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Reporting on Economy, Efficiency & Effectiveness in the use of Public Resources

AIN: 15956

AUDIT REPORT
OF
“NORTHERN EAST-WEST HIGHWAY PROJECT”
IMPLEMENTED BY
REGIONAL OFFICE, TRONGSA, DEPARTMENT OF ROADS,
MINISTRY OF WORKS AND HUMAN SETTLEMENT

PERIOD: INCEPTION TO 30 JUNE 2017

MAY 2019

Every individual must strive to be principled. And individuals in positions of responsibility must even strive harder'

- His Majesty the King Jigme Khesar Namgyel Wangchuck



རྒྱལ་ཁཚམས་རྩིས་ཞིབ་དབང་འཛིན།
ROYAL AUDIT AUTHORITY
Bhutan Integrity House



Reporting on Economy, Efficiency & Effectiveness in the use of Public Resources

RAA/AR/ DSA-SCID/RO-L/thang/2019/15956

Dated: 29th May 2019

The Hon'ble Minister,
Ministry of Works and Human Settlement
Thimphu.

Subject: Audit Report of “Northern East west Highway Project”of Regional Office, Trongsa for the period from inception to 30.6.2017

Your Excellency,

Enclosed herewith please find the audit report in respect of Northern East-West Highway Project implemented by the Regional Office, Trongsa, covering periods from inception to 30.06.2017 along with the ***Audit Findings & Recommendations*** on the accounts and operations, internal controls, and contract managements. The RAA has conducted audit as required under the Audit Act of Bhutan 2018.

Audit Findings and Recommendations

The auditor's review of the operations, accounting records, internal controls and contract managements of the Norther East-West Project revealed deficiencies and lapses of significant nature involving improper planning and preparation of estimates and BOQs, inappropriate tender evaluations, claims of inflated quantities through RA bills, acceptance of substandard and defective works, excess and inadmissible payments. The lapses also involved violations and non-enforcement of provisions of technical specifications and contract agreements, decisions of coordination meetings and government directives, provisions of PRR 2009 as well awards of substantial value of additional works despite slow progress of works that were detrimental to the economic, efficient and effective contract management and uses of public funds.

The audit findings along with recommendations is detailed in main report. Part A contains General observations with and without the accountability; Part B contains specific observations pertaining to contract packages with accountability and Part C with specific observations without accountability but requiring remedial actions to prevent occurrence of similar deficiencies and lapses for similar project in future. However, in the event the DOR and the Ministry do not take measures and actions on the recommendations within three months' time from the issue of the report, as agreed during the exit meeting, the RAA would fix the accountability for appropriate action.

The audit findings under **Part A** of the report contains those issues, which are recommendatory in nature and intended to bring improved compliances through appropriate interventions and as such no accountability has been fixed for the findings as decided in the Audit Exit Meeting.

However, in the event the DOR and the Ministry do not take measures and actions on the recommendations within appropriate time period from the date of the issue of the report, the RAA would fix the accountability for appropriate action

Some of the findings of significant nature involving wasteful expenditures are briefly mentioned below for kind reference and appropriate action:

1. *Adhoc Change of design/drawings and increase of 1m width carriageway after awards of contracts resulted in extra financial burden to the Government Exchequer with financial implication of Nu. 112.753 million (Refer Para No.2.1).*
2. *The enhancement of the rate for formation cutting works by 15% for requiring execution of works at night to accommodate traffic had tantamount to violation of provisions of technical specification and double payment as well as resulted into wasteful payment Nu.24.062million (Refer Para No. 2.2).*
3. *Inconsistency in the fixation of construction durations for contract packages having same design and scope of construction works within the Regional Office indicated absence of standard procedures and processes for the fixation of contract durations resulted into abnormal time overruns (Refer Para No.2.7).*
4. *Inconsistencies in the incorporation of cost of Bitumen in the preparation of estimates indicated absence of standard procedures and processes as well as results in wasteful payments to the extent of excessive issue of bitumen to the contractors (Refer Para No.2.8).*
5. *Adoption of varying practices of rate analysis by contractors and wrong application of coefficient for 80mm, instead of 75mm design thickness of DBM and for 50mm thick Asphalt resulted wasteful payment of Nu. 29.987 million (Refer Para No.2.9).*
6. *Flawed rate analysis through incorporation of transportation cost of bitumen as percentage to the overall derived cost of the item of work by the winning bidders and failure to take cognizance by the evaluation committee resulted into wasteful payment of Nu. 7.605 million (Refer Para No.2.10).*
7. *Flawed decision on the realization of differential amount between estimated and quoted value net of 20% resulted into non-realization of differential amounts of Nu. 291.169 million as well as short realization of Nu. 52.150 million due to application of approved percentage on the quoted contract price instead of estimated cost. Further, BG for differential amounts of Nu. 141.328million were found not renewed on expiry of the validity periods benefiting the contractors and forgoing the financial safeguards of the project (Para No.2.12).*
8. *Non-deployment committed key Personnel and equipment at site as per the requirements and non-deduction of penalty (Refer Para No.2.13 & 2.14).*
9. *Non-installation of laboratory at site as per BOQ despite payments for installation of laboratory facilities resulted into payments for laboratory facilities not provided at site (Refer Para No. 2.15).*
10. *Flaws in the BOQ and technical Specification on the transportation of Spoil materials as the designated dumping yards were within the vicinity of 500m though the BOQs indicated that the quantified transportation of spoil materials were beyond 500m to 120m. Thus, it had resulted into payments for transportation of spoil materials within 500m lead (Refer Para No. 2.16).*
11. *Damages to Environment due to Dumping of muck in unidentified areas and push/freely rolling of mucks over the valley despite payment for transportation of spoil materials beyond 500m lead resulted into wasteful payments for spoil materials allowed to dump in unidentified areas and roll over of mucks over the valley (Refer Para No. 2.17).*
12. *Flaws in the allowable wastage of 5% on the bitumen consumption fixed for manual executions despite mechanized execution of works resulted financial loss to the*

Government exchequer of Nu. 8.305 million for two contract packages alone (Refer Para No.2.18).

13. *Excessive engagement and payment of hired charges of machineries not complying with coefficient specified in LMC for departmentally executed formation cutting works Nu. 5.199 million resulted into wasteful payments (Refer Para No.2.19).*
14. *Non-insurance for cost of bitumen issued to contractors along with the contract amounts Nu. 740.326 million (Refer Para No.2.20).*
15. *Non-stacking/recording of excavated rock materials from rock cutting works and non-recovery of cost from the contractors with resultant financial loss Nu. 498.259 million (Refer Para No.2.21).*
16. *Non-maintenance of 1.5m/1m width shoulder at Valley as per drawings and technical specifications and non-adjustment of cost to the extent of shoulder width not maintained resulted into payments for works not executed (Refer Para No.2.24).*
17. *Non-Installation of Asphalt Plant by the NEWH contractors despite cost being in-built in the related item of works for the installation of the plants resulted into payments for non-deployment of machineries and plants (Refer Para No.2.28).*
18. *Inclusions of inadmissible cost on maintenance and Boulder Walls of Nu. 27,649,925.00 in the value of additional works as well as hindrances with resultant excessive grant of time extensions (Refer Para No.4).*
19. *Irregularities in payment of compensation amount – Nu. 1,100,587.30 (Refer Para No.6).*
20. *Irregular financial support rendered to M/s. Raven Builders & Company (P) LTD, Gelephu by way of advance payment for POL Nu. 9,410,000.00 and other contractors Nu. 240.700 million (Refer Para No.23.2).*
21. *Over/excess payments due to wrong measurements and improper verification of RA bills indicating absence of proper measurement system and certification of RA Bills prior to settlement of RA bills.*
22. *Acceptance of defective and substandard works indicating poor supervisions and monitoring by the site engineers and RO.*

The RAA has reviewed the replies furnished by the RO, Trongsa, DOR and the Ministry and incorporated in the report. Some of the audit findings were resolved in view of reply and related supporting documents and evidences furnished subsequently. The Ministry, DOR and the RO, Lobeyisa have fixed the accountability for the observations incorporated in this report.

In view of significant of the audit findings, the Ministry and the DOR is requested to further review the whole process followed in the preparation of drawings, estimates, BOQS, tendering and evaluation processes, changes of drawings in deviations to standards and soon after awards of contracts, executions of substandard infrastructures works, awarding of foreseeable permanent works as additional works. The Ministry should also review the decisions on 15% extra payment on FC works for accommodating traffic, which was in violation to the provisions of the technical specification and double benefited the contractors as well as the non-enforcement of the decisions on the increase of defect liability period of 3 years.

The Ministry is requested to review the deficiencies and lapses pointed out and institute appropriate check and balance systems to curb such lapses in future. The Royal Audit Authority would appreciate receiving an Action Taken Report (ATR) **within three months** from the date of issuance of this report.

The Royal Audit Authority acknowledges the kind co-operation and assistance extended to the audit team by the officials of the RO, Trongsa, DOR and the Ministry, which facilitated smooth completion of the audit.

Yours sincerely,



(Tshering Kezang)
Auditor General

Copy to:

1. The Secretary, Ministry of Finance, Tashichho-Dzong, Thimphu for kind information and necessary action
2. The Secretary, Ministry of Works and Human Settlement, Thimphu for kind information and necessary action
3. The Director, Department of Roads, MoWHS, Thimphu kind information and necessary action
4. The Director, Directorate of Finance Service, MoWHS, Thimphu kind information and necessary action
5. The Chief Engineer, Regional Office, Trongsa for necessary action
6. The AAG, PPAARD, Royal Audit Authority, Thimphu
7. The AAG, Follow-Up & Clearance Division, Royal Audit Authority, Thimphu

'Every individual must strive to be principled. And individuals in positions of responsibility must even strive harder.'

- His Majesty The King Jigme Khesar Namgyel Wangchuck

TITLE SHEET

1	Title	:	Audit Report “Northern EastWest Highway Project, RO, Trongsa
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3	Drawing and Disbursing Officer	:	1. Tougay Choedup, Ex Chief Engineer, EID:9107099 2. Ugyen Dorji, Chief Engineer, EID:9107094 3. Tsheten Wangchuk, Acctt Asstt 1,EID:9404034
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5	Period Audited	:	From Inception to 30 June 2017
6	Schedule of Audit	:	Planning : 01/8/2017 to 31/08/2017 Actual : 01/01/2018 to 24/02/2018 Reporting :
7.	Composition of teams	:	<u>Team Leader:</u> Karma Wangchuk, Dy. Chief Auditor (EID No. 9209042) <u>Team Member:</u> 1.Tashi, Audit Officer, (EID No.20130101140) 2. Jamtsho, Audit Officer, (EID No.20170107993) 3. Wangchuk T, Senior Auditor, (EID No.9610090)
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10.	Engagement Letter No	:	SCID/MoWHS/int-01/17-18/2203 dated 08/08/2017
11	Focal Person	:	Karma Wangchuk
12	Date of Exit Conference	:	3& 4.12.2018



Disclaimer Note

The coverage of this report is based on the facts, figures and information made available and accessible to the audit team by the *RO, Trongsa* . The opinion of the auditors shall confine to the period covered and information made available till the time of issue of this report.

This is also to certify that the auditors during the audit had neither yielded to pressure, nor dispensed any favour or resorted to any unethical means that would be considered as violation of the Royal Audit Authority's Oath of Good Conduct, Ethics and Secrecy of Auditors.

Glossary of Abbreviations & Acronyms

AAG	: Assistant Auditor General
AC	: Asphalt Concrete
AE	: Assistant Engineer
AFD	: Administration & Finance Division
AIN	: Audit Information Number
AR	: Audit Report
ARA	: Audit Recoveries Account
ATR	: Action Taken Report
BSR	: Bhutan Schedule of Rates
BOQ	: Bills of Quantity
CDB	: Construction Development Board
CE	: Chief Engineer
DBM	: Dense Bitumen Macadam
DS	: Directorate Services
DES	: Department of Engineering Services
DHS	: Department of Human Settlement
DSA	: Department of Sectorial Audit
DOR	: Department of Roads
EID	: Employee Identification Number
FUCD	: Followup & Clearance Division
GCC	: General Condition of Contract
GSB	: Granular sub base
HR	: Human Resource
ITB	: Instruction to Bidder
JE	: Junior Engineer
LTD	: Limited
MoF	: Ministry of Finance
Pvt	: Private
PP&AARD	: Policy Planning & Annual Audit Report Division
RAA	: Royal Audit Authority
RO	: Regional Office
RRM	: Rubble Ransom Masonry
SCID	: Social, Communication & Information Division
SCC	: Special Condition of Contract
TS	: Technical Specification
WMM	: Wet Mix Macadam

TABLE OF CONTENT

PART A: GENERAL AUDIT FINDINGS	1
1. Introduction	1
2. DEFICIENCIES AND LAPSES	9
2.1 Increase of 1meter width carriageway due to change in design and drawing with resultant cost implication of Nu. 317.637 million	9
2.2 Decisions in violation to the technical specification and huge cost implication due to enhancement of 15% over the quoted rate for FC work as well as ambiguity in the maintenance of records to support the claims of night working allowances of Nu. 44.275 million	13
2.3 Inadmissible Payments of 15% enhanced rate for completed FC works prior to approval of Nu. 5.329million – (5.1.19)	17
2.4 Non amendment of contract document pertaining to enhancement of defective liability period - (4.4.69)	19
2.5 Inconsistency in the implementation of Double Lanning works	21
2.6 Ambiguities and flaws in the change of Road designs & Drawings with resultant deviations from the approved Design Standard envisaged in the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 and almost doing away of 1m formation width vis-à-vis compromising necessary safety measures and safety of commuters	25
2.7 Inconsistency in the fixation of construction duration for the same design and scope of construction works within and among the Regional Offices	31
2.8 Inconsistencies in the incorporation of cost of Bitumen in the preparation of estimates	33
2.9 Adoption of varying practices of rate analysis by contractors and wrong application of coefficient for 80mm, instead of 75mm design thickness of DBM and also for 50mm thick Asphalt and recoverable amount aggregating to Nu. 69.334 million	36
2.10 Flawed rate analysis through incorporation of transportation cost of bitumen as percentage to the overall derived cost of the item of work with resultant avoidable cost to the project Nu. 12.323 million	38
2.11 Award of three work packages in contravention to the Nganglam Resolution	41
2.12 Flawed decision on the realization of differential amount between estimated and quoted value net of 20% with resultant non- realization of Nu. 446.142 million as well as short realization of Nu. 52.150 million due to application of approved	

percentage on the quoted contract price and subsequently non-renewal of BG for approved differential amount of Nu. 203.406 million.....	45
2.12.3 Non-renewal of Bank Guarantees/Cash warrants obtained against differential amounts on expiry of the initial validity periods.....	47
2.13. Non-deployment/Mismatch of Personnel at site as per the requirements and non-deduction of penalty approximately - Nu. 40,579,000.00 (4.4.15).....	50
2.14 Non-deployment of equipment at site as per the requirements and non-deduction of penalty approximately - Nu.94,388,400.00 (4.4.15).....	78
2.15 Non-installation of laboratory at site as per BOQ (5.1.15)	94
2.16 Flaws in the BOQ and technical Specification on the transportation of Spoil materials in designated dumping yards (4.4.69)	104
2.17 Damages to Environment due to Dumping of muck in unidentified areas and push/freely rolling of mucks over the valley.....	106
2.18 Flaws in the allowable wastage of 5% on the bitumen consumption with resultant financial loss to the Government exchequer of Nu. 13,956,639.07	122
2.19 Excessive engagement and payment of hired charges of machineries not complying with coefficient specified in LMC for departmentally executed formation cutting works of Nu. 89.061million.....	125
2.20 Bitumen issued to contractors not covered by insurance - Nu. 2,237.655 million	128
2.21 Non-stacking/recording of excavated rock materials with resultant loss of Nu. 674,501,379.27.....	131
2.22 Irregular release of additional advances of Nu.254.110 million	133
2.23 Irregular Change of pavement thickness with resultant inconsistency in the execution of pavement works.....	135
2.24 Non-deduction of cost for reduced 1.5 m Hard Shoulders between Paved carriageway and L-Drain and 0.50m at valley side	137
2.25 Non-maintenance of 1.5m/1m width shoulder at Valley side.....	138
2.26 Non-achievement of formation width 10.50 meters and non-execution of FC works	140
2.27 Procurement and irregular issue of extension kits to the non-field officials - Nu. 311,900.00 (5.9.3).....	146
2.28 Non-aligning of pavement thickness with the item of works provided in the Bhutan Schedule of Rates (BSR) with resultant cost implication by way of applying built up rates through rate analysis.....	149
2.29 Irregularities in supply of lab equipment for NEWH (5.6.8).....	151
2.29.1 Non-supply of testing equipment in full quantity	152
2.29.2 Irregular payment of advance Nu. 560,000.00	152

2.29.3	Supply of testing equipment not as per specification and acceptance thereof - Nu. 1,902,660.00	153
2.30	Unsafe Storage of explosives materials	155
PART B: PACKAGE SPECIFIC OBSERVATIONS WITH ACCOUNTABILITY.....		157
3.	Ambiguity and irregularities in calculation of value of additional works and in the revision of completion deadlines.....	157
3.2	Inclusions of inadmissible cost on maintenance and Boulder Walls of Nu.27,649,925.00 in the value of additional works as well as hindrances with resultant excessive grant of time extensions (4.4.51)	160
3.3	Excessive grant of time extension due to flaws in the revision of completion deadlines (4.4.51).....	164
4.	Irregularities in payment of compensation amount – Nu. 1,100,587.30 (5.1.20).....	166
5.	Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Sakachawa to Tsangkha (Package 3) by M/s Rinson Construction Pvt. Ltd.	169
5.1	Non-providing of coping in RRM wall & other irregularities thereof (5.1.20).....	169
6	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Tshangkha to View Point (Package 4) by M/s Gyalcon Infrastructure Pvt. Ltd.....	171
6.1	Non-revision of contract duration after reducing the scope of work and irregularity in revision of contract amount (4.4.69)	172
6.2	Un-justified curtailment of scope and non-adjustment of quoted rates of Nu. 10,000.00 per running meter in align to the reduced scope of work with resultant extension of undue financial benefit to the contractor (5.1.2).....	174
6.3	Unjustified award of additional works valuing Nu. 15,028,000.00 exacerbating further delays in the completion of contract works vis-à-vis violation of Procurement norms (4.4.51).....	177
7	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from View Point- BjeeZam (Package 5) by M/s Druk Lhayul Construction Pvt. Ltd.....	180
7.1	Payment made for work not executed at site - Nu. 10,280.00 (5.1.14)	180
7.2	Payment made for work not executed at site - Nu. 4,950.00 (5.1.14)	183
7.3	Proving and Laying RCC (M25) deck slab not as per specification (4.4.69).....	184
7.4	Non-execution of Formation Cutting work for 181 meters (4.4.37)	185
8	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bjeezam- Trongsa (Package 6) by M/s Raven Builders & Company Pvt. Ltd	190

8.1	Possible illegal Sub-letting of road formation cutting and other works by M/s. Raven Pvt. Ltd. (Package-VI from Bjeezam-Trongsa) to T&C Pvt. Ltd as evident from the daily works done at site.....	192
8.2	Overpayment in Construction – Nu. 40,850.00 (5.1.18)	195
8.3	Inadmissible payment for RRM wall – Nu. 123,970.80 (5.1.15)	197
8.4	Payment for works not executed at site (5.1.20).....	198
8.5	Non-reinstatement of damaged RRM walls (4.4.63).....	200
9.	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Trongsa to Punzhi (Package 7A) by M/s Druk Lamsel Construction Pvt. Ltd.....	202
9.1	Development of cracks in Retaining walls requiring rectification thereof (4.4.63)	203
9.2	Construction of parapets not as per drawing and design (4.4.63).....	205
9.3	Excess payment due to difference in measurements between the MB and actual work done at site - Nu. 35,600.43 (5.1.14)	207
10	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Trongsa to Punzhi (Package 7B) by M/s Samphel Construction Pvt. Ltd	208
10.1	Acceptance of Defective Construction works - Nu. 1,681,948.60 (4.4.63).....	209
10.2	Overpayment in Construction – Nu. 87,466.00 (5.1.18)	212
11.	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Tashipokto to Dorjigonpa (Package 9) by M/s Welfare Construction Pvt. Ltd	213
11.1	Non-restoration of damaged RRM, RC Culverts and Hume Pipe Culvert walls – Nu. 7,638,360.00 (4.4.63).....	214
11.2	Over payment in Construction - Nu. 157,208.16 (5.1.18)	218
12.	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Dorji Gonpa to Yotongla (Package 10) by M/s Rinson Construction Pvt. Ltd.....	220
12.1	Damaged RRM Wall (4.4.63).....	221
12.2	Non-execution of work as per the survey and design with resultant extra financial burden of Nu. 491,750.00 and non-adjustment of cost for box cutting works (4.4.29).....	224
12.3	Payment made for RRM wall, which could not be located at site - Nu. 17,754.00 (5.1.18).....	227
12.4	Ineligible payment - Nu. 44,525.31 (5.1.20).....	228
13	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Yotongla to Bongzam (Package 11) by M/s Dungkar Construction Pvt. Ltd.....	230

13.1	Excess payment to the contractor - Nu.148,231.53 (5.1.14)	230
13.2	Payments made for laying of PCC 1:3:6 Bed Block under RCC slab without providing at site - Nu. 27,830.00 (5.1.20).....	232
13.3	Acceptance of Defective construction works (4.4.63)	234
14	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bongzam to Gyatsa Zam (Package 12) by M/s Dungkar Construction Pvt. Ltd.....	235
14.1	PCC 1:3:6 coping done not as per the drawing & design (4.4.69).....	236
14.2	Construction of Sub-standard catch pits along chainage 72-85 Km (4.4.30)	237
14.3	Defective Abutments along Chainages 72-85 Km (4.4.63)	239
14.4	Construction of parapets deviating from standard requirements along chainages 72-85 Km (4.4.63)	241
15	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Sonam Kuenphen to Hurjee (Package 14) by M/s Lamnekha Construction Pvt. Ltd	243
15.1	In admissible payment of incentive for FC work - Nu.96,705.00 (5.1.19).....	244
PART C: FINDINGS OF RECOMMENDARY NATURE WITHOUT ACCOUNTABILITY		246
16	Abnormal delay and slow progress of the work.....	246
17	Non-fulfillment of Milestone Commitment Agreement by the contractors	248
18	Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Chuserbu to Nyelazam (Package 1) by M/s Rigsar Construction Pvt. Ltd.....	261
18.1	Laying of Bitumen without conducting requisite Tests for Bituminous Works	262
18.2	Execution of Defective PCC 1:3:6 coping on RRM wall - Nu. 10,363.50.....	264
19	Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Sakachawa to Tsangkha (Package 3) by M/s Rinson Construction Pvt. Ltd.	266
19.1	Acceptance of abnormally low and nil quoted bids for item of works.....	267
19.2	Flaws in application of rates for estimation of additional works with resultant extra financial burden to the Government	271
20	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bjeezam- Trongsa (Package 6) by M/s Raven Builders & Company Pvt. Ltd	274
20.1	M/s. Raven Builders & Company (P) LTD Ltd obtaining loan from T Bank Ltd, Thimphu in spite of Credit line available from BDBL to the extent of Nu. 18.6 million with resultant invalidity of the Credit line obtained from BDBL.	276

20.2	Irregular financial support rendered to M/s. Raven Builders & Company (P) LTD, Gelephu by way of advance payment for POL Nu. 9,410,000.00 despite the availability of Credit line to the extent of Nu. 18.6 million from BDBL and to other contractors Nu. 240.700 million.....	278
21	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Dorji Gonpa to Yotongla (Package 10) by M/s Rinson Construction Pvt. Ltd.....	280
21.1	Short /excess utilization of reinforcement in rigid pavement work (4.4.69).....	280
21.2	Payment made for higher specification works resulting into excess payment - Nu. 894,500.00 (5.1.14)	283
21.3	Acceptance of abnormally low quoted bids for item of works (4.4.69).....	285
21.4	Mismatch of technical specification in Drawing, Departmental Estimate and BOQ	289
21.5	Poor quality works and poor workmanship (4.4.63)	290
22	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Yotongla to Bongzam (Package 11) by M/s Dungkar Construction Pvt. Ltd.....	292
22.1	Over/in-admissible payment to the contractor due to wrong quantification subgrade preparation item - Nu. 160,776.75 (5.1.14)	292
23.	Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Gyatsazam to Ngangar (Package 13) by M/s Rinson Construction Pvt. Ltd	293
23.1	Flaws in estimation relating to Formation Cutting and avoidable expenditure- Nu. 4.740 million (4.4.65).....	294
23.2	Acceptance of nil or abnormally low quoted bids for item of works with resultant delayed work progress (4.4.69)	297
23.3	Defectiv construction of Kerb Beam (4.4.63).....	301
24	Irregular grant of Additional work of Construction of Boulder walls for slope failure and slide to contractors in violation of the Contract agreement and technical specification - Nu. 5.65 million.....	302
25	Huge Quantity variations in earth and rock volume between estimates and actual execution for the departmentally executed works	306
26	Non-conducting of proper study on the soil properties for the Construction of RRM wall and failure thereof – Nu. 10,305,010.07	307
27	Direct award of Construction of Steel Arch Bridges as additional work by MLTC in violation to the Procurement norms and contract agreement - Nu. 10,137,000.00.....	309
28	Direct award of maintenance of roads contracts to the ongoing contractors in violation to the Contract agreement and technical specification - Nu. 22 million	311

29	Award of additional work contracts in violation to Exclusion Criteria announcement made on 2nd July 2016	314
30	Irregularities in booking of expenditure and hiring charges of light vehicle under the project	318
31	Irregularities noted in Road Improvement Works on Trongsa-Yurmo PNH executed by M/s Empire Construction Pvt. Ltd, Thimphu.....	320
31.1	Abnormal variations in Formation Cutting quantities from the departmentally estimated Quantities	321
31.2	Execution of work in deviation to the drawings and technical specifications with resultant unjustified payments to the extent of Nu. 27,082,443.80.....	322
31.3	Award of contract to incompetent contractor with resultant extravagant expenditures to the tune of Nu. 40.987 million.....	325
31.4	Reimbursement of expenditure by MHPA to the extent of Nu.40.987 million	328
32	Inconsistencies in the item rates and components of item works for similar nature of works	329

PART A: GENERAL AUDIT FINDINGS

Report on the Audit of Up-gradation Project Northern East-West Highway implemented by the Ministry of Works & Human Settlement

1. Introduction

The Up-Gradation Project Northern East West Highway is the most important road construction activity undertaken during the 11th five year plan period both in terms of financial outlay and scope of works. Considering its significance and nature of risks involved in such a large project, the Royal Audit Authority conducted the Audit of the Up-Gradation Project - Northern East West Highway covering the period inception (end of 2014) to 30th June 2017.

- 1.1 The audit was primarily directed towards ascertaining whether the implementation of the project complied with Procurement Rules and Regulations, Financial Rules and Regulations and approved Design Standard envisaged in the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009.
- 1.2 The up-gradation project was proposed under the Project Tied Assistance (PTA) and tabled for discussion during the 3rd Plan Talk held with the Government of India in Thimphu on September 11, 2014.
- 1.3 The Government of India concurred to finance the up-gradation from Semtokha to Trashigang with the total budget of Nu 4,636.646 in the 11th Five Year Plan period although the total estimated cost is Nu. 7,284.211 million.
- 1.4 During the discussion it was agreed that Project DANTAK to carry out the up-gradation works of 52 km from Trashigang to Yadi. The survey and design for the up-gradation works to be provided by the Ministry of Works & Human Settlement.
- 1.5 The Department of Roads, Ministry of Works and Human Settlement is mandated to implement the project within 3 years of time period starting 1st January 2015.
- 1.6 The composition of the Project Management Team (PMT) were as follows:
 - Hon'ble Secretary, MoWHS (Chairman)
 - Director, DoR
 - Chief Engineer, Construction Division
 - Chief Engineer, Design Division
 - Project Coordinator, GoI Projects
- 1.7 The composition of the Technical Management Team (TMT) were as follows:
 - Kunzang Wangdi, Specialist, DoR

C.K. Pradhan, PE, Const. Division, DoR
 Karma Tenzin, EE, Design Division
 Tempa Thinley, Geotech Unit, Design Division, DoR

1.8 The composition of the Ministerial Level Tender Committee were as follows:

Phuntsho Wangdi, Secretary (Chairman)
 Dhak Tshering, Director, Secretariat
 Karma Galay, Director, DOR
 Tenzin, Director, DES
 Karma Sonam, Director, DHS
 Karma Ugyen, Dy. Chief Accounts Officer
 Lungten Jamtsho, CE, Construction Division
 Ugyen Dorji, EE, Construction Division

1.9 The up-gradation of Northern East West Highway (NEWH) works started towards the end of 2014.

1.10 The rationale and benefit of the project are as follows:

- Shortening travel time between Thimphu and Trashigang
- Enhance the socio-economic wellbeing of the people of Bhutan
- Facilitates timely transportation of heavy electro-mechanical equipment for Hydro- Electric projects
- Serve smooth and convenient access for tourist, VVIPs and to the road users

1.11 The Projects were implemented by the Four Regional Offices of DOR and Project DANTAK as tabulated below:

Regional Office	Scope of work distance in Km	Locations	Total Estimates in million
Thimphu and Lobeysa	65	Semtokha-Wangdue	764.217
Lobeysa	82	Wangdue-Chuserbu	1,156.061
Trongsa	100	Chuserbu-Trongsa-Nangar	2,454.575
Lingmethang	39	Yadi-Lingmithang	1,763.745
Project DANTAK	52	T/gang –Yadi	1,145.613
Total			7,284.211

1.12 As of 30 June 2017, GOI releases amounted to **Nu. 3,605.21 million** against committed fund of **Nu. 4,636.646 million** and expenditures amounted to **Nu. 4,293.12 million** exceeding the releases by **Nu.687.91 million**.

Regional Office	Scope of work distance in Km	Locations	GOI release Nu. in million	Total Estimates in million
Thimphu and Lobeysa	65	Semtokha-Wangdue	1,197.50	1,166.31
Lobeysa	82	Wangdue-Chuserbu	693.64	1,031.74
Trongsa	100	Chuserbu-Trongsa-	643.64	882.31

		Nangar		
Lingmethang	39	Yadi-Lingmithang	383.06	525.39
Project DANTAK	52	T/gang –Yadi	687.37	687.37
Total			3,605.21	4,293.12

1.13 The status of work progress as of 15th November 2018 were as highlighted below:

Table 1.13: Status of Work Progress				
Regional Office	Scope of work distance in Km	Locations	Overall progress	
Thimphu & Lobeysa	65	Semtokha-Wangdue	-	All 7 Contract Packages Completed
Lobeysa	82	Wangdue-Chuserbu	2 Contract Packages On-going	12 Contract Packages completed
Trongsa	100	Chuserbu-Trongsa-Nangar	11 Contract Packages still On-going	Only 3 Contract Packages completed
Lingmethang	39	Yadi-Lingmithang	All 7 Contract Packages On-going	1 Packages yet to be retendered out
Total				

The status of work progress as of 20th April 2019 were as highlighted below:

Table 1.9.1: Status of Work Progress					
Regional Office	Length Km	No. of Contract Packages	Locations	Overall progress	Status as of 20 th April 2019
Thimphu & Lobeysa	65	7	Semtokha-Wangdue	Nil	All 7 Contract Packages Completed
Lobeysa	82	14	Wangdue-Chuserbu	2 Contract Packages On-going	12 Contract Packages completed
Trongsa	100	14	Chuserbu-Trongsa-Nangar	4 Contract Packages still On-going including 1 Contract Package terminated	Only 10 Contract Packages completed
Lingmethang	39	7	Yadi-Lingmithang	2 Contract Packages terminated and On-going 1 Package executed Departmentally	5 Packages completed

1.14 Time overruns as from the initial contract periods, revised completion time and time lapsed from the revised time periods for completed contract packages:

Table 1.14: Time overruns							
Name of Contractors	Time to complete the road						Remarks
	Time to complete the road Packages	Planned months	Actual months	Time overruns in months	% Time overruns	No. of revisions	
RO, Thimphu							
M/s. Raven Builders & Company (P) LTD	Simtokha-Dochula Package 1	15	33	18	120	2	

M/s Yangkhil Construction Pvt Ltd	Simtokha-Dochula& Olakha Package 2	15	22	7	47	2	
RO, Lobeysa							
M/s Chogyal Construction Pvt. Ltd.	Dochula-Lampari Package 1	15	14.9	(0.1)	-	-	
M/s Chogyal Construction Pvt. Ltd.	Lampari-Menchuna Package 2	15	16.9	1.9	13	-	
M/s Chogyal Construction Pvt. Ltd.	Menchuna-Chasagang Package 3	15	16.8	1.8	12	-	
M/s Singye Construction Pvt. Ltd	Chasagang-Langkena Package 4	15	29.2	14.2	71	-	
M/s Etho Metho Construction Pvt. Ltd.	Langkena-Tekizam Package 5	20	34.5	14.5	72.5	2	
M/s Tshering Tobgyel Construction Pvt. Ltd. Wangdue	Tekizampa-Khelekha Package 6	25	32.5	17.5	70	2	
M/s Loden Construction Pvt. Ltd, Thimphu	Khelekha-Rachau Package 7	20	32.4	12.4	62	2	
M/s Welfare Construction, Pvt. Ltd, Thimphu	Bumilo-Rukubji Package 9	25	30.4	5.4	22	2	
M/s Rigzar Const. Pvt .Ltd	Rukubji-Chuserbu Package 10	24	39.7	15.7	65	2	
M/s Hi Tech Company Pvt. Ltd, Punakha	Pelela-Dungdungnyelsa Package 11	25	34.8	9.8	39	2	
M/s Tagsingchungd ruk Construction Pvt. Ltd, Thimphu	Wangdue-Langkena Package 12	11	14.9	3.9	36	1	
M/s Empire Construction Pvt. Ltd, Punakha	Nobding-Dungdungnyelsa	10	23.2	13.2	132	1	
M/s Empire Construction Pvt. Ltd, Punakha	Nobding-Dungdungnyelsa	12	19.4	7.4	62	1	
RO, Trongsa							
M/s Rigzar Const. Pvt .Ltd	Chuserbu-Nyelazam Package 1	30	37	7	23	2	
M/s Gaseb Const. Pvt .Ltd	Nyelazam-Sakachawa Package 2	30	35	5	17	2	
M/s Rinson Const. Pvt .Ltd	Sakachawa-Tsangkha Package 3	30	42	12	40	2	
M/s Druk Lamsel Const. Pvt. Ltd	Trongsa-Punzhi Package 7						
M/s Dungkar	Punzhi-Tashipokto	28	40	12	43	2	

Const. Pvt .Ltd	Package 8						
M/s Welfare Const. Pvt .Ltd	Tashipokto–Dorji Gonpa Package 8	28	40	12	43	2	
M/s Dungkar Const. Pvt .Ltd	Bongzam-Gyatsazam package 12	28	40	12	43	1	
M/s Rinson Const. Pvt .Ltd	Gyatsazam-Nangar Package 13	28	40	12	43	1	
M/s Lamneka Const. Pvt. Ltd	Sonam Kuenphen-Hurjee bypass	15	17	2	13	1	Scope reduced
RO, Lingmithang							
M/s. Bhutan Zeocrete Pavement Technologies (JV)	Between Yadi & Ngatsang Package 1	18	28.5	10.5	58	3	
M/s. KD Builders Pvt. Ltd, Gelephu	Pangser & Kilikhar Package 3	24	37	13	54	2	
M/s. Gongphel Construction Pvt. Ltd, Samdrup Jongkhar	Kilikhar & Mongar Package 4	30	38	18	60	2	
M/S Norbu Construction Company Pvt Ltd, Gelephu	Mongar and Gangola Package 5	30				1	Contract terminated
M/s Rigsar Const. Pvt .Ltd	Gangola & Kurizam Package 6	28	30	2	7	2	
M/s. Tshering Construction Pvt Ltd, Bumthang	Kurizampa & Lingmethang Package 7	15	28	13	87	1	

Time overruns from the initial contract periods for completed contract packages as of **15th November 2018** are as highlighted below:

Name of Contractor	Time to complete the road				Remarks
	Packages	Planned months	Actual months	Time overruns in months	
RO, Thimphu	2 Contract packages	15	22 & 33	7 & 18	
RO, Lobeysa	5 Contract Packages	11 to 25	14.9 to 30.4	1.8 to 5.4	
	8 Contract Packages	10 to 25	19.4 to 39.7	7.4 to 17.5	
RO, Trongsa	1 Contract Package	15	17	2	
	8 Contract Packages	28 to 30	35 to 42	5 to 12	
RO, Lingmithang	1 Contract Package	30			Contract terminated
	4 Contract Packages	15 to 30	28 to 38	13 to 18	

All contract packages have exceeded the original set time and the extension is quite significant for most packages. This was also the case for those contract packages that were completed after a decision to reduce the scope of the works. All of contract periods were revised under the construction phase.

1.15 Northern East-West Highway GOI funded Project Financial statement/Requirements as of 15th November 2018, prepared by ROs, DOR, MoWHS:

Sl.No.	Stretches NEWH	FIC	Initial Committed Fund 6th PT	Total Revised Committed Amount (M)	Total Revised Contract Amount (M)	Expenditure as of 15/11/2018 (M)	Pre-Financing requests beyond committed fund to the extent of contract Amount (M)
1	Semtokha - Wangdue	3036	1,197.602	1,233.358	1,035.047	1,225.739	
2	Wangdue-Chuserbu	3037	1,293.291	1,510.567	1,844.012	1,519.115	
3	Chuserbu-Trongsa	3038	744.440	744.440	1,022.282	599.322	
4	Trongsa-Nangar	3039	835.668	835.668	1,277.348	763.921	
5	Lingmithang - Yadi	3040	1,018.600	1,018.600	1,351.663	751.221	
		Total	5,089.601	5,342.633	6,530.352	4,859.318	1, 187.72

1.16 Tendering processes and contract awards, change orders in terms of designs/drawings, acceptance of new technology, time extensions, and awards of additional works were carried out by the Ministerial Level Tender Committee (MLTC) under the Chairmanship of the Secretary, Ministry of Works & Human Settlement (MoWHS). However, the contract managements and overseeing of project works were carried out by the four Regional Offices of Thimphu, Lobeyasa, Trongsa and Lingmethang.

1.17 It was apparent from letter No. MoWHS/Sec-29/2015-2016/524 dated 16th October 2015 that the Secretary, MoWHS had conveyed the decisions on the meeting held on **16th June 2015** with the contractors and directed the Regional Offices for issuance of amendments to the contract agreements on the decisions subsequently taken on the following areas:

✓ **15% extra on FC Works**

Since the contractors executing the widening works are required to work at night (7pm to 8AM) to allow undisturbed flow of traffic during the day, it has been decided to enhance the rate of FC work by 15%.

✓ **Increase in pavement width from 6.50mtr to 7.50mtr**

It has also been decided to increase the width of pavement by 1meter from 6.5 meters to 7.5 meters.

✓ **Enhancement of Defect Liability Period from 1year to 3 years**

During the meeting held between the Hon'ble Prime Minister & the contractors working on NEWH on 24th August 2015, the contractors have agreed to the proposal of increasing the defect liability period for the works from one to three years.

1.18 Ineligible advances of Nu.250.110 million were sanctioned to 13 contractors by the ROs on the strength of approval of the Ministry and the MLTC exclusive of all other

normal entitled advances like Mobilization advance, Secured advance etc. as detailed in table 1.18 below:

Table 1.18: Payment of Ineligible Advances				
Sl.No.	Name of contractor	Contract Package	Date of Payment	Amount (Nu.)
RO, Trongsa				
1	M/s welfare Construction Pvt. Ltd.	Package IX	12.4.2017	20,000,000.00
2	M/s Dungkar Construction Pvt. Ltd.	Package VIII, XI & XII	9.12.2017	20,000,000.00
3	M/s Gyalcon Construction Pvt. Ltd.	Package IV	28.6.2017 & 26.10.2017	15,000,000.00
4	M/s Druk Lhayul Construction Pvt. Ltd.	Package V	19.5.2017 & 14.6.2017	20,000,000.00
5	M/s Rinson Construction Company Pvt. Ltd.	Package III, X & XII		30,000,000.00
6	M/s Raven Construction Company (P) Ltd.	Package VI		9,410,000.00
		Total		114,410,000.00
RO, Lobeysa				
7	M/s Chogyal Construction Pvt. Ltd	(Packages I, II and III)	2015/2016	46,000,000.00
8	M/s Singye Construction Pvt. Ltd (CDB No. 2148)	Package IV	12/2015	39,700,000.00
9	M/s welfare Construction Pvt. Ltd.	Package IX	12.11.2017	10,000,000.00
10	M/s Rigsar Construction Pvt. Ltd	Package X	6.6.2017 & 22.12.2017	4,500,000.00
11	M/s TT construction Pvt. Ltd	Package VI	7.2.2017 & 20.12.2017	19,000,000.00
		Total		119,200,000.00
RO, Lingmethang				
12	M/s Gongphel Construction Pvt. Ltd.	Package IV	9.4.2017 & 22.12.2017	10,000,000.00
13	M/s Rigsar Construction Pvt. Ltd	Package VI	8.2.2017 & 9.5.2017	6,500,000.00
		Total		16,500,000.00
RO, Thimphu				
14	M/s Raven Construction Company (P) Ltd.	Package I		4,000,000.00
		Total		4,000,000.00
		Grand Total		254,110,000.00

1.19 In terms of the Technical specifications under Clause 502 -“Dismantling Culverts, other Structures and Pavements” categorically stipulates as “All salvaged or un-salvaged materials shall be the property of the employer”. It also stipulates that prior to commencement of dismantling, the work of dismantling structures shall be measured in unit given under the clause of section (6). While all the contract packages included permanent works viz. culvert extensions, catchpits, gabion walls, RRM & CRM walls, etc. involving huge cost to the project, the ROs and the DOR had neither taken stock of all existing permanent structures nor accounted for all the salvaged materials. Thus, in the absence of stock accounts for the existing permanent structures, the RAA was not in a position to verify and ensure proper accountal and disposal thereon. Thus, non-accountal of salvaged materials from the existing permanent structures had resulted in substantial financial loss to the Government. The Ministry and the Government should look into the issue for appropriate decisions and actions.

1.20 In terms of the Technical specifications under Clause 107, “Survey and Setting Out” amongst others categorically stipulated as “ During the period of commencement of works the contractor shall resurvey the Base lines, Traverse Points, Bench Marks and confirm the co-ordinates and levels of the stations. All stations and reference points shall be clearly marked and protected to the satisfaction of the Engineer. Where survey station point is likely to be disturbed during construction operations, the contractor shall establish suitable reference stations at locations where they will not be disturbed during construction. The existing profile and cross-sections shall be taken jointly by the Engineer and the contractor. These shall form the basis for the measurements and payments”. However, the ROs have not conducted the final survey on completion of formation cutting as to ascertain actual quantum of earthwork excavations and the extent of formation cutting works carried out by the contractors.

The RAA in its attempt to carry out the final survey of the formation cutting works, engaged survey officials from the National Land Commission(NLC) for a month but failed to conduct the survey in the absence of the initial survey stations and reference points as the same were found disturbed and not protected during the construction operations. Thus, the extent of formation cutting and the actual quantum of earthwork excavations could not be verified and cross checked with the estimated quantum reflected in the estimates and BOQs.

1.21 The status of budgetary releases and expenditures incurred as of 30.06.2017 are a summarized in the table below:

Table 1.21: Status of budgetary releases and expenditures								
Stretches NEWH	FIC	Initial Committed Fund 6th PT	Total Revised Committed Amount (M)	Total Revised Contract Amount (M)	Expenditure as of 5/9/2018 (M)	Advance O/S (M)	Exp + Adv	Name of Ros
Semtokha – Wangdue	3036	1,197.602	1,233.358	1,035.047	1,225.739	-	1,225.739	Thimphu & Lobeysa
Wangdue-Chuserbu	3037	1,293.291	1,510.567	1,844.012	1,514.813	2.112	1,516.925	Lobeysa
Chuserbu- Trongsa	3038	744.440	744.440	1,022.282	578.612	110.989	689.601	Trongsa
Trongsa-Nangar	3039	835.668	835.668	1,277.348	727.057	88.198	815.255	Trongsa
Lingmithang – Yadi	3040	1,018.600	1,018.600	1,351.663	736.337	327.843	1,064.180	Lingmethang
	Total	5,089.601	5,342.633	6,530.352	4,782.558	529.142	5,311.700	

2. DEFICIENCIES AND LAPSES

Review of the related records and documents including designs and drawings, estimates and BOQs, tendering processes, contract documents, supervision and monitoring controls, contract management, and physical visits and verification of works done at sites with reference to technical specifications indicated inadequacies, irregularities and deficiencies resulting from inadequacies in planning, weak supervisory and monitoring controls and lack of proper contract management system. Major issues observed in planning, tendering processes, implementation of contracts and taking over of works from contractors are as discussed below:

2.1 Increase of 1meter width carriageway due to change in design and drawing with resultant cost implication of Nu. 317.637 million

The initial approved design and drawing attached with the bidding documents were prepared as per the approved **Technical Standard and Road Classification and Standard 2009**.

The design provided standard carriageway width of 6.5m, 1m L-drain at hill and hard shoulder of 1.50 m between L-Drain and carriage way and 1.50m at valley side with granular sub soil drain to be provided in marshy areas.

The shoulders provided at both side of the carriage pavement width of 1.50m each was generally to provide for the Safety and efficient traffic operations, emergency storage of disabled vehicles, space for law enforcement activities, an area for drivers to maneuver to avoid crashes, space for maintenance activities and for bicycle accommodation.

The typical cross section of approved drawing which was instrumentally used in conceiving the estimates and BOQs to derive estimated cost of the project as well as obtaining competitive bids and awards of contracts is as depicted in the photograph below:

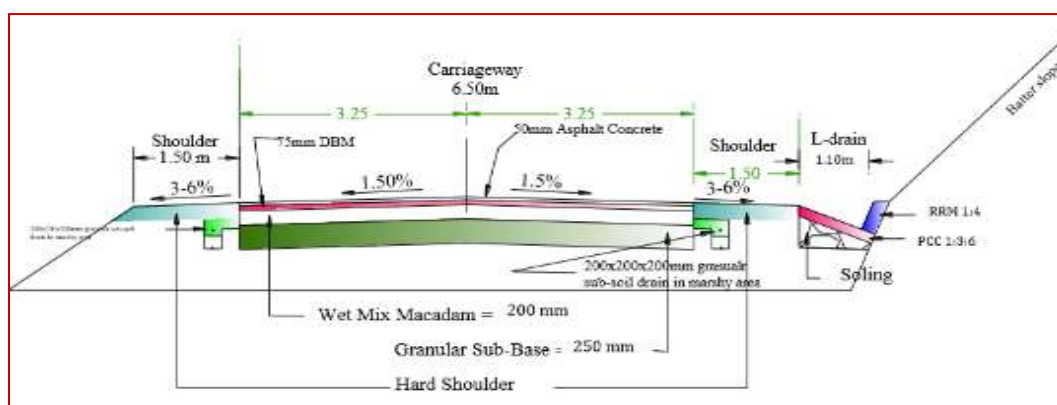


Fig: 2.1 –Initial approved design and drawings

However, vide letter No. MoWHS/Sec-29/2015-2016/524 dated 16th October 2015, the Secretary, MoWHS had conveyed the meeting held on 16th June 2015 with the contractors and directed the Regional Offices for issuance of amendment to the contract agreements based on the decisions subsequently taken to increase the carriageway width from 6.5m to 7.5 m. Reasons for increase of carriageway width was found not documented.

In addition, vide letter No. DoR/ROL/16/15-16/481 dated 21/10/15, all Regional Offices were informed to increase the pavement width from 6.5 meters to 7.5 meters. In line with change order, the revised drawing developed and circulated by Design Division, DoR Thimphu was as depicted in the photograph below:

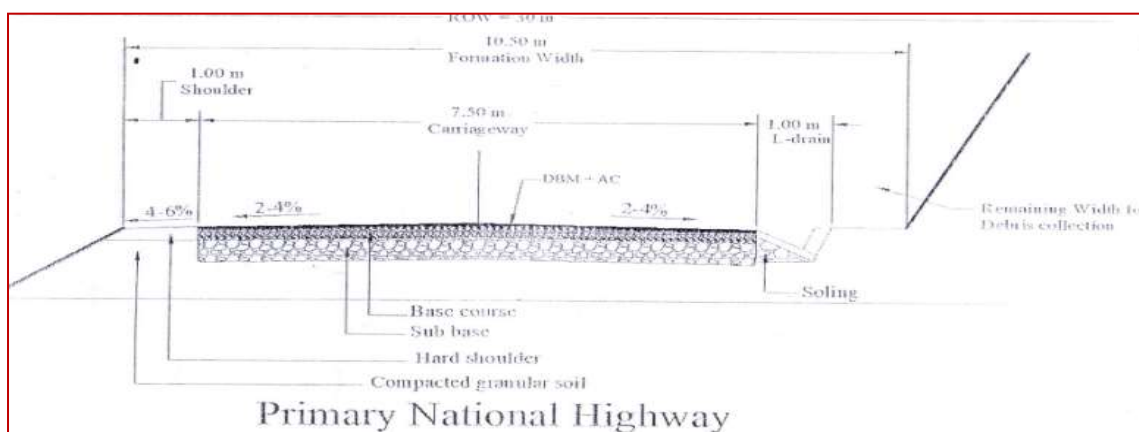


Fig: 2.1(1)-Revised design and drawing

Thus, the increase of pavement width of 1m from the initial carriageway width of 6.5m to 7.5m after a time lapse of almost eight months from the dates of awards of contract works was irrational and inappropriate as it had not only distorted the drawings, estimates, BOQs, Projected Cost and funding modality but also adversely impacted the overall project cost by **Nu. 317,636,875.54** as summarized in table 2.1 below:

Sl. No.	Regional Office	No. of Packages	Amount (Nu. in Million)	Remarks
1	RO, Lobeysa	15 contract packages	119,519,393.84	
2	RO, Thimphu	2 Packages	11,504,832.70	
3	RO Trongsa	13 Contract Packages	112,753,111.00	
4	RO Lingmethang	7 contract packages	50,638,059.00	
5	RO Lingmethang	1 package	23,221,479.00	ZeoCrete pavement works contract
	Total		317,636,875.54	

In addition, the change in design also impeded the following benefits to government and the commuters:

- The provision of 1m width between hillside and L-drain technically benefited the contractors as 1m width were not insisted upon to be maintained as the contractors were allowed to construct L-Drains attaching the hillside.
- Doing away of 1.5m shoulder width between L-Drain and carriageway and reduction of 1.50m to 1m at valley sides had resulted in compromising necessary safety measures and safety of commuters.
- The Physical verifications indicated that overall formation width were not achieved in certain stretches of roads and no cost adjustments were carried out for non-achievement of formation width and non-maintenance of 1m width at hillsides. As a result, contractors benefited financially since the payments were made on the basis of running meters and not based on the quantum of works executed.

The Regional Offices in consultation with the Ministry should comment on the changes of drawings and technical specifications after the awards of contract works that had resulted in additional avoidable financial implication to the extent of **Nu. 317,636,875.54**.

Auditee's Response:

Increasing of Pavement width from 6.5m to 7.5m came from the need to upgrade our very important Primary National Highway of the country spanning East to West by gradually improving its basic specifications to meet with the growing demands by ever increasing road users and to ensure traffic reliability, passenger comfort and their safety when the opportunity existed for such an intervention under GOI funding.

From over several decades of experiences in the construction and maintenance of roads in Bhutan and learning from experiences of many developed countries, it has been established that ingress of water is the top most factor for premature damages to road pavements (especially the flexible pavement system). Factors such as environmental conditions, traffic intensity and increased loadings, and the design inadequacies are some other contributing factor for premature pavement damages. Based on this premise, since pavement works were not commenced in all of the contracts awarded for all stretches from Simtokha to Korilla, the intervention was deemed timely. DoR also appraised this ministry that under GOI funding on NEWH project, it expected huge savings then.

Therefore, instead of providing 1.5m wide earthen shoulder on the hillside of the pavement the ministry proposed increasing the pavement width from 6.5m to 7.5m taking up 1.0m of the 1.5m shoulder and fixing the 1.0m wide L-shaped/U-shaped side drains next to the pavement structure only. This intervention brought following improvements and benefits to the overall flexible pavement system.

- 1. Earthen shoulders are a porous medium that will allow gradual seepage of surface run off water and the normal rainwater. The water percolates into underlying pavement layers of DBM, WMM and GSB that are fairly porous in nature. When ground temperatures reach 40 degrees centigrade, the bitumen strips off the aggregates causing segregation of bituminous concrete. During winter in high altitude areas, the water in the pavement layers undergo freezing / icing breaking open the bituminous concrete and when weather warms up in Spring and after, the thawing of frozen ice takes place melting it into water leaving cracks in the bituminous concrete. This phenomenon of icing and thawing leads to crushing of cracked road surfaces under wheels of trucks and vehicles, forming cracks of all kinds and potholes. Addition of this 1.0m extra blacktop instead of earthen shoulder definitely prevents this undesirable phenomenon - saving huge recurrent expenditures.*
- 2. The side drain running parallel to the centerline of the pavement next to the pavement structure not only ensures that road surface is impervious to ingress of water enhancing the life of the pavement, the aesthetics of the pavement alignment improves to a great extent.*
- 3. The 1.0m extra pavement width will allow much desired unrestricted speed of the traffic flow in both directions preventing the pulling force that will otherwise develop between vehicles crossing past in opposite directions close to each other. In fact, to enhance*

safety, if space permits there should be a solid divider between lanes in opposite directions to avoid pulling (vacuum) force and the glares from headlights.

- 4. The extra wide road will compensate for the absence of super-elevation at curves as the introduction of which is not possible in our highways due to lack of space to lay the transition curves that precedes the Super-elevation. Super-elevation counter acts the centrifugal force of speeding vehicles.*
- 5. This initiative allows leaving a 1.0m space between the hillside slope toe and the side's L-drain, which not only will hold back the first slides getting into the drain directly from slope erosion under rains, but also improves the sight distance for the drivers at the curves and sharp corners. It also ensured a relatively dust and mud free highway pavement as only valley side shoulder exists.*
- 6. The introduction of 1.0m extra avoided payment for 1.5m wide shoulder, although an additional expenditure was required to be made for 1.0m wide DBM and AC layers. A certain percentage on the cost for BT would have been compensated.*

The 1.0m extra wide black top pavement did not affect any fundamental geometrics or integrity of the national highway. In fact it definitely has enhanced the longevity of the pavement life, improved the safety and riding comfort of road users, the long desired national highway specification upgraded with aesthetics significantly improved and all of these are vital for the growth and sustenance of our economy.

With these positive outcomes in the perspective, the proposal thus submitted was endorsed by the MLTC members and recommendations duly approved jointly by the Ministers for Finance and Works & Human Settlement ministries vide MoWHS/SEC/29/2015/476 dated 5/8/2015 (Copy enclosed). The RAA is therefore requested to consider the submission favorably given the benefits and many positive outcomes from the initiative by not pursuing the matter further please.

RAA's Further Comments & Recommendations:

*The RAA had noted that the initial design and drawings incorporated in the tender and contract documents were as per the Road Designs outlined in the **Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009** approved by the Cabinet.*

In addition, in line with the responses, it was evident that the Ministry despite having several decades of experiences in the construction and maintenance of roads in Bhutan and learning from experiences of many developed countries and having established that ingress of water is the top most factor for premature damages to road pavements (especially the flexible pavement system) had failed to consider such factors in the initial design and drawings. It also indicated that the Ministry had failed to exercise due diligence while preparing the project plans, designs, and specifications to ensure that all information are accurate and complete and prevent changes including time and cost overruns.

It is thus evident that the change of designs and drawing and technical specification on the increase of Impavement width after award of contracts and during execution phase of contracts was an adhoc decision and was also not aligned to the approved design and

technical specification of the Guidelines. The change of designs by doing away the 1.5m shoulder width between L-Drain and carriageway and reduction of 1.50 m to 1m at valley sides had resulted in compromising necessary safety measures and safety of commuters.

In addition, the extra financial burden to the government due to change is design and technical specification particularly due to increase of 1m carriage way alone after the contract awards amounted to Nu. 317.637 million (**Ministerial Level Committee were responsible for the changes**)

The Ministry should not only strengthen the Design Divisions for accurate designing of road structures but also institute a technical team to review project plans, designs, and specifications to ensure that the same are accurate and complete including verification of the accuracy of surveys for future projects as to prevent changes in designs as well as time and cost overruns.

The huge financial loss to the extent of Nu. 317.637 million to the government Exchequer is brought to the notice of the Government for appropriate decisions and actions.

2.2 Decisions in violation to the technical specification and huge cost implication due to enhancement of 15% over the quoted rate for FC work as well as ambiguity in the maintenance of records to support the claims of night working allowances of Nu. 44.275 million

The rate for FC works was enhanced by 15% on the grounds that the contractors executing the widening works are required to work at night (7pm to 8AM) to allow undisturbed flow of traffic during the day as conveyed by the Secretary, MoWHS under letter No. MoWHS/Sec-29/2015-2016/524 dated 16/10/15 on the basis of the decision taken during the meeting held on **16th June 2015** with the contractors.

Accordingly, project cost on account of 15% enhanced rate for contractors executing the widening works increased by **Nu. 44,274,922.00** as shown in table 2.2 below:

Sl. No.	Regional Office	No. of Packages	Amount (Nu. in Million)
1	RO, Lobeyasa	6 contract packages	11,666,449.74
2	RO Trongsa	13 Contract Packages	24,061,503.00
3	RO Lingmethang	5 contract packages	8,546,469.45
	Total		44,274,922.00

However, the Technical Specifications categorically stipulated on Traffic Safety & Control under Section 100-General Requirement, Clause 105, Sub Clause (2) General Requirements that, “*The Contractor shall at all times carry out works on the road in a manner creating least interferences to the flow of traffic. For all works involving improvement of the existing road, the Contractor shall provide and maintain a passage for traffic either along a part of the existing carriageway under improvement, or along a temporary diversion constructed close to the road. The Contractor shall take prior approval of the Engineer regarding traffic arrangements during construction Traffic Safety & Control. The Contractor may be allowed to stop traffic temporarily. The period of such closure shall be as agreed by the engineer. For this the Contractor shall submit the time and period of the closure to the Engineer at least 14 days in advance, to enable the Engineer to issue the relevant notices*”

In addition, clause 105(5) Traffic Safety & Control, and under sub para on **Measurement and Payment**, stipulated as “*No separate measurement and payment shall be made for the works described in this clause. All the costs in connection with the work specified herein shall be considered included in the related item of work specified in the bill of quantities*”

Thus, in terms of the technical specifications, bidders were to in-built the cost on the “Traffic Safety & Control” as well as hindrances expected to hamper the execution of FC works in rates in the related item of work specified in the bill of quantities.

The enhancement of the rate for formation cutting works by 15% and payment of Nu. 44,274,922.00 as of date of audit for requiring works to be done at night tantamount to double payments to the contractors as the quoted rates of the contractors were inclusive of cost for ensuring least interference to the flow of traffic during execution of works.

Further, the audit team noted that there were no properly defined working procedures for execution of works at night. In addition, maintenance of subsidiary records to substantiate the works done at night for eligibility of claiming of 15% night working allowances and any other related records if maintained were not available on records. In the absence of such records, the correctness of the claims were not susceptible for audit scrutiny.

Considering the huge magnitude and cost of formation cutting works, decision of paying extra 15% having enormous amount of additional financial implication certainly warranted a detailed analysis of incremental cost arising from night work. However, there were no evidence produced indicating analysis carried out to ascertain the cost elements and extent of additional cost entailed in executing the formation cutting works at night that necessitated the compensation payment beyond what was already covered as stipulated under the Technical Specifications.

The Regional Offices in consultation with Ministry should revisit the decisions in terms of the provisions of the contract documents and technical specifications and should recover the built up cost for “traffic safety and control cost” in the quoted rates of contractors. Besides, the Ministry should also direct the site engineer and the contractor to provide documentary evidences of work done at night.

Auditee's Response:

The DoR Regional Offices would like to thank the RAA for carrying out the detailed auditing of all the NEWH project packages and for the observations.

With great concern to the public travelling on our NEWH projects having to wait at the time of FC work during daytime, the meeting of 16th June 2015 chaired by Hon'ble Secretary in presence of all contractors decided to carry out FC work during the night to avoid disturbances to the traffic flow. The contractors had submitted their incentive requirement to the Ministry and it was decided at 15% of FC cost vide order no. DoR/CD GoI PMU/NEWH 19/1522 dated 31st July 2015. The RO then issued the letter no. RO/DoR/Trongsa/E-01/2015-2016/85 dated 3rd Aug 2015 in line to the above order to contractors to carry out FC work during night time (i.e. 7 PM – 8 AM). However, RO accepts on the ground stated that there was no record keeping for FC done at night but we made sure that FC works were carried

out during night ONLY mostly in presence of our site engineers without any incentives working both day and night after the order had been circulated.

The improvement works on the Northern East West highway beyond Wangdue was about to be started with 36 contract packages of which 21 have even the widening of existing road widths to 10.5m. Each of these contract packages spanning anywhere from 6 to 10 km in length were located immediately next to each other with men and machines. Crossing past one package and then through the rest was the biggest challenge DoR and the contractors together foresaw since commuters cannot be blocked at series of locations separated by a maximum of five to ten kilometers. We say five to ten kms because most widening operations took place mostly with two sets of machines in each contract package.

The objective of the 16th June 2015 meeting was therefore to bring about a slight change to the execution methodology of the Formation Cutting (FC) item and also to improve the pavement specification of the Primary National Highway. The very interactive discussion finally came to an agreement that contracts having FC works would thenceforth work at night from 7PM until 8AM next morning. To this change, contractors submitted a joint application demanding 20% raise in the FC work item for night works, overtime payment to cover risks, and to provide lighting systems. After intense arguments that followed in pursuit for negotiations where the Ministry and DoR actually desired to pay for lights only, contractors finally stayed put with 15% only as against 20%. This 15% on FC item accounts for only 3.29% raise in the overall contractual allocation.

International experiences and researches indicate that, “the general opinion is that costs are significantly higher at night than daytime. Night shifts are theoretically more expensive due to overtime and night-premium pay, lighting expense, use of additional traffic control devices, and higher bids. Hinze and Carlisle (6) said that overall contracts costs increase by 10%. In 1990 they (Hinze and Carlisle) found that contract cost was 9% higher at night. Hacher and Taylor (2001) and Al-Kaisy and Nassar (2002) conclude that cooler temperature at night and longer undisturbed working hours can actually increase nighttime work quality.”

While the contract stipulates a requirement that contractor shall ensure traffic flow with least interferences requiring the contractor to allow unhindered flow of traffic, the contractor (if lone) as a single entity would easily fulfill this requirement with specific timings for blockings and openings. The next contractor/s at every 6 to 10km distance will have to set yet another timings and so forth by all the 21 widening contractors. It may be perhaps possible with just one direction traffic, but with both directions traffic and added by those with emergency commuters, the permutation and combination coordination set ups would have brought in much commotion and frustration to both contractors and the general road users and the most undesirable complaints and reports to the headquarters in Thimphu on a daily basis. Even with just the two blocks on over 40km stretch between Dochula and Wangdue had caused every road user to sacrifice one to two hours of his/her one-way travel time. The contractors would have also found valid reasons for delaying their work resulting in justifiable cost escalations and time extensions.

The night work therefore definitely resulted in many positive outcomes such as inculcating the culture of night work for the construction industry, eased travelers with uninterrupted flow of daytime safe travel, enabled continuation of the conduct of socio-economic activities by one and all, and allowed the administrative functions to continue by local governments

served by East West highway corridor in particular without let or hindrances. This initiative also served the contractors with unrestricted amount of time and working spaces for the contractors themselves, which greatly enhanced their work progress. The many indirect benefits thus accrued by this initiative would have far outweighed the cost for 15% extra paid for night FC works.

The contract further stipulates, “For all works involving improvement of the existing road, the contractor shall provide and maintain a passage for traffic either along part of the existing carriageway under improvement, or along a temporary diversion constructed close to the road”. Provisionally, and in general the clause makes sense, but in the current situation, unlike for projects plain areas, the requirement cannot be met, as each widening contract location had neither the extra carriageway nor any convenient space for making a temporary diversion, because the widening works were contracted where none of these two conditions existed.

The stipulation continues, “the contractor shall take prior approval of engineer at least 14 days in advance, to enable engineer to issue the relevant notices”. Since the fixation of timings for blocks and openings for a series of block points spread over a long distance in a single stretch was not possible, which are perhaps possible for block points that are fairly isolated or lonely, for reasons stated in the foregoing paragraphs, taking engineer’s permission or issuing of relevant notices by engineer obviously did not arise. Supposedly, despite issuance of such notices as per contract requirement, should any of the contract package default in sticking to set timings, the occurrence of which are inevitable given the nature of works in a hostile terrain as ours and the unpredictability nature of equipment’s performance etc. – the whole chain of timings for both direction traffic would get completely distorted. In most times, due to varying speeds of vehicles, a car will cross one block only to meet with series of subsequent blocks in such a long stretch of multiple block points.

RAA would consider favorably based on the merits of the initiative and not pursue the matter further la. This initiative was implemented only with the kind approval of the Honorable Ministers for Works & Human Settlement and the Ministry of Finance on the Note vide No. MoWHS/SEC/29/2015/476 dated 5.8.2015 (Copy enclosed for reference please). In view of above justifications, RAA is kindly requested to drop the memo.

RAA’s Further Comments & Recommendations:

The RAA while noting the rationale of the compensation payments for executing formation works at night, reiterates that the technical specification categorically incorporated the Traffic Safety & Control under Section 100-General Requirement, Clause 105, Sub Clause (2) General Requirements and regulation of payments under Clause 105(5) Traffic Safety & Controls. It was very clear that the contractors were to in-built the cost on the “Traffic Safety & Control” as well as hindrances expected to hamper the execution of FC works in rates in the related item of work specified in the bill of quantities.

Further, decisions for the payment of 15% did not outline the procedures and modality of working at night and regulating payments. No documentary evidences were maintained either by the site engineers of ROs or by the contractors to support widening works executed at night. It is also to reiterate that the Director, DOR vide letter No. DOR/CD/GOI-PMU/NEWH19/1522 dated 3.8.2015, had informed ROs that the widening works were being executed as usual with traffic disruption during the day and instructed to notify the

contractors to abide by the decisions. Indicating that execution of FC was done during day time in some locations.

It is noted that the flat increase of 15% for FC works at night hours was not supported by detailed analysis of additional cost involved in working during night hours which were not specifically covered by the existing contract rates. Thus, the Ministry failed to pursue a prudent and sound financial management practice in utilizing the public resources. Further, Ministry should note that payment were made not in line with the signed contract agreement.

Considering the above fact and events, the Ministry should revisit the decisions in terms of the provisions of the contract documents and technical specifications and should recover the built up cost for “traffic safety and control cost” in the quoted rates of contractors. It is also to reiterate that payments amounting to Nu. 44,274,922.00 without regulating to technical terms would tantamount to double payments to the contractor and ineligible expenditures by the government.

The huge financial loss to the extent of Nu. 44.275 million to the government Exchequer is brought to the notice of the Government for appropriate decisions and actions.

2.3 Inadmissible Payments of 15% enhanced rate for completed FC works prior to approval of Nu. 5.329million – (5.1.19)

The rate for Formation Cutting (FC) works was enhanced by 15% as per the executive order vide letter No. MoWHS/Sec-29/2015-2016/524 dated 16/10/15. However, the letter did not specify the effective date of the order.

On verification of contractor’s bills, MB recording, it was noted that enhanced rate of 15% was paid to those contractors, who had completed the FC works prior to the date of the Secretary’s letter No. MoWHS/Sec-29/2015-2016/524 dated 16/10/15 conveying the approval for rate enhancement of 15%.

The payment of RA bill although was made on 14.11.2015, the actual works were carried out prior to the approval conveyed under letter dated 16th October 2015. Thus, the contractor was not eligible for enhanced rate of 15% for the completed works prior to the approval Order issued.

The enhanced rate for FC works paid to contractors who had completed the FC works prior to the approval of the enhanced rates resulted in ineligible payments and undue favour to the contractors to the extent of Nu. 5,328,975.00 as detailed in table 2.3 below:

Sl. No.	Regional Office	No. of Packages	Amount (Nu. in Million)	Remarks
1	RO, Lobeysa	(Package V) by M/s Etho Metho Construction Pvt. Ltd	191,070.00	As per work plan, FC of 1.061km should have been completed prior to issuance of the order
2	RO Trongsa	Package II M/s Gaseb construction Ltd	1,224,405.00	RA Bill Amount paid before 16/10/2015
3	RO Trongsa	M/s Rigsar Construction Pvt Ltd	1,190,250.00	RA Bill Amount paid before 16/10/2015
4	RO Lingmethang	M/s Tshering Construction Pvt Ltd	546,750.00	RA Bill Amount paid before 16/10/2015
5	RO Lingmethang	M/s Norbu Construction Pvt	1,462,500.00	RA Bill Amount paid before

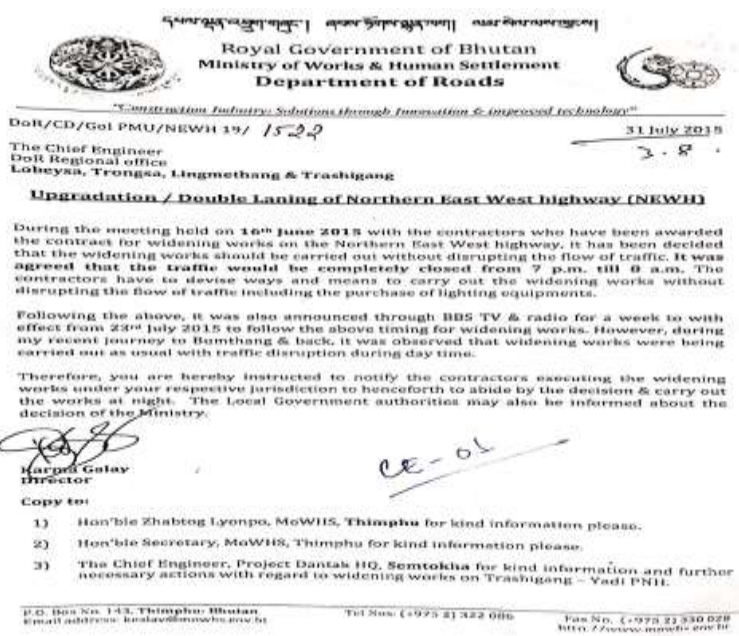
		Ltd		16/10/2015
6	RO Lingmethang	M/s KD Builders Pvt Ltd	714,000.00	RA Bill Amount paid before 16/10/2015
Total			5,328,975.00	

The RO should comment on payment of 15% on FC works prior to issuance of Executive order besides recovering the inadmissible payment of Nu. 5,328,975.00 and the same deposited to Audit Recoveries Account.

Auditee's Response:

Though the execution of FC work has been started prior to approval of 15% incentive, the complete FC width was not achieved due to arrangement for traffic to ply without hindrance during daytime. The actual execution of FC works has been carried out after the announcement of night execution i.e. from 7PM to 8AM was broadcast on BBS TV & Radio for a week w.e.f. 23rd July 2015. The RO took the date of the above advertisement as eligible for 15% incentive for carrying out FC works at night. The contractors were instructed to strictly follow the order to provide disturbance free movement of vehicles during daytime. The Order of Director, DoR vide letter no. DoR/CD GoI PMU/NEWH 19/1522 dated 31st July 2015 is attached for ready reference please.

In view of above justifications, RAA is kindly requested to drop the memo.



RAA's Further Comments & Recommendations:

The RAA while taking note of the response on the airing of decision on the payment of 15% enhance rate and requiring execution of formation works at night from 7PM to 8AM on BBS TV & Radio for a week w.e.f. 23rd July 2015, reiterates that the executive order for the enhancement of rate for FC works by 15% was notified and instructed the ROs to amendment the contract only in October 2015 in terms of the Secretary, MoWHS letter No. MoWHS/Sec-29/2015-2016/524 dated 16/10/15. In addition, the letter did not specify the effective date of the order and in terms of normal practice, in absence of specified effective date, the date of issuance of order should be considered as the effective date.

Further, the ROs had not amended the contract agreement in line with the executive order. Thus, payment of 15% enhance rate on the RA bills payments was not justifiable. It is also to reiterate that the Director vide letter No. DOR/CD/GOI-PMU/NEWH19/1522 dated 3.8.2015, had informed ROs that the widening works were being executed as usual with traffic disruption during the day and instructed to notify the contractors to abide by the decisions. The audit team during site visits had also noted execution of formation works during day time in some locations

Considering the above fact and events, the Ministry should revisit the payments made by ROs for those completed FC works prior to the executive order of the Secretary and without amendment of the contract agreements and recover payments of Nu. 5.329million.

Who is accountable?

Direct Accountability	: Refer Accountability Statement attached
Supervisory Accountability	:Refer Accountability Statement attached

2.4 Non amendment of contract document pertaining to enhancement of defective liability period - (4.4.69)

One of major component of works for double Lanning of Northern East West Highway Project was FC works by extension of existing pavement roads to facilitate smooth ride to commuters and particularly for the flow of traffic.

The Secretary, MoWHS vide letter No. MoWHS/Sec-29/2015-2016/524 dated 16th October 2015, had conveyed the decisions of the meeting held on **16th June 2015** with the contractors and directed the Regional Offices for issuance of amendment to the contract agreements on the decisions subsequently taken on the following areas:

✓ **Enhance rate of 15% on FC Works**

Since the contractors executing the widening works are required to work at night (7pm to 8AM) to allow undisturbed flow of traffic during the day, it has been decided to enhance the rate of FC work by 15%

✓ **Increase in pavement width from 6.50mtr to 7.50mtr**

It has also been decided to increase the width of pavement by 1meter from 6.5m- 7.5m.

✓ **Enhancement of Defect Liability Period from 1year to 3 years**

During the meeting held between the Hon'ble Prime Minister and the contractors working on NEWH on 24/8/15, the contractors have agreed to the proposal of increasing the defect liability period for the works from one to three years.

However, the audit team noted that while no amendments were made in the contract documents, the decisions on the payment of 15% extra on FC works, and execution of additional 1m Increase in pavement width from 6.50m to 7.50m were found implemented, the defect liability from 1year to 3 years were found not implemented.

The Ministry besides commenting on the failure to amend the contract agreements should investigate the circumstances leading to non amendments of contract agreement as of date.

In addition, the Ministry should take action to recover all the rectification and road maintenance cost incurred by the ROs through award of additional works to the contractors from the FC contractors as these were to be covered under 3 years defect liability periods.

Auditee's Response:

Based on the decision of MLTC which was held on 16th June 2015 with the eleven contractors of NEWH vide reference no. MoWHS/Sec/29/2.15-2016/ the RO has written a letter of amendment vide letter no. DoR/ROL/16/2015-2016/481 dt. 21/10/2015.

However, none of the contractors whose defect liability period of 1 year enshrined in the initial contract agreement agreed to amend the contract as per the instruction of Ministry. The contractors stated that they have not built probable defect's cost beyond one year, as the initial bidding document did not have the provision of three years DLP. Should they need to increase the DLP to 3 years, they even hinted to compensate the risk factor. The issue of non-acceptance to amend the DLP was made known to the Department and Ministry.

It is to inform that three decisions taken during the meeting with the NEWH contractors and MoWHS, chaired by Hon'ble Lyonchoen, Prime Minister of Bhutan are to be understood differently. The 15% extra on FC works is for night allowance, odd hour working time, high risk involved at night working, additional lighting systems required etc. Whilst 1m increase in the pavement width is to prevent the seepage of water through the unpaved shoulder between the paved surface and the L-drain.

ROs concern of non- acceptance by the contractors to amend the DLP to 3years, the MLTC that held on 28th May 2018 (attached as supporting documents) holistically deliberated at length and in line with the signed contract agreement, which is the mother document for reference in case of litigation, decided to do away with the amendment of defect liability period. However, the DLP of 3 years already incorporated in the later contract agreement shall remain as it since the bidder might have incorporated the risk factor. Therefore, RO requests the RAA to kindly drop the memo & not to pursue further.

Response RO, Lingmethang

However, the RO has received a letter of acceptance from only one contractor out of six contractors working under RO (attached for reference). The rest of the firms did not submit their acceptance hence; defect liability period could not be amended. Moreover if the defect liability period has to be increased, contractor could have inbuilt the rates and accordingly the cost of construction would increase substantially. (Refer the letter from Ministry to do away with the 3 yrs defect liability period).

Therefore, RO request the RAA to kindly drop the memo & not to pursue further.

RAA's Further Comments & Recommendations:

While noting the response, the RAA would like to reiterate that "In terms of letter No. MoWHS/Sec-29/2015-2016/524 dated 16th October 2015, the Secretary, MoWHS, had explicitly conveyed the decisions of the meeting held on 16th June 2015 with the contractors and directed the Regional Offices for issuance of amendment to the contract agreements on the decisions subsequently taken on the 15% extra on FC Work, Increase in pavement width

from 6.50mtr to 7.50mtr and Enhancement of Defect Liability Period from 1year to 3 years”. Thus, the decisions were to be read in conjunction to each other and not in isolation.

Further, decision on the 15% extra on FC Work and Increase in pavement width from 6.50mtr to 7.50mtr were also not in line with the signed contract agreement and stands recoverable either from the contractors or executives responsible for the unilateral decisions. It is also construed that Enhancement of Defect Liability Period from 1 year to 3 years was to support the decision on the payment of 15% extra on FC Work and Increase in pavement width from 6.50mtr to 7.50mtr.

Further, the decision of the MLTC held on 28th May 2018 to do away with the amendment of defect liability period was not in the interest of the Government since huge government funds to the extent of Nu. 361.912 million were spent by way of refinancing process towards payments of 15% extra on FC works and execution of 1m increase pavement width.

The decisions for the payment of 15% extra on FC was in contrary to the technical specifications where the contactors were required to built-up their rates for Traffic Safety & Controls envisaged under Technical Specifications Section 100-General Requirement, Clause 105, Sub Clause (2) General Requirements. In addition, the increase of pavement width from 6.5m to 7.5m by doing way the Hard Shoulder between the L-Drain and Carriageway was also in contravention to Road Design Standard outlined in the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 approved by the Cabinet as well as had compromised the safety of the commuters.

In the light of the decision of the MLTC of doing away with the amendment of defect liability period from 1 year to 3 years which was dully approved by the Government in conjunction to payment of 15% extra on FC Work and 1m increase in carriage width as well as at the verge of the completion of contracts is bought to the notice of the Government for appropriate decisions and actions.

Who is accountable?

<i>Direct Accountability</i>	<i>: Refer Accountability Statement attached</i>
<i>Supervisory Accountability</i>	<i>:Refer Accountability Statement attached</i>

2.5 Inconsistency in the implementation of Double Lanning works

The *Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009* prepared by MoWHS in collaboration with relevant stakeholders (GNHC, MoHCA, MoAF, Dzongkhag Administrations and Department of Roads) was approved by Lhengye Zhungtshog on 24th February 2009.

The road classifications and its design standards and drawing approved are as shown below:

Road Design Standards

Road Classification	Primary National Highway				Secondary National Highway				Dzongkhag Road				Farm Road			
	L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Terrain classification	L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Design speed (km/h)	60	50	40	30	50	40	30	20	40	30	20	15	30	25	15	10
Traffic volume (vpd)	≥200				100-200				30-100				<30			
Width (m)	Right of way				30				30				30			
	Carriageway				6.5				3.5				3.5			
	Shoulder				1.5x2				1.5x2				0.5x2			
	Drain				1.0				1.0				0.6			
Min. radii of horizontal curve (m)	115	80	50	30	75	75	25	15	75	25	15	15	15 Exceptional =10			
Pavement slope (%)	2-5				2-5				4				4			
Shoulder slope (%)	3-6				4				5				5			
Type of pavement	Double bituminous treatment				Dense bituminous premix				Base Course				Single Layer Base Course			
Max. super-elevation (%)	10				10				10				10			
Max. vertical grade (%)	4	5	6	7	5-9				6-10				6-10			
Structure loading (minimum)	HS20-44				As per DoR standard				As per DoR standard				As per DoR standard			

Fig: 2.5- Approved Road Design Standards

NEWH is classified as the Primary National Highway, the Ministry had prepared the design/drawing and estimation for carriageway of 6.5 m with 1.5m hard shoulder each on both side of carriageway and 1m L drain at hillside as depicted below:

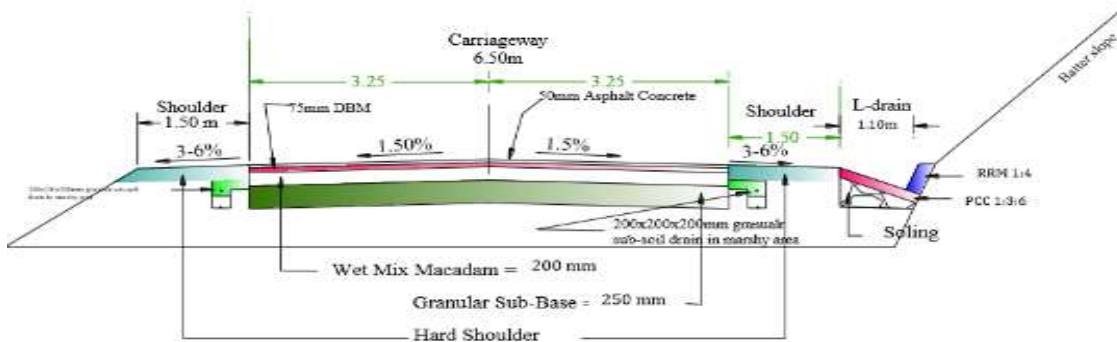


Fig 2.5(1)- Design and Drawing aligned to Road Design Standard

However, the Secretary, MoWHS vide letter No. MoWHS/Sec-29/2015-16/524 dated 16th October 2015 amongst others, directed all the Regional Offices on the decisions taken during the meeting held on February, 2016, after a time elapse of more than eight months from the commencement of the contract works, to increase pavement width from 6.5 m to 7.5 m and to issue amendment to the contract agreement signed with the contractors under respective jurisdictions.

In line with change order, the revised drawing was developed and circulated by Design Division, DoR Thimphu. However, during the course of the review of drawings implemented by the four Regional Offices, and site verifications, the audit team noted two (2) different drawings with difference technical specification for the same NEWH Up-gradation works.

It was noted that RO Thimphu and Trongsa were following one drawing and RO Lobeysa and Lingmethang were following a different as shown in Figure 1 & 2 below:

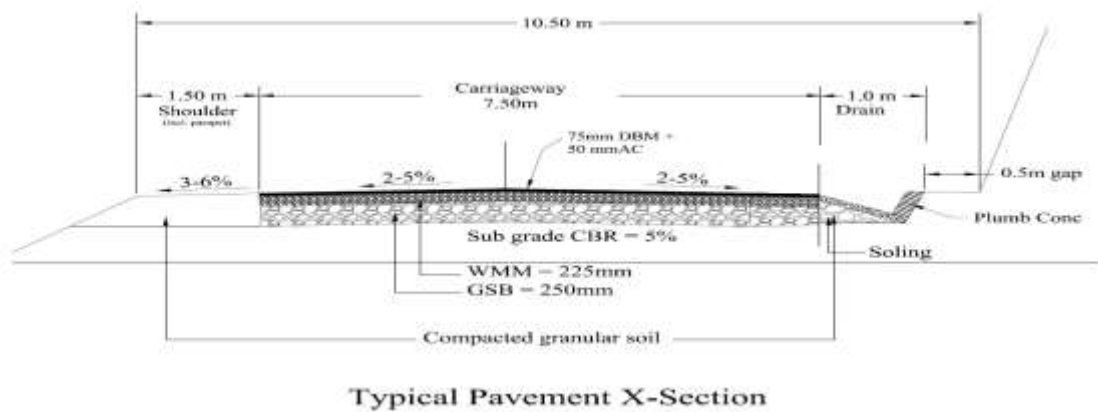


Figure 1.5(2): Revised drawing No. 1: Pavement drawing followed by RO Lobeysa and Lingmethang

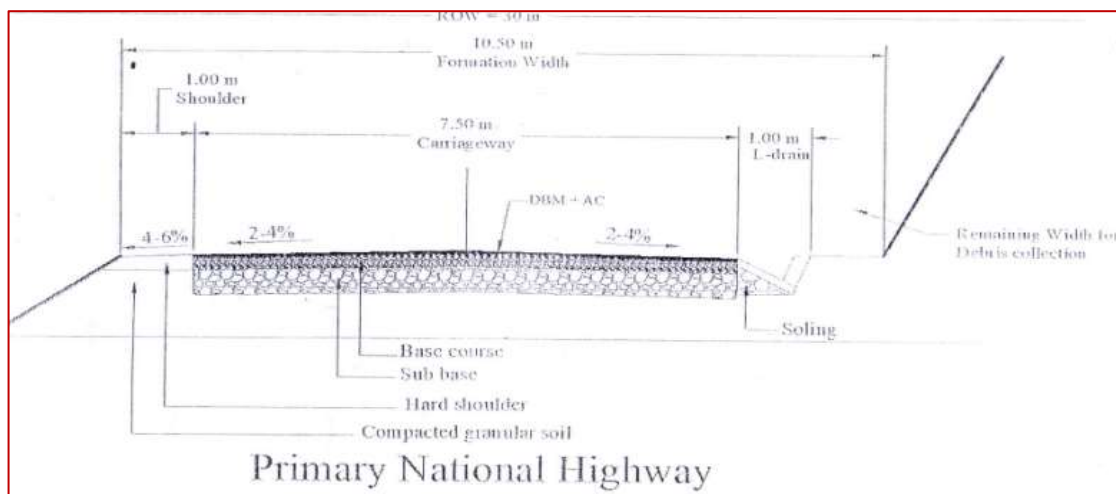


Figure 2.5(3): Revised drawing No. 2: Pavement drawing followed by RO Thimphu and Trongsa

Thus, for the Primary National Highway, two different types of pavement drawings and specification were applied resulting in inconsistency in the implementation of Double Lanning works as well as non-adherence to the Road Design Standards specified in the *Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009*.

Adoption of two different drawings with varying pavement specifications and non-adherence to the approved Road Design Standard indicated improper planning and lack of due diligence in the preparation of drawings and specifications. Such mismatches in technical specification of road works would inevitably result in execution of two different type of pavement works for the same NEWH double lanning works.

The Ministry should review the adoption of two different types of drawings in the execution of road pavement works besides taking measures to ensure adoption of one type of drawings

and technical specifications as outlined in the Road Design Standard to avoid inconsistencies and other impacts on the execution of road works.

Auditee's Response:

DoR ROs would like to acknowledge the observation of RAA and would like to submit the following justifications.

The widening & up-gradation of the NEWH was approved in September 2014. A total of 385 kms of the road was to be widened & up-graded to PNH standard & completed within a period of three years by Dec 2017. By any standards, it is a huge task and time was of essence.

We partly agree to the observation of RAA regarding improper planning & lack of due diligence in the preparation of drawings & specifications. To be honest, there was not enough time to carry out proper survey, design and drawings. RAA has already noted the fact that the pavement width for PNH was originally 6.5 mtr as per the Guidelines on Road Classification System & Delineation of Construction & Maintenance Responsibilities, 2009. This was however revised later to have a pavement width of 7.5 mtr.

As recommended by RAA, the Guidelines on Road Classification System & Delineation of Construction & Maintenance Responsibilities, 2009 has been revised and the new Road Classification System, June 2017 has been circulated to all the Regional Offices of DoR. We hope that uniformity can be achieved in 12th FYP projects. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While the initial design was prepared as per the Road Design Standard provided in the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 and was adopted by all the ROs, the adhoc changes in design including technical specification was the main factor for executing NEWH project by the ROs applying two different sets of road designs.

It also indicated absence of design review process within the Design Division of the Ministry to review that any changes made in design complies with good practices and relevant standards and guidelines.

The ministry should review the circumstances leading to the implementation of two different sets of designs by the ROs besides instituting design review process to ensure consistent and uniform implementation of designs and drawing for similar projects in future.

In addition, the Ministry should also revisit the revised designs circulated to ROs, as the requisite gap between hillside and drains was found not maintained in majority of the work due to site specific and alignment problem of the drain works. Further, the Ministry should also relook on doing away of 1.5m Hard shoulders between the L-Drain and Carriageway in terms of risks towards safety of the commuters.

2.6 Ambiguities and flaws in the change of Road designs & Drawings with resultant deviations from the approved Design Standard envisaged in the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 and almost doing away of 1m formation width vis-à-vis compromising necessary safety measures and safety of commuters

The *Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009* for various categories of roads were as tabulated below:

Road Design Standards

Road Classification		Primary National Highway				Secondary National Highway				Dzongkhag Road				Farm Road			
Terrain classification		L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Design speed (km/h)		60	50	40	30	30	40	30	20	40	30	20	15	30	25	15	10
Traffic volume (vpd)		>200				100-200				30-100				<30			
Width (m)	Right of way	30				30				30				30			
	Carrigeway	6.5				3.5				3.5				3.5			
	Shoulder	1.5x2				1.5x2				0.5x2				0.5x2			
	Drain	1.0				1.0				0.6				0.6			
Min. radii of horizontal curve (m)		115	80	50	30	75	75	25	15	75	25	15	15	15 Exceptional =10			
Pavement slope (%)		2-5				2-5				4				4			
Shoulder slope (%)		3-6				4				5				5			
Type of pavement		Double bituminous treatment				Dense bituminous premix				Base Course				Single Layer Base Course			
Max. super-elevation (%)		10				10				10				10			
Max. vertical grade (%)		4	5	6	7	5-9				6-10				6-10			
Structure loading (minimum)		HS20-44				As per DoR standard				As per DoR standard				As per DoR standard			

Note:

1. Thromde Roads – Design standards to be prepared by DUDES in consultation with DoR.
 2. Access Road - Design standard to be set by DoR in consultation with the concerned agencies
 3. The Design standards for AH are at par with the design standards for PNH.
 4. Design standard of Farm Roads are equivalent to the design standards of Dzongkhag Roads.
- vpd = vehicles per day
L = Level terrain (0 to 10 per cent)
R = Rolling terrain (10 to 25 per cent)
M = Mountainous terrain (25 to 60 per cent)
S = Steep terrain (More than 60 per cent)

Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities

Fig: 2.6- Road Design standard

The Guidelines also stipulates that “All AHs, PNHs and SNHs shall have necessary safety measures including road signs and guardrails as per the DoR standards”.

The initial approved drawings attached with the bidding documents were found designed by the Design Division, DOR in line with the approved technical standard and road classification and standard of 2009 as depicted in the photograph below:

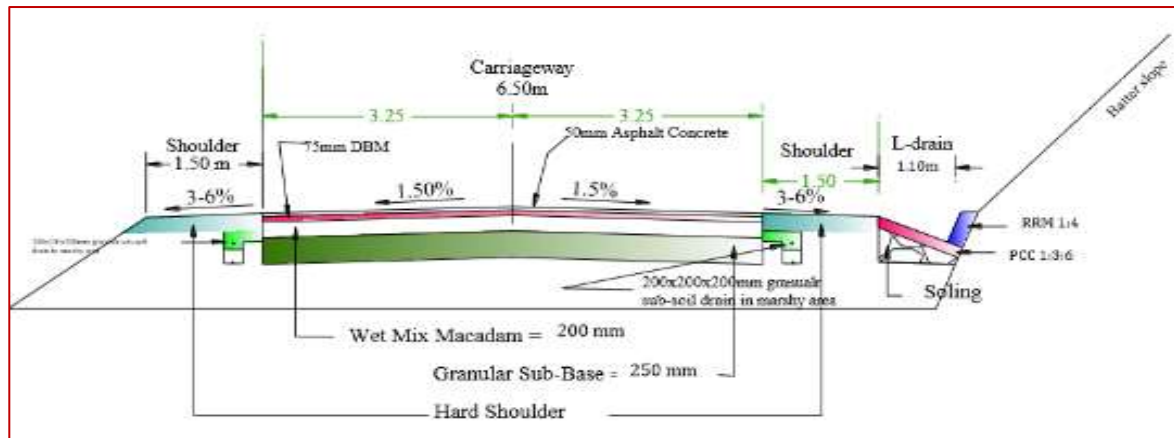


Fig:2.6(1)- Initial Approved drawing

The drawings outlined the following technical specifications and standards of the road:

- i. Overall Formation width 10.5m
- ii. Carriageway paved width 6.5m;
- iii. Hard shoulder of 1.5m between 1m L-drain and carriage paved width and 1.5m hard shoulder at valley side; and
- iv. Line Drain 1m width at hill side
- v. 200X200X200mm granular sub soil drain in marshy area:

In terms of the technical standards of Road Design, the Shoulders provide a number of important functions. Safety and efficient traffic operations can be adversely affected if any of the following functions are compromised:

- *Shoulders provide space for emergency storage of disabled vehicles. Particularly on high-speed, high-volume highways such as urban freeways, the ability to move a disabled vehicle off the travel lanes reduces the risk of rear-end crashes and can prevent a lane from being closed, which can cause severe congestion and safety problems on these facilities.*
- *Shoulders provide space for enforcement activities. This is particularly important for the outside (right) shoulder because law enforcement personnel prefer to conduct enforcement activities in this location. Shoulder widths of approximately 8 feet or greater are normally required for this function.*
- *Shoulders provide space for maintenance activities. If routine maintenance work can be conducted without closing a travel lane, both safety and operations will be improved. Shoulder widths of approximately 8 feet or greater are normally required for this function. In northern regions, shoulders also provide space for storing snow that has been cleared from the travel lanes.*
- *Shoulders provide an area for drivers to maneuver to avoid crashes. This is particularly important on high-speed, high-volume highways or at locations where there is limited stopping sight distance. Shoulder widths of approximately 8 feet or greater are normally required for this function.*

- *Shoulders improve bicycle accommodation. For most highways, cyclists are legally allowed to ride on the travel lanes. A paved or partially paved shoulder offers cyclists an alternative to ride with some separation from vehicular traffic. This type of shoulder can also reduce risky passing maneuvers by drivers.*
- *Shoulders increase safety by providing a stable, clear recovery area for drivers who have left the travel lane. If a driver inadvertently leaves the lane or is attempting to avoid a crash or an object in the lane ahead, a firm, stable shoulder greatly increases the chance of safe recovery. However, areas with pavement edge drop-offs can be a significant safety risk. Edge drop-offs occur where gravel or earth material is adjacent to the paved lane or shoulder. This material can settle or erode at the pavement edge, creating a drop-off that can make it difficult for a driver to safely recover after driving off the paved portion of the roadway. The drop-off can contribute to a loss of control as the driver tries to bring the vehicle back onto the roadway, especially if the driver does not reduce speed before attempting to recover.*
- *Shoulders improve stopping sight distance at horizontal curves by providing an offset to objects such as barrier and bridge piers.*
- *On highways with curb and enclosed drainage systems, shoulders store and carry water during storms, preventing water from spreading onto the travel lanes.*
- *On high-speed roadways, shoulders improve capacity by increasing driver comfort.*

All the estimates and BOQ's were prepared based on the above drawings. Accordingly, the contract works for all packages were awarded based on the initial approved drawings and works commenced from July /August 2015.

However, it was apparent from the records that based on the decisions taken during the meeting held in **February, 2016, after a time elapse of more than eight month from the commencement of the contract works**, drawings were found revised for different category of Road in Bhutan as depicted in the photograph below:

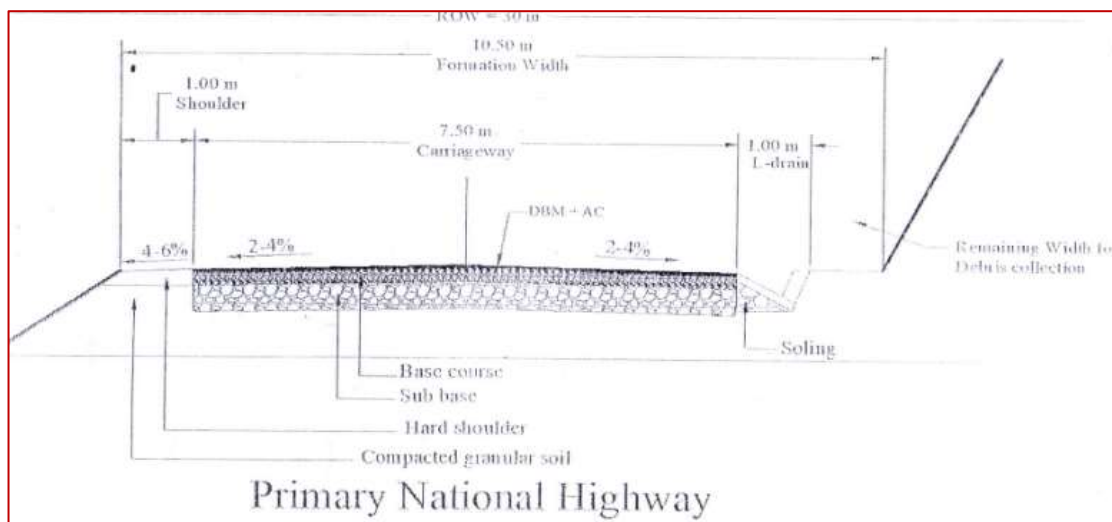


Fig: 2.6(2)- Revised design and drawing

As per the record of discussion dated 26/02/2016, the revised drawing and design were circulated to respective ROs vide letter No. MoWHS/Sec-29/2015-16/524 dated 16/10/2015 for adoption. The drawings outlined the following technical specifications and standards of the road:

- i. Overall Formation width of 10.5m;
- ii. Carriage width 7.5m;
- iii. 1m width maintained for Debris collection on hillside;
- iv. Line drain of 1m between the paved carriage way and 1m width at hill side;

In line with the directive, the Regional Office, Lobeysa had conveyed to all Sub-Division to implement the work as per standard drawing vide letter No. DoR/ROL/2015-2016/Plg-05/1828 dated 11/5/2016.

While the subsequent design and drawing had maintained increased carriage pavement width of 7.5m, other structural drawings were also changed from the initial designs and drawings as evident from the above photograph.

The above changes in the design and drawing not only resulted in extra financial implication to the government exchequer for increase of 1m carriage width to the extent of approximately Nu.317.637 million but also impeded timely completion of work due to grant of time extension for the increased scope of work as well as compromised safety measures by doing away Hard shoulders of 1.5m width between the L-Drain and Paved carriageway width including reduction of 0.5m hard shoulder at valley side. Besides, due to design changes, overall formation width of 10.5m were found not achieved as 1m width supposedly maintained for Debris collections between hillside and L-Drain were found not maintained in entirety for all stretches of the roads as majority of the L-Drain was found constructed attached to the hillside. Further, 1m shoulder width on the valley sides were also found not maintained as in some stretches of roads the pavement road were found executed at the edge of the road width.

In this connection, the Ministry may also comment on the following aspects:

- The design deviation from the approved design stipulated in the Guidelines 2009 and approval of the Lhengye Zhungtshog, if any, obtained as “*The Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 prepared by the Ministry of Works and Human Settlement (MoWHS)*” was dully approved in the 31st Session of Meeting of Lhengye Zhungtshog held on 24th February 2009;
- Doing away of 1.50 m Hard shoulder width between the L-Drain and Paved carriage way;
- Non-achievement and non-maintenance of 1m width for Debris collection at the hillside;
- Non/inconsistent maintenance of 1m width at valley sides; and
- Approval for deviation of design from approved designs and sources for additional funds to the extent of Nu. 317.637million.

Besides, the Ministry must hold the officials responsible for design changes after the award of the contract as well as deviations from the approved design for appropriate decisions and action.

Auditee's Response:

Increasing of Pavement width from 6.5m to 7.5m came from the need to upgrade our very important Primary National Highway of the country spanning East to West by gradually improving its basic specifications to meet with the growing demands by ever increasing road users and to ensure traffic reliability, passenger comfort and their safety when the opportunity existed for such an intervention under GOI funding.

From over several decades of experiences in the construction and maintenance of roads in Bhutan and learning from experiences of many developed countries, it has been established that ingress of water is the top most factor for premature damages to road pavements (especially the flexible pavement system). Factors such as environmental conditions, traffic intensity and increased loadings, and the design inadequacies are some other contributing factor for premature pavement damages. Based on this premise, since pavement works were not commenced in all of the contracts awarded for all stretches from Simtokha to Korilla, the intervention was deemed timely. DoR also appraised this ministry that under GOI funding on NEWH project, it expected huge savings then.

Therefore, instead of providing 1.5m wide earthen shoulder on the hillside of the pavement the ministry proposed increasing the pavement width from 6.5m to 7.5m taking up 1.0m of the 1.5m shoulder and fixing the 1.0m wide L-shaped/U-shaped side drains next to the pavement structure only. This intervention brought following improvements and benefits to the overall flexible pavement system.

- 1. Earthen shoulders are a porous medium that will allow gradual seepage of surface run off water and the normal rainwater. The water percolates into underlying pavement payers of DBM, WMM and GSB that are fairly porous in nature. When ground temperatures reach 40 degrees centigrade, the bitumen strips off the aggregates causing segregation of bituminous concrete. During winter in high altitude areas, the water in the pavement layers undergo freezing / icing breaking open the bituminous concrete and when weather warms up in Spring and after, the thawing of frozen ice takes place melting it into water leaving cracks in the bituminous concrete. This phenomenon of icing and thawing leads to crushing of cracked road surfaces under wheels of trucks and vehicles, forming cracks of all kinds and potholes. Addition of this 1.0m extra blacktop instead of earthen shoulder definitely prevents this undesirable phenomenon - saving huge recurrent expenditures.*
- 2. The side drain running parallel to the centerline of the pavement next to the pavement structure not only ensures that road surface is impervious to ingress of water enhancing the life of the pavement, the aesthetics of the pavement alignment improves to a great extent.*
- 3. The 1.0m extra pavement width will allow much desired unrestricted speed of the traffic flow in both directions preventing the pulling force that will otherwise develop between vehicles crossing past in opposite directions close to each other. In fact, to enhance safety, if space permits there should be a solid divider between lanes in opposite directions to avoid pulling (vacuum) force and the glares from headlights.*

4. *The extra wide road will compensate for the absence of super-elevation at curves as the introduction of which is not possible in our highways due to lack of space to lay the transition curves that precedes the Super-elevation. Super-elevation counter acts the centrifugal force of speeding vehicles.*
5. *This initiative allows leaving a 1.0m space between the hillside slope toe and the side's L-drain, which not only will hold back the first slides getting into the drain directly from slope erosion under rains, but also improves the sight distance for the drivers at the curves and sharp corners. It also ensured a relatively dust and mud free highway pavement as only valley side shoulder exists.*
6. *The introduction of 1.0m extra avoided payment for 1.5m wide shoulder, although an additional expenditure was required to be made for 1.0m wide DBM and AC layers. A certain percentage on the cost for BT would have been compensated.*

The 1.0m extra wide black top pavement did not affect any fundamental geometrics or integrity of the national highway. In fact it definitely has enhanced the longevity of the pavement life, improved the safety and riding comfort of road users, the long desired national highway specification upgraded with aesthetics significantly improved and all of these are vital for the growth and sustenance of our economy.

With these positive outcomes in the perspective, the proposal thus submitted was endorsed by the MLTC members and recommendations duly approved jointly by the Ministers for Finance and Works & Human Settlement ministries vide MoWHS/SEC/29/2015/476 dated 5/8/2015 (Copy enclosed). The RAA is therefore requested to consider the submission favorably given the benefits and many positive outcomes from the initiative by not pursuing the matter further please.

The Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 prepared by the Ministry of Works and Human Settlement (MoWHS) approved in the 31st Session of the Lhengye Zhungtshog Meeting held on 24th February 2009.

RAA's Further Comments & Recommendation:

It is to reiterate that "The Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009" prepared by the Ministry of Works and Human Settlement (MoWHS) was approved in the 31st Session of the Lhengye Zhungtshog Meeting held on 24th February 2009. As the Guidelines was approved by the Cabinet, the approval, if any, obtained on the changes in technical specification of road was not available on records.

It is also to reiterate that the changes in technical specification for providing 1m gap between the Drain works and hill side were found not achieved in all contract packages as the L-Drains were found executed attaching to hills as provided in the initial designs/drawings. Thus, given the present scenario, the RAA is of the opinion, that non-achieving of or maintaining the required gaps was a result of technical flaws.

As discussed in the exit meeting, the DOR in consultation with the Ministry should revisit the revised drawing for appropriate decisions and taking measures to address any technical flaws and ambiguities. Besides, the Ministry should also look in to the requirement of approval of Cabinet on the revised designs as it had deviated from “The Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009”.

2.7 Inconsistency in the fixation of construction duration for the same design and scope of construction works within and among the Regional Offices

The Construction of East West double lanning works followed the same design and specifications. However, the quoted rates and project durations had huge variations as tabulated in table 2.7 below:

RO	Packages	Type of works	Scope of work in terms of Chainage coverage	Estimated Cost (in millions of Nu)	Quoted rates (in millions of Nu)	Project Duration (in months)	Duration in month per Km
Lobeysa	I, II, III	Pavement works	10 Km each	119,590,876.28	102,286,495.00	15	1.5
Lobeysa	IV	Pavement works	11 Km	127,642,926.26	107,120,422.00	15	1.364
Lobeysa	VI	Pavement works	12.14 km	131,989,514.38	112,652,539.00	25	2.06
Lobeysa	XII	Pavement works	7 km	100,267,497.37	66,128,323.00	11	1.571
Lobeysa	XIII	Pavement works	8 km	126,747,002.70	69,441,930.00	17	2.125
Lobeysa	XIV	Pavement works	3.25 km	46,552,814.61	27,808,65.00	10	3.077
Lobeysa	XV	Pavement works	2.75 km	39,390,946.46	39,390,946.46	12	4.364
Lobeysa	V	Widening & Pavement works	7 Km	92,439,003.48	72,680,325.00	20	2.857
Lobeysa	VII	Widening & Pavement works	6.86 km	90,091,287.54	71,417,679.10	20	2.915
Lobeysa	VIII	Widening & Pavement works	7 km	87,463,950.28	78,967,074.00	25	3.571
Lobeysa	IX	Widening & Pavement works	7 Km	92,798,931.12	93,263,506.00	25	3.571
Lobeysa	X	Widening & Pavement works	6 Km	84,881,450.38	56,974,612.41	24	4.00
Lobeysa	XI	Widening & Pavement works	10 km	153,688,193.47	107,568,025.00	25	2.5
Lingmethang	PKG - VII	Pavement works	4 Km	70,459,887.01	37,106,895.00	15	3.75
Lingmethang	I(a)	Pavement works with ZeoCrete Technology	10 Km	166,708,500.00	166,708,500.00	18	1.8 (Estimated cost higher only due to cost of ZeoCrete materials)

Lingmethang	II	Widening & Pavement works	5.70 Km	82,050,303.45	62,478,155.55	24	4.2
Lingmethang	III	Widening & Pavement works	6 Km	94,700,240.00	73,783,024.22	24	4
Lingmethang	IV	Widening & Pavement works	5 Km	77,382,142.43	59,469,881.70	30	6
Lingmethang	V	Widening & Pavement works	11.56 km	131,001,271.16	111,902,235.00	30	2.6
Lingmethang	VI	Widening & Pavement works	12 Km	140,282,847.00	125,555,774.00	28	2.33
Trongsa	TR-VII	Pavement works	6.4 Km	95,574,000.00	70,131,698.00	18	2.81
Trongsa	TR-XII	Pavement works	5 Km	100,267,497.37	78,928,350.00	20	4.00
Trongsa	TR-I	Widening & Pavement works	12 Km	191,662,477.46	147,882,777.62	30	2.5
Trongsa	TR-II	Widening & Pavement works	7.5 Km	171,993,910.77	111,563,269.46	30	4.0
Trongsa	TR-III	Widening & Pavement works	7.5 Km	151,041,704.92	97,306,916.89	30	4.0
Trongsa	TR-IV	Widening & Pavement works	5 Km	146,426,379.15	94,860,888.47	30	6.0
Trongsa	TR-V	Widening & Pavement works	5.7 Km	131,935,342.62	77,150,269.45	30	5.26
Trongsa	TR-VI	Widening & Pavement works	6.7 Km	138,898,344.12	79,151,909.00	30	4.48
Trongsa	TR-VIII	Widening & Pavement works	7.2 Km	105,297,611.69	73,239,890.20	28	3.89
Trongsa	TR-IX	Widening & Pavement works	7.98 Km	127,405,641.48	120,072,191.07	28	3.51
Trongsa	TR-X	Widening & Pavement works	6.02 Km	150,325,008.00	85,883,906.60	28	4.65
Trongsa	TR-XI	Widening & Pavement works	8 Km	117,475,584.76	89,839,558.00	28	3.5
Trongsa	TR-XIII	Widening & Pavement works	10.10 Km	129,964,945.98	124,174,327.15	28	2.77
Trongsa	TR-XIV	Widening & Pavement works	2.18 Km	55,771,219.28	45,714,110.00	15	6.88
Thimphu	TH-I	Pavement works	8.7 Km	115,642,860.00	81,088,430.15	15	1.72
Thimphu	TH-II	Pavement works	6.5 km +2 km	108,362,690.31	84,347,137.15	15	1.74

It would be apparent from the table above varying construction durations have been derived as the construction durations were neither based on Chainage coverage nor the estimated cost. The construction durations had been estimated differently within the ROs and amongst the ROs indicating absence of systems and procedures for estimation of contract durations.

The Ministry should comment on the adoption of varying practices for the fixation of construction durations and any systems or procedures put in place vis-à-vis Rules of thumb required to be used by engineers for estimating the construction durations on a more realistic, transparent and fair manner.

Auditee's Response:

Internationally there is hard formula stating definite contract duration. And no two projects are identical in nature, size and conditions. Therefore, the contract duration is either fixed based on the past experiences or considering many factors such as scope of work, unseen geological conditions, availability of resources (materials), process to obtain environmental clearances, settlement nearby the project, availability of suitable machinery etc. Sometimes, the contract duration is even governed by the urgency of the infrastructure needed, like construction of extended class room after the earthquake. In cases, the work can be accomplished by doubling the resources and usually comes at higher cost.

In the hill roads, unexpected geological conditions, apart from many factors is predominate factor that often delays the project completion and cost overrun. A good example is Punachangchu Hydro power project.

Therefore, please drop the memo.

RAA's Further Comments & Recommendations:

While acknowledging the responses on the fixation of contract duration based on experiences and work related factors, the analysis carried out by the RAA indicated flaws and ambiguities as differing durations were determined by ROs for various constructions packages. The contract durations per KM for Pavement Works ranged from as low as 1.4 months to as high as 4.4 months. Similarly, for Formations and Pavement work contracts, the contract duration per km ranged from as low as 2.5 months to as high as 6.8 months.

Thus, there is a need for determination of contract duration in an objective manner based on scheduling major quantum of works expected to be executed and assigning activity durations and the minimum resources expected to be committed during the execution including factors such as full work season of the year, weather limitations, concrete curing times, rainfalls, locally available materials and lead time involved in transportation materials from base towns.

One of the main reasons for time and cost overruns of most of the construction works is apparently due to fixing of unreasonable contract durations. Besides, there is also possible risk of compromising the quality of works in an effort to complete the contract work within unreasonable deadline.

The MoWHS should, therefore, formulate specific guidelines or a Rule of thumb to provide reasonable and consistent basis for determining the construction duration for all construction works undertaken by government agencies.

2.8 Inconsistencies in the incorporation of cost of Bitumen in the preparation of estimates

The Four Regional Offices had prepared two cost estimates for each contract packages of double Lanning works. One cost estimate prepared is inclusive of cost of bitumen and other one without including the cost of bitumen. The cost estimates without the cost of bitumen were considered for cost comparison with the quoted prices of the bidders as well as for the realization of the differential amount in cases of abnormally low quoted bids.

The RAA made an attempt to cross verify the consistencies in the incorporation of cost of bitumen in the estimates in terms of cost per kilometer since the technical specification including DBM and AC thickness were same for all the contract packages. On review of the cost estimates prepared by the Regional Offices for various contract packages, it was noted that bitumen cost per kilometer within and among the ROs were varying as shown in table 2.8 below:

Table 2.8: Inconsistencies in the incorporation of cost of bitumen in the estimates							
RO Trongsa							
Packages	Estimate without bitumen	Estimate with bitumen	Cost of Bitumen	Chainage Awarded	Total Km awarded	Cost per KM	% Variations
1	191,662,477.46	279,895,177.46	88,232,700.00	0.00 to 12 = 12 Kms.	12	7,352,725.00	87.72
2	171,993,910.77	227,139,348.27	55,145,437.50	12 - 19.5 = 7.5 Kms.	7.5	7,352,725.00	87.72
3	151,041,704.92	206,187,000.00	55,145,295.08	19.5 - 27 = 7.5 Kms	7.5	7,352,706.01	87.72
4	146,426,379.15	187,701,324.56	41,274,945.41	27 - 32 = 5 Kms	5	8,254,989.08	110.75
5	131,935,342.62	171,648,867.12	39,713,524.50	32 - 37.7 = 5.7Kms	5.7	6,967,285.00	77.88
6	138,898,344.12	185,370,135.07	46,471,790.95	37.7 - 44.4 = 6.7 Kms	6.7	6,936,088.20	77.08
7	95,574,000.00	119,467,000.00	23,893,000.00	44.7 - 50.8 = 6.10Kms	6.1	3,916,885.25	0.00
8	105,297,611.69	155,462,063.69	50,164,452.00	50.8 - 58 = 7.2Kms	7.2	6,967,285.00	77.88
9	127,405,641.48	183,004,575.78	55,598,934.30	58 - 65.98 = 7.98 Kms	7.98	6,967,285.00	77.88
10	150,325,008.00	182,465,053.60	32,140,045.60	65.98 - 72 = 6.02Kms	6.02	5,338,878.01	36.30
11	117,475,584.76	174,263,864.76	56,788,280.00	72 - 80 = 8 Kms	8	7,098,535.00	81.23
12	98,619,592.00	130,933,412.42	32,313,820.42	80 - 85 = 5 Kms	5	6,462,764.08	65.00
13	129,964,945.98	201,016,750.70	71,051,804.72	85 - 97.3 = 10.10 Kms	10.10	7,034,832.15	79.60
14	55,771,219.28	65,277,109.28	9,505,890.00	87.62 - 89.8 = 2.18 Kms	2.18	4,360,500.00	11.33

Table 2.8.1: Inconsistencies in the incorporation of cost of bitumen in the estimates							
RO, Lobeysa							
Packages	Estimate without bitumen	Estimate with bitumen	Cost of Bitumen	Chainage Awarded	Total Km awarded	Cost per KM	% Variations
1	114,155,909.36	197,346,703.07	83,190,793.71	477-467 (10 Kms)	10	8,319,079.37	44.92
2	118,573,848.79	201,764,642.50	83,190,793.71	467-457 (10 Kms)	10	8,319,079.37	44.92
3	119,590,876.28	202,781,669.99	83,190,793.71	457-447 (10 Kms)	10	8,319,079.37	44.92
4	127,642,926.26	201,169,182.50	73,526,256.24	447-436 (11 Kms)	11	6,684,205.11	16.44
5	92,439,003.48	150,265,331.42	57,826,327.94	429-422 (7 Kms)	7	8,260,903.99	43.90
6	131,989,272.17	231,546,557.29	99,557,285.12	422-409.86 (12.14)	12.14	8,200,764.84	42.86
7	90,091,287.54	146,348,534.32	56,257,246.78	409.86-403 (6.86 Kms)	6.86	8,200,764.84	42.86
8	87,463,950.28	144,869,304.13	57,405,353.85	379-372 (7 Kms)	7	8,200,764.84	42.86
9	92,978,931.12	150,384,284.98	57,405,353.86	379-389 (10 kms)	10	5,740,535.39	0.00
10	84,881,450.38	134,086,039.40	49,204,589.02	365-359 (6 Kms)	6	8,200,764.84	42.86

11	153,688,193.47	236,339,379.80	82,651,186.33	379-389 (10 kms)	10	8,265,118.63	43.98
12	100,267,497.37	158,692,087.37	58,424,590.00	436-429 (7 Kms)	7	8,346,370.00	45.39
13	126,747,002.70	193,517,962.70	66,770,960.00	403-395 (8 Kms)	8	8,346,370.00	45.39
14	46,552,814.61	73,678,517.11	27,125,702.50	392.25-389 (3.25 Kms)	3.25	8,346,370.00	45.39
15	39,390,946.46	62,343,463.96	22,952,517.50	395-392.25 (2.75 Kms)	2.75	8,346,370.00	45.39

Note: Under Lobeysa, DBM and AC thickness for contract packages 12, 13, 14, and 15 were reduced from 75mm to 60 and 50mm to 40mm respectively.

Table 2.8.2: Inconsistencies in the incorporation of cost of bitumen in the estimates							
RO, Lingmethang							
Packages	Estimate without bitumen	Estimate with bitumen	Cost of Bitumen	Chainage Awarded	Total Km awarded	Cost per KM	% Variations
1 (B)	88,210,000.00	144,900,000.00	56,690,000.00	51.00-61.50 = 10.50 km	10.50	5,399,047.62	0.00
2	82,050,303.45	127,410,000.00	45,359,696.55	73.19-78.89 = 5.79 km	5.79	7,834,144.48	45.10
3	94,700,240.00	142,445,000.00	47,744,760.00	78.89-84.89 = 6.00 km	6	7,957,460.00	47.39
4	77,382,142.43	117,169,000.00	39,786,857.57	84.89-89.89 = 5.00 km	5	7,957,371.51	47.38
5	131,001,271.16	222,969,000.00	91,967,728.84	90.89-102.45 = 11.56 km	11.56	7,955,685.89	47.35
6	140,282,847.00	235,773,000.00	95,490,153.00	102.45-114.45 = 12.00 Km	12	7,957,512.75	47.39
7	70,459,887.01	96,717,000.00	26,257,112.99	114.45-118.45 = 4 Km	4	6,564,278.25	21.58

Note: Under Lingmethang, DBM and AC thickness for contract package 7 was reduced from 75mm to 60 and 50mm to 40mm respectively

Table 2.8.3: Inconsistencies in the incorporation of cost of bitumen in the estimates							
RO, Thimphu							
Packages	Estimate without bitumen	Estimate with bitumen	Cost of Bitumen	Chainage Awarded	Total Km awarded	Cost per KM	% Variations
1	115,642,860.00	169,193,479.02	53,550,619.02	527 to 527.7 & 530 to 538	8.7	6,155,243.57	0.00
2	108,362,690.31	163,597,831.25	55,235,140.94	538 to 544.5 & Simtokha Olakah 2Km	8.5	6,498,251.88	5.57

In consideration to the equal thickness of DBM and AC for all contract packages except 5 packages where DBM and AC thickness were reduced, the bitumen cost per kilometer should have been comparable. It is apparent from the tables above that cost of bitumen incorporated in the cost estimates varied from Nu. 3,916,885.25 per km to as high as Nu. 8,346,370.00 per km indicating flaws and ambiguity in the cost estimates for bitumen.

The Ministry should review the cost estimates and ascertain the circumstances leading to substantial bitumen cost differences in the estimates.

Auditee's Response:

In compliance to the existing policy, the bitumen required for road works is being procured centrally by the Directorate Services, MoWHS.

The cost of bitumen at source is not constant due to fluctuation of price of petroleum products in the international market. In addition, there is also the transportation cost for the bitumen from the source to the Central Stores in P'ling. Also, the cost of transportation of bitumen from Central Stores to the respective Regional offices varies based on the distance from P'ling.

As recommended by RAA, DoR RO Trongsa will request the Ministry to review the cost estimates to ascertain the facts leading to substantial difference in the cost of bitumen in the cost estimates.

RAA's Further Comments & Recommendation:

While taking note of the response on the fluctuation of price of petroleum products in the international market and the transportation cost for the bitumen from Central Stores to RO Regional Stores and project sites, the fact remains that the bitumen cost per kilometer varied from as low as Nu. 3,916,885.25 per km to as high as Nu. 8,346,370.00 per km representing more than 113% variations indicated flaws and ambiguity in the cost estimates for bitumen.

However, as discussed during the exit meeting, the DOR and Ministry should review all the estimates prepared by the ROs to validate the correctness of the estimates and ascertain existence of any systemic flaws and ambiguities in the preparation of estimates for initiating corrective measures for future project works. The Ministry should furnish the outcome of the review and measures put in place to address flaws and ambiguities in the preparation of estimates for future projects.

2.9 Adoption of varying practices of rate analysis by contractors and wrong application of coefficient for 80mm, instead of 75mm design thickness of DBM and also for 50mm thick Asphalt and recoverable amount aggregating to Nu. 69.334 million

Special Conditions of Contract, Point No. 2, stipulates as “***The bidder must attach the detail rate analysis for DBM and AC along with the bidding document***”. It was made to understand that submission of rate analysis by contractor was to ensure that the cost of bitumen was not included and that rates incorporated for design thickness for DBM and Asphalt concrete did not exceed 75mm and 50mm thick respectively.

On review of contractor's rate analysis attached with the tender documents, lapses and discrepancies were observed in the application of co-efficient for the item of work 75mm DBM & 50mm AC as the LMC provided were only for 70mm and 80mm, DBM work and 40mm AC work. Thus, the co-efficient used for 75mm DBM was considered for 80mm thick and co-efficient for 50mm thick AC works was randomly worked out by contractors. In addition clerical errors were also found on deriving the analyzed rates.

Thus, due to wrong application of Co-efficient and clerical errors, the rates accepted by the Evaluation Committee and reflected in the BOQs were found inflated. The overall financial implication due to wrong acceptance of rates for the two item of works amounted to Nu. 69,334,409.38 as shown in table 2.9 below:

Sl. No.	Regional Office	No. of Packages	Amount (Nu. in Million)	Remarks
1	RO, Lobeysa	8 Contract packages	20,782,438.38	
2	RO Trongsa	7 Contract Packages	28,468,525.00	
3	RO Lingmethang	73 Contract packages	10,984,878.00	
4	RO, Lobeysa	M/s Chogyal Construction Pvt. Ltd (Packages I, II and III)	7,104,603.83	Acceptance of inflated rate analysis due to inclusion of rate for Bitumen Spreader. The Bitumen Spreader was not specified in the LMC for DBM and Asphalt concrete works.
5	RO, Lobeysa	M/s Welfare Construction Pvt. Ltd –	9,098,568.00	Inclusion of cost for Generator & Control Panel not Complying to LMC and 5% for mobilization and installation of Labour Camps, Machinery yard, tools and plants
6	RO Trongsa	M/s Druk Lamsel Construction Pvt. Ltd(Package 7A) (AM18.6)	1,488,000.00	Acceptance of inflated rate analysis due to inclusion of rate for Bitumen Spreader. The Bitumen Spreader was not specified in the LMC for DBM and Asphalt concrete works
Total			69,334,409.38	

The Ministry must thoroughly review the aforementioned discrepancies involving substantial amounts of financial implication to the Government and also ascertain the circumstances leading to failure on the part of the Evaluation Committee and MLTC despite obtaining the rate analysis from the prospective bidders. The Ministry should also fix the officials responsible for such unwarranted lapses for appropriate decisions and actions.

Besides, the Ministry must either recover the amount of **Nu.69,334,409.38** if already paid or correct the quoted rates to prevent ineligible payments in the upcoming RA Bills.

Auditee’s Response:

The pavement thickness was derived from the pavement chart based on the average traffic in msa and CBR value. For NEWH Project, based on the traffic count and traffic forecast including future traffic, the DBM and AC were determined to be 80mm and 50mm thickness respectively. However, there is no coefficient in the BSR for above thickness. Therefore, the coefficients were interpolated and extrapolated in the departmental estimates.

The main objective of asking the rate analysis for DBM and AC with the bid is to ensure that the bidder has not included the cost of bitumen since the bitumen is to be provided by the client. The rate analysis and pricing of the contractor varies from one contractor to another. Also to inform RAA that the issuance of the bitumen is based on the Job Mix Formula and not as per the coefficient of the rate analysis.

As per the ABSD recommendation, bitumen has been listed as one of the central procurement materials to ensure quality and the study found that there is substantial saving if it is procured centrally. Initially, there was a practice in the Department to recover the cost of the bitumen issued based on the prevailing rates. However, many bidders did not appreciate the

deduction being done from their running bill and also there was contention in using different bitumen rates in the recovery.

Therefore, in order to streamline the process and reduce contention in the interpretation, the Department through the approval of the Ministry has decided to issue the bitumen free of cost to the contractors executing the BT works.

Since the main objective of the rate analysis was to check the cost of the bitumen as “zero” in the quote, the evaluation team neither the award committee felt necessary to check the LMC of the DBM & AC. In the competitive tender, rate will definitely vary and internationally it is never practiced to increase the coefficient of those items that are less and similarly cutting down the coefficient of those items where the LMC is high. Contractor’s rate vary from item to item.

Therefore, RAA is requested to kindly drop the memo based on the justifications provided above.

RAA’s Further Comments & Recommendations:

While taking note of the response, it is clear that the Ministry has failed to incorporate appropriately in the tender documents and TOR of Evaluation Committee on the requirement of Rate analysis to be aligned with the Labour and Material Co-efficient (LMC) and BSR not just to check that the cost of bitumen is “Zero” in the rate analysis.

The wrong application of Co-efficient and clerical errors by the contractor in its rate analysis had inflated the quoted rates of the above item of works. The failure on the part of the Evaluation Committee to ensure application of correct labour and material co-efficient during rate analysis had resulted in overall financial implication to the Government Exchequer to the extent of Nu. 60,235,841.38.

In view of huge financial implication, the Ministry should consider forming a dedicated technical team to review all the rate analysis of the contractors and measures taken to correct the discrepancies to avoid similar lapses in future contract works.

The huge financial loss to the extent of Nu. 69.334 million to the government Exchequer is brought to the notice of the Government for appropriate decisions and actions.

2.10 Flawed rate analysis through incorporation of transportation cost of bitumen as percentage to the overall derived cost of the item of work with resultant avoidable cost to the project Nu. 12.323 million

Under SCC (Additional Clause) and Addendum issued vide letter DoR/ROL/Plg-15 (A)14-15/3439 dated 16/4/15, No. R0-T/DoR/2014-2015/W-9/1469 dated April 14, 2015, Clauses amongst others were amended as below:-

- i. The Department will procure Bitumen(VG-10) and supply to the contractors*
- ii. The Bidder(s) shall apply “0” Zero for the cost of Bitumen (VG-10) in their rate analysis for Dense Bituminous Macadam (DBM) and Asphalt concrete(AC) as department is to supply bitumen (VG-10)*
- iii. In order to authenticate the above point No ii, the Bidder (s) should compulsorily submit the details of rate analysis for DBM & AC along with the bids.*

- iv. *The contractor shall lift the required bitumen (VG-10) from Store, Regional Offices, DoR, and transport it to their respective sites(s) at his or her own cost.*

On review, the Rate analysis for the DBM and Asphalt works submitted with the tender documents revealed that eight (8) Contract packages had included transportation cost for lifting of Bitumen from Regional Store to work site either as cost component of the item work or as percentage to the overall analyzed cost of the item work.

Thus, the inclusion of transportation charges as a part of the component of cost in lieu of cost of bitumen in addition to loading, wastage and overhead charges applied for deriving the item rates for the item works was not in compliance to the aforementioned Addendum issued.

The cost implication based on estimated quantities of DBM & AC works for transportation of bitumen from the Regional store to site alone amounted to Nu. 12,322,823.58 as computed in table 2.10 below:

Sl.No.	Regional Office	No. of Packages	Amount (Nu. in Million)	Rate charged	Remarks
1	RO, Lobeysa	M/s Taksing Chungdruk Construction Pvt. Ltd. (Packages 12)	1,758,512.08.	DBM= Nu.19 per Sqm AC= Nu. 14 per Sqm	Added 10% as transportation charges for lifting of bitumen on over cost
2	RO Lingmethang	M/s K.D Builder Pvt Ltd. Bumthang (Packages 3)	803,300.00	DBM= Nu.11.31 per Sqm AC= Nu. 6.63 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis for the DBM and AC item of work
3		M/s Rigsar Construction Pvt. Ltd (Package 6)	2,156,400.00	DBM= Nu.13.31 per Sqm AC= Nu. 10.65per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis for the DBM and AC item of work
4	RO Trongsa	M/s Rinson Construction Pvt. Ltd (Package 13) (AM25.9)	2,053,582.50	DBM= Nu.15.98 per Sqm AC= Nu. 11.13 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis under the DBM and AC item of work
5		M/s Rigsar Construction Pvt. Ltd (Package 1)	2,156,400.00	DBM= Nu.13.31 per Sqm AC= Nu. 10.65 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis under the DBM and AC item of work
6		M/s Rinson Construction Pvt. Ltd (Package 3)	2,032,875.00	DBM = Nu. 21.30 per Sqm AC= Nu. 14.84 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis under the DBM and AC item of work
7		M/s Welfare Construction Pvt. Ltd (Package 9)	239,400.00	DBM= Nu. 2.00 per Sqm AC= Nu. 2.00 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis under the DBM and AC item of work
8		M/s Rinson Construction Pvt. Ltd (Package 10)	1,122,354.00	DBM= Nu. 15.98 per Sqm AC= Nu. 11.13 per Sqm	Acceptance of inflated rate analysis due to inclusion of rate for transportation cost of Bitumen in the rate analysis under the DBM and AC item of work
	Total		12,322,823.58		

It is apparent that the Evaluation Committee and MLTC had failed to review the rate analysis submitted by the contractors in line with the addendum and for appropriateness and to take corrective measures prior to acceptance of the rates. The RO in consultation with the Ministry should revisit the analyzed rates. Cost implication due to inclusion of transportation cost as a

component of cost of the item work in addition to the wastages and overhead charges applied on the overall item rates should be worked out and recovery effected deposited into ARA.

The Ministry besides commenting on the deficiencies and lapses on the part of the Evaluation Committee and MLTC members should hold the responsible officials accountable to make good the loss in the event contractor disagree to refund the cost implication.

Auditee's Response:

As per the section VI of the SCC: the additional clause reads:

i) Bitumen VG-10 shall be supplied by the client and no recovery shall be made. However, the contractor shall lift the bitumen from the Regional Offices, DoR, and transport it to respective work site at their own cost.

ii) The bidders are required to submit rate analysis for the following items:

- a. Providing & Laying DBM*
- b. Providing and laying AC.*

Note: The rate of bitumen VG-10 must be "0" (Zero) in the above rate analysis: however, the transportation cost of bitumen from above store to the respective work site must be included in relevant items of the rate analysis.

From the above clauses, it is understood that contractor has to submit the rate analysis for DBM and AC. The contract document also highlights that contractor can add transportation cost of bitumen from RO store to work site in relevant items of the rate analysis. In compliance to the tender document, the contractor has submitted the rate analysis and added the transportation cost in the relevant coefficient.

RAA's Further Comments & Recommendations:

Evaluation committee plays a crucial role in procurement as it is their due diligence and decision that determines the outcome of the tendering process. The members have to be competent and charged with the responsibility to uphold the core principles of procurement to ensure procurements at most competitive manner.

It was the responsibility of the Evaluation Committee to present the facts correctly to the MLTC on the incorporation of transportation charges as component cost of the item of works against the cost of bitumen though was to be "Zero" in the rate analysis. The cost of transportation should have been covered under overheads and profit charges as incorporated by other contractors. The decisions on the evaluation committee to ignore such flaws in the rates analysis had resulted in overall financial implication to the Government Exchequer to the extent of Nu.12,322,823.58.

Failure of evaluation committee members seem to be a major cause for most procurement errors or non-compliances. The absence of consistent structures in place in different procuring agencies leave room for isolated approach and differing practices undermining the PRR's objective of achieving uniformity and effectiveness of procurement procedures.

Considering huge financial implication, the Ministry should institute technical team to review all the rate analysis of contractors and formulate specific guidelines in carrying out rate analysis by the ROs and contractors detailing the processes for incorporating transportation and other related cost if construction materials are to be supplied to the contractors by the executing agencies to avoid flaws, ambiguities and complications in future project works.

The huge financial loss to the extent of Nu. 12.323 million to the government is brought to the notice of the Government for appropriate decisions and actions.

2.11 Award of three work packages in contravention to the Nganglam Resolution

The review of documents relating to the construction of the NEWH indicated following pre-construction decisions taken by the Ministry as discussed below:

☞ *Coordination Meeting held at Nganglam on **23rd December, 2014** deliberated series of issues on management of Double Lanning of NEWH, such as formation of Project Management Team(PMT), Division of contract packages, Monitoring and Supervision issue, Requirement of sign boards. Amongst other decisions, the procurement of contract was decided that only two work packages were to be awarded to each contractor.*

☞ *Subsequently, the Project Management Team met on **12th January 2015** at Thimphu with the objective to follow-up and take immediate action on the resolutions of Nganglam's meeting held on 23rd December, 2014.*

During the Meet, besides formation of the Technical team and assigning the tasks to the GoI project coordinator on the maintenance of keep updated financial information, manpower & HR issues again reiterated on the award of two work packages each to the individual contractor by the Chief Engineer of Regional Office of Trongsa, Lobeysa & Lingmithang.

☞ *75 mm thick Dense Bituminous Macadam and 50mm Asphalt concrete was designed by Design Division, Ministry of Works & Human Settlement, Thimphu to withstand the plying of heavy traffic.*

However, the approved design particularly was beyond the purview of Bhutan Schedule of Rates 2015, thus bidder was ask to submit separate rate analysis with bidding documents, further, it was stipulated in additional clause in the Special Condition of Contract to analyze the rate for the said item excluding the cost of bitumen.

However, it was noted that four contractors were awarded three contract packages each in contravention to the resolutions of the Nganglam Meet **23rd December 2014** and Project Management Team **12th January 2015** at Thimphu to award maximum of two packages to each contractor.

The three contract packages awarded with a total road stretch ranging from 13 km to 30 km along with contract amounts are as tabulated below:

Table 2.11: Award of three contract packages						
M/s Chogyal Construction Pvt. Limited, Thimphu holding trade license No.1032785, CDB No.7640						
Package (RO, Lobeyesa)	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)	Work done value (Nu)	% of Deviation (Contract value – Work done value)
I-(Ch:477-467) (10km)	114,155,909.36	100,376,501.11	-12.07	15	116,399,663.99	15.97
II- Ch: 467-457)(10km)	118,573,848.79	102,070,100.40	-13.92	15	115,511,304.38	13.17
III-(Ch:457-447)(10km)	119,590,876.28	102,286,495.00	-14.48	15	115,504,285.38	12.93
Total stretch of 30Km		304,733,096.51				

Table 2.11.1: Award of three contract packages						Delays in months from the initial completion periods
M/s Chogyal Construction Pvt. Limited, Thimphu holding trade license No.1032785, CDB No.7640						
Package (RO, Trongsa)	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)		
VIII Ch: 50.8-58 (7.2km)	150,298,000.00	73,239,890.20	-30.45%	28		12
XI Ch: 72-80 (8 km)	117,475,584.76	89,839,558.00	-23.52%	28		12(Ongoing)
XII Ch: 80-85 (5km)	106,509,159.36	78,928,350.00	-25.89%	20		12
Total road stretch of 20.2 Km		242,007,798.20				

Table 2.11.2: Award of three contract packages						Delays in months from the initial completion periods
M/s Rigsar Construction Pvt. Limited, Trashigang holding trade license 6004726, CDB No. 2435						
Package	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)		
X- Ch 365-359 (6Km) (Lobeyesa)	78,073,915.54	56,974,612.41	-27.03%	24		15.7
I- Ch 0-12 (12 Km) (Trongsa)	191,662,477.46	147,882,777.62	-22.84%	30		7
VI- Ch:102.45-114.45 (12Km) (Lingmithang)	140,282,847.00	125,557,813.70	-10.49%	28		2
Total road stretch of 30 Km		330,415,203.73				

Table 2.11.3: Award of three contract packages					Delays in months from the initial completion periods
M/s Rinson Construction Pvt. Limited holding trade license No.1000488 and CDB No.1965					
Package (RO, Trongsa)	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)	
III-(Ch: 19.5-27) (7.5km)	151,041,704.92	97,306,916.89	-35.58	30	12
X- Ch: 65.98 -72)(6.02km)	150,325,008.00	85,883,906.60	-42.87	28	13 (On-going)
XIII-(Ch:85-97.3)(12.3km)	139,964,945.98	124,174,327.15	-11.28	28	12
Total road stretch of 25.82 Km		307,365,150.60			

Table 2.11.4: Award of three contract packages					Delays in months from the initial completion periods
M/s Empire Construction Pvt. Ltd, Punakha					
Package (RO, Lobeyesa)	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)	
XIV-Ch-392.25-389 (3.25 Kms)	46,552,814.61	27,808,65.00	-40.26%	10	13.2

XV-Ch-395-392.25 (2.75 Kms)	39,390,946.46	39,390,946.46	Direct on estimated cost	12	7.4
VIII_Ch-379-372 (7 Kms)	87,463,950.28	78,967,074.00	-9.71%	25	17(Ongoing)
Total road stretch of 13 Km		118,358,020.46			

While the other contract works were in progress, the contract packages awarded to M/s Chogyal Construction Pvt. Limited, Thimphu were found completed prior to start of the audit. On review, the RAA noted that the contract works including additional works were found completed with delays by more than 3.8 months except one package as tabulated below:

Table 2.11.5: Award of three contract packages with resultant delay completion of contract						
M/s Chogyal Construction Pvt. Limited, Thimphu holding trade license No.1032785, CDB No.7640						
	Chainage	Contract Amount (Nu)	Work done value (Nu)	Due completion Date	Actual Completion Date	Delays in Months
Dochula-Lampari	477-467 (10 Kms)	100,376,501.11	116,399,663.99	28/9/2016	26/09/2016	-
Lamperi-Menchuna	467-457 (10 Kms)	102,070,100.40	115,511,304.38	28/9/2016	20/01/2017	3.8
Menchuna-Chasagang	457-447 (10 Kms)	102,286,495.00	115,504,285.38	9/11/2016	03/01/2017	3.8

The Regional Office in consultation with the MTLC should comment on the circumstances leading to award of three packages disregarding the critical resolution of the Nganglam Coordination Meet of Ministry, Departments and Regional Offices, besides, the Regional Offices should also comment on the decision taken to scope in pavement works with stretches in packages ranging from 5km to 12.3km deviating from the projected average allotment of 6.7 Kms per package.

Auditee's Response:

During the 1st Coordination meeting for NEWH held in Nganglam on 23rd Dec 2014, it was discussed & resolved to award only two packages to one bidder in order to ascertain timely completion of the works & to the desired quality. However, in subsequent discussions with CDB & PPPD, MoF it was pointed out by the two agencies that a contractor can have a minimum of five works in hand at any given time. Therefore, the decision to award only two works could not be adhered to.

Widening & improvement works on the NEWH was a major project of the DoR, MoWHS. The duration for completion of the project was 3 years only until Dec 2017. So, for the project time was of essence.

The e-tool system allows the contractors to bid for several packages using the same set of equipment & human resources; these resources do not get blocked until the contract is formally signed between the contractor & the procuring agency.

The decision to award the three packages to the same contractor (lowest evaluated) was taken by the MLTC in view of the financial advantages. Moreover, awarding the three packages to the same contractor made sense as the management of the works on the part of the contractor would be easier & more productive on the same stretch of road. Timely completion & quality deliverance of the work was anticipated. In view of the above justifications, the para may please be dropped.

Response of RO, Lobeysa

The up-gradation of the 385 km Northern East West Highway (NEWH) from Sementokha to Trashigang was a priority project of the Government then and started from 1st January 2015 with three years' time period. The first coordination meeting between the Ministry and Department including Regional Offices was held in Nganglam, Pema Gatsel on 23rd December 2014 under the chairmanship of Zhabtog Lyonpo. Issues pertaining to project implementation such as contract packaging & size, tendering, uniform bidding document, quality control etc. were discussed in the coordination meeting. Following the first coordination meeting in Nganglam, the first Project Management Team Meeting was convened on 12th January 2015 at Thimphu and one of the issues discussed was to award only two contract packages of double lanning of east west highway per contractor. The meeting also decided that approval of Ministry of Finance would be sought for change in the procurement standard.

Based on the recommendation of the first Project Management Meeting, a separate consultative meeting was held on 14th January 2015 under the chairmanship of Hon'ble Zhabtog Lyonpo. Officials from ACC, CDB and MoF were present during the meeting (a copy of minutes attached for ready reference). The meeting discussed many issues including the proposal to award only two NEWH works to one contractor.

Although, it is not captured in the minutes of the meeting, the meeting indeed discussed and decided that the proposal of MoWHS to award only two works to one contractor is a violation of PRR 2009 and CDB e-tool work in hand information. Therefore, the MLTC had to follow the existing procurement rules and regulations i.e. maximum of five works in hand as per the e-tool report.

Based on above stated facts and justifications submitted, RAA is requested to kindly drop the memo.

RAA's Further Comments & Recommendations:

While the RAA takes note of the responses, the fact remains that the Ministry had failed to strictly adhere to its own decisions taken during the Coordination Meeting held at Nganglam on 23rd December, 2014 and affirmation of the decision taken during the Project Management Team met on 12th January, 2015 at Thimphu. It is to put on records that contractors who were awarded one or two contract packages had failed to complete projects in time let alone those contractors who were awarded three contract packages.

The maximum of five works in hand as allowed by CDB e-tool is for evaluation purpose. Decision as to how many packages should be awarded to each contractor must be based on the capacity of contractor to undertake and complete the work within the prescribed contract period. A maximum of five works in hand would not mean that the Contractors without any work in hand should be awarded five works as otherwise it would constitute violation of procurement norms as suggested in the response.

Thus, the decisions of MLTC to award of three contact packages to the five firms were not in the interest of project as the contractors failed to complete the packages on time with overall delays in completion of the Project.

In the light of the failure to implement its own decisions on the award only two contract packages due to overriding of decisions by the MLTC, it is imperative for the Government and the authority concern to review the existing policy and system of MLTC functions and responsibilities and take measures to prevent overriding of decisions for future similar project.

2.12 Flawed decision on the realization of differential amount between estimated and quoted value net of 20% with resultant non- realization of Nu. 446.142 million as well as short realization of Nu. 52.150 million due to application of approved percentage on the quoted contract price and subsequently non-renewal of BG for approved differential amount of Nu. 203.406 million

Clause 5.4 Evaluation of Bids sub clause 5.4.5 Abnormally Low Bid of Procurement Manual 2009, states as *“Where the prices in a particular bid appear abnormally low or the bid appears seriously unbalanced, the Procuring Agency may reject it only after seeking written explanations from the bidder submitting the low or seriously unbalanced bid. In the case of a bid which appears seriously unbalanced, the procuring agency shall request from the bidder an analysis of rates of the relevant items”.*

“If the Procuring Agency decides to accept the abnormally low bid or the bid with the seriously unbalanced rates after considering the above factors, the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security”.

In addition, ITB Clause 29.6 stipulates as *“If the Bid which results in the lowest evaluated Bid price is abnormally low, seriously unbalanced and/or front loaded in the opinion of the Employer, the Employer shall require the Bidder to produce written explanation of, justifications and detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices if the Procuring Agency decides to accept the abnormally low, seriously unbalanced and /or front loaded price, the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security”.*

On review of the documents and accounting records relating to realization of differential amounts, flaws and deficiencies were observed as discussed below:

2.12.1 Non-realization of differential amounts to the extent of Nu. 446.142 million

On review of the bidding processes and tender evaluation reports, the contract packages were found awarded to the lowest evaluated bidders. It was noted that on the basis of tender evaluation reports, the MLTC had passed decisions to award the contract to the lowest evaluated bidder on realization of differential amounts. However, the Awarding Committee had taken decisions to realize the differential amounts net of 20% variations.

In line with the decisions of the MLTC and Awarding Committee, the ROs had realized differential amounts net of 20% amounting to Nu. 203,406,293.05 as against the actual differential amounts of Nu. 649,557,598.08 as detailed below:

Table 2.12.1: Short realization of differential amounts						
Name of contractor	Estimated Amount (Nu.)	Quoted Amount (Nu.)	Differential Amount (Nu.)	% Differential Amount	% Differential Amount realized	Total Amount realized (Nu.)
RO, Trongsa						
(Package 1) M/s Rigsar Construction Pvt. Ltd.	191,662,477.46	147,882,777.62	43,779,699.84	22.84%	2.84%	4,199,870.88
(Package 2) M/s Gaseb Construction Pvt. Ltd	171,993,910.77	111,563,269.46	60,430,641.31	35.14%	15.14%	16,890,000.00
(Package 3) M/s Rinson Construction Pvt. Ltd	151,041,704.92	97,306,916.89	53,734,788.03	35.58%	15.58%	15,160,417.65
(Package 4) M/s Gyalcon Infrastructure Pvt. Ltd	146,426,379.15	94,860,888.47	51,565,490.68	35.22%	15.22%	14,437,827.23
(Package 5) M/s Druk Lhayul Construction Pvt. Ltd	131,935,342.62	77,150,269.45	54,785,073.17	41.52%	21.52%	16,602,737.99
(Package 6) M/s Raven Construction Pvt. Ltd	138,898,344.12	79,151,909.00	59,746,435.12	43.01%	23.01%	18,212,854.26
(Package 7A) M/s Druk Lamsel Construction Pvt. Ltd	95,574,000.00	70,131,689.00	25,442,311.00	26.62%	6.62%	6,326,100.00
(PKG-8) M/s. Dungkar Construction Pvt Ltd. Thimphu	105,297,611.69.	73,239,890.20.	32,057,721.49	30.44%	10.44%	10,993,070.66
(Package 10) M/s Rinson Construction Pvt. Ltd	150,325,008.00	85,883,906.60.	64,441,101.40	42.87%	22.87%	34,379,329.33
(Package 11) M/s Dungkar Construction Pvt. Ltd	117,475,585.00	89,839,558.00.	27,636,027.00	23.52%	3.52%	4,135,140.59
(Package 12) M/s. Dungkar Construction Pvt Ltd. Thimphu	98,620,000.00	78,930,000.00.	19,690,000.00	19.97%		-
RO, Lobeysa						
(Package VII) M/s Loden Construction Pvt. Ltd	90,091,287.54	71,417,679.10.	18,673,608.44	20.73%	0.73%	657 666.40
(Package XI) M/s Hi-Tech Company Pvt. Ltd	153,688,193.47	107,568,025.00	46,120,168.47	30.01%	10.01%	15,369,197.50
(Package XII) M/s Taksing Chungdruk Construction Pvt. Ltd	100,267,497.37	66,128,323.00.	34,139,174.37	34.05%	14.05%	14,087,583.38
(Package XIII) M/s U.P Construction Pvt. Ltd	126,747,002.70.	69,441,930.80	57,305,072.7	45.21%	25.21%	31,953,919.38
Total			649,547,312.22			203,405,715.25
	Short realization					446,141,596.97

Thus, differential amounts to the extent of Nu. 446.151 million were not realized thereby failing to safeguard the interest of the Government. In addition, the decisions of the Awarding Committee to realize net of 20% variations was in deviation to Clause 29.6 of ITB of Standard Bidding Document which clearly stipulated requirement to realize the differential amount between the estimated amount and the quoted price in addition to the performance security.

2.12.2 Short realization of differential amount to the extent of Nu. 52.150 million due to wrong application of differential percentages on contract prices

On cross check on the differential amounts realized in terms of the approved differential percentages with that of the estimated cost, it was noted that the differential percentages were found applied to the contract prices instead of estimated costs. Thus, wrong application of differential percentages had resulted in short realization of differential amounts to the extent of Nu. 52,150,092 which benefited six contractor to that extent.

The short realization of differential amounts is as tabulated below:

Name of contractor	Estimated Amount (Nu.)	Quoted Amount (Nu.)	% Differential percentage realized	Differential amount on estimated cost (Nu.)	Amount realized on contract price (Nu.)	Total Amount short realized (Nu.)
RO, Trongsa						
(Package 1) M/s Rigsar Construction Pvt. Ltd.	191,662,477.46	147,882,777.62	2.84%	5,443,214.36	4,199,870.88	1,243,343.48
(Package 2) M/s Gaseb Construction Pvt. Ltd	171,993,910.77	111,563,269.46	15.14%	26,039,878.09	16,890,000.00	9,149,199.09
(Package 3) M/s Rinson Construction Pvt. Ltd	151,041,704.92	97,306,916.89	15.58%	23,532,297.63	15,160,417.65	8,371,879.98
(Package 4) M/s Gyalcon Infrastructure Pvt. Ltd	146,426,379.15	94,860,888.47.	15.22%	22,286,094.91	14,437,827.23	7,848,267.68
(Package 5) M/s Druk Lhayul Construction Pvt. Ltd	131,935,342.62	77,150,269.45.	21.52%	28,392,485.73	16,602,737.99	11,789,747.75
(Package 6) M/s Raven Construction Pvt. Ltd	138,898,344.12.	79,151,909.00	23.01%	31,960,508.98	18,212,854.26	13,747,654.72
Total				137,654,479.70	85,504,387.00	52,150,092.69

Wrong application of differential percentages indicated existence of either weak management system or possible unhealthy practices.

The Ministry should to recover short realization of differential amounts of Nu.52.150 million and deposited into Audit Recoveries Accounts, besides taking action against the responsible official for wrong computation of differential amount for six contract packages..

2.12.3 Non-renewal of Bank Guarantees/Cash warrants obtained against differential amounts on expiry of the initial validity periods

Provisions of PRR 2009 and SBD provides that, “*the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security*”.

In addition Clause 51, sub-clause 51.1 state that, “The Performance security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount specified in the SCC by a bank or surety acceptable to the Employer, and in denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance security shall be valid until a date 30 days from the date of issue of the Certificate of Completion”.

Thus, in terms of the above provisions, the security for the differential amounts was to be obtained with validity period aligned to the performance security validity periods.

On review of the Bank Guarantee and Cash Warrant related records, it was noted that while the contractors had renewed the Performance Guarantees, the ROs had failed to renew the Bank Guarantees for the differential amounts of **Nu. 203,406,293.05** initially obtained in the form of Bank Guarantee/Cash Warrant on expiry of the validity periods as detailed below:

Name of contractor	Contract Duration in month	Total Amount realized (Nu.)	Bank Guarantees/ Cash warrants validity period	Validity periods in months	Expiry date of the BG/ CW	Remarks
RO, Trongsa						
(Package 1) M/s	5 th		BG No. PG/TG/2015-	12 month	31 st May,	Only Bank Guarantee for

Rigsar Construction Pvt. Ltd.	December 2017	4,199,870.88	10 of 2.6.2015 that too with validity till 31st May, 2016.		2016.	performance security renewed on 20 th June 2016
(Package 2) M/s Gaseb Construction Pvt. Ltd	30 months i.e., until 05.12.2017 with time extension granted up to 18 th March 2018	16,890,000.00	No. PG/PL2015-50 & 51 of 1.6.2015 with validity period of just 6 months up to 30 th November 2015	6 months	30 th November 2015	Only BG for performance security renewed on 1 st December 2015 with validity period of 12 months up to 29 th November 2016 as evident from BG No.. G/PL2015-50 E of 1.12.2015.
(Package 3) M/s Rinson Construction Pvt. Ltd	contract duration of up to 15.12.2017	15,160,417.65	Bank Guarantee that too with validity till 26th June, 2016	12 months	26th June, 2016	Only Performance Guarantee (PS) PG/HO/2016-447E amounting to Nu. 9,715,000.00(that too less by Nu.30,691.69) representing performance security of 9.98% only on 27/06/2017 which was valid till 31 st December 2017
(Package 4) M/s Gyalcon Infrastructure Pvt. Ltd	30 months up to 17 th December 2017	14,437,827.23	BG No. PREGRNTEE/2015/4300 dated 18/6/2015) that too valid till 15/6/2016	12 months	15/6/2016	Only Bank Guarantee PS was renewed on 8 th October 2016 up to 3 rd October 2017 for a period of another 12 months
(Package 5) M/s Druk Lhayul Construction Pvt. Ltd	30 months up to 12 th December 2017.	16,602,737.99	BG No. 00101150115 dated 11.6.15) that too valid till 15/6/2016	12 months	15/6/2016	Only Bank Guarantee (PRFGRNTEE/2017/6443 dt.20/4/2017) for performance security amounting to Nu 8,000,000.00 on 20 th April 2017 up to 31 st December 2017 that too after a time lapse of almost 10 months
(Package 6) M/s Raven Construction Pvt. Ltd	30 months up to 21.11.2017	18,212,854.26	Bank Guarantee obtained with validity period of just 12 months up to 9.6.2016	12 months	9.6.2016	only BG for PS renewed on 19.8.2016 with validity period up to 19.8.2017
(Package 7A) M/s Druk Lamsel Construction Pvt. Ltd	18 months up to 12.1.2018	6,326,100.00	Cash Warrant with validity period of just 6 months up to 10.1.2017	6 months	10.1.2017	only BG for PS renewed on 6.6.2017 as evident from BG/CORP/2017-326 OF 6.6.2017 with validity till 2.2.2018
(PKG-8) M/s. Dungkar Construction Pvt Ltd. Thimphu		10,993,070.66				Not realized
(Package 10) M/s Rinson Construction Pvt. Ltd	28 months up to 31.12.2017	34,379,329.33	Bank guarantee which was valid till 28th February 2016 under BG No. BH/HO/2015-892 of 29.8.2015	6 months	28th February 2016	PS expired on 28 th February 2016 and renewed only the PS on 28 th March 2017 with validity till 31 st December 2017 as evident form the BG No. PG/HO/2017-160 of 28.3.2017 after a delay of 13 months
(Package 11) M/s Dungkar Construction Pvt. Ltd	28 months up to 31.01.2018.	4,135,140.59	Bank guarantee which was valid till 30th September 2016 under BG No. 000101150223 of 16/9/2015 & 000101150224 of	12 months	30th September 2016	Only PS was renewed on 18 th April 2017 with validity of just 9 months till 31 st January 2018 as evident form the BG No. 00001170109 of 18.4.2017 that too after

			16/9/2015			delays of 6 1/2 months
RO, Lobeysa						
(Package VII) M/s Loden Construction Pvt. Ltd	3 rd August 2015 to 24 th March 2017	657 666.40	Bank Guarantee vide BG No. 167801/PG/PL/2015/1 11(E) dated 18 th April 2017.			
(Package XI) M/s Hi-Tech Company Pvt. Ltd	26 th Nov 2015 to 14 th December 2017	15,369,197.50	Bank Guarantee vide BG No. 126603 dated 16 th November 2015.			
(Package XII) M/s Taksing Chungdruk Construction Pvt. Ltd	3 rd March, 2016 to 26 th January, 2017	14,087,583.38	Bank Guarantee vide BG No.			
(Package XIII) M/s U.P Construction Pvt. Ltd	22 nd February 2016 to 15 th July 2017	31,953,919.38	Guarantee vide BG No. PRFGRNTE1/ 2016/23 of 13.2.16.			
non-renewal of BG		203,406,293.05				

The Ministry should investigate the circumstances leading to the failure to renew the Bank Guarantee for differential amounts after expiry of initial validity period along with the renewal of Performance Guarantee. Besides, the Ministry must recover the interest on the differential amounts for time periods not renewed including one month period for issuance of certification of completion.

In addition, the Ministry should take appropriate action against the ROs for laxity and extension of undue favour to the contractor. The inaction on the part of the ROs to recover the differential amounts indicated apathy towards enforcement of contract provisions and safeguards the government interest.

Auditee's Response:

In the case of NEWH project, the MLTC in its wisdom had decided that the additional performance security would only be imposed for bids after allowing for deduction of 20% from their quoted amount.

Clause 5.4.5.3 under Abnormally Low Bid of PRR 2009 (revised July 2015) allows the Procuring Agency to accept abnormally low bid or bid with seriously unbalanced rates after considering factors specified under clause 5.4.5.2. The bidder shall be required to provide additional bid security equivalent to the difference between estimated amount & the quoted price in addition to the performance security.

In the Ministry, it is a generally accepted fact that bids within the range of +/- 20% of the departmental estimated cost is workable.

In view of the above, the decision of MLTC to ask the lowest evaluated bidders to submit the additional differential security beyond (-) 20% only may be considered by RAA.

Also, as RAA is aware of, Bhutanese contractors in their effort to win the bids quote low rates to the tune of (-) 40% also. However, if the full (-) 40% is to be deposited by the bidder as differential security, the bidder would be seriously constrained with working capital. Thus, the decision of MLTC to get the differential security beyond (-20)% only.

The Ministerial Tender Committee (MLTC) is the highest decision making body in the Ministry for procurement of goods, services & works. MLTC takes decisions based on consensus in the best interest of the works and the Government. Therefore, the decision of MLTC may kindly be reviewed holistically & honored. In view of the above justifications, the para may please be dropped.

RAA's Further Comments & Recommendations:

While taking note of the response, it is reiterated that under Instructions to Bidder ITB under section "Evaluation and Comparison of Bids, the decisions and actions on the part of the MLTC and Awarding Committee to realize net of 20% variations were in violation to the provisions of the PRR and Standard Bidding Documents (SBD). There is no scope provided in the PRR to adjust +/- 20% for the purpose of depositing differential security.

The Ministry in consultation with the Ministry Finance should take immediate decisions and measures to either amend the provisions in the PRR and SBD for consistency and uniform adoptions by all government agencies or take actions against the MLTC and Awarding Committees for the violations which had resulted in non-realization of differential amounts to the extent of Nu. 446.151 million to ensure timely completion of contracts and safeguard the interest of the Government in the event of the failure to fulfil the contractual obligations by the contractors.

Regarding the wrong application of approved differential percentages with resultant short realization of differential amounts of Nu. 52.150 million, the Ministry should ascertain the circumstances leading to such lapses only for 6 contract packages besides taking actions against the officials responsible for the failure to appropriately apply the percentage to the estimated amounts.

Further, the Ministry should investigate the circumstances leading to the failure to renew the Bank Guarantee for differential amounts after expiry of initial validity period along with the renewal of Performance Guarantee. Besides, the Ministry must recover the interest on the differential amounts for time periods not renewed either from the contractors or officials responsible for the violation of the Procurement norms.

Furthermore, in the light of flaws and deficiencies in the applications and realization of security for differential amounts and performance security, the Ministry should institute a mechanism to create responsiveness on the procedures and process for the realization and disposal of bank Guarantees in the best interest of the Government.

2.13. Non-deployment/Mismatch of Personnel at site as per the requirements and non-deduction of penalty approximately - Nu. 40,579,000.00 (4.4.15)

As per the bidding data sheet, Section II, Employer's Requirements (ERQ) key personnel requirements on the widening and pavement construction works were found met by contractors in terms of the declared individual CV submitted along with the project profile.

During the site verification conducted by the joint team comprising of audit team and officials from RO, an attempt was made to cross check the personnel present at site with that of committed key personnel in the contract documents. It revealed that the personnel

committed were not present but different set of key personnel were found deployed at site. The status of key personnel committed as per bidding document and actual employment at work sites as noted during the physical verification for all the contract packages were as tabulated and discussed below:

RO, Lobeysa

2.13.1 Dochula to Chasagang (Packages I, II and III) executed by M/s Chogyal Construction Pvt. Ltd recoverable penalty Nu.7.144 million (RO, Lobeysa)

The joint verification of site conducted on *29 September 2017 & 2 October 2017* revealed the following lapses:

- On reviewing associated HR and equipment aspects in new point based system of evaluation in e-tools through hard copy of e-tools report noted few HR and Equipment were used commonly to evaluate in system all the three packages I, II and III. However, the evaluation committee used same HR & Equipment for evaluation in e-tools system for contract packages II & III.
- This particular concern was presented to in MLTC meeting convened on 3rd June, 2015 wherein, MLTC unanimously decided that contractor should allocate separate HR & Equipment considering the work being separate package and also on contractor's commitment to provide separate HR & Equipment as per letter No. CCCPLT/T&Q-11/2015/11 dated June 19, 2015.
- Following the decisions of the MLTC convened on **3rd June, 2015**, the Regional Office vide letter No. DOR.ROL/Plg-15/2014-2015/3721 dated June 9, 2015 had directed the contractor to submit the letter of commitment for deployment of separate resources for the two packages.
- In response, the contractor had sought one-week time extension for submission of additional resources vide letter **No. CCCPLT/T&Q-11/2015/10 dated June 12, 2015** and had subsequently assure availability of adequate resources for the deployment of separate HR and equipment **vide letter No. CCCPLT/T&Q-11/2015/11 dated June 19, 2015**.
- The audit team could not verify the documentary evidences as Regional Office had failed to produce documents relating the deployment of separate HR and equipment in particular for package III despite repeated request.
- On probing further, the RO stated the contractor had used the same HR & Equipment for package II & III. This scenario proved that the contractor had failed to allocate separate HR & Equipment for package II & III, resulting in fundamental breach of contractual obligation.
- The Regional Office have neither invoked the termination clause nor enforced the penalty clause GCC 10.1

Particular of HR	Penalty amount /month (Nu)	penalty amount for the duration of the contract 18.8 months
Project Engineer	50,000.00	940,000.00
Materials Engineer	40,000.00	752,000.00
Project Manager	50,000.00	940,000.00
Junior Engineer	25,000.00	470,000.00
Laboratory Technician	15,000.00	282,000.00
Site Supervisor	15,000.00	282,000.00
Total:		3,666,000.00

Similarly, the contractor had failed to deploy separate HR and equipment against the same HR and equipment committed for the three packages. Thus, in line with the penalty provisions under Clauses GCC 10.1 and SCC and failure to terminate the contract, the Regional Office should recover the salaries of such personnel and hire charges of equipment at a rate stipulated in the Special Condition of Contract per month per personnel and equipment for the duration of the contract amounting to Nu. 3,478,000.00 as computed below:

Particular of HR	Name	Packages	Penalty amount /month (Nu) (II)	Penalty amount for the duration of the contract 18.8 months (Nu.)
Project Manager	Biren Thapa	Same for all packages (I,II, & III)	50,000.00	940,000.00
Project Engineer	Babu Madhavan Puthenpurayil	Same for all packages (I,II, & III)	50,000.00	940,000.00
Material Engineer	Sonam Tobgay Dorji	Same for all packages (I,II, & III)	40,000.00	752,000.00
Surveyor	Karchung	Same for all packages (I,II, & III)	15,000.00	282,000.00
Lab Technician	Megraj Gurung	Same for all packages (I,II, & III)	15,000.00	282,000.00
Site supervisor	Nidup Lhamo	Same for all packages (I,II, & III)	15,000.00	282,000.00
Site supervisor	Lhendup Tshering Lepcha	Same for all packages (I,II, & III)	15,000.00	282,000.00
Total:				3,478,000.00

- The following correspondences apparently indicated failure of the Pavement works for Packages II and III valuing Nu. 26.490 million and additional compensation payment of Nu. 3.593 million in addition to the insurance claim of Nu. 19.453 million.
 - DoR/CE(TMT)/2015-16/8 date 1st June 2016
 - CCCPL/ROL-(III)/Works-09/2016-2017/002 dated 7th January 2017
 - DoR/Lobeysa/construction Division(09)/2016-2017/037 dated 24th January 2017
 - CCCPL/ROL-(II)/Works-07/2016-2017/049 dated 13th April 2017
 - DoR/CE(CD)/2016-2017/W-7/3795 dated 17th April 2017
 - DoR/CD/7/2016-2017/4059 dated 26th June 2017
 - DoR/CD/28/2017-2018/4245 dated 8th August 2017

The failure of such magnitude of pavement works is a clear evidence of non-deployment of separate HR by the contractor as well as laxity on the part of the Regional Office and MLTC in allowing the contractor to execute three packages with the same HR for all the three works.

2.13.2 Langkena-Tekizampa (Package V) executed by M/s Etho Metho Construction Pvt. Ltd (RO, Lobeysa)

Table 2.13.2:HR requirement/employed as per bidding documents				HR as per physical verification at site			
Sl. No.	Key Personnel Required	Qualification Required	Nos.	Nos.	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	J.D Karchung	Sonam Dorji, Degree in Tourism	
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Ashok Maheswari	Nil	Not present at site
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Phuntsho Wangdi Diploma in Civil Engg		Not present at site
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Kinley Penjor	Bhawana, Degree in Civil Engg	
5	Surveyor	Diploma in Survey or trained surveyors	1	1	Mr. Gurung	Surya Bdr Chettri	
6	Lab Technician	Class X pass with experience	1	1	Kinley Chophel	Choki, Class X passed	
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Sangay Phuntsho	Lok Bdr	
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Tshering Tobgay	Pema Wangchuk	

- The site engineer was also not aware of unauthorized replacements
- The Project Engineer and Material Engineer were not at site during physical verifications.

The Regional Office should work out the penalty amounts as per the above-referred clause for non-deployment of project engineer and other key personnel and accordingly deposit into Audit Recoveries Account.

2.13.3 Pelela to Bumilo (Package VIII) executed by M/s Empire Construction Pvt. Ltd, recoverable penalty Nu. 1,125,000.00 (RO, Lobeysa)

Table 2.13.3.: Key Personnel deployed at site					
Designation	Name & CID at site	Qualification	Working Experience	Remarks	
Project Manager	Ugyen Dorji, CID No. 11909000813			Documents produced for Dawa Tenzin, graduate of 2008, but person available at site is Uguen Dorji	
Project Engineer	Lobzang Chodup, CID No. 11007001278	Degree	May - 2014 - 2016 (2 yrs)	Not meeting the criteria	
Material Engineer	Kinga, CID No. 10306001264	Diploma	9 years		
Junior Engineer	Yejay, CID No. 11506005017	Diploma	pass out in 29.6.15 from	Not meeting the criteria	

			JNEP	
Surveyor	Sonam Tshering, CID No. 11909000811	Certificate in survey		Not at site
Laboratory Tech.	Jigme Dawa, CID No. 11405001432	12 pass	5 years	Not at site
Work Supervisor	Jigme Wangdi, CID No. 11806001347			Documents not produced
Work Supervisor	1. Sonam Tshewang, CID No. 10904000060	VTI	3 years	Not at site

- Set of key personnel committed in the bid documents were replaced without meeting the criteria stated in the GCC and without appropriate approvals of the client.
- During physical verification conducted at site, Mr. Ugyen Dorji, bearing CID No. 11909000813 present at work site was stated as Project Manager. However, the available documents submitted by the company for verification showed Mr. Dawa Tenzin, bearing CID No. 11007001276 as Project Manager.
- The Project Engineer & Junior Engineer were replaced by personnel having less working experience. The Project Engineer has 1-year working experience (i.e. 2015 with M/s D Builders) and Mr. Yejay, JE had just passed out from JNP, Deothang.
- The contractor had failed to deploy the Surveyor, Laboratory Technicians and one work supervisor, as they were not available at site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Surveyor	15,000.00	375,000.00	Deduction for 25 months
Laboratory Technician	15,000.00	375,000.00	Deduction for 25 months
Work Supervisor	15,000.00	375,000.00	Deduction for 25 month
Total:		1,125,000.00	

2.13.4 Pelela to Dungdungnesa (Package XI) executed by M/s Hi-Tech Company Pvt. Ltd and recoverable penalty Nu. 2,125,000.00 (RO, Lobeysa)

Sl. No.	Key Personnel Required	Qualification Required	Nos.	HR Committed	HR recruited at site	
				Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	Kharka Prasad Upreti	Tshewang Norbu, Diploma in civil Eng.	Owner
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Tshewang Norbu, Diploma	Mon Bhadur Subba,	Not at site
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Karma Renzin	Not available	-
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Pema Wangchey	Karchung, Diploma in civil	
5	Surveyor	Diploma in Survey or trained surveyors	1			
6	Lab Technician	Class X pass with experience	1			
7	Site Supervisors	VTI Graduate or equivalent with	1	Mon Bdr.	Sherub, VTI	

		more than 2 years' experience		Mongar		
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	Not mentioned	Not available	

- Set of key personnel committed in the bid documents were changed without meeting the criteria stated in the GCC and made without approval of appropriate authority.
- During physical verification conducted at site, except the site supervisor, all the HR personnel were engaged on Gasa Secondary National Highway (SNH) work site.
- The contractor had failed to deploy separate personnel for two different contract works.
- All the committed key personnel were replaced with lesser qualification and working experiences.
- The contractor had not deployed the Material Engineer, Surveyor, Laboratory Technicians and one work supervisor

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Table 2.13.4.1:Deductions		
Particular of HR	Penalty amount /month (Nu)	penalty amount for the duration of the contract 25 months
Materials Engineer	40,000.00	1,000,000.00
Laboratory Technician	15,000.00	375,000.00
Surveyor	15,000.00	375,000.00
Site Supervisor	15,000.00	375,000.00
Total:		2,125,000.00

2.13.5 Razhau to Nobding (Package XIII) executed by M/s U.P Construction Pvt. Ltd and recoverable penalty Nu. 1,190,000.00 (RO, Lobeysa)

- The contractor had failed to recruit Material Engineer, Lab-Technician and Site supervisor as committed in the contract documents.
- The site engineer was not aware of absence of HR personnel at site.
- The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Table 2.13.5:Deductions		
Particular of HR	Penalty amount /month (Nu)	penalty amount for the duration of the contract 17 months
Materials Engineer	40,000.00	680,000.00
Laboratory Technician	15,000.00	255,000.00
Site Supervisor	15,000.00	255,000.00
Total:		1,190,000.00

RO, Trongsa

2.13.6 Chuserbu to Nyelazam (Package 1) executed by M/s Rigsar Construction Pvt. Ltd-recoverable penalty - Nu.195,000.00 (RO, Trongsa)

Table 2.13.6: HR requirement/employed as per bidding documents				HR recruited at site			
Sl. No.	Key Personnel Required	Qualification Required	Nos.	Nos.	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Pema Khenrub, B.Com 10yrs	Sonam Chogyel BA with 23 years' experience	Not at site
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Jampel, BE Civil, 7yrs	Nidup Chong, BE civil with 12 years' experience	Not at site, and also the project engineer was overseeing all the 3 packages awarded to the firm
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Sachitra Pokhrel, BE Civil	Phuntsho Wangdi, BE Civil 3years experience	
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Ram Bhadur Rai, Diploma in civil	Namgay Tshering, Diploma in Civil with 3 years' experience	
5	Surveyor	Diploma in Survey or trained surveyors	1	1	Phuntsho, Diploma in Civil	Puran Ghalley Class XII with locally trained surveyor with 7 years' experience	
6	Lab Technician	Class X pass with experience	1	1	Tashi Dorji, Class X passed	Tashi Dorji, Class X	Not at site
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Dechen Yangden, VTI graduate	Sacha, Class 12 with 7 years' experience	
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1		Thinley Yoezer, X pass with 9 years' experience	

- All committed key personnel except Lab Technician, Tashi Dorji, were substituted with different sets of key personnel without approval.
- Project Manager, Project Engineer and Lab-Technician were not at work site during the physical verification of key personnel.
- The Site Engineer, RO was also not aware of unauthorized replacements and absence of the Project Engineer.
- Mr. Nidup Chong, the Project Engineer was handling all the three 3 packages awarded to the firm

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Project Manager	50,000.00	150,000.00	Deduction for 3 months
Laboratory Technician	15,000.00	45,000.00	Deduction for 3 months
Project Engineer			Separately worked out under different audit memo
Total:		195,000.00	

2.13.7 Nyelazam to Sakachawa (Package 2) executed by M/s Gaseb Construction Pvt. Ltd (RO, Trongsa)

Table 2.13.7: HR committed as per Agreement			Present at Work site on		
Sl/No	Name of HR Personnel with Designation	Qualification &No. of years' experience	Name of HR Personnel with Designation	Qualification &No. of years' experience	Remarks
1	Kumar Poudyel, Project Manager	Degree in Civil engg. 25 years	Not present		Stated on leave
2	Sonam Kuenga Tshering, PE	Master in Geitech & Degree in CE, 24 years	Saji Thomas	Diploma in civil engg. 23 years	
3	Kinley Wangchuk, ME	Degree in Civil Engg	Indraman Limby	Diploma in Civil engg. 2.5 years	
4	Saji Thomas, JE	Diploma in civil engg. 23 years	Bhim Kumar Gurung, SE	Diploma in civil engg. No experience	
5	Doten, Surveyor	Degree in civil engg. Trained surveyor	No present		
6	Yam Kumar Pradhan, laboratory	Class 12 passed out	Not present		
7	Tandin Wangchuk	VTI Graduate	Bhim Mukha, VTI	6 years	
8	Tshering	VTI Graduate	Tshering	3 years	

- All committed key personnel except three personnel were substituted with different sets of key personnel without approval.
- Project Manager, Material Engineer, Surveyor and Lab-Technician were not present at work site during the physical verification of key personnel.
- The Site Engineer, RO was also not aware of unauthorized replacements and absence of the key personnel
- Mr. Saji Thomas, JE, Diploma in civil engineering with 23 years of experiences was designated as Project Engineer in place Mr. Sonam Kuenga Tshering, PE with Master in Geitech & Degree in CE, having 24 years experiences.

2.13.8 Sakachawa to Tsangkha (Package 3) executed by M/s Rinson Construction Pvt. Ltd –recoverable penalty Nu. 1,765,000.00 (RO, Trongsa)

Table 2.13.8: HR requirement/employed as per bidding documents				HR recruited at site			
Sl. No	Key Personnel Required	Qualification Required	Nos	Nos	Key Personnel Stated in Proposal	Present at site & Qualification Experience	Remarks

1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Tity Varu Ghese, Degree in civil, 29 yrs.	Rinzin Dorji Diploma in Electrical	Not qualified to become Project Manager
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Sonam Dorji, Dip. In civil, 19 yrs.	Sonam Dorji, Dip. In civil, 19 yrs.	
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tara Rai, Dip. In civil, 14 yrs.	No.	-
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Pema Dorji Wangdi, Diploma in civil	No	
5	Surveyor	Diploma in Survey or trained surveyors	1	1	Kumar Pradhan, Surveyor	Kumar Pradhan, Surveyor	
6	Lab Technician	Class X pass with experience	1	1	Lachimi Narayan	Thinley Tenzin...General Degree	
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Wangchuk, VIT, 8 yrs.	Wangdi. Class VIII passed	Inexperienced for site supervision
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Rinzin Dorji, VTI, 8 yrs.	Surjaman Rai, Class 12 passed	Inexperienced for site supervision

- Material Engineer and Junior Engineer not recruited.
- The Project Manager and Site Supervisors were substituted with lesser qualification and experiences.
- Except the Project Engineer and Surveyor, all other committed Key personnel were replaced without approval.

The Site engineer not aware of absence of HR personnel at site. The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Materials Engineer	40,000.00	240,000.00	Deduction for 6 months
Project Manager	50,000.00	1,500,000.00	Deduction for 30 months
Junior Engineer	25,000.00	25,000.00	Deduction for 1 month
Total:		1,765,000.00	

2.13.9 Tshangkha to View Point (Package 4) executed by M/s Gyalcon Infrastructure Pvt. Ltd-recoverable penalty Nu. 750,000.00 (RO, Trongsa)

Sl/ No	Name of HR Personnel with Designation	Qualification &No. of years' experience	Present at Work site on		
			Name of HR Personnel with Designation	Qualification &No. of years' experience	Remarks
Jun 1	Thinley Dem, Project Manager	Master in Environment Engg.	Ugyen Dorji	Diploma in Civil Engg	Replaced with low qualifications
2	Ugyen Dorji, PE	Diploma in Civil Engineering	Mewash Gurung	Degree in Civil Engg	only 1 and ½ years' experience

3	Passang Dorji, ME	Diploma in Civil Engineering	Tshering Dorji,	Diploma in Civil Engg. Years	Replaced with less work experience (Fresh graduate)
4	Kamal Chhetri, JE	Diploma in Civil Engineering			Not present
5	Kaamba Singh Singdhan, w/s	RBIT	GB Gurung	No qualification	Working experience 25 years
6	Rinzin Wangchuk, WS	VTI	Sonam Tobgay	12 passed	2 years

- Junior Engineer not recruited.
- The Project Manager and Site Supervisors were substituted with lesser qualification and experiences.
- All Committed Key Personnel were replaced without approval.
- The Site engineer not aware of absence of HR personnel at site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Table 2.13.9.1: Penalty deductions			
Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Junior Engineer	25,000.00	750,000.00	Deduction for 30 months
Total:		750,000.00	

2.13.10 View Point- BjeeZam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd-recoverable penalty Nu. 1,200,000.00 (RO, Trongsa)

Table 2.13.10: HR committed as per Agreement			Present at Work site on		
Sl/ No	Name of HR Personnel with Designation	Qualification &No. of years' experience	Name of HR Personnel with Designation	Qualification &No. of years' experience	Remarks
1	Karma Phuntsho, Project Manager	Degree in Civil Engineering, Experience around 15 years	Kuenzang Wangchuk, PM	BBA with 2.5 years	Replaced with no experience and required qualification
2	Choki Dorji, Material Engineer	Diploma in Civil Engineering, 15 years' Experience			Not deployed at site
3	Kinley Penjor, Junior Engineer	Diploma in Civil Engineering, 16 years' Experience	Sonam Dendup, JE	Diploma in Civil Engg. 3 years	Replaced with less work experience
4	Deo Prakash Rai, Project Engineer	Diploma in Civil Engineering, 16 years' Experience	Jigme Tashi, PE	B.Tech Civil, 1 year	Replaced with no experience and required qualification
5	Nil		Yeshi Wangmo, SS	Class X, 2 years	
6	Nil		Sunjok Subha, SS	Class X, 2 years	

- Material Engineer not recruited.

- The Project Manager, Project Engineer and Junior Engineer were substituted with lesser qualification and experiences.
- All Committed Key Personnel were replaced without approval.
- The Site engineer not aware of absence of HR personnel at site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Material Engineer	40,000.00	1,200,000.00	Deduction for 30 months
Total:		1,200,000.00	

2.13.11 Bjeezam- Trongsa (Package 6) executed by M/s Raven Builders & Company Pvt. Ltd recoverable penalty Nu. 3,210,000.00 (RO, Trongsa)

HR requirement /employed as per bidding documents				HR recruited at site			
Sl. No	Key Personnel Required	Qualification Required	Nos	Nos	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Sangay Dorji, B.Com, 11 years expel	Phub Tshering, Diploma in Civil	Fresh graduate
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Dorji Tshering, BE Civil, 35 yrs	-	Not present
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tenzin Wangdi, BE Civil, 15 yrs	-	Not present since start of the project
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Kinley, Diploma in Civil, 7yrs	Yogita, B.E Civil	
5	Surveyor	Diploma in Survey or trained surveyors	1	1	Sonam Phuntsho, Survey Engg	-	Not present
6	Lab Technician	Class X pass with experience	1	1	Cheku, Class 12 passed, 7yrs	-	Not present since start of the project
7	Site Supervisor	VTI Graduate or equivalent with more than 2 years' experience	1	1	Choten, VTI Civil, 4yrs	Karma Tshomo, VTI, 1year graduate	
8	Site Supervisor	VTI Graduate or equivalent with more than 2 years' experience	1	1	Neten Dorji, VTI Civil, 5yrs	-	Not present since September 2017

- The Project Manager was found substituted with fresh graduate.
- All Committed Key Personnel were replaced without approval.

- Except Project Manager, Junior Engineer and one site supervisor, all other key personnel were not present at work site during the physical verification of key personnel's
- The Site engineer not aware of absence of HR personnel at site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Project Engineer	50,000.00	1,500,000.00	Deduction for 30 months
Materials Engineer	40,000.00	1,200,000.00	Deduction for 30 months
Project Manager	50,000.00	-	
Junior Engineer	25,000.00	-	
Laboratory Technician	15,000.00	450,000.00	Deduction for 30 months
Site Supervisor	15,000.00	60,000.00	Deduction for 4 months
Total:		3,210,000.00	

2.13.12 Pinzhi-Tashipokto (PKG-8) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu -recoverable penalty Nu. 5,180,000.00 (RO, Trongsa)

SI/ No	Name of HR Personnel with Designation	Qualification &No. of years' experience	Present at Work site on		
			Name of HR Personnel with Designation	Qualification &No. of years' experience	Remarks
1	Sherab Penjor, Project Manager	B.Com (computer Science)			Not present at site
2	Om Kumar Pradhan, project Engineer	Diploma in Civil Engineering			Not present at site
3	MD. Alludin Aanasari, Material Engineer	Degree in Civil Engineering			Not present at site
4	Yonten Dorji, Laboratory	Class 12 passed			Not present at site
5	Patitapaban Jagamohan, Junior Engineer	Diploma in Civil Engineering	Sanvir Singh, Junior Engineer	Diploma in Civil Engineering	
6	Karma Wangchuk, Work Supervisor	VTI Graduate			Not present at site
7	Pema Lethro, Work supervisor	VTI Graduate			Not present at site

- All Committed Key Personnel were either not recruited or deployed for the three packages
- Except Junior Engineer, all other key personnel were not present at work site during the physical verification of key personnel's
- The Site engineer not aware of absence of HR personnel at site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Sl/No	Name of HR Personnel with Designation	Penalty deductible per month Nu.	No. of months	Amount Nu.
1	Sherab Penjor, Project Manager	50,000.00	28	1,400,000.00
2	Om Kumar Pradhan, project Engineer	50,000.00	28	1,400,000.00
3	MD. Alludin Anasari, Material Engineer	40,000.00	28	1,120,000.00
4	Yonten Dorji, Laboratory	15,000.00	28	420,000.00
5	Karma Wangchuk, Work Supervisor	15,000.00	28	420,000.00
6	Pema Lethro, Work supervisor	15,000.00	28	420,000.00
	Total			5,180,000.00

2.13.13 Tashipokto to Dorjigonpa (Package 9) executed by M/s Welfare Construction Pvt. Ltd-recoverable penalty Nu. 2,665,000.00 (RO, Trongsa)

HR requirement/employed as per bidding documents				HR recruited at site			
Sl. No	Key Personnel Required	Qualification Required	Nos	Nos	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Tshelthrim Dukar, Degree in science, 10yrs	Dradul, Degree in geology	Not present since December 2017
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Sujith N.S, Diploma in C.Engg, 10yrs	Karma, B.E Civil, 18yrs	
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Chandra Kumar Giri, Diploma in C.Engg, 7yrs	Nil	Not present since start of project
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1		Nil	Was at site only for 5 months
5	Surveyor	Diploma in Survey or trained surveyors	1	1	DD Gurung, Certificate in Surveying, 20yrs	Nil	Not present since start of project
6	Lab Technician	Class X pass with experience	1	1	Mon Maya Tamang, Class X, 10yrs	Nil	Not present since start of project
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Yeshey Kuenzang, VTI, 7yrs	Tshering Dorji,	Not at site since December 2017
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Pema Tshering, Class 12, 10yrs	Nil	Not present since start of project

- Committed Key Personnel viz. Material Engineer, Surveyor, Lab Technician and One Site Supervisor were not recruited since the start of the contract works
- Project Manager, Project Engineer and One Site Supervisor though deployed were substitute of committed key personnel and were replaced without approval and verification of qualifications and experiences
- Project Manager and One Site Supervisor was stated to have been deployed but were not present since December 2017.
- Junior Engineer stated to have been deployed for just 5 months

- The Site engineer not aware of absence of HR personnel from the site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Project Manager	50,000.00	100,000.00	Deduction for 2 months
Material Engineer	40,000.00	1,120,000.00	Deduction for 28 months
Junior Engineer	25,000.00	575,000.00	Deduction for 23 months
Lab Technician	15,000.00	420,000.00	Deduction for 28 months
Site Supervisor I	15,000.00	30,000.00	Deduction for 2 months
Site Supervisor II	15,000.00	420,000.00	Deduction for 28 months
Total:		2,665,000.00	

2.13.14 Dorji Gonpa to Yotongla (Package 10) executed by M/s Rinson Construction Pvt. Ltd-recoverable penalty Nu. 2,670,000.00 (RO, Trongsa)

HR requirement/employed as per bidding documents				HR recruited at site			
Sl. No	Key Personnel Required	Qualification Required	Nos	Nos	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Angela Alexander, B.Com, 8yrs	Tara Rai, Diploma in Civil	On leave
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tity Varu Ghese, Degree in civil, 29 yrs.	Ugyen, B.E.Civil	On leave
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tara Rai, Diploma in Civil, 14yrs	Jigme Wangchuk, Diploma in Civil, 2yrs	
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Sonam Dorji, Diploma in Civil, 19yrs	Som Bdr Rai, Diploma in Civil, 1 yr	Transferred to Package 13
5	Surveyor	Diploma in Survey or trained surveyors	1	1	Pema Namgyel, Class 12	Nil	Not present since start of project
6	Lab Technician	Class X pass with experience	1	1	Bir Bdr Adikari, VTI	Nil	Not present since start of project
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Rinzin Dorji, RBIT pass, 8yrs	Wangdi, 10yrs	Only present for 4 months
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Wangchuk, VTI, 3 yrs	Nil	Not present since start of project

- Committed Key Personnel viz. Surveyor, Lab Technician and One Site Supervisor were not recruited since the start of the contract works

- All key personnel deployed at work site were substitutes of committed key personnel and replaced without approval and verification of qualifications and experiences
- Project Manager, Project Engineer and One Site Supervisor was stated to have been deployed but were either on leave and not present at work during the physical verifications of the key personnel
- One Site Supervisor was stated to have been deployed for just 4 months
- Junior Engineer was not present at work site during physical verification but stated to have been transferred to Package 13.
- The Site engineer not aware of absence of HR personnel from the site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	Amount	Remarks
Junior Engineer	25,000.00	50,000.00	Deduction for 2 months
Lab Technician	15,000.00	435,000.00	Deduction for 29 months
Surveyor	15,000.00	375,000.00	Deduction for 29 months
Site Supervisor I	15,000.00	375,000.00	Deduction for 25 months
Site Supervisor II	15,000.00	435,000.00	Deduction for 29 months
Total:		2,670,000.00	

2.13.15 Yotongla to Bongzam (Package 11) executed by M/s Dungkar Construction Pvt. Ltd-recoverable penalty Nu. 6,440,000.00 (RO, Trongsa)

Table 2.13.15: Human Resource required as per ITB 4.3 (e) of Section II, Bidding Data sheet					Status at site during physical verification
SL. No.	Position	Name of personnel	Qualification	No.	No separate HR deployed at site but HR same as HR deployed for Contract Package XII
1	Project Manager	Ms. Pema Lhadon	Degree in any field OR Diploma in Civil Engineering	1	
2	Project Engineer	Mr.Prasant Kumar	Degree in civil Engineering OR Diploma in Civil Engineering	1	
3	Material Engineer	Mr. Namgay Dorji	Degree in Civil Engineering OR Diploma in Civil Engineering	1	
4	Engineer/Junior Engineer	Not provided	Degree in Civil Engineering OR Diploma in Civil Engineering	1	
5	Surveyor	Ms. Sonam Zam	Diploma in Survey Or trained surveyors	1	
6	Laboratory Technician	Mr. Sonam Tashi	Class X pass with experience	1	
7	Work/Site supervisor	Mr. Namdak Rinchen	VTI graduate	2	
	Work/Site supervisor	Not Provided	VTI graduate		

- No separate HR deployed at site but same HR deployed for Contract Package XII were used for the management of the contract works
- The Site engineer and RO had failed to ensure deployment of separate HR personnel for the contract package

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	No.	Penalty amount /month (Nu)	Penalty amount for the duration of the contract 28 months (XI)	Remarks
Project Engineer	1	50,000.00	1,400,000.00	On Completion of works, the RO should work out and recover the deductions for the extended contract periods
Materials Engineer	1	40,000.00	1,120,000.00	
Project Manager	1	50,000.00	1,400,000.00	
Junior Engineer	1	25,000.00	700,000.00	
Surveyor	1	20,000.00	560,000.00	
Laboratory Technician	1	15,000.00	420,000.00	
Site Supervisor	2	15,000.00	840,000.00	
Total:			6,440,000.00	

2.13.16 Bongzam to Gyatsa Zam (Package 12) by M/s Dungkar Construction Pvt. Ltd- recoverable penalty Nu. 2,380,000.00 (RO, Trongsa)

SL. No.	Position	Qualification	Name of personnel	Qualification	No.	Status at site during physical verification
1	Project Manager		Ms. Pema Lhadon	BA Eco	1	No separate HR deployed at site but HR same as HR deployed for Contract Package XI
2	Project Engineer	Degree in any field OR Diploma in Civil Engineering	Mr.Prasant Kumar	Degree in civil Engineering	1	
3	Material Engineer	Degree in civil Engineering OR Diploma in Civil Engineering	Mr. Namgay Dorji	Diploma in Civil Engineering	1	
4	Engineer/Junior Engineer	Degree in Civil Engineering OR Diploma in Civil Engineering	Not provided		1	
5	Surveyor	Degree in Civil Engineering OR Diploma in Civil Engineering	Ms. Sonam Zam	Bachelor in Architecture	1	
6	Laboratory Technician	Class X pass with experience	Mr. Sonam Tashi	Degree in Electrical Engineering	1	
7	Work/Site supervisor	VTI graduate	Mr. Namdak Rinchen	Class XII passed	2	
			Not Provided			

- No separate HR deployed at site but same HR deployed for Contract Package XII were used for the management of the contract works

- All key personnel deployed at work site were substitutes of committed key personnel and replaced without approval and verification of qualifications and experiences
- Material engineer, Laboratory Technician and two Work Site Supervisors, if deployed, were not present at work site during the physical verification of the key personnel conducted on 3rd January 2018.
- The Site engineer and RO had failed to ensure deployment of separate HR personnel for the contract package .

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Table 2.13.16.1: Human Resource required as per ITB 4.3 (e) of Section II, Bidding Data sheet					HR personnel available at site		
Sl/ No	Position	Name of personnel	Qualification	No.	Name & Qualification	Penalty Amount (Nu.)	Remarks
1	Project Manager	Ms. Pema Lhadon	BA Eco	1	Tharpa Tashi, Ph.D Economics		Present
2	Project Engineer	Mr.Prasant Kumar	Degree in civil Engineering	1	Prabat Rai, Master in Engg.		Present
3	Material Engineer	Mr. Namgay Dorji	Diploma in Civil Engineering	1		Nu. 1,120,000.00 (i.e.,40,000.00 * 28)	Not present
4	Engineer/Junior Engineer	Not provided		1	Dipak Galey, Diploma in Civil Engg.		Present
5	Surveyor	Ms. Sonam Zam	Bachelor in Architecture	1	Ms. Sonam Zam		Present
6	Laboratory Technician	Mr. Sonam Tashi	Degree in Electrical Engineering	1		Nu. 420,000.00(i.e., 15,000.00 *28)	Not present
7	Work/Site supervisor	Mr. Namdak Rinchen	Class XII passed	2		Nu.840,000.00 (i.e.,15,000.00 *28*2)	Not present
			Total			2,380,000.00	

2.13.17 Gyatsazam to Ngangar (Package 13) executed by M/s Rinson Construction Pvt. Ltd-recoverable penalty Nu. 2,240,000.00 (RO, Trongsa)

Table 2.13.17: HR requirement/employed as per bidding documents				HR recruited at site		
Sl. No.	Key Personnel Required	Qualification Required	Nos.	Nos.	Key Personnel Stated in Proposal	Present at site Qualification & Experience
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1	Angela Alexander, BCom., 8 years	Tashi Norbu, Diploma in civil, 8 years
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tity Varu Ghese, Degree in civil, 29 yrs.	Som Raj Rai, Diploma in civil, 1 yr.
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Tara Rai, Dip. In civil, 14 yrs.	No.
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1	Sonam Dorji, Dip. In civil, 19 yrs.	No

5	Surveyor	Diploma in Survey or trained surveyors	1	1	Pema Namgyel, class XII with certificate	No
6	Lab Technician	Class X pass with experience	1	1	Bir Bdr. Adhikari, VTI, 15 yrs.	No
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Wangchuk, VIT, 8 yrs.	Wangchuk, VIT, 8 yrs.
8	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1	Rinzin Dorji, VTI, 8 yrs.	Sher Bdr. Tamang, work experience

- Committed Key Personnel viz. Material Engineer, Junior Engineer, Surveyor, Lab Technician were not recruited since the start of the contract works
- All key personnel except One Site Engineer deployed at work site were substitutes of committed key personnel and replaced without approval and verification of qualifications and experiences
- The Site engineer not aware of absence of HR personnel from the site.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	28 months (Nu.)
Materials Engineer	40,000.00	1,120,000.00
Laboratory Technician	15,000.00	420,000.00
Junior Engineer	25,000.00	700,000.00
Total:		2,240,000.00

2.13.18 Sonam Kuenphen to Hurjee (Package 14) executed by M/s Lamnekha Construction Pvt. Ltd-recoverable penalty Nu. 1,050,000.00 (RO, Trongsa)

HR requirement/employed as per bidding documents				HR recruited at site			
Sl. No	Key Personnel Required	Qualification Required	Nos.	Nos.	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	1		Tshering Wangdi, Ex- policemen	No qualification
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1		Yonten Tobgay, Degree in civil	
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1		No	-
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	1		Karma Tsundru, Diploma in Civil	
5	Surveyor	Diploma in Survey or trained surveyors	1	1		No	
6	Lab Technician	Class X pass with experience	1	1		No	

7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	1	1		Tshering Dorji, VIT	
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- The RO and the project manager had failed to produce the companies' profile. In the absence of which the committed key personnel in the proposal, tender as well as in put in e-tool could not be verified in audit.
- The Project Manager should have bachelor degree in any field with 7 years' experience or diploma in civil engineer with 10 years' work experience but had deployed ex-policeman and no profile of the official was made available on record.
- Key personnel viz. Material Engineer, Junior Engineer & Lab-Technician were not recruited since the start of the contract works.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed below:

Particular of HR	Penalty amount /month (Nu)	15 months (Nu.)
Materials Engineer	40,000.00	600,000.00
Surveyor	15,000.00	225,000.00
Laboratory Technician	15,000.00	225,000.00
Total:		1,050,000.00

RO, Lingmethang

2.13.19 Korila-Pangser (Package-2) executed by M/s. Tshering Construction Pvt Ltd. Bumthang (RO, Lingmethang)

The status of key personnel required and committed by the Contractor as per bidding document are as tabulated below:

S l. N o .	Key Personnel Required	Qualification Required	Number require	Name of committed personal	Qualification
1	Project Manager	Degree in any field with 1 to 7 years or more work experience or Diploma in Civil Engineering with 3 to 10 years or more work experience and Any other qualification	1	Sonam Jamtsho	Bachelors in Commerce
2	Project Engineer	Degree in Civil Engineering and and with 1 to 5 years or more work experience or Diploma in Civil Engineering and also with 3 to 10 years or more work experience in road/bridge works and Any other qualification	1	Karsang Norbu	Post graduate diploma in water supply and treatment engineering
3	Material Engineer	Degree in Civil Engineering with 3 to 5 years' experience or Diploma in Civil Engineering with 3 to 10 years' experience and Any other qualification	1	Binod Rana Mongar	Degree in Civil Engg
4	Junior	Degree in Civil Engineering or Diploma in	1	Vinod Kumar	Diploma in Civil

	Engineer	Civil Engineering with experience 5 to 10 years or more other than road work		Lal	Engg
5	Surveyor	Diploma in Survey and also with 3 to 7 or more work experience or Certified/trained surveyor with 1 to 10 years or more work experience and Any other qualification	1	Dilli Ram Baraily	Diploma in Survey
6	Lab Technician	Class XII pas with 5 years experiences as lab technician or Class X pass with 3 to 5 years' experience as Lab Technician and Any other qualification	1	Nil	
7	Work/Site Supervisors	VTI Graduate or equivalent with 1 to 5 years or more work experience and Any other level of qualification or experience	2	Tshirim Dorji	Diploma in electrical
				Lham Chenzom	VTI

The status of key personnel committed as per bidding document and actual employment at work site as noted during the physical verification are as tabulated below:

Sl. No	Key Personnel Required	Name of the committed personal	Qualification	Personnel Engaged At Site as per record	Qualification & Experience	Status during physical verification	Remarks
1	Project Manager	Sonam Jamtsho	Bachelors in Commerce	Sonam Jamtsho	Bachelors in Commerce	Present	
2	Project Engineer	Karsang Norbu	Post graduate diploma in water supply and treatment engineering	Jucdeep,	Degree in Civil	Not Present	Need to review the score assigned
3	Material Engineer	Binod Rana Mongar	Degree in Civil Engg	Phub Dorji,	Diploma in Civil, 1 year experience		Need to review the score assigned as replacement is by diploma holder as against Degree holder
4	Junior Engineer	Vinod Kumar Lal	Diploma in Civil Engg	Surja Ghalley,	Diploma in Civil, 2 years		Review experience of Vinod Kumar Lal and score assigned
5	Surveyor	Dilli Ram Baraily	Diploma in Survey	Nil		Not Available/engaged	
6	Lab Technician	Nil		Narayan,	Class 12 Passed		
7	Site Supervisors	Tshirim Dorji	Diploma in electrical	Tashi Tshering,	VTI		Review the score assigned during evaluation
8	Site Supervisors	Lham Chenzom	VTI	Nil		Not available /engaged	

- Set of key personnel committed in the bid documents were replaced without meeting the criteria stated in the GCC and without appropriate approvals of the client.
- The contractor had failed to deploy the Surveyor, Laboratory Technicians and one work supervisor, as they were not available at site.

2.13.20 Pangser-Kilikhar (Package-3) executed by M/s. K. D Builder Pvt Ltd (RO, Lingmethang)

The status of key personnel required and committed by the Contractor as per bidding document are as shown in table 2.13.20 below:

Sl. No.	Key Personnel Required	Qualification Required	Number require	Name of committed personal	Qualification
1	Project Manager	Degree in any field with 1 to 7 years or more work experience or Diploma in Civil Engineering with 3 to 10 years or more work experience and Any other qualification	1	Dorji Wangda	B.Com, 8 years
2	Project Engineer	Degree in Civil Engineering and with 1 to 5 years or more work experience or Diploma in Civil Engineering and also with 3 to 10 years or more work experience in road/bridge works and Any other qualification	1	Chencho Tshering	Diploma in Civil Engg, 26yrs
3	Material Engineer	Degree in Civil Engineering with 3 to 5 years' experience or Diploma in Civil Engineering with 3 to 10 years' experience and Any other qualification	1	Prasenjit Mukhoadhyay	Diploma in Civil Engg, 23 yrs
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering with experience 5 to 10 years or more other than road work	1	Ranjan Kumar	Diploma in Civil Engg, 23 yrs
5	Surveyor	Diploma in Survey and also with 3 to 7 or more work experience or Certified/trained surveyor with 1 to 10 years or more work experience and Any other qualification	1	Nil	
6	Lab Technician	Class XII pas with 5 years experiences as lab technician or Class X pass with 3 to 5 years' experience as Lab Technician and Any other qualification	1	Kuenzang Wangmo	Class XII, 8 years
7	Work/Site Supervisors	VTI Graduate or equivalent with 1 to 5 years or more work experience and Any other level of qualification or experience	2	Tshering	VTI, 8 years
				Sonam Choden	VTI, 7 years

The status of key personnel committed as per bidding document and actual employment at work site as noted during the physical verification is shown in table 2.13.20.1 below:

Sl. No.	Key Personnel Required	Name of committed personal	Qualification	Personnel Engaged At Site as per record	Qualification & Experience	Status during physical verification	Remarks
1	Project Manager	Dorji Wangda	B.Com, 8 years	Karma Dema	BBM	Present	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
2	Project	Chencho	Diploma in	Chencho	Diploma	Present	

	Engineer	Tshering	Civil Engg, 26yrs	Tshering	in Civil Engg		
3	Material Engineer	Prasenjit Mukhoadhyay	Diploma in Civil Engg, 23 yrs	Dorji Wangdi	Diploma in Civil Engg	Present	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
4	Junior Engineer	Ranjan Kumar	Diploma in Civil Engg, 23 yrs	Tenzin Norbu	BE Civil engg	Present	Need to furnished documents to validate Experience though replaced by a Degree holder.
5	Surveyor	Nil		Ram Chandra	Diploma in Survey	Present	Need to furnish documents to validate qualification and experience met the requirements
6	Lab Technician	Kuenzang Wangmo	Class XII, 8 years	Norbu	VTI	Present	Need to furnish documents to validate Experience met the requirement.
7	Work/Site Supervisors	Tshering	VTI, 8 years	Bikash Rai,	Class X passed	Present	Need to furnish documents to validate Experience met the requirement
		Sonam Choden	VTI, 7 years	Ganga Raj,	Class X passed	Present	Need to furnish documents to validate Experience met the requirement

Set of key personnel committed in the bid documents were replaced without meeting the criteria stated in the GCC and without appropriate approvals of the client.

2.13.21 Kilikhar to Mongar (Package 4) executed by M/s Gongphel Construction Pvt. Ltd

The status of key personnel required and committed by the Contractor as per bidding document are as tabulated in table 2.13.21 below:

Sl. No.	Key Personnel Required	Qualification Required	Number require	Name of committed personal	Qualification
1	Project Manager	Degree in any field with 1 to 7 years or more work experience or Diploma in Civil Engineering with 3 to 10 years or more work experience and Any other qualification	1	Dawa Rinchen	BA
2	Project Engineer	Degree in Civil Engineering and and with 1 to 5 years or more work experience or Diploma in Civil Engineering and also with 3 to 10 years or more work experience in road/bridge works and Any other qualification	1	Parimal Das Gupta	Diploma in Civil Engg

3	Material Engineer	Degree in Civil Engineering with 3 to 5 years' experience or Diploma in Civil Engineering with 3 to 10 years' experience and Any other qualification	1	Paltu Datta	Diploma in Civil Engg
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering with experience 5 to 10 years or more other than road work	1	Partha Partim Basu	Diploma in Civil Engg
5	Surveyor	Diploma in Survey and also with 3 to 7 or more work experience or Certified/trained surveyor with 1 to 10 years or more work experience and Any other qualification	1	A.K.Mohanan	Diploma in Civil Engg
6	Lab Technician	Class XII pas with 5 years experiences as lab technician or Class X pass with 3 to 5 years' experience as Lab Technician and Any other qualification	1	Pema Luwang	Class 12 passed
7	Work/Site Supervisors	VTI Graduate or equivalent with 1 to 5 years or more work experience and Any other level of qualification or experience	2	Ugyen Tobgay	BBA
				Mon Bdr Rai	Class 6 pass

The status of key personnel committed as per bidding document and actual employment at work site as noted during the physical verification is shown in table 2.13.21.1 below:

Sl. No	Key Personnel Required	Number required	Name of committed personal	Qualification	Personnel Engaged At Site as per record/	Qualification & Experience	Remarks
1	Project Manager	1	Dawa Rinchen	BA	Dawa		
2	Project Engineer	1	Parimal Das Gupta	Diploma in Civil Engg	Sherab Phuntsho	Master in transportation engineering	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
3	Material Engineer	1	Paltu Datta	Diploma in Civil Engg	Jambay	BE Civil Engg	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
4	Junior Engineer	1	Partha Partim Basu	Diploma in Civil Engg	Parimal Das	Diploma in Civil Engg	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
5	Surveyor	1	A.K.Mohanan	Diploma in Civil Engg	AK Mohanan		Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
6	Lab Technician	1	Pema Luwang	Class 12 passed	Divanath Sharma	Class X passed	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation
7	Work/Site Supervisors	2	Ugyen Tobgay	BBA	Kinley Penjor,	Class X passed	Need to furnish documents to validate Experience met the

							requirement and score assigned during evaluation
			Mon Bdr Rai	Class 6 pass	Wangchuk	Certificate in Civil	Need to furnish documents to validate Experience met the requirement and score assigned during evaluation

- The cross check revealed that the personnel committed were not present but different set of key personnel were found deployed at site and without appropriate approvals of the client.
- The contractor had failed to deploy the Surveyor, as was not present at site.

2.13.22 Mongar-Gongola (Package-5) executed by M/s. Norbu Construction Company Pvt. Ltd, Gelephu (RO, Lingmethang)

The status of key personnel required and committed by the Contractor as per bidding document are as shown in table 1.13.22 below:

Sl. No.	Key Personnel Required	Qualification Required	Number require	Name of committed personal	Qualification
1	Project Manager	Degree in any field with 1 to 7 years or more work experience or Diploma in Civil Engineering with 3 to 10 years or more work experience and Any other qualification	1	Sangay Rinzin	Bachelor of Arts
2	Project Engineer	Degree in Civil Engineering and and with 1 to 5 years or more work experience or Diploma in Civil Engineering and also with 3 to 10 years or more work experience in road/bridge works and Any other qualification	1	Karthik Muthu	BE Civil Engineering
3	Material Engineer	Degree in Civil Engineering with 3 to 5 years' experience or Diploma in Civil Engineering with 3 to 10 years' experience and Any other qualification	1	Pankaj Baruwa	Diploma in Civil Engg
4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering with experience 5 to 10 years or more other than road work	1	Abdur Rahman	Diploma in Civil Engineer
5	Surveyor	Diploma in Survey and also with 3 to 7 or more work experience or Certified/trained surveyor with 1 to 10 years or more work experience and Any other qualification	1	Suren Pradhan	Trained Surveyor
6	Lab Technician	Class XII pas with 5 years experiences as lab technician or Class X pass with 3 to 5 years' experience as Lab Technician and Any other qualification	1	Phuentsho Wangdi	VTI Graduate
7	Work/Site Supervisors	VTI Graduate or equivalent with 1 to 5 years or more work experience and Any other level of qualification or experience	2	Tsheten Dorji	VTI Graduate
				Yonton Jamtsho	VTI Graduate

The status of key personnel committed as per bidding document and actual employment at work site as noted during the physical verification is shown in table 2.13.22.1 below:

Sl. No.	Key Personnel Required	Name of committed personal	Qualification	Personnel Engaged At Site as per record	Qualification & Experience	Status during physical verification	Remarks
1	Project Manager	Sangay Rinzin	Bachelor of Arts	Karma Dema	Sangay Rinzin	Present	
2	Project Engineer	Karthik Muthu	BE Civil Engineering	Karthik Muthu	BE Civil Engg	Present	
3	Material Engineer	Pankaj Baruwa	Diploma in Civil Engg	Dhendup Tshering	BE Civil Engg	Present	Need to review the score assigned as replacement is by a Degree holder (Experience need to be reviewed)
4	Junior Engineer	Abdur Rahman	Diploma in Civil Engineer	Nil		Not Engaged	Need to review the score assigned
5	Surveyor	Suren Pradhan	Trained Surveyor	Suren Pradhan		Present	Need to review the score assigned and Experience need to be reviewed.
6	Lab Technician	Phuentsho Wangdi	VTI Graduate	Pema Tshewang,	VTI	Stated on leave	Experience to be reviewed
7	Work/Site Supervisors	Tsheten Dorji	VTI Graduate	Pema Lhamo	VTI	Present	Score assigned and Experience to be reviewed
		Yonton Jamtsho	VTI Graduate	Nil		Not Engaged	Score assigned to be reviewed

- The cross check revealed that the personnel committed were not present but different set of key personnel were found deployed at site and without appropriate approvals of the client.
- The contractor had failed to deploy the Junior Engineer, one Work Site Supervisor.
- The Lab Technician was stated to be on leave as was not present at site.

2.13.23 Gangola-Kurizampa (Package 6) executed by M/s. Rigzar Construction Pvt Ltd. Trashigang (RO, Lingmethang)

The status of key personnel required and committed by the Contractor as per bidding document is as tabulated below:

Sl. No.	Key Personnel Required	No. of Personnel Required	Present Personnel At Site,	Qualification & Experience	Remarks
1	Project Manager	Degree in any field or Diploma in Civil Engineering	1	Karma Wangchuk	Bachelor of Arts
2	Project Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Nidup Chong	BE Civil Engineering
3	Material Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Karma Tenzin	Diploma in Civil Engg

4	Junior Engineer	Degree in Civil Engineering or Diploma in Civil Engineering	1	Karma Dizang	Diploma in Civil Engineer
5	Surveyor	Diploma in Survey or trained surveyors	1	Pema Wangchuk	Trained Surveyor
6	Lab Technician	Class X pass with experience	1	Rinzin Pelden	VTI Graduate
7	Site Supervisors	VTI Graduate or equivalent with more than 2 years' experience	2	Yani Maya Newar	VTI Graduate
				Khandu Wangmo	VTI Graduate

The status of key personnel committed as per bidding document and actual employment at work site as noted during the physical verification is shown in table 2.13.23.1 below:

Sl. No.	Key Personal Required	No. of Personnel Required	Present Personnel At Site,	Qualification & Experience	Remarks
1	Project Manager	1	Karma Wangchuk,	General Degree	
2	Project Engineer	1	Nidup Chong,	Degree in Civil Engg	Not present at site
3	Material Engineer	1	Dorji Dhendup,	Diploma in Civil Engg	
4	Junior Engineer	1	Om Prakash Puri,	Diploma in Civil Engg	
5	Surveyor	1	Puran Ghalley,	Class XII Passed	
6	Lab Technician	1	Rinzin Pelden,	Class X passed	
7	Site Supervisor	1	Tashi Phuntsho		Not present at site
8	Site Supervisor	1	Karma Tshering,	Class XII passed	

- The cross check revealed that the personnel committed were not present but different set of key personnel were found deployed at site and without appropriate approvals of the client.
- The contractor had failed to deploy one Work Site Supervisor.
- The Project Engineer was not present at site during the physical verification.

As per General Conditions of Contract (GCC) clauses 10 – Personal, 10.1 “ *the Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the SCC, to carry out the functions stated in the Schedule or other personnel approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the schedules. If the contractor fails to deploy the personnel as committed in the Bid documents, the employer shall stop the work if the quality of work is going to suffer or otherwise deduct the salaries of such personnel at a rate stipulated in the SCC per month per personnel for every month of absence of such personnel from the site. Such deductions shall continue till such time that the contractor deploys the key personnel acceptable to the employer. If the contractor fails to deploy such key personnel within one to four months, the deduction shall be discontinued and the contractor’s failure to deploy such personnel shall be treated as a fundamental breach of contract*”.

As evident from above tables all the contractors had violated the aforementioned terms and condition of the contract. In this context, the audit had observed following lapses:

- Set of key personnel committed in the bid documents were changed without following due process as outlined in the GCC of the contract documents. The replacements and substitutions were also found made without the approval of appropriate authority.
- Committed key personnel were found replaced by those having less qualification and working experiences. The replacements were in contrary to the contractual provisions wherein it categorically stipulated that their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedules of key personnel.
- The contractors had failed to recruit and deploy key personnel since the start of the contract works.
- The personnel deployed were not available at site during the physical verifications of key personnel.
- The RO and the Site Engineer had allowed the contractors to deploy same key personnel for two or three contract packages instead of ensuring deployment of separate key personnel for each contract package.
- The RO and the Site Engineers had failed to either ensure deployment of committed key personnel by the contractors or take action as per the provisions of the contract agreements against the defaulting contractors.

Non-deployment of committed key personnel was in total violation of the contract with reference to clause GCC 10.1 GCC and keeping in view that the firms had qualified the technical category by obtaining scores based on the proposed deployment of key personnel. Further, it was the responsibility of site engineer to report the matter to Regional Office for appropriate decisions and actions. The inaction on the part of the site engineer indicated laxity and complacency as well as extension of undue favour to the contractor

The RO, should comment on the basis of accepting the key personnel other than those committed in the contract including acceptance of same Project Engineer for all 3 packages whose service is critical for providing technical support to construction staff under the supervision of the Project Manager, overseeing progress of work, scheduling and ensuring execution of works as per drawings and technical specifications.

Besides, the RO must also comment on course of action taken against the contractors in term of the contract Clause SCC 10.1 of the GCC for deployment of different set of key personnel in the event no approval were sanctioned for change of key personnel.

The Regional Office besides recovering the penalties computed by the RAA should also work out the exact penalty amounts deductible taking into consideration the revised and actual completion dates, and non deployment of committed key personnel and deposited in to Audit Recoveries Account.

Auditee's Response:

It is to inform RAA that M/s. Chogyal construction had deployed separate set of machineries and human resources for all three packages during the execution. RAA was provided with the set of resources deployed for two packages during the auditing time itself. However, RO could not able to produce documentation for one package due to its misplacement. We regret for not having produced the documents as required during the auditing. Finally, after hard work of searching every day, finally RO could able to find the documents for the third package. The copy of HR and equipment for package II & III attached for reference and

record, please. Therefore, RAA is requested to kindly drop the memo. Further RO also assures RAA that such important documents shall be kept under safe custody for future works.

The Project Engineer, Mr. Ashok Maheshwari was replaced by Mr. Ugyen Penden, Degree in Civil Engineering. However, during the site visit by RAA Mr. Ugyen Penden & Mr. Phuntsho Wangdi, Material Engineer may not have been present. The deduction of penalty for non-enrolment of key personnel is found not applicable. Therefore, please drop the memo. (His signatory attested for reference in the annexure)

During the initial stage of pavement strengthening works, the precise requirement of Key personnel was not felt necessary. However, during the actual execution the required key personnel are deployed and as per work requirement. Actually, Mr. Ugyen Dorji is Site Supervisor and Mr. Dawa Tenzin is Project Manager. However, during the visit of RAA team it was erroneously acknowledged Ugyen Dorji as Project Manager although both of them were present at site.

During the field visit by RAA team, it was peak winter season (December) during which almost all the works were stopped due to adverse climatic conditions. The required HR personnel were engaged by the contractor for execution of work when the weather favored.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that timely deployment of committed key personnel is a critical factor for project success in terms of time, cost, and quality. The RO had failed to ensure not only deployment of requisite and committed personnel at work site but also replacement of personnel in line with the procedures and process outlined in the contract document. The change of entire or partial key personnel by the contractor without following due process and the failure on the part of the RO and the Site Engineer to ensure deployment of all committed personnel at work site and adoption of due processes for replacements as envisaged in the contract documents indicated laxity and complacency as well as existence of systemic flaws, deficiencies and poor contract management.

It is apparent that abnormal delays of the contract works beyond the original contract period and revised completion period were attributed by the absence of deployment of adequate and committed key personnel by the contractor for the works as well as replacement of personnel with lower qualification and experiences to save cost. The contract delays were also possible due to engagement of same key personnel for the both contract packages II and VII.

Non- enforcement of contract clauses strictly and non-levy of penalty as envisaged in the contract document tantamount to extension of undue favour as the contractors not only benefit financially from not having to entirely deploy personnel at site and incur associated cost but also annulling the payment of penalty for non- deployment of personnel at site. It is to reiterate that the quoted rates of contractor for the related items of works is built up cost inclusive of cost of committed key personnel and all risks factors.

However, as agreed during the exit meeting, DOR and RO should work out the amount to be deducted for non-deployment of key personnel and recover within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per Chapter IV, Section 4.5.1.4 of the Finance and Accounting Manual 2016.

Further DoR and the Ministry should review and analyze the impact of poor human resource management particularly in relation to non-deployment of key committed personnel on delays in completion of work as well as quality of work executed. Besides, the DoR and the Ministry should also conduct appropriate studies in terms of skills and experiences required for key personnel and labourer including number requirements, as well as adequate human resources deployment plan in relation to the quantum of works and cost of the project for effective human resource management by both the site engineer and the contractor.

The studies conducted and actions and measures initiated to improve the human resource management system to prevent such flaws and lapses intimated to RAA for records and follow-up in future audits.

Who is accountable?

Direct Accountability	: Refer Accountability Statement attached
Supervisory accountability	:Refer Accountability Statement attached

2.14 Non-deployment of equipment at site as per the requirements and non-deduction of penalty approximately - Nu.94,388,400.00 (4.4.15)

As per the bidding data sheet, Section II, “Employer’s Requirements (ERQ)”, Equipment requirements on the widening and pavement construction works were found met by contractors in terms of the declared individual CV submitted along with the project profile.

A joint team comprising of audit team and officials from RO visited the construction sites for carrying out measurements of completed structures. During the course of the site visits, an attempt was made to cross check the equipment deployed at site with that of committed equipment in the contract documents. The status of equipment committed as per bidding document and actual deployment at work sites as noted during the physical verification for all the contract packages were as tabulated and discussed below:

RO, Lobeysa

2.14.1 Dochula to Chasagang (Packages I, II and III) executed by M/s Chogyal Construction Pvt. Ltd recoverable penalty Nu. 57.302 million (RO, Lobeysa)

The joint verification of site conducted on *29 September 2017 & 2 October 2017* revealed the following lapses:

- On reviewing associated HR and equipment aspects in new point based system of evaluation in e-tools through hard copy of e-tools report noted few HR and Equipment were used commonly to evaluate in system all the three packages I, II and III. However, the evaluation committee used same HR & Equipment for evaluation in e-tools system for contract packages II & III.
- This particular concern was presented to in MLTC meeting convened on 3rd June, 2015 wherein, MLTC unanimously decided that contractor should allocate separate HR & Equipment considering the work being separate package and also on contractor’s

commitment to provide separate HR & Equipment as per letter No. CCCPLT/T&Q-11/2015/11 dated June 19, 2015.

- Following the decisions of the MLTC convened on 3rd June, 2015, the Regional Office vide letter No. DOR.ROL/Plg-15/2014-2015/3721 dated June 9, 2015 had directed the contractor to submit the letter of commitment for deployment of separate resources for the two packages.
- In response, the contractor had sought one-week time extension for submission of additional resources vide letter No. CCCPLT/T&Q-11/2015/10 dated June 12, 2015 and had subsequently assure availability of adequate resources for the deployment of separate HR and equipment vide letter No. CCCPLT/T&Q-11/2015/11 dated June 19, 2015.
- The audit team could not verify the documentary evidences as Regional Office had failed to produce documents relating to the deployment of separate HR and equipment in particular for package III despite repeated request.
- On probing further, the RO stated the contractor had used the same HR & Equipment for package II & III. This scenario proved that the contractor had failed to allocate separate HR & Equipment for package II & III, resulting in fundamental breach of contractual obligation.
- The Regional Office have neither invoked the termination clause nor enforced the penalty clause GCC 10.1

Particular of Equipment	Penalty/day of non-deployment	Total contract duration in Months	Total Contract duration in Days	Penalty calculated as per approved work schedule (Nu)
Asphalt plant	10,000.00	18.8	564	5,640,000.00
Excavator	10,000.00	18.8	564	5,640,000.00
Backhoe Loader	7,000.00	18.8	564	3,948,000.00
Motor Grader	10,000.00	18.8	564	5,640,000.00
Paver	8,000.00	18.8	564	4,512,000.00
Static Roller	4,000.00	18.8	564	2,256,000.00
Concrete Mixer	500	18.8	564	282,000.00
Water tanker	1,000.00	18.8	564	564,000.00
Four Tipper truck	1,500.00	18.8	564	3,384,000.00
Vibrator roller	5,000.00	18.8	564	2,820,000.00
Total station	500	18.8	564	282,000.00
Tandem Roller	6,000.00	18.8	564	3,384,000.00
Bitumen Sprayer	3,000.00	18.8	564	1,692,000.00
Plate compactor	300	18.8	564	169,200.00
Air compressor	5,000.00	18.8	564	2,820,000.00
Total:				43,033,200.00

Similarly, the contractor had failed to deploy separate HR and equipment against the same HR and equipment committed for the three packages. Thus, in line with the penalty provisions under Clauses GCC 10.1 and SCC and failure to terminate the contract, the Regional Office should recovered the salaries of such personnel and hire charges of equipment at a rate stipulated in the Special Condition of Contract per month per personnel and equipment for the duration of the contract amounting to Nu. 14,269,200.00 as computed below:

Particular of Equipment	Name	Packages	Penalty/day of non-deployment	Total Contract duration of 18.8 month in Days (II)	penalty amount for the duration of the contract 18.8 months
Backhoe Loader	BP-1-1124	Same for Packages I,	7,000.00	564	3,948,000.00

		II & III			
Concrete Mixer	Inv. 365 of 22.12.05	Same for Packages I, II & III	500.00	564	282,000.00
Tipper truck	BP-2-A5481	Same for Packages I, II & III	1,500	564	846,000.00
Tipper truck	BP-1-A1910	Same for Packages I, II & III	1,500	564	846,000.00
Tipper truck	BP-2-A5479	Same for Packages I, II & III	1,500	564	846,000.00
Tipper truck	BP-2-A5480	Same for Packages I, II & III	1,500	564	846,000.00
Vibratory roller	BP-1-A1918	Same for Packages I, II & III	5,000	564	2,820,000.00
Total station		Same for Packages I, II & III	500	564	282,000.00
Tandem Roller	BP-2-A7572	Same for Packages I, II & III	6,000	564	3,384,000.00
Plate compactor	Inv. 165 of 1.2.12	Same for Packages I, II & III	300	564	169,200.00
Total:					14,269,200.00

- The following correspondences apparently indicated failure of the Pavement works for Packages II and III valuing Nu. 26.490 million and additional compensation payment of Nu. 3.593 million in addition to the insurance claim of Nu. 19.453 million.
- DoR/CE(TMT)/2015-16/8 date 1st June 2016
- CCCPL/ROL-(III)/Works-09/2016-2017/002 dated 7th January 2017
- DoR/Lobeysa/construction Division(09)/2016-2017/037 dated 24th January 2017
- CCCPL/ROL-(II)/Works-07/2016-2017/049 dated 13th April 2017
- DoR/CE(CD)/2016-2017/W-7/3795 dated 17th April 2017
- DoR/CD/7/2016-2017/4059 dated 26th June 2017
- DoR/CD/28/2017-2018/4245 dated 8th August 2017

The failure of such magnitude of pavement works is a clear evidence of non-deployment of separate equipment by the contractor as well as laxity on the part of the Regional Office and MLTC in allowing the contractor to execute three packages with the same equipment for all the three works.

2.14.2 Langkena-Tekizampa (Package V) executed by M/s Etho Metho Construction Pvt. Ltd (RO, Lobeysa)

Equipment	Numbers Required	Numbers Committed	Remarks
Excavator	5	5	Available
Total Station	1	0	Not committed
Asphalt Plant	1	1	Available
Paving Machine	1	1	Available
Vibrating Road Roller	1	1	Not Available
Tandem Roller	1	1	Available
Motor Grader	1	1	Available
Backhoe	1	1	Available
Static Road Roller	1	1	Available
Bitumen Sprayer	1	1	Not Available
Tripper Truck	6	6	Available
Concrete Mixer	1	1	Available
Water Tanker	1	1	Available
Plate Compactor	1	1	Not Available
Air Compressor	2	2	Only 1 Available

- The Contractor had failed to deploy some critical equipment/plants namely vibrating road roller, bitumen sprayer, plate compactor and one air compressor at work site at work site.
- One number Total Station was not committed as per the tender document. The contract did not deploy the equipment at site.

RO, Trongsa

2.14.3 Chuserbu to Nyelazam (Package 1) executed by M/s Rigsar Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.3: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on		
Sl/ No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Excavator	4 Nos.	Excavator	4	
2	Excavator with rock breaker	2 Nos.	Excavator with bucket	2	
3	Trucks Tripper	6 Nos	Trucks Tripper	4	2 Nos. not available
4	Pay Loader	2 No.	Pay Loader	1	1 No. not available
5	Asphalt plant	1 No.	Asphalt plant	1	
6	Paver finisher	1 No.	Paver	1	
7	Static Roller	1 No.	Static Roller	1	
8	Air Compressor	2 No	Air Compressor	1	1 No. not available
9	Bitumen sprayer	1 No.	Bitumen sprayer	1	
10	Pneumatic Roller	1 No.	Pneumatic Roller	1	
11	Water Tanker	1 No.	Water Tanker	1	
12	Plate Compactor	2 No.	Plate Compactor	1	1 No. not available
13	Motor Grader	1 No.	Motor Grader	1	
14	Crusher plant	1 No	Crusher plant	1	
15	Vibratory road roller	1 No	Vibrator	1	
16	Total station	1 No	Total station	1	

- Two trippers and one each of Pay Loader, Air Compressor and Plate Compactor were not deployed at site.

2.14.4 Nyelazam to Sakachawa (Package 2) executed by M/s Gaseb Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.4: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on (7 th December 2017)		
Sl/ No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Asphalt plant	1 No.	Asphalt plant	Not available	
2	Paver	1 No.	Paver	Not available	
3	Bitumen sprayer	1 No.	Bitumen sprayer	Not available	
4	Pneumatic Roller	1 No.	Pneumatic Roller	Not available	
5	Water Tanker	1 No.	Water Tanker	Not available	

The Contractor had failed to deploy some critical equipment/plants namely Asphalt Plant, Paver, Pneumatic Roller, Bitumen Sprayer, at work site.

2.14.5 Sakachawa to Tsangkha (Package 3) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.5: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on 7.12.2017		
Sl/ No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Status/Remarks
1	Excavator	4 Nos.	Excavator	4	2 off road
2	Excavator with rock breaker	2 Nos.	Excavator with bucket	2	1 off road
3	Trucks Tripper	6 Nos	Trucks Tripper	4	3 off road
4	Pay Loader	2 No.	Pay Loader	1	Off road
5	Asphalt plant	1 No.	Asphalt plant	0	
6	Paver finisher	1 No.	Paver	0	
7	Static Road Roller	1 No.	Static Roller	1	Off road
8	Air Compressor	2 No	Air Compressor	3	2 off road
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	
10	Pneumatic Roller	1 No.	Pneumatic Roller	0	
11	Water Tanker	1 No.	Water Tanker	0	
12	Plate Compactor	2 No.	Plate Compactor	0	
13	Motor Grader	1 No.	Motor Grader	0	
14	Crusher plant	1 No	Crusher plant	1	Manual crusher not as per the requirement
15	Vibratory road roller	1 No	Vibrator	1	Off road
16	Total station	1 No	Total station	0	

- Majority of machineries and equipment deployed were found off road during the physical verification.
- Machineries and equipment required for bituminous works were found not deployed
- Manual Crusher plant was installed instead of requisite Crusher plant
- Committed machineries were not deployed but deployed different machineries

2.14.6 Tshangkha to View Point (Package 4) executed by M/s Gyalcon Infrastructure Pvt. Ltd (RO, Trongsa)

Table 2.14.6: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on 3/1/2018		
Sl/ No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Asphalt plant	1 No.	Asphalt plant	0	
2	Paver Machines	1 No.	Paver	0	
3	Static Roller (8-10MT)	1 No.	Static Roller	1	Off road
4	Vibratory Road Roller	1 No	Vibratory Road Roller	1 No	
5	Pneumatic Roller	1 No.	Pneumatic Roller	0	
6	Water Tanker	1 No.	Water Tanker	1	Off road
7	Bitumen sprayer	1 No.	Bitumen sprayer	0	
8	Motor Grader	1 No.	Motor Grader	0	

- Machineries and equipment required for bituminous works were found not deployed
- Static Roller and Water Tanker deployed were found off road during the physical verification.

2.14.7 View Point- BjeeZam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.7: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on 7th December, 2017		
Sl/ No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks

1	Excavator	4 Nos.	Excavator	2	
2	Excavator with bucket	2 Nos.	Excavator with bucket	1	Off road
3	Trucks Tripper	6 Nos	Trucks Tripper	2 Nos.	Primer equivalent to 2 trippers
5	Asphalt plant	1 No.	Asphalt plant	0	
6	Paver	1 No.	Paver	0	
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	
10	Pneumatic Roller	1 No.	Pneumatic Roller	0	
11	Water Tanker	1 No.	Water Tanker	0	
12	Plate Compactor	1 No.	Plate	0	

- Asphalt plant and paver machine and related equipment which are critically required at site for bituminous works were not deployed at work site.
- One out of two excavators deployed was found off road during the physical verification
- Two tripper trucks were deployed against Six committed as per contract agreement

2.14.8 Bjezam- Trongsa (Package 6) executed by M/s Raven Builders & Company Pvt. Ltd (RO, Trongsa)

Table 2.14.8: Status of Equipment			Present at Work site on 14.12.2017		
Equipment committed as per Agreement			Present at Work site on 14.12.2017		
Sl/No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Excavator	4 Nos.	Excavator	3	1 off road
2	Excavator with rock breaker	2 Nos.	Excavator with bucket	1	
3	Trucks Tripper	6 Nos	Trucks Tripper	3	
4	Pay Loader	2 No.	Pay Loader	1	
5	Asphalt plant	1 No.	Asphalt plant	0	
6	Paver finisher	1 No.	Paver	0	
7	Static Roller	1 No.	Static Roller	0	
8	Air Compressor	2 No	Air Compressor	1	
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	
10	Pneumatic Roller	1 No.	Pneumatic Roller	1	
11	Water Tanker	1 No.	Water Tanker	1	
12	Plate Compactor	2 No.	Plate Compactor	0	
13	Motor Grader	1 No.	Motor Grader	0	
14	Crusher plant	1 No	Crusher plant	1	
15	Vibratory road roller	1 No	Vibrator	1	
16	Total station	1 No	Total station	0	

- Asphalt plant and paver machine and related equipment which are critically required for bituminous works were not deployed at work site.
- One out of three excavators deployed was found off road during the physical verification
- Three tripper trucks were deployed against Six committed as per contract agreement
- One Excavator with rock breaker was deployed against two required and committed
- One each of Pay Loader and Air Compressor were deployed against two required and committed.

2.14.9 Pinzhi-Tashipokto (PKG-8) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu (RO, Trongsa)

Table 2.14.9: Status of Equipment			Present at Work site on 18 th January, 2018		
Equipment committed as per Agreement			Present at Work site on 18 th January, 2018		
Sl/No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty	Remarks

				(Nos.)	
1	Excavator	4 Nos.	Excavator	2	2 Nos not available at site
2	Excavator with rock breaker	2 Nos.	Excavator with rock breaker	1	1 Nos not available at site
3	Trucks Tripper	6 Nos	Trucks Tripper	1	5Nos not available at site
4	Water Tanker	1 No	Water Tanker	0	Not available at site
5	Asphalt plant	1 No.	Asphalt plant	0	Not available at site
6	Paving Machine (Paver)	1 No.	Paving Machine (Paver)	1	Not available at site
7	Vibratory roller (8-10mt)	1No	Vibratory roller (8-10mt)	0	Not available at site
8	Static Road Roller (8-10Mt)	1No	Static Road Roller (8-10Mt)	0	Not available at site
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	Not available at site
10	Pneumatic Roller	1 No.	Pneumatic Roller	0	Not available at site
11	Water Tanker	1 No.	Water Tanker	0	Not available at site
12	Plate Compactor	1 No.	Plate Compactor	0	Not available at site
13	Crusher (min 30TPH)	1 No.	Crusher (min 30TPH)	0	Not available at site
14	Pay loader/back hoe	2 Nos.	Pay loader/back hoe	0	Not available at site

- Asphalt plant and paver machine and related equipment which are critically required for bituminous works were not deployed at work site.
- Majority of key machineries and equipment were found not deployed at work site during the physical verification.

2.14.10 Tashipokto to Dorjigonpa (Package 9) executed by M/s Welfare Construction Pvt. Ltd. (RO, Trongsa)

Table 2.14.10: Status of Equipment			Present at Work site on	
Equipment required as per Agreement				
Sl/No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)
1	Excavator	4 Nos.	Excavator	4
2	Excavator with rock breaker	2 Nos.	Excavator with rock breaker	1
3	Tripper Trucks	6 Nos	Tripper Trucks	2
4	Pay Loader	2 No.	Pay Loader	0
5	Asphalt plant	1 No.	Asphalt plant	0
6	Paver finisher	1 No.	Paver	0
7	Static Road Roller	1 No.	Static Roller	0
8	Air Compressor	2 No	Air Compressor	2
9	Bitumen sprayer	1 No.	Bitumen sprayer	0
10	Pneumatic Roller	1 No.	Pneumatic Roller	0
11	Water Tanker	1 No.	Water Tanker	0
12	Plate Compactor	2 No.	Plate Compactor	0
13	Motor Grader	1 No.	Motor Grader	0
14	Concrete Mixer	1 No.	Concrete Mixer	1
15	Crusher plant	1 No	Crusher plant	1
16	Vibratory road roller	1 No	Vibratory road roller	0
17	Total station	1 No	Total station	1

- Asphalt plant and paver machine and related equipment which are critically required for bituminous works were not deployed at work site.
- Majority of key machineries and equipment were found not deployed at work site during the physical verification

2.14.11 Dorji Gonpa to Yotongla (Package 10) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.11: Status of Equipment			Present at Work site on 18.1.2018		
Equipment committed as per Agreement			Present at Work site on 18.1.2018		
Sl/No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Excavator	4 Nos.	Excavator	4	2 off road
2	Excavator with rock breaker	2 Nos.	Excavator with bucket	1	off road
3	Tripper Trucks	6 Nos	Tripper Trucks	6	5 off road
4	Pay Loader	2 No.	Pay Loader	1	
5	Asphalt plant	1 No.	Asphalt plant	0	
6	Paver finisher	1 No.	Paver	0	
7	Static Road Roller	1 No.	Static Roller	0	
8	Air Compressor	2 No	Air Compressor	2	
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	
10	Pneumatic Roller	1 No.	Pneumatic Roller	0	
11	Water Tanker	1 No.	Water Tanker	1	Same for Package 13
12	Plate Compactor	2 No.	Plate Compactor	0	
13	Motor Grader	1 No.	Motor Grader	0	
14	Concrete Mixer	1 No.	Concrete Mixer	1	
15	Crusher plant	1 No	Crusher plant	1	
16	Vibratory road roller	1 No	Vibratory road roller	1	Same for Package 13
17	Total station	1 No	Total station	0	

- Same machineries and equipment committed for Package 10 and package 13.
- Majority of machineries and equipment deployed were found off road during the physical verification.
- Machineries and equipment required for bituminous works were found not deployed.
- One Water Tanker and one Vibratory Road Roller deployed was also used for package 13 instead of separate deployment
- One Excavator with rock breaker, One Pay Loader were deployed against requirements/commitment of two each.

2.14.12 Yotongla to Bongzam (Package 11) executed by M/s Dungkar Construction Pvt. Ltd. recoverable penalty Nu. 37,086,000.00 (RO, Trongsa)

Table 2.14.12: Status of Equipment			Commitment as per tender document		Status at site during physical verification on 03/1/2018	
Machinery/Equipment required as per ITB 4.3 (a) of Section – II, Bidding Data Sheet			Commitment as per tender document		Status at site during physical verification on 03/1/2018	
Sl/No	Name of Equipment's	Qty. (Nos.)	Qty. (Nos.)	Qty (Nos.)	Remarks	
1	Excavator	4	2	Nil	No separate Machinery/equipment deployed at site but same as Machinery/equipment deployed for Contract Package XII	
2	Excavator with rock breaker	2		Nil		
3	Total Station set	1	1	Nil		
4	Asphalt Plant (Min 30TPH)	1		Nil		
5	Paving Machine (Paver)	1		Nil		
6	Vibratory Road Roller (8-10 ton Capacity)	1	1	Nil		
7	Pneumatic Tyred Roller	1		Nil		
8	Motor Grader	1	1	Nil		
9	Pay Loader/Backhoe	2	1	Nil		

10	Static Road Roller (8-10 ton capacity)	1		Nil
11	Air Compressor	2		Nil
12	Bitumen sprayer	1	1	Nil
13	Tipper Trucks	6	3	Nil
14	Concrete Mixer 7/5 cft. capacity or more	1	1	Nil
15	Water Tanker	1		Nil
16	Plate Compactor	2		Nil
17	Crusher (Min 30 TPH)	1		Nil

- On reviewing associated machineries and equipment aspects in new point based system of evaluation in e-tools through hard copy of e-tools report noted that for both the packages XI and XII, awarded to the firm, same HR and Equipment were used for evaluation in e-tools system.
- The contractor had failed to allocate separate HR & Equipment for package XI & XII, resulting in fundamental breach of contractual obligation.

The Site Engineer had failed to enforce the contract Clause SCC 10.1 of the GCC on the deduction of amounts as specified in the SCC for absence of officials at site as computed in table 2.14.12.1 below:

Particular of Machinery/Equipment	No.	Penalty/day of non-deployment	Total contract duration in Months	Total Contract duration in Days (III)	Penalty calculated as per approved work schedule (Nu)
Asphalt plant	1	10,000.00	28	420	4,200,000.00
Excavator	4	10,000.00	28	420	4,200,000.00
Excavator with rock breaker	2	10,000.00	28	420	4,200,000.00
Backhoe Loader	2	7,000.00	28	420	2,940,000.00
Motor Grader	1	10,000.00	28	420	4,200,000.00
Paver	1	8,000.00	28	420	3,360,000.00
Static Roller	1	4,000.00	28	420	1,680,000.00
Concrete Mixer	1	500.00	28	420	210,000.00
Water tanker	1	1,000.00	28	840	840,000.00
Tipper truck	6	1,500.00	28	840	1,260,000.00
Vibrator roller	1	5,000.00	28	420	2,100,000.00
Total station	1	500.00	28	420	210,000.00
Pneumatic Tyred Roller	1	5,000.00	28	420	2,100,000.00
Bitumen Sprayer	1	3,000.00	28	420	1,260,000.00
Plate compactor	2	300.00	28	420	126,000.00
Air compressor	2	5,000.00	28	840	4,200,000.00
Crusher (Min 30 TPH)	1	5,000.00	28	840	4,200,000.00
	Total:				37,086,000.00

2.14.13 Bongzam to Gyatsa Zam (Package 12) by M/s Dungkar Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.13: Status of Equipment						
Equipment required as per ITB 4.3 (a) of Section – II, Bidding Data Sheet			Commitment as per tender document		Status at site during physical verification on 03/1/2018	
Sl/No	Qty. (Nos.)	Qty. (Nos.)	Qty. (Nos.)	Qty (Nos.)	Remarks	
1	Excavator	2	2	2		
2	Excavator with rock breaker					
3	Total Station set	1	1	1		
4	Asphalt Plant (Min 30TPH)	1	1	0	Not available	
5	Paving Machine (Paver)	1	1	0	Not available	
6	Vibratory Road Roller (8-10 ton Capacity)	1	1	1		
7	Pneumatic Tyred Roller					
8	Motor Grader	1	1	1		
9	Pay Loader/Backhoe	1	1	1		
10	Static Road Roller (8-10 ton capacity)					
11	Air Compressor					
12	Bitumen sprayer	1	1	0	Not available	
13	Tipper Trucks	3	3	3		
14	Concrete Mixer 7/5 cft. capacity or more	1	1	1		
15	Water Tanker	1	Nil	0	Not available	
16	Plate Compactor	1	Nil	0	Not available	
17	Crusher (Min 30 TPH)	1	Nil	1		

- On reviewing associated machineries and equipment aspects in new point based system of evaluation in e-tools through hard copy of e-tools report noted that for both the packages XI and XII, awarded to the firm, same HR and Equipment were used for evaluation in e-tools system
- Machineries and equipment which are critically required for bituminous works were not provided as on the date of physical verification.
- The contractor has been allowed to execute three contract packages with the same HR and equipment and that too without adequate deployment of HR and machinery/equipment for contract packages VIII and XI.

2.14.14 Gyatsazam to Ngangar (Package 13) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

Table 2.14.14: Status of Equipment					
Equipment committed as per Agreement			Present at Work site on 18.1.2018		
Sl/No	Name of Equipment's	Qty (Nos.)	Name of Equipment's	Qty (Nos.)	Remarks
1	Excavator	4 Nos.	Excavator	2	1 off road
2	Excavator with rock breaker	2 Nos.	Excavator with bucket	0	
3	Tripper Trucks	6 Nos	Tripper Trucks	3	
4	Pay Loader	2 No.	Pay Loader	1	
5	Asphalt plant	1 No.	Asphalt plant	0	
6	Paver finisher	1 No.	Paver	0	
7	Static Road Roller	1 No.	Static Roller	1	
8	Air Compressor	2 No	Air Compressor	2	
9	Bitumen sprayer	1 No.	Bitumen sprayer	0	
10	Pneumatic Roller	1 No.	Pneumatic Roller	0	

11	Water Tanker	1 No.	Water Tanker	1	Same for Package 10
12	Plate Compactor	2 No.	Plate Compactor	0	
13	Motor Grader	1 No.	Motor Grader	0	
14	Concrete Mixer	1 No.	Concrete Mixer	0	
15	Crusher plant	1 No	Crusher plant	0	
16	Vibratory road roller	1 No	Vibratory road roller	1	Same for Package 10
17	Total station	1 No	Total station	0	

- On reviewing associated machineries and equipment aspects in new point based system of evaluation in e-tools through hard copy of e-tools report noted that for both the packages X and XIII, awarded to the firm, same machineries and Equipment were used for evaluation in e-tools system
- Machineries and equipment which are critically required for bituminous works were not provided as on the date of physical verification.
- One Excavator deployed was found off road during the physical verification.
- One Water Tanker and one Vibratory Road Roller deployed was also used for package 10 instead of separate deployment
- Deployed: Two Excavators against 4 committed, three trippers against 6 committed and one Pay Loader against 2 committed.
- Different sets of machineries and equipment were found deployed at site as against committed as per contract documents.

RO, Lingmethang

2.14.15 Korila-Pangser (Package-2) executed by M/s. Tshering Construction Pvt Ltd. Bumthang (RO, Lingmethang)

Type of Equipment	Equipment Numbers Required/ and Committed	Status of availability of equipment during physical verification at site	
		Available at site	Not Available at site
Excavator	2	Available	
Excavator with rock breaker	2	Available	
Total Station	1	Available	
Asphalt Plant	1		Not Available
Paving Machine	1	Available	
Vibrating Road Roller	1	Available	
Pneumatic Tyred Roller	1		Not Available
Motor Grader	1	Available	
Backhoe	2	Available	
Static Road Roller	1		Not Available
Bitumen Sprayer	1		Not Available
Tripper Truck	6	Available	
Concrete Mixer	1		Not Available
Water Tanker	1	Available	
Crusher	1	Available	
Plate Compactor	1		Not Available
Air Compressor	2	1 Available	1 Not Available

The Contractor had failed to deploy some critical equipment/plants namely Asphalt plant, Pneumatic Tyred Roller, Static Road Roller, bitumen sprayer, Concrete Mixer, plate compactor and one air compressor at work site.

2.14.16 Pangser-Kilikhar (Package-3) executed by M/s. K. D Builder Pvt Ltd (RO, Lingmethang)

Table 2.14.16 : Status of Equipment				
Equipment	Numbers Required	Numbers Committed	Status of availability of equipment during physical verification at site	
Excavator	2	2	Available	
Excavator with rock breaker	2	-		Not Available
Total Station	1	1	Available	
Asphalt Plant	1	1		Not Available
Paving Machine	1	1	Available	
Vibrating Road Roller	1	1	Available	
Pneumatic Tyred Roller	1	-		Not Available
Motor Grader	1	1		Not Available
Backhoe	1	1	Available	
Static Road Roller	1	-		Not Available
Bitumen Sprayer	1	1		Not Available
Tripper Truck	6	6	Only Available 4	2 No. Not Available
Concrete Mixer	1	1	Available	
Water Tanker	1	1	Available	
Crusher	1	1	Available	
Plate Compactor	1	1		Not Available
Air Compressor	2	2	Only Available 1	1 No. Not Available

- The contractor had failed to deploy some critical equipment/plants namely Excavator with rock breaker, Asphalt Plant, Pneumatic Tyred Roller, Motor Grader, Static Road Roller, Bitumen Sprayer, Plate compactor, two Tripper Trucks and one air compressor at work site.
- Two numbers Excavator with rock breaker, Pneumatic Tyred Roller and Static Road Roller were not committed as per the tender document. Accordingly, the contractor did not deploy the plant and equipment at site.

2.14.17 Kilikhar to Mongar (Package 4) executed by M/s Gongphel Construction Pvt. Ltd (RO, Lingmethang)

Table 2.14.17: Status of Equipment				
Equipment	Numbers Required	Equipment Committed	Status of availability of equipment during physical verification at site	
Excavator	4	4	4	Available
Excavator with rock breaker	2	2	2	Available
Total Station	1	1	1	Available
Asphalt Plant	1	1	-	Not Available
Paving Machine	1	1	-	Not Available
Vibrating Road Roller	1	1	1	Available
Pneumatic Tyred Roller	1	2	-	Not Available
Motor Grader	1	1	1	Available
Backhoe	1	1	1	Available
Static Road Roller	1	1	-	Not Available
Bitumen Sprayer	1	1	-	Not Available
Tripper Truck	6	6	5	One tripper truck not

				available
Concrete Mixer	1	1	1	Available
Water Tanker	1	1	1	Available
Crusher	1	1	1	Available
Plate Compactor	2	2	-	Not Available
Air Compressor	2	2	2	Available

- The contractor had failed to deploy some critical equipment/plants namely Asphalt Plant, Paving Machine, Pneumatic Tyred Roller, Static Road Roller, Bitumen Sprayer, Plate compactor and one number tripper truck at work site.

2.14.18 Gangola-Kurizampa (Package 6) executed by M/s. Rigzar Construction Pvt Ltd. Trashigang (RO, Lingmethang)

Equipment	Numbers Required	Numbers Committed	Remarks
Excavator	4	4	Available
Excavator with rock breaker	2	2	Available
Total Station	1	1	Available
Asphalt Plant	1	1	Available
Paving Machine	1	1	Available
Vibrating Road Roller	1	1	Available
Pneumatic Tyred Roller	1	1	Not Available
Motor Grader	1	1	Available
Exca drill	1	1	Available
Backhoe	2	2	Available
Steel Road Roller	1	1	Available
Bitumen Sprayer	1	1	Available but off road
Tripper Truck	6	7	Available
Concrete Mixer	1	1	Available
Water Tanker	1	1	Available
Crusher	1	1	Available
Plate Compactor	1	1	Available

- The contractor had failed to deploy some critical equipment/plants namely Pneumatic Tyred Roller and the Bitumen Sprayer though available at site was found off road.

2.14.19 Kurizampa-Lingmethang Highway (Package-7) executed by M/s Tshering Construction Pvt. Ltd, Bumthang (RO, Lingmethang)

Equipment	Numbers Required	Equipment Committed	Remarks
Excavator	2	2	Available
Total Station	1	1	Available
Rock Breaker	1	1	Available
Asphalt Plant	1	1	Available
Paving Machine	1	1	Not Available
Vibrating Road Roller	1	1	Available
Tandem Roller	1	1	Available
Motor Grader	1	1	Available
Backhoe	1	1	Available
Static Road Roller	1	1	Available
Bitumen Sprayer	1	1	Not Available
Tripper Truck	6	6	Available

Concrete Mixer	1	1	Available
Water Tanker	1	1	Available
Plate Compactor	1	1	Not Available
Air Compressor	2	2	Available

The contractor had failed to deploy some critical equipment/plants namely Paving Machine, Bitumen Sprayer and Plate compactor at work site.

As per General Conditions of Contract (GCC) clauses 10 – Personal, 10.1 “ *the Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the SCC, to carry out the functions stated in the Schedule or other personnel approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the schedule. If the contractor fails to deploy the personnel as committed in the Bid documents, the employer shall stop the work if the quality of work is going to suffer or otherwise deduct the salaries of such personnel at a rate stipulated in the SCC per month per personnel for every month of absence of such personnel from the site. Such deductions shall continue till such time that the contractor deploys the key personnel acceptable to the employer. If the contractor fails to deploy such key personnel within one to four months, the deduction shall be discontinued and the contractor’s failure to deploy such personnel shall be treated as a fundamental breach of contract*”.

“This shall also apply to the commitment of employment to Vocational Training Institute Graduates (VTI)/skilled local labourers and commitment to provide internship to VTI graduates. However, in this case, Contract may not be terminated but wage rates as mentioned in the SCC shall be deducted for the duration of the contract”.

“Similarly, if the committed equipment are not available at site, the hiring charges of such equipment shall be deducted at a rate stipulated in the SCC per month for every month of absence for a period of one to four months after which the deductions shall be discontinued and the contractor’s failure to produce such equipment at site shall be treated as a fundamental breach of contract”.

As evident from above tables all the contractors had violated the aforementioned terms and condition of the contract. In this context, the audit had observed following lapses:-

- Machineries and equipment were not deployed as committed in the bid documents and were replaced without the approval of appropriate authority.
- The contractors had failed to deploy Machineries and equipment since the start of the contract works.
- Few of Machineries and equipment deployed at work sites were found Off Road and no actions were taken to either repair or replace as on the date of audit.
- The RO and the Site Engineer had allowed the contractors to deploy same machineries and equipment for two or three contract packages instead of ensuring deployment of separate equipment for each contract package.
- Different sets of machineries and equipment were found deployed at site as against committed as per contract documents.
- Few Contractors had failed to commit the machineries and equipment viz. Water Tanker, Plate Compactor and Crusher Plant, which were critical equipment, required

for the smooth execution of road works. The Evaluation Committee and MLTC/DLTC had not taken decisions to address the non-commitment of the equipment despite the work was awarded to the firm. During the physical verification of the machinery /equipment, revealed that contractors had not deployed such equipment and the RO had failed to take action on the issue.

- The RO and the Site Engineers had failed to either ensure deployment of committed machineries and equipment by the contractors or take action to deduct the hiring cost as per the provisions of the contract agreements against the defaulting contractors.

Non-deployment of committed machineries and equipment were in total violations with reference to Clause SCC 10.1 of the GCC of the contract agreements and keeping in view that the firms had qualified the technical category by obtaining scores based on the proposed deployment of key equipment and machineries. Further, it was the responsibility of site engineer to report the matter to Regional Office for appropriate decisions and actions. The inaction on the part of the site engineer indicated laxity and complacency as well as extension of undue favour to the contractors.

The RO, should comment on the basis of accepting machineries and equipment other than those committed in the contracts including acceptance of same equipment for contractors executing two or three contract packages as different work plans and completion deadlines were set against each contract package. Besides, the RO must also comment on course of action taken against the contractors in term of the contract Clause SCC 10.1 of the GCC for deployment of different set of machineries and equipment in the event no approval were accorded for replacements.

The Regional Office besides recovering the penalties computed by the RAA should also work out the exact penalty amounts deductible taking into consideration the revised and actual completion dates, substitutions with lesser capacity of machineries and equipment and deposited in to Audit Recoveries Account.

The DOR and the Ministry should hold the RO and the Site Engineer accountable for the failure to ensure deployment of machineries and equipment as per bidding documents for appropriate decisions and action.

Auditee's Response:

It is to inform RAA that M/s. Chogyal construction had deployed separate set of machineries and human resources for all three packages during the execution. RAA was provided with the set of resources deployed for two packages during the auditing time itself. However, RO could not able to produce documentation for one package due to its misplacement. We regret for not having produced the documents as required during the auditing. Finally, after hard work of searching every day, finally RO could able to find the documents for the third package. The copy of HR and equipment for package II & III attached for reference and record, please. Therefore, RAA is requested to kindly drop the memo. Further RO also assures RAA that such important documents shall be kept under safe custody for future works.

M/s Etho Metho Construction has deployed machineries as per the agreement. However, the Bitumen Sprayer was not brought to site yet the BT works was successfully executed by spraying the bitumen manually to the required specification. The RO thus accepted the work

and penalty for not deploying the bitumen sprayer was not imposed. Therefore, RO requests RAA to consider and drop the memo, please.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that timely deployment of committed machinery and equipment is a critical factor for project success in terms of time, cost, and quality. The RO had failed to draw appropriate time schedule for the deployment of machinery and equipment in line with the work programs to enable the site engineer to monitor and direct the contractors for deployment of equipment as scheduled. It is apparent that abnormal delays of the contract works beyond the contract and revised completion periods were in the absence of predetermined schedules for deployment of equipment by the contractor for the works. The contract delays was also possible due for engagement of same equipment for the both contract packages II and VII.

Non-levy of penalty as envisaged in the contract document tantamount to extension of undue favour as the contractors not only benefit financially from not having to bring the equipment at site and incur associated cost but also on annulling the payment of penalty for non-deployment of equipment at site. It is to reiterate that the quoted rates of contractor for the related items of works is built up cost inclusive of cost of equipment and all risks factors.

The failure on the part of the RO and the Site Engineer to ensure deployment of all committed Plants and Equipment at work site indicated laxity and complacency as well as existence of systemic faults, deficiencies and poor contract management.

However, as asserted in the response on the deployment of all machinery and equipment at site on readying the bituminous works, the RO should submit the list equipment and machinery deployed along with documentary evidences for both the contract packages for records and verification in audit. In the event of failure to furnish the requisite records, the RO should recover the penalty as envisaged in the contract documents. In addition, it is to reiterate that non-deployment of one concrete mixture and one air compressor as noted during the physical verification were require throughout constructions not just for bituminous works.

However, as agreed during the exit meeting, DOR and RO, should work out the exact penalty amounts deductible for non-deployment of equipment as per contract document and amounts be recovered within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per Chapter IV, Section 4.5.1.4 of the Finance and Accounting Manual 2016.

Further DoR and the Ministry should study on the impact of poor plant and equipment management existing within the present system and practices on the progress and quality of works. Besides, the DOR and the Ministry should also conduct appropriate studies in terms of types of plant and equipment and efficiency requirements, numbers of plant and equipment requirements, adequate machinery and equipment deployment plan in relation to the quantum of works and cost of the project for effective equipment management by both the site engineer and the contractor. In addition, the Ministry should also review on the non-commitment of critical and requisite machineries and equipment by the winning bidders and appropriate measures and system put in place to address such flaws in the tender process as well as avoid complication in the contract management for similar project in future.

The studies conducted and actions and measures initiated to improve the equipment management system as well as to prevent such flaws and lapses intimated to RAA for records and follow-up in future audits.

Who is accountable?

Direct Accountability	: Refer Accountability Statement attached
Supervisory Accountability	:Refer Accountability Statement attached

2.15 Non-installation of laboratory at site as per BOQ (5.1.15)

The Regional Office, Trongsa and Lingmethang, despite clear instruction in the technical specification that no separate measurements and payment to be made on the provisions and maintenance of Camps, Offices, Stores, Equipment Yards and Workshops, had prepared detailed estimates for *Installation of Labour camps, contractors' site office, accommodation with proper toilets and sanitation, stores signage, water supply, electricity, lab facilities including equipment etc.* and included as a separate “**item of work**” in the BOQ.

For this item of work, the contractors had quoted lump sum amounts and were paid for including establishment of laboratory at work sites as detailed below:

RO, Trongsa-Table 2.15: details of estimated cost, quoted price and payments thereon				
Packages	Name of Contractor	Departmental estimate (Nu.)	Quoted Amount (Nu.)	Amount paid (Nu.)
Package 1	M/s Rigsar Construction Pvt. Ltd	200,000.00	200,000.00	200,000.00
Package 2	M/s Gaseb Construction Pvt. Ltd	200,000.00	2,000,000.00	2,000,000.00
Package 3	M/s Rinson Construction Pvt. Ltd	200,000.00	1,000,000.00	1,000,000.00
Package 4	M/s Gyalcon Infrastructure Pvt. Ltd	200,000.00	1,200,000.00	1,200,000.00
Package 5	M/s Druk Lhayul Construction Pvt. Ltd	200,000.00	500,000.00	500,000.00
Package 6	M/s Raven Builders & Company Pvt. Ltd	200,000.00	400,000.00	400,000.00
Package 7	M/s Druk Lamsel Construction Pvt/ Ltd	300,000.00	600,000.00	600,000.00
Package 8	M/s. Dungkar Construction Pvt Ltd. Thimphu	200,000.00	150,000.00	150,000.00
Package 9	M/s Welfare Construction Pvt. Ltd	200,000.00	2,000,000.00	1,800,000.00
Package 10	M/s Rinson Construction Pvt/ Ltd	200,000.00	750,000.00	675,000.00
Package 11	M/s Dungkar Construction Pvt/ Ltd	200,000.00	150,000.00	150,000.00
Package 12	M/s Dungkar Construction Pvt Ltd	300,000.00	150,000.00	150,000.00
Package 13	M/s Rinson Construction Pvt/ Ltd	200,000.00	500,000.00	500,000.00
Package 14	M/s Lamnekha Construction Pvt Ltd	300,000.00	50,000.00	50,000.00
Total		3,100,000.00	9,650,000.00	9,325,000.00

RO, Lingmethang-Table 2.15(a): details of estimated cost, quoted price and payments thereon				
Packages	Name of Contractor	Departmental estimate (Nu.)	Quoted Amount (Nu.)	Amount paid (Nu.)
Package 2	M/s Tshering Construction Pvt. Ltd	1,744,875.00	2,500,000.00	2,500,000.00
Package 3	M/s KD Builders Pvt. Ltd.)	1,794,875.00	4,800,000.00	4,800,000.00
Package 4	M/s Gongphel Construction Pvt. Ltd.	2,194,875.00	1,000,000.00	1,000,000.00
Package 5	M/s Norbu Construction Pvt. Ltd)	2,294,875.00	700,000.00	700,000.00
Package 6	M/s Rigsar Construction Pvt. Ltd.	2,294,875.00	250,000.00	200,000.00

Package 7	M/s Tshering Construction Pvt. Ltd	1,225,175.00	2,500,000.00	2,000,000.00
	Total	11,549,550.00	11,750,000.00	11,200,000.00

During site visit, the audit team in the presence of the Officials from Regional Offices and contractors, physically verified the establishment of proper camps, toilets, water supply and equipment etc. as defined in the estimates and contract document. The team observed that while the payments were made, some contractors had not installed laboratory and some had failed to procure necessary equipment for the laboratory as discussed below:

RO, Trongsa

2.15.1 Nyelazam to Sakachawa (Package 2) executed by M/s Gaseb Construction Pvt. Ltd (RO, Trongsa)

M/s Gaseb Construction Pvt. Ltd had quoted Nu. 2,000,000.00 and was paid accordingly. However, during site verification by the audit team along with the site engineer and the contractor, observed that while most of the lab equipment were available, no separate laboratory facilities was found established. The following equipments were not made available for verification:

Table 2.15.1: Lab Equipment not available at site			
Procurement of lab equipment and other related items		No.	Remark
I	Bitumen thermometer – digital	1	No
II	CBR testing machine	1	No
III	Flakiness & elongation Index	1	No

2.15.2 Sakachawa to Tsangkha (Package 3) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

M/s Rinson Construction Pvt. Ltd had quoted Nu. 1,000,000.00 and was paid accordingly. However, during the site visit made on 12.01.2017 by the audit team along with the site engineer and the contractor, observed that the laboratory was not installed at site as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.2: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No	Remarks
I	Sand Replacement Equipment	1	No
II	Sieve - all sizes	1	No
III	Flakiness & elongation Index	1	No
IV	Moisture content (speedometer)	1	No
V	Slump Cone	1	No
VI	Cube moulds	1	No
VII	Bitumen thermometer – digital	1	No
VII	Marshall equipment/apparatus	1	No

IX	Bituminous Oven	1	No
X	Water bath	1	No
XI	Centrifuge extractor	1	No
XII	Digital balance	1	No
XIII	Jaw crusher (small)	1	No
XIV	Triple Beam balance 1 set	1	No
XV	Density wire basket	1	No
XVI	CBR testing machine	1	No

On enquiry, the project engineer stated that only one laboratory was installed for package 3 (III) and for Package 10 (X) although installation of camp and laboratory for individual packages were paid separately.

2.15.3 Tshangkha to View Point (Package 4) executed by M/s Gyalcon Infrastructure Pvt. Ltd (RO, Trongsa)

M/s Gyalcon Infrastructure Pvt. Ltd. had quoted Nu. 1,200,000.00 and was paid accordingly. However, during site verification by the audit team along with the site engineer and the contractor, observed that the contractor had not established laboratory since the start of the project.

2.15.4 View Point- BjeeZam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd (RO, Trongsa)

M/s Druk Lhayel Construction Pvt. Ltd had quoted Nu. 1,000,000.00 and was paid accordingly. However, during the site visit by the audit team along with the site engineer and the contractor, observed that the laboratory was not installed at site as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.4: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remark
I	Sand Replacement Equipment	1	No
II	Sieve - all sizes	1	Only fine aggregates equipment present
III	Flakiness & elongation Index	1	No
IV	Moisture content (speedometer)	1	No
V	Slump Cone	1	Yes
VI	Cube moulds	1	Yes
VII	Bitumen thermometer – digital	1	Yes
VII	Marshall equipment/apparatus	1	No
IX	Bituminous Oven	1	No
X	Water bath	1	No
XI	Centrifuge extractor	1	No
XII	Digital balance	1	No

XIII	Jaw crusher (small)	1	No
XIV	Triple Beam balance 1 set	1	No
XV	Density wire basket	1	No
XVI	CBR testing machine	1	No

Sieve of all sizes, Slump Cone and Bitumen thermometer – digital only were made available for verification

2.15.5 Bjezam- Trongsa (Package 6) executed by M/s Raven Builders & Company Pvt. Ltd (RO, Trongsa)

M/s. Raven Builders & Company (P) LTD had quoted Nu. 400,000.00 and was paid accordingly. However, during the site verification by the audit team along with the site engineer and the contractor, observed that no laboratory facilities was found established.

2.15.6 Pinzhi-Tashipokto (PKG-8) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu (RO, Trongsa)

M/s Dungkar Construction Pvt. Ltd quoted only Nu. 150,000.00 and was paid accordingly. However, during site verification by the audit team along with the site engineer and the contractor, observed while most of the lab equipment were available, no separate laboratory facilities was found established.

2.15.7 Tashipokto to Dorjigonpa (Package 9) executed by M/s Welfare Construction Pvt. Ltd (RO, Trongsa)

M/s Welfare Construction Pvt. Ltd had quoted Nu. 2,000,000.00 and was paid accordingly. However, during site verification on 19.01.2017 by the audit team along with the site engineer and the contractor, the team was informed that the contractor had not established laboratory since the start of the project.

On pointing out, the RO, stated that Nu. 200,000.00 representing 10% of the quoted amount for non-installation of laboratory was deducted.

2.15.8 Dorji Gonpa to Yotongla (Package 10) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

M/s Rinson Construction Pvt. Ltd had quoted Nu. 750,000.00 and was paid Nu. 675,000.00. However, during the site visit on 18.01.2017 by the audit team along with the site engineer and the contractor, observed that the laboratory was not installed at site as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.8: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remarks
I	Sand Replacement Equipment	1	No
II	Sieve - all sizes	1	Yes
III	Flakiness & elongation Index	1	Yes
IV	Moisture content (speedometer)	1	No
V	Slump Cone	1	Yes

VI	Cube moulds	1	Yes
VII	Bitumen thermometer – digital	1	No
VII	Bitumen Penetration	1	No
IX	Marshall equipment/apparatus	1	No
X	Lab Oven	1	Yes
XI	Water bath	1	No
XII	Centrifuge extractor	1	No
XIII	Digital balance	1	Yes
XIV	Jaw crusher (small)	1	No
XV	Triple Beam balance 1 set	1	No
XVI	Density wire basket	1	Yes
XVII	CBR testing machine	1	Yes

On enquiry, the project engineer stated that only one laboratory was installed for package 3 (III) and for Package 10 (X) although installation of camp and laboratory for individual packages were paid separately.

On pointing out, the RO, stated that Nu. 75,000.00 representing 10% of the quoted amount was deducted for not fully establishing the laboratory.

2.15.9 Yotongla to Bongzam (Package 11) executed by M/s Dungkar Construction Pvt. Ltd (RO, Trongsa)

M/s Dungkar Construction Pvt. Ltd have quoted Nu. 150,000.00 and was paid accordingly. However, during the site verification by the audit team along with the site engineer and the contractor, observed that the no separate laboratory facilities was found established except for Package 8.

2.15.10 Bongzam to Gyatsa Zam (Package 12) by M/s Dungkar Construction Pvt. Ltd (RO, Trongsa)

M/s Dungkar Construction Pvt. Ltd have quoted Nu. 150,000.00 and was paid accordingly. However, during the site verification by the audit team along with the site engineer and the contractor, observed that the no separate laboratory facilities was found established except for Package 8.

2.15.11 Gyatsazam to Ngangar (Package 13) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

M/s Rinson Construction Pvt. Ltd had quoted Nu. 500,000.00 and was paid accordingly. However, during the site verification on 21.12.2017 by the audit team along with the site engineer and the contractor, observed that the no separate laboratory facilities was found established as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.11: Lab Equipment not available at site			
Installation of labor camps, contractor’s site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remarks
I	Sand Replacement Equipment	1	No

II	Sieve - all sizes	1	No
III	Flakiness & elongation Index	1	No
IV	Moisture content (speedometer)	1	No
V	Slump Cone	1	No
VI	Cube moulds	1	No
VII	Bitumen thermometer – digital	1	No
VIII	Marshall equipment/apparatus	1	No
IX	Bituminous Oven	1	No
X	Water bath	1	No
XI	Centrifuge extractor	1	No
XII	Digital balance	1	No
XIII	Jaw crusher (small)	1	No
XIV	Triple Beam balance 1 set	1	No
XV	Density wire basket	1	No
XVI	CBR testing machine	1	No

On enquiry, the project engineer stated that only one laboratory was installed for package 10 (X) and for Package 13 (XIII) although installation of camp and laboratory for individual packages were paid separately.

RO, Lingmethang

2.15.12 Korila-Pangser (Package-2) executed by M/s. Tshering Construction Pvt Ltd. Bumthang (RO, Lingmethang)

M/s. Tshering Construction Pvt Ltd. had quoted Nu. 2,500,000.00 and was paid accordingly. However, during site visit, the audit team in the presence of the Officials from Regional Office and contractor physically verified the establishment of proper camps, toilets, water supply etc. as defined in the estimates and contract document. The team noted that while the payments were made, some necessary equipment were found not procured by the contractor as detailed below:

Table 2.15.12: Lab Equipment not available at site			
Procurement of lab equipment and other related items		No.	Remark
I	Marshall equipment/apparatus	1	No
II	Bituminous Oven	1	No
III	Water bath	1	No
IV	Centrifuge extractor	1	No
V	Sand equivalent test apparatus	1	No
VI	Jaw crusher (small)	1	No
VII	Triple Beam balance 1 set	1	No
VIII	Density wire basket	1	No
IX	CRB testing machine	1	No

2.15.13 Pangser-Kilikhar (Package-3) executed by M/s. K. D Builder Pvt Ltd (RO, Lingmethang)

M/s. K. D Builder Pvt Ltd. had quoted Nu. 4,800,000.00 and was paid accordingly. However, during site visit, the audit team in the presence of the Officials from Regional Office and contractor physically verified the establishment of proper camps, toilets, water supply etc. as defined in the estimates and contract document. The team noted that while the payments were made, some necessary equipment were found not procured by the contractor as detailed below:

Table 2.15.13: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remark
I	Marshall equipment/apparatus	1	No
II	Bituminous Oven	1	No
III	Centrifuge extractor	1	No
IV	Jaw crusher (small)	1	No
V	Triple Beam balance 1 set	1	No
VI	Density wire basket	1	No
VII	CBR testing machine	1	No
VIII	Safety goggles	1	No

On enquiry, the project engineer stated that only one laboratory was installed for package 3 (III) and for Package 10 (X) although installation of camp and laboratory for individual packages were paid separately.

2.15.14 Kilikhar to Mongar (Package 4) executed by M/s Gongphel Construction Pvt. Ltd (RO, Lingmethang)

M/s Gongphel Construction Pvt. Ltd had quoted Nu. 1,000,000.00 and was paid accordingly. However, during site visit, the audit team in the presence of the Officials from Regional Office and contractor physically verified the establishment of proper camps, toilets, water supply etc. as defined in the estimates and contract document. The team noted that while the payments were made, some necessary equipment were found not procured by the contractor as detailed below:

Table 2.15.14: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remark
I	Bituminous Oven	1	No
II	Centrifuge extractor	1	No
III	Water bath	1	No
IV	Density wire basket	1	No
V	CBR testing machine	1	No

VI	Safety goggles	1	No
VII	Safety Belts	1	No

2.15.15 Mongar-Gongola (Package-5) executed by M/s. Norbu Construction Company Pvt. Ltd, Gelephu (RO, Lingmethang)

M/s. Norbu Construction Company Pvt. Ltd, Gelephu had quoted Nu. 700,000.00 and was paid accordingly. However, during site visit, the audit team in the presence of the Officials from Regional Office and contractor physically verified the establishment of proper camps, toilets, water supply etc. as defined in the estimates and contract document. The team noted that while the payments were made, no separate lab facilities was found established at site as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.15: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remark
I	Flakiness & elongation Index	1	No
II	Moisture content (speedometer)	1	No
III	Bitumen thermometer – digital	1	No
IV	Marshall equipment/apparatus	1	No
V	Bituminous Oven	1	No
VI	Water bath	1	No
VII	Centrifuge extractor	1	No
VIII	Jaw crusher (small)	1	No
IX	Triple Beam balance 1 set	1	No
X	Density wire basket	1	No
XI	CBR testing machine	1	No

2.15.16 Gangola-Kurizampa (Package 6) executed by M/s. Rigsar Construction Pvt Ltd. Trashigang (RO, Lingmethang)

M/s. Rigsar Construction Pvt Ltd had quoted Nu. 250,000.00 and was paid Nu. 200,000.00. However, during the site verification by the audit team along with the site engineer and the contractor, observed that while most of the lab equipment were available, no separate lab facilities was found established at site as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.16: Lab Equipment not available at site			
Installation of labour camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		Qty. in No.	Remarks
I	Marshall equipment/apparatus	1	No
II	Bitumen Oven	1	No
III	Water bath	1	No

IV	Centrifuge extractor	1	No
V	Jaw crusher (small)	1	No
VI	Triple Beam balance 1 set	1	No
VII	Density wire basket	1	No
VIII	CBR testing machine	1	No
IX	Insurance		documents not available

2.15.17 Kurizampa-Lingmethang Highway (Package-7) executed by M/s Tshering Construction Pvt. Ltd, Bumthang (RO, Lingmethang)

M/s Tshering Construction Pvt. Ltd, Bumthang had quoted Nu. 2,500,000.00 and was paid Nu.2,000,000.00. However, during the site verification by the audit team along with the site engineer and the contractor, observed that the no separate laboratory facilities was found established as laboratory equipment as detailed in the table below were not available for verification:

Table 2.15.17: Lab Equipment not available at site			
Installation of labor camps, contractor's site office, accommodation with proper toilets and sanitation, stores, signage, water supply, electricity, lab facilities including equipment etc. as per Technical Specification.			
Procurement of lab equipment and other related items		No.	Remarks
I	Sand Replacement Equipment	1	No
II	Flakiness & elongation Index	1	No
III	Moisture content (speedometer)	1	No
IV	Slump Cone	1	No
V	Bitumen thermometer – digital	1	No
VI	Marshall equipment/apparatus	1	No
VII	Bituminous Oven	1	No
VIII	Water bath	1	No
IX	Centrifuge extractor	1	No
X	Sand equivalent test apparatus	1	No
XI	Digital balance	1	No
XII	Jaw crusher (small)	1	No
XIII	Triple Beam balance 1 set	1	No
XIV	Density wire basket	1	No
XV	CBR testing machine	1	No

The Regional Office should comment on the non-establishment of lab facilities which is a critical component of contract obligations for ensuring execution of contract works with quality materials and testing of executed works to validate that works met the required technical standards and specifications.

The Regional Office should comment as to how such technical requirements on the execution of works were achieved without laboratory facilities. Besides, the RO should recover the proportionate amount from the contractor for not installing laboratory at site or installation of combined laboratory, if any, and the amount recovered deposited into Audit Recoveries

Account. Further, the Regional Office should also comment on non availability of lab equipments at site.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority and we have great concerns and high regards for the observation made by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for kind consideration by Royal Audit Authority.

From the list of equipment enclosed, RO acknowledges that though the firm has not brought all the requisite equipment at site, the minimal pre-requisite testing equipment are present at site.

More over the firm carries out the required test at site as demanded by the nature of work from the neighboring contractor's laboratory.

For some equipment made not available at site during the course of testing, proportionate amount will be worked out and will be recovered and deposited to ARA

We would like to request the Royal Audit Authority to kindly review above detailed explanations and consider dropping the above Para.

Other Responses:

As long as many contractors getting their materials tested from APECs and nearby contractor with their own expenses, RO could not do anything despite several instructions.

With every bill submission, contractors are instructed to attach test reports/results and each & every contractor is complying with this requirement

RAA's Further Comments & Recommendations:

The response of the RO that request test were conducted by the contractors from APECs and neighboring contractors' laboratories is not tenable as the incorporation of such extra item of works in the estimates and BOQs was made in violation of the provisions of the technical specifications and also such decisions should have been taken prior to incorporation of the lab requirements in the estimates/BOQs, tendering and awarding the contract works. The incorporation of installation of laboratory facilities in the estimates/BOQs would have cost implications which bidders are expected to include in their rates.

It is apparent from the response that the RO had not adhered to the contract provisions by allowing the contractors to conduct the test in APECs and neighboring contractors' laboratories instead of directing the contractors to establish own laboratory as per the contract agreement. It also indicated laxity and complacency on the part of the RO to enforce the provisions of the contract agreement.

Non-enforcement of contract clauses strictly and non-levy of penalty tantamount to extension of undue favour as the contractors benefits financially on not having to procure and install the lab facilities and incur associated cost. It is to reiterate that the quoted rates of contractors for the related items of works is built up cost inclusive of cost of lab equipment and all risks factors.

However, as agreed during the exit meeting, DOR and RO should work out the exact penalty amounts deductible for non-establishment of laboratories and non-furnishing of full laboratory facilities in terms of the total payments made to Contractors as the deduction of just 10% made by the RO from few contractors were not justified. The deductible amounts should be recovered within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per Chapter IV, Section 4.5.1.4 of the Finance and Accounting Manual 2016. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished to RAA for review and record.

Further, in the light of the failure not only to establish laboratory facilities by majority of the contractors but also on the part of the RO and Site Engineer to strictly enforced the provisions as per contract agreement, the DoR and the Ministry should revisit the estimates/BOQs and technical specifications for appropriate decisions and action on the requirement for inclusion of installation of separate laboratory facilities by contractors for similar future works.

The outcome of the decisions should be intimated to RAA for records and follow-up in future audits.

Who is accountable?

Direct Accountability	: Refer Accountability Statement attached
Supervisory Accountability	: Refer Accountability Statement attached

2.16 Flaws in the BOQ and technical Specification on the transportation of Spoil materials in designated dumping yards (4.4.69)

The Nomenclature provided in the BOQ for item work RW0024 for dumping of spoil materials were as under:

“Transportation of loose spoil materials in designated locations including loading/unloading, Dressing of dump sites and plantation of vegetation after completion of dumping beyond 500 up to 1210 m.”

While the bidder was required to bid in lump sum amount for FC works comprising item of works “RW0014 for exaction of all kinds of rocks”, RW0013 for “excavation of all kinds of soil” and RW0024 for “transportation of loose soil”, the nomenclature categorically provided under RW0024 transportation of loose spoil materials beyond 500m up to 1210m indicating that the designated dumping sites were beyond 500m distances.

Accordingly, the quotes though obtained as lump sum amount for formation works, had invariably built up rates for the transportation of loose soil beyond 500m up to 1210 m. It was apparent from the records and documents that the Regional Office had obtained NEC clearance for dumping yards for all contract packages prior to estimations and awards of contracts.

The designated dumping yards for the various contract packages were approved as detailed in table 2.16 below:

Table 2.16: Flaws in the BOQ and technical Specification			
Name of contractor	Contract Chainage	Designated Dump Yard Chainage	Remark
M/s Empire Construction (Package VIII) – Lobeyasa	372km to 379km (7km) Pelela- Bumilo	379.10KM,378.70KM,377.90KM,377.80KM,376.5KM,375.50KM,374.50KM,374.3KM&372.6KM	Analysis based on the designated dumping yards indicated that from a less than a kilometer, transportation of loose materials were required beyond 500m. (M/s Empire Construction Pvt. Ltd. as evident from the NEC clearance letter No. NECS/ESD/DOR/3023/2014/1018 dated 18/12/2014).
M/s Gaseb Construction Pvt. Ltd - (Package 2) Trongsa	12.00km to 19.50km (7.5km) Nyelazam – Sakachawa	13960-14020, 14420-14490, 14700-14750, 15000-15040, 15520-15580, 15720-15790, 16220-16280	Analysis based on the designated dumping yards indicated that in between Chainage 12000 to 13460m and 16780 to 19500m , transportation of loose material beyond 500m were required only for about 1460m and 2720m respectively.
M/s Druk Gyalcon Construction Pvt. Ltd (Package 4) -Trongsa	27km to 32.00km (5km) Tsangkha to Trongsa View point	27274m, 27372m, 2772m, 28794m, 28956m, 29120m, 29256m, 29500m, 29709m, 31743m	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 1313m
M/s Druk Lhayul Construction Pvt. Ltd (Package 5) Trongsa	32.00km to 37.70km (5.7km) View Point-Bjee Zam	32160-32240m, 32380-32440m, 33610-33640m	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 3730m
M/s Raven Construction Pvt. Ltd (Package 6) Trongsa	37.7km-44.4km(6.7 km) Bjeezam-Trongsa	37,960m-38,000m, 39,540m-39,620m, 41,520m-41,600m, 43,260m-43,300m	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 2700m
M/s. Dungkar Construction Pvt Ltd. Thimphu (Package 8) Trongsa	50.80km to 58.00km (7.2km) to Pinzhi-Tashipokto	53310m, 56569m	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 5200m
M/s Welfare Lamsel Construction Pvt. Ltd (Package 9) Trongsa	58km to 65.98km (7.98km) Dorjigonpa to Tashipokto	58.76 - 58.82km, 60.66 - 60.80km, 61.29 - 61.39km, 63.22 - 63.36km, 63.85 - 63.91km	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 4.5km
M/s Rinson Construction Pvt. Ltd (Package 10) Trongsa	65.98km to 72km (6.02km) Dorjigonpa to Yotongla	71353-71763m, 70823-71001m, 68061-68106m	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 3298m
M/s. Dungkar Construction Pvt Ltd. Thimphu (Package 11) Trongsa	72km to 80km (8km) Yotongla to Bongzam	81.2-81.26km, 81.78-81.84km, 84.76- 84.81	Analysis based on the designated dumping yards indicated that transportation of loose materials beyond 500m were required only for 2.61km

Further, it was evident from the documents that the NEC clearance for dumping yards in respect of contract package VIII (Lobeyasa) awarded to M/s Empire Construction was obtained seven months ahead of the award of the contract on 23/07/2015.

The audit in an attempt to validate the requirement for the transportation of loose materials beyond 500 up to 1210 m carried out an analysis based on the approved designated dumping yards and observed that transportation of loose materials beyond 500m lead were not required in most of chainages as the dumping yards were well within 500m lead. The extent of transportation of loose materials required beyond 500m were as depicted in the table 2.16 above in respect of each packages.

The specification in the BOQ requiring transportation beyond 500m up to 1210m of excavated loose spoil materials indicated flawed BOQs specification. The Regional Offices should have taken into consideration the approved dump yards and to the extent of loose

materials actually required to be transported beyond 500m lead quantified and incorporated in the departmental estimates and specified in the BOQ of the tender documents. Thus, inclusion of a standard nomenclature in the BOQ on the transportation of spoil materials indicated requirement of transportation of all excavated materials beyond lead of 500m which adversely impacted the departmental estimates as well as bid prices.

The Regional Offices and the DOR besides commenting on the lapses should also hold the concerned officials accountable for preparation of flawed estimates, BOQs and technical specification relating to the transportation of loose spoil materials despite knowing that designated dumping yards were approved by NEC for each contract packages. The DoR and the Ministry should revisit the departmental estimates and ascertain the financial implications due to flawed estimation and nomenclature in the BOQs of the tender documents.

Auditee's Response:

The lead for transportation of spoils were anticipated within the lead of 500.00M-1,210.00M in the estimates. The NEC visited the sites and identified the dumping yards which fell distance lesser than the above lead which were assumed during the time of estimates. In reality, the actual lead for transportation is more than 500M. Therefore, please drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, it is reiterated that the approvals for dumping yards were obtained prior to the awards of the contracts by ROs from respective authorities and known to the ROs. The analysis carried out in terms of approved dumping yards as detailed in the table of the report revealed that for 9 contract packages, the requirement of transportation of spoil materials beyond 500m lead ranged just from half a kilometer to 5.2 kms against allotted road stretches ranging from 5km to 8km. The transportation of spoil materials incorporated in the departmental estimated cost in respect of Lobeyisa ranged from 40% to 65% in respect of contract packages and the departmentally executed formation cutting works showed as high as 98.74%.

Thus, in consideration to the above facts, there exist flaws in the departmental estimations and nomenclatures in the BOQs.

However, as discussed during the exit meeting, the DOR and Ministry should revisit all the departmental estimates prepared by the ROs and flaws and ambiguities, if any, remedial measures taken to prevent unrealistic preparation of estimates and inclusion of flawed nomenclatures in the BOQs for similar projects in future. The outcome of the review and remedial measures put in place intimated to RAA for records and follow-up in future audits.

2.17 Damages to Environment due to Dumping of muck in unidentified areas and push/freely rolling of mucks over the valley

The dump yards were found identified and dully approved by Dzongkhags NEC, and the National Environment Commission Secretariat for each contract packages. The NEC clearances clearly stipulated the following terms and conditions amongst many others:

1. The holders shall ensure that Environmentally Friendly Road Construction (EFRC) techniques are adopted for the widening of this road to minimize adverse environmental impacts;
2. The holder shall ensure that excavated materials are never pushed downhill and are loaded, Hauled and dumped at the pre-identified/approved spoil dumpsites to avoid downstream environmental damages; and
3. The holder shall ensure that dusts generated during widening of the road are adequately suppressed by spraying water.

However, during the joint physical verification of construction sites comprising officials from respective ROs, and audit team, spoil materials were found dumped at various locations by the contractors despite allocation of designated dumping yards within the contract Chainages. The excavated spoil materials found either dumped in places other than the designated dump sites or freely rolled/pushed over the hills causing downstream environmental damages in the chainages are as discussed below:

RO, Lobeysa

2.17.1 Pelela to Bumilo (Package VIII) executed by M/s Empire Construction Pvt. Ltd

During the joint site verification of the construction site, spoil materials were also found dumped at locations viz. chainages 378.94km, 378.52 and 377.69KM by the contractor despite allocation of nine designated dumping yards within the contract scope of works of seven Kilometers (*Refer audit memo 15.6*) as depicted in the Photograph below:



Fig: 2.17.1- Spoil materials rolled down the cliff in places other than *designated areas*

RO, Trongsa

2.17.2 Trongsa Nyelazam – Sakachawa executed by M/s Gaseb Construction Pvt. Ltd - (Package 2) Trongsa

The dump yard identified by RO, Trongsa for the excavated soil are in between Chainages 14450 to 17005 meters and 17973 to 24058 meters for 7.5km FC works. However, the audit team noted that excavated soil were not transported to dump yard but rolled/pushed over the hills in the following chainages:

Table 2.17.2: Soil rolled/pushed over the hills and not dump in designated dumping yards				
Sl. No.	Identified dump yard (Chainage)	Chainages where muck are dumped/rolled over	Remarks	Chainages requiring transportation of spoil materials to dump yards
1	13960-14020			12000-13960
2	14420-14490			14020-14420
3	14700-14750	12123-12369	Rolled over	14490-14700
4	15000-15040	12595-13683	Rolled over	14750-15000
5	15520-15580	13727-15496	Rolled over	15040-15520
6	15720-15790	13956-16072	Rolled over	15580-15720
7	16220-16280			15790-16220
				16280-19500

As would be transpired from the table above that against the 7 identified dump yards, loose materials were found directly rolled over/ pushed down the hills from additional 4 places without the approval causing downstream environmental damages as depicted in the photographs below:



Fig: 2.17.2-Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

Thus, inclusion of a standard nomenclature in the BOQ on the transportation of spoil materials indicated requirement of transportation of all excavated materials beyond the lead of 500m which adversely impacted the bid price.

2.17.3 Tsangkha to View Point (Package 4) executed by M/s Druk Gyalcon Construction Pvt. Ltd (RO, Trongsa)

During the joint physical verification of site along with officials from RO, Trongsa and contractor’s staff, it was observed that the excessive earth excavated from the formation cutting were not transported to dump yard but rolled/pushed over the hills in the following chainages:

Table 2.17.3: Soil rolled/pushed over the hills and not dump in designated dumping yards			
SL. No	Identified dump yard (Chain age)	Chainages where muck are dumped	Remarks
1	27274	27372	Roll over
2	27372	27619	Roll over
3	27724	27737	Roll over
4	28794	28842	Dump yard
5	28956	29014	Dump yard
6	29120	29168	Roll over
7	29256	29486	Roll over
8	29500	29595	Dump yard
9	29709	29861	Dump yard
10	31743	31843	Roll over

It would be noted that against the 10 identified dump yards, additional 3 places were used as dump yards without the approval. The spoil materials directly rolled/push over the hills are as shown in the photographs below:



Fig: 2.17.3- Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

2.17.4 View Point- Bjee Zam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd (RO, Trongsa)

During the joint physical verification of site along with officials from RO, Trongsa it was observed that dumping of muck were done in haphazard manner or freely rolled/pushed over the hills in unidentified areas causing downstream environmental damages in the following chainages:

Table 2.17.4: Soil rolled/pushed over the hills and not dump in designated dumping yards			
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SL. No	Identified dump yard (Chain age)	Chainages where muck are dumped	Remarks
1	32160-32240	32160-32247	Dump at identified place
2	32380-32440	32530-32685	Dump at identified place
3		32916-33068	Roll over
4		33080-33212	Dump yard though not identified
5		33220-33305	Roll over
6		33433-33448	Dump yard though not identified
7	33610-33640	33588-33702	Dump at identified place
8		34513-34600	Roll over
9		34677-34850	Dump yard though not identified
10		35097-35147	Dump yard though not identified
11		35297-35412	Dump yard though not identified
12		35503-35651	Roll over
13		35691-35916	Roll over
14		36117-36297	Roll over
15		36848-36927	Dump yard though not identified
16		36950-37110	Roll over
17		37138-37178	Roll over

It was also noted that against the 3 identified dump yards, additional 6 places were used as dump yards without the approval. The spoil materials directly rolled/push over the hills are as shown in the photographs below:



Fig: 2.17.4- Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

2.17.5 Bjeezam-Trongsa (Package 6) executed by M/s Raven Construction Pvt. Ltd (Package 6) Trongsa

During the joint physical verification of sites comprising officials from RO, Trongsa and audit team on 14th December 2017, it was observed that despite assigning specific dump sites for stretch between Bjeezam -Trongsa, the excavated spoil materials were found either dumped in places other than the designated dump sites or freely rolled/pushed over the hills causing downstream environmental damages in the chainages detailed below:

SL. No	Ch. From (m)	Ch. To (m)	Length (m)	Remarks
1	40476	40535	59	Not identified as dumping areas by NEC
2	41318	41446	128	Not identified as dumping areas by NEC
3	41612	41665	53	Not identified as dumping areas by NEC
4	41864	41910	46	Not identified as dumping areas by NEC
5	42250	42275	25	Not identified as dumping areas by NEC

In addition, photographic evidences of spoil materials dumped and freely rolled/pushed over the hills are as depicted below:



Fig: 2.17.5-Roll over of mucks over the valley

2.17.6 Pinzhi-Tashipokto (Package8) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu (RO, Trongsa)

During the joint physical verification of site along with officials from RO, Trongsa and contractor's staff, it was observed that the dumping of excessive earth excavated from the formation cutting were either not done in the identified dumping yards/areas or freely rolled/pushed over the hills causing downstream environmental damages in following chainages:

SL. No	Identified dump yard (Chain age)	Chainages where muck are dumped/rolled over
1	53310	57798-57876
2	56569	57603-57674
3		57474-57509
4		57372-57427

5		55818-55975
6		55754-55791
7		55576-55632
8		55417-55494
9		54475-54565

As against 2 identified dump yards, additional 9 places were used at dump yards/rolled over without the approval. The spoil materials directly rolled/push over the hill are as depicted in the photographs below:



Fig: 2.17.6-Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

2.17.7 Dorjigonpa to Tashipokto (Package 8) executed by M/s Welfare Lamsel Construction Pvt. Ltd (RO, Trongsa)

The dump yard identified by RO, Trongsa for the disposal of excavated soil are in between Chainages 58.76 km to 63.91km as indicated below:

Table 2.17.7: Identified dumping yards	
Identified dump yard (Chain age)	Chainages where muck are dumped/rolled over
58.76 - 58.82	- dumping yard
60.66 - 60.80	- dumping yard
61.29 - 61.39	- dumping yard
63.22 - 63.36	- dumping yard
63.85 - 63.91	- dumping yard

However, the audit team during site visit along with the officials of Regional Office, noted that all the excavated soil from chainages 65581 to 65096 were not transported to the designated dump yards instead rolled/pushed over the hills in the following chainages:

Sl. No.	Chainage		Total length	Remarks
	From	To		
1	65980			
2	65581	65513	68	399-467 Rolling over
3	65270			
4	65167	65096	71	813 – 884 – Roll over

Further, out of five designated dumping yards, the contractor had dumped at various locations as shown below:

Sl. No.	Chainage	Remarks
1	65980	
2	65581	399-467 Rolling over
3	65270	
4	65167	813 – 884 – Roll over
	63850 – 63910	Dumping yard designated
5	63631	Box cutting
6	63460	Camp
	63220 - 63360	Dumping yard designated
7	62840	
8	61498	
	61290 – 61390	Dumping yard designated
9	60961	Filling
10	60871	
11	60782	Dumping Yard
	60660 - 60800	Dumping yard designated
12	60128	
13	60000	
14	59167	
15	58908	
	58760 – 58820	Dumping yard designated
16	58661	
17	58055	

2.17.8 Dorjigonpa to Yotongla (Package 10) executed by M/s Rinson Construction Pvt. Ltd (RO, Trongsa)

The dump yards identified by RO, Trongsa for the disposal of excavated soil are in between Chainages 53310 meters and 56569 meters for 6.02km FC works. However, the audit team

noted that all excavated soil are not transported to dump yards and instead rolled/pushed over the hills in the following chainages:

Table 2.17.8: Soil rolled/pushed over the hills and not dump in designated dumping yards			
SL. No	Identified dump yard (Chain age)	Chainages where muck are dumped/rolled over	Remarks
1		71726-7200	Roll over/muck dump
2	71353-71763	71353-71763	Identified dump yard
3	70823-71001	70823-71001	Identified dump yard
4		70506-70705	Roll over/muck dump
5		70272-70514	Roll over/muck dump
6		70062-70198	Roll over/muck dump
7		69877-69942	Roll over/muck dump
8		69739-69810	Roll over/muck dump
9		69503-69739	Roll over/muck dump
10		69291-69478	Roll over/muck dump
11		69111-69169	Roll over/muck dump
12		68149-68852	Roll over/muck dump
13	68061-68106	68061-68106	Identified dump yard
14		67554-67680	Roll over/muck dump
15		66925-67189	Roll over/muck dump
16		66668-66831	Roll over/muck dump
17		66494-66504	Roll over/muck dump

As against 3 identified dump yards, additional 14 places were used at dump yards/rolled over without the approval. The spoil materials are directly rolled over the hill as shown in the photographs depicted below:



Fig: 2.17.8- Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

2.17.9 Yotongla to Bongzam (Package 11) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu (RO, Trongsa)

The joint physical verification of site along with officials from RO, Trongsa revealed that dumping of muck are either not done in identified areas or freely rolled/pushed over the hills causing downstream environment damages in the following chainages:

Table 2.17.9: Soil rolled/pushed over the hills and not dump in designated dumping yards			
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SL. No	Approximate chainages (in meter)	Remarks
1	1110-1166	Rolled over
2	1303-1358	Muck dumped
3	1483-1551	Rolled over
4	6505-6611	Rolled over
5	7007-7249	Rolled over
6	7249-8000	Muck dumped

As against 6 identified dump yards, additional place was used as dump yard without the approval. The spoil materials are directly rolled over the hill as shown in the photographs below:



Fig: 2.17.9-Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

RO, Lingmethang

2.17.10 Korila-Pangser (Package-2) executed by M/s. Tshering Construction Pvt Ltd. Bumthang (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainage 36.4km, 36.6km, and 36.9km.

During the joint physical verification of sites comprising of officials from RO, Lingmethang on 17th November 2017, it was observed that despite assigning specific dump sites for stretch between Korila to Pangsar, the excavated spoil materials were found either dumped other than the designated dump sites or freely rolled/pushed over the hills causing downstream environment damages as detailed below:-

SL. No	Approximate chainages (in meter)	Remarks
1	37324	Rolled over
2	37372	Muck dumped
3	37647	Rolled over
4	37883	Rolled over

5	38090	Rolled over
6	39374	Muck dumped
7	40687	Muck dumped
8	41228	Rolled over
9	41295	Muck dumped
10	41518	Muck dumped

The spoil materials directly rolled/push over the hill are as depicted in the photographs below:



Fig: 2.17.10-Spoil materials dumped and freely rolled/pushed over the hill causing damaged to the environment

2.17.11 Pangser-Kilikhar (Package-3) executed by M/s. K. D Builder Pvt Ltd (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainage Identification of dumpsite at Chainage 29.5 km, and 32.8km.

During the joint physical verification of sites comprising of officials from RO, Lingmethang on 13th November 2017, observed that despite assigning specific dump sites for stretch between Korila to Pangsar, the excavated spoil materials were found either dumped other than the designated dump sites or freely rolled/pushed over the hills causing downstream environment damages as detailed in the table below:

Table 2.17.11: Soil rolled/pushed over the hills and not dump in designated dumping yards			
SL. No.	Approx. chainages (in meter)		Approx. length (in meter)
	From	To	
1	29376	29595	219
2	29607	30035	428
3	30099	30200	101
4	30219	30359	140
5	31188	31213	25
6	31378	31401	23
7	32648	32707	59
8	33496	33814	318
9	34715	34797	82

Photograph evidences of spoil materials dumped and freely rolled/pushed over the hills are as depicted below:



Fig: 2.17.11- Spoils materials dumped and freely rolled/pushed over the hill

2.17.12 Kilikhar-Mongar (Package-4) executed by M/s. Gongphel Construction Pvt. Ltd. (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainage 27.3 km, and 28km.

However, during the joint physical verification of site along with officials from DoR, Lingmethang on 8th November 2017, it was observed that between Chainages 25.735km to 25.818km, all the excavated spoil materials were freely rolled/pushed over the hills causing downstream environment damages. Photograph evidences of spoil materials dumped and freely rolled/pushed over the hills are as depicted below:



Fig: 2.17.12- Freely rolled/pushed down of excavated materials over the hill

2.17.13 Mongar-Gongola (Package-5) executed by M/s. Norbu Construction Company Pvt. Ltd, Gelephu (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainage 13.7km, 21 km, and 22.6km.

During the joint physical verification of sites comprising of officials from RO, Lingmethang on 4th November 2017, observed that despite assigning specific dump sites for stretch between Korila to Pangsar, the excavated spoil materials were found either dumped other than the designated dump sites or freely rolled/pushed over the hills causing downstream environment damages pertaining to Chainages detailed in the table below:-

SL. No.	Chainages (approximately in meter)
1	1185m
2	2605m
3	5100m
4	5130m

2.17.14 Kurizam to Gongola ((Package 6)) executed by M/s. Rigsar Construction Pvt Ltd. Trashigang (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainages 2.3km, 3 km, 9.3km, 10.3km, and 12.3km.

However, during the joint physical verification of site along with officials from RO, Lingmethang on 30th October 2017, it was observed that excavated muck materials were found dumped in unidentified areas along the stretches/chainages as detailed below:

SL. No.	Chainages (approximately in meter)
1	4480m
2	5000m
3	5100m
4	5130m
5	8880m
6	8960m
7	9780m
8	10440m
9	10640m
10	11900m

Similarly, in some chainages viz. 1,425m, 1,443m, 1,570m-1,705m and 10,000m (approx.) excavated materials were freely rolled/pushed over the hill causing downstream environment damages as shown in the photographs below:



Fig.: 2.17.14- Freely rolled/pushed down of excavated materials over the hill

2.17.15 Kurizampa-Lingmethang (Package-7) executed by M/s Tshering Construction Pvt. Ltd, Bumthang (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in at Chainages 2.3km, 3 km, 9.3km, 10.3km, and 12.3km.

During the joint physical verification of sites comprising of officials from RO, Lingmethang on 25th October 2017 observed that despite assigning specific dump sites for stretch between Kurizampa-Lingmethang, the excavated spoil materials were found dumped other than the designated dump sites in Chainages detailed in the table below:-

Table 2.17.15: Soil not dump in designated dumping yards		
SL. No.	Chainage	Remarks
1	115.25 Km	Not identified as dumping area by NEC
2	115.90 Km	Not identified as dumping area by NEC
3	116.45 Km	Not identified as dumping area by NEC
4	116.95 Km	Not identified as dumping area by NEC

Similarly, in Chainages 114.95Km, 115.85Km, 116.4Km and 116.75Km, the excavated materials were freely rolled/push over the hill causing downstream environment damages as evident form the Photographs depicted below:



Fig: 2.17.15-Roll over of mucks over the valley

2.17.16 Kurizampa-Yadi executed departmentally (RO, Lingmethang)

The dump yard identified by RO, Lingmethang for the disposal of excavated soil are in Chainages 43.8km, 50km, 51.7km, 55.7km, 56.1km and 64km in between Yadi-Korila.

During the joint physical verification of sites comprising of officials from RO, Lingmethang on 18th November 2017, observed that despite assigning specific dump sites for stretch between Yadi-Korila, the excavated spoil materials were dumped in unidentified areas along the stretches/chainages as detailed below:

Table 2.17.16: Soil not dump in designated dumping yards		
SL. No.	Soil dump in various Chainages (approximately in Km)	Dump Yard Identified at Chainages as per Environment Management Plan
1	43.4km	43.8km
2	44.6km	
3	46.1km	
4	48.1km	
5	48.5km	
6	48.9km	
8	54.9km	50km, 51.7km, 55.7km
10	58.49km	56.1km
11	59.1km	
12	59.7km	
13	63.5km	64km

In addition, the excavated materials were freely rolled/push over the hill in chainages 47.4km, 47.5km,51.1km,55.2km,55.5km,57.5km,59.1km,59.8km, and 63.8km (approx.) causing downstream environment damages as depicted in the photographs below:



Fig: 2.17.16-Freely rolled/pushed down of excavated materials over the hill

The extent of volume of mucks dumped in unidentified areas and rolled over the hills could not be ascertained in audit. Further, during the site visit, it was also observed that dusts generated from the widening of the road were not adequately suppressed by spraying water. As such, all of the above have breached the terms and conditions laid down in the renewed Environmental Clearance issued by the Dzongkhag Environment Committee/NEC which needs to be justified. Therefore, the ROs, Lobeysa and Trongsa should justify for failing to comply with the provisions contained in the Environment Clearance.

It is to reiterate that since the lump sum contract included transportation of spoil materials at designated places, the disposal of spoil materials in places other than the designated places were not only in violation of the environment regulations but also benefited the contractors by way of not having to transport spoil materials to the dump yards. Further, designated dumping sites were also not found dressed and planted with vegetation as per the technical specification of the BOQs wherein it categorically stipulated as ***“Dressing of dump sites and plantation of vegetation after completion of dumping”***.

The Regional Office should comment for non adherence to environmental regulations. Besides, the Regional Office should ascertain the volume of spoil materials dumped/roll down the cliff in the aforementioned chainages and cost recovered including the environment penalty liable as per environment norms and deposit into ARA.

In addition, the Regional Office, should fix the site engineers accountable for allowing the contractor to dump/roll over the cliff the spoil materials and dumping in unidentified places. In the event the site engineer had taken any measures/action against the contractor the same should be furnished to audit for verification and record.

Auditee's Response:

The Contractor as far as possible followed the directives of National Environment Commission and action taken in consultation with the NEC officials. But at times due to unavoidable circumstances especially working at night and continuous flow of rain water, some of the spillage over the valley side could not be controlled. In-fact, NEC has imposed fines and penalty to the contractors for failing to adhere to the rules and regulations of NEC. Therefore, please drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that though the lump sum contract price for formation cutting included transportation of spoil materials at designated dump yards, the contractors were allowed to not only dump spoil materials indiscriminately in unidentified areas but also freely roll/push spoil materials down the hills causing damaged to the environment as evident from the Physical verification of sites. The disposal of spoil materials in areas other than the designated areas and rolling over the hills had benefited the contractors at the cost of the Government and damage to pristine environment.

*Further, designated dumping sites were also not found dressed and planted with vegetation as per the technical specification of the BOQs wherein it categorically stipulated as ***“Dressing of dump sites and plantation of vegetation after completion of dump”***.*

However, as discussed during the exit meeting, the DOR and Ministry should depute a technical team or direct the ROs to quantify the extent of spoil materials dumped in areas other than the designated dump yards as well as rolled/pushed over hills in the aforementioned chainages and cost recovered and deposited into ARA. Besides, the Ministry in consultant with the NEC should thoroughly investigate all constructions sites to ascertain the extent of environmental damages by the contractors to timely address and measures put in place to avoid future complications. The outcome of the review and remedial measures put in place intimated to RAA for record and follow-up in future audits.

2.18 Flaws in the allowable wastage of 5% on the bitumen consumption with resultant financial loss to the Government exchequer of Nu. 13,956,639.07

On review of the documents and records relating to the *Theoretical consumption of bitumen worked out based on the Job Mix Formula and test results by the ROs*, it was noted that for comparison of the Theoretical consumption with that of actual consumption, the ROs have allowed bitumen wastages of 5% on the total theoretical consumptions. Cases where *Theoretical consumption of bitumen were worked out based on the Job Mix Formula and test results by allowing 5% bitumen wastages* by the ROs including huge financial loss to the Government Exchequer are detailed below:

Name of Contractor	Total issue as per register (MT)	Total No. of barrels	Theoretical consumption (MT)	5% Wastage on Theoretical consumption (MT)	Rate per MT	Amount (Nu.)	Remarks
M/s Chogyal Construction Pvt. Ltd (Packages I,II,III) (RO, Lobeyesa)	3680.664	22866	3447.20	172.36	42,401.87	7,308,386.31	
M/s Raven Builder & Co. Pvt. Ltd, RO, Thimphu	1265.248		1,106.0393	55.3019	35,951.17	1,988,168.01	
M/s Yangkhil Construction Pvt. Ltd(Package 2)RO, Thimphu	1284.2066		1,199.4285	59.9714		2,156,041.99	
M/s SL Construction Pvt. Ltd (M/s Raven) RO, Thimphu	370.4617		352.996	17.6498	35,951.17	634,530.96	
Package X) by M/s Rigsar Construction Pvt. Ltd., RO, Lobeyesa	632.891			27.7206	35,951.17	996,558.93	Actual wastage 4.38%
M/s KD Builder Pvt. Ltd.	809.36			24.2808		872,923.17	Actual wastage 3%
						13,956,639.07	

It was reported that 5% bitumen wastages were allowed for the following contract packages. It would be apparent that in terms of bitumen issued to the contractors, the total wastages amounts to Nu. 13,956,639.07 for six contracts alone in consideration to the present mechanized method of execution of bitumen works.

The RAA in an attempt to confirm the admissibility of the 5% wastage for bitumen, had referred the Financial Manual 1988 where Allowance variations percentage were given on the following selected items as detailed below:

Sl.No	Item	Variation	Allowance variation
1	Cement	+/-	3%
2	Steel	+/-	10%
3	Bitumen	+/-	5%
4	M.S Sheet/G.I Pipe	+/-	10%

Thus, it was apparent that the RO had applied the same allowance variations percentage for bitumen stipulated in the 1988 Financial Manual.

The RAA is of the opinion that taking into cognizance the present scenario where execution of bituminous works are carried out through mechanized processes with the deployment of advance plants, machineries and equipment with minimum wastages as compared to the manual processes where wastages were high, the application of same wastage percentage on bituminous works was not rationale and justified.

It was evident from the analysis carried out by the RO, on the theoretical consumption and bitumen issued as per stock ledger in respect of the following contractors that the wastages of bitumen varied from minus 6.70% to just plus 0.962% except M/s Rigsar Construction Pvt. Ltd. with plus 4.38% and M/s Tshering construction Pvt .Ltd. with plus 3% as tabulated below.

Name of Contractors	Issue in barrel as per stock register/MT	Return in barrel	Total consumption in barrel/MT	Theoretical consumption computed based on JMF and quantity of works done(Barrel.MT)	Total variation in barrel /MT	% of wastage
RO, Lobeysa						
M/s Singye Construction Pvt. Ltd.	8224	223	8001	7924.31	76.69	0.962%
RO, Trongsa						
(Package V) by M/s TT Construction Pvt. Ltd.	777.702					-2.24%
(Package VI) by M/s Etho Metho Construction Pvt. Ltd.	1436.788					0.51%
(Package VII) by M/s Loden Construction Pvt. Ltd.	811.027					-1.78%
(Package IX) by M/s Welfare Construction Pvt. Ltd.	741.904					-6.70%
Package X) by M/s Rigsar	632.891					4.38%

Construction Pvt. Ltd.						
(Package XI) by M/s Hi-Tech Company Pvt. Ltd.	1201.409					0%
(Package XII) executed by M/s Taksing Chungdru Construction Pvt. Ltd.	671.47					0.75%
(Package XIV & XV) executed by M/s Empire Construction Pvt. Ltd.	557.976					0%
RO, Lingmethang						
M/s KD Builder Pvt. Ltd.	809.36					3%
M/s Rigsar Construction Pvt. Ltd.	1446.18					0%
M/s Tshering Construction Pvt.. Ltd.	377.17					0%

Thus, in the light of bitumen wastages of minus % to less than 1% as tabulated above, it is obvious that the application of 5% wastage based on old allowable percentage was not rationale and tantamount to extension of undue financial benefit of Nu. 13,956,639.07 to six contractors.

The RO should comment on the application of 5% wastages on the bituminous works as no proper analysis had been carried out by the RO prior to entertainment of such wastages. It is also reiterated that consideration of 5% wastages despite having adopted mechanized methods, will have huge cost implication to the Project and Governments besides benefiting the contractors.

The RO in consultation with the Ministry should relook on the admissibility of the 5% wastages on the bituminous works in consideration to the vast difference in the execution of bituminous works through mechanized method as compared to the conventional methods.

Auditee's Response:

The RO, Lobeyasa agrees that mechanized bituminous works would lessen the wastages in comparison to manual way of bituminous works. However, the wastage of bitumen at site occurred due to the following reasons.

Transportation: The transportation of bitumen has to transit/load & unload multiple times from the factory till work site (example losses in the transportation of bitumen from Mumbai to Falakata, unloading and reloading at Falakata yard, unloading and loading at the central store, unloading and loading at the regional store).

- *There are leakages in the stock yard despite efforts to safeguard the barrels.*
- *The extreme heat due to global warming have major impact on viscosity.*
- *The wastages after the mix rejected at site due to unforeseen machinery breakdown.*

Above all, the RO had sought the consensus of HQ and was accordingly approved by DCC vide letter No.DOR/CD/7/2016-2017/3909 dated 4th May 2017. RO Lobeyasa also would like to inform that, we have not sought approval for uniform application of plus 5% wastages. The wastages could be plus or minus 5% which is practically unavoidable during the execution of bituminous works at site and furthermore we have not issued excess bitumen

more than actual requirement at site. The wastages reflected in the consumption statement is due to site conditions. Therefore, RAA is requested to kindly drop the said memo.

RAA's Further Comments & Recommendations:

Considering the fact that the allowable wastage of 5% were fixed for the execution of bituminous works manually, the application of same wastage percentage for mechanized bituminous works was not justified and decisions of the HQ and DCC has caused adverse financial implication to the Government Exchequer.

It is noted that the approval accorded for application of 5% wastage by the HQ & DCC was not supported by detailed analysis on the application of same wastage percentage for both manual and mechanized method. The variation percentage was also not specifically covered by the existing contract provisions. Thus, the Ministry did not pursue a prudent and sound financial management practice in allowing 5% wastage for the bitumen issued by the Government free of cost.

Considering the above fact and events, the Ministry should revisit its decision of allowing 5% bitumen wastage keeping in view the actual wastage of just 1% worked out in respect of M/s Singye Construction Pvt. Ltd. and determine the allowable wastage for the mechanized bituminous works.

It is also to reiterate that allowing 5% bitumen wastages without proper analysis just for six contract packages alone have adversely impacted Project funds to the extent of Nu. 13.957 million.

The huge financial loss to the extent of Nu. 13.957 million to the government Exchequer is brought to the notice of the Government for appropriate decisions and actions.

2.19 Excessive engagement and payment of hired charges of machineries not complying with coefficient specified in LMC for departmentally executed formation cutting works of Nu. 89.061million

The earthwork quantity for the formation cutting for the departmentally executed works was derived based on the survey report. The ROs had prepared estimates detailing excavation of all kind of soil and rocks including quantum of spoil materials to be dumped beyond 500m up to 1210m amounting to Nu. 131.352 million as submitted below:

Code	Particular of item	Estimated Qty (Cu.m)	Amount (Nu)
	RO, Lobeyasa, (a total of 7Kms), RO, Trongsa (a total of 6.1Kms and 5km) RO, Thimphu (a total 19.5 km) and RO, Lingmethang (a total of 21.19 km)		
RW0014	Excavation of road formation cutting/trace/box cutting, with excavator including separate deposition of soil, rock and stone within 50m for reuse-all kind of rocks	321,632.89	69,074,709.70
RW0013	Excavation of road formation cutting/trace/box cutting, with excavator including separate deposition of soil, rock and stone within 50m for reuse-all kind of soil	446,549.57	21,389,857.93
EW0096	Banking with granular material for road, flood banks, guide banks, back filling for walls & depressions, in layers <200mm depth, including watering, rolling & dressing up within 50m lead & 1.5m lift - All kind of soil	37,235.69	3,076,629.26

	Sub total	825,418.15	93,541,196.89
RW0021	Transport of loose spoil materials in designated locations including loading, unloading. Dressing of dump sites and plantation of vegetation after completing of dumping-beyond 500 up to 1210m	443,036.80	37,811,295.33
	Total	1,268,454.95	131,352,492.22

The actual expenditure for formation cutting as compared to the estimated amount had substantially exceeded as detailed below:

Particular of item	Amount (Nu)	Amount (Nu)	Amount (Nu)	Amount (Nu)	Amount (Nu)
	RO, Lobeysa	RO, Trongsa	RO, Trongsa	RO Lingmethang	RO, Thimphu
Particular of item	Amount (Nu)	Amount (Nu)	Amount (Nu)	Amount (Nu)	Amount (Nu)
Estimated Amount	17,432,935.40	21,161,521.78	8,718,671.79	54,345,523.29	29,693,839.95
Total Expenditure	22,631,933.00	54,344,376.50	15,700,590.00	53,412,867.00	8,190,441.50*
Excess expenditure over the Estimated cost (Nu.)	5,198,997.60	33,182,854.72	6,981,918.21	(932,656.29)	
Increase in terms of %	29.82 %	156.81%	80%	(1.72%)	

*Note: Expenditure pertained to financial year 2016-2017 and not comparable

Based on the Labour and Material Co-efficient (LMC), the actual machinery hours required to be hired and deployed were worked out and cross checked with the total hours of equipment and machinery engaged in terms of hiring charges paid. The comparison indicated excessive engagement of machine hours amounting to Nu. 89,061,496.31 as detailed below:

Particulars	Amount (Nu.)	Excess expenditure in terms of LMC Amount (Nu.)
RO, Lobeysa, (Chainages 44.7km to 50.8km, a total of 6.1Kms)-Trongsa to Punzhi		
Actual expenditures incurred as per bills and MB	17,841,512.16	
Less: Expenditure to be incurred based on the LMC Co-efficient	<u>9,275,174.16</u>	8,566,338.00
RO, Trongsa, (Chainages 44.7km to 50.8km, a total of 6.1Kms)-Trongsa to Punzhi		
Actual expenditures incurred as per bills and MB	54,344,376.50	
Less: Expenditure to be incurred based on the LMC Co-efficient	<u>13,785,775.07</u>	40,558,601.43
RO, Trongsa (Chainages 80 to 85km, a total of 5km) Bongzam-Gaytszam		
Actual expenditures incurred as per bills and MB	15,700,590.00	
Less: Expenditure to be incurred based on the LMC Co-efficient	<u>4,624,568.04</u>	11,076,021.96
RO, Lingmethang, (Chainages 52km to 73.19km, a total of 21.19 km)- Yadi-Korila		
Actual expenditures incurred as per bills and MB	53,412,867.00	
Less: Expenditure to be incurred based on the LMC Co-efficient	<u>29,358,343.36</u>	24,054,523.64
RO, Thimphu: 19.5 km road from Simtokha-Dochula,		
Actual expenditures incurred as per bills and MB	8,190,441.50	
Less: Expenditure to be incurred based on the LMC Co-efficient	<u>3,384,430.17</u>	4,806,011.33
Total cost impact		89,061,496.31

The payments of hiring charges also included payments of Nu. 5,416,382.00 for machineries which were not defined in the LMC 2015 for the execution of formation works as presented below:

Table 2.19.3: deployment of equipment and machineries not in LMC					
Types of machine engaged	Work done volume (m3)	Nos. of days	Nos. of hrs. engaged	Rate (Nu)	Amount (Nu)
RO, Lobeysa					
Backhoe loader	119,630.84	216	1,723.00	670.64*	1,152,822.00
Pay loader	119,630.84	210	1,674.00	2,000.00	3,348,000.00
Tailor	119,630.84	4	24.00	1,732.67*	40,840.00
Total					4,541,662.00
RO, Thimphu					
Deployment of machineries and materials not in LMC with resultant inadmissible payment					874,720.00
Grand Total					5,416,382.00

Note: * Average rates of hiring charges

The deployment of machineries that were not in the LMC and huge difference between the required hours of deployment of machineries in terms of estimated volume of works and actual hours deployed and paid, indicated either flaws in deployment of machineries or inefficient deployment of machineries due to poor monitoring and supervision.

Auditee's Response:

Basically, the departmentally executed works are based on LMC. However, due to the following unavoidable circumstances, the actual expenditures have deviated as compared to the LMC.

- 1. In our country we do not have diversion road where vehicle movement can be diverted in one direction and work site would be in free of vehicle movement disturbance. In such cases we are not able to achieve work done by machine as per LMC but machine will be in start while passing vehicles.*
- 2. Due to difficult terrain of road cutting.*
- 3. Movement of VVIP and AMBULANCES.*
- 4. Working with difference types of Machineries of Horse power.*
- 5. The backhoe and pay loader were engaged to push the dumped materials and clear the road during the emergency hours which is not captured in the initial estimates.*
- 6. Trailer was engaged to transport the machineries from one location to another mainly to save time and allow smooth flow of traffic congestion which is not incorporated in the LMC.*
- 7. FC works were executed during night hours to expedite the progress of the works whereby the efficiency of the work done is comparatively low due to risk involved and poor visibility at night.*
- 8. The soil strata are unstable in nature and the slips were occurred at various locations at all times. These lead to marching of machineries for clearance which ultimately lead to loss of resources.*

9. *Frequent usage of machineries to clear the slips which was not envisaged during the initial estimation.*

10. *The usage of explosives was prohibited due to settlement below the road and earthen irrigation channel above whereby the more numbers of days for machinery had to be engaged. Therefore, please drop the memo.*

During the detailed survey detail geotechnical studies are not carried out and the identification of soil type cannot be studied accurately whereby It was based upon visual judgment of the surface. During execution of the FC work, more rock was discovered thereby increasing the quantity of rock cutting volume.

Moreover, in some stretches due to cutting height being too high the quantity of rock excavation was increased. It was also noticed that during the cutting from design fixed batter peg, the total width of 10.5m was not achieved so in order to achieve the width of the FC, the batter peg were moved 1-1.5m outward. Due to which the volume of cutting had been increased.

At times FC work being involved for two monsoon seasons and the cutting being fresh, several slide occurred which also increased the volume of excavation. Thus the difference in estimated quantity and executed quantity was noticed as per the site condition.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

The quantum of formation works exceeded allowable variations of +/- 20% from estimated quantities and excess payment of hiring charges to the extent of Nu. 89.061 million indicated either flaws in the deployment of machineries or inefficient deployment of machineries due to poor monitoring and supervision. The violations and deviations from the procurement norms, financial rules and regulations and BSR are due to absence of standard guidelines and procedures for departmentally executed works including monitoring controls over execution of works from appropriate authorities.

As discussed in the exit meeting, the DoR and the Ministry are advised to review and investigate excessive deployment of machineries and deployment of machineries not in LMC to the extent of Nu. 94.477 million (Nu.89.061+5.416) computed in audit and work out the quantum of works executed by the RO to regulate the expenditures accordingly.

The Ministry is also advised to review the present practices and procedures adopted by ROs in conducting survey, preparation of drawings, estimates, BOQs and executions including hiring and deployment of machineries and equipment and execution of permanent works and develop standard guidelines and procedures to prevent such irregularities and lapses in future.

2.20 Bitumen issued to contractors not covered by insurance - Nu. 2,237.655 million

The Contract Document stipulates following conditions to be complied by contractor and/or employer on insurance of contract works:

- Clause 14.1 under Section V: General Conditions of Contract stipulated that the Contractor shall provide, in the joint names of the Employer and Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the SCC for the following events which are due to the Contractor’s risks:
 - (a) Loss of or damages to the Works, Plant, and Materials to be built into the works.
- As per Clause 14.2, Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager’s approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
- Clause 14.3 provides that if the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due from the Contractor to the Employer.
- Clause 14.4 stipulates that alterations to the terms of insurance shall not be made without the approval of the Project Manager.
- As per Clause 14.5, both the parties shall comply with any conditions of the insurance policies.
- Further, the requirement of insurance was reiterated under Section VI: Special Conditions of contract (Clause GCC 14.1).
- Section 103 of the Technical Specification, it also stipulates as under:
 - “The Contractor shall provide and maintain the insurance cover in accordance with Clause 14 of the General Conditions of Contract from an approved insurance company from the start date to the end of the Defects Liability Period.”
 - “No separate payment shall be made for insurance. All costs involved in connection with the work insurance herein shall be considered included with other related items of the work in the Bill of Quantities”.

Contrary to the above clauses in the contract document, both the contractor and the employer had failed to maintain insurance coverage for the bitumen issued to the various contractors. An abstract of bitumen issued to various contractors by ROs are tabulated below:

Regional Office:	Qty. of Bitumen Issued (in Metric tonne)	Estimated cost of bitumen (Nu.) in million
RO, Thimphu	2,549.75	108.237
Ro, Lobeyasa	10,714.70	977.037
RO, Trongsa	2,881.91	740.326
RO, Lingmethang	5199.08	412.055
Grand Total	16,146.36	2,237.655

Accordingly, it was noted that the contractor had insured Works, Plant and Material for the

minimum contract amount only as evident from the insurance coverage of **M/s Chogyal Construction for Package I, II & III**). Thus, insurance did not cover the cost of bitumen that were issued by the Regional Office as the insurance claims and compensation payments received by the contractor were solely used by the contractor as the RO had not deducted the cost of bitumen although the claims and compensation pertained to bituminous works. Further, it was evident from the records that the RO had issued the bitumen for redoing the damaged works.

The RO should comment on the circumstances leading to non-insurance of the cost of bitumen by the contractor as bituminous works are executed by the contractor and damages and loss to works are contractor's risks. Besides, the RO should comment on the measures put in place to safeguard against such loss.

Auditee's Response:

The bitumen was procured departmentally and was issued to the contractor free of cost as per the Job Mix Formula/consumption thereon. However, insurance for bitumen was not covered since the contract amount in the BOQ is exclusive of bitumen. The insurance company while insuring the work takes into account the contract amount/work order amount only, which is determined from the signed contract agreement.

The bitumen is transported from the Regional Store and adjustment is made with the central store, Pl'ing. Till now there is no system of insuring the bitumen during the transportation.

The additional clause in the SCC also states that the cost of the bitumen should be 'zero', which means that the employer is asking the bidder to quote for the execution of work only excluding the cost of bitumen. Since the cost of bitumen is not included in the contract price, and the premium (determined from the contract amount) paid to the insurance company by the contractor, the RO did not find a base to recover the cost of bitumen for redoing the damaged work.

The issuance of bitumen free of cost has increased the workload of the site engineers and often the site engineers complain that they had to literally take care and monitor the bitumen issued to the contractor till the BT work is completed. In view of this, RO is proposing to discuss this issue with DoR HQ during the upcoming DoR Quarterly Meeting. Hence, RAA is requested to kindly drop the memo.

RAA's Further Comments & Recommendations:

It is apparent from the response that the ROs and DOR failed to enforce the provisions stipulated under SBD on the requirement of insurance coverage for loss of or damage to the Works, Plant and Materials to be built into the works from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the SCC.

The non-insurance of cost of bitumen either by the Contractors or ROs also clearly indicated flaws in the tender documents and contract agreements. The failure to insure the bitumen cost with the cost of bituminous works had resulted in avoidable reissuance of bitumen valuing Nu. 7,085,432.30 for redoing the damaged bituminous works for two packages (I & II) executed by M/s Chogyal Construction Company Private Ltd. under RO, Lobeyasa.

The DOR and the Ministry should investigate the circumstances leading to failure of insuring cost of bitumen with the bituminous works by the contractors as well as non-incorporation of such requirements in the tender and contract documents which had cost the Government Nu. 7.085 million for reissuing the bitumen for redoing the damaged pavement works.

The DOR in consultation with the Ministry should immediately direct all the contractor to insure the cost of bitumen for all completed pavements works to safeguard the interest of the Government and avoid complications in future. Besides, the Ministry should come up with clear policy and procedures for insuring the cost of bitumen by the contractors even if the bitumen is issued free of cost by the Government as otherwise the Ministry should consider the desirability of allowing the contractors to include the cost of bitumen in the contract price but recovery is to be made at the prescribed departmental rates to enable the contractors insuring the cost of bituminous works with bitumen cost and avoid complications.

The decisions and measures taken on the issue should be furnished to RAA for record and follow-up in future audits. The non-insurance of substantial cost of bitumen by the contractors and ROs resulting in loss of Nu. 7.085 million to the Project for reissuance of Bitumen for redoing the damaged bituminous works for three packages is brought to the notice of the Government for appropriate decisions and actions.

2.21 Non-stacking/recording of excavated rock materials with resultant loss of Nu. 674,501,379.27

The works of Northern East-West Highway include Formation Cutting, Permanent works and Pavement works. One of the major works is the formation cutting work, for which the department had quantified the volume of earthwork excavations on the basis of survey reports.

In line with the survey report, the departmental estimates projected excavation of rock of 2,489,385.58 m³ involving Nu. 674,501,379.27 as detailed in table 2.21 below:

Name RO	No. of Contracts	Qty(m³)	Amount (Nu.)	Remarks	
Execution through Contracts					
Regional Office Lobeyasa	Six Contractors	256,342.71	46,659,927.29	No stock accountal were made on records	
Regional Office Trongsa	Twelve Contractors	1,412,406.578	440,596,648.44		
Regional Office Lingmethang	Six Contractors	320,725.21	68,945,647.21		
Departmental Executions					
Regional Office Lobeyasa		68,360.48	12,252,248.83		
Regional Office Trongsa		184,655.44	57,662,354.25		
Regional Office Lingmethang		118,836.84	25,497,632.39		
Regional Office Thimphu		107,289.84	19,848,620.40		
	Total	2,489,385.58	674,501,379.27		

During the physical verification of the work sites, it was noted that the rocks excavated from the roadside excavation works were found used by the contractors responsible for formation cutting works for construction of permanent structures without accounting the excavated boulder and recovering the cost of used boulders. In addition, the excavated materials were found not properly stacked along the road causing inconvenience to the commuters.

As per the GCC A20.2 of the contract document “*All materials obtained during excavation from the site and that have not been accounted for in the bid shall be the property of the*

Employer and the contractor shall take care of useful materials obtained during the execution of the Works and stack at place designated by the Employer”.

Further, the technical specifications Clause 605-Execution in Cutting states as ***“All suitable excavated materials shall be used in construction of the roadway to the extent as required”.***

Thus the use of usable excavated materials without accounting in the books of account and also without recovering the equivalent cost was in violation of the contract terms.

Further, in terms of the Specification for Building and Road Works, Clause 21.3.2 Excavations, ***“The contractor shall take all precautions necessary to preserve the materials or existing structures below and beyond any line of excavations in the soundest possible conditions”.*** It also states as ***“the contractors controlled blasting and other operations in excavation shall be such that they will yield as much materials as possible suitable for use in the work”.***

Proper retrieval of stone boulder from the rock excavation would not only have saved the cost on the permanent structures but also benefited the RO through cost recovery of recovered boulders through disposals in the best interest of the Project.

The contractors are paid for excavation and transportation of spoil materials besides payments for execution of permanent structures. Thus, allowing the contractors to use the useful materials free of cost tantamount to extending double benefits to contractors.

The ROs and DOR should comment on the circumstances leading to non-accountal of excavated useful materials and investigate whereabouts of excavated materials and ascertain the extent of materials used by the contractors on permanent works. The DOR and ROs should recover the cost of the material to the extent of quantum of materials used by contractor for permanent works. Besides, the DOR should also investigate whereabouts of excavated materials for the departmentally executed formation works.

Auditee’s Response:

DoR, RO Trongsa would like to thank the RAA for the observation and would like to submit the following justifications. The total quantity of earthwork by the twelve contractors is 1,412,406.58 cum valued at Nu. 440,596,648.44 and for departmental works it was 186,655.44 cum valued at Nu. 57,662,354.25. In view of the above justifications, RAA is requested to drop the memo.

RAA’s Further Comments & Recommendations:

The ROs and DOR have not appropriately provided the response on the observation. The RAA would invite reference to provisions of the General Conditions of Contract (GCC) under “Discoveries Clause” which categorically states as under:

“Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Employer’s instructions for dealing with them. All materials obtained during excavation from the site and that have not been accounted for in the bid shall be the property of the Employer and the contractor shall take

care of useful materials obtained during the execution of the Works and stack at place designated by the Employer. An arrangement shall be made between the Contractors”.

Thus, in view of the specific provisions under Technical specifications as well as GCC as highlighted above, non-accountal of materials(Boulder) obtained from the formation cutting works (Projected rock excavation of proximately Nu.674.501million executed either by contractors or departmentally, was in violation of the provisions of the contract. This has also deprived the Government of the benefit to the extent of boulders retrieved and used in the permanent and pavement works by the contractors and department.

The DOR and the Ministry should investigate and ascertain the quantum of boulder retrieved and used by the contractors and ROs, and recover the cost as per the existing provisions of the technical specifications and SBD and the amount recovered deposited into ARA. Besides, the Ministry should also take appropriate action on the officials responsible for non-accountal of boulders despite huge amount of of Nu.674.501 million projected towards cost for excavation of rocks.

The Ministry should not only strengthen the Design Divisions for accurate designing of road structures but also institute a technical team to review project plans, designs, and specifications to ensure that the same are accurate and complete including verification of the accuracy of surveys for future projects to prevent changes in designs as well as time and cost overruns.

*The huge financial loss to the extent of excavated boulders not accounted against the projected rock excavation of **Nu. 674.501 million** to the government Exchequer is bought to the notice of the Government for appropriate decisions and actions.*

2.22 Irregular release of additional advances of Nu.254.110 million

Huge amounts of inadmissible additional advances were paid and payment for POL and release of retention money were made to contractors despite availing all financial benefits entitled as per the contractual agreement.

The ROs, DOR and the MLTC had failed to ensure utilization of available Credit line to the extent committed as per the bidding documents. Non-utilization of Credit line extended by the financial institutions by the contractors raises doubts on the genuineness and validity of Credit Lines. Besides, extension of such financial support to the extent of Nu. 254,110,000.00 were in violation to the provisions of the contract agreements and Financial Rules and Regulations.

Table 2.51: Detailing huge releases of irregular advances to the contractors				
Sl.No.	Name of contractor	Contract Package	Date of Payment	Amount (Nu.)
Thimphu & Trongsa				
1	M/s Raven Builder & Company (P) Ltd	Package 1	21.9.2016	4,000,000.00
2	M/s Raven Builder & Company (P) Ltd	Package VI	various dates during fiscal years 2016,2017 and 2018	9,410,000.00

				Total	13,410,000.00
Trongsa					
1	M/s welfare Construction Pvt. Ltd.	Package IX	12.4.2017		20,000,000.00
2	M/s Dungkar Construction Pvt. Ltd.	Package VIII, XI & XII	9.12.2017		20,000,000.00
3	M/s Gyalcon Construction Pvt. Ltd.	Package IV	28.6.2017& 26.10.2017		15,000,000.00
4	M/s Druk Lhayul Construction Pvt. Ltd.	Package V	19.5.2017 & 14.6.2017		20,000,000.00
5	M/s Rinson Construction Company Pvt. Ltd.	Package III,X & XII			30,000,000.00
				Total	105,000,000.00
RO, Lobeysa					
1	M/s Chogyal Construction Pvt. Ltd	(Packages I, II and III)	2015/2016		46,000,000.00
2	M/s Singye Construction Pvt. Ltd (CDB No. 2148)	Package IV	12/2015		39,700,000.00
3	M/s welfare Construction Pvt. Ltd.	Package IX	12.11.2017		10,000,000.00
4	M/s Rigzar Construction Pvt. Ltd	Package X	6.6.2017 & 22.12.2017		4,500,000.00
5	M/s TT construction Pvt. Ltd	Package VI	7.2.2017 &20.12.2017		19,000,000.00
				Total	119,200,000.00
RO, Lingmethang					
1	M/s Gongphel Construction Pvt. Ltd.	Package IV	9.4.2017 & 22.12.2017		10,000,000.00
2	M/s Rigzar Construction Pvt. Ltd	Package VI	8.2.2017 &9.5.2017		6,500,000.00
				Total	16,500,000.00
Grand Total					254,110,000.00

Auditee's Response:

The ROs responded that advances not within the provisions of the contracts were released based on verbal instruction and approval accorded by Minister and Secretary, MoWHS to extend necessary support to the contractor in the interest of works. The RO also mentioned that the financial support rendered is purely to expedite the progress of works.

RAA's Further Comments & Recommendations:

The Granting of advances beyond the provisions of the contract is in violation of the contract agreements and Financial Rules and Regulations and clear indication of undue financial support extended to the contractors. The failure on the part of the ROs, DOR and Ministry to direct the contractors to avail the credit facilities indicated existence of poor contract management system.

As discussed during the exit meeting, the DOR and the Ministry are advised to recover all the irregular and ineligible advances from the contractors with penal interest.

The Ministry besides directing officials in positions to strictly abide by the Financial Rules and Regulations and provisions of the contract documents is also advised to institute appropriate control mechanism over the sanctioning of construction advances to prevent payments of advances in violations of rules and contract agreements.

The huge financial payments of Nu. 254.110 million from project funds in violation to the provisions of the contract documents and financial Rules and Regulations by the authority in position is brought to the notice of the Government for appropriate decisions and actions.

2.23 Irregular Change of pavement thickness with resultant inconsistency in the execution of pavement works

Northern East-West Highway being the Primary National Highway, both the initial and revised drawings has specified a total pavement thickness of 600mm as shown in the diagram and in the table below:

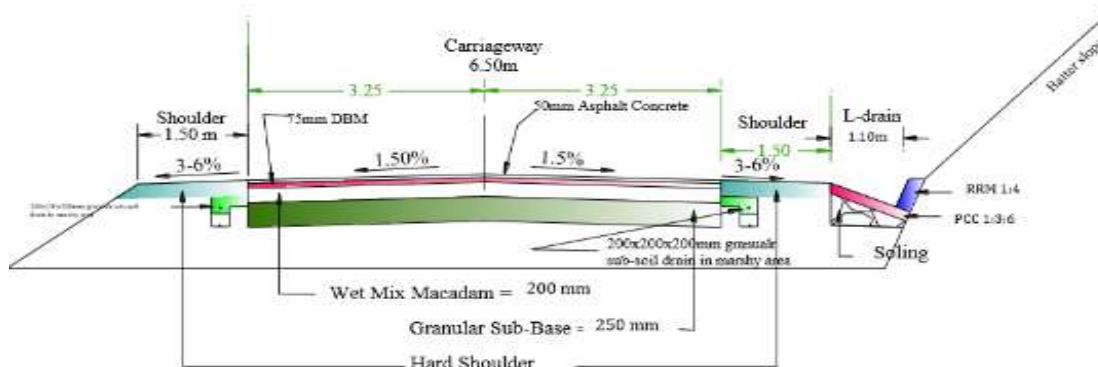


Fig: 2.22- Initial approved design and drawing

Table 2.22: Pavement thickness	
The pavement thickness of various layers is as follows:	
Item works	Thickness
GSB	250mm
WMM	225mm
DBM	75mm
AC	50mm
Total:	600mm

In all contract packages the above design parameters were required to be followed. However, on 7th DoR Quarterly Meeting held on 27-29 July, 2015, the meeting discussed and decided to reduce the thickness of DBM from 75mm to 60mm and AC from 50mm to 40mm thereby reducing the overall pavement thickness to 575mm against initial pavement thickness of 600mm for the NEWH work.

Accordingly, under RO Lobeyasa, out of 15 contract packages, four (4) packages were awarded with the new pavement design thickness as detailed in table 2.22.1 below:

Package No	Location	Chainage	Contractor
12	Wangdue-Langkema	436-429 (7 Kms)	M/s Taging Chungdruk Construction Pvt. Ltd, Thimphu
13	Razhau-Nobding	403-395 (8 Kms)	M/s U.P Construction, Thimphu
14	Nobding-Dungdungnyelsa	392.25-389 (3.25 Kms)	M/s Empire Construction Pvt. Ltd, Punakha
15	Nobding-Dungdungnyelsa	395-392.25 (2.75 Kms)	M/s Empire Construction Pvt. Ltd, Punakha

Under RO, Lingmethang, out of 6 packages only one (1) was awarded with the new pavement design thickness as detailed below:

Package No	Location	Chainage	Contractor
7	Between Kurizampa & Lingmethang	114.45-118.45 = 4 Km	M/s. Tshering Construction Pvt Ltd, Bumthang

However, although the revised pavement design thickness was approved during the 7th DoR Quarterly Meeting held on 27-29 July, 2015, the RO Trongsa had failed to comply with the resolution as the work for up gradation of pavement of 2.18Km from Chainage 87.62-89.8 (Sonam Kuenphen to Hurjee (bypass)) was found awarded to M/s Lamnekha Construction Pvt. Ltd during April 2016 with the initial pavement design thickness of 600mm instead of revised thickness of 575mm.

The reason stated in changing of pavement thickness was low volume of traffic between Wangdue and Trashigang. Thus, the decision of DOR and the Ministry to change pavement design thickness to 575 mm just for five packages with Chainage coverage of just 25 km was found impetuous and in violation to the *Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 as the traffic volume of Primary National Highway is standardized as >200vpd (Vehicle per day)*.

The Ministry should comment on the change of pavement design thickness just for Five (5) contract packages despite the fact that the decisions were taken in July 2015 just after the awards of contracts when all contractors were carrying out only the formation cutting and permanent works. The DOR and Ministry should have issued changed order on the pavement thickness of all contract packages if the changes were made on the basis of low volume of traffic between Wangdue and Trashigang. Besides, the Ministry should also comment on the fact that if the revised pavement thickness were to suffice the low volume traffic, why the decisions and approval for the initial thickness were taken which had substantially impacted the construction cost.

The Ministry should also comment on the failure of the RO, Trongsa to abide by the revised design thickness of pavement works awarded after the decision of the Meeting.

Auditee's Response:

Initially, the pavement width was to be 6.5 mtr wide with total 600 mm thickness of various layers. However, as per policy decision taken at a later stage, the pavement width was increased from the original 6.5 mtr to 7.5 mtr in the larger interest of the Government. Similarly, as discussed & decided during the 7th DoR Quarterly meeting held on 27-29th July

2015, the thickness of DBM & AC was reduced from the original 75 mm to 60 mm and for AC from 50 mm to 40 mm respectively.

The reason for reducing the pavement thickness from 600 mm to 575 mm was due to the consideration of lesser traffic volume plying from Wangdue Bridge towards Trongsa & further. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response on the reduction of pavement thickness due to low traffic volume between Wangdue and Trashigang, the fact remains that the reduced pavement thickness from 600mm to 575mm (reduction of DBM thickness from 75mm to 60mm and AC thickness from 50mm to 40mm) was just for a stretch of 25km. For all remaining road stretches, the initial DBM thickness of 75mm and AC thickness of 50mm was maintained.

It is also to reiterate that the changes in DBM and AC thickness were approved during the meeting held on 27-29th July 2015 when formation cutting and permanent works were being carried out and it would have been possible to issue change orders for the revised DBM and AC thickness. The changes of DBM and AC thickness on the ground of low volume of traffic within the same stretches of roads indicated flaws and deficiencies in the decisions as the decisions were not supported by adequate study carried out, if any, on the technical merit of such changes only in stretches covered in the five contract packages. Such decisions and actions indicated adhoc changes of designs, lacked coordination amongst ROs and DOR and monitoring controls by the DOR.

The varying pavement thickness approved by the DOR and Ministry within the same stretches of roads as well as deviations from the Guidelines on Road Classification System and Delineation of Construction and Maintenance Responsibilities 2009 is brought to the notice of the Government.

2.24 Non-deduction of cost for reduced 1.5 m Hard Shoulders between Paved carriageway and L-Drain and 0.50m at valley side

The initial and revised design/drawings for pavement works provided the following specifications:

Initial Drawing

- ✓ Formation cutting width 10.5m
- ✓ Carriage width 6.5m
- ✓ L-Drain hillside 1m
- ✓ Shoulder between L-Drain and Carriage Way 1.5m
- ✓ Shoulder at valley side 1.5m

The execution of required 1.50m Hard Shoulders between the L-Drain and Paved Carriageway and 0.5m at valley side was done away due to change in the design and drawing of the double lanning works.

However, in terms of the initial designs, the contractors were required to execute the Hard Shoulder. As no separate item of works were provided in the BOQs for Hard Shoulder, the cost was required to be built up in the item rates quoted for the execution of pavement items of works. Thus, doing away the execution of Hard Shoulders and paying for execution of

increased carriage way of 1m width separately tantamount to payments made without execution at site.

The Ministry should comment on the circumstances leading to non-deduction/non-adjustment of cost for Hard Shoulders from payment for increased scope of 1m pavement works. Besides, the Ministry must thoroughly review the execution of hard shoulder at valley sides and cost to the extent of hard shoulders not maintained and executed at valley sides including cost of 1.5m hard shoulders not executed between L-Drain and Paved Carriageway should be worked out and deposited into ARA.

Auditee's Response:

The item for hard shoulder was not incorporated in the BOQ and the specification was not mentioned in the document. The contractors were paid as per the actual measurement for the rest of the items whereby the double payment by RO has not been made. Since the other items in the BOQ are in cubic meter, the payments were done for actual work done only. Hence deduction of cost for not constructing hard shoulder was not applicable. Hence the memo may be dropped.

RAA's Further Comments & Recommendations:

In view of the requirement to execute Hard Shoulders in terms of the initial drawings, even though the item was not incorporated in the BOQ, the contractors were required to either built up the rates with the relevant item of works or the contingencies such as overhead cost was to cover up variety of possible risks or events that are not specifically identified or quantified in the BOQs. Thus, non-deduction or adjustment of cost for Hard shoulders from the payments on the increased pavement width of 1m tantamount to financial benefit to the contractors.

However, the Ministry should institute a technical team to review the cost implication in terms of the initial design/ drawings where the contractors were required to execute and maintain Hard Shoulders between the L-Drain and Carriageways and at valley site in terms of the contractual documents and appropriate decisions and action taken on the issue intimated to the RAA.

2.25 Non-maintenance of 1.5m/1m width shoulder at Valley side

The initial and revised design/drawings for pavement works provided the following specifications:

Initial Drawing

- ✓ Formation cutting width 10.5m
- ✓ Carriage width 6.5m
- ✓ L-Drain hillside 1m
- ✓ Shoulder between L-Drain and Carriage Way 1.5m
- ✓ Shoulder at valley side 1.5m

Revised Drawing

- ✓ Formation cutting width 10.5m
- ✓ Carriage width 7.5m

- ✓ Shoulder hillside 0.5m
- ✓ L-Drain between shoulder hillside and Carriageway 1m
- ✓ Shoulder at valley side 1.5m/1m

In terms of the technical specifications, the contractors responsible for Formation Works were required to achieve formation width of 10.5m and contractor for Pavement works were to execute and maintain Hard Shoulder at valley side of 1.5m/1m respectively as per the revised drawings. The quantum of work was required to be executed as per initial and revised drawings and cost thereof either built up with “Providing and Laying GSB” or other pavement related works.

During the physical verification of sites with the ROs site engineers and officials, the RAA observed that the Hard Shoulders of 1.5 m/1m width at valley side were found not maintained homogeneously throughout the stretches of the road. The RAA noted that DBM and AC works were found executed at the edge of the roads at the valley side to achieve the 7.5m carriageway.

Thus, the failure to maintain the hard should of 1.5m/1m at valley side by the contractors responsible for Pavement works indicated the failure on the part of the contractors and ROs to achieve the overall formation width of 10.5m.

In addition, non-provisioning of the 1.5m/1m width Hard Shoulder at the valley side again had financially benefited the contractor as no adjustment of the amount was found made for area where Hard shoulders width were not maintained.

The Ministry should comment on the revisions of the designs/drawings and non-adjustment of cost thereof for works not required to be executed and works not actually executed. Besides, the Ministry should institute a technical team to carry out measurements of the formation width and pavement works to regulate payments to the extent of actual works done as per designs/drawings and technical specification as well as adjust cost for the hard shoulders not executed at site.

Auditee’s Response:

The shoulder width of 1.5 m has been maintained where ever possible. However, in some of the stretches where there was requirement of huge rock cutting and some stretches highly vulnerable to major slide have been left out to save future maintenance cost. Further RO was also instructed verbally by the then Hon’ble Lyonpo, MoWHS that formation width can be reduced in rocky stretches as long as required pavement width is achieved to speed up the completion of the project.

Copy of the mail is attached below. Therefore, the memo may be kindly dropped.

2. Contract packaging of the east-west highway should be carefully prepared to engage all levels of contract categories including CDCL and Department works; and also to ensure efficiency with regard to sequencing and site management.

3. While the national highway standard specifications will be applied, site specific flexibility that will save us substantially in money and time should be permitted. (for example, no need to get the full specified formation width at rocky/cliff stretches; no blacktopping needed on the wet and unstable stretches; choices to adopt "V" or box drain as per the site condition - for wet stretches, box drain is said to be more effective; etc..)

4. To address problems with asphalt surfacing on wet and moist stretches, it may be worthwhile to experiment concrete pavement. DoR Director was instructed to look at this through a desk top research and prepare presentation to see the possibility of piloting few stretches on the lateral east west highway works.

RAA's Further Comments & Recommendations:

Notwithstanding the instructions issued through e-mail as well as verbal instruction of the then Hon'ble Lyonpo, MoWHS, it was the responsibility of the ROs and the Site Engineers to regulate and adjust the cost for the formation width not achieved since the quoted rates for formation works were running meters with overall formation width of 10.5m.

Thus, non-deduction or adjustment of cost to the extent of formation width not achieved from the payments tantamount to payments to the contractors for works not executed. In addition, the achievement of formation width had led to non-maintenance of Hard Shoulders at valley side by the Contractors responsible for Pavement works. This has also resulted in payments for Hard Shoulders not executed at site.

However, the Ministry as agreed during the exit meeting should institute a technical team to review the cost implication in terms of non-achievement of formation width and non-maintaining of Hard Shoulders at valley site in terms of the contractual documents and appropriate decisions and action taken on the issue intimated to the RAA.

2.26 Non-achievement of formation width 10.50 meters and non-execution of FC works

As per the approved revised drawing and design, the technical specifications required maximum Formation road width of 10.50 meter (m) comprising 1.5 m width shoulder on the valley side, 0.50 m width on hill side behind the L Drain for the purpose of debris collection, and 1m width L-drain and Carriageway width of 7.50 m.

In terms of the contract documents, the quoted rates in lump sum for formation cutting works was to achieve overall road width of 10.50 m for ensuring achievement of technical specifications defined for pavement works.

The joint physical verification of site revealed that in many stretches of roads, the formation width was not achieved as well as formation works were found not executed as detailed below:

RO, Lingmethang

2.26.1 Korila-Pangser (Package-2) executed by M/s. Tshering Construction Pvt Ltd. Bumthang

SL. No.	Approx. Chainage (in meter)	Approx. length (in meter)	Approx. width measured (in meter)	Width Deficit
1	36605-36641, 37244-37251	43	9	1.5
2	36753-36786, 37212-37217 37594-37598,39435-39445	52	10	0.5
3	37190-37194	4	9.5	1.0
Total		99		

2.26.2 Pangser-Kilikhar (Package-3) executed by M/s. K. D Builder Pvt Ltd.

Sl.No.	Approx. Chainage (in meter)	Approx. length (in meter)	Approx. widths measured (in meter)	Width Deficit (in Meter)
	From			
1	29284-29319, 29878-29889, 31659-31675, 31926-31956, 34108-34121, 34443-34466, 34912-34938,	154	10	0.5
2	29618-29649, 29679-29708	60	10.3	0.2
3	29752-29786, 29817-29828, 29965-30001	81	9.4	1.1
4	29845-29864, 32707-32720, 34965-34989, 35018-35033	71	9	1.5
5	32410-32427	17	9.7	0.8
6	33039-33051	12	9.9	0.6
Total		395		

2.26.3 Kilikhar to Mongar (Package 4) executed by M/s Gongphel Construction Pvt. Ltd

SL. No.	Chainage/ total length (in m)	Approx. length (in meter)	Physically measured width (approx. in meter)	Width Deficit
1	25377m-25320m and 26291m-26114m	234	9	1.5
2	26588m-26569m	19	10	0.5
3	27384m-27347m	37	9.7	0.8
4	29058m-29028m	30	9.5	1.0
Total		320		

2.26.4 Mongar-Gongola (Package-5) executed by M/s. Norbu Construction Company Pvt. Ltd , Gelephu

Sl.No	Chainage/ total length (in meter)	Approx. length (in meter)	Physically measured width (approx. in meter)	Width Deficit
1	15m-0m, 120m-103m, 899m-890m , and 1410m-1400m	51	9.5	1.0
2	3382m-3350m	32	10	0.5
3	5450m-5400m	50	9	1.5
Total		133		

2.26.5 Kurizampa-Lingmethang Highway (Package-7) executed by M/s Tshering Construction Pvt. Ltd, Bumthang

Sl. No	Chainages (in km)	Length in M	Physically measure width (approx. in m)	Width Deficit (in m)
1	114.526-114.562, 115.019--115.048, 115.07-115.089, 115.113-115.144, 116.372-116.401, 116.523,116.448-116.462, 116.523-116.543	178	10	0.5
2	114.735-114.816, 116.795-116.839	125	9	1.5
3	116.719-116.747	28	9.5	1.0
Total		331		

RO, Trongsa

2.26.6 Chuserbu to Nyelazam (Package 1) executed by M/s Rigsar Construction Pvt. Ltd

SL. No.	Chainage/ total length (in meter)	Length in (M)	Physically measured width (approx. in meter)	Width Deficit in (m)
1	125m-90m, 506m-440m, 1050m-1040m, 1985m-1978m, 3270m-3246m	142	10	0.5
2	1187m-1175m	12	9.7	0.8
3	2890m-2883m	7	9.5	1.0
Total		161		

SL. No.	Chainage	Meter	Length	Width Measured in (m)	Width deficit in (m)
1	2147	2147	10	7.4	0.01
2	2156	2156	9	7.2	0.30
3	5145	968	8	7.25	0.25
4	7629	3452	81	7.15	0.35
Total			108		

2.26.7 Nyelazam to Sakachawa (Package 2) executed by M/s Gaseb Construction Pvt. Ltd

SL. No.	Chainage	Approx. length (in meter)	Approx. width measured (in meter)	Width Deficit (in m)	FC not carried (in m)
1	12360-12324, 13596-13610, 13641-13650	79	10.0	0.5	
2	14666-14688	22	9.9	0.6	
3	12000-12059				50
4	16031-16068				37
Total		101			87

2.26.8 Sakachawa to Tsangkha (Package 3) executed by M/s Rinson Construction Pvt. Ltd

Sl. No.	Chainage	Meter	Length in (m)	Width	Width Deficit (in m)	Chainage in (m)	FC not carried in (m)
1	21271	1600	59	10.4	0.1	1047-1168	121
2	21586	1915	73	9.5	1.0	1886-1915	29
3	22145	2474	559	8.8	1.7	5259-5409	150
4	22638	2967	227	10.0	0.5	536-556	20
5	23158	3487	189	9.7	0.8	223-402	179
6	25206	5535	40	9.3	1.2		
Total			1147				459

2.26.9 Tshangkha to View Point (Package 4) executed by M/s Gyalcon Infrastructure Pvt. Ltd

SL. No.	Approx. chain age (in meter)	Approx. length (in meter)	Approx. width measured (in meter)	Width Deficit (in m)
1	27435-27460	25	8.0	2.5
2	27724-27737	13	9.5	1.0
3	30039-33042, 30168-30238, 30667-30673	79	10.0	0.5
Total		117		

2.26.10 View Point- BjeeZam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd

SL. No.	Approx. chain age (in meter)	Approx. length (in meter)	Approx. width measured (in meter)	Width Deficit (in m)	FC not carried in (m)
1	33276-33305	29	4.7	5.8	
2	33305-33352	47	7.3	3.2	
3	34164-34198, 35445-35487, 36648-36686	114	9.0	1.5	
4	34541-34594, 36786-36806	73	10.0	0.5	
5	35351-35387	36	7.0	3.5	
6	35564-35619, 35792-35916,	179	8.5	2.0	
7	36067-36099	32	8.7	1.8	
8	36273-36416	143	8.0	2.5	
8	3200-32053				53
9	34316-34361				45
10	37627-37710				83
Total		653			181

2.26.11 Bjeezam- Trongsa (Package 6) executed by M/s. Raven Builders & Company (P) LTD

SL. No	Ch. From (in m)	Length (in m)	Physically measure width (approx. in m)	Width Deficit (in m)	FC not carried (in m)
1	37811-37930, 40172-40192, 39384-39410, 39317-39338	186	9.3	1.2	
2	38153-38231, 39233-39291	136	9.0	1.5	
3	38556-38646, 42821-42851	120	8.0	2.5	
4	40284-40324, 41637-41665, 41819-41837, 42073-42145, 43033-43087	212	10.0	0.5	
5	40728-40836, 41954-41983	137	7.0	3.5	
6	40856-40980, 42645-42702, 39849-39860	192	9.7	0.8	
7	42393-42441, 42730-42768, 41495-41513	104	7.5	3.0	
8	43441-43465, 43570-43638	92	8.5	2.0	
9	37700, 40324, 40531, 42536, 43548, 43785				992
Total		1179			992

2.26.12 Gyatsazam to Ngangar (Package 13) by M/s Rinson Construction Pvt. Ltd

Sl. No.	Chainage	Wheel Meter reading	Width measured	Width Deficit (in m)
1	85418,	438	10.3	0.2
2	85706, 99527,	3661	10.0	0.5
3	87118	2138	9.7	0.8

4	87288, 99244	4960	9.5	1.0
5	89881	81	7.7	2.8
6	90558, 96675,	841	9.0	1.5
7	96592	4060	8.0	2.5
8	97655, 98592, 99080	5551	10.2	0.3
Total		21,730		

2.26.13 Sonam Kuenphen to Hurjee (Package 14) executed by M/s Lamnekha Construction Pvt. Ltd

Sl. No.	Chainage	Wheel meter reading	Length (in m)	Width (in m)	Width deficit (in m)	FC not carried (in m)
1	87917	159- 297				138
2	88220	549-600				51
3	88376	687-756				69
4	88622	889-1002				113
5	88695.9	1002-1075.9	73.9	10.2	0.3	
6	88803	1098.9- 1183				84.1
7	88892	1183- 1272	89	9.9	0.6	
8	89011.7	1272-1391.7	119.7	9.0	1.5	
9	89190.7	1391.7-1570.7	179	7.6	2.9	
10	89234.6	1570.7-1614.6	43.9	8.8	1.7	
11	89268.2	1614.6-1648.2				33.6
12	89606.6	1810.4-1986.6				176.2
13	89791.6	1986.6- 2171.6	185	8.6	1.9	
Total			690.5			664.9

The non-achievement of formation width requirement of 10.50 m as per revised drawings and technical specifications as well as non-execution of formation works indicated execution of works in deviation to the technical design and specification and inadequate monitoring and supervision by the site engineers over the execution works.

Further, the non-achievement of the required widening width and non-execution of formation works entailed payments for unexecuted works as the quotes for FC works were on lump sum basis.

Auditee's Response:

The DOR and the Ministry responded that while almost all the stretches completed have width 10.5m, the road width were not achieved only in areas where there is local resident, private properties, water tanks, permanent structures, public utilities, Religious, cultural, Historic and ecologically important sites.

The ROs also responded that the Minister, during her visit to sites and during meetings instructed that there was no need to get full specified formation width at rocky and cliff stretches as well as black topping on the wet and unstable stretches to save substantially in money and time.

The ROs also responded that the FC width not achieved shall be deducted and payment will be made accordingly on pro rata-basis.

Response RO, Lobeysa

The Regional Office duly acknowledges the observation made by RAA and has concerns for it. We would like to furnish the facts and evidences of following comprehensive explanations for kind consideration by Royal Audit Authority.

It is to apprise that the project officials involved in double lanning of NEWH has been constantly monitoring the entrusted works to execute the works as per the standard drawings and design. The formation cutting were carried out based on the survey line fixed by the Department.

Moreover, the FC works were ongoing during the RAA's site visit and most of the stretches were covered with landslides and found as width not achieved. Now the contractor has cleared the landslides from most of the stretches and trimming works being carried out and FC width are found fully achieved.

*Other reasons for non-achievement of formation width as per individual responses
The FC works is still ongoing and out of 0.992 Km, 48 m near the Bjezam will not be possible to cut due to presence of RCC Composite Bridge and RBP Infrastructures.*

Moreover, 492 m stretch at the end point near the Town area will also not be possible to cut due to presence of Human Settlement above the road and Sherubling bypass road and accordingly the bill will not be paid for the FC not carried out.

FC width were achieved except few exceptional stretches (rocky cliff and Town area) for which payment will be made accordingly on pro rata-basis.

FC width at very few location not achieved due to the human settlement, transmission line and restricted areas for cutting hill sides due to presence of private land above the road way, the road geometric has been re-designed.

In some of the stretches where slides are not prone and to improve the road geometric further FC width was restricted.

In few stretches due to unavoidable circumstances FC width had to be restricted or relaxed up to 9.5 mtr. For instance, at Nikachu Power house junction the FC work was not achieved due the presence of surge shaft above the road as well as project colony below the highway. This was done jointly at site with Nikachhu and RO. The FC width not achieved shall be deducted and payment will be made accordingly on pro rata-basis.

RAA's Further Comments and Recommendations

There were inadequacies in the site feasibility studies for formation cutting works as well as lack of proper planning as the ROs had failed to consider in the preparation of design, estimates and BOQs, the limitations for formation works expected in locations where there were local resident, private properties, permanent structures, public utilities, Religious, Historic and ecologically important sites as well as rocky and cliff areas. The non-execution of formation works, and non-achievement of formation width would defeat the very objective of up-gradation project of the NEWH.

The lump sum payments for formation cutting works in running meter without adjustment of the cost for road stretches where requisite formation width were not achieved and FC works not carried out tantamount to payments for unexecuted works.

As agreed during the Audit Exit meeting, the ROs and DOR are advised to regulate the payments for FC works on pro rata basis for road stretches where FC width were not achieved and FC not carried out and amounts recovered within three months from the date of issue of the report.

The Ministry is also advised to institute a technical team to conduct site verification on the non-achievement of formation width, the extent of FC works not carried out, non-maintenance of specified Hard Shoulder width at hillside and valley side under all contract packages, and ascertain the actual cost implication on the project and also to ascertain the remedial actions that may be required to improve the road conditions in such stretches.

2.27 Procurement and irregular issue of extension kits to the non-field officials - Nu. 311,900.00 (5.9.3)

An amount of Nu. 311,900.00 was paid to M/s Kinley & Sonam Manufacturing, Thimphu for the supply of extension kits to the Technical Monitoring Team. Since the NEWH activities are spread over 4 Regional Offices, expenditures are allocated amongst four ROs at equal amount of Nu. 77,975.00 each. Further review of the related documents revealed the following irregularities:

As per the approved note dated 02.02.2016, the following extension kits were approved for the procurement by the Secretary:

Sl/No	Description	Qty
1	Sleeping bags	9 Nos
2	Expedition mats	9 Nos
3	Safety boots	9 Nos
4	Torch lights	4 Nos
5	Tent (A or E type)	3 Nos

The audit team noted another note sheet dated 2.2.2016 approving the procurement of following extension kits by the Secretary:

Sl/No	Description	Qty
1	Sleeping bags	12 Nos
2	Expedition mats	12 Nos
3	Safety boots	12 Nos (not approved)
5	Tent (A or E type)	12 Nos

It is also noted that no dispatch numbers for both the Note sheets were available and the two note sheets were approved on the same day. Therefore, the audit team could not ascertain as to whether both the above two note sheets were approved for procurement.

Further, the procurement was made during the FY 2016-2017, though the procurement was approved for procurement during the FY 2015-2016 indicating flaws in the approval and procurements of extension kits. On review of the records made available, the RAA noted procurement of the following extension kits:

Sl/No.	Items	Qty	Total Qty.	Rate (Nu.)	Amount (Nu.)
1	Sleeping bag A	2		10,990.00	21,980.00
2	Sleeping bag 2	8		9,990.00	79,920.00
3	Sleeping bag 3	7	17	5,990.00	41,930.00
4	Safety boots A	9		3,890.00	35,010.00
5	Safety boots B	7	16	1,990.00	13,930.00
6	Rain Gear A	8		3,690.00	29,520.00
7	Rain Rear B	6	14	1,450.00	8,700.00
8	Tent D/type	9	9	8,990.00	80,910.00
	Total				311,900.00

On further review on the issue of extension kits, it was noted that extension kits were also issued to officials other than the TMT Officials as shown below:

Sl/No	Name	sleeping bag	Safety boot steel	Rain Gear	Tent D/type	Total cost Nu
1	Karma Ugyen, DCAO	1	1	1	1	26,560.00
2	Kinzang Norbu, Budget officer	1	1	1	1	26,560.00
3	Ugyen Thinley, AFD	1	1	1	1	26,560.00
4	Thinley Dorji, MTO	1	1	1	1	24,660.00
5	Sonam Dorji, Store	1	1	1	1	26,560.00
6	Pema Eden	1	1	1	0	17,570.00
7	TMT officials	11	10	8	4	163,430.00
						311,900.00

Further, following irregularities were also observed:

- The extensions kits were excessively procured as noted from the stock balances as on the date of audit.
- Procurement of 8 Nos Rain Gears valuing Nu. 38,220.00 were not in the list of extension kits listed in both the approved Note sheets.
- In terms of approved Note Sheets, Tent A or E type was to be procured but tent D types were found procured. Thus the procurement was in violation of the approved note sheets
- As per available records, the **Technical Monitoring Team (TMT)** comprise the following team members:
 - ✓ Tshering Wangdi A (TMT Leader)
 - ✓ C.K. Pradhan, PE, Const. Division, DoR
 - ✓ Karma Tenzin, EE, Design Division

- ✓ Tempa Thinley, Geotech Unit, Design Division, DoR

Thus, the reasons for issuing extension kits to other than TMT officials was not understood in audit.

- The issue of tents to individual was not rational and correct as the tents could be used by other field officials as and when required.
- The charging of expenditure to the Project was not justified as such expenditure could have been booked under normal LC accounts.
- The necessity of the extension kits to the above officials including TMT officials are found not genuine since the TMT official visits are not regular. Further, all ROs have established transit camps well equipped with all necessary items.

Taking into the consideration of the above facts, the DOR and Ministry should recover the amount from the above officials besides the Ministry should also hold the approving authority accountable for approving such procurements from project funds.

Auditee's Response:

We would like to furnish our reply as detailed below:

- 0. In order to monitor the work progress and quality of the NEWH Project, a Technical Monitoring Team (TMT) comprising Chief Engineers, Principle Engineers and other senior engineers from HQ have been formed during the 8th DoR Quarterly Meeting held in 28th – 30th, 2015. A copy of minutes attached for reference. As per ToR, TMT is mandated to check the quality of work and carry out the field tests.*
- 1. Although the core TMT members were from the Department, at times there was a requirement of finance and procurement officials to visit the project sites to evaluate the financial and procurement processes and constraints faced by the bidders. Since there was no separate fund for purchase of extension kits, the stuffs were procured and booked under the project head only.*
- 2. An amount of Nu. 311,900.00 were paid to M/s Kinley and Sonam Manufacturing, Thimphu for the supply of extension kits to the Technical Monitoring Team.*
- 3. Since the NEWH activities are spread over four Regional Offices, expenditures are divided among the ROs and each RO has incurred an amount of Nu. 77,975.00.*

The above amount of Nu. 77,975.00 was paid based on the directive of ministry and DOR, HQ vide note sheet approval no. DOR/TMT/2016-2017/3522 on February 2017.

We would like to submit the Royal Audit Authority to kindly review above details explanations and requested to consider the above Para.

RAA's Further Comments & Recommendations:

The RAA has taken note of the response. It is to reiterate that in terms of budgetary norms, separate budget allocation are approved for procurement of extension kits for the field staff under the normal budgetary system (LC). The procurement of extension kits from the project

fund in addition to budgetary fund is in violation of the budgetary norms. Besides, the issuance of extension kit to non-field staff is unjustified.

However, as discussed during the exit meeting, the ROs and DOR should get back the tents and account for in stock ledger and intimated to RAA for verifications and record. Besides, the Ministry should direct the DOR and ROs to refrain from such decisions and action in future.

Who is Accountable?

Direct Accountability	: Refer Accountability Statement
Supervisory Accountability	: Refer Accountability Statement

2.28 Non-aligning of pavement thickness with the item of works provided in the Bhutan Schedule of Rates (BSR) with resultant cost implication by way of applying built up rates through rate analysis

In terms of BSR, the item of work “Providing and Laying Dense Bituminous Macadam (DBM) to required degree of compaction based on mixture design (Job mix formula) approved by the supervising engineer including preparation of surface with road broom, application of prime coat @0.75 kg/sq. m by mechanized method using asphalt plant, paver, steel roller, tyre roller etc. complete”– outlines built-up rates for the execution of pavement works only for the varying thickness as shown below:

Item Code	DBM thickness
RW0132	50mm
RW0133	60mm
RW0134	70mm
RW0135	80mm

Similarly, for the item of works “Providing and Laying Asphalt/Bituminous Concrete to required degree of compaction based on the job mixture design approved by the supervising engineer using asphalt plant, paver, steel roller, tyre roller etc. as per material gradation and aggregate quality specified” also outlines built-up rates for the execution of pavement works only for the varying thickness as shown below:

Item Code	AC thickness
RW0136	25mm
RW0137	30mm
RW0138	35mm
RW0139	40mm

However, for the double lanning of Northern East-West National Highway, the Ministry has prepared the designs/drawings with a total pavement thickness of 600mm as shown below:

The pavement thickness of various layers is as follows:

GSB	=	250mm
WMM	=	225mm
DBM	=	75mm
AC	=	50mm
Total:		600mm

It was apparent that DBM and AC thickness were not aligned to the thickness provided in the BSR but maintained as design thickness for DBM as 75mm in-between the defined thickness of 70mm and 80mm and 50mm for AC against maximum thickness of 40mm provided in the BSR.

Thus, specifying different DBM and AC thickness had resulted in requirement of carrying out rate analysis both by the ROs in the preparation of estimates and contractors while submitting the rates for the two item works. On review of contractor's rate analysis attached with the tender documents, lapses and discrepancies in the application of co-efficient for the item of work 75mm DBM & 50mm AC were noted as the LMC provided only for 70mm and 80mm DBM work and 40mm AC work. Thus, the co-efficient used for 75mm DBM was considered for 80mm thick and co-efficient for 50mm thick AC works was randomly worked out by contractors.

However, the varying rates used by the RO through rate analysis in the preparation of estimates including rates applied for departmentally executed works and BSR rates are detailed in table 2.26.2 below:

Packages	BSR Code reference	DMB rate without bitumen	AC rate without bitumen	Departmental		BSR Rates	
				DMB rate with bitumen for 75 mm	AC rate with Bitumen for 50mm	DBM with bitumen 80mm (BSR 2015-Thimphu Base)	AC with bitumen 40 mm (BSR 2015-Thimphu Base)
VI, VII, VIII, IX, X	AR	213.14	159.14	839.65	648.22	891.92	521.27
XI	AR	252.43	153.15				
I, II, III, IV, V	AR	205.85	140.87				
XII, XIII, XIV, XV	RW0133	247.47	148.2				

Further, it was noted from the Minutes of the 7th DoR Quarterly Meeting held on 27-29 July, 2015, the meeting discussed and decided to reduce the thickness of DBM from 75mm to 60mm and AC from 50mm to 40mm aligning to the thickness provided in the BSRs. However, the execution of pavement thickness was found maintained in line with the initial approved design thickness in majority of the contract packages.

The Ministry in particular the Design Division should comment on designing of bitumen thickness not provided in the BSR for the preparation of estimates and subsequently reducing the bitumen thickness in line with the thickness provided in the BSR.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. While BSR is prepared as a tool to assist in the estimation of project costs, it is to inform you that it does not cover every items in detail. For instance, laying of WMM is done with the use of motar grader while it is not reflected in the labour coefficient.

The required items are incorporated based on site specific as and when required and found necessary. Likewise, varying thickness for DBM & AC for NEWH is based on design traffic volume and site requirement. There is no added cost on the application of present DBM & AC thickness adopted for the above work.

In view of the above justification, RAA is kindly requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response that the pavement design thickness is guided by the traffic volume, the fact remains that the change in design thickness of DBM from 75mm to 60mm and AC from 50mm to 40mm were made only for 25km stretch of road between Wangdi and Trongsa and Yadi to Lingmethang despite having same traffic volume. Thus, adhoc change of design thickness of DBM to 60mm and AC to 40mm on the basis of traffic volume, indicated that the Design Division, DOR could have designed the DBM and AC thickness within thickness provided in the BSR and LMC. The providing of design thickness of 75mm for DBM and 50mm for AC not provided in the BSR and LMC had resulted in application of varying rates by the ROs in the preparation of estimates and wrong application of material co-efficient in the analysis of rates for items of works by the contractors inflating the quoted rates with overall financial implication to the extent of Nu.60.236 million as reported under Para 2.4 of the report.

However, as discussed in the exit meeting the DOR in consultation with the Ministry should take measures to maintain the design thickness of DBM and AC and other item of works as per the thickness provided and available in the BSR and LMC or incorporate in the BSR and LMC varying design thickness requirements in terms of traffic volume and site specific conditions to minimize wrong application of labour and Material Co-efficient in carrying out rate analysis in future.

The decisions and measures taken by the Ministry to address the issue intimated to the RAA for record and follow-up in future audits.

2.29 Irregularities in supply of lab equipment for NEWH (5.6.8)

As noted from Kuensel issue of 7/10/15, the NIT for procurement of laboratory Testing Equipment for road works was found invited with completion period of supply of 3 months. Details of laboratory testing equipment required were as shown below:

i.	Proctor Compaction Test Apparatus	4 sets
ii.	California Bearing Ratio (CBR) Test Apparatus	4 sets
iii.	Field Density (Sand Cone Method) Test Apparatus	4 sets
iv.	Binder Determination(Centrifuge Extractor Method) Test apparatus	4 sets
v.	Compaction of Bituminous Marshall Test Apparatus	4 sets

- vi. Core Cutting Machine (Portable& diesel/petro engine operated) 4 sets

As per evaluation reports, M/s GS Traders were the lowest evaluated bidder with bid amount of Nu. 2,462,660.00. The contract agreement was found drawn accordingly between the Director, DoR and M/s GS Traders, Olakha, Thimphu.

During the review of the documents, the following lapses were observed:

2.29.1 Non-supply of testing equipment in full quantity

The supply order was issued vide order No. DoR/CE(CD)/2015-2016/W-47/1994 dated 5/1/16 for supply and delivery of Lab Testing Equipment for Road Works valuing Nu.2,462,660.00. The supply order amongst others categorically stipulated that *“inferior quality or re-conditioned product must be avoided. The joint inspection of supply delivery shall be carried by the procuring agency”*.

As per the Handing taking letter No. DoR/CE(CD)15-16/W-7/ dated 23/8/16, the demonstration of core cutting machine was conducted on 22/8/16 in the presence of the following officials:

- i. Tshering Wangdi A (TMT Leader)
- ii. Karma Wangdi, CE Construction Division
- iii. Sonam Jamtsho, Engineer, Construction Division
- iv. Pema Tshewang, Lab Tech, RO, Lingmithang
- v. Tshejymo, Lab Tech, RO, Trongsa
- vi. Gagan Lama, CEO, M/s GS Traders &
- vii. Binod Ghalley, Manager, M/s GS Traders 17629259

After demonstration, it was decided not to accept the core cutting machine since it was not as per specification. The supplier agreed to supply the whole set of core cutting machine within 1st week of September 2016. However, as of date of audit i.e.17/5/2018 even after a time lapse of almost two years the supplier had failed to replace core cutting machine. In addition, the DOR had also failed to take any action against the supplier. Further, some equipment items were also found not supplied by the supplier as shown in **Appendix “A”**.

2.29.2 Irregular payment of advance Nu. 560,000.00

Minutes of DLTC meeting held on 30/8/16 after deliberations had endorsed following decisions:

- The supplier is eligible for the payment only after supplying all the equipment as per the contract agreement. However, since his bills are pending the committee decided to make advance payment of Nu. 560,000.00.
- Payment of the quoted amount for 4 sets of core cutting machine and Nu. 246,266.00 being the 10% mobilization advance payment as per contract agreement on furnishing BG from the reputed bank. This is to facilitate the supplier to replace the core cutting machine at the earliest.
- The supplier shall supply the core cutting machine within 2 weeks after making the above payment by the department.

In accordance with the decisions of the DLTC, payment of Nu. 560,000.00 was found released to the supplier as advance payment since the bills are kept pending as the supply was not fully completed. The advance payments were made from four ROs as shown below:

SI/No	Name of ROs	Amount Nu.
1	RO, Thimphu	140,000.00
2	RO, Lobeysa	140,000.00
3	RO, Trongsa	140,000.00
4	RO, Lingmithang	140,000.00
	Total	560,000.00

The decision of DLTC for payment of advance amounting to Nu. 560,000.00 was not justified as the supplier failed to supply the equipment even on the date of the audit.

2.29.3 Supply of testing equipment not as per specification and acceptance thereof - Nu. 1,902,660.00

M/s GS Traders, Thimphu had supplied lab testing equipment amounting to Nu. 1,902,660.00 except the Core Cutting Machines. Accordingly, RO, Thimphu had paid an amount of Nu. 475,665.00 vide dv No.6.134 dated 20/6/17 for cost of 5 Nos. (1 set testing equipment) as the balance amounts were to be met by ROs Lobeysa, Trongsa and Lingmithang as detailed below:

SI/No	Name of ROs	Amount paid Nu.	Vr. No & date	Remarks
1	RO, Thimphu	475,665.00	6.134 of 20/6/17	After adjustment

RO, Thimphu informed that equipment received were tested as required and payment released based on the stock entry and verification of bills by head sub division. However, the audit team noted that balance amounts were found not released by the three ROs.

On enquiry with the Lab In- charge of RO, Lobeysa, Trongsa & Lingmithang, it was stated that though they have received the equipment, payments were not released as the equipment did not meet the specification requirements. This indicated that the payment by RO, Thimphu had been released without inspecting the equipment by the joint team.

It was also apparent that the ROs had not initiated actions either to return the equipment or to obtain replacement as on the date of audit. The Ministry should investigate the circumstances leading to acceptance of the equipment without prior inspection and certification of the same and retaining as of the date of audit. Such retention of equipment may complicate the issue further.

The Ministry should immediately direct the ROs to return the equipment and direct the supplier to replace the equipment along with the core testing machines. Further, any Bank Guarantee available should be renewed.

The inaction on the part of the Ministry and ROs also indicates procurement of testing equipment on the bases of to make use of funds and not based on actual requirements.

Auditee's Response:

M/s GS Traders, Thimphu has supplied lab testing equipment amounting to Nu. 1,902,660.00 except the Core Cutting Machines. According However, the audit team noted that balance amounts were found not released by the three RO offices equipment's are tastes as required and payment released based on the stock entry and verification of bills by head sub division.

- *M/S GS Traders, Thimphu supplier was placed with the supply order No. DOR/CE(CD)/2015-2016/W-47/1994 on Date 5/1/16 for supply and delivery of Lab Testing Equipment for Road Works*
- *M/S GS Traders, Thimphu has failed to supply the above lab testing equipment and Core Cutting Machines as per the specification as per terms and conditions of contract within the duration of three months date line issued by DOR, HQ, accordingly LD has been imposed based on terms and condition of contract agreement, imposed full amount LD 10% vide DV.06.134 on Dated 20/6/17 amounting to Nu. 47,567.00.*
- *We would like to put way forward to further substantiate that M/S GS Traders, Thimphu has supply the above lab testing equipment and Core Cutting Machines, while supplying to other ROS*
- *It is to submit here because of time lost while making twice procurement of lab testing equipment and Core Cutting Machines from third country by M/S GS Traders, Thimphu, the supplier could not supplied on time and therefore, the supplier was imposed penalty i.e., LD 10% of the contract value.*

Further, we would like to furnish our reply as detail below:

- i. *It is to submit here all the tendering process has been undertaken at DOR, HQ, as per the directive of DOR, HQ, we have received the lab testing equipment 4nos and Core Cutting Machines 1 no was received from M/S GS Traders, Thimphu.*
- ii. *It is to further substantiate the quality of lab testing equipment 4nos and Core Cutting Machines 1 no was found satisfactory while performing its output at our various field.*
- iii. *The quality of lab testing equipment 4nos and Core Cutting Machines 1 no was verified accordingly to specification in contract document jointly by our Executive Engineer and Sub-Store In-charge based on the instruction of Chief Engineer Bridge Division DOR, HQ, instructed on the body of letter.*
- iv. *The note sheet put up by Finance and Administration Division under RO-T, clear remarks has been noted payment of bill has been process after verification with other ROS, involved on NEWH.*
- v. *Accordingly the payment had been released amounting to Nu. 475,665.00 vide DV.06.134 on Dated 20/6/17 for cost of lab testing equipment 4nos and Core Cutting Machines 1 no.*
- vi. *M/S GS Traders, Thimphu has failed to supply the above lab testing equipment and Core Cutting Machines as per the supply order date line issued by DOR, HQ, accordingly LD*

has been imposed based on terms and condition of contract agreement, imposed LD 10% vide DV.06.134 on Dated 20/6/17 amounting to Nu. 47,567.00.

- vii. It is to further substantiate that M/S GS Traders, Thimphu has supply the above lab testing equipment and Core Cutting Machines, while supplying to other ROs, however our Executive Engineer SD No. I, and Sub-Store In charge has rejected and returned back the equipment to M/S GS Traders, Thimphu.
- viii. It is to submit here because of time lost while making twice procurement of lab testing equipment and Core Cutting Machines by M/S GS Traders, Thimphu, the supplier was imposed LD 10% vide DV.06.134 on Dated based on terms and condition of contract agreement.

We would like to submit the Royal Audit Authority to kindly review above details explanations and requested to reconsider dropping the above Para.

RAA's Further Comments & Recommendations:

It is apparent that the ROs, and DOR had failed to take action against the supplier either to get all the equipment replaced as per technical specification or recover the payments including the Liquidated damages as per the terms and conditions of the supply contract even after a time lapse of almost two years as on the date of audit.

The DOR should immediately return the equipment retained by the ROs/DOR to the supplier and obtain replacement of the same. Besides, the DOR should also investigate the circumstances leading to non-return of the rejected equipment for almost two years and those responsible should be made accountable in event of any complications arising in future. The DOR must also test the equipment accepted by the RO, Thimphu by the joint inspection team.

The decisions and actions initiated by the DOR and the Ministry on the issues and outcome thereof intimated to RAA for records and follow-up in future audits.

Who is Accountable?

Direct Accountability	: Refer Accountability Statement
Supervisory Accountability	: Refer Accountability Statement

2.30 Unsafe Storage of explosives materials

In the light of the explosive materials being hazardous in nature and government controlled items, the audit team during site visits had also visited explosive storage facilities installed by the contractor at site offices. During the physical verification of site, the team noted that in most cases, explosive materials were found stored in open space, temporary sheds and in office instead of storing the materials in the designated explosive Magazines or designated stores constructed for the purposes. The status of explosives received, issued and balances of explosives in respect of RO, Lingmethang are shown in **Appendix "B"**.

The storing of explosive in open space and temporary shed compromises safety and security requirements as materials were exposed to possible risk to theft, pilferage and deterioration and health hazard to employees, labourers and general public and in particular commuters.

While no major accidents related to explosives were reported as of date, considering the hazardous nature of explosive materials it is imperative for RO, Lingmethang to ensure proper storage arrangement and physical safe guards of materials.

Auditee's Response

RAAs observations on storage of explosives at various contractors of NEWH is well noted by the RO and the project officials. Despite several reminders through monthly coordination meetings and field visits has briefed about the risk of explosives and the rules and regulations and possible impacts for keeping in exposed condition and safety aspects. But many contractors in due process have improved a lot while still some fails to do so. In this regards, strict monitoring will be done by the RO and defaulters will be penalized accordingly in future. Therefore, the RAAs advice will be strictly noted for future guidance and strict implementation.

RAA's Further Comments & Recommendations:

While taking note of the response the fact remains that explosives are hazardous in nature and government controlled items, and exposed to possible risk to theft, pilferage and deterioration and health hazard to employees, labourers and general public and in particular commuters and were found not stored in designated explosive Magazines or designated stores constructed for the purposes.

However, as agreed during the Audit Exit Meeting, the DoR and the Ministry should immediately direct all the ROs and contractors for proper storage of the hazardous explosives. The DOR and Ministry should also direct the ROs to take stock of the explosives in terms of approval accorded by the Ministry, accountal of receipts, usages for the works and stock balances to prevent mishandling, misuses and ensure proper disposal of balance stocks. Besides, the DOR an the Ministry should institute proper procedures in the accountal, usages and disposal of unutilized explosives as well as monitoring mechanism to ensure enforcement of related explosives rules and regulations to prevent untoward complications in future.

PART B: PACKAGE SPECIFIC OBSERVATIONS WITH ACCOUNTABILITY

3. Ambiguity and irregularities in calculation of value of additional works and in the revision of completion deadlines

The RO, Trongsa had calculated time extension based on the increase of one-meter pavement width, additional permanent structures required, maintenance works and hindrances as recorded in the hindrance registers which were found duly approved by the MLTC.

On review of the time extensions approved by MLTC under letter No. DOR/CD/7/2017-18/4405 dated 21/09/2017, irregularities in approval of time extensions were noted. The details of scope of works, revised contract amount, additional value of works involved, time extension computed and proposed by RO and time extensions dully approved by the MLTC are as shown in table 3 below:

Contractor	Actual Length (km)	Revised Contract Amount (million)	Time extension						Time extension approved by MLTC (in months)
			Im BT amount (million)	Additional value (million)	Work amount executed per month (million)	Time in months	Hindrance month	Total time extn in months	
M/s Rigsar Const. Pvt .Ltd (PKG 1)	12.00	210.66	11.76	20.37	7.02	1.95	1.23	3.19	3.5
M/s Gaseb Const. Pvt .Ltd (PKG 2)	7.50	150.80	7.05	17.15	5.03	2.13	1.30	3.43	3.5
M/s Rinson Const. Pvt .Ltd (PKG3)	7.50	136.54	7.10	15.49	4.55	2.17	1.27	3.44	3.5
M/s Gyalcon Const. Pvt .Ltd (PKG 4)	5.00	121.02	5.62	12.35	4.03	1.95	1.50	3.45	3.5
M/s Druk Lhayul Const. Pvt. Ltd (PKG 5)	5.70	106.97	6.78	16.32	3.57	2.86	1.43	4.29	4
M/s. Raven Builders & Company (P) LTD (PKG 6)	7.00	115.77	9.02	11.22	3.86	2.16	1.50	3.66	3.7
M/s Druk Lamsel Const. Pvt. Ltd (PKG7)	6.10	102.04	0.00	30.98	5.67	2.73	1.27	4.00	4
M/s Dungkar Const. Pvt .Ltd (PKG 8)	7.20	110.91	10.29	23.71	3.96	3.77	1.27	5.04	5
M/s Welfare Const. Pvt .Ltd (PKG 9)	7.98	161.82	13.20	18.97	5.78	2.33	1.43	3.76	4
M/s Rinson Const. Pvt .Ltd (PKG 10)	6.02	117.38	6.86	5.83	4.19	1.19	1.83	3.02	3
M/s Dungkar Const. Pvt .Ltd (PKG 11)	8.00	131.69	9.98	5.16	4.70	1.19	1.47	2.65	3
M/s Dungkar Const. Pvt .Ltd (PKG 12)	5.00	105.08	0.00	0.00	5.25	0.00	1.60	1.60	2

M/s Rinson Const. Pvt .Ltd (PKG 13)	10.10	177.01	13.15	0.00	6.32	0.62	1.70	2.32	3
M/s Lamneka Const. Pvt. Ltd (PKG 14)	2.20	57.22	0.00	0.00	3.81	0.00	1.37	1.37	1.5

Based on the time extension approved by the MLTC, the revised completion date for each packages were scheduled as tabulated below:

Sl/No	Name of Contractors	Work completion date as per the plan	Revised work completion date	No of months revised
1	M/s Rigsar Const. Pvt .Ltd	05/12/17	18/03/18	3.5
2	M/s Gaseb Const. Pvt .Ltd	05/12/17	18/03/18	3.5
3	M/s Rinson Const. Pvt .Ltd	16/12/17	31/03/18	3.5
4	M/s Gyalcon Const. Pvt .Ltd	18/12/17	18/04/18	4
5	M/s Druk Lhayul Const. Pvt. Ltd	12/12/17	12/04/18	4
6	M/s. Raven Builders & Company (P) LTD	10/12/17	30/04/18	3.7
7	M/s Druk Lamsel Const. Pvt. Ltd	12/01/18	12/05/18	4
8	M/s Dungkar Const. Pvt .Ltd	18/12/17	18/05/18	5
9	M/s Welfare Const. Pvt .Ltd	21/01/18	21/05/18	4
10	M/s Rinson Const. Pvt .Ltd	31/12/17	31/03/18	3
11	M/s Dungkar Const. Pvt .Ltd	31/01/18	30/04/18	3
12	M/s Dungkar Const. Pvt .Ltd	05/03/18	05/05/18	2
13	M/s Rinson Const. Pvt .Ltd	02/02/18	02/05/18	3
14	M/s Lamneka Const. Pvt. Ltd	29/10/17	16/12/17	1.5

3.1 Differences in the value of additional works between MLTC, RO and RAA- (4.4.51)

On review of the details of time extension sanctioned, the details of value of additional works sanctioned, following differences in value of additional work computed by MLTC and RO were observed:

Sl/No	Name of contractors	Additional amount sanctioned by MLTC (million)	Additional amount estimated by RO, Trongsa (million)	Details of Additional amount provided to RAA (million)
1	M/s Rigsar Const. Pvt .Ltd	23.579	20.372	13.821
2	M/s Gaseb Const. Pvt .Ltd	17.148	17.148	5.417
3	M/s Rinson Const. Pvt .Ltd	16.384	15.486	14.474
4	M/s Gyalcon Const. Pvt .Ltd	15.028	12.351	12.962
5	M/s Druk Lhayul Const. Pvt. Ltd	16.318	16.318	0
6	M/s. Raven Builders & Company (P) LTD	13.718	11.218	10.694
7	M/s Druk Lamsel Const. Pvt. Ltd	50.203	30.98	3.00
8	M/s Dungkar Const. Pvt .Ltd	23.714	23.714	3.266
9	M/s Welfare Const. Pvt .Ltd	20.370	18.97	12.781
10	M/s Rinson Const. Pvt .Ltd	5.830	5.83	4.472

11	M/s Dungkar Const. Pvt .Ltd	5.811	5.163	4.174
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The audit team could not ascertain the correct estimated value of additional works due to non-production of related documents for audit verifications.

Auditee's Response:

MLTC being the highest decision making body in the Ministry, the value of additional work approved is the final, which prevails all over the implementation process.

RO regrets its inability for not being able to furnish the right documents during the time of auditing due to misplacement of the estimate.

Therefore, RO is submitting the authentic abstract of the estimated amount of the additional work approved by the MLTC. (Attached as Appendix-1)

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that not only the value of additional works computed in audit on the basis of relevant records made available were far less than the value of works taken for computation for time extension by both RO and MLTC but also there were mismatch of value of works between the RO and MLTC. Besides, the RO and MLTC had also failed to submit the detailed estimates and BOQs supporting the value of additional works considered as a basis for the computation of time extension. Further, the Appendix 2 submitted in response and during the exit meeting was only the abstract of the estimated value for the additional works which were already reviewed and noted during the course of audit. Thus, the failure to submit the detailed estimates and BOQs for the additional works indicated that both the RO and MLTC had considered adhoc value of probable additional works without actual preparation of detailed estimates and BOQs to facilitate time extensions as completion deadlines for majority of the contract packages were due within November and December 2017.

However, as discussed during the exit meeting, the RO and MLTC should furnish all the relevant documents relating to the additional works for audit verification and forming final opinion on the matter:

- ✓ *List of additional works awarded and executed by the contractor*
- ✓ *Detailed estimates and BOQs along with drawings and designs if any supporting the value of additional works sanctioned by the MLTC and value of additional works estimated by RO*
- ✓ *Additional Work order along with detailed estimates and BOQs*
- ✓ *Rate analysis if any carried out in the preparation of estimates/BOQs*

It is to reiterate that non-availability and production of requisite documents as indicated above would be construed that value of additional works were misrepresentation of facts intended to provide undue support to the contractors with abnormal time extensions and avoid imposition of liquidated damages.

The Ministry should investigate on the mismatch of value of additional works as well as non-submission of relevant documents supporting the time extensions for appropriate decisions and actions against the responsible officials. The Ministry should also review the procedures and practices adopted for additional works and time extensions to institute proper control

system and mechanism to prevent such violations, deviations and irregularities in future projects.

Who is accountable?

Direct Accountability	: 1. Kinzang Chopel, Asstt Engineer, EID No. 2107153 2. Tashi Dorji, Asstt. Engineer, EID No.2197149 3. Sangay Dorji, Principal Engineer, EID No.9307024
Supervisory Accountability	: Tougay Choedup, Chief Engineer, EID No. 9107099

3.2 Inclusions of inadmissible cost on maintenance and Boulder Walls of Nu.27,649,925.00 in the value of additional works as well as hindrances with resultant excessive grant of time extensions (4.4.51)

On review of the estimates and BOQs prepared by RO for additional works, it was noted the RO had included amounts for maintenance works and boulder works, which were in contravention to the provisions of the technical specifications. In addition, hindrance registers reflected hindrances on road maintenance, rainfall and clearing of debris, which were not admissible.

However, the audit team taking cognizance of the provisions of the technical specification and allowable hindrances as per contract documents as well as the estimated amounts of additional works made available to the team had re-computed the time extension admissible.

The recomputed time extensions vis-à-vis time extensions approved by the MLTC are as shown in table 3.2 below:

Sl/ No	Contractor	Revised Contract Amount (million)	Time extension					Total time extn in months	Recomputed time extension (months)	Approved by MLTC in months
			Im BT amount (million)	Addition al value (million)	work amount executed per month (million)	time in months	Hindranc e month			
1	M/s Rigsar Const. Pvt .Ltd	210.66	11.76	13.821	7.02	1.811	0.833	2.644	2.6	3.5
2	M/s Gaseb Const. Pvt .Ltd	150.80	7.05	5.417	5.03	1.927	0.833	2.76	2.8	3.5
3	M/s Rinson Const. Pvt .Ltd	136.54	7.10	14.474	4.55	1.949	0.833	2.782	2.8	3.5
4	M/s Gyalcon Const. Pvt .Ltd	121.02	5.62	12.962	4.03	1.560	0.833	2.393	2.4	3.5
5	M/s Druk Lhayul Const. Pvt. Ltd	106.97	6.78	0.000	3.57	2.578	0.833	3.411	3.4	4
6	M/s. Raven Builders & Company (P) LTD	115.77	9.02	10.694	3.86	1.896	0.833	2.729	2.7	3.7
7	M/s Druk Lamsel Const. Pvt. Ltd	102.04	0.00	3.000	5.67	2.556	0.833	3.389	3.4	4
8	M/s Dungkar Const. Pvt .Ltd	110.91	10.29	3.266	3.96	3.520	0.833	4.353	4.4	5
9	M/s Welfare Const. Pvt .Ltd	161.82	13.20	12.781	5.78	2.154	0.833	2.987	3.00	4

10	M/s Rinson Const. Pvt .Ltd	117.38	6.86	4.472	4.19	0.948	0.833	1.781	1.8	3
11	M/s Dungkar Const. Pvt .Ltd	131.69	9.98	4.174	4.70	0.973	0.767	1.74	1.8	3
12	M/s Dungkar Const. Pvt .Ltd	105.08	0.00	0.000	5.25	0.000	0.767	0.767	0.8	2
13	M/s Rinson Const. Pvt .Ltd	177.01	13.15	0.000	6.32	0.624	0.767	1.391	1.4	3
14	M/s Lamneka Const. Pvt. Ltd	57.22	0.00	0.000	3.81	0.000	0.767	0.757	0.8	1.5

The details of value of additional works including hindrances considered by the MLTC are highlighted in **Appendix “C”**.

The Ministry should comment on the inclusion of cost of maintenance and boulder walls which had inflated the value of additional works and resulted in excessive sanction of time extensions.

Auditee’s Response:

Boulder walls and maintenance of road was added in additional work estimate by RO. Boulder walls are constructed at marshy areas to retain heavy land mass sliding towards the road below it in which additional resources were incurred for construction. The boulder wall construction needs experienced excavator operator for stacking of boulders in stable and aesthetic conditions. At many places, boulders were not available at construction site and it was required to be transported from distant sites. The road maintenance was kept in the interest of public where during summer due to incessant rainfall, the road becomes too boggy making traffic unable to pass whereby even contractors become reluctant to restore road. On these grounds, the RO had added as additional value.

RO had calculated the time extension by taking in to account the 1 mtr BT extension, MLTC approved additional work value and hindrances recorded at sites. The RO had calculated time extension on the basis of 30% time on 1 mtr BT extension and 50% time for additional works value. The time calculation sheet clearly shows that the additional work value is kept lesser than the MLTC approved value and only 50% time was granted on additional work. If it is worked out on pro-rata basis, the time extension would be much higher than the granted time.

The RAA team had applied the same formula for calculating time in which the team had taken note of lesser additional work value furnished to RAA (as in memo 6.1). The RO is confident that the actual time extension granted by the MLTC to the contractors are much lesser than the actual pro-rata time extension.

In view of the above genuine justifications, the memo may kindly be dropped.



Para:4- Maintenance Works

We would like to acknowledge that the hindrance on account of rainfall and clearing of debris is not admissible. But due to inevitable circumstances where during laying of GSB and WMM which needs to be laid at OMC, the incessant rainfall had hindered the progress of the work in which the RO had to stop the contractors working on these two items. Even after the rain had stopped, the surplus moisture content in the stacked GSB & WMM along the road needs sufficient time to evaporate which hindered the work progress. We also would like to add that RO had not given hindrance on normal clearing of debris. The RO had considered hindrances for clearance of huge blocks on our roads where the road needs to be cleared for traffic immediately due to public pressure. Under these circumstances, contractors' machineries engaged for their works needed to be immediately diverted to the block points for clearance because of which the actual work is ultimately hampered. Therefore, with the genuineness and in the interest of road users the hindrance had been given.



Para:3.2(1)- Huge landslide clearance for traffic.



Para: 3.2(2)- Boulder Wall Construction



Para:3.2(3) –Before



Para 3.2(4)- After

As per the instruction of Honorable Minister and Dasho Secretary, MoWHS that construction of boulder walls are faster and suitable to retain huge backpressure. Accordingly, RO had adopted construction of boulder wall after approval from MLTC as additional structures. (Few photographs are shown above). In view of the above genuine justifications, the memo may kindly be dropped.

RAA’s Further Comments & Recommendations:

While taking note of the response and approval accorded by the MLTC, the fact remains that the technical specifications which is integral part of the contract documents categorically stipulated under TS 109 and SCC (GCC 1.1 (ff)), the responsibilities of the contractors for “removal of landslide/debris of any volume until the completion and handing over of the project to the Client”.

It is to reiterate that the quoted rates of contractor for the related items of works is built up cost inclusive of cost of all risks factors involved in terms of requirements stipulated in the technical specifications and provisions in the contract document. Thus, the inclusion of cost of maintenance and boulder walls in the value of additional works violated the provisions stipulated in the technical specification and contract documents.

However, as discussed during the exit meeting, the DOR and the Ministry should revisit and review the inclusions of maintenance related cost as additional works in relation to the provisions of the technical specifications including unjustified hindrances and decisions thereof intimated to enable the RAA to form its final opinion on the time extension.

Who is accountable?

Direct Accountability	: 1. Kinzang Chopel, Asstt Engineer, EID No. 2107153 2. Tashi Dorji, Asstt. Engineer, EID No.2197149 3. Sangay Dorji, Principal Engineer, EID No.9307024
Supervisory Accountability	: Tougay Choedup, Chief Engineer, EID No.9107099

3.3 Excessive grant of time extension due to flaws in the revision of completion deadlines (4.4.51)

The audit team taking cognizance of the provisions of the technical specification and allowable hindrances as per contract documents as well as the estimated amounts of additional works made available to the audit team had worked out the time extension admissible. The recomputed time extensions vis-à-vis time extensions approved by the MLTC are shown in table 3.3 below:

Sl/No	Name of Contractors	No of months revised as per MLTC (months)	Admissible time extension as per audit team (months)	Diff. (months)
1	M/s Rigsar Const. Pvt .Ltd	3.5	2.6	0.9
2	M/s Gaseb Const. Pvt .Ltd	3.5	2.8	0.7
3	M/s Rinson Const. Pvt .Ltd	3.5	2.8	0.7
4	M/s Gyalcon Const. Pvt .Ltd	4	2.4	1.6
5	M/s Druk Lhayul Const. Pvt. Ltd	4	3.4	0.6
6	M/s. Raven Builders & Company (P) LTD	3.7	2.7	1.0
7	M/s Druk Lamsel Const. Pvt. Ltd	4	3.4	0.6
8	M/s Dungkar Const. Pvt .Ltd	5	4.4	0.6
9	M/s Welfare Const. Pvt .Ltd	4	3.00	1.0
10	M/s Rinson Const. Pvt .Ltd	3	1.8	1.2
11	M/s Dungkar Const. Pvt .Ltd	3	1.8	1.2
12	M/s Dungkar Const. Pvt .Ltd	2	0.8	1.2
13	M/s Rinson Const. Pvt .Ltd	3	1.4	1.6
14	M/s Lamneka Const. Pvt. Ltd	1.5	0.8	0.7

It would be noted from the table above that time extensions approved by MLTC were much more than the allowable time thereby inflating the completion deadlines beyond the admissible deadlines as tabulated below:

Sl/No	Name of Contractors	Work completion date as per contract	Revised work completion date as per RO/MLTC	Revised work completion date as per RAA
1	M/s Rigsar Const. Pvt .Ltd	05/12/17	18/03/18	15/02/2018
2	M/s Gaseb Const. Pvt .Ltd	05/12/17	18/03/18	28/01/2018
3	M/s Rinson Const. Pvt .Ltd	16/12/17	31/03/18	13/03/2018
4	M/s Gyalcon Const. Pvt .Ltd	18/12/17	18/04/18	15/03/2018
5	M/s Druk Lhayul Const. Pvt. Ltd	12/12/17	12/04/18	23/01/2018
6	M/s. Raven Builders & Company (P) LTD Ltd	10/12/17	31/04/18	07/03/2018
7	M/s Druk Lamsel Const. Pvt. Ltd	12/01/18	12/05/18	14/02/2018
8	M/s Dungkar Const. Pvt .Ltd	18/12/17	18/05/18	19/02/2018
9	M/s Welfare Const. Pvt .Ltd	21/01/18	21/05/18	12/04/2018

10	M/s Rinson Const. Pvt .Ltd	31/12/17	31/03/18	23/02/2018
11	M/s Dungkar Const. Pvt .Ltd	31/01/18	31/04/18	26/03/2018
12	M/s Dungkar Const. Pvt .Ltd	05/03/18	05/05/18	29/03/2018
13	M/s Rinson Const. Pvt .Ltd	02/02/18	02/05/18	16/03/2018
14	M/s Lamneka Const. Pvt. Ltd	29/10/17	16/12/17	22/11/2017

The RO, Trongsa and DOR should revisit the time extension granted to the contractors in terms of value and admissibility of additional works including hindrances and accordingly revise the completion deadlines and the same intimated to RAA.

Auditee's Response:

RO had calculated the time extension by taking in account the 1 mtr BT extension, MLTC approved additional work value and hindrances recorded at sites. The RO had calculated time extension on the basis of 30% time on 1 mtr BT extension and 50% time for additional works value. The time calculation sheet clearly shows that the additional work value is kept lesser than the MLTC approved value and granted only 50% time on additional work, which is kept much lesser time. If it is worked out on pro-rata basis, the time extension would be much higher than the granted time.

The RAA team had applied the same formula for calculating time in which the team had taken account of lesser additional work value furnished to RAA (as in memo 6.1). The RO is confident that the actual time extension granted by the MLTC to the contractors are much lesser than the actual pro-rata time extension. In view of the above genuine justifications, the memo may kindly be dropped.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that there were mismatches of value of additional works furnished to RAA and even between the figures of RO and MLTC. Besides, the value of additional works also included cost of maintenance and boulder walls not in line with the technical specifications and SBD as well as hindrances not in line with the contract document.

However, as discussed and agreed in the Audit Exit Meeting held on 3 - 4/12/18, the time extension granted for landslide clearance, the RO and DOR should disallow the cost of maintenance and boulder walls and hindrances against rainfall and recompute the allowable time extensions and accordingly revise the completion deadlines. The RO, should furnish the details of time extension computed and allowed to RAA for verification and record.

The DOR and the Ministry should formulate proper guidelines to provide reasonable and consistent basis for determining the construction duration for all construction works undertaken by government agencies as well as to facilitate computation of time extensions for additional works, variations of quantities taking into consideration the compensation events for allowing time extensions for future projects.

Who is accountable?

Direct Accountability	: 1. Tougay Choedup, Chief Engineer, EID No.9107099
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Supervisory Accountability	<i>:1. Phuntsho Wangdi, Secretary, EID No.8403049, CID No.115050004908</i> <i>2. Tenzin, Director, DoR, EID No.9801115)</i> <i>3. Karma Sonam, Director, DHS, EID No. 9107112</i> <i>4. Dechen Yangdon, Offtfg. Director, DES, EID No.200201092</i> <i>5. Dhak Tshering, Director, Directorate Services, EID No. 8801090</i>
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4. Irregularities in payment of compensation amount – Nu. 1,100,587.30 (5.1.20)

An amount of Nu. 3,597,959.84 was found paid to Mrs. Chogyal Lhamo as compensation to her damaged house during the widening works. The payment was released based on the valuation done by the Dzongkhag Administration, Trongsa. Upon physical verification and review of the documents the RAA noted overpayment of Nu.1,100,587.30 due to inflated plinth area and wrong specification of toilet used for valuation. The details of valuation and excess payments worked out are as shown in table 4, 4.1, 4.2 and 4.3 below:

Table 4: Building Valuation for Main Building		Table 4.1: Building Valuation for Toilet	
A] Basic Data	Valuation Date: 24/10/2016	A] Basic Data	Valuation Date: 24/10/2016
Name of the owner	Mrs. Chodyel Lhamo	Name of the owner	Mrs. Chodyel Lhamo
Location	Pangena, Trongsa	Location	Pangena, Trongsa
Thram No	2724	Thram No	2724
B] Specification of the Building		B] Specification of the Building	
Type of structure/No of floors	Residential, two storied	Type of structure/No of floors	Toilet with Bathroom
Foundation and plinth	RRM in cement	Foundation and plinth	RRM in cement
Superstructure	Rammed Earth	Superstructure	RRM in cement
Partition wall and its finishing	Rammed Earth and timber structure	Partition wall and its finishing	RRM in cement
Cornices	Traditional wooden cornices	Cornices	Traditional wooden cornices
Total no of rooms	8	Total no of rooms	3
Average room height	2.2	Average room height	2.2
Base town rates	2014	Base town rates	3116.4
Cost index	88% over BSR 2005	Cost index	88% over BSR 2005
Rate adjustment factor	0.98	Rate adjustment factor	1.2
Adjusted rate	3786.32	Adjusted rate	5858.83
Year of construction	2002	Year of construction	2003
Age of the building	14 years	Age of the building	13 years
Economic life span	50 years	Economic life span	50 years

Table 4.2. Valuation of the building done based on the above details and plinth area.								
Plinth area calculation								
Sl No	Floor Details	Length (m)	Breadth (m)	Height (m)	Volume	Rate	Rate Adjustment factor	Amount

For Building								
1	Ground Floor	16.75	12.5	2.2	460.625	3786.32	0.98	1,709,192.18
2	First Floor	16.75	12.5	2.2	460.625	3786.32	0.98	1,709,192.18
For Toilet								
1	Ground Floor	4.3	2.7	2.2	25.542	5858.83	1.2	179,575.48
							Total	3,597,959.84

Table 4.3: Difference of plinth area and specifications of toilet noted during the physical verification conducted by RAA along with engineers from RO, Trongsa and actual valuation of the building works out to Nu.2,580,151.01 as tabulated below:

Plinth area calculation								
Sl no	Floor Details	Length (m)	Breadth (m)	Height (m)	Volume	Rate	Rate Adjustment factor	Amount
For Building								
1	Ground Floor	14.76	9.2	2.3	312.3216	3786.32	1.015	1,200,287.76
2	First Floor	14.76	9.2	2.3	312.3216	3786.32	1.015	1,200,287.76
For Toilet								
1	Ground Floor	4.3	2.7	2.2	25.542	5858.83	1.2	179,575.48
							Total	2,580,151.01
Difference in valuation (value under table 2 minus value under table 3)								1,100,587.30

The specification of toilet for foundation and plinth, superstructure in actual were constructed with RRM in mud mortar as against RRM in cement mortar recorded for valuation. In addition, cornices were not found constructed in toilet as evident from picture below:



Therefore, RO, Trongsa besides working out the actual rate (per sqm/m height) for the correct specifications in collaboration with the Dzongkhag Administration should comment on the compensation payment for inflated dimensions and wrong specifications.

Auditee Response:

With the widening work, the building of Mrs. Chogyal Lhamo was affected and the RO had to compensate for it. The owner had lodged the complaint to Dzongkhag Administration and accordingly the Disaster committee from Dzongkhag had visited the site and confirmed after several studies that the building was really affected by the widening activities. After which the Technical Committee of the Dzongkhag Administration worked out the valuation and submitted to RO for the compensation amounting to Nu. 3,597,959.00. The valuation was done by the Technical Committee of Dzongkhag Administration and the RO made the payment for the compensation. The memo will be forwarded to the Dzongkhag Administration, Trongsa to furnish the reply for the irregularities in valuation.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that there was overpayment to the beneficiary due to wrong valuation of the property by the Technical Committee of the Dzongkhag Administration. It also indicated existence of weak internal controls within RO over the settlement of compensation claims without validating the claims.

However, as agreed during the exit meeting, the overpayment of Nu. 1,100,587.30 should be recovered immediately and deposited into Audit Recoveries Account within three months from the date of issue of the report beyond which 24% penalty per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual.

The DOR and the Ministry should put in place appropriate procedures and control mechanism for carrying out proper valuation of affected properties with reference to Property Assessment and Valuation Agency 2009 either independently or jointly with Dzongkhag Administration to prevent overvaluation of properties and overpayments of compensations in future.

Who is accountable?

Direct Accountability	<p>: Dzongkhag Committee members 1.Passang Dorji, Principle Engineer, EID No.8201041, CID No.11704001758 2. Karma Dhendup, Dzongrab, EID No.9308087, CID No.10703000062 3.Kinzang Dorji, Legal Officer, EID No.201101086 4.Chencho Gyeltshen, Kidu officer, EID No.2101146, CID No.11405000805 5.Tobgay, Executive Engineer, EID No.201101170 6.Jamyang Chojey, DYT, EID No.20120500223</p>
Supervisory Accountability	<p>: Dzongkhag Committee members 1.Passang Dorji, Principle Engineer, EID No.8201041, CID No.11704001758 2. Karma Dhendup, Dzongrab, EID No.9308087, CID No.10703000062 3.Kinzang Dorji, Legal Officer, EID No.201101086 4.Chencho Gyeltshen, Kidu officer, EID No.2101146, CID No.11405000805</p>

5. Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Sakachawa to Tsangkha (Package 3) by M/s Rinson Construction Pvt. Ltd.

The contract for formation cutting and pavement works from Sakachawa to Tsangkha (Chainages 19.5km to 27km) covering 7.5 km was awarded to M/s Rinson Construction being the lowest evaluated bidder with bid value of Nu. 97,306,916.89. The contract was signed under agreement No. RO/DOR/(Trongsa)/14-15/PL-36/919 dated 16/06/2015. Estimated cost, contract amount and other important details of the contract were as indicated below:

i.	Quoted amount	: Nu. 97,306,916.89
ii.	Revised Quoted Amount	: Nu.38,004,218.10
iii.	Actual Exp.	: Nu.26,962,873.14
iv.	Duration of contract	: 30 months
v.	Start date	: 16 th June, 2015
vi.	Due date of completion	: 16 th December 2017
vii.	Time Extension	: 3.5 months
viii.	Date of completion (revised)	: 31 st March 2018
ix.	Work status	: On-going

The approved revised drawing and design issued by the MoWHS specified the following technical specifications for the construction of NEWH:

- i. The maximum Formation road width of 10.50 meter (m) comprising 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and
- ii. Carriageway width of 7.50m.

The Bill of Quantities for FC works reflected measurements in running meters and lump sum payment modality.

Scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

5.1 Non-providing of coping in RRM wall & other irregularities thereof (5.1.20)

During the joint physical verification, it was observed that the construction of RRM 1:6 walls were found constructed without coping in deviation to the technical specification and drawings. On review of the RA bills it was noted that no payments for PCC 1:3:6 coping works were found made although required to be provided as per drawing. Photographic evidences of non-providing of coping works are as depicted in Fig. 5.1 below:



Fig: 5.1- RRM without Coping

Furthermore, the catch pit constructed at Chainage 24460 measuring a total volume of 3.26cum amounting to Nu. 9,454.00 (*3.26m³ @ Nu. 2900*) was found constructed with poor workmanship indicating execution of sub-standard works as shown in fig. 5.1(a) below:



Fig: 5.1(a)- Sub-standard catch pit

The Ministry should immediately direct the RO to rectify the defective works besides instituting a technical team to verify the completed works to ensure that works executed are

as per the drawings and technical specifications and also to prevent accepting and taking over of defective and substandard works.

Further, the rectification carried out and certificate to that effect should be intimated to RAA for review and record.

Auditee’s Response:

We would like to convey that the construction of permanent works were ongoing during the RAA team visit to the site. The RO had instructed the contractor to rectify the defective work as per the technical specification and some defective works are already rectified which will be intimated to the RAA team for review and records.

RAA’s Further Comments & Recommendations:

The damages and defects noted in the newly constructed road indicated poor quality of road works and workmanships and also lack of proper supervision and monitoring of works by the site engineers.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record. The Ministry should hold the site engineer accountable for execution and acceptance of substandard works.

Further, DOR should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works and facilitate timely detection and rectification of defective and substandard works within the defect liability period at the cost of the contractors. The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

Who is Accountable?

Direct Accountability	: Nar Bhadur Jogi, AE, (EID No. 201001746) M/s Rinson Construction Pvt Ltd, (CDB No. 1965)
Supervisory Accountability	: Kinzang Chopel , EE, (EID No. 2107153)

6 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Tshangkha to View Point (Package 4) by M/s Gyalcon Infrastructure Pvt. Ltd

The contract for formation cutting and pavement works from Tsangkha to Trongsa View point (Chainages 27km to 32.00km) covering a total of 5 kilometer estimated at Nu.146,426,379.15 was awarded to M/s. Gyalcon Infrastructure Pvt Ltd. Thimphu at his lowest evaluated bid. The contract was signed vide agreement No.RO/DOR/(Trongsa)/14-15/PL-36/930 dated 23/6/15. Estimated cost, contract amount and other important milestones were as indicated below:

i.	Quoted amount	: Nu. 101,429,168.47
ii.	Revised Quoted Amount	: Nu. 94,860,888.47
iii.	Actual Exp.	: Nu.55,497,042.00 (30 th June 2017)
iv.	Duration of contract	: 30 months
v.	Start date	: 18 th June 2015
vi.	Due date of completion	: 17 th December, 2017
vii.	Time Extension	: 4 months
viii.	Date of completion (revised)	: 18 th April 2018
ix.	Additional work	: 15,028,000.00
x.	Work status	: On-going

As per revised design and drawing issued by the MoWHS, following technical specifications were required to be abided by the contractor and the site engineer for the construction of NEWH:

- The maximum Formation road width of 10.50 meter (m) comprising 1m width shoulder on the valley side, 1m width on hill side for the purpose of debris collection and 1m width L-drain; and
- Carriageway width of 7.50m.

In term of the contract documents, the build-up/quoted rates in lump sum for formation cutting were to achieve overall road width of 10.50m.

Detailed verification of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction sites revealed over payments and other irregularities as discussed below:

6.1 Non-revision of contract duration after reducing the scope of work and irregularity in revision of contract amount (4.4.69)

The contract price was found revised to Nu. 94,860,888.47 from the quoted amount of Nu. 101,429,168.47 due to reduction in the scope of work by 800m from the initially allotted road length of 5000m on the basis of the proposal for carrying out tunneling work at Thomangdrak. The revision of the contract price was made in line with the decisions of the MLTC held on 27/5/15 on the widening of just 2m width along the 800m stretch as evident from the letter of RO, Trongsa No. RO/DoR/Trongsa/CE-01)/14-15/810 dated 25/5/15.

Initial quoted amount and computation of revised quoted amount are as shown in table 6.1 below:

Item	Initial estimates & Amount			Revised estimates & amount		
	Qty (meter)	Quoted rate (Nu.)	Amount (Nu.)	Qty (m)	Quoted rate (Nu.)	Amount (Nu.)
FC works	5,000.00	10,000.00	50,000,000.00	4,200.00	10,000.00	42,000,000.00
FC works				800.00	3,766.48	3,013,184.00
Pavement works	5,000.00		37,464,925.00			35,883,461.00
Permanent works & others etc			13,964,243.47			13,964,243.47
			101,429,168.47			94,860,888.47

However, as evident from letter No. DoR/CD/7/2017-18/4405 dated 21.9.2017, the decision to widen 2m width along the 800 m stretch was found dropped based on instruction of the Hon'ble Minister, MoWHS conveyed under letter No.MoWHS/DoR/4/14-15/464 dated 7/5/2015 and the report submitted by RO, Trongsa wherein it stated that ***“contractor had done some critical widening for the intended purpose where transportation of heavy electromechanical equipment of MHPA is now completed and proposed to do away further rock cutting between intake and outlet section of the proposed tunnel locations etc”***.

Thus, it was apparent from the above facts that the initial scope of works was found curtailed by Nu. 9,581,464.00 (9.45%) including 800m widening works valuing Nu.3,013,184.00 from the estimated cost of Nu.101,429,168.47, reflecting the revised contract cost of Nu. 91,847,704.47. While the scope of works was reduced by 9.45% of the initial quoted price, the construction duration of 30 months fixed based of the initial scope of works was found not adjusted proportionately to the extent of reduction in the scope of work which works out to 2.83 months. Thus, the contractor benefitted due to non-adjustment of contract durations for the reduced scope of works which was on the difficult areas where maximum time were required for the execution of formation cutting works.

The RO, Trongsa and MoWHS should comment on the circumstances leading to non-adjustment of the contract duration to the extent of reduction in the scope of works. The RO in consultation with the Ministry should proportionally reduce the contract period.

Auditee's Response:

Although the scope of widening works had been reduced but contract duration had not been revised due to the fact that the contractor was instructed to carry out some critical widening works several times for the intended purpose of transportation of heavy electro-mechanical equipment of MHPA repeatedly. The contractor had also carried out 150 mtr of 2 mtr extension on this same stretch. The payment for critical widening had not been made to the contractor.

In view of the above justifications, the para may please be dropped.

RAA's Further Comments & Recommendations:

While taking note of the response, it is to reiterate that the Hon'ble Minister vide letter No.MoWHS/DoR/4/14-15/464 dated 7/5/2015, had clearly instructed, just one day after the bid opening of 6th May 2015 to exclude 1.5km rocky stretch road from 5km road stretch included in package from awarding to explore tunneling of a short span of the stretch. As observed from the remarks on the face of the letter that the Director, DOR had discussed the issue with the CE, RO Trongsa on 11th May 2015. Further it was evident from the Minutes of the MLTC Meeting held on 5th September 2015 that the decision to widen 2m for a stretch of about 1.2km taken on 25th May 2015 was also withdrawn. Thus, the widening works for the entire stretch of 1.2km were withdrawn. However, the RO and the MLTC had failed to adjust the contract duration for the reduced scope of rock excavation works.

In terms of the departmental estimates, rock excavation quantity was 328,145.763 cum with soil excavation of just 28,968.65cum. Further, initial work plan submitted by the contractor indicated allotment of 300 working days (equivalent to 10 months) from 27th June 2015 to 19th August 2016 for formation cutting of 5km stretch roads.

Since major portion of rock excavation works were withdrawn, which would have huge impact on the contract duration, the non-adjustment of contract duration was not justified.

The Ministry should investigate circumstances leading to non-adjustment of contract duration despite the facts that major portion of rock excavation works were withdrawn within the bid opening day and prior to awarding of contract. Besides, the Ministry should proportionately work out the contract duration for FC work (widening) left out by the contractor and completion date revised accordingly. In addition, the Ministry should impose liquidated damages for the period of delays as per the revised completion deadline.

The DOR and Ministry should review such lapses besides instituting proper internal control system to prevent changes in the scope of works at the verge of opening of tenders as well as to ensure that any changes in scope of works, related changes in estimated quantities, quoted rates, and contract durations are carried out to avoid complications in future.

Who is accountable?

Direct Accountability	: 1. Tougay Choedup, Chief Engineer, EID No. 9107099
Supervisory Accountability	: MLTC Members 1. Dasho Phunstho Wangdi, Ex Secretary, EID No.8403049 2. Tenzin, Director, EID No.9107112 3. Dhak Tshering, Director, DS, EID No.8801090 4. Karma Sonam, director, DHS, EID No.9107112 5. Dechen Yangdon, Offtg Director, DES, EID No.200201092 6. Dorji Gyeltshen P, CE, Construction, EID No.200201089

6.2 Un-justified curtailment of scope and non-adjustment of quoted rates of Nu. 10,000.00 per running meter in align to the reduced scope of work with resultant extension of undue financial benefit to the contractor (5.1.2)

The Ministry and the MLTC had taken decisions to scope down the excavation work at Thomangdrak on the basis of the proposal for carrying out tunneling work after receiving and opening the bids on 6th June 2015 as evident from letter of the Hon'ble Minister, MoWHS conveyed under letter No.MoWHS/DoR/4/14-15/464 dated 7/5/2015.

The estimate prepared based on the quantum of excavation works required to be carried out were as tabulated below:

Type of soil	Qty. estimated	Rates	Amount (Nu.)	Contractor's Quoted Rate per meter Nu.	Contractor's lump sum quotes (Nu.)
All kinds of soils	28,968.654	48.11	1,393,681.97		
All kinds of rocks	328,145.763	312.27	102,470,077.27		
			103,863,759.24		
Transportation	14,484.327	50.00	724,216.36		
Total			104,587,975.62	10,000.00	50 000 000.00

It would be apparent from the quantum of excavation required, that the excavation of rocks represented almost 92% of the total formation cutting works. Thus, it was apparent that the quoted rates of Nu. 10,000.00 per running meter by the contractor was based on excavation of rocky areas, the difficult terrain of 800m excavation requiring maximum input of resources.

In addition, subsequent decision taken during the meeting held on 5th September 2017 by the MLTC, the widening of 2 meters width at Thomnagdrak was also cancelled and the contractor was not required to widen the 800m rocky areas of road. Thus, the exorbitant quoted rate of Nu.10,000.00 per running meter should have been adjusted accordingly.

Further, the decision of the MLTC to cancel widening of 2m width of the 800m road was not justified and indicated undue support to the contractor. It was noted that the contractor had not completed the formation cutting works as on September 2017 despite the fact that 90% of the contract period was over as it was scheduled for completion on or before 17th December 2017. Thus, the contractor had failed to complete the contract work and the RO had to resort to drawing up of a Milestone Commitment Agreement in September 2017 just before three (3) months of the contract deadline.

The RO in consultation with the Ministry should comment on the curtailment of scope as well as non-adjustment of quoted rates in line with curtailment of scope which was a major factor influencing the bid price. Besides, the MLTC and the Ministry should take steps to regulate the quoted rates for formation cutting works having regard to rates of other contract packages.

The Ministry should also comment on the expected date for tunneling works and that the amount deducted from the quoted price of the contractor amounting to Nu. 9,581,464.00 would be sufficient enough to cover the cost of tunneling works. As otherwise, the instruction of the Hon'ble Minister and the decision of the MLTC was not justified on reducing of scope of works already tendered out and accepted by the winning bidder. Any additional cost implication on the tunneling works should be the responsibility of the Hon'ble Minister and the MLTC.

Auditee's Response:

The critical widening by about 2 mtr on about 150 mtr stretch was carried out by the contractor and it has been paid for the work done @ Nu. 3,766.48 per/m only instead of 10,000 per/m. The above rate had been approved by MLTC.

In view of the above justifications, the para may please be dropped.

RAA's Further Comments & Recommendations:

While taking note of the response, it is to reiterate that in terms of the Hon'ble Minister's letter No.MoWHS/DoR/4/14-15/464 dated 7/5/2015, just one day after the bid opening of 6th May 2015 had clearly instructed to exclude 1.5km rocky stretch road from 5km road stretch incorporated in package from awarding to explore tunneling of a short span of the stretch. It was also noted that from the remarks on the face of the letter that the Director, DOR had discussed the issue with the CE, RO Trongsa on 11th May 2015. Further it was evident that from the Minutes of the MLTC Meeting held on 5th September 2015 that the decision to widen 2m for a stretch of about 1.2km taken on 25th May 2015 was also withdrawn. Thus, the

widening works for the entire stretch of 1.2km were withdrawn. However, the RO and the MLTC had failed to negotiate and regulate the quoted price of Nu. 10,000.00 per running meter for formation works for the reduction of the major portion of rock excavation works. In terms of the departmental estimates, rock excavations were estimated 328,145.763 cum and soil excavation of just 28,968.65cum.

In consideration to the fact that major portion of rock excavation work that impacted the departmental estimated cost by Nu. 102.470 million against overall estimated cost of Nu.146.426 million for the contract package were withdrawn, the payment for formation works at the quoted rates was not justified and reasonable. It is to reiterate that quoted rates for the formation cutting works for other contract packages were much lower than the quoted rate of the contract package as detailed below:

Table 6.2(1)- Detailing quoted rates of other contract packages for rock excavation works						
TRONGSA	All kinds of soil Qty. in cum	Rate used for soil estimation	All kinds of rock Qty. in cum	Rate used for rock estimation	% of rock Qty to overall Qty of FC works	Quoted Rates by contractor in Running meter including transportation of spoil material (Nu.)
M/s Rigsar Construction Pvt Ltd (P1)	200,782.983	48.11	107,311.656	312.27	35	1,500.00
M/s Gaseb Construction Pvt Ltd (P2)	122,301.099	48.11	193,157.968	312.27	61	1,495.00
M/s Rinson Construction Pvt Ltd (P3)	86,497.775	48.11	155,421.493	312.27	64	3,750.00
M/s Gyalcon Construction Pvt Ltd (P4)	28,968.654	48.11	328,145.763	312.27	92	10,000.00
M/s Druk Lhayul Construction Pvt Ltd (P5)	76,132.388	48.11	183,039.150	312.27	71	3,000.00
M/s. Raven Builders & Company (P) LTD (P6)	103,284.360	48.11	133,525.577	312.27	56	400.00
P7 departmental	102,586.082	48.11	39,387.764	312.27	28	3,469.10
M/s Dungkar Construction Pvt Ltd (8)	103,218.493	48.11	58,396.883	312.27	36	2,000.00
M/s Welfare Construction Pvt Ltd (P9)	158,016.694	48.11	50,351.478	312.27	24	900.00
M/s Rinson Construction Pvt Ltd (9)	119,475.366	48.11	179,984.326	312.27	60	3,000.00
M/s Rinson Construction Pvt Ltd (P11)	135,286.080	48.11	9,395.446	312.27	7	1,500.00
P12 departmental	45,733.715	68.00	10,307.222	312.27	18	1743.73
M/s Rinson Construction (P13)	69,798.881	48.11	7,289.915	312.27	10	1,000.00
M/s Lamnekha Construction Pvt Ltd (P14)	21,289.746	65.29	6,386.924		23	300.00

It would be apparent from the table that the quoted rates for FC works were as low as Nu.300.00 per running meter up to Nu.3,750.00 per running meter.

The Ministry should investigate circumstances leading to non-adjustment of time despite the facts that major component of rock excavation works were withdrawn just after the bid opening day and prior to awarding of contracts. Besides, as discussed during the Audit Exit Meeting, the DOR in consultation with Ministry should proportionately work out the rates for the FC works in keeping in view of the extent of Rock excavation works withdrawn as well as considering the quoted rates of other contract package and regulate the payment accordingly. The DOR and the Ministry should furnish in detail the rate approved and

regulated for the FC works besides furnishing the detailed accountal of recovered amounts in the Books of Account for record.

In addition, the DOR and Ministry should review such lapses besides instituting proper internal control system to prevent changes in the scope of works at the verge of opening of tenders as well as to ensure that any changes in the scope of works, related changes in estimated quantities, quoted rates and contract durations are carried out to avoid complications in future.

Who is accountable?

Direct Accountability	: 1. Tougay Choedup, Chief Engineer, EID No. 9107099
Supervisory Accountability	: MLTC Members 1. Dasho Phunstho Wangdi, Ex Secretary, EID No.8403049 1. Tenzin, Director, EID No.9107112 2. Dhak Tshering, Director, DS, EID No.8801090 3. Karma Sonam, director, DHS, EID No.9107112 4. Dechen Yangdon, Offtg Director, DES, EID No.200201092 5. Dorji Gyeltshen P, CE, Construction, EID No.200201089

6.3 Unjustified award of additional works valuing Nu. 15,028,000.00 exacerbating further delays in the completion of contract works vis-à-vis violation of Procurement norms (4.4.51)

In terms of contract agreement, completion deadline for the contract was 17th December 2017. The RO experiencing abnormal delays and foreseeing contractor's failure to complete the contract works within the completion deadline, had drawn up a Milestone Commitment Agreement under letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just three months before the completion deadline scheduled on 17th December 2017.

It was noted that milestones drawn up for each component of activities were based on the time extension of 4 months with completion deadline of 18th April 2018 as in table 6.3 below:

Item of work	Qty	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Remarks
FC	720m	360m	360m							
GSB	5km			1	2	2				
WMM	5km					1.67	1.67	1.67		
Drain	5km					1	1.5	1.5	1	
DBM	5km							2.5	2.5	2.5 (15 days in Feb & 15 days in march)
AC	5km								5	

However, it was apparent from the Minutes of the Ministerial Level Tender Committee (MLTC) Meeting of 5th September 2017, following structures were approved as additional works along with time extension of 4 months from 18/12/2017 to 18/4/2018:

Table : 6.3(1)- Detailing award of additional works			
Sl.No.	Description of items	Estimated Amount (Nu.)	Remarks
1	RRM walls	4,492,383.00	Approved 4 months as time extensions
2	RCC Culvert	989,423.00	
3	Boulder wall	668,925.00	
4	Clearing of Hard rock	1,266,250.00	
5	Gabion Wall	5,610,966.00	
6	Road maintenance	2,000,000.00	
	Total	15,027,947.00	

In this connection, following observations are offered:

- It is apparent from the milestones drawn up and committed by the contractor that pavement works including drain works were found not started at all and even 720meters of FC works had not been completed although 90% of the contract duration was already over.
- The decision taken by MLTC during Meeting held on 5/9/2017 to award substantial amounts of the additional works of Nu. 15,028,000.00 despite poor work progress and that too just before 3 months of the expiry of the completion deadline and drawing up of Milestone Commitment Agreement indicated flawed decision and also an attempt to cover up the delays and avoid imposition of liquidated damages.
- It was apparent that as on the date of audit 31/12/2017, the contractor had failed to achieve the 1st two months milestones and also an indication of inability to complete the works within the extended completion deadline.
- Further, in terms of the Procurement Rules and Regulations, the value of the additional works shall not exceed twenty percent (20%) of the original contract amount, or the maximum threshold value for the use of Limited Tender whichever is lowest. For award of additional works exceeding 20% of the original contract price, and subject to availability of budget within the same program, special approval must be sought from competent authority. Since the additional works value exceeded the maximum Limited Tender threshold value of Nu. 1million, the award was thus in violation of the PRR.

The RO and the Ministry should have sought appropriate clarification on the issue from the Ministry of Finance prior to awarding of additional work.

The RO and MLTC should comment on the award of additional works despite poor work progress and known fact that the contractor would not complete the contract work within the completion deadline. Besides, the RO and MLTC should be held accountable for flawed decisions and award of additional works in violation of the PRR.

Auditee's Response:

The additional works had been proposed with the following reasons:

- *Unusual Monsoon had washed out road formation*
- *Huge slope failure due to unstable terrain*
- *Breast walls & Retaining walls not included in BoQ*

- Destruction by rock / Formation cutting
- To protect private property
- Missed item in BoQ

RAA’s Further Comments & Recommendations:

While taking note of the response, it is to reiterate that the works progress were far behind the initial contract completion deadline of 17th December 2017 and Milestone Commitment Agreement drawn under letter No DoR/RO/Trongsa/2017-18/P-3/237 dated 19/9/17 just three months before the completion deadline of 17th December 2017.

The revision of completion deadline based on proposed additional works by the MLTC at the verge of the expiry of the contract period was unjustified and not in the interest of the government. The decision to award the additional works has not only further exacerbated the work progress of the firm but also added to time and cost overruns of the contract and the project. It was also noted that additional work order was found not issued as of 2nd December 2017 indicating that the decision of the MLTC to award the additional works were driven by intention to protect the firm from liability of liquidated damages.

Further the direct award of additional works valuing Nu.15.028 million was also in violation of Section 4.2.5.2(f) of the PRR wherein it stipulates that direct contracting to be restricted to lower of the 20% of the original contract amount and the maximum threshold value of Nu. 1.00million allowed under limited Tender.

However as discussed during the audit exit meeting, the Ministry should review the award of additional works despite failure of the contractor to progress as per work plans which had exacerbated the work progress further. Besides, the Ministry should also impose liquidated damages for the delays in the completion of original contract works as additional works were different components that could be executed independently.

The liquidated damages levied and recovered should be deposited into Audit Recoveries Account within three months from the date of issue of the report beyond which 24% penalty per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual. Besides, the DOR and the Ministry should also furnish the copy of work order along with actual start date and completion date of the additional works.

In addition, the Ministry should hold the MLTC accountable for the unjustified award of additional works despite the fact the firm had totally failed to progress the works within the time frame stipulated in the contract.

Who is accountable?

Direct Accountability	: 1. Tougay Choedup, Chief Engineer, EID No. 9107099
Supervisory Accountability	: MLTC Members 1. Dasho Phunstho Wangdi, Ex Secretary, EID No.8403049 2. Tenzin, Director,EID No.9107112 3. Dhak Tshering, Director,DS, EID No.8801090 4. Karma Sonam, director, DHS, EID No.9107112

	5. Dechen Yangdon, Offtg Director, DES, EID No.200201092
	6. Dorji Gyeltshen P, CE, Construction, EID No.200201089

7 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from View Point- BjeeZam (Package 5) by M/s Druk Lhayul Construction Pvt. Ltd.

The contract for formation cutting and pavement works from Trongsa View point–Bjee Zam (Chainages 32.00km to 37.70km) covering 5.7 kilometer was awarded to M/s. Druk Lhayul Construction Pvt. Ltd., Paro being the lowest evaluated bidder. The contract was signed vide agreement No.RO/DOR/(Trongsa)/14-15/PL-36/887 dated 12/6/15. Estimated cost, contract amount and other important details of contract were as indicated below:

i. Quoted amount	:	Nu. 77,150,269.45
ii. Actual Exp.	:	Nu.17,418,556.15 (30 th June 2017)
iii. Duration of contract	:	30 months
iv. Start date	:	12 th June 2015
v. Due date of completion	:	12 th December 2017
vi. Time Extension	:	4 months
vii. Date of completion (revised)	:	12 th April 2018
viii. Work status	:	On-going
ix. Name of site engineer	:	Tashi Tobgay

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

7.1 Payment made for work not executed at site - Nu. 10,280.00 (5.1.14)

The contractor had claimed Nu. 5,940.00 for providing and laying PCC 1:3:6 (Coping) (*Refer MB13 page no 029*) for RRM walls. However, during physical verification of the structures, the coping work was found not executed as claimed as evident from the photographs given below:



Fig 7.1- RRM without PCC coping

Similarly, the PCC 1:2:4 for RCC culvert amounting to Nu. 4,340.00 (1.24 Cum @ Nu. 3500) (*Refer MB 13 page no 21*) was found not provided as apparent from the pictorial evidences depicted under:



Fig: 7.1(1)- Abutment walls without coping

Further, the RCC Culvert (*refer MB 13 Page no 020*) constructed at the total cost of Nu. 57,550.00. was found damaged and cracks had developed indicating poor supervision and monitoring, improper laying of stones, and use of weak cement mortar as evident from the photograph given below:



Fig: 7.1(2)- Damaged Wall

The RO, Trongsa besides recovering Nu. 10,280.00 should direct the contractor to rectify the damaged RRM wall under intimation to RAA.

Auditee's Response:

The Regional Office has acknowledges the observations issued by Royal Audit Authority and we have great concerns and high regards for the observation. We would like to furnish the following facts and evidences as comprehensive explanations for consideration by Royal Audit Authority.

Since the work is ongoing, we have already instructed the contractor to carry out the Copping works that has been paid without execution and we will intimate to the RAA after the rectification works are completed with the photographic evidence. We also assure that it will not be repeated in the future.

In addition, the Damaged RCC culvert (referred by RAA in MB no. 13 page 20) has been rectified by the contractor and photographic evidence is attached.



Para: 7.1- After Rectification

In view of above justifications, RAA is requested to drop the above Para.

RAA's Further Comments & Recommendations:

The rectification of defective RRM works is noted. However, it is to reiterate that rectification of defective and substandard works at the instance of audit verification of sites is an indication of laxity on the part of the RO and Site engineer towards works and procedures. It was apparent that the contractor would have been paid for defective and sub-standard works if not observed by RAA.

However, as agreed during the exit meeting, the DoR and RO should either recover the cost of coping works not executed to the extent of Nu.10,280.00 or rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record. The DoR and Ministry should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The control mechanism proposed to be put in place intimated to RAA for record and follow-up during future audit.

Who is accountable?

Direct Accountability	: 1. Tashi Tobjay, AE, EID No.200608008 2. M/s Druk lhayul Construction Pvt Ltd. CDB No.3664
Supervisory Accountability	: Tashi Tobjay, AE, EID No.200608008

7.2 Payment made for work not executed at site - Nu. 4,950.00 (5.1.14)

The drawing for RCC culvert does not show PCC 1:3:6 coping of 100 mm thick on 400mm thick top wall as shown below:

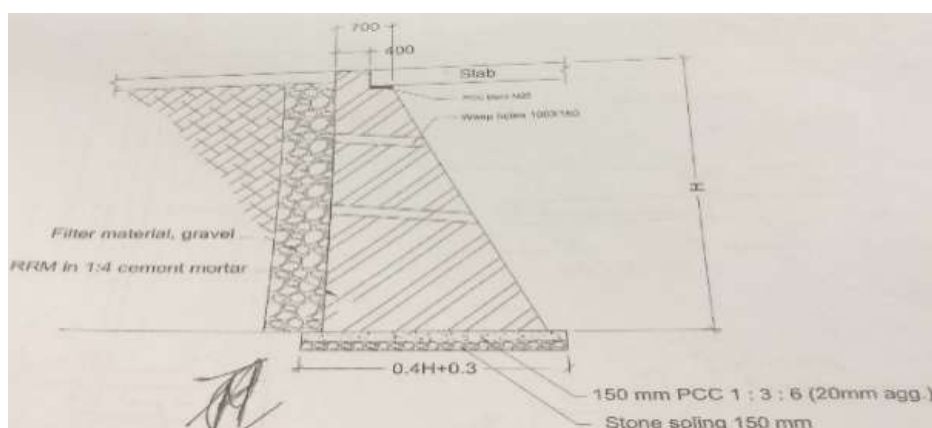


Fig: 7.2- Approved drawing for culvert

However, the contractor was paid Nu. 4,950.00 (1.65cum @ Nu. 3000) (*Refer MB 13page no 18*) for providing 100mm thick coping on top wall. During the physical verification of the structures, the coping work was found not provided as evident from the photographs depicted below:



Fig: 7.2(1)- RC wall without PCC 1:3:6

Payment for unexecuted works indicates settlement of claims without proper verification of work done at site.

The RO, Trongsa besides recovering the payment for the unexecuted works should hold the site engineer accountable for certifying the payment for works not executed at site.

Auditee's Response:

Since the copping is not shown in the drawing, the same amount of Nu. 4,950.00 will be recovered from the contractor and deposited in the ARA. We also assure that such mistakes will not be repeated in the future. In view of above justifications, RAA is requested to drop the above Para.

RAA's Further Comments & Recommendations:

The RAA has taken note of the response that recovery of excess payment will be made from the contractor. The amount recovered and accounted for in the books of accounts should be furnished to RAA for review and record.

Further as agreed in the exit meeting, DOR should institute appropriate supervision and monitoring controls to prevent such payments in future.

Who is accountable?

Direct Accountability	: 1.Tashi Tobjay, AE, EID No.200608008 2.M/s Druk lhayul Construction Pvt Ltd. CDB No.3664
Supervisory Accountability	: Tashi Tobjay, AE, EID No.200608008

7.3 Proving and Laying RCC (M25) deck slab not as per specification (4.4.69)

The specification for providing RCC deck slab reads as “P&L RCC (M25 grade) works in suspended floor, roofs having slope up to 15%, landings, balconies, shelves and chajjas up to floor five level excluding the cost of centering, shuttering and reinforcement”. However, during the joint physical verification of the executed works as well as on enquiry with the site engineer, it was found that RCC deck slab was provided with M20 grade of 260mm thick against the technical specification of 300mm recorded in MB (refer MB 13 page No. 024). The pictorial evidence not achieving 300mm thickness deck slab is as shown below:



Fig: 7.3- 260mm thick deck slab

Further, the payment was found made @ Nu. 5,000 per cum quoted for **Proving and Laying RCC (M25) deck slab** instead of regulating the rate for M20 executed at site.

The RO, Trongsa should direct the contractor to redo the work as per specification and concerned site engineer held accountable for accepting the substandard works.

Auditee’s Response:

The specification for providing RCC deck slab reads, “P&L RCC (M25 grade) works in suspended floor, roofs having slope up to 15%, landings, balconies, shelves and chajjas up to floor five level excluding the cost of centering, shuttering and reinforcement”.

Though the RCC slab casting was carried out as per the specifications (M25), during the entry of item nomenclature in measurement book it was mistakenly entered as M20 instead of M25.

The Contractor was asked to redo the slab as thickness of the slab was not achieved and same will be intimated after the rectification with the pictorial evidence. In view of above justifications, RAA is requested to drop the above Para.

RAA’s Further Comments & Recommendations:

The non-execution of slab as per specification indicated lack of proper supervision and monitoring of work by the site engineer. It is to reiterate that rectification of defective and substandard works at the instant of audit verification of sites is an indication of laxity on the part of the RO and Site engineer toward works and procedures. It was apparent that the contractor would have been paid for sub-standard works if not observed by RAA.

However, as agreed during the exit meeting, the DoR and RO should either recover the cost difference between M2 and M20 or rectify the substandard works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record.

The DoR and Ministry should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The control mechanism proposed to be put in place intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Tashi Tobjay, AE, EID No.200608008 2.M/s Druk lhayul Construction Pvt Ltd. CDB No.3664
Supervisory Accountability	: Tashi Tobjay, AE, EID No.200608008

7.4 Non-execution of Formation Cutting work for 181 meters (4.4.37)

In terms of contract documents, the build-up/quoted rates in lump sum for formation cutting were to achieve overall road width of 10.50 m for ensuring standard carriageway of 7.50m, including 1.5m shoulder on valley side and 0.50 m behind L-drain towards hill side and 1m between L-drain and pavement. The audit team along with the site engineer and contractor’s engineer visited the site for physical measurements and observed that the contractor had not done formation cutting in following chainages involving aggregate length of 181m:

Sl/No.	Chainages	Meters
1	32000-32053	53
2	34316-34361	45
3	37627-37710	83
	Total	181

The reason for non-execution of FC works for the above chainages was found not documented. It also indicated inadequate monitoring and supervision by the site engineer over the execution of works.

The Regional Office should comment on the non-execution of FC besides holding the site engineer/contractor accountable for non-execution of works as per drawing and technical specification. In addition, the Regional office should recover the cost for FC works not executed and the amount deposited into the audit recoveries account.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority and we have great concerns and high regards for the observation. We would like to furnish the following facts and evidences as comprehensive explanations for consideration by Royal Audit Authority.

With persistent complaint lodged by the Raven Crown Resort located just above the viewpoint cafeteria on its likely destruction to his property due to blasting operation in the vicinity, the Chief Engineer RO, Trongsa requested TMT on their way towards Thimphu from Eastern Tour and the team proposed to avoid the cliff cutting and to construct the Permanent work below the road.



Subsequently on 14th November 2016, Hon'ble Dasho Secretary, Director & Chief Engineer, Design Division also proposed to construct the permanent works at Bjeezam and View point to avoid the high cliff cutting and to protect the RCC composite bridge, RBP infrastructures

and private infrastructures in the vicinity. Again on 18th April 2017, Geotechnical expert team studied the site visually and recommended to avoid the hill side cutting and to construct Retaining wall.

During the 2nd day of 12th DoR quarterly meeting held in Serbithang, Thimphu, from 27th to 29th April 2017, Hon'ble Dasho Secretary raised the concern for not starting above proposed work for which the RO prepared the cost estimate and incorporated in the additional work approved by the MLTC.



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ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF WORKS & HUMAN SETTLEMENT
DEPARTMENT OF ROADS
Sub-Division Office: Trongsa

"Construction Industry: Solutions through innovation and improved technology"

Ref. No. DoR/SDO(TRONGSA)/2017-2018/W-19/ 006

Date 7th July, 2017.

NOTE SHEET

Subject: Construction of Gabion Retaining wall over Toe PCC Plum Concrete wall at 32.00 km near Viewpoint & C/o RRM retaining wall near Bjeezam Bridge point on Chuserbu - Trongsa PNH

Project name: Upgradation works of Northern East - West Highway

Name of Office: Department of Roads, Sub-Division Office: Trongsa

Background:

With persistent complaint lodged by the Proprietor of Raven Crown Resort located just above Viewpoint Cafeteria, to both the Contractor & the Department, on its likely destruction to his properties due to ongoing widening works with blasting activities near his vicinity; the Chief Engineer requested the **Technical Monitoring Team (TMT) led by Mr. Sonam Tobgay (Principal Engineer)** who were actually on their way to Thimphu after touring to eastern regions, to share their views for proposal.

After having studied about the site situations and on the other hand requiring achieving of required road width, his team recommended the Regional Office to propose for construction of Gabion toe wall only of 3 to 5m height at some distance from the road point below the highway and avoid hillside cutting. Since the Regional Office could not start the work due to free cutting of embankment of the structure.

Similarly, on 14.11.2016 while **Dasho Secretary, Director & Chief Engineer from Design Division** who actually came to review progress achievements in different packages under the region, also made site visit of the identified locations for to review the alternatives structures proposed by the Regional Office i.e. C/o RRM retaining wall just before reaching Bjeezam bridge point in order to avoid or minimize volume of high cliff cut and also C/o Permanent structure near Viewpoint during Their way back to Thimphu. The formation cutting works needs to be avoid, mainly to safeguard the Bjeezam RCC composite bridge and Royal Bhutan Police check post infrastructures located just beside the bridge. The Team reviewed the structure proposed in line with the prevailing site conditions and thus, instructed to take-up with the execution of works as proposed and

Telephone # 03 - 521273



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with submit estimation costs to the DoR head Office for ascending of approval as mentioned within 12th committee of this year to be held on 18.4.2017 that the Geotechnical expert team led by **Mr. Tshewang Dorji (Chief Engineer of Bridge Division)** after having studied the site conditions through visually made up with the recommendation to propose above cited composite structures in order to achieve the road width without cutting the hillside cutting. However, the works was still not started due to cost of the works proposed had been realized coming abnormally too high and was not for reviewing.

The concerned for not starting the above works by the Regional Office was also raised by Hon'ble Secretary of MoWHS during the 2nd Day of 12th DoR Quarterly Meeting held in Thimphu Serbithang from 27.4.2017 to 29.4.2017. Hence, the Sub-Division has come up with the estimation cost prepared appointing contractor's quoted rates.

SUBMISSION:

Since the contractor is very soon going to start with the execution of works; the Sub-Division would like to hereby request the Regional Office to kindly expedite the reviewing processes and arrange to issue us intended instructions so as to enable this Office to inform the contractor on the same accordingly, without further delay please.

Enclosed: Drawings & estimates

Proposal submitted:

Site Engineer
Project Section
Sub-Division: Trongsa

Project Manager
Sub-Division: Trongsa
DoR, SDO Trongsa

Telephone # 03 - 521273

The payment for the FC work not carried out in these areas has not been made separately.

In view of above justifications, we would like to request the Royal Audit Authority to kindly review above detailed explanations and consider for dropping the above Para.



Para: 7.4-At Starting point Ch. 32000 m – 32053 m showing FC avoided with construction of R/Wall



Para : 7.4-At end point Ch. 37,627 - 37,710 showing FC avoided with construction of R/Wall



Para: 7.4(2)- At Ch. 34316-34361 FC work under progress avoided with construction of R/Wall



RAA's Further Comments & Recommendations:

While taking note of the response on the achievement of road width with constructions of RRM walls, it is apparent that there were deficiencies in the site feasibility studies for formation cutting works besides improper planning as the RO had failed to consider in the preparation of design and estimates/BOQs the limitations for formation works expected in locations where there were RCC composite bridge, RBP infrastructures and private infrastructures in the vicinity. Further, the decisions of the Technical monitoring team, the Secretary as well as the Geotechnical expert team to go for RRM and gabion walls constructions indicated flaws as even the Geotechnical expert team had not carried out in-depth studies on the actual impact of the formation works on the existing structures but recommendations were found based on visual survey at site.

Furthermore, in the light of the following facts, the decisions and actions to go for RRM walls construction indicated existence of undue favour to the contractor in terms of time and cost and delayed decisions of the relevant authorities:

- The Proprietor, Raven Crown Resort located just above the viewpoint cafeteria had written to the Director, DoR vide letter No. Nil dated 4th November 2015 informing*

amongst others on the damages to the structures and request to repair the damages and provide retaining walls throughout the affected areas to avoid landslides during monsoon period and to control the intensity of the blasting activities in order to avoid damages to resort.

- *The Chief Engineer, RO, Trongsa requested TMT on their way towards Thimphu from Eastern Tour and the team proposed to avoid the cliff cutting and to construct the Permanent work below the road.*
- *On 14th November 2016, after almost a year, the Secretary, Director & Chief Engineer, Design Division also proposed to construct the permanent works at Bjezam and View point to avoid the high cliff cutting and to protect the RCC composite bridge, RBP infrastructures and private infrastructures in the vicinity.*
- *Again on 18th April 2017, after Five months from the visit of the Secretary and team, Geotechnical expert team had studied the site visually and recommended to avoid the hill side cutting and to construct Retaining wall.*
- *Subsequently, during the 2nd day of 12th DoR quarterly meeting held in Serbithang, Thimphu, from 27th to 29th April 2017, the Secretary raised the concern for not starting above proposed work for which the RO prepared the cost estimate and incorporated in the additional work approved by the MLTC.*
- *The Project Manager and Site Engineer, SDO, Trongsa vide Note sheet No. DOR/SDO(Trongsa)/2017-2018/W-19/006 dated 7th July 2017 had informed the RO on the prompt decisions on cost estimates prepared by SDO.*
- *It is evident from the above Note Sheet, as well as time extension approval accorded by the MLTC that the cost estimates of the additional works were prepared in 2017.*
- *On review of the time extensions approved by MLTC under letter No. DOR/CD/7/2017-18/4405 dated 21/09/2017 indicated that the works were yet to be awarded.*

Considering the above facts and events, the Ministry should investigate the circumstances leading to delayed decisions on the construction of RRM walls instead of formation cutting works as well as non-conduct of in-depth feasibility studies on the actual impact of the formation works to the existing structures prior to preparation of estimates and tendering .

Further, the Ministry should review the payment modalities on the construction of RRM walls to achieve the formation width and the payments for areas for which formation cutting works were not carried out. The final payments regulated by the RO on the construction of RRM walls and formation works not carried out should be furnished to RAA for verification and record.

In addition, the Ministry should institute a technical team to review the technical soundness of the RRM structures built to achieve formation width instead of achieving through formation cutting works and ascertain the remedial actions that may be required to improve the road conditions in such stretches. It may also be necessary to review and evaluate the cost implications of construction of RRM walls in lieu of achievement of requisite design width through formation cutting works and appropriate decisions and action taken on the issue intimated to the RAA.

Who is accountable?

Direct Accountability	: 1.Tashi Tobjay, AE, EID No.200608008 2.M/s Druk lhayul Construction Pvt Ltd. CDB No.3664
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8 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bjeezam- Trongsa (Package 6) by M/s Raven Builders & Company Pvt. Ltd

ITB for the Double Lanning works from Bjeezam-Trongsa covering Chainage 37.7 km -44.4 km , a total of 6.7 km for execution of Base Course, Bituminous works, Walls, L-Drain, Box-Drains, Protection works were invited vide letter No. RO/DOR(TRONGSA)/2014-2-15/PL-15/279 dated 11th October 2014 and published in Kuensel & Bhutan Today Newspapers dated 14th & 16th October 2014 respectively. Likewise, it was announced through BBS for seven (7) days and also uploaded in the Ministry's Web Site. The bidding documents were found made available online for downloading from 30th March 2015.

Subsequent to ITB, following thirteen (13) bidders had submitted their bids:

1. M/s Empire Construction Pvt. Ltd., Thimphu
2. M/s Chapcha Engineering Pvt. Ltd., Thimphu
3. M/s. Bhutan Engineering Company Pvt. Ltd., Thimphu
4. M/s. Welfare construction Company Pvt. Ltd., Thimphu
5. M/s. Tshering Tobgyel Construction, Wangdue
6. M/s. Dhodter Rigsel Construction, Thimphu
7. M/s. Rinson Construction Co. Pvt. Ltd., Thimphu
8. M/s. Tacho Construction Pvt. Ltd., Phuentsholing
9. M/s. Druk Lhayul Construction Pvt. Ltd., Paro
10. M/s. Tshering Samdrup Construction, Zhemgang
11. M/s. Raven Builders & Company (P) LTD, Gelephu
12. M/s. Gaseb Construction Pvt. Ltd., Phuentsholing
13. M/s. Gongphel Construction Pvt. Ltd., Samdrup Jongkhar

All thirteen (13) bids were received on or before **10:00 AM (Local time) on 8th May 2015** and the bids were opened at 10:30AM in the Conference Hall of the Regional Office, DoR, Trongsa in the presence of bidders and their representatives.

In terms of Clause 15.1 of the ITB, ***“the Bid shall be valid for (90) days from the deadline for submission of Bids stipulated in ITB Clause 201.1”***. Thus, in line with the clause, the bids were to remain valid until 05/08/2015. However, during the evaluation, the Committee noted that M/s. Dhodter Rigsel Construction bearing CDB No.5116 had bid validity till 08/07/2015 resulting in non-fulfillment of requirement and was considered as non-responsive bid.

From the Evaluation report of the Committee, it was noted that the eight responsive bidders had quoted substantially low bids ranging from minus 25.44% to minus 43.0% as compared to the estimated cost of Nu. 138,898,344.12 as in table 8 below:

Sl. No.	Name of Firms	CDB No.	Corrected Bid Price (Nu.)	Difference (Nu.)	% Deviations
1	M/s. Empire Construction Pvt. Ltd., Thimphu	2206	80,629,925.35	(-) 58,268,418.77	(-) 41.95
2	M/s. Chapcha Engineering ,	2241	99,088,801.00	(-) 39,809,543.12	(-) 28.66

	Thimphu				
3	M/s. Tshering Tobgyel Construction, Thimphu	3267	103,562,982.45	(-) 35,335,361.67	(-) 25.44
4	M/s. Rinson Construction, Thimphu	1965	88,354,065.69	(-) 50,544,278.43	(-) 36.39
5	M/s. Druk Lhayul Construction, Paro	1664	80,265,198.30	(-) 58,633,145.82	(-) 42.21
6	M/s. Tshering Samdrup Construction, Zhemgang	1146	97,730,065.05	(-) 41,168,279.07	(-) 29.64
7	M/s. Raven Builders, Gelephu	2356	79,151,909.00	(-) 59,746,435.12	(-) 43.01
8	M/s. Gongphel Construction, Samdrup Jongkhar	2119	94,016,393.76	(-) 44,881,950.36	(-) 32.31

In terms of clause 29 of ITB and sub-clause 29.30, in order to qualify for award of the contract, the substantially responsive bids were evaluated in e-tools against the minimum qualifying criteria and scores assigned against each parameter as detailed in table 8(1) below:

Parameter	Score Assigned
Similar work experience	10
Access to equipment	25
Manpower availability	25
Previous performance	10
Bid capacity	10
Credit line	20

Subsequent to assessment of e-tools, M/s. Raven Builders Pvt. Ltd., Gelephu with quoted amount of Nu. 79,151,909.00, who had quoted 43.01% below the departmental estimates was declared as lowest evaluated bidder (*the highest score*) amongst twelve bidders.

Accordingly, the Departmental Level Tender Committee met on 25th May 2015 and accepted the bid as submitted by the Evaluation Committee and awarded the works to M/s. Raven Builders Pvt. Ltd., Gelephu.

Following the issuance of the acceptance letter vide ref: RO/DOR/Trongsa/CE-01/2014-2015/815 dated 29th May 2015, the Contract Agreement between the Chief Engineer, Regional Office, DoR, MoWHS, Trongsa and M/s. Raven Builders Pvt. Ltd., Gelephu was signed vide Ref. no. RO/DOR/(Trongsa)/2014-2015/PL-36/869 dated 04.06.2015 for execution of formation cutting and pavement works for 6.7 km road stretch at their quoted price of Nu. 79,151,909.00.

In terms of the agreement, the entire work was scheduled for completion within thirty (30) months from the handing taking of site made vide no. PO/DoR(Trongsa)/2014-2015/W-15/210 of 10th June 2015 and completion deadline was due on or before 21.11.2017. The completion deadline was later revised to 30th April 2018 following the time extension of 3.7 months for additional works and increase of 1 meter carriage way width to 7.5m from 6.5 meter.

From the review of contract documents, drawings, estimates, bill of quantities, contractor's RA bills and physical verification of actual constructions at work site, following irregularities and lapses were observed:

8.1 Possible illegal Sub-letting of road formation cutting and other works by M/s. Raven Pvt. Ltd. (Package-VI from Bjeezam-Trongsa) to T&C Pvt. Ltd as evident from the daily works done at site

As per Clause 7.1 of the General Conditions of Contract (GCC), Section V, *“The Contractor may subcontract with the approval of the Employer provided such provisions exists in contract document, but shall not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor’s obligations”*. *The ceiling for sub contractor’s participation and conditions are: 20% of contract price.*

A joint team comprising officials from Regional office, and the audit team had conducted the physical verification of sites on 14.12.2017. During the physical site verification, the team found that the formation cutting works and road side structures were being executed by M/s. T & C Pvt. Ltd. Besides, all machineries and human sources deployed at sites were owned by M/s. T&C Pvt. Ltd which apparently indicated that the works were sub-let to M/s. T&C Pvt. Ltd. by the M/s. Raven Builders & Pvt. Ltd.

The approval sought and approval accorded by the RO was not made available on record. The exact date as to when it was taken over by M/s. T&C Pvt. Ltd from M/s. Raven Builders & Pvt. Ltd was also not available on record.

Thus, the deployment of human resources and machineries and equipment of M/s. T&C Pvt. Ltd, at sites, clearly indicated that M/s. Raven Builders & Pvt. Ltd had illegally sub-let the contract works to M/s. T&C Pvt. Ltd. and totally abandoned the work site.

In the event of illegal sub-let of contract, it would result in not only fundamental breach of contract by M/s. Raven Builders & Pvt. Ltd but may also create complications in the event of failure to complete works in time and resorting to legal course of action in the settlement of disputes.

The DOR and the Ministry should thoroughly investigate the matter and ascertain the exact status of the execution of the contract works for taking appropriate decisions and actions as per the provisions of the contract agreement. The Ministry should also take action against the site engineer and the RO for the failure to oversee and report on any illegal dealings by the contractor considering the fact that all human resources and machineries were deployed by M/s. T&C Pvt. Ltd, for the contract works.

Auditee’s Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority and we have great concern and high regards for the observation. We would like to furnish the following facts and evidences as comprehensive explanations for the kind consideration by Royal Audit Authority.

On the first instance, we too thought that the work has been sublet to another contractor, for which the project Office has written letter to M/s Raven Builders vide letter no. SDO/DoR(Trongsa)/2015-2016/W-15/406 dated 8th April 2016 (attached) for the clarification. Reply to the above letter has been furnished by M/s Raven Builder vide letter no. RBCPL/CEO/2016-2017/962 dated 14th April 2016 (attached) stating that the machine hiring was done from Mr. Tarchen, Trongsa. The Chief Engineer RO Trongsa asked for

further letter of confirmation vide letter no. DoR/RO/P-6/2017-2018/1039 dated 24th May 2018 (letter attached).

Reply to the above letter has been again furnished by the M/s Raven Builder vide letter no. RBCPL/ADM-05/2018/1321 dated 31st May 2018 (attached) stating that the Mrs. Tshewang Choden was appointed as Project Manager with extra authority to sign transaction bills on behalf of M/s Raven Builder pertaining to the double lanning of NEWH from Bjeezam to Trongsa. In view of above justifications, RAA is requested to review and drop the para.



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Ref. No. SDO/DoR (TRONGSA)/2015-2016/W-15/ 406 Date 8th April, 2016.

To,
 The Proprietor,
 M/s Raven Builders Pvt. limited,
 Gelephu: Bhutan.

Sub: **Request for production of Authentication letter.**

Sir,

This Office is frequently hearing through rumor within many people in and around the town that you work for execution of widening works for double laning from Bjeezam - Trongsa highway which was awarded to your firm through Agreement No. RO/DoR(Trongsa)/2014-2015/PL-36/RO9 dated 10/5/2011 had been sublet wholly to third party and of course, which is a serious questioning for the Department.

In this connection, we would like to request your firm to kindly clarify & intimate us through written letter whether such report is really true or it is just the fallacious rumor.

Your timely action on the suspicion averting is highly awaited please.

Yours faithfully,


 Project Manager

C.C:

1. The Chief Engineer, Department of Roads, Regional Office, Trongsa for kind information.
2. The Project Manager, M/s Raven Builders Pvt. Limited, Camp Trongsa for kind information.
3. The Site Engineer, Department of Roads, Trongsa Section for information and follow-up actions.



RAVEN BUILDERS & COMPANY (P) LTD
HEAD OFFICE: PELRITHANG, GELEPHU.
 POST BOX: 199
 License No: 2007500
 CDD No: 2556
 PPA No: 844.00012
 Values: Economic, Quality, Safety, Health, Environment & Environmentally friendly

RBCPL/CEO/2016-2017/ 962 Dated: 14th April 2016

To,
 The Project Manager,
 Department of Roads,
 Northern East West Highway Project (NEWH)
 Trongsa, Division.

Subject: Letter of Authentication

Dear Sir,

With reference to your letter no. SDO/DoR(TRONGSA)/2015-2016/W-15/406, dated 8th April 2016 with regard to authentication letter to be submitted to this office. This undersigned official, Chief Executive Officer of this company hereby fully submit this letter that the work/project awarded to this firm "Double Laning of Bjeezam - Trongsa(6.70Km)" is fully undertaken by the company till date and it is ridiculous to hear such unpleasant things that the work has been subletted to third party which is untrue so in this matter I, on behalf of the company fully undertake and hereby submit that the work is being undertaken by the company itself. For your kind information, I have subletted the machinery hiring to one of the local contractor Mr. Tharchen, Trongsa where we have a agreement in regard to the hiring terms.

Therefore, I would appreciate if your good office would entertain not all such baseless talks in an around.

Thanking you for your continuous support, please.

Yours' Faithfully,


 Tshewang Wangchuk
 Chief Executive Officer
 Raven Builders & Co. (P) Ltd
 C.C: Pelrithang, Gelephu, Engineer, DoR, Trongsa Division, for his kind information. please
 C.C: Pelrithang Office copy



Contact: 00973-06-2313781 / 06-2313781 / 06-2313781 / 06-2313781 / 06-2313781 / 06-2313781
 Email: info@ravenbuilders.com

Mission :



RAVEN BUILDERS & COMPANY (P) LTD
HEAD OFFICE: PELRITHANG, GELEPHU.

POST BOX: 169

License No: 3007380
 CDB No: 2336
 TPN No: RAC 00015

Vision: Economically viable, socially conductive & environmentally friendly

RBCPL/ADM-05/2018/ 1321

31st May, 2018

The Chief Engineer,
 Department of Roads,
 (Regional Office)
 Trongsa.



Sub: Clarification

Sir,

In continuation to our earlier letter No.RBCPL/CEO/2016-2017/962 dated 14th April, 2016 (copy attached herewith), we would like to inform again that the work for double laning of NEWH (Bjeezam- Trongsa) has been executing by the company itself.

The company appointed Mrs. Tshewang Choden as a Project Manager in order to manage and bring about a good progress of work in absence of CEO owing to his busy schedule. Upon observing positive attitude towards her assigned duty, she was given an extra authority to sign and transact bills on behalf of the company pertaining to that same work.

Therefore, please be informed that we have not created any condition which would lead to arise in any discrepancies and compromise on the progress of work.

This has reference to your letter No.DoR/RO/P-6/2017-2018/1039 dated 24th May, 2018.

With respect,

Yours sincerely,

(Signature)
 General Manager
 (Karma Sherub)
 General Manager

15

Table
 Show a copy
 with G.O. copy &
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 keep it for
 record
 5/6/18

Copy to:

- The Chief Executive Officer, Raven Builders & Company (P) limited for his kind information.
- Mrs. Tshewang Choden, Project Manager, RBCPL, for her information.

1560
 6/6/18

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that during the site verification it revealed that key personnel, machineries and equipment deployed at site were owned by M/s T & C Pvt Ltd and work supervised by the Mr. Tharchen, owner of the company. Thus, the clarification provided by the contractor vide letter No.RBCPL/ADM-05/2018/1321 dated 31/5/18 and RBCPL/CEO/2016-2017/962 dated 14/4/2017 on the issue is not conclusive. It would be apparent from the table below that entire key personnel were replaced as only three key personnel were found at site during site verification.

Key Personal Required	Nos	Key Personnel Stated in Proposal	Present at site Qualification & Experience	Remarks
Project Manager	1	Sangay Dorji, B.Com, 11 years exp	Phub Tshering, Diploma in Civil	Fresh graduate
Project Engineer	1	Dorji Tshering, BE Civil, 35 yrs	-	Not present
Material Engineer	1	Tenzin Wangdi, BE Civil, 15 yrs	-	Not present since start of the project
Junior Engineer	1	Kinley, Diploma in Civil, 7yrs	Yogita, B.E Civil	
Surveyor	1	Sonam Phuntsho, Survey Engg	-	Not present
Lab Technician	1	Cheku, Class 12 passed, 7yrs	-	Not present since start of the project
Site Supervisor	1	Choten, VTI Civil, 4yrs	Karma Tshomo, VTI, 1 year graduate	

Site Supervisor	1	Neten Dorji, VTI Civil, 5yrs	-	Not present since September 2017
-----------------	---	------------------------------	---	----------------------------------

However, in the light of above, the RO should direct the contractor to furnish following details for verification in audit:

- i. The profile of each key personnel
- ii. Copy of appointment orders, salary sheet, PF number and copy of letter submitted to CDB for inclusion as firm's employees in the firm profile maintained by the CDB.
- iii. Employment agreement of Mrs. Tshewang in the said company.
- iv. Lease agreements between the firm and M/s T & C Pvt Ltd for all machineries and equipment deployed at site including registration numbers.
- v. Copy of tax file with the Department of Revenue and Custom for the calendar years 2016 and 2017.
- vi. Employment details of key personnel committed in the proposal of the tender document.
- vii. The grounds under which the BDBL had denied the letter of credit facilities committed by the financial Institution during the tender process.
- viii. Approval given by the MLTC for the replacement of key personnel and machineries and equipment in line with provisions of the contract.

As discussed and agreed during the Audit Exit Meeting, the Ministry should also constitute a team to thoroughly investigate on the deployment of key personnel and machineries and equipment by a different firm at site. The outcome of the investigation along with all requisite documents as detailed above should be furnished to audit for review and provide final opinion on the matter.

Who is accountable?

Direct Accountability	: 1.Tashi Tobgay, AE, EID No.200608008 2.M/s Raven Builders Pvt Ltd, CDB No.2556
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

8.2 Overpayment in Construction – Nu. 40,850.00 (5.1.18)

The verification of contractor's bill with reference to drawings and the actual execution at site showed overpayment of Nu. 40,850.10 as discussed below:

- i. An excess payment of Nu.24,878.10 was found paid to the contractor due to excess measurements of work as shown in table 8.2 below:

Sl. No.	No	As per Contractors Bill				As per RAA				Diff	Rate	Amount (Nu.)	Remarks
		L	B	H	Vol	L	B	h	Vol				
Pane 11	Step 1	9.1	2.8	2	50.96	8.4	2.8	2	47.04	3.92	2100	8,232.00	Refer MB 16 page 009
	Step 2	9.1	2.8	2	50.96	8.4	2.8	2	47.04	3.92	2100	8,232.00	
	Step 3	9.1	1.03	2.75	25.78	8.4	1.03	2.75	23.79	1.98	2100	4163.77	

Pane 12	Step 1	9.25	2.8	1.8	46.62	9.10	2.80	1.80	45.86	0.76	2100	1587.60
	Step 2	9.25	2.8	2	51.80	9.10	2.80	2.00	50.96	0.84	2100	1764.00
	Step 3	9.25	1.03	2.77	26.39	9.10	1.03	2.77	25.96	0.43	2100	898.73
												24,878.10

ii. Inadmissible payment of Nu.9,000.00 was made to the contractor on account of excavation works for the construction of gabion walls as the excavation rate for the excavation in foundation trenches were inclusive of gabion wall excavation works as shown below:-

	No	Length	Breadth	Height	Volume	Rate	Amount (Nu.)	Remarks
Gabion wall at Ch 39820-39900	0.5	50	1.5	3	112.5	80	9,000.00	Refer MB 16 page no 032

iii. On construction of RRM wall in Hume pipe culvert, Volume of Hume Pipe was not found deducted resulting in overpayment of Nu. 6,972.00 as detailed below:

Chainage		Vol claimed	Rate	Amount (Nu.)	Remarks
38740	RRM wall	21.6	2100	45,360	Refer MB 16 page no 059
	Deduction for 2 Hume pipes	-1.33	2100	2,793.00	
42630, 40000, 39620	RRM wall	68.95	2100	144,795.00	Refer MB 16 page no 071
	Deductions for 3 Hume pipes	1.99	2100	4,179.00	

Therefore, the RO should recover Nu. 40,850.00 and deposit into Audit Recoveries Account.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

Due to the mode of measurement some changes in the length of wall has been noticed and as per the audit observation amount of Nu. 24,878.10 will be recovered and deposited in the ARA.

Due to oversight, the excavation for gabion wall has been paid separately though the excavation works being already included in the gabion work item. Therefore, the amount of Nu. 9,000.00 will be recovered and deposit to the ARA.

During the preparation of bill the deduction for the Hume pipe has been an overlooked. Therefore, audit observation amounting to Nu. 6,972.00 will be recovered and deposited to the ARA.

In view of above, the Para may please be dropped.

RAA's Further Comments & Recommendations:

The RAA has taken note of the response on the recovery of the excess payments which had occurred apparently due to failure of the Site Engineer and the Supervising Engineer to exercise necessary checks on the admissibility and correctness of amounts claimed by the contractor. It is to reiterate that the overpayment is a clear indication of existence of weak internal controls over the measurements of work executed, verifications of bills and passing and settlement of RA bills.

As agreed during the exit meeting, the overpayment of Nu. 40,850.00 should be recovered and accounted for in the books of accounts within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual.

The DoR and RO should regulate payment as per the actual works executed at site. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished for review and record.

Who is accountable?

Direct Accountability	<i>: 1.Tashi Tobgay, AE, EID No.200608008 2.M/s Raven Builders Pvt Ltd, CDB No.2556</i>
Supervisory Accountability	<i>: Tashi Dorji, AE, EID No.2107149</i>

8.3 Inadmissible payment for RRM wall – Nu. 123,970.80 (5.1.15)

The privately constructed RRM wall below Rinchending Hotel was damaged by M/s. Raven Builders & Company (P) LTD during the execution of formation cutting works due to improper and negligence in the execution of work. Upon the complaint by the proprietor of the Richening Hotel, the RO, Trongsa, had directed the contractor to reconstruct the wall and accordingly the wall was found constructed by the contractor.

On review of related construction records, it was noted that the RO had released payment of Nu. 123,970.80 to the contractor for the reconstruction of the damaged wall. Since the wall was damaged by the contractor during the FC work due to improper execution and negligence of the contractor, the reconstruction was the responsibility of the contractor. Thus, the payment made towards the reinstating of the wall was in violation of the contract agreement and technical specifications.

The RO besides commenting on the payment beyond the contractual provisions, should immediately recover the amounts of Nu.123,970.80 either from the contractor or official(s) responsible for release of such payments and deposit into ARA.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

Due to non-achievement of the formation width and following the design batter peg, the privately constructed wall falling within the widening portion was damaged. And after completion of widening works, the wall was restored and paid for the same.

In view of above, the Para may please be dropped.

RAA’s Further Comments & Recommendations:

The RAA has taken note of the response. It is to reiterate that in terms of the provisions of the technical specifications and contract agreement, the payment on such accounts was not justified. It also appears that the Site Engineer and the Supervising Engineer had failed to exercise necessary checks on the admissibility claims of the contractor.

However, as agreed during the exit meeting, the overpayment of Nu. 123,970.80 should be recovered and accounted for in the books of accounts within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual.

The DoR and RO should regulate payment as per the provision of the contract provisions. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished for review and record.

Who is accountable?

Direct Accountability	: 1.Tashi Tobgay, AE, EID No.200608008 2.M/s Raven Builders Pvt Ltd, CDB No.2556
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

8.4 Payment for works not executed at site (5.1.20)

The contractor had claimed Nu. 29,476.39 for providing and laying PCC coping 1:3:6 for RRM walls (*Refer MB16 page no 049*). However, on physical verification of works, it was found that the PCC coping was not done for some panels and wherever PCC coping done, was found sub-standard as there were segregation of cement as evident from the photographs below:



Fig : 8.4- Segregation of PCC



Fig: 8.4(1)-- PCC coping not done

The above pictorial evidences indicated absence of adequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Official. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated apathy on the part of the Regional Office towards execution of quality works.

The Ministry should constitute a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. Besides, the Ministry should hold the site engineer accountable for such lapses and immediately direct the contractor to rectify the defective works and rectification carried out intimated to RAA for review and record.

Auditee's Response:

Since the work is ongoing, we have already instructed the contractor to carry out the Copping works that has been paid without execution and the same will be intimated to the RAA with photographic evidence after the completion of rectification.

We assure that such mistakes will not be repeated in the future. In view of above, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

The instruction issued to the contractor for rectification of defective RRM works is noted. However, it is to reiterate that rectification of defective and substandard works at the instance of audit verification of sites is an indication of laxity on the part of the RO and Site engineer toward works and procedures. It was apparent that the contractor would have been paid and let it go for executing defective and sub-standard works if not observed by RAA.

However, as agreed during the exit meeting, the DoR and RO should rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record.

The DoR and Ministry should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The control mechanism proposed to be put in place intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Tashi Tobgay, AE, EID No.200608008 2.M/s Raven Builders Pvt Ltd, CDB No.2556
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

8.5 Non-reinstatement of damaged RRM walls (4.4.63)

An amount of Nu. 581,115.00 was paid to the contractor for the construction of RRM walls below Yangkhil Gate and at Chainage 43.6 km as shown in table 8.5 below:

Table: 8.5- Construction of R/wall at Ch. 42620 to 42780 below Yangkhil Gate					
Sl no	Description	Volume (m3)	Rate (Nu.)	Amount (Nu.)	Remarks
1	Earthwork Excavation	97.3	80	7784	Refer MB 16 page no 061
2	P&L hand packed stone soling	98	550	53900	
3	P/F centering and shuttering	21.27	400	8508	
4	P/L PCC 1:5:10	14.6	2500	36500	
5	P/L RRM in CM 1:6	129.3	2100	271530	
6	P/L PCC 1:3:6	3.96	3100	12276	
			Total	390,498.00	
RRM wall chainage 43.6 Km					
Sl no	Volume (cum)	Amount (Nu.)	Remarks		
Panel 1	45.77	96,117.00	Refer MB 16 page no 024		
Panel 2	45	94,500.00			

During physical verification, works executed were found completely damaged and boulder barrier was found constructed instead of RRM wall. Pictorial evidence of damaged RRM wall and construction of boulder barrier instead of RRM wall are shown below:



Fig:8.5- Damaged RRM walls

The RO besides commenting on the acceptance of boulder barriers instead of reconstructing the RRM walls should either make the contractor to rectify the damaged walls as per the approved technical specification or cost of RRM walls of Nu. 581,115.00 recovered and deposited into ARA.

Further, the audit team observed that the RRM walls constructed at Chainage 43.6 km valuing Nu. 204,204.00 (Refer MB 16 page No. 061) had developed significant cracks in Panel 3 and 4 as depicted in the photographs below:



Fig: 8.5(1) - Cracks on RRM wall

The existence of defects within a short span of time indicated execution of substandard works or poor workmanship including weak supervision and monitoring over execution of works by the sit engineer. Besides, acceptance of boulder walls instead of RRM walls also indicated laxity and violation of technical specifications.

The DOR and the Ministry should review the acceptance of different structure besides directing the RO to reconstruct the RMM including rectification of all defective works as per technical specification.

Auditee's Response:

The contractor has already been informed and the restoration works is under full swing (Photo attached for reference) and same will be intimated to RAA after the completion of rectification with photographic evidence. In view of above, RAA is requested to drop the



Para 8.5- Restored Damaged R/wall

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the reinstatement of damaged walls though still under progress were carried out at the instance of audit verification of sites and the contractor would have been paid for defective and sub-standard works if not observed by RAA. The failure on the part of the site Engineer and the RO to timely carry out the rectification works indicated laxity and complacency toward works and procedures.

The DOR and Ministry should constitute technical team to thoroughly review and ascertain that all the structures built are as per the technical specifications and drawings, estimates and BOQs and quality and cost of structures are not compromised. The outcome of review of the structures built including decisions and measures intimated to RAA for review and record.

As agreed during the exit meeting, the DoR and RO should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The control mechanism proposed to be put in place intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Tashi Tobgay, AE, EID No.200608008 2.M/s Raven Builders Pvt Ltd, CDB No.2556
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

9. Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Trongsa to Punzhi (Package 7A) by M/s Druk Lamsel Construction Pvt. Ltd

The contract for formation cutting and pavement works from Trongsa to Pinzhi (Chainages 44.70km to 50.80km) covering a total of 6.10 kilometer was awarded to M/s Druk Lamsel Construction Pvt Ltd, Thimphu being the lowest evaluated bidder with bid value of Nu. 70,131,698.00. The contract was signed vide agreement No. DoR/CE(CD)/16-17/W-29/2800 dated 12/7/16 with contract details as indicated below:

- i. Estimated amount : Nu. 95,574,000.00
- ii. Quoted amount : Nu. 70,131,698.00
- iii. Actual Exp. : Nu.26,962,873.14
- iv. Duration of contract : 18 months
- v. Start date : 12th July, 2016
- vi. Due date of completion : 12th January, 2018
- vii. Time Extension : 04 months
- viii. Date of completion (revised) : 12th May 2018
- ix. Work status : on going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction sites revealed over payments and other irregularities as discussed below:

9.1 Development of cracks in Retaining walls requiring rectification thereof (4.4.63)

During the joint physical verification of the construction of road side structure on 20.01.2018, it was revealed that the construction of Random Rubble Masonry in CM 1:6 had developed cracks in the following chainages:

Table :9.1- Detailing construction of RRM walls					
Sl. No.	Description of work items	Chainage	Qty. (Cum/m)	Rate (Nu.)	Amount (Nu.)
1	Providing and Laying Random Rubble Masonry in CM 1:6 in road side structures incl. Headwalls, wing wall, catch pit, channels, and Weep holes to be provided as per drawing. -Panel -2	46.46km	35.04 m ³		
	-Panel -1	48.54km	56.74 m ³	2,655.00	150,644.70
	-Panel- 3	48.54km	106.63m ³	2,655.00	283,102.65
	-Panel- 4	50.25km	65.14 m ³	2,655.00	172,946.7
	-Panel- 7	50.25km	79.27 m ³	2,655.00	210,461.85
	-Panel-10	50.25km	62.90 m ³	2,655.00	166,999.50
	-Panel -12	50.25km	50.20 m ³	2,655.00	133,281.00
	-Panel-1	45.14km	33.90 m ³	2,655.00	90,004.50
	-Panel -2	45.14km	64.26 m ³	2,655.00	170610.30
	Below newly built- Panel-1	46.70km	65.81 m ³	2,655.00	174,725.77
					1,552,776.97

Pictorial evidences of cracks in the Random Rubble Masonry on above chainages are as shown under:



Fig: 9.1- Cracks developed in the Random Rubble Masonry walls

Similarly, in Chainages 45.14km, Panel 3, about 3.0m out of 10.88m length and 2.99m height RRM wall valuing Nu.162,353.00 (i.e. $61.15 \text{ m}^3 * 2,655.00$) had developed cracks. Further, in Panel 4, RRM measuring 8.50m length and 2.65m height worth Nu.102,244.00 (i.e., $38.51 \text{ m}^3 * 2,655.00$) had sunk from the normal level of the road and failed to serve the very purpose of constructing walls and parapets as can be seen from the following photographs:



Fig: 9.1(1) - Collapsed RRM wall and sunk from the normal level of road

The occurrence of such defects within a short span of time indicated execution of substandard works or poor workmanship including weak supervision and monitoring over execution of works by the site engineer. Besides, acceptance of substandard and damaged RRM walls also indicated laxity and complacency on the part of the Site Engineers and RO.

The Ministry should institute a dedicated technical committee in addition to the Technical Monitoring Team to thoroughly inspect and certify that all completed works were executed as per technical specification to prevent taking over of poor quality and defective works from the contractor. Besides, the Ministry must hold the site engineer as well as the Technical Monitoring Team and RO accountable for such unwarranted lapses and direct the contractor to redo the defective and substandard works immediately and furnish the rectification report along with photographi evidence to RAA for review and record.

Auditee's Response:

Although the contractor has constructed the Wall as per the standards and technical specifications, the disaster of monsoon damages during the year 2016 was heavy in Trongsa, which caused all the damages to the structures as observed by the RAA.

The contractor has now completed the work with some rectification completed while some are still under progress. The same will be intimated to RAA upon completion of rectification

with photographic evidence for further review. In view of above justifications, the Para may please be dropped.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the defects noted in the newly constructed RRM walls indicated execution of poor quality of road works and workmanships by the contractor and lack of proper supervision and monitoring of works by the site engineer, supervisory engineer and the Chief Engineer. The proposal to carry out rectification works at the instance of audit verification of sites indicated laxity and complacency toward works and procedures. It is also to reiterate that the contractor would have been paid for defective and sub-standard works if not observed by RAA.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA accordingly along with the photographic evidence for further review and record.

The DOR and Ministry should also constitute technical team to thoroughly review that all structures built are as per the technical specifications and drawings, estimates and BOQs as well as to ascertain that quality and cost of structures are not compromised. The Ministry should also institute strict supervision and monitoring controls besides taking appropriate administrative action on the responsible officials to prevent execution and acceptance of defective and sub-standard works in future.

The control mechanism proposed to be put in place should be intimated to RAA for record and follow-up during future audits.

9.2 Construction of parapets not as per drawing and design (4.4.63)

The parapet dimension was specified as 0.4m x 0.75m x 0.70m as per the standard drawing and design given below:

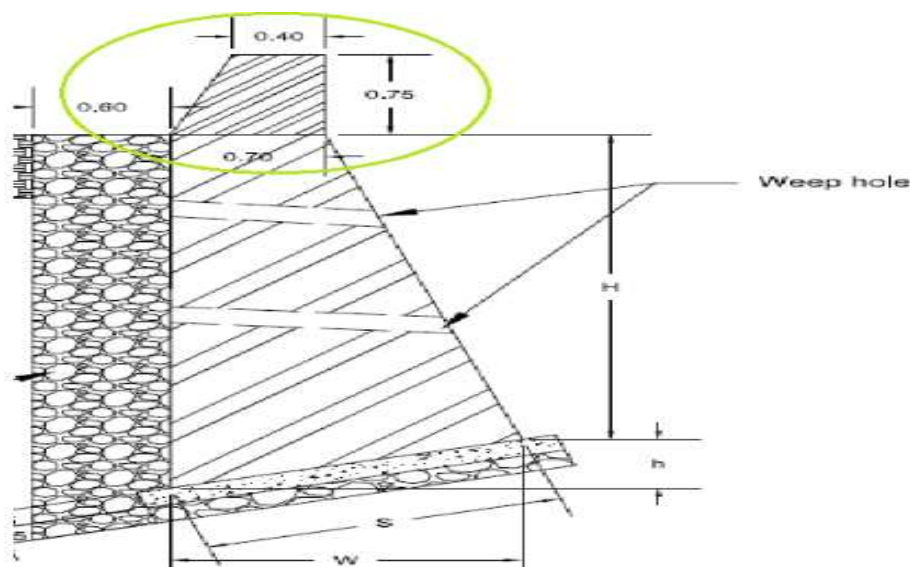


Fig: 9.2- Approved drawing for parapet

However, during the site verification of the structures, it was observed that the parapets constructed along Chainages 48.08km, 48.54km and 47.92km were irregular in shapes and with varying dimensions as evident from the photograph depicted below:



Fig: 9.2(1)- Parapets in irregular shape and improper finishing on back side of the parapets

The existence of such defects indicated execution of works with poor workmanship including weak supervision and monitoring over execution of works by the sit engineer. Besides, it also indicated laxity and complacency on the part of the Site Engineers and RO.

The Ministry should institute a dedicated technical committee in addition to the Technical Monitoring Team to thoroughly inspect and certify that all completed works were executed as per technical specification to prevent taking over of poor quality and defective works from the contractor. Besides, the Ministry must hold he site engineer as well as the Technical Monitoring Team and RO accountable for such unwarranted lapses and direct the contractor to redo the defective works immediately and rectification report furnished to RAA along with photographi evidence for review and record.

Auditee's Response:

The contractor has already been informed and accepted to rectify the defective parapets as per the drawings and it will be intimated to RAA upon completion with Photographic evidence.

In view of above, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the defects noted in the newly constructed parapets indicated poor workmanships of the contractor and also lack of proper supervision and monitoring of works by the site engineer, supervisory engineer and the Chief Engineer. The proposal to carry out rectification works at the instance of audit verification of sites indicated existence of laxity and complacency toward works and procedures. It is also to reiterate that the contractor would have been paid for defective and sub-standard works if not observed by RAA.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record.

The DOR and Ministry should also constitute technical team to thoroughly review that all structures built are as per the technical specifications and drawings, estimates and BOQs as well as to ascertain that quality and cost of structures are not compromised.

The Ministry should also institute strict supervision and monitoring controls besides taking appropriate administrative action on the responsible officials to prevent execution and acceptance of defective works with poor workmanship in future. The control mechanism proposed to be put in place intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Tashi Dorji, AE, EID No.2107149 2.M/s Druk Lamsel Construction Pvt Ltd, CDB No.7680
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

9.3 Excess payment due to difference in measurements between the MB and actual work done at site - Nu. 35,600.43 (5.1.14)

On comparison of the measurements recorded in the MB with the measurements obtained during the physical measurement of works done at site, discrepancies in the measurements to the extent of Nu.35,600.43 resulting in excess payment were noted on the items of works tabulated below:

Item Code	Description of items	Locations		Qty. paid as per MB (Cum/m)	Qty. measured at site	Diff. in qty.	Rate (Nu.)	Amount (Nu.)
		Ch.	Panel					
A/R	Providing and Laying Random Rubble Masonry in CM 1:6 in road side structures incl. Headwalls, wingwalls, catchpits, channels. Weep holes to be provided as per drawing.	47.42km	14	14.53m ³	13.41m ³	1.12m ³	2,655.00	2,984.35
		48.42km	1	76.53m ³	75.38m ³	1.15m ³	2,655.00	3,063.63
		48.54km	1	56.74m ³	55.96m ³	0.78m ³	2,655.00	2,067.50
		48.54km	2	85.63m ³	84.00m ³	1.63m ³	2,655.00	4,339.68
		48.54km	3	106.63m ³	104.64m ³	1.99m ³	2,655.00	5,288.15
		50.25km	1	72.63m ³	71.74m ³	0.89m ³	2,655.00	2,366.11
		50.25km	2	56.93m ³	56.20m ³	0.73m ³	2,655.00	1,950.44
		50.25km	3	62.83m ³	60.83m ³	2.00m ³	2,655.00	5,306.63
		50.25km	5	64.05m ³	63.52m ³	0.53m ³	2,655.00	1,399.77
50.25km	11	64.13m ³	63.48m ³	0.65m ³	2,655.00	1,716.67		
CW0005	Coping: Providing and laying in position plain cement concrete excluding the cost of centering and shuttering - All work up to plinth level. 1:3:6 (1 cement: 3 sand: 6 graded crushed stone 40 mm nominal size.	48.96km	1 & 2	1.15 m ³	0	1.15 m ³	4,450.00	5,117.50
Grand total								35,600.43

The Regional Office, should recover the excess payment of Nu. 35,600.43 and deposit into Audit Recoveries Account (ARA) besides commenting on the discrepancies in the measurements between the MB and actual work done at site as well as failure to prevent such excess claims and payments.

Auditee's Response:

The excess payment has occurred due to mode of measurement and same has been already informed to the contractor and it has accepted to recover from their final bill. The recovery made will be intimated to RAA.

RAA's Further Comments & Recommendations:

The RAA has taken note of the response on the recovery of the excess payment which had occurred apparently due to failure of the Site Engineer and the Supervising Engineer to exercise necessary checks on the admissibility of contractor's claims indicating existence of weak internal controls over the measurements of work executed and recorded in the MB, verifications of bills and passing and settlement of RA bills.

However, as agreed in the exit meeting, the DOR and RO should recover the overpayment of Nu. 35,600.45 within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual. The details of recoveries affected and accounted for in the books of accounts should be furnished to RAA for review and record. Further, DOR and the Ministry should fix responsibility on the officials responsible for such overpayments.

The DoR and RO should institute strict check and balance system including supervision and monitoring controls over the measurement and recording of actual work done at site and settlement of RA bills to prevent overpayments in future.

Who is accountable?

Direct Accountability	: 1.Tashi Dorji, AE, EID No.2107149 2.M/s Druk Lamsel Construction Pvt Ltd, CDB No.7680
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

10 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Trongsa to Punzhi (Package 7B) by M/s Samphel Construction Pvt. Ltd

The contract for construction and extension of RCC culverts from Trongsa to Punzhi was awarded to M/s Samphel Construction, Thimphu being the lowest evaluated bidder. The contract was signed vide agreement via Agreement No: RO/DOR/(Trongsa)/PL-15/2015-2016/673 dated 01.03.2016 with contract details as indicated below:

- i. Name of the Construction : M/s Samphel Construction, Thimphu
- ii. Contract agreement No. : RO/DOR/(Trongsa)/PL-15/2015-2016/673
- iii. CDB No. : 7800
- iv. Contract amount : Nu. 8,777,777.00

- v. Duration of work : 08 months
vi. Date of start : 11.03.2016
vii. Date of completion : 11.11.2016
viii. Work status : Completed

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction sites revealed over payments and other irregularities as discussed below:

10.1 Acceptance of Defective Construction works - Nu. 1,681,948.60 (4.4.63)

During the physical verification of works, it was revealed that there were damages of RCC culverts and Hume pipes along chainages 44.4–50.8km valuing Nu. 1,681,948.60 as detailed below:

Table :10.1- Detailing damages of RCC culverts and Hume pipes along the chainages				
Chainage	Description	Total Qty	Rate (Nu.)	Amount Nu.
RCC Culverts				
47.3	Wing wall	9.33	2400	22,392.00
	Abutment	116.899	2400	280,557.60
	Slab	6.6	5200	34,320.00
	Catchpits	3.63	2400	8,712.00
47.42	Wing wall	12.95	2400	31,080.00
	Abutment	61.04	2400	146,496.00
	Slab	10.25	5200	53,300.00
	Catchpits	10.53	2400	25,272.00
47.9	Wingwalls left	3.99	2400	9,576.00
	Catchpits	3.24	2400	7,776.00
47.98	Kerb	1.87	5200	9,724.00
49.6	Wing wall	15.6	2400	37,440.00
	Abutment	89.25	2400	214,200.00
	Slab	9.6	5200	49,920.00
	Catchpits	7.55	2400	18,120.00
49.66	Wing wall	29.88	2400	71,712.00
	Abutment	92.87	2400	222,888.00
	Slab	9.67	5200	50,284.00
	Catchpits	5.66	2400	13,584.00
49.78	W/wall right	127.26	2400	305,424.00
	Total			1,612,777.60
Hume pipe				
48.98	U/s RRM H/wall	4.58	2300	10,534.00
	Catchpits	3.88	2400	9,312.00
49.31	D/s RRM W/wall	14.99	2300	34,477.00
	U/s Head wall	3.68	2300	8,464.00
	Catchpits	2.66	2400	6,384.00
	Total			69,171.00

Pictorial evidences on the damages of RCC culverts and Hume pipes are as depicted in the photographs below:



Fig:10.1- Damaged culvert



Fig:10.1 (1)- Damaged culvert

The occurrence of such defects within a short span of time indicated execution of substandard works or poor workmanship including weak supervision and monitoring over execution of works by the site engineer. Besides, acceptance of substandard and damaged RCC Culverts and Hume pipes also indicated laxity and complacency on the part of the Site

Engineers and RO towards ensuring immediate rectification of works or at least within the defect liability periods.

The Ministry should institute a dedicated technical committee in addition to the Technical Monitoring Team to thoroughly inspect and certify that all completed works were executed as per technical specification to prevent taking over of poor quality and defective works from the contractor. Besides, the Ministry must hold the site engineer as well as the Technical Monitoring Team and RO accountable for such unwarranted lapses and direct the contractor to redo the defective and substandard works immediately and rectification report furnished to RAA along with photographi evidence for review and record.

Auditee's Response:

The damage duly occurred during the monsoon 2016 and letter has been written to M/s Samphel Construction about the repair of the defective walls and accordingly, the materials have been mobilized at site for rectification. The same will be intimated upon completion of the rectification to RAA with photographic evidence for further verification.

In view of above, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the defects noted in the newly constructed RCC culverts and Hume pipes indicated execution of poor quality of road works and workmanships and lack of proper supervision and monitoring of works by the site engineers and supervising engineers. The proposal to carry out the rectification of works at the instance of audit verification of sites indicated existence of laxity and complacency toward ensuring immediate rectification of works. It is also to reiterate that the contractor would have been paid for defective and sub-standard works if not observed by RAA.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and furnish the rectification to RAA along with the photographic evidence for further review and record.

The DOR and Ministry should constitute technical team to thoroughly review all structures built are as per the technical specifications and drawings, estimates and BOQs as well as to ascertain that quality and cost of structures are not compromised. The Ministry should also institute strict supervision and monitoring controls besides taking appropriate administrative action on the responsible officials to prevent recurrence of such lapses in future.

The control mechanism proposed to be put in place should be intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Tashi Dorji, AE, EID No.2107149 2.M/s Samphel Construction, CDB No.7800
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

10.2 Overpayment in Construction – Nu. 87,466.00 (5.1.18)

On review of related records and cross verification of measurements recorded in the MB, Contractor's bills, and BOQ as well as physical verification of built structures it was noted that overpayment of Nu. 87,466.00 was made to the contractor as detailed below:

Table :10.2-Detailing overpayments in construction															
Chain age	Description	No	As per Contractors Bill				As per RAA					Diff	Rate	Amount Nu.	Remarks
			L	B	H	Vol	No	L	B	H	Vol				
47.42	Kerb	2	2.6	0.4	0.9	1.87	1	2.6	0.4	0.9	0.94	0.94	5200	4,867.20	Only 1 kerb at site
	TMT					99.11					49.56	49.55	68	3,369.40	
47.98	Wingwalls left	1	3.37	1	2.2	7.41	1	1.9	1	2.2	4.18	3.23	2400	7,761.60	Length short at site
48.64	Slab	1	10.5	2.7	0.3	8.51	1	5.2	2.7	0.3	4.21	4.29	5200	22,323.60	Slab length short at site
48.8	Wingwalls left	1	1.25	0.7	1.95	1.71						1.71	2400	4,095.00	No wall at site
49.6	Catchpits	1	6.27	0.4	2.3	5.77	1	4.2	0.4	2.3	3.86	1.90	2400	4,570.56	Length short at site
49.78	W/wall left	1	11.48	1.75	7.2	144.65	1	10.3	1.75	7.2	129.78	14.87	2400	35,683.20	Length short at site
50.58	RRM wall below H/pipe	1	2.2	1.585	1	3.49	1	1.6	1.585	1	2.54	0.95	2300	2,187.30	Length short at site
	Above H/pipe	1	2.2	0.7	2.7	4.16	1	1.6	0.7	2.7	3.02	1.13	2300	2,608.20	Length short at site
												Total		87,466.06	

The over payment indicated failure of the site engineer to carry out and record the measurements of the actual work done at site correctly and also to properly scrutinize the claims with relation to the actual work done and measurements recorded. The lapses also indicated laxity and complacency on the part of the Site Engineers and RO towards works and procedures.

The Ministry should hold the site engineer and RO accountable for such unwarranted lapses and direct immediate recovery of the excess amount of Nu. 87,466.06 and deposit into Audit Recoveries Account (ARA) besides instituting appropriate control mechanism to prevent such excess claims and payments in future.

Auditee's Response:

This excess payment of Nu. 87,466.00 has occurred due to the mode of measurement and it has been informed to contractor and it has accepted to be recovered from the Retention money. The amount will be recovered and deposited to ARA.

In view of above, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

The RO has agreed to recover the excess payment which had occurred apparently due to failure of the Site Engineer and the Supervising Engineer to exercise necessary checks on the admissibility of contractor's claims as to the measurements of work executed and recorded in the MB, verifications of bills and passing and settlement of RA bills.

However, as agreed in the exit meeting, the DOR and RO should recover the excess payment of Nu. 87,466.00 within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual. The details of recoveries affected and accounted for in the books of accounts should be furnished to RAA for review and record. Further, DOR and the Ministry should take appropriate administrative action on the responsible officials for the lapses.

The DoR and RO should institute strict check and balance system including supervision and monitoring controls over the measurement and recording of actual work done at site and settlement of RA bills to prevent such overpayments in future.

Who is accountable?

Direct Accountability	: 1.Tashi Dorji, AE, EID No.2107149 2.M/s Samphel Construction, CDB No.7800
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

11. Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Tashipokto to Dorjigonpa (Package 9) by M/s Welfare Construction Pvt. Ltd

The contract for formation cutting and pavement works from Dorjigonpa to Tashipokto covering a total of 7.98 kilometer from chainages 58km to 65.98km estimated at Nu. 127,405,641.48 was awarded to M/s Welfare Construction Company Pvt. Ltd being the lowest evaluated bidder. The contract was signed vide agreement via Agreement No: RO/DOR/(Trongsa)/2015-2016/PL-36/224 dated 18.09.2015 with the contract details as indicated below:

- i. Contractor : M/s Welfare Construction Company
- ii. Contract agreement No. : RO/DOR/(Trongsa)/2015-2016/PL-36/224 dated 18.09.2015
- iii. CDB No. : 2294
- iv. License No. : 1003469
- v. Contract amount : Nu. 120,072,191.07
- vi. Duration of work : 28 months
- vii. Date of start : 21.09.2015
- viii. Date of completion : 21.1.2018
- ix. Work status : On-going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bills, technical specification and physical verification of the construction site revealed over payments and other irregularities as discussed below:

11.1 Non-restoration of damaged RRM, RC Culverts and Hume Pipe Culvert walls – Nu. 7,638,360.00 (4.4.63)

A joint team comprising officials from the Regional Office, DoR and Contractor and audit team conducted the physical verification of Retaining walls and other structures constructed at a cost of Nu.10,158,796.00 at various chainages as detailed in table below:

Table 11.1- Detailing non-resoration of damaged RRM walls and Culverts					
Chainage	Description	Vol	Rate	Amount Nu.	Remarks
59907.23	PCC 1:5:10	56.04	4500	252,180.00	Chainage 59907.225 to 60075.214
	PCC 1:3:6	4.83	5000	24,150.00	Chainage 59907.225 to 60075.214
	RRM 1:6	2454.01	3000	7,362,030.00	Chainage 59907.225 to 60075.214
				7,638,360.00	
60420	RRM wall				
	Stone soling	17.52	1100	19,272.00	
	PCC 1:5:10	17.52	4500	78,840.00	
	PCC 1:3:6	24.05	5000	120,250.00	
	RRM 1:6	653.65	3000	1,960,950.00	
	RC Culverts				
	Stone soling	33.89	1100	37,279.00	
	PCC 1:5:10	8.18	4000	32,720.00	
	PCC 1:3:6	0.81	5000	4,050.00	
	RRM 1:4	59.35	4500	267,075.00	
	TOTAL			10,158,796.00	

The physical verification of structures revealed that the Retaining walls constructed at a cost of Nu. 7,638,360.00 in between chainages 59907.225 to 60075.214 were found damaged and had remained unrestored as on the date of audit.

The pictorial evidences of damaged walls remaining unrestored are depicted below:



Fig:11.1- Damaged RRM walls at various chainages



Chainage 59907.225 to 60075.214)



(Chainage 60420)

Fig: 11.1(1) - Damaged RRM walls at various chainages

On enquiry with the site engineer, it was stated that retaining wall submerged itself and got damaged after construction. It was also stated that the technical team consisting of following officials had carried out the geotechnical assessment of the damages and reported that the main reason for collapse of the wall was presence of watershed below the road whereby water seepages were occurring at various locations:

- ✚ Tshewang Dorji, CE, Design Division,
- ✚ Tempa Thinley, Engineer, Geotechnical section, Design division,
- ✚ Sonam Tshering, Engineer, Geotechnical section, Design division ,
- ✚ Wangchuk, Dy. Executive Engineer,
- ✚ RO, Trongsa and
- ✚ Tashi Dorji, AE II, RO, Trongsa

The geotechnical team also reported that about 100m below the highway, a fresh landslide had occurred which detached the slope by about 10m from its original level. In addition, the team reported that the slide is active and there is high risk of collapsing the whole slope during the event of an earthquake or prolonged rainfall in near future.

Taking into account the causes of failure, the geotechnical team recommended following measures:

- To carry out detailed geotechnical study and advised to install monitoring equipment to monitor the landslide;
- Lowering of ground water table by constructing well or by constructing horizontal drain to reduce the movement of the slope;
- Construct RCC or wooden crib wall in place of collapsed RRM wall as a temporary measure to regain the width of carriage way; and

- The runoff water from the surface of the highway should be completely diverted away from the landslide area.

Further, Hume pipe culvert worth Nu. 12,280.00 (*Refer MB 41 page 29*) at chainage 58500km was found damaged as shown below:



Fig:11.1(1) - Damaged RRM step walls

The RAA noted that as of the date of audit, the RO, had neither taken initiatives to implement the recommendations of the technical team nor put in place measures to prevent further damages to the structures as well as failed to direct the contractor to rectify the damaged structures despite the fact that the works are insured as per the terms and conditions of the contract.

The damages of structures within a short span of time indicated lack of proper supervision and monitoring controls from the concerned engineers as well as Regional Office besides acceptance and taking over of poor quality or substandard works.

The Ministry besides investigating the circumstances leading to non-implementation of remedial measures recommended by the geotechnical team should constitute a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. The Ministry must also hold the site engineer and supervising engineers accountable for such lapses including contractor for execution of defective works and non-reinstatement of the structures and direct the contractor to redo the defective and substandard works immediately and furnish the rectification report along with photographic evidence to RAA for review and records.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

- a) Ch. 59907.225 – 60075.214 (Dorji Gonpa Wall): Two geological studies have been done in this place without any conclusive results. [Reports attached]
Filling has been done at sinking area to make the road wider and trafficable.
[Photograph below]*
- b) Ch. 60420: Re-construction done [Photograph attached]*
- c) Ch. 58500: The picture depicts the scour protection on the base of the culvert has cracked.*

This location as shown in the picture below was quite narrow before the wall was constructed. Directly below the road the slope was quite steep and hence the wall was constructed by avoiding the steep slope. This resulted in very little space between the base of the wall and the steep slope. Therefore, it was seen important to construct a scour protection to protect the base of the wall from giving away. However, due lack of space, this was constructed on top the excavated fill and hence resulted in settlement thereby causing crack.

The contractor has been intimated about this, rectifications shall be made on time, and RAA shall be intimated accordingly.



Para 11.1- Filling done at sinking area

In view of the above justifications, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

While taking note of the response as well as discussion held during the joint site visit after the exit meeting, the fact remains that the RO had neither taken action to implement the remedial measures recommended by the geotechnical team nor directed the contractor to restore the structures as of the date of the exit meeting. Further, the RO had allowed the contractor to retain the amount received from Insurance Company as a compensation for the damaged structures without taking custody of the amount till such time the decision is taken either to restore the structures or do away with the structures in consideration to the fact that slide is active and there is high risk of collapsing the whole slope during the event of an earthquake or prolonged rainfall in near future as reported by the geotechnical team. If the contractor is allowed to retain the compensation received from the insurance company, it is likely that the contractor will utilise the money for other purposes and it may not be available for restoration works as may be needed.

Therefore, the DOR and the Ministry should take immediate decisions on either to obtain the insurance money from the Contractor in the event restoration of walls were not feasible in the light of the active slide and risk in the event of prolonged rainfall in near future or carry out the restoration of structures with appropriate technical solutions within the defect liability periods as it would lead to complications on expiry of the liability periods.

The Ministry should intimate the RAA of the decisions and actions taken on the unrestored RRM walls along with any reports on the detailed geotechnical study carried out on the site for review and records.

Who is accountable?

Direct Accountability	: 1.Baru Kumar Sanyasi, Engineer, EID No.20170107862 2.M/s Welfare Construction Pvt Ltd, CDB No.2294
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

11.2 Over payment in Construction - Nu. 157,208.16 (5.1.18)

Detailed verification of measurements of work done as recorded in the MB, measurements claimed in contractor's bills, with reference to measurements provided in drawings and physical verification of actual work executed at site revealed overpayment of Nu. 83,934.09 due to payments made for quantities in excess of actual work done at site as detailed below:

Chain age	Description	As per Contractors Bill					As per RAA					Difference	Rate	Amount	Remarks
		No	L	B	H	Qty	No	L	b	H	Qty				
60150	Parapet	17	0.9	0.4	0.6	3.67	16	0.9	0.4	0.6	3.46	0.22	3000	648.00	Refer MB 25 page 09
	Catch pit deduction					0.00	2	0.4	0.4	0.3	0.10	0.10	3000	288.00	
						0.00	1	0.4	0.4	0.3	0.05	0.05	3000	144.00	
60234	R/wall 4	1	9.5	2.13	7	141.65	1	8.4	2.13	7	125.24	16.40	3000	49,203.00	Refer MB 25 page 30
61060	Parapet	11	0.9	0.4	0.6	2.38	10	0.9	0.4	0.6	2.16	0.216	3000	648.00	
62826.052	Left Wall	1	4.9	1.23	5.3	31.94	1	4.9	1.23	4.5	27.12	4.82	3000	14,464.80	Refer MB 25 page 104
63450	Left wall	1	7	1.28	3.75	33.60	1	8	1.28	3.75	38.4	-4.8	3000	(14,400.00)	Refer MB 25 page 184
58700	Panel 2 - Left wall	1	5.6	1.63	5.51	50.30	1	4.5	1.63	5.51	40.42	9.88	3000	29,638.29	
		0.5	5.6	2.5	0.8	5.60	0.5	4.5	2.5	0.8	4.5	1.1	3000	3,300.00	
												Total		83,934.09	

The overpayment had occurred due to recording of excess quantities in the MB and contractor's RA bill as compared to the quantities measured on the basis of actual work done at site.

Further, over payment of Nu.73,274.07 was made to the contractor due to application of wrong formula for computing the volume of back filling works. It was noted that the formula used for working out the volume was based on length x breadth x height (L*B*H) only instead of multiplying the product of "length x breadth x height" (0.5*L*B*H) by 0.5 as shown below:

Table : 11.2(1) -Back filling of walls with selected granular including layer wise compaction															
Cha inag e	Descr iption	No	As per Contractors Bill				As per RAA					Differen ce	Rate	Amount	Remar ks
			l	B	H	Qty	No	L	b	h	Qty				
5985 8	RW 1	1	14.1	1.8	2.8	71.06	0.5	14.1	1.8	2.8	35.53	35.532	85	3020.22	Refer MB 25 page 012
6015 0	RW 3	1	32.79	1.1	3.9	141	0.5	32.79	1.1	3.9	70.51	70.51	85	5993.77	
6023 4	RW 4	1	8.93	10.83	5.9	570.6	0.5	8.93	10.83	5.9	285.3	285.30	85	24250.50	Refer MB 25 page 031
		1	9.3	8	6.4	479.9	0.5	9.3	8	6.4	239.9	239.94	85	20394.9	
6004 0	RW 2	2	10	1.6	3	96	1	10	1.6	3	48	48	85	4080	
												Total		57,739.40	
6023 0	Culver t wall	1	12.5	1.5	3	56.25	0.5	12.5	1.5	3	28.13	28.125	80	2250	Refer MB 25 page 035
6042 0	Culver t wall	1	11.7	3.3	5	193.1	0.5	11.7	3.3	5	96.53	96.525	80	7722	Refer MB 25 page 078
6256 0	Culver t wall	2	5.45	1.06	1.7	20.68	1	5.45	1.06	1.7	10.34	10.34083	80	827.26	Refer MB 25 page 110
6283 0	Culver t wall	2	5.45	1.06	1.7	20.68	1	5.45	1.06	1.7	10.34	10.34083	80	827.26	
6054 0	Culver t wall	2	7	1.2	1.7	28.56	1	7	1.2	1.7	14.28	14.28	80	1142.4	Refer MB 25 page 141
6235 0	Culver t wall	2	6.55	1.2	1.5	23.58	1	6.55	1.2	1.5	11.79	11.79	80	943.2	
6468 0	Culver t wall	2	6.6	1.3	1.4	24.88	1	6.6	1.3	1.4	12.44	12.441	80	995.28	
6283 0	Culver t wall	2	5.45	1.06	1.7	20.68	1	5.45	1.06	1.7	10.34	10.34083	80	827.26	
												Total		15,534.68	

The RO should comment on the wrong application of formula besides recovering the overpayments of Nu. 157,208.16 (Nu.83,934.09 plus Nu. 73,274.07) and depositing into Audit Recoveries Account. The RO should fix the responsibility on the officials responsible for the overpayments for taking appropriate action.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

This excess payment has occurred due to the mode of measurement and it has been informed to contractor and accepted to be recovered from their running bill. The amount will be recovered and deposited to ARA and will be intimated accordingly.

In view of the above justifications, RAA is requested to drop the Para.

RAA's Further Comments & Recommendations:

The RAA has taken note of the response agreeing to recover the excess payment which had occurred apparently due to failure of the Site Engineer and the Supervising Engineer to exercise necessary checks on the admissibility of the measurements for actual work done. It is also an indication of existence of weak internal controls over the measurements of work executed and recorded in the MB, verifications of bills and passing and settlement of RA bills.

However, as agreed in the exit meeting, the DOR and RO should recover the excess payment of Nu. 157,208.16 within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual.

The details of recoveries affected and accounted for in the books of accounts should be furnished to RAA for review and record. Further, the DOR and Ministry should take appropriate administrative action on the responsible officials for the lapses.

The DoR and RO should also institute strict check and balance system including supervision and monitoring controls over the measurement and recording of actual work done at site and settlement of RA bills to prevent such overpayments in future.

Who is accountable?

Direct Accountability	: 1.Baru Kumar Sanyasi, Engineer,EID No.20170107862 2.M/s Welfare Construction Pvt Ltd, CDB No.2294
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

12. Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Dorji Gonpa to Yotongla (Package 10) by M/s Rinson Construction Pvt. Ltd

The contract for formation cutting and pavement works from Dorjigonpa to Yotongla (Chainages 65.98km to 72km) covering a total of 6.02 kilometer was awarded to M/s Rinson Construction Pvt. Ltd being the lowest evaluated bidder. The contract was signed vide Agreement No: RO/DOR/(Trongsa)/PL-36/2015-2016/176 dated 31/08/2015 with contract details as under:

i. Quoted amount	:	Nu. 85,883,906.60
ii. Actual Exp.	:	Nu. 30,492,925.70 (30 th June 2017)
iii. Duration of contract	:	28 months
iv. Start date	:	31 st August 2015
v. Due date of completion	:	31 st December 2017
vi. Time Extension	:	3 months
vii. Date of completion (revised)	:	31 st March 2018
viii. Work status	:	On-going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

12.1 Damaged RRM Wall (4.4.63)

The Retaining walls constructed at a cost of Nu. 753,346.00 (**342.42m³ @ Nu. 2200**) were found constructed with poor quality and workmanship. There were voids between the layers due to providing poor/weak cement mortar, and development of cracks at chainages shown below:

Table: 12.1- P/L RRM in CM 1:6					
Chainage	Description	Volume	Rate	Amount	Remarks
69400	RRM	118.49	2200	260,678.00	Refer MB 23 page 30
71670	RRM	150.3	2200	330,660.00	
68270	RRM wall - Panel 1	58.13	2200	127,886.00	Refer MB 23 page 142
68440	RRM wall - Panel 1	15.51	2200	34,122.00	

The pictorial evidences of damaged RRM walls are depicted in the photographs below:

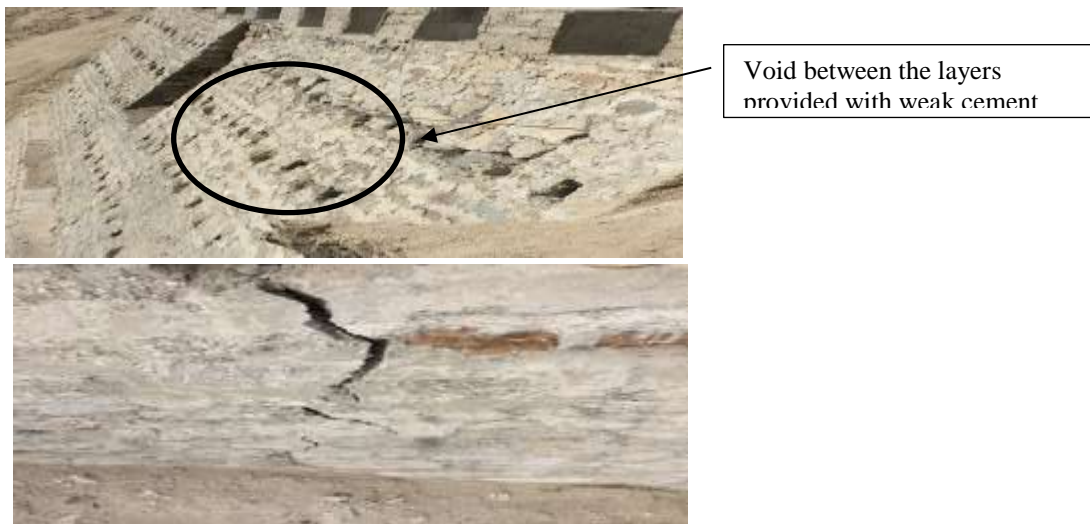


Fig:12.1- Significant cracks developed

Similarly, construction of catch pits in RRM CM 1:4 at a cost of Nu. 32,448.00 were found damaged at chainages detailed below:

Table 12.1- P/L RRM in CM 1:4					
Chainage	Description	Volume	Rate	Amount	Remarks

71800	Catch pit	4.5	3200	14,400.00	
68640	Catch pit	2.82	3200	9,024.00	Refer MB 23 page 69
69330	Catch pit	2.82	3200	9,024.00	Refer MB 23 page 70

Pictorial evidences showing damaged RRM walls of the catchpits are depicted in the photographs below:



Fig: 12.1- Damaged catchpits



Fig: 12.1(1) - Damaged catchpits

The above pictorial evidences indicated lack of proper supervision and monitoring controls over the execution of works by the Site Engineer and Regional Officials. The acceptance and taking over of poor quality or substandard works indicated laxity on the part of the Regional Office. Further, non-reconstruction of damaged B/wall also indicated existence of poor monitoring and contract management process.

The Ministry should consider the desirability of instituting a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of works with poor workmanship and quality from the contractor. Besides, the Ministry should hold the site engineer accountable for such lapses and immediately direct the contractor to redo the defective and substandard works and reconstruction and rectifications carried out intimated to RAA for review and records.

The Ministry must also recover the cost for coping works not executed at site and the amount deposited into ARA.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

The RRM walls of Chainage 68270 and 68440 were damaged due to vehicles. It was constructed well and was in good condition while carrying out joint measurement for the bill. The contractor has been intimated and the damages shall be rectified.

The RRM wall of chainage 69400 was damaged while carrying out formation cutting whereby a rock projectile hit the wall and hence cracked. The wall was in good condition while carrying out joint measurement for the bill. The contractor has been intimated and the damages shall be rectified.

In chainage 71670, a cold joint can be observed. This has occurred due to changes in workforce. The initial labour group constructing the wall left the site due to some internal issues with the management of the contractor. It was left unfinished for several weeks, whereby the mortar has set. Once a new labour group had arrived and started construction again, the gap became visible. The contractor has been intimated and the damages shall be rectified.

Heavy vehicles mostly damaged the catch pits. The wall was in good condition while carrying out joint measurement for the bill. The contractor has been intimated and the damages shall be rectified. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

The damages and defects noted in the newly constructed road indicated execution of poor quality of road works and workmanships that led to early development of cracks and damages of RRM walls and also indication of lack of proper supervision and monitoring of works by the site engineers.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works and take appropriate administrative actions on the responsible officials to prevent the recurrence of such lapses in future.

Further, DOR should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works and facilitate timely detection and rectification of defective and substandard works within the defect liability periods at the cost of the contractors.

The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

Who is accountable?

Direct Accountability	: 1. Baru Kumar Sanyasi, Engineer, EID No. 20170107862 2. M/s Rinson Construction Pvt Ltd, CDB No. 1965
Supervisory Accountability	: Tashi Dorji, AE, EID No. 2107149

12.2 Non-execution of work as per the survey and design with resultant extra financial burden of Nu. 491,750.00 and non-adjustment of cost for box cutting works (4.4.29)

The Formation cutting from Dorjigonpa to Yotongla covering chainages from 65.98km to 72km included box cutting work at Chainage 67390-67450m measuring 60 meters as per survey and design report. However, the box cutting work was found cancelled as per the instruction of Hon'ble Minister, MoWHS dated 25/12/17. It was stated that Hon'ble Minister had ordered that on observing the site, did not see critical as widening would serve the purposes and there will be no alignment issue and besides the work progress was found lagging behind the schedule.

Thus, the DoR was asked to look into changing box cutting into widening works and changes communicated to the contractor. It was evident from the minutes of meeting circulated under letter vide letter No. DoR/SDO(Trongsa)/Er/17-18/F001 dated 25/1/18, that change in scope was communicated to the contractor. The decision to drop out the box cutting works has resulted in decrease in scope of work as well as an increase in the length of road by 70 m net of box cutting length of 60m.

The audit while could not work out the extent of scope of work decrease and its cost implication since the formation cutting were paid in running meter, had worked out the additional financial implication of Nu. 491,750.00 due to net increase in length of the road by 70m changes in the scope of work as shown below:

Sl. No.	Description	Unit	Length	Breadth	Height	Volume	Rate Nu.	Amount Nu.
1	FC	M	70				3,000.00	210,000.00
2	L-drain	M	70				1,400.00	98,000.00
3	Sub-grade preparation	Cum	70	5.5	0.25	96.25	20.00	1,400.00
4	GSB	Cum	70	5.5	0.25	96.25	500.00	35,000.00
5	WMM	Cum	70	7.5	0.225	118.125	1,500.00	105,000.00
6	Scarifying road surface	Sqm	70	7.50		525.000	15.00	1,050.00
7	DBM	Sqm	70	7.50		525.000	300.00	21,000.00
8	AC	Sqm	70	7.50		525.000	190	13,300.00
9	Road Shoulder	Cum	70	1.50	0.25	26.250	100	7,000.00
						Total		491,750.00

The decision of the Minister on 25th December 2017 to drop the box cutting works initially incorporated in the design, technical specification, BOQ/estimates based on the survey report that too just few days before the expiry of the completion date scheduled on 31st December 2017, was definitely an extension of undue financial favour to the contractor as major cost

involved in Box cutting were minimized and delays to the extent of time involved for box cutting was avoided and liquidated damaged leviable for delays were nullified to that extent.

The Ministry should carry out technical review of the box cutting site as the Minister while taking decisions had categorically mentioned that “on observing the site, did not see critical as widening would serve the purposes and there will be no alignment issue and besides the work progress was also found lagging behind the schedule” as to validate the decision. Further, the Ministry should review the quoted rate of the contractor for the formation works and regulate the payments after adjusting the cost involved in box cutting works. The Ministry besides recovering the cost involved in box cutting works if already paid should also adjust the contract durations to the extent of time not required on the reduced scope of works and liquidated damages imposed and recovered deposited into ARA.


Auditee’s Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.


During the visit of Hon’ble Zhabtog Lyonpo on dated 25th December 2017, her Excellency was concerned about the progress of this contract package which was already running behind the schedule. On this matter to complete the FC work on time, Lyonpo proposed to avoid box cutting and carry out the widening in lieu of box cutting.

In view of the above justifications, RAA is requested to drop the memo.

Para : 12.2- Tour Report of Hon’ble Zhabtog Lyonpo attached



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MINISTRY OF WORKS AND HUMAN SETTLEMENT
"Construction Industry: Solutions through innovation and improved technology"




Trongsa explained that since the activity was included in the estimates, the scope of the work need to be revised as per the prevailing contractual norms.

To the box cutting issue, Hon’ble Zhabtog Lyonpo, observing the site did not see the critical need of it as widening can serve to improve the alignment. Since the progress of the work on this contract package is already running behind the schedule, DoR is asked to look into changing the box cutting to widening. The change should be communicated to the contractor immediately and payment to be adjusted accordingly.

Above instruction was given by Hon’ble Zhabtog Lyonpo in presence of following officials:

1. Mr. Tashi Dorji (Offg. Project Manager, NEWH project, Trongsa Sub-Division, DoR)
2. Mr. Barun Kumar Sanyasi (Project Engineer, NEWH project, Trongsa Sub-Division, DoR)
3. Mr. Tara Rai (Project Manager, Rinson Construction Pvt. Ltd., NEWH project)
4. Mr. Choeda Jamtsho, (APC, Col PMU, Construction Division, DoR HQ)

The instruction is to be notified to the concerned contractor and RO Trongsa for information.


Dorji Choden
ZHABTOG LYONPO

RAA's Further Comments & Recommendations:

While taking note of the response on the doing away of box cutting works based on the directive of the Minister as well as discussion held during the joint site visit after the exit meeting, the fact remains that as per survey and design report, the box cutting has shortened the road length by 70m from the existing road stretch of 130m. The joint site visit observed that the box cutting was found critical and required to be carried out for shortening the time as well as serve smooth and convenient access to all road users.

Further, rationale and benefits of the up-gradation of Northern East West Highway (NEWH) project were as follows:

- *Shortening travel time between Thimphu and Trashigang*
- *Enhance the socio-economic wellbeing of the people of Bhutan*
- *Facilitates timely transportation of heavy electro-mechanical equipment for Hydro-Electric projects*
- *Serve smooth and convenient access for tourist, VVIPs and to the road users*

Thus, the decision of the Minister to do away of the box cutting works at the verge of the expiry of the contract completion period was not in interest of the Government but an extension undue time and financial benefits to the contractor as evident from the following facts:

- *Initial existing road length of 130m was shorten by 70 m with execution of box cutting length of 60m.*
- *The doing away with the box cutting, the road length increased to the initial road length of 130m*
- *The very objective of up-gradation of East west Highway project "Shortening travel time between Thimphu and Trashigang" was defeated.*
- *The contract duration period and rate for formation cutting works was not adjusted for doing away the box cutting work of 60m*
- *The contractor failed to handover the works within the completion deadlines of 31st December 2017 despite substantial reduction of scope of works and work still under progress as on 31st January 2018.*
- *The MLTC and RO awarded additional works valuing Nu, 5.83 million despite the fact that the contractor had totally failed to progress the works as per initial work plans as well as timelines drawn under the Milestones Commitment Agreement.*
- *The contractor had failed to complete all the three contract packages (3,10, and 13) awarded by the MLTC and RO and all the three works are still under progress as on 31st January 2018.*
- *The increase of 70m road length due to doing away with the box cutting also cost the project to the extent of Nu. 0.492 million*

In the light of aforementioned facts, the Ministry should thoroughly review the matter and appropriate decisions and actions taken intimated to RAA for review and forming final decision on the issue. Besides, the Ministry should also investigate the circumstances leading to award of three contract packages and additional work of 5.83 million which exacerbated further delays of the project.

Further, as discussed and agreed during the Audit Exit Meeting, the RO and DOR should work out the cost involved of box cutting works as well as for normal FC work and cost difference thereon recovered along with liquidated damages imposed within three months from the date of issue of the report beyond which penalty @ 24% per annum would be levied as per the FRR 2016, Chapter-IV, Section 4.5.1.4 of FAM.

The Ministry should not only strengthen the Design Divisions for accurate designing of road structures but also needs to respect onced designed besides instituting a technical team to review project plans, designs, and specifications to ensure that the same are accurate and complete including verification of the accuracy of surveys for future projects to prevent changes in designs as well as time and cost overruns.

The decision taken by the Minister to do away the box cutting works was found detrimental in the interest of the government and general public and is bought to the notice of the Government for appropriate decisions and actions.

Who is accountable?

Direct Accountability	: 1.Baru Kumar Sanyasi, Engineer,EID No.20170107862 2.M/s Rinson Construction Pvt Ltd, CDB No.1965
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

12.3 Payment made for RRM wall, which could not be located at site - Nu. 17,754.00 (5.1.18)

As per MB, payment of Nu. 17,754.00 was made to the contractor for the construction of RRM walls at chainages 67600m, 70060m and 71720m as detailed below:

Chainage	Description	Nos.	L	B	H	Vol	Rate	Amount (Nu.)	Remarks
67600	Panel 1, d/s drop wall	1				4.68	2200	10,296.00	Refer MB23 page 16
70060	Abutment wall- head wall	2	1	0.4	1.5	1.2	2200	2,640.00	Refer MB23 page 22
71720	Abutment wall- head wall	2	0.75	0.95	1.2	1.71	2200	3,762.00	Refer MB23 page 22
	Head wall projection	2	0.5	0.4	1.2	0.48	2200	1,056.00	Refer MB23 page 23
	Total							17,754.00	

However, during the site visit and physical verification of structures, the present Site Engineer failed to locate walls as shown in the table above as the Site Engineer responsible for certifying the constructions was found transferred.

The RO, Trongsa should locate the walls and intimate to RAA for verification failing which the amount should be recovered and deposited into ARA.

The Ministry should also review on the failure to account the structures in the asset register as well as the failure of the present site engineer to locate the structures.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

During joint verification by auditing team, due to change in site engineer the particular wall could not be located as the wall has already been covered with the muck and for that RO has informed the concern contractor regarding the misplaced wall and on that they too failed to show the exact location so the firm accepted to recover the overpayment of Nu. 17,754.00 to ARA and which will be intimated to RAA.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response on the acceptance of recovery of the cost of the structure by the contractors, it is to reiterate that the failure of both the site engineer and the contractor to locate the executed structures indicated existence of claims for works not executed at sites. It also indicates entertainment of RA bills without actual verification of site and measurements as required under technical norms and financial rules and regulations (FRR). It was apparent that the contractor would have been paid for works not executed at site if not observed by RAA.

However, as agreed in the exit meeting the DoR and RO should institute strict supervision and monitoring controls to prevent claims for unexecuted works in future. The measures and procedures proposed to be put in place intimated to RAA for record and follow-up during future audits. Besides, the recoveries of Nu. 17,754.00 affected and accounted for in the books of accounts should be furnished to RAA for review and record within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual.

Who is accountable?

Direct Accountability	: 1.Baru Kumar Sanyasi, Engineer,EID No.20170107862 2.M/s Rinson Construction Pvt Ltd, CDB No.1965
Supervisory Accountability	: Tashi Dorji, AE, EID No.2107149

12.4 Ineligible payment - Nu. 44,525.31 (5.1.20)

Verification of measurements and specification for Providing and Laying PCC 1:3:6 coping for RRM walls, wing walls, catch pits recorded in MB with drawing observed that the contractor was paid for 100mm thick, although the payment should have been restricted to 75mm thick as provided in the drawing. Thus, the payments beyond the required thickness has resulted into ineligible payments of Nu. 22,930.11 as detailed in **Appendix "D"**.

Further, while making payment for construction of RRM walls for Hume pipe culvert, the necessary deductions for Hume pipes and openings were not done resulting in overpayment of Nu. 21,595.20 as shown below:

Table: 12.4- detailing ineligible payments									
Chainage	Description	No	L	B	H	Vol	Rate	Amount	Remarks
69400	Deduction for Hume pipe	2	0.76	0.95		1.44	2200.00	3176.8	Refer MB23 page 30
71600	Deduction for Hume pipe	2	0.76	0.95		1.44	2200.00	3176.8	
71670	Deduction for Hume pipe	2	0.76	0.95		1.44	2200.00	3176.8	
71800	Deduction for Hume pipe	2	0.76	0.95		1.44	2200.00	3176.8	
68640	Deduction for triangular portion	0.5	2.5	0.8	1.4	1.40	2200.00	3080	Refer MB23 page 69
69330	Deduction for triangular portion	0.5	3	1	1.76	2.64	2200.00	5808	
							Total	21,595.20	

Thus, non-regulation of payments as per requisite specification and drawings and non-deduction for Hume pipes and opening paid separately from the RRM works, indicated existence of weak internal controls over the measurement and recording of actual works required to be done as per drawings and verification and settlement of claims.

Therefore, the RO should recover the ineligible and overpayments of Nu. 44,525.31 (Nu.21,595.20+ Nu. 22,930.11) and deposit into Audit Recoveries Account. Besides, the RO should hold the site engineer accountable for such unwarranted lapses.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

The site engineer acknowledges the lapses on his part, the said amount shall be recovered and deposited to the ARA, and the same will be intimated to RAA upon recovery.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, it is to reiterate that inadmissible payment had occurred due failure on the part of the Site Engineer and the Supervising Engineer to exercise necessary checks to ensure the admissibility and correctness of contractor's claims prior to settlement of RA Bills. It was apparent that the contractor would have been paid for works not executed if not observed by RAA.

However, as agreed, the overpayment of Nu. 44,525.31 should be recovered within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual and accounted for in the books of accounts should be furnished to RAA for review and record. Besides, the DoR and RO should institute strict supervision and monitoring controls to prevent incorrect claims in future.

The measures and procedures proposed to be put in place should be intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1. Baru Kumar Sanyasi, Engineer, EID No. 20170107862 2. M/s Rinson Construction Pvt Ltd, CDB No. 1965
Supervisory Accountability	: Tashi Dorji, AE, EID No. 2107149

13 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Yotongla to Bongzam (Package 11) by M/s Dungkar Construction Pvt. Ltd

The contract for formation cutting and pavement works from Yotongla to Bongzam (Chainage 72km to 80km) covering a total of 8 kilometer was awarded to M/s. Dungkar Construction Pvt Ltd. Thimphu being the lowest evaluated bid. The contract was signed vide agreement No. RO/DOR/(Trongsa)/15-16/PL-36/TR-11 with following contract details:

- i. Quoted amount : Nu. 89,839,558.00
- ii. Actual Exp. : Nu. 24,661,705.00(06.12.2017)
- iii. Duration of contract : 28 months
- iv. Start date : 01st October 2015
- v. Due date of completion : 31st January 2018
- vi. Time Extension : 4 months
- vii. Date of completion (revised) : 30th April 2018
- viii. Work status : On-going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

13.1 Excess payment to the contractor - Nu.148,231.53 (5.1.14)

Verification of contractor's bill with reference to drawings and the actual execution of works at site revealed overpayment of **Nu. 115,470.90** (57.74m³ @ Nu. 2000) as detailed in **Appendix "E"**. The over payment was found made on the item: *P&L RRM in CM 1:6 in road side structures including headwalls, wingwalls, catchpits, channels - weep holes* to be provided as per drawing.

Similarly, payment of Nu. 3,385.38 was made for providing and laying PCC 1:3:6 (Coping) as tabulated below though not executed at site.

Sl no	Description	Length	Breadth	Height	Volume	Rate	Amount	Remarks
	RRM							
1	75960 - Headwall	5.65	0.76	0.075	0.322	2500	805.13	MB 03 page no 108
2	77710 - head wall	8.1	0.76	0.075	0.462	2500	1154.25	MB 44 page no 063
3	74300 -Hume pipe				0.57	2500	1425.00	MB 43 page no 050
	Total						3,385.38	

Pictorial evidence of coping works not provided is depicted below:



Fig: 13.1- PCC 1:3:6 coping of 75mm not done

Further, the contractor was paid Nu. 29,375.25 for construction of kerb beam and catch pit, which was found not constructed at site. The details of work not executed is tabulated below:

Chainage	Description	No	L	b	H	Qty	Rate	Amount	Remarks
Ch:7621 0 m	Kerb Beam	2	2.6	0.35	0.85	1.55	4500	6961.5	Only 1 kerb beam constructed
	TMT					106.11	75	7958.25	
Ch:7754 0 m	Kerb Beam					0.96	4500	4320	
	TMT					66.18	75	4963.5	
Ch:7942 0 m	Catchpits					2.23	2000	4460	
Ch:7942 0 m	Catchpits plaster					4.17	100	417	
Ch:7942 0 m	Catchpits stone soiling					0.59	500	295	
	Total							29,375.25	

The Regional Office, should comment on the circumstances leading to payments for work not executed at site. Besides, the Regional Office must recover the overpayment of Nu. 148,231.53 (Nu. 29,375.25+ Nu. 3,385.38+ Nu.115,470.90) and deposit it to Audit Recoveries Account and hold the site engineer and the contractor accountable for inflating the measurement of works done in the MB and RA Bills for appropriate decisions and actions.

Auditee's Response:

We sincerely acknowledge on the RAA observation in which we had failed our part to construct permanent structures as per the technical specification. Payment had happened with the mutual trust between our site engineer and the contractor in which the walls had to be paid in full shape before completing in full shape. The RO ensures to RAA that such practice will be strictly monitored during joint measurement and payment.

The RO has already recovered the amount Nu, 3,385.38+29,375.25. The remaining will be recovered from the upcoming bills and will be deposited in ARA.

RAA's Further Comments & Recommendations:

The recovery of overpayments of Nu. 32,760.63 is noted. However, it is to reiterate that the site engineer had failed to properly cross check the claims with that of actual work done at site indicating entertainment of RA bills without actual verification of site and measurements as required under technical norms and financial rules and regulations (FRR). It was obvious that that the contractor would have benefited by the overpayments if not observed by RAA.

However, as agreed in the exit meeting, the DoR and RO should recover the balance amount of Nu. 115,470.90 within three months from the date of issue of the report beyond which penalty @ 24% per annum would be levied as per the FRR 2016, Chapter IV, Section 4.5.1.4 of Finance and Accounting Manual

The remedial measures and procedures proposed to be put in place to ensure proper recording of measurements of actual work done and verification of RA bills to avoid overpayments in future should be intimated to RAA for record and follow-up during future audits. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished for review and records.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No. 9307024

13.2 Payments made for laying of PCC 1:3:6 Bed Block under RCC slab without providing at site - Nu. 27,830.00 (5.1.20)

The contractor was paid Nu. 27,830.00 for providing and laying PCC 1:3:6 bed block under RCC slab. However, during the physical verification of structures, the PCC bed block was found not provided at site under the RCC slab.

As the very purpose of providing PCC bed block is to level the RCC slab and to make the abutment strong enough to support the RCC slab on it, the absence of PCC bed block could lead to failure of the RCC slab culvert. Details of payment made for unexecuted PCC bed block are as shown below:

Table: 13.2- Formwork - RC0090					
Chainage	Qty	Rate	Amount	MB no	Page no
72780	1.12	250	280	43	16-17
72900	1.96	250	490	43	19
74140	1.6	250	400	43	23-24
74400	1.5	250	375	43	28
76460	1.14	250	285	43	32
77200	1.18	250	295	43	35
75260	2.34	250	585	44	15
76920	0.87	250	217.5	44	17
76960	1.28	250	320	44	18
77290	1.08	250	270	44	19
77540	0.87	250	217.5	44	20
77630	1.32	250	330	44	21
77710	1.56	250	390	44	23
77789	1.38	250	345	44	25
78040	0.96	250	240	44	26
78180	1.38	250	345	44	27
78380	0.98	250	245	44	28
79120	2.38	250	595	44	29
79220	1.02	250	255	44	30
79420	0.96	250	240	44	31
79770	1.12	250	280	44	33
79860	0.82	250	205	44	34
		Total	7,205.00		

Table: 13.2(1)PCC 1:3:6					
Chainage	Qty	Rate	Amount	MB no	Page no
72780	0.3	2500	750	43	48
72900	0.56	2500	1400	43	48
74140	0.46	2500	1150	43	48
74400	0.42	2500	1050	43	49
76460	0.32	2500	800	43	49
77200	0.3	2500	750	43	49
75260	0.66	2500	1650	44	77
76920	0.26	2500	650	44	77
76960	0.34	2500	850	44	78
77290	0.28	2500	700	44	78
77540	0.22	2500	550	44	78
77630	0.36	2500	900	44	79
77710	0.4	2500	1000	44	79
77780	0.34	2500	850	44	80
78040	0.26	2500	650	44	80
78180	0.38	2500	950	44	80
78380	0.26	2500	650	44	81
79120	1.03	2500	2575	44	81
79220	0.32	2500	800	44	81
79420	0.26	2500	650	44	82
79770	0.3	2500	750	44	82
79860	0.22	2500	550	44	82
		Total	20,625.00		

Therefore, RO, Trongsa besides recovering Nu. 27,830.00 should justify for non-execution of the PCC bed block under RCC slab as provided in the drawings and technical specifications.

The RO should also hold the site engineer accountable for appropriate action for such lapses.

Auditee's Response:

The RO acknowledges the RAA observations and the management regrets on our own lapses leading to poor workmanship. We accept the defect in the construction and the mentioned amount will be recovered from the contractor's bill and deposited in the ARA.

RAA's Further Comments & Recommendations:

The RO has accepted the lapses, which had occurred primarily due to poor supervisions and monitoring as well as laxity and complacency on the part the Site Engineer and RO. It was obvious that the contractor would have benefited for the payments for works not executed if not observed by RAA.

However, the RO should technically review the structures of any effect on the quality due to non-providing of PCC bed block under RCC slab prior to recovery of the cost of the work not

executed at site. Further as discussed in the exit meeting, the DoR and Ministry should institute technical Team to oversee technical soundness of all constructed infrastructures to facilitate timely rectification of structure besides instituting strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future.

The measures and procedures proposed to be put in place to prevent such lapses should be intimated to RAA for record and follow-up during future audits. Besides, the details of recoveries if affected and accounted for in the books of accounts should be furnished for review and records.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No.9307024

13.3 Acceptance of Defective construction works (4.4.63)

The RCC slab (P&L M25 slab concrete in suspended floor and construction of RRM in CM 1:4 for abutment) at chainage 76960m was not properly casted on the abutment. The slab was found sliding off from the abutment indicating poor workmanship as evident from the photograph depicted below:



Fig:13.3- Slab shifted off the abutment

The above pictorial evidences indicated existence of inadequate supervision and monitoring controls over the execution of abutment works by the Site Engineer and Regional Official during the execution and poor workmanship of the contractor. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should consider the desirability of establishing a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. Besides, the Ministry must hold the site engineer accountable for such lapses and direct the contractor to redo the defective and substandard works immediately and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

The RO sincerely regrets this. We have already instructed the contractor to rectify the defects. The rectification carried out and certificate to that effect will be intimated to RAA for review and records.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the execution of substandard abutment works not aligning to the technical specification by the contractor is indicative of absence of inadequate supervision and monitoring by the site engineer and the project engineer. It was apparent that the contractor would have been paid for defective and sub-standard works if not observed by RAA.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records.

The DoR and Ministry should institute technical Team to oversee technical soundness of all constructed infrastructures to facilitate timely rectification of structure besides instituting strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The measures and procedures proposed to be put in place to prevent such lapses intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No. 9307024

14 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bongzam to Gyatsa Zam (Package 12) by M/s Dungkar Construction Pvt. Ltd

The contract for formation cutting and pavement works from Bongzam to Gaytsa (Chainages 80km to 85km) covering a total of 5 kilometer estimated at Nu. 98,620,000.00 was awarded to M/s. Dungkar Construction Pvt Ltd. Thimphu being the lowest evaluated bid. The contract was signed vide agreement No.DOR/CE(CD)/2016-2-17/W-29/2778 dated 6th July 2016 (TR-12) with following contract details:

- i. Quoted amount : Nu. 78,928,350.00
- ii. Duration of contract : 20 months
- iii. Start date : 5th July 2016
- iv. Due date of completion : 5th March 2018
- v. Work status : On-going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

14.1 PCC 1:3:6 coping done not as per the drawing & design (4.4.69)

The contractor was paid Nu. 11,130.00 for providing and laying 75mm thick PCC coping for RRM wall at chainage 84780m. However, upon physical verification, only 40mm thick PCC was found provided as against required specification of 75mm as evident from the photograph depicted below:



Fig: 14.1- PCC coping of 40mm done against 75mm requirement

The above pictorial evidence indicated absence of adequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Officials. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should constitute a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of works executed in deviation to drawing & design from the contractor. Besides, the Ministry should hold the site engineers accountable for such unwarranted lapses and direct the contractor to rectify the defective works immediately and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

The RO has already instructed the contractor to redo the sub-standard thickness coping to 75mm thick. It all happened due to no clear instructions between the engineers and the workers. For this we had already instructed the joint measurement team led by the site

engineer to measure the work as per the drawing and payment will be released only if it meets the technical specification.

This observations are our valuable guides in the future to be alert before accepting the measurement

RAA's Further Comments & Recommendations:

The instruction issued to the contractor for rectification of defective RRM works is noted. However, it is to reiterate that rectification of defective and substandard works at the instance of audit verification of sites is an indication of laxity on the part of the RO and Site engineers toward works and procedures. It was apparent that the contractor would have been paid for defective and sub-standard works had it not been pointed out by RAA.

However, as agreed in the exit meeting, the DoR and RO should rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and record.

The DoR and Ministry institute should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The control mechanism proposed to be put in place to prevent such lapses should be intimated to RAA for record and follow-up during future audits.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No.9307024

14.2 Construction of Sub-standard catch pits along chainage 72-85 Km (4.4.30)

The item of works “Providing & Laying RRM in CM 1:6 in road side structures included construction of headwalls, wing walls, catch pits, channels - weep holes as per drawing.”

A joint team comprising of officials from the Regional Office, DoR Trongsa, Contractor and audit team conducted the physical verification of site. During the physical verification of works it revealed execution of substandard RRM works as well as in deviation to the approved drawings as depicted in the photographs below:



Fig.:14.2-Catch pit without opening leading to diversion of water along the roadside, which is completely deviating from the purpose of construction of catch pit and Catchpits not aligning to standard drawings and defective works

The above pictorial evidences indicated not only construction of catch pits not complying with the approved drawings but also existence of inadequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Officials. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should consider the desirability of establishing a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. Besides, the Ministry must hold the site engineers accountable for such lapses and direct the contractor to redo the defective and substandard works immediately and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

The RO has already instructed the contractor to rectify the sub-standard catch pits complying with the technical specification. This is the failure of contractor's engineer as well as on our part accepting such defective work. RO will ensure that the sub-standard structures are rectified as per the technical specification and accordingly the RO team will certify on the rectified structures, which will be ultimately intimated to RAA for kind record and review.

RAA's Further Comments & Recommendations:

The damages and defects noted in the newly constructed road indicated poor quality of road works and workmanships and also indication of lack of proper supervision and monitoring of works by the site engineers.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works and take appropriate administrative action on the responsible officials to prevent recurrence of such lapses in future.

Further, DOR should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works as approve drawings and designs and facilitate timely detection and rectification of defective and substandard works within the defect liability periods at the cost of the contractors.

The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

Who is accountable?

<i>Direct Accountability</i>	<i>: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067</i>
<i>Supervisory Accountability</i>	<i>: Sangay Dorji, PE, EID No.9307024</i>

14.3 Defective Abutments along Chainages 72-85 Km (4.4.63)

The RRM walls for construction of abutments were found constructed with poor quality and workmanship as well as without complying with the principles of construction.

The bearing length of abutments were maintained at 200mm in contrary to 300mm required as per the drawing. Construction of such defective works could lead to failing of RCC slabs.

Pictorial evidences of execution of poor quality RRM works as well as in deviation to the approved drawings are as depicted in the photographs below:



Fig:b14.3- Defective construction of culvert

The above pictorial evidences indicated absence of adequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Officials during execution. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should consider the desirability of instituting a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship and quality from the contractor. Besides, the Ministry should hold the site engineer accountable for such lapses and direct the contractor to redo the substandard and poor quality works immediately and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

The RO has already instructed the contractor to rectify the sub-standard abutments complying with the technical specification. This is the failure of contractor's engineer as well as on our part accepting such defective work. RO will ensure that the sub-standard structures are rectified as per the technical specification and accordingly the RO team will certify on the rectified structure, which will be ultimately intimated to RAA for kind record and review.

RAA's Further Comments & Recommendations:

While taking note of response, the fact remains that the contractor has constructed abutments not as per the drawings and designs provided indicating inadequate supervision and monitoring of works by the site engineers.

It was apparent that the contractor would have escaped by constructing abutments not meeting the drawings and designs had it not been pointed out by RAA thereby benefiting in terms of monetary terms.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the abutments as per the drawings and designs at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works and take appropriate administrative action on the responsible officials to prevent recurrence of such lapses in future.

Further, DOR and the Ministry should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works as approve drawings and designs and facilitate timely detection and rectification of defective and substandard works within the defect liability periods at the cost of the contractors. The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No.9307024

14.4 Construction of parapets deviating from standard requirements along chainages 72-85 Km (4.4.63)

The parapets constructed along chainages 72-85km were found constructed with poor quality and workmanship without complying with the standard drawing and designs. The bearing length of parapets were maintained at 500mm and 800mm in contrary to 600mm and 900mm required as per the drawing. Pictorial evidences of execution of different forms of parapets, poor quality works and deviations to the approved drawings are as depicted in the photographs below:



Fig: 14.4 - Construction of parapets not aligning to the specification



Fig: 14.4(1) - Construction of parapets not aligning to the specification

The above pictorial evidences indicated absence of adequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Officials during execution. The acceptance and taking over of works which did not meet the drawings and designs indicated laxity on the part of the Regional Office.

The Ministry should consider the desirability of instituting a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship and quality from the contractor. Besides, the Ministry should hold the site engineer accountable for such lapses and direct the contractor to redo the substandard and poor quality works immediately and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

RO would like to appreciate the RAA for the observation. The RO has already instructed to rectify the sub-standard parapets complying with the technical specification. This is the failure of contractor's engineer as well as on our part accepting such defective work. RO will ensure that the sub-standard structures are rectified as per the technical specification and accordingly the RO team will certify on the rectified structure, which will be ultimately intimated to RAA for kind record and review.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of response, the fact remains that the execution of parapet works in deviation to the approved drawings and designs indicated inadequate supervision and monitoring of works by the site engineer and RO.

It was apparent that the contractor would not have rectified those parapets which did not meet the drawings and designs had it not been pointed out by RAA. The failure to timely inspect and rectify the defective parapets indicated existence of inadequate supervision and monitoring of works at the time of execution by the RO and site Engineers.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works and take appropriate administrative action on the responsible officials to prevent recurrence of such lapses in future.

Further, DOR and the Ministry should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works as approve drawings and designs and facilitate timely detection and rectification of defective and substandard works within the defect liability periods at the cost of the contractors. The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

Who is accountable?

Direct Accountability	: 1.Krishna Kumar Gautam, AE,EID No.20120100021 2.M/s Dungkar Construction Pvt Ltd, CDB No.3067
Supervisory Accountability	: Sangay Dorji, PE, EID No.9307024

15 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Sonam Kuenphen to Hurjee (Package 14) by M/s Lamnekha Construction Pvt. Ltd

The contract for formation cutting and pavement works from Sonam Kuenphen to Hurjee (Chainages 87.62km to 89.80km) covering a total of 2.18 kilometer estimated at Nu. 55,566,000.00 was awarded to M/s Lamnekha Construction Pvt. Ltd, Chukha being the lowest evaluated bid. The contract was signed vide agreement No.DOR/CE(CD)/2016-17/W-29/2855 dated 1st August 2016 with following contract details:

- i. Work order No. : DoR/RO/NEWH/TN-P14 of 29.7.2016
- ii. CDB No. : 1435
- iii. License No. : 2000012
- iv. Duration of work : 15 Months
- v. Date of start : 29th July 2016
- vi. Date of completion : 29th October 2017
- vii. Contract amount : Nu. 45,714,110.00

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality for FC works.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

15.1 In admissible payment of incentive for FC work - Nu.96,705.00 (5.1.19)

In terms of Section VI of SCC, Clause GCC 1.1 (ff) of the contract agreement, it categorically stipulated as under:

“Formation Cutting work shall be executed at night from 7PM to 8AM for which separate incentive will not be paid. Any damage to existing structure of the public or other agencies during road excavation, the contractor will be liable for compensation if any”.

On review of the RA bills and MB, it was noted that M/s Lamnekha Construction Pvt. Ltd was paid 15% incentive amounting to Nu. 96,705.00 for FC works of 2149m (***Refer MB 31 page 180***) as detailed below:

Table: 15.1- Detailing inadmissible payment of 15% incentive								
Sl. No.	Chainage	Total road length	Qty. FC	Rate (Nu.)	Amount (Nu.)	15% paid	Total Amount paid	Remarks
1	87.62 – 89.8	2.18 km	2149	300	644,700.00	96,705.00	741,405.00	15% not admissible as per contract

The Regional Office, should comment on the circumstances leading to payment of 15% incentive despite categorical stipulation of the inadmissibility in the contract agreement. The violation of the provisions of the contract agreement indicated existence of poor contract management as well as weak control mechanism over the verification and settlement of RA bills.

The Regional Office besides recovering the inadmissible payment of Nu.96,705.00 and depositing it to Audit Recoveries Account should hold the site engineer and the contractor accountable for illegal claims and payment for appropriate decisions and actions.

Auditee's Response:

Formation Cutting work shall be executed at night from 7 PM to 8AM for which separate incentive will not be paid. Any damage to existing structure of the public or other agencies during road excavation, the contractor will be liable for compensation “if any” RO will recover Nu. 96,705.00 and it will be deposited in the ARA.

RAA's Further Comments & Recommendations:

The reply to recover the ineligible payment of Nu. 96,705.00 is noted. However, it is to reiterate that the site engineer had failed to properly cross check the claims with that of

provisions of the contract agreement. It also indicated existence of poor contract management system and weak internal controls over settlement of RA Bills. It was obvious that the contractor would have benefited if not observed by RAA.

However, as agreed in the exit meeting, the DoR and RO besides recovering the amount of 96,705.00 within three months from the date of issue of the report beyond which 24% penalty would be levied as per the Ministry of Finance circular No.MOF/R-circular/2010/9842 dated 7/01/2010 should strengthen the contract management system as well as control mechanism to prevent ineligible claims and payment including strict enforcement of the provisions of the contract agreement in future. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished for review and records.

Who is accountable?

Direct Accountability	: 1.Kinzang Wangdi, AE,EID No.201101237 2.M/s Lamnekha Construction Pvt Ltd, CDB No.1435
Supervisory Accountability	: Sangay Dorji, PE, EID No.9307024

PART C: FINDINGS OF RECOMMENDATORY NATURE WITHOUT ACCOUNTABILITY

The audit findings under this section of the report contains those issues, which are recommendatory in nature and intended to bring improved compliances through appropriate interventions and as such no accountability has been fixed for the findings. However, in the event the DOR and the Ministry do not take measures and actions on the recommendations within three months' time from the issue of the report, as agreed during the exit meeting, the RAA would fix the accountability for appropriate action.

16 Abnormal delay and slow progress of the work

The work progress as on 31st January 2018 as compared to contract deadline and the work schedules showed that almost all the contract works are far behind the agreed work schedules. The status of physical progress of work achieved by the contractors and scheduled work completion dates are as shown in table 2.33 below:

Package	Contractor	Work completion date as per the plan	Revised work completion date	Work Status	Physical progress as on 31/01/18
1	M/s Rigsar Construction Pvt/ Ltd. (Chuserbu – Nyelazam)	05/12/17	18/03/18	Under Progress	FC, Permanent works, base course, 6km of DBM and AC completed
2	M/s Gaseb Construction Pvt. Ltd. (Nyelazam-Sakachawa)	05/12/17	18/03/18	Under Progress	FC, Permanent works, and till WMM completed
3	M/s Rinson Construction Pvt. Ltd (Sakachawa – Tsangkha)	16/12/17	31/03/18	Under Progress	FC, Permanent works, and only 1.1Km of GSB completed
4	M/s Gyalcon Construction Pvt/ Ltd (Tsangkha - Viewpoint)	18/12/17	18/04/18	Under Progress	FC, Permanent works,
5	M/s Druk Lhayul Construction Pvt/ Ltd (Viewpoint – Bjeezam)	12/12/17	12/04/18	Under Progress	FC, Permanent works,
6	M/s. Raven Builders & Company (P) LTD (Bjeezam – Trongsa)	10/12/17	31/04/18	Under Progress	FC, Permanent works,
7	M/s Druk Lamsel Const. Pvt. Ltd (Trongsa – Punzhi)	12/01/18	12/05/18	Under Progress	FC, Permanent works and till WMM completed
8	M/s Dungkar Construction Pvt/ Ltd (Punzhi – Tashipokto)	18/12/17	18/05/18	Under Progress	FC, Permanent works
9	M/s Welfare Construction Pvt/ Ltd (Tashipokto – Dorjigonpa)	21/01/18	21/05/18	Under Progress	Only FC and Permanent works completed
10	M/s Rinson Construction Pvt/ Ltd (Dorjigonpa – Yotongla)	31/12/17	31/03/18	Under Progress	FC, Permanent works and 2.8Km GSB completed
11	M/s Dungkar Construction Pvt/ Ltd (Yotongla- Bongzam)	31/01/18	31/04/18	Under Progress	FC, Permanent works
12	M/s Dungkar Construction Pvt. Ltd (Bongzam – Gyatsa zam)	05/03/18	05/05/18	Under Progress	FC, Permanent works
13	M/s Rinson Construction Pvt/ Ltd (Gyatsa zam – Nangar)	02/02/18	02/05/18	Under Progress	FC, Permanent works, 2.1km GSB and 500m drain completed
14	M/s Lamneka Const. Pvt. Ltd	29/10/17	16/12/17	Under Progress	Permanent works and till WMM completed

It is apparent from the above table that most of the contractors are not likely to complete their works on revised completion dates. The delays are mainly due to the failure of the contractors

to deploy requisite key personnel and equipment and other related resources as well as awarding of additional works despite contractors' failure to cope up with the originally awarded contract packages. Such delays and failure to complete contract works within and extended timeframe also indicated inadequate monitoring and supervision mechanism over the execution of works and approved work program by the site supervisors and engineers. Moreover, the poor work progress also defeated the purpose of the additional advance payments made to contractors to speed up the works and thus did not provide value for money as the work progress were all falling behind.

The RO, Trongsa should comment on the circumstances leading to such delays and measures taken to address such delays including awarding of additional works despite poor work progress. Besides, the RO should comment on the course of action taken against the contractors for the slow progress of contract works.

Auditee Response:

We are equally concerned for delay and slow progress of the work despite the several progress review meetings at both regional level and HQ level, issuance of warning letters for slow and delays in the progress, reminder letters, close monitoring & technical assistance at site and additional advance payments. For many contractors, it had been always a benefit for them to be reminded themselves and speed up the work progress. However, few could not show much progress as expected due to their own internal management instability.

The department and the RO had tried every possible steps to speed up the progress in the interest of all but due to many unavoidable elements in the path of construction the progress had been hampered.

In view of above justifications, RAA is kindly requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response indicating various initiative taken to speed up the work progress including issuance of letters to the contractors, the fact remains that all the contract packages were far behind the completion deadline. It is also apparent from the response that the RO and DOR including TMT team had not vigorously followed up to expedite the work progress. The physical verification had also revealed that almost all the contractors had not only failed to deploy committed key personnel and equipment but also replaced the key personnel with lesser qualifications and experiences that too without appropriate approval of the ROs. In addition, the contractors having two or three contract packages were using same machineries and equipment and personnel and some of the machineries and equipment deployed were found off roads. The contractors may also lack capacity to handle multiple projects.

The RO should impose liquidated damages to all contractors as per the contract agreement for abnormal delays and the amount deposited into Audit Recoveries Account. In the event time extensions were to be granted or already sanctioned, the RO should furnish the number of time extension sanctioned along with approving authority as well as documentary evidences supporting the grounds under which the time extensions were sanctioned.

As discussed during the exit meeting, the DOR and the Ministry should also carry out studies on the causes of delays and proper contract management system instituted having regard to

nature, volume and scope of works. The study should also consider proper work plan scheduling of project, defining types and number of machineries and equipment and efficiency requirements and deployment plan, adequate key personnel & work force deployment plan with technical skills requirements and Capacity of contractors to handle multiple projects.

The outcome of the study conducted along with the systems and process proposed to be instituted for execution of similar projects in an economic, efficient and effective manner should be intimated to RAA for record and follow-up in future audits.

17 Non-fulfillment of Milestone Commitment Agreement by the contractors

The completion deadlines for all the contract packages were found revised on the strength of the approval of MLTC accorded under letter No.DOR/CD/7/2017-18/4405 dated 21/09/2017 due to additional works and increase of 1m carriageway width.

However, taking cognizance of slow progress of the works and contractors' failure to complete the contract works within the original and revised completion deadlines, Milestone Commitment Agreement were found drawn by the ROs with the defaulting Contractors. The milestone consisted of two months and the commitment agreement stipulated that failing to achieve two (2) consecutive milestones would lead to termination of contract. The milestone commitment agreement drawn between the ROs and the contractors were as discussed below:

17.1 Sakachawa to Tsangkha (Package 3) excited by M/s Rinson Construction Pvt. Ltd

As per the initial work plan, the contractor had proposed the completion of work by 16th December 2017 as scheduled in the contract documents as shown below:



The completion deadline was found revised to 31st March 2018 based on the award of additional works of Nu. 16.384 million. The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 as shown below:

Table 17.1: Milestone Commitments									
Qty to be executed as per the milestone commitment agreement starting from Sept 2017									
Item of work	Qty	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18
FC	500m	125	125	125	125				
GSB	7.5km		2.5	2.5	2.5				
WMM	7.5km				2.5	2.5	2.5		
Drain	7.5km				0.5	2	2.5	2.5	
DBM	7.5km					2.5	2.5	2.5	
AC	7.5km						3.75	3.75	

The Milestone Commitment Agreement also stipulated the following:

- Collection of GSB materials to be completed by end of September 2017
- Collection of WMM materials to be completed by end of November 2017
- Installation of Asphalt plant by the end of December 2017
- 20mm and 10mm aggregate from Yotongla

However, the audit team on comparison of the milestone with the actual work done at site as of 12/01/2018 noted that 1st two months milestone was not achieved as shown below:

Table 17.1(1): Milestone achievement				
Item of work	Qty	As per mile stone till end of Dec 2017	Work done till 12/01/2018	Remarks
FC	500m	500m (7.5km)	6.5km	86.67% work complete
GSB	7.5km	7.5km	1.1km	14.67% work complete
WMM	7.5km	2.5km	Nil	0% work done
Drain	7.5km	0.5km	Nil	0% work done
DBM	7.5km	Nil	Nil	
AC	7.5km	Nil	Nil	

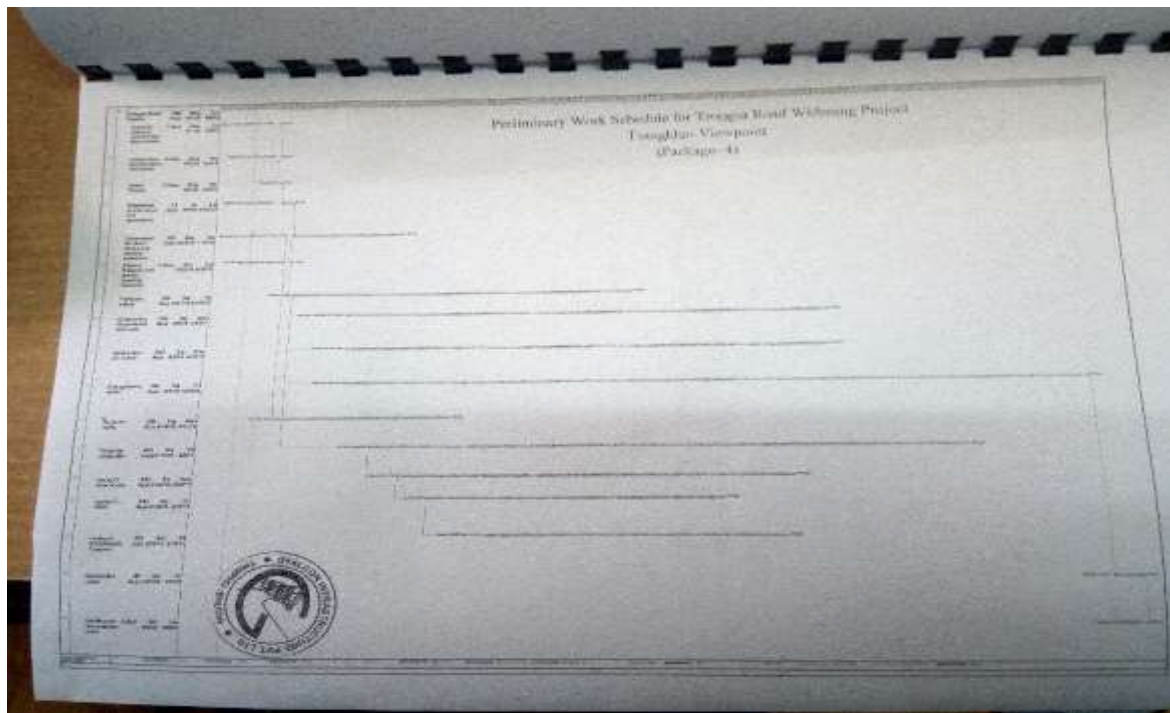
In addition to the above failure, the following works were found not yet completed:

- Collection of GSB materials was found under progress which should have been completed by the end of September 2017 delayed by more than three months.
- Collection of WMM materials not yet started thus already delayed by more than two months
- Asphalt plant not installed which should have done by the end of December 2017 thus already delayed.

The audit team noted that even the milestone for FC was not achieved indicating failure to achieve all the subsequent milestones.

17.2 Tshangkha to View Point (Package 4) executed by M/s Gyalcon Infrastructure Pvt. Ltd

As per the work plan submitted by the contractor, the proposed completion deadline of contract work was 17th December 2017 as depicted in the work plan below:



The completion deadline was found revised to 18th April 2018 based on the award of additional works of Nu. 15.028 million. The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 as shown below:

Table 17.2: Milestone Commitment										
		Qty to be executed as per the milestone commitment agreement starting from Sept 2017								
Item of work	Qty	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Remarks
FC	720 m	360m	360m							
GSB	5km			1	2	2				
WMM	5km					1.67	1.67	1.67		
Drain	5km					1	1.5	1.5	1	
DBM	5km							2.5	2.5	2.5 (15 days in Feb & 15 days in march)
AC	5km								5	

The Milestone Commitment Agreement also stated the followings:

- Collection of GSB materials to be completed by end of September 2017
- Collection of WMM materials to be completed by end of November 2017

- The contractor planning to get DBM & AC materials from Hi-Tech plant from Tekizampa, around 90 km lead.

However, the audit team on comparison of milestone with the actual work done at site as on 31/12/2017 noted that 1st two months mile stone was not achieved as shown below:

Item of work	Qty	As per mile stone till December 2017	Work done till 31/12/2017	Remarks
FC	720m			Not done, it was cancelled
GSB	5km (Revised to 4km)	4km	1km	3km not completed
WMM	5km (Revised to 4km)	1.67	Not done	843m3 wmm materials stacked at site (for 500 m length roads)
Drain	5km (Revised to 4km)	1km	Not done	Not started
DBM	5km (Revised to 4km)	Nil	Nil	
AC	5km (Revised to 4km)	Nil	Nil	

In addition to the above failure, the following works were found either under progress or not yet started:

- Collection of GSB materials still under progress though should have been completed by 15th October 2017.
- Collection of WMM materials just started though should have been completed by end of the Dec 2017.
- Drain work was found not started although by December 2017, 1km drain works should have been completed.

The audit team noted that 1st two months mile stones agreed were not achieved and achievement of 2nd two months mile stone was also not possible at current pace of work.

17.3 View Point- BjeeZam (Package 5) executed by M/s Druk Lhayul Construction Pvt. Ltd

As per the work plan submitted by the contractor, the proposed completion of contract work was scheduled on 12th December 2017 as per contract agreement.

The completion deadline was found revised up to 12th April 2018 based on the award of additional works of Nu.**15,027,947.00** as detailed below:

Sl.No.	Description of items	Estimated Amount	Basis of estimated cost	Remarks
1	RRM walls	4,492,383.00	BSR-2017	approved 4 months as time extensions
2	RCC Culvert	989,423.00	BSR 2017	
3	Boulder wall	668,925.00	Rate Analysis	
4	Clearing of Hard rock	1,266,250.00	Rate Analysis	
5	Gabion Wall	5,610,966.00	BSR-2017	
6	Road maintenance	2,000,000.00	Lump sum	
	Total	15,027,947.00		

Note: (Minutes of the Ministerial Level Tender Committee (MLTC) Meeting of 5th September 2017)

The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just three months before the completion deadline scheduled on 12th December 2017 as shown below:

Table 17.3(1): Milestone Commitment										
Qty to be executed as per the milestone commitment agreement starting from Sept 2017										
Item of work	Qty	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Remarks
FC	720m	360m	360m							
GSB	5km			1	2	2				
WMM	5km					1.67	1.67	1.67		
Drain	5km					1	1.5	1.5	1	
DBM	5km							2.5	2.5	2.5 (15 days in Feb & 15 days in march)
AC	5km								5	

However, the audit team on comparison of milestone with the actual work done at site as on 31/12/2017 noted that 1st two months milestone was not achieved. And also indication of failure to complete the works within the extended completion deadline. In addition, the following works were found either under progress or not yet started as shown below

The pavement works including drain works were found not started at all and even 720meters of FC works had remained uncompleted although 90% of the contract duration was already over.

17.4 Bjeezam- Trongsa (Package 6) executed by M/s. Raven Builders & Company (P) Ltd

As per the work plan submitted by the contractor, the proposed completion schedule of work was 21st November 2017 as per contract agreement.

The completion deadline was found revised to 30th April 2018 based on the award of additional works of Nu.**13.718 million**.

As evident from progress reports, the work progress reminders were served to contractor vide Ref: RO/DoR/P6/2016-2017/410 dated 16th January 2017, highlighting on the achievement of just 30.8% against 50% progress committed and time lapsed of 62% and again vide Ref: DoR/RO/Trongsa/2016-17/P6/472 dated 6th February 2017 on the achievement of just 50% progress by end of January 2017.

Further, Milestone Commitment Agreement was found drawn vide letter No DoR/RO/Trongsa/17-18/5/237 dated 19/9/17 as shown below:

Table 17.4: Milestone Commitment											
Qty to be executed as per the milestone commitment agreement starting from Sept 2017											
Item of work	Qty	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	Remarks
FC	500m	0.00	100.00	100.00	100.00	200.00					Excavator -4, breaker-2, Exca drill

GSB	6.7km			1	2	2.35	1.35				Material collection: GSB= 900m ³
WMM	6.7km					1.5	1.5	2	1.7		WMM= Nil
Drain	6.7km					1	1	1	2	1.7	
DBM	6.7km						1.7	2	3		Nil
AC	6.7km						1	2.5	2.5	0.7	Nil

The Milestone Commitment Agreement also states the followings:

- Exca drill to reach at site by end of August 2017
- Collection of GSB materials to be completed by end of Oct. 2017
- Collection of WMM materials to be completed by 30th Dec. 2017

However, the audit team on comparison of Milestone with the actual work done at site as on 31/12/2017 noted that 1st two months mile stone was not achieved as shown below:

Item of work	Qty	As per mile stone till December 2017	Work done till 31/12/2017	Remarks
FC	500m	200m	100m	Only 100 m was done in the month of October
GSB	6.7km)	3 km	Not done	Material collection: GSB= 900m ³
WMM	6.7km	Nil	Not done	Nil
Drain	6.7km)	Nil	Not done	Nil
DBM	6.7km	Nil	Nil	Nil
AC	6.7km	Nil	Nil	Nil

In addition to the above failure, the following works were found either under progress or not yet started:

- Collection of GSB materials is still under progress although it should have been completed by end of October 2017
- Collection of WMM materials is still not done although it should have been completed by end of the November 2017
- Non installment of Asphalt plant though agreed to complete installation by end of December 2017
- Some committed machineries were still not deployed at site

As apparent from above, 1st two months Milestones agreement had miserably failed and the possibility of achieving 2nd two month Milestone would remain a distant myth at this current pace of works.

17.5 Pinzhi-Tashipokto (PKG-8) executed by M/s. Dungkar Construction Pvt Ltd. Thimphu

As per the initial work plan, the contractor has proposed the completion of work by 2nd December 2017 against the scheduled completion on 12th December 2017. The completion deadline was found revised up to 18th May 2018 based on the award of additional works of **Nu. 23.714 million.**

The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just three months before the completion deadline scheduled on 12th December 2017 as shown below:

Table 17.5: Milestone Commitment									
		Qty to be executed as per the milestone commitment agreement starting from Sept 2017							
Item of work	Qty	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	Remarks
GSB	8km	1km	2km	2km	3km				
WMM	8km				2km	3km	3km		
Drain	8km				1	1	3	3	
DBM	8km					1km	3.5km	3.5km	
AC	8km						4km	4km	

The Milestone Commitment Agreement also stipulated the followings:

Collection of GSB materials to be completed by 15th Oct 2017

Collection of WMM materials to be completed by end of Dec 2017

Asphalt plant installation to complete end of October 2017 at Gyatsa

However, the audit team on comparison of mile stone with the actual work done as on 31/12/2017 noted that 1st two months mile stones were not achieved as shown below:

Table :17.5(1) - Milestone Achievement										
		Qty to be executed as per the milestone commitment agreement starting from Sept 2017								
Item of work	Qty	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	Remarks
GSB	8km									collection under progress
WMM	8km									Not done
Drain	8km									Not done
DBM	8km									Not done
AC	8km									Not done

In addition to the above failure, the following works were found either under progress or not yet started:

- Collection of GSB materials still under progress though should have been completed by 15th October 2017
- Collection of WMM materials just started though should have been completed by end of the Dec 2017

The audit team noted that the contractor had failed to achieve the agreed milestones of 1st two months and achievement of 2nd two months milestones was also not possible at current pace of work progress.

17.6 Tashipokto to Dorjigonpa (Package 9) executed by M/s Welfare Construction Pvt. Ltd

As per the initial work plan, the contractor has proposed the completion of work on 21st January 2018. The completion deadline was found revised up to 18th May 2018 based on the award of additional works of **Nu. 20.370 million.**

The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just four months before the completion deadline scheduled on 21st January 2018 as shown below:

Table 17.6: Milestone Commitment											
		Qty to be executed as per the milestone commitment agreement starting from Sept 2017									
Item of work	Qty	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18	May-18	Remarks
FC	250m	50	80	70	50						
GSB	7.98km				3	4.98					
WMM	7.98km					2	3	2.98			
Drain	7.98km						1.98	3	3		
DBM	7.98km							3	4	0.98	
AC	7.98km							1	4	2.98	

The Milestone Commitment Agreement also stated the followings:

- Collection of GSB materials to be completed by end of December 2017
- Collection of WMM materials to be completed by end of January 2018

However, the audit team on comparison of the targets set in the milestone agreement with the actual work done at site as of 31/01/2018 noted that only FC work was completed as shown below:

Table 17.6 (1): Milestone Achievement				
Item of work	Qty	As per mile stone till end of Jan 2018	Work done till 31/01/2018	Remarks
FC	250m	250	250m	100% work complete
GSB	7.98km	7.98km	Nil	0% work done
WMM	7.98km	2km	Nil	0% work done
Drain	7.98km	Nil	Nil	
DBM	7.98km	Nil	Nil	
AC	7.98km	Nil	Nil	

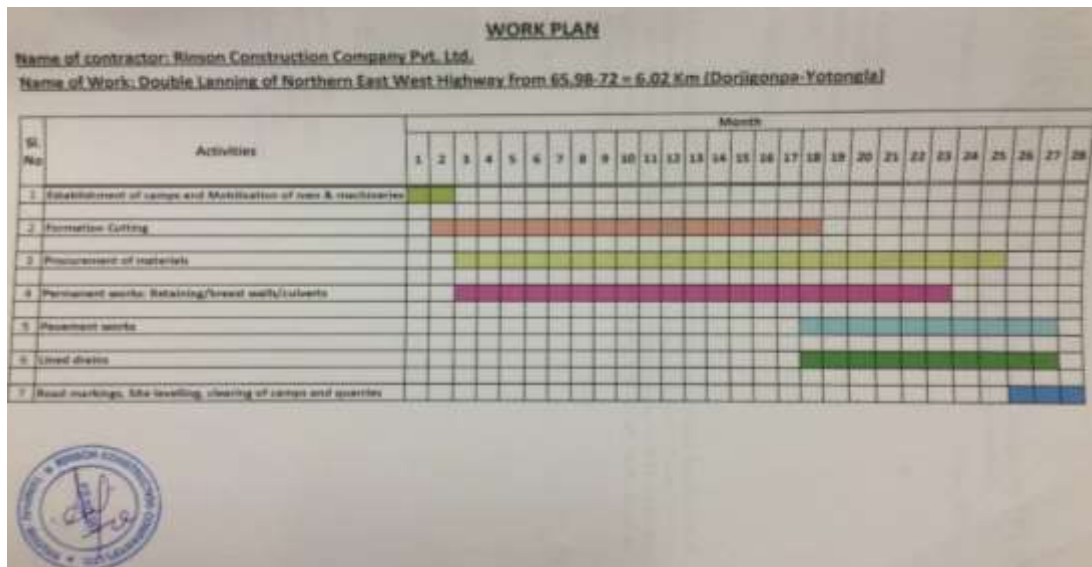
In addition to the above failure, the following works were found either under progress or not yet started:

- Collection of GSB materials is going on which should have been completed by the end of December 2017
- Collection of WMM materials not yet started
- Only FC work was achieved and the progress of work on other two milestones i.e., GSB and WMM work was nil as of 31st January 2018.

The audit team noted that 1st two months milestones agreed were not achieved and achievement of remaining milestones seems unlikely at current pace of work progress.

17.7 Dorji Goenpa to Yotongla (Package 10) executed by M/s Rinson Construction Pvt. Ltd

As per the initial work plan, the contractor was to complete the contract work by 31st December 2017 as shown below:



The completion deadline was found revised up to 31st May 2018 based on the award of additional works of **Nu. 5.830 million**. The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 as shown below:

Table: 17.7: Milestone Commitment

			Qty to be executed as per the milestone commitment agreement starting from Sept 2017							
Item of work	Qty	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Remarks
FC	1km	100	100	200	200	200	200			
GSB	4.42km			0.5	1.5	2	0.42			
WMM	6.02km					2	2	2.02		
Drain	6.02km					1.5	1.5	1.5	1.52	
DBM	6.02km						2	2	2.02	
AC	6.02km							3.01	3.01	

The Milestone Commitment Agreement also states the followings:

- Collection of GSB materials to be completed by end of December 2017
- Collection of WMM materials to be completed by end of January 2018
- Installation of Asphalt plant at Gaytsa
- Crusher installed at Yotongla and another one to install at Ura by end of Oct 2017

However, the audit team on comparison of the milestone with the actual work done at site as on 31/01/2018 noted that 1st two months milestone was not achieved as shown below:

Table 17.7(1): Milestone Achievement

Item of work	Qty	As per mile stone till end of January 2018	Work done till 31/01/2018	Remarks
FC	1km	1km	580m	58% work complete
GSB	4.42km	4.42km	2.8km	63.34% work complete
WMM	6.02km	4km	Nil	0% work done

Drain	6.02km	3km	225m	7.5% work done
DBM	6.02km	2km	Nil	
AC	6.02km	Nil	Nil	

In addition to the above failure, the following works were found not yet completed:

- Collection of GSB materials is going on which should have been completed by the end of September 2017
- Collection of WMM materials not yet started
- Asphalt plant not installed

The audit team noted that 1st two months mile stones agreed was failed miserably and achievement of 2nd two months milestone also not possible at current pace of work progress.

17.8 Yotongla to Bongzam (Package 11) executed by M/s Dungkar Construction Pvt. Ltd

As per the initial work plan, the contractor has proposed the completion of work on 31st January 2018. The completion deadline was found revised up to 30th April 2018 based on the award of additional works of Nu. 5.811million.

The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just four months before the completion deadline scheduled on 31st January 2018 as shown below:

Qty to be executed as per the milestone commitment agreement starting from Sept 2017									
Item of work	Qty	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18	Remarks
GSB	8km	1	2	2	3				Material collection GSB=00m3
WMM	8km				2	3	3		2 crushers for GSB &WMM
Drain	8km				1	1	3	3	
DBM	8km					1	3.5	3.5	Nil
AC	8km						4	4	Nil

The Milestone Commitment Agreement also states the followings:

- Collection of GSB materials to be completed by mid Oct 2017
- Collection of WMM materials to be completed by end of Dec 2017
- Asphalt plant installation to be completed by end October 2017 at Gaytsa

However, the audit team on comparison mile stone with the actual work done at site as on 31/12/2017 noted that 1st two months mile stone was not achieved as shown below:

Item of work	Qty	As per mile stone till December 2017	Work done till 31/12/2017	Remarks
GSB	8km		GSB completed	

WMM	8km		Not yet started	Materials collection not yet started
Drain	8km		Not yet started	
DBM	8km		Not yet started	
AC	8km		Not yet started	

In addition to the above failure, the following works were found under progress or not yet started:

- Collection of GSB materials still under progress though should have been completed by 15th October 2017
- Collection of WMM materials just started though should have been completed by end of the Dec 2017
- Non-installment of Asphalt plant though agreed to install by end of Dec 2017

The audit team noted that 1st two months mile stones agreed was failed miserably and achievement of 2nd two months milestone also not possible at current pace of work progress.

17.9 Gyatsazam to Ngangar (Package 13) executed by M/s Rinson Construction Pvt. Ltd

As per the initial work plan, the contractor has proposed the completion of work on 2nd February, 2018. The completion deadline was found revised up to 2nd May, 2018 based on the increase of 1m pavement width.

The Milestone Commitment Agreement was drawn under Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17 just four months before the completion deadline scheduled on 2nd January 2018 as shown below:

Table:17.9: Milestone Commitment										
Item of work	Qty	Sep-17	Qty to be executed as per the milestone commitment agreement starting from Sept 2017							Remarks
			Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18	
GSB	0.6k m	0.3	0.3							
WMM	10.1 km			2	2.1	3	3			
Drain	10.1 km			1.7	1.7	1.7	1.7	1.7	1.6	
DBM	10.1 km					3.3	3.3	3.3	0.2	DBM to be completed by Mid April 2018
AC	10.1 km						3	3	4.1	

The Milestone Commitment Agreement also states the followings:

- a. Collection of GSB materials to be completed by end of Oct 2017
- b. Collection of WMM materials to be completed by end of Dec 2017
- c. Crusher Installed at Yotongla and another one to install at Ura by end of Oct 2017

However, the audit team on comparison milestone with the actual work done at site as on 31/12/2017 noted that 1st two months milestone was not achieved as shown below:

Table :17.9(1): Milestone Achievement				
Item of work	Qty	As per mile stone till end of Dec 2017	Work done till 15/1//2018	Remarks
GSB	0.6km	Complete	Complete	
WMM	10.1km	4.1 km	2.1 km	50% of milestone achieved
Drain	10.1km	3.4 km	500 m	Only 14.7% achieved
DBM	10.1km	Nil	Nil	
AC	10.1km	Nil	Nil	

In addition to the above failure, the following works were not yet completed:

- Collection of WMM materials just started which should have been completed by end of the Dec 2017
- Providing of DBM layer is yet to start since WMM is not completed which is supposed to be done from January, 2018

The audit team noted achievement of 2nd two months milestone also not possible at current pace of work progress.

In the light of the slow progress of works as well as non-achievement of committed milestones by the contractors, the RO and MLTC should have terminated the contracts as per conditions of the Milestone Commitment Agreement or allowed to continued the contracts under liquidated damages as envisage in the SBD and PRR. The RO and MLTC's decisions to award huge amount of additional works on the verge of expiry of completion deadlines and despite lacking capacity to progress the work as per work plans and committed milestones indicated extension of undue favour to contractors or possible existence of conflict of interest. The award of additional works had further exacerbated the progress of works and lead to time and cost overruns.

The Ministry should investigate the circumstances leading to award of huge amounts of additional works just few months before the expiry of the completion deadlines and ascertain existence of possible conflict of interest or collusive practices. Besides, the Ministry should hold the RO and MLTC accountable for extension of undue financial benefits to contractors by way of nullifying the liquidated damages to the extent of extended time periods as well as awarding additional works beyond the contractors' capacity to handle the works and resulting in time overruns of the projects.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

For an instances as per the Government directive the defect liability period for works has been imposed for three years by serving them in form of letter, since it was not incorporated in our contract document, contractors has not honored and atomically came back to one year.

It is to further substantiate here as similar to above points noted with regards to Milestone Commitment agreement, However the Regional Office DOR, Trongsa would like to substantiate further that the above terms and condition were not incorporated in the mother contract documents not even included in notice inviting tender (NIT), nether incorporated in special condition of contract (SCC) nor reflected in general condition of contract (GCC) and any parts of terms & condition of contract agreement.

The contractors were reluctant to not honor as stated as Milestone Commitment agreement. It is to submit here the above conditions were issued at the later stage conveyed through Government directive such as defects liability period for three years and milestone contract in three steps were received at the later stage while project was ongoing.

Moreover, the milestone contract was implemented to just enforce the contractors to speed up the progress in the interest of the work.

Milestone is a hand tool for the contractor to make them work as per their committed work plan

In view of the above justifications, RAA is requested to drop the memo.

Additional Auditee's Response:

Originally, there is no milestone agreement in the mother contract document. However, at the later stage in the interest of work progress, the department enforced the milestone agreement as a tool to monitor the work progress. This milestone had lifted progress of the contractor in which the contractor could finish the work on time. In view of the above justifications, the para may please be dropped contract document has resulted into non-enforcement of the milestone contract by the RO, Trongsa.

However, as discussed and agreed in the Audit Exit Meeting, the present status of the work with expenditures till date should be submitted to RAA to form final opinion.

RAA's Further Comments & Recommendations:

The assertions of the RO and the DOR that the milestone commitment agreement was not in the mother contract agreement was not justified and tenable. In the event such assertions hold water than all additional works, changes of scope in terms of 1m increase of carriageway width, 15% extra payment and any other decisions taken outside the mother agreement should also stand null and void.

However, the RO and the MLTC in consultation with the DOR and the Ministry should relook at the responses and assertions to ascertain whether the milestone commitment agreements are enforceable particularly when these were mutually agreed. The Ministry should thoroughly investigate the grounds under which additional works were necessitated and identified at a very later stage at the verge of the expiry of completion deadlines and that too despite knowing the fact that the contractors did not have adequate capacity and resources to even handle the work in hand. The time overruns of contract works beyond the extended time periods are clear evidences of lack of capacity of the contractors to handle multiple works or project.

The Ministry should hold all the ROs and MLTC accountable for such decisions and actions that not only exacerbated time overruns but also cost overruns due to estimation of additional works at analyzed rates and awarding works without competitive bidding process.

In addition, as discussed and agreed during the Audit Exit Meeting, the RO should furnish the present status of the contract works detailing expenditures till date as well as actual completion date and handing taking over dates to enable the RAA to form final decision on the issues.

Further, in the light of forgoing fact and events that had led to time and cost overruns of the project, the Ministry should institute a technical team to review and address the systemic and persisting problems in the road construction projects.

The MLTC's decisions in the award of huge amounts of additional works to contractors despite the facts that contractors lacked capacity and resources to handle ongoing contract works with resultant time and cost overruns of the contracts are brought to the notice of the Government for appropriate decisions and actions.

18 Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Chuserbu to Nyelazam (Package 1) by M/s Rigsar Construction Pvt. Ltd

The contract for formation cutting (FC) and pavement works from Chuserbu to Nyelazam (Chainage 1km to 12km) covering a total of 12km was awarded to M/s Rigsar Construction Pvt. Ltd being the lowest evaluated bidder. The contract was signed under Agreement No: RO/DOR/(Trongsa)/2014-2015/PL-36/850 dated 05.06.2015. Estimated cost, contract amount and other important details of contract were as indicated below:

- Name of the Construction : M/s Rigsar Construction
- Contract agreement No. : RO/DOR/(Trongsa)/2014-2015/PL-36/850 dated 05.06.2015
- CDB No. : 2435
- License No. : 6004726
- Duration of work : 30 months
- Date of start : 05.06.2015
- Date of completion : 05.12.2017
- Contract amount : Nu. 147,882,777.62
- Work status : On-going

The status of FC works executed by the contractor is as indicated below:

Sl. No.	Chainage	Total road length	FC Paid in meter	Actual FC cutting in meter	Diff.	Remarks
1	0 – 12 Kms	12 Kms.	12000	11155	845	Actual road length 11,860 as per physical measurement. 705 m were filled as well as some area un-cut.

As per approved revised drawings and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- The maximum Formation road width of 10.50 meter (m) comprising 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

18.1 Laying of Bitumen without conducting requisite Tests for Bituminous Works

On review of construction records it was observed that M/s Rigsar Construction Pvt Ltd was paid Nu. 20,194,872.00 for the item of works “providing and laying of DBM and AC” covering 5.8km road stretch vide 10th and 11th RA Bills as summarized in the table below:

Particulars	10th RA Bill			11th RA Bill		
	Qty. (m ²)	Rate (Nu.)	Amount (Nu.)	Qty. (m ²)	Rate (Nu.)	Amount (Nu.)
DBM	25543.75	233	5,951,693.75	18743.25	233	4,367,177.25
AC	25543.75	223	5,696,256.25	18743.25	223	4,179,744.75
Total			11,647,950.00			8,546,922.00

As per the Additional Clause of the Contract Agreement, the contractor was required to submit test results of bituminous works duly checked and verified by site engineer for passing of the RA Bills. Also Section 1202.5 and 1203 of the technical specifications required the contractor to conduct plant trials, laying trials, site trials and necessary quality control tests in order to ascertain that the bituminous works complied with the requisite technical specifications.

In addition, sub-section (5) Site Trail stipulates as under:

“The contractor shall compact each section of trial over the range of compaction effort the Contractor is proposing. The following data shall be recorded for each level of compaction effort at each site trial:

- ✓ *The composition and grading of the materials including the bitumen content and type and grade of bitumen use.*
- ✓ *The moisture content of aggregates in the asphalt plant hot bins.*
- ✓ *The temperature of bitumen and aggregates immediately prior to entering the mixture, the temperature of the mix, on discharge from the mixture and the temperature of the mix on commencement of laying, on commencement of compaction and on completion of compaction. The temperature of the mixture to be measured in accordance with BS 598, Part 109.*
- ✓ *The type, size, mass, width of roll, number of wheels, wheel load, tyre pressure, frequency of vibration and the number of passes of the compaction equipment, as appropriate for the type of roller.*

- ✓ *The target voids and other target properties of the mix together with the results of the laboratory tests on the mix.*
- ✓ *The density and voids achieved.*
- ✓ *The compacted thickness of the layer*
- ✓ *Any other relevant information as directed by the Engineer*

At least eight sets of tests shall be made by the contractor on each 100metres of trial for each level of compaction effort and provide all eight sets of results over the range of compaction effort proposed by the contractor to meet the specified requirements for the materials and then the site trial shall be deemed successful. The above data recorded in the trial shall become agreed basis on which the particular material shall be provided and processed to achieve the specified requirements”.

However, documentary evidences on the requisite tests conducted by the contractor were not made available on records although the contractor had already finished laying bituminous works for about 5.8km.

Further, the item rates for bituminous works quoted by the contractor are inclusive of cost for all requisite tests and other stipulated requirements. Thus non-enforcement of such requirements tantamount to extending financial benefit to the contractor as well as laxity on the part of the RO and compromising the quality of works. The RO should recover the cost relating to non-fulfilment of requisite tests and other requirements and the amount deposited into ARA.

The RO should also comment on non-enforcement of the aforementioned provisions of technical specification as well as measures instituted to address laying of bitumen as per specified requirements without making the contractor to conduct necessary tests vis-a-vis passing of RA bill without test reports attached.

The DOR and Ministry should hold the RO and site engineers responsible for taking appropriate action for the lapses.

Auditee's Response:

RO accepts that no tests for bituminous works was performed prior to laying of BT for M/s Rigzar Construction as RO partly relied on the Job Mix Formula (JMF) submitted by the contractor. Somehow, during the course of BT work at site, our site engineers learnt that the fines were already mixed with aggregates. To this our site engineers had stopped the addition of fines which was the active measure taken. Core cutting test was performed later, in which the test samples confirmed the thickness requirements are met as per the technical specification. Photos of Cores extracted are shown below. In view of the above justifications, the para may please be dropped.



RAA's Further Comments & Recommendations:

While taking note of the response on the test conducted and achievement of the thickness, the fact remains that the following requisite trails as stipulated in the technical specifications were not conducted to demonstrate that quality of bituminous works are in accordance with the technical specifications:

- *Plan Trial: to establish the plant capacity and the plant can be set up to produce a uniform mix conforming to the approved job mix formula and variations within the permissible variation in the job mix formula. In addition, the engineer is required to conduct **additional testing of the product to establish the reliability and consistency of the plant:***
- *Laying Trails: to demonstrate that the proposed mix can be successfully laid and compacted all in required density;*
- *Site Trials: to demonstrate the suitability of mixture and compaction equipment to provide and compact the materials to the specified voids content and confirm that the other specified requirements of the completed asphalt pavement layer can be achieved were not conducted; and*
- *Quality Control Testing: During mixing and laying of bituminous mixtures, control tests on the constituents and on the mixed materials shall be carried out in accordance with relevant clauses of Section 1200 to show that constituent materials comply with the specifications.*

It is to reiterate that the quoted rates of contractor for the related items of works is built up cost inclusive of cost of all risks factors involved in terms of requirements stipulated in the technical specifications and provisions in the contract document. Thus, non- enforcement of provisions strictly as envisaged in the technical specifications tantamount to extension of undue favour as the contractor not only benefitted financially from not having to conduct the trials at site and incur associated cost but also from possible risks of test results not meeting the specified technical parameters. The failure to ensure requisite and critical trails indicated laxity and complacency on the part of the RO as well as existence of poor supervisions and monitoring controls by the DOR and in particular the dedicated Technical Management Team (TMT) of the project.

However, as discussed during the exit meeting, the DOR and Ministry besides conducting test for bitumen content and density should review and strengthen the existing practices and procedures on the contract management and monitoring system particularly over the enforcement of provisions of the technical specifications which are critical in ensuring use of quality materials, appropriate construction plants and equipment and approved constructions methods for executing the work.

The outcome of the review of existing procedures and practices and measures proposed to be initiated to prevent such lapses in future intimated to RAA for record and follow-up in future audits.

18.2 Execution of Defective PCC 1:3:6 coping on RRM wall - Nu. 10,363.50

During physical verification of works at site, it was observed that PCC 1:3:6 coping for RRM wall at Chainage 3970 was found defective as segregation of materials had occurred as depicted in the photographs below:



Fig: 18.2 - Defective PCC coping

The value of defective work amounted to Nu. 10,363.50 (**2.961cum @ Nu3500**) as reflected in MB 15 page 096.

The above pictorial evidences indicated absence of adequate supervision and monitoring controls over the execution of works by the Site Engineer and Regional Official. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should constitute a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. Besides, the Ministry should fix the site engineer accountable for such lapses and direct the contractor immediately to rectify the defective works and rectification carried out intimated to RAA for review and record.

Auditee's Response:

The RO regrets for such type of defective works. We had already informed the contractor to rectify the coping defect and accordingly the contractor has rectified. The rectified coping will be intimated to RAA for review and records.



Para : 8.2-- Defective PCC

The defective PCC has been rectified as shown in the photograph below.



Para 8.2- Rectified PCC

In view of the above justifications, the para may please be dropped.

RAA's Further Comments & Recommendations:

The defects found in the newly constructed road indicated poor quality of road works and workmanships that led to early segregation of materials of RRM walls. However, while taking note of the response and the photographic evidences, the fact remains that the contractor would have not rectified the defective works if not pointed out by RAA. The failure to timely inspect and rectify defective works by the RO and site Engineer indicated absence of adequate monitoring controls over the executed and completed works to prevent taking over of substandard works. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works.

Further, DOR should institute proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works and facilitate timely detection and rectification of defective and substandard works within the defect liability period at the cost of the contractors.

The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

19 Irregularities noted in Formation Cutting and Payment works for Double Lanning of Northern East-West Highway from Sakachawa to Tsangkha (Package 3) by M/s Rinson Construction Pvt. Ltd.

Scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

19.1 Acceptance of abnormally low and nil quoted bids for item of works

M/s Rincon Construction Pvt. Ltd was awarded the contract for Package III from Sakachawa to Tshangkha covering Chainages 19.5 to 27km with a total of 7.5 Km. The quoted bid was found 35.58 % below the departmental estimated cost as shown below:

Package	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)
III-(Ch: 19.5-27)	151,041,704.92	97,306,916.89	-35.58	30

On review of the contractor's quoted item rates with the Departmental estimates, it was noted that for some item of works, the contractor had not quoted the rates and rates quoted for some item of works were abnormally low indicating submission of low or seriously unbalanced bid as shown below:

Description	Code	Quantity	As per Departmental		As per Contractor		Difference in Amount (Nu.)
			Rate	Amount (Nu.)	Rate (Nu.)	Amount (Nu.)	
Road embankment and back filling	EW0096	9888.44	70	692,190.80	-	-	692,190.80
RRM 1:6							
Providing and laying hand packed stone soling/Back filling	SM0072	794.303	1,097.49	2,422,766.91	-	-	2,422,766.91
HP Culvert							
P%L Earth bedding below Hume pipe	EW0197	208.77	148	30,897.96	-	-	30,897.96
Providing & Laying hand pack stone soling /filling works.	SM0072	155.16	1,097.49	212,858.19	-	-	212,858.19
RC Culvert Extension							
Earthwork in excavation	EW0106	1819.8	48.11	124,647.72	-	-	124,647.72
Providing & fixing centering and shuttering (formwork),	RC0090	504.93	242.52	232,026.16	-	-	232,026.16
P&L RRM in CM 1:6	SM0007	567.358	2740.64	2,389,344.76	-	-	2,389,344.76
P&L hand packed stone soiling	SM0072	326.82	1097.49	572,856.86	-	-	572,856.86
Filling of trenches, sides of foundation, etc. in a layers< 200mm using selected excavated earth, raming etc. within lead 50m & lift 1.50m	EW0195	842.919	56.88	62,440.17	-	-	62,440.17
						Total	6,740,029.53
Providing and laying in position RCC Hume pipe 900.00 mm Diameter NP3	DR0095	100	14,435.43	1,443,543.00	6500	650,000.00	793,543.00
Providing and laying Granular sub base course (GSB)	RW0130	10337.625	1,510.29	15,612,811.66	500.00	5,168,812.50	10,443,999.16
Total				23,796,384.19		5, 818,812.5	
Total cost not quoted for items of works by the contractor							17,977,571.69

As seen from the table above that the contractor had quoted nil amount for items of works estimated at Nu. 6,740,029.53 and overall underquoted bids amounted to Nu.17.977 million. The quoted rate of Nu. 6500 per unit for RCC Hume Pipe and Nu.500.00 per cum for the two major items of works “Laying of RRC Hume pipes and “ GSB works” respectively were found abnormally low as compared to the departmental estimated rates. It was noted that the rate quoted for GSB which was the critical component of the pavement works was almost 67% below the departmental rate indicating existence of either error in quoted rate or inflated departmental estimated rates.

In relation to the abnormally low bid, Clause 5.4 Evaluation of Bids sub-clause 5.4.5 - Abnormally Low Bid of PRR 2009 provides as under:

- 5.4.5.1 *Where the prices in a particular bid appear abnormally low or the bid appears seriously unbalanced, the Procuring Agency may reject it only after seeking written explanations from the bidder submitting the low or seriously unbalanced bid. In the case of a bid that appears seriously unbalanced, the procuring agency shall request from the bidder an analysis of rates of the relevant items.*
- 5.4.5.2 *The Procuring Agency may take into consideration explanations, which are justified on objective grounds including:*
- a. *The economy of the construction method or the method by which the goods or services are to be provided; or*
 - b. *The technical solutions chosen; or*
 - c. *The exceptionally favorable conditions available to the bidder for the execution of the contract; or*
 - d. *The originality of the work, product or service proposed by the bidder.*
 - e. *The internal consistency of those prices with the construction methods and schedule proposed.*
- 5.4.5.3 *If the Procuring Agency decides to accept the abnormally low bid or the bid with the seriously unbalanced rates after considering the above factors, the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security.*

Further, while ITB Clause 13(13.2) clearly stipulated that “**Items for which no rates or price is entered by the Bidder shall not be paid for by the Employer when executed and shall be deemed covered by other rates and prices in the Bill of Quantities**”, Further, GCC Clause 29 Evaluation and Comparison of Bids sub-clause 29.6 stipulated as under:

“If the Bid which results in the lowest evaluated Bid price is abnormally low, seriously unbalanced and/or front loaded in the opinion of the Employer, the Procuring Agency shall require the Bidder to produce written explanations of, justifications and detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and scheduled proposed. Such explanation, justifications and analyses. After objective evaluation, if the Procuring agency decides to accept the abnormally low, seriously unbalanced and/or front loaded price, the bidder shall be required to provided additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security”.

As apparent from the contract award letter that the RO had realized the differential amount of Nu. 15,160,309.00 as against actual differential amount of Nu. 53,734,788.03 based on the decisions of the MLTC. The RO had also not realized the differential amount of Nu. 15,160,309.00 on expiry of the related Bank Guarantee on **26th June 2017** despite the fact that the contract duration was up to 5th December 2017 and further time extension was granted up to 30th June 2018.

The RO taking note of the poor work progress and completion deadline falling on 31st December 2017 had drawn up Milestone agreement. The Milestone Commitment Agreement stipulated the followings:

- i. *Collection of GSB materials to be completed by end of September 2017*
- ii. *Collection of WMM materials to be completed by end of November 2017*
- iii. *Installation of Asphalt plant by the end of December 2017*
- iv. *20mm and 10mm aggregate from Yotongla*

On review of the work progress as on the date of physical verification conducted on 12/01/2018 it was observed that the Contractor had failed to achieve the progress as per the Milestone Commitment Agreement as indicated below:

- *Collection of GSB materials was found under progress which should have been completed by the end of September 2017 thereby already delayed by more than four months,*
- *Collection of WMM materials had not yet started thus already delayed by more than three months, and*
- *Asphalt plant was not installed which should have done by the end of December 2017 thus already delayed by almost one month.*

The audit team noted that not even one (1) milestone was achieved indicating contractor's inability to achieve the subsequent milestones.

In consideration to the above facts, including substantial rate differences particularly for the critical GSB works, the RO should comment on the measures and due diligence exercise carried out by the Evaluation Committee and the MLTC to obtain explanations and justifications on the abnormally low rate and seriously unbalanced bid.

The RO should also comment and furnish evidences of additional measures taken to prevent execution of substandard GSB works as well as pavement works by the contractor.

Auditee's Response:

The Regional Office acknowledges the observations made by Royal Audit Authority and have great concerns and high regards for the observation. We would like to furnish the following facts and evidences as comprehensive explanations for consideration by Royal Audit Authority.

There is no clause in PRR stating that the nil quoted rate should be rejected and more over the contractor has quoted nil which clearly depicts that he/she can carry out the work without compromising the quality of work. After all the firm's quoted rate cannot be altered by the evaluation committee and nil quoted rate ultimately leads to lowest evaluated bidder and that is what PRR states - to award the work to the lowest evaluated bidder.

As pointed out, several milestones were not achieved by the contractor despite several meetings and assistance by the department. It was true that at one time there was a problem of GSB & WMM becoming so muddy. We would like to clarify that at some very marshy areas in Tshangkha, the GSB material despite passing the required test did not performed well. The RO assured the RAA team that until the contractor had laid base course satisfactorily at site with the required test result during the course of joint measurement/bill time, their bills were withheld. The same trend has been followed for all the contract packages.

We would like to submit the Royal Audit Authority to kindly review above detailed explanations and consider dropping the above Para.

RAA’s Further Comments & Recommendations:

While taking note of the response particularly on the assertions “the contractor had quoted nil amount which clearly depicts that he/she can carry out the work without compromising the quality of work”, the fact remains that under the provisions of PRR as mentioned above in the observation, the Evaluation Committee was required to carry out due diligence review particularly on the bidder’s analysis of rates for the relevant items to objectively accept the abnormally low bid or seriously unbalanced rates. In addition, while the differential amount of Nu. 15,160,309.00 against actual differential amount of Nu. 53,734,788.03 was found realized initially was not realized on expiry of the related Bank Guarantee on **26th June 2017** despite knowing the following facts by RO and MLTC:

1. The contract duration was up to 5th December 2017 and further revise to 30th June 2018 in terms of approval accorded by MLTC under letter No. letter No. DOR/CD/7/2017-18/4405 dated 21/09/2017 on account of the increase of 1m carriageway width and additional works.
2. The RO taking cognizance of the slow progress of works, just before three months of the expiry of the contract period, had drawn the Milestone Commitment Agreement as evident from Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17. The status of work progress was as shown below:

Item of work	Qty	Qty to be executed as per the milestone commitment agreement starting from Sept 2017							
		Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18
FC	500m	125	125	125	125				
GSB	7.5km		2.5	2.5	2.5				
WMM	7.5km				2.5	2.5	2.5		
Drain	7.5km				0.5	2	2.5	2.5	
DBM	7.5km					2.5	2.5	2.5	
AC	7.5km						3.75	3.75	

It was evident that the contractor had failed to complete 500m of formation cutting works and pavement works were yet to be start as of September 2017.

3. The work progress report as on 31st January 2018 against the work completion deadline scheduled on 30th March 2018 indicated the work progress as below:

Package 3	M/s Rinson Construction Pvt. Ltd (Sakachawa – Tsangkha)	16/12/17	31/03/18	Under Progress	FC, Permanent works, and only 1.1Km of GSB completed
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In terms of the milestone agreement, the WMM and DBM of 2.5km each and 2km of drains should have been completed.

4. The proposal to award the additional works valuing Nu. 15.486 million as tabulated below in September 2017 was towards the end of the contract period (16.12.2017):

Sl. No.	Additional Structure	Constructed Cost	Proposed Cost	Total Amount (Nu.)	Recommended by
1	RRM wall	3.774	6.349	10.123	RO Proposal
2	HP Culvert	0.428	0	0.428	RO Proposal
3	Gabion	0.587	2.348	2.935	RO Proposal
4	Maintenance	0.00	2.00	2.00	DoR
	Total	4.789	10.697	15.486	

As seen from the table above that additional works comprises items of works -RMM walls and HP Culvert amounting to Nu. 10.551million for which the contractor had not quoted the rates in the bid.

Considering the above facts, it is apparent that the RO and MLTC had not only extended undue favour in terms of awarding additional works particularly the items of works for which rates were not quoted and other works which were initially not identified and incorporated in the estimates and BOQs.

Thus, in the light of above facts, the Ministry should thoroughly investigate the circumstances leading to identification of the need for additional structures in consideration to the structures existing prior to the widening works and the reasonableness of analyzed rates incorporated for the estimation of works. Besides, the Ministry should also review the payments for the structures executed by the contractor for which no rates were quoted in the BOQs. The outcome of investigations along with documentary evidences and action taken if any intimated to RAA for review and forming final opinion on the issues. The Ministry should also fix accountability on those responsible for lapses and take appropriate actions.

19.2 Flaws in application of rates for estimation of additional works with resultant extra financial burden to the Government

Clause 6.3.6.1 of PRR under the conditions for variations in a work contract stipulates the following possibilities:

- a. Increase or decrease in the quantity of works
- b. Deletion or insertion of any item of works
- c. Change in level, lines, positions and dimensions of any part of the Works
- d. Change in the character, quality or kind of any work
- e. Additional works of any kind

f. Changes in the sequence or timing of construction activities.

Clause 6.3.6.2 stipulates “All variations shall be ordered by issuing written instructions to the Contractor. The contract conditions shall specify the authority, which will be responsible to issue variation orders.

Note: Generally, the Head of Office of the Procuring Agency shall, in accordance with the powers delegated to him, issue variation orders in writing as and when necessary. All powers in a Procuring Agency shall be exercised by the Head of Office who shall be primarily accountable for all affairs in the agency”.

Clause 6.3.6.3 under Pricing of the Variation stipulates as “The conditions of variations in a works contract shall specify the mechanism for valuation of the varied items in accordance with the following: a. All variations, except for those listed under item 6.3.6.1 (a), shall be valued at the contract rates and prices as mentioned in the priced Bill of Quantities. If the contract does not contain any rate(s) applicable to the variation, suitable rates or prices will be agreed upon between the Procuring Agency and the Contractor. In the event of disagreement between the parties, the procuring Agency shall fix the rates as may be considered fair and appropriate and those shall be notified to the contractor”.

Note: Generally, the average percentage above or below the applicable BSR quoted by the contractor shall be taken into consideration for fixing prices of the varied items not existing in the contract (Bill of Quantities).

In addition, GCC Clause 40- Payments for Variations stipulates as under:-

Sub-clause 40.1 “The Contractor shall provide the Project Manager analyzed rate for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the analyzed rates, which shall be given within seven days of the request or within any longer period stated by the Project Manager and before the Variation is ordered”.

Sub-clause 40.2 “If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of Project Manager, the quantity of work above the limit stated in GCC Sub-Clause 38.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work”.

Sub-clause 40.3- “ If the Contractor’s quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager’s own forecast of the effects of the Variation on the Contractor’s costs”

On review of the Minutes of Ministerial Level Tender Committee Meeting endorsed under letter No. DoR/CD/7/2017-18/4405 dated 21.9.2017, it was noted that the Chief Engineer (CE), Trongsa had reported in the meeting that the valuation of the additional works were based on BSR 2017 and time extension derived using pro rata basis as shown below:

Sl.No.	Description of items	Estimated Amount (Nu.)	Basis of estimated cost	Remarks
1	RRM walls	4,492,383.00	BSR-2017	approved 4 months as time extensions
2	RCC Culvert	989,423.00	BSR 2017	
3	Boulder wall	668,925.00	Rate Analysis	
4	Clearing of Hard rock	1,266,250.00	Rate Analysis	
5	Gabion Wall	5,610,966.00	BSR-2017	
6	Road maintenance	2,000,000.00	Lump sum	
	Total	15,027,947.00		

The CE had also reported that rates for additional works will be negotiated after completion of the works and on fulfillment of deviation criteria as per contract clauses which will be submitted to MLTC along with approval for deviated quantity. It was also reported that most of the additional works are already executed by the contractors as per instructions.

In this regard, following irregularities and lapses are observed:

1. Clause 6.3.6.2 stipulates “*All variations shall be ordered by issuing written instructions and Head of Office of the Procuring Agency shall, in accordance with the powers delegated to him, issue variation orders in writing as and when necessary.*” The variation order, if any, issued was not made available. It was apparent from the report submitted by the CE that most of the additional works were already executed by the contractor. The variation order issued in line with the provisions of the PRR should be furnished to RAA. Any violation of the provisions of the PRR, the RO should be held accountable for appropriate action.
2. In terms of aforementioned provisions of PRR and GCC, the rates were to be regulated as per contract rates and prices as mentioned in the Bill of Quantities. As otherwise, suitable rates or prices will be agreed upon between the procuring agency and the Contractor. It was apparent from the report submitted by the CE that cost estimates were prepared based on the BSR 2017 rates and analyzed rates and no due process as required under PRR and SBD were followed for pricing of the variations as envisaged under Clause 6.3.6.3 of PRR.
3. The award of additional works without agreeing the rates and prices tantamount to not only violation of the provisions of the PRR and the contract agreement but also extension of undue favour as Contractor will have every right to claim higher rates or at the estimated rates and it may not be possible to regulate the rates as per provisions of the PRR and contract agreement.

The Ministry should thoroughly investigate the circumstances leading to identifications of such structures on the verge of the contract periods and awarding as additional works that could have been anticipated at the time of conducting survey for the formation works and during physical stock taking of prevailing structures and site visit prior to preparation of estimates. Besides, the Ministry should hold RO accountable for directly awarding the additional works prior to obtaining approval from MLTC as well as without agreed rates and prices for the works.

Auditee’s Response:

In the interest of time where the additional works had to be executed at site on genuineness, the additional work was incorporated in the on-going contract. The need of permanent

structures, such as additional works were found to be necessary at site to retain the road width and protect the slopes. As a normal procedure of road design, requirement of retaining structures such as breast wall and Retaining wall are not forecasted which are assessed at a later stage, which is carried out as additional work.

RAA's Further Comments & Recommendations:

The assertion of the RO that as a normal procedure of road design, requirement of retaining structures such as breast wall and Retaining wall are not forecasted which are assessed at a later stage was not correct in the light of the facts that widening works were an extension of the existing roads and any existing permanent structures within the widening works were required to be constructed on completion of widening works. Besides, any additional structures required were also identifiable at the time of conducting survey for formation works. In addition, in terms of the technical specifications, the structures such as boulder wall, rock breakings and maintenance works were part and parcel of the contract for which cost was not to be borne by the RO and the Project.

The failure on the part of the RO to incorporate all the foreseeable permanent structures in particular extension of culverts, RRM walls, gabion walls in the initial contract estimates indicated deficient and poor planning and lack of due diligence in the preparation of estimates and BOQs. It is also to reiterate that any structures required during the construction phase should have been identified immediately after completion of the formation cutting and due process followed prior to instructing the contractor take up the work. Further the estimation of additional works based on current BSR 2017 and analysis of rates without regulating in terms of the provisions for the works was in total violation of the PRR and contract documents as well as indicated possible extension of undue financial benefit to the contractor. Besides the direct award had also deprived the Government from obtaining competitive rates as the award was based on departmental estimated cost although the contractor's quoted price were 43.62% below the departmental estimates.

However, as discussed in the exit meeting, the DoR in consultation with the Ministry besides, reviewing the circumstances leading to failure to incorporate permanent structures, should also technically investigate the necessity of such structures in terms of geotechnical conditions of the locations and terrains. The Ministry should also regulate the payment for all additional works in terms of the provisions of the contract document and PRR besides holding the RO and MLTC accountable for the failure to agree the rates prior to approving the additional work.

The DOR and Ministry should issue proper guidelines and standards as well as institute effective mechanism to ensure detailed survey and adequate planning process prior to preparation of detailed estimates and BOQs and prevent unwarranted award of substantial additional works in future projects. The outcome of the review and guidelines and standard proposed to be put in place intimated to RAA for record and follow-up in future audits.

20 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Bjeezam- Trongsa (Package 6) by M/s Raven Builders & Company Pvt. Ltd

ITB for the Double Lanning works from Bjeezam-Trongsam covering Chainage 37.7 km -44.4 km , a total of 6.7 km for execution of Base Course, Bituminous works, Walls, L-Drain,

Box-Drains, Protection works were invited vide letter No. RO/DOR(TRONGSA)/2014-2-15/PL-15/279 dated 11th October 2014 and published in Kuensel & Bhutan Today Newspapers dated 14th & 16th October 2014 respectively. Likewise, it was announced through BBS for seven (7) days and also uploaded in the Ministry's Web Site. The bidding documents were found made available online for downloading from 30th March 2015. Subsequent to ITB, following thirteen (13) bidders had submitted their bids:

1. M/s Empire Construction Pvt. Ltd., Thimphu
2. M/s Chapcha Engineering Pvt. Ltd., Thimphu
3. M/s. Bhutan Engineering Company Pvt. Ltd., Thimphu
4. M/s. Welfare construction Company Pvt. Ltd., Thimphu
5. M/s. Tshering Tobgyel Construction, Wangdue
6. M/s. Dhodter Rigsel Construction, Thimphu
7. M/s. Rinson Construction Co. Pvt. Ltd., Thimphu
8. M/s. Tacho Construction Pvt. Ltd., Phuentsholing
9. M/s. Druk Lhayul Construction Pvt. Ltd., Paro
10. M/s. Tshering Samdrup Construction, Zhemgang
11. M/s. Raven Builders & Company (P) LTD, Gelephu
12. M/s. Gaseb Construction Pvt. Ltd., Phuentsholing
13. M/s. Gongphel Construction Pvt. Ltd., Samdrup Jongkhar

All thirteen (13) bids were received on or before **10:00 AM (Local time) on 8th May 2015** and the bids were opened at 10:30AM in the Conference Hall of the Regional Office, DoR, Trongsa in the presence of bidders and their representatives.

In terms of Clause 15.1 of the ITB, ***“the Bid shall be valid for (90) days from the deadline for submission of Bids stipulated in ITB Clause 201.1”***. Thus, in line with the clause, the bids were to remain valid until 05/08/2015. However, during the evaluation, the Committee noted that M/s. Dhodter Rigsel Construction bearing CDB No.5116 had bid validity till 08/07/2015 resulting in non-fulfillment of requirement and was considered as non-responsive bid.

From the Evaluation report of the Committee, it was noted that the eight responsive bidders had quoted substantially low bids ranging from minus 25.44% to minus 43.0% as compared to the estimated cost of Nu. 138,898,344.12 as tabulated below:

Sl. No.	Name of Firms	CDB No.	Corrected Bid Price (Nu.)	Difference (Nu.)	% Deviations
1	M/s. Empire Construction Pvt. Ltd., Thimphu	2206	80,629,925.35	(-) 58,268,418.77	(-) 41.95
2	M/s. Chapcha Engineering , Thimphu	2241	99,088,801.00	(-) 39,809,543.12	(-) 28.66
3	M/s. Tshering Tobgyel Construction, Thimphu	3267	103,562,982.45	(-) 35,335,361.67	(-) 25.44
4	M/s. Rinson Construction, Thimphu	1965	88,354,065.69	(-) 50,544,278.43	(-) 36.39
5	M/s. Druk Lhayul Construction, Paro	1664	80,265,198.30	(-) 58,633,145.82	(-) 42.21
6	M/s. Tshering Samdrup Construction, Zhemgang	1146	97,730,065.05	(-) 41,168,279.07	(-) 29.64
7	M/s. Raven Builders, Gelephu	2356	79,151,909.00	(-) 59,746,435.12	(-) 43.01
8	M/s. Gongphel Construction, Samdrup Jongkhar	2119	94,016,393.76	(-) 44,881,950.36	(-) 32.31

In terms of clause 29 of ITB and sub-clause 29.30, in order to qualify for award of the contract, the substantially responsive bids were evaluated in e-tools against the minimum qualifying criteria and scores assigned against each parameter as detailed below:

Parameter	Score Assigned
Similar work experience	10
Access to equipment	25
Manpower availability	25
Previous performance	10
Bid capacity	10
Credit line	20

Subsequent to assessment of e-tools, M/s. Raven Builders Pvt. Ltd., Gelephu with quoted amount of Nu. 79,151,909.00, who had quoted 43.01% below the departmental estimates was declared as lowest evaluated bidder (*the highest score*) amongst twelve bidders.

Accordingly, the Departmental Level Tender Committee met on 25th May 2015 and accepted the bid as submitted by the Evaluation Committee and awarded the works to M/s. Raven Builders Pvt. Ltd., Gelephu.

Following the issuance of the acceptance letter vide ref: RO/DOR/Trongsa/CE-01/2014-2015/815 dated 29th May 2015, the Contract Agreement between the Chief Engineer, Regional Office, DoR, MoWHS, Trongsa and M/s. Raven Builders Pvt. Ltd., Gelephu was signed vide Ref. no. RO/DOR/(Trongsa)/2014-2015/PL-36/869 dated 04.06.2015 for execution of formation cutting and pavement works for 6.7 km road stretch at their quoted price of Nu. 79,151,909.00.

In terms of the agreement, the entire work was scheduled for completion within thirty (30) months from the handing taking of site made vide no. PO/DoR(Trongsa)/2014-2015/W-15/210 of 10th June 2015 and completion deadline was due on or before 21.11.2017. The completion deadline was later revised to 30th April 2018 following the time extension of 3.7 months for additional works and increase of 1 meter carriage way width to 7.5m from 6.5 meter.

From the review of contract documents, drawings, estimates, bill of quantities, contractor's RA bills and physical verification of actual constructions at work site, following irregularities and lapses were observed:

20.1 M/s. Raven Builders & Company (P) LTD Ltd obtaining loan from T Bank Ltd, Thimphu in spite of Credit line available from BDBL to the extent of Nu. 18.6 million with resultant invalidity of the Credit line obtained from BDBL.

On review of the parameters used for assessing the qualification of bidders, it was noted that the firm had obtained a Credit Line to the extent of Nu. 18.6 million as required in terms of ITB 4.5(f) from BDBL as evident from letter No BDBL/Tsa-12/2015/536 dated 06.05.2015. Score ranging from 0 to 20 assigned based on the level of achievement of the Evaluation table in respect of each parameter and subsequent Evaluation Report indicated full score of 20 points awarded under the "Credit Line Available".

Fulfillment of all the criteria and subsequent aggregation of scores had resulted in the firm obtaining highest score (lowest evaluated bid) amongst the bidders that led to winning of works.

However, during the scrutiny of relevant documents, it was noted that a letter captioned “Request to route Running Bill Payments for Double Lanning of NEWH from Bjezam-Trongsa for quoted amount of Nu. 79,151,909.00 of M/s. Raven Builders & Company (P) LTD through Account No.77711017282001 maintained with T Bank Ltd., Thimphu Branch” was submitted by the Head of the Credit Department, Thimphu. The letter categorically stated that the request was based on Mrs. Tshewang Choden’s request for short term loan to supplement the working capital.

The intention of request for short term loan from T Bank Ltd., Thimphu despite the availability of huge Credit line from the BDBL, could not be comprehend in the audit. Thus, the genuineness of the Credit line obtained from BDBL and submitted along with the tender documents remained questionable.

Non-utilization of Credit line extended by the BDBL to M/s. Raven Builders & Company (P) LTD Ltd and obtaining short term loan from T Bank Ltd by Mrs. Tshewang Choden who was then authorized to execute and manage the Contract Package by M/s. Raven Builders & Pvt. Ltd. indicated sublet of contract works and denial of credit line by the BDBL.

The DOR and the Ministry should investigate the circumstances leading to repudiation of Credit lines by the BDBL for the contract. Besides, the Ministry should obtain the loan agreement drawn between the T Bank Ltd and Mrs. Tshewang Choden and furnish to RAA for review and to enable to form a final decision on the sublet contract. Further, the Ministry should take stock of denial of Credit Lines by the BDBL and other Financial Institutions for review and taking remedial measures to prevent such complication for future similar projects.

Auditee’s Response:

Non-utilization of Credit line extended by the BDBL by M/s. Raven Builders & Pvt. Ltd and obtaining short-term loan from T Bank Ltd should be looked into as to validate that the credit line obtained from BDBL was genuine and grounds of not resorting to avail the credit line may be furnished to audit for review and record. DoR, RO Trongsa would like to thank the RAA for the observation and we would like to submit the following for its consideration.

It is a known fact that bidders submit the availability of Credit line facility from the banks during the time of bidding. However, the facility is hardly used. The decision to avail short-term loan from T-Bank Ltd. instead of availing the Credit line facility from BDBL is the decision of M/s Raven Builders. In view of the above justifications, the para may please be dropped.

RAA’s Further Comments & Recommendations:

The response furnished by the RO, Trongsa is reviewed and noted. However, it is reiterated that the contract works are being executed by a different management and the possibility of subcontracting of work could not be ruled out. It is also to reiterate that despite having arrangement by the contractor with the BDBL for availing the credit facilities from M/s

BDBL, the availing of short term loan from a different bank by the firm indicates subcontracting of the contract.

However, as discussed during the exit meeting, the DOR and the Ministry should investigate the circumstances leading to repudiation of Credit lines by the BDBL for the contract. Besides, the Ministry should obtain the loan agreement drawn between the T Bank Ltd and Mrs. Tshewang Choden and furnish to RAA for review and enable to form a final opinion on the contract. Further, the Ministry should take stock of denial of Credit Lines by the BDBL and other Financial Institutions for review and taking remedial measures to prevent such complication for future similar projects.

20.2 Irregular financial support rendered to M/s. Raven Builders & Company (P) LTD, Gelephu by way of advance payment for POL Nu. 9,410,000.00 despite the availability of Credit line to the extent of Nu. 18.6 million from BDBL and to other contractors Nu. 240.700 million

In terms of the ITB 4.5(f) and Bidding Data Sheet (ITB 4.5 (f), the contractor had submitted available credit line of Nu.18.6 million and the Evaluation Report indicated awarding of full score of 20 points under the “Credit Line Available”.

However, on review of related documents and payments released in the name of M/s. Raven Builders & Company (P) LTD, instances of irregular financial support to the extent of Nu. 9.410million were noted as detailed below:

Table : 20.2- Detailing grant of ineligible advances			
DV. No & Date	Particulars	Amount (Nu.)	Remarks
77 dt. 20.12.2017	POL advance	100,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
30 dt.17.11.2017	POL advance	100,000.00	
01 dt.04.01.2018	POL advance	100,000.00	
24 dt. 31.07.2017	POL advance	500,000.00	Against BG approved by the Secretary based on the recommendations of RO
23 dt 11.01.2018	POL advance	100,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
35 dt.15.01.2018	POL advance	100,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
51 dt.19.01.2018	POL advance	300,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
78 dt.30.01.2018	POL advance	100,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
18 dt.09.02.2018	POL advance	300,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
29 dt.13.02.2018	POL advance	500,000.00	As per the advice of the Secretary upon the request for POL advance by M/s. Raven Builder & Pvt. Ltd.
157 dt. 29.06.2017	Special advances	5,000,000.00	As per approval accorded by the Secretary as special advance against BG
8 dt.8.12.16	POL advance	500,000.00	Taugay Chedup, CE &
72 dt 25.1.17	Setting of crusher plant	300,000.00	Taugay Chedup, CE &
25 dt.11.4.17	advance against BG	300,000.00	Taugay Chedup, CE &
43 dt.20.12.16	Advance against bill	560,000.00	Taugay Chedup, CE &
41 dt 19.1.17	Advance against bill	300,000.00	Taugay Chedup, CE &
22dt18.1.17	POL	250,000.00	Instruction from secretary
		9,410,000.00	

Advances sanctioned were exclusive of all other normal entitled advances like Mobilization advance, secured advance etc. The nature of the advances sought from the office clearly indicates that M/s. Raven Builder & Company (P) Ltd had resource constraints to meet even the working capital of the project even after regular releases of RA bills and obtaining funds from available avenues like upon the production of BG. Besides M/s. Raven Builders & Company (P) LTD had failed to meet every schedules of work plan prepared, agreed and committed so far which was in the knowledge of the RO, MLTC and the Secretary.

The continuous financial and other supports rendered from the higher authorities in terms of releases of inadmissible advances, non-invoking of contractual provisions, and conditions of Milestones Commitment Agreement was questionable which also indicated existence of possible conflict of interest. On the other hand, non-utilization of Credit line extended by the BDBL despite resource constraints casts doubt on the genuineness of the credit line obtained and validated by the Evaluation Team.

The RO in consultant with the Ministry should comment on the financial supports extended to the contractor beyond the contractual provisions, and non-enforcement of contract terms. Besides, the Ministry must direct the RO to impose commercial interest on the inadmissible advances and the amount deposited into ARA.

Auditee's Response:

With verbal instruction and approval accorded by Hon'ble Lyonpo and Hon'ble Secretary, MoWHS to extend necessary support to the contractor in the interest of work, same has been rendered to the firm by RO. The financial support rendered is purely to expedite the progress of works. In view of the above justifications, the para may please be dropped.

RAA's Further Comments & Recommendations:

The response of the RO is noted. However, the granting of advances beyond the provisions of the contract is in violation of the Financial Rules and Regulations and clear indication of extension of undue financial support to the contractor. The failure on the part of the RO and Authority to direct the contractor to avail the credit facilities of Nu.18.6 million extended by the M/s BDBL in terms tender documents indicated also existence of poor contract management and non-enforcement of contract provisions.

The RO and the Authority concerned should comment on the non-invoking of provisions of the contract as there was fundamental breach of contract since the contractor was facing resource problems. However, as discussed during the exit meeting, the DOR and the Ministry should recover all the irregular advances from the contractor with penal interest failing which the authorities concerned should be held responsible to make good the amounts with penal interest.

In addition, all ineligible advances paid to the following contractors for other packages should be recovered with penal interest:

Sl.No.	Name of contractor	Contract Package	Date of Payment	Amount (Nu.)
1	M/s welfare Construction Pvt. Ltd.	Package IX	12.4.2017	20,000,000.00
2	M/s Dungkar Construction Pvt. Ltd.	Package VIII, XI & XII	9.12.2017	20,000,000.00
3	M/s Gyalcon Construction Pvt. Ltd.	Package IV	28.6.2017 & 26.10.2017	15,000,000.00
4	M/s Druk Lhayul Construction Pvt.	Package V	19.5.2017 & 14.6.2017	20,000,000.00

	<i>Ltd.</i>			
5	<i>M/s Rinson Construction Company Pvt. Ltd.</i>	<i>Package III,X & XII</i>		<i>30,000,000.00</i>
		Total		105,000,000.00
	RO, Lobeysa			
6	<i>M/s Chogyal Construction Pvt. Ltd</i>	<i>(Packages I, II and III)</i>	<i>2015/2016</i>	<i>46,000,000.00</i>
7	<i>M/s Singye Construction Pvt. Ltd (CDB No. 2148)</i>	<i>Package IV</i>	<i>12/2015</i>	<i>39,700,000.00</i>
8	<i>M/s welfare Construction Pvt. Ltd.</i>	<i>Package IX</i>	<i>12.11.2017</i>	<i>10,000,000.00</i>
9	<i>M/s Rigsar Construction Pvt. Ltd</i>	<i>Package X</i>	<i>6.6.2017 & 22.12.2017</i>	<i>4,500,000.00</i>
10	<i>M/s TT construction Pvt. Ltd</i>	<i>Package VI</i>	<i>7.2.2017 & 20.12.2017</i>	<i>19,000,000.00</i>
		Total		119,200,000.00
11	RO, Lingmethang			
12	<i>M/s Gongphel Construction Pvt. Ltd.</i>	<i>Package IV</i>	<i>9.4.2017 & 22.12.2017</i>	<i>10,000,000.00</i>
13	<i>M/s Rigsar Construction Pvt. Ltd</i>	<i>Package VI</i>	<i>8.2.2017 & 9.5.2017</i>	<i>6,500,000.00</i>
		Total		16,500,000.00
		Grand Total		240,700,000.00

The RO and the DOR should furnish documentary evidences of the recoveries and accountal in the books of accounts for review and records.

The Ministry besides directing officials in positions to strictly abide by the Financial Rules and Regulations as well as provisions of the contract documents should institute appropriate control mechanism over the sanctioning of construction advances to prevent unwarranted violations and complications in future.

21 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Dorji Gonpa to Yotongla (Package 10) by M/s Rinson Construction Pvt. Ltd

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

21.1 Short /excess utilization of reinforcement in rigid pavement work (4.4.69)

The details of reinforcement bars to be provided in the rigid pavement works in terms of technical specification and BOQ are as shown below:

- a) Dowel bar 25mm dia 0.8m long at 0.5m c/c
- b) Tie bar 12mm dia 0.8m long at 1.125m c/c

However, during the physical verification of works site, the audit team observed irregularities in construction of rigid pavement works as discussed below:

- i. Strength of PCC was M25 in contrary to M45 as per drawing;
- ii. Shuttering were found not properly provided leading to irregular PCC blocks and formation of honeycomb; and
- iii. Tie bars were not provided as per the drawing as detailed in the table below:

PCC block	Tie bars Provided at site (Nos.)	Tie bars to be provided as per drawings (Nos.)	Excess /shortages
9 and 11	2	3	1 short
12	1	3	2 short
13	0	3	3 short
40, 41, 42 and 43	4	3	1 excess

48 and 49	4	3	1 excess
52 and 56	4	3	1 excess
54	2	3	1 short

Further, the center-to-center distance and clear cover were not maintained properly indicating that the contractor did not follow the drawing and the technical specifications. Photographic evidences of poor construction of rigid pavement works are as depicted in Photographs 1 to 4 below:



Fig: 21.1- PCC block without TMT Tie bar



Fig: 21.1- PCC block with irregular center-to-center distance maintained



Fig: 21.1(2)- PCC block with 4 tie bars



Fig: 21.1(3) Improper formworks leading to irregular PCC block

The execution and payment for works which are not as per drawing and technical specifications is a serious lapse on the part of the Regional Office in particular the Site engineer responsible for overseeing construction works. The Regional Office should consider taking immediate steps to either redo the all works as per the technical drawing and specification to achieve quality works and value for money or entire cost recovered and deposited into Audit Recoveries Account.

The Ministry should constitute a technical team for verification of all infrastructure works executed by the contractors to ensure execution of infrastructure works as per technical drawings and specification, quality and with proper workmanships.

Auditee's Response:

The observation made by the RAA is duly acknowledged by the RO. The RO would like to furnish the following comprehensive explanations for the consideration of RAA:

As pointed out by the RAA, in few blocks of Rigid pavement, tie bars were found missing. Initially, all the required numbers of tie bars were inserted. However, since only one lane was constructed at that time, the tie bars were pointed out towards other lane. Due to daily movement of traffic in the other lanes, the tie bars loosened up and hence got removed from

its position. However, this has been rectified and the actual required number of bars were hence inserted again before the panels were cast at the other lane. Payment for individual bar has not be done yet.

In theory, tie bars are provided mainly to tie two adjacent panel. [Photographs attached



Para : 21.1-[Before and after pic showing that tie bars are re-inserted]

Regarding irregular panel, it has primarily occurred due to the use of 8mm plywood formwork. This size is being used in order to keep the minimum possible expansion joints between two panels. This size of the plywood makes it difficult to hold the wet concrete that exerts tremendous pressure on the formwork. If bigger sizes of formwork is adopted then the expansion joint becomes too wide which would give jerks to vehicles when moving over it. Extra shoring were provided to minimize this. However, as evident from the picture in the memo, it could not be controlled completely.

Construction of Rigid pavements are rare in our country. As of now construction has been done only in few places like Thrumshingla, Nganglam etc. Because of this, experienced labourers and masons are a rare sight. Due to this construction of such kind of pavement is challenging to both the contractor and the department. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, the assertions of the RO on the non-availability of experienced labourer and masons for construction of rigid pavement is not justified and tenable. It is to reiterate that RO is responsible to ensure that the contractor deploys adequately skilled labourers and masons for delivering quality works and achieve value for money. The failure to deploy skilled labourers and masons as per contract provisions is a clear indication of weak contract management as well as laxity towards works and procedures, and also inadequate supervision and monitoring from the site engineer.

It is apparent from the response that rigid pavement works were executed through engagement of unskilled labourers and masons compromising workmanship and quality works.

However, as discussed in the exit meeting, the RO and the DOR should conduct appropriate test on the rigid pavement works to ensure that the works were executed as per technical specification and meet all the requisite technical aspects. The Ministry should obtain the test reports and furnish to RAA for review and record.

The DoR and Ministry should institute strict supervision and monitoring controls to prevent execution and acceptance of defective and substandard works in future.

21.2 Payment made for higher specification works resulting into excess payment - Nu. 894,500.00 (5.1.14)

As per BOQ & drawing, the item RRM wall nomenclature was defined as “*P/L RRM in CM 1:6 in road side structures incl. headwalls, wing walls, catch pit, channels, weep holes to be provided as per drawing and catch pit in CM 1:4*”. The contractor had accordingly quoted rates of Nu. 2,200.00 for RRM wall and Nu. 3,200.00 for catch pits.

However, during the review of RA bills, it was noted that RRM walls measuring 894.5m³ was found claimed and paid at Nu. 3,200.00 per cum which was the quoted rates for construction of catch pit in CM 1:4. Thus, the application of wrong quoted rates by the contractor had resulted into overpayment to the tune of Nu. 894.500.00 (894.5m³*Nu.1,000 (Nu.3,200 - Nu.2,200)).

The audit team is of the view that concerned site engineer had made the payment deliberately as the rates of two different items were clearly specified in the BOQ. The RO, Trongsa should investigate the matter besides recovering the amount and depositing into ARA.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

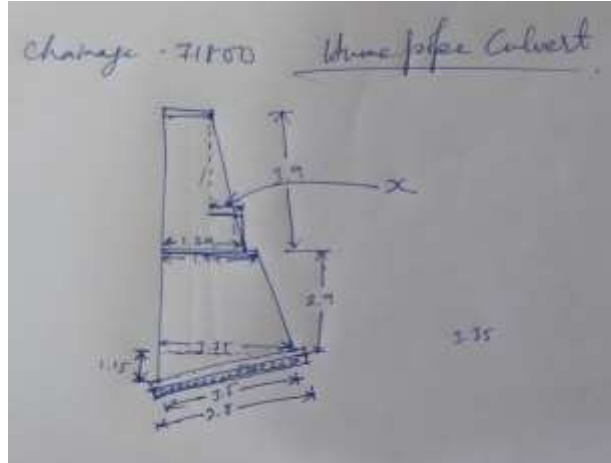
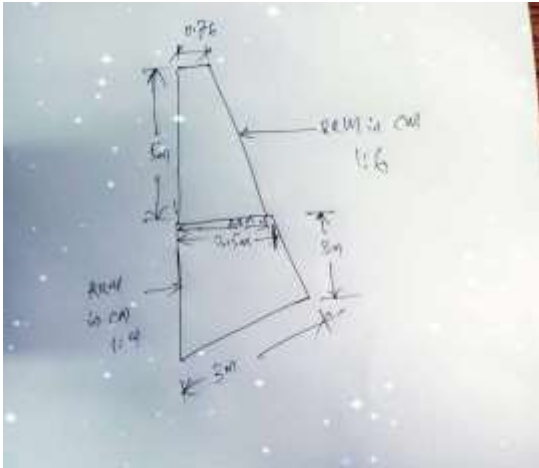
The areas where the walls were constructed is marshy and due to this strong base of wall was difficult to be achieved. Hence the depth of excavation increased significantly and consequently the height of the wall increased significantly. The contractor had been deeply concerned that the structures built on such area may not be serviceable. Hence the construction of wall up to the first level was instructed to be constructed with rich cement mortar (1:4) to withstand the wall in the marshy area by the ex- Project Manager. Accordingly, the wall was constructed with cement mortar ratio of 1:4 at the base level and subsequently 1:6 for the successive layers.

As seen in the photograph below, the vegetation at the base of the wall is indication of marshy area.



Para : 21.2-vegetation indicating marshy area

Para: 21.2(2)- Sketch drawing is as shown below



Sketch drawing is as shown below.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the approved drawings, technical specifications and BOQs nomenclature are based on feasibility studies, survey reports and site specific requirements. The sudden change of technical specifications without proper conduct of studies and prior approval of appropriate authorities was not justified and correct. The changes in specification during the execution on the ground of marshy area indicated deficiencies in the site feasibility studies as well as improper planning as the RO had failed to consider in the preparation of design and estimates/BOQs on the requisite technical specifications for the RRM works.

However, as discussed during the exit meeting, the DOR and the Ministry should review the geotechnical assessment carried out necessitating change of the specification, otherwise the payment should be either regulated in terms of the technical specification defined in the BOQ or constitute a technical team to investigate on the actual application of technical specification for the works. Besides, the Ministry should also review and ascertain that all other structures built in marshy areas are of same technical specifications as to validate the assertion of the RO on the need to apply different specifications from the approved specifications.

The DOR and the Ministry should furnish the outcome of investigation and review along with decisions and actions taken on the issue for review and records.

The Ministry besides reviewing the flaws and deficiencies in the present system of preparing designs, drawings, estimates and BOQs should put in place a proper standard and procedures for conducting feasibility study, geotechnical assessments and approving process for any changes in the initially approved technical specification to prevent adhoc changes by the site engineers, and ROs for future projects.

21.3 Acceptance of abnormally low quoted bids for item of works (4.4.69)

M/s Rincon Construction Pvt. Ltd was awarded the contract work for Contract Package X covering Chainages from 65.98km to 72km with a total of 6.02 Km from Dorjigonpa to Yotongla although the quoted bid was found 42.87% below the estimated cost of Nu. 150,325,008.00.

On review of the contractor's BOQs quoted rates with the BOQs of Departmental estimates, it was noted that in respect of some items of works, the contractor had not quoted the rates and rates quoted for some items of works were abnormally low indicating submission of low or seriously unbalance bid as shown below:

Table : 21.3-Detailing abnormally low quoted rates							
SL no	Description	Qty	As per Departmental		As per Contractor		Diff. Nu.
			Rate Nu.	Amount Nu.	Rate Nu.	Amount Nu.	
RRM							
1	Formwork	210.40 4	242.52	51,027.18	100.00	21,040.40	29,986.78
2	Providing and laying hand packed stone soling/Back filling of walls with stone.	1081.2 66	1,622.44	1,754,289.21	50.00	54,063.30	1,700,225.91
HP Culvert							
3	Formwork	77.28	242.52	18,741.95	100.00	7,728.00	11,013.95
4	Providing and laying in position RCC Hume pipe 900.00 mm Diameter NP3 ...etc. complete.	100	14,435.43	1,443,543.00	5,500.00	550,000.00	893,543.00
5	Providing & Laying hand pack stone soling /filling works.	155.16	1,097.49	170,286.55	50.00	7,758.00	162,528.55
RC Culvert Extension							
6	Formwork	637.93	242.52	154,710.78	100.00	63,793.00	90,917.78
7	P&L RRM in CM 1:6	591.65	2740.64	1,621,499.66	280.00	165,662.00	1,455,837.66
8	P&L hand packed stone soling	355.92	1097.49	390,618.64	50.00	17,796.00	372,822.64
Pavement Works - Flexible Pavement							
9	Providing and laying Granular sub base course (GSB)	5520	1,510.29	8,336,800.80	500	2,760,000.00	5,576,800.80
Pavement Works - Rigid Pavement							
10	Providing and laying Granular sub base course (GSB)	812.5	1,622.91	1,318,614.38	500	406,250.00	912,364.38
11	Formwork	1950	242.52	472,914.00	-		472,914.00
							11,678,955.44

It would be apparent from the table above that the contractor had quoted very low bids for all the items of works and overall underquoted bids amounted to Nu.11.679 million. For instance, the quoted rate of Nu. 5,500 per unit for RCC Hume Pipe and Nu.500.00 per cum for the two major items of works "Laying of RRC Hume pipes and " GSB works" respectively were found abnormally low as compared to the departmental estimated rates. It was noted that the rate quoted for GSB which was the critical component of the pavement works was almost 67% below the departmental rate indicating existence of either error in quoted rates or inflated departmental estimated rates.

As per Clause 5.4 Evaluation of Bids sub-clause 5.4.5 -Abnormally Low Bid of PRR 2009 states as under:

- 5.4.5.1 *Where the prices in a particular bid appear abnormally low or the bid appears seriously unbalanced, the Procuring Agency may reject it only after seeking written explanations from the bidder submitting the low or seriously unbalanced bid. In the case of a bid that appears seriously unbalanced, the procuring agency shall request from the bidder an analysis of rates of the relevant items.*
- 5.4.5.2 *The Procuring Agency may take into consideration explanations, which are justified on objective grounds including:*
- a. *The economy of the construction method or the method by which the goods or services are to be provided; or*
 - b. *The technical solutions chosen; or*
 - c. *The exceptionally favorable conditions available to the bidder for the execution of the contract; or*
 - d. *The originality of the work, product or service proposed by the bidder.*
 - e. *The internal consistency of those prices with the construction methods and schedule proposed.*
- 5.4.5.3 *If the Procuring Agency decides to accept the abnormally low bid or the bid with the seriously unbalanced rates after considering the above factors, the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security.*

It is apparent that the Evaluation Committee and MLTC had passed the decision for award of work with realization of differential amount instead of acceptance after following above due processes to ensure competency of contractor to complete the work in scheduled timeframe without compromising the quality.

As apparent from the contract award letter the RO had realized the differential amount of Nu. 34,379.329.33 as against actual differential amount of Nu. 64,441,101.40 based on the decisions of the MLTC. Besides, the RO had not realized the differential amount of Nu. 34,379.329.33 on expiry of the related Bank Guarantee on 26th June 2017 despite the fact that the contract duration was up to 31st December 2017 and further time extension was granted up to 31st March 2018.

The RO taking note of the poor work progress and completion deadline falling on 31st December 2017 had drawn up Milestone agreement. As transpired from physical verification conducted on 12/01/2018 the contractor had failed to achieve the progress in terms of Milestone Commitment Agreement as shown below: -

- Collection of GSB materials was found under progress which should have been completed by the end of September 2017 delayed by more than four months.
- Collection of WMM materials not yet started thus already delayed by more than three months.
- Asphalt plant not installed which should have been done by the end of December 2017 thus already delayed by almost one month.

The audit team noted that not even one (1) milestone was achieved indicating non-achievement of subsequent milestones.

In consideration to the above facts and events, including substantial rate differences in particular for the critical item works, the RO should comment and furnish on the measures and due diligence exercise carried out by the evaluation committee to address and validate the abnormally low rate and the basis considered for the acceptance of rates. The RO should also comment and furnish evidences of additional measures taken to prevent execution of substandard works by the contractor.

The RO should invoke the relevant clauses of the contract documents as well as provisions stipulated in the Milestone Commitment Agreement to prevent delays and time and cost overruns and complications in future.

The Ministry should also investigate the circumstances leading to acceptance of bid without conducting proper analysis, short realization of differential amount and non-renewal of Bank Guarantee thereon on expiry of the validity period and measures taken to speed up the progress as the contractor had already failed to complete the work as per completion deadline and committed milestones.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

There is no clauses in PRR stating that the nil quoted rate should be rejected and more over the contractor has quoted nil which clearly depicts that he/she can carry out the work without compromising the quality of work. After all the firm's quoted rate cannot be altered by the evaluation committee and nil quoted rate ultimately, leads to lowest evaluated bidder and that is what PRR states to award the work to the lowest evaluated bidder. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response particularly on the assertions that "the contractor has quoted very low bids which clearly depicts that he/she can carry out the work without compromising the quality of work", the fact remains that under the provisions of PRR as mentioned above in the observation, the Evaluation Committee was required to carry out due diligence review particularly on the bidder's analysis of rates for the relevant items to objectively accept the abnormally low bid or seriously unbalanced rates. In addition, while the differential amount of Nu. 34,379.329.33 against actual differential amount of Nu. 64,441,101.40 initially realized was found not realized on expiry of the related Bank Guarantee on 26th June 2017 despite the flowing facts known to the RO and MLTC:

- 1. The contract duration was up to 31st December 2017 and further revised up to 31st March 2018 by MLTC under letter No. letter No. DOR/CD/7/2017-18/4405 dated 21/09/2017 towards the increase of 1m carriageway width including additional works.*
- 2. The RO taking cognizance of the slow progress of works, just before three months of the expiry of the contract period, has drawn the Milestone Commitment Agreement as*

evident from Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17,. The status of work progress was as shown below:

Item of work	Qty	Qty to be executed as per the milestone commitment agreement starting from Sept 2017							
		Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18
FC	1km	100	100	200	200	200	200		
GSB	4.42km			0.5	1.5	2	0.42		
WMM	6.02km					2	2	2.02	
Drain	6.02km					1.5	1.5	1.5	1.52
DBM	6.02km						2	2	2.02
AC	6.02km							3.01	3.01

It was evident that the contractor had failed to complete 1000m (1km) of formation cutting works and pavement works which were yet to start as on the August 2017.

3 The work progress report as on 31st January 2018 against the work completion deadline scheduled on 31st March 2018 indicated the work progress as below:

Package 10	M/s Rinson Construction Pvt/ Ltd (Dorjigonpa – Yotongla)	31/12/17	31/03/18	Under Progress	FC, Permanent works and 2.8Km GSB completed
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In terms of the milestone, the GSB, 4km of WMM, 3km of drains and 2km of DBM should have been completed.

4 The proposal on the award of additional works valuing Nu. 5.830 million in September 2017 just at the verge of expiry of the contract periods as tabulated below:

Sl.No	Additional Structure	Constructed Cost	Proposed Cost	Total Amount (Nu.)	Recommended by
1	French drain	0.83	0	0.83	RO
2	RRM	0	3.00	3.00	RO
2	Maintenance	0	2.00	2.00	DoR
	Total			5.83	

It would be apparent from the table above that additional works comprises items of work like RMM walls amounted to Nu. 3.0 million for which the contractor had quoted abnormally low rates in the bid.

Considering the above facts and events, it is apparent that the RO and MLTC had not only extended undue favour in terms of awarding additional works particularly the items of works for which quoted rates were abnormally low which were initially not identified and incorporated in the estimates and BOQs.

Thus, in the light of above facts, the Ministry should thoroughly investigate the circumstances leading to identification of the need for additional structures in consideration to the structures existing prior to the widening works and the reasonableness of analyzed rates incorporated for the estimation of the works. Besides, the Ministry should also review the payments for the structures executed by the contractor for which rates were quoted abnormally low in the BOQs. The outcome of investigations along with documentary

evidences and action taken if any in the course of the investigations intimated to RAA for review and to enable to provide final decision on the issues.

The Ministry should take appropriate actions on the responsible officials of any untoward decisions, violations and lapses.

21.4 Mismatch of technical specification in Drawing, Departmental Estimate and BOQ

The BOQ & estimates for pavement works from Dorjigonpa to Yotongla included 500 meters of rigid pavement works at Yotongla. On review of the drawing in relation to the BOQs and Estimates, it was noted that varying specifications were defined for rigid pavement works as discussed below:

- **Drawings:** In the drawing, the specification of rigid pavement works was provided for PCC M45, 30 cm thick casted in blocks of 3.25x3.25 with rough surface finish,
- **BOQ:** In BoQ, nomenclature provided for rigid pavement works was PCC M25, 30 cm thick casted in blocks of 3.25x3.25 with rough surface finish,
- **Estimates:** In estimates the specification of rigid pavement works was provided as PCC M15, 30 cm thick casted in blocks of 3.25x3.25 with rough surface finish

However, the actual execution at site was done as per BOQ nomenclature not aligned to drawings since it is the basis for preparation of estimates and BOQ.

The RO should justify as to how different specification was made for same items and how the decision was arrived to execute as per BOQ nomenclature.

The Ministry should investigate the circumstances leading to adoption of different specifications besides instituting a technical team to technically assess that the strength and quality of the rigid pavements as the strength of the PCC was reduced to M25 from M45.

Auditee's Response:

The observation made by the RAA is duly acknowledged by the RO. The RO would like to furnish the following comprehensive explanations under the kind consideration of RAA:

Due to the need of execution of huge magnitude project in a limited time for planning and designing, such lapses had been occurred unintentionally in the planning. For this, the RO had stick to the BOQ grade of M25 in which the payment is ultimately prevail by the BOQ rate. The RO acknowledges the lapses on this matter and hence promises not to repeat such incidences in the future. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

*While taking note of the response, the fact remains that design and drawing are the critical aspect for the execution of quality works. It is also indicative of poor planning as well as weak management controls as the RO had failed to incorporate technical specification as per design and drawing in the **preparation of estimates and BOQs.***

However, as discussed in the exit meeting, the DoR and the Ministry should constitute a technical team to review the technical soundness of the rigid pavement since the specification of rigid pavement works provided in the drawing was for PCC M45, 30 cm thick casted in blocks of 3.25x3.25 with rough surface finish as against PCC M25 executed at site. The outcome of the review and measures taken, if any, required intimated to RAA for review and record.

The DoR and the Ministry should institute strict procedures for the preparation of designs, drawings, estimates and BOQs including a system of review process to prevent adoption of different specifications in the tender documents in future.

The measures and procedures proposed to be put in place intimated to RAA for record and follow-up during future audits.

21.5 Poor quality works and poor workmanship (4.4.63)

A joint team comprising officials from the Regional Office, DoR, Trongsa, Contractor and audit team conducted the physical verification of site. The physical verification of works that are under progress revealed execution of abutments for RCC culvert works with poor quality and workmanship. The abutment walls were found being constructed using huge boulders with voids and less cement mortar that could result in weak bonding besides the stone soling was also found constructed with huge boulders as shown in the photographs below:



Fig: 2.5- Abutment walls constructed with huge boulder



Fig: 21.5 (1) - Stone soling with huge boulders

The above pictorial evidences indicated existence of inadequate supervision and monitoring controls over the execution of abutment works by the Site Engineer and Regional Officials. The acceptance and taking over of poor quality or substandard works despite investment of huge Government scarce resources indicated laxity on the part of the Regional Office.

The Ministry should consider the desirability of establishing a dedicated technical committee to thoroughly inspect and certify all completed works to prevent taking over of poor workmanship/quality works from the contractor. Besides, the Ministry must hold the site engineers accountable for such lapses and direct the contractor to redo the defective and substandard works immediately at the cost of the contractor and rectification report along with photographic evidence furnished to RAA for review and records.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for the consideration by Royal Audit Authority.

The abutment walls as depicted in the picture has been rejected by the site engineer. Payment was withheld for this wall. The contractor was asked to dismantle the wall and redo it. The wall has now been rectified as depicted in the pictures below.



Para: 2.5-[Wall dismantled]



Para: 2.5: [Reconstruction]

Abutment constructed well with filter materials behind. Backside also sealed well with cement mortar. The defect had occurred primarily due to poor workmanship of the mason employed by the contractor. This particular mason was expelled and a new group was brought in to reconstruct the wall.

In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

The response stating that abutment walls were rejected by the site engineer and payment withheld and the contractor was asked to dismantle the wall and redo it. The wall has now been rectified is noted in audit. However, it is to reiterate that the execution of substandard abutment works not aligning to the technical specification by the contractor is indicative of

either absence of or inadequate supervision and monitoring by the site engineer and the project engineer.

However, as discussed in the exit meeting, the DoR and Ministry should institute technical Team to oversee technical soundness of all constructed infrastructures to facilitate timely rectification of structure besides instituting strict supervision and monitoring controls to prevent execution and acceptance of defective and sub-standard works in future. The measures and procedures proposed to be put in place intimated to RAA for record and follow-up during future audits.

22 Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Yotongla to Bongzam (Package 11) by M/s Dungkar Construction Pvt. Ltd

The contract for formation cutting and pavement works from Yotongla to Bongzam (Chainage 72km to 80km) covering a total of 8 kilometer was awarded to M/s. Dungkar Construction Pvt Ltd. Thimphu being the lowest evaluated bid. The contract was signed vide agreement No.RO/DOR/(Trongsa)/15-16/PL-36/TR-11 with following contract details:

i.	Quoted amount	: Nu. 89,839,558.00
ii.	Actual Exp.	: Nu. 24,661,705.00(06.12.2017)
iii.	Duration of contract	: 28 months
iv.	Start date	: 01 st October 2015
v.	Due date of completion	: 31 st January 2018
vi.	Time Extension	: 4 months
vii.	Date of completion (revised)	: 30 th April 2018
viii.	Work status	: On-going

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

22.1 Over/in-admissible payment to the contractor due to wrong quantification subgrade preparation item - Nu. 160,776.75 (5.1.14)

On review of measurements recorded in the MB and RA bills, it was noted that while quantifying the work done for *“Preparation of subgrade with proper camber by excavating earth to depth equal to pavement thickness, consolidation with roller, disposal of surplus earth to designated dump yard for all kinds of soil”*, the quantities of work done was computed in Sqm instead of quantifying in cum. Thus, the Contractor had claimed and was

paid for 10,718.45 Sqm instead of claiming for 2,679.61 cum. which resulted into excess payment of Nu. 160,776.75 as tabulated below:

Item code	As per contractors Bill	As per RAA				Remarks
	Quantity in Sqm	Quantity in Cum	Diff.	Rate	Amount (Nu.)	
RW0121	10,718.45	2 679.61 (10718.45*.25)	8038.84	20	160,776.75	Refer MB 43 page 149

The concerned site engineer has accepted the wrong quantification for the item of works and the excess payment. The RO should also hold the site engineer accountable for appropriate action for such lapses.

Auditee Response:

We acknowledge the RAA findings on this lapses as we failed to perform the due diligence. With the previous practice of calculating the subgrade preparation in area, we had failed on our part to cross check the unit in which the subgrade item was paid in area. The Regional Office had already recovered the excess amount of Nu. 160,776.75 and will be deposited into Audit Recoveries Account (ARA).

RAA's Further Comments & Recommendations:

While taking note of the response and recovery of the excess payment, the fact remains that the contractor was overpaid in the RA bills to the extent of Nu. 160,776.75 due to quantification of subgrade preparation item into Sqm instead of Cum. The inflated payments indicated existence of weak internal controls over the quantification of work done and verification of RA bills with the item works units provided in the BOQs. It was obvious that by the contractor would have benefited by the overpayments if not observed by RAA.

However, as agreed in the exit meeting, the DoR and RO should institute appropriate control mechanism over the measurement of works done at site and verification of RA bills prior to settlement of the claims to prevent such overpayments in future. The measures and procedures proposed to be put in place to avoid such lapses be intimated to RAA for record and follow-up during future audits. Besides, the details of recoveries affected and accounted for in the books of accounts should be furnished for review and records.

23. Irregularities noted in Formation Cutting and Pavement works for Double Lanning of Northern East-West Highway from Gyatsazam to Ngangar (Package 13) by M/s Rinson Construction Pvt. Ltd

The contract for formation cutting and pavement works from Gyatsazam to Ngangar (Chainage 72km to 80km) covering a total of 8 kilometer was awarded to M/s Rinson Construction Company (P) Ltd. Thimphu being the lowest evaluated bid. The contract was signed vide agreement RO/DOR/(Trongsa)/PL-36/2015-2016/262 dated 2.10.15 with the following contract details:

- i. CDB No. : 1965
- ii. License No. : 1000488
- iii. Duration of Contract : 28 months

iv.	Date of start	: 2nd October 2015
v.	Date of completion	: 2nd February, 2018
vi.	Revised Completion date	: 2 nd May, 2018
vii.	Contract amount	: Nu. 124,174,327.15
viii.	Work status	: On-going
ix.	Name of site engineer	: Kinzang, AE

As per approved revised drawing and design issued by the MoWHS, following specification was to be adopted by the contractor and the site engineer for the construction of road:

- ✓ The maximum Formation road width of 10.50 meter (m) comprising of 1.5m width shoulder on the valley side, 0.50m width on hill side for the purpose of debris collection, and 1m width L-drain; and Carriageway width of 7.50m.
- ✓ The Bill of Quantities reflected measurements in running meters and lump sum payment modality.

On scrutiny of drawings, estimates, bill of quantities, contractor's bill, technical specification and physical verification of the construction revealed over payments and other irregularities as discussed below:

23.1 Flaws in estimation relating to Formation Cutting and avoidable expenditure- Nu. 4.740 million (4.4.65)

The departmental estimate for FC Works prepared based on the survey report, reflected soil and rock excavations including transportation of spoil materials as tabulated below:

Sl. No.	Description of items	Code no	Qty.	Unit	Rate	Amount (Nu.)
1	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of soil.	RW0013	69,798.881	cum	48.11	3,358,024.16
2	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of rocks.	RW0014	7,289.915	cum	312.27	2,276,421.69
3	Transportation of excavated materials	RW0021	48,859.217	Cum	50.00	2,442,960.83

In terms of the survey report and departmental estimates, entire 10.10 km stretch of road were incorporated as formation cutting works. However, during the physical verification of the site, the audit team observed that approximately 5.362 km did not require formation cutting works but just an earthwork excavation over area, under the item of work “*Earthwork in excavation over areas exceeding 300mm in depth, 1.5m in width as well as 10sq.m on plan including disposal of excavated earth (disposed earth to be levelled and neatly dressed)*”.

Accordingly, the rate for items “*EW0030 and EW0031 Earthwork in excavation over areas >300mm, width >1.5m, area>10sq.m, including disposal of excavated earth within 50m lead and 1.5m lift and disposal soil to be neatly dressed*” should have been applied for estimation and regulating payment to contractor instead of rates for items “*RW0013 and RW0014*”.

The RO, had estimated all 10.10 km stretch of road under formation cutting works and accordingly the contractor was paid for all the stretches as formation cutting works despite the fact that formation cutting were not required to be executed.

Pictorial evidences of just requiring execution of earthwork excavation over areas instead of formation cutting works are as depicted in the photographs below:



Fig:23.1-. Land profile- indicating non-requirement of formation cutting works

The pictorial evidences clearly indicates that the height of earthwork that needs excavation is just exceeding 300mm in depth and did not require deployment of heavy machineries as required for the formation cutting works.

The audit team taking into consideration of the requirement of earthwork excavation over areas under items “*EW0030 and EW0031*”, had worked out the avoidable financial implications of Nu.4,739,954.38 as shown below:

Table:23.1- Detailing avoidable financial implication								
Description	As per BoQ (Paid to Contractor)			As per RAA			Diff.	Remarks
	L	Rate	Amount (Nu.)	L	Rate	Amount (Nu.)		
Excavation of road formation with excavator including disposal of muck to designated dump yards and clearing, grubbing and removal of bushes - all kinds of soil and rock. The item to be executed correct to specified batter slope, road width, gradient and to the Technical Specifications.	10100	1000	10,100,000.00	4738	1000	4,738,000.00		Quoted rate by contractor

Earth work in excavation over areas, depth >300mm, width >1.5m, area >10 Sqm on plan, including disposal of excavated earth within 50m lead and 1.5m lift & disposed soil to be neatly dressed	-	-	-	5362	116.01	622,045.62		Rate as per BSR 2015
Total			10,100,000.00			5,360,045.62	4,739,954.38	

The survey and estimates are normally based on site visits and physical verification of sites. Thus, the estimation of FC works for all stretches of 10.10 km road despite the fact that FC works for 5.362 km were not required was not understood in audit. The DOR and the Ministry should constitute a technical committee to investigate as to how the estimate was prepared including the survey report besides fixing the accountability on the concerned official(s) for preparation of estimates not based on site conditions and requirements which had resulted into undue financial benefit of Nu.4,739,954.38 to the Contractor.

Auditee's Response:

The RO would like to apprise that the initial survey and design with detail estimate was prepared by the ex-CE who is expert in the surveying and road design. The current management opinion that there should not be estimate of cut where there is no cutting required. Even for the small cut for the preparation of surface for pavement, excavators and other required machineries are to be engaged whereby the running cost of the machine is incurred.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that approximately 4.362km required earthwork excavation of areas less than a depth of 300mm and did not fall under the category of formation cutting works. The inclusion of earthwork excavation of less than 300mm as formation cutting works both in the survey report and estimates indicated either survey was not properly conducted or physical site visits not carried out prior to preparation of estimates/BOQs.

Further, in terms of BSR, it categorically defines that the rate for items EW0030 to EW0034 to be used for road works involving just "Earthwork in excavation over areas, exceeding 300mm in depth, 1.5m in width as well as 10 Sqm on plan". Thus, estimation on the basis of formation cutting works for the whole stretch of 10.10km roads had resulted into overestimation of cost of the work as well as avoidable expenditure and payment of Nu.4.740 million to the contractor.

However, as discussed in the exit meeting, the DOR and the Ministry should review the circumstances leading to inclusion of entire stretch of 10.10km roads as formation cutting works in the estimates as well as in the survey reported though 5.362km did not require formation cutting except excavation of over areas just exceeding 300mm in depth. Besides, the DOR and the Ministry should also make the responsible official(s) accountable for avoidable loss of Nu.4.740 million due to wrong classification of items of works and items as well as over cost estimations of the works.

The DOR and Ministry should issue proper guidelines and standards as well as institute effective mechanism to ensure conduct of detailed survey and adequate planning process prior to preparation of detailed estimates and BOQs and prevent unwarranted overestimations due to wrong applications of items of works and items as well as financial loss to the Government in future. The outcome of the review and guidelines and standard proposed to be put in place should be intimated to RAA for record and follow-up in future audits.

23.2 Acceptance of nil or abnormally low quoted bids for item of works with resultant delayed work progress (4.4.69)

M/s Rinson Construction Pvt. Ltd was awarded the work contract for Contract Package XIII covering Chainages from 85.00km to 97.30km with a total of 10.10 Km from Gaytsa to Nangar although the quoted bid was found **4.46%** below the estimated cost of Nu. 129,964,945.98 as shown below:

Package	Estimated amount (Nu)	Contract Amount (Nu)	% of deviation (Estimate-Contract value)	Contract duration in month(s)
XIII-(Ch:85-97.3)	129,964,945.98	124,174,327.15	-4.46	28

On review of the contractor's BOQs quoted rates with the BOQs of Departmental estimates, it was noted that in respect of some item of works, the contractor had not quoted the rates and rates quoted for some item of works were abnormally low indicating submission of low or seriously unbalanced bid as shown below:

Sl. No.	Description	Item code	Qty.	As per Departmental		As per Contractor		Diff.
				Rate	Amount (Nu.)	Rate	Amount (Nu.)	
	RRM							
1	Excavation in foundation trenches or drains	EW0106	2332.574	48.11	112,220.12	-	-	112,220.12
2	Providing & fixing centering and shuttering (formwork)	RC0090	670.002	242.52	162,488.79	100.00	67,000.16	95,488.63
3	Providing and laying in position plain cement concrete 1:5:10. All work up to plinth level.	CW0011	486.234	3,534.72	1,718,702.82	-	-	1,718,702.82
4	Providing and laying hand packed stone soling/Back filling of walls with stone.	SM0072	2207.55	1,097.49	2,422,766.91	100.00	220,755.26	2,202,011.65
	HP Culvert							
5	Excavation in foundation trenches or drain	EW0106	708.4	48.11	34,081.12	-	-	34,081.12
6	Providing & fixing centering and shuttering (formwork)	RC0090	96.6	242.52	23,427.43	100.00	9,660.00	13,767.43
7	Providing and laying in position RCC Hume pipe 900.00 mm Diameter NP3 ...etc. complete.	DR0095	125	14,435.43	1,804,428.75	7,000.00	875,000.00	929,428.75
8	Providing & Laying hand pack stone soling /filling works.	SM0072	193.95	1,097.49	212,858.19	100.00	19,395.00	193,463.19
	RC Culvert Extension							
9	Excavation in foundation trenches or drain	EW0106	2590.89	48.11	124,647.72	-	-	124,647.72

10	Providing & fixing centering and shuttering (formwork)	RC0090	956.73	242.52	232,026.16	-	-	232,026.16
11	P&L RRM in CM 1:6	SM0007	871.82	2740.64	2,389,344.76	-	-	2,389,344.76
12	P&L hand packed stone soiling	SM0072	521.97	1097.49	572,856.86	100.00	52,197.00	520,659.86
13	Filling of trenches, sides of foundation, etc. in a layers < 200mm	EW0195	1097.79	56.88	62,440.17	-	-	62,440.17
	Protective works							
14	Construction of 1.5 m height boulder wall	AR	1000	1,000.00	1,000,000.00	200.00	200,000.00	800,000.00
15	Construction of French Drain (Size= 600 mm & 1000 mm deep)	AR	50	791.42	39,571.00	100.00	5,000.00	34,571.00
							Total	9,462,853.37

As can be seen from the table above that the contractor had quoted very low bids for all the items of works and overall underquoted bids amounted to Nu.9.463 million including nil quoted rates for items valuing Nu. 4,673,462.87.

The quoted rate of Nu. 7,000 per unit for RCC Hume Pipe was found abnormally low as compared to the departmental estimated rate of Nu.14,435.43 per unit.

As per Clause 5.4 Evaluation of Bids sub-clause 5.4.5 -Abnormally Low Bid of PRR 2009 states as under:

- 5.4.5.1 *Where the prices in a particular bid appear abnormally low or the bid appears seriously unbalanced, the Procuring Agency may reject it only after seeking written explanations from the bidder submitting the low or seriously unbalanced bid. In the case of a bid that appears seriously unbalanced, the procuring agency shall request from the bidder an analysis of rates of the relevant items.*
- 5.4.5.2 *The Procuring Agency may take into consideration explanations, which are justified on objective grounds including:*
- a. *The economy of the construction method or the method by which the goods or services are to be provided; or*
 - b. *The technical solutions chosen; or*
 - c. *The exceptionally favorable conditions available to the bidder for the execution of the contract; or*
 - d. *The originality of the work, product or service proposed by the bidder.*
 - e. *The internal consistency of those prices with the construction methods and schedule proposed.*
- 5.4.5.3 *If the Procuring Agency decides to accept the abnormally low bid or the bid with the seriously unbalanced rates after considering the above factors, the bidder shall be required to provide additional differential security equivalent to the difference between the estimated amount and the quoted price in addition to the performance security.*

It is apparent that the Evaluation Committee and MLTC had passed the decision for award of work instead of acceptance after following above due processes to ensure competency of contractor to complete the work in scheduled timeframe.

Further, as per the initial work plan, work was scheduled for completion by 02/02/2018. However, till the date of audit i.e. 15/01/2018, the contractor had completed FC, GSB, Permanent Structures, and only 2.1Km of WMM and 500m drain work against 10.10km stretch road. Thus, the reasons for slow work progress and abnormal contract delays could possibly be due to abnormally low quoted bids as shown in the table above.

The RO taking note of the poor work progress and completion deadline falling on 2nd February 2018 had drawn up Milestone agreement. As transpired from physical verification conducted on 15.1.2018, the contractor had failed to achieve the progress in terms of Milestone Commitment Agreement as shown below: -

- The audit team noted that since only 1 milestone was achieved and the subsequent milestones are failing.
- Collection of WMM materials was found just started which should have been completed by the end of October 2017 delayed by more than three months.
- Providing and laying of WMM materials for 7.1km should have been completed by end of January 2018 but completed just 2.1km.
- Drain works of 5.1km should have been completed by end of January 2018 but completed just 500m.
- Providing of DBM layer of 3.3km should have been completed by end of January 2018 but still not yet started since WMM work is not completed.

The audit team noted that not even one (1) milestone was achieved indicating non-achievement of subsequent milestones.

In consideration to the above facts and events, including substantial rate differences in particular for the critical item works, the RO should comment and furnish on the measures and due diligence exercise carried out by the evaluation committee to address and validate the Nil and abnormally low rates and the basis considered for the acceptance of rates. The RO should also comment and furnish evidences of additional measures taken to prevent execution of substandard works by the contractor.

The RO should invoke the relevant clauses of the contract documents as well as provisions stipulated in the Milestone Commitment Agreement to prevent further delays and time and cost overruns and complications in future.

The Ministry should also investigate the circumstances leading to acceptance of bid without conducting proper analysis, and measures taken to speed up the progress as the contractor had already failed to complete the work as per completion deadline and committed milestones.

Auditee's Response:

The Regional Office acknowledges the observations issued by Royal Audit Authority. We would like to furnish the following facts and evidences as comprehensive explanations for consideration by Royal Audit Authority. There is no clauses in PRR stating that the nil quoted rate should be rejected and more over the contractor has quoted nil which clearly depicts that he/she can carry out the work without compromising the quality of work. After all the firm's quoted rate cannot be altered by the evaluation committee and nil quoted rate

ultimately leads to lowest evaluated bidder and that is what PRR states to award the work to the lowest evaluated bidder. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response particularly on the assertions that “the contractor has quoted very low bids which clearly depicts that he/she can carry out the work without compromising the quality of work”, the fact remains that under the provisions of PRR as mentioned above in the observation, the Evaluation Committee was required to carry out due diligence review particularly on the bidder’s analysis of rates for the relevant items to objectively accept the abnormally low bid or seriously unbalanced rates.

Further, the contract duration was up to 2nd February 2018 and further revised up to 2nd May 2018 in terms of approval accorded by MLTC under letter No. letter No. DOR/CD/7/2017-18/4405 dated 21/09/2017 towards the increase of 1m carriageway width including additional works. However, the RO taking cognizance of the slow progress of works, just before five months of the expiry of the contract period, has drawn the Milestone Commitment Agreement as evident from Milestone Commitment Agreement letter No DoR/RO/Trongsa/2017-18/P-3/237 at 19/9/17. The status of work progress as on that date was as shown below:

		Qty. to be executed as per the milestone commitment agreement starting from Sept 2017								
Item of work	Qty	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	April-18	Remarks
GSB	0.6km	0.3	0.3							
WM M	10.1km			2	2.1	3	3			
Drain	10.1km			1.7	1.7	1.7	1.7	1.7	1.6	
DBM	10.1km					3.3	3.3	3.3	0.2	DBM to be completed by Mid-April 2018
AC	10.1km						3	3	4.1	

The work progress report as on 31st January 2018 against the work completion deadline scheduled on 2nd May 2018 indicated the work progress as shown below:

Package	Name of Contractor	Initial completion deadline	Revised completion deadline	Status of Work	Remarks
Package 13	M/s Rinson Construction Pvt/ Ltd (Gyatsa Zam – Nangar)	02/02/18	02/05/18	Under Progress	FC, Permanent works, GSB , 2.1km WMM and 500m drain completed

In terms of the milestone, 7.1km of WMM, 5.1km of drains and 3.3km of DBM should have been completed.

Thus, in the light of above facts, the Ministry should thoroughly investigate the circumstances leading to acceptance of bid without conducting following requisite due process and proper analysis of rates, and measures taken to speed up the progress as the contractor had already failed to complete the work as per completion deadline and committed milestones. Besides, the Ministry should also review the quality of the structures executed by the contractor for

which rates were quoted either nil or abnormally low in the BOQs including regulation of payments.

In addition, the Ministry should also assess the exact impact on the work progress and quality of works for the items of works executed without payments for instituting appropriate system to address tenders with nil or abnormally low quoted bids for future projects. The outcome of investigations along with documentary evidences and action taken if any to remedy the existing flaws and deficiencies in the tender evaluations intimated to RAA for review and enable to provide final opinion on the issues. The Ministry should take appropriate actions on the responsible officials of any untoward decisions, violations and lapses.

23.3 Defectiv construction of Kerb Beam (4.4.63)

The kerb beams on the RCC slab was found constructed with poor quality and workmanship as there were segregation and formation of honeycombs. Pictorial evidences on execution of substandard and defective Kerb Beams are as depicted in the photographs below:



Fig:23.3- Defective Kerb Beams

The execution of substandard works or poor workmanship indicated inadequate supervision and monitoring over execution of works by the site engineer. Besides, acceptance of substandard and defective works also indicated laxity and complacency on the part of the Site Engineers and RO towards ensuring immediate rectification of works or at least within the defect liability periods.

The Ministry should institute a dedicated technical committee in addition to the Technical Monitoring Team to thoroughly inspect and certify that all completed works were executed as per technical specification to prevent taking over of poor quality and defective works from

the contractor. Besides, the Ministry must fix the site engineer as well as the Technical Monitoring Team and RO accountable for such unwarranted lapses and direct immediately the contractor to redo the defective and substandard works and rectification carried out intimated to RAA for review and record.

Auditee’s Response:

The defective happened due to poor formwork whereby the cement slurry had been oozed out of the formwork. The RO had already instructed the contractor to rectify the defect, which was found not in line to the technical specification in presence of our site engineer. The same rectified work will be intimate to RAA for record and review.

RAA’s Further Comments & Recommendations:

While taking note of response, the fact remains that the execution of substandard works or poor workmanship was primarily due inadequate supervision and monitoring of works at the time of execution by the site engineer and RO.

It was apparent that the contractor would have escaped by executing substandard Kerb beam works had it not been pointed out by RAA. This also indicate failure on the part of RO and site Engineer to inspect timely and direct the contractor to rectify those defective works.

However, as agreed in the audit exit meeting, the DoR should direct the RO to rectify the defective works immediately as per technical specifications at the cost of the contractor and intimate RAA along with the photographic evidence for further review and records. The Ministry should hold the site engineer responsible for execution and acceptance of substandard works for taking appropriate administrative action.

Further, DOR and the Ministry should come up with proper control mechanism to oversee that the Site Engineers constantly monitor and supervise the works executed by contractors to ensure execution of quality works as per approved drawings and designs and facilitate timely detection and rectification of defective and substandard works within the defect liability periods at the cost of the contractors.

The control mechanism and measures put in place should be intimated to RAA for record and follow up in future.

24 Irregular grant of Additional work of Construction of Boulder walls for slope failure and slide to contractors in violation of the Contract agreement and technical specification - Nu. 5.65 million

On review of the time extension related records, it was noted that construction of boulder walls were proposed as additional work for Packages 1, 2 and 4 for areas where there are slope failure and continuous slide. Accordingly, some of the boulder walls were found constructed at sites. The details of proposed additional boulder walls for 3 packages are as tabulated below:

Table: 24- Details of additional work value for boulder wall construction		
Package No.	Name of Contractor	Amount (Nu. in millions)
01	M/s Rigsar Const Pvt. Ltd.	4.487

02	M/s Gaseb Const Pvt. Ltd.	0.494
04	M/s Gyalcon Const Pvt. Ltd.	0.669
	Total	5.650

On pointing out, the RO justified that the proposal of boulder walls as additional works were that the natural slope was disturbed by road formation cutting and during heavy monsoon it started sliding.

However, on review of the technical specifications, it was noted that the proposed additional works “*Construction of Boulder Walls*” was not justified as additional works as the following Clauses of the Technical Specifications categorically stipulated that “no separate measurements and payments shall be made and all costs in connection with the work specified to be included in the related work items of the work specified in the Bill of Quantities”:

Section 100 – General Requirements sub section 111- Environment Protection Works:

- *The contractor shall take all precautions for safeguarding the environment during the execution of the contract;*
- *He shall abide by the prevailing laws, rules and regulations governing environmental protection and fully comply with Environment Codes of Practices for Highways and Roads;*
- *The Contractor shall follow the requirements specified in the Environment Management Plan under the contract;*
- *All areas susceptible to erosion shall be protected as soon as possible either by temporary or permanent drainage works. All necessary measures shall be taken to prevent concentration of surface water and to avoid erosion and scouring of slopes and other areas (refer 111(3));and*
- *Erosion and/or instability and/or sediment deposition arising from earthwork operations not in accordance with the Technical Specifications shall be made good immediately by the Contractor (refer 111(3)).*

Section 600 – Earthworks sub section 602 –Definitions and General Requirements:

- *At all times the Contractor shall ensure that earthworks are not damaged by weather or traffic. In the event such damage occurred, the Engineer may withdraw approval from the affected works until the Contractor has carried out repairs to restore the works to their original condition. The cost of all such repairs and any additional testing shall be borne by the Contractor without extra cost to the Employer (refer 602(9)).*

Further, sub section 605-Excavtion in Cutting:

- *While executing excavations, the Contractor shall take adequate precautions against soil erosion and water pollution (refer sub point-3);*

- *The slopes of cutting shall be cleared of all rock fragments, which move when pricked by a crowbar, unless otherwise directed by the Engineer. Where the Engineer considers that the slope, immediately after dressing, shall not be permanently stable, he shall direct the Contractor as to the stabilization measures required. The Contractor shall carry out these measures soon after Engineer's instruction(refer sub point-7); and*
- *If slips, slides, over breaks or subsidence occur in cutting, they shall be removed. Adequate precautions shall be taken to ensure that during construction, the slopes are not rendered unstable or give rise to recurrent slides after construction (refer sub point-8).*

In addition, the Technical Specification (TS 109) categorically stipulated as under:

“The routine maintenance of the road shall include besides other, trimming vegetation; cleaning all culverts, ditches, borrow pits, road side drainage, drainage channels and any other obstructions including clearance of debris/landslides of any volumes; etc...”

*Further, SCC (GCC 1.1 (ff)) also stipulated categorically as “The Works consist of: Road widening work, construction of retaining wall, construction of lined drain, sub-grade preparation, laying of granular sub-base, wet mix macadam, dense bituminous macadam and asphalt concrete from Km 389.00-379.00. **The contractor shall assume full responsibility for the removal of landslide/debris of any volume until the completion and handing over of the project to the Client***

In addition, as per letter No. MoWHS/Sec-29/2015-2016/524 dated 16th October 2015, the Secretary, MoWHS had conveyed on the meeting held on **16th June 2016** with the contractors and directed the Regional Offices for issuance of amendment to the contract agreements on the decisions subsequently taken on the following areas:

✓ ***15% extra on FC Works***

Since the contractors executing the widening works are required to work at night (7pm to 8AM) to allow undisturbed flow of traffic during the day, it has been decided to enhance the rate of FC work by 15%.

✓ ***Increase in pavement width from 6.50mtr to 7.50mtr***

It has also been decided to increase the width of pavement by 1meter from 6.5 meters to 7.5 meters.

✓ ***Enhancement of Defect Liability Period from 1year to 3 years***

During the meeting held between the Hon'ble Prime Minister and the contractors working on NEWH on 24/8/15, the contractors have agreed to the proposal of increasing the defect liability period for the works from one to three years.

Thus, in terms of the technical specifications and provisions of the Contract Documents, the cost of the stabilization of the slope to prevent slide were to be in-built in their quoted rates for the relevant item of work *“Excavation of road formation with excavator including disposal of muck to designated dump yards and clearing, grubbing and removal of bushes - all kinds of soil and rock. The item to be executed correct to specified batter slope, road width, gradient and to the Technical Specifications”*.

Further, while taking the decisions to pay 15% extra for executing formation works at night, the Ministry had also taken decisions to enhance the ***Defect Liability Period from 1 year to 3 years***. Thus, the contractor, responsible for the formation cutting works was responsible to clear and prevent the landslide within the defect liability periods.

Therefore, proposal of additional works towards construction of boulder walls for protection against land sliding was not only in violation of the Technical Specification and contractual agreements but also an indication of intent of the MLTC to favor the contractors as the original contract works were found substantially delayed and obvious to fail to handover the contracts within the completion deadlines.

The Ministry should relook into the decisions and actions taken by the MLTC in violation of the categorically stipulated provisions of the contract documents and technical specification besides issuing appropriate directive to the MLTC to revoke the decisions and approval. The RAA would hold the MLTC accountable for violations of contractual provisions and extension of undue favour and financial benefits to the contractors.

Auditee's Response:

The additional works had been proposed with the following reasons:

- *Unusual Monsoon had washed out road formation*
- *Huge slope failure due to unstable terrain*
- *Breast walls & Retaining walls not included in BoQ*
- *Destruction by rock / Formation cutting*

The above additional works is approved by MLTC. In view of the above justifications, RAA is requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response and approval accorded by the MLTC, the fact remains that the technical specifications which is an integral part of the contract documents categorically stipulated under TS 109 and SCC (GCC 1.1 (ff)), on the responsibilities of the contractors for "removal of landslide/debris of any volume until the completion and handing over of the project to the Client". It is to reiterate that the quoted rates of contractor for the related items of works is built up cost inclusive of cost of all risks factors involved in terms of requirements stipulated in the technical specifications and provisions in the contract document.

It was also apparent that the MLTC had violated the provisions stipulated in the technical specification and contractual documents.

However, as discussed in the exit meeting the RO and DOR should recover the cost of boulders from the total cost of boulder walls paid to the contractor within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per Chapter IV, Section 4.5.1.4 of the Finance and Accounting Manual 2016. The RO and the DOR should furnish documentary evidences of the recoveries and accountal in the books of accounts for review and records.

In addition, keeping in view the violation of provisions envisaged in technical specifications and contract document by MLTC, the DOR in consultation with the Ministry should revisit and review the provisions to assess on the appropriateness and practicability of inclusion of such provisions in the technical specifications and contract documents to safeguard the interest of the government for similar future projects.

25 Huge Quantity variations in earth and rock volume between estimates and actual execution for the departmentally executed works

On comparison of quantities of earthwork and rock excavation estimated and actual execution as recorded in the MB huge variations particularly in the quantities of rock excavations were noted as shown below:

Table:25- Detailing huge variations in quantity of earthwork between estimate and execution					
Item code	Description of items	Qty. as per estimates m³	Qty quantified after execution m³	Diff. m³	% deviation
RO, Trongsa, (Chainage 44.7km to 50.8km, a total of 6.1Kms) -Trongsa to Punzhi					
EW0013	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of soil.	102,586.082	109,088.35	6,502.27	6.33%
EW0014	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of rocks.	39,387.764	139,237.52	99,849.76	253.50%
RO, Trongsa (Chainages 80 to 85km, a total of 5km) Bongzam-Gaytszam					
EW0013	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of soil.	45,733.715	39,946.42	5,787.29	12.65%
EW0014	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rocks and stones within 50m for reuse - all kinds of rocks.	10,307.222	45,417.92	-35110.70	340.64%

The audit team could not ascertain reasons of substantial variations in the quantities of rock excavations since the variations in soil excavation were very minimal. The RO should comment as to how such huge variations had occurred since the quantification of soil and rock were based on detailed survey report that too along existing road where accessibility was not an issue. The DOR and the Ministry should also investigate the circumstance leading to huge quantity variations only in rock excavations and outcome intimated to RAA for review.

Auditee Response:

During the detail survey detail geotechnical studies are not carried out and the identification of soil type cannot be studied accurately whereby it was based upon visual judgment of the

surface. During execution of the FC work, more rock was discovered thereby increasing the quantity of rock cutting volume.

Moreover, in some stretches due to cutting height being too high the quantity of rock excavation was increased. It was also noticed that during the cutting from design fixed batter peg, the total width of 10.5m was not achieved so in order to achieve the width of the FC, the batter peg were moved 1-1.5m outward. Due to which the volume of cutting had been increased.

At times FC work being involved for two monsoon seasons and the cutting being fresh, several slide occurred which also increased the volume of excavation. Thus the difference in estimated quantity and executed quantity was noticed as per the site condition. In view of the above justifications, RAA is requested to drop the memo. Department of Geology & Mines in Appendix-4 & Appendix-5 respectively.

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that DoR/RO had failed to carry out detailed geotechnical survey for this magnitude of project and quantify soil and rock close to accurate. Therefore, in the absence of final survey report, the correctness of such substantial variations in the quantities particularly in rock excavations could not be ascertained in audit.

However, as discussed in the exit meeting, the DOR and the Ministry should constitute a technical team to conduct final survey and assess the correctness of the quantities of rock excavations as recorded in the MB. Besides, the Ministry should also institute appropriate system to ensure proper conduct of survey as well as realistic classification and quantifications of rock and soil excavations in the estimates and BOQs in future. The DOR and the Ministry should intimate the outcome of the survey and measures and action taken to RAA for review and records.

26 Non-conducting of proper study on the soil properties for the Construction of RRM wall and failure thereof – Nu. 10,305,010.07

Gravity retaining walls are constructed with plain concrete or stone masonry and depend on their own weight and any soil resting on the masonry improve stability. This type of construction is not economical for high walls.

To design retaining walls properly, an engineer should study the basic soil parameters such as the unit weight, angle of friction, and cohesion-for the soil retained behind the wall and the soil below the base slab. Knowing the properties of the soil behind the wall enables the engineer to determine the lateral pressure distribution that has to be designed for. The retaining wall to be constructed needs to be checked for overturning about its toe, sliding along its base, bearing capacity failure, settlement and overall stability such that the constructed retaining wall does not fail due to overturn, slide or settlement.

While basic study of soil properties are required to be carried out for designing the retaining walls, the common practice in MoWHS is the use of thumb rule irrespective of the soil condition. The thumb rule used are as under:

- For wall height up to 3m, top width = 0.6m and base width = $(0.4*H+0.3)m$

- For wall height greater than 3m, top width = 0.76m and base width = (0.4*H+0.3)m

The thumb rules are the preliminary dimensions that help the engineers in designing of retaining walls and in most cases, it may be safe and applicable. However, it is necessary to design and check whether the design is safe or not. The factor of safety against sliding, overturning and settlement needs to be worked out and checked to ascertain stability of retaining walls.

Especially in mega project like up gradation of Northern East-West Highway, where the land, soil and climatic conditions are different, it is necessary to study the soil parameters and design accordingly. The thumb rule would be safe and applicable in stable area but not in marshy and unstable areas like Trongsa.

During physical verifications of sites, it was revealed that the RRM walls designed based on thumb rules and constructed at a cost of Nu. 10,305,010.07 had failed completely in the following chainages:

Chainage	Description	Amount (Nu.)
46.78	RRM wall	260,198.35
47.28	RRM wall	227,139.72

Chainage	Description	Amount (Nu.)
59907.23	RRM wall	7,638,360.00
60420.00	RRM wall	2,179,312.00

It is apparent that the failure of the structures were primarily due to designing of RRM walls based on the thumb rules without studying the basic soil parameters of the locations. The RO should comment as to how the standard thumb rules were used despite the facts that designing of any structures were to be based on the soil parameters.

Further, the decisions and course of action taken by RO on the failed RRM walls, constructed at a cost of Nu. 10,305,010.07 was not made available on records.

The DOR and the Ministry should thoroughly review the failure of the RRM works and inaction on the part of the RO on the failed structures and direct the contractors and the RO to redo the works at their own cost. Besides, the DOR and the Ministry should review the circumstances leading to use of thumb rules by the ROs for designing the RRM walls irrespective of soil conditions.

Auditee's Response:

*DoR RO, Trongsa would like to thank the RAA for the observation. As part of our justifications, we are pleased to submit herewith the Geo-technical Assessment Reports of DoR HQ & Department of Geology & Mines in **Appendix-4 & Appendix-5** respectively.*

RAA's Further Comments & Further Comments:

While taking note of the response, the fact remains that the RO had failed to conduct proper geotechnical study of the locations prior to designing the RRM walls. The use of standard thumb rules had led to the failure of the structures leading to drain of resources.

However, as discussed in the meeting, the DOR and the Ministry should revisit the present system of designing of RRM walls and other related structures through use of the Thumb Rule as to ascertain the extent of its applicability and institute appropriate standards and procedures for designing of RRM walls based on soil parameters and site specific to prevent such failures of structures in future.

Further, the Ministry should thoroughly review the failure of the RRM works and direct the contractor to redo the works at their own cost and documentary evidences of rectification carried out furnished to RAA for review and records along with photographic evidence of the rectified RRM works.

27 Direct award of Construction of Steel Arch Bridges as additional work by MLTC in violation to the Procurement norms and contract agreement - Nu. 10,137,000.00

MLTC based on its meeting held on 14/9/2017, vide letter No. DoR/CD/7/2017-18/4405 approved the additional structures proposed by Regional Office, Trongsa. The additional structures amongst others included three (3) numbers of new Steel Arch Bridges as replacement over old bridges located between Chuserbu to Nyelazam (Package1), Nyelazam-Sakachawa (Package 2) and Yotongla to Bongzam (Package 11). The estimated value for the proposed bridges were as tabulated below:

Package No.	Name of contractor	Amount (Nu. in million)	Contract amount [Nu.]	20% of CA
1	M/s Rigsar Const Pvt. Ltd.	3.811	147,882,777.62	29,576,555.52
2	M/s Gaseb Const Pvt. Ltd.	3.163	115,563,269.46	23,112,653.89
11	M/s Dungkar Const Pvt. Ltd.	3.163	89,839,558.00	17,967,911.60
		10.137		

The Procurement Rules and Regulations while allowing direct award of additional works of any kind stipulates as under:

“Clause 4.2.5 –Direct Contracting Method “*In case of additional works provided that the value of the additional works shall not exceed twenty percent (20%) of the original contract amount or the maximum threshold value for the use of Limited Tender (above Nu. 200,000 and up to Nu.1,000,000) whichever is lower. Additional works exceeding twenty percent (20%) of the original contract price and subject to availability of budget within the same program, special approval must be sought from the competent authority”.*

While the value of additional works ranged from Nu. 3.163 million to Nu. 3.811 million and are within the 20% of the original contract amount, all three exceeded the maximum threshold value of Nu.1 million applicable under Limited Tender/Bidding. Thus, the approval of MLTC to award the works directly to the Contractors had violated the Clause 4.2.5 of Procurement Rules and Regulations. Further, the direct award of such magnitude of works to the same contractors despite failure to progress works as per approved work plans would also

be construed as extension of undue favour to contractors and also the possible existence of unhealthy practices could not be ruled out.

The RO in consultation with the Ministry should stop the proposed work awards in the light of the violation of the PRR as well as abnormal delays in the completion of original contracts by the contractors. The RO and the MLTC should be accountable for such unwarranted violations of the PRR.

Auditee Response:

MLTC meeting held on 14th Sept 2017 approved the award of additional structures i.e. the replacement of the existing bridges with steel arch bridges, as proposed by the Regional office, Trongsa to the existing contractors on their respective stretches. The value of additional work is within the limit of 20% of the original contract amount.

The reason for awarding the additional work in the stretch to the respective contractors is to save time involved in calling fresh tenders and to avoid conflicts between the existing contractor & a new contractor. Since, the existing contractor already has its establishment & resources at the site, the progress of works is expected to be faster. Note Sheet submitted by RO, Trongsa & the MLTC Minutes is attached as Appendix-3

RAA's Further Comments & Recommendations:

While taking note of the response, the fact remains that the value of additional works though within 20% of the original contract amount, the direct contracting under Clause 4.2.5, sub-clause 4.2.5.2(f) categorically stipulates that the value of additional works to be limited to maximum threshold value Nu. 1 million applicable for the use of Limited Tender. In addition, the additional works of substantial value were found awarded despite slow progress of works which further exacerbated the work progress. The status of progress of works as of 24th April 2017 and 31st January 2018 are as tabulated below:

Package	Name of Contractor	Initial completion deadline	Status of work as on 24 th April 2017(Refer Progress Review Meeting (PRM-04))		
			Length in KM	Physical Progress in %	Financial Progress in %
1	M/s Rigsar Construction Pvt/ Ltd. (Chuserbu – Nyelazam)	05/12/17	12.0	71	70
2	M/s Gaseb Construction Pvt. Ltd. (Nyelazam-Sakachawa)	05/12/17	7.5	71	70
11	M/s Dungkar Construction Pvt Ltd (Yotongla- Bongzam)	31/01/18	8.0	33	61
8	M/s Dungkar Construction Pvt. Ltd (Pinzhi-Tasipokto)	05/03/18	7.2	58	64
12	M/s Dungkar Construction Pvt. Ltd (Bongzam-Gaytsa))	05/03/18	10.10	18	61

Package	Name of Contractor	Initial completion deadline	Revised completion deadline	Status of work as on 31 st January, 2018	
				Under Progress	FC, Permanent works, base course, 6km of DBM and AC completed
1	M/s Rigsar Construction Pvt/ Ltd. (Chuserbu – Nyelazam)	05/12/17	18/03/18	Under Progress	FC, Permanent works, base course, 6km of DBM and AC completed
2	M/s Gaseb Construction Pvt. Ltd. (Nyelazam-Sakachawa)	05/12/17	18/03/18	Under Progress	FC, Permanent works, and till WMM completed
11	M/s Dungkar Construction Pvt/ Ltd (Yotongla- Bongzam)	31/01/18	31/04/18	Under Progress	FC, Permanent works completed
8	M/s Dungkar Construction Pvt. Ltd (Pinzhi-Tasipokto)	05/03/18	05/05/18	Under Progress	FC, Permanent works completed

12	M/s Dungkhar Construction Pvt. Ltd (Bongzam-Gaytso)	05/03/18	05/05/18	Under Progress	FC, Permanent works completed

It is apparent from the table above that the works progress were worsened through the award of additional works and failed to complete the works within the revised deadlines. The Ministry should review the basis that had necessitated to replace the old bridges at a later stage and the failure of the RO to foresee and incorporate in the initial estimates. Besides, the Ministry should also review on the circumstances leading to direct awards instead of awarding through competitive bidding process as the construction of bridges could have been easily carried out by deployment of different contractors.

Besides, as discussed in the exit meeting, the DOR and the Ministry should direct the RO to furnish copies of the work orders, estimates and drawings for audit scrutiny as the same were not made available on record during the course of the audit. Further, the DOR should also comment on the decisions taken to do way with the construction of bridge proposed under contract package 11 along with revision of the contract durations for review and comments.

28 Direct award of maintenance of roads contracts to the ongoing contractors in violation to the Contract agreement and technical specification - Nu. 22 million

While going through the records pertaining to time extensions, it was noted that the MLTC in its meeting held on 14/9/2017 had accorded approvals for proposal of additional budgets of Nu. 2 million each for contract packages I to XI for awarding the maintenance contracts.

The decisions and approval of the MLTC to award maintenance contracts was not in line with the contract documents and technical specifications. It was noted that Clause GCC 1.1(ff) amongst others stated that ***“The contractor shall assume full responsibility to keep the road open at all times during non-working hours under any circumstances. The contractor is also responsible for removal of landslide/debris of any volume until the completion and handing over of the project to the Client”***.

Further, the Technical Specifications, Section 100, sub-section 109 Maintenance of Road, categorically stipulates as under:

a) Maintenance of Existing Road

“The Contractor shall be responsible for undertaking all routine maintenance of the existing road and all bridges on it under the contract from the day the road is officially handed-over to the Contractor until the issue of work completion certificate by the Engineer. The existing road and bridges on the road shall be referred to the length of road and bridges within the contract package. The contractor shall also carry out the routine maintenance of all completed works from the time of their substantial completion until the work completion certificate is issued.

The contractor shall also maintain roads that the contractor uses for the constructions or access and the use of such roads shall be identified in advance to the Engineer for inspection prior to use. The routine maintenance of the road shall include besides other, trimming vegetation, cleaning all culverts, ditches, borrow pits, road side drainage, drainage channels and any other obstructions including clearance of debris/landsides of any volume, cleaning road signs and checking and undertaking repair of guardrails/crash barriers and other road safety structures; cleaning including removal of obstructions of bridge decks and bridge deck

of drainage elements; cleaning and checking of expansion joints and bearings, cleaning bearing shelves and weep holes; removing accumulated debris and vegetation around and between piers and abutments, repairing parapets, clearance on the road to allow free flow of traffic and reinstatement of any damaged or deteriorated carriageway; and protection of adjoining works

The contractor shall perform the maintenance works as often as required to keep the carriageway, shoulders, and adjoining structures in proper working order to the satisfaction of the Engineer. The contractor shall carry out reinstatement of works (pavement, pavement surface, shoulder or any other works) washed out or damaged due to poor routine maintenance of drains, drainage channels, culverts, shoulders, lacking clearance of obstructions such as landslides.

No separate measurements and payments shall be made for the works. All costs in connection with the work specified herein shall be considered included in the related items of works specified in the Bill of Quantities. No extra payment shall be made to the contractor in case of reinstatement of works, washed out or damaged due to poor routine maintenance”.

b) Maintenance of New Road Section

“The Contractor shall be responsible for undertaking all routine maintenance of the completed works of new road construction including bridges till completion and handing/taking over of the project”.

The contractor shall also maintain roads that the contractor uses for the constructions or access and the use of such roads shall be identified in advance to the Engineer for inspection prior to use. The routine maintenance of the road shall include besides other protection of plants and vegetation; cleaning of culverts, road side drainage (including reshaping/restoring in case of unlined drains) and drainage channels; and clearing any other obstructions including landslide and maintaining all completed road features to allow free flow of traffic. The material removed from the cleaning and clearing as above shall be disposed of at safe places as directed by the Engineer. The contractor shall carry out reinstatement of works (pavement, pavement surface, shoulder or any other works) washed out or damaged due to poor routine maintenance of drains, drainage channels, culverts, shoulders, lacking clearance of obstructions such as landslides etc. other than those occurred due to earthquake.

The Contractor shall perform the maintenance works as often as required to keep the carriageway, pavement, shoulders and adjoining structures in proper working order to the satisfaction of the Engineer. The Contractor shall mobilize labour, equipment and materials to carry out the routine maintenance of the road. No separate measurement and payment shall be made for the works described in this Clause. All costs in connection with the work specified herein shall be considered included in the related items of the work specified in the Bill of Quantities.

No extra payment shall be made to the contractor in case of reinstatement of works, washed out or damaged due to poor routine maintenance of drains, drainage channels, culverts, shoulders, lacking clearance of obstructions such as landslides etc.”

Thus, in terms of the technical specifications and provisions of the Contract Documents, the cost on the maintenance of existing and newly constructed roads were to be in-built in their quoted rates, as the clause categorically stipulated that ***“No separate measurement and payment shall be made for the works described in this Clause. All costs in connection with the work specified herein shall be considered included in the related items of the work specified in the Bill of Quantities”***.

In the light of the above clauses, the decisions and approval of the MLTC for the proposal of fund allocation of Nu. 2million for maintenance of road for all contract packages were not in order and in violation of provisions of the contract agreement and technical specifications. The obtaining of funds and awarding the maintenance contracts as well as granting of time extensions on the proposed works despite failure of the contractors to complete works in scheduled time indicated extension of undue support and financial benefits to contractors and the existence of unethical practices could not be ruled out.

The Ministry should relook into the decisions and actions taken by the MLTC in violation of the categorically stipulated provisions of the contract documents and technical specification besides issuing appropriate directive to the MLTC to revoke the decisions and approval. The Ministry should hold the MLTC accountable for violations of contractual provisions and extension of undue favour and financial benefits to the contractors.

Auditee Response:

In the interest of time, inclusion of maintenance of road (Nu. 2 million for each package) was added to each package. The very purpose of inclusion of road maintenance in each package was to restore road during extreme condition where even the contractors become reluctant to restore the road for commuters. In order to restore in such extreme road conditions the inclusion of road maintenance was kept.

Till now, not all contractors were paid on road maintenance except 2 contractors whereby they had to execute continuous restoration of road for commuters.



RAA's Further Comments & Recommendations:

While taking note of the response and approval accorded by the MLTC, the fact remains that the technical specifications is an integral part of the contract documents which categorically stipulates under TS 109 and SCC (GCC 1.1 (ff)), on the responsibilities of the contractors for "removal of landslide/debris of any volume until the completion and handing over of the project to the Client". In addition, the Technical Specifications, Section 100, sub-section 109 Maintenance of Road, categorically stipulates "The Contractor shall be responsible for undertaking all routine maintenance of the existing and new roads and all bridges on it under the contract from the day the road is officially handed-over to the Contractor until the issue of work completion certificate by the Engineer".

Further, it is to reiterate that the quoted rates of contractors for the related items of works is built up cost inclusive of cost of all risks factors involved in terms of requirements stipulated in the technical specifications and provisions in the contract document. It was apparent that the MLTC had overridden and violated the provisions stipulated in the technical specifications and contract documents.

However, as discussed in the exit meeting the DOR and the Ministry should investigate on the proposal and awards of maintenance contracts despite categorical stipulation in the technical specification on the responsibilities of the contractors for the maintenance of roads until the issue of work completion certificate by the Engineer. The Ministry besides recovering the maintenance amounts paid to two contractors should hold the MLTC accountable for violations of provisions and make good the amounts paid to the two contractors. The maintenance amounts should be recovered within three months from the date of issue of the report beyond which penalty @ 24% per annum shall be levied as per Chapter IV, Section 4.5.1.4 of the Finance and Accounting Manual 2016a and furnish documentary evidences of the recoveries and accountal in the books of accounts for review and records.

In addition, keeping in view the violation of provisions envisaged in technical specifications and contract document by MLTC, the Ministry should revisit and review the provisions to assess on the appropriateness and practicability of inclusion of such provisions in the technical specifications and contract documents to safeguard the interest of the government for similar future projects.

29 Award of additional work contracts in violation to Exclusion Criteria announcement made on 2nd July 2016

In terms of the Public Announcement on Exclusion Criteria issued on 2nd July 2016, based on the Note Sheet No. DoR/CE(CD)/2016-2017/W-2/2750 dated 1st July 2016, approved by the Ministry, MoWHS, the Contractors who have not fulfilled their contractual obligations with the Department in the past were to be excluded from bidding process. The very objective of the announcement of the Exclusion Criteria was to segregate the performing Contractors from the non-performing ones and to encourage timely completion of works.

The announcement also highlighted that data collected from 1st July 2016 onwards would be used for application of exclusion criteria. The following aspects were stipulated as a part of the exclusion criteria:

Sl.No	Exclusion Criteria	No. of years of Exclusion
1	Contract terminated for fundamental breach of Contract and/or on completion of the stipulated Liquidated damages (LD) period- if the works remains incomplete; or Minimum of three Works not completed within Liquidated Damages (LD) period	Three (3) years
2	Minimum of two Works not completed within Liquidated Damages (LD) period	Two (2) years
3	Minimum of one Work not completed within Liquidated Damages (LD) period	One (1) year

Further, Public Announcement was issued vide No MoWHS/SEC/42/2016-17/725 dated 14th December 2016, superseding the earlier announcement, with the following exclusion criteria:

Sl.No	Exclusion Criteria
1	Works not completed within the contract period; or Goods/Supplies not made within the contract period
2	Works not completed within or after Liquidatd Damages (LD) period; or Goods/Supplies made within or Liquidatd Damages (LD) period;
3	The Contractor/Consultant /Suppliers has an ongoing litigation or lost a litigation with Department/Ministry

While taking note of the public announcements, it was noted that the MLTC and RO had awarded the following additional works despite that facts that the ongoing contractors failed to complete the work within the contract periods:

Pack age	Name Contractor	Add. Works	Amount(Nu. in million)	Remarks
	M/s Bhutan ZeoCrete Pavement Technologies (JV), a Joint Venture Company, formed by M/s Yarkay Group of Companies Ltd & M/s LongYea e-solution Pvt Ltd, New Delhi	Drainage Works	13.656	Time Extension on the basis of proposal to award Drainage Works. Ongoing works delayed and additiona works not awarded but time extension granted by MLTC. The Physical verification of work site on 29 th November 2017 at Yadi indicated that ZeoCrete pavement works were under progress. Further the review of the physical and financial progress as at 15 th December 2017 furnished by the Regional Office indicated that though the work was scheduled to be completed by 6 th December 2017 as per contract agreement, the physical progress achieved was just 30.35% and financial progress depicted was 53.29%. Additional works was not awarded as of the dates of audit (2 nd December, 2017)
P1	M/s Rigсар Const. Pvt .Ltd	Steel Arch, Rockfill embankment, Gabion wall, Boulder wall, maintenance contract etc.	20.372	As on 31.1.2018, the work was under progress although the intial schedule completion date was on 5.12.2017. With additional works, the completion deadline was revised to 18.3.2018. The additional work order was found not issued at the time of audit.
P2	M/s Gaseb Const. Pvt .Ltd	Steel Arch, Rockfill embankment,	17.148	As on 31.1.2018, the work upto WMM was completed and thus work was under progress although the intial schedule completion date was on

		RCC wall, Boulder wall, maintenance contract etc.		5.12.2017. With additional works, the completion deadline was revised to 18.3.2018. The additional work order was found not issued at the time of audit.
P3	M/s Rinson Const. Pvt .Ltd	Gabion wall, RRM wall maintenance contract etc.	15.486	As on 31.1.2018, the work upto GSB of 1.1km was completed and thus work was under progress although the intial schedule completion date was on 16.12.2017. With additional works, the completion deadline was revised to 31.3.2018. The additional work order was found not issued at the time of audit.
P4	M/s Gyalcon Const. Pvt .Ltd	Gabion wall, RRM wall, rock lclearing and maintenance contract etc.	12.483	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on 18.12.2017. With additional works, the completion deadline was revised to 18.4.2018. The additional work order was found not issued at the time of audit.
P5	M/s Druk Lhayul Const. Pvt. Ltd	Gabion wall, RRM wall, and maintenance contract etc.	16.318	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on 12.12.2017. With additional works, the completion deadline was revised to 12.4.2018. The additional work order was found not issued at the time of audit.
P6	M/s Raven Const. Pvt .Ltd	RRM wall and maintenance contract etc.	11.218	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on 10.12.2017. With additional works, the completion deadline was revised to 31.4.2018. The additional work order was found not issued at the time of audit.
P7	M/s Druk Lamsel Const. Pvt. Ltd	RRM wall, French Drain and maintenance contract etc.	30.980	As on 31.1.2018, the FC, permanent works and WMM completed and thus work was under progress although the intial schedule completion date was on 12.01.2018. With additional works, the completion deadline was revised to 12.05.2018. The additional work order was found not issued at the time of audit.
P8	M/s Dungkar Const. Pvt.Ltd	RRM wall, Missed permanent works and maintenance contract etc.	23.714	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on 18.12.2017. With additional works, the completion deadline was revised to 18.05.2018. The additional work order was found not issued at the time of audit.
P9	M/s Welfare Const. Pvt .Ltd	Gabion wall, RRM wall, and maintenance contract etc.	9.630	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on 21.01.2018. With additional works, the completion deadline was revised to 21.05.2018. The additional work order was found not issued at the time of audit.
P10	M/s Rinson Const. Pvt .Ltd	RRM wall, French Drain and maintenance contract etc.	5.830	As on 31.1.2018, the FC, permanent works and GSB upto 2.8 km completed and thus work was under progress although the intial schedule completion date was on 31.12.2017. With additional works, the completion deadline was revised to 31.03.2018. The additional work order was found not issued at the time of audit.
P11	M/s Dungkar Const. Pvt .Ltd	Steel Arch and maintenance	5.163	As on 31.1.2018, the FC and permanent works completed and thus work was under progress although the intial schedule completion date was on

		contract etc.		31.01.2018. With additional works, the completion deadline was revised to 31.4.2018. The additional work order was found not issued at the time of audit.
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Thus, the award of additional works by the MLTC and RO to the ongoing contractors despite failure to complete the contract works within the scheduled deadlines, were in contravention to the “Exclusion Criteria” announced in the above two Public Announcements.

It was also noted that the additional works orders were found not issued at the time of audit and while granting the time extensions by the MLTC/RO.

The Ministry should review the awards of additional works to the defaulting contractors in contravention to the “Exclusion Criteria” announced in the above two Public Announcements.

Auditee Response:

In the interest of time and due to genuineness of permanent structures to be executed at site to retain existing road width from further damage and to protect from above landslide immediately, the additional works were awarded to the existing contractors. By giving the additional work to the existing contractors, following advantages are noted:

1. *immediate restoration of the work*
2. *no tender process thus saving time*
3. *Machineries and other resources are already mobilized.*
- 4.

In view of the above justification, RAA is kindly requested to drop the memo.

RAA’s Further Comments & Recommendations:

While noting the response, the fact remains that the work progress of all the contractors were not as per work plan and expected time overruns of the project. In addition, the additional works were proposed just before two to three months prior to the expiry of contract periods indicating adhoc proposals and award of works. Thus, the awards were not in the interest of the Government but an extension of undue favours to the contractors as the project completions were further delayed to the extent of time extensions given.

Further, the award of additional works to the defaulting contractors were also not in line with the decisions taken on the “Exclusion Criteria” announced in the above two Public Announcements.

However, the Ministry besides revisiting the decisions of the RO and MLTC on the award of additional works to the defaulting contractors should institute appropriate mechanism to reinforce the very objective of the announcement of the “Exclusion Criteria” to not only debar the non-performing contractors from participation in the future competitive bidding process but also disqualify defaulting contractors for any additional works.

The measures and system put in place should be intimated to RAA for review and records.

30 Irregularities in booking of expenditure and hiring charges of light vehicle under the project

While reviewing the project expenditures, it was noted that expenses on fuel, purchase of furniture, office equipment and hiring charges of vehicles were found booked under NEWH on the justification that the expenditures related to the said project work. An abstract of payments charged to the project are shown below:

Sl/No.	Particulars	Amount (Nu.)
1	POL & Vehicle maintenance	765,894.81
2	Office equipment	1,183,403.00
3	Utilities	294,452.33
4	Entertainment	487,667.77
	TOTAL	2,731,417.91

The charging of expenditures incurred on the procurement of office equipment, furniture and fuelling of vehicles from the NEWH project is irregular and in violation of the Financial Rules and Regulations since the Regional Office is allocated with separate budget appropriations for the said activities.

In addition, charging of hiring charges of light vehicle to the project was also found not appropriate as every sub division has been allotted with a pool vehicle and site engineers are paid mileage during the site visits.

The RO besides commenting on the charging of such expenditures to the project in addition to the budgetary funds allocated for such activities should review the circumstances leading to utilization of the hired light vehicles in addition to the designated pool vehicles and mileage payments to site engineers while visiting the work sites and outcome intimated to RAA for review.

Auditee's Response:

The booking of expenditures on NEWH project was done in line with the resolution of Nganglam meeting and based on upon note sheet approved by DoR HQ.

It was also observed by the RAA that the charging of hiring charges of light vehicle to the project was also found not appropriate as every sub division has been allotted with a pool vehicle and site engineers are paid mileage during the site visits.

The RO would like to clarify that we do not have project pool vehicle at Project management unit based at Tshangkha. Moreover, RO does not have even one number of pool vehicle for construction and maintenance division to monitor the construction & maintenance works. For this in the interest of the project to be monitored, RO had hired pool vehicle and expenditure was booking to NEWH.



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ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF WORKS & HUMAN SETTLEMENT
 Regional Office: Trongsa
 "Construction Industry Solutions through Innovation and Improved Technology"



Ref. No. RO/DoR/CE-01/2016-2018/110

11 May 2018

Note sheet

Subject: Logistics for Meeting and Transit Camp facilities.

It has been decided during the meeting at Nganglam and recent order of Hon'ble Secretary of MoWHHS that most of the coordination meeting for double lanning of NEWH will be conducted at Trongsa due to its strategic location. RO Trongsa would therefore like to propose to procure facilities such as meeting table and chairs, Overboard projector set, Renovation of meeting hall, Conversion of old office to transit camp with some renovations, Transit camp facilities such as bed, mattress, blankets, TV set, kitchen utensils etc.

The expenditure so incurred will be booked against widening of NEWH, which will be executed by way of calling spot quotations and direct orders to manufacturers within Bhutan.

Submitted for approval please.

Tenzin
 Chief Engineer
 RO Trongsa

CE(Construction),DoR

Faxed
 Date: 12/05/18

Post Box No. 373
 Tel. CE : 03521121(0), Dy.CE : 03521494 (0), Account section 03521406(0), Fax : 03521114



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ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF WORKS & HUMAN SETTLEMENT
DEPARTMENT OF ROADS
Construction Division, Thimphu, Bhutan
 "Construction Industry Solutions through Innovation and Improved Technology"



Ref No: DoR/CE(CD)/2014-2018/W-2/ 104

Date: 25/03/2015

To
 All the Chief Engineers
 Regional Office /Project Co-ordinators Trongsa
 Department of Roads.

Sub: Booking/Charging of TA/DA expenses to works

Sir,

Enclosed please find herewith note sheet regarding the above cited subject bearing the approval of the Hon'ble Director, DoR for your kind information & necessary action.

Yours sincerely,

Tenzin
 (Tenzin-Jantscho)
 Chief Engineer

Copy to:-

1. The Director, DoR for your kind information please.
2. The Chief Engineer, Mts. Division, Design Division & Planning Division for your information.

P.T.D

Page 1 of 1

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**ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF WORKS & HUMAN SETTLEMENT
DEPARTMENT OF ROADS
CONSTRUCTION DIVISION
THIMPHU: BHUTAN**



"Construction Industry: Solutions Through Innovation and Improved Technology"

DoR/CE(CD)/14-15/

Date: March 25, 2015

NOTE SHEET

Subject: Booking/Charging of TA/DA expenses to works.

1. During the recent 6th DoR quarterly meeting convened at Phuentsholing, one of the pressing issues raised by all the Regional Offices was on the lack of adequate budget to meet the expenses of officials on tour.
2. The Department has been informed by the Regional Chiefs that while there has been a raise on the TA/DA by the government, but this has not been commensurated by actual topping of budget thereby hindering the movement of engineers to the project sites and creating a dent on the quality.
3. Department of Roads being one of the biggest departments under the Ministry which has almost two third of the Ministry's capital outlay for the current financial year, frequent movement of engineers to the field to monitor works is absolutely essential to get quality output.
4. Given the importance stressed by Government and the Ministry to deliver quality works by DoR, the only practical way of achieving it is through constant supervision, monitoring and field tests.
5. Since the Department of Roads has vast and critical mandate of 'Double Lanning of East West Highway' and 'Black Topping of GC Roads' in the current plan, the movement of engineers to the project sites as far as possible should be uninterrupted so that no compromise is made in terms of achieving quality and delivering the project on schedule.
6. Owing to the criticality and inevitability of the engineers to be in the project sites frequently, the Department would like to propose to book TA/DA expenses of the touring officials to the concerned works/projects of the concerned Regional Offices.
7. The proposal to charge TA/DA to works is in line with the Budget Call Notification for FY 15-16 issued by MoF which explicitly mentioned that "in order to streamline and to capture the actual cost of activities and programs, all expenditures including travel cost directly associated to a program/project/activity should be included in the estimate of works".

Submitted for kind approval.


Chief Engineer
Construction Division, DoR


DIRECTOR
Department of Roads

In view of the above justification, RAA is kindly requested to drop the memo.

RAA's Further Comments & Recommendations:

While taking note of the response, it is to reiterate that the Note Sheet approved by the Director, explicitly mentioned on the charging of TA/DA through inclusion in the estimates of works. Thus, the charging of expenditures other than the TA/DA was not justified and correct.

However, as discussed and agreed in the Audit Exit Meeting, the RO, in consultation with the DOR and the Ministry should take up with the Ministry of Finance for appropriate decisions on the issues and outcome intimated to RAA for review and records.

31 Irregularities noted in Road Improvement Works on Trongsa-Yurmo PNH executed by M/s Empire Construction Pvt. Ltd, Thimphu

The widening, L-drain and pavement work from Trongsa-Yurmo (Chainage 199km to 244km) with a total of 45km, was awarded to M/s Empire Construction Pvt. Ltd, Thimphu holding trade license No. 1011083, CDB. No. 2206 being the lowest evaluated bid vide work order No. RO/DoR (Trongsa)/2014-2015/PL-15/706 dated 9th April 2015 with contract details as under:

- i. Name of Work : Road Improvement Works (Widening, l-drain, BC and BT)
- ii. Contract Initial Amount : Nu. 39,400,443.00
- iii. Contract Final Amount : Nu. 40,987,391.20
- iv. Start date : 24/04/2015
- v. Due date of completion : 16/07/2016
- vi. Contract duration : 15 Months
- vii. Actual date of termination : 2/11/2015
- viii. Completion Status : 955m of FC completed

In terms of the MOU signed between the Ministry and MHPA on 16th September 2014, the formation cutting was to be completed by end of December 2015 to enable MHPA to transport heavy Electro-mechanical equipment.

The RO, Trongsa awarded the contract to M/s Empire Construction through open tender at a cost of Nu.39.40 million for widening of approximately 2.5km of rocky stretch. The agreement was signed on 24th April 2015 with contract duration of 16 months ending by 16th July 2016.

On 9th September 2015, due to unsatisfactory progress of the work after time lapse of 5 months, a meeting was conducted with the contractor and MHPA at DOR Head Quarters where the contractor gave his commitment to finish the work in time as required by MHPA and DoR. Meeting between the Secretary, MHPA and contractor was again held on 3rd October 2015. During the Meeting, MHPA and JPCL expressed their doubt and informed the meeting that loosing time would ultimately lead to financial loss of Nu.22 million per day. MHPA also informed the floor that loss will have to be borne by the defaulter (contractor) and expected to complicate DoR as whole.

The write up mentioned that after extensive deliberation, it was decided that the works will be handed over back to MHPA and payments to be made for executed works. Accordingly, the contractor was found paid Nu. 40,987,391.00 for works executed against the contract cost of Nu. 39,400,443.00 (*Refer 3rd and final bill paid under DV6.90 dated 24.6.2016*) despite the failure to complete 2.5km rocky area within December 2015.

The review of contract document, drawings, estimates, bill of quantities, contractor’s RA bills and physical verification of actual constructions at work site noted irregularities and lapses as discussed below:

31.1 Abnormal variations in Formation Cutting quantities from the departmentally estimated Quantities

The departmental estimated quantity for the Formation Cutting works of Trongsa–Yurmo road covering a total length of 2.5km rocky areas were as summarized below:

Description	Quantity	Unit	Rate [Nu.]	Amount [Nu.]
All kinds of soil	4,041.50	Cum	100	404,150.00

All kinds of rock	122,654.00	Cum	270	33,116,580.00
Total				33,520,730.00

The expenditure incurred for formation cutting works of just 955m had amounted to **Nu. 39,887,362.90** as against estimated cost of **Nu. 33,520,730.00** as tabulated below:

Table 31.1(1) Description	As per BoQ			As per Contractors Bill for 955m road			Difference (Nu)
	Quantity [cum.]	Rate [Nu.]	Amount [Nu.]	Quantity [cum.]	Rate [Nu.]	Amount [Nu.]	
All kinds of soil	4,041.50	100	404,150.00	4,790.35	100	479,035.00	74,885.00
All kinds of rock	122,654.00	270	33,116,580.00	145,956.77	270	39,408,327.90	6,291,747.90
Total			33,520,730.00			39,887,362.90	6,366,633.20
Variation in quantum of earthwork in terms of percentage			18.98% increase even though FC of only 955m was completed out of 2.5km				

Thus, it is apparent that the execution of just 955m alone had exceeded the estimated cost by Nu. 6,366,633.20 representing 18.98% of the estimated cost despite the fact that the execution of work was completed just 12.7% of the 2.5km rocky areas.

The RAA made an attempt to ascertain the causes of abnormal deviation between the estimated and executed quantities of FC works through review of relevant document and physical verification of works site. In the course of review following deficiencies and irregularities were observed.

31.2 Execution of work in deviation to the drawings and technical specifications with resultant unjustified payments to the extent of Nu. 27,082,443.80

In terms of the brief write up regarding road widening by M/s Empire Construction Pvt Ltd submitted by RO, Trongsa to Secretary, MoWHS vide letter no DoR/RO/NEWG/2015-2016/P-05/707 dated 18th March, 2016, the RAA noted that the formation cutting work was initially planned to be done as half tunneling excavation. However, due to high risk and incompetence of the contractor, the contractor had followed the conventional cutting leading to abnormal increase in quantity of excavation.

During visits to the construction site, the audit team found that while the technical specification incorporated in estimates showed formation cutting width of 3-10m with cut height of 6-10m, the actual execution showed cut width of as wide as 30m and cut height of as high as 100m. Accordingly, quantum of soil and rock excavations of just 0.955 km road had substantially exceeded the estimated quantum of earthwork excavations for 2.5km road by 18.98%. However, in terms of pro-rata basis of just 0.955km, the quantum of excavations had abnormally exceed by 111.48% with adverse financial implication of Nu. 27.082m as computed below:

Description	As per BoQ		As per Contractors Bill				
	BOQ Quantity in terms of 2.5km	Amount (Nu.)	Qty in term of original BOQ	Qty. in terms of 955m work done representing just 38.2% of 2.5km road	Excess Qty executed in terms of 955m work done	Rate (Nu.)	Extra Cost impact (Nu)

All kinds of soil	4,041.50 cum	404,150.00	4,790.35cum	1,543.85 cum	3,246.50cum	100	324,650.00
All kinds of rock	122,654.00cum	33,116,580.00	145,956.77cum	46,853.83 cum	99,102.94cum	270	26,757,793.80
Total		33,520,730.00					27,082,443.80
Variation in quantum of earthwork in terms of percentage			111.48% increase for FC of only 955m completed out of 2.5km				

Pictorial evidences for excavation of rock cutting works (formation cutting) in deviation to the designs drawings, technical specifications, estimates and BOQs are as depicted in the photographs below:



Fig: 31.2- Detailing excavations in deviation to designs and drawings



Fig:31.2(10- Cut height of earthwork excavation

It is apparent from the photographs above, the RO had not regulated the measurements and payments as per technical specifications but allowed the measurements for execution of extravagant heights and width not within the technical specification. It is also apparent that the executed earth works did not serve the purpose and achieve the intent of road widening and half tunneling objective. Thus, the expenditure incurred and paid was a wasteful one to some extent and avoidable had the site engineer and RO regulated the payment as per the estimates and technical specifications.

The Ministry should thoroughly investigate the circumstances leading to execution of formation works beyond the required width and height in lieu of approved half tunneling methodology. Besides, the Ministry should depute a technical team to technically investigate on the technical requirement for the execution of formation works beyond the required width and height and achievement of the purpose and objective.

Auditee Response:

DoR RO Trongsa would like to thank the RAA for the observation and submit the following justifications:

The MHPA had requested DoR to carry out the critical widening works, especially the cliff at Dzongkhalum, as a deposit work. Accordingly, MoU was signed by the Ministry with MHPA on 16th Sept 2014. Based on the instruction of the Ministry, RO Trongsa carried out the tendering for the works. The road widening works was awarded to M/s Empire Construction Pvt. Ltd. being the lowest evaluated bidder based on open tender. The reason for abnormal variation in the FC quantities is due to the method of execution adopted by the contractor and the terrain conditions (rocky cliff at Dzongkhalum). While it was envisaged to widen the road as a half tunnel, the winning bidder was not able to widen the road as planned due to site conditions. The contractor followed the conventional method of excavation leading to the abnormal deviation in the quantity of excavation. DoR RO Trongsa would like to thank the RAA for the observation and submit the following justifications:

As recommended by the auditors, RO Trongsa will request the Ministry to thoroughly investigate the circumstances leading to the execution of formation cutting works beyond the required width & height instead of the half tunneling methodology.

RAA's Further Comments & Recommendations:

It is apparent from the response that the abnormal variations in the FC quantities had occurred due to adoption of conventional method of excavation instead of adoption of half tunneling method of execution as envisaged in the drawings, technical specifications and contract agreement. The failure to adopt the approved method of rock excavations indicated that the contractor was incompetent and lacked experiences in the tunneling works. Thus, it also indicated that not only the Evaluation Committee, MLTC and RO had failed to carry out due diligence review of the capability and experience of the contractor prior to the award of the contract but also the RO and Site Engineer had failed to take appropriate action immediately on experiencing the contractor's incapability to adopt half tunneling method of execution. Allowing for the adoption of conventional method of excavation by the contractor in deviation to the approved method as well as inactions against the complaints and dissatisfaction raised by the MHPA/JPCL in various bilateral meetings and discussion on the

adoption of unprofessional widening techniques by the contractor also indicated laxity and extension of undue favour to the contractor by the RO and the Site Engineer and DOR.

The Ministry should thoroughly investigate the circumstances leading to award of contract work requiring adoption of half tunneling method of excavation to an inexperience and incompetent contractor as well as allowing for the adoption conventional method of excavation which had resulted into substantial cost overruns of Nu. 27.082 million despite failure to achieve the intended objective of widening work.

Besides, the Ministry should depute a technical team to technically investigate on the technical requirement for the execution of formation works beyond the required width and height and achievement of the purpose and objective and legitimacy of the measurements and payments to the extent of Nu. 39.887 million paid to the contractor. The Ministry should intimate the outcome of the investigation and measures and action take to RAA for review and enabling to form a final opinion on the issue.

31.3 Award of contract to incompetent contractor with resultant extravagant expenditures to the tune of Nu. 40.987 million

From the review of available records particularly the write up on the widening works from Trongsa to Yurmo by M/s Empire Construction submitted to the Secretary by the Chief Engineer, RO, Trongsa duly signed by the Chief Engineer, Dy. EE, Sub Division and Site Engineer, following facts and events were observed entailing termination of the contract by the RO Trongsa:

- i. MHPA had requested DOR to carry out critical widening works as deposit works especially the cliff of Dzongkhalum.
- ii. Accordingly, MoU was signed by the Ministry with MHPA on 16th September 2014.
- iii. RO Trongsa awarded the contract to M/s Empire Construction through open tender at a cost of Nu.39.40 million for widening of approximately 2.5km of rocky stretch.
- iv. The agreement was signed on 24th April 2015 with contract duration of 16 months ending by 16th July 2016.
- v. In terms of MoU, formation cutting was to be completed by end of December 2015 to enable MHPA to transport heavy Electro-mechanical equipment.
- vi. Accordingly, the contractor was informed of the conditions during the signing of the agreement and supplemented during the meeting with contractor at Dam Colony on 20th June 2105 where the contractor agreed and assured to complete the formation cutting works by end of December 2015 and rest of the works by 16th July 2016.
- vii. On 9th September 2015, due to satisfactory progress after time lapse of 5 months, a meeting was conducted with the contractor and MHPA at DOR Head Quarters where the contractor gave his commitment to finish the work in time as required by MHPA and DoR.
- viii. During the visit of Hon'ble Finance Minister on 28th September 2015, MHPA and JPCL reported along with other numerous complaints in the past that:

- a. There is huge risk to the lives of people and commuter as result of unprofessional widening techniques adopted by the contractor which is proved by emitting flying boulders into the JP colony located about 300m away due to uncontrolled blasting by the contractor.
 - b. Due to indiscriminate pushing of muck to the valley side, the stream could change and effect the JP colony in times to come.
 - c. The contractor will in no way complete the FC works in December due to “inexperience and poor technology adopted by the contractor”.
- ix. The Secretary was instructed both by Zhabtog Lyonpo and Nyultse Lyonpo to explore the solution to the public safety and timely completion of critical road widening from Trongsa to Yurmo.
- x. Based on the directive of Nyultse Lyonpo, Meeting with the Secretary, MHPA and contractor was held on 3rd October 2015. During the Meeting, MHPA and JPCL expressed their doubt and informed the meeting that loosing time would ultimately lead to financial loss of Nu.22 million per day. MHPA also informed the floor that loss will have to be borne by the defaulter (contractor) and expected to complicate DoR as whole.
- xi. The write up mentioned that after extensive deliberation, it was decided that the works will be handed over back to MHPA on the following reasons:
 - After time lapse of 5 months, the progress is hardly 30% due to so many requirements imposed by MHPA and mostly due to difficult terrain and continuous rainfall.
 - It was perceived that the contractor will not be able to meet December deadline with required level of safety aspects to commuters and contractor not getting enough time to do the works due to continuous project based requirement.
 - The contractor is required to start the works simultaneously at many places with required safety level at par with international standards to enable to meet the deadline. It will be beyond our norms to penalize the contractor as put forward by MHPA.
 - As a support by the Government, the Secretary informed the contractor that they will be given the equivalent value of work elsewhere due to the fact that they have not failed the contract but due to safety issues being not able to put in place at the level of international standards to which the contractor had agreed.
 - The contractor will be paid for the work executed so far.
- xii. The Write up also highlighted on BOQ and work executed wherein the BOQ quantity of 103,387.50 cum was done by MHPA purely on the basis of assumption without any detail survey works and work is expected to execute by way of half tunneling method with average height of cut of hardly 10m. On RO’s instruction, the contractor had tried to do a type of half tunneling excavation but they could not do it due to high risk

and inexperienced resources. Due to above facts, the contractor had to resort to conventional cutting. It had also mentioned that as the Bhutanese contractors lack capability of doing half tunneling works, the contractor had adopted full cutting technique as high as 100m height of cut to get the required road width due to vertical to almost negative slope of existing terrain.

Considering the above facts and event, it is apparent that the RO and the Ministry had awarded the half tunneling works to an inexperienced contractor. Unprofessional widening techniques adopted by the contractor had led to high risk emitting flying boulders into the JP colony located about 300m away and of uncontrolled blasting by the contractor. Even after time lapse of 5 months, the contractor could make progress of roughly 30% and remaining 70% FC works was bound to remain incomplete within 3 months as the FC was to be completed by end of December 2015. The ground of difficult terrain and continuous rainfall was not justified as such aspects are foreseen and known to the DOR and Contractor.

It is apparent that the payment of Nu.40.987 million for execution of just 955m road did not provide value for money and resulted into an extravagant expenditures.

The Ministry should comment on the award of tunneling works to an incompetent contractor. Besides, the Ministry should also obtain a certificate from the MHPA management to the extent that the work executed by the M/s Empire Construction valuing Nu.40.987 million were to the satisfaction of their requirements.

Auditee Response:

DoR RO Trongsa would like to thank the RAA for the observation and submit the following justifications.

The road widening works was awarded to M/s Empire Construction Pvt. Ltd. being the lowest evaluated bidder based on open tender. The bidder had fulfilled the evaluation criteria & was determined as the lowest evaluated bidder.

As recommended by the RAA, RO Trongsa will request the Ministry to submit further justifications on the award of critical road widening works to an incompetent contractor.

RAA's Further Comments & Recommendations:

While taking note on the response on the award of contract being the lowest evaluated bidder, the fact remains that the contractor did not have experience and capability to adopt half tunneling method of execution as envisaged in the drawings, technical specifications and contract agreement but resort to conventional method of excavation which resulted in failure to achieve the intended objective of widening works as well as unfruitful expenditures to the extent of Nu.40.987 million.

It is to reiterate that fulfilment of evaluation criteria and qualifying as lowest evaluated bidder did not guarantee the capacity and technical competency of the contractor and indicated either existence of flaws in the evaluation criteria or failure on the part of the Evaluation Committee to appropriately evaluate on the technical competence of the bidder as the scope of work required the winning bidder to adopt half tunneling method of execution of rock works.

The Ministry should thoroughly investigate the circumstances leading to award of contract work requiring adoption of half tunneling method of excavation to an inexperience and incompetent contractor as well as allowing for the adoption of conventional method of excavation which had resulted into substantial cost overruns of Nu. 27.082 million despite failure to achieve the intended objective of widening work.

Besides, the Ministry should review the present system and practices in the adoption of evaluation Criteria as to institute appropriate standard and guidelines in the use of evaluation criteria in aligning to the scope of works and method of excavations required in terms of drawings, designs, and technical specification to prevent qualifying and winning of contract awards by incompetent and inexperience bidders in similar projects in future. The Ministry should intimate RAA on the measures and standards put in place to address such lapses in future.

31.4 Reimbursement of expenditure by MHPA to the extent of Nu.40.987 million

From the review of available records particularly the write up on the widening works from Trongsa to Yurmo by M/s Empire Construction submitted to the Secretary by the Chief Engineer, RO, Trongsa dully signed by the Chief Engineer, Dy. EE, Sub Division and Site Engineer, following facts and events were observed entailing termination of the contract by the RO Trongsa:

- MHPA had requested DOR to carry out critical widening works as deposit works especially the cliff of Dzongkhalum.
- Accordingly, MoU was signed by the Ministry with MHPA on 16th September 2014.
- RO Trongsa awarded the contract to M/s Empire Construction through open tender at a cost of Nu.39.40 million for widening of approximately 2.5km of rocky stretch.
- The agreement was signed on 24th April 2015 with contract duration of 16 months ending on 16th July 2016.
- In terms of MoU, formation cutting was to be completed by end of December 2015 to enable MHPA to transport heavy Electro-mechanical equipment.

However, during the Meeting held on 3rd October 2015 between the Secretary, MoWHS, MHPA and contractor, the MHPA and JPCL expressed that loosing time would ultimately lead to financial loss of Nu.22 million per day to the Prject and the loss has to be borne by the defaulter (contractor), the Meeting decided that the works will be handed over back to MHPA and payments for executed works to be made to the Contractor.

Based on the information and accounting records furnished to RAA, it was noted that the RO, Trongsa had paid the contractor an amount of Nu. 40,987,391.00 for works executed against the contract cost of Nu. 39,400,443.00 (**Refer 3rd and final bill paid under DV6.90 dated 24.6.2016**) despite the failure to complete excavation of 2.5km rocky areas within December 2015.

Considering that the RO had executed the work as deposit work of MHPA, the actual expenditures incurred on the contract works were to be reimbursed by the MHPA. The RO and the Ministry should furnish details of fund releases and reimbursement made by the

MHPA to RO settling the RA bill payments made to the contractor to the extent of Nu. 40.9876 million.

Auditee Response:

*The detailed account statement attached as **Appendix-6***

RAA's Further Comments & Recommendations:

While taking note on the response, it is to reiterate that the contractor had failed to complete the widening of 2.5km of road works at Dzonkhalum despite incurring huge expenditure of Nu.40,987,391.00 which was in excess of the fund of Nu.39,400,443.00 received from the MHPA. This had occurred apparently due to award of contract to an inexperienced and incompetent contractor as well as allowing for the adoption of conventional method of excavation which had resulted into substantial cost overruns of Nu. 27.082 million despite failure to achieve the intended objective of widening work.

The Ministry should thoroughly investigate the circumstances leading to award of contract work requiring adoption of half tunneling method of excavation to an inexperienced and incompetent contractor as well as allowing for the adoption of conventional method of excavation which led to substantial cost overruns of Nu. 27.082 million.

Besides, the Ministry should depute a technical team to technically investigate on the technical requirement for the execution of formation works beyond the required width and height and achievement of the purpose and objective and legitimacy of the measurements and payments to the extent of Nu. 39.887 million paid to the contractor. In addition, the Ministry should also obtain a certificate on the acceptance of the works by the MHPA in terms of measured works recorded in the MB and RA Bills. Further, the Ministry should intimate the outcome of the investigation and measures and action taken to RAA.

32 Inconsistencies in the item rates and components of item works for similar nature of works

The review of cost estimates for contract packages revealed inconsistencies in the items rates, application of BSR 2015 rates and component of item of works for RCC Culvert Extension works. It was also noted that some items rates were much higher than the BSR 2017 rates. The inconsistencies and discrepancies noted are detailed in **Appendix "F"**.

It is apparent from the adoption of varying rates and components for similar item of works were due to absence of standard procedures and norms in the preparation of cost estimates. However, the Ministry should thoroughly review the estimates for contract packages detailed in Appendix and ascertain the circumstances leading to inconsistencies in the application of BSR rates, incorporation of varying components of item of works and rates variations for the similar items of works.

Auditee Response:

As is evident from the BSR, the rate for each item of works is different for the Base towns. Work sites are located in different parts of the country. The transportation cost for materials will vary with the location of the site. Thus, the Cost Index is also different for different sites.

In view of the above, RO Trongsa would like to submit that rates for same item of work will be different for each RO. No two sites will have exactly the same geological conditions.

As recommended by the RAA, RO Trongsa will request the Ministry to thoroughly review the estimates for the contract packages detailed in Annex I to ascertain the circumstances leading to inconsistencies.

RAA's Further Comments & Recommendations:

*While taking note of the response, it is to reiterate that the inconsistencies were not only in the items rates, but also in the application of BSR 2015 rates including component of items for RCC Culvert Extension works as would be evident from the **Appendix "F"**.*

*However, as discussed in the exit meeting, the DOR and the Ministry should constitute a technical team to review the inconsistencies highlighted in the **Appendix "F"** and appropriate remedial measures taken to remedy the causes and flaws in the preparation of cost estimates and BOQs. The action taken may be intimated to RAA for review and follow-up in next audits.*

