The Afghanistan Engineering Support Program assembled this deliverable. It is an approved, official USAID document. Budget information contained herein is for illustrative purposes. All policy, personal, financial, and procurement sensitive information has been removed. Additional information on the report can be obtained from Firouz Rooyani, Tetra Tech Sr. VP International Operations, (703) 387-2151.

TETRA TECH

MEMORANDUM

To: [redacted]

From: [redacted] P.E.

Date: July 11, 2011

Re: **AESP WO-A-0075:**
Investigation of Khost-Gardez Road Failure at 23.6KM

Executive Summary

USAID requested Tetra Tech (Tt) to independently evaluate the Khost-Gardez road failure zone (KM 23+550) to determine, from an engineering perspective, if the failure was a natural phenomena or caused by either design, construction, or other causes. Tt has been provided most of the engineering documentation from LBG. LBG has cooperated and been very forthcoming in this investigation. The level of transparency and cooperation was instrumental in garnering needed information.

While our assessment shows the engineering design of the roadway was adequate, the control of water was less than adequate. The fact that talus deposits were in this failed road section and LBG's geotechnical report of April 2009 states "Talus deposits have little cohesion and are generally constitute unstable soil masses in the presence of water" (p. 10, section 5.1.3, 2nd paragraph, 4th sentence) the control of water in this section of road would be paramount. When the road section failed in the fall of 2010, [redacted] visited this site and recommended some water drainage control measures which did not arrest the subsidence in the road section. The designed water control features of this section of roadway failed to divert water from the roadway and contributed to the section failure.

The major question is the level of government involvement in the decisions taken by LBG. A case in point is the value engineering proposal which was to save the government $10 million dollars in geotechnical investigations. It was mentioned several times, but there is no documentation that it was approved by the contracting officer. The central theme was cost containment and so it seems reasonable that the value engineering proposal would be approved. As with the failed road section emergency repairs in the fall of 2010, we read where cost and winter's approach was a driving force in the decisions. Follow up work was discussed and never undertaken. There was no design or discussion until the road failed in the spring 2011. During the winter of 2010, the road was signed over from LBG to USAID and then to the Government of Afghanistan with knowledge that this section of road was below standard by both parties.

Current emergency measures to make the road suitable for traffic have been undertaken and successfully restored the road to acceptable levels of use. The follow on visit to this area and the subsequent recommendations by LBG are reasonable and follow standard engineering practices. Tt wants to emphasize that water control will be paramount to the successful long term repairs to this section of roadway. LBG has provided an engineered solution which we agree will provide years of life to this section, however without proper drainage installed and maintained these problems can re-occur.

The implementation of a permanent repair should be undertaken during this construction season. The emergency repairs exposed a large surface area and drainage features need to be installed before the on-set of winter. Subsurface clay layers may become saturated and make it more difficult to work on a permanent solution next spring.

Field Reconnaissance Observations

On June 30, 2011, a field reconnaissance team consisting of [redacted] traveled to the subject site via helicopter.

Field Observations:

At the site, the team observed the ongoing roadway repairs.

LBG had excavated 3 to 4 meters laterally into the slope on the east side of the road through the failure zone (~23+550 to 23+620). This excavation was designed to remove the unstable sliding portion of the failure zone on this side of the road. LBG also excavated ~3 to 4 meters into the east slope south of the failure zone (~23+620 to 23+660) and ~1 to 4 meters into the east slope north of the failure zone (~23+520 to 23+550). These excavations north and south of the failure zone will allow for the proposed permanent road realignment.

LBG had used a track excavator to remove material alongside the roadway. The excavation to the east of the road was into the adjacent slope face. As LBG excavated the lower slope, the upper reaches of the slope often collapsed down the slope and these materials were removed as well. A terrace was build to allow access to the upper slope, material was excavated and pushed to the lower slope and hauled off as well. The excavation to the west of the roadway was of the previous shoulder. This shoulder was lowered ~1 meter for the full extent of the failure zone.

The excavation east of the roadway into the slope continued to uncover more loose material. A sample taken by LBG is classified as sandy lean clay with ~20% natural moisture content. This material was widespread in the area excavated and is likely beneath the road holding moisture and allowing for slippage along the failure plane.

The excavation also removed most of the previous emergency repairs and the concrete ditch on the east side of the road with the exception of a small area beyond the failure zone to the north.

The roadway itself in the failure zone is now a gravel single lane built up almost to the original grade from the previous failing southbound lane. The present road allows only for a single lane of travel, but no vehicle back-ups seemed to occur at the site. Jersey barriers were used to direct traffic to the maintained area of the road as well as keep vehicles out of the construction zone.

Document Review

Tt has conducted a detailed technical review of documentation provided by LBG related to the road construction and their contract. This information includes: soil/geotechnical reports,

materials testing reports, field density reports, contract construction documents (plans/specs)/mix design, QA/QC & field observation reports and photos taken during construction.

Initial observations from this document review include:

a) The road appears to have been installed in accordance with contract specifications and standard engineering practice.

b) There is no record of LBG conducting slope stability survey per their original Scope of Work (crushed rock failure zone vs. bedrock on road zones above and below failure).

c) Per the specifications for the entire road, the previous roadbed had at least 10 cm of gravel removed, the sub-grade was compacted and a new base and asphalt road was constructed on top of that.

d) Records indicate that there were some density tests that failed in the zone of the road failure, but are unlikely to be associated with the road failure due to the depth of the presumed landslide slip plane.

e) Test pits done near the road failure zone allegedly reached shallow bedrock. It is likely that in the failed zone that true bedrock is many meters below the surface.

<u>Updated List of Findings of Facts:</u>

The Gardez to Khost Road TO-08 Statement of Work (section provided was undated):

p. 6, section II, 2nd paragraph, 3rd sentence, "Drainage will be designed for 20-year storm events and a passable road for all seasons of the year".

> Finding of fact: The drainage system installed for the road did not allow for proper drainage of water on the east side of the road in the failure zone. This excess water may have contributed to the road failure.

p. 7, section c, 3rd paragraph, 1st and 2nd sentences, "At the local level, an initial planning meeting with local village elders and tribal leaders will be held to present the project objectives, implementation schedule, and ROW needs. Monthly or bi-monthly information exchanges will follow and will present project status, ROW progress and other issues".

> Finding of fact: LBG indicated that they heard, after the road failure, discussions on previous historic road failures from locals.

p. 7, section c, 4th paragraph, 3rd sentence, "Village meetings will present the road alignment, discuss employment opportunities and facilitate questions and local input while gaining a sense of local support for the project".

> Finding of fact: LBG indicated that they heard, after the road failure, discussions on previous historic road failures from locals.

p. 9, section c, 3rd paragraph, 1st sentence, "Because of an extensive mountain section, it will require substantial slope stability review and analysis, in addition to possibly voluminous retaining wall designs and other measures included for landslide control".

Finding of fact: No slope stability review and analysis was performed.

p. 10, section c, 1st paragraph, "Cross sections may be taken at a higher frequency than typical 20 meter intervals to provide greater control on earthworks quantity estimates. A large number of culverts will be necessary to provide proper drainage from the mountain streamlets. LBG/B&V JV will analyze the watershed and determine the projected capacities for side ditches, cross drains and drainage structures".

Finding of fact: LBG/B&V JV did not add cross sections in the failure area. LBG B&V JV failed to analyze the watershed properly and engineer the culverts, ditches, cross drains and other drainage structures to appropriately address water in the failure zone.

The Geotechnical Report, April 2009:

p. 2, 1st paragraph, 4th sentence, "In order to maintain the long term roadway safety, rock slope stability and to mitigate rock falls, scaling; the removal of all loose boulders and rocks, as well as the installation of rock bolts, catch fences and catch walls will be required".

Finding of fact: None of these features were installed in the failure zone.

p. 3, section 1, 2nd paragraph, 1st sentence, "The purpose of this report is to evaluate the subsurface physical conditions based on the data collected from: 125 test pits, laboratory test results, land and aerial site reconnaissance surveys, preliminary engineering and geologic mapping of the route, and a review of related literature, and to provide recommendations for the design of the proposed roadway and pavement".

Finding of fact: Land and aerial reconnaissance surveys of the failed zone prior to construction should have indicated the need for investigation and greater engineering controls in the failure zone.

p. 7, section 5.1, 2nd paragraph and 3rd bullet, "Therefore, during construction of the roadway, the controlling factors for the proposed roadway are:", "Roadway Widening, Excavation and Slope Stability".

Finding of fact: Slope stability was not performed in the failure zone.

p. 9, section 5.1.3, 1st paragraph, 3rd and 4th sentences, "Route engineering geologic survey could not be conducted due to the lack of security at the time of the preparation of the design for this project. Therefore, no specific slope stability analyses were conducted".

Finding of fact: LBG did not follow the Statement of Work.

p. 10, section 5.1.3, 2nd paragraph, 4th sentence, “Talus deposits have little cohesion and are generally constitute unstable soil masses in the presence of water”.

Finding of fact: Talus deposits were present in the failure zone.

p. 10, section 5.1.3, 2nd paragraph, 8th sentence, “If the removal of talus is not practical, or possible, the slope gradient must be limited to 1.0H: 1.0V and a retaining wall should be constructed at the toe of the slope”.

Finding of fact: At 23+580 the slope was 1.0H: 1.5V and no retaining wall was constructed.

p. 10, section 5.1.3, 3rd paragraph, 1st and 2nd sentences, “The design slope angles assumed fully drained slope conditions. Accordingly, slope drainage by mean must be maintained during and after construction, and or the design slope angles must be flattened to account for some saturation”.

Finding of fact: The failure zone did not have fully drained slope conditions.

p. 10, section 5.1.3, 6th paragraph, 2nd and 3rd sentences, “Nevertheless, some rock stabilization measures will still be required to maintain the long term safety of the roadway and rock slope stability, and to mitigate rock falls, scaling of the rock slope and block failures. The design and locations of the rock slope stabilization measures, which include a catch trench with or without a catch wall and installation of rock bolts, were provided in the design drawings and project specifications”.

Finding of fact: Observation from the field in the failure zone indicated no installation of these measures.

p. 10, section 5.1.3, 6th paragraph, 7th and 8th sentences, “Despite a global satisfactory stability of the rock masses, some of the rock masses that are shown on the design drawings will need to be rock bolted to maintain stability. Systematic or spot rock bolts, with four (4) meter in length will be required to increase the factor of safety against a potential plane failure”.

Finding of fact: Observation from the field in the zone of the failure indicated no installation of these measures.

p. 14, section 8.0, #6, 1st sentence, “For the pavement design, a CBR value CBR=10 is recommended for most parts of the proposed pavement except in areas where clay is present for which a CBR value of CBR=4 is recommended”.

Finding of fact: This area was defined as CBR=10, but the laboratory measurement was CBR=8.

Conclusions

Tt agrees with LBG/B&V JV's statement on page 3 of 14, under "Primary Cause of the Slide" in their "Slide Restoration Report to USAID" dated July 3, 2011, that the fault gorge material exposed during the emergency repair excavations is a major contributing factor to the failure of the road. The removal of vegetation, soil, and lack of adequate drainage away from the failure zone during construction allowed water to infiltrate and saturate the gorge material and contribute to weakening the slip plane that resulted in the road failure.

Based on Tt's review of the contract documentation and records, the design appears to be sufficient in the absence of a slope stability analysis. The contractor did build according to the specifications, with some minor field density failures unrelated to the road failure. LBG's QA/QC appears sufficient. IRD's QA/QC appears sufficient and the failure was noted and tracked from August 2010 (Attachment A). It is possible construction activities, including road widening and the installed catchment trenches and ditches, increased water infiltration to the slip plane which may have contributed to the failure. When the problem was identified, a minor remediation effort was undertaken, in accordance with industry standards. The remediation effort was not successful in mitigating the road subsidence. It is reasonable to infer that had a slope stability analysis been performed or greater awareness been made of the native material and water infiltration during construction, the design and alignment of the road may have taken into account the possibility of a slip plane failure. Subsequent slope stability engineering such as reinforcement above and below the road may have helped prevent the road failure.

Tt concurs with [redacted] proposed solution for the permanent repair to this section of failed roadway, as presented at the meeting held at USAID on July 4, 2011 and described in the section "Future Work to Restore Stability" of LBG/B&V JV's report "Slide Restoration Report to USAID" dated July 3, 2011. Tt recommends a thorough water drainage effort especially in the surrounding hillsides. Also a clay layer was discovered approximately 4 meters into the hillside while undertaking emergency remedial efforts. Tt would suggest 4 meters of excavation under the permanent road repair to ensure that the excavation uncovers the potential clay layer and excavates the clay layer underneath the roadway if it is present.

Tt also recommends that the permanent repair be completed prior to the next winter season (November/December 2011) to avoid introduction of additional water to this failed road section which may result in further slippage to the road causing an unsafe condition and/or loss of access along this road.

ATTACHMENT A

IRD, Trip Report, August 29 to September 1, 2010:

Km 23+600. There are undetermined sub-base issues in this area. The roadway is cracking and settling. The slope is sliding. Figure 7.

- The road settlement at Km 23+600 needs immediate attention. Recommend setting up monitoring program as soon as possible. The consultation from a qualified Geotechnical Engineer is recommended as soon as possible. If the road area is filled in with binder, new monitoring points should be established. The continuation of the monitoring process is recommended. The slope failure should be addressed and resolved.

Figure 7, Settlement, Km 23+600 N 33°28.540' (33°28'32.4") E 69°22.492' (69°22'29.5")

IRD, Summary Doc 9-26-10:

KM 23+600 is also an area of concern. The roadway has significant geotechnical issues. The down slope side of the road displayed separation in the soil. Cracks in the slope are evident. The roadway has sunken and was paved over with an additional asphalt binder course. The area was being surveyed when the inspection team arrived. It is recommended this area be inspected by a geotechnical specialist as there is potential for further settling in this section of the road which adjoins a very steep slope.

It is the recommendation of the inspection team that the roadway be inspected by a

geotechnical specialist at KM 23+600 and Km 00+600 to Km 10+000. At a minimum the slippage area (Km 23+600) in this roadway section should be monitored with survey equipment to determine any further slippage.

IRD, Summary Doc 9-29-10:

KM 23+600. It is recommended the area affected be monitored to see if the settlement has slowed, stopped or is continuing to progress. Furthermore, it is also recommended a geo-technical specialist investigate this section of road.

IRD, Substantial Completion Inspection Punch List, November 21, 2010:

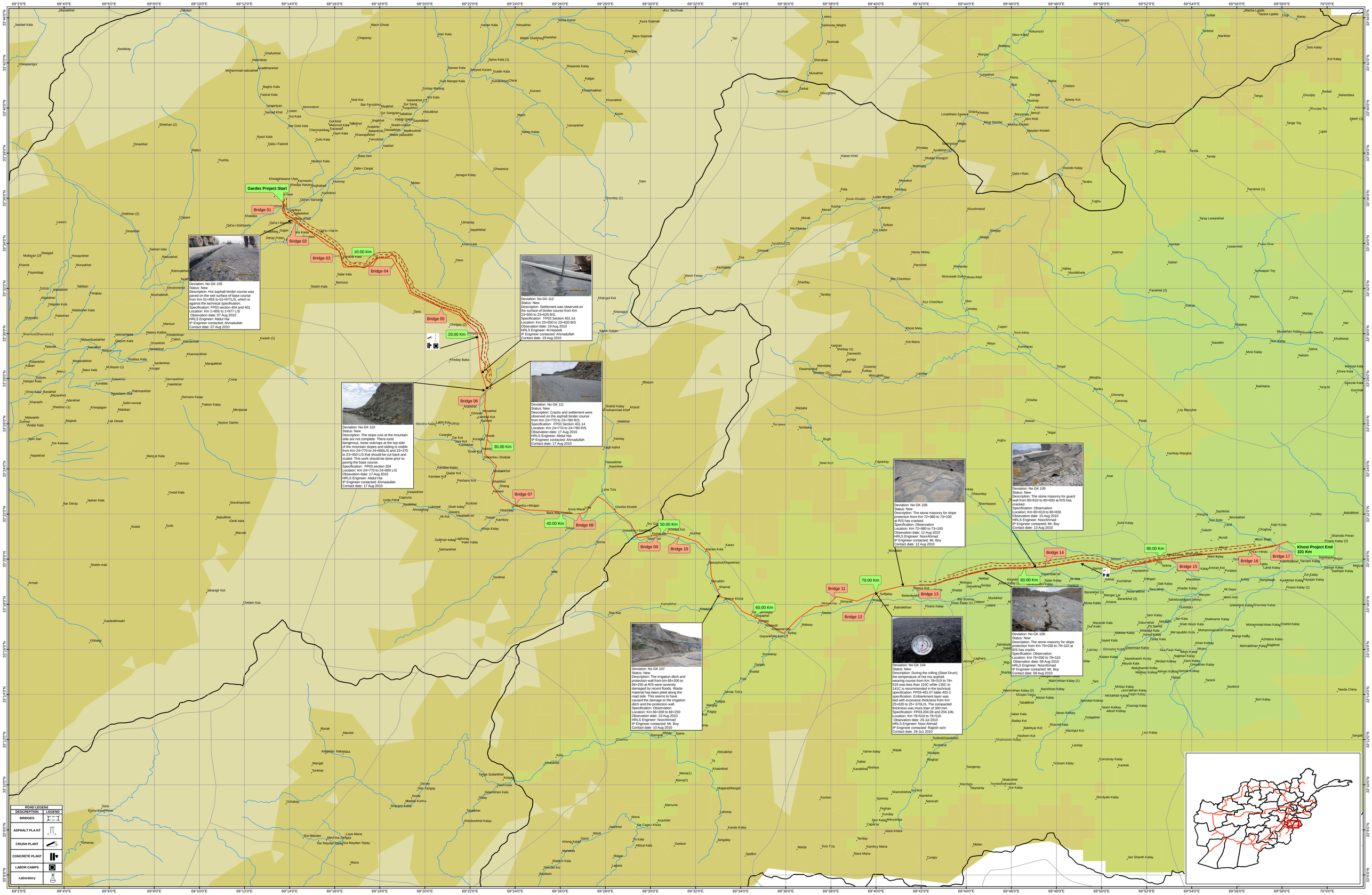
A road way deviation of high importance as jointly inspected by IRD/HRLS and LBG/BV is the road way settlement and slippage occurring from Km. 23+560 to Km. 23+610. A large continuous crack and depression from the middle of the road to the down side slope of the road indicates slope failure and road slippage. This failing road way section that has been monitored for approximately 2 months and was once repaved continues to show signs of slope failure and road way settlement. The road way slippage has strong geo-technical implications and expertise in this area is highly recommended.

IRD, Final Inspection Report, December 4, 2010:

The inspection team drove the road to Km. 23+610 to inspect a portion of the road that was cracked and apparently slipping. While there, the LBG geo-technical engineer conducted a geotechnical assessment of this portion of the road. Preliminary findings as discussed on site suggest the issue is not of catastrophic proportion. However, at this time IRD and LBG await the geo-technical engineers report. He will furnish a formal report of his findings and methodologies for resolution. However, the LBG geotechnical engineer did say (depending on his calculations) he may recommend some or all of the following.

1. Seal bench on upslope side with a lean concrete or slurry
2. Seal asphalt surface to hinder water infiltration
3. Excavate roadway to virgin soil
4. Seal virgin soil with waterproofing
5. Perform lifts of soil using dynamic compaction
6. Sealing soil layers with grout.

Although these were only preliminary findings the LBG geotechnical engineer stated he would perform calculations and furnish his official report.



0 1.5 3 6 9 12 15 Kilometers

0 1.5 3 6 9 12 15 Miles

N W E S

Gardez to Khost Road Project

Text color in deviation photo box
Black color is New Deviation
Red color is Pending Deviation
Blue color is Resolved Deviation

Project Details

Contract No	IRP-09-08-GH1308
Project Title	Gardez to Khost Provincial Road
Project Location	Paktya and Khost Provinces
Project Length	101.206.7 Km
Start Date	28-Apr-08
Scheduled Completion Date	Dec 31, 2009 extended up to Dec, 2010
Type of Work	Rehabilitation
Implementing Partner (IP)	(LBG / B&V) JV
Sub Contractor (Co – IP)	BSCZCEC
Project Engineer	Mary Linn
Monitored by	M. Rahq Noori, Noor Ahmad, Abul Hai and M. Hasseb
Checked by	Ziaulhaq Quam
GPS Coordinates	Start Point: N: 33.59154 E: 069.22914 End Point: N: 33.33519 E: 069.90110
Period Covered	July 26, 2010 to August 25, 2010

Asphalt Binder Course
Base Course
Sub Grade
Road Alignment
Villages
Road Alignment
River
ProvinceBoundary_Dissolve
District Boundary
Lakes

Map Information

Map Produced: Sep 15, 2010
Cartographer: Nisar Ahmad
QA Supervisor: Gene Dion
Office: Kabul, Afghanistan
Email: nisar@ird-hrls.org
Infrastructure Data Center
Projection: World Mercator
Datum: D_WGS_1984

Data Source

Base layer information including boundaries, roads, rivers and place names courtesy of the Afghan Geodesy and Cartography Head Office (AGCHO)

Data Disclaimer

All boundaries and map features are approximate and should not be considered authoritative.
While every effort is made to use the best available data, accuracy of features or other information cannot be guaranteed.
No endorsement by the U.S. Government or other organization is implied.

Gardez – Khost Road Project (TO-8)

Nr.	Road	Descriptions	Specification	Latitude	Longitude	Km	Observation Date	HRLS QA Manager	IP Contact Informed	IP Contact Date	Status	Remarks
GK10	Gardez-Khost	The asphalt binder is alligator cracking	Observation	33°35.278'	69 13.793	1+240	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK31	Gardez-Khost	There is a pothole, settlement and alligator cracking in the asphalt binder	Observation	33°34.959'	69°14.261'	2+240	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK38	Gardez-Khost	The asphalt binder has settlement and alligator cracking	Observation	33°34.816'	69°14.466'	2+410	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK45	Gardez-Khost	This asphalt binder has severe alligator cracking	Observation	33°34.679'	69°14.679'	2+750	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK50	Gardez-Khost	The asphalt binder has settlement and alligator cracking.	Observation	33°34.541'	69°14.872'	3+130	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK58	Gardez-Khost	The recent road repair has settlement	Observation	33°34.125'	69°15.474'	3+800	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK66	Gardez-Khost	This asphalt binder has settlement and alligator cracking	Observation	33°33.984'	69°15.681'	4+800	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK79	Gardez-Khost	This asphalt binder has severe alligator cracking	Observation	33°33.603'	69°16.208'	5+850	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK82	Gardez-Khost	The road has settlement	Observation	33°33.421'	69°16.267'	6+150	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK85	Gardez-Khost	There is severe alligator cracking in the asphalt binder	Observation	33°33.237'	69°16.297'	6+400	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK87	Gardez-Khost	The recent road repair has settlement	Observation	33°33.173'	69°16.314'	6+700	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK98	Gardez-Khost	There is settlement and alligator cracking	Observation	33°32.953'	69°16.617'	7+560	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK104	Gardez-Khost	This asphalt binder has settlement and cracking	Observation	33°32.943'	69°16.845'	7+850	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK111	Gardez-Khost	The asphalt binder has settlement and alligator cracking.	Observation	33°32.884'	69°17.082'	8+420	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK113	Gardez-Khost	The asphalt binder has severe alligator cracking. Notice the roadway around the defective portion has been repaired.	Observation	33°32.885'	69°17.167'	8+550	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK115	Gardez-Khost	The asphalt binder has settlement and alligator cracking.	Observation	33°32.888'	69°17.233'	8+650	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK118	Gardez-Khost	The asphalt binder has settlement and alligator cracking.	Observation	33°32.889'	69°17.320'	8+777	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK124	Gardez-Khost	The asphalt binder has settlement and alligator cracking.	Observation	33°33.031'	69°17.613'	9+350	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK130	Gardez-Khost	There are saw cuts in the asphalt binder, cracking and no repairs.	Observation	33°33.199'	69°17.807'	9+700	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	This is an example of over 100 photos take from Km 0+600 to Km 10+000.
GK131	Gardez-Khost	There is slope erosion on the outlet side of the culvert. The stone masonry has gaps in the mortar at the base of the wall.	Observation	33°29.275'	69°22.416'	21+830	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	It is recommended the slope erosion be stopped and the mortar be repaired.
GK133A	Gardez-Khost	There is undetermined slope slippage and or settlement in this location. Settlement was noticed from the middle of the roadway and extends towards the down slope side of the roadway. The area was paved with an additional asphalt binder course to level the road surface. Surveyors were setting points to monitor potential continued settlement.	Observation	33°28.569'	69°22.480'	23+600	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	New	It is recommended the undetermined slope settlement issues be investigated by a geotechnical specialist. Although the additional asphalt binder course will alleviate drivability concerns, it will not rectify the undetermined settlement issues.
GK 133 B	Gardez-Khost	This photo shows the settlement in the road. Notice the irregular flow patterns	Observation	33°28.569'	69°22.480'	23+600	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	Pending	It is recommended the undetermined slope settlement issues be investigated by a geotechnical specialist. Although the additional asphalt binder course will alleviate drivability concerns, it will not rectify the undetermined settlement issues.
GK 133 C	Gardez-Khost	The asphalt binder is cracking . There is settlement in the roadway.	Observation	33°28.569'	69°22.480'	23+600	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	Pending	It is recommended the undetermined slope settlement issues be investigated by a geotechnical specialist. Although the additional asphalt binder course will alleviate drivability concerns, it will not rectify the undetermined settlement issues.
GK 133 D	Gardez-Khost	The soil is cracking and separating on the down slope side of the road.	Observation	33°28.569'	69°22.480'	23+600	29-Sep-10	LGCD QA Manager	LBG Site Project Manager	29-Sep-10	Pending	It is recommended the undetermined slope settlement issues be investigated by a geotechnical specialist. Although the additional asphalt binder course will alleviate drivability concerns, it will not rectify the undetermined settlement issues.

GK 10

GK 31

GK 38

GK 45

GK 50

GK 58

GK 66

GK 79

GK 82

GK 85

GK 87

GK 98

GK 104

GK 111

GK 113

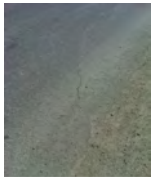
GK 115

GK 118

GK 124

GK 130

GK 131



GK 133 A

GK 133 B

GK 133 C

GK 133 D

Project : USAID Gardez - Khost Road Rehabilitation Project TO- 08

Subject : IRD/HRLS Substantial Completion Punch List

Section: Section 1, Km. 0+000 to 25+000

Date: November 10, 2010

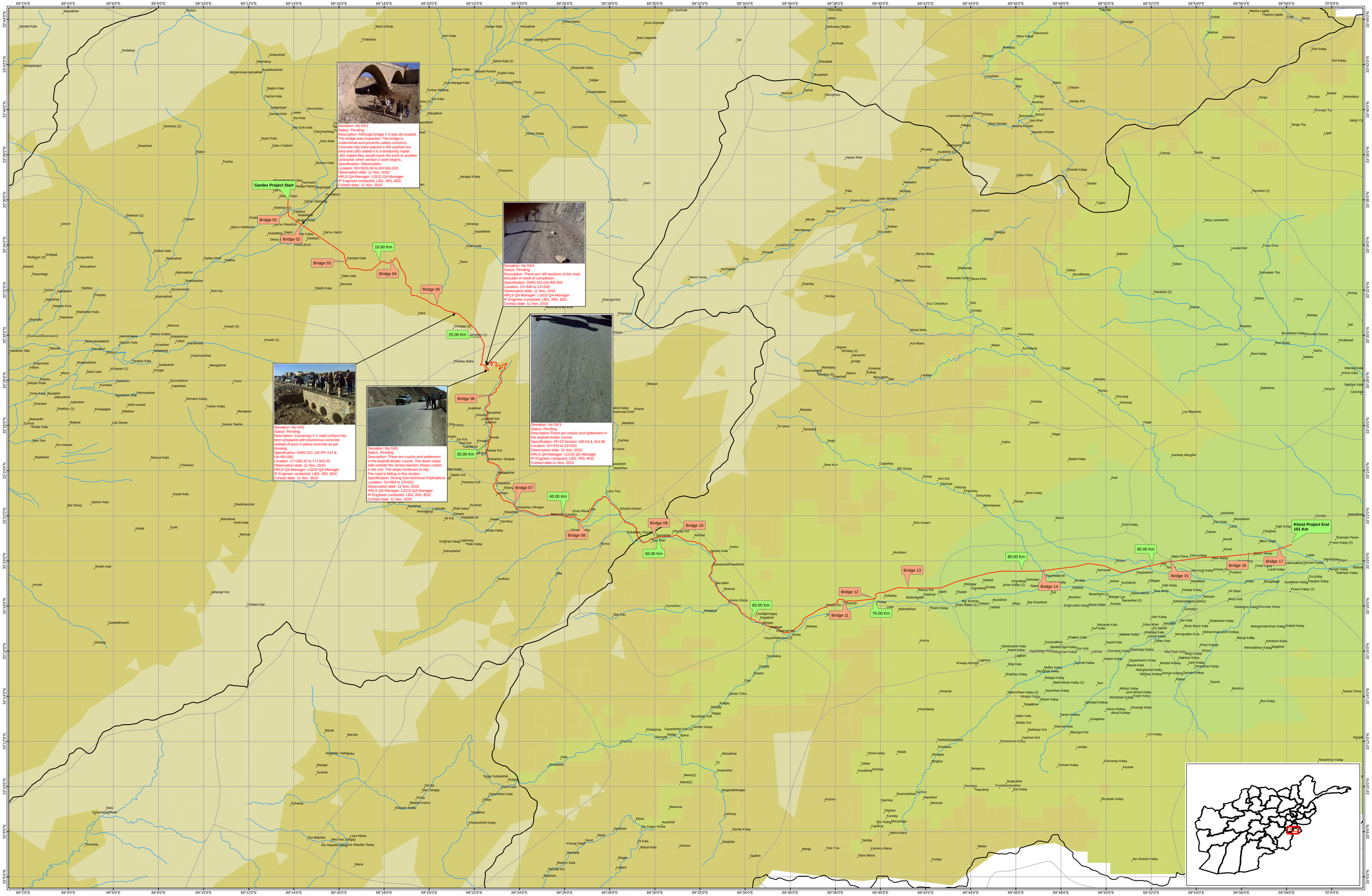
No	Description	Station Limit		Location		Deficiencies / Remaining works to be done	Joint Inspection Conducted By			REMARKS
		FROM	TO	LHS	RHS		BSC/C&C	IRD	LBG/B&V	
1	RCC Rectangular lined ditch	0+035	0+040		√	Concrete has poor workmanship	√	√	√	Pending deviation
2	Drain	0+035	0+0100	√		Cleaning of inside drain	√	√	√	Pending deviation
3	Rectangular lined ditch	0+045			√	Visible cracking	√	√	√	Pending deviation
4	Rectangular lined ditch	0+050			√	Visible cracking	√	√	√	Pending deviation
5	Rectangular lined ditch	0+085			√	Visible cracking	√	√	√	Pending deviation
6	Rectangular lined ditch	0+100			√	Visible cracking inside and outside	√	√	√	Pending deviation
7	Rectangular lined ditch	0+110			√	Inside has cracking	√	√	√	Pending deviation
8	Rectangular lined ditch	0+110			√	Outside has cracking	√	√	√	Pending deviation
9	Rectangular lined ditch	0+115			√	Inside has cracking	√	√	√	Pending deviation
10	Rectangular lined ditch	0+120			√	Inside has cracking	√	√	√	Pending deviation
11	Rectangular lined ditch	0+123			√	Outside has cracking	√	√	√	Pending deviation
12	Rectangular lined ditch	0+130			√	Inside has cracking	√	√	√	Pending deviation
13	Rectangular lined ditch	0+156		√		Outside was damage and poor workmanship	√	√	√	Pending deviation
14	Rectangular lined ditch	0+160			√	Inside has cracking	√	√	√	Pending deviation
15	Rectangular lined ditch	0+190			√	Inside has cracking	√	√	√	Pending deviation
16	Rectangular lined ditch	0+200			√	Inside has cracking	√	√	√	Pending deviation
17	Rectangular lined ditch	0+241			√	Inside has cracking	√	√	√	Pending deviation
18	Rectangular lined ditch	0+258		√		Outside has cracking	√	√	√	Pending deviation
19	Rectangular lined ditch	0+272			√	Inside has cracking	√	√	√	Pending deviation
20	Rectangular lined ditch	0+278			√	Inside has cracking	√	√	√	Pending deviation
21	Side walk	0+278			√	Cracking on the surface	√	√	√	Pending deviation

No	Description	Station Limit		Location		Deficiencies / Remaining works to be done	Joint Inspection Conducted By			REMARKS
		FROM	TO	LHS	RHS		BSC/C&C	IRD	LBG/B&V	
22	Rectangular lined ditch	0+285			√	Outside has cracking	√	√	√	Pending deviation
23	Rectangular lined ditch	0+288			√	Inside has cracking	√	√	√	Pending deviation
24	Rectangular lined ditch	0+322			√	Inside has cracking	√	√	√	Pending deviation
25	Culvert	0+320	0+330	√		Slab placed in opposite direction	√	√	√	Pending deviation
26	Rectangular lined ditch	0+359			√	Inside has cracking	√	√	√	Pending deviation
27	Drain	0+360	0+450	√		Cleaning needed	√	√	√	Pending deviation
28	Culvert	0+370			√	Slab placed in opposite direction	√	√	√	Pending deviation
29	Culvert	0+376		√		Slab placed in opposite direction	√	√	√	Pending deviation
30	Rectangular lined ditch	0+386		√		Inside has cracking	√	√	√	Pending deviation
31	Rectangular lined ditch	0+388			√	Outside has cracking	√	√	√	Pending deviation
32	Rectangular lined ditch	0+390			√	Inside has cracking	√	√	√	Pending deviation
33	Rectangular lined ditch	0+400			√	Outside has cracking	√	√	√	Pending deviation
34	Rectangular lined ditch	0+430			√	Inside has cracking	√	√	√	Pending deviation
35	Rectangular lined ditch	0+470		√		Inside has cracking	√	√	√	Pending deviation
36	Culvert	0+480		√		Slab placed opposite	√	√	√	Pending deviation
37	Wearing Course	0+500	0+510	√		Improper elevation and level	√	√	√	Pending deviation
38	Rectangular lined ditch	0+508		√		Outside has cracking	√	√	√	Pending deviation
39	Rectangular lined ditch	0+522		√		Wall is damaged	√	√	√	Pending deviation
40	Rectangular lined ditch	0+600			√	Outside has cracking	√	√	√	Pending deviation
41	Pavement Marking	0+035	0+600	√	√	Pavement marking unfinished	√	√	√	Pending deviation
42	Wearing Course	0+740	2+210	√	√	Remaining work	√	√	√	Pending deviation
43	CAB Shoulder	0+740	2+210	√	√	Remaining work	√	√	√	Pending deviation
44	Culvert	1+100		√	√	Cleaning of inlet and outlet needed. The head wall has visible cracking and damage.	√	√	√	Pending deviation
45	Culvert	1+480		√	√	Cleaning of inlet and outlet needed. The head wall has visible cracking and damage.	√	√	√	Pending deviation
46	Slope protection	1+970	2+120		√	Visible cracking and damage	√	√	√	Pending deviation
47	Culvert	2+120		√	√	Head wall is unfinished. The floor of culvert is cracking	√	√	√	Pending deviation
48	Culvert	2+820		√	√	Head wall pointing is unfinished. Cleaning of the inlet & outlet needed	√	√	√	Pending deviation
49	CAB Shoulder	2+210	3+000	√	√	Elevation and level	√	√	√	Pending deviation
50	Culvert	3+000		√	√	Head wall has visible cracking	√	√	√	Pending deviation
51	Guard wall	3+440	3+540	√		Weep holes elevation is higher than the shoulder surface and is cracked and damaged	√	√	√	Pending deviation
52	Guard wall	3+440	3+500		√	There is visible cracking and damage	√	√	√	Pending deviation
53	Bridge No. 2	3+540	3+570	√	√	Bridge railing and wing wall on the U/S side is damaged	√	√	√	Pending deviation
54	Culvert	4+190		√	√	Wing wall work is unfinished. The head wall is damaged. cleaning of the inlet and outlet needed	√	√	√	Pending deviation
55	Culvert	4+320		√	√	There is no head wall and wing wall. cleaning of the inlet and outlet needed	√	√	√	Pending deviation
56	Culvert	5+370		√	√	Head wall has cracking and no capping	√	√	√	Pending deviation
57	Culvert	5+890		√	√	The head wall pointing, capping and backfilling is unfinished	√	√	√	Pending deviation
58	Culvert	6+170		√	√	Head wall on the R/S has cracking. No head wall on L/S. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
59	Guard wall	6+232	6+280	√		Visible cracks and damage	√	√	√	Pending deviation
60	Culvert	6+682		√	√	The wing wall has cracking and the head wall is damaged. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
61	Culvert	6+936		√	√	Wing wall has cracking and the head wall has no capping	√	√	√	Pending deviation
62	CAB Shoulder	3+000	7+000	√	√	Elevation and level	√	√	√	Pending deviation
63	Culvert	7+389		√	√	Head wall not constructed. Cleaning of the inlet and outlet	√	√	√	Pending deviation
64	Culvert	7+560		√	√	Head wall not constructed. Wing wall on L/S is damage	√	√	√	Pending deviation
65	Guard wall	7+720	7+760	√		Capping damaged and visible cracking, height are less then requirement	√	√	√	Pending deviation
66	Guard wall	7+770	7+810	√		No pointing and the capping is damage	√	√	√	Pending deviation
67	Culvert	7+720		√	√	Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
68	Culvert	8+100		√	√	No pointing and the capping is damage	√	√	√	Pending deviation
69	Guard wall	8+150	8+250	√		Cracks are visible on the capping. The pointing are not done and the construction joints are more then 5cm	√	√	√	Pending deviation

No	Description	Station Limit		Location		Deficiencies / Remaining works to be done	Joint Inspection Conducted By			REMARKS
		FROM	TO	LHS	RHS		BSC/C&C	IRD	LBG/B&V	
70	Bridge No. 3	8+410		√	√	Wing wall has cracking. The head wall is damage and deck slab of the bridge has crack on U/S, The head wall pointing is unfinished	√	√	√	Pending deviation
71	Guard wall	8+415	8+450	√	√	Capping has cracking and the back side has no pointing	√	√	√	Pending deviation
72	Culvert	8+520		√		Head wall and wing wall of culvert has cracking on L/S. The head wall pointing is unfinished and the wing wall has cracking on R/S	√	√	√	Pending deviation
73	Lined ditch	8+525	8+567	√		Stone masonry has cracks. Backfilling work is unfinished	√	√	√	Pending deviation
74	Lined ditch	8+600	8+690		√	Stone masonry has cracks. Backfilling work is unfinished and poor workmanship	√	√	√	Pending deviation
75	Culvert	8+735		√	√	The head wall is unfinished	√	√	√	Pending deviation
76	Lined ditch	8+736	8+850	√		Stone masonry has cracks and is damaged	√	√	√	Pending deviation
77	Guard wall	9+070	9+150	√		Stone masonry and capping has cracks	√	√	√	Pending deviation
78	Culvert	9+080		√	√	Wing wall is cracked. the head wall is unfinished and has poor workmanship	√	√	√	Pending deviation
79	Guard wall	9+280	9+365	√		Stone masonry and capping has cracks. backfilling is unfinished	√	√	√	Pending deviation
80	Culvert	9+430		√	√	Head wall and backfilling are unfinished. Slab is not level and have poor workmanship	√	√	√	Pending deviation
81	Culvert	9+640		√	√	Head wall is unfinished	√	√	√	Remainig work
82	Guard wall	10+190	10+340	√		Stone masonry, cap, and pointing on the back side has cracks. The backfilling is unfinished	√	√	√	Pending deviation
83	Culvert	10+350		√	√	Wing wall has cracks and poor workmanship. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
84	CAB Shoulder	10+000	11+400	√		Elevation and level	√	√	√	Pending deviation
85	Guard wall	10+530	10+550	√		Stone masonry has cracks	√	√	√	Pending deviation
86	Culvert	10+570		√	√	Cleaning of the inlet and outlet needed. Poor workmanshi	√	√	√	Pending deviation
87	Guard wall	10+650	10+685	√	√	Stone masonry poor workmanship and is cracking. Backfilling is unfinished.	√	√	√	Pending deviation
88	Bridge No. 4	10+685	10+694	√	√	Bridge railing is damaged	√	√	√	Pending deviation
89	Guard wall	10+694	10+730	√	√	Stone masonry has poor workmanship. The backfilling is unfinished.	√	√	√	Pending deviation
90	Guard wall	11+070	11+200		√	Visible cracking	√	√	√	Pending deviation
91	Culvert	11+115		√		Head wall pointing is unfinished	√	√	√	Remainig work
92	Retaining wall	11+120	11+240		√	Visible cracking and damage and has poor workmanship	√	√	√	Pending deviation
93	Culvert	11+440		√	√	Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
94	Guard wall	11+470	11+543		√	Damaged and visible cracking on the top	√	√	√	Pending deviation
95	Culvert	11+640		√	√	Head wall and wing wall has cracking	√	√	√	Pending deviation
96	Lined ditch	11+640	11+840	√		Visible cracking and damage. Cleaning is needed	√	√	√	Pending deviation
97	Culvert	11+860		√	√	Wing wall and apron is damaged. The head wall capping is unfinished	√	√	√	Pending deviation
98	Culvert	12+226		√	√	Cleaning of the inlet and outlet needed	√	√	√	Remainig work
99	Retaining wall	12+210	12+226		√	The retaining wall is damaged	√	√	√	Pending deviation
100	Guard wall	12+226	12+250		√	Visible cracking	√	√	√	Pending deviation
101	Culvert	12+480		√	√	Head wall pointing and capping are unfinished. Cleaning of the inlet and outlet needed	√	√	√	Remainig work
102	Culvert	12+600		√	√	Head wall is damaged and the wing wall has visible cracking. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
103	Culvert	12+820		√	√	Head wall has visible cracking and the capping is unfinished	√	√	√	Pending deviation
104	Culvert	13+020		√	√	Wing wall is damaged and the capping is unfinished. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
105	Culvert	13+260		√	√	Wing wall is damaged. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
106	Guard wall	13+298	13+391		√	Backfilling is unfinished	√	√	√	Remainig work
107	Guard wall	13+330	13+346		√	Stone masonry is damaged	√	√	√	Pending deviation
108	Culvert	13+392		√	√	Wing wall on L/S is unfinished and cleaning of the inlet and outlet is needed	√	√	√	Remainig work
109	Guard wall	13+440	13+550	√	√	Backfilling is unfinished	√	√	√	Remainig work
110	Culvert	13+640		√	√	Wing wall, apron, head wall and capping is damaged	√	√	√	Pending deviation
111	Guard wall	14+025	14+035	√		Capping damaged	√	√	√	Pending deviation

No	Description	Station Limit		Location		Deficiencies / Remaining works to be done	Joint Inspection Conducted By			REMARKS
		FROM	TO	LHS	RHS		BSC/C&C	IRD	LBG/B&V	
112	Lined ditch	14+100	14+120	√		Backfilling is unfinished	√	√	√	Remainig work
113	Culvert	14+138		√	√	Capping is unfinished. Cleaning of the inlet and outlet needed	√	√	√	Remainig work
114	Culvert	14+325		√	√	Capping is unfinished	√	√	√	Pending deviation
115	Culvert	14+540		√	√	Cleaning of the inlet and outlet needed	√	√	√	Remainig work
116	Culvert	14+890		√	√	Head wall capping is unfinished	√	√	√	Pending deviation
117	Culvert	15+420		√	√	Head wall is damaged. Cleaning of the inlet and outlet needed D/R	√	√	√	Pending deviation
118	Pipe culvert	15+860		√	√	Head wall is damaged. The wing wall L/S has visible cracking	√	√	√	Pending deviation
119	Guard wall	15+960	15+970		√	Height is less then requirement	√	√	√	Pending deviation
120	Pipe culvert	16+900		√	√	Wing wall has visible cracking and no head wall	√	√	√	Pending deviation
121	CAB Shoulder	16+800	17+870	√	√	Elevation and level	√	√	√	Pending deviation
122	Culvert	17+140		√	√	No head wall, cleaning of the inlet and outlet needed	√	√	√	Pending deviation
123	Causeway No. 1	17+265	17+340	√	√	Gabion for the cutoff wall is damaged. No stone masonry for the cutoff wall and no RCC concrete for the panels	√	√	√	Pending deviation
124	Retaining wall	17+480	17+840		√	No capping on the top	√	√	√	Remainig work
125	Bridge No.5	17+870		√	√	No bridge railing installed	√	√	√	Pending deviation
126	Culvert	18+010		√	√	Head wall is damaged on L/S. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
127	Lined ditch	18+010	18+015		√	Lined ditch is damaged	√	√	√	Pending deviation
128	CAB Shoulder	18+000	19+000	√	√	Shoulder is unfinished	√	√	√	Remainig work
129	Culvert	19+000		√	√	Wing wall is damaged. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
130	Culvert	20+000		√	√	Wing wall is damaged	√	√	√	Pending deviation
131	Culvert	20+240		√	√	Abutment wall and wing wall has visible cracking. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
132	Culvert	20+280		√	√	Wing wall and head wall are of poor workmanship	√	√	√	Pending deviation
133	Culvert	20+700			√	No capping on the head wall	√	√	√	Pending deviation
134	Guard wall	21+479	21+484		√	Visible cracking	√	√	√	Pending deviation
135	Semi circular line ditch	21+550	21+670	√		Remaining work	√	√	√	Pending deviation
136	Culvert	21+673		√		Wing wall and head wall are damaged	√	√	√	Pending deviation
137	Culvert	22+101		√		Head wall on the back side is not pointing. Wing wall has visible cracking. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
138	Guard wall	22+102			√	Visible cracking	√	√	√	Pending deviation
139	Mountain	22+110	22+200	√		The slope is sliding	√	√	√	Pending deviation
140	Binder course	22+115		√	√	Visible transverse cracking	√	√	√	Pending deviation
141	Culvert	22+230			√	Culvert is damaged on the down stream side	√	√	√	Pending deviation
142	Semi circular line ditch	22+230	22+415	√		Backfilling is unfinished	√	√	√	Remainig work
143	Guard wall	22+429	22+430		√	Stone masonry is damaged	√	√	√	Pending deviation
144	Mountain	22+430	22+520	√		The slope is sliding	√	√	√	Pending deviation
145	Semi circular line ditch	22+432	22+530	√		Backfilling is unfinished	√	√	√	Remainig work
146	Culvert	22+530			√	The apron is damaged	√	√	√	Pending deviation
147	Retaining wall	22+531	22+600	√		No capping	√	√	√	Pending deviation
148	Retaining wall	22+730	22+860	√		No capping	√	√	√	Pending deviation
149	Semi circular line ditch	22+730	22+780	√		The lined ditch is unfinished	√	√	√	Pending deviation
150	Mountain	22+880	23+040	√		The slope is sliding	√	√	√	Pending deviation
151	Semi circular line ditch	22+878	23+015	√		Backfilling is unfinished	√	√	√	Pending deviation
152	Binder course	23+020		√	√	Visible transverse cracking	√	√	√	Pending deviation
153	Binder course	23+340		√	√	Visible transverse cracking	√	√	√	Pending deviation
154	Culvert	23+340		√	√	Head wall pointed improperly	√	√	√	Pending deviation
155	Binder course	23+555	23+615	√	√	The binder course is sliding	√	√	√	Pending deviation
156	Binder course	23+940	23+960	√	√	Visible settlement on the binder course	√	√	√	Pending deviation
157	Guard wall	23+970	24+030		√	No capping	√	√	√	Pending deviation
158	Wearing Course	20+000	24+090	√	√	The wearing course is unfinished	√	√	√	Pending deviation
159	Guard wall	24+050	24+090		√	No capping	√	√	√	Pending deviation
160	Pipe culvert	24+200		√	√	Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
161	Mountain	24+180	24+280	√		The slope is sliding	√	√	√	Pending deviation
162	Mountain	24+340	24+420	√		The slope is sliding	√	√	√	Pending deviation
163	Guard wall	24+500	24+530		√	Back filling is unfinished	√	√	√	Pending deviation
164	Culvert	24+510		√	√	Cleaning of the inlet outlet needed	√	√	√	Pending deviation
165	Binder course	24+515	24+640	√	√	The binder course is settling	√	√	√	Pending deviation

No	Description	Station Limit		Location		Deficiencies / Remaining works to be done	Joint Inspection Conducted By			REMARKS
		FROM	TO	LHS	RHS		BSC/C&C	IRD	LBG/B&V	
166	Mountain	24+640	24+780	√		The slope is sliding	√	√	√	Pending deviation
167	Binder course	24+750	24+780	√		The binder course has settlement and cracking	√	√	√	Pending deviation
168	Culvert	24+800		√		Wing wall is damaged. Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
169	Guard wall	24+860	24+24+890		√	The capping is unfinished	√	√	√	Pending deviation
170	Culvert	24+860		√	√	Cleaning of the inlet and outlet needed	√	√	√	Pending deviation
171	Binder course	24+975	25+030	√	√	The binder course is settling	√	√	√	Pending deviation
172	Wearing course	24+090	25+360	√	√	The wearing course is unfinished	√	√	√	Pending deviation
173	Shoulder	24+090	25+360	√	√	The shoulder is unfinished	√	√	√	Pending deviation
174	Mountain	25+230	25+360	√		The slope is sliding	√	√	√	Pending deviation



0 2.5 5 10 15 Kilometers

0 2.5 5 10 15 Miles

N W E S

Gardez to Khost Road Project

Islamic Republic of Afghanistan
Ministry of Public Work

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Text color in deviation photo box
Black color is New Deviation
Red color is Pending Deviation
Blue color is Resolved Deviation

Asphalt Binder Course
Wearing Course
Base Course
Sub Grade
Road Alignment

Villages
River
Lakes
Province Boundary
District Boundary

Map Information

Map ID: 381
Map Produced: Nov 20, 2010
Cartographer: Sayed Zia Ahmad
QC Supervisor: Naveedullah
Email: wajhanyar@ird-hrls.org
Datum: D_WGS_1984

Data Source

Base layer information including boundaries, roads, rivers and place names courtesy of the Afghan Geodesy and Cartography Head Office (AGCHO)

Data Disclaimer

All boundaries and map features are approximate and should not be considered authoritative.
While every effort is made to use the best available data, accuracy of features or other information cannot be guaranteed.
No endorsement by the U.S. Government or other organization is implied.

Gardez Project Start

Khost Project End
101 Km

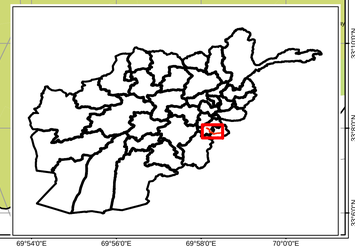
10.00 Km
20.00 Km
30.00 Km
40.00 Km
50.00 Km
60.00 Km
70.00 Km
80.00 Km
90.00 Km

Bridge 01
Bridge 02
Bridge 03
Bridge 04
Bridge 05
Bridge 06
Bridge 07
Bridge 08
Bridge 09
Bridge 10
Bridge 11
Bridge 12
Bridge 13
Bridge 14
Bridge 15
Bridge 16
Bridge 17

Deviation: No GK1
Status: Pending
Description: Causeway # 1 is not per design. The causeway surface is finished with bituminous concrete. Design calls for reinforced concrete cement.
Specification: Observation
Location: 17+330
Observation date: Dec 02 2010
HRLS QA Manager: LGCD QA Manager
IP Engineer contacted: LBG Site Project Manager
Contact date: Dec 02 2010

Deviation: No GK3
Status: Pending
Description: There is slope slippage/failure in this location. The roadway surface has substantial cracking in it. The LBG geotechnical engineer performed an evaluation of the area. IRD & LBG await his report.
Specification: Observation
Location: 23+560 to 23+610
Observation date: Dec 02 2010
HRLS QA Manager: LGCD QA Manager
IP Engineer contacted: LBG Site Project Manager
Contact date: Dec 02 2010

Deviation: No GK2
Status: Pending
Description: There is water leaking from the hill side. The road way at this location has failed. The area was repaired with an engineered soil
Specification: Observation
Location: 23+202 to 23+208
Observation date: Dec 02 2010
HRLS QA Manager: LGCD QA Manager
IP Engineer contacted: LBG Site Project Manager
Contact date: Dec 02 2010



0 2.5 5 10 15 Kilometers

0 2.5 5 10 15 Miles

N W E S

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Text color in deviation photo box
Black color is New Deviation
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Blue color is Resolved Deviation

- Gardez to Khost Road
- River
- Lakes
- Villages
- Province Boundary
- District Boundary

Map Information
Map ID: 530
Map Produced: Dec 06 2010
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Datum: D_WGS_1984

Data Source
Base layer information including boundaries and place names courtesy of the Afghan Geodesy and Cartography Head Office (AGCHO). Road digitized through raster imagery by IRD-AIDC Team.

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All boundaries and map features are approximate and should not be considered authoritative.
While every effort is made to use the best available data, accuracy of features or other information cannot be guaranteed.
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Project : USAID Gardez - Khost Road Rehabilitation Project TO- 08

Subject : IRD/HRLS Final Inspection Punch List

Section: Section 1, Km. 0+000 to 25+000

Date: December 3, 2010

No	Description	Station Limit		Location		Deviations / Remaining works	REMARKS
		FROM	TO	LHS	RHS		
1	Slope protection	1+970	2+120		√	Visible cracking and damage	Pending deviation
2	Causeway No. 1	17+265	17+340	√	√	Gabion for the cutoff wall is damaged. No stone masonry for the cutoff wall and no RCC concrete for the panels	Pending deviation
3	Culvert	20+240		√	√	Abutment wall and wing wall has visible cracking. Cleaning of the inlet and outlet needed	Pending deviation
4	Binder course	23+020		√	√	Visible transverse cracking	Pending deviation
5	Binder course	23+340		√	√	Visible transverse cracking	Pending deviation
6	Binder course	23+555	23+615	√	√	The binder course is sliding	Pending deviation
7	Binder course	23+940	23+960	√	√	Visible settlement on the binder course	Pending deviation
8	Binder course	24+515	24+640	√	√	The binder course is settling	Pending deviation
9	Binder course	24+750	24+780	√		The binder course has settlement and cracking	Pending deviation
10	Binder course	24+975	25+030	√	√	The binder course is settling	Pending deviation