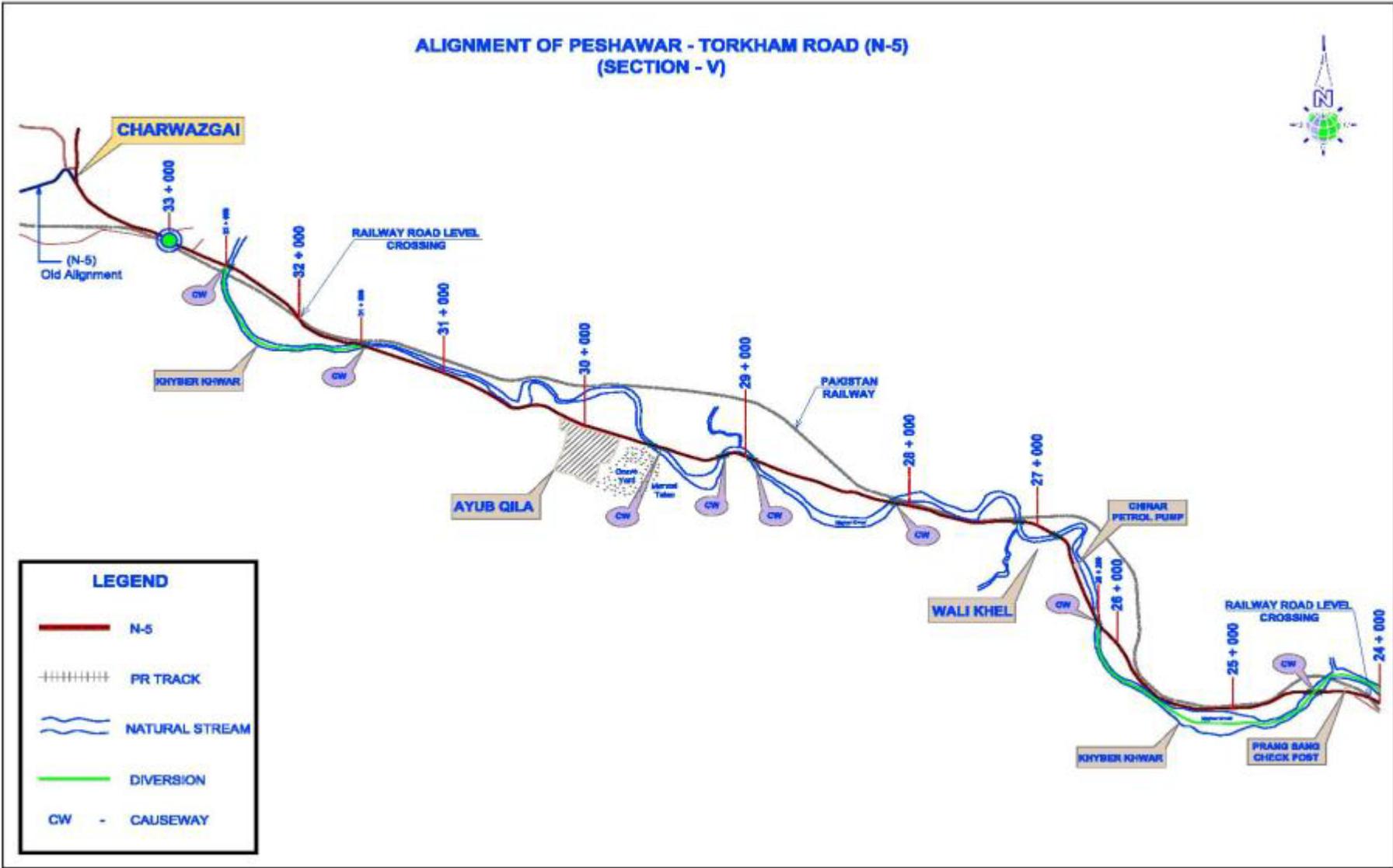


### ALIGNMENT OF PESHAWAR - TORKHAM ROAD (N-5) (SECTION - II)

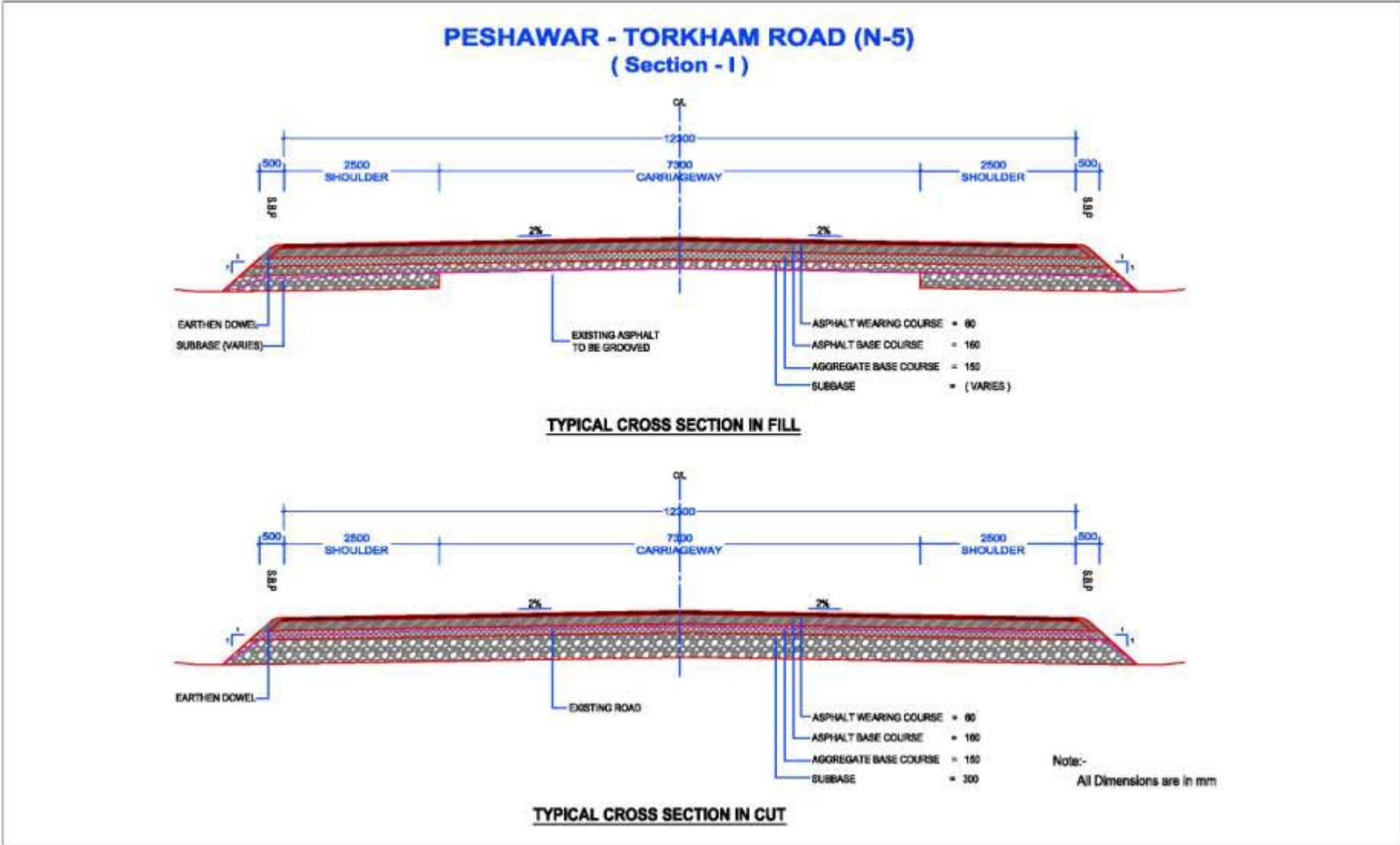


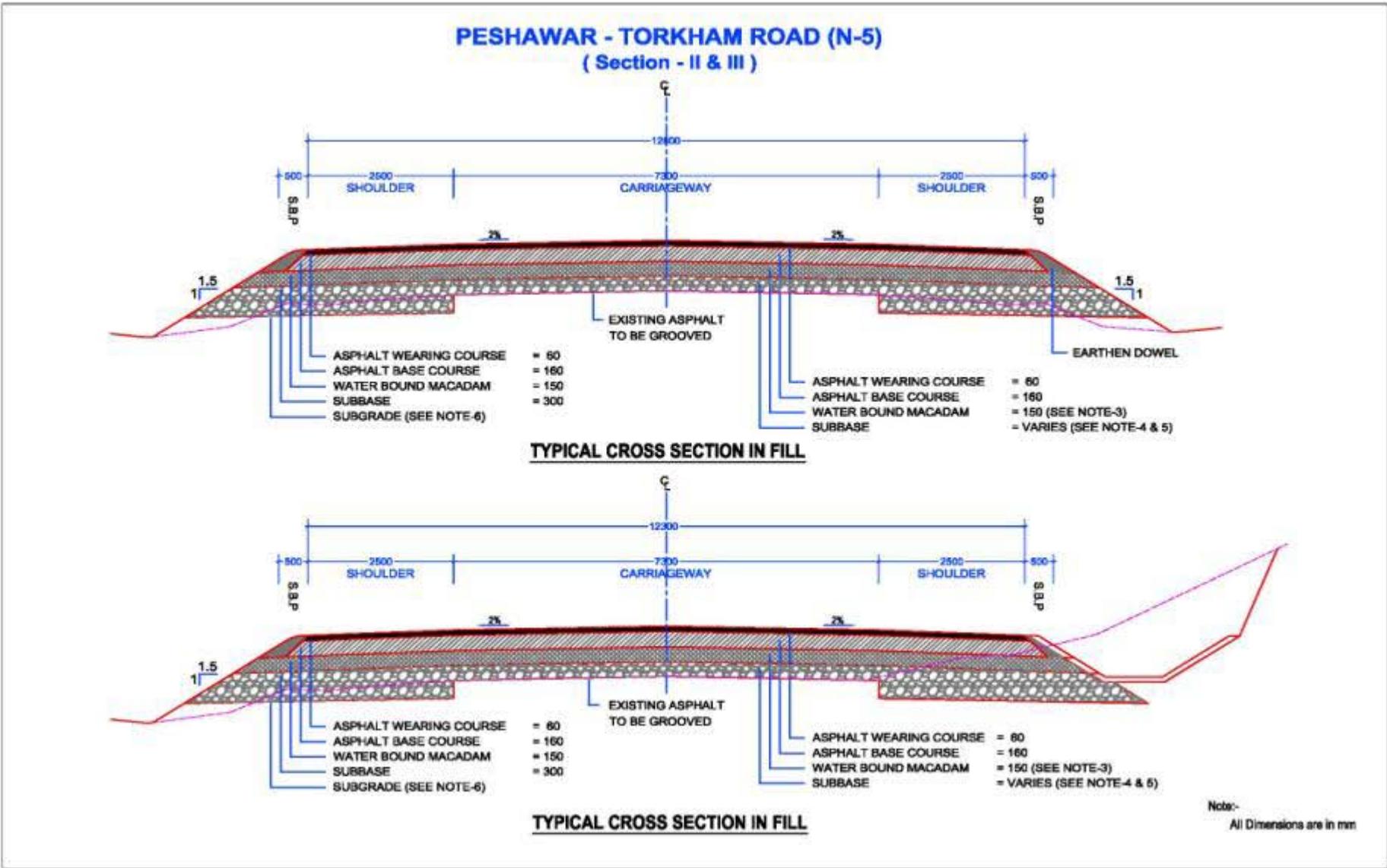


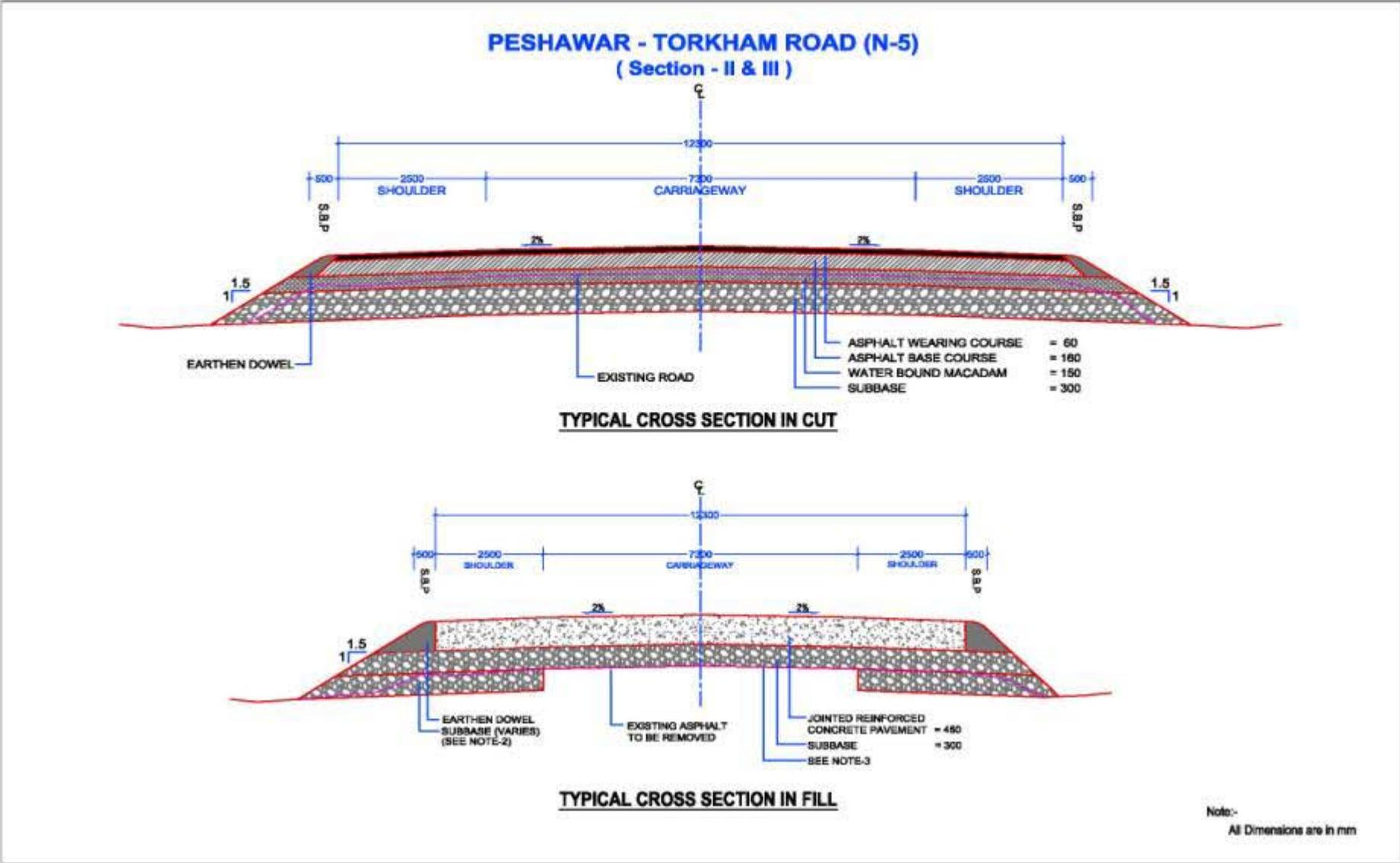




1.6 TYPICAL CROSS SECTIONS OF ROAD







# **M&E SERVICES & PROGRESS OF ACTIVITIES**

**2.1 M&E CONSULTANTS MAJOR ACTIVITIES DURING THE REPORTING MONTH – FEBRUARY 2014**

- Key construction achievements made against section – I by the end of February 2014 are :-
  - Roadside drains were taken from 64.05% to 74 %.
- Detailed technical discussion held with FWO/ NESPAK at NESPAK office Lahore during the reporting month. Matters pertaining to design/ drawing and cost estimation of Sec – IV, V and VI, and additional work items were discussed.
- Milestones finalization for Bridge # 02 (KM: 9+560), #10 (KM: 23+750) & Multi-cell Culvert (KM: 11+190) of the project with FWO/NESPAK continued during the reporting period.
- M&E Consultants continued to monitor the Construction activities during the reporting month and conducted requisite material sampling & testing as per NHA's guidelines.
- Work continued to finalize the detailed design & ground survey from KM: 24+000 To 46+000.
- During the reporting month, the M&E consultants attended 01 meeting at FWO 495 Group HQ Rawalpindi regarding revised final cost of the PTR project.
- M&E consultants continued to liaise with relevant stakeholders about project and address environmental, planning and other concerns relating to the strengthening / improvement of the vital national traffic corridor.
- Joint site visit conducted on 11 Feb, 2014 with FWO/NESPAK for proposed design validation of Section KM: 35 to 43.
- M&E Consultants attended coordination meetings held in the office of CRE NESPAK in the reporting month.
- Actively participated in on-site discussions with FWO/NESPAK regarding ongoing construction activities.
- FWO was constantly pressed for demonstrating good environmental practice in conformity with the construction environmental management plan.
- Total percent time elapsed up to 28<sup>th</sup> February, 2014 is 62.21 %.

## **2.2 MATTERS REQUIRING ATTENTION**

### **2.2.1 PROJECT COST ESTIMATES – ADDITIONAL COSTS**

The PTR project was initially estimated to cost US \$ 67 million. So far design and cost estimates for about 50% of the road length have been shared with the M&E Consultants and USAID for the purpose of PIL processing. Based on these estimates, the projected cost for the entire 46 KM of road would apparently be significantly high. The first nine KM road was completed close to the estimated per kilometer cost as the road was passing in plain terrain. However, the next sections traverses mostly through difficult hilly terrain requiring increased number of cross drainage structures, considerably increased length of earth retaining structures and roadside drains, inclusion of loops, extensive roadway excavation in varying geological formations and construction of rigid pavement as against the flexible pavement. Conversion of causeways into bridges is another prime factor requiring additional costs.

The matters has been already discussed with USAID COR who has instructed FWO/NESPAK to finalize the overall project design at the earliest and share it with the M&E Consultants. Once the overall design is finalized only then the actual project cutoff cost could be established for necessary arrangement of funds or otherwise by USAID.

### **2.2.2 COMPLEXITY IN MAINTAINING TRAFFIC ON DIVERSIONS**

Diversions have been provided at intervals b/w KM: 09+000 To 35+000. However, substandard condition of the diversion tracks, including potholes, bumpy and dusty surface, diesel fumes of multi-axle trucks etc. making life miserable for the road commuters and population. Peak hour traffic congestion and its frequency is regularly escalating the problem. Even minor traffic accident on the corridor usually results in rapid disturbance to traffic movement and some time complete blockage of diversions.

In order to ensure smooth traffic movement along the corridor, minimizing traffic delays keeping dust & noise pollution to a minimum, a higher level of communication and liaison would be required throughout the work period to meet the expectations of stakeholders and commuters.

### **2.2.3 DELAY IN UTILITIES IDENTIFICATION / SHIFTING FROM CONSTRUCTION CORRIDOR**

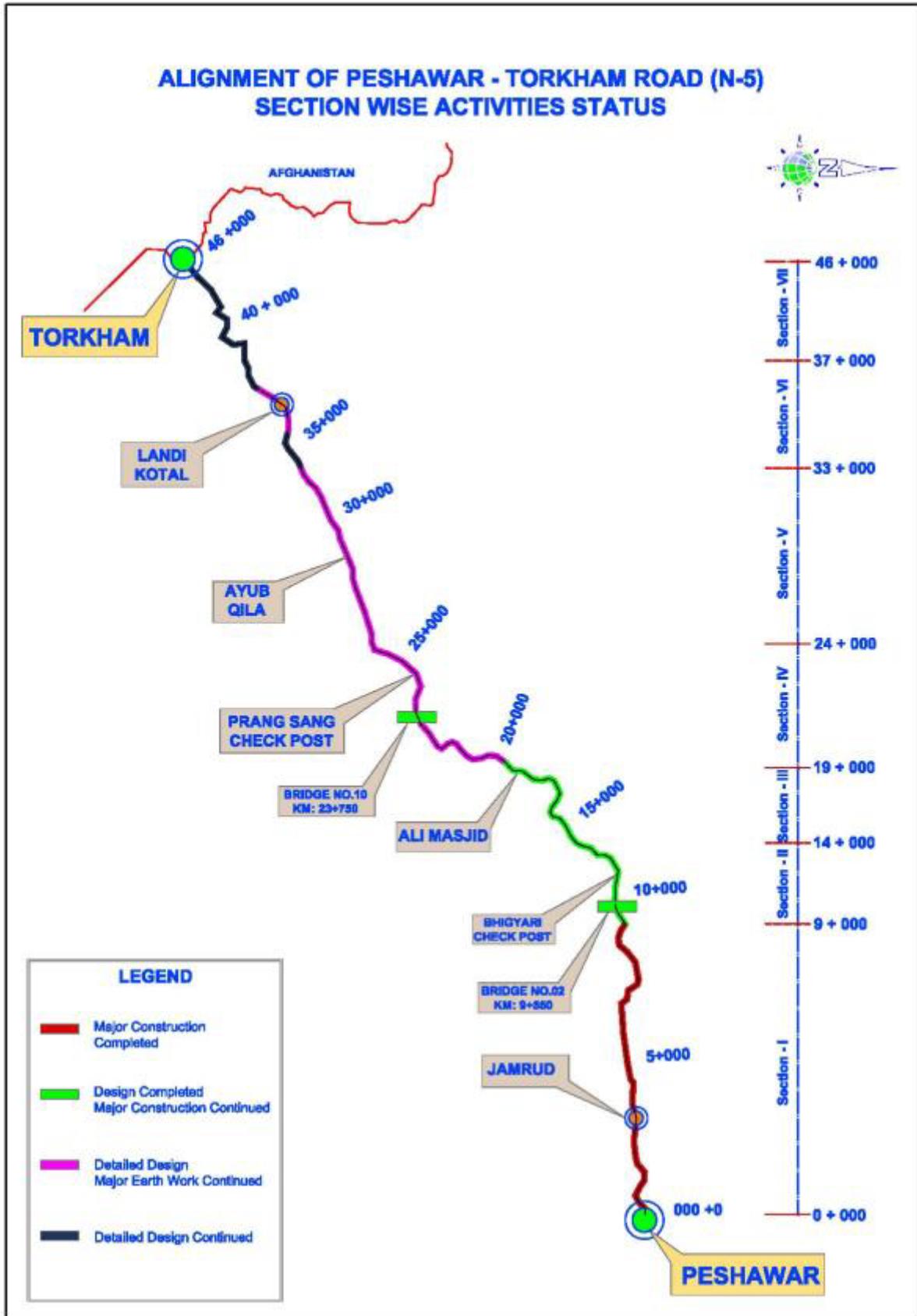
Since Peshawar Torkham road project traverses through the rolling / hilly terrain of Khyber agency, proper records of the underground utilities like water supply, sewerage lines and telephone cables etc. is hardly available. Utilities usually get identified during the construction activities. Similarly, shifting of overhead electric lines (including poles) got delayed due to nonpayment of relocation cost by FWO and cumbersome procedures involved for clearances / approvals / permissions from the concerned departments.

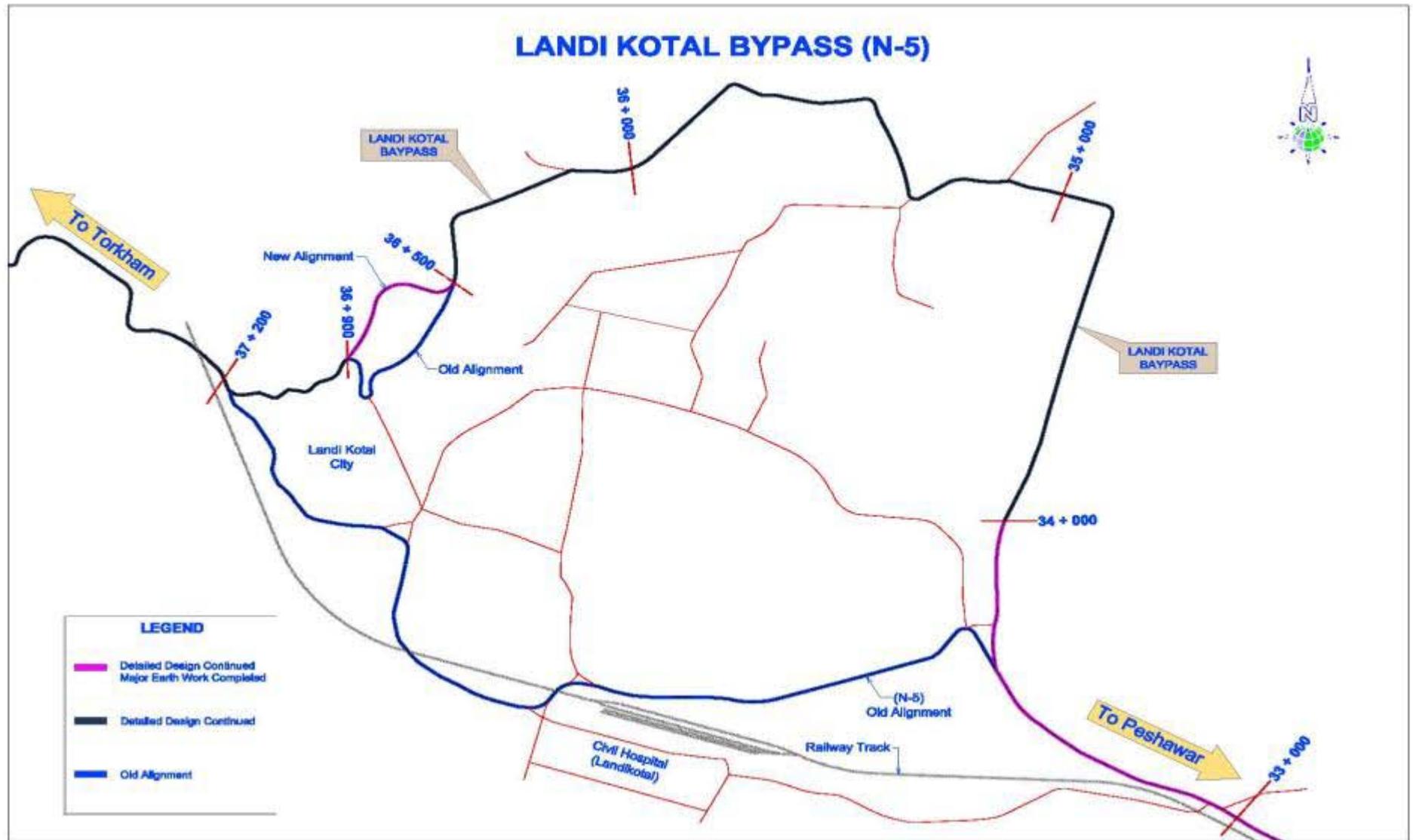
The cited encumbrances put a constraint on the contractor's capacity to undertake construction work in an un-interrupted and continuous manner.

#### **2.2.4 ENVIRONMENTAL COMPLIANCE**

FWO needs to focus more on environmental compliance measures due to inherited site specific conditions such as live traffic corridor, heavy traffic, hilly terrain, and residential and commercial areas along the road.

### 2.3 SECTION WISE ACTIVITIES STATUS





# **CIVIL WORKS PROGRESS STATUS**

### 3.1 SECTION - I CUMULATIVE MILESTONE WISE PROGRESS STATUS

| BILL NO | DESCRIPTION  | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UPTO PREVIOUS MONTH |                     |              | PROGRESS IN THIS MONTH |                   |             | MILESTONE WISE COMULATIVE PROGRESS |                     |              |
|---------|--|----------------|----------------------|---------------------------------|----------------------|------------------------------|---------------------|--------------|------------------------|-------------------|-------------|------------------------------------|---------------------|--------------|
|         |  |                |                      |                                 |                      | MILESTONE ACHIEVED           | AMOUNT (US \$)      | PROGRESS %   | MILESTONE ACHIEVED     | AMOUNT (US \$)    | PROGRESS %  | MILESTONE ACHIEVED                 | AMOUNT (US \$)      | PROGRESS %   |
| 1       | EARTH WORK   | KM             | 9                    | 6,339.85                        | 57,058.65            | 9.00                         | 57,058.65           | 100.00       | -                      | -                 | -           | 9.00                               | 57,058.65           | 100.00       |
| 2       | SUB BASE AND BASE COURSE   |                |                      |                                 |                      |                              |                     |              |                        |                   |             |                                    |                     |              |
| i       | GRANULAR SUB BASE  | KM             | 9                    | 111,763.61                      | 1,005,872.49         | 9.00                         | 1,005,872.49        | 100.00       | -                      | -                 | -           | 9.00                               | 1,005,872.49        | 100.00       |
| ii      | AGGREGATE BASE COURSE  | KM             | 9                    | 73,611.56                       | 662,504.04           | 9.00                         | 662,504.04          | 100.00       | -                      | -                 | -           | 9.00                               | 662,504.04          | 100.00       |
| iii     | ASPHALTIC BASE COURSE  | KM             | 9                    | 416,608.69                      | 3,749,478.21         | 9.00                         | 3,749,478.21        | 100.00       | -                      | -                 | -           | 9.00                               | 3,749,478.21        | 100.00       |
| 3       | SURFACE COURSES AND PAVEMENT                                     | KM             | 9                    | 213,785.71                      | 1,924,071.39         | 9.00                         | 1,924,071.39        | 100.00       | -                      | -                 | -           | 9.00                               | 1,924,071.39        | 100.00       |
| 4a      | STRUCTURES ( RETAINING WALL/BREAST WALL)                         | JOB            | 1                    | 38,812.31                       | 38,812.31            | 0.94                         | 36,289.51           | 93.50        | -                      | -                 | -           | 0.94                               | 36,289.51           | 93.50        |
| 4b      | STRUCTURES ( CULVERTS)   |                |                      |                                 |                      |                              |                     |              |                        |                   |             |                                    |                     |              |
| I       | WIDENING AND REPAIR OF EXISTING CULVERTS AT RD 1+290 & 5+692     | NUMBER         | 2                    | 10,657.55                       | 21,315.10            | -                            | -                   | -            | -                      | -                 | -           | -                                  | -                   | -            |
| II      | CONSTRUCTION OF NEW CULVERTS (No. of Span x Span Width x Height) |                |                      |                                 |                      |                              |                     |              |                        |                   |             |                                    |                     |              |
|         | 1 x 2 x 1.5  | NUMBER         | 7                    | 19,268.30                       | 134,878.10           | 7.00                         | 134,878.10          | 100.00       | -                      | -                 | -           | 7.00                               | 134,878.10          | 100.00       |
|         | 1 x 3 x 1.5  | NUMBER         | 3                    | 25,204.07                       | 75,612.21            | 3.00                         | 75,612.21           | 100.00       | -                      | -                 | -           | 3.00                               | 75,612.21           | 100.00       |
|         | 2 x 3 x 1.5  | NUMBER         | 2                    | 40,950.75                       | 81,901.50            | 2.00                         | 81,901.50           | 100.00       | -                      | -                 | -           | 2.00                               | 81,901.50           | 100.00       |
|         | 3 x 3 x 1.5  | NUMBER         | 1                    | 54,597.59                       | 54,597.59            | 1.00                         | 54,597.59           | 100.00       | -                      | -                 | -           | 1.00                               | 54,597.59           | 100.00       |
|         | 5 x 3 x 1.5  | NUMBER         | 1                    | 75,007.57                       | 75,007.57            | 1.00                         | 75,007.57           | 100.00       | -                      | -                 | -           | 1.00                               | 75,007.57           | 100.00       |
| 5a      | DRAINAGE & EROSION WORKS ( ROAD SIDE DRAIN)                      |                |                      |                                 |                      |                              |                     |              |                        |                   |             |                                    |                     |              |
| i       | DRAIN TYPE D-1 & D-2 (COVERED)                                   | KM             | 5.5                  | 249,002.78                      | 1,369,515.29         | 3.48                         | 865,284.66          | 63.18        | 0.25                   | 62,250.70         | 4.55        | 3.73                               | 927,535.36          | 67.73        |
| ii      | DRAIN TYPE D-1a & D-2a (UNCOVERED)                               | KM             | 3                    | 110,128.52                      | 330,385.56           | 1.95                         | 214,750.61          | 65.00        | 0.23                   | 24,778.92         | 7.50        | 2.18                               | 239,529.53          | 72.50        |
| iii     | DRAIN TYPE D-3 (Converted to D-2 type)                           | KM             | 1.5                  | 135,439.74                      | 203,159.61           | 1.03                         | 138,825.73          | 68.33        | 0.20                   | 27,087.95         | 13.33       | 1.23                               | 165,913.68          | 81.67        |
| 5b      | ROAD PROTECTION WORKS (100 M)                                    | JOB            | 1                    | 11,047.54                       | 11,047.54            | -                            | -                   | -            | -                      | -                 | -           | -                                  | -                   | -            |
| 6       | ANCILLARY WORKS COMPLETE IN ALL RESPECT                          | JOB            | 1                    | 54,375.49                       | 54,375.49            | 0.47                         | 25,556.48           | 47.00        | -                      | -                 | -           | 0.47                               | 25,556.48           | 47.00        |
| 7       | DIVERSION  | KM             | 9                    | 12,978.72                       | 116,808.48           | 9.00                         | 116,808.48          | 100.00       | -                      | -                 | -           | 9.00                               | 116,808.48          | 100.00       |
| 8       | PLANTATION OF TREES (450 Nos)                                    | KM             | 9                    | 1,297.87                        | 11,680.83            | -                            | -                   | -            | -                      | -                 | -           | -                                  | -                   | -            |
|         | <b>TOTAL PROJECT COST (SECTION-I)</b>                            |                |                      |                                 | <b>9,978,081.96</b>  |                              | <b>9,218,497.23</b> | <b>92.39</b> |                        | <b>114,117.56</b> | <b>1.14</b> |                                    | <b>9,332,614.79</b> | <b>93.53</b> |

**3.2 SECTION - I PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS**

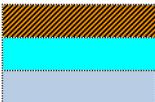
|   |         |         |          |          |          |          |          |          |          |
|---|---------|---------|----------|----------|----------|----------|----------|----------|----------|
| Ancillary works                             |         |         |          |          |          |          |          |          |          |
| Asphaltic Wearing Course                    |         |         |          |          |          |          |          |          |          |
| Asphaltic Base Course                       |         |         |          |          |          |          |          |          |          |
| Aggregate Base Course                       |         |         |          |          |          |          |          |          |          |
| Granular Sub Base (Carriageway)             |         |         |          |          |          |          |          |          |          |
| Granular Sub Base - Shoulders               |         |         |          |          |          |          |          |          |          |
| Earthwork - Carriageway                     |         |         |          |          |          |          |          |          |          |
| Earthwork - Shoulders                       |         |         |          |          |          |          |          |          |          |
| Structures (Retaining Wall & Breast Walls)  |         |         |          |          |          |          |          |          |          |
| Road Protection works                       |         |         |          |          |          |          |          |          |          |
| Drainage & Erosion Works (Road Side Drains) |         |         |          |          |          |          |          |          |          |
| Traffic Diversion                           |         |         |          |          |          |          |          |          |          |
| Joint X-Section                             |         |         |          |          |          |          |          |          |          |
| <b>CH: KM:</b>                              | 0 + 000 | 0 + 500 | 01 + 000 | 01 + 500 | 02 + 000 | 02 + 500 | 03 + 000 | 03 + 500 | 04 + 000 |

04 + 500

|   |          |          |          |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Ancillary works                             |          |          |          |          |          |          |          |          |          |
| Asphaltic Wearing Course                    |          |          |          |          |          |          |          |          |          |
| Asphaltic Base Course                       |          |          |          |          |          |          |          |          |          |
| Aggregate Base Course                       |          |          |          |          |          |          |          |          |          |
| Granular Sub Base (Carriageway)             |          |          |          |          |          |          |          |          |          |
| Granular Sub Base - Shoulders               |          |          |          |          |          |          |          |          |          |
| Earthwork - Carriageway                     |          |          |          |          |          |          |          |          |          |
| Earthwork - Shoulders                       |          |          |          |          |          |          |          |          |          |
| Structures (Retaining Wall & Breast Walls)  |          |          |          |          |          |          |          |          |          |
| Road Protection works                       |          |          |          |          |          |          |          |          |          |
| Drainage & Erosion Works (Road Side Drains) |          |          |          |          |          |          |          |          |          |
| Traffic Diversion                           |          |          |          |          |          |          |          |          |          |
| Joint X-Section                             |          |          |          |          |          |          |          |          |          |
| <b>CH: KM:</b>                              | 04 + 500 | 05 + 000 | 05 + 500 | 06 + 000 | 06 + 500 | 07 + 000 | 07 + 500 | 08 + 000 | 08 + 500 |

09 + 000

**LEGEND**



WORKS COMPLETED IN FEBRUARY 2014  
 WORKS COMPLETED IN PREVIOUS MONTHS  
 PARTIAL COMPLETION



SINGLE LANE TRAFFIC MAINTAINED  
 ITEM NOT REQUIRED

3.3 SECTION - I CULVERTS PHYSICAL PROGRESS STATUS

|  |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
|--|--|-------|---------|---------|---------|---------|-------|---------|---------|---------|---------|---------|---------|---------|---------|
| RCC Railing                                | Deleted - Replaced with Pipe Culvert Extension |       |         |         | Deleted |         |       |         |         |         |         |         |         |         |         |
| Roll Pointing                              |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| RCC Slab Cast in situ                      |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Flooring/Cut-off wall/ Rip rap             |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Back Filling                               |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Bed plate/Curtain wall                     |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Stone Masonry (Wing Walls)                 |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Stone Masonry (Abutments/ Pier)            |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Lean Concrete                              |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Structural Excavation                      |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Dismantling of Existing Structure          |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| Size of Culvert (No. of Span*Width*Height) |  |       | 1*2*1.5 | 1*2*1.5 |         | 1*3*1.5 |       | 1*2*1.5 | 1*3*1.5 | 1*2*1.5 | 3*3*1.5 | 2*3*1.5 | 5*3*1.5 | 1*2*1.5 | 1*2*1.5 |
| Activity                                   |  |       |         |         |         |         |       |         |         |         |         |         |         |         |         |
| KM   | 1+230  | 2+611 | 3+081   | 4+480   | 4+590   | 5+202   | 5+354 | 5+905   | 6+050   | 6+191   | 6+501   | 6+648   | 6+883   | 7+384   |         |

 ACTIVITIES COMPLETED IN FEBRUARY 2014  
 ACTIVITIES COMPLETED IN PREVIOUS MONTHS

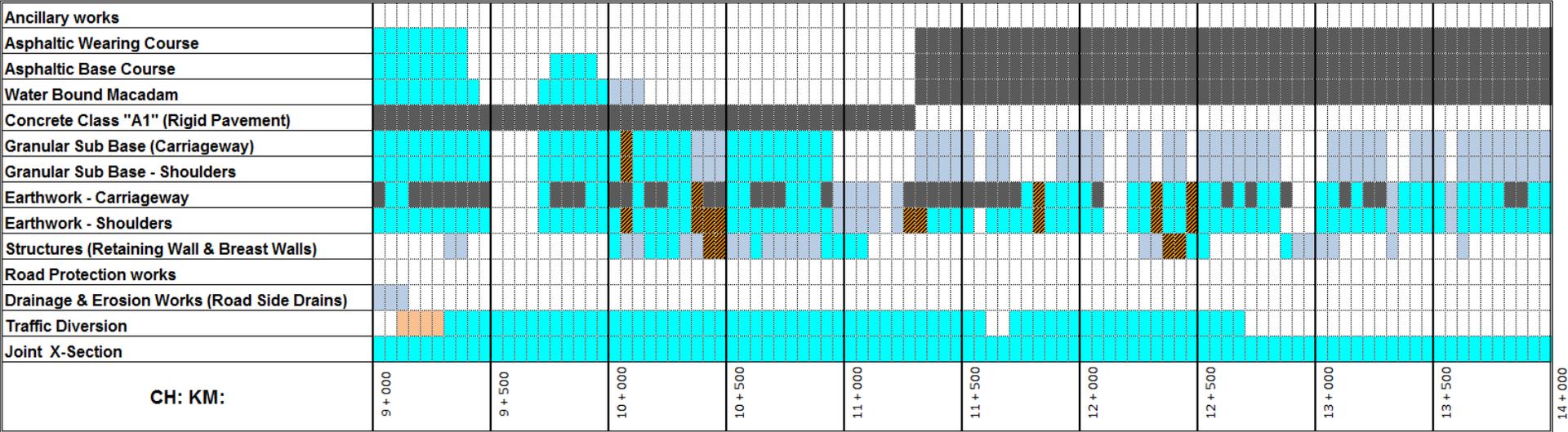
### 3.4 SECTION - II CUMULATIVE MILESTONE WISE PROGRESS STATUS

| BILL NO | DESCRIPTION OF BILL   | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UPTO PREVIOUS MONTH |                |            | PROGRESS IN THIS MONTH |                |            | MILESTONE WISE COMULATIVE PROGRESS |                |            |
|---------|---|----------------|----------------------|---------------------------------|----------------------|------------------------------|----------------|------------|------------------------|----------------|------------|------------------------------------|----------------|------------|
|         |   |                |                      |                                 |                      | MILESTONE ACHIEVED           | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED     | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED                 | AMOUNT (US \$) | PROGRESS % |
| 1       | EARTH WORK ( INCLUDING EARTHEN DOWELS)                                  | 500 m          | 10                   | 101,245                         | 1,012,450            | 7.25                         | 734,026.25     | 72.50      | 0.90                   | 91,120.50      | 9.00       | 8.15                               | 825,146.75     | 81.50      |
| 2       | <b>SUB BASE AND BASE COURSE</b>   |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| a       | GRANULAR SUB BASE   | 500 m          | 10                   | 27,073                          | 270,730              | 5.21                         | 140,914.97     | 52.05      | 0.31                   | 8,257.26       | 3.05       | 5.51                               | 149,172.23     | 55.10      |
| b       | WATER BOUND MACADAM   | 500 m          | 4.6                  | 28,702                          | 132,029              | 1.40                         | 40,182.74      | 30.43      | -                      | -              | -          | 1.40                               | 40,182.74      | 30.43      |
| c       | ASPHALTIC BASE COURSE   | 500 m          | 4.6                  | 221,168                         | 1,017,373            | 1.20                         | 265,401.65     | 26.09      | -                      | -              | -          | 1.20                               | 265,401.65     | 26.09      |
| 3       | <b>SURFACE COURSES AND PAVEMENT</b>                                     |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| a       | ASPHALTIC CONCRETE FOR WEARING COURSE AND ALLIED ACTIVITIES             | 500 m          | 4.6                  | 104,708                         | 481,657              | 0.80                         | 83,766.43      | 17.39      | -                      | -              | -          | 0.80                               | 83,766.43      | 17.39      |
| b       | RIGID PAVEMENT (6.15 m Width Lane of 500 m)                             | 500 m          | 10.8                 | 262,510                         | 2,835,108            | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 4a      | <b>STRUCTURES (RETAINING WALL /BREAST WALL)</b>                         |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| 4a - i  | RETAINING WALL - 1975 M   | 100 m          | 19.75                | 70,864                          | 1,399,564            | 6.50                         | 460,616.00     | 32.91      | 4.00                   | 283,456.00     | 20.25      | 10.50                              | 744,072.00     | 53.16      |
| 4a - ii | BREAST WALL - 325 M   | 100 m          | 3.25                 | 28,169                          | 91,549               | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 4b      | <b>STRUCTURES (CULVERTS)</b>  |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
|         | <b>CONSTRUCTION OF NEW CULVERTS (No. of Span x Span Width x Height)</b> |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
|         | 1 x 2 x 2.5 (15 skew, Flexible Pavement)                                | No             | 2                    | 33,373                          | 66,746               | 1.57                         | 52,395.78      | 78.50      | 0.37                   | 12,214.56      | 18.30      | 1.94                               | 64,610.34      | 96.80      |
|         | 1 x 2 x 2.5 (22 m long, Flexible Pavement)                              | No             | 1                    | 49,109                          | 49,109               | 0.92                         | 45,180.07      | 92.00      | 0.05                   | 2,455.44       | 5.00       | 0.97                               | 47,635.51      | 97.00      |
|         | 1 x 2 x 3 (Flexible Pavement)   | No             | 2                    | 43,350                          | 86,700               | 1.92                         | 83,232.17      | 96.00      | 0.02                   | 650.25         | 0.75       | 1.94                               | 83,882.42      | 96.75      |
|         | 1 x 2 x 3 (Rigid Pavement)  | No             | 0                    | -                               | -                    | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
|         | 1 x 2 x 3 (15° skew)  | No             | 1                    | 44,585                          | 44,585               | 0.65                         | 28,980.49      | 65.00      | 0.30                   | 13,375.61      | 30.00      | 0.95                               | 42,356.09      | 95.00      |
|         | 1 x 2 x 3 (30° skew)  | No             | 1                    | 48,068                          | 48,068               | 0.62                         | 29,801.87      | 62.00      | 0.17                   | 8,171.48       | 17.00      | 0.79                               | 37,973.35      | 79.00      |

## SECTION - II CUMULATIVE MILESTONE WISE PROGRESS STATUS

| BILL NO | DESCRIPTION OF BILL  | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UPTO PREVIOUS MONTH |                  |              | PROGRESS IN THIS MONTH |                |             | MILESTONE WISE COMULATIVE PROGRESS |                  |              |
|---------|--|----------------|----------------------|---------------------------------|----------------------|------------------------------|------------------|--------------|------------------------|----------------|-------------|------------------------------------|------------------|--------------|
|         |  |                |                      |                                 |                      | MILESTONE ACHIEVED           | AMOUNT (US \$)   | PROGRESS %   | MILESTONE ACHIEVED     | AMOUNT (US \$) | PROGRESS %  | MILESTONE ACHIEVED                 | AMOUNT (US \$)   | PROGRESS %   |
|         | <b>CONSTRUCTION OF NEW CULVERTS (REPLACEMENT OF OLD) (No. of Span x Span Width x Height)</b> |                |                      |                                 |                      |                              |                  |              |                        |                |             |                                    |                  |              |
|         | 1 x 2 x 2.5 (Rigid Pavement)   | No             | 3                    | 33,083                          | 99,249               | 1.58                         | 52,271.14        | 52.67        | 0.51                   | 16,872.33      | 17.00       | 2.09                               | 69,143.47        | 69.67        |
|         | 1 x 2 x 2.5 (30° skew)(Flexible Pavement)  | No             | 1                    | 36,376                          | 36,376               | 0.80                         | 29,100.80        | 80.00        | 0.10                   | 3,637.60       | 10.00       | 0.90                               | 32,738.40        | 90.00        |
|         | 1 x 3 x 4.0  | No             | 1                    | 76,130                          | 76,130               | 0.87                         | 66,233.10        | 87.00        | 0.06                   | 4,567.80       | 6.00        | 0.93                               | 70,800.90        | 93.00        |
|         | 1 x 2 x 4 (22 m length)  | No             | 1                    | 89,408                          | 89,408               | 0.50                         | 44,435.78        | 49.70        | 0.06                   | 5,632.70       | 6.30        | 0.56                               | 50,068.48        | 56.00        |
|         | 1 x 2 x 4.5 (22 m length)  | No             | 1                    | 105,875                         | 105,875              | 0.94                         | 99,522.50        | 94.00        | 0.02                   | 2,117.50       | 2.00        | 0.96                               | 101,640.00       | 96.00        |
|         | 1 x 2 x 4.5 (15° skew)   | No             | 1                    | 83,564                          | 83,564               | 0.56                         | 46,795.84        | 56.00        | 0.13                   | 10,863.32      | 13.00       | 0.69                               | 57,659.16        | 69.00        |
|         | 1 x 3 x 2.5 (15° skew)   | No             | 1                    | 38,000                          | 38,000               | 0.87                         | 33,060.00        | 87.00        | 0.04                   | 1,634.00       | 4.30        | 0.91                               | 34,694.00        | 91.30        |
|         | 1 x 3 x 4.5 (15° skew)   | No             | 1                    | 88,589                          | 88,589               | 0.19                         | 16,831.84        | 19.00        | 0.33                   | 29,234.25      | 33.00       | 0.52                               | 46,066.09        | 52.00        |
|         | Service Ducts  | No             | 23                   | 2,666                           | 61,318               | 19.00                        | 50,654.00        | 82.61        | -                      | -              | -           | 19.00                              | 50,654.00        | 82.61        |
| 5a      | <b>DRAINAGE &amp; EROSION WORKS ( ROAD SIDE DRAIN)</b>                                       |                |                      |                                 |                      |                              |                  |              |                        |                |             |                                    |                  |              |
| i       | DRAIN TYPE D-1 (COVERED) - (0.8 KM)  | JOB            | 1                    | 161,945                         | 161,945              | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| ii      | DRAIN TYPE D-4 (0.875 KM)  | JOB            | 1                    | 232,586                         | 232,586              | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| iii     | DRAIN TYPE D-3a (3.725 KM)   | KM             | 3.725                | 34,924                          | 130,092              | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| 5b      | ROAD PROTECTION WORKS (75 M)   | JOB            | 1                    | 404,279                         | 404,279              | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| 6       | ANCILLARY WORKS COMPLETE IN ALL RESPECTS   | JOB            | 1                    | 70,050                          | 70,050               | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| 7       | DIVERSION  | KM             | 5                    | 30,579                          | 152,895              | 1.00                         | 30,579.00        | 20.00        | 0.25                   | 7,644.75       | 5.00        | 1.25                               | 38,223.75        | 25.00        |
| 8       | MISCELLANEOUS (Relocation of utilities and plantatio   | JOB            | 1                    | 17,460                          | 17,460               | -                            | -                | -            | -                      | -              | -           | -                                  | -                | -            |
|         | <b>TOTAL</b>   |                |                      |                                 | <b>9,383,484</b>     |                              | <b>2,433,982</b> | <b>25.94</b> |                        | <b>501,905</b> | <b>5.35</b> |                                    | <b>2,935,888</b> | <b>31.29</b> |

**3.5 SECTION - II PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS**



**LEGEND**

- WORKS COMPLETED IN FEBRUARY 2014
- WORKS COMPLETED IN PREVIOUS MONTHS
- PARTIAL COMPLETION
- ITEM NOT REQUIRED
- SINGLE LANE TRAFFIC MAINTAINED

3.6 SECTION - II CULVERTS PHYSICAL PROGRESS STATUS

|  |            |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|--|------------|----------|------------------|------------------|----------------|------------------|----------|------------------|---------|------------------|---------|------------------|------------------|------------------|------------------|--------|------------------|---------|
| RCC Railing                                | U/S side   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | D/S side   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Roll Pointing                              | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Flooring/Cut-off wall/ Riprap              | B/W Abts   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| RCC Slab cast insitu                       |            |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Bed plate/Curtain wall                     | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Back filling                               | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | B/W Abts   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Stone Masonry (Wing Walls)                 | U/S side   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | D/S side   |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Stone Masonry (Abutments/ Pier)            | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Lean Concrete                              | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Structural Excavation                      | Abt No1    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
|  | Abt No2    |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Dismantling of Existing Structure          |            |          |                  |                  |                |                  |          |                  |         |                  |         |                  |                  |                  |                  |        |                  |         |
| Pavement Type                              | Rigid/Flex | Flexible | Flexible         | Flexible         | Flexible       | Flexible         | Flexible | Flexible         | Rigid   | Rigid            | Rigid   | Rigid            | Rigid            | Rigid            |                  | Rigid  | Rigid            | Rigid   |
| Construction Sequence (FW/HW)              |            | FW       | FW               | FW               | FW             | FW               | FW       | FW               | FW      | HW               | HW      | FW               | FW               | FW               | FW               | FW     | FW               | FW      |
| Size of Culvert (No. of Span*Width*Height) |            | 1*2*3    | 1*2*2.5<br>(22M) | 1*2*4.5<br>(22M) | 1*3*4<br>(22M) | 1*2*2.5          | 1*2*3    | 1*2*2.5          | 1*2*2.5 | 1*2*3            | 1*2*2.5 | 1*3*4.5          | 1*2*2.5          | 1*3*2.5          | 1*2*4.5          | 1*2*4  | 1*2*3            | 1*2*2.5 |
| KM as per site                             |            | 10+050   | 10+502           | 10+562           | 10+602         | 10+788           | 10+850   | 10+961           | 11+372  | 11+691           | 11+841  | 12+178           | 12+337           | 12+460           | 12+975           | 13+212 | 13+333           | 13+565  |
| KM as per Drawing                          |            | 10+025   | 10+500           | 10+571           | 10+615         | 10+790<br>(skew) | 10+850   | 10+965<br>(skew) | 11+375  | 11+690<br>(skew) | 11+840  | 12+200<br>(skew) | 12+336<br>(skew) | 12+460<br>(skew) | 12+975<br>(skew) | 13+215 | 13+325<br>(skew) | 13+650  |

|   |   |   |                         |
|---|---|---|-------------------------|
|  | ACTIVITIES COMPLETED IN FEBRUARY 2014   |  | ACTIVITIES NOT REQUIRED |
|  | ACTIVITIES COMPLETED IN PREVIOUS MONTHS |  | ACTIVITIES IN PROGRESS  |

### 3.7 SECTION - III CUMULATIVE MILESTONE WISE PROGRESS STATUS

| BILL NO | DESCRIPTION OF BILL   | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UPTO PREVIOUS MONTH |                |            | PROGRESS IN THIS MONTH |                |            | MILESTONE WISE COMULATIVE PROGRESS |                |            |
|---------|---|----------------|----------------------|---------------------------------|----------------------|------------------------------|----------------|------------|------------------------|----------------|------------|------------------------------------|----------------|------------|
|         |   |                |                      |                                 |                      | MILESTONE ACHIEVED           | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED     | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED                 | AMOUNT (US \$) | PROGRESS % |
| 1       | <b>EARTH WORK</b>   | 500m           | 10                   | 104,451.00                      | 1,044,510.00         | 6                            | 626,706.00     | 60         | 0.8                    | 83,560.80      | 8.00       | 6.8                                | 710,266.80     | 68.00      |
| 2       | <b>SUB BASE AND BASE COURSE</b>                             |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| a       | GRANULAR SUB BASE   | 500m           | 11.80                | 39,882.00                       | 470,607.60           | 4.9                          | 195,421.80     | 41.53      | 2.1                    | 83,752.20      | 17.80      | 7.0                                | 279,174.00     | 59.32      |
| b       | WATER BOUND MACADAM   | 500m           | 4.70                 | 28,023.00                       | 131,708.10           | 2.2                          | 61,650.60      | 46.81      | 0.6                    | 16,813.80      | 12.77      | 2.8                                | 78,464.40      | 59.57      |
| c       | ASPHALTIC BASE COURSE                                       | 500m           | 4.70                 | 212,362.00                      | 998,101.40           | 1.2                          | 254,834.40     | 25.53      | 1.1                    | 233,598.20     | 23.40      | 2.3                                | 488,432.60     | 48.94      |
| d       | EARTHEN DOWEL   | JOB            | 1.00                 | 24,249.00                       | 24,249.00            | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 3       | <b>SURFACE COURSES AND PAVEMENT</b>                         |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| a       | ASPHALTIC CONCRETE FOR WEARING COURSE AND ALLIED ACTIVITIES | 500m           | 4.70                 | 101,000.00                      | 474,700.00           | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| b       | RIGID PAVEMENT (HALF PAVEMENT WIDTH)                        | 500m           | 14.30                | 216,504.00                      | 3,096,007.20         | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 4a      | <b>STRUCTURES (RETAINING WALL /BREAST WALL)</b>             |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| 4a - i  | RETAINING WALL (RW-2) - TOTAL L = 2780 M                    |                |                      |                                 |                      |                              |                |            |                        |                |            |                                    |                |            |
| a       | RETAINING WALL (RW-2) : H= 1.5 M ; L= 475 M                 | 200M           | 2.38                 | 18,706.00                       | 44,426.75            | 0.50                         | 9,353.00       | 21.05      | -                      | -              | -          | 0.5                                | 9,353.00       | 21.05      |
| b       | RETAINING WALL (RW-2) : H= 2.0 M ; L= 100 M                 | JOB            | 1.00                 | 13,980.00                       | 13,980.00            | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| c       | RETAINING WALL (RW-2) : H= 2.5 M ; L= 1075 M                | 100M           | 10.75                | 19,044.00                       | 204,723.00           | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| d       | RETAINING WALL (RW-2) : H= 3.0 M ; L= 150 M                 | JOB            | 1.00                 | 37,862.00                       | 37,862.00            | 0.67                         | 25,367.54      | 67.00      | 0.16                   | 6,057.92       | 16.00      | 0.83                               | 31,425.46      | 83.00      |
| e       | RETAINING WALL (RW-2) : H= 4.0 M ; L= 105 M                 | JOB            | 1.00                 | 44,200.00                       | 44,200.00            | -                            | -              | -          | 0.48                   | 21,039.20      | 47.60      | 0.48                               | 21,039.20      | 47.60      |
| f       | RETAINING WALL (RW-2) : H= 6.0 M ; L= 600 M                 | 100M           | 6.00                 | 93,510.00                       | 561,060.00           | 2.00                         | 187,020.00     | 33.33      | -                      | -              | -          | 2.00                               | 187,020.00     | 33.33      |
| g       | RETAINING WALL (RW-2) : H= 7.0 M ; L= 175 M                 | 100M           | 1.75                 | 124,511.00                      | 217,894.25           | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| h       | RETAINING WALL (RW-2) : H= 8.0 M ; L= 100 M                 | 100M           | 1.00                 | 164,173.00                      | 164,173.00           | -                            | -              | -          | 0.50                   | 82,086.50      | 50.00      | 0.50                               | 82,086.50      | 50.00      |
| 4a - ii | BREAST WALL - 225 M   | 100M           | 2.25                 | 34,037.00                       | 76,583.25            | -                            | -              | -          | -                      | -              | -          | -                                  | -              | -          |

**SECTION - III CUMULATIVE MILESTONE WISE PROGRESS STATUS**

| BILL NO | DESCRIPTION OF BILL   | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UP TO PREVIOUS MONTH |                |            | PROGRESS IN THIS MONTH |                |            | MILESTONE WISE COMULATIVE PROGRESS |                |            |
|---------|---|----------------|----------------------|---------------------------------|----------------------|-------------------------------|----------------|------------|------------------------|----------------|------------|------------------------------------|----------------|------------|
|         |   |                |                      |                                 |                      | MILESTONE ACHIEVED            | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED     | AMOUNT (US \$) | PROGRESS % | MILESTONE ACHIEVED                 | AMOUNT (US \$) | PROGRESS % |
| 4b      | <b>STRUCTURES (CULVERTS)</b>  |                |                      |                                 |                      |                               |                |            |                        |                |            |                                    |                |            |
| NS      | <b>CONSTRUCTION OF NEW CULVERTS (No. of Span x Span Width x Height)</b>                     |                |                      |                                 |                      |                               |                |            |                        |                |            |                                    |                |            |
|         | 1 x 2 x 2.5 (Flexible Pavement)   | No             | 1                    | 33,442.00                       | 33,442.00            | 0.68                          | 22,740.56      | 68.00      | 0.24                   | 8,026.08       | 24.00      | 0.92                               | 30,766.64      | 92.00      |
|         | 1 x 2 x 3 ( Flexible Pavement)  | No             | 1                    | 44,315.00                       | 44,315.00            | 0.94                          | 41,656.10      | 94.00      | -                      | -              | -          | 0.94                               | 41,656.10      | 94.00      |
|         | 1 x 2 x 4.5 ( Flexible Pavement)  | No             | 1                    | 83,501.00                       | 83,501.00            | 0.02                          | 1,670.02       | 2.00       | -                      | -              | -          | 0.67                               | 55,945.67      | 67.00      |
|         | 1 x 2 x 3 (Loop-1 Rigid Pavement)   | No             | 2                    | 40,667.00                       | 81,334.00            | 1.03                          | 41,887.01      | 51.50      | -                      | -              | -          | 1.03                               | 41,887.01      | 51.50      |
|         | 2 x 2 x 3 (Loop-1 Rigid Pavement)   | No             | 1                    | 52,479.00                       | 52,479.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| NS      | <b>CONSTRUCTION OF NEW CULVERTS(REPLACEMENT OF OLD) (No. of Span x Span Width x Height)</b> |                |                      |                                 |                      |                               |                |            |                        |                |            |                                    |                |            |
|         | 1 x 2 x 2   | No             | 1                    | 27,031.00                       | 27,031.00            | 0.86                          | 23,246.66      | 86.00      | 0.08                   | 2,162.48       | 8.00       | 0.94                               | 25,409.14      | 94.00      |
|         | 1 x 2 x 2.5   | No             | 2                    | 33,621.00                       | 67,242.00            | 1.66                          | 55,810.86      | 83.00      | 0.17                   | 5,715.57       | 8.50       | 1.83                               | 61,526.43      | 91.50      |
|         | 1 x 2 x 2.5 (Rigid Pavement)  | No             | 2                    | 33,818.00                       | 67,636.00            | 1.22                          | 41,257.96      | 61.00      | 0.60                   | 20,290.80      | 30.00      | 1.82                               | 61,548.76      | 91.00      |
|         | 1 x 2 x 2.5(15° skew)   | No             | 1                    | 34,445.00                       | 34,445.00            | 0.98                          | 33,756.10      | 98.00      | -                      | -              | -          | 0.98                               | 33,756.10      | 98.00      |
|         | 1 x 2 x 2.5(30° skew)   | No             | 1                    | 37,186.00                       | 37,186.00            | 0.96                          | 35,698.56      | 96.00      | -                      | -              | -          | 0.96                               | 35,698.56      | 96.00      |
|         | 1 x 2 x 3 (15° skew)  | No             | 1                    | 45,559.00                       | 45,559.00            | 0.98                          | 44,647.82      | 98.00      | -                      | -              | -          | 0.98                               | 44,647.82      | 98.00      |
|         | 1 x 2 x 3 (30° skew)  | No             | 1                    | 49,119.00                       | 49,119.00            | 0.4                           | 19,647.60      | 40.00      | 0.04                   | 1,964.76       | 4.00       | 0.44                               | 21,612.36      | 44.00      |
|         | 1 x 2 x 2.5 (Loop-1)  | No             | 3                    | 30,901.00                       | 92,703.00            | 0.6                           | 18,540.60      | 20.00      | 0.94                   | 29,046.94      | 31.33      | 1.54                               | 47,587.54      | 51.33      |
|         | 2 x 2 x 2.5   | No             | 1                    | 39,933.00                       | 39,933.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
|         | Service Ducts   | No             | 6                    | 2,725.00                        | 16,350.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 5a      | <b>DRAINAGE &amp; EROSION WORKS ( ROAD SIDE DRAIN)</b>                                      |                |                      |                                 |                      |                               |                |            |                        |                |            |                                    |                |            |
| i       | DRAIN TYPE D-3a (7.0 KM)  | 500m           | 14                   | 18,007.00                       | 252,098.00           | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| ii      | DRAIN TYPE D-3b (0.225 KM)  | JOB            | 1                    | 16,610.00                       | 16,610.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| 5b      | <b>ROAD PROTECTION WORKS</b>  |                |                      |                                 |                      |                               |                |            |                        |                |            |                                    |                |            |
| i       | STONE PITCHING (100M)   | JOB            | 1                    | 5,416.00                        | 5,416.00             | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| ii      | METAL GUARD RAIL (475M)   | JOB            | 1                    | 40,008.00                       | 40,008.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |
| iii     | BARRIER (150M)  | JOB            | 1                    | 45,775.00                       | 45,775.00            | -                             | -              | -          | -                      | -              | -          | -                                  | -              | -          |

**SECTION - III CUMULATIVE MILESTONE WISE PROGRESS STATUS**

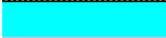
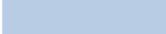
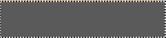
| BILL NO | DESCRIPTION OF BILL   | MILESTONE UNIT | NUMBER OF MILESTONES | AMOUNT AS PER MILESTONE (US \$) | TOTAL AMOUNT (US \$) | PROGRESS UP TO PREVIOUS MONTH |                  |              | PROGRESS IN THIS MONTH |                |             | MILESTONE WISE COMULATIVE PROGRESS |                  |              |
|---------|---|----------------|----------------------|---------------------------------|----------------------|-------------------------------|------------------|--------------|------------------------|----------------|-------------|------------------------------------|------------------|--------------|
|         |   |                |                      |                                 |                      | MILESTONE ACHIEVED            | AMOUNT (US \$)   | PROGRESS %   | MILESTONE ACHIEVED     | AMOUNT (US \$) | PROGRESS %  | MILESTONE ACHIEVED                 | AMOUNT (US \$)   | PROGRES S %  |
| 6       | <b>ANCILLARY WORKS(TRAFFIC ROAD SIGNS, PAVEMENT MARKING / STUDS &amp; KM POSTS)</b> |                |                      |                                 |                      |                               |                  |              |                        |                |             |                                    |                  |              |
| i       | TRAFFIC SIGNS / KM POSTS  | JOB            | 1                    | 18,894.00                       | 18,894.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| ii      | PAVEMENT MARKINGS / STUDS   | JOB            | 1                    | 50,671.00                       | 50,671.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| 7       | <b>DIVERSION</b>  | KM             | 5                    | 31,259.00                       | 156,295.00           | 1                             | 31,259.00        | 20.00        | 0.25                   | 7,814.75       | 5.00        | 1.25                               | 39,073.75        | 25.00        |
| 8       | <b>MISCELLANEOUS</b>  |                |                      |                                 |                      |                               |                  |              |                        |                |             |                                    |                  |              |
| a       | PLANTATION OF TREES (450 NOS)   | JOB            | 1                    | 10,514.00                       | 10,514.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| b       | SHIFTING OF UTILITIES (OPTIC FIBRE UPTO KM 19)                                      |                |                      |                                 |                      | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| i       | SHIFTING OF O.F.C FROM KM: 04 TO KM: 09   | JOB            | 1                    | 58,744.00                       | 58,744.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| ii      | SHIFTING OF O.F.C FROM KM: 09 TO KM: 14   | JOB            | 1                    | 58,744.00                       | 58,744.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| iii     | SHIFTING OF O.F.C FROM KM: 14 TO KM: 19   | JOB            | 1                    | 58,744.00                       | 58,744.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| c       | RELOCATION OF ELECTRIC POLES (UPTO KM 30)   |                |                      |                                 |                      |                               |                  |              |                        |                |             |                                    |                  |              |
| i       | RELOCATION OF 45 NO OF ELECTRIC POLES (KM: 09 TO KM:26)                             | JOB            | 1                    | 57,708.00                       | 57,708.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| ii      | RELOCATION OF 45 NO OF ELECTRIC POLES (KM: 26 TO KM:32+325)                         | JOB            | 1                    | 57,708.00                       | 57,708.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| iii     | RELOCATION OF 45 NO OF ELECTRIC POLES (KM:32+325 TO KM: 35+010 )                    | JOB            | 1                    | 57,708.00                       | 57,708.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| d       | RELOCATION OF FC CHECK POSTS & RELOCATION OF SHOP AT KM 14+100                      |                |                      |                                 |                      |                               |                  |              |                        |                |             |                                    |                  |              |
| i       | RELOCATION OF FC CHECK POSTS BLOCK - 1 (454 SQ-M)                                   | JOB            | 1                    | 80,620.00                       | 80,620.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| ii      | RELOCATION OF FC CHECK POSTS BLOCK - 2 (298 SQ-M)                                   | JOB            | 1                    | 52,918.00                       | 52,918.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| iii     | RELOCATION OF FC CHECK POSTS BLOCK - 3 (298 SQ-M)                                   | JOB            | 1                    | 52,918.00                       | 52,918.00            | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
| iv      | RELOCATION OF SHOP AT KM 14+100 (20 SQ-M)   | JOB            | 1                    | 3,552.00                        | 3,552.00             | -                             | -                | -            | -                      | -              | -           | -                                  | -                | -            |
|         | <b>TOTAL</b>  |                |                      |                                 | <b>9,512,705.55</b>  |                               | <b>1,772,172</b> | <b>18.63</b> |                        | <b>601,930</b> | <b>6.33</b> |                                    | <b>2,428,378</b> | <b>25.53</b> |



**3.9 SECTION - III (LOOP NO. 1) PAVEMENT CONSTRUCTION PHYSICAL PROGRESS STATUS**

|   |         |         |         |
|---|---------|---------|---------|
| Ancillary works                             |         |         |         |
| Asphaltic Wearing Course                    |         |         |         |
| Asphaltic Base Course                       |         |         |         |
| Water Bound Macadam                         |         |         |         |
| Concrete Class "A1" (Rigid Pavement)        |         |         |         |
| Granular Sub Base (Carriageway)             |         |         |         |
| Granular Sub Base - Shoulders               |         |         |         |
| Earthwork - Carriageway                     |         |         |         |
| Earthwork - Shoulders                       |         |         |         |
| Structures (Retaining Wall & Breast Walls)  |         |         |         |
| Road Protection works                       |         |         |         |
| Drainage & Erosion Works (Road Side Drains) |         |         |         |
| Traffic Diversion                           |         |         |         |
| Joint X-Section                             |         |         |         |
| <b>CH: KM:</b>                              | 0 + 000 | 0 + 500 | 0 + 922 |

**LEGEND**

-  WORKS COMPLETED IN FEBRUARY 2014
-  WORKS COMPLETED IN PREVIOUS MONTHS
-  PARTIAL COMPLETION
-  SINGLE LANE TRAFFIC MAINTAINED
-  ITEM NOT REQUIRED

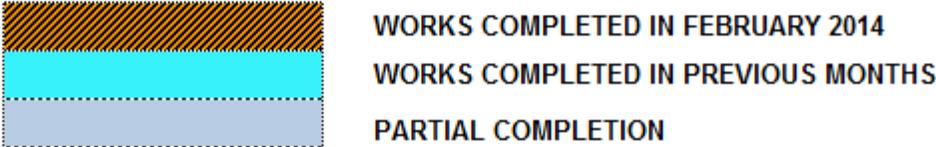
**3.10 SECTION - III CULVERTS PHYSICAL PROGRESS STATUS**

|  |                                |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
|--|--------------------------------|---------|--------------------|---------|--------------------|---------|--------------------|---------|-----------|---------|---------|------------------|----------|----------|----------|----------|----------|----------|------------------|----------|
| RCC Railing                                | U/S side<br>D/S side           |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Roll Pointing                              | Abt No1<br>Abt No2             |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Flooring/Cut-off wall/ Riprap              | B/W Abts                       |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| RCC Slab/Precast Pannels                   |                                |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Bed plate/Curtain wall                     | Abt No1<br>Abt No2             |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Back filling                               | Abt No1<br>Abt No2<br>B/W Abts |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Stone Masonry (Wing Walls)                 | U/S side<br>D/S side           |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Stone Masonry (Abutments/ Pier)            | Abt No1<br>Abt No2             |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Lean Concrete                              | Abt No1<br>Abt No2             |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Structural Excavation                      | Abt No1<br>Abt No2             |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Dismantling of Existing Structure          |                                |         |                    |         |                    |         |                    |         |           |         |         |                  |          |          |          |          |          |          |                  |          |
| Pavement Type                              | Rigid/ Flex                    | Rigid   | Rigid              | Rigid   | Rigid              | Rigid   | Rigid              | Rigid   |           | Rigid   | Rigid   | Flexible         | Flexible | Flexible | Flexible | Flexible | Flexible | Flexible | Flexible         | Flexible |
| Construction Sequence( FW / HW)            |                                | FW      | FW                 | FW      | FW                 | FW      | FW                 | FW      | HW<br>RHS | FW      | FW      | FW               | FW       | FW       | FW       | FW       | FW       | FW       | FW               | FW       |
| Size of Culvert (No. of Span*Width*Height) |                                | 2*2*2.5 | 2*2*3              | 1*2*2.5 | 1*2*3              | 1*2*2.5 | 1*2*3              | 1*2*2.5 | 1*2*2     | 1*2*2.5 | 1*2*2.5 | 1*2*2.5          | 1*2*3    | 1*2*2.5  | 1*2*2.5  | 1*2*2.5  | 1*2*4.5  | 1*2*3    | 1*2*3            | 1*2*2.5  |
| KM as per site                             |                                |         |                    |         |                    | 14+333  | 14+433             | 14+600  | 15+139    | 15+647  | 15+795  | 16+316           | 16+618   | 16+740   | 17+010   | 17+435   | 17+562   | 17+666   | 17+901           | 18+146   |
| KM as in Drawing                           |                                | 14+250  | 14+250<br>(Loop-1) | 14+300  | 14+300<br>(Loop-1) | 14+431  | 14+431<br>(Loop-1) | 14+600  | 15+138    | 15+640  | 15+795  | 16+313<br>(Skew) | 16+625   | 16+750   | 16+996   | 17+400   | 17+561   | 17+665   | 17+909<br>(Skew) | 18+142   |

|   |   |   |                         |
|---|---|---|-------------------------|
|  | ACTIVITIES COMPLETED IN FEBRUARY 2014   |  | ACTIVITIES NOT REQUIRED |
|  | ACTIVITIES COMPLETED IN PREVIOUS MONTHS |  | ACTIVITIES IN PROGRESS  |

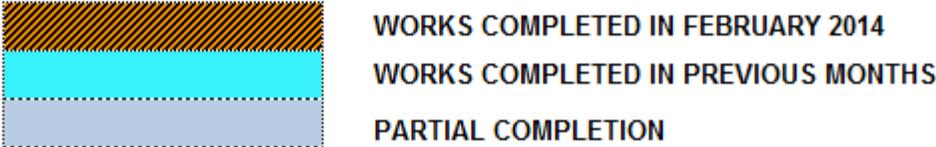
**3.11 BRIDGE NO. 2      PHYSICAL PROGRESS STATUS**

| BRIDGES          | DESCRIPTION         | TOTAL | COMPLETED | 10%                           | 20% | 30% | 40% | 50% | 60%                            | 70% | 80%                             | 90% | 100% | REMARKS                         |  |  |  |
|------------------|---------------------|-------|-----------|-------------------------------|-----|-----|-----|-----|--------------------------------|-----|---------------------------------|-----|------|---------------------------------|--|--|--|
| KM: 09+560       |                     |       |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
| BRIDGE<br>NO: 02 | Piles               | 36    | 36        | [Progress bar from 0% to 95%] |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Pile Caps           | 4     | 4         | [Progress bar from 0% to 30%] |     |     |     |     |                                |     |                                 |     |      | [Progress bar from 30% to 100%] |  |  |  |
|                  | Abutments/ Piers    | 4     | 2         | [Progress bar from 0% to 50%] |     |     |     |     | [Progress bar from 50% to 80%] |     |                                 |     |      |                                 |  |  |  |
|                  | Transom             | 4     |           | [Progress bar from 0% to 50%] |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Girder Casting      | 15    | 15        | [Progress bar from 0% to 70%] |     |     |     |     |                                |     | [Progress bar from 70% to 100%] |     |      |                                 |  |  |  |
|                  | Girder Prestressing | 15    |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Girder Launching    | 15    |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Deck Slab / Barrier | 3     |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Expansion Joint     | 4     |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |
|                  | Approach Slab       | 2     |           |                               |     |     |     |     |                                |     |                                 |     |      |                                 |  |  |  |



**3.12 BRIDGE NO. 10 PHYSICAL PROGRESS STATUS**

| BRIDGES       | DESCRIPTION         | TOTAL | COMPLETED | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | REMARKS |  |
|---------------|---------------------|-------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---------|--|
| KM: 23+850    |                     |       |           |     |     |     |     |     |     |     |     |     |      |         |  |
| BRIDGE NO: 10 | Piles               | 30    | 11        |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Pile Caps           | 3     |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Abutments/ Piers    | 3     |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Transom             | 3     |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Girder Casting      | 10    | 1         |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Girder Prestressing | 10    |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Girder Launching    | 10    |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Deck Slab / Barrier | 2     |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Expansion Joint     | 3     |           |     |     |     |     |     |     |     |     |     |      |         |  |
|               | Approach Slab       | 2     |           |     |     |     |     |     |     |     |     |     |      |         |  |



# QUALITY TEST REPORTS

#### 4.1 EMBANKMENT FORMATION FIELD DENSITY TESTS REPORT

| S.No | Location (KM)       | Description      | Station (KM) | MMD (g/cc) | OMC (%) | Adj.MDD (g/cc) | M.C (%) | Achieved Compaction | Required Compaction | Remarks |
|------|---------------------|------------------|--------------|------------|---------|----------------|---------|---------------------|---------------------|---------|
| 1    | 32+825 ~ 32+875 F/W | Zone B 2nd Layer | 32+860 L/S   | 2.222      | 7.9     | 2.234          | 6.6     | 94.7                | 93                  | Pass    |
| 2    | 22+975 ~ 23+075 F/W | Zone A 3rd Layer | 23+040       | 2.354      | 5.6     | 2.354          | 5.4     | 96.1                | 95                  | Pass    |
| 3    | 22+800 ~ 22+875 F/W | Zone A15th Layer | 22+810       | 2.354      | 5.6     | 2.366          | 4.3     | 95.9                | 95                  | Pass    |
| 4    | 22+800 ~ 22+875 F/W | Zone A16th Layer | 22+840 R/S   | 2.354      | 5.6     | 2.365          | 4.2     | 96                  | 95                  | Pass    |
| 5    | 33+775 ~ 33+825 F/W | Zone C 9th Layer | 33+800       | 2.222      | 7.9     | 2.234          | 5.3     | 94.3                | 90                  | Pass    |

#### 4.2 SUB-GRADE FIELD DENSITY TESTS REPORT

| S.No | Location (KM)       | Description   | Station (KM) | MMD (g/cc) | OMC (%) | Adj.MDD (g/cc) | M.C (%) | Achieved Compaction | Required Compaction | Remarks |
|------|---------------------|---------------|--------------|------------|---------|----------------|---------|---------------------|---------------------|---------|
| 1    | 10+187 ~ 10+300 L/S | Sub Grade 1st | 10+270 L/S   | 2.230      | 7.5     | 2.233          | 5.3     | 95.1                | 95                  | Pass    |
| 2    | 10+850 ~ 10+925 L/S | Sub Grade 1st | 10+890 L/S   | 2.230      | 7.5     | 2.266          | 4.7     | 96.1                | 95                  | Pass    |
| 3    | 30+600 ~ 30+725 H/W | Sub Grade 2nd | 30+640 L/S   | 2.295      | 6.2     | 2.295          | 5.1     | 96.4                | 95                  | Pass    |

**4.3 SUBBASE FIELD DENSITY REPORT**

| S.No | Location (KM)       | Description   | Station (KM) | MMD (g/cc) | OMC (%) | Adj.MDD (g/cc) | M.C (%) | Achieved Compaction | Required Compaction | Remarks |
|------|---------------------|---------------|--------------|------------|---------|----------------|---------|---------------------|---------------------|---------|
| 1    | 14+000 ~ 14+050     | Sube Base 1st | 12+009 L/S   | 2.364      | 6.1     | 2.359          | 5.2     | 99.6                | 98                  | Pass    |
| 2    | 11+725 ~ 11+800 F/W | Sub Base 1st  | 11+760 L/S   | 2.335      | 5.2     | 2.353          | 4.9     | 99.4                | 98                  | Pass    |
| 3    | 15+775 ~ 1+825 F/W  | Sub Base 2nd  | 15+800 R/S   | 2.337      | 5.9     | 2.346          | 3.2     | 94.1                | 98                  | Note 01 |
| 4    | 15+775 ~ 1+825 F/W  | Sub Base 2nd  | 15+807 L/S   | 2.337      | 5.9     | 2.340          | 4.3     | 99.1                | 98                  | Pass    |

Note 01: Subsequent layer placement and compaction postpond until previous layer properly compacted/ retested and accepted

**4.4 WATER BOUND MACADAM FIELD DENSITY TESTS REPORT**

| S.No | Location (KM)       | Description | Station (KM) | MMD (g/cc) | OMC (%) | Adj.MDD (g/cc) | M.C (%) | Achieved Compaction | Required Compaction | Remarks |
|------|---------------------|-------------|--------------|------------|---------|----------------|---------|---------------------|---------------------|---------|
| 1    | 16+975 ~ 17+050     | WBM         | 16+995 R/S   | 2.316      | 5.0     | 2.435          | 3.2     | 100.6               | 100                 | Pass    |
| 2    | 15+037 ~ 15+250 F/W | WBM         | 15+155 L/S   | 2.364      | 4.9     | 2.459          | 2.2     | 100.2               | 100                 | Pass    |

**4.5 ASPHALTIC BASE COURSE QUALITY TESTS REPORT**

| Specific Gravity A.C (Gb) 1.030 |                       |                 |        |       |         |         |          |         | Combined Specific Gravity of Aggregate (Gsb) 2.665 |                                       |                               |          |         |                |                       |                       |
|---------------------------------|-----------------------|-----------------|--------|-------|---------|---------|----------|---------|--|---------------------------------------|-------------------------------|----------|---------|----------------|-----------------------|-----------------------|
| Paving Date                     | % A.C By Wt of Mix Pb | Sieves analysis |        |       |         |         |          |         | Bulk Sp. Gr. (Gmb)                                 | Maximum Sp.Gravity (G <sub>mm</sub> ) | % Air Voids (V <sub>a</sub> ) | VMA (%)  | VFA (%) | Stability (Kg) | Loss of Stability (%) | Flow (0.01") (0.25mm) |
|                                 |                       | 2"              | 1½"    | ¾"    | #4      | #8      | #50      | #200    |  |                                       |                               |          |         |                |                       |                       |
| 1-Feb-14                        | 3.44                  | 100             | 100    | 66.5  | 31.7    | 23.3    | 7.4      | 4.8     | 2.400  | 2.539                                 | 5.5                           | 13.03    | 58.1    | 1492           | 16.8                  | 11.6                  |
| 10-Feb-14                       | 3.31                  | 100             | 100    | 61.7  | 26      | 19.1    | 7.3      | 3.3     | 2.398  | 2.547                                 | 5.9                           | 13.01    | 54.9    | 1214           | 14.8                  | 12                    |
| 15-Feb-14                       | 3.22                  | 100             | 100    | 65.4  | 29.4    | 19.4    | 6.0      | 3.4     | 2.414  | 2.539                                 | 4.9                           | 12.35    | 60      | 1432           | 17.0                  | 10.8                  |
| 27-Feb-14                       | 3.61                  | 100             | 100    | 75.1  | 32.1    | 22.7    | 8.3      | 3.9     | 2.399  | 2.535                                 | 5.4                           | 13.23    | 59.4    | 1480           | 17.9                  | 9.3                   |
| JMF LIMITS                      | 3.1 ~ 3.7             | 100             | 93~100 | 59~73 | 24 ~ 38 | 19 ~ 27 | 3.8~11.8 | 3.7~5.7 | -  | -                                     | 4 ~ 8                         | 13 % Min | 55 ~ 75 | 1000 Kg Min    | 25% Max               | 8 ~ 14 at (0.01")     |

#### 4.6 ASPHALTIC BASE COURSE LAYER CORES COMPACTION REPORT

| S.No             | Core No. | Testing Date | Covered Area    | Station | Offset From C/L | Wt. in Air (g) | Wt. in Water (g) | SSD. Wt (g) | Volume (cc) | Density (g/cc) | LAB Density (GMB) | Achieved Compaction | Required Compaction | Remarks |
|------------------|----------|--------------|-----------------|---------|-----------------|----------------|------------------|-------------|-------------|----------------|-------------------|---------------------|---------------------|---------|
| <u>1st Layer</u> |          |              |                 |         |                 |                |                  |             |             |                |                   |                     |                     |         |
| 1                | C-1      | 18-Feb-14    | 16+575~16+675   | 16+590  | 3.1m L/S        | 1219           | 705.7            | 1224.8      | 519.1       | 2.348          | 2.414             | 97.3                | 97                  | OK      |
| 2                | C-2      |              |                 | 16+640  | 6.0m R/S        | 1462.7         | 847.8            | 1468.2      | 620.4       | 2.358          | 2.414             | 97.7                | 97                  | OK      |
| 3                | C-3      |              | 16+675~16+775   | 16+710  | 2.7m L/S        | 1103.4         | 635              | 1105.8      | 470.8       | 2.344          | 2.414             | 97.1                | 97                  | OK      |
| 4                | C-4      |              |                 | 16+760  | 2.2m R/S        | 1254.9         | 727.6            | 1257.5      | 529.9       | 2.368          | 2.414             | 98.1                | 97                  | OK      |
| <u>2nd Layer</u> |          |              |                 |         |                 |                |                  |             |             |                |                   |                     |                     |         |
| 1                | C-1      | 18-Feb-14    | 16+265~16+365   | 16+290  | 1.0m L/S        | 1278.7         | 737.4            | 1282.4      | 545         | 2.346          | 2.398             | 97.8                | 97                  | OK      |
| 2                | C-2      |              |                 | 16+340  | 0.5m R/S        | 1446.5         | 831.8            | 1450.2      | 618.4       | 2.339          | 2.398             | 97.5                | 97                  | OK      |
| 3                | C-3      |              | 16+365~ 16+465  | 16+400  | 5.0m L/S        | 1582.4         | 913.5            | 1586.9      | 673.4       | 2.350          | 2.398             | 98.0                | 97                  | OK      |
| 4                | C-4      |              |                 | 16+440  | 2.3m R/S        | 1434.2         | 835.2            | 1441.5      | 606.3       | 2.365          | 2.398             | 98.6                | 97                  | OK      |
| 5                | C-6      |              | 16+465 ~ 16+565 | 16+490  | 5.0m L/S        | 1569.8         | 909.3            | 1574.3      | 665         | 2.361          | 2.398             | 98.4                | 97                  | OK      |
| 6                | C-5      |              |                 | 16+560  | 2.3m R/S        | 1371.8         | 797.8            | 1377.3      | 579.5       | 2.367          | 2.398             | 98.7                | 97                  | OK      |

#### 4.7 ASPHALTIC BASE COURSE CORES THICKNESS REPORT

| S.No             | Core No. | Testing Date | Covered Area    | Station | Offset From C/L | Cores Thickness (cm) |      |      |      | Average Thickness (cm) | Required Thickness (cm) | Remarks    |
|------------------|----------|--------------|-----------------|---------|-----------------|----------------------|------|------|------|------------------------|-------------------------|------------|
|                  |          |              |                 |         |                 | 1                    | 2    | 3    | 4    |                        |                         |            |
| <u>1st Layer</u> |          |              |                 |         |                 |                      |      |      |      |                        |                         |            |
| 1                | T-1      | 18-Feb-14    | 16+575~16+675   | 16+590  | 5.8m L/S        | 8.9                  | 8.9  | 8.8  | 8.9  | 8.9                    | 8.0                     | OK         |
| 2                | T-2      |              |                 | 16+640  | 2.0m R/S        | 7.5                  | 7.6  | 7.5  | 7.5  | 7.5                    | 8.0                     | Ok         |
| 3                | T-3      |              | 16+675~16+775   | 16+710  | 2.1m L/S        | 7.4                  | 7.4  | 7.4  | 7.6  | 7.5                    | 8.0                     | OK         |
| 4                | T-4      |              |                 | 16+760  | 4.5m R/S        | 8.1                  | 8.1  | 8.1  | 8.2  | 8.1                    | 8.0                     | OK         |
| <u>2nd Layer</u> |          |              |                 |         |                 |                      |      |      |      |                        |                         |            |
| 1                | T-1      | 18-Feb-14    | 16+265 ~ 16+365 | 16+290  | 2.4m L/S        | 8                    | 8.1  | 8    | 7.9  | 8.0                    | 8.0                     | OK         |
| 2                | T-2      |              |                 | 16+340  | C/L             | 7.8                  | 7.8  | 7.8  | 7.6  | 7.8                    | 8.0                     | OK         |
| 3                | T-3      |              | 16+365 ~ 16+465 | 16+400  | 4.5m R/S        | 8.2                  | 7.8  | 7.9  | 7.8  | 7.9                    | 8.0                     | OK         |
| 4                | T-4      |              |                 | 16+440  | 5.4m R/S        | 9.7                  | 9.7  | 9.5  | 9.6  | 9.6                    | 8.0                     | OK         |
| 5                | T-5      |              | 16+465 ~ 16+565 | 16+490  | 3.1m L/S        | 8.2                  | 7.8  | 7.9  | 7.8  | 7.9                    | 8.0                     | OK         |
| 6                | T-6      |              |                 | 16+560  | 4.5m R/S        | 16.2                 | 16.1 | 16.2 | 16.4 | 16.2                   | 16.0                    | Full Lenth |

#### 4.8 SUBBASE MATERIAL QUALITY TESTS REPORT

| S.No                              | Location (KM)   | Description | Sieve Analysis |       |       |       |       |       |      | MDD (g/cc) | OMC % | L.A %   | Sand Equivalent | CBR% at |      | Specific gravity | Plastic Index | Remarks |
|-----------------------------------|-----------------|-------------|----------------|-------|-------|-------|-------|-------|------|------------|-------|---------|-----------------|---------|------|------------------|---------------|---------|
|                                   |                 |             | 2"             | 1"    | 3/8"  | #4    | #10   | #40   | #200 |            |       |         |                 | 0.1"    | 0.2" |                  |               |         |
| 1                                 | 27+000 ~ 28+000 | Sub Base    | 100            | 75.1  | 46.9  | 37    | 27.3  | 16.1  | 9.1  | 2.392      | 5.6   | 28.6    | 19.7            | 47      | 72   |                  | 5.7           |         |
| Specification Limits for Sub Base |                 |             | 100            | 55~85 | 40~70 | 30~60 | 20~50 | 10~30 | 5~15 | -          | -     | 50% Max | 25% Min         | 50% Min | -    | 6 Max            |               |         |
| Total Nos.of Tests                |                 |             | 1              |       |       |       |       |       |      | 1          | 1     | 1       | 1               | 1       | 1    | 0                | 1             |         |

#### 4.9 WATER BOUND MACADAM QUALITY TESTS REPORT

| S.No                              | Location (KM)   | Station | Sieve Analysis |        |       |      |      | MDD (g/cc) | OMC % | L.A (%) | Flakiness Index | Elongation (%) | Soundness (%) | Specific gravity | Remarks |
|-----------------------------------|-----------------|---------|----------------|--------|-------|------|------|------------|-------|---------|-----------------|----------------|---------------|------------------|---------|
|                                   |                 |         | 3"             | 2½"    | 2"    | 1½"  | 3/4" |            |       |         |                 |                |               |                  |         |
| 1                                 | 15+000 ~ 16+000 | 15+087  | 100            | 86.4   | 31.2  | 10.3 | 3.4  | 2.364      | 4.9   | 27.7    | 5.4             | -              | 0.037         | 2.756            |         |
| Specification Limits for Sub Base |                 |         | 100            | 90~100 | 25~75 | 0~15 | 0~5  | -          | -     | 45% Max | 15% Max         | 15% Max        | 12% Max       | -                |         |
| Total Nos.of Tests                |                 |         | 2              |        |       |      |      |            |       |         | -               | -              | -             |                  |         |

## 4.10 AGGREGATE QUALITY TESTS FOR CONCRETE REPORT

| S.No                 | Location             | Description        | Aggregate Size   | Sieve Analysis |           |        |        |       |        |        |       |      |       |      |      |         | FM  | L.A % | Sand Equivalent | Specific Gravity | Soundness | Remarks      |              |
|----------------------|----------------------|--------------------|------------------|----------------|-----------|--------|--------|-------|--------|--------|-------|------|-------|------|------|---------|-----|-------|-----------------|------------------|-----------|--------------|--------------|
|                      |                      |                    |                  | 2"             | 1½"       | 1"     | ¾"     | ½"    | 3/8"   | #4     | #8    | #16  | #30   | #50  | #100 | #200    |     |       |                 |                  |           |              |              |
| 1                    | Stock Pile           | For "A-3" Concrete | 38mm Agg         | 100            | 100       | 38.3   | 4.4    | 0.8   | 0.4    | 0.1    | -     | -    | -     | -    | -    | -       | -   | -     | 2.768           | -                |           |              |              |
|                      |                      |                    | 25mm Agg         | -              | -         | 100    | 76.7   | 9.0   | 1.8    | 0.5    | -     | -    | -     | -    | -    | -       | -   | -     | -               | 2.765            |           | -            |              |
|                      |                      |                    | 19mm Agg         | -              | -         | -      | 100.0  | 97.3  | 81.7   | 13.6   | -     | -    | -     | -    | -    | -       | -   | -     | -               | 2.761            |           | -            |              |
|                      | Combined Grading     |                    | 40,40 & 20 %     | 100            | 100       | 75.3   | 52.4   | 23.4  | 17.2   | 3.0    | -     | -    | -     | -    | -    | -       | -   | -     | -               | -                |           | -            |              |
|                      | Specification Limits |                    |                  | 100            | 95~100    | -      | 35~70  | -     | 10~30  | 0~5    | -     | -    | -     | -    | -    | -       | -   | -     | -               | -                |           | -            | -            |
|                      | Stock Pile           | "A-3" Con.         | Sand             | -              | -         | -      | -      | -     | 100    | 96.6   | 80.3  | 59.3 | 41.3  | 19.0 | 7.4  | 2.8     | 3.0 | -     | -               | -                |           | -            | Natural Sand |
| Specification Limits |                      |                    | -                | -              | -         | -      | -      | 100   | 95~100 | -      | 45~80 | -    | 10~30 | 2~10 | 0~3  | 2.3~3.1 | -   | -     | -               | -                | -         |              |              |
| 2                    | Stock Pile           | For "D-1" Concrete | 25mm Agg         | -              | -         | 100.0  | 76.7   | 9.0   | 1.8    | 0.5    | -     | -    | -     | -    | -    | -       | -   | -     | 2.765           | -                |           |              |              |
|                      |                      |                    | 19mm Agg         | -              | -         | -      | 100.0  | 97.3  | 81.7   | 13.6   | -     | -    | -     | -    | -    | -       | -   | -     | 2.761           | -                |           |              |              |
|                      |                      |                    | Combined Grading |                | 62 & 38 % | -      | 100    | 100.0 | 93.9   | 51.4   | 32.2  | 2.2  | -     | -    | -    | -       | -   | -     | -               | -                |           | -            | -            |
|                      | Specification Limits |                    |                  | -              | 100       | 95~100 | -      | 25~60 | -      | 0~5    | -     | -    | -     | -    | -    | -       | -   | -     | -               | -                |           | -            |              |
|                      | Stock Pile           | "D-1" Con.         | Sand             | -              | -         | -      | -      | -     | 100    | 96.6   | 80.3  | 59.3 | 41.3  | 19.0 | 7.4  | 2.8     | 3.0 | -     | -               | -                |           | Natural Sand |              |
| Specification Limits |                      |                    | -                | -              | -         | -      | -      | 100   | 95~100 | -      | 45~80 | -    | 10~30 | 2~10 | 0~3  | 2.3~3.1 | -   | -     | -               | -                | -         |              |              |
| 3                    | Stock Pile           | For "A-1" Concrete | 25mm Agg         | -              | -         | 100.0  | 76.7   | 9.0   | 1.8    | 0.5    | -     | -    | -     | -    | -    | -       | -   | -     | 2.765           | -                |           |              |              |
|                      |                      |                    | 19mm Agg         | -              | -         | -      | 100.0  | 97.3  | 81.7   | 13.6   | -     | -    | -     | -    | -    | -       | -   | -     | 2.761           | -                |           |              |              |
|                      |                      |                    | Combined Grading |                | 45 & 55 % | -      | -      | 100.0 | 93.9   | 51.4   | 32.2  | 2.2  | -     | -    | -    | -       | -   | -     | -               | -                |           | -            | -            |
|                      | Specification Limits |                    |                  | -              | -         | 100    | 90~100 | -     | 20~55  | 0 ~ 10 | -     | -    | -     | -    | -    | -       | -   | -     | -               | -                |           | -            |              |
|                      | Stock Pile           | "A-1" Con.         | Sand             | -              | -         | -      | -      | -     | 100    | 96.6   | 80.3  | 59.3 | 41.3  | 19.0 | 7.4  | 2.8     | 3.0 | -     | -               | -                |           | Natural Sand |              |
| Specification Limits |                      |                    | -                | -              | -         | -      | -      | 100   | 95~100 | -      | 45~80 | -    | 10~30 | 2~10 | 0~3  | 2.3~3.1 | -   | -     | -               | -                | -         |              |              |

**4.11 AGGREGATE QUALITY TESTS FOR ASPHALTIC BASE COURSE**

| S.No                        | Location                 | Description  | Sieve Analysis |               |           |              |             |             |              |              |     |     |             |      |              | FM | L.A %         | Absorption (%) | Specific Gravity | Soundness      | Remarks |
|-----------------------------|--------------------------|--------------|----------------|---------------|-----------|--------------|-------------|-------------|--------------|--------------|-----|-----|-------------|------|--------------|----|---------------|----------------|------------------|----------------|---------|
|                             |                          |              | 2"             | 1½"           | 1"        | ¾"           | ½"          | 3/8"        | #4           | #8           | #16 | #30 | #50         | #100 | #200         |    |               |                |                  |                |         |
| 1                           | Asphalt Plant Stock Pile | Bin #1 , 32% | 100            | 100           | 49.7      | 2.7          | 0.3         | 0.1         | -            | -            | -   | -   | -           | -    | -            | -  | 29.8          | 0.77           | 2.724            | -              |         |
| 2                           | Asphalt Plant Stock Pile | Bin #2 , 20% | -              | -             | 100       | 88.3         | 9.1         | 0.9         | 0.4          | -            | -   | -   | -           | -    | -            | -  |               | 0.97           | 2.673            | -              |         |
| 3                           | Asphalt Plant Stock Pile | Bin #3 , 18% | -              | -             | -         | 100          | 97.3        | 83.1        | 24.3         | 0.9          | 0.5 | -   | -           | -    | -            | -  |               | 1.09           | 2.658            | -              |         |
| 4                           | Asphalt Plant Stock Pile | Bin #4 , 30% | -              | -             | -         | -            | -           | 100         | 99.9         | 76.3         | -   | -   | 23.3        | -    | 14.2         | -  |               | 1.52           | 2.656            | -              |         |
| <b>Combined Grading</b>     |                          |              | <b>100</b>     | <b>100</b>    | <b>84</b> | <b>66.5</b>  | <b>49.4</b> | <b>45.2</b> | <b>34.4</b>  | <b>23.1</b>  | -   | -   | <b>7.1</b>  | -    | <b>4.3</b>   | -  | -             | -              | -                | -              |         |
| 1                           | Asphalt Plant Stock Pile | Bin #1 , 32% | 100            | 100           | 63.1      | 4.2          | 0.8         | 0.3         | -            | -            | -   | -   | -           | -    | -            | -  | -             | 0.76           | 2.712            | -              |         |
| 2                           | Asphalt Plant Stock Pile | Bin #2 , 20% | -              | 100           | 99.6      | 79.3         | 10.2        | 1.0         | 0.2          | -            | -   | -   | -           | -    | -            | -  |               | 0.86           | 2.68             | -              |         |
| 3                           | Asphalt Plant Stock Pile | Bin #3 , 18% | -              | -             | 100       | 100          | 98.0        | 80.7        | 13.8         | 0.5          | 0.4 | -   | -           | -    | -            | -  |               | 1.05           | 2.66             | -              |         |
| 4                           | Asphalt Plant Stock Pile | Bin #4 , 30% | -              | -             | -         | -            | -           | 100         | 99.8         | 80.0         | -   | -   | 23.3        | -    | 13.5         | -  |               | -              | -                | -              | -       |
| <b>Combined Grading</b>     |                          |              | <b>100</b>     | <b>100</b>    | <b>88</b> | <b>65.2</b>  | <b>49.9</b> | <b>44.8</b> | <b>32.5</b>  | <b>24.1</b>  | -   | -   | <b>7.1</b>  | -    | <b>4.1</b>   | -  | -             | -              | -                | -              |         |
| <b>Specification Limits</b> |                          |              | <b>100</b>     | <b>90~100</b> | -         | <b>56~75</b> | -           | -           | <b>23~40</b> | <b>15~30</b> | -   | -   | <b>4~10</b> | -    | <b>3 ~ 6</b> | -  | <b>40 Max</b> | -              | -                | <b>12% Max</b> |         |

#### 4.12 SUMMARY OF CONCRETE COMPRESSIVE STRENGTH

| Description  | Casting date | Testing date | Age     | Load in (KN) | Length (cm) | Dia (cm) | Area (cm <sup>2</sup> ) | Load in Kg | Strength (Kg/cm <sup>2</sup> ) |         |          | Remarks |
|--|--------------|--------------|---------|--------------|-------------|----------|-------------------------|------------|--------------------------------|---------|----------|---------|
|  |              |              |         |              |             |          |                         |            | Achieved                       | Average | Required |         |
| Concrete Class "A-3" Bridge No.2<br>Pile No.3 Pier No.1                | 4/Jan/2014   | 1/Feb/2014   | 28 Days | 509          | 30.48       | 15.24    | 182.4                   | 51903      | 284.6                          | 283.3   | 280      |         |
|  |              |              |         | 506          | 30.48       |          |                         | 51597      | 282.9                          |         |          |         |
|  |              |              |         | 505          | 30.48       |          |                         | 51495      | 282.3                          |         |          |         |
| Concrete Class "A-1" Culvert Top<br>Slab KM:10+572                     | 4/Jan/2014   | 1/Feb/2014   | 28 Days | 400          | 30.48       | 15.24    | 182.4                   | 40788      | 223.6                          | 231.4   | 210      |         |
|  |              |              |         | 429          | 30.48       |          |                         | 43745      | 239.8                          |         |          |         |
|  |              |              |         | 413          | 30.48       |          |                         | 42114      | 230.9                          |         |          |         |
| Concrete Class "A-3" Bridge No.10<br>(KM:23+750) Pile No.7 Abutment #1 | 5/Jan/2014   | 2/Feb/2014   | 28 Days | 509          | 30.48       | 15.24    | 182.4                   | 51903      | 284.6                          | 291.6   | 280      |         |
|  |              |              |         | 526          | 30.48       |          |                         | 53636      | 294.1                          |         |          |         |
|  |              |              |         | 530          | 30.48       |          |                         | 54044      | 296.3                          |         |          |         |
| Concrete Class "A-3" Bridge No.2<br>(KM:9+560) Pile No.9 Abutment No.2 | 5/Jan/2014   | 2/Feb/2014   | 28 Days | 496          | 30.48       | 15.24    | 182.4                   | 50577      | 277.3                          | 282.3   | 280      |         |
|  |              |              |         | 493          | 30.48       |          |                         | 50271      | 275.6                          |         |          |         |
|  |              |              |         | 526          | 30.48       |          |                         | 53636      | 294.1                          |         |          |         |
| Concrete Class "D-1" Bridge No.2<br>(KM:9+560) Girder # 6              | 6/Jan/2014   | 3/Feb/2014   | 28 Days | 611          | 30.48       | 15.24    | 182.4                   | 62304      | 341.6                          | 362.6   | 350      |         |
|  |              |              |         | 660          | 30.48       |          |                         | 67300      | 369.0                          |         |          |         |
|  |              |              |         | 675          | 30.48       |          |                         | 68830      | 377.4                          |         |          |         |
| Concrete Class "A-3" Bridge No.2<br>(KM:9+560) Abutment #2 Pile #4 & 7 | 27/Jan/2014  | 3/Feb/2014   | 7 Days  | 498          | 30.48       | 15.24    | 182.4                   | 50781      | 278.4                          | 264.4   | 210      |         |
|  |              |              |         | 460          | 30.48       |          |                         | 46906      | 257.2                          |         |          |         |
|  |              |              |         | 461          | 30.48       |          |                         | 47008      | 257.7                          |         |          |         |
| Concrete Class "A-3" Bridge No.2<br>(KM:9+560) Pile No.3 Abutment 2    | 7/Jan/2014   | 4/Feb/2014   | 28 Days | 555          | 30.48       | 15.24    | 182.4                   | 56593      | 310.3                          | 316.2   | 210      |         |
|  |              |              |         | 570          | 30.48       |          |                         | 58123      | 318.7                          |         |          |         |
|  |              |              |         | 572          | 30.48       |          |                         | 58327      | 319.8                          |         |          |         |

**SUMMARY OF CONCRETE COMPRESSIVE STRENGTH**

| Description  | Casting date | Testing date | Age     | Load in (KN) | Length (cm) | Dia (cm) | Area (cm <sup>2</sup> ) | Load in Kg | Strength (Kg/cm <sup>2</sup> ) |         |          | Remarks |
|--|--------------|--------------|---------|--------------|-------------|----------|-------------------------|------------|--------------------------------|---------|----------|---------|
|  |              |              |         |              |             |          |                         |            | Achieved                       | Average | Required |         |
| Concrete Class "A-1" Bridge No.2 (KM:9+560) Pile Cape of Pier # 1  | 28/Jan/2014  | 4/Feb/2014   | 7 Days  | 358          | 30.48       | 15.24    | 182.4                   | 36505      | 200.1                          | 194.9   | 157.5    |         |
|  |              |              |         | 342          | 30.48       |          |                         | 34874      | 191.2                          |         |          |         |
|  |              |              |         | 346          | 30.48       |          |                         | 35282      | 193.4                          |         |          |         |
| Concrete Class "A-1" Culvert Slab KM:10+788 & 10+961               | 28/Jan/2014  | 4/Feb/2014   | 7 Days  | 370          | 30.48       | 15.24    | 182.4                   | 37729      | 206.8                          | 208.9   | 157.5    |         |
|  |              |              |         | 373          | 30.48       |          |                         | 38035      | 208.5                          |         |          |         |
|  |              |              |         | 378          | 30.48       |          |                         | 38545      | 211.3                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 10            | 30/Jan/2014  | 6/Feb/2014   | 7 Days  | 533          | 30.48       | 15.24    | 182.4                   | 54350      | 298.0                          | 302.1   | 262      |         |
|  |              |              |         | 542          | 30.48       |          |                         | 55268      | 303.0                          |         |          |         |
|  |              |              |         | 546          | 30.48       |          |                         | 55676      | 305.2                          |         |          |         |
| Concrete Class "A-1" Culvert Slab KM:12+372 & 11+139               | 30/Jan/2014  | 6/Feb/2014   | 7 Days  | 385          | 30.48       | 15.24    | 182.4                   | 39258      | 215.2                          | 218.6   | 157.5    |         |
|  |              |              |         | 392          | 30.48       |          |                         | 39972      | 219.1                          |         |          |         |
|  |              |              |         | 396          | 30.48       |          |                         | 40380      | 221.4                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 Girder # 7 KM: 9+560              | 11/Jan/2014  | 8/Feb/2014   | 28 Days | 664          | 30.48       | 15.24    | 182.4                   | 67708      | 371.2                          | 373.3   | 350      |         |
|  |              |              |         | 661          | 30.48       |          |                         | 67402      | 369.5                          |         |          |         |
|  |              |              |         | 678          | 30.48       |          |                         | 69136      | 379.0                          |         |          |         |
| Concrete Class "A-3" Bridge No.2 (KM:9+560) Pile No.5 Abutment #2  | 1/Feb/2014   | 8/Feb/2014   | 7 Days  | 473          | 30.48       | 15.24    | 182.4                   | 48232      | 264.4                          | 245.6   | 210      |         |
|  |              |              |         | 453          | 30.48       |          |                         | 46192      | 253.2                          |         |          |         |
|  |              |              |         | 392          | 30.48       |          |                         | 39972      | 219.1                          |         |          |         |
| Concrete Class "A-3" Bridge No.2 (KM:9+560) Pile No.10 Abutment #2 | 12/Jan/2014  | 9/Feb/2014   | 28 Days | 532          | 30.48       | 15.24    | 182.4                   | 54248      | 297.4                          | 301.1   | 280      |         |
|  |              |              |         | 541          | 30.48       |          |                         | 55166      | 302.4                          |         |          |         |
|  |              |              |         | 543          | 30.48       |          |                         | 55370      | 303.6                          |         |          |         |

**SUMMARY OF CONCRETE COMPRESSIVE STRENGTH**

| Description  | Casting date | Testing date | Age     | Load in (KN) | Length (cm) | Dia (cm) | Area (cm <sup>2</sup> ) | Load in Kg | Strength (Kg/cm <sup>2</sup> ) |         |          | Remarks |
|--|--------------|--------------|---------|--------------|-------------|----------|-------------------------|------------|--------------------------------|---------|----------|---------|
|  |              |              |         |              |             |          |                         |            | Achieved                       | Average | Required |         |
| Concrete Class "A-1" Bridge No.2 (KM:9+560) Pile Cape of Pier #2 | 2/Feb/2014   | 9/Feb/2014   | 7 Days  | 297          | 30.48       | 15.24    | 182.4                   | 30285      | 166.0                          | 174.2   | 157.5    |         |
|  |              |              |         | 314          | 30.48       |          |                         | 32019      | 175.5                          |         |          |         |
|  |              |              |         | 324          | 30.48       |          |                         | 33038      | 181.1                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 11          | 3/Feb/2014   | 10/Feb/2014  | 7 Days  | 540          | 30.48       | 15.24    | 182.4                   | 55064      | 301.9                          | 305.8   | 262      |         |
|  |              |              |         | 537          | 30.48       |          |                         | 54758      | 300.2                          |         |          |         |
|  |              |              |         | 564          | 30.48       |          |                         | 57511      | 315.3                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 8           | 16/Jan/2014  | 13/Feb/2014  | 28 Days | 664          | 30.48       | 15.24    | 182.4                   | 67708      | 371.2                          | 370.3   | 350      |         |
|  |              |              |         | 660          | 30.48       |          |                         | 67300      | 369.0                          |         |          |         |
|  |              |              |         | 663          | 30.48       |          |                         | 67606      | 370.6                          |         |          |         |
| Concrete Class "A-1" Culvert Top Slab KM: 10+500                 | 16/Jan/2014  | 13/Feb/2013  | 28 Days | 498          | 30.48       | 15.24    | 182.4                   | 50781      | 278.4                          | 267.8   | 210      |         |
|  |              |              |         | 464          | 30.48       |          |                         | 47314      | 259.4                          |         |          |         |
|  |              |              |         | 475          | 30.48       |          |                         | 48436      | 265.5                          |         |          |         |
| Concrete Class "A-3" Multicell Culvert KM:22+937                 | 9/Feb/2014   | 16/Feb/2014  | 7 Days  | 442          | 30.48       | 15.24    | 182.4                   | 45071      | 247.1                          | 252.1   | 210      |         |
|  |              |              |         | 452          | 30.48       |          |                         | 46090      | 252.7                          |         |          |         |
|  |              |              |         | 459          | 30.48       |          |                         | 46804      | 256.6                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 12          | 10/Feb/2014  | 17/Feb/2014  | 7 Days  | 573          | 30.48       | 15.24    | 182.4                   | 58429      | 320.3                          | 309.9   | 262      |         |
|  |              |              |         | 524          | 30.48       |          |                         | 53432      | 292.9                          |         |          |         |
|  |              |              |         | 566          | 30.48       |          |                         | 57715      | 316.4                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 9           | 21/Jan/2014  | 18/Feb/2014  | 28 Days | 747          | 30.48       | 15.24    | 182.4                   | 76172      | 417.6                          | 403.3   | 350      |         |
|  |              |              |         | 706          | 30.48       |          |                         | 71991      | 394.7                          |         |          |         |
|  |              |              |         | 711          | 30.48       |          |                         | 72501      | 397.5                          |         |          |         |

**SUMMARY OF CONCRETE COMPRESSIVE STRENGTH**

| Description  | Casting date | Testing date | Age     | Load in (KN) | Length (cm) | Dia (cm) | Area (cm <sup>2</sup> ) | Load in Kg | Strength (Kg/cm <sup>2</sup> ) |         |          | Remarks |
|--|--------------|--------------|---------|--------------|-------------|----------|-------------------------|------------|--------------------------------|---------|----------|---------|
|  |              |              |         |              |             |          |                         |            | Achieved                       | Average | Required |         |
| Concrete Class "A-3" Multicell Culvert<br>KM:11+190                      | 22/Jan/2014  | 19/Feb/2014  | 28 Days | 608          | 30.48       | 15.24    | 182.4                   | 61998      | 339.9                          | 344.7   | 280      |         |
|  |              |              |         | 598          | 30.48       |          |                         | 60978      | 334.3                          |         |          |         |
|  |              |              |         | 644          | 30.48       |          |                         | 65669      | 360.0                          |         |          |         |
| Concrete Class "D-1" Bridge No.2<br>(KM:9+560) Girder # 13               | 15/Feb/2014  | 22/Feb/2014  | 7 Days  | 458          | 30.48       | 15.24    | 182.4                   | 46702      | 256.0                          | 257.3   | 262      |         |
|  |              |              |         | 466          | 30.48       |          |                         | 47518      | 260.5                          |         |          |         |
|  |              |              |         | 457          | 30.48       |          |                         | 46600      | 255.5                          |         |          |         |
| Concrete Class "A-1" Bridge No.2<br>(KM:9+560) Pile Cape of Abutment # 1 | 16/Feb/2014  | 23/Feb/2014  | 7 Days  | 380          | 30.48       | 15.24    | 182.4                   | 38749      | 212.4                          | 210.9   | 158      |         |
|  |              |              |         | 381          | 30.48       |          |                         | 38851      | 213.0                          |         |          |         |
|  |              |              |         | 371          | 30.48       |          |                         | 37831      | 207.4                          |         |          |         |
| Concrete Class "A-3" Bridge No.2<br>(KM:9+560) Abutment #2 Pile #4 & 7   | 27/Jan/2014  | 24/Feb/2014  | 28 Days | 650          | 30.48       | 15.24    | 182.4                   | 66281      | 363.4                          | 363.0   | 280      |         |
|  |              |              |         | 643          | 30.48       |          |                         | 65567      | 359.5                          |         |          |         |
|  |              |              |         | 655          | 30.48       |          |                         | 66790      | 366.2                          |         |          |         |
| Concrete Class "D-1" Bridge No.10<br>(KM:23+750) Girder # 13             | 17/Feb/2014  | 24/Feb/2014  | 7 Days  | 505          | 30.48       | 15.24    | 182.4                   | 51495      | 282.3                          | 289.0   | 262      |         |
|  |              |              |         | 524          | 30.48       |          |                         | 53432      | 292.9                          |         |          |         |
|  |              |              |         | 522          | 30.48       |          |                         | 53228      | 291.8                          |         |          |         |
| Concrete Class "A-1" Bridge No.2<br>(KM:9+560) Pile Cape of Pier #1      | 28/Jan/2014  | 25/Feb/2014  | 28 Days | 455          | 30.48       | 15.24    | 182.4                   | 46396      | 254.4                          | 249.0   | 210      |         |
|  |              |              |         | 440          | 30.48       |          |                         | 44867      | 246.0                          |         |          |         |
|  |              |              |         | 441          | 30.48       |          |                         | 44969      | 246.5                          |         |          |         |
| Concrete Class "A-1" Culvert Slab<br>KM:10+788 & 10+961                  | 28/Jan/2014  | 25/Feb/2014  | 28 Days | 466          | 30.48       | 15.24    | 182.4                   | 47518      | 260.5                          | 261.4   | 210      |         |
|  |              |              |         | 474          | 30.48       |          |                         | 48334      | 265.0                          |         |          |         |
|  |              |              |         | 463          | 30.48       |          |                         | 47212      | 258.8                          |         |          |         |

**SUMMARY OF CONCRETE COMPRESSIVE STRENGTH**

| Description   | Casting date | Testing date | Age     | Load in (KN) | Length (cm) | Dia (cm) | Area (cm <sup>2</sup> ) | Load in Kg | Strength (Kg/cm <sup>2</sup> ) |         |          | Remarks |
|---|--------------|--------------|---------|--------------|-------------|----------|-------------------------|------------|--------------------------------|---------|----------|---------|
|   |              |              |         |              |             |          |                         |            | Achieved                       | Average | Required |         |
| Concrete Class "A-3" Bridge No.10 (KM:23+725) Pile #4, Abutment #1 & Pile #10 Abutment #2 | 18/Feb/2014  | 25/Feb/2014  | 7 Days  | 441          | 30.48       | 15.24    | 182.4                   | 44969      | 246.5                          | 254.4   | 210      |         |
|   |              |              |         | 463          | 30.48       |          |                         | 47212      | 258.8                          |         |          |         |
|   |              |              |         | 461          | 30.48       |          |                         | 47008      | 257.7                          |         |          |         |
| Concrete Class "A-3" Multicell Culvert Abutment Walls KM:11+190                           | 19/Feb/2014  | 26/Feb/2014  | 7 Days  | 466          | 30.48       | 15.24    | 182.4                   | 47518      | 260.5                          | 258.1   | 210      |         |
|   |              |              |         | 455          | 30.48       |          |                         | 46396      | 254.4                          |         |          |         |
|   |              |              |         | 464          | 30.48       |          |                         | 47314      | 259.4                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 10                                   | 30/Jan/2014  | 27/Feb/2014  | 28 Days | 711          | 30.48       | 15.24    | 182.4                   | 72501      | 397.5                          | 395.1   | 350      |         |
|   |              |              |         | 696          | 30.48       |          |                         | 70971      | 389.1                          |         |          |         |
|   |              |              |         | 713          | 30.48       |          |                         | 72705      | 398.6                          |         |          |         |
| Concrete Class "A-1" Culvert Slab KM:12+372 & 11+139                                      | 30/Jan/2014  | 27/Feb/2014  | 28 Days | 519          | 30.48       | 15.24    | 182.4                   | 52922      | 290.1                          | 292.8   | 210      |         |
|   |              |              |         | 523          | 30.48       |          |                         | 53330      | 292.4                          |         |          |         |
|   |              |              |         | 529          | 30.48       |          |                         | 53942      | 295.7                          |         |          |         |
| Concrete Class "A-3" Rigid Pavement KM:15+879 ~ 15+902                                    | 20/Feb/2014  | 27/Feb/2014  | 7 Days  | 434          | 30.48       | 15.24    | 182.4                   | 44255      | 242.6                          | 247.5   | 210      |         |
|   |              |              |         | 442          | 30.48       |          |                         | 45071      | 247.1                          |         |          |         |
|   |              |              |         | 452          | 30.48       |          |                         | 46090      | 252.7                          |         |          |         |
| Concrete Class "D-1" Bridge No.2 (KM:9+560) Girder # 14                                   | 20/Feb/2014  | 27/Feb/2014  | 7 Days  | 534          | 30.48       | 15.24    | 182.4                   | 54452      | 298.5                          | 294.6   | 262      |         |
|   |              |              |         | 518          | 30.48       |          |                         | 52820      | 289.6                          |         |          |         |
|   |              |              |         | 529          | 30.48       |          |                         | 53942      | 295.7                          |         |          |         |

# **ENVIRONMENTAL COMPLIANCE MONITORING**

**Environmental Compliance Officer**

**Shabir Ahmad Khan**

**Field Monitor (Social):**

**Jamil Khan**

**Road Section under Construction:**

Section-I KM: 0+000 to KM: 9+000

Section-II KM: 9+000 to KM: 14+000

Section-III KM: 14+000 to KM: 19+000

Section-IV KM: 19+000 to KM: 24+000

Section-V KM: 24+000 to KM: 33+000

**Persons Consulted at Site:**

1. Mr. Mohammad Shakeel, Surveyor, FWO
2. Mr. Anwar, Site Engineer, FWO
3. Mr. Nasir Javeed, Surveyor, FWO
4. Mr. Abdur Rehman, Surveyor, FWO
5. Mr Tilal, Surveyor, FWO
6. Mr Noman, Surveyor, FWO

**Work Status:**

- Work in progress.
- Work Stopped
- Work Completed

|   |
|---|
| √ |
|   |
|   |

**Quality of Environment Compliance:**

- Good
- Satisfactory
- Poor

|   |
|---|
|   |
| √ |
|   |

**Issues at site:**

- Traffic and speed limit checking sign boards for safety of people at site.
- H&S plan, Site Specific Plan and Risk Assessment Report.
- Personal protective equipments.
- Records of EHS (Environment, Health and Safety measures).
- Environmental Specialist/ Expert at site from FWO / NESPAK side
- Health and Safety arrangements at work sites.
- First aid box and Ambulance arrangements at site.

### Environmental Monitoring Check List for the Site

| S. #                      | Activity  | Mitigation Measures  | Monitoring indicators                      | Observations   |
|---------------------------|---|--|--|--|
| <b>Construction Phase</b> |   |  |  |  |
| 1                         | <b>Use of heavy equipments</b>                        | <ul style="list-style-type: none"> <li>a. Set protocols for vehicle Maintenance.</li> <li>b. Check fuel level, deliveries, and use.</li> <li>c. Check pipes and joints for leaks.</li> <li>d. Tight &amp; check generators cables and fuel lines.</li> <li>e. Prevent over filling of main storage and vehicles tanks.</li> <li>f. Avoid parking of heavy equipments under trees to prevent soil compaction and damage to the roots of the trees.</li> </ul> | Soil contaminations, stability and erosion | FWO follow an overall general compliance in the use and maintenance of both heavy and light machinery at site area.<br>Heavy machinery follow compacted routes while carrying material from the quarrying areas. No damage at site to the vegetation was found, as all the heavy machinery is parked in an area fenced near the main FWO camp at Jamrud. It was observed that there is a need for H&S inspections and protocols compliance set for the purpose of vehicles maintenance in the H&S plan due to parking and maintenance of heavy machinery inside the FWO camps. |
| 2                         | <b>Flood protection</b>                               | <ul style="list-style-type: none"> <li>a. Culverts construction to control flood damages and provide safety to embankments.</li> <li>b. Take measures to protect road alongside the river.</li> <li>c. Construction of retaining walls.</li> <li>d. Provide new causeways for smooth flow of flood water during rainy seasons.</li> </ul>  | Road protection and Safety                 | To protect road from flood, safety measures such as, construction of culverts, retaining walls in section -II and III in order to provide smooth flow to flood water and sewerage disposal are in progress. During site visits, it was observed, that culverts in section- I for the purpose mentioned above are already completed, while work on side drains along the road continues (Please refer to photos # 02, 03, 04, 08 and 09).   |
| 3                         | <b>Handling and transportation of hazardous waste</b> | <ul style="list-style-type: none"> <li>a. Prevent dumping of hazardous materials near the villages and water bodies.</li> <li>b. Burn waste oil which is not reusable.</li> <li>c. Recyclable material should not contain heavy metals that are inflammable, investigate and use less toxic alternative products.</li> </ul>   | Soil Contamination and Safety              | During site visit, no hazardous material was found along the road site; therefore, no action as such is further required.  |

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|   |  | d. Prohibit use of waste oil for cooking purposes.  |   |  |
| 4 | <b>Handling of solid Waste</b>                       | <ul style="list-style-type: none"> <li>a. Site manager should feel responsible for the collection of solid waste and disposal.</li> <li>b. Provide Training to the site personnel in management of waste material and its handling procedures.</li> <li>c. Separation of chemical waste for special handling.</li> <li>d. Record the amount of waste, generated recycled and reused.</li> <li>e. Proper storage and managed site practices will minimize the potential damage to contaminate construction materials.</li> <li>f. Store general refuse in enclosed bins to control its mixing with construction materials.</li> <li>g. Engage a reputable waste collection firm for waste collection and removal of general refuse from site.</li> </ul> | Toxicity, Soil Contamination and Pollution        | <p>During the visit, no proper segregation of handling solid waste was observed at site area. In this respect, FWO should share their solid waste management plan with the AGES Socio-environmental compliance team. A proper handling of the materials was observed at the main storage, while the construction site was devoid of such arrangements. It was also found that the subcontractors do not follow environmental, health and safety protocols. Subsequently, it is strongly advised to the subcontractors to provide bins for handling of solid waste during culverts construction at sites (Please refer to photos # 02, 03, 04, 08 and 09).</p>  |
| 5 | <b>Construction crews, camps &amp; Accommodation</b> | <ul style="list-style-type: none"> <li>a. Check quality and maintenance of accommodations for site crew.</li> <li>b. Avoid cutting of vegetation as much as possible.</li> <li>c. Provide sanitation such as pit latrines to the site crew on temporary basis.</li> <li>d. Use of local labor.</li> <li>e. Screening test of potentially affected HIV and tuberculosis viruses site crews</li> <li>f. Provide education and enforced guidelines to local inhabitants.</li> <li>g. Set guidelines to prohibit poaching and plants collection.</li> <li>h. Provide good quality of food and its adequate quantities to the work force.</li> <li>i. Drinking water should meet WHO standards,</li> </ul>   | Ground water pollution and conflicts with locals. | <p>Accommodation provided to the construction crews were properly maintained and found appropriate at army camps. These camps have been renovated in order to fulfill accommodation requirements of the FWO labor force. All the basic facilities e.g. washrooms, kitchen, TV lounge, café shop etc. were available and found adequate to the construction crew at FWO camps.</p> <p>The quality of food provided is good. Other facilities such as hygienic water to the FWO workforce were found satisfactory</p> <p>Majority of sub contractors are local employees, therefore, FWO staff need guidelines, taken strictly from their seniors to communicate further with locals. A presence of domestic livestock was found at site</p> |

|   |  |  |                                   |   |
|---|--|--|-----------------------------------|---|
|   |  | and clearly be demarcated from water for construction purposes.<br>j. Prohibit domestic pets or livestock to enter into the site.  |                                   | but the FWO camp was safely away from such interference (Please refer to photo # 01)  |
| 6 | <b>Material handling, use, and storage</b>   | <p>a. Securing of construction materials will ensure safe passage between destinations for transport system. Loaded vehicles shall be properly covered to prevent spillage, and contractor should be held responsible to clear them off.</p> <p>b. Direct transfer and deposit of construction materials to the site for its use. Avoid stockpiles to create less visual impacts. Any leftover of foreign materials should clearly be off, and the area should properly be reinstated if affected by any construction activity.</p> <p>c. Avoid spray of bitumen products on vegetation outside the road area.</p> <p>d. Avoid concrete mixing on ground.</p> <p>e. Use of wet gravel at site.</p> <p>f. Avoid direct fall of drainage water into sensitive areas.</p> <p>g. Control of all runoff from batching plants so that cement do not contaminate water, and if any, it should be collected, stored and disposed of at a designated site.</p> <p>h. Collect and deliver empty cement bags to recycling plants.</p> <p>i. Storage of Contaminated water should not allow to over flow and be protected from rain water.</p> | Dust pollution                    | FWO staff was advised to provide a safe passage to dumpers while carrying construction materials at site. Take appropriate measures such as a proper secure of Loaded material will prevent load spillage and create less visual impacts. Loaded vehicles were found without proper cover to prevent spillage. No concrete mixing as such was found during construction activities at site. There was an overall negligence among subcontractors about protocols handling construction materials, especially, during culverts construction at site. (Please refer to photos # 02, 03, 04, 08 and 09). |
| 7 | <b>Materials extraction, Quarrying &amp;</b> | <p>a. Identify environment friendly materials within budget.</p> <p>b. Use materials from local road cuts first, only</p>  | Change in landscape & Creation of | FWO workforce shows no proper care to follow safety protocols at work places. FWO officials were found hesitant while sharing their logging, quarrying  |

|   |                                     |   |  |   |
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|   | <b>logging</b>                      | <p>if it produces an aggregate of materials for stabilizing surfaces and filling embankments.</p> <p>c. Area should properly be restored and be treated with erosion control measures once materials are removed.</p> <p>d. Develop logging quarrying and borrowing plans, and take into account its accumulative effects.</p> <p>e. Take photos at site before start of excavation so that restoration can match the original site as much as possible. Also make sure Site quarries and gravel pits are not visible to travelers on roads.</p> <p>f. Adhere and monitor the plans to minimize side impacts due to extraction activities. Try to modify the plans as much as required.</p> <p>g. Restore and sustain the site area once the extraction activity is over.</p> <p>h. Install drainage structures to direct water away from pits.</p> <p>i. Implement safety protocols to minimize risks due to fall of rocks, debris, collapse of quarry walls or any accidental falls from clefts.</p> <p>j. Discuss with local community the option of retaining walls pits as water collection ponds for crops, grazing cattle, or similar use.</p> | water ponds.   | and borrowing plans with AGES environmental compliance monitoring team. Therefore, it is advised to the FWO staff to strictly follow safety protocols in order to avoid any mishap during work. In this respect, no environmental protocols as such were followed about quarry protection. Moreover, proper restoration and sustenance of the quarry area is required, once the extraction activities are completed (Please refer to photo # 05). |
| 8 | <b>Site clearing &amp; leveling</b> | <p>a. Minimize disturbance of local flora during construction activities as much as possible.</p> <p>b. Minimize the amount of clearance of small areas for active work once at a time.</p> <p>c. Avoid use of herbicides. Any such use should follow health and safety procedures to protect people and the environment.</p> <p>d. Limit of herbicides use should specified by the manufacturers.</p>  | Loss of vegetation, soil erosion, stability, water pollution, health of workers and local community. | No impact on vegetation was observed as most of the road construction area is rugged, and of hilly nature. However, the excavation continues at the shoulders of already existed road. Moreover, plantation is needed on emergency basis along the whole of Peshawar-Torkham road. Some specific plant species, in this regard, need to be identified in the area as per the provisions set in the Environment Management Plan.                   |

|                 |  |   |  |   |
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|                 |  | <ul style="list-style-type: none"> <li>e. Clear out the area without destroying plants and turfs, and take measures to preserve and replant where ever is possible.</li> <li>f. Remove Vegetation during dry periods only, and preserve soil top surface if re spreading is required. While if it is removed during wet periods don't disturb soil just before the start of actual construction.</li> <li>g. Use of erosion control measures such as hay bales</li> <li>h. Replant and re –vegetate the local flora on immediate basis once equipment is removed from site.</li> </ul>  |  | <p>Therefore, it is strongly recommended, that FWO contractor should coordinate with Forest department on immediate basis in this regard.</p> <p>No use of herbicides was found at site, and soil conservation measures were found appropriate due to the hilly, rocky nature which consists of sand, silt and gravels of its compact nature.</p>   |
| <p><b>9</b></p> | <p><b>Excavation , cutting , and filling</b></p> | <ul style="list-style-type: none"> <li>a. Cover Piles with plastic sheets, prevent run off with hay bales, or use similar measures.</li> <li>b. Fencing around excavation activities.</li> <li>c. Investigate shallow over excavation and alternatives.</li> <li>d. Construction crews and supervisors must aware of the historic burials, socio-cultural and religious objects. And, if recovered should properly be guarded to avoid any destruction.</li> <li>e. Ensure excavation is accompanied by a well-engineered drainage.</li> <li>f. Don't fill the flow line of a watershed. Even in arid areas, occasional rains may create strong water flow in channels.</li> <li>g. Adopt best engineering practices, for example, don't use the soil alone, first lay a bed of rock and then gravel it.</li> <li>h. Balance cuts and fills, wherever is possible to minimize the earth work movement.</li> <li>i. Water sprinkling on temporarily used road to avoid dust solution.</li> </ul> | <p>Soil erosion, stability and surface water contamination</p> | <p>The ongoing excavation process in section II and III for widening purpose of road, culverts and retaining walls construction need H&amp;S protocols, where compliance of such protocols about these activities in the above sections are generally missing.</p> <p>At KM. 10+450,13+405,13+513,25+700 and 23+750, both rocks excavation and structural excavation of culverts construction continued but safety protocols &amp; personal protective measures were remained absent during site visit. It was noticed that during rocks excavation even traffic was poorly handled and found mismanaged which may put the life of people further at danger.</p> <p>During site visit, it was also recommended to FWO staff that culverts construction should properly be covered and fenced at all sites. A proper drainage system engineered on best techniques may also be installed in order to provide flow to waterfall during excavation process. Proper dumping of excavated materials and sprinkling of water are also required to avoid dust pollution (Please refer to photo # 07, 08 and 09).</p> |

|    |                                       |   |  |   |
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| 10 | <b>Traffic Control and management</b> | <ul style="list-style-type: none"> <li>a. Need of practical efforts in order to control and accommodate traffic along the road as far as much possible.</li> <li>b. Provide sign boards in order to direct and guide drivers about diversions.</li> <li>c. Provide proper traffic management training to the contractor staff at the site before the construction activities take place.</li> <li>d. Avoid temporary by passes during land clearing as much as possible.</li> <li>e. Maximum speed limit on the site for heavy machinery should not exceed 20Km/hr.</li> <li>f. Try to keep the road partly closed to provide all time maximum safe passage to the vehicles/pedestrians</li> <li>g. Try to conduct work when traffic volume is low</li> <li>h. Organize a proper schedule in order to deliver sand trucks at the time of less traffic.</li> </ul> | Health and Safety of workers & local population  | <p>Traffic flows with diversions along the same road. Though FWO has arranged diversions, but proper traffic signboards are not found, which have put the existing traffic control further at risk. Therefore, FWO contractors are strongly suggested:<br/>Install proper sign boards with reflective materials on temporary basis further maximizing drivers' visibility at night.<br/>Speed breakers are needed to ensure maximum speed limit for heavy machinery at the site, and which should not exceed 20Km/hr.</p> |
| 11 | <b>Blasting</b>                       | <ul style="list-style-type: none"> <li>a. Allow minimum blasting at site as much as possible.</li> <li>b. Take Safety measures to provide protection to workers and locals from injuries due to rocks falling and avalanches.</li> <li>c. Provide protective equipments to the workforce on individual basis.</li> </ul>  | Noise pollution and occupational safety  | <p>Rock excavation is currently in progress in section-II and III for widening purpose of road construction, where safety protocols are generally not followed. Therefore, FWO is advised to provide protective equipments to the workers to further ensure their safety at site.</p>   |
| 12 | <b>Sources of building materials</b>  | <ul style="list-style-type: none"> <li>a. Develop logging, quarrying and borrowing plans for providing cumulative effects.</li> <li>b. Adherence to the plans and strong monitoring over impacts due to extraction activities. Try to modify these plans as much as required.</li> <li>c. Fill in quarries and pits before abandoning the construction activity.</li> <li>d. Control runoff into pits.</li> </ul>   | Damages to the aquatic, terrestrial ecosystems erosion, siltation, and vector-borne diseases | <p>No safety plan or such other monitoring measures were observed during extraction activities at quarry sites. In this regard, FWO is requested to develop logging, quarrying and borrowing plans in order to bring cumulative effects in this regard.</p>   |

|    |   |  |  |  |
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| 13 | <b>Dust Pollution</b>                         | <ul style="list-style-type: none"> <li>a. Water spraying</li> <li>b. Covering of Trucks with tarpaulins</li> </ul>   | Nuisance to the public, undermining of the quality of air and water due to contamination   | At this site visit, water sprinkling vehicle was observed at some places, but the problem of dust pollution is still found at some places.   |
| 14 | <b>Borrow Areas</b>                           | These impacts are reversible through a diligent restoration process which must be put in place by the contractor and approved by the Highway Division.   | Rugged landscape and its interference with the local aesthetics; posing a danger to livestock and local community children; holding of stagnant water and take up agricultural land. | No activities at site were seen about borrow areas. Moreover, borrow areas still need to be identified, if needed.   |
| 15 | <b>Damages to the existing infrastructure</b> | <ul style="list-style-type: none"> <li>a. Locate different locations of existing infrastructure on both sides of road.</li> <li>b. Determine and avoid damages to locations of water pipes, electricity pylons etc.</li> </ul>   | Facilities to the locals   | During site visit, PTCL and FWO concerned authorities were asked to take care of the existing infrastructure at the time of the excavation activities, especially when culverts are constructed at sites. It was also suggested to the FWO/ NESPAK personals that WAPDA/PTCL departments should early informed before any excavation activity is started.  |
| 16 | <b>Health &amp; Safety of the workers</b>     | <ul style="list-style-type: none"> <li>a. Prepare and implement a Health and Safety Plan at site.</li> <li>b. Exclude public from site area.</li> <li>c. Ensure that workers use Personal Protective Equipments.</li> <li>d. Provide Health &amp; Safety Training (including HIV/AIDS transmission process) to all personnel;</li> </ul> | Workers and the public are at risk from accidents on site  | Health and safety protocols are followed in general at camps, but no respect is shown by the workers to H&S requirements/protocols during construction activities at site. In this regard, FWO officials are advised to take care of the safety protocols and also prepare H&S plan as well as to take measures for keeping records of accidents, illness and workers treatments etc. Moreover, it is also very important to |

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|  |   | <ul style="list-style-type: none"> <li>e. Follow documented procedures for all activities at site;</li> <li>f. Keep reports and records of accidents.</li> </ul>  |                                       | <p>arrange and provide H&amp;S trainings to the workers in order to ensure their good health and safety at site. Health facilities such as, first aid and ambulance facilities should also be provided to the workers at site. Provisions of personal protective equipments to the workers were also missing at site area.</p> <p>At all the places, where activities of culverts constructions, retaining walls, material extraction at quarry and other excavation sites continues should comply the above mentioned guidelines.</p>              |
| 17   | <b>Local Employment</b>                       | Contractor' should hire at least 50% of local workforce at work site  | Economic benefits to the local people | Most of the employees in the existing FWO contract are their regular employees. Therefore, a sporadic local labor is hired when a subcontract is in place.  |
| 18   | <b>Others concerns like Resettlement etc.</b> | <ul style="list-style-type: none"> <li>a. Resettlement, if any.</li> <li>b. Provide pedestrians and road access to local people.</li> <li>c. Avoid social disturbances over Infrastructure damages such as, telephone cables, sewerage, water supply schemes etc</li> <li>d. Avoid Social Conflicts with locals.</li> </ul> | Resettlement & Social management      | <p>Issues like resettlement or relocation were found absent at site area because the newly constructed road continues on its existing corridor. Infrastructure facilities to the locals such as Sewerage, telephone cables and electricity lines etc. must properly cared, managed, and undisturbed. While going through the site area, some social issues were also observed which need proper attention, and be properly addressed.</p> <p>Activities of drains construction at many places in section 1 like KM 7+00, 8+825 are in progress.</p> |
| <b>Operation and Maintenance of newly constructed road</b> |   |   |                                       |   |
| 19   | <b>Road maintenance</b>                       | <ul style="list-style-type: none"> <li>a. Monitor and Maintain cleanness of drainage structures, channels, ditches and culverts.</li> <li>b. Fill mud and pot holes with a good quality of gravels, and also remove trees and wooden limbs lying down on road.</li> </ul>   | Road Maintenance                      | Most of the construction work in section -I of the Peshawar-Torkham road has already been completed, while construction of side drains along the road for disposal of water are in progress   |

|    |   |  |                          |   |
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|    |   | c. Use water from retention ponds and basins settled for road maintenance.   |                          |   |
| 20 | <b>Use and maintenance of equipments</b>    | Install concrete pads, drains and oil/water for vehicles maintenance.<br>Areas separation for where equipments, vehicles are maintained and fueled on regular basis.                                       | Water and soil pollution | No compliance was shown at site. The required protocol may properly addressed |
| 21 | <b>Accidents due to hazardous materials</b> | a. In case of a spill, concerned department should consult on emergency basis.<br>b. Need for establishing an administrative department which will administer and monitor the road of hazardous substances | Cases of accidents       | No compliance was shown at site. The required protocol may properly addressed |
| 22 | <b>Vehicles management</b>                  | a. Prohibit vehicles to travel on road which promote noise pollution.<br>b. Proper education about noise and air pollution to locals and how to keep the road clean  | Visual inspection        | No compliance was shown at site. The required protocol may properly addressed |

# APPENDICES

**6.1 CONTRACTOR IPC's (SECTION-I)**

| IPC No:                            | TOTAL PIL AMOUNT |                | AMOUNT CLAIMED |                | DATE OF SUBMISSION<br>BY CONTRACTOR TO<br>FATA | DATE OF<br>SUBMISSION BY<br>FATA TO USAID | DATE OF<br>CERTIFICATION BY<br>M&E CONSULTANTS | AMOUNT CERTIFIED BY<br>M&E CONSULTANTS |                    |
|------------------------------------|------------------|----------------|----------------|----------------|--|---|--|--|--------------------|
|                                    | US \$            | EQUIVALENT PKR | US \$          | EQUIVALENT PKR |  |   |  | US \$                                  | EQUIVALENT PKR     |
| 1                                  | 9,978,081        | 937,939,614    | 1,444,442      | 135,777,548    | 23-May-13                                      | 28-May-13                                 | 28-Jun-13                                      | 597,641                                | 56,178,279         |
| 2                                  |                  |                | 2,494,227      | 234,453,311    | 28-Jun-13                                      | 2-Jul-13                                  | 26-Jul-13                                      | 2,494,227                              | 234,453,311        |
| 3                                  |                  |                | 2,382,898      | 223,992,366    | 26-Jul-13                                      | 31-Jul-13                                 | 29-Aug-13                                      | 2,268,345                              | 213,224,394        |
| 4                                  |                  |                | 1,738,259      | 163,396,356    | 3-Sep-13                                       | 11-Sep-13                                 | 25-Sep-13                                      | 1,096,902                              | 103,108,788        |
| 5                                  |                  |                | 699,562        | 65,758,791     | 30-Sep-13                                      | 3-Oct-13                                  | 23-Oct-13                                      | 680,293                                | 63,947,570         |
| 6                                  |                  |                | 1,287,568      | 121,031,406    | 2-Dec-13                                       | 2-Dec-13                                  | 17-Dec-13                                      | 886,305                                | 83,312,672         |
| 7                                  |                  |                | 467,684        | 43,962,288     | 26-Dec-13                                      | 26-Dec-13                                 | 30-Dec-13                                      | 19,268                                 | 1,811,220          |
| <b>UP-TO DATE CERTIFIED AMOUNT</b> |                  |                |                |                |  |   |  | <b>8,042,981</b>                       | <b>756,036,234</b> |

Conversion Rate 1 US \$ = 94 PKR

**6.2 CONTRACTOR IPC's (SECTION-II)**

| IPC No:                            | TOTAL PIL AMOUNT |                | AMOUNT CLAIMED |                | DATE OF SUBMISSION<br>BY CONTRACTOR TO<br>FATA | DATE OF<br>SUBMISSION BY<br>FATA TO USAID | DATE OF<br>CERTIFICATION BY<br>M&E CONSULTANTS | AMOUNT CERTIFIED BY<br>M&E CONSULTANTS |                   |
|------------------------------------|------------------|----------------|----------------|----------------|--|---|--|--|-------------------|
|                                    | US \$            | EQUIVALENT PKR | US \$          | EQUIVALENT PKR |  |   |  | US \$                                  | EQUIVALENT PKR    |
| 1                                  | 9,383,484        | 985,265,820    | 1,159,388      | 121,735,792    | 26-Dec-13                                      | 26-Dec-13                                 | 31-Dec-13                                      | 661,911                                | 69,500,655        |
| <b>UP-TO DATE CERTIFIED AMOUNT</b> |                  |                |                |                |  |   |  | <b>661,911</b>                         | <b>69,500,655</b> |

Conversion Rate 1 US \$ = 105 PKR

**6.3 RECORD OF COORDINATION MEETINGS / JOINT SITE VISITS**

| <b>Date</b> | <b>Meeting</b>       | <b>Participants</b>                            | <b>Venue</b>               |
|-------------|----------------------|--|----------------------------|
| 11-Feb-14   | Joint Site Visit     | M&E Consultants, FWO, NESPAK                   | P-T Road Project           |
| 24-Feb-14   | Coordination Meeting | FATA, USAID, M&E Consultants, FWO, NESPAK      | HQ 495 Group Rawalpindi    |
| 26-Feb-14   | Coordination Meeting | NHA, FATA, USAID, M&E Consultants, FWO, NESPAK | PD-FW (495 Group) Peshawar |
| 27-Feb-14   | Coordination Meeting | M&E Consultants, FWO, NESPAK                   | NESPAK HQ, LAHORE          |
| 28-Feb-14   | Coordination Meeting | M&E Consultants, FWO, NESPAK                   | NESPAK HQ, LAHORE          |

## 6.4 MOBILIZATION OF M&E STAFF

The following members of the M&E Team were mobilized as various activities of the project progressed. Other staff members will be mobilized according to demand of work load.

### PROJECT MANAGER OFFICE – STAFF DEPLOYMENT

| S. No. | Name                  | Designation                      |                |
|--------|-----------------------|----------------------------------|----------------|
| 1      | Aziz-ul-Haq           | Project Manager                  | ROAD COMPONENT |
| 2      | Nasir-ul-Mulk         | Project Advisor                  |                |
| 3      | Abdul Hakim           | Senior Technical Specialist      |                |
| 4      | Shabir Ahmad Khan     | Environmental Compliance Officer |                |
| 5      | Muhammad Khurshid     | Mid-Level Specialist             |                |
| 6      | Amjad Saeed           | Mid-Level Specialist             |                |
| 7      | Saqib Maqbool         | Junior Engineer                  |                |
| 8      | Arshad Khan           | CAD Operator                     |                |
| 9      | Sohail Anjum          | Senior Surveyor                  |                |
| 10     | Abdul Waheed          | Manager Admin/Finance            |                |
| 11     | Amir Habib            | IT Officer                       |                |
| 12     | Muhammad Bilal        | Assistant Accountant             |                |
| 13     | Faizan Khan           | Computer Operator                |                |
| 14     | Jamil Khan            | Field Monitor Social             |                |
| 15     | Anwar Dad             | Quantity Surveyor                |                |
| 16     | Waqar ul Mulk         | Junior Architect                 |                |
| 17     | Naeem Jan             | Senior Surveyor                  |                |
| 18     | Muhammad Waqas        | Survey Assistant                 |                |
| 19     | Muhammad Ayaz         | Survey Assistant                 |                |
| 20     | Muhammad Zeeshan Atta | Survey Assistant                 |                |
| 21     | Sana ullah            | Accountant                       |                |

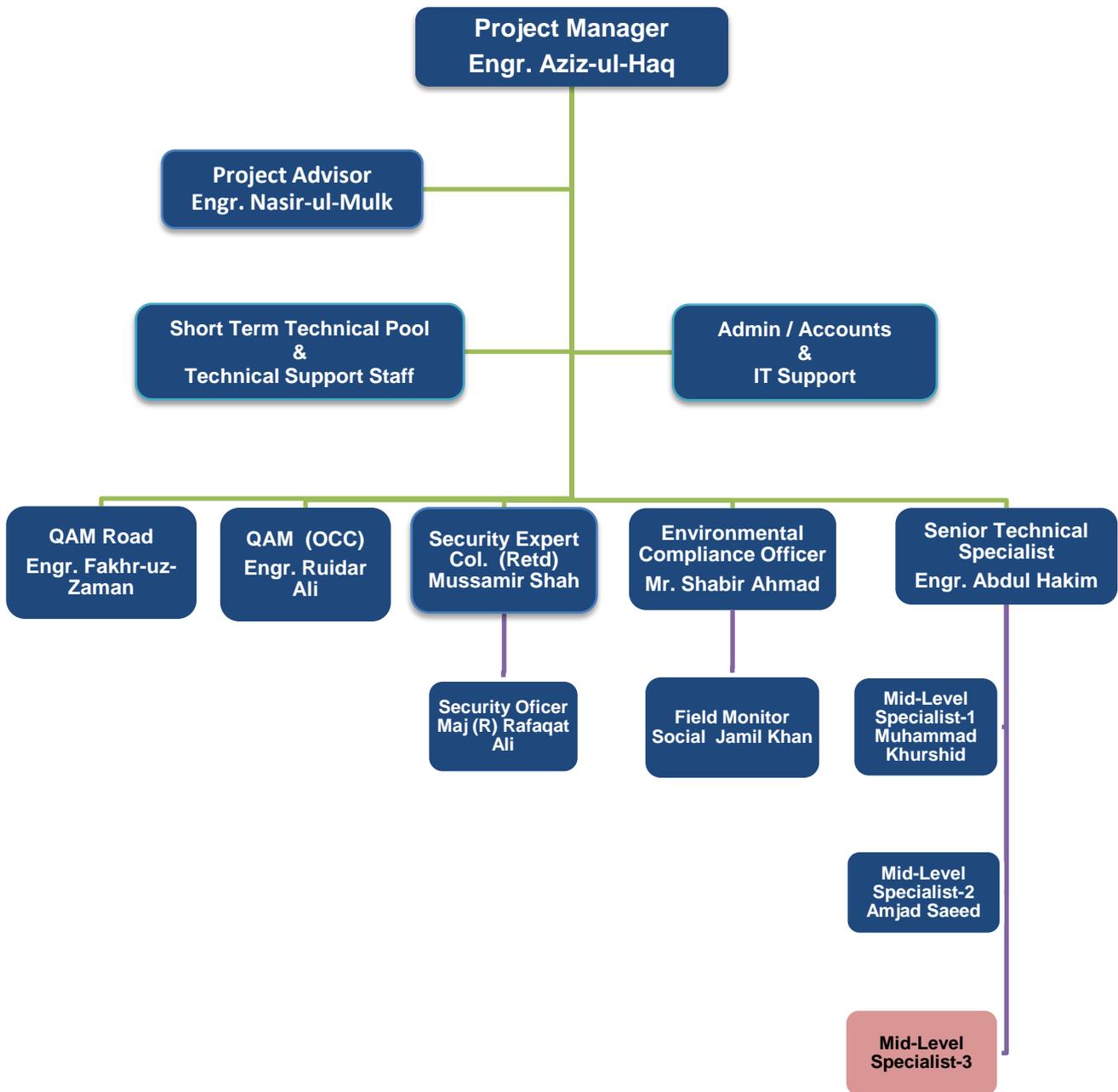
**QAM Office (Road Component)**

| <b>S. No.</b> | <b>Name</b>        | <b>Designation</b>               |
|---------------|--------------------|----------------------------------|
| 1             | Fakhr-uz-Zaman     | Quality Assurance Manager (Road) |
| 2             | Saeed ur Rehman    | M&E Specialist Road              |
| 3             | Muhammad Ilyas     | Field Manager M&E                |
| 4             | Muhammad Ibrar     | Office Engineer                  |
| 5             | Rasheed Khan       | Field Monitor Road               |
| 6             | Muhammad Sher      | Field Monitor Road               |
| 7             | Ghulam Qasim       | Field Monitor Road               |
| 8             | Tariq Ibrahim Khan | Quantity Surveyor                |
| 9             | Asad Khan          | CAD Operator                     |
| 10            | Ihsan Ullah        | Accountant                       |
| 11            | Hafiz ur Rehman    | Assistant Accountant             |
| 12            | Nasir Alam         | Admin Officer                    |
| 13            | Umar Shah          | Assistant Office Admin           |
| 14            | Hamid Ali          | Computer Operator                |

**Laboratory Staff (Road Component)**

| <b>S. No.</b> | <b>Name</b>    | <b>Designation</b>        |
|---------------|----------------|---------------------------|
| 1             | Gul Zada       | Material Engineer         |
| 2             | Amjad Ali Khan | Senior Lab. Technician    |
| 3             | Khan Umar      | Senior Lab. Technician    |
| 4             | Shakeel Akbar  | Lab. Technician           |
| 5             | Noor Ali Jan   | Lab. Technician           |
| 6             | Mujeeb Khan    | Assistant Lab. Technician |
| 7             | Babar Naeem    | Assistant Lab. Technician |

### 6.5 ORGANIZATION CHART FOR CMEP OFFICE, PESHAWAR



**LEGEND:**

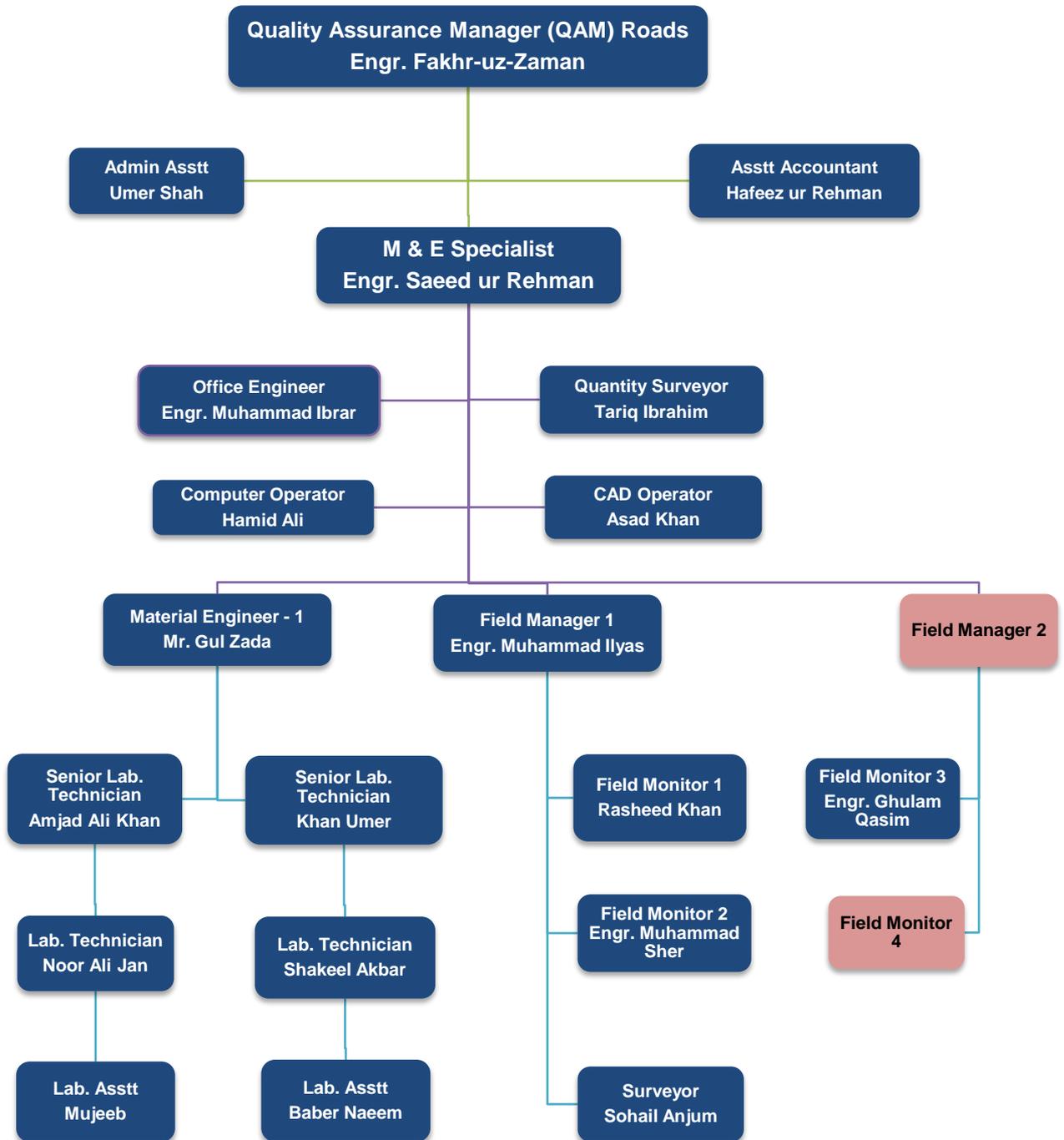


**Mobilized**



**To be mobilized with expansion of work**

## 6.6 ORGANIZATION CHART FOR ROAD COMPONENT OF CMEP PROJECT



### LEGEND:



**Mobilized**



**To be mobilized with expansion of work**

# **PROJECT PHOTOGRAPHS**

# PAVEMENT



KM: 10+350 To 10+450 (Full Width) Sub-base top layer leveling & grading in progress



KM: 10+450 To 10+500 RHS Roadway excavation for breast wall in progress



KM: 15+025 To 15+250 (Half width RHS) Water bound macadam brooming in progress



KM: 16+275 To 16+575 (Half width RHS) ACBC 2nd layer initial rolling in progress



KM: 16+575 To 16+775 (Full width) ACBC 1st layer final rolling in progress



KM: 16+575 To 16+775 (Full width) M&E Consultant checking loose thickness of ACBC 1st layer



KM: 16+575 To 16+775 (Full width) M&E Consultant taking samples from ACBC 1<sup>st</sup> layer



KM: 16+575 To 16+775 (Full width) ACBC 1st layer laying & final rolling in progress



KM: 17+500 To 17+600 (Full width) Cleaning & brooming of water bound macadam in progress



KM: 17+612 To 17+800 (Full width) Water bound macadam material spreading & grading in progress



KM: 17+612 To 17+800 (Full width) WBM spreading of screening material with dry compaction in progress



KM: 18+700 To 19+000 (RHS) Drilling in hard rock for blasting in progress



KM: 18+700 To 19+000 (RHS) Roadway excavation in progress



KM: 18+700 To 19+000 (RHS) Roadway excavation & blasting in hard rock in progress



KM: 18+700 To 19+000 (RHS) Shifting of surplus material to crush plant in progress



KM: 22+725 To 22+825 (Full width) Embankment layer leveling & grading in progress



KM: 22+975 To 23+100 Full width Windrows of embankment formation



KM: 27+650 To 27+700 (Half width LHS) Sub base 1st layer leveling & grading in progress

# **STRUCTURES**



Culvert KM: 1+315    RHS RCC Barrier concrete placed for 01 panel



Culvert KM: 11+190    Form work erection for RCC wall in progress



Culvert KM: 11+190

Curing of 02 No RCC wall of box culvert in progress



Culvert KM: 11+372 Curing of concrete top slab in progress



Culvert KM: 11+84 Formwork erection for top slab in progress



Culvert KM: 12+178 Stone masonry construction of abutments in progress



Culvert KM: 12+975

Roll pointing on abutments in progress



Culvert KM: 13+212

Compaction of backfill in progress



Culvert KM: 13+565

Formwork for top slab in progress



Culvert KM: 14+300

Stone masonry construction of wing wall in progress



Culvert KM: 14+431 Stone masonry construction of wing wall on U/S side in progress



Culvert KM: 15+795

Curing of concrete top slab in progress



Culvert KM: 16+740 Bituminous material prepared at site for joint filling



Culvert KM: 17+565

Stone masonry construction of wing wall in progress



Culvert KM: 22+925 Formwork erection for RCC walls of multicell box culvert in progress



Culvert KM: 22+925 Formwork erection for RCC walls of multicell box culvert in progress



Drain KM: 0+575 To 0+595

RHS Brick masonry Drain type D-2 in progress



Drain KM: 0+825 To 1+100

RHS Brick masonry drain type D-2 in progress



Drain KM: 2+900 To 3+000 LHS Slab formwork & rebars fixing in progress



Drain KM 0+125 To 0+238 RHS Drain type D-2 structural excavation in progress



Bridge KM: 9+560 Abutment-1 concrete curing in progress



Bridge KM: 9+560 Formwork erection for pre-stress girder-15 in progress



Bridge KM: 9+560 Pile cap abutment-2 concrete with mobile concrete pump in progress.



Bridge KM: 9+560 Prestress girder-14 concrete compaction in progress



Bridge KM 23+875 Pile boring in progress



Bridge KM: 27+350 Boring for test pile in progress



KM: 10+400 To 10+447 LHS stone masonry construction of retaining wall in progress



KM: 10+550 To 10+570 LHS stone masonry construction of retaining wall in progress



KM 10+575 To 10+600

LHS stone masonry construction of retaining wall in progress



KM: 10+575 To 10+600

RHS stone masonry construction of breast wall in progress



KM: 10+575 To 10+700      RHS stone masonry construction of breast wall in progress



KM: 13+300 To 13+325      RHS stone masonry construction of breast wall in progress



KM: 13+600 To 13+650      LHS stone masonry construction of breast wall in progress



KM: 25+300 To 25+425      RHS stone masonry construction of retaining wall in progress



KM: 25+350 To 25+400      RHS stone masonry construction of retaining wall in progress



KM: 25+400 To 25+425      LHS stone masonry construction of retaining wall in progress

# **FIELD / LAB TESTING**



KM: 16+600 Sampling of Asphaltic Base course by M&E Consultants



KM: 9+560 Casting of D-1 Concrete Cylinders of Girder # 14 by M&E Consultants



KM: 16+340 Joint coring of Asphaltic Base course by FWO and M&E Consultants



KM: 30+640 Joint Field density test of Sub Grade Top layer



Visually Testing the Striping of Aggregates of ACBC in M&E Consultants lab

# **ENVIRONMENTAL MONITORING**



(Photo #1) Outside view of dining hall at FWO Labor Camp



(Photo # 2) KM: 7+000 Road side drain construction needs H&S protocols



(Photo # 3) KM: 8+825 Road side drain Construction needs H&S protocols



(Photo # 4) KM: 9+ 560 Bridge construction needs Health and Safety measures



(Photo # 5) KM: 9+ 700 Quarry area needs proper H&S protocols for its handling



(Photo # 6) KM: 10+300 Crush gravels placement is in progress and needs a proper sign board and safety measures



(Photo # 7) KM: 10+450 Roadway excavation needs H&S protocols



(Photo # 8) KM: 12+975 Dust pollution; needs sprinkling of water



(Photo # 9) KM: 13+513

Construction of retaining wall needs H&S measures, a proper placement of building material and personal protective equipments



(Photo # 10) KM: 15+690

Rigid Pavement concrete pouring needs proper H & S protocols