

REVIEW OF DPRs SUBMITTED BY TTL

BY K B BANSAL

1. Jasraj to Pipariya Ramwan road in District Sagar : Length : 1.82 Km

DPR of this road was verified on ground by me on 30-08-2016. It was noticed that the proposed road starts after nearly 200 RM of earthen road. MPRRDA was requested to include this portion as otherwise the village will not be treated as connected with all weather road.

Now MPRRDA has included the above missing link in the DPR and length of road stands 1.82 Km. Rehabilitation works of submersible slab culvert as proposed during my site visit is also included in the present DPR.

Comments:

1. Under clause 2.14 (Road Design Brief) under issue column of the table CBR value of existing GSB is mentioned as 3.0, be corrected as 30. This may be seen.
2. The break up of cost as mentioned in COVER & F-1 do not match, however the cost per Km worked out in COVER is o.k. Details mentioned in COVER be corrected. This point was also told during my visits. It seems this is the requirement of MPRRDA. This may be seen.
3. Under design of Rigid Pavement , sub base of 225 mm (GSB:150 mm & G-2 :75 mm) Is considered and accordingly value of Factor-K is increased by 20%, while in the costing (Format-7), cost of only 75 mm thick G-2 is taken. This may be seen.
It is also to add that under Concrete Pavement G-2 is not laid, it should be either GSB or G-3 or lime treated soil of required thickness (Clause 1501.6 of "Specifications of Rural Road "published by IRC on behalf of Ministry of Rural Development, August 2004. This may be seen.
4. During my visit, MPRRDA was requested to make provision for the development of junction at the end with provision of one no. culvert and also connect school building by constructing nearly 50 RM concrete pavements as a social enhancement .This may kindly be seen.
5. Required provision is made for road marking, guard pillars at locations of high embankment & wheel guards on cause way and culverts. However provision of HAZARD MARKERS is not made on structures.
6. As per Clause 2.8 of Planning and Basic Design Consideration and Adopted Geometric Design Standards , there are 5 no curves of radius less than 60 M in the project road , signs should be provided on all curves , however provision for only 4 signs is made in the DPR. Provision be modified accordingly.

7. Quality of existing GSB material is very good (Soaked CBR varies from 29 to 30)

I think that now the quality of DPR (from technical point) is reasonably satisfactory & of acceptable level.

2. Chandoniganj to Bandoli road in Raisen District:Length:3.425 Km.

DPR of this road was verified on ground by me on 30-08-2016. During visit MPRRDA was requested to connect the school building by constructing Concrete Pavement in nearly 100RM length. MPRRDA has taken this issue and accordingly length of the road stands as 3.425 Km.

Comments:

1. In chapter 2.13 Site Photographs, photos are missing, only details are mentioned.
2. Minutes of Transact Walk not attached in the DPR.
3. In figure-4, strip plan is missing.
4. There are 7 curves (length nearly 311 RM) and 5 culverts; provision of only 4 sq.m of road marking is made (item no 30 of Format-7). This should be nearly 900RM i.e. 90 sq.m, this may be seen.
5. Heading of Format-10 is some thing (Details of profile corrective course in the existing carriageway Km wise thickness to be provided by the Consultants) and information is of Social Screening. This may be seen.
6. For making the existing GSB surface to proper camber and grade no provision is made in the DPR. For this MPRRDA introduced new item of loosening & re-compacting the part thickness of the existing GSB layer to proper camber & grade, however this item is missing in the DPR. This may be seen.
7. In format-10, details are incomplete (Requirement of ROW in Open area, Built up area, Shoulders, at culvert locations/ bridge). It is mentioned that no community building is affected; however one school building at Chan age 0.017 is located only at a distance of 2.50 M from center of the road formation. Similarly 2 no trees (Chan age 0.019 & 2.403) are on the road formation. No provision of measures to mitigate the safety issues at these locations is provided in the DPR. This may be seen.
8. No provision for Hazard Markers is made on structures (on cause way and culverts). This may be seen.
9. No provision for the up gradation of junction is made in the DPR. However under Junction Design it is mentioned that Flared Junction is already provided by CMGSY, up gradation has been considered and taken in BOQ. This may be seen.
10. Quality of existing GSB material is good (Soaked CBR varies from 22 to 23)

I think that the quality of DPR is not satisfactory & requires rework / modification.

3. AB ROAD To SAKONYA in GUNA District : Length : 1.65 Km

Ground verification of DPR of this road not done. Quantity required for making the existing GSB surface to require camber & grade have been calculated on the basis of actual profile, came out nearly additional 75 mm layer. However the DPR seems to be satisfactory.

Comments:

1. Provision of Hazard Markers on structures (culverts) not made in the DPR.
2. Chain age of Rigid Pavement (50RM) not mentioned in clause 15.3.8 (Specifications)of the DPR.
3. Provision of road marking is on lower side. Length of curves with transition length is nearly 1200 RM(all curves are of 30 M radius). In addition road marking is also required on culverts (2 no) and on the junction. Provision is only for 578 RM, requirement is nearly 1500 RM. This may be seen.
4. Minutes of Transact Walk not attached in the DPR.
5. Photos along with details are missing.
6. Quality of existing GSB material is very good (Soaked CBR varies from 28 to 29)

I think that the quality of DPR requires rework / modification.

4. DEVRI to BICHHIYA Road in KATNI District : Length : 2.600 Km

Ground verification of DPR of this road not done. This DPR is nicely prepared and contains very good details & costing of each item. There is some confusion in the number of existing structures in the road. Over all DPR seems to be good.

Comments:

1. In format 1 (C) (inventory of existing Structures) , total 9 structures (8 no HP Culverts and 1 no vented causeway) are shown. In format -2, 8 no structures (7 no HP Culverts and 1 no Slab Culvert) are shown. In check list and Format C-1 only 8 structures are shown. In costing also 8 structures are taken. Strip chart as attached shows 9 no structures. Photographs of only 7 no structures are attached (Photo of structure at Km2.140 & 2.320 are missing) .This point be seen and details in all formats corrected as per actual.
2. The thickness of existing GSB is found only nearly 1100 mm, as such in the DPR provision of 125 mm thick layer of GSB is made, which is a good proposal.

3. In this DPR costing of each and every item is worked out nicely. Provision for turning of vehicles is also made.
4. Provision of Hazard Markers at structures not made in the DPR. This may be seen.
5. Quality of existing GSB material is good (Soaked CBR varies from 18 to 27)

I think that the quality of DPR (from technical point) is good & of acceptable level.

5. Amahi Kachnar Road to Mudra in Ashok Nagar District : Length : 2.208 Km

Ground verification of DPR of this road not done. Quantity required for making the existing GSB surface to require camber & grade have been calculated on the basis of actual profile, comes out nearly additional 60 mm layer. It seems that the DPR is not technically reviewed properly and require rework and recasting. Following comments may be considered:

Comments:

1. As per material testing report contained in chapter -4, Table-4.1, Plasticity Index of existing GSB is 13 percent against required of only up to 6 , while the Liquid Limit varies from 26 to 27 percent against required of only up to 25. The Soaked CBR of the existing GSB layer varies from 16 to 17; qualify as per the standards contained in IRC Specifications. However the minimum requirement of Soaked CBR of GSB is 20, but in case material of this CBR is not available within economical leads, CBR up to 15 can be permitted with the approval of MPRRDA. (Clause 401.3 , Strength of Sub Base of Specifications for Rural Roads issued by IRC on behalf of Ministry of Rural Development in August 2004) .

In light of the above facts & figures, the existing GSB requires to be replaced with proper material and DPR be framed fresh. Otherwise the carriageway will develop boggy action (spongy action, higher Plasticity Index plays a key role in this type of behavior). This may be seen.

In case decision is taken to consider the existing GSB layer as good enough for these small roads, then, provision of profile corrective course for making the existing GSB surface to the required camber & grade be reconsidered. In this connection my view is as below:

The average rainfall in the area of this road is 1400 mm as reported in DPR.

As per clause 2.8 of IRC: 20, camber required is 3.5% (for rainfall more than 1000 mm). It means we require a cross fall of 52.5 mm. Crown of the carriageway shall be 52.5 mm higher than the edge of the carriageway. Presently as clear from the photographs

attached with the DPR, present carriageway seems to be flat, i.e. no slope/ camber. After inspection of many roads of the State , it is noticed that majority (nearly 90-95 percent) of the roads constructed under CMGSY are now flat with ruts (shallow to deep) on both sides of the crown. For making proper camber we require minimum thickness of 60 mm. DPR says to adopt the grading of GSB as per Table 400.1. This table contains 6 different grading. In case we refer IRC: 20, Table 4.4 & 4.5, these also contain 6 different grading. The minimum thickness required is nearly 30 mm. As such minimum thickness of 30 mm is required at edge and 90 mm at crown. It means average 60mm, then what about filling of RUTS and can 30 mm thick layer at edge can have proper bonding with the existing GSB over which it is to be laid. DPR has not prescribed grading number proposed to be used.

In my opinion:

1. MPRRDA should loosen the existing GSB to some extent (say 100mm or so), mix the new material as required for making good the deficiency in making the surface to proper camber & grade (ensuring the minimum compacted thickness of GSB as required by design) and then spread and compact the entire mass to the required density. This will ensure proper bonding by making homogenous mass of the old & new material
2. MPRRDA should lay a layer of minimum 90 - 100 mm thick new GSB depending on the requirement of camber as per average annual rainfall.
Better option is loosening & compaction of the Existing GSB layer with or without additional GSB material based on the quality (CBR)&thickness of existing GSB.

6. Garoth- Bolya Road To Farnyakhedi in Mandsaur District : Length : 2.181 Km. :

Ground verification of DPR of this road not done. Quality of DPR seems to be good. It is good to note that proper provision for turning of vehicles at the end point and also for required road signage is made in the DPR. However the DPR is not technically reviewed properly and require rework and recasting. following comments maybe considered:

Comments:

1. As per material testing report contained in chapter -4, Table-4.1, Plasticity Index of existing GSB is 13 percent against required of only up to 6, while the Liquid Limit varies from 25 to 26 percent against required of only up to 25. The Soaked CBR of the existing GSB layer varies from 18 to 19; qualify as per the standards contained in IRC Specifications. However the minimum requirement of Soaked CBR of GSB is

20, but in case material of this CBR is not available within economical leads, CBR up to 15 can be permitted with the approval of MPRRDA. (Clause 401.3 , Strength of Sub Base of Specifications for Rural Roads issued by IRC on behalf of Ministry of Rural Development in August 2004)

In light of the above facts & figures, the existing GSB requires to be replaced with proper material and DPR be framed fresh. Otherwise the carriageway will develop boggy action (spongy action, higher Plasticity Index plays a key role in this type of behavior). This may be seen.

In case decision is taken to consider the existing GSB layer as good enough for these small roads. Thickness of existing GSB varies from 150 mm to 190 mm. Provision is made for loosening & compacting of the existing GSB to proper grade & camber and thickness of compacted GSB as required based on the traffic and CBR of existing GSB present case is of T-1 category & 7% CBR of subgrade) . In my opinion, in existing constructed roads up to GSB level it is a good option to achieve the proper camber & grade of GSB layer , however the thickness required as per traffic be ensured , may be by adding additional quantity of new GSB material.

2. In report average rainfall of the district is mentioned as 786mm. However under Chapter-6 (Climatic Condition) it is mentioned that the maximum rainfall from July – August is 1000 mm. It means that the average rainfall should be more than 1000 mm as some percentage of rainfall is also experienced in months other than monsoon months of the year. This is generally 20% of the total rainfall. This may be seen. In case the figure of 1000 mm is correct than the camber of carriageway presently proposed as 3% will be 3.5 % (clause 2.8 of IRC:SP:20)
3. 7 no Culverts exists on the road. Under chapter 10 (Design of Cross Drainage Works) it is mentioned that HPC at Chain age Km.0.498 & 1.668 require reconstruction , while in chapter 6 & Format 7 (A) these are shown as in GOOD CONDITION and in cost part also no provision is made neither for reconstruction nor for repairs etc. This may be seen and corrected accordingly.
4. Provision of road marking is made on curves only for the length of the curves. No provision is made for transition lengths both side. This may be seen.

7. Barotha Road To Sarpatti in Dewas District : Length : 3.500 Km

Ground verification of DPR of this road not done. Quality of DPR seems to be good. It is good to note that proper provision for turning of vehicles at the end point and also for required road signage is made in the DPR. However the DPR is not technically reviewed and require rework and recasting. Following comments may be considered:

Comments:

1. As per material testing report contained in chapter -4, Table-4.1, Plasticity Index of existing GSB varies from 13 to 14 percent against required of only up to 6, while the Liquid Limit varies from 26 to 29 percent against required of only up to 25. The Soaked CBR of the existing GSB layer is nearly 15; just qualify as per the standards contained in IRC Specifications. However the minimum requirement of Soaked CBR of GSB is 20, but in case material of this CBR is not available within economical leads, CBR up to 15 can be permitted with the approval of MPRRDA. (Clause 401.3 , Strength of Sub Base of Specifications for Rural Roads issued by IRC on behalf of Ministry of Rural Development in August 2004)
The existing GSB bereplaced with proper material and DPR beframed fresh. This may be seen.Otherwise the carriageway will develop boggy action (spongy action, higher Plasticity Index plays a key role in this type of behavior).
In case decision is taken to consider the existing GSB layer as good enough for these small roads.Thickness of existing GSB varies from 170 mm to 190 mm. Provision is made for loosening & compacting of the existing GSB to proper grade & camber and thickness of compacted GSB as required based on the traffic and CBR of existing GSB , present case is of T-1 category &8% CBR of subgrade .
In my opinion, in existing constructed roads up to GSB level it is a good option to achieve the proper camber & grade of GSB layer , however the thickness required as per traffic be ensured , may be by adding additional quantity of new GSB material.
2. Provision of road marking is made on curves only for the length of the curves. No provision is made for transition lengths both side. This may be seen.
3. As per details contained in chapter -16 (Environmental Issues) flooding at Chan age Km.2.690 & Km.3.470 is reported, however mitigation measures adopted only at Chain age Km. 3.470 by proposing a FLUSH CAUSEWAY of 30 M length. No proposal for another chain age is made in the DPR. This may be seen.

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