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Swiss Agency for Development and Cooperation SDC

Government of Nepal
Ministry of Local Development

Department of Local Infrastructure Development and Agricultural Roads
(DoLIDAR)

COMPREHENSIVE BRIDGE MANUAL

PART 1 : SCREENING AND PRIORITIZATION OF BRIDGE DEMANDS

Preface

With the goal of '***People in the programme districts have improved livelihoods***' and outcomes as **"People have improved access to services and opportunities and National" "Local institutions adopt appropriate local road bridge strategy"**; government of Nepal initiated **Local Roads Bridge Programme (LRBP)** supported by Government of Switzerland.

As stated in the "**Component 3: Formulate policy, strategies, business plans, norms and standards"** of the Programme, it has been envisaged that there will be various norms and standards as well as policies and strategies regarding the overall management of motorable bridges in local roads.

In order to capciate the local authorities (DDC/DTOs) and central department (DoLIDAR) looking after the infrastructures in local level, in the management motorable bridge / river crossings, it is undeniable that a maunal or guideline is necessary.

So, in line with the LRBP and to adress the need in the field of bridge building in local roads, this Comprehensive Bridge Manual has been developed.

COMPREHENSIVE BRIDGE MANUAL

The overall rationale of the **Comprehensive Bridge Manual** is to document and present the all the processes, steps and decision making activites related with local roads motorable bridge in one picture.

The **Manual** contains all the activites / phases of a bridge selection, design, construction and maintenance including required norms and standards.

The Manual has been organised as shown below

PART 1: SCREENING AND PRIORITIZATION OF DEMANDS

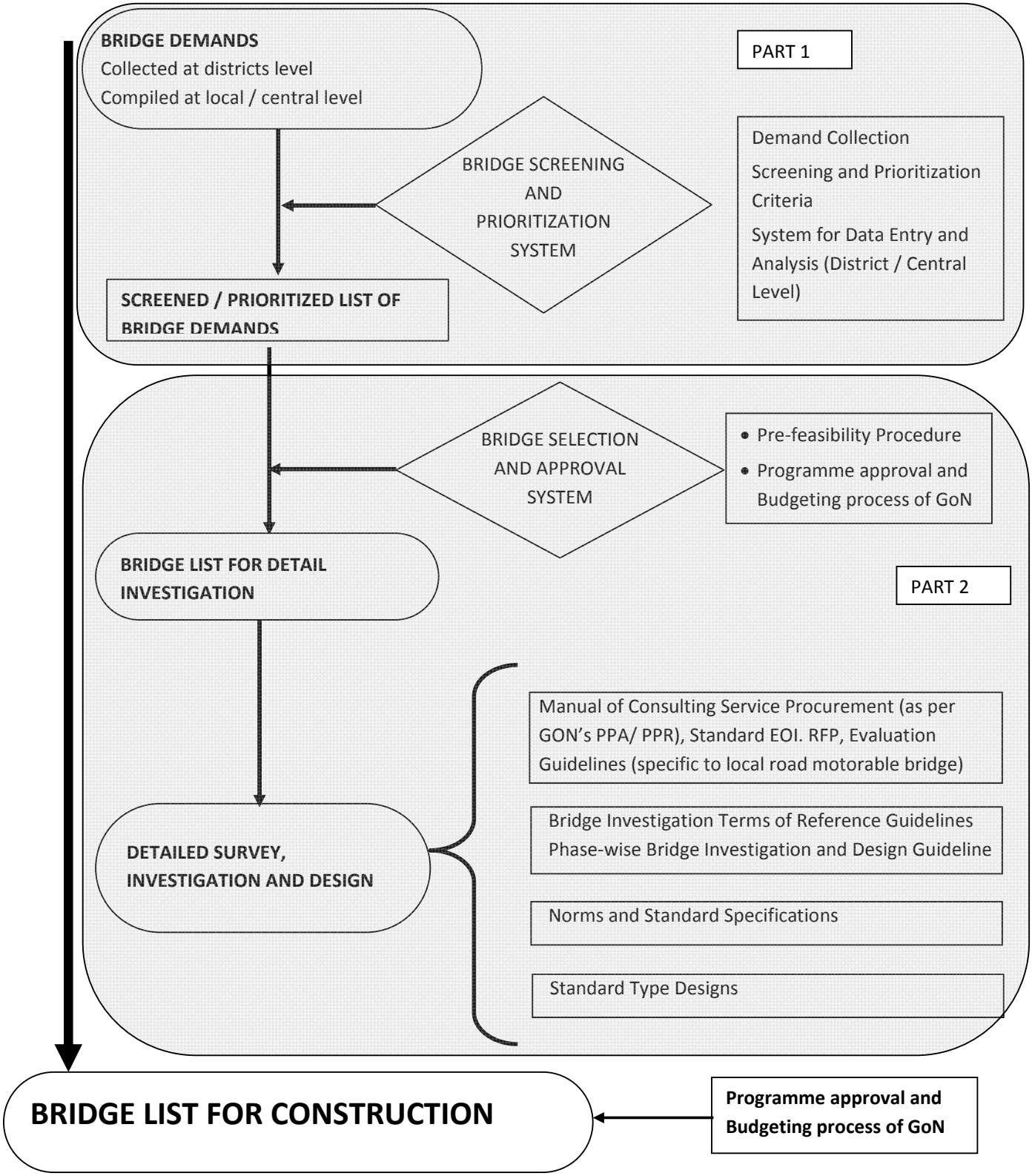
PART 2: SELECTION AND DETAIL INVESTIGATION (SURVEY AND DESIGN)

PART 3: PROCUREMENT AND CONSTRUCTION

PART 4: POST CONSTRUCTION MANAGEMENT / MAINTENANCE

The overall sequence of the activities in the above mentioned PARTs is as shown in the next page.

COMPREHENSIVE BRIDGE MANUAL
(BASIC FLOW CHART)



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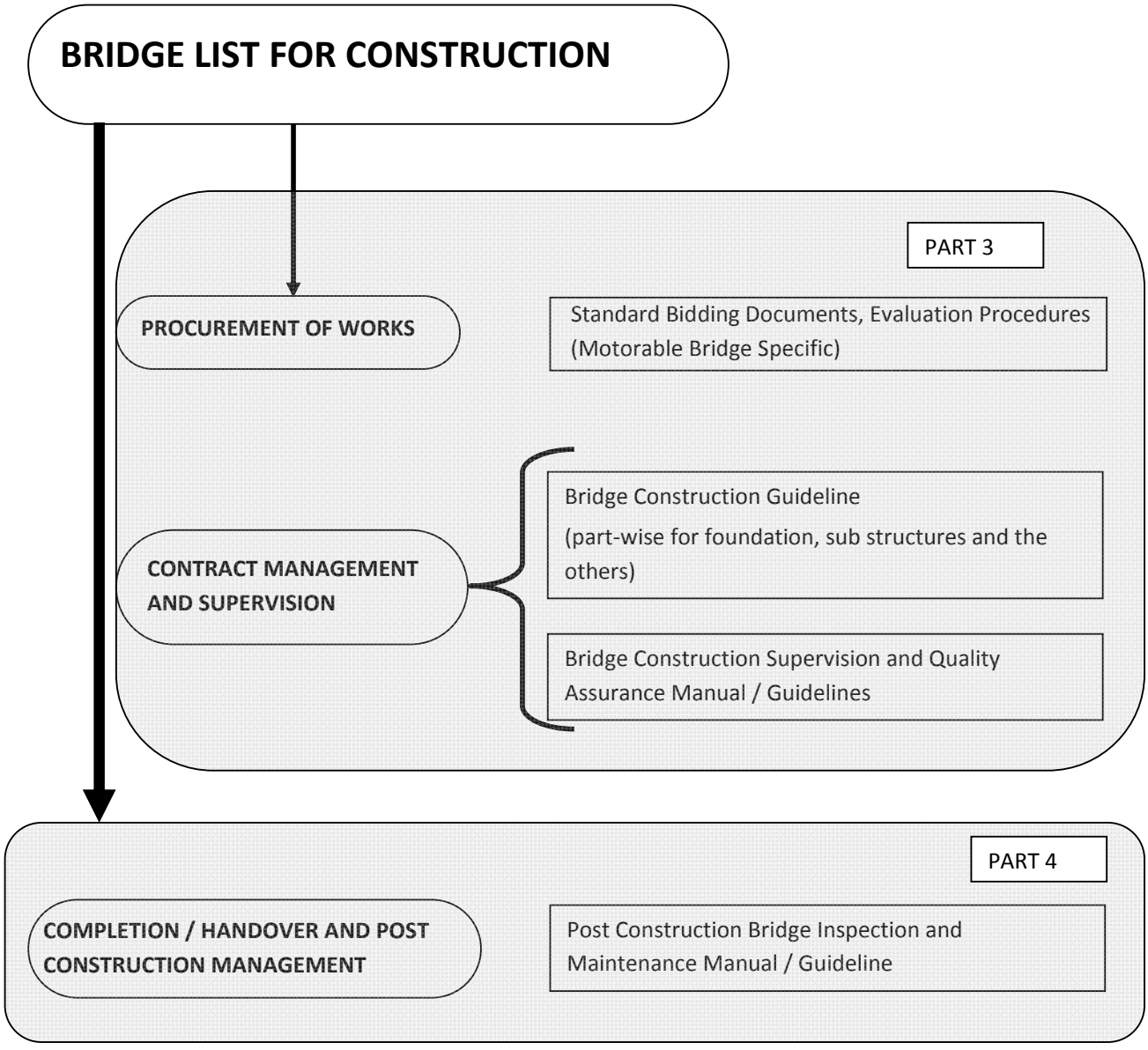


COMPREHENSIVE BRIDGE MANUAL

PART 1 : SCREENING AND PRIORITIZATION OF BRIDGE DEMANDS

1. Introduction

As the local roads network is expanding rapidly and to fully realize the target of improving accessibility by making the local roads all weather, the motorable bridge play a vital role. So, the demand of motorable bridges in local roads is already huge and increasing day by day. Due to constraints in available resources and even increasing demands, it is obvious that there should be a decision support system that enables the districts and DoLIDAR to prioritize the investment on bridges based upon both social and economic perspectives.

There are no specific criteria and process developed or adopted for screening and prioritization of local road bridges in DDC and DoLIDAR. In this present scenario, the demands of local road bridges come to DDCs from different sources like local peoples, local political leaders and so on. This lead to the situation that the local authorities like DDCs face a huge list of bridge demands. And due to absence of proper and rational method to sort these demands, there is high possibility that

- Undue influences and discussion arise while choosing the bridge for further studies / implementation.
- Increases political and other pressures to select bridges
- Leads to selection of wrong bridges, or bridges that socially and economically not justifiable
- Leads to waste of scarce resource
- Decision regarding selection of bridges for further studies/ implementations gets delayed.

The concept of screening and prioritization criteria was discussed at various levels. The draft of bridge screening and prioritization criteria was introduced in 1st Steering Committee Meeting. It was then discussed during the Kick-off / Orientation Workshops between LRBP and DTO / DDCs. And later on, there have been many discussions among DoLIDAR, SDC, LRBSU Team and other bridge professionals. The final version of **Bridge Screening and Prioritization Criteria (BSPC)** has been prepared incorporating all the comments and suggestions.

And, this part is included in **Comprehensive Bridge Manual** as **Part 1: SCREENING AND PRIORITIZATION OF DEMANDS**, which is aimed at establishing a systematic approach to screen and prioritize the unending numerous bridge demand.

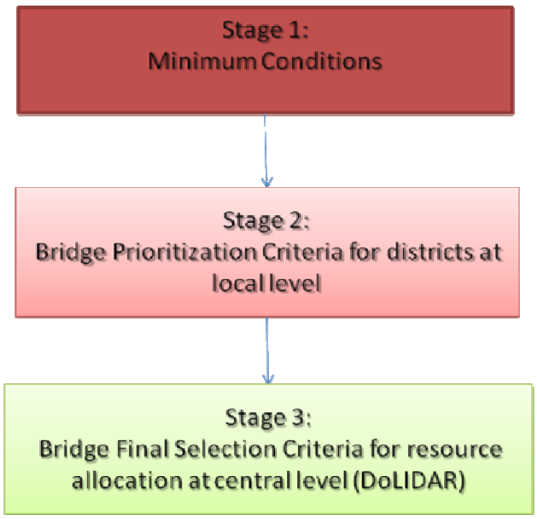
2. Purpose

The main purpose of developing **Bridge Screening and Prioritization Criteria (BSPC)** is to provide basis to the District Development Committees to screen / prioritize the bridge demands in the local level. And also make a definite system at central level (DoLIDAR / MoLD) to prioritize bridges for overall planning for implementation as well as resources allocation from central level.

3. Screening and Prioritization of Bridge Demands:

The proposed BSPC, contains 3 stages altogether. The first one is the "Minimum Conditions" and the other two are "Scoring Criteria" based on board social and economic aspects.

The "**Stage 1: Minimum Conditions"** and **"Stage 2 Scoring Criteria"** are to be done at the local level by DDCs. The "**Stage 3: Scoring Criteria"** is to be applied at the central level by DoLIDAR.



So, when a demand comes, the DDC / DTO will enlist it to check with **Stage 1: Minimum Condition.** After collecting the necessary information / data of all the bridges in demand, the DDC will apply **Stage 2: Bridge Prioritization Criteria** to come up with the screened and prioritized list of bridge demands which will be forwarded to central level. At central level (DoLIDAR) also, the screened and prioritized lists from districts are complied together and **Stage 3: Bridge Prioritization Criteria** is applied to get the final national list of screened and prioritized bridges.

The purpose of this BSPC ends here with the **National List of the Bridge Demands**.

Stage-1: Minimum Conditions:

The minimum condition for bridge screening, selection and prioritization are

- **The roads on which the bridges are built are in District Transport Management Plan (DTMP),**
- **The proposed bridges are on local roads and if lies on a strategic road, an understanding with DoR is reached,**
- **The District Council approves the bridge requirement.**

Stage 2: Bridge Prioritization Criteria for districts at local level (DDC/DTO):

After establishing the filtered list of bridges in demand, district-level Bridge selection/prioritization will be done on following criteria

Stage 2: District level	**Score / Weightage**
1. Number of people living in ZoI (Zone of influence)	**40**
2. Kilometers of road that the proposed bridge will make all weather	**20**
3. Number of vehicles plying along the roads at both sides of river	**20**
4. Lengths and sections of district roads on which bridges are proposed are maintained and operable by concerned DDCs.	**20**
Total Score	**100**

These data shall be collected through a **"Walk-over Survey"** of the proposed bridge site and the alignment of the road stretch which will be all weather due to the proposed bridge. For the collection of the basic data, **BSPC Format** give in **Annex** shall be used.

Stage 3: Bridge Final Selection Criteria for resource allocation at central level (DoLIDAR):

There will be several demand from DDCs to the DoLIDAR for the bridges. The central level Bridge selection/prioritization will be made on following criteria for resources allocation;

Stage 3: Central Level	Score / Weightage
1. Number of people living in ZoI:	**50**
2. Kilometers of road that the proposed bridge will make all weather	**25**
3. Location of bridge–potentials for inter district/regional linkages	**25**
Total Score	**100**

4. Details of Scoring Method (Scoring Guideline)

Local / District Level

Criteria	Score	Definition	Scoring
1. Number of people living in ZoI (Zone of Influence)	**40**	*ZOI: Area of which the people will be travelling through the proposed bridge*	*<1000 =10.0* *1000 - 3000= 15.0* *3000 -5000= 20.0* *5000 - 10000= 25.0* *10000 -12000=30.0* *12000 – 15000 =35.0* *> 15000 =40.0*
2. Kilometers of road that the proposed bridge will make all weather	**20**	*The length of road stretch (between 2 identifiable nodes)*	*< 20.0 km=4.0* *20.0 – 30.0 km=8.0* *30.0 – 40.0 km=12.0* *40.0 – 50.0 km = 16.0 km* *<50.0 km = 20.0*
3. Number of vehicles plying along the roads at both sides of river	**20**	*The number of vehicle that will cross immediately after the construction of the bridge (not projected or estimated, but already arriving at the banks before bridge construction / during dry seasons)*	*None= 5* *< 5= 7.5* *5-10 = 10.0* *10-20 = 15.0* *<20 = 20.0*
4. Lengths and sections of district roads on which bridges are proposed are maintained and operable by concerned DDCs.	**20**	*Part of the road length mentioned in the Criteria3 that will be maintained for vehicle plying*	*All of the length : 20.0* *Most of the length:15.0* *about half: 10.0* *less than half: 5.0* *only some: 2.0*

Definitions

ZOI: *Zone of Influence is the area, the people from where will use the proposed bridge / river crossing.*

- ***For determination of ZOI and the population in it, a separate map based spatial analysis system (computer application) can also be developed***
- ***ZOI is marked on a VDC level map as per the definition mentioned above. And the ZOI population is derived from the map analysis and the population of those VDCs from latest census data.***

Central Level

Even the criteria are similar for local level and central level, the scoring system has been made more broad/ wider in central level.

Criteria	Score	Definition	Scoring	Remarks
1. Number of people living in ZoI	**50**	*ZOI: Area the people of which will be travelling through the proposed bridge*	*< 5000= 10.0* *5000 - 10000= 20.0* *10000 -20000=30.0* *20000 - 30000=40.0* *> 30000 = 50.0*	The total scored will be multiplied by 2.0 for the remote hilly districts, 1.5 for hilly districts, to balance the unequal population distribution[1]
2. Kilometers of road that the proposed bridge will make all weather	**25**	*The length of road stretch (between 2 identifiable nodes)*	*< 20.0 km = 5.0* *20.0 –30.0 km=10.0* *30.0 –40.0 km=15.0* *40.0 –50.0 km=15.0* *>50.0 km = 25.0*	
3. Location of bridge– potentials for inter district/regional linkages	**25**	*Road stretch on which the bridge has been proposed*	*part of the Link between 2 major places / District HQ of 2 districts= 25.0* *part of the link between two existing motorable roads: 20.0* *Others: 15.0*	

Note 1: *The score after multiplying with the mentioned factors shall not be greater than the total score allocated in that criteria*

5. Expected output and way forward

After the different stages of bridge screening and prioritization, the output will be the prioritized demand list of local road bridges. Based on the available resources, the projects from the top ranking order will be selected for detail survey, design. LBS/DoLIDAR will coordinate with concerned DDCs/DTOs for the implementation of the selected bridge projects of related districts.

Office of | | Districts Development Committee

Bridge Screening and Prioritization Data Collection Format

River / Bridge

GPS Coordinates

Location	Left		Right	Point ID:	
	Dist		Dist	**Easting:**	
	VDC		VDC	**Northing:**	
	Ward		Ward	Elevation:	
	Place		Place	UTM Zone:	

Number of vehicles that will be playing on the proposed bridge immediately

Bus / Trucks	Tractors / Cars	Motorcycles	Others

Alignment that will be all weather and served by the proposed bridge *[fill the name of the places along the road]*

Total KM

Alignment Condition

From	To	Distance	Condition (Maintainable or not)	Remarks

ANNEX: Format for Data Collection

ZOI (the area, people from where use the proposed bridge)

Name	Population

for example ***[All wards of XYZ VDC]*** ***[Ward no ….. , ….. of XYZ VDC]***

[Population data can be taken from latest available source like census or any other surveys]

DTMP

SRN

Collected By

Verified By

Approved By

ANNEX: Format for Data Collection