HARYANA PWD CODE

GOVERNMENT OF HARYANA

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Foreword

In a progressive, industrialised and welfare state such as Haryana, the increasing role and contribution of Public Works Departments (PWDs) can hardly be overemphasised. Over the years, the span of public works has stretched beyond the traditional domain of public buildings, roads, bridges, canals and water supply services etc. Given the pace of industrial advancement of the state, demand for infrastructure has grown manifold and public works have come to constitute a sizable chunk of annual government spending.

Even otherwise, ever growing vistas of PWD operations and increased responsibilities highlighted the need for updating the rules, regulations and control systems which had to be codified into a new document. The need for redoing the earlier set of instructions was underscored by the modern day requirements that warranted evolution of new systems and practices to keep pace with the changing times and demands for people-centricity, efficiency, e-monitoring and transparency.

Since its formation as a separate state in 1966, Haryana has been following the Punjab PWD Code by occasional updating. But merely updating the Code written in earlier 1900s was not enough now and it had to be re-done against the backdrop of the ground level realities. This exactly made me direct the administration to rewrite the Code. I am happy to note that Haryana is the first such state to do so and the present Code is the first ever 21st century PWD Code introduced by any State Government.

The Code, in its new avatar, emerges as an enabling mechanism that would empower the officers/officials to perform effectively and efficiently. It lays down procedures for administrative and executive action, delineates work profile, fixes duties and responsibilities at various levels and prescribes controls to be exercised in realisation of the goals. Small wonder it covers new topics, reflects the work ethos and dynamism and holds a mirror to the amplified scope and responsibilities of the departments in the present-day context. I am happy to note that the Code speaks about public-private participation, safety mechanism, quality assurance, e-governance and other modern systems without which no establishment can function and answer the aspirations of the people. Better still, it would make the departmental working transparent and those engaged in execution of public works involving huge expenditure, accountable to the people who are the final arbiters of our destiny.

Needless to emphasise, the new Code reflects the good work done by many dedicated officers, serving as well as retired, and a number of other professionals, without whose contribution, it would not have acquired the present shape. My

special appreciation is for Mr. K. K. Jalan IAS, Principal Secretary, Government of Haryana and Mr. M. K. Agarwal, former Engineer-in-Chief PWD(B&R) Haryana for taking up the work as a passion.

It gives me immense pleasure to dedicate the Code to the people of Haryana.

Bhupinder Singh Hooda
Chief Minister, Haryana

Preface

It was indeed thoughtful of Hon'ble Chief Minister, Mr. Bhupinder Singh Hooda, to have taken the pioneering decision of getting the PWD Code of pre-Independence days, redone. It was desired that the new code should not only capture the latest developments in construction know-how, practices and control systems but also hold a mirror to the present-day realities which include the enlarged scope of operation of the departments and the sea change in the methods of management. The administration swung into action and readied a roadmap on how to go about the mammoth task of redoing a code which had been scripted way back in earlier 1900s.

A Steering Committee consisting of Principal Secretaries of all the Public Works Departments, other senior officers and professionals was constituted in December 2005. Mr. M.K.Agarwal, former Engineer-in-Chief, PWD(B&R) Haryana, was associated as consultant for drafting the Code. In the initial meetings, the Steering Committee laid down the foundation and ground rules for preparation of the draft. Subsequently large volume of literature was consulted and deliberations were held with reputed professionals and various stakeholders such as contractors, academicians, engineers, department employees, legal experts, financial experts, etc. Several meetings and discussions took place in three Public Works Departments. Mr Agarwal came up with the preliminary draft in July 2007.

This first draft was deliberated upon chapter by chapter in all the three PWDs and at the level of the Steering Committee. A number of valuable suggestions made therein were incorporated and the second draft was made ready in January 2008. This draft was again considered in the departments and by other stakeholders such as contractors and academicians. Public notices were issued and public meetings were held for eliciting response from the general public. At this stage, the Chief Secretary also held a series of meetings wherein major corporations involved in execution of public works were also invited. These meetings resulted into further improvements in the draft. The third draft was available sometime in October, 2008. This draft was again debated and this time the Principal Secretary to the Chief Minister held a number of meetings and discussed the draft chapter by chapter. These meetings resulted into the fourth draft in May 2009. This draft has been further improved with the effort of a number of persons such as engineers, financial and legal experts, proof readers, language experts and other professionals.

Overall it has taken about four years of hard work, countless number of meetings and endless rounds of consultations and painstaking efforts by senior colleagues, to have in place a Code that endeavours to codify the present-day work ethos, processes and control systems, situations and practices. The new Code, as expected, has many departures from the old Code. It delineates the duties and responsibilities of the

Engineer-in-Chief for the first time. The existing Code did not recognize the existence of Engineer-in-Chief, a post which is in operation for more than 30 years.

Separate and detailed chapters have been added on many topics including 'Consultancy Services'-for enhancing the capacity of departments and supplementing the efforts of officers through outsourcing; 'Emergency/Disaster Management'-for adopting advance engineering preventive measures, ensuring preparedness in coordination with Civil Administration and meeting the emergency in shortest possible time by relaxing procedures; 'Quality-Control, Assurance and Audit'-for ensuring and evaluating the quality of projects from inception to completion by the departments, contractors and auditors; 'Public Private Participation'- for reducing the burden on state exchequer to execute suitable projects by tapping the finances, skills and efficient delivery procedure of private sector; 'Safety Management'- for meeting safety requirements of structures, workers and public in general by observing provisions of various legislations/safety codes during planning, construction and post-construction stages; 'Inspection'- for organised examination and formal evaluation of stated objectives at desired frequency with the help of checklists for every element of work and 'Asset Management and Maintenance'- for getting maximum output and user satisfaction from land, roads, buildings, canals, bridges etc. by creating inventories, vigilance against encroachments/cuts/breaches and prescribed maintenance programmes. These topics were either not covered at all in the earlier Code or there were only scattered references to the same.

Other key changes in the new Code are provisions relating to IT as a tool in execution of public works e.g. e-monitoring, e-measurements, e-billing, e-tendering etc. Besides, provisions with regard to preparation and approval of estimates; commencement, execution and completion of works as well as contract management have been rationalised to reduce cost over runs, time over runs, contractual disputes and to enhance inter-departmental credibility.

Although the new Code now incorporates current thinking, best practised procedures and futuristic trends, yet innovations in technology, management skills and delivery system shall necessitate revisions in PWD procedures and systems. More so, since the working requirements of each PWD are different. Therefore, the Code authorises each PWD to issue guidelines/instructions/orders on specific issues of its concern as also to revise existing manuals and prepare new ones as prescribed in the Code. It also envisages a procedure for further revisions in the Code and makes PWD (B&R) department as the administrative department for notifying revisions. It is hoped that these measures shall impart dynamism to the Code.

To me, personally, it has indeed been an enriching experience. I would be failing in my duty if I do not pay my grateful thanks to the Chief Secretary, Mr. Dharam Vir I.A.S., who not only guided the proceedings as the founding chairman of the Steering Committee, but also was actively involved at every stage. I convey my special thanks to Mr. M.L. Tayal I.A.S., who not only closely monitored the progress, but intervened

personally in moving forward at critical junctures. The work would have been difficult, if not impossible, without the active support of Mr. M.K. Agarwal, who was driven with passion throughout. I am thankful to other senior officers and colleagues who readily and willingly helped, assisted and guided in this Herculean task of preparation of first ever 21st century State PWD Code. I am sure it will facilitate better planning and execution of public works.

K.K.Jalan
Financial Commissioner & Principal Secretary
Government of Haryana
PW(B&R) and Architecture departments

Suggestions

Though Haryana PWD Code has been finalised after numerous meetings at various levels and after consultations among stakeholders, yet suggestions for improvement in the same are welcome. Any communication in this regard shall be addressed to

Chief Engineer
Incharge of PWD Code
PW (B&R) Department
Nirman Bhawan, Sector-33
Chandigarh-160047

These can also be e-mailed at pwd-cecode@hry.nic.in


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Acknowledgements

Preparation of any such document such as PWD Code requires concerted effort of many individuals. This Code is no exception and it is well nigh impossible to list the names of all those who helped in bringing the document to the present stage. A series of meetings involving uncountable officers/officials and other stakeholders were held for the purpose and the present document would not have been possible without sizeable and painstaking contribution of members of these formal and informal committees and discussion groups. It will, however, be in order to acknowledge a few names mentioned below who made significant contribution to this gigantic effort:

Mr. Dharam Vir, Chief Secretary played a stellar role in guiding the deliberations at every stage. He not only willingly spared his valuable time, but also provided critical and useful suggestions. Earlier, in his capacity as the Chairman of the Steering Committee, he was responsible for laying the foundation and ground rules for the preparation of the Code.

Fulsome tribute is due to Mr. M.L.Tayal, Principal Secretary to Chief Minister, who conceptualised the whole proposal and remained the brain and moving spirit behind the document.

Financial Commissioners & Principal Secretaries of Irrigation and Public Health Engineering departments during this period namely Mr. R.N.Prasher, Mr. Naresh Gulati, Mr. Samir Mathur, Mr.Dalip Singh and Mr. Roshan Lal coordinated the inputs of their respective departments, and made valuable suggestions of their own in the course of various review meetings.

Mr. Ajit Mohan Sharan, Finanancial Commissioner & Principal Secretary, Finance and other members of his team enlightened the Steering Committee and other formal and informal discussion groups not only on financial aspects, but also on almost all topics.

Mr. M.S.Sullar and Mr. P.L.Ahuja, Legal Remembrancers and other members of their team, especially Mr.V.P.Gupta and Mr. Kamal Kant for providing critical inputs from the legal point of view at every stage of the draft.

Mr. M.K.Agarwal, former Engineer-in-Chief PWD(B&R), Government of Haryana, not only took his work as consultant very diligently. Rather he made it as a passion. He almost singlehandedly pursued the task with great sincerity and devotion and came up with revised drafts one after the other. He was always available for discussions, deliberations and conferences on the subject. He arduously went through each and every provision of the Code and enlarged its scope and enriched its contents.

Engineers-in-Chief of the three PWDs namely Mr. R.R.Sheoran, Mr. H.S.Chahal, Mr. Mahesh Kumar; Mr. J.S.Ahlawat, Mr. M.K.Gupta,

Mr. R.K.Dewan; Mr. S.K. Khanna, Mr. M.P.Bhandari, Mr. A.K.Kheterpal; Chief Architects Mr. A.K. Sabharwal and Mr. Pratap Singh contributed in a significant manner by giving useful comments from a professional angle and user's perspective.

Mr. D.P. Gupta and Mr. S.C. Sharma, both former Director Generals, Road Development, Government of India; Mr. L.R. Gupta, former Director General, CPWD; Mr. P.K. Lauria, former Secretary PWD, Government of Rajasthan; Mr. R.K.Jain, former Chief Engineer, PWD (B&R), Government of Haryana and Mr. P.R.Swarup Director General, Construction Industry Development Council helped by not only associating in various meetings of the Steering Committee, but also gave valuable inputs on variety of topics.

Mr. B.S.Singla, Managing Director, HSRDC scrutinised the document with unusual thoroughness and provided the much-needed logistic support.

Mr. Rajeshwar Kumar helped by computer coding and precious back-up expertise.

Contents

Abbreviations

1.	**a/a**	Administrative Approval
2.	**ACR**	Annual Confidential Report
3.	**B&R department**	Public Works (Buildings & Roads) Department
4.	**BC**	Before Christ
5.	**BIS**	Bureau of Indian Standards
6.	**BLT**	Build-Lease and Transfer
7.	**BOO**	Build-Own and Operate
8.	**BOOT**	Build-Own-Operate and Transfer
9.	**BOQ**	Bill of Quantities
10.	**BOT**	Build-Operate and Transfer
11.	**CAD**	Computer-Aided-Design
12.	**CADA**	Command Area Development Authority
13.	**CBIP**	Central Board of Irrigation and Power
14.	**CBR**	California Bearing Ratio
15.	**CE**	Chief Engineer
16.	**CGWB**	Central Ground Water Board
17.	**CI**	Cast Iron
18.	**CIDC**	Construction Industry Development Council
19.	**CITO**	Chief Information Technology Officer
20.	**CPCB**	Central Pollution Control Board
21.	**CPHEEO**	Central Public Heath and Environment Engineering Organisation
22.	**CPM**	Critical Path Method
23.	**CPWD**	Central Public Works Department
24.	**CR**	Confidential Report
25.	**CRRI**	Central Road Research Institute
26.	**CSR**	Civil Services Rules
27.	**CWC**	Central Water Commission
28.	**DFR**	Departmental Financial Rules
29.	**Dir(F&A)**	Director (Finance and Accounts)
30.	**Dir(P&A)**	Director (Personnel and Administration)
31.	**DLC**	Defects Liability Certificate
32.	**DNIT**	Detailed Notice Inviting Tenders
33.	**DoA**	Department of Architecture
34.	**DPR**	Detailed Project Report
35.	**DPRO**	District Public Relations Officer

36.	**EIA**	Environmental Impact Assessment
37.	**EIC**	Engineer-in-Chief
38.	**ESI**	Employees' State Insurance
39.	**ELCB**	Earth-Leakage-Circuit-Breaker
40.	**E-mail**	Electronic Mail
41.	**EOT**	Extension of Time
42.	**EPC**	Engineering, Procurement & Construction
43.	**EPF**	Employees' Provident Fund
44.	**FIDIC**	Federation Internationale Des Ingenieurs Conseils
45.	**FIR**	First Information Report
46.	**FSL**	Full Supply Level
47.	**GCC**	General Conditions of Contract
48.	**GIS**	Geographical Information System
49.	**GOI**	Government of India
50.	**Govt.**	Government
51.	**GPS**	Global Positioning System
52.	**GTS**	Great Trigonometric Survey
53.	**HFL**	Highest Flood Level
54.	**HIRMI**	Haryana Irrigation Research and Management Institute
55.	**HOD**	Head of Department
56.	**HaRRIDA**	Haryana Rural Roads and Infrastructure Development Agency
57.	**HSR**	Haryana Schedule of Rates
58.	**HSRDC**	Haryana State Roads & Bridges Development Corporation Ltd.
59.	**HT**	High Tension
60.	**HUDA**	Haryana Urban Development Authority
61.	**HVPN**	Haryana Vidyut Prasaran Nigam
62.	**IABSE**	International Association for Bridge and Structural Engineering
63.	**IBC**	Indian Buildings Congress
64.	**ICB**	International Competitive Bidding
65.	**IIT**	Indian Institute of Technology
66.	**IPC**	Interim Payment Certificate
67.	**IRC**	Indian Roads Congress
68.	**IS**	Indian Standard
69.	**IT**	Information Technology
70.	**ITB**	Instructions to Bidders

71.	**ITC**	Instructions to Consultants
72.	**IWWA**	Indian Water Works Association
73.	**JE**	Junior Engineer
74.	**LAA**	Land Acquisition Action
75.	**LAC**	Land Acquisition Collector
76.	**LCG**	Low Carbon Galvanised
77.	**LD**	Liquidated Damages
78.	**LOA**	Letter of Acceptance
79.	**LOC**	Letter of Credit
80.	**LOI**	Letter of Intent
81.	**LR**	Legal Remembrancer
82.	**LT**	Low Tension
83.	**MB**	Measurement Book
84.	**MCB**	Miniature Circuit Breaker
85.	**MES**	Military Engineering Services
86.	**MIS**	Management Information System
87.	**MLA**	Member of Legislative Assembly
88.	**MOEF**	Ministry of Environment & Forests
89.	**MORT&H**	Ministry of Road Transport & Highways
90.	**MOU**	Memorandum of Understanding
91.	**MP**	Member of Parliament
92.	**MS**	Mild Steel
93.	**NABARD**	National Bank for Agriculture & Rural Development
94.	**NCR**	National Capital Region
95.	**NCRPB**	National Capital Region Planning Board
96.	**NGOs**	Non-Governmental Organisations
97.	**NHAI**	National Highways Authority of India
98.	**NIC**	National Informatics Centre
99.	**NIT**	Notice Inviting Tenders
100.	**NOC**	No Objection Certificate
101.	**O&M**	Operation & Maintenance
102.	**OMT**	Operate-Maintain and Transfer
103.	**OSD**	Officer on Special Duty
104.	**PFR**	Punjab Financial Rules
105.	**PHE**	Public Health Engineering
106.	**PHED**	Public Health Engineering Department
107.	**PIO**	Public Information Officer
108.	**PIU**	Project Implementation Unit
109.	**PLI**	Professional Liability Insurance

110.	**PMGSY**	Pradhan Mantri Gram Sadak Yojna
111.	**PMS**	Pavement Management System
112.	**POL**	Petrol, Oil & Lubricants
113.	**PPE**	Personal Protective Equipment
114.	**PPP**	Public-Private-Participation
115.	**PPR**	Preliminary Project Report
116.	**PRQI**	Pavement Riding Quality Improvement
117.	**PSIN**	Personal Service Identification Number
118.	**PVC**	Poly Vinyl Chloride
119.	**PWD**	Public Works Department
120.	**QA**	Quality Assurance
121.	**QMP**	Quality Management Plan
122.	**RAP**	Resettlement Action Plan
123.	**RCC**	Reinforced Cement Concrete
124.	**RD**	Reduced Distance
125.	**RFA**	Request For Approval
126.	**RFP**	Request For Proposal
127.	**RFQ**	Request For Qualification
128.	**RTI Act**	Right to Information Act
129.	**SCC**	Special Conditions of Contract
130.	**SDE**	Sub-Divisional Engineer
131.	**SDO**	Sub-Divisional Officer
132.	**SDO (C)**	Sub Divisional Officer (Civil)
133.	**SE**	Superintending Engineer
134.	**SEAC**	State level Expert Appraisal Committee
135.	**SEIAA**	State Environmental Impact Assessment Authority
136.	**SI**	Systeme International
137.	**SMB**	Standard Measurement Book
138.	**SMS**	Short Message Service
139.	**SP**	Special Publication
140.	**SPV**	Special Purpose Vehicle
141.	**T&P**	Tools & Plants
142.	**TOR**	Terms of Reference
143.	**TS**	Technical Specifications
144.	**UT**	Union Territory
145.	**VIP**	Very Important Person
146.	**WUAs**	Water Users Associations

Chapter 1
Introduction

1.1 HISTORICAL BACKGROUND

1.1.1 In a broad sense, public works are the construction or engineering projects carried out by the State for creating and/or improving public facilities. The execution of public works has been an organised function of the State from times immemorial in our country. Archaeological finds of Indus Valley Civilisation have revealed to us the building traditions of India prevalent 3,000 before the Christian era (BC) These have also brought to the fore the meticulous planning and construction acumen at that time. Kautilya's Arthashastra, one of the immortal works on Government functions and politics, written as early as 300 BC, speaks of officers of the State in-charge of finance, public works and royal correspondence. This practice of construction activities has continued during all regimes, irrespective of the fact as to whether the command was with Hindu Kings, Mughals, Marathas, Pallavas, Cheras, Cholas, or others.

1.1.2 The East India Company, which started as a trading concern in India, also felt the need for construction of roads, buildings, railways and irrigation works, etc. While the works of construction of railways were given to different companies, the public works like roads, buildings and irrigation were entrusted with Military Boards in all the three Presidencies of Calcutta, Madras and Bombay. These works were mostly of a military character comprising barracks and other buildings for troops and a few military roads. In 1849, when Punjab was annexed by the British, the first ever department for public works (in British India) was created, which was entrusted with the improvement of Grand Trunk Road from Calcutta to Peshawar, including construction of about 100 bridges on it. The department also undertook construction of the Upper Doab Canal, the roads from Kalka to Shimla and Chini to Sutlej and the work of Upper Ganga Canal, and completed them by 1854.

1.1.3 Public Works Department in Punjab was thus the oldest such department in British India. Initially, it looked after all public works, whether irrigation, power, water supply, sanitation, roads or buildings, but as the work expanded, separate departments of Power, Irrigation and Public Health Engineering were constituted at different times. The original PWD mainly became Public Works (Building & Roads) department. Vistas of public works have expanded over the years, and have come to include a host of facilities such as roads, bridges, office buildings, community buildings (like hospitals, schools, bus stands), houses, townships, canals, dams, drains, water supply and sewage disposal, municipal services, storage godowns, parks, tourist centres and public amenities in the villages, etc. The spurt in the demand of works in the public domain, expanding complexities of construction, new technological inventions, modes of delivery and funding patterns have led to the creation of many other institutions to take up such works.

1.2 NEED FOR CODE

1.2.1 As public works constitute a sizable part of the expenditure of the Government of India as well as of the various State Governments, the need of some rules, regulations and control systems was felt from the very beginning. Accordingly, these were framed over the initial years and incorporated in the form of a Code. Many States developed their own codes, while a few followed the code prepared by Central Public Works Department. Punjab PWD Code is said to have been written in the beginning of the twentieth century. Except for some minor corrections and amendments, the same version has held the ground all these decades. Haryana, on its formation as a separate State in 1966, has been following this very Code.

1.2.2 The plethora of changes over the years demands almost a complete revision of the existing Code. The need of a revised Code has acquired further importance over the years as the demand of physical infrastructure has multiplied and expenditure on public works has increased exponentially. The infrastructure created over time demands maintenance and renovation. Since endemic delays in the delivery system result in increased costs and adversely affect the accrual of intended benefits, completion of works in a given time frame is of paramount importance. There are also the concomitant requirements of improvement of quality of construction, implementation of the programmes in a transparent and cost effective manner, and use of the most appropriate materials, design and construction technologies, and management practices. The Code provides a framework to address these various concerns.

1.2.3 The Code is also a tool to empower the officers/officials of public works departments to perform effectively as it lays down procedure of administrative and executive action, delineates the duties and responsibilities of the officers/officials at various levels and prescribes controls to be exercised in the achievement of the objectives.

1.3 APPLICABILITY OF THE CODE

1.3.1 The Code shall be applicable to Public Works (Irrigation) (Irrigation, in short), Public Works (Buildings & Roads) (B&R, in short) and Public Health Engineering (PHE, in short) Departments hereinafter called the PWDs, besides the Department of Architecture (DoA). These departments have been allocated a distinct role under 'Business of the Haryana Government (Allocation) Rules, 1974' as modified from time to time. The State Government may, however, allocate any other function or work to any department.

1.3.2 The Code will be generally applicable to all other public works being undertaken by other departments, state undertakings, societies, agencies or bodies of the State of Haryana. These organisations, however, will specifically decide as to whether they need to be governed by the provisions of this Code. As the number of such organisations involved in creation/improvement of public works is quite large, it is difficult to list them all. A few of the organisations, besides the three major departments, which are engaged in creation and maintenance of public works, are

listed as follows:

(1) Haryana Urban Development Authority;

(2) Haryana State Roads & Bridges Development Corporation;

(3) Haryana Rural Roads & Infrastructure Development Agency;

(4) Haryana State Agricultural Marketing Board;

(5) Haryana Housing Board;

(6) Haryana Police Housing Corporation;

(7) Haryana Tourism Corporation;

(8) Panchayati Raj Department; and

(9) Command Area Development Authority.

1.3.3 There is a tendency on the part of some departments (which normally do not deal with execution of public works) to take up construction works on their own, using their own procedure and methodology. This shall be done only with prior approval of the Government stating the circumstances and reasons for the intended course, and after obtaining the concurrence of the Finance Department. The views of the Public Works Department concerned (which shall be provided within 15 days) should be invariably obtained before grant of such permission and shall be brought to the explicit notice of the decision making authority.

1.4 SCOPE OF CODE

1.4.1 The Code defines the scope of administrative and executive functions of the three PWDs and also of their officers. The rules in the Code shall not be deemed to override any special rules laid down by the Government for application to special classes of works.

1.4.2 The Rules/Regulations outlined in Treasury Rules, Financial Rules, Account Code, Budget Manual, Civil Services Rules, etc. relating to classes of transactions which occur in the Public Works Department, as well as in other departments of Government, are binding on Public Works Departments except in so far as they have been specifically overridden by express provisions in this Code. Barring these express provisions, in case of any conflict between the applicable law/rules of the Government, on one hand, and provisions of the Code, on the other, the former shall prevail. The PWDs shall, however, endeavour to get the amendments effected in other rules so that they are in consonance with the provisions in this Code.

1.4.3 For detailed working, including delineation of duties of various categories of officials, each PWD shall have its separate Manual of Orders. However, these Manuals will not take away the essence of the duties provided in the Code. The Administrative Secretary of each PWD should endeavour to get these reviewed periodically, at least once in five years.

1.5 FURTHER REVISIONS IN THE CODE

1.5.1 The administrative department for the Code will be B&R department. Any

changes in the Code will be notified by the same. This department, with the approval of the State Government, shall also designate a Chief Engineer as incharge of the Code for any revisions in the same. This Chief Engineer will be custodian of all records and files pertaining to this Code.

1.5.2 If any revision, addition or alteration is required on any technical point, this will be first discussed by a standing committee consisting of the Engineers-in-Chief (EICs) of the three PWDs, with Chief Engineer incharge of the Code as the Member-Secretary. The decision of the Committee will be sent to Administrative Secretary of the B&R department, who will further examine the issue and take necessary action after obtaining the approval of the Chief Minister.

1.5.3 The Administrative Secretary of B&R department will also hold periodical meetings to discuss any administrative or other issues arising during implementation of the Code. This meeting will be attended by the Administrative Secretaries and Engineers-in-Chief of the PWDs, representatives of Finance Department, Law and Legislative Department as members. Chief Engineer incharge of the Code will be the Member-Secretary. In case there is no unanimity on any particular matter, the meeting will be presided over by the Chief Secretary and the decision of this meeting shall be final, subject, however, to the approval of the Chief Minister.

1.5.4 The amendment in the Code can be brought about only when the same is approved by the Chief Minister to whom the proposal will be submitted through the Minister in-charge of B&R department. The concurrence of Finance Department and Legal Remembrancer will be required in all cases.

1.6 INTERPRETATION

1.6.1 In case of any dispute or difference of opinion regarding any provision of the Code, the view as given by the State Government in the B&R department (administrative department for the Code) will be considered as final.

1.7 INSTRUCTIONS/CIRCULARS UNDER THE CODE

1.7.1 The Code envisages issuance of a number of instructions/circulars on various matters, either at Government or at Department level. These instructions/circulars can only be issued by the Head of Department (HOD) or the Administrative Secretary. Initially, these shall be issued within three months of applicability of the Code, and subsequently, as and when the occasion demands. The instructions/circulars should be appropriately numbered with a clear reference to the para(s). For example, in case of instructions issued by B&R department at Government level, they will carry number as PWD Code/B&R/Govt./Para ---/No. ---/Date--- or an instruction issued by Irrigation department at HOD level will get numbered as PWD Code/Irr/Deptt./Para ---/No. ---/Date ---. In case of any conflict between the instructions issued by the Department and the Government, the instructions issued at the Government level will prevail.

1.7.2 Instructions on common subjects shall normally be issued by B&R department, though in consultation with Irrigation and Public Health Engineering departments.

Chapter 2
Organisation

2.1 NORMAL STRUCTURE

2.1.1 PWDs, for efficient operations, are organised into Headquarters Office and Field Units. Engineer-in-Chief is the HOD and all officers/officials of the department work under his overall supervision unless specifically provided by the State Government in the administrative department.

2.1.2 The Engineer-in-Chief is supported by a number of functionaries such as Director (Personnel and Administration) [(Dir(P&A)], Director(Finance and Accounts) [Dir(F&A)], Chief Information Technology Officer (CITO), Law Officer, besides the Chief Engineers, who may be incharge of (i) some broad function of the Department or (ii) a specific project or (iii) a particular geographical zone of the State. Chief Engineer may be part of the Headquarters Office or can be asked to head a separate office. A Chief Engineer may have under him a few Circles, Divisions, Sub-Divisions and Sections. In certain cases, he may even be asked to head a Project Implementation Unit (PIU) as a Project Director. The headquarters of a Chief Engineer is as decided by the State Government.

2.1.3 Engineering officers down the line are Superintending Engineers, Executive Engineers, Assistant Executive Engineers/ Sub-Divisional Engineers/ Assistant Engineers, and Junior Engineers. They may be posted in the Headquarters or in the Field Units.

2.1.4 There are other officers/officials at various levels, in Headquarters Office and Field Units, in matters relating to administration, finance, accounts, law, information, vigilance, estimation, design, drawing, regulation, testing, research, land acquisition, etc. Besides, there is supporting staff in all the offices, and skilled personnel of various categories for execution and supervision of site works.

2.1.5 Specialised posts, when required, shall be created with the approval of competent authority. Need for such posts shall be reviewed periodically. Qualifications for these posts shall be prescribed at the time of entry and promotion.

2.2 HEADQUARTERS OFFICE

2.2.1 Engineer-in-Chief is at the apex. Personnel administration and management of finance, accounts, training and information technology (IT) have assumed key roles in the successful running of a Public Works Department. Endeavour should be made to have specialists such as Director (P&A), Director (F&A), Director (Training), CITO, etc. to deal with these specific functions. Chief Engineers of the works should not be loaded with routine administrative works except when the officers looking after those functions are not posted. It is not desirable to route all

types of files through one or the other Chief Engineer. However, there is not a complete ban on getting views/comments of some Chief Engineer in a specific matter. Tendency to route even administration and accounts files through the Chief Engineers looking after works shall be avoided by the Engineers-in-Chief.

2.2.2 The Headquarters Office is organised into various branches and sections (section is the basic work unit, responsible for attending to items of work allotted to it). Section may also be termed as cell. The Section incharge reports to the Branch Officer in-charge.

2.2.3 Ministerial, Accounts, Legal, IT, Vigilance and other sections handle the work allotted to them. It is desirable that an order clearly outlining the duties of every section is issued. The working of the offices in the field as well as in head office will be governed by the principles/instructions provided in the office Secretariat manual.

2.2.4 Drawing (or Project) Branches deal with preparation of drawings, estimates, rate analysis, evaluation of tenders, examination of alignments and other related matters. Each drawing/ project branch has one or more distinct function(s) assigned to it e.g. bridges, roads, buildings, canals, urban water supply, sewerage, rural water supply, regulation, water resources, etc. In Irrigation department, the project branch also takes up examination of outlets, orifices, shoots, etc. Circle Head-Draftsman is in-charge of the branch, and he reports to the Assistant Engineer/Executive Engineer concerned as provided in the Manual of Orders issued by the PWD concerned.

2.3 FIELD UNITS

2.3.1 At the field level, the departments shall be divided into Circles, Divisions, Sub-Divisions and Sections. A Circle shall be under the charge of a Superintending Engineer, and has under its control a few Divisions headed by Divisional Officers. A Division is made up of a few Sub-Divisions manned by Sub-Divisional Officers/ Sub-Divisional Engineers. A Sub-Division may comprise Sections under the charge of Junior Engineers. For a project of a concentrated or similar nature, this hierarchical pyramid may not be followed and could be narrowed.

2.3.2 The main administrative unit of the department at the field level is the Circle, under the charge of a Superintending Engineer, who shall be responsible to the Engineer-in-Chief and Chief Engineer(s) for the administration and general professional control of execution, operation and maintenance of public works under the charge of officers of the department within his Circle. He needs to inspect divisional and other offices under him periodically and ensure that his office as well as the offices under him, implement the programmes and policies of the organisation properly and diligently. He shall also be the principal departmental officer to provide support at the Commissionerate level.

2.3.3 The executing unit of the department is the Division, under the charge of a Divisional Officer who shall be usually an Executive Engineer, and shall be responsible for the execution and management of works within the Division. The Divisional Officer is the main interface of the department with the other departments

and general administration and has a very crucial role. The Divisional Officer also functions as the principal departmental officer at the district level, and provides support to the district administration as required under various statutes, regulations and instructions.

2.3.4 The Division is divided into Sub-Divisions which are under the charge of Sub-Divisional Officers who may be Assistant Executive Engineers, Assistant Engineers or Sub-Divisional Engineers. They shall be responsible to the Divisional Officer for the management and execution of works within their Sub-Divisions and assist the Divisional Officer/Executive Engineer.

2.3.5 The Sub-Divisional Engineer also works as principal officer of the Public Works Department at the civil sub-division level. He shall be responsible for providing logistics for work, quality control and pursuing the pace of work with the contractor or other implementing agency to maintain time schedule and quality of the work. He shall thus provide all necessary support to the civil administration in execution of public works and otherwise. He should occasionally apprise Sub Divisional Officer (Civil) [SDO(C)] about the ongoing projects and seek assistance in case of any problems.

2.3.6 The smallest working unit of a Sub-Division in the field is the Section, held by a Junior Engineer who shall be responsible for the work to the Sub-Divisional Engineer. The Engineer-in-Chief shall detail the duties of Junior Engineer and other staff working in the department, especially on technical side.

2.4 CREATION OF ADDITIONAL CIRCLES, DIVISIONS, SUB-DIVISIONS

2.4.1 The work load of the departments is subject to fluctuation, depending on budgetary allocation and receipts from various other heads/sources. Thus, the number of Circles, Divisions, and Sub-Divisions may require to be increased or decreased. To cope with this situation, a Standing Committee under the chairmanship of Administrative Secretary of concerned PWD, Special Secretary Finance Department, Engineer-in-Chief, Director(P&A), Director(F&A) will discuss and finalise proposals for creation / abolition of the number of Circles, Divisions, Sub-Divisions, etc. and get the same sanctioned from the competent authority.

2.4.2 Every PWD shall also carry out manpower review once in five years. The Standing Committee prescribed in para 2.4.1 can also look into this aspect and the case then shall be submitted for appropriate approval.

2.5 INSTITUTIONAL SET-UP

2.5.1 The three PWDs have further created a few institutions to meet their requirements. More such institutions, as may become necessary, may be set up with the permission of the competent authority.

2.5.2 Haryana State Buildings and Roads Academy of Research and Training. It has been set up as a Society registered under the Societies Registration Act, 1860, under the administrative control of the B&R department. The infrastructure of the

existing Research Laboratory of B&R department at Hisar will be utilised and suitably upgraded and strengthened for the purposes of the Academy. The principal objectives of the Academy are:

(a) To provide service to PWDs / Government Undertakings / Boards as independent quality control advisor and formulate procedures and schemes to act as State Quality Monitor;

(b) To work for up-gradation of human resources in all PWDs, and conduct courses for advancement of learning and dissemination of knowledge among engineering personnel of PWDs;

(c) To design, develop and conduct training courses for skilled, semi-skilled, un-skilled workers, engineers, contractors and supervisors and to issue certification;

(d) To serve as a resource centre for applied research;

(e) To organise seminars, conferences, symposia and exhibitions in the fields of construction, management and civil engineering;

(f) To provide service to various Departments, Boards and Corporations of the State Government in the areas of civil engineering, construction technology and management;

(g) To co-ordinate with other similar agencies in public and private sectors;

(h) To perform such other functions and to carry out such other duties as may, from time to time, be assigned to it by the State Government; and

(i) The Academy shall establish and maintain laboratories to carry out quality control tests. It shall also carry out checks/ investigations of any work assigned to it by the Department or the Government.

2.5.3 Haryana Irrigation Research and Management Institute (HIRMI). It has been set up by Irrigation Department under Societies Registration Act 1860 at Kurukshetra, with the aim of conservation and efficient management of water resources through research and training. Functions of the Institute are as under:

(a) To impart training to in-service personnel of Irrigation and Command Area Development Authority (CADA) personnel;

(b) To serve as a centre for training and extension education in water resources to engineers, NGOs, farmers and Water Users Associations (WUAs);

(c) To undertake experiments in various aspects of irrigation management;

(d) To conduct action and adoptive research on water resource management;

(e) To guide farmers/ members of WUAs through participation in irrigation management;

(f) To hold demonstrations of drip, sprinkler and micro-sprinkler for efficient use of water at research farm;

(g) To conduct studies on various plantations for feasibility of inter-cropping,

and

(h) To impart training to officers/officials of the Department on latest software and mathematical models.

2.5.4 Haryana State Roads & Bridges Development Corporation Limited (HSRDC). It was set up in June 1999 with Headquarters at Panchkula, under the Companies Act, 1956. The main objectives of the Corporation are:

(a) Development and maintenance of roads and bridges;

(b) Undertake projects in public-private participation mode and collect toll and service charges on these projects;

(c) Raise funds through bonds, debentures, equity, borrowings, etc;

(d) Commercially exploit Government land in possession of B&R department and apply the proceeds to roads and bridges infrastructure;

(e) Carry out works assigned by B&R department out of the funds raised in the form of loans from financial institutions; and

(f) Carry out works entrusted by other departments/ agencies as deposit works.

2.5.5 Haryana Rural Roads and Infrastructure Development Agency (HaRRIDA). It was set up in January 2008, with Head Office at Panchkula, under the Societies Registration Act, 1860. The main objectives of the Agency are as follows:

(a) To undertake infrastructure projects, especially roads, to benefit the rural areas of Haryana, particularly rural roads approved under Pradhan Mantri Gram Sadak Yojana (PMGSY);

(b) To maintain and manage the rural road network;

(c) To provide service for training manpower for road infrastructure industry and other related fields;

(d) To disseminate information on rural infrastructure; and

(e) To build database for rural infrastructure for Haryana.

2.5.6 Command Area Development Authority (CADA). It was set up as a Society registered under the Societies Registration Act, 1860 in 1974 to promote optimum utilisation of irrigation potential on selected projects. A few objectives of the Command Area Development Authority are as follows:

(a) To undertake construction / lining of field channels;

(b) To conduct adaptive trials on some plots;

(c) To carry out training of farmers;

(d) To organise training of technical staff;

(e) To facilitate and propagate participative irrigation management;

(f) To carry out evaluation studies; and

(g) To carry out monitoring and evaluation of all projects.

2.6 OTHER IMPLEMENTATION MODELS / TIE-UPS

2.6.1 The Government may desire a more innovative and faster implementation of certain projects and some projects may require special skills. Accordingly, new implementation models may become necessary. To this purpose, the departments may enter into Public Private Participation (PPP), and/or may create Special Purpose Vehicle (SPV), either on their own or in partnership. The departments, where necessary, may create Project Implementation Units (PIUs) for implementing certain projects.

2.6.2 PWDs shall put in place structures, arrangements, institutions to take up new responsibilities, keep abreast with advancement of knowledge, technological and management changes, and cope with emerging situations and challenges. The PWDs and other bodies listed in this chapter shall endeavour to have Memorandum of Understanding (MOU) with academic/ research institutions, etc. to create a platform for co-operation and partnership between the parties for defined objectives. Tie-ups with technical training institutes, industry and leading construction/ consultancy firms for training and up-gradation of skills of departmental staff shall be encouraged. Sanction of the Government shall be obtained as required.

2.6.3 In this world of technological change, it is necessary that the PWDs are acquainted with the latest practices in the field. With this intention, the departments may tie up with any foreign and/or domestic institute for support on technical, managerial and financial matters. Such arrangements may be project-specific or function-specific. The departments shall, with the approval of the competent authority, also associate themselves with the national and international bodies of repute such as Indian Roads Congress (IRC), Indian Buildings Congress (IBC), International Association for Bridge and Structural Engineering (IABSE), Indian Water Works Association (IWWA), Central Board of Irrigation and Power (CBIP), Central Water Commission (CWC), Central Pollution Control Board (CPCB), Central Ground Water Board (CGWB), etc. The Departments shall also encourage innovations and new research. Regular seminars/workshops on topics of interest shall be held by each PWD periodically.

Chapter 3
Establishment

3.1 ESTABLISHMENT

3.1.1 Establishment of each PWD normally consists of engineering establishment, subordinate engineering establishment, drawing establishment, office establishment, revenue establishment, accounts and audit establishment, research laboratory establishment, information technology (IT) establishment and others.

3.1.2 Recruitment and conditions of service of each category and rank of staff are regulated by separate Service Rules of each department. However, the HODs shall ensure that all such rules are re-examined at least once in five years to determine as to whether any amendments are warranted in these service rules and accordingly shall take steps to ensure such amendments at the earliest. They shall carry out the first such exercise immediately after the application of this Code to ensure that the service rules are in conformity with the provisions of this Code.

3.2 ESTABLISHMENT MATTERS

3.2.1 Recruitment to various services and posts is regulated by the provisions in Service Rules relevant to the specific establishment. If, in a particular case, the Service Rules are not available, recruitment shall be regulated by the procedure laid down by the appointing authority after taking approval of the State Government. In no case, the system of recruitment should be such that there are allegations of bias or lack of transparency. In the case of recruitment to technical posts, there shall be a written examination (containing at least some subjective part) to judge the technical knowledge of the applicants.

3.2.2 The Administrative Secretary and the Engineer-in-Chief concerned shall try to ensure that the recruitment to engineering and other services is made regularly, taking into account expansion of activities of the department, retirement/ attrition of officers and requirements of deputation and training. Cadre review shall be done every five years.

3.2.3 Promotion is the advancement/ career progression of an employee from one job level to a higher one, often with increase of salary. Sometimes, the job itself may be upgraded. Promotions shall be governed by Service Rules relevant to the cadre concerned; and in their absence, by the procedure laid down by the appointing authority with the approval of the State Government. HODs shall cause to initiate and send the cases of promotion sufficiently in advance so as to facilitate the promotion orders to be issued well before the due date. In all such cases, where the final authority vests with them or the officers subordinate to them, they should ensure timely action.

3.2.4 For writing of Confidential Reports, 'Consolidated Instructions Regarding Confidential Reports' issued by Haryana Government shall be followed. The

reporting officer shall appraise the assessed employee objectively. Wherever possible, well-defined performance factors and criteria against which to assess, should be prescribed and if need be, self-appraisal proformas be developed for the purpose. The proformas for writing Confidential Reports (CR) shall be revised and structured to suit the requirements of the concerned category of staff so as to bring out adequately the performance and relevant traits of the employee under report. These proformas shall be reviewed at least once in five years by the respective appointing authorities. The State Government has already issued instructions that the HODs shall ensure that the performance appraisals are completed in time and any adverse reports are also conveyed to the officer/official reported upon in minimum possible time, not more than prescribed under the relevant rules/instructions.

3.2.5 As regards punishment, including suspension, removal or dismissal, the Haryana Civil Services (Punishment and Appeal) Rules, 1987 along with accompanying instructions relating to these rules shall apply. The appointing authorities shall ensure that the charge sheets and decisions on them are not unnecessarily delayed. The tendency to issue charge sheets against the employees on the verge of their retirement shall be strictly avoided. Efforts should be made so that charge sheet is not issued during the last six months of the retirement of an individual, unless it pertains to the work and conduct of the employee in that period. In case the charge sheet against the employee for his conduct during the period earlier than the last six months of retirement becomes essential, reasons for such an eventuality shall be provided and an inquiry conducted as to who delayed the disciplinary action and responsibility fixed for the said delay. Every attempt shall be made that on the date of retirement of an employee, all his retirement documents and retirement benefits are duly finalised, unless there are cogent, extenuating circumstances to justify the failure to do so. The co-operation of the employee is also essential as he shall submit all papers sufficiently in advance and get the no dues from various sections urgently. He shall also get his provident fund statements tallied beforehand.

3.2.6 The service record of the employee shall, inter alia, also contain finger prints and post card size photograph (preferably digitised on the web) of the employee (the latest photograph to be added every five years). A system shall be introduced to issue a unique Personal Service Identification Number (PSIN) on first appointment, which shall be used in all service matters. To detect and weed out impersonation, especially in Group D employees, the Heads of Offices shall carry out surprise inspections for verification.

3.2.7 As regards other service matters, Punjab Civil Service Rules (as applicable to Haryana) along with instructions of Haryana Government relating to these Rules shall apply.

3.2.8 Every Government employee including that of PWD shall be bound by Government Employees Conduct Rules, 1966 and/or any other rules applicable in this regard. It becomes further necessary in case of PWDs that no employee shall have personal financial interest in a work for which he is responsible to Government. It is

forbidden for a Government servant acting on behalf of the Government to issue a work order to, or sign a contract in favour of, or buy materials for Government work from any person who is related to him or in whose activities he is privately interested. Unless the term 'relation' is specifically defined in the context of a particular matter, it shall mean the first blood relation of the employee or the spouse.

3.2.9 Every member of the department must consider that his pay, for the time being, or as defined in any agreement, is his sole legal remuneration from the service, and that the receipt of any consideration, directly or indirectly, on account of any business or transaction (including arbitration work, etc) is prohibited, unless specifically allowed by the State Government. The employee shall be expected to inform about any financial receipt other than pay to his appointing authority within 15 days of the receipt and/or acceptance of a work where some remuneration or honorarium is committed in future.

3.2.10 Consistent with the policy of the Government, each department shall take measures to improve the quality of human resources in terms of exploiting the employee's potential, career advancement and developing the employee for better performance and occupying senior positions.

3.2.11 Each department shall put in place suitable measures to keep the personnel enthusiastic towards the job, and motivated for higher efficiency and productivity. Suitable incentives, awards or rewards may be instituted as felt necessary for any category of employees.

3.2.12 Postings and transfers shall be done in accordance with Government rules and instructions. As far as possible, the officers shall be rotated to work in different disciplines of the Department. The officers should not be allowed to leave the works at the fag end of their completion and should be required to clear the final bills. The tendency on the part of the employees to approach political authority for transfers and postings should be discouraged, and in the case of any employee found doing so, the fact should be recorded in his personal file.

3.2.13 The complaints received against personnel of the department should be looked into on an immediate basis. All those complaints which come with an affidavit, or contain any verifiable fact or are required otherwise to be examined, should be investigated in minimum possible time. Complaint against an officer shall be normally enquired into only by an officer senior in rank to the officer complained against and not by equal rank or junior officer, though a team of officers even at junior level can be constituted to find out facts.

3.3 RE-EMPLOYMENT

3.3.1 An officer on retirement may be re-employed with a State Government, Central Government or any State or Central Government Undertaking/ Organisation/ Authority in accordance with the applicable Civil Service Rules. As far as possible, the person so employed should not occupy a substantive post as it blocks the promotional avenues of serving employees. In case of private re-employment, the

prescribed cooling period will apply, unless waived off in a particular case.

3.4 TRANSFER OF CHARGE

3.4.1 Subject to any specific instructions in the transfer orders, an officer must not delay making over charge after the arrival of the relieving officer; nor must he, without a medical certificate or the permission of the immediate superior officer, leave the station before the arrival of the successor. In a case where relieving officer has not joined, he shall leave the charge not later than six working days of the receipt of orders, unless there are some specific orders otherwise. In case the officer/official does not leave the charge in this period, he shall be deemed to have been relieved and no pay thereafter can be given to the officer/official on that post.

3.4.2 The relieving officer shall take up the expenditure of cash and stores from and for the first day of the accounting month during which the relieving took place, and submit the next monthly accounts in the same manner as if he has been in charge during the whole month, but the relieved officer remains responsible that proper explanation is forthcoming for transactions during his incumbency.

3.4.3 The relieving officer shall bring to the notice within a reasonable period any deficiency or defect in works or stores taken over from his predecessor, otherwise he will be held responsible for the same. Reasonable period will be two months from the date of taking over of charge of the Sub-Division/ Section. In the case of Divisional Officers, the charge of bank guarantees/any other financial instrument is also crucial and any shortcoming in this regard or any other account must be reported at the earliest, not later than two months of taking over the charge.

3.4.4 A register of incumbents of charges shall be kept in each office. The Divisional Office shall keep the incumbency register of its own office and also of the Sub-Divisions under it. The headquarters shall maintain incumbency registers of the Ministers incharge, Administrative Secretaries, Engineers-in-Chief, Chief Engineers and all Class I posts sanctioned at headquarters.

3.4.5 In the case of Divisional/ Sub-Divisional officers, the relieved officer, besides handing over cash and store balances, shall give the relieving officer a list and memorandum showing the works in hand and the orders remaining to be complied with and of such matters as particularly require his attention, with full explanation of any peculiarity of circumstances, or apprehended difficulties. He shall furnish the relieving officer with a complete statement of all unadjusted claims, with the reasons for not having been adjusted in due course, and a report as to any complication likely to arise owing to their non-adjustment. The handing over notes will contain details of arbitration matters and the stand/ defence of the department. The relieving officer should promptly bring out anything objectionable or irregular that may come officially to his notice. The relieving officer can also seek information from the relieved officer in the above mentioned cases. However, he shall not make any alibi due to non-receipt of such information.

3.5 TEMPORARY/WORK -CHARGED ESTABLISHMENT

3.5.1 The Government views with disfavour the tendency of some departments to

retain, despite clear instructions of the Government, temporary or work-charged employees on their rolls. The departmental officers shall ensure that they do not have any such employee (except as directed by the Court) and if any officer violates Government instructions on the subject, he shall be held to account. In case of outsourced employees, procurement shall be from only those contractors who are so registered (with labour department). It will be prudent to check all issues such as payment of EPF, ESI dues by the contractor in respect of such employees before making any payment to the contractor. In any case, the hiring of employees should be done in a manner as will not create circumstances for their regularisation.

3.5.2 The HODs shall periodically reiterate instructions on the subject so that no person remains employed in violation of the instructions. A periodical report from the Superintending Engineers in the field and from Director (P&A) at the headquarters should be sought on the matter.

3.5.3 Works establishment shall include such establishment as is employed upon the actual execution, operation or maintenance, as distinct from the general supervision, of a specific work or sub-works of a specific project, or upon the subordinate supervision of departmental labour, stores and machinery in connection with such a work or sub-works. When employees borne on the temporary establishment are employed on work of this nature, their pay should, for the time being, be charged direct to the work.

3.5.4 Works establishment does not include non-industrial establishment such as clerks, draftsmen, subordinates or extra establishment of any kind for the Divisional or Sub-Divisional Offices.

3.5.5 Retrenchment means termination by the employer of the service of the workman for any reason whatsoever, but excludes (a) Dismissal inflicted by way of disciplinary action; (b) Voluntary retirement of the workman; (c) Retirement on reaching the age of superannuation; (d) Termination as a result of non-renewal of contract of employment; and (e) Termination due to continued ill-health of the workman. Retrenchment shall follow the principles laid down in the Industrial Disputes Act, 1947.

3.5.6 While employing a workman on a work where retrenchment has taken place, the retrenched employee should be given preference, if he offers himself, in accordance with the principles laid down in the Industrial Disputes Act, 1947.

3.6 EMPLOYMENT ON MUSTER ROLL

3.6.1 Employment of labour on muster roll has been one of the ways of departmental execution of work. In case of ban on muster roll, the preferred mode of execution of work should generally be through contract. But, in case of emergencies like cuts and breaches on canals/drains, floods, severe damages to works posing danger to public safety, channel clearance, etc. labour on muster roll shall be employed for that limited and defined purpose. Works of emergency nature and not susceptible to measurements shall also be executed on muster roll basis.

3.6.2 Labour on muster roll, in any case, shall not be engaged for more than two

months in a given situation and efforts shall be made to procure it through a labour contractor, who supplies labour on requisition by the department and receives periodic payments on the basis of labour supplied and rates as agreed upon.

3.7 OUTSOURCING

3.7.1 Services/activities may be outsourced as and when required, in part or completely, by the departments, in accordance with the policy on the subject laid down by the State Government. These services may typically include cleaning of premises, horticulture work, housekeeping services, maintenance of buildings, operation and maintenance of waterworks, storm water network, sewerage network, transport services, information technology services provided the software application required to be developed or data entry services are clearly defined, secretarial services, courier services, highly technical and professional services, and billing services, etc. for a period of one year or for the period for which services are required. The departments will, if required, move for additional provisions in their budget for outsourcing services/ activities. Wherever contract for services is awarded on the basis of transparent bidding process, no approval of Finance Department will be required. Department will fix the eligibility criteria for the above services/ activities.

3.7.2 In case of outsourced services, the services of only those contractors shall be used who are so registered with labour department and whose antecedents are proper, as onus is on the primary principal employer to ensure payment of employees' provident fund, employees' insurance, etc.

Chapter 4
Interface with General Administration

4.1 GENERAL

4.1.1 Public Works Departments have an important interface with district administration inasmuch as they, in the performance of their programmes, need co-operation and assistance of the district administration and the latter requires inputs and advice of these departments for multifarious functions. Further, the district administration sometimes gets funds directly from various sources for execution of certain public works, to which end, it may require the services of the PWDs.

4.1.2 While the officers/officials of PWDs, in the discharge of their duties at district or sub division level, are assigned independent functions by their respective departments, sometimes the district administration may require their expertise as members of Committees set up by it for certain matters. In such cases, it will be proper that before involving officers/officials of PWDs working at district level, the respective Engineers-in-Chief are consulted and their approval is taken. It should, however, be understood that, in the performance of such duties, the local PWD officers/officials are prohibited from the diversion of resources of PWDs. The district administration shall not usually involve an officer junior to an Executive Engineer without the express permission of the Engineer-in-Chief. It will be better if the Engineers-in-Chief issue suitable instructions in this regard.

4.1.3 No officer of a Public Works Department should be required to supervise a work not connected with his official duties, unless provided in a Statue such as work relating to elections. However, if the need of such supervision arises, it may be done with the permission of Engineer-in-Chief and on payment of 2% supervision charges (to be deposited in treasury) or such limit as may be decided by the Government (it can be even waived off in certain cases by the State Government). In case of emergencies, prior permission will not be necessary, but it shall nevertheless be obtained post-facto.

4.1.4 In general, when the requisition of a work from the district administration falls outside the normal budget allocations or work programme of PWDs, it will be the duty of the Divisional Officer to prepare an estimate and submit it for counter-signature of the Deputy Commissioner, who will arrange approval of the competent authority (to be identified by him), and secure requisite funds. If the urgency of the situation does not permit observance of formal procedure, the Divisional Officer shall carry out the work as per written instructions of the Deputy Commissioner and charge the expenditure to suspense head. He will keep the Superintending Engineer and Audit informed of the liability being undertaken by him. As soon as possible, the Divisional Officer will prepare the required estimate and apply to the Deputy Commissioner for securing sanction and deposit of funds. On receipt of funds, the suspense head will be cleared.

4.1.5 Normally, machinery of a Public Works Department will not be requisitioned

by the district administration as it is likely to affect adversely the operations of the department. But if, on account of overriding or statutory considerations, requisition does become necessary, it should be for the minimum possible period and done on payment basis.

4.2 VIP VISITS AND FUNCTIONS

4.2.1 The PWDs may, in connection with the visit of certain official dignitaries, be called upon by the district administration to clear the ground, lay a path, construct the stage, erect barricading and put up temporary washrooms, etc. In all such cases, the PWD officer shall, before undertaking the work, get a written request from the district administration (either the Deputy Commissioner or the City Magistrate). As soon as possible, the Executive Engineer concerned shall prepare an estimate for the work involved and put it up to the district administration for arranging sanction of the estimate and providing funds. If, on account of paucity of time, these formalities cannot be completed, the work may be carried out in anticipation, and intimation to this effect shall be sent to the district administration with copies to the Superintending Engineer and Audit. Pending receipt of funds, expenditure may be booked to suspense head, which shall be cleared when funds are received, preferably within two months.

4.2.2 If the VIP visit is regarding a function of a private party or organisation, the district administration shall normally ask the private party or the organisation to make advance payment. The PWD, in such cases, will carry out the work as deposit work.

4.2.3 With regard to arrangements to be made in connection with State functions such as Independence Day (15th August), Republic Day (26th January), etc. the payment of any expenditure is to be made by the district administration. As soon as possible, the Executive Engineer concerned shall prepare an estimate for the work involved and put it up to the district administration for arranging sanction and funds. Pending completion of these formalities, the work may be carried out, and expenditure booked to suspense head, which shall be cleared on receipt of funds, preferably within two months.

4.2.4 The HODs shall cause to make a list of all unsettled expenses incurred while performing activities as provided in Chapter 4 during each calendar year (1st January to 31st December) and bring this to the notice of the State Government. The Administrative Secretary shall either resolve the issues at the departmental level or may request the Chief Secretary to hold a meeting to sort out the issues and to amend instructions, if any, in this regard.

4.3 INSPECTIONS

4.3.1 The officers of PWDs at district level may often be called upon by the district administration to carry out various types of inspections, such as the following:

(a) Inspection of Jail buildings;
(b) Inspection of Treasury buildings;
(c) Inspection of works of a private builder;
(d) Inspection of quality of water supplied by a private person;

(e) Inspection of site regarding its suitability for helicopter landing;

(f) Inspection of access route to a polling booth for election purposes; and

(g) Inspection in connection with issue of No-Objection Certificates.

4.3.2 Inspection of Jail buildings and Treasury buildings, etc. shall be carried out in accordance with the procedure laid down in the Jail Manual and the Treasury Manual, respectively. Site for helicopter landing will require clearance of air authorities. Engineers-in-Chief shall cause to list down all types of such inspections which the field or other officers have been required to undertake and issue guidelines as to the methodology of conducting these inspections and the reporting format. Inspection fee, if any, shall also be prescribed, depending on the inputs involved. The types of such inspections, their frequency and the fee chargeable shall also be periodically deliberated upon in a meeting held at the level of the Administrative Secretary.

4.4 NO OBJECTION CERTIFICATES (NOCs)

4.4.1 District administration may be required to issue various licenses, permissions, clearances, etc. under different Acts or statutory requirements. In fulfillment of these functions, PWDs may be called upon to issue No Objection Certificates relating to their respective functions. The competent officer of PWD will issue the requisite NOC after satisfying himself fully about the satisfactory compliance of conditions prescribed under the Act, Statute or Guidelines of any Code or those issued by the Engineer-in-Chief concerned.

4.4.2 One important inspection/no-objection certificate is regarding cinemas and new upcoming multiplexes. The HODs shall issue detailed instructions in this regard from time to time, especially keeping in view the provisions contained in the relevant Acts/Rules and the case law developed over the years. Further, it would be desirable to grade the buildings on the basis of their value, and in case of high value buildings, the responsibility of no-objection needs to be assumed at senior level.

4.4.3 Another important inspection/no-objection is regarding petrol pumps. Location and layouts of petrol pumps shall be checked in the light of Indian Roads Congress publication titled IRC: 12 'Guidelines for Access, Location and Lay-out of Roadside Fuel Stations and Service Stations'. Detailed methodology and instructions in this regard shall be laid down and shall form part of the available material on website.

4.4.4 The district administration may sometimes require evaluation of any structure for purposes of acquisition and/or rent. The instructions regarding such an evaluation exist and evaluation needs to be done on that basis. These instructions shall also be looked into periodically, at least once in two years, in order that evaluation of structures is done realistically.

4.5 MISCELLANEOUS WORKS

4.5.1 PWDs may be called upon by the district administration to execute various works which do not fall within the normal sphere of their duties. Typically, these works may include the following:

(a) Erection of platform, fencing and safety barricading in connection with

election work;

(b) Removal of debris in case of collapse of a building or structure;

(c) Preparing helipad; and

(d) Rescue of a person or animal who has fallen in a well, pond, canal, etc.

4.5.2 The PWD concerned will carry out these works but raise demand for re-imbursement of the expenditure incurred. It will be for the district administration to recover the funds from the organization/authority concerned or the defaulter responsible for the mishap.

4.6 COURT ORDERS

4.6.1 In case court orders are received by any officer of the PWD, either directly or through the district administration, to carry out any inspection, the same will be duly carried out. If fee for such an inspection has not already been prescribed and deposited, the same will be requested for through an appropriate letter and invoice.

4.7 CO-OPERATION BY DISTRICT ADMINISTRATION

4.7.1 In the execution and maintenance of various works, the co-operation of district administration becomes inevitable. This may be by way of help in removal of encroachments, maintenance of law and order, traffic regulation, obtaining clearances, inter-departmental co-ordination, etc. Deputy Commissioner will ensure that this co-operation is readily provided by his office and all other offices in the district.

4.7.2 Though the PWDs are required to work as an integral part of the district administration, but at the same time the district authorities shall also understand the limitations of the PWD officers in providing certain types of assistance. For example, it is difficult to close a running canal as it not only carries water for irrigation, but also for drinking purposes and in many cases, the water may be for the residents of the other States under the inter-state agreements.

4.8 MAINTENANCE OF HOUSES IN THE DISTRICT

4.8.1 Guidelines given in Chapter 27 shall generally be followed. Regarding specifications and space norms, the instructions laid down by the Government shall be observed.

4.8.2 For any issue of maintenance/change contemplated in the houses other than those of judicial officers, the decision shall be taken by a committee comprising the Deputy Commissioner, Superintending Engineer and Executive Engineer concerned. For judicial houses, the decision will be taken by a committee comprising the District & Sessions Judge, Superintending Engineer and Executive Engineer concerned. In case of any decision/expenditure pertaining to judicial houses/offices, the details shall be invariably sent for information of the High Court (Building Committee) with a copy to the Administrative Secretary and the HOD. In case of other houses, the HOD and the Administrative Secretary shall be informed. The expenditure incurred on the renovation of the houses of the Deputy Commissioner, District & Sessions Judge and Superintendent of Police shall also be reported by the HOD to the Chief Secretary through the Administrative Secretary.

Chapter 5

Office Procedure & Miscellaneous

5.1 OFFICE MANAGEMENT AND PROCEDURE

5.1.1 Detailed instructions have been laid down by the State Government in regard to the Office Management and Procedure. However, for the purpose of facilitation, a few important instructions are captured in the subsequent paras.

5.1.2 Punctuality. Normally, the hours of attendance are those which are fixed by the Haryana Government from time to time for its departments. Punctuality must be strictly observed. No member of the staff is permitted to leave office, within office hours, except with the specific permission of the immediate controlling officer or officer-in-charge. Lack of punctuality by the employees in an office will also be a reflection on the lack of supervision by the Head of Office. The touring officers should also inspect the field offices with a view to checking on punctuality.

5.1.3 Unauthorised absence. Except in cases of emergency such as sudden illness, permission to leave must be obtained before it is availed of. Absence without leave will render the employee liable for disciplinary action unless he furnishes a satisfactory explanation for such absence. In case of consistent default by an employee on this account, the officer incharge should report the matter to the competent authority for initiating disciplinary action against the employee.

5.1.4 Oral Instructions by Higher Officers. An officer shall, in the performance of his official duties, or in the exercise of powers conferred on him, act in his best judgement except when he is acting under instructions from an officer superior to him. In the latter case, he shall get the directions in writing wherever practicable, and where it is not possible to do so, he shall seek/ obtain written confirmation of the directions as soon thereafter as possible. In a case where a junior officer has reason to believe that orders of his senior/s are not as per rules, he should report the matter demi-officially to the next higher authority and, in important cases, to the Head of Department, on immediate basis.

5.1.5 Oral Orders on behalf of or from Minister. If an officer receives oral instructions from the Minister or from the personal staff, these should be reduced in writing and brought to the notice of his superiors with a copy to the personal staff of the Minister. If the orders are not in accordance with the norms, rules, regulations or procedures, he should seek further clear orders from his seniors, as the case may be, about the line of action to be taken, stating clearly that the instructions, as per his understanding, are not in accordance with the norms, rules, regulations or procedures.

5.1.6 Protocol. No officer should correspond direct with an authority superior to the officer under whom he is immediately serving, or with the State Government or the Central Government as a matter of routine, except in case of extreme emergency,

in which case he must send copies of his communications to his immediate superior. However, in case of charge sheets or explanations or any correspondence received from a senior officer, they should directly reply to the office seeking information. Similarly, any statement or information should not be delayed taking this pretext.

5.1.7 Officers are prohibited from approaching Members of Parliament/ Legislators or Ministers, either personally or through the medium of a friend or relation, for seeking personal or any other favour.

5.1.8 Demi-official Correspondence. The use of this mode should be made sparingly, and only in cases of urgency or secrecy, or to supplement and explain a matter which has been or is about to be, referred officially. No demi-official correspondence should be quoted or referred to in official communications unless such correspondence has been brought on record. Demi-official letter received from a senior officer or office must be attended to in minimum possible time and the reply to the same should be sent within five working days positively, unless specifically asked earlier. If somehow, complete reply is not possible, interim reply should be sent, followed by complete reply, which should not be delayed beyond 15 days.

5.1.9 Secret and Confidential Correspondence. The rules and the procedure prescribed for dealing with secret and confidential correspondence (maps and books should be treated in the same way) by the State Government in general shall also be applicable to Public Works Departments. In view of the Right to Information Act, 2005, only a few papers can be termed as secret or confidential. In Public Works Departments, the information, as far as possible, should be kept in public domain and preferably on website, except inter-state matters such as in Irrigation department.

5.1.10 Unauthorised Communication of Official Information. Unless authorised by general or specific orders, no official shall communicate to another official or a non-official, any information or document, including electronic document which has come into his possession in the course of his official duties.

5.1.11 Communication of Information to the Press. Official information to the press and other news media, i.e., radio and television, shall normally be communicated through the Information & Public Relations Department of the Government. However, Executive Engineer and Superintending Engineer in the field or Chief Engineer and Engineer-in-Chief at headquarters, if approached by a representative of the press, may, without making comments or critical references, give information about the programmes of the department, and issue press notes to correct any wrong information published in the media.

5.1.12 Public Grievances appearing in Newspapers. Many major newspapers run grievances columns in which they publish grievances received from the public on matters arising out of their interaction with Government agencies. The grievances column should be regularly examined by each PWD for picking up all cases which relate to it. Quick action should be taken by the officer concerned for redressing these grievances on a time-bound basis. The complainant should be informed of the action being taken by way of redressal, where it can be given in a month's time. But if

redressal is likely to take longer, a suitable interim reply should be sent to the complainant. Where appropriate, the newspaper editor may also be suitably informed. The other news items of relevance or concern appearing in the newspapers and other media along with action taken or proposed to be taken should be reported by the Divisional Officer/ Superintending Engineer to the Engineer-in-Chief/ Chief Engineer.

5.1.13 Communications received from VIPs. A special watch on communications received from Members of Parliament (MPs), Members of Legislative Assembly (MLAs) and other VIPs should be kept for their speedy disposal. For this purpose, a proper record/ register will be maintained by Superintendent/ Deputy Superintendent in- charge of the concerned section. The progress shall be reported on file to the branch officer in the first week of every month. The Head of Office must inspect such register and see the pendency in this regard at least once in a fortnight.

5.2 COURT CASES

5.2.1 Avoidance of litigation. Litigation is cumbersome and a lengthy process. It also takes away precious time. Thus, efforts shall be made to avoid litigation as far as possible. It is important that the authority concerned decides petitions/representations referred to it, speedily and fairly (with detailed reasoned orders as far as possible), so that the applicant is not un-necessarily required to go to the Court to seek relief.

5.2.2 Monitoring Court Cases and Implementation of Court Directions/ Orders. Every Head of office and branch incharge shall maintain a proper record/ register to watch the status of (a) cases listed before a Court for hearing; (b) legal notices/ notice of demand for justice; (c) orders for implementation; and (d) contempt notices. This data shall also be closely monitored by the Divisional Officers and Superintending Engineers in the field. Efforts shall be made to computerise the monitoring system.

5.2.3 Every Head of office and the branch in-charge will carry out a review of all legal cases (including legal notices) on the first and fifteenth day of every month. They should ensure that the files regarding legal cases are maintained properly and that the cases are being attended to by the staff in a diligent manner. The Director (P&A) shall take stock of the situation at headquarters level at least once in a fortnight.

5.2.4 Many a time the senior officers are made part of contempt petitions even when the matter may never have come to their attention and further, even the draft reply to the contempt notice is put up to them at the eleventh hour. In all such cases, time is of essence. At no level, should the file be kept for more than three working days. The requisite action and the case file should be pursued with utmost seriousness. Every officer or official concerned, whether at Head Office or in the field, should ensure that action, as directed or as warranted, is taken well in time without there being any occasion of delay. The senior officers should be apprised of the action taken on e-mail almost on daily basis.

5.2.5 In all court cases, the officer concerned has to ensure that the interest of the Department is properly safeguarded. He shall (i) ensure that all the relevant papers are kept ready (ii) maintain a close liaison with the advocates and (iii) keep a watch on the progress of the cases.

5.2.6 All affidavits before courts, on behalf of the Government, should be issued only after prior approval of the Administrative Secretary. If a separate affidavit is to be filed by the Government, the draft of affidavit to be filed by the State Government should be prepared and sent along with the copy of affidavit filed by the department. The copies of the same should be invariably sent by e-mail so that any corrections can be done easily. Such cases shall come to the Government much in advance so that there is sufficient time to examine the matter and to effect changes, if warranted. The instructions issued by the Advocate General shall be meticulously followed.

5.2.7 Reference to the Legal Remembrancer (LR) is required to be made through the Administrative Secretary. In such cases, to avoid delay, the approval can be taken on single file basis. In any case, instructions issued by LR shall be complied with.

5.2.8 The conduct of all civil suits affecting Government or its officers in their official capacity will be in accordance with the rules contained in the Punjab Law Department Manual as applicable to Haryana.

5.3 MONITORING OF GOVERNMENT ASSURANCES

5.3.1 Each Section shall keep a record of assurances given by the Chief Minister or the Minister in-charge to the House, whether in reply to questions or in the course of discussions, resolutions or other motions. The progress on the state of implementation shall be watched by the branch in-charge every month and it shall be reported to the Government.

5.3.2 Assurances and Public Announcements of Chief Minister. A record to watch the status of implementation of public assurances and announcements made by the Chief Minister in relation to the activities of every department shall be maintained in Headquarters Office, Circle Office and Divisional Office. Concerned branch officer in the Headquarters Office, and Superintending Engineer/ Divisional Officer in the field shall personally monitor the action taken. Reasons for delay shall be immediately brought to the notice of the Government through the Engineer-in-Chief/ Chief Engineer concerned. Director (P&A) shall be responsible in the headquarters to monitor the progress in this regard and shall get the necessary changes effected on continuous basis in the computerised management system developed by National Informatics Centre (NIC) in this regard.

5.3.3 Similarly, a record shall be kept of the assurances made by the Minister in-charge and the orders passed by him. A monthly review of the same is also desirable and a report should be sent to the Government.

5.4 MAINTAINING HEADQUARTERS

5.4.1 Superintending Engineers, Executive Engineers, Sub-Divisional Engineers

and Junior Engineers and other staff should, unless on leave or duty entitling them to leave the station of their posting, should maintain their headquarters. In case they have to leave the station, they should do so with the permission of their immediate superior, and leave behind their contact point. Further, such request must be reduced in writing. Any Superintending Engineer/Executive Engineer visiting headquarters or Panchkula, must report his visit to the Engineer-in-Chief and Administrative Secretary (preferably on SMS or e-mail) so that if considered necessary, opportunity may be taken to discuss matters of importance or urgency with them.

5.4.2 A list of the addresses (and contact numbers, if any) of all officers and staff employed in a department will be maintained up-to-date in the administration section of the headquarters and in the field, in the offices of Superintending Engineer and Executive Engineer. The members of the staff shall intimate changes in their residential addresses as soon as they take place.

5.5 MAINTENANCE OF DISCIPLINE

5.5.1 While the Head of office is responsible for the general discipline of the office, every section/ branch in-charge is responsible for the maintenance of order in his section/ branch, and should prevent idle talking, loitering, reading of newspapers, doing homework, etc. in office hours by his staff.

5.5.2 As far as possible, the offices especially the Headquarters office should register the visitors visiting the offices. Any person calling on business or entitled by position to make enquiry should do so from the branch officer. No member of the staff should, under any circumstances, give any information on any subject to any outsider.

5.5.3 Surprise visits by the controlling officers and other senior officers to the various sections/ branches of the office are mandatory in order to ensure that the attendance is regular, there are no undue arrears of work, and that discipline, efficiency, and tidiness are generally maintained. The branch incharge shall also be responsible for any absentee and lack of above functions, in case he has not reported the deficiency regarding his subordinates to branch officers. Every officer is supposed to conduct a periodic detailed inspection of the branches or sections or offices under his charge and send such inspection notes to the seniors.

5.6 MEETINGS

5.6.1 Meetings should normally be held when they are really needed. As far as possible, agenda along with any supporting notes/ documents should be prepared and circulated well in advance, to enable the participants to come prepared. The convenience and availability of an outside member, whose participation is considered important, shall be ascertained before fixing the date of the meeting. After the meeting, minutes should generally be drawn promptly and circulated amongst those attending and other interested parties. Action taken on the decisions should be monitored and reviewed till logical conclusion. When ad hoc meetings are called and minutes are not drawn, a signed note should be prepared to record the important decisions and placed on file.

5.7 RIGHT TO INFORMATION

5.7.1 Under the Right to Information Act, 2005, the citizens have been vested with the right to information under the control of public authorities. The information, for the purpose of this law, means any material in any form, including records, documents, memos, e-mails, opinions, press releases, circulars, orders, log books, contracts, reports, papers, samples, models, data material held in any form.

5.7.2 To facilitate access to information, each PWD shall maintain all its records duly catalogued and indexed, computerised wherever appropriate, and connected through a network. Further, it should publish information relating to its organization, functions and duties of its officers, facilities available for obtaining information, and designate Public Information Officers (PIOs) (and Assistant Public Information Officers, if required).

5.7.3 Applications which are accompanied by the prescribed fee and are in proper shape shall be attended to expeditiously as per the Act and disposed of in time. Each unit of the Department shall provide complete and prompt assistance to the designated PIO.

5.8 LAW SUITS AGAINST OFFICERS

5.8.1 In cases where officers are sued by name in matters pertaining to their official work, the defence shall be on behalf of the Government. If notice is received by an officer/official subsequent to his transfer from a particular office, the incumbent officer in-charge of that office should defend the case fully and he shall be responsible for the same. The incumbent officer shall defend the suit by pleading that the Government should be made the defendant. However, if the case matter relates to the conduct of an employee which may not be termed official, the onus of defence will lie with the employee concerned.

5.8.2 But when the suit is for damages in respect of an alleged wrongful act of an officer/official, the party aggrieved may, as a general rule, bring the suit against such an officer/official, and it would be no defence for the officer/official sued to contend that the Government ought to be the defendant. The plaintiff may legally contend that he has a right to look to the party by whose conduct he has been aggrieved, whether he could or could not have sued that party's principal. The distinction is between suits on contracts and suits for wrongs. In case of the latter kind, it will remain with the Government to determine whether it would be just and proper that the defence should be carried on at Government expense. The course should ordinarily be adopted in all such cases where there is no reasonable doubt of the innocence of the accused. When, on the other hand, there is prima facie evidence that he had acted improperly, he should be left to take up his own defence, and the question of Government contributing towards the cost of defence shall be subsequently considered on merit. Whatever be the nature of the case, failure to defend the suit or to reply to the plaint in person or by counsel, as the case may require, will render the officer or subordinate personally responsible.

5.8.3 Principles as to the conditions in which Government will pay the cost of

defence of its servants in criminal proceedings, are laid down in the relevant chapter of the Punjab Law Department Manual, as applicable to Haryana.

5.9 PRODUCTION OF OFFICIAL DOCUMENTS IN LAW COURTS

5.9.1 The law relating to production of unpublished official records as evidence in courts is contained in sections 123, 124 and 162 of the Indian Evidence Act, 1872. The guidelines have also been issued by the State Government in this regard. The HODs in PWDs shall reiterate these instructions periodically and shall ensure that these are adhered to by the field as well as headquarters staff.

5.10 STATIONERY

5.10.1 Stationery is supplied to public offices by the Controller of Printing & Stationery, Haryana. Officers shall normally procure their requirements from this office, but special stationery may be obtained from other sources as per the procedure laid down by the Government; otherwise, under the orders of the Head of office not below the rank of Executive Engineer.

5.10.2 The custody of stationery should be entrusted with a responsible person who shall maintain a proper record of the receipts, issues and balances. Stock should be verified annually and the certificate of verification recorded in the register of stationery under the signatures of the said official.

5.11 FORMS

5.11.1 Standard forms shall not be altered without the previous sanction of the Government. Alterations in non-standard or provisionally standardised forms may be made with the approval of Engineer-in-Chief. In the case of account forms, alteration shall be done only with the approval of the Accountant General (Accounts) Haryana, who shall, however, obtain concurrence of the Haryana Government in the Finance Department to any important changes or modification.

5.11.2 A review of the existing forms shall be carried out to make recommendations regarding (i) abolition of forms which have become obsolete or (ii) their modification to suit the present requirements. Engineer-in-Chief shall constitute a committee for preliminary spade work. Thereafter, the Administrative Secretary concerned shall constitute a Committee (including representatives of Accountant General (Accounts) Haryana and Finance Department) for the purpose of periodic revision or issue of guidelines in this regard.

5.11.3 While designing or re-designing the forms, the following should be kept in view:

(a) The source from which the information is to be collected and to determine its periodicity;

(b) Methods and equipment which will be used for recording, processing and storing the information;

(c) Whether there is a possibility of developing multi-purpose forms; and

(d) Whether there is un-necessary duplication and whether the forms have

become obsolete.

5.11.4 As regards forms of deeds and other documents which are not already standard, the proposal shall be sent by the HOD to the Government.

5.12 REPORTS AND RETURNS

5.12.1 Appropriate reports and returns (other than those prescribed by the Government) in administrative, financial and works matters may be instituted under the orders of the Head of Department, for the purpose of cataloguing information, managing, analysing, evaluating, reviewing, monitoring and dispossessing the individual concerned of the possibility of modifying or falsifying, with ulterior motive, information previously submitted by him. Periodic examination (at least once in 5 years) of the necessity of each return and amendment thereof shall be carried out.

5.13 MANAGEMENT OF RECORDS

5.13.1 For effective record management, the following principles should be followed:

(a) Records shall be kept systematically arranged for easy location;

(b) Records shall neither be prematurely destroyed nor retained for a period longer than necessary;

(c) Records shall be reviewed periodically and weeded out in accordance with Government instructions.

(d) Wherever possible, measures shall be taken to computerise the records.

5.13.2 Destruction of Official Records. The destruction of records shall be subject to any general or specific rule issued by the Government. For destruction of records, which pertain to the accounts in Divisional Offices of the department, the proposal shall be forwarded by the Superintending Engineer to the Audit Officer for his concurrence before the destruction of records. Every PWD shall constitute a departmental committee for making recommendations in regard to records which are peculiar to it. To ensure uniformity of common categories of records among the public works departments, the Direction Committee (Chapter 10) shall discuss the issue and decide. Till such time it is done and the recommendations are finalised/ approved by the Government, the Departments shall issue instructions to follow the existing provisions, provided as Appendix III in the old Code.

5.13.3 The PWDs have some valuable old records from a historical point of view. There may be some visitor books containing comments of important dignatories. There may be estimates pertaining to some works which have become quite important over the years. All such documents shall be identified and transferred to the archives as per instructions issued by the Archives Department.

5.13.4 The following records shall not be destroyed for the period relevant to each type of record:

(a) Records connected with expenditure which is within the statute of limitation;

(b) Records connected with expenditure on works not completed although beyond the period of limitation;

(c) Records connected with claims to service and personal matters concerning employees in service;

(d) Records of experiments and observations;

(e) Records pertaining to matters in dispute;

(f) Calculations relating to particular designs; and

(g) Revenue records pertaining to various assets.

5.14 USE OF INFORMATION TECHNOLOGY

5.14.1 Each PWD shall endeavour to adopt an electronic support system for easy storage, processing and retrieval of information at any point of time, thereby increasing its overall efficiency and productivity. As far as possible, designs and detailed project reports shall also be kept in digital form. The system will operate with the help of computer hardware installed with all sections and personal staff, in addition to the officers, and supported by matching software, and the availability of local area network. All personnel required to operate these computers shall be trained in data entry, keeping daily back-ups, generating periodic reports and taking hard copies.

5.14.2 For project related requirements, procurement of computer-related ware will be a valid charge on the project.

5.14.3 Each PWD shall develop its website and host all information as desired by the Government or the Right to Information Act, 2005. The strategy shall be to provide comprehensive information about the department and its activities so as to obviate or minimise the necessity of the public having to approach the department officials to get the information. At the minimum, the website shall have details about organisational set-up, major policies and programmes, departmental plans/ projects and their status/ progress.

5.14.4 Each PWD shall place the information regarding listing of tenders and tender notices on the website. They shall increasingly resort to inviting e-tenders, and their evaluation, too, in electronic mode. Management Information System (MIS) shall be introduced for transparency and close monitoring. Like-wise, various public assets should be classified and put in the electronic form.

5.14.5 The website shall be kept up-dated regularly, preferably on dynamic basis. For updating the website, clear-cut responsibilities shall be assigned. For up-loading of documents like tender notices, clear and proper authorisation shall be made.

5.15 INTER-DEPARTMENTAL MATTERS

5.15.1 Inter-departmental matters shall be resolved through mutual discussions/ correspondence, and not litigation. In the first attempt, the Engineers-in-Chief concerned shall attempt to resolve the issue at their level, and in case of failure, the Administrative Secretaries concerned shall hold discussions to sort out the matter. If

still there is no mutually acceptable solution, the matter shall be put up before the Chief Secretary, who will arrange to convene a meeting and take a final decision. Approval of competent authority shall be obtained wherever required. For such matters, the term 'department' also includes State Undertakings and other bodies owned by the State.

Chapter 6
Duties and Responsibilities of Officers

6.1 GENERAL

6.1.1 The charter of duties laid down here shall be understood in the context that in the case of officers while some duties may have a tangible character, there are other duties such as providing leadership, possessing resourcefulness, managing conflict, etc. which cannot be adequately defined or measured, but which nevertheless are expected of them. Further, the officers are not only required to perform their own duties well, but are also expected to ensure that personnel employed in all offices directly or indirectly under their charge function as per rules and regulations and that the officers subordinate to them exhibit initiative qualities and function diligently and in a transparent manner. They should periodically carry out detailed inspection of subordinate offices and send inspection notes to the officer concerned with copy to the next senior officer for information and for taking corrective measures.

6.2 ENGINEER-IN-CHIEF

6.2.1 Engineer-in-Chief is responsible to the Government for the efficient administration and general professional control of public works of the department. He is the professional adviser to the Government in all matters relating to his charge or on which his advice may be desired. He is required to bring clearly and faithfully before the Government all subjects reserved for its decision. He will exercise full technical and supervisory control on the Chief Engineers and all other officers working in the department, unless specifically provided otherwise.

6.2.2 The PWDs shall endeavour that the Engineer-in-Chief, as far as possible, shall not involve himself in direct administration of contracts (except as specially provided in directions issued by the Government) so as to provide one appellate channel within the department itself. However, all the functions of the department shall be coordinated by the Engineer-in-Chief and he will get an annual plan of action prepared for the department by February every year listing the targets of every officer/unit including that at the level of Chief Engineer. He shall, however, take steps to ensure uniformity in decision making by the different officers and issue necessary directions from time to time in this regard.

6.2.3 Engineer-in-Chief is also responsible for long range planning, co-ordination, capacity building, and introduction of emerging construction technology and management practices. As regards personnel matters, he shall use personnel in the best possible manner and where the orders are issued by the Government, he shall send his opinion in the matter.

6.2.4 Engineer-in-Chief shall ensure the framing of Information Technology (IT) related applications appropriate to the needs of the department, including but not

limited to the following:

(a) Computer-aided-Design (CAD) in the matter of design, drafting, analysis of rates and estimation, etc;

(b) e-monitoring of physical and financial progress of works;

(c) Financial and accounts management system;

(d) Geographical Information System (GIS) in regard to the network of roads, buildings, bridges, canals, drains, sewers and waterlines, etc. as the case may be;

(e) Building database as a tool to planning, design and analysis;

(f) Personnel administration;

(g) Maintaining and regular up-dating of website;

(h) e-tendering (on-line tendering);

(i) Speedy trial and disposal of inquiry cases;

(j) Overall quality management of works; and

(k) Asset management.

6.2.5 Engineer-in-Chief shall exercise concurrent control with the Audit Officer viz. Accountant General, Haryana, over the duties of the officers of the department in connection with the maintenance of accounts and give all legitimate support to the Audit Officer in enforcing strict attention to the regulations concerning the disbursement of money, the custody of stores and the submission of accounts. He has no authority over the Audit Officer in regard to audit matters, but has a claim on him for assistance and advice in matters relating to accounts and finance. The Engineer-in-Chief shall arrange that the Audit Officer is kept fully cognizant of all proceedings and proposals to enable the latter to fulfill his functions.

6.2.6 Engineer-in-Chief shall prepare annually the portion of the budget estimates relating to the establishment (including training) and works of his department. He shall ensure that the budget allotments of the year are fully expended in so far as is consistent with general economy, and heavy expenditure in the last months of the financial year, for the sole purpose of avoiding lapse, is prevented. He shall also ensure that money not likely to be needed during the year is promptly surrendered, so as to allow its appropriation for other purposes by the proper authority. In case a commitment is made by the Government beyond the budget, Engineer-in-Chief shall seek additional funds by re-appropriation, supplementary grant or excess grant, as considered appropriate or advised by Finance Department.

6.2.7 As soon as possible after the close of each year, Engineer-in-Chief will arrange the preparation of Annual Administration Report of his department, giving a brief and clear account of its operations. Significant milestones achieved, initiatives taken and lessons learnt should also be brought out. It must contain all aspects as per instructions issued from time to time. The Report shall be sent to the Government by June end.

6.2.8 It shall be ensured that property returns are duly filed by the staff, annual confidential reports (ACRs) are complete and up-to-date, and that pension cases do not remain pending inordinately.

6.2.9 Engineer-in-Chief shall, in consultation with the Chief Engineers, delegate power to the Superintending Engineers and Executive Engineers posted in the Headquarters office to perform/ dispose, at their own level, such functions/ cases where no orders of the next higher authority are required. These delegations should be periodically looked into.

6.2.10 Engineer-in-Chief shall have guidelines issued regarding functions to be performed at field level. Guidelines for keeping record of various activities performed by the department at different levels to ensure availability of information which may be sought under Right to Information Act, 2005 shall also be clearly spelt out.

6.2.11 The major function of the department is to get the public works completed in time, without cost over-run and with appropriate quality standards. Engineer-in-Chief shall monitor the same closely and take all remedial steps. He shall identify the crucial / important projects for close monitoring at his personal level. The Administrative Secretary may also list down such projects for effective monitoring and implementation and ask for periodic reports on the same.

6.2.12 Engineer-in-Chief shall prepare every month a list of unresolved issues and bring the same to the notice of the Administrative Secretary. He shall try to resolve issues himself or request the Secretary to have a meeting for resolving them. The issues shall not be kept pending unnecessarily.

6.2.13 In the Irrigation department, the Engineer-in-Chief is the overall custodian of all water resources. He is supposed to have close liaison with the neighbouring States and other agencies for availability, equitable distribution and regulation of water. Obviously inter-state water issues are an important part of his duty. The general supervision and control of the assessment of revenue from irrigation works or any other source, within the limits of his charge, rest with the Engineer-in-Chief, who shall cause to frame the necessary estimates and arrange regular watch on the progress of realisations during the course of the year. Engineer-in-Chief, Irrigation shall initiate proposals for periodic revision of water rates, for consideration and approval by the Government.

6.3 CHIEF ENGINEER

6.3.1 Chief Engineer shall be responsible for conceiving strategies to achieve the objectives in respect of the domain assigned to him.

6.3.2 Chief Engineer shall assist the Engineer-in-Chief in getting the budget estimates prepared pertaining to works under his charge. He will ensure optimal utilisation of budget allocation following the principles of financial propriety. He shall try to ensure that changes in the demand for funds are reflected properly in the revised budget estimates. He will also assist the Engineer-in-Chief in preparation of Annual Administration Report and shall give the part of the report concerning his area

of work by May 15 every year.

6.3.3 Chief Engineer shall ensure that the designs, drawings, specifications and estimates approved by him are sound and realistic. In particular, he shall see that the estimates incorporate all the provisions necessary for successful execution and meaningful usage of the works in question.

6.3.4 Chief Engineer shall be responsible for monitoring of all IT related applications pertaining to his sphere of work and the introduction of emerging design, construction and management practices.

6.3.5 Chief Engineer shall inspect the Circle Offices under his charge at least once a year. In addition, he will carry out inspections of the Circle or Divisional Offices or any other offices/branches assigned to him by the Engineer-in-Chief.

6.3.6 Chief Engineer shall coordinate, evaluate, review and hold inspections in the required manner and frequency so that the field officers ensure timely completion of work with appropriate quality and method of execution.

6.3.7 Chief Engineer shall ensure that estimate of all works to be technically sanctioned are prepared by the officers concerned so that technical sanction can be issued well in time and their accounts finalised at the earliest.

6.3.8 Chief Engineer shall take appropriate steps to ensure that the field officers ensure efficient execution of works under his charge (whether they are of original nature or concern operation and/or maintenance) with proper quality. He will take special measures and carry out more inspections in respect of certain works of crucial importance as decided by the State Government and, in a way, monitor such projects at personal level. Chief Engineer must report the cases in which improvement was not taking place despite his intervention. He shall bring to the notice of the Engineer-in-Chief cases of bad implementation, with specifics.

6.3.9 It is expected that the Chief Engineer shall spend at least five days in a month on inspection of the works or offices. He shall take all possible corrective measures and report the matter, if required, to the Engineer-in-Chief. He shall take all necessary steps to bring about improvements, and in this regard he can even write directly to the Administrative Secretary and the Minister.

6.3.10 Chief Engineer shall hold periodic meetings, say monthly or as specified, in respect of Circles under his charge so as to bring about all-round improvement in respect of personnel matters, accounts and audit issues and timely completion of works.

6.3.11 In the Irrigation Department, Chief Engineer shall also perform all revenue duties assigned to him in the Revenue Manual. Under the Haryana Canal and Drainage Act, 1974, Chief Engineer, Irrigation is designated as 'Chief Canal Officer' and shall exercise the powers and perform the duties of that office.

6.3.12 Chief Engineer can be assigned any other duty or responsibility in addition to what has been listed in the Code by the State Government or the Engineer-in-Chief. However, in case of any delegation, the delegation order shall be got approved from

the State Government.

6.4 SUPERINTENDING ENGINEER (SE)

6.4.1 Superintending Engineer is a direction and controlling officer. He is responsible to Engineer-in-Chief/ Chief Engineer for the efficient administration and general professional control of public works in the charge of officers of the department within his Circle. He provides inputs to the Engineer-in-Chief /Chief Engineer in regard to technical and professional matters, and with respect to the suitability of projects or reasonability of designs.

6.4.2 Superintending Engineer is the key officer in the field to exercise control on budget allotted to the Divisional Offices under his control and its proper utilisation. He is expected to scrutinise the Letter of Credit (LOC) demanded by Divisional offices and to ensure that LOC or any other amount received by the Divisional Office is properly utilised.

6.4.3 Superintending Engineer shall ensure that detailed estimates of works are prepared in time and technically sanctioned by the competent authority.

6.4.4 It is the duty of the Superintending Engineer to inspect the state of various works within his Circle and to satisfy himself that the system of management prevailing is efficient and economical. He shall monitor the various work contracts and also see that, on the completion of works, no delay is allowed to occur in the preparation of final bills, submission of completion reports or completion statements, where necessary, and closure of accounts.

6.4.5 Superintending Engineer is responsible for the engineering character of works approved by him. While submitting any report, design, estimate or other document to the Chief Engineer, he will see that it is a thorough and professional work, and will invariably state his own opinion and recommendations on the subject. He shall pay special attention to the works of crucial importance as decided by the Government and the works costing more than the prescribed value.

6.4.6 Superintending Engineer shall inspect Divisional Offices in his Circle periodically, at least twice a year. One of these inspections shall be pre-announced and cover all aspects of functioning of the Divisional Office with facts and figures. The inspection notes shall be reduced in writing and shall be brought to the notice of Chief Engineer in-charge of the Circle and Engineer-in-Chief. He shall also follow up on action taken, and if he finds any laxity, he will either himself take disciplinary action against the defaulting officers or make recommendations in this behalf to the Chief Engineer.

6.4.7 When a revised estimate is required, he shall arrange, without delay, its submission with full details and justification to the sanctioning authority.

6.4.8 Superintending Engineer shall inspect works as prescribed in Chapter 23. He shall hold inspections in such manner and frequency so as to achieve timely completion of works with emphasis on quality. In case there are widespread issues of poor quality of works under his charge, he will be answerable. He shall spend at least

seven days in a month on inspections of works or offices under his charge. He shall issue inspection notes and/or record his observations in the site inspection register/site order book.

6.4.9 Superintending Engineer shall pay special attention to the works of crucial importance as decided by the Government and the works costing more than the prescribed value. In case of any serious accident/ threatened danger to works/assets in his Circle, he shall assume responsibility to guide the officers on the spot, and by virtue of being Vigilance Officer, he shall cause to conduct enquiry at the earliest, if required.

6.4.10 Project related information shall be submitted by him to the Headquarters at such frequency and in such form as may be prescribed. He will also plan for acquisition of data required for project preparation and macro planning.

6.4.11 Superintending Engineer may correspond directly with any of the local authorities, civil and military, within his Circle. He may correspond with the General Officers Commanding Divisions and Brigades through their Staff Officers, and all other officers.

6.4.12 Superintending Engineer shall ensure that the physical and financial progress of all the works is updated by subordinate offices and the periodical reports and returns, due to the Headquarters Office or Chief Engineer, are submitted in time.

6.4.13 Superintending Engineer shall, from time to time, call at the Divisional headquarters a meeting of the representatives of the contractors, labour co-operative societies and suppliers working in a particular Division, and give patient hearing to their difficulties and concerns. If any important issue comes to the notice of the Superintending Engineer during these meetings, he shall send a self-contained report to the Engineer-in-Chief and Chief Engineer incharge of the Circle.

6.4.14 Superintending Engineer will interact with Divisional Commissioner and occasionally brief him about the activities of his department. He shall also oversee the demands and assurances put up to Chief Minister/ Ministers in respect of his jurisdiction.

6.4.15 Superintending Engineer shall ensure that status of works under his jurisdiction is constantly updated on the electronic mode and that the staff employed in his jurisdiction is computer friendly. He shall also cause to implement all IT related applications in his Circle.

6.4.16 Superintending Engineer shall be responsible for training of all staff in his jurisdiction including staff employed on operation and maintenance. He shall frame annual action plan for training of all categories of staff and organise conferences / seminars to keep the subordinate officers / officials abreast with the latest technologies.

6.4.17 Superintending Engineer will also act as Vigilance Officer for all the functions and activities in his jurisdiction. He shall take appropriate action whenever any incident of improper conduct or performance comes to his notice.

6.4.18 Superintending Engineer shall hold periodic meetings (as prescribed by Engineer-in-Chief, but in no case less than once a quarter) with the Divisional Officers to review important matters including the timely completion of projects, their quality, finalisation of bills, court cases, arbitration cases, encroachments on Government land, land acquisition cases, including compensation, personnel matters, accounts and audit paras, etc.

6.4.19 Superintending Engineer shall be responsible to approve designs and drawings of works up to the prescribed limit in the respective PWD. For example, as on 1.4.2009, he is responsible to approve designs and drawings up to Rs. 1 crore in B&R department. In Irrigation Department, Superintending Engineer approves all designs/drawings of works on distributaries up to 3 cum/sec discharge and on drains up to 15 cum/sec discharge, and of other structures as directed by Engineer-in-Chief. In PHED, Superintending Engineer is to approve all designs/drawings of all works, but in technology related matters, he shall obtain the approval of the Chief Engineer. The departments shall look into revision of such powers periodically (at least once in 5 years) and notify the changes.

6.4.20 In Irrigation Department, the supervision and control of the assessment of revenue from irrigation and navigation works or any other source within the Circle, rest with the Superintending Engineer. In this connection, he shall perform the duties and functions laid down in Revenue Manual. Further, under The Haryana Canal and Drainage Act, 1974, Superintending Engineer, Irrigation is designated as 'Superintending Canal Officer' and will exercise the powers and perform the duties of that office. Proper regulation of water as per allocation within the rotational program is his duty. He must ensure proper upkeep of H-Registers of outlets.

6.4.21 When posted in the Headquarters Office, the Superintending Engineer shall perform the duties of his charge, besides those which may be assigned to him by the Chief Engineer/Engineer-in-Chief. Even the Superintending Engineers in the field can be allocated other duties by the State Government or the HOD.

6.5 DIVISIONAL OFFICER

6.5.1 Divisional Officer is responsible for the execution and management of all works within his Division. He is responsible for administration of contracts, quality of works, their timely completion and finalisation of bills within a reasonable period after completion of work.

6.5.2 Divisional Officer, as the primary disbursing officer of the Division, is responsible not only for the financial regularity of the transactions of the whole Division but also for the maintenance of the accounts of the transactions correctly. In this regard, he shall exercise a thorough and efficient control and check over the Divisional Accountant/ Divisional Accounts Officer and see that the accounts of the Division are correctly compiled and the specified returns are submitted in time to Audit Office/ Headquarters Office. The Divisional officer shall be responsible for arranging reconciliation of the accounts with the Accountant General's office.

6.5.3 While the Divisional Officer has a right to seek the advice of the office of the Accountant General in all matters connected with the accounts of his Division or the application of financial rules and orders concerning which there may be any doubt, it will usually be desirable that he should first obtain the advice of the Divisional Accountant/ Divisional Accounts Officer, and this should be done in writing in all cases of importance. To enable the Divisional Accountant / Divisional Accounts Officer to discharge his duties efficiently, the Divisional Officer shall see that the former is allowed access to all relevant records and provided with all relevant financial books.

6.5.4 Divisional Officer shall inspect at least once a year, all the properties in his Division and see that proper measures are taken to preserve them and prevent encroachment on Government lands/ property in his charge. He shall have the boundaries of the Government lands demarcated to identify any encroachment and take immediate steps to get these removed. The property registers shall be updated on regular basis.

6.5.5 Divisional Officer shall keep on record in his office the following plans, or such of them as may be required in his Division:

(a) Complete plans of works under his charge as actually constructed, with any subsequent alteration (the boundaries of the land attached to any building/structure should be distinctly shown);

(b) Copies of public health services, electrical services and of any other relevant plans;

(c) Plans of roads (showing quarries), canals, distributaries, drains, sewers, water supply lines, etc. as the case may be; and

(d) Plans of Government lands/properties.

6.5.6 Divisional Officer shall check the site and survey plans of important works prepared by the Sub-Divisional Engineer regarding their accuracy and completeness before submission to authorities concerned.

6.5.7 Divisional Officer shall report immediately by fax/ e-mail direct to the Engineer-in-Chief and also to the Superintending Engineer regarding any serious accident or unusual occurrence resulting in a serious injury to, or death of, any person or damage to any work or property connected with his Division. He shall follow it up by letter detailing the happening and stating the action taken by him. He must report to Engineer-in-Chief /Superintending Engineer any incident of theft or fire in the office.

6.5.8 Divisional Officer shall ensure that demand of LOC is raised correctly and applied to the work/objective for which it has been issued and not diverted elsewhere. He shall also ensure that funds for deposit works are utilised only for the specific works for which they were received.

6.5.9 Divisional Officer shall organise and supervise the execution of works and to see that they are carried out in accordance with specifications and stipulations of the contract. He shall inspect the works regularly and make appropriate notes in the site

order book. He will also issue inspection notes after the inspection and monitor the compliance by subordinate offices/ contractors on next inspection.

6.5.10 Divisional Officer shall prepare annual programmes/plans/ estimates for proper maintenance of all works in his charge. He shall prepare estimates of new minor works and major works, when called upon to do so.

6.5.11 Divisional Officer will periodically brief the Deputy Commissioner concerned about the activities of the department and take his assistance wherever required.

6.5.12 Divisional Officer shall not commence the construction of any work or spend public funds without the sanction of competent authority, except in case of emergency, when the circumstances should forthwith be reported to the Superintending Engineer for proper sanction/ regularisation of expenditure. Divisional Officer shall not make or permit any material deviation from any sanctioned design in the course of execution without specific authority.

6.5.13 Immediately after the work is completed, the Divisional Officer shall close the accounts as per the contract and maintenance/ defects liability period of the works. In no case, should the closure of accounts be delayed beyond three months of the last date of such contractual requirement.

6.5.14 Divisional Officer shall exercise a close watch over the flow of expenditure on the works and its corresponding physical progress. Whenever it becomes apparent that the estimated cost of work is likely to be exceeded, for whatever cause, he shall report the fact forthwith to the Superintending Engineer, describing the nature and cause of the probable excess and asking for orders.

6.5.15 Divisional Officer will consider himself to be the ex-officio professional adviser to all departments of the Administration within the limits of his charge. Such services shall be provided without much formality.

6.5.16 Divisional Officer shall inspect each Sub-Divisional Office of his Division at least once a year and submit his report to the Superintending Engineer. The inspection report shall briefly state the steps taken to remedy the defects previously noticed and bring out prominently those items on which instructions were issued but not attended to. A Sub-Division in which laxity of supervision on the part of the Sub-Divisional Engineer comes to notice should be inspected more frequently. The case for initiating disciplinary action shall also be sent against the Sub-Divisional Engineer and other defaulting officials.

6.5.17 Divisional Officer shall see that instructions with regard to the use and upkeep of measurement books are strictly observed.

6.5.18 In case of B&R department, Divisional Officer shall, in co-ordination with Executive Engineer, Mechanical ensure that all departmental machinery under his charge is properly manned and adequate arrangements are made for its safe housing, proper upkeep and periodical overhauling. Divisional Officers of Irrigation Department and Public Health Engineering Department shall, in the matter of

maintenance of departmental machinery, follow directions given in their respective Manuals.

6.5.19 Divisional Officer shall check each work in his Division. The instructions regarding such checks can be issued by Engineer-in-Chief or the Government. The Divisional Officer shall check at least 5% of principal items of every major work (as defined in para 8.3). Checks shall be exercised at different crucial stages as the work progresses. The fact of his having exercised the check and the portion checked shall be duly recorded in the measurement book.

6.5.20 Divisional Officer shall see that proper arrangements are made throughout his Division for proper custody and protection of public property.

6.5.21 Divisional Officer shall exercise close supervision over his Sub-Divisional Officers, and impart, from time to time, instructions and guidance to them in the discharge of their duties.

6.5.22 Divisional Officer Public Works (B&R) Department is responsible to achieve co-ordination with the concerned Executive Engineer, Electrical and Executive Engineer, Public Health Engineering Department, in the execution of building projects under his charge. He shall also keep liaison with architects for timely supply of building drawings and details.

6.5.23 Divisional Officer shall liaise with district administration and other departments as necessary, and keep watch over the implementation/ progress of assurances by Chief Minister.

6.5.24 Divisional Officer shall carry out Government/ departmental instructions for dealing with labour and their grievances as per rules/ guidelines.

6.5.25 Divisional Officer shall maintain the record of land/ building given by the Government on lease, along with realization of lease money. Renewal of such lease deeds shall also be checked from time to time, at least annually.

6.5.26 Divisional Officer shall be responsible for proper operation and maintenance of works / assets in his jurisdiction. He shall maintain the records of assets of which he is in-charge and keep them up-to-date. Any addenda/ corrigenda should be notified to the Superintending Engineer annually. (refer Chapter 27)

6.5.27 Divisional Officer shall exercise necessary vigilance in checking/ removal of encroachments under the Haryana Public Premises and Land (Eviction and Rent Recovery) Act, 1972.

6.5.28 Divisional Officer is primarily responsible for updating status of all the works under his jurisdiction on MIS, wherever implemented.

6.5.29 Divisional Officer, in consultation with Superintending Engineer, shall coordinate training of all categories of staff under his jurisdiction, and maintain proper record of the training undergone and required to be imparted to the staff.

6.5.30 Divisional Officer/ Executive Engineer (B&R) designated as Director under Punjab Scheduled Roads and Controlled Areas (Restriction of Unregulated

Development) Act, 1963, shall perform the duties and exercise powers vested in him as Director. He shall be responsible for any lack of action in the matter.

6.5.31 Divisional Officer in the Irrigation department shall perform revenue related duties assigned to him as per the Revenue Manual. Further, under the Haryana Canal and Drainage Act, 1974, Divisional Officer, Irrigation is designated as 'Divisional Canal Officer' and shall exercise the powers and perform the duties of that office. He shall also ensure that all flood works are completed as per schedule and all measures are taken for flood preparedness. The Divisional Officer, Irrigation shall also be responsible for proper regulation of water as per authorisation in his jurisdiction. He shall ensure feeding of tails properly.

6.5.32 Divisional Officer in B&R department shall approve designs and drawings of all petty works. Divisional Officer in Irrigation department shall approve designs and drawings of petty works and in case of structures of canals and drains up to 1 cum/ sec discharge. However, the limits prescribed can be changed by the HODs.

6.5.33 Executive Engineer posted in the Headquarters Office will perform duties of his charge, besides any such duty as may be assigned to him by the Engineer-in-Chief/ Chief Engineer. Even Executive Engineers in the field can be assigned any additional duty/responsibility by the State Government/HOD.

6.6 SUB-DIVISIONAL ENGINEER (SDE)

6.6.1 Sub-Divisional Engineer is a generic designation, but it also includes Assistant Executive Engineer, Sub-Divisional Officer, Assistant Engineer, Assistant Design Engineer or any such equivalent designation which may prevail in any Public Works Department. He is responsible to the Divisional Officer for the management and execution of works within his Sub-Division and is his assistant.

6.6.2 Sub-Divisional Engineer shall prepare site and survey plans required for planning of building works or other structures. He shall ensure that these plans are accurate, fully dimensioned and detailed, with proper co-ordinates, and that the levels are related to the nearest GTS (Great Trigonometric Survey) bench mark (which should be identified). The position and formation /plinth/ bed levels of the nearest road/important structure/drain should also be given. For any inaccuracy, he shall be held personally responsible.

6.6.3 Sub-Divisional Engineer shall arrange and supervise the actual execution of all works in the Sub- Division in accordance with sanctioned estimates, specifications and drawings. In case of original works, he shall invariably check all 'nishans' himself and see that they have been correctly given in accordance with sanctioned plans. He is to check the foundations of all important structures, bridges and buildings and ensure that they are sound and to record the measurements in the measurement book in his own hand. He shall also check the underground work before it is covered up, including founding levels, reinforcement, concreting and masonry work. Sub-Divisional Engineer will ensure that during the execution of work all relevant record such as copies of estimate and agreement, quality control registers, basic testing

equipment, site order book, and other necessary documents are available in his office/ at site.

6.6.4 Proper execution of works with due regard to quality, safety and process of execution within prescribed time limit is primarily the responsibility of the Sub-Divisional Engineer. He will take appropriate action regarding performance of contracts in his jurisdiction.

6.6.5 He shall be responsible for proper operation and maintenance of assets in his jurisdiction, and maintenance of their records. He shall keep watch that no Government land or property is encroached upon and no unauthorised construction is allowed to be done. He shall further see that property in his charge is kept in a proper state by timely action and wise utilisation of Government funds, with the sanction of the competent authority.

6.6.6 Sub-Divisional Engineer shall maintain all initial accounts for expenditure in respect of works in his charge and submit the same every month to the Divisional Office regularly.

6.6.7 Sub-Divisional Engineer shall check the foundation of every work and see that it is sound. He shall check the founding level of all structures including embankments. He shall fully check all hidden works before they are covered. Length of line works (e.g. roads, canals, pipelines, sewers, etc.) shall similarly be checked/recorded 100% by the Sub-Divisional Engineer himself. Regarding other items of all minor and major works, he shall check 50% quantities of the work if the work is at his headquarters and 25%, if outside. The Sub-Divisional Engineer shall remain in constant and close touch with the day to day work of the Junior Engineers and should see that measurements are taken in due time and got checked.

6.6.8 Sub-Divisional Engineer shall see that all public property/ works/ buildings/ structures in his charge are duly inspected at least once a year as per instructions contained in the Department's Manual.

6.6.9 Sub-Divisional Engineer shall see that his subordinates thoroughly understand and strictly adhere to the details of the estimates for work on which they are engaged. Detailed instructions should be freely and patiently imparted on all points regarding which a subordinate has doubts.

6.6.10 Sub-Divisional Engineer shall report immediately to the Divisional Officer any serious accident or unusual occurrence resulting in serious injury to or death of any person or damage to any work or property in his charge.

6.6.11 Sub-Divisional Engineer shall keep a vigilant control over expenditure. He will report progress of work periodically as may be ordered by Divisional Officer, or higher authorities.

6.6.12 Sub-Divisional Engineer shall personally examine all the Standard Measurement Books of the Sub-Division, once a year, and have them up-dated in case of any additions/ alterations.

6.6.13 Sub-Divisional Engineer shall check all the stores in his Sub-Division twice a

year and T&P articles once a year. Surplus, unused or unserviceable material at site or in the store shall be properly accounted or disposed of as per prescribed procedure.

6.6.14 Sub-Divisional Engineer shall exercise proper care for safe custody of Government cash and maintain proper account of cash receipt/ expenditure.

6.6.15 In Irrigation department, Sub-Divisional Engineer shall perform revenue related duties assigned to him as per the Revenue Manual. He shall also be responsible for upkeep of rain-gauges and canal telephone system/ lines. Further, under The Haryana Canal and Drainage Act, 1974, Sub-Divisional Engineer, Irrigation is designated as 'Sub-Divisional Canal Officer' and he shall exercise the powers and perform the duties of that office.

6.6.16 When posted in Head Office (Circle Office), Sub-Divisional Engineer shall perform the duties assigned to him by the Engineer-in-Chief (Superintending Engineer).

6.7 SUPERINTENDING ENGINEER (ELECTRICAL), B&R DEPARTMENT

6.7.1 Superintending Engineer, Electrical is responsible to Engineer-in-Chief/ Chief Engineer for the administration and general professional control of electrical works within his Circle. Broadly, his duties are analogous to those of Superintending Engineer laid down in para 6.4.

6.7.2 Particular duties which are peculiar to Superintending Engineer, Electrical, shall be as follows:

(a) Superintending Engineer, Electrical shall ensure that the estimates of electrical services of a project are prepared on sound basis, and in accordance with provisions of National Building Code, 2005 (with latest revision) as also those of Bureau of Energy Efficiency, wherever applicable;

(b) He shall be responsible for efficient and timely execution of electrical works of a project, and ensure that their progress keeps pace with the progress of civil works. In the course of his tours, he shall interact with the Superintending Engineers concerned of the civil wing and discuss issues or problems of mutual concern. He shall ensure that co-ordination meetings called by the latter are properly attended, either by him or the concerned Executive Engineer, Electrical, depending on the circumstances and urgency;

(c) He shall see that preventive, periodic and routine maintenance of all electrical installations and appliances under his Circle are carried out effectively, and at the right time. Complaints of the user shall be redressed promptly, and a system of daily status report of compliance put in place. If required, he may, with the approval of the Chief Engineer, out-source maintenance services, and for special services enter into annual maintenance contracts;

(d) He shall prepare survey reports of such electrical equipment as has out-lived

its useful life and has gone beyond economical repairs, in order that the same can be condemned and disposed as per the prescribed procedure;

(e) He shall look to the proper and safe storage of out-of-season equipment/ appliances, and further that the same are serviced properly before being brought back into use in the next season; and

(f) He shall inspect the works and see that the system of their execution and management is satisfactory, that requisite site records are being maintained and that all procedures for safety of equipment and personnel are being duly followed.

6.8 EXECUTIVE ENGINEER (ELECTRICAL), B&R DEPARTMENT

6.8.1 Executive Engineer, Electrical is incharge of the Electrical Division, and is responsible through the Superintending Engineer, Electrical to the Chief Engineer concerned for the efficient, smooth and proper working of his Sub-Divisions. Broadly, his duties are analogous to those of Divisional Officer laid down in para 6.5.

6.8.2 Particular duties of Executive Engineer, Electrical which are peculiar to him shall be as follows:

(a) Executive Engineer, Electrical shall be in direct and independent charge of execution of electrical works of his Division and maintenance of electrical installation works under B&R department;

(b) He shall look to the safety aspects of all electrical systems during construction, operation and maintenance phases;

(c) Executive Engineer, Electrical shall arrange that:

  (i) The lightning conductors on the buildings under the charge of B&R department are tested once a year and a report is submitted to the Superintending Engineer, Electrical;

  (ii) The lightning conductors on the police magazines and jail buildings are tested once a year and test certificates are issued to Superintendent of Police/ Superintendent Jail concerned;

  (iii) The electrical installations in all administrative offices, under his charge, are tested quarterly and that certificates are issued to the offices concerned.

(d) He shall interact with the Executive Engineers concerned of the Civil wing and discuss issues or problems of mutual concern. He shall ensure that co-ordination meetings called by the latter are properly attended, either by him or the Sub-Divisional Engineer, Electrical concerned, depending on the circumstances and urgency.

6.9 SUB-DIVISIONAL ENGINEER (ELECTRICAL), B&R DEPARTMENT

6.9.1 Sub-Divisional Engineer (Electrical) is responsible to Executive Engineer, Electrical for the management and execution of electrical works within his Sub-

Division and is his assistant. The duties of Sub-Divisional Engineer (Electrical) are analogous to the duties of Sub-Divisional Engineer of the civil wing as enumerated in para 6.6. He shall ensure that the electrical works under his charge are properly executed, and that during maintenance phase, electrical installations and appliances are duly checked, serviced and maintained.

6.10 SUPERINTENDING ENGINEER (MECHANICAL)

6.10.1 Superintending Engineer, Mechanical is responsible to Engineer-in-Chief/ Chief Engineer for the administration and general professional control of Mechanical Divisions/ Sub-Divisions/ Sections under his charge. Broadly, his duties are analogous to those of Superintending Engineer, Civil laid down in para 6.4.

6.10.2 In the case of B&R department, Superintending Engineer, Mechanical shall be guided by Engineer-in-Chief's Technical Memo No. 6

6.10.3 Particular duties which are peculiar to Superintending Engineer, Mechanical shall be as follows:

(a) He shall be responsible for short and long term planning with regard to the procurement, operation and maintenance of construction and earth-moving machinery, vehicles, trucks, road-maintenance vans, bridge-inspection units, bailey/ temporary bridging units, mechanical rigs and other mechanical equipment;

(b) He shall see that preventive, periodic and daily maintenance works of all machinery and vehicles are carried out timely, properly and cost effectively;

(c) He shall judiciously fix/ review from time to time (i) the number of working hours or kilometres any item of machinery or vehicle is expected to run in a year/ month (ii) consumption norms of POL (Petrol,Oil,Lubricants) per hour/ kilometre and (iii) running charges. He shall see that the said machinery or vehicles operate at the optimum level of efficiency and, in case of serious or recurrent slippages, conduct investigation as to the cause and take suitable curative, preventive or administrative action;

(d) He shall prepare survey reports of such machinery and equipment as has out-lived its useful life and has gone beyond economical repairs, in order that the same can be condemned and disposed of as per the prescribed procedure;

(e) He shall see that central and regional workshops are managed efficiently and that proper records/ procedures are maintained/ followed. He shall put in place proper store management to ensure right availability of spares. He shall see that the repairs/ overhaul of machinery and vehicles are carried efficiently with minimum downtime;

(f) He shall put into place systems and procedures to check and prevent pilferage of POL;

(g) He shall inspect the sites of work where departmental machinery/ rigs have been deployed and see that the system of their operation and management is

satisfactory, that requisite logbooks are being maintained and that all procedures for safety of machinery and personnel are being duly followed;

(h) He shall inspect each Divisional Office under his charge at least once a year to examine initial accounts, divisional books, inventory records, manufacture accounts, maintenance manuals, and office work in general, etc.

(i) In the course of his tours, he shall interact with the Superintending Engineer concerned of the civil wing and discuss problems of mutual concern. He shall ensure that co-ordination meetings called by the latter are properly attended, either by him or the concerned Executive Engineer, Mechanical, depending on the circumstances and urgency;

(j) Superintending Engineer, Mechanical shall submit, giving full justification and technical details, estimates for purchase of new machinery and vehicles to head office for sanction by the Government;

(k) He shall sanction the estimates for repair and maintenance of machinery and vehicles received from various Executive Engineers, Mechanical;

(l) In the case of Public Health Engineering Department, Superintending Engineer shall approve the schedule of boring of tubewells submitted to him by Executive Engineer, Mechanical prepared by the latter after getting the demand from field Executive Engineers, Civil;

(m) He shall, in consultation with the Engineer-in-Chief /Chief Engineer concerned, work out the requirement and configuration of bailey/ launchable temporary bridges and arrange their procurement. He shall further ensure that these units are kept duly serviced and in ready-to-use condition for any eventuality. He shall also develop a trained work force to commission the bridges in the shortest possible time; and

(n) He shall send to the Engineer-in-Chief a monthly utilisation report of each item of machinery under his charge and in the case of under-utilisation of major machinery, propose suitable corrective action.

6.11 EXECUTIVE ENGINEER (MECHANICAL)

6.11.1 Executive Engineer, Mechanical is incharge of the Mechanical Division, and is responsible through the Superintending Engineer (Mechanical) to the Chief Engineer concerned for the efficient, smooth and proper working of his Sub-Divisions. Broadly, the duties of Executive Engineer, Mechanical are analogous to those of Divisional Officer laid down in para 6.5.

6.11.2 In the case of B&R department, Executive Engineer, Mechanical shall be guided by Engineer-in-Chief's Technical Memo No. 6.

6.11.3 The particular duties of Executive Engineer, Mechanical which are peculiar to him, shall be as follows:

(a) Executive Engineer, Mechanical shall ensure that instructions regarding (i) parking/ safe storage of vehicles/ machinery not currently in use; (ii) their

private use, operation, renting and locking; and (iii) maintenance of logbooks are duly followed;

(b) He shall see that the machinery and vehicles under his charge operate at the prescribed level of efficiency and fuel consumption norms. As far as possible, idling and breakdown period of machinery shall be kept down to the minimum. He shall submit to the Superintending Engineer a monthly utilisation report of every piece of machinery under his charge and in the case of under-utilisation of major machinery, propose suitable corrective action;

(c) He shall initiate estimates for purchase, working and repair and maintenance of machinery for sanction of the competent authority;

(d) Executive Engineer, Mechanical is required to arrange materials like spare parts, tyres and tubes, batteries, POL and other miscellaneous store items for working of machinery and its repair and maintenance;

(e) In the case of water supply works, Executive Engineer, Mechanical shall also arrange MS(mild steel) casing pipes, strainers/ LCG (low carbon galvanised) screens, gravels, etc;

(f) Executive Engineer, Mechanical shall initiate proposals for condemnation of machinery and vehicles which have out-lived their economical life and have crossed the stage of economical repairs and, on receipt of sanction, arrange condemnation and disposal as per procedure prescribed;

(g) He shall prepare annually survey reports of surplus/ obsolete spare parts and old/ used/ unserviceable parts for sanction by the competent authority, and on approval, arrange their disposal, as per prescribed procedure;

(h) He shall achieve co-ordination with concerned Executive Engineers, Civil regarding working, repair and maintenance of machinery deployed on works.

(i) He shall ensure that bills are raised for working of machinery and realised/ adjusted regularly against works; and

(j) In the case of Public Health Engineering Department, Executive Engineer, Mechanical shall approve, after satisfying himself fully, the report regarding failed tube wells submitted by Sub-Divisional Engineer, Mechanical.

6.12 SUB-DIVISIONAL ENGINEER (MECHNICAL)

6.12.1 Sub-Divisional Engineer, Mechanical shall manage efficiently the operation and maintenance of machinery and vehicles under his charge. Broadly, the duties of Sub-Divisional Engineer (Mechanical) are analogous to the duties of Sub-Divisional Engineer of the civil wing as enumerated in para 6.6.

6.12.2 In the case of B&R department, Sub-Divisional Engineer, Mechanical shall be guided by Engineer-in-Chief's Technical Memo No. 6

6.12.3 The particular duties of Sub-Divisional Engineer, Mechanical peculiar to him shall be as follows:

(a) Sub-Divisional Engineer, Mechanical shall be responsible for proper running of machinery under his charge, execution of repairs, boring of tubewells, consumption of spares and POL and maintenance of proper records;

(b) He shall ensure that the prescribed norms of safety are duly followed;

(c) He shall attend all court cases, especially those of the Motor Accidents Tribunal, and arrange to put up defence as per the orders of Executive Engineer, Mechanical;

(d) In the case of tubewells, he shall inspect and prepare report regarding failure of any tubewell on the request of Sub-Divisional/ Executive Engineer, Civil, and shall submit the same to Executive Engineer, Mechanical for approval; and

(e) Sub-Divisional Engineer, Mechanical shall ensure that all the machinery under his charge is efficiently utilised. He shall promptly report to his Executive Engineer if the machinery is underutilised or mishandled.

6.13 EXECUTIVE ENGINEER (HORTICULTURE), B&R DEPARTMENT

6.13.1 The general duties of Executive Engineer, Horticulture are analogous to those prescribed in para 6.5. His particular duties shall be as follows:

(a) Executive Engineer, Horticulture shall look after the upkeep and maintenance of horticulture works of circuit houses, B&R rest houses, Haryana Bhavan and other campuses as may be specified by the Government;

(b) On receipt of a copy of administrative approval of new works, he shall prepare a scheme of plantation, work out estimate of cost, secure technical sanction of the competent authority, if the amount exceeds his own power. He shall take steps to execute the work within the provisions made available;

(c) He shall put up and maintain nurseries and green houses to fulfill department's requirements for plant material in addition to what may have to be procured from the market;

(d) He shall be responsible for plantation work on the central verges of State roads, traffic islands, so as to beautify them and to prevent the night glare of traffic from opposite side;

(e) He shall supervise the work of Assistant Engineers (Horticulture) and give them professional guidance; and

(f) He shall inspect the highways and road network and take steps for pruning of branches of tree which are a hazard to safety of traffic.

6.14 ASSISTANT ENGINEER (HORTICULTURE), B&R DEPARTMENT

6.14.1 The general duties of Assistant Engineer (Horticulture) are analogous to those prescribed for Sub-Divisional Officer / Sub-Divisional Engineer in para 6.6,

and particular duties to those of Executive Engineer, Horticulture in para 6.13, except for span of control.

6.15 DIRECTOR (PERSONNEL AND ADMINISTRATION)

6.15.1 The PWDs shall have an officer as Director (P&A) who preferably should be a senior officer drawn from State Administration Department or a Chief Engineer to deal with all matters relating to establishment. Depending on the requirements of each PWD, he is assisted by one or more officers such as Administrative Officer, Establishment Officer, Registrar and Officer on Special Duty (OSD) etc. His duties are laid down below, besides any others which may be assigned by the Engineer-in-Chief.

6.15.2 Director (P&A) shall look after manpower planning, recruitment, departmental examination where prescribed, promotion, deputation, discipline/ punishment, personnel welfare and their benefits and interests, maintenance of service records and confidential reports.

6.15.3 He shall be responsible for other service related matters such as leave, resignations, retirements, suspensions, removal from service, dismissals, re-employment and deputation, etc.

6.15.4 He shall look after disciplinary cases, cases covered by Government Employees Conduct Rules, 1966 and Haryana Civil Services (Punishment and Appeal) Rules, 1987.

6.15.5 He shall see that the retirement papers of every officer/ official (concerning his charge) retiring in the next one year are initiated and that all the requisite formalities are completed in time. He shall also pursue that any disciplinary case against the retiree is expeditiously finalised, so as not to become an impediment in the latter's earning the superannuation benefits when they become due. If, in a particular case, disciplinary matters cannot be settled before retirement, he shall pursue that they are settled within 6 months of retirement.

6.15.6 He shall ensure that annual confidential reports of personnel concerning his charge are written in time, and particularly see that confidential reports to be written by a retiring officer are written before he retires.

6.15.7 He shall look after administration-related matters or reports emanating from any authority. He will be responsible for office maintenance, regulating entry to the office, punctuality and regularity in the office.

6.15.8 He shall be responsible for implementation of Government instructions relating to service matters. Every year, he shall inspect in detail at least 5 Divisional Offices and 2 Circle Offices from administration and personnel point of view and send written inspection notes to Engineer-in-Chief. He will prepare an annual paper for the Government on the status of personnel/administration of the Department at the Headquarters and field level and suggest remedial measures required, if any.

6.16 DIRECTOR TRAINING

6.16.1 Public Works Departments shall strive to have a separate senior officer as

Director, Training to look after the training requirements of the department and co-ordination issues. Till the post of a separate officer is sanctioned and posted, the charge of this work may be given to one of the Chief Engineers. The functions can also be performed by the Director (P&A). This job can also be performed by Director, Haryana State Buildings and Roads Academy of Research & Training (in case of B&R department) and Director, HIRMI (in case of Irrigation department).

6.16.2 Director Training shall organise all types of trainings and examinations related thereto. He will also be in charge of collaborations the department may have with academic, professional and industry driven bodies.

6.17 DIRECTOR (FINANCE AND ACCOUNTS)

6.17.1 Due to substantial expenditure being incurred by the PWDs, they shall desirably have a separate officer as Director (F&A), who may be a senior officer drawn from Indian Audit and Accounts Service, Indian Civil Accounts Service, Indian Railway Accounts Service, Indian Postal Accounts Service, Indian Defence Accounts Service or appointed by direct recruitment from among qualified chartered / cost and works accountant with suitable experience. He shall deal with all functions relating to budget, finance and accounts and associated status and reporting. Accounts Officer (s), Assistant Accounts Officer (s) and other support staff assist him in the discharge of his duties. Duties of Director (F&A) are laid down in subsequent paras below, besides any others which may be assigned by the Engineer-in-Chief.

6.17.2 Director (F&A) shall be responsible for financial and accounts management system of the department. He shall ensure due preparation of budget estimates of the department, excesses and surrenders and re-appropriation statements, and monthly and annual expenditure accounts and their timely submission to the authorities concerned. He shall, every year, inspect in detail at least five Divisional Offices and two Circle Offices from accounts and finance point of view and send written inspection notes to the Engineer-in-Chief. He shall prepare an annual paper for the Government on the status of accounts in the department and suggest the remedial measures required, if any.

6.17.3 He shall issue the grants and LOC to various units, as decided by Engineer-in-Chief/ Chief Engineer. He shall look after all other cases relating to budget.

6.17.4 He shall collect from the field offices and Headquarters office financial data, prepare the necessary statements and reports, and bring to the notice of Engineer-in-Chief any cases of excess or short expenditure or financial indiscipline.

6.17.5 He shall be responsible for seeing that deposit accounts are accurately maintained, that deposit funds are not spent towards any purpose other than that for which intended, and that utilisation certificates are duly submitted.

6.17.6 He shall look after audit paras and matters relating to Public Accounts Committee. He shall also coordinate matters with regard to Estimates Committee, Public Undertakings Committee or any other Committee which examines or seeks information on financial matters.

6.17.7 He shall look after service matters involving finances such as pay, increments, pension, allowances, advances, re-imbursements, recoveries, General Provident Fund, Government Group Insurance Scheme and medical claims, etc.

6.17.8 He shall carry out internal audit to check booking of expenditure under proper heads/sub-heads, detect accounting mistakes, financial irregularities and deviations from the laid-down procedures/stipulations/norms and also ensure implementation of prescribed accounting policies.

6.18 CHIEF INFORMATION TECHNOLOGY OFFICER (CITO)

6.18.1 The Public Works Departments shall use latest information technology tools for better, transparent and faster implementation. The departments should, therefore, have a senior officer with specialisation in computer sciences/ information technology (possessing such qualifications and experience as may be prescribed by the Government) to work as Chief Information Technology Officer. He will be assisted by programmers and data entry operators or such other staff as approved by the competent authority.

6.18.2 He shall look after the IT related requirements of the department, like computerisation of personnel information, accounts, records, progress reports, management information systems, operation/ maintenance of software and hardware, etc.

6.18.3 He shall regularly inspect field offices to ensure that they implement the IT policies in minimum possible time and on sustained basis. He will periodically (once in a quarter initially) prepare a paper on the IT requirements of the department, suggesting remedial measures and have the decisions taken at the appropriate level on an urgent basis.

6.18.4 Though the Director Training shall be the overall in-charge of the training needs of the department, yet for faster and time bound implementation of IT applications, the CITO can get the staff trained, wherever required, without going through the Director Training.

6.19 PRINCIPAL INFORMATION CUM PUBLIC RELATIONS OFFICER

6.19.1 As the public is becoming aware of their rights under the Right to Information Act, 2005, and the departments are also spending large sums of money on execution of public works, there is the need of an officer to work as Principal Information Officer. This officer may also work as Public Relations Officer. The departments shall, therefore, endeavour to have such an officer who will be responsible for the following duties:

(a) Collection and supply of all information relating to the department to any member of the public under the Right to Information Act, 2005;

(b) Public relations work of the department;

(c) Bringing out public grievances about the department appearing in the press/ media, and issue of clarifications after obtaining feed-back;

(d) Preparation of hand-outs and brochures, etc.;

(e) Preparation of media plan for department and its programmes; and

(f) Co-ordination with Directorate of Information and Public Relations, Government of Haryana.

6.19.2 Principal Information cum Public Relations Officer will be assisted by such staff as may be decided by the competent authority.

6.20 LAW OFFICER

6.20.1 Law Officer (which term includes District Attorney, Deputy District Attorney and Assistant District Attorney) is normally drawn from Law and Legislative/ Prosecution Department of the State. He shall be responsible for vetting the reply of court cases sent to him and filing the reply/ written statement in the courts well in time. It shall also be his duty to assist the branch officer in getting the written statement vetted by Advocate General, Haryana, where required.

6.20.2 Law Officer shall give an opinion on any case referred to him by the competent authority and, in a case involving some matter of public importance, suggest that the opinion of Legal Remembrancer may also be obtained in addition to his own views.

6.20.3 He shall be responsible for moving the office of Legal Remembrancer for issue of directions to District Attorney/ Advocate on Record for defending in the relevant court any civil suit/ writ of which notice is received by the department. In cases of importance, he will get orders of the Engineer-in-Chief/ Chief Engineer to engage private counsel under the advice of Legal Remebrancer.

6.20.4 In matters fixed before the High Court or Supreme Court, the Law Officer or the officer designated by him shall be present to brief the counsel.

6.20.5 Law Officer shall vet the charge sheets, notifications, forms of a contract/bond/surety, and rules of the Department, etc.

6.20.6 He shall be responsible for bringing to the notice of Engineer-in-Chief/ Chief Engineers the decisions of courts for (i) speedy implementation or (ii) seeking extension, giving full justification if implementation is not possible within the time stipulated or (iii) filing an appeal, depending on the circumstances and merits of each case.

6.20.7 He shall maintain a diary of all cases fixed in the Courts and arrange with the branch officer to ensure the appearance of the counsel to argue/defend the case and also the presence of the branch official with all relevant record.

6.20.8 The Law Officer shall be responsible in getting the requisite instructions issued regarding handling the legal matters in the field, such as handling arbitration issues, drafting and presenting charge sheets, framing replies to the court cases, etc. He shall attend the court hearing, if required by the Superintending Engineer in a particular case.

6.21 DEPUTY COLLECTOR, IRRIGATION

6.21.1 The Deputy Collector in an Irrigation Division holds, in regard to revenue assessment, a position analogous to that of a Sub-Divisional Officer. He is the Divisional Officer's revenue assistant and is responsible to that officer jointly with the Sub-Divisional Officers for the supervision of the revenue assessments and control of the revenue establishment.

6.21.2 Subject to such general orders as are issued by the Engineer-in-Chief, it is the business of the Divisional Officer to arrange the distribution of duties between the Deputy Collector and the Sub-Divisional Officer in such manner as best to utilise their respective qualifications/ positions, and to avoid overlapping or friction.

6.21.3 Deputy Collector has Ziledars and Canal Patwaris to assist him in booking of irrigation of land in the jurisdiction of the Division; preparing 'khataunis' (demand statements) i.e. irrigator-wise and crop-wise assessment of water charges to be recovered from the farmer who utilises the canal water supplied during a crop/ season. Necessary check of booking by the Ziledar shall be done by the Deputy Collector to ensure that no area goes un-booked. Independent percentage check shall be done by the Sub Divisional Officers as well as the Divisional Canal Officer (Executive Engineer), which shall be not less than 5% in case of the former, and 2% in case of the latter.

6.21.4 Necessary check on un-authorised irrigation done or canal water wasted by the irrigators shall also be done, and charges (taiwan) included in the 'khataunis' (demand statements) for recovery by the Revenue authorities.

6.21.5 Deputy Collector shall get 'wara-bandi' (canal water distribution schedule, crop-wise, during rotational schedule of running of supplies in a canal system) fixed. Complaints of breach shall be checked and action as due initiated against the defaulter.

6.21.6 He shall also deal with canal water demands from the field, and check/propose canal irrigation damages, and recommend reduction in demand charges based on crop damages.

6.22 DUTIES OF SPECIAL OFFICERS

6.22.1 Duties of special officers shall be as prescribed by the HODs concerned.

6.22.2 Officers posted at Headquarters may occupy different seats and the nature of their duties will correspondingly vary. The designations/ nomenclatures thereof are also not uniform across the three PWDs. Some posts are peculiar to a department such as Executive Engineer, Regulation in Irrigation Department or Environment Engineer in another department. Duties of such officers shall be appropriately assigned by the Engineer-in-Chief concerned and circulated within the department for information of all concerned.

6.23 ENGINEER/ENGINEER-IN-CHARGE

6.23.1 Engineer/Engineer-in-Charge, for the purpose of this Code, is the person

responsible for the execution of work. He shall obtain approval of other authorities for specific actions as required under rules, regulations and delegation of powers of the department and/or stipulations of the contract.

6.23.2 Engineer/Engineer-in-Charge shall operate the contract strictly as per provisions of the contract. Allotment shall be done as per provisions in the bid document. Allotment letter shall be posted properly and be got received as far as possible. The time of start shall be given as per bid document. Sometimes action is taken without following such procedural formalities, which results in arbitration awards against the department. The risk and cost tenders also need to be finalised as per the provisions of the bid document so that there is at least no legal hitch in recovering the amount.

6.24 DUTIES OF OTHER STAFF

6.24.1 Duties of other staff shall be laid down by each Public Works Department in its Manual. Wherever such duties are not that defined, these shall be analogous to the duties of the employees working in other departments.

Chapter 7
Training and Examinations

7.1 TYPES

7.1.1 Training will broadly be of three types:

(a) At entry level, called induction or orientation training;

(b) At the time of promotion or prior to the promotion; and

(c) In-service training (in India and/or in a foreign country).

7.2 INDUCTION/ ORIENTATION TRAINING FOR NEW ENTRANTS

7.2.1 New entrants to the engineering service shall be given orientation/induction training for the prescribed period of not less than 3 months in order to familiarise them with the functioning of the department, their job requirements, and future responsibilities. The course contents of the training shall be designed so as to fulfill the following objectives:

(a) To impart to the new entrants a broad knowledge of the constitutional framework of the country, the administrative set-up of the State, and how the government works;

(b) To acquaint them with major rules, regulations and enactments likely to have a bearing on their working;

(c) To familiarise them with organisational goals and structures, policies and work procedures, methods of functioning, and general work culture of the department;

(d) To orient the new incumbents with their job responsibilities, and equip them with various methods of performing the assigned tasks in an effective manner; and

(e) To develop in them esprit de corps, inculcate proper attitude towards work, seniors, subordinates and the public, and imbibe a healthy value system and work culture.

7.2.2 The contents of training and duration of different capsules shall be worked out from time to time as per the emerging needs. The training should give the trainee exposure to different facets of the department. The period of training should not normally be curtailed. To bestow seriousness, it shall be followed by an evaluation process/ examination which the trainee shall be required to pass as per the evaluation criterion. In case a trainee fails to clear the examination in the first instance, his training shall be extended by lots of three months at a time. Thereafter, the trainee shall again be given the examination and in case he fails to pass even in the repeated attempts during the probation, the appointing authority may seriously consider termination of his probation.

7.2.3 The departments shall identify a few training programmes which an officer must be required to go through before he can be considered for promotion. If need be, the rules shall be amended by the competent authority. This will enable the departments to have competent people in higher positions.

7.2.4 Some promotions are subject to clearance of prescribed departmental examinations. The PWDs shall ensure that the passing of such examinations shall be prior to the promotion and if needed, the departmental rules governing the service be amended accordingly.

7.3 IN-SERVICE TRAINING OF OFFICERS

7.3.1 Each department shall assess the training needs of all its officers and arrange training programmes suitably. The periodicity of in-service training, its duration, and subject of training shall be worked out by each department.

7.3.2 Many State or Central level or Public Sector institutions offer a variety of training courses, which can be availed of according to needs; otherwise, tailor-made training programmes may be organised in-house with the help of Haryana State Buildings and Roads Academy of Research and Training, Haryana Irrigation Research and Management Institute or Haryana Institute of Public Administration. In addition, several bodies hold, from time to time, special purpose workshops, seminars, and conferences, which can be taken advantage of.

7.3.3 A donor agency, as a component of its aid programme, may offer training courses aimed at transfer of technology. These may be at selected institutions within the country or outside, or may be by way of deputation or secondment to its own or other organisations. These are excellent opportunities to upgrade the skills of the departmental staff and should be judiciously availed of.

7.3.4 Normally, every officer especially in the engineering disciplines, in the course of service in the department, should undergo at least (i) one short term training programme every five years (ii) one medium term training in ten years and (iii) two long term trainings in the entire service career, one preferably in a foreign country. The foreign training, however, shall only be considered for the officers and that too after completion of ten years in the service.

7.3.5 Training of duration up to 15 days shall be termed as short term training; of duration varying from 15 days to 89 days, as medium term training and of duration 90 days and more, as long term training.

7.4 IN-SERVICE TRAINING OF OTHER PERSONNEL

7.4.1 Other personnel of different categories (such as Superintendents, Deputy Superintendents/ Head Clerks, Assistants, Private Assistants, Draftsmen, etc) shall be given periodic training in respect of areas relevant to them, such as office management, service rules, enquiries, budget, accounts, estimating and drafting techniques, data entry, etc.

7.4.2 The training of Junior Engineers and the other staff at the cutting edge of

execution is required from time to time to upgrade their knowledge and skills in new methods of construction methodology, supervision, quantity surveying and new instruments of setting out and leveling.

7.5 MANAGEMENT OF TRAINING

7.5.1 At the beginning of each financial year, Director Training or Chief Engineer in-charge of training shall assess the training needs of the Department as also of the officers/officials, and shall get a training calendar finalised. The calendar shall be reviewed on half-yearly basis. The department shall assess the requirement of funds and arrange suitable budgetary allocation. The selection of candidates shall be done by considering suitable parameters like aptitude, capacity to absorb the training, growth needs, as also usefulness to the department. For premier training programmes, performance shall be an added consideration.

7.5.2 Proper record of training shall be kept. The department will examine how best to utilise the acquired skill/ knowledge.

7.6 TRAINING OF WORKERS, SUPERVISORS & CONTRACTORS

7.6.1 The training of skilled workers, operators, supervisors and also contractors is crucial to induction of professionalism in the departments and successful execution of modern day projects. Haryana State Buildings and Roads Academy of Research & Training and/or Haryana Irrigation Research & Management Institute have been especially charged with the responsibility to design, develop and conduct suitable training programmes and issue certification. In addition, there are other training organisations in the country which are engaged in this business, with which collaboration, training can be arranged.

7.6.2 The departments shall evolve a strategy for training of various categories of personnel in construction-related areas. Contracts, especially for works of magnitude, should stipulate employment by the contractor of a certain minimum percentage of certified workers in different trades. Regular, skilled work force of the departments also should, over a period of time, be required to pursue certified courses. In future, only trained persons duly certified shall be recruited and if need be, the service rules shall be amended.

7.7 DEPARTMENTAL EXAMINATION

7.7.1 The officers/ officials shall be required to pass the departmental and other examination(s) as provided in the relevant service rules. The departments shall amend the service rules so as to provide for the passing of departmental examinations before affecting the promotion. In any case, the probation of the officer/official shall be extended till the time the officer/official clears his/her departmental examination.

7.7.2 The general scheme of examination for each department shall be in accordance with the respective service rules of the department concerned; otherwise, as may be prescribed by the Government.

7.7.3 The syllabus for the written papers, for different disciplines, shall be worked out by each department separately under orders of the Engineer-in-Chief concerned,

and revised with changing needs.

7.7.4 The scheme of taking the examination by a candidate (whether in one go or in installments), number of chances that can be availed, and the 'pass' criteria shall be as per service rules or as may be prescribed by the Government.

7.7.5 The fact of departmental examination having been cleared by an officer will be recorded in his service book.

7.7.6 The examination shall be held separately by each department twice a year, first in the middle of May and then in the middle of November. For all the engineering disciplines in a department, the examination shall be held together.

7.7.7 The Engineer-in-Chief shall set up a Board of Examination, which may comprise one Chief Engineer (Chairman of the Board), two Superintending Engineers and one Executive Engineer.

7.7.8 The Chairman shall fix a suitable examination centre and also dates for the examination in consultation with the Engineer-in-Chief and put up the same on the departmental website in early March and early September.

7.7.9 A candidate desiring to appear in an examination in May/ November should apply to the Divisional Officer for permission to do so by end of March/ September. The Divisional Officer shall transmit to the Superintending Engineer the names of all the applicants, with clear recommendations on those found fit along with reasons for not recommending the rest, with intimation to the applicant-officer. The Superintending Engineer shall forward the recommendations with his comments to the Chairman by middle of April/ October. The applicants will also send a copy of the application direct to the Chairman. Efforts shall be made to take applications/recommendations on-line.

7.7.10 For paper setting, the Chairman shall allocate different subjects to different officers (or even retired officers, academicians or professors working outside the department). The examiners so appointed shall set question papers and submit the same to the Chairman in a confidential cover. The Chairman may, in his sole discretion, moderate the question papers and finalise them.

7.8 CONDUCT OF EXAMINATION

7.8.1 The examination shall be conducted in a fair manner and every precaution taken to avoid leakage of question paper and copying. The candidates shall be supplied answer sheets but they shall arrange their own writing pens, pencils, drawing instruments, calculator, etc. The examination shall be supervised by an officer authorised for the purpose, preferably the Superintending Engineer in-charge of the Circle where the examination is held, and he may be given additional manpower to assist him or can be authorised to co-opt persons to assist him.

7.8.2 Before the start of the examination, the Supervisor shall arrange to have the attendance sheet signed by the candidates. At the end of the examination, the Supervisor shall collect from the candidates the answer sheets, authenticate them by putting his full signatures on the first page (at the beginning of the write-up) and on the

last page (at the end of the write-up). The Supervisor shall put all the answer sheets in a bundle, seal them in a packet, and arrange to send it to the Chairman together with a certificate to the effect that the examination has been conducted under his supervision strictly according to the prescribed rules. The certificate will also contain the information relating to date of examination, subject, time of commencement of examination, time when examination ended, number of candidates due to appear, number of candidates who actually appeared in the examination and number of answer sheets.

7.8.3 Impersonation. To avoid impersonation, each candidate shall, for admission into the examination hall, be required to produce photo identity card (carrying his signatures) issued by the department concerned. If still case of impersonation is suspected or detected, enquiry will be ordered by the Chairman. If impersonation is established, the candidate shall be declared 'fail' and debarred from taking the examination for a further period of two years. The impersonator shall be proceeded against under the relevant provisions of Criminal Procedure Code and departmental provisions where applicable.

7.8.4 The oral examination, if any, shall be held, preferably on the last day of the examination, by Chairman and the Members of the Board. Aim of this examination is to determine general capability of the officer.

7.8.5 The Chairman shall have the sealed packet of answer sheets sent to the paper-setters for evaluation after giving confidential roll numbers. Table marking should be preferred. In evaluation, no grace marks shall be allowed, but half mark will be rounded up to the next higher number. The Chairman shall ensure that the evaluated answer sheets are received back by him together with the marks sheet in triplicate, within the time period fixed by him. The Chairman may have the answer sheets re-checked if a discrepancy is noticed.

7.9 OUT-SOURCING OF CONDUCT OF EXAMINATION

7.9.1 The Engineer-in-Chief may outsource the work of holding the examination to a reputed outside agency such as IITs, Construction Industry Development Council, Institute of Engineers, etc. The work can also be entrusted to institutes such as Haryana Institute of Public Administration, Haryana State Buildings and Roads Academy of Research and Training and/or Haryana Irrigation Research and Management Institute.


SERVO
PRIDE

Chapter 8
Classification of Works

8.1 CLASSIFICATION OF WORKS

8.1.1 The works in PWDs shall be classified on the basis of various parameters, as indicated below:

(a) Nature of work, i.e., whether the work is original or pertains to repairs, operation or maintenance;

(b) Source of funds, i.e., whether the funds are from capital head or revenue head; whether these come from plan head or non-plan head; whether these are deposits received from organizations/individuals; whether the funds will be disbursed by some other agency say Regional Officer of the Ministry of Road Transport and Highways; or whether these come through foreign-aid, etc.

(c) Value of works (to indicate their relative importance, level of supervision and monitoring);

(d) Monitoring requirements (e.g. works relating to announcements by the Chief Minister; works of a particular department; works relating to a particular activity such as housing; works falling in a particular district or constituency; works serving specified levels of population; works of specified value running behind schedule; works undertaken during the current year and spill-over works of previous years, etc); and

(e) Any other system to suit particular needs.

8.1.2 Engineer-in-Chief shall examine by January every year as to which classification parameters are to be used for the next financial year (most of the parameters referred to in para 8.1.1 are required) and get the orders of the Administrative Secretary in this regard. The classification system shall be part of overall computerised Management Information System.

8.2 CLASSIFICATION BY NATURE

8.2.1 As indicated above, in terms of nature, the works of PWDs are divided primarily into two classes: 'Original Works' and 'Repairs' or 'Maintenance'.

8.2.2 **Original Works.** The term 'Original' in this context indicates creation of new assets or value addition to existing works (for example, replacing conglomerate flooring of a building with marble flooring). Original works shall include new construction, whether of entirely new works or additions and alterations to or renovation, remodelling and extension of existing works, except as hereinafter provided; also all repairs to newly purchased or previously abandoned buildings or works required for bringing them into use.

8.2.3 Repairs or Maintenance Works. The term 'Repairs' or 'Maintenance' indicates primarily operations undertaken to maintain in proper condition buildings and works in ordinary use. It shall embrace all works which are required for the preservation of an asset and to prevent its deterioration noticeably below that which prevailed immediately after the original construction. In certain circumstances, it also includes new works and some petty works, as discussed in paras 8.2.5 and 8.2.6. In many cases, maintenance will embrace operational functions, like running/operating a facility or installation of equipment to perform a service (e.g. running a canal or lift or generator or operating a toll plaza). To take care of such requirements, an inclusive term 'Operation & Maintenance' is often used.

8.2.4 When a portion of an existing structure or any other work is to be replaced or remodelled (whether or not the change involves any dismantling) and the cost of the change represents a genuine increase in the value of the property, the work of replacement or remodelling, as the case may be, shall normally be classified as 'Original Work'. In all other cases, the whole cost of new work should be charged to 'Repairs'. When any dismantling is involved and serviceable materials are recovered, the cost of such materials should be credited to 'Original Work' or 'Repairs' as the case may be. The authority competent to accord technical sanction to the estimate should ensure that such credit as due is given in the estimates.

8.2.5 Miscellaneous items of works, as described in para 8.2.6, which should ordinarily be debited to 'Original Work' may, with the prior approval of the Chief Engineer, can be debited to 'Repairs' subject to a maximum of Rs.5,00,000 (or as prescribed) in any one case provided that the works in question do not form part of any comprehensive scheme or project covered by works estimate. In case of residential buildings, this limit is Rs. 50,000 (or as prescribed). In case of works relating to residences, the cost incurred shall be taken into account in determining their capital cost and in calculating the rent in accordance with rules issued by the Government.

8.2.6 Following are the types of works, which ordinarily should be classified as 'new works', may be treated as 'repairs' subject to the prescribed financial limits:

(a) In case of roads:

(i) Super-elevation at curves;

(ii) Cutting back a hillside to improve sight distance and vision at curves, provided acquisition of land is not involved;

(iii) The construction or reconstruction of an experimental stretch of road;

(iv) Improvement of alignment or gradient or change of grade at causeways, carried out at the time of renewing a surface, provided acquisition of land is not involved;

(v) Petty survey works, including survey required to complete records relating to land widths, encroachments;

(vi) Demarcation of road boundaries;

(vii) Traffic census/ surveys, creating data base for planning and prioritisation of road development schemes and projects;

(viii) Widening the formation or carriageway of a road or widening of a drain; and

(ix) Reconstruction or remodelling of bridges, culverts, causeways, embankments, protection or training works.

(b) In case of buildings:

(i) Replacement of electrical wiring and electrical fittings, etc. which have outlived their life or utility;

(ii) Minor additions and alterations in the toilets, bathrooms and kitchens; and

(iii) Providing security measures or garage without interfering with architectural concept or building control.

(c) In case of water supply and sanitation works:

(i) Replacement of choked sewer and the raising of manholes; and

(ii) Provision of gully traps for storm water drainage.

(d) In case of irrigation works:

(i) Adjustments/modifications of outlets.

8.2.7 An asset, of which the quality or serviceability, as a result of prolonged wear and tear or damages or floods, has fallen considerably below that what prevailed at the time of its construction, or is no longer in a position to perform the level of service expected of it now, may require not just repairs but extensive or holistic treatment, which shall be termed as 'Special Repairs'. Special repairs may involve some component of original work, if the facility/ asset is sought to be upgraded. The work of special repairs shall be taken up after following the same formalities as in case of original works.

8.2.8 There may sometimes be a thin line of difference whether the expenditure on works of special repairs involving an element of original work should be debitable to repairs or original head or apportioned between the two. In any such case of ambiguity, the decision of the Administrative Secretary shall be final.

8.2.9 The maintenance of a work, of which the original construction has not been completed, shall constitute a charge against the same account head under which the original work is sanctioned. However, this can be done only till the administrative approval of the work is in operation which, as the subsequent paras indicate, cannot go beyond five years. Any expenditure incurred on maintenance subsequent to completion of the original work should be debited to repair head.

8.3 CLASSIFICATION OF WORKS ON COST BASIS

8.3.1 A work of which the cost is up to Rs. 5 lakh shall be called a Petty Work.

8.3.2 A work of which the cost is more than Rs. 5 lakh, but less than Rs. 25 lakh, shall be called a Minor Work.

8.3.3 A work costing more than the limit of minor work shall be a Major Work.

8.3.4 The limits prescribed in paras 8.3.1 and 8.3.2 can be varied by the Departments on the basis of their needs or types of works with the approval of Administrative Secretary.

8.4 DEPOSIT WORKS

8.4.1 A PWD may be called upon to execute works of construction or repair for which the outlay is provided wholly or in part from (a) funds of a public nature but not included in the financial estimates and accounts of the State Government; (b) contributions from the public. Such works are termed deposit works. These works may be on behalf of another State, corporation, municipality, Red Cross Society, welfare organisation or any other legal entity, etc.

8.4.2 Tenders for deposit works shall be invited for and on behalf of the principal i.e. the entity concerned.

8.4.3 PWD officers shall exercise powers to undertake deposit works within the limits of their powers as laid down in DFR to accord technical sanction.

8.4.4 Prior to undertaking the preparation of the estimate, cost of its preparation shall be got deposited from the client (refer para 9.2.1). Before the work is taken in hand, a written approval to the design and estimate must be obtained from the authority depositing or administering the funds. Levy of departmental charges in the estimates shall be in accordance with the policy laid down by the State Government from time to time, but the Government may grant full or part exemption. The administrative approval and technical sanction shall be governed by the relevant provisions of Chapter 9.

8.4.5 The funds shall be realised before any liability is incurred on account of the work. No interest shall be allowed on sums deposited as private contributions for works. In case where the receipt of money is assured, one-third of the estimated cost may be got deposited in advance. Thereafter, the expenditure incurred may be got reimbursed through monthly bills with rendering of monthly accounts on the progress of works. The one-third deposit obtained as the first instalment shall be retained for adjustment in the last portion of the estimated expenditure. Where delays are experienced in obtaining funds, and where expenditure has to be incurred out of one-third reserve to keep the works going, the matter should be brought to the notice of Superintending Engineer/ Chief Engineer promptly for taking up the matter with client department. It should be understood that no expenditure shall be incurred by any PWD out of its own grants/funds and vice versa. For petty or short duration works, full funds should be realised in advance. In the case of works which are financed by private persons, it shall be proper to get 100% deposit.

8.4.6 In case of a State Government undertaking or a State University or any such body, the amount may be taken in such instalments and by such dates as decided by the administrative department of that body. The administrative department, while giving such concurrence, shall note that it was undertaking to provide the funds itself in case of any shortfall.

8.4.7 Where a work is to be carried out partly from funds in the estimates of the department and partly from funds provided by some other entity, the contribution will be considered as a lump sum in addition to the Government grant, and the work shall be executed strictly in accordance with the procedure laid down for normal Government works. The contribution can be taken in instalments also.

8.4.8 The client shall be clearly told that no advance of Government money will be permitted and in case where the money is paid by instalments, the PWD will not be responsible for any increase in cost, or damage to the incomplete work caused by temporary stoppage of the work pending receipt of further instalments.

8.4.9 Deposits received from one department should not be diverted to works of the other. However, the Chief Engineer concerned may allow temporary use of funds in special circumstances in respect of State departments, undertakings or other State entities.

8.4.10 It shall be the duty of the Engineer-in-Charge of the work to bring, as soon as possible, to the notice of the superiors and the party concerned, any anticipated excess over the estimate, and also to provide full information in connection with the progress of work as well as expenditure so that no responsibility may attach to the Department in the event of work having to be stopped for want of funds.

8.4.11 All anticipated excess owing to the tender having been received at rates higher than provided in the estimate should be at once brought by the Engineer-in-Charge to the notice of the party concerned for accepting the excess and arranging enhanced funds accordingly. The executing officer shall also inform the client about any significant increase happening in the construction cost due to any reasons. The client can, however, seek any details in this regard. It will be proper to associate a representative of the party at the tender stage and at any other stage where deemed fit.

8.4.12 Expenditure in excess of deposits cannot be operated from Public Account. Classification of such excess as minus (-) deposit is against financial norms, and constitutes a serious financial irregularity. In no case, shall the departmental officers allow expenditure on such works to be incurred or booked to some other work or head of account.

8.4.13 Authorities undertaking such works shall satisfy themselves that the extent to which Government is responsible in regard to the execution of the work is thoroughly understood both by the party for whom the work is to be constructed and by the executive officer to whom the construction is to be entrusted. The cost of any escalation/ litigation/ arbitration is always required to be borne by the client, and no liability shall devolve on the State Government.

8.4.14 The scope of a deposit work shall not be altered without the written permission of the client. The representative of the client shall be involved in case any changes are to be made during the course of execution for some good and justifiable reasons.

8.4.15 The Engineer-in-Charge shall send monthly utilisation certificates to the

Superintending Engineer, the authority competent to accord technical sanction (if different from Superintending Engineer) and the client. The department shall also inform the client department with a copy to the Administrative Secretary of the progress of the work, at least major activity-wise.

8.4.16 After the completion of the work, the executing officer shall bring to the notice of the client all guarantees and warranties outstanding at that time with their time span, and shall get them transferred to the client, wherever required.

8.4.17 No liability of maintenance of these works shall devolve on the PWD.

8.4.18 Where the work is of large magnitude and private party is involved, an agreement should be drawn up under legal advice.

8.5 SPONSORED WORKS

8.5.1 In some cases, while the public works authority is the executing department on behalf of an organisation, that organisation itself is responsible for the payment of bills of expenditure. Such works shall be termed as sponsored works.

8.5.2 If the sponsoring authority has laid down any rules and procedures regarding various approvals, investigation and planning, design standards, format of estimate, method of procurement, construction methodology, site checks, supervision requirements, quality assurance, external audit, funding pattern, mode of payment, post-construction maintenance, etc. the same shall be followed, subject to concurrence/ approval of the State Government being obtained. Any modification of rules and procedures considered necessary will be settled before undertaking the work/ programme.

8.5.3 The cost of any escalation/ litigation/ arbitration is always required to be borne by the sponsoring authority, and no liability shall devolve on the State Government.

8.5.4 The executing authority should ensure that the agency charges as determined by the State Government shall be recovered from the sponsoring authority. In case the agency charges are not so determined, these shall be charged as 14% of the project cost.

8.6 EMERGENCY WORKS

8.6.1 The works of extreme urgent nature such as a breach/cut, or a flood or a calamity (such as earthquake or cyclone), etc. are called emergency works. For details of management of these works, refer to Chapter 17.

Chapter 9
Approval of Estimates

9.1 INTRODUCTION

9.1.1 For every work proposed to be carried out, there has to be (i) approval of the estimate by the client/owner of the work requiring it, called administrative approval (ii) approval by the competent engineering officer in respect of specifications and soundness of the proposal contained in the detailed estimate, called technical sanction.

9.1.2 The powers of the Government and the authorities subordinate to it to accord administrative approval to works are laid down in the relevant financial rules of the State. These powers are subject to previous concurrence of the Finance Department. Administrative approval (a/a) at the State Government level is accorded in a department which is to own the asset. For example, the a/a for a road work is accorded by the State Government in B&R Department, for an irrigation project by State Government in Irrigation department and for a water supply and/or a sewerage project by State Government in Public Health Engineering Department (PHED). The a/a for construction of judicial buildings is accorded by the State Government in Administration of Justice Department and construction of Mini- Secretariats is accorded by the State Government in Revenue Department.

9.1.3 The administrative approval in case of public works not particularly connected with any branch of the administration will be granted by the B&R department and the file in this case will be moved through the Chief Secretary bringing out the inability of any other department to accord the administrative approval.

9.1.4 Administrative approval for repairs is required only in case it is specifically prescribed in relevant provisions of Departmental Financial Rules (DFR); otherwise, technical sanction and provision of funds are sufficient authority to incur expenditure on them. Administrative approval in case of special repairs is, however, required as earlier indicated in Chapter 8.

9.1.5 The sanction of an ordinary estimate of repairs lapses on the last day of the financial year in which it receives sanction. The estimate of special repairs, like an original work, remains in force till completion, of course subject to the limit of 5 years.

9.1.6 A register of administrative approvals giving suitable particulars including those of revised administrative approval, if any, date (s) of commencement and completion, etc. shall be maintained. The register shall be reviewed periodically by the Chief Engineer concerned.

9.2 INITIATING THE ESTIMATE

9.2.1 As preparation of estimates, even of preliminary nature, demands precious time and resources, there shall be proper discipline for undertaking the same. The cost of preparation of various types of rough cost estimates shall be listed down by the

PWDs, and the same revised from time to time. This cost shall be chargeable in case of private or deposit works.

9.2.2 In the case of works owned by other departments, the preparation of estimates shall only be undertaken after a written request regarding the same is received from the said department. In the case of PWD owned works, detailed instructions for initiating a proposal shall be issued by the respective departments at the State Government level. As a rule, the actual preparation of an estimate shall be taken up only with the approval of the authority competent to accord technical sanction or an authority senior to it.

9.2.3 Certain works may need pre-feasibility studies, design inputs or even detailed project reports. In such cases, the PWDs shall first take prior approval of the competent authority to incur expenditure on preparation of such reports. In the case of works owned by PWDs, the rough cost, based on the inputs likely to be involved, will be worked out and a proposal sent for approval of the State Government in the concerned PWD. In case of works owned by another department, such an estimate shall be prepared only on receipt of a written request from it. For engaging consultants, if required, the methodology provided in Chapter 11 will be followed.

9.3 ADMINISTRATIVE APPROVAL IN CASE OF BUILDINGS

9.3.1 For a rough cost estimate of a building to be prepared by the PWD, the client department shall, in the first instance, approach the Chief Architect, Department of Architecture (DoA), Haryana for preparation of architectural drawings on the basis of scope decided by it. The role of DoA has been laid down in para 10.6. It shall be proper if the client department designates some officer of the department as nodal officer, who will have liaison/discussion with the Department of Architecture/ Chief Engineer (Buildings). The Client department is, however, required to take all other steps such as identification of land, preparation of proper land plan etc.

9.3.2 The client department may also like to decide to hire a private architect at this stage, following the methodology as laid down in Chapter 11. However, before taking a considered decision in the matter, the views of the Chief Architect shall be sought and approval of the Chief Minister and the Finance department obtained.

9.3.3 The Chief Architect has already worked out standard drawings for various types of buildings. To save on time, the client department can adopt these standard drawings, which have the further advantage that even cost estimates could be readily available. However, in all such cases, the lay-out plan and cost of estate services will be site specific. The client department can also identify projects for standardisation of drawings by the Chief Architect.

9.3.4 Administrative approval shall be sought as soon as the necessity for the work is apparent. The case for administrative approval should be submitted to the client department accompanied by an estimate (which may not be a detailed one) bringing out the cost, along with information as to the approximate time required to start the work after the accord of administrative approval, realistic time to complete the work

and fund flow chart. The unit cost should be realistic and if possible, based on similar projects completed in the recent past. While preparing the estimate for getting administrative approval, the provisions of para 10.1.3 shall be followed, which require, among other things, a mandatory site visit. The said estimate will be framed under the authority of an officer of the PWD competent to accord technical sanction and signed by an officer authorised in this behalf under his full name and date. The amount of departmental charges, if leviable, should be indicated in the estimate separately from the amount of works outlay.

9.3.5 If the client department, instead of issuing administrative approval, deposits full amount of estimated cost with the concerned PWD, the latter shall again request the client department to issue formal administrative approval. If no reply is received within 15 days, the work shall be deemed to be administratively approved, and the fact should be brought on record by the concerned PWD.

9.3.6 If the expenditure is to be met from sources other than the State Government, the authority or body providing the funds may need a certain requirement to be met or procedure to be followed. In such cases, the concerned client department or body should specifically bring out these details. The implementing agency shall study the requirements, list down the changes required in the normal system and their effect, if any, and get the approval of the Administrative Secretary on single file system.

9.3.7 In case where administrative approval for a certain sum has been accorded to a project by the Government, the Head of the client department shall not, on his own authority and without prior reference to the Government, direct the Public Works Department to provide for extensive additions and alterations as will cause excess over the estimated cost (as given in a/a) by more than 10 percent, thereby necessitating revised administrative approval. To avoid delay, the Head of the client department should send, through his Administrative Secretary, the case on single file system to the Public Works Department.

9.3.8 A group of works, which form one project, shall be considered as one work. The necessity of obtaining administrative approval of higher authority is not avoided by the fact that the cost of each particular work in the project is within the powers of a lower authority to accord approval. However, technical approval to components or small parts of a project can be accorded by officers of the PWD, in accordance with the provisions laid down in the para relating to technical sanction.

9.3.9 The scope of work approved by the sanctioning authority must on all occasions be looked upon as strictly limited to the precise objects which the estimate was intended to provide for. Accordingly, any anticipated or actual savings on a sanctioned estimate for a definite project should not, without special authority (the special authority means the same authority which was competent to give administrative approval to the original estimate), be applied to carry out additional work not contemplated in the original project except where such work may be considered fairly contingent to its execution.

9.3.10 In case there are material deviations from the original proposal, even though

the cost may possibly be covered by saving on other items, or where detailed estimates when prepared exceed the original estimate by more than 10 percent, revised estimate is required to be submitted to obtain revised administrative approval of the competent authority. This procedure shall also apply to cases where, during the execution of the work, owing to increase of rates or other causes, the amount administratively approved would be exceeded by more than 10 percent. The case for revised estimate should be sent at the earliest, preferably within one month of the knowledge that revised administrative approval will be required. In case of State Government works, if the tendered cost initially is 20% more than the amount of administrative approval, the work should not be allotted unless approval is first obtained, on single file system, from the Administrative Secretary concerned through the PWD Administrative Secretary.

9.3.11 Subject to availability of funds, the work on the project should be taken in hand as soon as practicable after receipt of administrative approval. In case it is not possible due to financial or other reasons, the matter should be brought to the notice of the concerned department. Where the administrative approval of a work is more than 2 years old, it will not be proper to start the work as the departmental priority might have changed in the meanwhile; in such a case, it will be necessary to seek at least the approval of the concerned Administrative Secretary on single file system. Otherwise, the administrative approval of an original work is valid for 5 years from the date of its issue.

9.3.12 It shall be desirable for the administrative department to observe a limit on the bank of sanctions. As a guide, the cost of new sanctions should not exceed two times (or as prescribed by the Finance department) the budget provision in a particular year, after first making an allowance for the requirement of funds for works in progress.

9.3.13 The client department, while granting administrative approval, shall also nominate a departmental officer to co-ordinate with the local Divisional Officer. This nominated officer shall inspect the progress of building at least once in three months. It will help in local co-ordination as well as will become independent source of information for the client department about the quantity and quality of work being done. The Divisional Officer shall involve such nominated officer in every major decision regarding the building.

9.3.14 It will be in order if for a building costing more than Rs. 10 crore (or as prescribed), the Administrative Secretary of the client department calls a meeting (consisting of Head of that department, Chief Architect, Chief Engineer incharge of buildings, nodal officer for the building and others as he deemed fit) at his level to look into the issues of lay out, drawings, specifications etc. so that there is no issue later. This step will enable the PWD to work better.

9.3.15 Engineer-in-Chief shall constitute a committee to look into all those minor expenses which the field or Headquarters officers might incur on tender notices or otherwise and which might not get booked to any particular work. Director (F&A)

and Director (P&A) shall be members of such committee. On the basis of recommendations of this committee, decision may be taken to regularise the expenditure. Future guidelines shall be also drawn on the basis of such proceedings.

9.3.16 A copy each of the administrative approval shall be sent by the client department to the Engineer-in-Chief, Chief Engineer (Buildings), Chief Architect, Public Health Engineering Department and Superintending Engineer (Electrical).

9.4 ADMINISTRATIVE APPROVAL IN CASE OF OTHER WORKS

9.4.1 The principles governing the administrative approval in case of other projects such as, roads, irrigation projects, water supply or sewerage projects are basically the same as indicated in para 9.3. The PWD shall need work-wise administrative approval before taking up any work. An approval given in principle to undertake a work shall not constitute proper administrative approval for commencement of execution as indicated in Chapter 10.

9.4.2 Sometimes, the sanction of projects is done only for seeking approval from another body such as National Capital Region Planning Board, NABARD or some department/Ministry of Government of India. Such a sanction for posing certain projects shall not be taken as administrative approval, which shall be sought separately for each work with all supporting estimates and documents.

9.4.3 The State Government may issue special instructions for adopting any particular methodology for granting administrative approval in respect of various works.

9.5 TECHNICAL SANCTION

9.5.1 For every work proposed to be carried out, a detailed estimate (based on essential drawings and preliminary structural and service designs) must be prepared for sanction of the competent authority. This sanction shall be known as technical sanction. What it implies is that the proposals are technically sound, specifications are appropriate for the service intended, and the estimates are realistic, based on adequate data. It shall be accorded by the technical officer of the concerned Public Works Department to the extent of powers vested in him in DFR. The said officer shall sign the estimate under his full name and full date. This sanction should precede the actual execution. The work may be allowed to be taken up in anticipation of technical sanction only in exceptional cases provided critical parameters of execution have been fixed/ approved by the sanctioning authority, and post-facto technical sanction sought at the earliest. The lump sum provision allowed, for want of details, in originally sanctioned estimate, shall be covered by a detailed sub-estimate later.

9.5.2 In case of original building works, other than petty works, to be done on behalf of other departments, the counter-signature of the Head of the department (or such lower officer as may have been specifically empowered in this behalf) shall be obtained on the plans and estimates in token of his acceptance of them, before technical sanction is accorded. If, subsequent to the grant of technical sanction, material and/or structural changes are contemplated, the orders of the original

sanctioning authority shall be obtained, even though no additional expenditure may be involved by the alterations.

9.5.3 The powers of officers to accord technical sanctions are fixed from time to time through the instructions issued by the State Government in public works departments. These instructions are usually issued with the concurrence of the Finance department. The power to issue technical sanction for original works shall be limited to 10 (ten) percent excess over administrative approval.

9.5.4 In the case of a project comprising several independent, identifiable components (e.g. the residential and administrative blocks of a hospital or different towers in a building complex), it is permissible for PWD officers to sanction separate detailed estimates for components of the project, each one being within the powers of their technical sanction, subject to the following conditions:

(a) For each such work or component there is a clear and separate amount in the administrative approval;

(b) The amount of such detailed estimate does not exceed the amount included in administrative approval by more than 10 percent; and

(c) The sanctioning authority is satisfied, before according technical sanction, that no material deviations from the whole project as prepared are to be anticipated, and that the amount of technical sanction for the whole project is not likely to exceed the amount of administrative approval by more than 10 percent.

9.5.5 The detailed estimate should, among other things, bring out: (i) quantities of principal materials to be consumed and (ii) unit rates of cost (which may be per unit of the facility, per unit area, per unit length or other appropriate unit). This information will form the data base for projects to be undertaken in the future.

9.5.6 A register of detailed estimates giving reference to administrative approval and other suitable particulars shall be maintained by the concerned officer. If there are more than one detailed estimates under one administrative approval, they should be related to the corresponding provision available for that work in the administrative approval.

9.6 APPROVAL IN CASE OF PETTY WORKS

9.6.1 For new petty works of buildings (and additions or alterations to existing buildings required for use by any department), the local head of the concerned department may call upon the Divisional Officer, B&R department to prepare rough cost estimate, but the Divisional Officer cannot be required, except by his departmental superior officers, to prepare the detailed drawings and estimates required for the purpose of technical sanction of projects, which he considers likely to cost a sum greater than that which can be administratively approved by the local officer-in-charge of the department concerned, or those, however small their probable cost, in the necessity of which he does not concur.

9.6.2 The Divisional Officer shall in each case, exercise his judgment on the

demand made and give full weight to the opinion of the department concerned. It is his duty to oppose any application of the funds at his disposal to works as to the real necessity of which he is not satisfied; and in every case in which he thinks that he cannot recommend the execution of a work called by a duly constituted authority, he should explain his objection to the officer concerned in writing, and if he fails to convince him, should refer the matter for the orders of the Superintending Engineer. At the same time he is responsible that such references are not made without reason.

9.6.3 The actual execution of these works shall in every case be dependent on the necessary funds being specifically sanctioned by the competent authority.

9.6.4 The following procedure shall be adopted in case of a new petty works:

(a) The requisition will be made by the officer for whom the work is required;

(b) The Divisional Officer will record on the requisition his opinion as to what work should be done, and give on the face of the requisition a rough estimate of the probable cost; and

(c) The acceptance of the estimate by the authorised officer of the client department shall be sufficient authority for the execution of the work provided that allotment of funds has been made.

Chapter 10
Estimates and Projects

10.1 ESTIMATE OF PROJECTS

10.1.1 The estimate brings out the background/necessity of the proposed work/ project and purports to tell in advance the expenditure likely to be incurred on the construction of the work in question. This information is essential to enable the client/ owner to take a decision regarding its acceptance and funding. It also helps the executing authority to control expenditure, evaluate the bids regarding their reasonableness, plan materials and to watch the progress.

10.1.2 The estimate for a work consists of a report, a specification and a detailed statement of measurements, quantities and rates, with an abstract showing the total estimated cost of each item. In the case of a project consisting of several works the report may be a single document for all the works and likewise the specification; but details of measurements and abstract may conveniently be prepared for each work, supplemented by a general abstract bringing the whole together. The report should state in clear terms the object to be gained by the execution of the work estimated for and explain any peculiarities which require elucidation, including where necessary the reasons for the adoption of the estimated project or design in preference to others. In the case of estimates for 'repairs' or 'maintenance' (but not the special repairs), only the specifications and the detailed statement of measurements, quantities and rates, with the abstract will ordinarily be required (refer para 9.1.4).

10.1.3 While preparing the estimate of any project, the site shall be inspected to ascertain field conditions, including availability of land. The estimate shall be a cost-effective proposal for the intended purpose and be as accurate as possible. In the case of projects of larger magnitude, the senior officers themselves should visit the site. The fact of the visit and its date/time and names of the officers, who visited the site, should be clearly brought out in the estimate. Engineer-in-Chief should also issue further detailed instructions in this regard from time to time.

10.1.4 The estimate may be preliminary/ rough cost estimate for the purpose of obtaining administrative approval or a detailed estimate for the purpose of according technical sanction.

10.1.5 Preliminary/ Rough Cost Estimate. It may be based on (i) rough estimate of quantities and their cost or (ii) cost per unit/length/ area/ volume or any other suitable parameter. In the latter case, the unit cost may be worked out from the cost of similar/comparable type of existing structure constructed by the department or of which cost has been worked out accurately on the basis of a detailed estimate. For rate purposes, comparable type means having the same type of construction, configuration, specifications, situation and usage, as also lead of construction materials. For any differences, due allowance in cost of construction should be made, besides the factor of

time lag to account for rise in cost of construction, etc. The estimate should incorporate ground conditions as ascertained during the site visit mentioned in para 10.1.3.

10.1.6 The responsibility of ensuring that estimate is prepared properly is with the Divisional Officer/Executive Engineer, but the senior officers involved in processing the estimate are required to see that the estimate is correct on all parameters. The rough cost estimate shall need the approval of the authority competent to accord technical sanction.

10.1.7 Detailed Estimate. The estimate shall be comprehensive, supported by complete details, and based on drawings and calculations of design, where necessary. Quantities of various items of work should be calculated from the drawings and cost worked out item by item. Unit rate of each item of work shall take into account the cost of materials, labour, equipment, overhead charges, profit, etc. For this, standard Schedule of Rates may be used, but where the schedule does not provide for any particular item, the rate may be worked out through market rate analysis. If the schedule rate does not appropriately reflect the actual market rate, the average of recent tendered rates should be taken so that the estimate reflects the true cost of the work at the time of submission of the estimate. This estimate is suitable for according technical sanction, and for inviting tenders. Detailed estimate shall also bring out clearly the provisions such as quantities and cost component-wise/ stage-wise. For a work consisting of several units, there may be separate detailed estimates for different, distinct and identifiable units, but the cost of the detailed estimate, for purposes of sanctioning it, shall be related to the corresponding provision of that unit in the rough cost estimate. As far as possible, a detailed estimate shall be prepared before the commencement of the work.

10.1.8 The detailed estimate shall be approved by the authority competent to accord technical sanction.

10.1.9 In certain cases, unit detailed estimates, on the basis of works already executed, are adopted and these are up-dated with time. While adopting such rates, care shall be taken to give full reference to the mother document/ estimate and establish the compatibility of rates, as there could be variations due to site and other circumstances. In any case, no officer preparing the estimate can take shelter behind this practice for calculations turning out to be wrong. He shall be fully responsible for the estimates and the unit rates used by him.

10.1.10 So far as the abstract is concerned, it should clearly bring out the cost of various components/units/ stages, as appropriate. The cost of the work shall be rounded off to the nearest hundred rupees. Miscellaneous petty works may be entered without measurements, the estimated cost alone being given as a lumpsum.

10.1.11 The abstract of estimate may be framed to show either (i) the quantity and the cost of completed items of work, or (ii) the cost of labour and materials separately. The adoption of either form of abstract shall be determined with reference to the mode in which it is proposed to carry out the work. If it is proposed to go in for a contract for completed items of work, the first mentioned form of abstract will be appropriate. If it

is intended to procure materials and employ labour for construction separately (whether by contract or by departmental agency), the second form of abstract will ensure a closer check on the outlay and will be preferable.

10.1.12 After an estimate has been sanctioned, it may sometimes become necessary to make a change in the method of execution originally contemplated. In such a case, the abstract should be recast in accordance with the above instructions. The details of cost and quantities already approved shall be rearranged and the revised abstract shall be approved by competent authority and thereafter treated as sanctioned estimate for accounts purposes.

10.1.13 Besides the cost of works proper, the following components of cost, as relevant, may also be provided in a rough cost estimate:

(a) Any access road to the site, need of special or deep foundations, unusual site conditions, incidental expenditure such as hutment for workmen, shed for stores, hiring of godowns, dewatering and pumping arrangements, site office, etc.

(b) Contingencies (to cover unanticipated minor requirements) at (i) 1 percent of the estimated cost of works up to Rs. 1 crore; (ii) 0.75 percent for those costing more than Rs. 1 crore, but less than Rs. 5 crores, subject to a minimum of Rs. 1 lac; (iii) 0.50 percent for those costing between Rs. 5 crore to Rs. 20 crore subject to a minimum of Rs. 3.75 lac, and (iv) 0.25 percent in other cases subject to a minimum of Rs. 10 lac. Efforts shall, however, be made to reduce the amount of contingent expenditure and instructions to this effect shall be issued for time to time. In the case of works done on behalf of funding agencies, the amount of provisions like contingencies, quality control, etc. shall be in accordance with the guidelines, if any, issued by them. The amount of contingency shall include cost of petty establishment employed on the works;

(c) 1 percent for quality control measures. This provision may be suitably enhanced for works requiring third party inspection, etc;

(d) Agency/ departmental charges as prescribed by the Government;

(e) Land development, boundary plantation and landscaping for new projects of buildings, roads, bridges, pumping stations, head-works, etc;

(f) Services re-location, forest and other statutory clearances, compensatory afforestation, re-settlement and rehabilitation of project affected persons;

(g) Requirement of any instrumentation;

(h) Maintenance during project completion and handing-over operation;

(i) Operation and Maintenance for the specified number of years, depending on the nature/requirement of the project; and

(j) Supervision or other consultancy services, if applicable.

10.2 SPECIFICATIONS

10.2.1 Specifications shall convey information about the materials and components to be used, the standard of workmanship that will be required, any specific performance requirements and/or the conditions under which the work is to be executed, as also the mode of measurement. Specifications will also be the basis of rate for any item of work. Engineers-in-Chief shall ensure that there is uniformity in the specifications for similar works and should issue instructions in this regard, from time to time.

10.2.2 Specifications to be used will generally be those as are laid down in the Book of Haryana PWD Specifications, supplemented/ substituted where required by relevant BIS or other codes of particular application to any department. The department concerned shall issue necessary instructions in this regard. For a special or unusual situation, customised specifications may be drawn with the approval of Engineer-in-Chief.

10.2.3 PWDs shall take steps for periodic revision and updating of Specifications to keep abreast of technology, innovations and introduction of new materials. The chapter-wise revision shall be done by the nodal departments, viz. B&R department for roads, bridges & buildings; PHED for water supply and sewerage works, and Irrigation department for irrigation and drainage works. For the sake of uniformity and holistic revision, the revisions so carried out shall be brought before the Direction Committee (para 10.3.4). Pending the wholesale revision of specifications, existing ones may be modified or new ones introduced, as necessary and addenda/ corrigenda to that effect issued in seriatim. All specifications shall be in SI (Systeme International) units.

10.3 SCHEDULE OF RATES

10.3.1 To facilitate the preparation of estimates, there shall be a Haryana Schedule of Rates (HSR), giving the unit cost of construction for each type of work in accordance with the prescribed specifications and method of construction.

10.3.2 The Schedule of Rates shall be on digital format, and revised and up-dated regularly (at least every two years) to take into account (i) rise in cost of inputs; (ii) changes of technology and construction practices; and (iii) introduction of new materials and specifications. Pending the revision of Schedule of Rates, interim revision shall be done, as considered necessary.

10.3.3 For an item of work for which no corresponding rate is available in the existing standard schedule of rates, rates may be analysed/ prepared from basic principles, and treated as non-schedule item. A continuous effort shall be made to reduce the number of non-schedule items. In any case, efforts shall be made to ensure that cost of non-scheduled items is not more than 10% of the total cost of the project.

10.3.4 To ensure uniformity in the Schedule of Rates, specifications and other matters specified in the Code, there shall be a committee called the Direction Committee which will comprise the following, with Engineer-in-Chief, B&R department as the convener:

(a) Engineers-in-Chief of all the three PWDs;

(b) One Chief Engineer each from three PWDs, to be nominated by Engineer-in-Chief of the Department;

(c) Chief Engineer B&R department in-charge of PWD Code;

(d) Managing Director, Haryana State Roads & Bridges Dev. Corporation Ltd.;

(e) EIC/Chief Engineer, HUDA;

(f) EIC/Chief Engineer, Haryana State Agricultural Marketing Board;

(g) Chief Engineer, Pachayati Raj Organisation;

(h) Senior Deputy Accountant General, Haryana;

(i) Representative of State Finance Department;

(j) 2 Co-opted members, decided by three Engineers-in-Chief;

(k) Chief Architect in case of Buildings issue; and

(l) Superintending Engineer, B&R department, in-charge of schedule and specification cell, Member Secretary.

10.3.5 The Administrative Secretary of B&R Department may re-organise the Direction Committee from time to time and may also ask it to perform some other functions which involve co-ordination among the three departments.

10.3.6 The Direction Committee shall meet at such frequency as necessary, but at least twice a year, in the months of January and July. The responsibility of calling the meetings of this Committee is that of Engineer-in-Chief of B&R department.

10.4 PRELIMINARIES OF BUILDING PROJECTS

10.4.1 Before undertaking the preparation of design and estimate of a building project, the site and its suitability should first be settled, and land should be in the possession of the client/administrative department. The department concerned should be requested to ensure that land/ municipal records have been updated to show the ownership in its favour. Where, however, land has to be acquired, notification under section 6 of the Land Acquisition Act, 1894 should have been issued before the PWD is called upon to initiate planning.

10.4.2 In the case of a work which needs some approval from the Government of India or some other authority due to its nearness to any fort or cantonment, or defence installation or railway, the client department shall first take necessary approvals before approaching the Public Works Department. If the work or building belongs to the PWD itself, the Divisional Officer shall, in the first instance, take up the matter with the local officer of the relevant department for an opinion from their point of view, and then submit to Government of India in the appropriate Ministry for concurrence and when such concurrence has been obtained, no deviation shall be made without reference to the same authority.

10.4.3 Site Selection Board. For important buildings (costing more than the prescribed limit or otherwise important) such as mini secretariat, site shall normally be

selected by Site Selection Board. The Board shall comprise the following:

(a) Deputy Commissioner of the District, as Chairman;

(b) Superintendent of Police;

(c) Executive Engineer, B&R department;

(d) Executive Engineer, Public Health Engineering department;

(e) Executive Engineer, Irrigation department;

(f) District Town Planner;

(g) Senior Architect/ Architect concerned;

(h) A senior officer of the department concerned; and

(i) Two co-opted members, as felt necessary by the Chairman.

10.4.4 Among other things, the Board shall consider the suitability of site from flood and drainage aspects, access to the site, possibility of any nuisance or hazard to the public or traffic, nature and suitability of soil for foundation design, availability of outfall for storm water and sewage, and prevailing controls/restrictions of any rules, regulations or byelaws. The site should not have problems in respect of (i) security or (ii) its acquisition/ procurement.

10.4.5 The administrative department shall see that the sites identified are free from encroachments and other encumbrances.

10.5 PRE-PLANNING OF BUILDING PROJECTS

10.5.1 A month or two before the start of the financial year, as soon as the plan size of the departments gets finalised for the next financial year, Chief Engineer incharge of the buildings works shall assess the demand of funds for continuing building works in the next financial year. After accounting for the funds which the PWD requires for works in progress, the remaining budget grant would be available for new works. In the month of March, he shall arrange holding of pre-planning meetings at Engineer-in-Chief level with each client department having a building programme budgeted for the next year, to work out a preliminary work programme for the ensuing year. Chief Architect, Department of Architecture, Haryana and the Chief Engineer concerned of PHED shall also be invited.

10.5.2 The preliminary meetings shall be followed by a meeting with the Administrative Secretary of the B&R department, in which a representative of the Finance Department shall also be invited. This meeting should be able to finalise the building programme for the following year and priortise the works. Schedule of site selection, preparation of site plan by B&R department and its submission to the Chief Architect shall be laid down.

10.5.3 It is necessary that the client department works out its requirements accurately and comprehensively so that once the planning has begun, there should be little room for changes. The client department shall designate a nodal officer for every building who should be associated by the executing officer in taking important decisions.

10.5.4 If changes become absolutely necessary, they shall be kept to the minimum and called for only by the competent authority (or the nodal officer) which intimated the original requirements.

10.5.5 It is imperative that building materials and the specifications for various items of work are appropriate to the class of building, its function, usage and geographical location as also economy and durability. These shall also be in conformity with the general specifications as stipulated by the State Government. In case the client department wants any change, it shall obtain approval of the Chief Minister.

10.5.6 It is also necessary that B&R and Architecture departments are allowed reasonable time that is necessary for proper planning and designing, depending on nature and size of the project.

10.6 ROLE OF DEPARTMENT OF ARCHITECTURE

10.6.1 The Department of Architecture (DoA) shall be responsible for preparation of master plans, lay-out plans, preliminary drawings, working drawings, detailed drawings and services drawings. All drawings shall be in metric units.

10.6.2 In the case of a large project which is to be developed in phases, spread over several years, DoA shall prepare the master plan in consultation with the client department. Consultations shall be held with other departments concerned to (i) determine the electrical load, source of power, need of laying any special line, requirement of a sub-station (ii) assess the requirement of water, determine the source and need of special arrangements (iii) estimate the sewage load and determine the method of treatment and disposal (iv) estimate the quantum of storm water and plan its disposal, etc.

10.6.3 Building requirements for each proposal/ project shall be worked out by the client in terms of functions, units, types, numbers, space allocation for various usages, requirement of special services, phases, future expansion, etc. and communicated to the DoA. The department shall prepare preliminary drawings with due regard to the norms of Haryana Government and National Building Code, 2005 (with latest revision) relating to economy, space, function, building efficiency. It shall also meet all other requirements regarding energy efficiency or use of power fixtures. The DoA shall send these drawings to the client department for its approval. The drawings shall be modified by the DoA in the light of any suggestions/ comments of the client department, and re-submitted to it for approval and counter-signature. Implicit in the approval of the drawings by the client department is the presumption that the requirements of space, function, aesthetics and economy have been fulfilled to its satisfaction and are in conformity with the finances available for the building.

10.6.4 The drawings so approved shall be sent by the DoA to the Engineer-in-Chief of B&R department for advice in terms of (i) structural feasibility and (ii) structural sizes, etc. The DoA shall also send the set of drawings to specialist officers like electrical engineers, public health engineers for their advice/comments.

10.6.5 The DoA shall consider the comments and suggestions sent by all these sources and incorporate modifications as agreed. The DoA should not usually take

more than a month in finalising the plans. In case the project requires more time, approval shall be sought from the Administrative Secretary of the Architecture department giving reasons.

10.6.6 The client department, in a special project, may require hiring a private architect for designing or monitoring of building construction. In all such cases, the client department shall take approval of the Chief Minister followed by that of the Finance Department. The Chief Architect or his representative shall always be associated with process of selection of private architect.

10.6.7 The DoA shall submit the final plans to Chief Engineer (Buildings), who shall get the cost estimates from Public Health Engineering Department and Electrical wing in respect of their parts. Chief Engineer (Buildings) shall then consolidate all the parts of the estimate including building work, water supply & sanitation work, electrical services and all the other ancillary and external services required. The cost of estate services and other special services such as lifts, central air conditioning, fire fighting, gas supply, acoustics, fixed furniture, etc. as required in a particular case shall be worked out as realistically as possible. The consolidated estimate shall be forwarded to the client department for arranging administrative approval and provision of funds.

10.6.8 On receipt of administrative approval, the DoA shall be called upon to prepare working drawings and detailed drawings (such as joinery and other details) for purposes of structural design and or detailed estimate by the PWD concerned. One set of structural drawings, whether prepared in-house or out-sourced, shall invariably be supplied by the Buildings section of B&R department to the DoA.

10.6.9 The DoA shall also prepare services drawings (showing layout, position and sizes of water supply, sanitary, electrical and other services and components as indicated in para 26.2). In this behalf, Chief Architect shall hold co-ordination meetings with the Executive Engineers concerned of PHED, Electrical wing of B&R department and other officers or specialists, as necessary. Timely supply of the services drawings is important so that provision for their incorporation can be made in the course of construction.

10.6.10 In addition to meeting the functional requirements of the client and adherence to statutory/ prescribed regulations, DoA shall ensure that the building designs are

(i) maintainable (ii) environment friendly (iii) differently abled friendly (iv) susceptible to rain water harvesting wherever necessary (v) disposed towards energy conservation (vi) equipped with requisite features for fire protection/ fighting and (vii) provided with adequate parking.

10.6.11 The DoA shall ensure compliance of architectural plans with the byelaws of the local Municipal Committee/ Corporation/Urban Arts Commission, Fire Department and other regulatory bodies, as required and applicable. Towards this end, the department shall send the necessary set of plans to such bodies for approval, if required.

10.6.12 Schedule of Drawings. Preferably, all the architectural and structural

drawings should be available at the time of award of the work. But if that is not possible, Chief Architect and Chief Engineer (Buildings) shall lay down a phased schedule specifying target dates by which complete architectural and structural drawings shall be supplied. All efforts shall be made to adhere to this schedule.

10.6.13 Proposals of additions/alterations to existing buildings shall be referred to DoA for preparation of requisite architectural plans. If the proposed design affects the structural system, Chief Engineer (Buildings) shall be consulted.

10.6.14 DoA shall also be responsible for preparation of plans of exhibitions, interior design and such other duties as may be assigned by the Government.

10.7 PREPARATION OF PROJECT REPORT

10.7.1 Usually, there is not much need of preparing a project report of a building project, but it may be required for funding or for some other reasons. The client department shall determine the justification, need and scope of the project and shall be responsible for preparing the project report. However, if the client department so desires, the PWD may provide assistance in preparation of the project report, for which purpose the client department shall issue administrative approval to PWD and provide necessary funds.

10.7.2 In case of other projects such as roads, bridges, canals, sewerage or water supply schemes, the project reports may be the basic requirement of the funding agencies. Even otherwise, the preparation of project report is required to examine a proposal from technical, financial and other parameters. In such cases, a three-stage approach may be adopted, namely (i) Feasibility Study (ii) Preliminary Project Report (PPR) (iii) Detailed Project Report (DPR). In the first instance, Feasibility Study will be carried out, unless dispensed with. For instance, if the project is already identified or the alignment is well established or an existing asset is to be improved/ upgraded/ replaced, feasibility study may be dispensed with. Only Preliminary Project Report (PPR)-cum-estimate followed by Detailed Project Report (DPR)-cum-estimate need be undertaken. In certain cases, even the decision can be taken to do away with PPR.

10.8 STRUCTURAL DESIGN

10.8.1 The structural design shall be based on the relevant standards/ criteria prescribed by the department such as the Bureau of Indian Standards in the case of buildings, Codes/ Standards of Indian Roads Congress in the case of roads and bridges and other relevant standards. Foundation design shall be done on the basis of adequate sub-soil investigation, consideration of water table and bearing capacity. It is not correct to base the foundation design of a particular building on the analogy of another building in the vicinity or even the same campus, for the soil conditions can vary. Not only the structure, but also the scaffolding, centering and shuttering shall be designed for adequate strength during the construction phase to avoid any failure.

10.8.2 Checklists/Guidelines. The following is an indicative list of items that shall be taken care of by the design team to avoid errors leading to problems of construction and safety of the project:

(a) Usage of the structure temporary and permanent;

(b) Likely loads i.e. live loads, dead loads, impact loads, alternating loads, vibrations, storage loads, and the seismic and wind forces applicable to the zone, and the prescribed load combinations, as laid down in National Building Code of India 2005 Part VI (with latest revision);

(c) Hydraulic loads, in case of water structures;

(d) Presence of existing structures, utilities and conduits on the site;

(e) Special local environmental conditions;

(f) Foundation type and its depth; presence/ effect of loose, unconsolidated soil and fills;

(g) Structural system; stability of the entire structure against lateral forces;

(h) Geometry, dimensions and spans;

(i) Expansion joints (location, number, width and sealants);

(j) Possible settlements designing for uniform settlements/ differential settlements;

(k) Effect of temperature, shrinkage, creep, deformations and angular rotations;

(l) Compatibility of materials;

(m) Compatibility of cost and budget;

(n) Compatibility of quality of field inspection and testing services with the level of complexity and sophistication of design;

(o) Design method (limit state or working stress) and allowable stresses;

(p) For precast members, design against stresses during transportation and lifting;

(q) Drainage of basements and retaining walls;

(r) Co-ordination of specifications with drawings;

(s) Validity of assumptions; and

(t) Drafting and detailing.

10.8.3 'Computer aided design' methods should be applied using standard and proven software. However, the validity of the software shall be first tested by comparing the results obtained with long hand method. The particulars of the software used shall be referenced.

10.9 ESTIMATE OF BUILDING WORKS

10.9.1 The estimate of a building work shall bring out briefly and lucidly the following aspects:

(a) History, giving reference to the authority initiating the proposal and previous correspondence, if any;

(b) Scope, stating explicitly what work is and is not covered by the estimate;

(c) Design, bringing out features of design and specifications;

(d) Rates, giving particulars how the rates have been arrived at, with explanation and justification thereof;

(e) Cost, giving cost of the work with break-up as between various components and services;

(f) Method, indicating the proposed method for executing the work whether by lumpsum contract, item rate or percentage rate tender, labour rate, or any other mode;

(g) Land, showing availability of land or arrangement for acquisition; and

(h) Time, giving estimate of time for completion after receipt of administrative approval and provision of funds. (For guidelines on Time of Completion, refer para 13.6.6)

10.9.2 Depending on the category of building and level of threat perception, provision shall be made in the design and estimate for explosive alarm, detection and de-activation systems, area illumination, boundary fencing, police posts, etc. followed by security audit of the building complex. Important buildings may also be required to be built bomb blast resistant. Director General of Police shall be associated as considered necessary.

10.9.3 As regards the components of cost, the estimate of a building work should provide the following components, as relevant, in addition to those indicated in para 10.1.13:

(a) Buildings, including internal service installations such as water (drinking/ bathing and flushing), sanitary, electrical, fixtures, and furniture (if that is a part of original work to be done by PWD);

(b) Services like lifts, air-conditioning, fire detection/ firefighting, solar water heating, internal communication system, public address system, acoustics, gas supply and other special services etc. if any (refer para 26.2);

(c) Main / approach road outside the boundary, if that forms a part of the project;

(d) Boundary walls, fences, gateway, internal roads and paths, land development i.e. grassing, shrubberies, trees etc.

(e) Estate electrical services such as power in connection with mains, or service connections outside the boundary (to be based on realistic assessment);

(f) Irrigation supply, if any, such as channels, pipes or canals outside the boundary;

(g) Estate services such as: (i) water supply (ii) sewerage (iii) storm water drainage (iv) sewage treatment and any recycling (v) rain water harvesting. In all cases, care shall be taken that the cost figures are not on percentage basis but on realistic assessment;

(h) Special Tools and Plants which may be necessary during construction;

(i) Stock and suspense account which may be necessary to be opened in

connection with the project;

(j) Miscellaneous works, such as levelling, dismantling of old structures or other items, which do not fall under the above heads; and

(k) Land acquisition, if required.

10.10 ESTIMATE OF ROADS AND BRIDGES

10.10.1 The roads and bridges projects have a unique importance as they constitute the basic element of infrastructure and play a major role in the formation of public opinion about the working of the Government. These projects should, therefore, be given utmost attention and diligence at every stage and every level. A methodology needs to be adopted for more detailed and closer examination of projects beyond a prescribed value.

10.10.2 Whenever the alignment of a new facility passes close to or involves any alteration or diversion of pre-existing facility, written consent of the authorities in charge of such existing facility must be obtained and enclosed with the estimate. The report of the estimate shall also discuss the effect the proposed construction would have on environmental equilibrium of the existing engineering works, such as railway embankments, bridges, siphon, culverts, etc. and should clearly state whether the concurrence of the authority concerned has been obtained and funding mechanism agreed upon.

10.10.3 Projects requiring clearance of a financial or sponsoring organisation shall be prepared as per guidelines, if any, prescribed by it.

10.10.4 Road Projects. The estimate of a road project should, in addition to the cost, bring out the following broad features:

(a) Necessity of the work;

(b) In case of works of improvement, past history of the road, improvements carried out in the last few years and their performance, and other relevant features to justify the proposal;

(c) Area and population to be served, with likely benefits of the proposed work;

(d) Prevailing or expected volume of traffic;

(e) GIS mapping of the road work in question;

(f) Right of way available, and need of any land acquisition;

(g) CBR evaluation and pavement design;

(h) Specifications;

(i) Road features and geometrics;

(j) Temporary diversion during construction and traffic arrangements;

(k) Environmental aspects;

(l) Materials and resources; and

(m) Construction programme.

10.10.5 Cost of a road project should include the cost of the work proper, cross-drainage works (minor bridges and culverts), longitudinal drains, cutting of trees, shifting of pipe lines/electric poles/telephone lines/cables or any other utility, compensatory afforestation (where required), any resettlement and rehabilitation, roadside plantation, wayside amenities, diversion arrangements, safety measures, land, etc.

10.10.6 Bridge projects. In respect of bridges, the estimate, in addition to the cost, should bring out the following broad features:

(a) Preliminary/Introduction, including the following:

  (i) **Existing arrangement:** A brief description of the existing mode of crossing; details of existing bridge, if any; its load carrying capacity, road width, type of foundation, substructure, superstructure; general condition of the structure; appraisal of the existing alignment; and

  (ii) The need of a new bridge, supported by existing and projected traffic data and any other justification.

(b) **Site selection:** Various alternative sites considered with their merits and demerits, rationale of the selected site, reference to the authority, if any, approving the site;

(c) Topographical survey, including if necessary aerial surveys and satellite imagery;

(d) Traffic data;

(e) **Hydraulic data:** This should include rationale of design discharge, detail of any model study, waterway fixation and scour calculations;

(f) Sub-soil investigation;

(g) Environment Impact Assessment (EIA), etc.

(h) Design of bridge elements;

(i) Design of protective works;

(j) Materials and resources;

(k) Construction arrangement; and

(l) Maintenance procedure for special type bridges.

10.10.7 Cost of a bridge project should include the cost of preparatory works including site investigations and model studies; foundations; substructure; superstructure; protective works; approaches and miscellaneous items.

10.11 ESTIMATE OF IRRIGATION WORKS

10.11.1 In case of irrigation projects, the first step is to prepare a preliminary report. This shall be done on the basis of collection of requisite information as well as surveys and investigations, and shall contain brief and concise chapters on general data, general planning, inter-state and international aspects, surveys/ investigations (topographical,

hydrological, meteorological, geological, geophysical, seismic, materials, foundations, etc.), drinking water requirements, irrigation planning, planning for other intended benefits, environmental and ecological aspects, etc. required for initial assessment of soundness of the basic planning of the project proposal.

10.11.2 Every scheme, wheresoever required, shall be published in such form and manner as may be prescribed for inviting objections and suggestions in respect thereof. Under Haryana Canal and Drainage Act, 1974, objections and suggestions shall be received within twenty-one days of publication of the schemes specified therein. Where stipulated, public hearing shall also be held. After considering objections and suggestions, if any, the scheme, with the approval of the competent authority, shall be modified, with due regard to technical viability. The scheme so worked out shall be put up before the Standing Technical Committee of the department for scrutiny and clearance.

10.11.3 On approval of the preliminary report, detailed estimate shall be taken up, along with initiation of action to obtain various clearances in respect of environment impact assessment/ environment management, rehabilitation and re-settlement plans, forestry, disaster management, etc.

10.11.4 Detailed estimate shall be prepared as per guidelines issued by the department (in absence of the same, CWC guidelines shall be followed). It shall cover the following heads:

(a) Introduction (Aims of the project; Location; Access - existing and required; Climatic conditions; Population affected and benefited; Natural resources; Land-use and socio-economic aspects; History earlier proposal and the present; Model experiments; Choice of the project; Stages of development; Inter-state and international aspects; Cost-benefits; Public cooperation and participation, etc.);

(b) Physical features;

(c) Surveys/ Investigations (topographical, hydrological, geological, meteorological, geophysical, archaeological, materials, soils, foundations);

(d) Communications;

(e) Drainage and hydrology;

(f) Design features and criteria for different structures;

(g) Reservoir;

(h) Irrigation planning;

(i) Command area development;

(j) Flood control and drainage;

(k) Power;

(l) Navigation;

(m) Construction programme and manpower and plant planning;

(n) Financial resources; and

(o) Cost estimates.

10.11.5 There may be some irrigation or drainage works taken up for general improvement or for administrative purposes, and charged to general consolidated fund of the State. These works fall under two sub-heads, namely (a) Works for which neither Capital nor Revenue accounts are kept and (b) Miscellaneous expenditure. Of the two, sub-head (a) is more important and is designed for the reception of expenditure upon large number of works which, while collectively of great importance, are individually too small to make it worth-while to maintain separate accounts for each. All expenditure on such works, whether upon construction of new works or upon the extension or improvement, maintenance or repair of existing works, shall be accounted for under this head of account. Sub-head (b) is intended mainly for expenditure on preliminary surveys of necessary new projects. The works failing under these two heads shall also be governed by the same rules as the Major Heads.

10.11.6 All drainage projects need approval of the State Flood Control Board before execution. However, in some urgent case, the Chief Minister might desire the work to be taken up in anticipation of the approval of the Board.

10.12 ESTIMATE OF WATER SUPPLY WORKS

10.12.1 Wherever required, norms/ standards laid down in the Manual by Central Public Heath and Environment Engineering Organisation (CPHEEO), Union Ministry of Urban Development, National Building Code, 2005 (with latest revision), Ministry of Rural Development, Bureau of Indian Standards or State Government, as relevant, shall be followed.

10.12.2 The principal features generally required to be incorporated in a project estimate shall be prescribed in the department's Manual of Orders. However, these shall include the following:

(a) Background and necessity of the proposal;

(b) **Source of Water:** Examination of various sources of water, their potential and quality, seasonal variations, alternative sources of water which can be tapped or developed, with relative merits and economics of each. If it is canal-based, assured quantity of water likely to be available and full supply level (FSL) of canal with respect to level of water works site, etc. If it is tubewell based, sub-soil formation, depth of water table, draw-down effect, drilling requirements, etc;

(c) **Design Period:** This requires judicious determination with flexibility of extension or augmentation in phases, but land for future expansion to be preferably acquired in the beginning;

(d) **Population:** Estimate of design population, taking into account future growth, migration and influx, development of industry, commerce, education, health, administration, etc;

(e) **Water Requirement:** Probable demand to meet needs of domestic areas, street watering, sewer flushing, public parks, animals, hospitals, institutions, industrial and commercial uses, air conditioning, fire fighting and unforeseen requirements, including projection of rise of consumption with improvement of living conditions, affordability and service levels;

(f) **Project Area, Location of Water Treatment Plant, Storage and Conveyance:** These aspects shall cover a survey of the project area in terms of topography; present and future land-use and socio-economic structure; inlet structures; alignment and location of carrier channels; location of water treatment plants;

(g) **Sedimentation and Storage System:** This shall deal with aspects like periods of lean flow, seasonal variations, etc. taking care that there is no interference with sub-soil water level;

(h) **Treatment Requirements:** Depending on the source of water and the end usage, the quality of raw water will need to be modified/ improved, for which suitable treatment plants will need to be designed and provided;

(i) Clear Water Storage;

(j) **Distribution System:** This shall cover layout and design of main distribution lines, boosting stations, over-head service reservoirs, public hydrants, etc;

(k) **Water Conservation:** Water being a scarce commodity, the policy shall be to observe the three R's, viz.: Reducing wastage of water, Recycling waste water and Recharging the ground aquifer;

(l) **Mechanisation, Instrumentation and Automation:** As far as possible, the latest technology, control systems and measuring instruments shall be incorporated, keeping in view cost and affordability;

(m) **Utilities:** Provision shall be made for housing for operation and maintenance of staff, facilities for communication, transport and emergencies; and

(n) Cost estimates.

10.13 ESTIMATE OF SEWERAGE/ SEWAGE TREATMENT WORKS

10.13.1 The objective of any treatment proposal shall be to properly collect the sewage, transport it efficiently and treat it to requisite standards before final disposal, without causing health and environmental hazards.

10.13.2 To avoid contamination of drinking water, the water lines and the sewer lines should preferably be on different sides of the road; if that is not possible, they should be separated horizontally as well as vertically, the sewer lines being placed lower than the water lines.

10.13.3 Storm water interference with sanitary sewers should be avoided/ minimised by proper design and providing separate storm water drainage network.

10.13.4 The essential elements of the estimate shall be detailed in the department's

Manual of orders. However, the principal features generally required to be incorporated in a project estimate shall include the following:

(a) Background and necessity;

(b) **Estimate of Quantity:** The estimate of waste water may be made from the quantum of public water supply system, adding contribution of private sources of water and industry effluent which discharges into public sewers. Prospective rise as a result of growth, expansion and enhancement of per capita of water supply over time should also be accounted. The estimate of storm water should be based on careful consideration of the peak hour run-off over the design period;

(c) **Sewage Characteristics:** Characteristics of waste water, particularly of industrial sewage, shall be determined as they govern the choice of treatment method;

(d) **Design Period:** As in the case of water supply schemes, this requires judicious determination with flexibility of extension or augmentation in phases, but land for future expansion shall be preferably acquired in the beginning;

(e) **Sewerage Design:** Topography, natural slope of the project area, nature of sub-soil and level of ground water table, width of roads, height of adjoining buildings, location of utilities, etc. shall be examined carefully to decide the alignment, type and depth of sewers, method of construction, including the need of dewatering, the location of intermediate pumping stations and their type, and other features. The levels at convergence of sewers of different sizes should be designed to enable smooth flow from the branch to the main sewer, without heading up or sedimentation in the former. As far as possible, the velocities should be self-cleansing and flushing should be resorted to only in exceptional cases;

(f) **Sewage Treatment:** The location and type of treatment plant and the technology shall be chosen taking into consideration the characteristics of sewage, the degree of treatment required, disposal system, flood proneness and direction of prevailing winds;

(g) **Disposal System:** The disposal point shall be chosen with great care, as its level and location have a bearing on the entire layout of the sewerage system. Availability of land water bodies will influence the selection and location of treatment methods. If source of water supply and effluent disposal happens to be the same, the disposal point should be downstream of the water intake point. If gravity flow is not feasible, pumping should be considered; and

(h) Cost estimates.

10.14 ENVIRONMENT CLEARANCE, IMPACT ASSESSMENT & MANAGEMENT

10.14.1 Construction of new projects and expansion of existing ones may require environment clearance. In this regard, the department must look at the latest guidelines

issued by the Ministry of Environment and Forests, Government of India.

10.14.2 Where, in a particular case, Environment Impact Assessment and Environment Management also become necessary, the same shall be carried out. The project proponent shall apply to the authority specified in the above notification and in the prescribed form(s) giving the information required.

10.15 SUPPLEMENTARY ESTIMATE

10.15.1 Any development of a project thought necessary while work is in progress which is not fairly contingent on the proper execution of work as first conceived shall be covered by a supplementary estimate. The framework of a supplementary estimate is the same as that of an estimate.

10.16 REVISED ESTIMATE

10.16.1 A revised estimate shall be submitted in the circumstances explained in Chapter 9. A second or third revised estimate shall be necessary when an excess is similarly anticipated over a sanctioned revised estimate.

10.16.2 When a revised estimate is prepared, it shall be accompanied by comparative statements showing the variations in quantities and rates due to:

(a) Escalation;

(b) Change of scope;

(c) Inadequate provisions in earlier estimates;

(d) Inadequate investigations while preparing the original estimates;

(e) Change in design and additional requirements;

(f) Tendered rates;

(g) Change of alignment;

(h) Change of cost of land acquisition; and

(i) Rise due to other causes.

10.16.3 The first occasion to revise the estimate arises at the time of allotment of the work if it is found that the cost of work as per tendered rates is likely to exceed the amount of administrative approval beyond the permissible limit of excess. At that point of time, the administrative department, on a report being submitted by the PWD, shall take a view whether to (i) go ahead with the execution of work as planned and give concurrence in principle or (ii) curtail the scope of work before allotment, taking into account the effect of this option on the objective of the scheme or (iii) ask the PWD to hold on till the revised estimate is sanctioned.

10.16.4 Without a firm commitment about the revised cost forthcoming from the administrative department, PWD officers shall not enter into a contractual liability for which they are not authorised.

10.16.5 The next opportune time to revise the estimate would be when the work is complete or is nearing completion as at that stage all the liabilities have either been incurred or are fairly known, except for any judicial pronouncement or arbitration

award, which, in any case, cannot be built into the sanctioned estimate and has to be approved and accepted separately.

10.16.6 It should be understood that whether at the tender stage or any intermediate stage before near/ full completion, the likely increase in cost cannot be ascertained with accuracy because (i) escalation in the prices of materials and labour is time dependent, and (ii) the impact of variations cannot be predicted.

10.16.7 In the period between commencement and completion, it shall be the duty of the Engineer-in-Charge to keep the administrative department duly informed (through the nodal officer), on quarterly basis, with the physical progress of work and its financial status in a proper and self-explanatory format. In any case, when there is likely to be unavoidable delay in the preparation of a revised estimate, an immediate report of the circumstances should be made to the authority whose sanction will ultimately be required.

10.16.8 Reduced Estimates. When saving due to low tenders or reduction in scope of work exceeds 10% of the amount of administrative approval, Reduced Estimate shall be prepared and sanctioned to guard that savings are not frittered away.

10.17 EXPEDITING CHECKS AND APPROVALS

10.17.1 Taking into account the guidelines contained in paras above, the Engineers-in-Chief shall chalk out detailed proformas and methodology whereby the estimates for different projects can be prepared expeditiously and in a professional manner.

10.17.2 The estimates submitted by a lower office to higher office for approval may, on scrutiny, be the subject matter of certain observations/objections. In such cases, all the observations/objections shall, as far as possible, be made in one go and not piecemeal. Further, to reduce time taken for approval, the higher office shall consider summoning the official concerned of the lower office for personal discussion and resolution of any point.

10.17.3 In the case of approval at Government level, the estimate shall be submitted by the HOD concerned direct to his Administrative Secretary. The Administrative Secretary, if need be, may get it examined from the secretariat branch or some other source, but in most of the cases, there may be no such need.

Chapter 11
Consultancy Services

11.1 ENGAGING CONSULTANTS

11.1.1 With a view to enhancing the capacity as well supplementing the efforts of the department, consultants may have to be engaged for a variety of jobs and services such as given below (the list is illustrative and not exhaustive):

(a) Feasibility studies;
(b) Geo-physical studies;
(c) Preparation of detailed project reports;
(d) Preparation of tender documents;
(e) Survey and investigation;
(f) Research studies;
(g) Traffic census and planning;
(h) Development of management systems;
(i) Proof checking;
(j) Construction supervision;
(k) Inspection and quality testing;
(l) Financial audit, technical audit and performance audit;
(m) Financial analysis;
(n) Structural analysis, design and drawings;
(o) Inventory management;
(p) Water management services;
(q) Environment studies (Environment impact assessment/ Environment management plan, etc), Social impact assessment, Resettlement & Rehabilitation plans;
(r) Master plans;
(s) Architectural design;
(t) Specific studies;
(u) Condition surveys;
(v) Preparation and revision of manuals/codes; and
(w) Landscaping.

11.1.2 Consultants engaged for the purpose of construction supervision are usually called supervision consultants. Sometimes separate entities are appointed for proof

checking, and they are called proof consultants. Further, there is now the need of separate consultants for quality and performance audit, who are normally known as quality auditors.

11.1.3 Consultants shall normally be engaged when the employer's organisation does not have in-house personnel or expertise to do the same work or it is felt that the outside consultant will do a better job in a cost-effective manner.

11.1.4 The departments shall aim at creating in-house capabilities as these are in any case required. One of the purposes of engaging consultants, therefore, shall be that the departmental officers learn new techniques and technologies. Thus, while engaging a consultant, it shall be clearly brought out as to how the engagement will enhance the capabilities of the department, and an assessment to that effect shall be duly made at the end. The permission to engage a consultant shall not be used to shirk work or avoid responsibility.

11.1.5 It should be understood that engaging consultants is not the end of the matter. Taking quality work from the consultants requires hard work and technical knowledge. While engaging consultants, the departments should, therefore, clearly specify as to who in the department will be responsible for taking work from the consultant on time and of the best quality.

11.1.6 The decision to hire consultants shall be taken by the authority competent to approve the detailed estimates for the work. In case of important works, the decision to do so shall be taken by the Engineer-in-Chief.

11.1.7 For projects financed by international or domestic lending agencies, it may be necessary to get the project reports prepared from an independent agency. In such cases, the guidelines to engage the consultants may also be laid down by them and they need to be followed.

11.2 TYPES OF CONSULTANCY SERVICES CONTRACT

11.2.1 There are various systems of engaging consultants. While engaging consultants, the competent authority shall take a conscious decision as to which system will be the best. The following paras do list a few systems, but the department can devise any other system provided it is transparent and not specific to one person/firm.

11.2.2 Lump Sum (Fixed Price) Contract. In this, the consultant gets a fixed amount for the consultancy. This is normally used for assignments pertaining to preparation of master plans, feasibility studies, detailed project reports, proof checking or similar design consultancy services in which the content and duration of the services and the required output are clearly defined. Payments are linked with acceptable outputs (deliverables), such as drawings, studies, etc. in the time frame specified.

11.2.3 Time-Based Contract. This shall be used for assignments pertaining to construction supervision, advisory services, complex studies or assignments of

nature where scope and length of services may be difficult to define precisely. Payments shall be based on agreed rates for personnel inputs and reimbursable items.

11.2.4 Percentage Contract. These contracts are best suited for architectural services, procurement, inspection agents, etc. Payments are related to the project cost, cost of goods procured or inspected. In case of repetitive designs, guidelines given in para 11.4.2 shall be followed.

11.2.5 Indefinite Delivery Contract. This type of contract is used when specialised services need to be engaged of which the timing and duration cannot be predicted. Retainers, advisors, adjudicators, etc. who need to be available as and when the occasion arises, fall in this category.

11.3 DIFFERENT METHODS FOR SELECTION

11.3.1 Various approaches can be adopted for selecting a consultant. The most appropriate method will be largely determined by the type of service. In every case, the approach shall be transparent, unbiased and aimed at selecting the best entity in a cost-effective manner. A few of the methods used are given in subsequent paras.

11.3.2 Quality and Cost Based Method. This selection method combines the twin aspects of a proposal, namely its quality and the cost, with suitable weightages to be assigned to the two.

11.3.3 Quality Based Method. This method is relevant for a highly specialised and complex assignment or when the objective is to secure the best advice or when the task can be accomplished in diverse methods and which cannot be brought on a common platform for comparative evaluation.

11.3.4 Least Cost Method. This method is suitable for assignments of a standard or routine nature, where norms are well established, and the job size is small. Minimum qualifying marks for quality and minimum inputs to be provided by the prospective consultant are laid down. Technical proposals are first opened to adjudge the eligibility, and thereafter the financial proposals of those qualifying are opened. The one with the least price is selected.

11.3.5 Fixed Budget Method. This method is used for simple assignments with well-defined scope. The budget available is told and the consultants are asked to submit their best technical and financial proposals within the budget. The bids which are priced higher than the budget are rejected, and of the remaining, the one with the highest ranked technical proposal is picked up for negotiation and final selection.

11.3.6 Method Based on Consultant's Qualifications. This method may be used for very small assignments, of a nature for which the consultant's experience, references, qualifications are the predominant criteria.

11.4 ENGAGEMENT OF CONSULTANTS

11.4.1 After obtaining the required approval (s), the consultancy proposals shall be invited from firms possessing requisite experience and capabilities in the relevant field. The department may adopt a pre-qualification criteria or post-qualification

criteria as decided by the competent authority (provided in para 11.1.6). For this purpose, Terms of Reference (TOR), qualifications of consultants, procedure for selection and other terms and conditions shall be clearly specified.

11.4.2 For repetitive type of assignments, consultants with appropriate qualifications as prescribed by the department may be empanelled through a transparent process of pre-qualification by inviting offers. The duration of empanelment should also be specified. Alternatively, empanelment could be an ongoing process with suitable safeguards. In case of empanelment, financial bids could be invited from the empanelled consultants. Alternatively, rates could be fixed for standard assignments. For repetitive work from the same consultant, the rate should be suitably got reduced for the subsequent assignment depending upon the effort required to carry out the repetitive work.

11.4.3 Public sector organisations or educational or professional institutions of repute such as IITs, National Institutes of Technology, CRRI, etc. which have expertise in the desired area, could also be engaged without calling offers from others, and terms and conditions settled directly with such organisations by a committee preferably headed by the seniormost Chief Engineer.

11.4.4 If consultancy work involves preparation of a master plan in the first stage, carrying out a feasibility study in the second stage and detailed engineering in the third stage, it may be better that the consultancy proposals shall be invited for the complete package and it shall be made clear that satisfactory completion of the preceding stage shall be prerequisite for start of the subsequent stage work.

11.4.5 The bid document to invite proposals for consultancy shall be approved by the competent authority (provided in para 11.1.6). The Request for Proposal (RFP) shall include the following to provide all the relevant information.

a) Letter of Invitation;

b) Instructions to Consultants (ITC);

c) Terms of Reference (TOR); and

d) Proposed Contract Agreement

11.4.6 It will be proper if the Engineer-in-Chief prepares a general bid document to be followed in the department keeping in view the latest documents of prestigious organisations such as NHAI, Planning Commission, CIDC, Railways etc. and gets it approved from the Administrative Department and the Finance Department.

11.5 INDIVIDUAL CONSULTANTS/ EXPERTS

11.5.1 Sometimes, services of individual consultants or experts may be required for specialised assignments of short duration or to meet emergency situations resulting from natural disasters or when a particular individual is the only specialist available and is willing for the assignment. Selection of such consultants shall be made by the competent authority on the basis of agreed terms and conditions.

11.5.2 Individual consultants/experts shall be selected on the basis of their

experience, qualification and suitability for the assignment. Professional fees and out-of-pocket expense shall be decided and paid on lumpsum basis or on the basis of daily fee. Selection shall be made by a committee consisting of at least two Chief Engineers and one Superintending Engineer, so nominated by Engineer-in-Chief.

11.5.3 Retired senior officers of the rank of Chief Engineers and Superintending Engineers, or experienced faculty members of independent laboratories or reputed academic institutions could also be considered for specific consultancy services or special assignments regarding checking of quality, etc. A panel of such names shall be prepared in a transparent manner by a committee, which will include Director (F&A). The committee shall also determine fee and other terms and conditions. The quality of work done by the consultants shall be reviewed and if any person has not performed satisfactorily, he shall be liable for suitable action, which may be removal from the panel on permanent basis or for a specified period or any other (refer para 11.11.2).

11.5.4 Each department will prepare panels of consultants for various jobs, and revise them from time to time. It will be prudent to revise this list every year in the month of March.

11.6 PEER REVIEW

11.6.1 If, for a particular job, the departments do not have in-house personnel or expertise to check the estimates and project reports prepared by a consultant, it is advisable to get them peer reviewed through independent experts. The peer review shall consist of overall review of the various provisions, assumptions made, adequacy of surveys and investigations carried out, appropriateness of unit rates, correctness of standards adopted and reasonableness of project cost as compared to known norms or yardsticks. Peer review may also be done in case of important documents.

11.6.2 The officers concerned of the department shall be associated with the peer review expert for better interaction and to strengthen their own skills and knowledge base. As earlier indicated, one of the objectives of hiring consultants is to enhance the capabilities of the department and its officers.

11.6.3 Before going in for peer review, the departments shall prepare a note giving reasons for the need of a peer review and the costs involved, and seek the approval of the Government on a single file to avoid delay.

11.6.4 The departments shall also examine as to whether there is need for a special committee called Technical Advisory Committee, comprising of departmental officers and outside nominated experts to periodically review the complex and multi-disciplinary projects. The Committee will render necessary advice to the employer on any problem or issue.

11.7 PROFESSIONAL LIABILITY

11.7.1 The consultant shall be expected to carry out his assignment with due diligence and total professional integrity, and at all times safeguard the interest of the Government. He shall be responsible for accuracy of data, designs, drawings,

estimates and other documents prepared by him. The consultant shall indemnify the PWD against any negligence, deficiency in service or inaccuracy/ deficiency in the work.

11.7.2 The PWDs shall evaluate as to whether the consultant shall be asked to provide the original Professional Liability Insurance (PLI). If so, PLI shall normally be valid for a period of 5 (five) years or as per applicable law, whichever is higher, after completion of services. The liability towards the PWD shall be either the total payments to be made under the consultant's contract or the proceeds the consultant is entitled to receive from any insurance maintained by it to cover such a liability, whichever is higher. The contract shall make a provision debarring the consultant from canceling the policy midway without the consent of the department and that the insurance company shall provide an undertaking in this regard.

11.8 CONFLICT OF INTEREST

11.8.1 The consultant shall not receive any remuneration in connection with the assignment, except as provided in the contract. The consultant and its affiliates shall not engage directly or indirectly in activities that conflict with the interest of the Public Works Department under the contract.

11.8.2 The consultants and its affiliates shall be excluded from downstream supply of goods or construction of works or purchase of any asset or provision of any other services related to the assignment other than continuation of the services under the ongoing contract not connected with the job concerned.

11.9 SETTLEMENT OF DISPUTES

11.9.1 Dispute settlement mechanism shall clearly be a part of the contract agreement. First level of resolution shall be a suitable departmental committee. If such a resolution is not successful, the dispute shall be settled through arbitration in accordance with the procedure laid down in the consultancy contract agreement.

11.10 MONITORING OF PERFORMANCE

11.10.1 The departments shall allocate responsibility to get the best possible output and documentation, which shall be thoroughly checked and cross-examined before acceptance. Payment to consultants shall be made as per provisions of the agreement. Consultants shall furnish regular progress reports in the format and time intervals as approved by the Chief Engineer concerned. Performance appraisal of the consultants shall be done by the Chief Engineer concerned.

11.10.2 It shall be clearly brought out in the ITC document that the consultants shall be liable to corrective and punitive action for misrepresentation, concealment, deficiency in services, errors, unauthorised sub-letting, misconduct, other acts of omission and commission, etc. as may be specified in the consultancy contract (refer para 11.11.2).

11.11 TAKING WORK FROM CONSULTANT

11.11.1 Monitoring Inputs. The inputs by the consultant in terms of man-days/

man-months of experts at different levels need to be monitored to ensure whether:

a) There is compliance with the original proposal;

b) Experts or innovative methods, as per commitments made in the technical and financial proposals, have actually been provided; and

c) The expenditure on supervision consultancy is in reasonable proportion of the progress and expenditure on works and whether there is need and scope of adjustments.

11.11.2 Deterrent Action. Whenever any shortcomings come to light, such as (i) errors in bid data (misrepresentation, false bio-data, frequent change of personnel, etc); (ii) unreliable DPRs containing errors in project data and design (wrong levels, inadequate surveys, false bearing capacity, etc.); (iii) unprofessional supervision (delays, collusions, not justifying decisions, improper records, poor track of quality control, infrequent or cursory site inspections and checks by the team leader, etc), deterrent action shall be taken against the erring consultant. The action may be in the shape of warning, suspension of registration, reduction of fee, removal from the panel on permanent basis or for a specified period, and blacklisting, etc. and taken after following prescribed procedure.

11.11.3 Ministry of Road Transport & Highways, GOI, has issued instructions regarding action to be taken against erring empanelled consultants for deficient or incompetent performance. These instructions may be got examined by the Engineer-in-Chief and general State-specific instructions evolved for their being suitably incorporated in consultancy contracts.

11.12 ADDITIONAL DUTIES OF SUPERVISION CONSULTANT

11.12.1 When the work is complete or is nearing completion, several problems may arise by way of disputes and claims, arbitration, litigation, investigation of delays and excesses, audit paras, vigilance enquiries, etc. Some of these problems may have originated from the actions or inactions of the consultant and he is best positioned to handle them. It is, therefore, desirable to provide a clause in consultancy contracts that the consultant, if so required by the Employer, shall, after completion of his services, be bound to render assistance, including appearance as witness, on payment of pre-agreed rates (with suitable escalation every year), up to the specified number of years.

Chapter 12
Acquisition of Land

12.1 TYPES OF LAND TO BE ACQUIRED

12.1.1 Generally speaking, all projects or works undertaken by the PWDs, unless they are situated in the boundaries of existing available land, involve acquisition of some land (the land here includes the structures, residential, commercial or others). The land may belong to one or more of the following:

a) Private parties (companies, individuals, etc);

b) State Government;

c) Government of India;

d) A public body of/with the State Government or the Government of India; and

e) A body of which the land had earlier been released after an order of acquisition, but a compelling necessity of a public nature has subsequently arisen to re-acquire it.

12.1.2 Whenever land belonging to private parties is required for works, it may be first checked as to whether there is any special law for acquiring land for that work. For example, if the work concerns national highways or railways, separate and more effective land acquisition laws are there. If there is no such special law, land shall be acquired under the Land Acquisition Act, 1894, as amended from time to time.

12.1.3 In the case of State Government land, acquisition is not called for as the Government cannot acquire its own property and the Land Acquisition Act, 1894 is not applicable. In such a case, the land, with the consent of the owner department, shall be got transferred to the Public Works Department concerned.

12.1.4 In case land belongs to the Government of India and is required for a State Government project, then the appropriate Department/Ministry in the Government of India may be approached through the State Government to transfer the land to the latter for its use. State Government is required to pay the market value of the land so transferred or such value as may be mutually settled between the two Governments. For getting army land transferred, the Ministry of Defence has laid down specific guidelines, which need to be followed if the land in question is army land.

12.1.5 When any land belonging to a public body is required for a State project, the land is simply resumed by the State Government if the transfer of land originally by the State Government to that body was on the specific condition that land shall be returned if required for a public propose by the State Government. In other cases, the land has to be got transferred by mutual consent or got acquired as in case of private lands.

12.1.6 It may happen that a particular work may require land which has earlier been released from acquisition by the State Government by a special or general order. In

such case, the order releasing the land needs to be studied and suitable reasons shall be given in the initial notice itself for acquiring the same.

12.2 ROLE OF PWD OFFICERS IN LAND ACQUISITION

12.2.1 The State Government has notified different Land Acquisition Collectors (LAC) for different districts and/or departments. It may also appoint a special officer to work as LAC for acquisition of specific land for a specific project. In case there is any ambiguity, the Deputy Commissioner of the district should be approached for knowing about the particular officer who will work as LAC for acquiring the land. If still there is any issue, it shall be brought to the notice of the HOD for resolving it, and if the latter feels handicapped, he shall bring the matter to the notice of Administrative Secretary, who shall get the issue resolved.

12.2.2 Though land acquisition is primarily the duty of the LAC, the role of the acquiring department becomes very crucial as the LAC usually has some other substantive charge which may keep him busy or he may have many other cases of land acquisition and he may not be able to keep track of every case. The Divisional Officer of the PWD, therefore, should pursue the case at different stages. If the land to be acquired falls in a number of Divisions, the Engineer-in-Chief/Chief Engineer/Superintending Engineer will make one or more Divisional Officers responsible for the same.

12.2.3 The Divisional Officer, in the first instance, shall get a copy of the revenue record of the land to be acquired and ascertain the quantum of land to be acquired and its rate. As far as possible, the Divisional Officer shall inspect the site himself. In rare cases, he can allocate this work to Sub-Divisional Engineer, in which case, the Divisional Officer shall do a part survey. As regards the rate of the land, the Divisional Officer shall ascertain the floor rate, the collector rate prescribed for registration in that area and the market rate as determined by the designated committee (constituted by the State Government from time to time) in the past regarding some land acquired in that area or nearby area and send an estimate urgently for the acquisition of the land. Simultaneously, he shall start preparing draft of notification to be issued under section 4 of Land Acquisition Act, 1894 for acquiring the said land and try to get the same vetted from LAC also.

12.2.4 While sending the estimate for land acquisition, the designated Divisional Officer(s) shall send the following documents:

(a) Plans showing the land proposed to be acquired;

(b) Schedule showing particulars of land i.e. location, surroundings, approaches, etc;

(c) Shajra plan from the Revenue Authority;

(d) Trees, wells, bores, structures, etc. if any on the land;

(e) Type of land;

(f) Floor rate and collector rate for registration in respect of land (care shall be

taken against an isolated, freak or manipulated instance of sale of land at unusually high rate becoming the basis of determination of rates for the proposed acquisition); and

(g) Approximate value of the structures.

12.2.5 In addition to the above, the estimate shall cover answers to all queries as listed below. These are only indicative and not exhaustive. The Divisional Officer may also give any additional information he may consider necessary for taking an appropriate decision in the matter.

(a) Is it for a new work or for extending the old work?

(b) Is any of the required land owned by the State Government or the Government of India or any legal entity fully or partially owned by the same? If so, the details of such land and about its ownership;

(c) Can any less expensive alternate land in the vicinity be acquired? If so, why was PWD not accepting it?

(d) What will be the source of funding for the acquisition of land? Is the amount already provided in the budget?

(e) Are any religious buildings, graveyards or ancient monuments affected? Give details of any structure, public or private, standing on the land;

(f) Are the persons, owning the land, generally willing to give the land or there is some opposition to acquisition? If there is any opposition, reasons thereof may be given;

(g) Are the persons, owning the land, ready to give the land on floor rates plus solatium?

(h) Whether some rough demarcation of the land with stones has been done? If so, a certificate to that effect shall be furnished;

(i) Are there any trees on the land to be acquired? Give details whether the trees belong to Forest Department, private or otherwise. If such trees are cut down after taking over possession whether compensation for the same has been paid to the occupant? Are steps being taken to pay value of trees separately?

(j) If urgency clause is proposed, full justification for the same should be given stating whether the land is waste or arable and contains superstructures and whether it is in a developed locality? (In cities where lands have non-agricultural value and are surrounded by buildings, application of urgency clause shall be avoided.);

(k) Does the proposal interfere with any public rights of way or stream or watercourse or drainages or channels for which provision must be made?

(l) Are there any commercial or residential buildings involved? Is there any need of rehabilitation/ resettlement of affected persons? If so, has any RAP (Resettlement Action Plan) been prepared?

12.2.6 When sanction to an estimate, framed as above, has been obtained, the Divisional Officer shall refer the matter to the LAC and get the notification issued under section 4 of Land Acquisition Act, 1894 from the competent authority/ officer so authorised. The necessity of acquisition shall be brought out convincingly. This is all the more important when land has to be acquired in circumstances mentioned in para 12.1.1 (d). Efforts shall be made by the Divisional Officer to get the land notified as soon as possible after the sanction of the estimate. In case he is unable to do so, he shall immediately report the difficulties to his seniors as well as to the Deputy Commissioner of the district concerned and take their help in resolving difficulties.

12.2.7 Though it becomes the duty of the LAC to acquire the land under Land Acquisition Act, 1894 but interest on the part of the Divisional Officer shall be helpful in expediting the matter. He can assist the revenue staff attached to LAC in surveying and to do joint measurements, preferably in presence of land owners.

12.2.8 The Divisional Officer shall assist the LAC in issuing the notice for inviting objections. When objections are received under section 5(A) of Land Acquisition Act, 1894, the Divisional Officer shall present the viewpoint of PWD before the LAC. The Divisional Officer thus shall aim at getting the section 6 Notification done under Land Acquisition Act, 1894 within three months of completion of proceedings under section 5(A).

12.2.9 The Divisional Officer or the officer/officials so designated by him shall participate in the proceedings under sections 7 to 16 of Land Acquisition Act, 1894 and assist the revenue authorities in the valuation of land and any structures over it. The right to appear and produce evidence regarding compensation shall be vigilantly exercised. They shall also make arrangement to make the payment of award through the Land Collector, demarcate the land at site and take over possession.

12.2.10 Any person who has not accepted the award made by the LAC under section 11 or section 17 of Land Acquisition Act, 1894, may apply to the LAC for making a reference to the Court under section 18 of Land Acquisition Act, 1894 for enhancement of compensation, among other things. PWD officers shall ensure that the said reference by LAC is properly made and all facts/figures which are required from the department's side or point of view are included in the reference. The Divisional Officer shall see that such a case is properly defended, even by engaging a private counsel with approval of the Government, to obviate adverse court orders, especially of the kind in which present day rates are decreed along with accumulated interest from the date of acquisition which may have been done a long time back. In case the department is not impleaded as a party, it shall move the Court under section 22 of Land Acquisition Act, 1894 to become a necessary and interested party.

12.2.11 Acquisition in case of urgency under section 17 shall be done only in case of real necessity, which shall be fully explained to the Government when submitting the proposal. This recourse shall not be taken merely to avoid the proceedings under section 5(A).

12.3 POSSESSION OF LAND

12.3.1 It is the duty of the PWD officer concerned to take over the possession of the land. It shall be prudent to do the videography of the act of taking over possession. A press release shall be also issued through the local DPRO regarding the possession of the land.

12.3.2 The Divisional Officer, immediately after taking over the land, shall get it mutated in favour of the department and get the entry made in jamabandi also.

12.3.3 The Divisional Officer shall preserve unimpaired the title to all land in his occupation and keep it free from encroachment. The PWD Officers in-charge shall be responsible and accountable for the land in their charge together with any structures on the land.

12.4 PAYMENT OF ANNUITY

12.4.1 The Divisional Officer of every Division is supposed to be aware of the land taken over by him. He shall prepare a record of annuity of land to be acquired in the prescribed format, for which purpose he may take assistance from the LAC. He shall maintain the record and ensure that the payment of annuity to the land owners concerned is done as per policy of the Government.

12.4.2 The Divisional Office shall update the record regarding the annuity payment as per instructions issued by the HOD from time to time.

12.5 COURT CASES

12.5.1 The Divisional Officer shall arrange to attend to any court case regarding land acquisition. If he is not impleaded as party, he shall request the court for doing so. He shall bring the fact of such court case to the notice of Superintending Engineer and the Chief Engineer concerned, who shall monitor such cases periodically.

12.6 TAKING OVER LAND BY NEGOTIATION/ CONSENT

12.6.1 As per the Land Acquisition Act, 1894, land may be acquired from private parties by persuasion, negotiation and consent of the owners. It shall be advisable and expeditious to take over land by private negotiations through a committee to be appointed by Administrative Secretary to the Government in the Department concerned. The instructions in this regard shall be issued by the State Government.

12.7 ACQUISITION OF LAND UNDER EXTERNALLY AIDED PROJECTS

12.7.1 The funding agencies may require different guidelines to be followed when the projects are taken up with the financial help from them. Such guidelines, if different from the above, may be followed only after the approval of the Chief Minister and the Finance Department.

12.8 REHABILITATION OF PROJECT AFFECTED PERSONS

12.8.1 In the case of irrigation projects where large areas of land or whole villages are likely to be submerged under a proposed reservoir, or in the case of major projects requiring acquisition of land on a large scale, village population gets displaced. Such

'Project Affected Persons' are required to be rehabilitated at another place effectively, with due consideration to the genuine concerns of the affected persons. For this, necessary provisions shall be made in the project estimates.

12.9 SUPERVISION

12.9.1 Land acquisition cases shall be monitored at every level. HOD shall review them once a quarter and Chief Engineer on a monthly basis. A consolidated report on the prescribed proforma shall be sent to the State Government every quarter. The Superintending Engineers shall also review the position of cases in their Circles and ensure that land acquisition does not take more than 6 months from the date of sanction of the estimate and more than three months from the receipt of LOC for payment of compensation.

Chapter 13
Contracts and Work Orders

13.1 CONTRACT

13.1.1 A contract is a formal written agreement between the parties, which says that one of them will supply goods or provide service or do work in an agreed way for an agreed sum of money. The term 'Contract' as used in this Code, does not include agreements for the execution of work by piece work, nor does it include mere ordinary purchases of material or store. All other works done under agreement are termed 'Contract Works', and in the agreement for such works, which shall invariably be in writing, there shall generally be stipulation as to the quantity of work to be done, and the time within which it is to be completed.

13.1.2 Tender or Bid (which is an offer made by one party to another party for execution of specified work at the stated cost, in keeping with all the terms and conditions laid down in the tender document, including the extent of work stipulated or shown on the plans and the time of completion) shall form a binding contract only when it receives acceptance by the employer or his duly authorised representative to act in this behalf.

13.2 TYPES OF CONTRACTS

13.2.1 Contracts are primarily of the following kinds:

(a) Lump Sum Contract;

(b) Measurement Contract, which may be Item Rate Contract or Percentage Rate Contract;

(c) Turnkey Contract;

(d) BOT (Build-Operate and Transfer) Contract;

(e) BOT Annuity;

(f) BOOT (Build-Operate-Own and Transfer) Contract;

(g) OMT (Operate-Maintain and Transfer) Contract;

(h) Labour Rate Contract; and

(i) Long Term Maintenance Contract.

13.2.2 **Lump Sum Contract.** In lump sum contract, the contractor undertakes to carry out and complete the work as shown on the plans and/or described in the specifications, supplying all the materials and labour for an agreed fixed lump sum. The contractor shall be paid from time to time as per the schedule specified in the contract or the full amount on completion of the work. The billing schedule shall be

commensurate with the actual work done, and the risk of front-loading strictly guarded against. A few other features of this system of contract are:

(a) Detailed measurements of work done in a lump sum contract are not required to be recorded, except in respect of additions and omissions. No reference is made in the contract to the departmental estimate of the work, schedule of rates or the quantities of work to be done. Payment of additions and omissions is regulated by schedule of rates as agreed upon while approving the tender or the rates;

(b) Lump sum contract requires the availability of site to avoid delay claims for its non-delivery. This contract is eminently suitable for stereotype/ repetitive residential buildings or other structures for which standard drawings are normally available. It is also suitable for bridge works, chimneys, bins/silos, overhead tanks, etc. whether on department's design or that of the contractor. In the latter case, the department shall spell out the requirements in detail to enable the contractor to prepare his designs and drawings accordingly, and submit them to the employer for check and approval before construction;

(c) Merits of lump sum contract based on contractor's design lie in innovativeness of design, economy made possible by the contractor's having standardised formwork and components, and speed of construction; and

(d) This type of contract is not amenable for works of additions and alterations, repairs or where working conditions and the attendant risks are uncertain.

13.2.3 Percentage Rate Contract. In percentage rate contract, the contractor agrees to carry out the work at his quoted percentages above or below the schedule of rates for every item and for the approximate quantities indicated in the attached schedule. The rates adopted are generally based on the 'Standard Schedule of Rates' for the locality, approved by the competent authority. The standard schedule of rates is also made a part of the contract to regulate measurement and payment of any additional item. For any other item of which the rate is not available in the standard schedule, the same is worked out with reference to the standard schedule of rates, if possible; otherwise, it is analysed on basic principles, using prevailing market rates. A few important features of this system of contract are:

(a) The contractor is paid on the basis of measurement of works executed at the rates approved in the letter of acceptance; and

(b) This type of contract is suitable for situations where the scope is likely to vary, or where the work is urgently required and there is not enough time to prepare drawings and work out quantities. It has the disadvantage that if the Standard Schedule of Rates is not up-to-date, the percentages, above or below the schedule, may not truly reflect the workable rates, and the price of contract cannot be accurately determined.

13.2.4 Item Rate Contract. In Item Rate Contract, the bid document only indicates the specifications and quantities of the item proposed for execution by the

department, and the contractor is expected to quote his rate normally based on his assessment of the market conditions and work out the total contract value. Reasonable variations can be allowed during execution in terms of the contract. The contractor is paid on the basis of measurement of works executed at the rates approved in the letter of acceptance. This type of contract is suitable for all types of works like buildings, bridges, culverts, roads, sewer lines, irrigation works, and carries the least risk of uncertainty for the parties.

13.2.5 Turnkey Contract. In this type of contract, the employer either directly or through an adviser states the detailed project requirements and standards of performance for inviting bids. The contractor or the consortium submits an all-in or turnkey bid, which is for the provision of the whole of the work including its survey and investigation, design, engineering, construction, supply and installation of equipment and commissioning. If required, maintenance for a limited period may also be entrusted to the same contractor. EPC (Engineering, Procurement and Construction) contract is essentially in the nature of a turnkey project. A few other features are:

(a) This type of contract saves on co-ordination effort, avoids delays and disputes arising out of incorrect survey and incompatible designs, and is particularly useful for time-bound commissioning of specialised and high-technology projects; and

(b) For success of the project, it is advisable for the employer to engage a competent engineer/ consulting organisation to play the roles of knowledge resource, coordinator, adviser in decision-making, and management guide.

13.2.6 BOT Contract. BOT projects are discussed in greater detail in Chapter 21. However, a few features of this system of contract are:

(a) In this type of contract, it is not the Government (owner) but the project proponent/concessionaire who is responsible for the design, finance, procurement and execution of the entire project, and also its operation and maintenance for a given period of time (called the concession period) to recover the capital investment with reasonable profit. This he does through collection of fee from the users of the facility, on mutually agreed terms and conditions. At the end of the concession period, he transfers the project back to the owner. The sponsor may be a single company or a group of companies called the consortium, which can provide the finances, in terms of equity and debt, needed for the project. Other important players, besides project proponent/concessionaire, are the equipment supplier, and the operation and maintenance contractor; and

(b) Infrastructure projects like bridges, flyovers, bypasses, roads, etc which carry heavy traffic and can be put to tolls, are good candidates for BOT contracts. To make the project commercially viable, if so necessary, land development and wayside amenities can be made an integral part of the project. In certain cases, the Government may also offer some limited grant.

In projects of high commercial potential there may be negative grant, which means that the bidders are willing to offer grant to the Government to win the project.

13.2.7 BOT Annuity. This system is a variation of the BOT system and is discussed in detail in para 21.2.3.

13.2.8 BOOT Contract. In this form, the project proponent is authorised to finance, own, operate and transfer an infrastructure or development facility, in which the project proponent is allowed to recover its total investment, operating and maintenance costs plus a reasonable return by collecting tolls, fee rentals or other charges from facility users. Under this, the project proponent who owns the assets of the facility may assign its operation and maintenance to a facility operator but at the end of the fixed term, the facility is transferred to the government agency.

13.2.9 OMT Contract. This model is generally used for effective operation of an existing facility like highway, water supply distribution system, irrigation channel, etc. The objective of this arrangement is to maximise the life of public assets, provide service of appropriate quality and reduce the burden of maintenance on the public exchequer. OMT is a separate, independent contract.

13.2.10 Labour Rate Contract. In this system, the contractor agrees to carry out the complete labour work of all items of work at the rates quoted by him. The rates quoted may be either (i) percentage above or below the Schedule for Labour Rate Work, payment to be made on measured quantities of work or (ii) flat rate, which may be for a category of work or the whole work or based on specified unit of measurement like, length of the work, area of the structure, volumetric contents. The contractor has to supply all the tools and plants, scaffolding, centering, shuttering, ladders, coir and nails, etc and the owner supplies only the materials required for the construction work. The contractor is responsible for line, level and setting out of work. The owner has to keep a close watch on the consumption of materials as the contractor may not be much concerned with wastages.

13.2.11 Long Term Maintenance Contract. This contract is generally performance-based contract where the contractor is paid on the basis of appraised/ measured performance, the longer duration of the contract being an inducement to him to invest in machinery, equipment and personnel for efficient execution of operations.

13.3 OTHER MODES OF EXECUTION

13.3.1 Works can also be carried out by any of the following methods, depending on the nature of work and other factors:

(a) Day Work;

(b) Piece Work; and

(c) Departmental Execution of Work.

13.3.2 Day Work. This method of execution of the work is adopted for small items of work which can neither be measured nor valued, e.g., architectural features,

decorative design or locations where access is difficult or working time is limited. The payments made to the contractor consist of materials and labour used to complete the work with such per cent added as may be prescribed to cover contractor's profit, establishment charges, and rentals for any plant, etc. It requires proper check on the materials consumed and the labour employed, and the reports to that effect must be signed daily by the supervisor in-charge.

13.3.3 Piece Work. If the work is of an urgent nature and day work is not possible, it is divided into parts and each part, known as Piece Work, is given to a contractor. This method may also be used in following situations:

(a) In cases in which it is necessary to start work in anticipation of formal acceptance of tender. The piece work is cancelled as soon as a regular contract is signed; and

(b) For running contracts e.g. the laying of pipes, sewers, etc. quotations are called periodically, and on that basis a running rate contract is finalised, usually for one year.

13.3.4 Piece Work is carried out through an agreement which is in the shape of 'Work Order', but such agreements are not 'contracts' in the real sense of the term. Traditionally, work orders contained only the description of the work and the rate to be paid for it, without reference to the quantity of work and the time of execution. However, such an open-ended provision lacks transparency as well as efficiency. Hence, time of completion, depending on the cost of work and its nature, shall always be stipulated.

13.3.5 Departmental Execution of Work. In this method the department concerned employs the labour required, like masons, carpenters, plumbers, mazdoors, bhishtis, etc. whose attendance is recorded daily in the muster rolls by the Junior Engineer. The materials of construction and plant and equipment (except for the personal tools of skilled labour) are supplied by the department. The labour is paid weekly, fortnightly or monthly as decided. In case of ban on employment of labour on muster roll, the labour required for a specified work not being of routine nature, shall be obtained through a labour contractor as earlier provided in Chapter 3.

13.3.6 The method of departmental execution is suitable for small and medium works, maintenance works of roads, buildings, canals, sewers, and is particularly useful for works of additions, alterations and repairs, emergency situations like repair of flood damages, canal breaches or works which cannot be measured accurately. Departmental execution may also be undertaken under the following circumstances:

(a) Non-availability of a regular contractor/ labour co-operative society;

(b) High rates quoted by the regular contractor; and

(c) Works situated in remote areas

13.4 INDIVIDUAL CONTRACTS AND COMPOSITE CONTRACTS

13.4.1 Various components of the project may be allotted to different contractors, called individual contractors. Alternatively, the contract may be integrated in which

one contractor assumes responsibility for execution of various or all the major components.

13.4.2 Individual Contract System. In this system different components of a project are allotted to different contractors. For example, in the case of a bridge project, the main bridge and protection works may be allotted to one agency and work of approaches to another agency. Similarly, in the case of a building work, the works of main building, overhead reservoir, and roads/pathways/boundary wall/fencing may be allotted to separate agencies.

13.4.3 Composite Contract System. In this system, the entire work is allotted to one contractor. For instance, in the case of a building project, the work of main building is included in Part I of the tender complete with specifications and bill of quantities. The other components and services like internal water supply and sanitary work, internal electrification, overhead reservoir, sewerage up to the last manhole near the boundary, surface drainage, roads and pathways connecting up to the external main road, compound wall and gates/fencing are included in Parts II, III, IV, etc. of the tender along with specifications and bill of quantities. The contractor quotes rates for different parts. Detailed estimates for these components shall be technically sanctioned separately by the competent authority

13.4.4 In respect of specialist items like sub-station equipment, generating sets, air-conditioning, lifts, acoustics, fire alarm and fire-fighting, etc. the department may dispense with the composite system and opt to engage specialist contractors for any of these items. In such cases, the department shall ensure that the contracts for specialist items are entered into well in time, so that the works of the main contractor and the specialists are well coordinated and the building with all the services duly completed, is ready for occupation by the user.

13.4.5 Normally, specialists should be asked to quote on the basis of the scheme and schedule of quantities prepared by the department. However, in certain cases, it is advantageous to ask the specialists to submit offers on their own designs, as this may be more economical. For comparative evaluation, all the offers shall be brought to a suitable, rational common platform.

13.5 PROCEDURE FOR PROCUREMENT/ ALLOTMENT OF WORK

13.5.1 The following is the usual step-wise procedure for procurement/ allotment of work:

(a) Preparation of tender (bid) documents;

(b) Approval of tender documents by the tender accepting authority;

(c) Issue of notice of pre-qualification (if required);

(d) Receipt of pre-qualification applications and their evaluation;

(e) Approval of pre-qualification;

(f) Issue of notice inviting tenders;

(g) Pre-bid conference (if specified), issue of minutes and clarifications, and

addendum to ITB (Instructions to Bidders), if necessary;

(h) Receipt of tenders;

(i) Scrutiny of tenders and their evaluation;

(j) Negotiation (only where warranted);

(k) Acceptance (or rejection) of tender;

(l) Award/ allotment of work;

(m) Order to commence; and

(n) Deposit of Performance Security (if specified).

13.6 TENDER DOCUMENTS

13.6.1 These shall generally comprise the following :

Section	Particulars	Volume No.
	Invitation for Bids / Tender Notice (IFB)	I
1	Instructions to Bidders/ Tenderers (ITB)	
2	Qualification Information, and other forms	
3	General Conditions of Contract (GCC) Special Conditions of Contract (SCC)/ Conditions of Particular Application (COPA)	
4	Contract Data	
5	Technical Specifications (TS); Reference to standard specifications, special specifications and revised clauses	II
6	Form of Bid	III
7	Bill of Quantities (BOQ)	
8	Forms for Securities in respect of Bid, Performance, Advance Payments (wherever applicable); Form of Agreement	
9	Drawings	IV
	Addenda (if any)	
10	Documents to be furnished by the tenderer/ bidder	V

13.6.2 Contract Data shall comprise contract-specific information like date of completion (with milestones and their dates, if any), site possession date(s), amount of performance security, amount(s) of advance(s) and rate of interest, defects liability period, amount and limit of liquidated damages, bonus (if any), etc.

13.6.3 The following principles shall be observed while preparing tender documents:

(a) Notice inviting tenders (NIT) is a very important document and is the basis of the agreement with the contractor. NIT shall be detailed and complete. Each page shall be numbered and all corrections, modifications duly attested;

(b) Standard form of contract shall be used wherever possible. Alternatives provided in the form, if not applicable, shall be scored out;

(c) Terms of the contract shall be precise and definite and shall give no room for ambiguity or misconstruction. Apportionment of risks, responsibilities and obligations of the Employer (the officer empowered to sanction the detailed estimates for the work or specifically so nominated by Engineer-in-Chief), Engineer and the Contractor shall be comprehensive;

(d) No contract involving an uncertain or indefinite liability or any condition of an unusual character shall be entered into without the prior consent of the competent financial authority. Leaving some procedures vague or use of ambiguous nomenclature shall be avoided, as they are liable to different interpretations;

(e) Conditions of contract shall not go against the provisions of the Contract Act, 1872, as modified from time to time. The standard contract form shall be reviewed to ensure conformity with the said Act;

(f) Special Conditions of Contract (SCC) or Conditions of Particular Application should be drafted with precision, without any overlap or conflict with corresponding General Conditions of Contract (GCC). These conditions shall be appropriate to the project and cut and paste method from one project to the other strictly avoided. Drawings, specifications and description of BOQ items shall be in total harmony. In general, there shall be no inconsistency among various parts, and every provision shall be capable of only one, singular construction;

(g) In terms of Article 299 of the Constitution, no contract shall be made by a subordinate authority which has not been directed or authorised by the Governor of Haryana to do so. For all Government works, the Governor of Haryana shall be made a party to the contract and the words 'for and on behalf of the Governor of Haryana' shall follow the designation appended below the signature of the officer authorised in this behalf and executing the contract;

(h) The bidders, at their own responsibility and risk, shall be encouraged to visit and examine the site of works and the surroundings and ascertain and gather for themselves all information that might be necessary for preparing their bids. The site visit will be at the bidders' own expense;

(i) The terms of the contract once entered into shall not be varied without the consent of the competent authority. No payments to contractors by way of compensation or otherwise, outside the strict terms of the contract or in excess of the contract rates, shall be authorised without the prior approval of the competent authority;

(j) For works of which the estimated cost exceeds Rs. 5 crore (or as prescribed) and which require qualification conditions, the bidders shall be asked to submit along with the tender, their work programme along with critical path method (CPM) chart, methods statement and quality management plan;

(k) For important and time-bound projects a suitably worded bonus clause may be considered. However, care shall be taken to see that time of completion is reasonable/ realistic and not loose;

(l) The amount of tender shall not be artificially pitched low with the sole purpose of keeping it initially within the tender accepting limit of a particular authority and subsequently enhancing the tender amount to the full cost of work;

(m) As far as possible, tenders shall be for full completion of work, including materials, labour, plant and equipment and all other expenses and overheads. The department's liability to supply materials like steel, cement, bitumen, pipes, etc. shall be limited to the absolute minimum, and provided only in exceptional cases;

(n) Splitting and packaging of road construction contracts into small sections, with externally supplied materials, departmental construction and direct labour force is generally prohibited. Package size shall be reasonable, and complete with materials, labour, plant and machinery and execution, along with all other expenses by way of overheads and profit. The competent authority may also examine as to whether the clubbing of some works shall be in order;

(o) Tenders for works of periodic renewal of roads shall be for full completion of the item of work and preferably be for a cluster of roads in a contiguous geographical area, rather than for individual roads. For this purpose, the cycle time of renewal of a particular road may reasonably be advanced or delayed, as required;

(p) In case of earth work, tenders shall be for complete work, including procurement of earth and all lead and lift;

(q) Issues which are likely to be source of dispute and claims shall be dealt with clarity. For instance, plinth level in case of building works, bed level in case of bridge works, and original ground level for embankment works, etc. shall be defined without ambiguity in the specifications accompanying the tender;

(r) For price adjustment, where provided, the items covered, the base date and the formulae (and indices) to be used shall be clearly laid down; and

(s) International Competitive Bidding (ICB) document of FIDIC (Federation Internationale Des Ingenieurs Conseils i.e. The International Federation of Consulting Engineers) for works of civil engineering construction along with suitably drafted conditions of particular application, shall be followed where so required.

13.6.4 The tender document shall also mention about the insurance required. In the case of works, two kinds of insurance are common:

(a) Liability Insurance Policy in which the Insurer (i.e. the Insurance Company) undertakes that if the insured person (the client) becomes legally liable to someone else (the 'victim'), the Insurer will indemnify the client against damages and legal costs which become payable. This would include Public Liability Policies for contractors to cover personnel on the site of work, and Professional Indemnity Policies for consultants; and

(b) Loss Insurance Policy in which the insured person is entitled to be compensated by the insurer for loss or damage which that person has suffered, whether this loss is caused accidentally or by someone else's negligence. This provides insurance cover to the works, plant and equipment.

13.6.5 As the personnel engaged on works, and plant and equipment are exposed to many risks and unsafe situations, the contract shall lay down the (i) party responsible for effecting insurance (ii) scope, amount and period of insurance, and (iii) liability to keep the policy in force.

13.6.6 Time of Completion. Engineers-in-Chief shall issue broad guidelines for fixing time of completion of various kinds of works most commonly executed by their respective departments. It is an important contract data as it may affect contract price, client/user expectation and image of the department. In no case, shall this period be decided arbitrarily. Due consideration shall be paid to various circumstances which impinge on the speed of construction, such as:

(a) **Location:** whether developed, or new site where approach road and other facilities do not exist;

(b) Urban area with easy availability of materials and skilled labour, or rural area;

(c) **Site conditions:** whether the area is open, or congested with difficult access, limited storage space for materials and constraint of traffic;

(d) Time required for preliminaries;

(e) Factors affecting foundations like water table, nature of sub-soil /founding strata;

(f) Number of storeys;

(g) Provision of any basement;

(h) Nature and extent of specialist services;

(i) Special finishes and architectural features;

(j) Technology of construction; and

(k) Period likely to be lost in adverse weather, like rains.

13.6.7 Each Public Works Department shall have its standard form of contract, to suit the type of work and the method of execution.

13.6.8 The tendered rates and price shall, except in so far as may otherwise be provided in the contract, include all plant and machinery, labour, supervision, materials, erection, maintenance, insurance, profit, taxes and duties, royalties, together with all general risks, liabilities and obligations set out or implied in the contract.

13.6.9 If in the priced bill of quantities, whether quantities are stated or not, the contractor has failed, against any item, to enter a rate or price, the cost of such item shall be deemed to be covered by other rates and prices in the bill of quantities.

13.6.10 The other important parts of the tender document such as notice for inviting tenders, earnest money, pre-bid meeting, performance security, handing over of site, etc. are explained in subsequent paras.

13.7 NOTICE INVITING TENDERS

13.7.1 Tenders shall not be invited until and unless the DNIT (Detailed Notice Inviting Tenders) for the work has been approved by the competent authority, i.e., the authority to accord technical sanction. However, in exceptional cases, the tenders may, with the approval of competent authority, be invited pending approval of DNIT, but in such cases, the DNIT shall be hosted on the website for a minimum period as prescribed.

13.7.2 Tenders for works shall invariably be invited in the most transparent manner possible by advertisement in a newspaper as per Government policy. Tender notices with tender documents in download format shall also be hosted on the department's website. The period of tender notice for different classes of works and the validity of the tender shall be as prescribed by the Government from time to time. As a general rule, to have wide, fair and adequate competition, and also to enable the prospective bidders to respond, sufficient time shall be given for submission of tenders. Engineer-in-Chief may decide to give exemption in some cases by a special or general order by passing a reasoned order. As the tender details are hosted on the website, the advertisements in newspapers shall not carry all conditions and shall only refer to the website for details. Instructions prescribing the format for advertisement shall be issued from time to time by the Engineer-in-Chief.

13.7.3 The departments, instead of selling tender forms, shall make them downloadable by the contractors from the computer. In case there is any problem or the tenders contain drawings which are difficult to be hosted on website, the tenderers may approach the tender inviting authority for assistance in the matter.

13.7.4 Authority shall always be reserved to reject any or all the tenders received without assigning any reason, and this shall be expressly stated in the detailed advertisement.

13.7.5 The bidders who download the documents from the website shall have to pay the cost of bid documents and submit it in a separate envelope marked 'cost of bidding document downloaded from the website'.

13.7.6 There may be a pre-bid meeting as mentioned in para 13.10.1. The minutes of

pre-bid meeting followed by addendum shall be issued immediately but not later than 7 days with a copy to all contractors present in the meeting and a copy be placed on departmental website. If the minutes of pre-bid meeting are delayed due to any reasons, the competent authority may usually extend the date of receipt of tenders. The tender document shall make it clear that a tenderer can seek any clarification in writing either before or during the course of pre-bid meeting.

13.7.7 Before the deadline of submission of tenders, the employer may, for justified and valid reasons, modify the tender documents by issuing an addendum with a copy to all contractors. A copy shall also be placed on the website. To give reasonable time to the prospective tenderers to take the addendum into account, the employer shall extend the date for submission of tenders as necessary. If tenders have been received and are yet to be accepted, tenders shall be cancelled and, as a rule, be re-invited, in which case copies of tender notices shall be specially sent to all the original bidders.

13.7.8 Revised tenders for a project shall be invited on the same basis on which the tenders were invited initially. Material modifications shall not be done without the approval of the competent authority. However, if any clerical or such like mistakes have crept in, they shall be rectified by the authority who allowed the tenders to be called in the first place.(refer also para 13.23.4)

13.8 EARNEST MONEY (BID SECURITY)

13.8.1 The bidders (tenderers) shall be called upon to deposit earnest money to confirm their earnestness in taking up the work. The mode of furnishing the earnest money and its amount shall be specified in the tender notice. The bids of bidders who fail to deposit earnest money shall be rejected and not considered.

13.8.2 Earnest money shall be forfeited if the bidder withdraws his bid during the bid validity period specified in the tender documents, and, in the case of a successful bidder, if he fails to sign the contract after the letter of acceptance is issued or fails to furnish the performance security, if prescribed, within the period specified, after the acceptance letter is issued.

13.8.3 If there is a delay on the part of the employer in taking a decision on the award, the tenderers, who have submitted valid tenders, shall be asked to extend the validity of the offer and of the bank guarantee if earnest money is in that form. The tenderers are free to accept or decline the request.

13.8.4 The earnest money of the successful tenderer shall become part of security deposit after ensuring that its shape and form are valid and satisfactory for the purpose. Earnest money of un-successful tenderers shall be returned within a reasonable time of the end of the bid validity period. Instructions shall be issued that the earnest money be refunded as early as possible, not later than 30 days of the allotment of tender.

13.8.5 The earnest money and performance security in case of co-operative labour and construction societies shall be normally the same. The administrative department may issue instructions for giving relief up to 50% in certain cases.

13.9 REQUEST FOR PROPOSAL (RFP)

13.9.1 In cases where the procedure of pre-qualification is to be followed, only the pre-qualified tenderers shall be requested to submit proposals/ tenders. Any such tenderer, wanting to participate in the tendering process, shall be supplied a copy of the tender documents on deposit of requisite fee.

13.10 PRE-BID MEETING

13.10.1 In case of works estimated to cost above Rs. 2 crore, or such other sum as may be fixed by the competent authority from rime to time, a pre-bid meeting shall be held at the place, venue, time and date as indicated in the tender notice about two weeks before the last date of submission of tenders for clarification of any doubts on any provision of the contract. Questions raised in the pre-bid meeting shall be carefully noted and clarifications given in due course, after full consideration of the facts, documents and circumstances, and the same shall be approved by the authority competent to sanction the estimate technically. Minutes of the meeting, including the text of questions and responses thereto, shall be circulated without delay (preferably within one week) to all the bidders present in the meeting and a copy placed on the departmental website. Any modification of the bid documents which may become necessary as a result of the pre-bid meeting shall be made by the employer through the issue of an Addendum.

13.11 RETENTION MONEY/ SECURITY DEPOSIT

13.11.1 At the time of making payments to the contractor, a sum at the rate of 10% (or such other percentage as may be prescribed) of the gross amount of each running bill is deducted till the cumulative amount of deduction along with the amount of earnest money already deposited reaches 5% (or such percentage as may be prescribed) of the tendered value. One-half of the security deposit will be refunded on completion of the work/ issue of Taking-over Certificate, and the other half will be released one year after expiry of the Defects Liability Period or as may be laid down in the tender document. The contractor shall have the option to replace the second half of retention money with unconditional bank guarantee for the desired period. For minor works, 100% security deposit may be released after defects liability period is over.

13.12 PERFORMANCE SECURITY

13.12.1 Tender document may provide that the successful tenderer will furnish performance security (5 percent of the contract price or such percentage as may be prescribed) which may be in the form of bank guarantee, to be kept as a surety that the contractor completes the work satisfactorily. Initially, the performance guarantee will be valid up to end of the defects liability period plus 30 days or as prescribed in the contract data. In case the time of completion is enlarged, the validity of the guarantee shall be correspondingly extended. It carries no interest and is returned to the contractor after the date specified in the contract.

13.12.2 If the bid is seriously unbalanced or front-loaded, the amount of performance guarantee shall be got increased suitably, to protect Government interest.

13.13 SECURED ADVANCE

13.13.1 Cases in which a contractor, whose contract is for finished work, requires an advance on the security of materials brought to site, Divisional Officer may, on written request from the contractor, sanction the advance up to an amount of 75% or as decided by the competent authority of the value (as assessed by themselves) of such materials, provided they are of an imperishable nature and that a formal agreement is drawn up with the contractor under which Government secures a lien on the materials and is safeguarded against losses due to the contractor postponing the execution of the work or misuse of the material and against the expense entailed for their proper watch and safe custody. If the material is fire prone or can be destroyed fully/partially on storage, it shall be desirable to have it first insured by the contractor.

13.13.2 Payment of such advance shall be made only on the certificate of an officer, not below the rank of a Sub-Divisional Engineer, that the quantities of materials upon which the advances are made have actually been brought to site, that the contractor has not previously received any advance on that security, that the contractor has furnished an affidavit that the said materials are free of any charge or hypothecation with any bank or financial institution, and that materials are all required by the contractor for use on items of work for which rates for finished work have been agreed upon.

13.13.3 The officer granting such a certificate shall be held personally responsible for any over-payment which may occur as a consequence. Recoveries of advances so made shall not be postponed until the whole of the work entrusted to the contractor is completed. The recoveries shall be made from the bills as the materials are progressively used, on pro-rata basis; the necessary deductions being made whenever the items of work in which they are used are billed for.

13.14 MOBILISATION ADVANCE

13.14.1 An interest bearing mobilisation advance up to the extent of 5% of contract value (or such limit as prescribed) may be given to contractors for works costing more than Rs. 5 crore (or such limit as may be prescribed by the competent authority from time to time), against unconditional and irrevocable bank guarantees to be furnished by the contractor equal to the amount of advances paid from time to time. Rate of interest shall be as specified in the contract.

13.14.2 The recovery of the mobilisation advance together with interest shall be done through percentage deductions from interim/ running payments, in the manner prescribed in the contract. It shall be desirable to recover the total amount of mobilisation advance along with interest within 80% of the time stipulated for completion. The mobilisation bank guarantee shall be released after the recovery of full mobilisation advance, including interest thereon.

13.14.3 If, in case of slow progress of work, the Divisional Officer comes to a conclusion that the total amount of mobilisation advance with interest cannot be recovered by the time 80% of stipulated time is over, the bank guarantee(s) furnished by the contractor may be encashed.

13.14.4 If the tender document so provides, the contractor will have the option to furnish mobilisation bank guarantees in parts and on recovering of ¼, ½, ¾ and full advance, proportional bank guarantees can be released.

13.15 MACHINERY ADVANCE

13.15.1 For works costing more than Rs. 10 crore, or such limit as may be prescribed by the Government from time to time, another interest bearing machinery advance to a maximum of 5% of the contract price, depending on merits of the case, can be given with the approval of the Chief Engineer against the new key construction equipment brought to the site, if a written request is made by the contractor.

13.15.2 The advance shall be paid only upon the contractor furnishing: (i) an affidavit that the machinery in question is free of any charge or hypothecation with any bank or financial institution; (ii) unconditional and irrevocable bank guarantee(s); (iii) satisfactory proof of purchase/ payment of the machinery, and (iv) a written undertaking that the equipment so purchased by him is required for use on the work in question, is fully serviceable, shall work only on that job and shall not be removed from the site without obtaining written approval of the Engineer-in-Charge. The recovery of machinery advance and the interest to be charged thereon shall be as per tender document.

13.15.3 The rate of interest shall be specified in the tender document. As in the case of mobilisation advance, if the tender document so provides, the contractor will have the option to furnish machinery bank guarantee in parts and on recovering of ¼, ½, ¾ and full advance, proportional bank guarantees can be released after recovering that proportional advance from the contractual agency.

13.16 BANK GUARANTEES

13.16.1 The bank guarantee shall be unconditional, requiring the bank to pay the beneficiary the sum specified in the guarantee on the first demand and without demur, and without reference to the party on whose behalf it has been issued, notwithstanding any dispute or disagreement that might have arisen between the employer and the contractor.

13.16.2 The form of bank guarantee shall be prescribed by the departments.

13.16.3 It shall be the duty of the Divisional Officer to obtain independent confirmation about the genuineness of the bank guarantees directly from the bank issuing them. Further, he shall keep them in safe custody, and hand them over to his successor when a change of charge takes place. Details of bank guarantees shall be entered into a register, which shall be reviewed every month to ensure timely action in respect of renewal of any guarantee, if required, before it expires.

13.16.4 Engineer-in-Chief shall issue clear instructions regarding receipt, verification and return of bank guarantees, after getting the same approved by the State Government. The Direction Committee can also deliberate on the issue to ensure uniformity among all PWDs.

13.17 SUBMISSION, RECEIPT AND PROCESSING OF TENDERS

13.17.1 Detailed procedure for submission, receipt, opening, clarification, determination of responsiveness, evaluation and comparison, etc. of tenders shall be given in the Instructions to Bidders (ITB). This procedure be widely circulated otherwise as part of departmental instructions and be made part of the Manual of Works/ Orders.

13.18 ACCEPTANCE OF TENDERS

13.18.1 The following shall be kept in mind while accepting the tenders:

(a) Top priority shall be given to decide the award of work. The successful tenderer shall be notified of the award by the employer prior to the expiry of bid validity period (original or extended) by telegram or fax and confirmed by registered letter. This letter called the 'Letter of Acceptance' (LOA) shall state the sum that the Employer will pay to contractor in consideration of the execution and completion of the work as prescribed in the contract document. The LOA shall constitute the formation of contract, subject only to signing of the agreement and the furnishing of the prescribed performance security, if any. Any vague condition given by a tenderer shall be got withdrawn or settled/priced before acceptance of the tender.

(b) If the tender of the lowest tenderer is seriously imbalanced in relation to the estimated cost of the work, the Employer may ask the tenderer to submit break down analysis for any or all items of BOQ to demonstrate the internal consistency of those prices with the methodology proposed.

(c) Normally, the lowest responsive tender (L-1) shall be accepted, unless there is some valid objection like, his record of failure in execution of a former work or his rates being abnormally low and not workable, etc. Reasons for rejecting the lowest tender shall be recorded on the tender register.

(d) The acceptance shall be within the validity period of the tender. If in the course of scrutiny, the validity period expires, the same shall be first got suitably extended before taking a decision to accept it. The tender shall be accepted as an absolute, without making any counter-offer, otherwise the offer may not stand.

(e) Tenders shall be accepted in accordance with the delegation of powers under Departmental Financial Rules (DFR).

(f) If the lowest tenderer (L-1) backs out, his earnest money shall be forfeited and the second lowest tenderer (L-2), third lowest tenderer (L-3) in order of sequence, may be called upon to bring his offer to the same level as the originally first lowest tenderer. In the event of their refusal to do so, tenders shall be recalled. In case of grave urgency, authority competent to accept the tender may authorise call of limited or short notice tenders.

(g) Single tenders shall normally not be considered unless there are special circumstances to do so. In such eventuality, decision to accept the single

tender shall be as prescribed in the rules. If special circumstances are not present, tenders shall be re-called. If re-tendering again results in a single tender, its acceptance may be considered with proper justification and reasons.

(h) If the lowest tenderer (L-1) whose tender has been accepted, does not furnish performance guarantee within the stipulated time, action shall be taken as per provisions of bid document. If the work is of an urgent nature and cannot brook delay involved in re-tendering, the remaining tenderers shall be offered the lowest approved rates. If more than one tenderer turns up, then preference shall be given to the tenderer graded according to the rates quoted in the first instance.

(i) Generally, no consideration shall be given to the offers received after scheduled time of receipt of tenders. But if the subsequent offer even from a non-tenderer (received within one week of the previous offer and before the decision of the contract) is not just marginally but significantly favourable to the Government (to the extent of 5% of the lowest tender amount in case of works costing more than Rs.5 crore, 10% in case of works more than Rs. 1 crore but less than Rs. 5 crore, 20% for in case of works more than Rs. 5 lac but less than Rs.1 crore and 30 % in case of works less than 5 lakh or any other limits as decided by Government from time to time) then the subsequent offer can be considered provided the bidder deposits the bid security and unconditional bank guarantee for the difference of the amounts between the offer of the lowest agency and the subsequent fresh offer. In that case, short notice fresh sealed bids shall be invited, with special invitation to the previous participants including the subsequent bidder mentioned above, but with the stipulation that the subsequent bidder shall not bid higher than his previous offer, otherwise his bid security and bank guarantee shall be forfeited. Tender shall be allotted to the lowest valid bid received.

(j) The letter of acceptance shall be issued to the contractor for an amount of its financial offer as evaluated. If this amount is more than 20% above the amount of administrative approval, Government/client's approval shall be taken; in other cases, work can be allotted under intimation to Government/client. In any case, revised administrative approval shall be sought if the excess over the amount of administrative approval is more than the permissible limits as given in Chapter 9. The client department shall be given sufficient time to arrive at decision, say 30-45 days.

13.18.2 Negotiations. As a matter of principle, no negotiations shall be carried out. If negotiations become necessary, they shall be held only (i) with the lowest tenderer (L-1) and (ii) by the authority competent to accept tenders. The State Government may, however, issue instructions in this regard.

13.18.3 In case of emergency work, to be certified as such by the Chief Engineer concerned, if reasonable rates are not received even after negotiations, the competent

authority, with the approval of next higher authority, may invite L-1, L-2, L-3, L-4 tenderers to quote revised rates in sealed covers, with the stipulation that these will not be higher than the previous rates. These sealed covers shall be opened in the presence of such tenderers who may like to be present, and the lowest of these rates considered as the lowest negotiated rate for acceptance. The competent authority may not accept even these rates, and may decide to re-tender.

13.19 CONTRACT PRICE

13.19.1 Contract price is the sum stated in the letter of acceptance as payable to the contractor for the execution and completion of the work and correcting any defects therein in accordance with the provisions of the contract. It takes into account the tendered rates and the financial effect of conditions and undertakings, and also negotiations, if any. It shall form the basis for determination of performance security, mobilization/ machinery advance, and liquidated damages, etc.

13.19.2 The contract price of a work, during the execution, may have to be enhanced on account of variations, price adjustment or other causes. Enhancement shall not be deferred till the final completion, but done intermittently, as the occasion demands, with the approval of the competent authority. Divisional Officer shall be responsible to see that the cases of enhancement are submitted expeditiously, but certainly within one month of their becoming due. The competent authority, depending on the enhanced value of the contract, shall ensure that such cases are decided on the highest priority.

13.19.3 Understating intentionally the cost of work at the time of inviting tenders and later going in for enhancement constitutes serious financial impropriety and should be dealt with accordingly [also refer to para 13.6.3 (l)].

13.20 OFFICERS EMPOWERED TO EXECUTE CONTRACTS

13.20.1 Officers of Public Works Departments and their subordinates are responsible that the terms of contract are strictly enforced and that no act is done to nullify and vitiate the contract. All contract deeds shall be executed on one or other of the standard forms. All agreements or security bonds entered into with the Public Works Department/ Government undertakings by contractors for the execution of works or for securing due performance of the contracts are exempt from stamp duty.

13.20.2 No authority lower than an officer in charge of a Sub-Division shall accept any tender or make a contract for public works. The different classes of deeds, contracts and other instruments which may be executed by the Public Works Departments and the authorities empowered to execute them and the financial powers which these authorities are authorised to determine the terms of deeds shall be as per Government rules/ instructions.

13.20.3 It shall be clearly understood that the splitting up of work at the time of calling tenders is a measure which must be justified by circumstances and must be in the interest of the work and the Department. It shall not be resorted to with the intention of evading the operation of any prescribed limit; any such action constitutes

financial impropriety on the part of the officer. As regards clubbing, the decision shall be taken by Engineer-in-Chief who should normally issue general directions in this regard from time to time.

13.20.4 In case of large works, the authority competent to accord technical sanction in conjunction with Engineer-in-Chief is competent to take decisions to make slices for better management and competition.

13.20.5 The agreement shall be signed by the Employer or his authorised representative (the authority letter shall become part of the agreement) and the successful bidder. In casecof bid documents where Employer is not defined, the Divisional Officer may sign the agreement for and on behalf of the Governor of Haryana after the tender has been accepted by the competent authority.

13.20.6 Two sets of documents shall be prepared and signed by both the parties on each page, including any correction slip. One of them shall be stamped 'Original' and the other 'Duplicate'. The Original shall be kept by the Divisional Officer in safe custody, and the Duplicate copy supplied to the contractor. Certified copy of the agreement shall be used for day to day use/reference. Certified copies shall also be invariably sent to the tender accepting authority, Audit and the Sub-Divisional Engineer in-charge.

13.21 HANDING OVER OF SITE

13.21.1 The site may be handed over at the commencement in full, substantially, or in parts. The schedule of handing over of the site to the contractor shall be clearly laid down in the agreement. It shall be incumbent on the department to hand over the balance site as early as possible. In the event of any unavoidable delay on the part of the department in handing over of the balance site, the contractor shall be entitled to only extension of time but no compensation, unless specifically provided otherwise in a particular contract.

13.21.2 For seeking time extension on the ground of not handing over, the contractor shall have to give documentary evidence as to what part of site was not handed over and the execution of which part of the work was affected. If the contractor had sufficient work front and the balance site is handed over in the meantime, he shall not be entitled to time extension.

13.22 WORK ORDER

13.22.1 Work order is like piece work as described in para 13.3.3. No work order shall be issued without sanction of estimates except in case of emergency.

13.22.2 Divisional Officers/ Sub-Divisional Officers shall be competent to issue work orders within their financial limits, without prior approval of the Superintending Engineer. In order to ensure that the rates given in work orders are current rates, Superintending Engineers shall order that tenders be publicly called from time to time to determine rates for specific works.

13.22.3 Divisional Officer may issue work order up to the amount of Rs. 2 lakh and a Sub-Divisional Engineer up to the amount of Rs. 50,000 (or such other limits as the

Government may fix from time to time). Enhancement of the amount of work order, or splitting the same work into different parts so as to bypass the above limits, is not allowed. No work order need be issued for a work likely to result in payment of Rs. 5,000 or under.

13.22.4 Work orders shall be used for the limited purpose for which they are intended and not as a short-cut to agreement/ contract work.

13.23 APPROVAL OF TENDER DOCUMENTS

13.23.1 The essential features and the methodology of preparation of bid document have been outlined in the above paras. The Engineer-in-Chief shall cause to prepare Standard Bid Document(s) and get the approval of the same from the State Government. Forms of important documents like Letter of Acceptance, Bid Security, Performance Bank Guarantee, Mobilisation & Machinery Advance Bank Guarantee, Indenture of Secured Advance, Agreement, etc. shall also be standardised.

13.23.2 Normally, the Standard Bid Document shall not be changed. However, if any such change is required in a particular case or type of cases, a proposal with full justification clearly specifying financial implications, if any, shall be submitted on single file for the approval of the Government.

13.23.3 In case of projects beyond certain value or some other important or crucial projects, the State Government may issue special directions to be followed in those projects.

13.23.4 In case a tender has to be re-invited, the bid document and the conditions thereof, used in the first instance, shall not be changed. In case it is necessary, the reasons for the same shall be recorded, especially as to why it was not thought of earlier and the case shall be sent to the Engineer-in-Chief in case of tenders to be decided at the level of Superintending Engineer or below and to the State Government in case of others.

13.23.5 The tenders shall be allotted taking into account all physical and financial parameters. However, if circumstances so warrant, a supplementary agreement may be entered into keeping in view the instructions issued by the State Government, if any.

13.24 E-TENDERING

13.24.1 E-tendering shall be extensively used to bring about objectivity and transparency, and also to reduce the processing time and cost in the award of works. Instructions to bidders shall be extensive and self-explanatory to encourage and facilitate the process of e-tendering. Towards this end, the departments shall develop a comprehensive database.

13.25 GENERAL

13.25.1 Provisions given above having contractual bearing are for general guidance and observance. If, in a particular contract, provisions are different, the latter shall prevail.

Chapter 14
Contractors-Enlistment and Qualification

14.1 GENERAL

14.1.1 The normal method of execution of works in PWDs is through the contractual agencies.

14.2 ENLISTMENT OF CONTRACTORS

14.2.1 Each PWD shall have rules for enlistment of contractors for various categories of works. These shall be got approved from the State Government. There can be different classes of contractors, depending on parameters specified, but these parameters may include tendering limits, jurisdiction and qualifications to be possessed. The rules shall provide, wherever possible, time limits for various actions and a procedure for review. The rules of enlistment shall be put on the website, to be up-dated from time to time. The contractors enlisted with the PWD shall be borne on the list of registered contractors. This list shall be put on the website. Along with this, e-mail id and mobile numbers of the enlisted contractors shall also be available.

14.2.2 The enlistment rules shall have provisions prohibiting the contractors from offering gifts and inducements. The contractors, who are near relatives of the key staff or engineering officers in a Circle of the department, shall not be allowed to tender for works in that Circle. A near relative shall mean wife, husband, parents, children, brother, sister, brother/sister-in-law, son/daughter-in-law and father/mother-in-law.

14.2.3 Enlistment of contractors shall be reviewed by the enlisting authority every three years on the basis of his performance (or as prescribed in the enlistment rules). In case of unsatisfactory performance, the contractor shall be liable to action as considered appropriate as per the provisions of the rules.

14.3 REGISTERS OF ENLISTED CONTRACTORS

14.3.1 Each office shall maintain registers showing the enlistment of various contractors in different classifications showing e-mail id and mobile number of the contractor. Whenever a contractor is black-listed, debarred, removed or temporarily suspended, etc. a remark to that effect shall be made in the register against that contractor. Efforts shall be made by the Engineers-in-Chief to get this data computerised so that information about new enlistments and any adverse action anywhere becomes known to all.

14.3.2 Instructions shall be issued by Engineers-in-Chief that information about a new tender shall be sent to the registered contractors on e-mail and/or SMS. This will put the registered contractors in a separate class.

14.3.3 To encourage registration with PWD, the PWD shall get some training courses started for the registered contractors and their employees. These courses can be organised by the Haryana Institute of Public Administration, Haryana State

Buildings and Roads Academy of Research & Training or Haryana Irrigation Research and Management Institute. The State Government may even come up with a plan to enhance the technical capacities of the contractors to encourage the completion of works timely, cost-effectively and with quality.

14.3.4 The Divisional Officer should meet the registered contractors periodically, at least once a year, to resolve their problems and to obtain their suggestions on the improvements in working of the department. Senior officers should also organise such meetings. The minutes of these meetings should be invariably drawn and sent to the superior officers for action.

14.4 WHEN REGISTRATION IS NOT COMPULSORY

14.4.1 Works shall normally be awarded only to the contractors registered with the respective Public Works Department. However, in the changing scenario, the exceptions listed in the following paras are important to observe.

14.4.2 The contractors registered with CPWD, MES, Railways and other Central Government or State Government Undertakings/ Organisations (an exhaustive such list be made in the beginning of every year) shall be allowed to participate in tender process without getting themselves registered with the PWD concerned. However, a Public Works Department can pass its own orders in this regard.

14.4.3 The PWDs may specify that for some special types of works a wider participation of contractors is in the interest of the department and will attract better competition. Obviously, in such cases, even the unregistered contractors shall be eligible. The authority approving the DNIT may also allow participation of specific unregistered contractors possessing requisite qualifications capability, and experience in exceptional cases as given below:

(a) Number of registered contractors is too small in the particular category to allow for genuine competition;

(b) There is an attempt to form a ring or pool of contractors to wrest out contract on self- dictated rates; and

(c) Contractors boycott tenders floated by the department to thwart tendering process and defeat fair play.

14.4.4 The Departments/Government Undertakings may choose to qualify the contractors on the basis of certain other qualifying criteria.

14.5 ACTION AGAINST ENLISTED CONTRACTORS

14.5.1 The enlisted contractors can be demoted to a lower class, removed from the list, blacklisted or debarred as per the enlistment rules. A few guidelines in this regard are provided in the following paras.

14.5.2 Demotion to a Lower Class. After giving a show cause notice of 30 days and recording the findings, the enlisting authority may demote a contractor to a lower class due to any of the following reasons:

(a) The contractor ceases to possess the adequate equipment, technical

personnel and financial resources to execute works in the class enlisted;

(b) He violates any important condition of contract executed by him with any department of the State Government; and

(c) He is responsible for any other matter which may justify his demotion to a lower class taking into account the merits of the case.

14.5.3 Removal from the Register. The enlisting authority may remove the name of a contractor from the register of enlisted contractors, after giving show cause notice of 30 days and recording the findings after hearing the contractor due to any of the following reasons:

(a) The contractor fails to execute a contract or executes it unsatisfactorily or is proved to be responsible for major construction defects which get manifested after the expiry of defects liability period;

(b) He violates any important condition of any contract carried out by him with any department of the State Government;

(c) He fails to furnish the required sales tax/ works contract tax clearance certificate as required under the rules;

(d) He fails to abide by any of the conditions of enlistment or is found to have given false particulars at the time of enlistment;

(e) He is declared or is in the process of being declared bankrupt, insolvent, or his business is wound up/ dissolved;

(f) His enlistment security falls short due to adjustment against any recovery and he fails to make it up; and

(g) He persistently violates the provisions of mining or/ and labour rules and regulations.

14.5.4 Blacklisting. After giving show-cause notice of 30 days (or as provided in the Enlistment Rules) and recording the findings after hearing the contractor, the enlisting authority may blacklist a contractor due to any of the following reasons:

(a) There are sufficient reasons to believe that the contractor or his employee has been guilty of malpractice such as bribery, corruption, fraud, vitiating fair process, including substitution or interpolation of tenders, pilfering or unauthorised use or disposal of government material issued for specific works, etc;

(b) The contractor continuously refuses to pay government dues without showing adequate reasons and where the enlisting authority is satisfied that no reasonable dispute attracting reference to Court of Law exists for contractor's action;

(c) Where the contractor or his representative has been convicted by a Court of Law for offences of moral turpitude in relation to business dealings or where security considerations, including suspected loyalty to the State, so warrant;

and

(d) If the contractor or his representative is found guilty of misbehaviour with any official of the State Government connected with the execution of the work directly or indirectly.

14.5.5 Debarring/ Suspension. After giving notice of 15 days (or as prescribed in the Enlistment Rules) and recording reasons the enlisting authority may debar/ suspend for a particular period the enlistment of a contractor for any of the following reasons:

(a) If a contractor does not execute agreement or deposit performance guarantee or does not start the work or complete the work after acceptance of tender as per agreement, the contractor is liable to be debarred and suspended from participating in the re-tender of that work or in future tenders and his enlistment may be suspended;

(b) If an enlisted contractor, after having tendered for a work or after negotiations, gives unauthorised applications voluntarily, vitiating the fair tendering process; and

(c) In case of a co-operative society, if it does not get the accounts audited in time.

14.5.6 Actions listed in paras 14.5.4 and 14.5.5 shall be taken against even those contractors who are not enlisted with the department. In all such cases, the authority competent to take action shall be the authority competent to sanction the estimate technically. Such provision shall be a part of the tender document.

14.5.7 Information of punitive action taken against a contractor shall be given wide publicity and circulated among Government organisations.

14.5.8 Review of Decisions. The orders issued by the competent authority regarding demotion, removal, blacklisting and debarring/ suspension can be reviewed by authority as prescribed in the enlistment rules.

14.6 QUALIFICATION

14.6.1 A Public Works Department may want to pre-qualify or post-qualify the contractors for any particular work or class of works. Such a decision shall be taken beforehand and relevant details shall be available in the tender document. The authority competent to approve the DNIT can impose any suitable conditions regarding pre-qualification / post-qualification and allow other eligible contractors, not enlisted with the PWD, to bid.

14.7 PRE-QUALIFICATION

14.7.1 Pre-qualification may be done for works costing more than Rs. 5 crore and other special works, irrespective of their value, or as prescribed.

14.7.2 Pre-qualification shall be based on the capabilities and resources of prospective bidders, taking into account their (a) experience and past performance on same kind of works in general and similar works in particular; (b) capabilities with

respect to personnel, equipment and construction or manufacturing facilities, and (c) financial position. The requirements to be fulfilled for each criterion shall be specified in the pre-qualification documents. Tenders shall be called from pre-qualified tenderers.

14.7.3 Under this procedure, initially, the request for 'Expression of Interest' shall be published in the newspapers and a copy of the same may also be sent to such reputed contractors having experience of the work concerned or who have shown an interest in the said project and the copy be also placed on the department's website. The tenderers expressing interest shall be supplied a copy of the pre-qualification documents after taking bid document fee. These documents shall be filled by the applicant and sent to the office concerned, along with prescribed testimonials.

14.7.4 Normally, the contractors shall be pre-qualified for a particular work as per the prescribed qualification criteria. But in case pre-qualification has already been done for a similar work, the competent authority may dispense with fresh pre-qualification in the case of tenderers who furnish a copy of the original letter of pre-qualification and up-date the pre-qualification application to establish that they still meet the prescribed requirements and that nothing has happened in the intervening period to debar them. However, for certain works, the contractors can be pre-qualified generally. A list of such pre-qualified contractors shall be prepared, which shall remain valid for a maximum period of two years, and bids invited only from them.

14.8 POST- QUALIFICATION

14.8.1 Contractors may be post-qualified for works costing between Rs. 2 crore and above, and works under special circumstances irrespective of value, or as prescribed. Each department shall prescribe evaluation criteria applicable to the work for selection of contractors on the basis of post qualification. The criteria shall be enclosed with the tender documents.

14.8.2 Under post-qualification method of selection of the contractor, two-envelope system of tendering shall be followed. Envelope-1 shall be the Technical Bid, containing information on qualification and other details as prescribed in ITB (Instructions to Bidders) and earnest money, etc. Envelope-2 shall be the Financial Bid. Both the bids shall be received simultaneously. In the first place, Technical Bid shall be opened by the committee constituted by the competent authority, and evaluated. The competent authority shall approve the responsive qualified bids. Financial Bids of tenderers whose Technical Bids have been found in order shall be opened by the committee and evaluated. The procedure of receipt, opening, evaluation, etc. shall be laid down in the Instructions to Bidders (refer para 13.17). The tender shall be considered for acceptance as per delegation of powers. The competent authority here means the authority competent to accept the bid at the quoted price.

14.9 BID CAPACITY

14.9.1 Bidders who meet the minimum qualifications criteria shall be qualified only

if their available bid capacity for construction work is equal to or more than the total bid value. Bid capacity will be determined for works costing Rs. 2 crore and above (or such limit as is fixed by the competent authority from time to time).

14.9.2 Unless otherwise specified by the PWD, the available bid capacity shall be calculated as under:

Assessed Available Bid capacity = (Ax N x M- B), where

A = Maximum value of civil engineering works executed in any one year during the last five years (taking into account the works completed and in progress, and updated to the price level of last year using 'Cost Inflation Indices' published by the Ministry of Finance, GOI or as prescribed in the tender document).

N = Number of years prescribed for completion of the works for which bids are invited (period up to six months to be taken as half-year and more than six months as full year)

M = 2 or such higher value not exceeding 3 as may be specified by the competent authority from time to time.

B = Value at current price level, of existing commitments and ongoing works to be completed during the period of completion of the works for which bids are invited.

14.10 DISQUALIFICATIONS

14.10.1 Even though the bidders fulfil the qualifying criteria and meet the bid capacity requirement, they are subject to be disqualified, if they have:

(a) Made misleading or false representations in the forms, statement, affidavits, attachments in proof of the qualification requirement, or

(b) Record of poor performance such as abandoning a work, not properly completing the contract, inordinate delays in completion, adverse litigation history, financial failure, etc. or

(c) Participated in previous bidding for the same work and had quoted unreasonably high or low bids and could not furnish rational justification for the same, or

(d) Submitted more than one bid, or

(e) Given unauthorised applications after opening of tenders, with a view to vitiating the competitive tendering process.

14.11 PERFORMANCE APPRAISAL OF CONTRACTORS

14.11.1 A confidential report on the performance of the contractors for all works costing more than Rs. 50 lakh (or as prescribed by the Government) shall be prepared by the Engineer-in-Charge. The report shall, inter alia, bring out:

(a) Ability to understand and willingness to carry out instructions;

(b) Implementation of quality assurance plan/ quality norms; willingness to rectify/ replace defective work/ materials;

(c) Deployment of the required equipment, key personnel and finances;

(d) Any case of imposition of penalty, liquidated damages, suspension, termination, or expulsion/ removal of staff, etc.

(e) Compliance with contractual provisions, labour laws, and safety rules;

(f) Any complaint regarding un-authorised sub-letting, sub-contracting;

(g) Behaviour (any act of gross misbehaviour to be reported with facts);

(h) Invocation of arbitration (with brief particulars); and

(i) Overall assessment.

14.11.2 The report shall be signed by the Engineer-in-Charge and submitted to the Superintending Engineer, who shall add his remarks, counter-sign and forward the same to the authority where the contractor is enlisted and also to the Headquarters Office for any further reference.

Chapter 15
Commencement of works

15.1 NORMAL WORKS

15.1.1 No work shall be commenced unless the following conditions are satisfied:

(a) The work is approved in principle and an administrative approval has been issued for its execution by the competent authority for the probable cost of the work;

(b) Allotment of funds has been made for the work and orders for its commencement issued by the competent authority; and

(c) Detailed designs and estimate have been prepared for the work to confirm that the work is technically feasible and viable and corresponding technical sanction has been issued by the competent authority.

15.1.2 Pending receipt of intimation of the budget grant for the year, work may be undertaken and expenditure incurred on:

(a) Original works in progress at the end of the previous financial year;

(b) Original works for which appropriation was made under proper authority in the budget estimates of the past year but which may not have commenced in that year; and

(c) Repair works.

15.1.3 Verbal orders for the commencement of work are to be deprecated as being liable to misapprehension, but in case where such orders are given, they shall ordinarily be confirmed in writing as soon as possible thereafter, and the procedure detailed above put into motion and completed.

15.1.4 Further, it shall also be seen that:

(a) The land/site on which construction is to take place is in the possession of PWD (preferably without encumbrances) or permission of the department concerned incharge of land has been received;

(b) Necessary pre-investigation / site survey has been carried out and proper thought has been given to the type of foundation to be used; and

(c) Necessary approvals of the authorities concerned have been obtained like (i) sanction of plans from Municipality/Development Authority (ii) clearance from the Fire Fighting Department, and (iii) other clearances as detailed in para 15.2.

15.2 CLEARANCES, UTILITIES, PERMITS

15.2.1 Execution of works may require certain clearances, relocation of the utilities and securing of permits. These are broadly indicated (list is not exhaustive and is only

indicative) below along with the departments/authorities/Ministries involved:

(a) Clearances

(i) Forest Department, to cut any trees and provide any compensatory afforestation;

(ii) Ministry of Environment and Forests, GOI or State Environmental Impact Assessment Authority (as the case may be) for environmental clearance;

(iii) Railways, to cross railway line (whether by level crossing, Road-over-Bridge, Road-under-Bridge or to provide project related railway siding);

(iv) Archaeology Department, to negotiate a historical structure or protected monument;

(v) Civil Aviation Department, for any structure likely to affect flying/ landing operations;

(vi) Military Authorities, for any installation in the vicinity of prohibited area;

(vi) B&R department, for using the right-of-way or crossing the same; and

(vii) Any other department whose facility is likely to be affected by the project (e.g. Irrigation Department if a proposed highway has to cross a canal or vice versa).

(b) Relocation of Utilities

(i) Department/ Authority concerned, for re-location of water supply lines and sewers;

(ii) State Electricity Board/ Undertaking, for shifting of electricity poles;

(iii) Telecommunication Department, for re-locating telephone poles/lines/cables; and

(iv) Cable Service Providers, in respect of cables.

(c) Permits Required

(i) Industries Department, for blasting operations;

(ii) Mines and Geology Department, for mining of earth and stone;

(iii) Ministry of Petroleum, for adjustment of the sites of petrol pumps, gas lines;

(iv) Labour Department, for import of labour;

(v) Health Department, for health/ sanitation requirements of labour camps;

(vi) District Administration/ Community Leaders, for shifting of

religious structures; and

(vii) Pollution Control Board, for various activities such as putting up a hot mix plant, setting up of brick kiln, discharge of effluent, etc.

15.2.2 In certain works, especially pertaining to irrigation, the permission of Central Water Commission or other relevant bodies shall be taken where required.

15.2.3 Depending on the nature of work and method of execution, the responsibility of obtaining clearances and permits and relocating the utilities shall be clearly specified in the contract document.

15.3 ENVIRONMENT CLEARANCE

15.3.1 The environment clearance has recently become one of the most important clearances required. This also takes considerable time. The Ministry of Environment and Forests (MOEF), Government of India, and other statutory bodies have issued guidelines in this regard, which are revised from time to time. The PWDs need to ensure that the environmental clearances are available even before the work is tendered. In any case, the work shall not be allowed to be commenced unless such a clearance is available as per latest applicable instructions.

15.3.2 Getting environment clearance can be time consuming as it involves a number of technicalities. To collate all relevant information on the subject and to ensure that the department is kept fully abreast with the latest requirements, the department shall designate one officer at the headquarters to be incharge of the subject. Instructions in this regard to the field offices shall be issued from time to time.

15.3.3 The senior officers of PWDs shall also familiarise themselves with all the statutory requirements for securing the required clearance well in time in respect of the projects handled by them.

15.4 EXPEDITING WORKS

15.4.1 The State Government may desire speeding up of some works, including the associated preliminaries. This measure may sometimes enable the State to get enhanced grants from the Government of India.

15.4.2 In case of certain works of the Government of India (for example, works under Central Road Fund, NCRPB loan scheme, etc), where detailed planning has already been done and the scheme cleared in principle, but actual sanction is awaited which may take some time, work may be put to tenders. Similarly, the works under PMGSY are usually considered by the Empowered Committee and their approval thereafter is more or less a formality. In such cases, the action to invite tenders may be taken immediately after the meeting of the Empowered Committee, as per the decisions taken therein. The work, however, shall be allotted only after the sanction is actually received.

15.4.3 In certain cases, the authority competent to accord technical sanction of a work may allow the executing authority to invite tenders and allot the work in anticipation of the said sanction. In these cases, the important technical parameters, however, shall be laid down beforehand.

15.4.4 Exigencies of speedy execution may sometimes require relaxation of the prescribed procedures. In such an event, the Engineer-in-Chief shall list the relaxation(s) required, explaining the circumstances, and put up the case to the Administrative Secretary on single file, for obtaining approval of the State Government.

15.5 COMMENCEMENT OF EMERGENCY WORKS

15.5.1 If, on grounds of urgency or otherwise, a Divisional Officer is required to commence a work for which no estimates have been sanctioned or for which no financial provision exists (whether estimates have been sanctioned or not), the procedure laid down in Chapter 17 shall apply.

Chapter 16
Execution of Works

16.1 SITE CLEARANCE

16.1.1 A construction contract is likely to involve clearance of the site (including removal and disposal of bushes, trees, stumps, roots, boulders and any existing material), demolition of any existing structure and rough grading. The manner and extent of carrying out these activities and fixation of the founding level shall be laid down in the tender documents. The utilities like electric or telephone line/pole, water supply line, sewer, etc falling within the alignment or at the location of any infrastructure work shall, as far as possible, be removed/ shifted before start of work. In case any utility is met during the execution of work, the same shall be removed expeditiously so as not to unreasonably delay the work.

16.1.2 The authority competent to accord technical sanction or the one senior to it may decide to start the tendering process in anticipation of these clearances and shifting of utilities. This shall be done with the clear understanding that site to work will be substantially (if not fully) available, preferably before the date of commencement of work, but certainly within three months of the commencement.

16.2 SETTING OUT

16.2.1 The Engineer in-Charge shall ensure that the contractor sets out the work in accordance with the contract drawings and information and instructions issued by the department. It shall be the duty of the Engineer-in-Charge to (i) supply dimensioned drawings/ requisite details to enable the contractor to set out the work and (ii) check the work when set out.

16.2.2 The Engineer-in-Charge shall bring to the notice of his superior if the setting out is not done within three weeks or the time prescribed, along with the reasons for the delay. He shall also take such action as may be prescribed in the agreement. Superintending Engineer, on his visit to the Division, shall examine any case of backlog of setting out and take such measures as he feels necessary.

16.3 WORK PROGRAMME

16.3.1 For works costing more than Rs. 2 crore, or such limit as may be fixed, the contractor shall be required to submit his construction programme bringing out the sequence of work, and dates of commencement and completion of various stages/ milestones. The programme shall be supported by Bar Charts or CPM (Critical Path Method) analysis or other appropriate form as prescribed. The programme shall be revised when slippages occur or as the conditions warrant. The pre-revised programmes shall, however, be retained for comparison and documentation.

16.3.2 In case of works of value less than the above limit, the need for work programme may be dispensed with, but their timely completion shall not be ignored.

16.3.3 The tender document shall prescribe the day by which the contractor is required to furnish the work programme. It may also contain a penalty provision for delayed submission or non-submission. The Engineer- in-charge shall examine the programme and convey approval without delay. However, this approval shall not absolve the contractor of his responsibility under the contract. The Engineer-in-Charge shall send a copy of the work programme to the Superintending Engineer and Chief Engineer. He shall bring all cases to the notice of his superiors where the work programme in proper format is not submitted. The Superintending Engineer, on his visit, shall examine the progress in relation to the work programme and ask for any corrective measures.

16.4 METHODS STATEMENT

16.4.1 For works costing more than Rs. 5 crore, or such other limit as may be fixed, the contractor shall be required to submit a statement giving step-wise general description of the methods he proposes to adopt, and all the complementary arrangements (including deployment of resources) he shall make to execute the major items of work.

16.4.2 The tender document shall prescribe the day by which the contractor is required to furnish the methods statement. It shall also contain a penalty provision for delayed or non-submission. The Engineer-in-Charge shall bring to the notice of his superior any case of default.

16.5 PLANNING/ENSURING QUALITY

16.5.1 For works costing more than Rs. 5 crore, or such other limit as may be fixed, the contractor shall be required to submit the Quality Management Plan, indicating the measures he will adopt and the organisation he will put in place to achieve the desired quality level. (also see Chapter 20).

16.5.2 The Engineer-in-Charge shall see that the plan is satisfactory and in accordance with the provisions in the Code and the Quality Assurance Manual (which the departments shall bring out), or instructions issued in this regard.

16.6 QUARRIES AND BORROW AREAS

16.6.1 The Engineer-in-Charge shall ensure that the contractor obtains approval for all quarries and borrow areas, he proposes to use. It shall be clearly brought out in tender document that the contractor shall remain responsible for statutory clearances and payment of royalty and other dues. A written undertaking to this effect shall also be obtained from him. Charts/ location plans of quarries and borrow areas shall be documented.

16.6.2 The Engineer-in-Charge shall carry out surprise checks to ensure that the material comes only from approved sources.

16.7 MATERIALS, EQUIPMENT AND MACHINERY

16.7.1 The Engineer-in-Charge shall ensure that all materials brought by the contractor are as per stipulations in the contract and specifications. In case of doubt,

the contractor shall be called upon to submit, at his own cost, satisfactory evidence and test results from an approved laboratory as to the kind and quality of materials. He shall use materials of special brands if specified; others of equal quality may be used subject to approval. Rejected/ defective materials shall, without delay or extra cost, be removed and replaced by the contractor by standard ones as provided in the contract.

16.7.2 The Engineer-in-Charge shall ensure that all equipment and machinery brought by the contractor are as per stipulations in the contract and specifications, and commensurate with the methodology and work programme.

16.7.3 The senior engineers while making inspections shall also examine these aspects and take corrective and/or punitive measures.

16.8 SCAFFOLDING AND FORMWORK

16.8.1 Scaffolding and formwork (centering and shuttering) are integral parts of construction. Scaffolding shall be strong and safe enough to withstand the weight of labour, materials and other forces like vibrations, wind, water, etc. To give additional safety, especially in tall buildings or where the wall has to have brick/ tile or some other decorative facing/ finish, double scaffolding shall be used. Scaffolding shall be stable against sways and distortion, and shall be stiffened by diagonal braces and ties. Struts shall rest on firm, unyielding soil, or embedded deep enough into the ground or rest on especially prepared foundation.

16.8.2 Formwork shall be set to line and level within the specified tolerances and include any camber that may be required. Struts and ties shall be strong and well secured to prevent undue strain and loss of geometry. Joints shall be sufficiently tight to prevent loss of grout. The class of formwork will be governed by the structural and architectural requirements of the member in question and whether the surface is exposed. Where it is intended to reuse the formwork, it shall be cleaned/ repaired to the satisfaction of the Engineer-in-Charge.

16.8.3 Scaffolding and formwork shall be removed after such time and in such manner that there is no damage to appearance, strength or durability. Steel shall be preferred over timber from the point of view of stability, re-use, wastage of timber and ultimate economy.

16.8.4 The contractor shall be required to submit detailed proposals of scaffolding and formwork to the Engineer-in-Charge for approval. Before ensuring adequacy and safety of centring and shuttering, the corresponding work shall not be allowed to proceed. However, the fact of approval or check by the departmental officers shall not absolve the contractor of his responsibility under the contract.

16.9 WORKMANSHIP AND TOLERANCES

16.9.1 All workmanship shall be of the prescribed standard and subject to inspection, examination and test by the Engineer-in-Charge at any and all times during construction and defects liability period. All work shall be in true line, level and as per dimensions shown on the drawings, subject to permissible tolerances.

16.9.2 Any rectification/ replacement required shall be got done by the contractor at

his own cost, soon after the deficiencies come to notice or are pointed out.

16.10 COMPLIANCE WITH LAWS

16.10.1 The Engineer-in-Charge shall be knowledgeable about the duties and responsibilities as principal employer. He shall ensure that the contractor meets with all obligations towards compliance of all applicable statutes, regulations and bylaws of the Central and State Governments, Local Bodies and other public authorities. He shall take steps to see that the contractor, at his own cost, obtains all necessary approvals and clearances. The Engineer incharge/department may, however, help the contractor in this regard.

16.10.2 Any case of non-compliance shall be brought to the notice of the contractor for taking immediate remedial measures. In case the contractor fails to take requisite steps, immediate legal action shall be taken.

16.11 LABOUR WELFARE AND SAFETY MEASURES

16.11.1 The contractor shall be made to adhere to all laws, rules and regulations concerning payment of wages to the labour, their welfare, occupational health and safety. He shall meet with the statutory requirements of various inspecting agencies in this regard.

16.11.2 The contractor shall be required to maintain all the prescribed labour records and submit such returns as may be prescribed. The labour records shall be available for inspection by the Engineer-in-Charge, Labour Officer and any other officer who may be authorised in this behalf by the Government. Engineer-in-Charge shall see that the conditions of the contract in regard to labour regulations are being duly fulfilled. Engineer-in-Charge can deduct from the money due to the contractor any sum required for making good the loss suffered by the workers due to non-observance of the labour regulations. In case the Engineer-in-Charge finds it difficult to take action on the advice tendered by the Labour Officer, or there is an appeal against such an advice, he shall report the matter to the Superintending Engineer and obtain directions from him.

16.11.3 In case of serious or fatal accidents, the matter shall invariably be reported by the Engineer-in-Charge to the Superintending Engineer and any other statutory authority, with a copy to the Deputy Commissioner. A preliminary enquiry shall be conducted immediately pending any detailed enquiry which may be ordered by the senior officers. The handling of accident cases shall be given priority at all levels.

16.11.4 The 'Building & Other Construction Works (Regulation of Employment and Conditions of Service) Act, 1996' is intended to provide safety, health and welfare measures to construction labour. Every contractor (employing ten or more workmen) and every workman so employed are required to register themselves under the Act. Under 'Building & Other Construction Works Welfare Cess Act, 1996', such a contractor is required to pay cess not exceeding 2% of the cost of construction incurred by him, to form a welfare fund. The accretions to the fund can be utilised for short, medium and long term welfare measures of the registered workers in

accordance with the rules framed under the Act. The PWDs shall put up suitable schemes before the State Welfare Board for consideration and approval, and take further requisite action.

16.12 INSPECTION AND APPROVAL

16.12.1 It is important to know in advance what work the contractor intends to do and how. The contractor shall supply this information to the Engineer-in-Charge and obtain his approval to commence any part of the work. Engineer-in-Charge must not unnecessarily hold up approvals. On receipt of request for approval (RFA) from the contractor, each stage of the work shall be checked as it proceeds and deficiencies got corrected as they appear. If testing is required, it shall be done in good time. The contractor may also seek final inspection of part of the work, as for example completion of a particular layer of road work, before he can proceed to the next stage. Such an inspection shall be done very carefully.

16.13 ENVIRONMENT PROTECTION MEASURES

16.13.1 The Engineer-in-Charge shall ensure that the contractor takes all measures to protect the environment, including the following:

(a) Restoring the borrow pits and other scarred sections of the construction area;

(b) Preventing land, water and air pollution by wastes from machinery, vehicles, asphalt and concrete plants, stone crushers, blasting operations and construction camps;

(c) Proper disposal of waste water, mud, debris and other wastes;

(d) Providing adequate lavatories, bathrooms, washing platforms for the labour force with proper drainage and regular cleaning;

(e) Ensuring that the employees do not use the open surroundings as toilets or dispose the excrement in an unsanitary manner;

(f) Giving due consideration to the preservation of natural beauty, historical and natural interests, re-creational spots and religious, geological and archaeological artifacts;

(g) Providing adequate emergency facilities to prevent the ill effects of explosions, fires, natural calamities and release of toxic materials;

(h) Ensuring that the migration of workers into the project area does not affect the local inhabitants and their pattern of life;

(i) Preventing contamination of ground water by leakage, spillage or run-off wastes;

(j) Safe transportation and storage of hazardous and inflammable materials;

(k) Avoiding water logging, sedimentation and soil erosion;

(l) Preventing damage to the adjoining property by surface subsidence or other causes;

(m) Avoiding disruption to the normal course of life and trade in the

neighbourhood;

(n) Preventing air pollution by dust from un-surfaced roads or other construction operations or discharge of smoke from plants or burning of dry leaves from becoming a hazard to health and environment;

(o) Providing service road /alternate route/ road crossings and maintaining the same throughout the period of construction;

(p) Avoiding conditions conducive to the spread of communicable diseases, and providing health care services and other welfare measures;

(q) Avoiding surcharge of the drainage system;

(r) Ensuring that the sewer system does not create new health problems by transporting and concentrating wastes at new locations; and

(s) Avoiding adverse effects of waste disposal measures or other operations on the units and installations situated downwind or downstream from the project, as needed.

16.13.2 The Engineer-in-Charge shall ensure that environmental protection measures are duly taken by the contractor and that any failure to do so is notified forthwith to the contractor for taking immediate corrective action at his cost.

16.14 CONTRACTOR'S SUPERINTENDENCE AND PERSONNEL

16.14.1 The contractor shall be required to provide all necessary superintendence during execution of all works and as long thereafter as may be necessary for fulfilling properly his obligations under the contract. Immediately after receipt of letter of acceptance of the tender and before commencement of work, he shall be required to intimate in writing to the Engineer-in-Charge the name(s), qualifications, experience, age and address(s) and other particulars of the principal technical representative to be in-charge of the work and other technical representatives who will be supervising the work. Minimum requirements of such technical representatives, their qualifications and experience shall not be less than those specified by the department concerned, depending on the contract amount or complexity of work (in which behalf, necessary criteria shall be laid down or instructions issued by the Engineer-in-Chief). The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise. Decision of tender accepting authority shall be final. Such principal representative and other technical representatives shall be available at site before start of work and at all times when any construction activity is going on, and also be present to take instructions from the Engineer-in-Charge or his designated representative.

16.14.2 Engineer-in-Charge may direct the contractor to remove from the contract works any personnel employed by the contractor or the sub-contractor in or about the execution of works who by reason of serious misconduct, incompetence or negligence of his duties is not considered acceptable in the interest of work. A person removed from the site shall not again be allowed to join without written permission of the Engineer-in-Charge.

16.14.3 The contractor shall inform the Engineer-in-Charge in writing, at the earliest opportunity, of specific likely future events and circumstances that may adversely affect the quality or progress of works. The contractor shall co-operate with the Engineer-in-Charge in making and considering proposals for avoiding or mitigating the effect of such events and circumstances.

16.15 SUB-CONTRACTING

16.15.1 Sub-contracting shall not be allowed without approval of the competent authority, except in the case of a nominated sub-contractor, or provision of labour or labour component or carriage or purchase of materials which are in accordance with prescribed standards.

16.15.2 If a contractor wishes to engage a sub-contractor, he shall be required to make a written request to the Engineer-in-Charge, giving justification, particulars of the proposed sub-contractor and the extent of sub-contracting. Engineer-in-Charge shall, before making his recommendations, thoroughly satisfy himself about the capability of the sub-contractor. The competent authority (as prescribed) may, on being satisfied, allow the request to sub-contract up to an amount not exceeding the limit prescribed in the agreement of the contract amount. Sub-contracting shall not relieve the contractor of any liability/ obligation under the contract.

16.15.3 Second tier of sub-contracting shall not be allowed.

16.16 DELAYS AND EXTENSION OF TIME (EOT)

16.16.1 Delay in completion of the contract in the time originally fixed in the contract may be caused by the employer, or contractor, or third party or Force Majeure. The consequences of delay are:

(a) Extension of time, which may be compensable or non-compensable, or

(b) Imposition of liquidated damages, or

(c) Determination / Termination of the contract.

16.16.2 The nature of action /sanction shall depend on the exact nature of delay, its cause, the party responsible, and the attendant circumstances. The procedure for grant of extension of time shall be as laid down in the contract.

16.16.3 While considering application of the contractor for extension of time, effect of concurrent delays shall be carefully assessed. In case of request for abnormal or disproportionate extension of time in comparison to the original time limit, especially in regard to important projects, the reasons of delay shall be thoroughly investigated.

16.16.4 Based on Hindrance Register [refer para 16.27.1 (j)] and where adequate grounds exist, extension may be granted even in the absence of application from the contractor so as to keep the contract alive, but this action shall be without prejudice to the right of the employer to impose liquidated damages.

16.16.5 Basically, the purpose of extension of time is to set a new time limit for completion, giving the contractor a date to work towards. However, to avoid a situation of the contract being at large, a provision should be made in the contract that extension of time can be granted retrospectively.

16.16.6 The authority competent to technically sanction the estimate shall have the power to grant EOT. However, to check disproportionate EOTs and to ensure uniformity in approach, the Engineer-in-Chief shall issue instructions in this regard from time to time.

16.16.7 Engineer-in-Chief shall frame guidelines to the effect that the Engineer-in Charge and the contractor shall have a formal meeting every 3 months to discuss and thrash out issues having a bearing on EOT.

16.17 LIQUIDATED DAMAGES (LD)/ COMPENSATION

16.17.1 Liquidated Damages. A contract may provide for payment of liquidated damages by the contractor which the owner suffers on account of delay, solely attributable to the contractor, in completion of the work by the prescribed date. Payment of liquidated damage does not absolve the contractor of his liability to complete the work or of any other obligation under the contract. The deduction on account of liquidated damages shall be as per provisions of the agreement. If the work is intended to be done in phases/ stages, appropriate milestones shall be set down in the contract and achievement of each milestone in the stipulated time made of the essence. If a milestone is not achieved in the prescribed time, liquidated damages get automatically attracted, but it shall be desirable to notify the contractor before and after the said action of deduction.

16.17.2 If the time of completion is extended after liquidated damages have been paid, the Engineer-in-Charge shall correct any over-payment of liquidated damages by the contractor by adjusting in the next payment certificate. Normally, there shall be no interest on the over-payment of liquidated damages by the contractor, unless specifically provided otherwise in a particular contract.

16.17.3 Compensation. A particular contract may, in stead of liquidated damages, provide for levy of compensation on the contractor for his failure to maintain the required progress. The action shall be taken after full consideration of the circumstances of the case, especially whether the contractor had applied for time extension in time, and after serving the contractor with a notice of department's intention to levy compensation. The compensation shall be levied as per provisions of the agreement. Payment of compensation does not affect the contractor's obligations under the contract. The contract may also provide for appeal to the Superintending Engineer or Chief Engineer, on written representation by the contractor. This appeal shall be decided by the authority concerned speedily, after giving reasonable opportunity to the parties of being heard.

16.17.4 The contract may further provide that in case the contractor has rendered himself liable to pay compensation for delay or other compensation events caused by him, as laid down in the contract, the Engineer-in-Charge may, by notice to the contractor (i) rescind the contract and forfeit security deposit and performance guarantee of the contractor or (ii) employ labour and supply material to complete the balance work, debiting the contractor with the cost so incurred and crediting him with the value of the work done at his contract rates or (iii) engage another contractor to

complete the balance work at the risk and cost of the first contractor. The best option shall be exercised with great circumspection and with approval of the authority which originally accepted the tender.

16.18 BONUS

16.18.1 To encourage expeditious completion of urgent and time-bound projects, a suitable bonus clause for completing the work ahead of the stipulated time of completion could be considered by the competent authority. For the purpose of evaluating bonus payment, the time of completion of the whole of the work shall be regarded as fixed and no adjustment of the time by reason of grant of extension of time or any other cause permitted.

16.19 VARIATIONS

16.19.1 Engineer-in-Charge, with the approval of the competent authority (to sanction the estimates technically), may order variations as per provisions of the contract. It enables the Engineer-in-Charge to (i) increase or decrease the quantity of any work; (ii) omit any such work; (iii) change the character or quality or kind of any such work; (iv) change levels, lines, positions and dimensions of any part of the work; (v) order additional work necessary for completion of the work, and (vi) change any specified sequence or timing of construction of any part of the works.

16.19.2 The following steps shall be taken to minimise the incidence and adverse effect of variations:

(a) Plans, specifications shall be prepared with good care and in sufficient detail;

(b) Representations to the contractor regarding site conditions, type of soil, availability of land, etc. shall be made with great foresight;

(c) Ground levels shown in the drawings shall tally with those at the site;

(d) A written procedure to issue variation orders, their extent, authority competent to authorise them, and method of valuation shall be put in place;

(e) Instructions to vary shall invariably be written; verbal instructions shall be confirmed as soon as possible;

(f) In the case of BOQ items (i) threshold limits in physical terms (quantity % of the varied item) and financial terms (cost of the varied item as % of the contract price) to be exceeded for considering change in rate and (ii) the quantity to which varied rates will apply, shall be laid down in the contract;

(g) The variations shall be approved expeditiously by the competent authority and in the interim, procedure for provisional payment provided;

(h) Normally, change of rate in the case of omission or decrease in the quantity of BOQ item shall not be considered unless specifically provided otherwise in a contract.

(i) A variation register shall be maintained to keep track of variations and their financial impact.

16.19.3 No variations shall be entered in the Measurement Book unless these are first

accepted in principle by the competent authority, except in case of increase of a BOQ item up to the threshold limit as indicated in para 16.19.2 (f) for which no change of rate is to be considered.

16.20 ALTERATIONS IN DESIGN

16.20.1 The Engineer-in-Charge shall not make any changes in the designs, standards or specifications except with the specific orders of the authority competent to accord technical sanction. If the design was originally made by the consultant, his view should be taken before making any changes. If, in urgent cases, the delay likely to be caused is inconvenient, an immediate report of circumstances shall be made to technical sanctioning authority for its consideration.

16.20.2 In case of building works, the fact that deviations are shown in the architect's plans should not be construed as having the sanction of the competent authority. The Architect, on his part, shall obtain prior concurrence of the technical sanctioning authority for making deviations from the approved plans, on the basis of which estimates were framed and tenders called. The revised drawings shall invariably give nature of changes made, with dates.

16.20.4 Where important structural alterations are contemplated, though not necessarily involving an increased outlay, the orders of the original sanctioning authority should be obtained. A revised estimate should be submitted for technical sanction, should the alterations involve any substantial change in the cost of the work.

16.20.5 In the case of works funded by other sources, the guidelines as agreed with the client department shall be followed.

16.21 URGENT REMEDIAL WORK

16.21.1 If the Engineer-in-Charge considers that urgent work, by reason of accident or failure or other event, is necessary for the safety of the works and the contractor is unable or unwilling to carry out such work, the employer may use other contractors after giving due notice to the original contractor. If the contractor was responsible in the first instance for the work, the employer may deduct his costs from sums otherwise due to the contractor. However, the Engineer-in-Charge should notify the contractor of the emergency or urgency as soon as practicable.

16.22 INTERIM PAYMENT CERTIFICATES (IPCs)/ ON-ACCOUNT PAYMENTS

16.22.1 For interim payments, the contractor should be required to submit to the Engineer-in-Charge, a statement/bill in the desired format showing the amount to which he considers himself to be entitled at the end of the stipulated period/stage. The Engineer-in-Charge will check the statement/bill and issue/pay interim payment certificates/bills showing the approximate value of work done or the contract price of materials delivered issued strictly in terms of conditions of the contract such as: stages of payment, payment of secured advance, amount to be retained towards retention money, recovery of any advances like mobilisation/ machinery, recovery of any liquidated damages, statutory deductions like works tax, income tax, etc. Engineer-

in-Charge may, by any interim certificate, correct or modify any previous certificate. The IPCs shall be issued with clear stipulation that the payments made under these certificates are provisional and are subject to adjustments at the end of the contract. These are not binding or conclusive certificates that the works executed are proper, and the contractor is not absolved of his responsibility for final correctness and quality of work. Interim payment certificates/bills shall be issued/paid as provided in the contract i.e., whether stage-wise (like plinth level, first floor slab, etc), monthly or periodically, etc. No payment shall, however, be certified/made until the performance guarantee, if required under the contract, has been provided by the contractor to the satisfaction of the employer. All such interim payments shall be in the nature of advance against final payment.

16.23 TAKING -OVER REQUEST AND ISSUE OF CERTIFICATE

16.23.1 When the whole of the works (or any section in respect of which a separate time for completion is provided in the contract) have been substantially completed (which means that the employer can put them to proper, intended use) and have satisfactorily passed any tests on completion as prescribed by the contract, the contractor shall write to the Engineer-in-Charge to take over the works. Such a request shall be accompanied by a written undertaking to take up and complete with due expedition any outstanding work during the defects liability period. Such a request and undertaking shall be deemed to be a request to the Engineer-in-Charge to issue taking-over certificate.

16.23.2 The Engineer-in-Charge will either issue a Taking-Over Certificate, stating the date on which, in his opinion, the work was substantially completed or he will give instructions in writing to the contractor specifying the work(s) which in the opinion of Engineer-in-Charge is (are) required to be done before the issue of Taking-Over Certificate and also defects affecting substantial completion. The contractor shall be entitled to receive the certificate only after full compliance of the instructions to the satisfaction of the Engineer-in-Charge.

16.23.3 The issue of Taking-Over Certificate triggers the release of proportionate part of retention money as specified in the contract and commencement of defects liability period.

16.24 DEFECTS LIABILITY

16.24.1 Period of defects liability of the contractor to be specified in the contract will depend on the nature of the work. Generally it may be kept from 2 to 3 years for major bridge works, 1 to 2 years for treatment plants, major road/building works and lesser period for other projects. The liability runs from the date of completion as certified by the Engineer-in-Charge in Taking-Over Certificate, and in the event of more than one certificate having been issued, from the respective dates so certified. The Engineer-in-Charge shall inspect the completed works every quarter during the Defects Liability Period and remain vigilant to take notice of any defects which become manifest during this period. He shall, within the specified time, serve the contractor with a fully detailed list of defects, asking their time-bound rectification. The Sub-Divisional

Engineer shall inspect the work at least every month and send a detailed report to the Engineer-in-Charge.

16.24.2 If, during the Defects Liability Period, any defect appears of which the responsibility is not immediately manifest, the Engineer-in-Charge may instruct the contractor to search the cause. Such an instruction shall be valid only if it is stipulated in the contract. Depending on whose responsibility the fault turns out to be, the contractor either bears the cost himself or receives additional payment, for not only the cost of search but also of remedying the defect, as per provisions of the contract.

16.24.3 If it is evident that the contractor is liable for making good a defect, the Engineer-in-Charge shall instruct the contractor to:

(a) Repair the defect to meet the requirement of specification;

(b) Replace the defective work; or

(c) Remedy the defect on the basis of an agreed procedure proposed by the contractor.

16.24.4 The contractor is responsible for remedial works if the defects have their origin in non-compliance of the specifications or drawings, but not if they are the result of normal wear and tear of the use of the facility. In case the contractor fails to carry out his obligation within a reasonable period, the Engineer-in-Charge may himself or employ any other contractor to complete the work at the risk and cost of the original contractor and may use for such completion so much of the latter's equipment, temporary works and materials as deemed proper.

16.24.5 If removal or reconstruction of bad, unsound, imperfect or un-skilful work is impractical, but the defective work is otherwise structurally sound, the employer may, on application by the contractor, exercise option to accept the work and pay for it at reduced rates. In such a case, accepting authority and the procedure to be followed shall be as per provisions of para 20.5.

16.25 DEFECTS LIABILITY CERTIFICATE (DLC)

16.25.1 Issue of Defects Liability Certificate amounts to final approval of the works. This certificate is to be issued (a) within a reasonable time (or the period specified in the contract) of expiry of the defects liability period (and if different defects liability periods become applicable to different sections or parts, the expiry of latest such period) or (b) as soon as possible after all outstanding, remedial and search works have been completed to the satisfaction of the Engineer-in-Charge, whichever is later. Grant of Defects Liability Certificate triggers the process for final payment, including release of performance security and the balance part of retention money. Only one final certificate is to be issued even if the work comprises many components or sections.

16.25.2 Notwithstanding issue of DLC, the contractor and the employer remain liable for the fulfilment of any obligation incurred under the provisions of the contract prior to the issue of DLC but which remain unperformed at the time of issue of DLC. To this extent the contract will remain in force.

16.26 FINAL ACCOUNT STATEMENT/BILL AND FINAL CERTIFICATE

16.26.1 After issue of Defects Liability Certificate, the contractor will be required to submit to the Engineer-in-Charge for consideration a draft final statement/bill with supporting documents showing in detail (i) the value of all work done in accordance with the contract and (ii) any further sum which the contractor considers and believes to be due to him under the contract.

16.26.2 The Engineer-in-Charge will examine the above statement/bill. If he disagrees with any part of it, the contractor shall be called upon to submit such information as may reasonably be required, make such changes as are agreed, and furnish the final statement/bill. On the final statement/bill being found in order, the Engineer-in-Charge shall issue final certificate stating the amount which, in his opinion, is finally due under the contract. This is a conclusive certificate denoting that (i) the work has been properly carried out, measured and valued; (ii) all adjustments in respect of over-payments, recoveries, deductions etc. have been made as per terms of the contract, and (iii) there are no defects in the work and if any defects were there, the same have been either rectified or appropriately dealt with to the satisfaction of the Engineer-in-Charge. It authorises final payment to the contractor. If there is disagreement/dispute on any issue, it will be settled in accordance with the procedure prescribed in the contract.

16.27 SITE RECORDS

16.27.1 Proper site records/ registers shall be maintained for reference whenever the need arises. The following are the important documents to be maintained:

(a) Day Work Diary showing record of:
  - (i) Weather (i.e. temperature, rainfall, storm);
  - (ii) Labour engaged by the contractor, category-wise;
  - (iii) Important materials brought, with approximate quantities and rejections, if any;
  - (iv) Details of machinery working, item-wise with their numbers and breakdowns, etc.
  - (v) Brief particulars of work in progress, with important stages completed;
  - (vi) Length and cause of delays/ interruptions; and
  - (vii) Visits by dignitaries and senior officers of the department;

(b) Site Order Book;

(c) Stage Passing Register;

(d) Visual Material Inspection Register;

(e) Register for record of tests carried out during execution;

(f) Variation Order Register;

(g) Records of piling, well-sinking, pre-stressing, grouting, concrete mix design,

bituminous mix design, and other important operations;

(h) Defects/ non-conformance reports;

(i) Records of inspection and field investigation, etc.

(j) Hindrance Register (showing nature of hindrance; items of work affected; dates of start and removal of hindrance; any overlapping period; net duration of hindrance, its weightage and net effective days of hindrance, etc); and

(k) Project photographs and videos.

16.27.2 Site Order Book. Site Order Book, like the Measurement Book, shall be printed, pages machine numbered, with a fly leaf showing instructions on its maintenance, and issued by the Engineer-in-Charge. Site Order Book shall be maintained properly and kept at the site during execution of the work, under safe custody of the Junior Engineer. On completion of the work, the Site Order Book shall be preserved for a period of 5 years or up to the time all disputes/arbitration cases of the work are finally settled, whichever is later.

16.27.3 The important of the above records, such as site order book, visual material inspection register and register for records of tests carried out during execution shall be bound with the contract agreement after the execution of the project.

16.28 BREACH OF CONTRACT

16.28.1 A breach of contract is failure on the part of any party to perform an obligation arising out of the contract. The breach may be total or partial. Every breach of a contractual obligation confers upon the injured party a right of action. However, there might be a number of reasons for non-performance of contractual obligations. An actionable breach of contract occurs when one party, without sufficient cause or justification, fails to perform in accordance with the terms of the agreement.

16.28.2 When breach of a contract takes place, the injured party has several alternatives. It may waive the breach, or release the other party, or terminate the contract, or accept performance subject to recovery of damages. The rights and obligations of the parties, and the remedies available in case of breaches should be spelt out in the contract.

16.29 TERMINATION

16.29.1 During the course of construction, situations may arise where termination of the contract before completion becomes necessary or prudent. Termination clause should include the grounds and procedure for termination as well as the remedies available to the other party.

16.29.2 If it is decided to rescind/ terminate the contract, approval of the authority that accepted the tender shall be taken.

16.30 GENERAL GUIDELINES DURING EXECUTION

16.30.1 In the execution of works, the safety and the convenience of the public should be given paramount attention, and all operations should be carried on in such a manner as to cause minimum inconvenience to traffic or interference in the ordinary

pursuits of the people. All safety measures shall be adopted. Temporary access routes, as required, should be provided, well maintained, properly lighted at night and kept free of physical obstructions. Brick and lime-kilns shall not be erected so close to the inhabited part of any town or cantonment as to be a nuisance, and their location and operation shall conform to prescribed controls and norms.

16.30.2 Interruptions of important works shall be immediately reported to the Superintending Engineer, explaining the causes, remedial action being taken and probable duration of such interruptions.

16.30.3 On completion of the work and demobilisation by the contractor, it shall be ensured that the site is free of all temporary works, surplus/ waste material, debris and is in a clean and tidy state for use and occupation by the client.

16.30.4 In contracts containing liability of the contractor to maintain a facility/work for a certain period, the scope of contractor's responsibilities, procedure of evaluating performance and making payments shall be clearly defined. (also refer to Chapter 27)

16.30.5 Work at Risk and Cost of the Contractor. If it becomes necessary to carry out the work at the risk and cost of the contractor, action shall be taken as per the provisions of the contract. In such a case, the contractor's liability is limited only to the original scope of the work and the specifications. Engineer-in-Chief shall issue suitable instructions regarding notices to be issued, procedure of joint measurements, methodology of execution of balance work, maintenance of accounts, and procedure of recovery of extra cost incurred, etc.

16.31 CO-ORDINATION AND REVIEW MEETINGS

16.31.1 These meetings shall be held periodically to (i) review the progress, work methods, adequacy of deployment of labour and machinery; (ii) take stock of problems and decide what action is to be taken, by whom, and by what time, and (iii) discuss variations and claims. The meetings should be attended by officers at the appropriate level, who should come prepared and take notes of the business transacted. Minutes of official meetings shall be recorded, distributed and agreed with the parties concerned. The decisions taken and status of implementation shall be reviewed. If effective action is not forthcoming at the operating level, the issue shall be brought to the notice of the superior authorities.

16.32 FOUNDATION STONE AND OPENING CEREMONIES

16.32.1 In case of foundation stone or opening/ inauguration ceremonies, the expenditure should be restricted to the basic minimum. Expenditure should be charged to the contingencies of the work against a proper estimate sanctioned by the competent authority. The dignitaries as per requirements of protocol and Government instructions shall be invited and treated with due courtesy. In holding these ceremonies, help and co-operation of District Administration, Police, Public Relations Department and local administration shall be duly enlisted.

16.33 AS-BUILT DRAWINGS AND MANUALS

16.33.1 A complete set of 'As-Built' records of the execution of works shall be

prepared and kept up-to-date, showing the exact as-built locations, sizes and details. A soft copy shall be maintained, wherever so possible.

16.33.2 In important/ special works, it may be necessary to have a provision in the contract for supply of Operation & Maintenance Manuals for regular and preventive maintenance.

16.33.3 The supply of above drawings and manuals shall be the responsibility of the contractor. To ensure that the obligation is duly discharged by the contractor, a provision shall be made in the contract for withholding from the contractor's payment a specified sum till he shows compliance.

16.34 APPRAISAL REPORT OF THE CONTRACTOR

16.34.1 On completion of all works costing above Rs.50 lakh, performance appraisal/report of the contractor shall be written as prescribed in para 14.11.

16.35 PROJECT APPRAISAL REPORT

16.35.1 For all works costing above Rs. 5 crore, the Engineer-in-Charge shall prepare a project appraisal report covering the following aspects and forward it to the Superintending Engineer who, after adding his own observations, shall submit it to the Chief Engineer for record and future reference:

(a) New materials/specifications used;

(b) New tools/ techniques tried/ employed;

(c) Statistical data (like, norms of consumption of materials, output of labour and machinery, unit rates of construction) which may be useful for other projects;

(d) Reasons or circumstances of contractual disputes and how they could be avoided;

(e) Reasons of any time over-run;

(f) Problems encountered and how solved;

(g) Experience and any recommendations for the future, in respect of staff deployment, contract document/ contract administration and monitoring tools;

(h) Failures if any and lessons learnt; and

(i) If opportunity was given to do the project again, what would be done differently?

16.36 INFORMATION TO BE GIVEN TO THE SURVEY

16.36.1 With a view to the Survey Department being supplied with information regarding all new public works to enable the map of India to be brought up to date, the following procedure shall be followed in regard to new lines of canals, large irrigation channels, main lines of roads:

(a) When any such public work has been constructed or section thereof has been opened, the index or record map shall be sent to Government in the Irrigation department [the department responsible for coordinating with the Survey of

India under 'Business of the Harayna Government (Allocation) Rules'] for transmission to the Survey Department;

(b) To ensure the material supplied being suitable for the purpose of the Survey Department, the topography adjoining the alignment, such as village sites, tri-junction boundary pillars, other permanent projects and the crossing of roads and streams, shall be accurately shown, and it shall be stated on the maps supplied if the information is derived from actual survey or otherwise; and

(c) The Survey Department should be requested to treat index or record maps with every care, and to return them as early as possible to the offices from which they have been received so that the labour of making tracings need not be resorted to.

16.37 TIME OVER-RUNS

16.37.1 Time-over-runs are likely to result in higher project cost, contractual claims, delay in the use of facility and possible loss of revenue. Un-anticipated factors such as lock-outs/ strikes/ labour unrest, power cuts, inclement weather, and delays on account of transportation or non-availability of materials, imports, accidents, etc can take a toll of time. In such circumstances, mitigation measures, appropriate to the situation, may be adopted. But there are many factors which have a bearing on completion of the work and of which the fall-out can be avoided or minimised with sufficient preparedness and foresight. In this regard, the following broad guidelines shall be followed:

(a) Survey work to be thorough so that the site conditions do not materially differ from what have been described in the tender;

(b) Defects, errors, omissions, ambiguities and internal contradictions in drawings, specifications, bill of quantities and other parts of tender documents to be avoided;

(c) Site to be handed over on commencement of work; if not in full, at least substantially for the work to proceed;

(d) Drawings to be supplied in time; any clarification to be arranged expeditiously;

(e) Clearances from Government departments and statutory bodies to be obtained within reasonable time, without adverse effect on the project;

(f) Engineer-in-Charge to co-ordinate and integrate the work of all agencies (i.e. contractors of different disciplines, consultants, vendors, government departments), and regulate inter-dependent activities;

(g) Avoiding situations of idling, breakages and re-do;

(h) Requests for approval of materials, samples, inspections, etc. to be complied with as soon as possible;

(i) Decisions sought should be given without undue hold-up;

(j) Legitimate payments to be released without delay;

(k) Material to be supplied by the department to be procured well in time;

(l) Change orders to be minimised;

(m) Critical activities to be kept under focus; completion of an activity which impinges on the over-all completion of the project to be organised at the relevant time;

(n) Regular monitoring of the progress, with weekly/ monthly targets (daily targets for important works) and their achievement;

(o) Proper choice of contractors;

(p) Thorough comprehension of contractual clauses and their effective enforcement;

(q) On important works, maintaining continuity of site personnel and the project team; and

(r) Different contracts, if allotted concurrently to the same contractor within his bid capacity, to be treated distinct entities, requiring separate deployment of machinery and other resources; to remove any ambiguity cropping up at a subsequent date, clear position to be stated at the time of award of works.

16.37.2 Programme Up-date. As a step towards arresting delays, the contractor should be required to submit to the Engineer-in-Charge, at regular intervals (say, quarterly) an up-dated programme for approval. If he fails to do so, a certain amount (5 % or such other as specified in the contract, of the next payment certificate) should be withheld and continue to be withheld till he shows compliance. The programme up-date should be in the form of activity report and narrative statement identifying the causes of delay, portions of the work affected, explanation of delay, corrective action proposed to meet key dates or mitigate potential delays along with cash flow statement and deployment of resources. The approval by the Engineer-in-Charge shall not alter contractor's obligations.

16.37.3 On-line monitoring system should be used as a management tool.

16.38 COST OVER-RUNS

16.38.1 Cost over-runs can be avoided to a large extent by good planning, commitment and ingenuity. Major factors contributing to cost over-runs are listed below:

(a) Incorrect determination of scope, requiring subsequent changes;

(b) Cursory, incomplete or wrong assessment/ investigation of site conditions;

(c) Un-realistic cost indices or unit costs, resulting in under-estimation of the cost of work;

(d) Non-provisioning or inadequate provisioning in the estimates of certain items of work, such as cost of shifting of utilities or resettlement and rehabilitation of project affected persons;

(e) Change of specifications during execution;

(f) Ambiguities in specifications and tender documents;

(g) Ad hoc or ill-considered change orders;

(h) Un-anticipated rise in price of labour, materials, POL, etc.

(i) Inflated measurements; use of wrong datum, benchmark or method;

(j) Payment at rates higher than justly admissible, which may be on account of incorrect understanding of the contract provisions or their subjective interpretation; and

(k) Changes of law or statutory price increases, which cannot be foreseen and avoided.

16.38.2 The impact of the contributory factors, barring those which are unavoidable, should be minimised with proper planning, checks and controls.

16.39 CITIZEN INFORMATION

16.39.1 At the site of every major work, Citizen Information Board in English and Hindi shall be installed at a prominent and secure place. The board should display information about: (i) Name of the work, its amount and intended time of completion; (ii) Name of the executing agency/contractor and his address, and (iii) Office address of the Engineer-in-Charge and his telephone number. Any enquiry or complaint regarding the work received from the public shall be suitably addressed.

Chapter 17
Emergency/Disaster Management

17.1 EMERGENCY SITUATIONS

17.1.1 Situations may arise which disrupt a public works facility, or endanger public convenience, safety, life and property. They may be the result of (i) natural events or events beyond human control or (ii) inadequacies of design, construction or maintenance. Such situations may come in several ways such as the following (the list is illustrative and not exhaustive):

(a) Collapse of a building;
(b) Failure of a bridge;
(c) Inundation, floods or landslides causing breaches, excessive settlement or blockage of a highway;
(d) Fire breakout in a building;
(e) Breach of a canal, drain or embankment;
(f) Cracks in a weir, dam, barrage or other hydraulic structures;
(g) Breakdown of water supply or sewerage system;
(h) Structural distress;
(i) Earthquakes, cyclones resulting in damage to or collapse of structures and dislocation of services;
(j) Terrorist attack, riots causing damage to public works; and
(k) Strikes and blockages.

17.1.2 The emergency situations can be broadly of two types. In the first type, something may happen to some specific work(s) of the department such as collapse of bridge/ building or breach of canal or breakdown of water supply, etc. In such a case, the responsibility to meet the emergency and take remedial measures lies with the public works department concerned. The Divisional Officer shall seek advice and support from the headquarters, and also necessary help of various sources through the district administration. In the second type, public works departments are not directly affected but in which they may be asked by the district administration to assist. These situations may be like earthquake or collapse of a private building or terrorist attack, etc.

17.1.3 A coordinated effort is the essence of an emergency. Thus, informing the district administration and seeking its help is one of the first actions. Usually, an emergency will require inputs from various departments, such as fire services, evacuation measures, removal of debris, healthcare services, relief camps, maintenance of law and order, regulation of traffic, support of voluntary organisations, etc. Towards this end, preparation of an emergency plan at District as well as State level by PWD is necessary, in addition to the preparation of such plans by the civil

administration. The departmental officers shall also be fully aware of their role under Disaster Management Plans which have been prepared in accordance with the provisions of 'The Disaster Management Act, 2005'.

17.1.4 The Superintending Engineer should ensure that the emergency/disaster management plans are available in every Division and that the officers are familiar with their role in the matter. The Divisional Officers shall organise a workshop once in six months to familiarise the staff with the provisions of the plans.

17.2 PREVENTIVE MEASURES

17.2.1 One of the best ways to meet an emergency situation is to take advance preventive measures. To meet emergencies of the first kind mentioned in para 17.1.2, the important measures to be adopted are given in the paras below. Divisional Officers will be responsible for all such preventive measures, especially pertaining to maintenance and inspection. Engineers-in-Chief shall ensure that the inspections as prescribed are carried out and that requisite corrective measures arising out of them are duly taken. The State Government may also issue instructions in this behalf.

17.2.2 Hazard avoidance starts with selection of site of a structure. The site should not be flood prone, or on a geological fault line, or at the toe of steep slopes, or at the top of or along ridges. Further, the site should be such as would provide access to fire tenders in case of fire. To guard against the ravages of strong winds, advantage should be taken of a natural shield such as a mound or a hill or thick plantation.

17.2.3 Canal alignments should avoid inhabited areas and sloping ground like dunes and should have strong banks to withstand strong wind, rain or erosion of earthen banks.

17.2.4 To minimise the adverse effect of high winds, the building should be oriented, where feasible, such that its small facade faces the prevalent wind direction. In seismic or cyclonic areas, a symmetrical building with a compact plan form should be preferred over an asymmetrical building with a zigzag plan, having empty pockets.

17.2.5 Large buildings with shapes like T, L, E, Y should preferably be separated into rectangular blocks with separation sections at appropriate places. The foundations and superstructure should be designed for the expected seismic and wind forces, with suitable ties, braces and reinforcing bands. Large door and window openings in bearing walls should be avoided. In pitched roofs, overhangs should be kept to the minimum.

17.2.6 Bridges, storage dams and other structures shall be designed to withstand zonal seismic forces. Important bridges should have stoppers at the bearing level to guard against tilting of the girders, and shock transmission units between the superstructure and the sub-structure.

17.2.7 In buildings likely to see over-crowding or susceptible to fire, adequate smoke detection signals, temperature gauges, wet and dry risers, fire extinguishers, water storage tanks, exit routes and fire alarms, etc., should be provided as necessary and test checked from time to time.

17.2.8 Services areas should have adequate drainage, and equipment like generators and dewatering pumps should be installed on raised platforms.

17.2.9 The choice of materials and specifications should be appropriate to the function and usage of the structure and the building element. For example:

(a) If a building is to store inflammable goods like, oil, cinematographic equipment, etc. the construction materials should be capable of resisting high temperatures; and

(b) The specifications of electrical wiring and the related equipment should be adequate to carry not only the present but also the anticipated additional load.

17.2.10 Proper drainage of buildings, de-silting of canals, maintenance of canal banks and blockages encroaching freeboard, cleaning of sewers, sound condition of road gullies, manhole covers and gratings, maintenance of bridge bearings and expansion joints, maintenance of mechanical and electrical equipment, cleanliness of roadside drains and other similar jobs should receive due and timely attention of the departments concerned.

17.2.11 Seepage, blocked drainage, leakages, overflows, initiation of cracks, overheating of an appliance, collection of debris around joints and bearings, broken railings and parapets, corrosion of steel and reinforcing bars, tilting or deflection beyond permissible/ design limits, excessive scour, concentration of flow, etc. are tell-tale signs of an impending hazardous situation, which if neglected, could snowball into breakdown or failure. Regular and meaningful inspection can reveal these incipient signs of distress. Inspection well before the monsoons should be mandatory as it could be helpful in putting into place requisite preventive measures.

17.2.12 Weak structures shall be provided warning signs and barricaded.

17.3 PREPAREDNESS

17.3.1 The emergency situations can be avoided and their after-effects controlled if the district administration and the public works departments are prepared in advance.

17.3.2 In the first place it is important to have appropriate stores and equipment like stones, boulders, gunny bags, bailey bridging units, dewatering pumps, generating sets, diesel engine sets, diving kits, motor boats, earth moving equipment, towing vehicles, cranes, emergency ladders, alarm and communication system, etc. Superintending Engineers shall see that the equipment is stocked at designated places and is in ready-to-use condition. They shall, from time to time, issue instructions for inspection of such stores and equipment and also see that trained staff is available to handle the equipment.

17.3.3 Different emergencies may require different actions. A few of the important actions are listed below, for which the PWDs should be prepared :

(a) Emergency repairs of roads and road bridges and maintaining lines of transportation;

(b) Emergency repairs of buildings and structures;

(c) Provision of road signs to guide and assist traffic;

(d) Securing of work under construction;

(e) Securing of critical works, installations and equipment;

(f) Dewatering;

(g) Plugging cuts/ breaches, providing studs, strengthening bunds and protective works;

(h) Providing drinking water;

(i) Clearing/cleaning ditches, drains, sewers; and

(j) Removal of debris.

17.4 EXECUTION OF EMERGENCY WORKS

17.4.1 In circumstances of urgency or emergency such as a breach/cut, or a flood or a calamity (such as earthquake or cyclone), etc. which render it impossible or inexpedient to invite tenders, the officers concerned will let out the work without calling tenders and immediately inform the next superior officer and audit in writing, giving reasons for the action taken. Further, a note of the order authorising execution of the work without the formality of inviting tenders should be attached to the file concerned. The Executive Engineer will be competent to take up such works up to Rs. 2 lakh, Superintending Engineer up to Rs. 5 lakh and beyond this, approval of Chief Engineer is required (these limits can be revised from time to time). Expectedly, such cases would be exceptional, and Superintending Engineers should carefully scrutinise them during their annual inspections of Divisional Offices. The record of reasons for not calling for tenders/quotations should also be made available to the inspecting audit officer, if called for.

17.4.2 The executing officer, immediately when time permits, shall bring out in writing the methodology adopted by him and seek approval as to its appropriateness from his superior. A copy of such correspondence should also be sent demi-officially to Engineer-in-Chief, who should get the matter examined urgently and take such interventional/corrective measures as may be required.

17.4.3 The Divisional Officer shall exercise a strict watch/ control on the expenditure and immediately inform the senior officers about the liability likely to be incurred. As soon as possible, he shall prepare a proper estimate to secure sanction of the competent authority.

17.4.4 The execution of work shall be of paramount importance subject to the condition it is done in a transparent and clearly explainable manner. Depending on the circumstances, short notice tenders can be called from contractors already short-listed or through collection of spot quotations. Agencies may also be fixed by negotiations, for which purpose a negotiating committee shall be set up.

17.4.5 All expenditure incurred on authorised liability should be initially charged to 'Suspense Head' till it can be recouped through proper budget provision and appropriations in due course.

17.4.6 The senior officers visiting the site shall see that the work is being executed in the best possible manner and give advice as may be necessary. They shall also see that muster rolls, if any, are being maintained properly.

Chapter 18
Measurements, Progress Reports and Records

18.1 GENERAL

18.1.1 The payments for the work done, supplies made, services rendered or labour employed shall be made on the basis of measurements or counts. The format of measurements adopted shall be appropriate to the requirements of recording entries and carrying out checks.

18.1.2 Standard form of Measurement Book (Public Works Account Form 23) will be generally followed, but a customised form to meet the requirements of a particular situation may be adopted with the approval of the Administrative Secretary who shall also take approval of Finance Department and the Accountant General.

18.1.3 Measurement Book (MB) is an important initial record. It shall be understood in the nature of an authentic and reliable record and may have to be produced as evidence in a Court of Law, if and when required.

18.1.4 All measurements and calculations shall be in the metric system. Mode of measurement of various items shall be as laid down in the contract.

18.2 RECORDING OF MEASUREMENTS

18.2.1 The measurements shall be recorded by the Junior Engineer, Assistant Executive Engineer / Sub-Divisional Engineer, Executive Engineer, or any person so authorised. In general, all items of work shall be measured and recorded by the Junior Engineer in-charge. However, it shall be open to the Assistant Executive Engineer / Sub-Divisional Engineer to record measurements of any particular item of work himself. In case of works more than Rs. 5 lakh or the limit prescribed by Engineer-in-Chief/Administrative Secretary, the measurements shall be recorded by the contractor in the electronic MB. In such cases, a register shall be kept at site to record measurements from time to time by the contractor which shall be further transferred in electronic mode. The Junior Engineer/Sub-Divisional Engineer, etc. shall check the measurements and make corrections wherever required by making separate entries. Even in cases where the MB is written by the Junior Engineer, efforts shall be made to get these completed in electronic mode.

18.2.2 In case the measurements are not recorded in electronic mode, these shall be recorded in ink so as to render it difficult to tamper with or to make unauthorised additions or alterations in the entries once made therein. Wrong entries shall be crossed out and corrections made under the initials of the official concerned who shall also record the reasons for cancellation.

18.2.3 Each set of measurements to be recorded shall clearly identify (i) name of

work and its location (ii) agreement number and date (iii) name of contractor/ supplier/ consultant, as may be the case (iv) date of commencement (v) original and extended dates of completion (vi) date of measurement and (vii) reference to any previous measurements. Actual completion date shall be recorded only on removal of defects, or as provided in the contract.

18.2.4 Attempt shall be made to take measurements in the presence of contractor/ supplier or his authorised representative. The person recording measurement shall record a dated certificate 'measured by me' over his full signature and name, and not just the initials.

18.2.5 Entries, when made in ink, shall be recorded continuously without leaving any blank page or tearing out a page. Any page or space inadvertently left blank shall be cancelled by diagonal lines and cancellation attested under dated initials of the official concerned. The stage up to which measurements are recorded at one time should be distinctly identifiable so as to avoid double measurements.

18.2.6 Measurements of works by the Sub-Divisional Engineer will be done in accordance with the duties prescribed in para 6.6.7.

18.2.7 Each MB shall, in the space provided at the beginning, have an index of the contents, and names of officers who have used the MB from time to time and also of those who have test checked the measurements.

18.2.8 At the end of each set of measurements, an abstract shall be prepared which collects the total of each item of work. This abstract, after the prescribed process of check and scrutiny, forms the basis of payment. After the payment is made, every page of MB pertaining to the measurement/ payment shall be scored out in red ink, and the voucher number and date vide which payment has been made recorded on the abstract page. In case of electronic MB, for every running bill and the final bill, hard copies of measurements recorded and abstract of cost shall be taken and signed. The contractor shall submit the hard and soft copies of record measurements and abstract of cost to the Engineer-in-Charge and also send it through e-mail so that date and time of submission get recorded. At the end, all such copies shall be bound together to have a permanent record like ink measurement books. The soft copy shall also be stored properly.

18.2.9 In case of canals, drains and embankment works, the final quantities are worked out from cross-sections taken at regular intervals. Calculations of quantities can be shown on cross-section sheets, and in the MB only abstract be prepared giving cross reference to cross-section sheet numbers. Similarly, for dams, barrages, regulators, weirs, etc the final quantities can be worked out in spread sheets, and in the MB only abstract be prepared giving cross reference to spread sheet numbers.

18.2.10 Detailed measurements may be dispensed with in the case of periodical repairs of buildings when the quantities are recorded in efficiently maintained standard measurement books (SMBs), which shall also be in electronic mode.

18.2.11 Similarly, the detailed measurements may also be dispensed with in

connection with the work done on lump sum contracts, if a responsible officer (not below the rank of Sub-Divisional Engineer) certifies in a bill that by a superficial and general measurement or in some other suitable method, which shall be specified, he has satisfied himself that the value of the work done is not less than a specified amount in conformity with contract agreement, and that, with the execution of authorised additions and alterations, the work has been done to the prescribed specifications. Detailed measurements must invariably be taken in respect of additions and alterations.

18.2.12 Complete nomenclature of the items as given in the agreement need not be reproduced for recording measurements and also for preparing the abstract for running bills. Only the Item Number and abbreviated nomenclature in the shape of a few keywords need to be used. However, in case of extra or substituted item of work, not provided in the agreement, its full nomenclature shall be given.

18.3 UP-KEEP AND MAINTENANCE OF MEASUREMENT BOOKS

18.3.1 A proper record of all ink measurement books issued and returned shall be maintained by the issuing office. MBs no longer to be used shall be withdrawn promptly even though not completely written-up, and re-issued. In case of MBs prepared in electronic mode, this provision obviously will not be applicable.

18.3.2 Measurements of all original works shall be preserved in the electronic form and soft copies shall be checked and certified by the Junior Engineer and Sub-Divisional Engineer. Such soft copies shall be kept in the custody of a responsible official in the Divisional Office and shall be write-protected. Whenever required for any use, the same will be copied on the hard disk under the supervision of a responsible officer.

18.3.3 Loss of MB is a serious matter and shall be reported to the higher authorities. When the MB cannot be traced for a month, the fact shall be reported to the Superintending Engineer who has to take suitable action in the matter. FIR (First Information Report) is also required to be lodged with the police. If MB cannot be traced within 6 months, an application for sanction to write off together with full report must be submitted to the Chief Engineer and the matter reported to the Government. It is necessary to re-construct at the earliest the measurements in the lost MB.

18.4 FIELD/ LEVEL BOOKS

18.4.1 In all cases where payments for earth work (or any other item) are to be made from cross-sections prepared before the work is started, the levels for such works shall be recorded in a special level book. The levels on which sections are plotted shall be entered in ink and the quantities calculated from the above-mentioned level data or from the cross-sectional areas plotted therefrom. The calculations forming details of the measurement shall be entered in ink. The level book can also be recorded and maintained in electronic mode. The cross sections of existing and proposed levels shall be plotted and quantities be calculated through reliable software. The record of

levels, x-sections and quantities shall be preserved in hard as well as in soft copies.

18.4.2 Initial levels of the area to be filled shall be taken. The levels shall be properly checked during the progress of work and on its completion by the Engineer-in-Charge.

18.4.3 In case of small works, borrow pit measurements and stack measurements of earth may be recorded indicating clearly the place of borrowing or disposal, as the case may be, so that lead/ distances can be verified.

18.4.4 The Junior Engineer shall record levels and measurements as the work progresses, with the same care and precision as laid down for measurement books, as they also form initial record.

18.5 REPORT OF MEASUREMENT OF WORKS

18.5.1 Every officer or subordinate incharge of a work, carried out under contract, shall furnish to the Divisional Officer at the beginning of each month a progress report of the measurements, and a calculation of the quantities paid during the previous month, together with a return of all the materials at site on the last day of the month.

18.5.2 It is the duty of the officer incharge to bring to notice any delay, bad work, or anything militating against the interest of the government on the part of the contractor and for any neglect in this respect he shall be responsible.

18.5.3 If the Junior Engineer does not send the report for a continuous period of 3 months, he shall be held accountable. In case the Sub-Divisional Engineer does not report default on the part of the Junior Engineer, the former shall be answerable for neglect. Similarly, Divisional Officer shall report to the Superintending Engineer any such lapse on the part of his juniors.

18.6 STANDARD MEASUREMENT BOOKS

18.6.1 Standard Measurement Books (SMBs) are maintained to record the measurements having permanent standing, as would be the case in a building. They may be used for preparing the annual repairs estimates of buildings and contractor's bills for such repairs, so as to avoid taking detailed measurements on every occasion. These shall be prepared soon after the completion of work and brought up to date as and when required on the basis of additions/ alterations. The SMBs shall be in electronic mode.

18.6.2 Till such time the SMBs are not in electronic mode, they should be written legibly in ink by the SDEs. They shall be test checked by the Divisional Officer who shall record a certificate as to their correctness. The SMBs shall be assigned a serial number, which will be of a distinctive character to distinguish them from the normal measurement books.

18.6.3 The Divisional Officer shall certify every year that all the standard measurement books have been inspected by him, that entries therein have not been tampered with and that all corrections due to additions and alterations have been made in the books. A report to this effect shall be made to the Superintending Engineer.

18.7 TEST CHECKING OF MEASUREMENTS

18.7.1 The Assistant Executive Engineer/ Sub-Divisional Engineer (or the Engineer's representative in the case of a work being supervised by a Supervision Consultant) shall, before submitting a bill (payment certificate), satisfy himself that the work or supply or service billed for has actually been carried out in accordance with the terms and conditions of the contract. He shall personally inspect all works, before authorising payments in connection therewith. The entries in this regard will be made in electronic MBs or Ink MBs as the case may be.

18.7.2 Divisional Officer shall test check the measurements as prescribed in para 6.5.19. He may, in his discretion, authorise payment without test check, but will have to accept general responsibility for the genuineness of the bill and the transaction as a whole. The entries regarding checking shall be made in the electronic MB or physical MB as the case may be.

18.7.3 For a work supervised by a supervision consultant, the project director shall random test check a suitable percentage of the measurements.

18.7.4 While passing the bill, the Divisional Officer shall see that the test checks required to be done, have been done to his satisfaction.

18.8 TIME LIMITS FOR CHECKING MEASUREMENTS

18.8.1 The Junior Engineer shall make complete recording/checking of measurements at the earliest. Rather, to facilitate the process, he can do the work even before the bill is submitted by the contractor. In any case, he shall not take more than 10 days for submission of MB to his superior. The checking report shall be e-mailed to Sub-Divisional Engineer so that date and time get recorded and a copy of the same be also given to the contractor.

18.8.2 The Sub-Divisional Engineer shall do his part of checking within next 7 days and then e-mail the report to the Divisional Officer, thus registering date and time. Along with it, the hard copy shall also go with his signatures.

18.8.3 The Divisional Officer shall make a test check within the minimum reasonable time of the receipt of the checking report from Sub-Divisional Engineer. The time limit in no case shall exceed 15 days.

18.9 REPORTING PROGRESS REGARDING WORKS

18.9.1 The Divisional Officer shall submit progress report of works to Superintending Engineer/ Chief Engineer/ Engineer-in-Chief in the manner prescribed. As far as possible, the reports shall be prepared in electronic format. The object of these reports is to apprise the senior officers about the ground realities of the project, and to bring out the physical and financial progress, constraints and problems if any, and decisions to be taken and guidance/ help needed from higher offices to avoid time over-run. In the case of works executed by daily labour, periodic labour reports in the prescribed form shall also be submitted in addition.

18.9.2 The format of the report shall be prescribed by the Chief Engineer concerned

in consultation with Engineer-in-Chief. For all important works costing more than the prescribed limit, a detailed Monthly/ Quarterly Progress Report shall be compiled. It shall broadly cover the following aspects:

(a) Executive summary;

(b) Project data and salient features;

(c) Status of pre-construction activities such as land acquisition, removal of obstructions and encumbrances, cutting of trees, shifting of utilities, approvals awaited, etc;

(d) Deployment of resources by the contractor, including plant and equipment;

(e) Physical progress during the month, and cumulative up to the month under report;

(f) Financial progress during the month, and cumulative up to the month under report;

(g) Variation orders and position of their approval;

(h) Claims of contractor;

(i) Extension of time applied by the contractor with status of approval by the department;

(j) Position of liquidated damages;

(k) Quality assurance measures, test results, any non-conformities and action taken;

(l) Construction constraints and their source; measures taken or proposed to tackle them;

(m) Report on co-ordination and review meetings; crucial decisions taken and their status;

(n) Proposed activities and milestones for the next month;

(o) Time over-run and mitigating steps proposed or necessary;

(p) Organisation charts (including incumbency) of the Employer, Contractor (and Supervision Consultant, if any);

(q) Miscellaneous; and

(r) Photographs.

18.9.3 The progress may further be illustrated by:

(a) S-Curves (Physical and financial as scheduled and actual, in different colours);

(b) Bar charts (showing for each major activity the start and completion date - as scheduled and actual, in different colours);

(c) Tabulations (showing numbers/ quantities, etc. required to be completed as per schedule and as actually completed); and

(d) Graphical representations as suitable to the work.

18.9.4 Senior officers shall examine these progress reports and enquire into the problems affecting the project, reasons of slow progress, any pending decisions, and increase of cost over the contract price.

18.10 PROGRESS REPORTS OF DEPOSIT WORKS AND SPECIAL SCHEMES

18.10.1 Progress reports of deposit works, centrally sponsored schemes and foreign-aided projects shall be submitted as prescribed by the HOD. Usually, the formats for the same are also prescribed by these agencies only.

18.10.2 Utilisation certificates of funds received shall also be duly furnished to the funding agency/accounting agency. Copies of these reports shall be forwarded to the Government.

18.11 HEAD-WISE CONSOLIDATED REPORTS

18.11.1 In addition to the work-wise progress reports, the Engineer-in-Charge shall submit monthly, consolidated reports in appropriate format for each Major Head/function e.g., buildings (department-wise), rural road works, widening and strengthening works, works of renewal coat, bridge works, rural water supply schemes, sewerage schemes, canal remodeling works etc. as may be prescribed by the HOD. However, where electronic MIS is in operation, there should not be any need for such reports.

18.11.2 The format of the report shall be devised judiciously and not changed too frequently. The MIS shall be updated by 10th of every month.

18.12 RECORDS CREATED DURING EXECUTION

18.12.1 Maintenance of proper records of a project is of utmost importance in order to keep track of the various activities, to ensure that nothing is missed, to achieve quality assurance, and to monitor the project, technically, physically and financially. It is these records which may have to be produced before internal/external audit, arbitrator(s) and court of law to substantiate any stand of the department. The Engineer-in-Charge shall ensure that the records are maintained faithfully and are kept up-to-date. Senior officers shall check compliance.

18.12.2 Following is the suggested list of records which should be maintained in each Divisional Office. Certain records are initially generated at the site but on completion of work they are finally transferred to the Divisional Office, which shall be the repository of all such record.

(i) Master Register of Records;

(ii) Running Bills / Final Bills;

(iii) Measurement Books;

(iv) Drawing Register (to be maintained separately in the Division Office and site);

(v) Site Order Book;
(vi) Visual Material Inspection Register;
(vii) Hindrance Register;
(viii) Daily Progress Report;
(ix) Weekly / Fortnightly /Monthly and Quarterly Progress Reports;
(x) Cement, steel, bitumen, pipes etc. store record;
(xi) Receipt and Issue Register;
(xii) Material Consumption Register of important materials like cement, steel, bitumen, pipes etc.
(xiii) Cement Cube Test Record;
(xiv) Other Material Test Record;
(xv) Equipment Calibration Record;
(xvi) Record of Inspection notes of site visits and their compliance;
(xvii) Site coordination meetings Record;
(xviii) Quality Audit (Internal / External) Record including Non-Compliance Reports and follow-up action;
(xix) Inventory Record;
(xx) Record of check- list formats used at site to check the quantity of work;
(xxi) Extra / Substituted /Reduced Rate Items Record;
(xxii) Time Extension Record;
(xxiii) Guarantee / Insurance Bonds Record;
(xxiv) Safety Assurance Record;
(xxv) Labour Welfare Record;
(xxvi) Record of Work programmes (original and those revised from time to time); and
(xxvii) Register of works under defects liability period.

Chapter 19
Completion of Works

19.1 COMPLETION

19.1.1 The Engineer-in-Charge shall see that the contractor completes the work in compliance with contractual terms and conditions, and hands over the work as well as the site in a fit state of occupation and use. The contract shall be considered complete on the issue of Defects Liability Certificate by the Engineer-in-Charge (refer para 16.25), and if there is no such provision, on the issue of completion certificate subsequent to the removal of all defects and incompletions.

19.1.2 On completion of the work, final payment shall be made and accounts settled (refer para 16.26). Subject to any contractual provision, final accounts should not be delayed beyond 6 months of the issue of the Defects Liability Certificate or the certified date of completion, as applicable.

19.1.3 In case of a work being done on behalf of a client, the Engineer-in-Charge shall inform the client periodically about the progress of the work. However, when the work such as that of a building is nearing completion, he shall accordingly inform the nodal officer (para 10.5.3) of the client department (as well as the Head of that department) so that the said department gets ready to take it over. He shall also cause inspection of the nodal officer with regard to satisfactory completion of the work beforehand and attend to any shortcomings which may be so pointed out. If the client department does not take over a building within one month of its completion, the fact shall be reported to Engineer-in-Chief and the Head of the client department demi-officially. It should be clearly brought out that the additional cost as a result of not taking over will have to be borne by the client department. In case the client department starts using a building without taking it over formally, Engineer-in-Charge shall report the matter to the Engineer-in-Chief and the Head of the client department demi-officially, and the building shall be assumed to have been taken over after one month of use.

19.2 COMPLETION REPORT

19.2.1 The Divisional Officer shall prepare completion reports of all works except minor or maintenance works as directed by the higher authorities. Completion report of important works (as per limit to be decided by each department with the approval of the Government) shall include (but not limited to) the following:

(a) Background of the project, i.e., how the project was conceived, its necessity, relationship with other projects, social, economic and environmental impact;

(b) Site selection, giving reasons for the selection of a particular site in preference to others;

(c) Approvals, with reference to administrative approval, expenditure sanction

and technical sanction;

(d) Planning features;

(e) Considerations which governed the structural designs, particularly in case of high rise buildings, large span constructions (halls, auditoriums), bridges, dams, weirs, aqueducts, water tanks, etc. with regard to foundations, earthquake and wind forces;

(f) Technical specifications, detailed estimates, formulation of tender documents, short listing of contractors and award of work;

(g) Major events during execution like earthquake, floods, strike, accidents, etc.

(h) Problems, if any, faced during execution and how solved;

(i) Extension of time, reasons for delay;

(j) How quality assurance was achieved;

(k) Financial account of the project, including any liquidated damages, variations, claims, cost over-run;

(l) Details of specialised services provided;

(m) Relocation/ shifting of existing services like water mains, sewers, electrical lines, telephone cables, etc;

(n) Instrumentation installed, if any, and its details;

(o) Any other matter such as innovations or significant achievements of the project;

(p) Any special instructions in regard to operation and maintenance;

(q) Organisation chart (along with incumbencies from time to time) of:

(i) Employer;

(ii) Contractor; and

(iii) Consultant, if any; and

(r) Quantities of principal materials consumed and unit costs achieved.

19.2.2 The following annexures shall normally be attached with the report mentioned in the para above:

(a) Names & addresses of contractors/ sub-contractors;

(b) Addresses of manufacturers / suppliers of electrical, water supply and sanitary installations/ fittings; in case of bridge works, of suppliers of bearings, expansion joint, high tensile steel, etc.

(c) Photographs (These should include photos taken at the start, during various stages of work and of completed works from various angles); and

(d) As-built drawings.

19.2.3 Completion reports of other works may be less elaborate as decided by the Engineer-in-Chief concerned in consultation with the Administrative Secretary. In

case of minor/ maintenance works, a certificate of completion may suffice.

19.2.4 Completion reports shall be prepared and submitted by the Engineer-in-Charge within 6 months (12 months in case of exceptionally large works) of closure of the construction estimate. If this is not found possible, the HOD will inform the State Government about the reasons for delay and the date by which the document will be ready.

Chapter 20

Quality - Control, Assurance and Audit

20.1 QUALITY

20.1.1 Quality should be understood as the totality of all features, characteristics and activities that bear on a construction project and which go to satisfy the stated or implied needs. In its broad form, it would embrace several aspects such as:

(a) Acceptable appearance and finish; proper lines, levels, dimensions and verticality; right-angle corners (or other specified); sharpness of arises; regularity/ pattern of joints; evenness; absence of incrustations, blemishes, cracks, breakages, hollowness, bulges and warps; proper drainage; absence of seepage; uniformity of slope and camber; symmetry; true shape and geometry; proper and secure fixtures, etc.;

(b) Conformity with the stipulated requirements regarding: (i) materials, their sources and characteristics; (ii) specifications in respect of strength, durability, performance tests, if any, etc.; and

(c) Functionality.

20.1.2 Quality System encompasses the organisational structure, responsibilities, procedures, processes and resources needed for quality management. Quality System shall comprise:

(a) Employer's Quality Policy to obtain quality product or service to meet stated or implied needs. It will be stated in the Quality Assurance Manual;

(b) Supplier's/ Contractor's Quality Policy to achieve and sustain quality of the product or service to meet Department's stated or implied needs. It will be stated in the document called Quality Management Plan;

(c) Supervision Consultant's Quality Policy, to ensure that the checks and approvals by him are adequate and that they are well documented. It will be stated in Supervision Consultant's Manual, which will be applicable for works supervised through a consultant; and

(d) Inspection and Audit of internal quality systems.

20.1.3 Quality System enunciated outlined above, involving commitment by the principal parties with emphasis on quality assurance, shall be followed for all works costing Rs. 5 crore or more (or such other limit as may be fixed).

20.2 QUALITY ASSURANCE (QA)

20.2.1 Quality Assurance is the organised methodology of evaluating the overall project on a regular basis, from inception to completion, in order to: (i) give confidence that all factors affecting adequacy of design, specifications, materials, workmanship,

construction techniques, etc. are taken care of and that the final service/ product will satisfy the requirements of stated/ implied quality, and (ii) provide documented evidence that all specified requirements have been met with.

20.2.2 Quality Assurance Manual will be the base document to be prepared by each Public Works Department, outlining policy, procedures, responsibilities, compliance, acceptance criteria and documentation, and generally cover the following:

(a) Identification of all parties involved in Quality Assurance (QA) and their inter-relationship;

(b) Internal QA of each party;

(c) Levels of cross-check/verification in case of multiple verifications/controls, including systems of inspection and audit, wherever applicable;

(d) Organisation of personnel, responsibilities and lines of reporting for QA purposes;

(e) Criteria for acceptance/rejection, including identification of authorities for such decisions;

(f) Inspection at the time of physical completion of work;

(g) Inspection at the end of defects liability period;

(h) Items to be covered in maintenance manual; and

(i) Formats for documentation

20.3 QUALITY MANAGEMENT PLAN (QMP)

20.3.1 Every contractor executing a work of more than the prescribed estimated value shall be required to submit Quality Management Plan (QMP). QMP shall describe (i) site management structure and the particular responsibility of each individual; (ii) appropriate general procedures; (iii) specific work procedure; (iv) individual quality plans for important packages of work, listing quality requirement, including any inspection tests or hold points. Effectiveness of the quality management plan shall be ensured by regular supervision and check by the Engineer-in-Charge, with the assistance of Sub-Divisional Engineer and it shall not be left to the contractor alone.

20.3.2 Where design relating to contractor-designed items and temporary works are required, appropriate procedures will be written, which shall cover:

(a) Preliminary drawings;

(b) Basic data, its source, responsibility of supply and methods of verification;

(c) Design approach, applicable codes, design specifications;

(d) Methods of analysis, calculation, checking and internal approvals;

(e) Final drawings; and

(f) Checking and approval by external authority, if any.

20.3.3 As regards materials, the main aspects to be taken care of shall be as under:

(a) Testing of material for source approval;

(b) Inspection and certification of materials on receipt;

(c) Testing of materials going into construction (also as part of verification exercise);

(d) Test records;

(e) Assessment and analysis;

(f) Test frequencies and calibration schedule;

(g) Storage and issue of materials; and

(h) Inventory.

20.3.4 Proper check on quality shall be regularly exercised as the source of materials (like quarries) initially approved may suffer in quality over time. If the supplies from the originally approved source are found to be consistently defective, the source should be disapproved and substituted by another on the request of the contractor, with no extra cost.

20.3.5 Water used for construction. Water used for construction should be recognised as a vital contributory factor in the durability of the structure. The source of water supply, whether tubewell or canal based or any other, should be subjected to strict scrutiny and investigation as regards quality of water in accordance with requirements of the specifications or relevant code of practice or standard. The requisite checks and controls shall be exercised in the beginning and also throughout the construction phase.

20.3.6 Contractor shall be required to establish and maintain documented procedures to ensure that: (i) all purchased products conform to specified requirement; (ii) they are handled, stored, combined with other products, installed and used in accordance with the manufacturer's recommendation and (iii) the materials are compatible with the other products and works.

20.3.7 Contractor shall be required to maintain documentation that permit of product identification and traceability during all stages of production, delivery and construction. The Contractor shall identify all samples and test results with the field locations to which they relate. For this purpose, work under the contract shall be subdivided into lots or discrete work areas and controlled in accordance with the instructions of Engineer-in-Charge.

20.3.8 To achieve the desired workmanship at various stages of work, it shall be necessary to carry out inspection in a regular and systematic manner. Towards this end, the employer shall devise an appropriate system to cover the following components and operations for the various items of work/activities involved:

(a) Request forms for inspection;

(b) Inspection proformas;

(c) Authority levels for inspection;

(d) Inspection procedures (preliminary, periodic and on completion);

(e) Check lists to systematise the inspections; and

(f) Records of inspection.

20.3.9 Procedures shall be laid for preventing any damage or deterioration of the various materials brought to the site as well as the works partially completed or fully completed till the completion of the entire job. These procedures shall cover the following aspects:

(a) Storage of materials like cement, reinforcement bars/ structural steel, aggregates, bitumen, emulsions, pipes, etc.

(b) Protection of the partially completed works from the point of view of structural stability and adverse effect of weather;

(c) Prevention of accidents to the structure as well as personnel working on the project;

(d) In the case of aggressive environment (climatic or sub-soil), adequate precautions shall be taken, which may be by way of protective coating, special treatment, choice of materials, modification of specifications or design, etc.

(e) If any deterioration is noticed despite protective measures, the same shall be rectified before taking up subsequent operations.

20.3.10 For quality assurance of the finished work, materials and workmanship shall conform fully with the stipulated requirements. Non-conforming work shall be dealt with as per procedure laid down. Special procedures shall be prescribed for tackling non-conformities of strength of concrete, where non-conformance may only be known after sometime. A complete record of non-conformities and their disposal shall be kept. A non-conforming product/ work, after detection, shall neither be covered up nor be further built unless the disposition has been accepted by the Engineer-in-Charge and implemented by the contractor. In case this prohibition is not observed, appropriate decision shall be made keeping in view the impact of non-conformity.

20.3.11 The contractor shall be required to review, analyse and record the cause of all detected non-conformities and develop corrective action to eliminate the cause of non-conformities. This shall include both the determination of immediate action to prevent recurrence, as well as long-term corrective action. The Engineer-in-Charge shall have a close supervision on such non-conformities and ensure that these are not repeated.

20.3.12 The contractor shall be required to establish and maintain documented procedures for identification, collection, indexing, access, fixing, storage, maintenance and disposition of quality record. Quality records shall be maintained to demonstrate conformance to the required quality and the effective operation of the quality system. In case of non-conformities, records of repair, rectification, retesting, inspection and acceptance shall be kept. The records shall be so stored and maintained that they are easily retrievable and are in appropriate facilities/ environment to minimise deterioration or damage, and to prevent loss. The contractor shall make the quality records available to the Engineer-in-Charge at all reasonable times, and where

requested by the latter, permit him to make copies.

20.3.13 If the contract provides, a maintenance manual shall be prepared highlighting the periodic actions and special activities required for maintenance. It shall also contain the list of all vendors who have supplied crucial items of fittings/ fixtures, machinery /equipment to the project, with their addresses. During the maintenance period the contractor shall carry out the maintenance as per provisions of contract and carry out joint inspections with Engineer-in-Charge. Notes of joint inspections shall be recorded.

20.4 QUALITY CONTROL

20.4.1 Quality Control is a sub-set of Quality Assurance. It comprises operational techniques of controlling quality by a structured arrangement like the following:

(a) Quality control of incoming materials;

(b) Monitoring of production processes;

(c) Inspection and testing; and

(d) Identification of causes of unsatisfactory performance and their elimination.

20.4.2 Quality Control shall be followed for all works where the more elaborate system of quality assurance is not intended.

20.4.3 Approval of Materials. All materials whether: (i) natural such as earth, stone; (ii) processed such as water mix macadam; (iii) manufactured such as bricks, cement, steel, pipes, machinery, fitting; and (iv) designed such as concrete, bituminous macadam, to be used on work, shall be approved by the Engineer-in-Charge with the assistance of Sub-Divisional Engineer / Junior Engineer. Visual inspection of incoming materials (like, bricks, sand, aggregate, fittings, accessories, etc.) is very necessary, and many of the defects can be observed at the initial stage. Remarks of visual observations by the visiting officers shall be recorded in a Visual Material Inspection Register kept at the site. Materials found unacceptable shall be removed from the site and their use shall be strictly prohibited. Future supplies shall be similarly regulated.

20.4.4 While specifying makes of manufactured items, care shall be taken that they are of the same quality in terms of construction/manufacture, finish, texture, weight, performance, durability, etc.

20.4.5 It is desirable, especially where a variety of materials are available and the choice is subjective and open to manipulation, to approve samples and safely preserve them for future reference and comparison. Examples are: marble; doors, windows, sanitary and electric fittings; paints, etc. In the case of workmanship also (like, finishing and other features), it is desirable to approve samples, showing the minimum acceptable standards.

20.4.6 Manufacturer's certificate should be insisted upon wherever possible (e.g. steel, cement, etc.), but samples should also be drawn and tested independently to ensure quality.

20.4.7 Generally, BIS (Bureau of Indian Standards) marked items should be preferred. Inscriptions such as: "Conforms to BIS …" or "As per BIS…" etc. are not to be confused with genuine BIS markings. In case of doubt, it is necessary to check with Bureau of Indian Standards. Normally, genuine BIS marked items may be accepted without further testing. But if large quantities of such items are to be used, it is desirable to test samples drawn at random. If any such sample fails in the test, action shall be taken as per stipulations of the contract, besides the matter being brought to the notice of BIS. In case materials of quality superior to that of BIS marked materials are available (like paint, sanitary fittings) and cost is not the constraint or the desired elegance/ finish so demands, the same should be preferred.

20.4.8 Where necessary, laboratory tests shall be carried out in accordance with prescribed procedure regarding sampling, frequency and method of testing. The results of tests shall be systematically recorded.

20.4.9 Sampling procedures shall follow the guidelines given in relevant BIS or otherwise, recognised good engineering practice. Samples should be drawn in the presence of the contractor, as far as possible, and be representative for the material to be tested. Sufficient quantities should be sampled to enable tests to be conducted, plus additional material to be stored for subsequent testing, if required. Access to stored material should be under the strict direct control of the Sub-Divisional Engineer. Sample bags/containers should be given suitable identification numbers, sample location, date and any additional information considered necessary. A register shall be maintained for the purpose.

20.4.10 Process Control. It involves appropriate control of all ingredients involved in production of a processed material like concrete, bituminous mix, wet mix macadam, etc. It will embrace right quality of materials, type of equipment, blending, mixing, producing, transportation and laying/depositing so that the desired specifications are achieved. Engineer-in-Charge shall ensure that method of processing is proper and that the net product meets with all the required standards and specifications.

20.4.11 Field Laboratory Tests. Every major construction site shall have a well-equipped site laboratory to conduct day-to-day tests on materials to be/ being used. The equipments and facilities to be provided shall depend on the nature and magnitude of the work. They should be in good and reliable condition, and properly calibrated. The laboratory shall have for ready reference operating manuals of equipment, relevant codes/ standards/ specifications giving the testing procedures for various tests, along with a copy of relevant contract specifications.

20.4.12 The staff engaged in the laboratory shall be properly qualified and trained and familiar with contract specifications. To satisfy himself, the Engineer-in Charge will also carry out the quality control tests. If facilities for a particular test are not available in the field laboratory, testing may be done in the regional/ central laboratory of the department, or accredited external testing laboratory/ engineering or research institute.

20.4.13 Performance Tests. These tests may be in the nature of: load tests on piles,

beams, bridges; compaction tests on high fills; permeability tests on concrete; hydraulic tests on water supply/ sewerage/ drainage pipes; surface unevenness tests on roads/runways; mandrel and water tightness tests on cables and ducts, etc. They shall be done with thoroughness to give confidence of quality.

20.4.14 Follow-up Action. After carrying out of tests, the Engineer-in-Charge shall: (i) review the failures; (ii) decide the course of action about materials/ samples failing in tests; and (iii) ensure that no failed material is used in work.

20.4.15 Supervision and Checking. Construction activities shall generally not be undertaken till all the materials to be used have been tested and found satisfactory (e.g. production of concrete will follow the approval of cement and aggregates). Next activity shall be taken up only when the preceding activity is satisfactorily completed (e.g. placement of steel will be taken up after centering and shuttering has been satisfactorily completed and approved). For every item of work, checks to be exercised shall be listed out so that nothing of importance is left out.

20.4.16 The Junior Engineer and Sub-Divisional Engineer are directly responsible for quality of works up to Rs. 25 lakh or such other limit as the Government may fix from time to time. However, Executive Engineer shall see that the prescribed procedures are being followed and he shall test check the work both with regard to measurements and quality. For works costing more than the above limit, while the Junior Engineer and Sub-divisional Engineer shall remain responsible, the Executive Engineer shall take responsibility for quality standards of critical items.

20.4.17 Second Level Check. In addition to checks on quality to be exercised by personnel in charge of construction, each PWD shall have a separate, suitable inspection set-up to check the works with regard to measurements, quality and adherence to specifications. The inspection set-up (quality control wing) may be organised on a zonal basis. The schedule of inspections shall be prepared on the basis of cost/ magnitude of work, its importance, and whether it is construction or maintenance work. The programme of inspection shall be sent to the site in advance and inspection preferably carried out in the presence of field staff.

20.4.18 The quality control wing shall carry out the inspection systematically, check the quality of work at the prescribed frequency or when so directed, and submit reports of test results to the Engineer-in-Charge, with copies to the concerned Superintending Engineer and Chief Engineer. Action to be taken by various officers on these inspection reports shall be detailed out by each PWD.

20.4.19 Engineer-in-Charge shall bring the inspection report to the notice of the Sub-Divisional Engineer and Junior Engineer, as also the contractor. The work shall be checked up for defects and rectified as per provisions of the contract. Engineer-in-Charge shall also investigate why defects were not arrested through material checks and process controls in the first instance, and further ensure that such shortcomings do not recur. Action taken report shall be sent by him within one month to the Superintending Engineer with copy to the quality control wing.

20.4.20 Superintending Engineer shall analyse the information/ data received from the inspection unit to find out reasons for occurrence of defects/shortcomings and seek in this behalf explanation from the concerned field officers. After full consideration, he shall send to the Chief Engineer concerned a detailed report, giving his own comments, findings and recommendations with regard to any action to be taken against any official or to remove any systemic weakness, unless such action lies within his own power. Chief Engineer shall take on the report received from the Superintending Engineer such action as may be warranted. He shall also bring to the notice of Engineer-in-Chief any significant points requiring the latter's attention.

20.4.21 Quality control wing shall review outstanding points of previous inspection in every subsequent inspection. In case any work, for which the quality control wing had given okay report, is subsequently found to be sub-standard, the official concerned, besides those in charge of execution, shall also be held responsible for the relevant segment and called upon to explain.

20.4.22 External Check. For all important items as may be identified by the Chief Engineer concerned, external quality check may be got done through independent agency, which may be retired senior officers of repute who are well versed with the type of work or a consulting firm or a research/ engineering institute.

20.5 SUB-STANDARD WORK

20.5.1 As a matter of principle, no sub-standard work should be allowed to be done. In case sub-standard work has been done by the contractor, the same should be got re-done in accordance with the specifications. Executive Engineer, Sub-Divisional Officer/Engineer and Junior Engineer have no authority to accept or allow acceptance of sub-standard work with reduction of rates.

20.5.2 Only Superintending Engineer shall have the authority to decide, in exceptional cases, on written request in this behalf from the contractor and recommendation by the Divisional Officer with good reasons, not to demolish/ remove a particular sub-standard work and accept it at suitably reduced rates, subject to the condition that the work in question is certified to be structurally sound for the purpose for which it was designed. The contractor should be required to accept terms specified by the department before he receives payment.

20.5.3 The decision of Superintending Engineer regarding the reduction as well as justification thereof in respect of rates for sub-standard work which may be decided shall be final and shall not be the subject matter of dispute or arbitration. Necessary provision should be incorporated in the tender document/contract.

20.6 QUALITY AUDIT

20.6.1 It is an independent check by expert auditors who visit the works periodically for a few days to verify and report on: (i) implementation of Quality Assurance Manual; (ii) extent of control exercised by the contractor and the employer (or supervision consultant); (iii) compliance with specifications and provisions of the

contract; (iv) findings of critical analysis of test results, deficiencies observed and suggestions for improvement, quality index, compliance with previous observations, etc. The quality audit is to be based on the observations during the site visits, examination of documents, carrying out of certain random checks and independent tests, checks on quality, the rates of extra items, etc. Generally speaking, the audit programme shall define:

(a) The functions, systems and procedures to be audited;

(b) Frequency of audits; and

(c) Method of reporting findings and recommendations.

20.6.2 Quality audit shall be carried out by appropriately trained and independent personnel who are not directly responsible for the work being audited. Quality audit report shall be reviewed by the Superintending Engineer who will undertake steps to correct deficiencies revealed. Action taken to correct deficiencies shall be re-audited to verify compliance and only then a closure report issued.

20.7 OTHER STEPS TO ACHIEVE QUALITY

20.7.1 Where felt necessary, training programme(s) may be organised for the staff of contractor as well as of the department, in order to familiarise them with various tests, tolerances and quality standards.

20.7.2 Inspecting officers shall take care to record their observations on quality in the inspection registers/ inspection notes, and review compliance on their next visit.

20.7.3 Degree of diligence shown by officers towards adherence to and enforcement of quality norms should be duly recorded by their superiors in their ACRs (Annual Confidential Reports).

20.7.4 Performance appraisal report of contractors should take particular note of contractor's quality arrangements and adherence to quality standards.

20.7.5 Efforts shall be made to ensure that the contract agreements for works costing above Rs. 5 crore (or such other limit as the Government may fix) should make it obligatory for the contractor to employ a certain minimum percentage (say 25%) of the skilled labour who have qualified in the particular trade from certified training institutes. This step, however, shall be taken in phases and will depend upon availability of skilled work force and training institutes.


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Chapter 21
Public-Private Participation

21.1 GENERAL

21.1.1 Execution of infrastructure projects by public-private participation (PPP) aims at reducing the burden on state resources for development of these projects, which are normally financed and undertaken by the Government, by tapping not only the finances but also the innovativeness, management skills and more efficient delivery system of the private sector.

21.1.2 PPP mode can be used for a number of projects. For example, the State may take up construction of highways, including expressways, roads, bypasses, bridges, interchanges, tunnels and related facilities; information technology and data base infrastructure; irrigation and related facilities, water supply, sewerage, drainage and related facilities, tourism spots and allied facilities and utilities, Government buildings and housing projects, markets and related facilities, and environmental and solid waste management and related facilities, etc.

21.1.3 Any project to be taken up by any department shall require the clearance of High Powered Committee (under the chairmanship of Chief Secretary) set up for the purpose.

21.2 MODES OF PUBLIC- PRIVATE PARTICIPATION

21.2.1 There are various models of private participation in public projects and new models are getting evolved to meet the specific requirements of a project. A few of the models are given in subsequent paras.

21.2.2 Build-Operate and Transfer (BOT). This is a contractual arrangement whereby the project proponent undertakes the construction, including financing, of a given infrastructure facility, and the operation and maintenance thereof. The project proponent operates the facility over a fixed term, called the concession period, during which it is allowed to charge the facility users appropriate tolls, fee, rentals or other charges not exceeding those proposed in its bid or as negotiated and incorporated in the contract to enable the project proponent to recover its investment, and operating and maintenance expenses in the project, together with a reasonable rate of return. At the end of the concession period, the project proponent transfers the facility to the government agency. To incentivise early completion, period of construction is included in the concession period.

21.2.3 BOT-Annuity System. It is a variation of the BOT System. In this, the investor gets return only in the shape of 'annuity' (which may be yearly or half-yearly) during the concession period, while the right of toll revenue belongs to the Government. This option may be used where the investors are unwilling to assume

operating risks. Bidders for the annuity project quote bids i.e. demanded annuity for pre-determined concession period; the project can be offered to the investor quoting the lowest annuity rate. Provision may be made for bonus for early completion of the project as also reduction in annuity if completion is delayed for reasons other than the fault of the Government. This system carries low risk for the project proponent/concessionaire but could involve heavy pay-outs for the Government.

21.2.4 Build-Own and Operate (BOO). In this, the project proponent is authorised to finance, own, operate and maintain an infrastructure or development facility, in which the project proponent is allowed to recover its total investment, operating and maintenance costs plus a reasonable return by collecting tolls, fee, rentals or other charges from facility users. Under this, the project proponent who owns the assets of the facility may assign its operation and maintenance to a facility operator.

21.2.5 Build-Own-Operate and Transfer (BOOT). This arrangement is similar to Build-own-and-operate (BOO) except that at the end of the fixed term, the facility is transferred to the government agency.

21.2.6 Build-Lease and Transfer (BLT). In this arrangement the project proponent is authorised to finance and construct an infrastructure or development facility and, upon its completion, turn it over to the government agency on lease arrangement for a fixed period, after which ownership of the facility is automatically transferred to the government agency.

21.2.7 Operate-Maintain and Transfer (OMT). This model is usually used for effective operation of an existing facility like, highway, water supply distribution system, irrigation channel, etc. The objective of this arrangement is to maximise the life of public assets, provide service of appropriate quality and reduce the burden of maintenance on the public exchequer. OMT is a separate, independent contract.

21.3 PROCUREMENT PROCESS

21.3.1 In a typical PPP project, the procurement process normally involves the following stages:

(a) Identification (or selection) of the project and its approval;

(b) Pre-qualification of bidders;

(c) Issue of bid documents to pre-qualified bidders;

(d) Submission, receipt, opening and evaluation of bids;

(e) Award;

(f) Signing of Agreement; and

(g) Financial Close.

21.4 SELECTION OF PROJECT

21.4.1 The first important step for adopting PPP mode is the identification of the project which can be considered suitable for private participation. It shall be desirable that the public works departments constitute for the purpose departmental committees

called 'Standing Committee for PPP'. It will not be improper to associate with the committee some known experts on the subject, either private or from other bodies. If the committee, after careful deliberations, decides a project to be taken on PPP mode, a preliminary report shall be prepared for approval of the High Powered Committee mentioned in para 21.1.3. This preliminary report shall also mention about approximate cost of the feasibility study.

21.4.2 After approval of this Committee and approval of the competent authority, the department may go in for feasibility study through a technical consultant selected in accordance with the procedure laid down in Chapter 11. Financial and legal consultants may also be engaged to provide special inputs. This study shall determine as to whether the project is technically feasible and passes the normal economic cost-benefit analysis or threshold internal rate of return. The feasibility report shall also indicate estimates of cost, volume of demand, and sensitivity analysis (considering the scenarios of project, cost going up and the benefits coming down). The study shall bring out potential, legal and technical issues, extent of land acquisition, scope of rehabilitation, environmental effect of the project, likely level of user fee, duration of concession period, public acceptability, and degree of government support, if any, etc. so that the government can take a decision on sponsoring the project.

21.4.3 The feasibility report shall be put up to the departmental Standing Committee, which will study the entire matter and prepare an assessment report, which should particularly include the proposed PPP mode and requirement of any Government support. The Standing Committee shall also find out the approximate cost for taking up the detailed project report. This report shall be put up for consideration and approval of the High Powered Committee. If so decided, the approval of the competent authority along with the approval of Finance Department shall be taken to proceed further in the matter.

21.4.4 Detailed project report may not be necessary and can be left to the expertise and innovativeness of the project proponent, in which case the core requirements of the design, construction, operation and maintenance shall be specified precisely. However, when it is decided to have a DPR prepared, it shall be got done as provided in Chapter 11. On preparation of the said DPR, it shall first be examined by the departmental Standing Committee for PPP and then taken to the High Powered Committee for further decision in the matter.

21.5 PREPARATION OF PRE-BID/ BID DOCUMENTS

21.5.1 The concerned department shall set up a duly constituted 'Pre-qualification, Evaluation and Award Committee' comprising technical officers well-versed with aspects or requirements of the project, legal officer, officer knowledgeable in management/ operation of the project and officer well-versed in project finance.

21.5.2 The Committee mentioned in para 21.4.1 shall take steps to get all documents ready for the bidding process. The documents shall be in detail and comprise the following:

(a) Pre-bid documents, which shall be pre-qualification documents laying form of technical, financial, legal parameters and criteria for pre-qualification;

(b) Bid documents, which shall comprise:

(i) Instructions to Bidders;

(ii) Minimum Design and Performance Standards and Specifications;

(iii) Draft Agreement;

(iv) Form of Bid;

(v) Forms of Performance Securities and other forms; and

(vi) Other documents as may be necessary.

21.5.3 Instructions to Bidders shall establish the rules of bidding and shall be clear, comprehensive and fair to all the bidders. Among other things, they shall give information on (i) General description and objectives of the project; (ii) Contractual arrangement under which the project shall be undertaken; (iii) Investment incentives, if any; (iv) Minimum amount of equity; (v) Formulas and appropriate indices to be used in the adjustment of tolls/fees/rentals/charges, where applicable (vi) Requirements of concerned regulatory bodies; (vii) Milestone bonding (viii) Date of Financial Close; (ix) Construction period, and (x) Concession period, where required.

21.5.4 The draft agreement is an important part of the bid document and shall be prepared to take into account all the technical, legal, financial and commercial aspects of the project. The Committee referred to in para 21.4.1 shall take appropriate decision in the matter. Model Concession Agreement prepared by the Planning Commission for highways or other such standard PPP agreement may be used as reference.

21.5.5 The terms of draft agreement shall be got approved from the State Law and Finance departments. It shall be proper if the document is prepared in advance and becomes even part of the Note to the Cabinet, though authority may be got delegated for last minute minor changes.

21.6 SELECTION OF PROJECT PROPONENT/CONCESSIONAIRE

21.6.1 In the first stage, the department concerned shall publish in the press and also post on the website a notice inviting bidders to pre-qualify for the approved project. The bidders shall be short-listed on the basis of scrutiny and evaluation of applications for pre-qualification. The short-listed bidders will be supplied bidding documents and called upon to submit their bids, following two-envelope system. The first envelope labeled 'Technical Proposal' will contain the prescribed information/requirements like: (i) Operational feasibility of the project, indicating the proposed organisation, methods and procedures for the operation and maintenance of the project; (ii) Technical soundness/preliminary engineering design, and proposed time limit; (iii) Project cost including operating and maintenance cost and (iv) Bid security. The second envelope shall be labeled 'Financial Proposal' and contain the prescribed financial parameters. On the date and time of bid opening as stipulated in ITB, the Committee (refer para

21.5.1) will open the first envelope and examine whether the same is complete in terms of the data/information required and is accompanied by bid security in acceptable form. Only those bidders who pass the first-envelope stage will have their second envelope opened for further evaluation. Such bidders who qualify for the second stage will be notified of the date, time and place of opening of the second envelope.

21.6.2 The bidder may be a sole applicant (single entity) or a group of entities (called the consortium) coming together to implement the project. Bids shall be evaluated on the basis of prescribed parameters like: (i) technical soundness; (ii) operational feasibility; (iii) environmental standards and management; (iv) project financing; (v) enhancements, which the project proponent may offer to the Government to make the proposal more attractive, such as lowest grant/highest premium (negative grant) if concession period is fixed or lowest concession period if the grant is zero/ fixed or lowest annuity or revenue sharing, as the case may be. After assessment and comparison of the bids, the best bidder will be selected and may be called for negotiation. After negotiation, letter of award is issued, to be followed by signing of the agreement.

21.7 FINANCIAL CLOSE

21.7.1 Financial close is the event (and also date) of completing financial agreements whereby the project proponent/concessionaire has access to the funds/ financial assistance committed in the financial documents/agreements, and copies of these agreements have been supplied to the Government. It signifies the start of the concession period, where applicable. The agreement shall clearly stipulate a definite date by which the project proponent/concessionaire shall achieve financial close. Provision may be made for limited extension on payment of specified penalty for each day of delay. Sometimes, it is advantageous, and as a further safeguard, to stipulate the furnishing of 'financial close bank guarantee' by the project proponent/concessionaire, which will be in addition to performance bank guarantee. Failure to adhere to achieve financial close even by the extended date shall be ground for termination, with such consequences as spelt out in the agreement, which may include forfeiture of bid security and also financial close bank guarantee, if so provided.

21.8 INDEPENDENT ENGINEER

21.8.1 In all PPP models, the potential bidders have more confidence if an independent engineer is appointed. The methodology of his appointment, terms and conditions, role and responsibilities shall be clearly laid down in the agreement. The independent engineer shall be available during the (i) development phase (from date of agreement to date of financial close) (ii) construction phase and (iii) operation and maintenance phase. He shall discharge all the functions enjoined upon him under the agreement in different phases.

21.9 MONITORING OF CONSTRUCTION

21.9.1 During the construction period, the work shall be inspected and monitored by

the project proponent/concessionaire and the independent engineer in the manner specified in the agreement, regarding the physical progress and conformance to standards and specifications. Upon recommendation by the independent engineer, the department may by notice require the project proponent/concessionaire to suspend works if they pose threat to safety and, if required, remedy any unsafe or defective work of which the cost will be borne by him if he is found in breach; otherwise, it will be borne by the department.

21.10 CHANGE OF SCOPE

21.10.1 To cover the contingency of modification of works and services, provision shall be made in the agreement for change of scope. The procedure for issue of notice to the project proponent/concessionaire for change of scope, the information to be furnished by him in response, determination of cost and time for implementation, the component of cost to be absorbed by him and that to be borne by the department, method of payment of the cost of change to him in respect of his share etc. shall be clearly laid down in the agreement. However, the need of such changes shall be kept to the absolute minimum by due advance diligence in order to avoid disputes and claims.

21.10.2 The department may, after giving the prescribed notice to the project proponent/concessionaire and considering his reply thereto, award such works and services to any person on the basis of open competitive bidding, provided the project proponent/concessionaire has the option to match the first ranked bids in terms of the selection criteria.

21.10.3 If there is reduction in the scope of the work or the project proponent/concessionaire fails to complete any work, the department may require him to pay such percentage of the cost as saved by him as specified in the agreement.

21.11 OPERATION AND MAINTENANCE

21.11.1 During the operation period, the project proponent/concessionaire shall operate and maintain the project facility in accordance with the agreement either itself or through the O & M contractor as per provisions of the agreement, applicable laws, applicable permits and conform to good industry practice. Maintenance requirements to meet the desired level of service shall be set down in the schedule to the agreement. The project proponent/concessionaire shall prepare the required documents like Maintenance Manual, Safety Manual and the Maintenance Programme, which shall be reviewed and approved by the independent engineer. Failure to meet the maintenance and safety requirements shall entitle the department to recover damages as stipulated in the agreement and to terminate the agreement.

21.12 COMPLETION CERTIFICATE

21.12.1 The agreement shall lay down the methodology for issue of completion certificate. Usually, the authority to issue completion certificate is with the independent engineer but it can be with another body also. It shall, however, be ensured that independent engineer gives certificate after due checking and successful

completion of all tests.

21.12.2 Usually, the PPP agreements provide for issue of a provisional certificate. This certificate shall be issued if there are only some minor incomplete works of such a nature as do not stand against the safe and reliable commercial use of the project. Such a provisional certificate shall have appended with it a Punch List of outstanding items, jointly signed by the independent engineer and the project proponent/concessionaire, clearly stipulating the time for their completion. The department shall ensure that all such incomplete works are duly completed. For any delay, other than for reasons attributable to the Government or force majeure, the Government shall be entitled to recover from the project proponent/concessionaire damages for each day of delay at the stipulated rates, until all items are satisfactorily completed. Subject to payment of such damages, the time of completion of the Punch List items may be suitably enlarged. Failure by the project proponent/concessionaire to complete the Punch List items even by the extended time shall entitle the department to take action as specified in the agreement.

21.13 PROJECT HANDOVER AND DEFECTS LIABILITY PERIOD

21.13.1 Upon the expiry of the concession period, the project proponent/ concessionaire shall hand over vacant and peaceful possession of the project assets and project site at no cost to the Government. The handing over process shall be initiated at least 12 months before the actual date of expiry of concession period. Independent engineer and the project proponent/concessionaire shall carry out a joint inspection and prepare a list of works/jobs/additions/alterations required to bring the project to the required level of service.

21.14 TERMINATION

21.14.1 If a party commits a default as specified in the agreement, the other party is entitled to terminate the agreement by following the procedure prescribed. Termination payment to the project proponent/concessionaire, rights and obligations of the parties, option of substitution and its acceptance, divestment of rights and interests by the project proponent/concessionaire etc. shall be as laid down in the agreement.

21.15 STEERING COMMITTEE

21.15.1 The Government may constitute an empowered committee called Steering Committee (or by any other name) to review the progress of the work at periodical intervals and give directions in the matter. The Committee can be authorised to take decisions on policy matters, determine extension of any concession period, and consider any issues or disputes which may be referred to it.

21.15.2 The department shall also periodically report the progress and highlights of the project to the High Powered Committee on PPP projects.

21.16 DISPUTE RESOLUTION

21.16.1 It shall be proper that the agreement clearly provides the methodology for resolutions of the disputes arising out of the same. Usually, the agreement provides that

in the first instance, the dispute shall be referred to the independent engineer, who shall mediate and assist the parties in arriving at an amicable settlement. If mediation is not successful, the dispute shall be referred to the Steering Committee. Chairman of the Board of Directors of the project proponent/concessionaire company firm may be asked to join. Failing resolution, the dispute shall be decided by arbitration as provided in the agreement, subject to the Arbitration and Conciliation Act, 1996.

Chapter 22
Safety Management

22.1 GENERAL

22.1.1 It has been well established that the accident rate in construction industry is much larger than in the manufacturing sector. Construction workers are exposed to a wide variety of hazards. Moreover, the work or the structure itself is liable to sink, collapse, fail or catch fire. Such catastrophic situations can also endanger the safety of public at large. Safety management of works is, therefore, of paramount importance. Safety management is also necessary due to requirements of various legislations (and their amendments) on the subject such as the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996; Industrial Disputes Act, 1947; Workmen Compensation Act, 1923 and other Labour Acts, besides provisions of the Indian Penal Code.

22.1.2 Safety in construction/ maintenance activities has many facets, but broadly it relates to the safety of the structure, safety of the workers, safety of the public in general and fire safety.

22.2 STRUCTURAL SAFETY

22.2.1 Structural safety shall be observed during construction and maintenance stages. National Building Code of India, 2005 (with latest revision) and other applicable safety codes shall be referred.

22.2.2 **Construction Phase.** Provision for safety at the construction stage shall cover the following:

(a) Foundation safety. This requires:

- (i) Proper geo-technical investigations;
- (ii) Determination of position, depth and size of underground structures, such as water pipes, mains, sewer lines, cables or other services in the vicinity to prevent accidents and damage to these utilities;
- (iii) Appropriate choice of foundation and its adequate design to prevent sinking and differential settlement; and
- (iv) Protective works like benching, shoring, timbering or other measures to avoid falls or collapse of side walls.

(b) Structural safety during normal conditions. This requires:

- (i) Appropriate choice of materials taking into account the usage, location, climate and the requirements of durability;
- (ii) Proper design by a qualified structural engineer in accordance with codal requirements;

(iii) Proper detailing; and

(iv) Sound construction with emphasis on quality.

(c) Structural safety during critical conditions, such as earthquakes, severe storms, heavy rains, floods. This requires that the structures shall be planned, designed and built to withstand the forces of these phenomena; and

(d) Safety of temporary structures, like platforms, scaffolding, centering, shuttering, etc. The temporary structures shall be properly designed for dead loads as well as all superimposed loads. The vertical props shall rest on firm, unyielding ground/ foundation. Removal of props and centering and shuttering shall be in proper sequence and at stipulated time, as per the requirements of structural behaviour and strength.

22.2.3 Post Construction Phase. Safety of structures in post construction period shall not be jeopardised by neglect and faulty actions, such as the following:

(a) Unplanned and ignorant removal of load bearing members or damage to them;

(b) Ad hoc, ill-informed and unsafe additions and alterations;

(c) Change of use, like an office building being used for library or warehouse;

(d) Poor drainage of roof and area around the building;

(e) Poor maintenance;

(f) Poor inspection and neglect of tell-tale signs like cracks, tilts, sinking/ yielding/buckling of a member, seepage, scouring, rusting of reinforcement; and

(g) Inaction to declare a structure unsafe, and have it either vacated or closed or dismantled, as the case may be, when it has deteriorated to such an extent (because of ageing or neglect) as to be unfit for the intended use.

22.3 WORKERS' SAFETY

22.3.1 Safety of workers can be enhanced by: (a) avoiding unsafe conditions; (b) avoiding unsafe acts; (c) avoiding unsafe electrical practices; (d) providing personal protective equipment (PPE); (e) altering the risky processes with possible and affordable safe alternatives; (f) safety education and training. Each of these aspects is discussed in the subsequent paras.

22.3.2 Unsafe Conditions. Unsafe conditions like the following shall be strictly avoided:

(a) Inadequate or missing guards of moving machines;

(b) Improper storage of inflammable and combustible materials;

(c) Non-erection of caution boards and danger signs at wanted locations of trenches or face of excavation;

(d) Storage of excavated material close to the edges;

(e) Inadequate fire warning and fire fighting system;

(f) Improper illumination;

(g) Unsafe methods and processes while performing various tasks;

(h) Protrusion of steel rods, pipes and other objects;

(i) Improper working platforms, poorly erected scaffolding without firm base, and inadequate lateral ties and bracing;

(j) Inadequate timbering/ shoring of excavations or unfenced excavations;

(k) Quicksand conditions;

(l) Sudden lowering of water table;

(m) Openings, cutouts, stair-wells, lift wells, etc. without or inadequate handrails and toe boards around them;

(n) Improper and unsafe access to work areas;

(o) Keeping loose materials at elevated places;

(p) Inadequate earthing of electrical equipments;

(q) Faulty electrical connections and cabling;

(r) Defective cranes and lifting tackles;

(s) Poor housekeeping; and

(t) Missing covers over the opening of water /sewage storage tanks.

22.3.3 Unsafe Acts. Unsafe acts like the following shall not be permitted:

(a) Working without licence;

(b) Smoking in prohibited areas;

(c) Leaving equipment in a dangerous condition;

(d) Improper slinging and rigging practices;

(e) Operating machines without adequate skill;

(f) Failure to use or wear PPE;

(g) Using equipment in the wrong way or for wrong tasks;

(h) Unsafe loading, lifting, transporting, placing and mixing,

(i) Careless handling of hot tar/ bitumen;

(j) Wearing loose garments;

(k) Walking along/or entering structures storing water / sewage / sludge without safety gadgets and caution;

(l) Entering sewer without safety precautions/ measures; and

(m) Horseplay i.e. distracting, teasing, quarrelling, etc.

22.3.4 Unsafe Electrical Practices. Electric shock may result in body injury or death due to electrocution. Its incidence can be quite high in construction works because of the tendency to regard the wiring to be of temporary nature. Some of the most common unsafe practices which shall be guarded against are:

(a) Inserting bare wires in sockets instead of using plug tops;

(b) Exposed extension boards without on-off switches;

(c) Loose connections;

(d) Non-use of earth-leakage-circuit-breakers (ELCBs);

(e) Disengaging a person in contact with a live circuit without self-insulation from earth or without switching off the mains;

(f) Poorly maintained and poorly insulated portable equipment;

(g) Long, dangling cables from the place of supply to the place of use;

(h) Use of undersize cables;

(i) Working on energised circuits without sufficient precautions;

(j) Non-provision of temporary lightning arrestors for high rise buildings;

(k) Deployment of un-qualified /un-skilled electricians;

(l) Poor preventive maintenance;

(m) Improper earthing of electrical equipments; and

(n) Overloading of circuits due to replacement with higher load rating equipment or rewinding of motors, etc.

22.3.5 Personal Protective Equipment (PPE). Personal Protective Equipment like helmets, gloves, safety belts, tarring outfit, gumboots, protective goggles, aprons, hand shields, gas masks, face masks, etc. depending on the trade, shall be used to eliminate injury or reduce its severity. Providing PPE is the obligation of the contractor. PPE shall be of good quality and comfortable.

22.3.6 Safety Education and Training. To ensure workers' safety, education and training in this aspect is an important pre-requisite. There is need to inculcate safety culture at all levels, particularly among middle level and site managers/ engineers. This may be done through manuals, workshops, meetings, lectures, safety instructions display boards, caution boards and site demonstrations, etc. Safety days could be observed to instill safety awareness, and safety awards instituted to encourage safe practices.

22.4 PUBLIC SAFETY

22.4.1 Public safety shall be improved by observing requisite safeguards like the following:

(a) Display of safety signs, caution signals and boards;

(b) Design and construction of windows, parapets, railings, etc. to concentrate on safety aspects in the matter of height (sill level in the case of windows), strength of elements and size of openings to avoid the danger of accidental falls, especially of children;

(c) Wells, cut-outs, tanks, pools, accessible roofs etc. to have protective railings/ parapets around them;

(d) Avoiding/ minimising storage of materials on public roads or public places;

(e) Preventive measures against damage to adjoining property because of deep excavations;

(f) Provision of barricading and curtains against fall of construction materials;

(g) In the case of driven piles, safeguarding adjacent structures and service lines against the effect of vibrations;

(h) Preventing unauthorised and direct access to construction sites;

(i) Adequate warning signs near danger zones like high tension lines, deep excavations, blasting areas, etc.;

(j) Keeping the manholes covered; providing immediate replacement of covers in case of loss or damage;

(k) Proper fencing of dangerous pits/ excavations;

(l) Preventing access to water, sewage and sludge containing structures; and

(m) In the case of road and bridge works, providing proper diversions with adequate markings, lights and advance notice boards, including their maintenance. (Also refer to para 22.6 on road safety).

22.4.2 Inspection. All buildings / structures shall be inspected by the Sub-Divisional Engineer once a year to check their safety for use, and he shall record a certificate to that effect. In the same manner, the Sub-Divisional Engineer (Electrical) shall carry out inspection in case of electrical installations, and record a certificate about their soundness. The Junior Engineers shall inspect such buildings/ structures twice a year and record the said certificate.

22.4.3 In case any deficiency or weakness or distress is detected in any building / structure, Sub-Divisional Engineer / Junior Engineer shall send immediate report to the Divisional Officer, who shall inspect the said building/ structure and take suitable remedial steps. Divisional Officer has independent responsibility to inspect important buildings/ structures once a year and bring to the notice of Superintending Engineer cases where he has reasons to doubt the structural soundness of any building/ structure, and the latter will take such action as considered necessary.

22.4.4 If a building has out-lived its life, it should be declared unsafe and arrangement made for its demolition in consultation with the owner. If the owner refuses or fails to vacate the building, he shall be notified that he is doing so at his own risk. The matter shall also be reported to the district authorities to take appropriate action in the matter. To facilitate such inspections, the list of buildings/ structures/ installations shall be kept in a computerised form so as to record inspections in a retrievable form for subsequent use.

22.5 FIRE SAFETY

22.5.1 All work places shall satisfy basic requirements which contribute to safety of life from fire, smoke, fumes and panic arising from these or similar causes. Guidelines of National Building Code of India, 2005 (with latest revision) shall be followed.

Important principles are set down in the following:

(a) Building plans shall conform to prevailing bylaws and good practice, and shall be got approved from the authority concerned including Fire Department;

(b) Actual use of the building shall conform to the intended use;

(c) Air-conditioning and ventilating systems shall be installed and maintained so as to minimise the danger of spread of fire, smoke or fumes;

(d) All requirements of electrical installations from the point of view of fire safety shall be met;

(e) Use of combustible finishes on walls and ceilings shall be avoided;

(f) All buildings, depending on their requirements with regard to importance and occupancy, shall be protected by fire fighting equipment like fire extinguishers, wet riser, down-comer, automatic sprinkler installation, high/ medium velocity water spray, foam and gaseous or dry powder system;

(g) A satisfactory supply of water for the purpose of fire fighting shall always be available in the form of underground/ terrace level storage tank having specified capacity, with arrangements for replenishment;

(h) In case of high-rise buildings (height above 15 m), their special requirements for fire safety shall be followed, which may include provision of fire detection, fire alarm system, lightning protection, fire lifts of required height, fire control room, public address system, first-aid equipment, compartmentalisation, etc;

(i) All exit requirements shall be followed including (i) capacities of exits and their location/ arrangement (ii) obstruction-free exits (iii) exits to be clearly visible and the route to reach the exits to be clearly marked with all signs properly illuminated;

(j) Temporary structures, erections, etc. shall be subjected to check for safety against fire; and

(k) Providing proper access of fire tenders to the site, especially in high risk areas.

22.6 SAFETY ON ROADS

22.6.1 Road safety has peculiar aspects as multiple agencies are involved and responsibilities are widely dispersed, as indicated below:

(a) Public Works Department/ Highways Authority: Responsible for road construction and maintenance and implementation of engineering measures;

(b) Motor Vehicles Department/ Licensing Authority: Responsible for issuing of driving licences and certificate of vehicle fitness;

(c) Police Department: Responsible for regulating traffic, enforcing laws and educating people and prosecution in case of accidents;

(d) Town Planning Department/ Development Authority: Responsible for land use planning; and

(e) Health Department: Responsible for treatment of accident cases and management of trauma centers.

22.6.2 Road Safety Board. It is essential that activities of all of the agencies involved in road safety are coordinated. In order to implement the programmes relating to road safety and to continuously monitor and study road safety situation, the State shall have a Road Safety Board with adequate infrastructure and support staff. It will comprehensively organise and monitor road safety issues, like: (i) education of the people; (ii) enforcement of rules, regulations and traffic discipline including control on overloading; (iii) policy of issue of driving licenses; (iv) recruitment and training procedures of drivers and conductors of public vehicles and their working hours/conditions; (v) road-worthiness of vehicles, and (vi) mitigation measures. It will also advise the State on road signs, road geometry, etc.

22.6.3 Road Construction with Safety. Road safety shall be an important feature during initial planning for construction of a road. For more comprehensive measures, 'Manual of Safety in Road Design' published by Ministry of Shipping, Road Transport & Highways through Indian Roads Congress may be referred. Road safety will normally involve a slew of measures, principally the following:

(a) Safety conscious planning of new road networks;

(b) Incorporation of safety features in the design of new roads;

(c) Improvement of safety aspects of existing roads to avoid future problems; and

(d) Improvement of hazardous locations (or black spots) on the network.

22.6.4 For enhancing safety, measures to be undertaken will be site-specific and could include one or more of the following:

(a) Improvement of geometrics (gradients, curves, transition curves, super-elevation and cross-fall);

(b) Repair of road edges and berms and avoiding differential levels;

(c) Improvement of riding characteristics;

(d) Junction modification and channelisation;

(e) Localised widening and lay-byes;

(f) Provision of proper traffic signs, road markings, delineators and reflectors;

(g) Construction of speed-breakers (as per standard design) or rumble-strips at hazardous locations, unmanned level crossings, etc. including their proper maintenance;

(h) Provision of service roads;

(i) Access control on main highways;

(j) Parking restrictions, turn prohibitions, heavy vehicle restrictions, revisions of speed limits;

(k) Tackling roadside features, like provision of guardrails, barriers; flattening side slopes of high embankments; edge treatment; closure of or protection

against roadside ditch or nullah; logging or cutting of trees on the shoulders;

(l) For pedestrians- providing railings, footpaths, crossings, subways, shelters;

(m) Removal of roadside obstacles, unauthorised hoardings and structures and their subsequent monitoring to prevent re-appearance (for hoardings, refer to IRC: 46 publication titled 'A Policy on Roadside Advertisements');

(n) Providing traffic aid posts on important highways; and

(o) Matching road level with top of manhole covers.

22.6.5 During construction operations, the basic need to be met with is a safe environment both for workers and road users. The guiding principles to be kept in view are:

(a) Road users to be given adequate warning of the danger ahead with ample time for them to take appropriate action or manoeuvre; closures/ diversions/ detours to be notified well in advance;

(b) Providing safe and clearly marked buffer and work zones;

(c) Providing measures to guide and regulate traffic, and control driver behaviour;

(d) Providing temporary diversions or secondary detours with proper transition lengths;

(e) Proper maintenance of construction zones and diversions, especially keeping them dust free to avoid the danger of poor visibility resulting from clouds of dust;

(f) Providing adequate and visible road signs, markings and advance warnings; and

(g) Safe parking of construction equipment, and its visibility with red flags/ lights/ reflectors.

22.6.6 Where the contractor is responsible for these measures, the Engineer-in-Charge shall ensure that the contractor furnishes, erects and maintains the barricades and traffic signs and makes adequate arrangements for diversions, lighting, equipment and flagmen as would be required. Indian Roads Congress Publication No. IRC: SP: 55 titled 'Guidelines on Safety in Road Construction Zones' may be referred.

22.6.7 Road construction in urban areas has certain peculiarities, which shall be duly taken care of. To minimise inconvenience to traffic and the incidence of accidents, it is desirable to carry out the work when the traffic volume is the least, say at night or early morning hours. Further, the choice of specifications and method of construction should be such as would speed up operations. Other measures would include: (i) due attention to be paid to the safety of pedestrians and non-motorised vehicles; (ii) un-necessary road-side dumping of materials to be avoided; (iii) construction area to be cordoned; (iv) speed restricted to safe levels, and (v) traffic to be regulated.

22.6.8 Road Safety during driving. Driving on highways requires skill,

concentration and caution to steer oneself safely on the road. 'SP: 44: Highway Safety Code' published by Indian Roads Congress details the various safety measures. These are primarily intended to: (i) induce good traffic sense; (ii) inculcate discipline and courtesy in road users; (iii) expound the need to avoid road rage; (iv) familiarise the public with the rules and laws governing the use of roads; (v) explain the meanings of road signs, pavement markings and signals met on the roads, and (vi) give tips on safe driving.

22.6.9 Motor Vehicles Act, 1988 and Central Motor Vehicles Rules, 1989 framed under the said Act (with statutory amendments) deal with various aspects of safety such as driving licence (issue, disqualification, suspension, cancellation), road-worthiness of vehicles, over-loading of vehicles, responsibilities of transporter/ owner/driver of goods carriage, driving rules/ regulations, etc. These may be referred to by all concerned, especially by the Police Department for enforcement.

22.7 PROHIBITION OF TRAFFIC ON ROADS DEEMED UNSAFE

22.7.1 If at any time it appears to the Divisional Officer that any road or any portion thereof has been rendered unsafe for vehicular or pedestrian traffic by reason of damage or otherwise, he may close the traffic or portion thereof to all traffic or any class of traffic, or regulate the number and speed of vehicles using the road.

22.7.2 The Divisional Officer shall see that the roads within his Division are not blocked unnecessarily and that their full carriageway is available to the road users.

22.7.3 If interest of safety or convenience of traffic so demands, right of access to the road may be regulated or diverted. However, care shall be taken that:

(a) The diversion is not unreasonably distant;

(b) Entry and exit are smooth and recognisable during day as well as night;

(c) Advance warning signs are duly provided;

(d) The diversion is well maintained, especially against the cloud of dust; and

(e) District administration and transport department are informed about the diversions/alternative routes.

22.8 SPECIAL ATTENTION TO BRIDGES AND OTHER STRUCTURES

22.8.1 Unsafe road conditions and bridges, which are weak, under distress, have broken railings, or badly eroded beds with exposed foundations, etc. constitute potential hazards. Deficiencies detected during inspection shall be attended to at the earliest. If assessment shows that a particular bridge is inadequate for the design load, the following precautions/ actions shall be taken:

(a) The load on the bridge should be restricted to its assessed capacity, speed restrictions imposed, advance warning signs installed, and the condition of the bridge monitored by special inspections at intervals not exceeding six months;

(b) Plying of vehicles on the bridge should be prohibited or restricted as necessary. The bridge should be closed for all traffic where the rated capacity

of the bridge is lower than the lowest class of traffic expected to ply on it; and

(c) Replacement or strengthening of the bridge or its affected part should be undertaken on high priority.

22.9 ROAD SAFETY AUDIT

22.9.1 For proper management of road safety, a reliable accident database shall be built. The best source of validated accident data is the Police Department. The accident form, while fulfilling the requirements of prosecution and court procedures, should also give summary information about the nature of accident, its location, possible causes and highway features at the accident location. Based on this data, sites prone to accidents (black spots) shall be identified (and maintained in computerised data base), and prioritised for treatment. Factors contributing to accidents at the selected black spot shall then be analysed in detail, and appropriate counter-measures considered and put in place.

22.9.2 Road safety audit of major new highway projects and major works of rehabilitation and improvement should be done in order to reduce the risk of accidents and if they occur, to minimise their severity and costs. The task of road safety audit should be entrusted to an independent team comprising persons with knowledge and experience of road standards, engineering principles, safety management and accident investigation. The auditor will evaluate the scheme from safety angle, analyse the past accidents record, "drive, ride, walk" the scheme, interact with the users and finally submit his assessment and report. The report shall be carefully considered and steps taken to incorporate acceptable recommendations.

22.10 HIGHWAY PATROLLING, TRAFFIC-AID POSTS AND TRAUMA CENTERS

22.10.1 Severity of accidents can be mitigated by organisational measures like surveillance, traffic-aid posts, communication system, ambulance services and trauma management. This requires active intervention and support of Police and Health Departments.

22.11 SAFETY FEATURES FOR WATER SUPPLY AND SANITATION WORKS

22.11.1 For works of water supply and sanitation, the following special safety measures, other than those which are common to all public works departments, shall be taken.

(a) Manholes should be of adequate size. No manhole should be left uncovered after inspection;

(b) Before entering the sewer at a particular manhole, covers of adjacent manholes should be removed at least two hours before entry;

(c) The sewer-men should be trained to avoid the dangers of falls, drowning, asphyxiation and gas poisoning. They should be required to use gumboots, gloves, gasmasks, which should be kept in ready stock. It would further be desirable to provide them bunny suits to avoid contact with contaminated

water. To avoid syncope and other harmful effects of poisonous gases and deficiency of oxygen, the workers should carry light respiratory equipment. Oxygen cylinders with breathing apparatus should be available at easy locations;

(d) All open tanks should be provided with guard rails. Narrow walkways or steps and spiral staircases should not be adopted; better and safer options should be preferred;

(e) Honeycomb grating should be provided on open channels to avoid accidental falls;

(f) Adequate lighting within and around the plant should be provided;

(g) Smoking or carrying open flames in and around digesters should be prohibited;

(h) Covered tanks, wet wells, pits or sewers should be well ventilated. Before entering, they should be kept open for sufficient time or force-ventilated. Entry should be permitted after testing against the presence of hazardous/ poisonous gases;

(i) First aid kits and fire extinguishers of the appropriate type in good operating condition should be available readily at hand. The staff should be trained in their use;

(j) Adequate toilet and bathing facilities should be provided to the operating staff and sewer-men. The staff should be required to use antiseptics for washing and bathing. The employees should be medically examined every two years;

(k) Wherever necessary, precautionary boards/ danger boards/ signboards should be displayed/ installed, drawing attention to the danger spots;

(l) Drinking water to have the prescribed kind and potency of disinfectant; and

(m) Proper safety measures should be taken against terrorist action and sabotage in the case of water works.

22.12 SAFETY FEATURES FOR IRRIGATION WORKS

22.12.1 The following safety measures shall be adopted:

(a) At all hazardous locations warning signs should be put up in regional language/ dual language/pictorial signs;

(b) In lined canals, safety ladders should be used;

(c) In case of breach/cut on canal, efforts shall be made to get closure / reduced supply from the head to limit inundation of adjoining fields; and

(d) Patrol staff, while checking canals and structures, should use life jackets.

22.13 SAFETY AGAINST FLOODS

22.13.1 Measures to combat hazards have been prescribed elsewhere. The following sets down the strategy to improve the safety of hydraulic structures and avoid adverse effect of floods:

(a) Mining of river bed for extraction of sand or stone in the vicinity of bridges and other hydraulic structures shall be prohibited in each potentially hazardous case. The restricted zone, up-stream and down-stream, shall be got notified by the PWD concerned through the Mining Department. A surveillance team consisting of Sub-Divisional Engineer of the PWD concerned, Assistant Mining Engineer and Tahsildar of the area, or as notified by the Government, shall monitor compliance. The powers of the team to impound offending vehicles, cancel licences, impose fines and launch legal proceedings shall be promulgated;

(b) Construction and any type of colonization in the flood waterway of the channel/drainage shall be prohibited. Director Town and Country Planning and other officers, who are vested with power and responsibility to take immediate steps to check/remove violations, shall be informed;

(c) Projects of river-front development should be undertaken only in case they do not destroy the river ecosystem and its hydrology;

(d) Release of water at the head-works shall be carefully planned and pre-meditated;

(e) In case of inter-state rivers, there shall be an inter-state co-ordination committee consisting of officers/officials of revenue and irrigation departments of the States concerned;

(f) Jacketing of rivers as a strategy shall be avoided as far as possible. But, where necessary, embankments may be put up after analysing their long term effect and maintained well;

(g) Design capacity of drains, canals, etc. shall be maintained by a regular programme of de-silting and de-weeding;

(h) Effective drainage shall be provided for flood-prone areas in towns, under-passes or localities housing critical equipment or functions, including adequate pumping arrangements to tackle emergencies; and

(i) Proper flood warning system shall be put in place, which should be kept functional.

Chapter 23
Inspection

23.1 GENERAL

23.1.1 An inspection is, most generally, an organised examination or a formal evaluation exercise. It may involve checks, measurements, tests, etc. to determine certain characteristics as to their conformity with specified requirements and standards or as inputs to further study or investigation.

23.1.2 A surprise inspection may give results different from those of an announced inspection. Officers seeking to discover how well the lower echelons in their organisation and the contractors are doing sometimes drop in unannounced to see for themselves the ground conditions. When an inspection is scheduled in advance, it may give people a chance to cover up or fix mistakes. A surprise inspection, therefore, gives the inspecting officer a better picture of the typical state of the inspected object than an announced inspection.

23.1.3 Despite what has been stated above, most of the inspections by senior officers shall be planned and scheduled as the intention is to improve the working of the junior officers and execution of work at the site. In fact, a judicious mix of surprise and announced inspections will be in order.

23.1.4 Engineers-in-Chief shall issue detailed instructions regarding inspections to be done by various officers. Inspection Manuals for various kinds of works (roads, bridges, canals, water supply, sewerage, etc.) and jobs (joinery, masonry, plumbing, plastering, wiring, etc.) shall also be prepared by each Public Works Department at the earliest. The aim of instructions and Inspection Manuals will be to systemise the procedure and format of inspections.

23.1.5 Though the detailed instructions will be issued by the Engineers-in-Chief /State Government, an indicative list of objectives of inspection of works/assets is provided in Annexure 23A.

23.2 CAUSES OF FAILURES AND PREVENTIVE STEPS

23.2.1 The following paras bring out the basic causes of failures of works/structures. They can be largely taken care of with exercise of due diligence at various stages including inspection. The inspections are done not only to ensure that the work or activity is being carried out as provided for but also to discover any systemic weaknesses with a view to taking corrective steps.

23.2.2 Errors of knowledge (Ignorance). These errors are often the result of insufficient education, training and experience including lack of communication. These can be taken care of by suitable up-gradation of know-how of the personnel and proper posting policy. It is essential that only officers having the right knowledge and experience are posted on important works. If in-house expertise for inspection in a

particular area is not available, a properly qualified and trained consultant may be engaged.

23.2.3 Errors of design. The departments should prepare checklist of items to avoid design errors so that nothing of importance is missed. Important ingredients to be ensured will be: (i) validity of assumptions made; (ii) compatibility of materials used; (iii) provision of all possible loads, during construction/erection/use; (iv) good drafting and detailing; (v) application of only standard, valid and proven software; and (vi) second level check including proof check where required.

23.2.4 Errors of performance (carelessness and negligence). These errors may be in the nature of: (i) incorrect reading/ interpretation of drawings/ specifications; (ii) inadequate strength/ stability of scaffolding; (iii) premature or wrong sequence of removal of formwork; (iv) defective construction and workmanship; (vi) lack of safety measures; (vii) neglect of maintenance; and (viii) improper usage.

23.2.5 Errors of intent. These are done with full knowledge. Some of the practices falling in this category are: (i) use of worn-out equipment and tools to reduce costs; (ii) taking unwarranted risks and shortcuts; (iii) using deficient/defective materials; and (iv) doing/ accepting work of poor or marginal quality with a view to accelerating construction or increasing profit or earnings, etc. These shall be particularly checked in the course of inspection and entail deterrent action.

23.3 TYPES OF INSPECTION

23.3.1 Inspection during Pre-construction (during planning phase). This inspection is to assess the suitability of site, nature of terrain, geographical conditions, likely obstructions/ hindrances, law and order situation, sources of materials, availability of skilled labour, transportation arrangements and general logistics.

23.3.2 Inspection during Construction. This inspection is carried out by various levels of officers on regular basis including quality control checks. Senior officers issue inspection notes bringing out their observation, suggestions and instructions, or record them in the Site Order Book. This inspection is frequent, even constant. Visual inspection of construction materials is an important constituent of this inspection (refer para 23.3.6).

23.3.3 Post Construction Inspection. This inspection is carried out immediately after completion or during defects liability period with a view to assessing/ identifying defects or incompletions and get them rectified/ completed from the contractor responsible for construction. It is also to see that the site is cleared of all the debris and left-over materials and that the facility is fit for the intended use.

23.3.4 Inspection during O & M Period. This inspection is conducted periodically, and may be (i) annually or bi-annually or (ii) at a particular time say, pre-monsoon or post-monsoon. For the periodic inspection to be meaningful and systematic, the departments shall prescribe checklists of inspection and inspection proformas. The report of this inspection will form the basis of initiating necessary preventive/ remedial measures.

23.3.5 Special Inspection. This inspection is carried out once in a while, to meet the objectives indicated in items (viii), (x) and (xi) of the list at Annexure 23A. This inspection usually requires the services of experts, who may be available within the department, or may have to be engaged from outside.

23.3.6 Visual Inspection. Here, the inspecting officers on visit to the site carry out visual inspections of the materials lying in the store/site, such as quality of bricks, cement, steel, etc. They shall record their observations regarding the quality of the materials in the Visual Material Inspection Register (refer para 20.4.3).

23.4 FREQUENCY OF INSPECTION

23.4.1 The frequency of inspection will be governed by various factors such as (i) size and cost of work (ii) its importance (iii) urgency of its completion; (iv) its geographical dispersal i.e. whether it is concentrated or scattered; and (v) its distance from the headquarters of the inspecting officer/official.

23.4.2 Engineers-in-Chief shall issue detailed instructions regarding the schedule of inspections to be followed in their respective departments. This shall also contain instructions regarding inspections pertaining to operation and maintenance. To begin with, the following schedule of inspection at various levels is suggested as a guideline:

Junior Engineer:

(a) All works twice a week; important works every day;

(b) All the important operations like setting out, fixing alignment, fixing ground or founding levels, concreting work, bituminous work, pile load test, well-plugging, pre-stressing operations, lowering of tube-well, etc. require his full-time presence;

(c) Roads, bridges, sewers, drains, canals, siphons, aqueducts, flood protection embankments and other such works - once every month, before and after monsoons and more often during rains;

(d) In Irrigation Department, all channels, their regulation structures, appurtenant works, outlets - before release of water, after stoppage of supply and at least twice during running period;

(e) All canal based water works and sewerage treatment plants, once a fortnight; all tube-well based water works, boosters and disposals, once a month; and

(f) In emergency, at once.

Sub-Divisional Engineer:

(a) All works once a week; important works more frequently;

(b) Important operations of the kind listed at (b) in respect of Junior Engineer require his prolonged (preferably full-time) presence;

(c) Roads, bridges, sewers, drains, canals, siphons, aqueducts, flood protection embankments and other such works - before and after monsoons and at least

twice during rains;

(d) In Irrigation Department, all channels, their regulation structures, appurtenant works, outlets - before release of water, after stoppage of supply and twice during running period;

(e) All canal based water works and sewerage treatment plants, once a month; all tube-well based water works, boosters and disposals, once in two months; and

(f) In emergency, at once.

Executive Engineer:

(a) Normal inspection once a month;

(b) During construction twice a month;

(c) Important works more frequently;

(d) Roads, bridges, sewers, drains, canals, siphons, aqueducts, flood protection embankments and other such works- before and after monsoons and at least once during rains;

(e) All canal based water works and sewerage treatment plants, once a quarter; all tube-well based water works, boosters and disposals, once in 6 months; and

(f) In emergency, immediately i.e. as soon as possible.

Superintending Engineer:

(a) Normal inspection once in three months;

(b) During construction once in two months;

(c) Important works more frequently; and

(d) In emergency, immediately i.e. as soon as possible

Chief Engineer:

(a) Important works of each Circle once in three months;

(b) Critical ones more often; and

(c) In emergency, as early as possible depending on the gravity.

Engineer-in-Chief:

(a) Important works of the Department, whenever possible; and

(b) In emergency, as early as possible depending on the gravity.

Quality Cell:

(a) Works costing tender accepting power of Superintending Engineer or more - once every quarter (important works as decided by the Chief Engineer, once a month); and

(b) Works costing more than the tender accepting power of Executive Engineer but less than that of Superintending Engineer - at least twice during currency.

23.4.3 Inspection by senior officers is meant to review progress, help achieve the commitments of the department in terms of satisfactory and timely execution of works, check the management of assets and impart requisite instructions. However, this inspection does not diminish the responsibility which devolves on the personnel at any level, in terms of their duties.

23.4.4 Inspections by various officers should be well spaced so that the work can be checked at different stages and also better compliance of the desired standards made possible. A few thorough inspections are more useful than many hurried and casual ones.

23.4 5 Although, the Inspection Manual and departmental instructions (will) lay down in detail the checklists of inspection for every element of work, broad check lists of inspection for different works are given in Annexure 23B.

23.5 RECORDING OF INSPECTION NOTES AND OBSERVATIONS

23.5.1 Senior officers of the rank of Superintending Engineer and above should generally communicate their observations by way of inspection notes. Instructions can also be issued verbally or given in the Site Order Book. Verbal observations made by them shall be recorded in the site inspection register by Executive Engineer or Sub Divisional Engineer, and a copy also sent to the inspecting officer. The observations should be reviewed in the next inspection with action taken reports.

23.5.2 Engineer-in-Charge and the Sub-Divisional Engineer should record their instructions in the Site Order Book, but in regard to important matters they may find it necessary to communicate such orders in writing. Junior Engineers should also record their observations in the Site Order Book if they find defective work going on or contractor not complying with terms of the contract, to serve as evidence in the eventuality of a dispute.

23.5.3 The compliance of instructions/ observations made by the supervisory officers should be recorded in the Site Order Book by the Sub-Divisional Engineer/ Junior Engineer with dated initials and date of compliance. Compliance report should be sent to the inspecting officer.

23.5.4 The entries/observations made in the Site Order Book and the compliance report shall be consulted while passing bills for payments to the contractors. Sub-Divisional Engineer shall, before signing the bill submitted by the contractor, record a certificate on the bill that defects pointed out have been rectified and that defective items have been excluded/deleted from the bill.

23.5.5 Inspection of Building Works by Architects. Inspection of building works by architects shall be done in accordance with the schedule and instructions issued by the Chief Architect. Purpose of this inspection will be to check compliance with approved architectural drawings and finishes, explain any architectural feature and to ascertain the requirement of any drawing/detail so that it can be supplied without delay and adverse effect on the progress of work. Any observations made or instructions issued by the architects in the course of inspection shall be examined

from technical, contractual and financial angles before these are acted upon.

23.6 INSPECTION OF SPECIAL PROJECTS

23.6.1 Some important or typical projects may require a special methodology for inspection, which shall be provided for. Engineer-in-Chief or Government may also constitute a special team for carrying out inspection of any project.

23.6.2 Engineer-in-Chief or Government may also engage an outside agency/person possessing sufficient experience and know-how to investigate the failure of a work. In the course of this investigation, the departmental officers concerned shall extend full assistance and co-operation to the inspecting/ investigating team, without obstructing or deflecting the course of investigation. When considered necessary, committees may be set up with the approval of the Government with a view to lesson-learning and identifying measures for avoiding repetition of failures in the future.

Annexure 23A

Objectives of Inspection

(i) To assess the progress of work, find out any hindrances in its execution and monitor its schedule of completion;

(ii) To verify and ensure that the prescribed specifications of work, quality procedures, safety requirements and contractual stipulations are being complied with;

(iii) To check that all site records are maintained properly and observations of earlier inspection notes are duly attended to;

(iv) To watch if there is any unauthorised use, occupation, extension, connection or encroachment of any building, land or facility; and take suitable measures, in observance of the prescribed procedure, for its removal;

(v) To ascertain the physical condition of the work/structure and recommend suitable remedial measures for portions adversely affected;

(vi) To check any blockages/ obstructions which affect the safe/efficient functioning of roads, bridges, canals, drains, sewers, and their carrying capacity, etc.;

(vii) To keep the department in a state of readiness to tackle emergency situations like floods, fire breakout;

(viii) In emergency, to take stock of the situation and organise remedial measures;

(ix) In case of electrical installations and mechanical equipment, to check their health and proper working; and to initiate the required corrective steps;

(x) To study/ monitor behaviour or performance of special type structures like suspension bridges, prestressed concrete continuous structures, cable stayed bridges, high-rise buildings, etc.;

(xi) To assess the effect and damage if any, of unusual occurrences like floods, earthquakes, strong winds and abnormal loadings;

(xii) To determine the residual life of a structure or prepare a scheme of major improvement or rehabilitation;

(xiii) To check that maintenance works are being attended to and maintenance staff are performing efficiently the duties assigned to it;

(xiv) To check that revenue/ toll/ user fee, etc., wherever levied/applicable, is being collected correctly;

(xv) To investigate a special situation, mishap, distress or failure; and

(xvi) To check the quality of water, effluent and ensure compliance with safety norms.

Annexure 23B

Checklist for Inspections

I. General

(i) To check the quality of materials (by prescribed visual examination methods and/or test results) and see that they are in accordance with the specifications;

(ii) To check whether all the stipulated tests are being carried out properly, results properly recorded and non-conformities attended to;

(iii) To check that workmanship is of the requisite standard prescribed for the work;

(iv) To check whether all actions for rectification/ improvement recommended during the previous inspections have been taken or not, giving details;

(v) Correctness of construction methods and sequence of operations;

(vi) To check observance of safety norms, labour laws and health regulations;

(vii) To check whether the progress of work is satisfactory; if not, any corrective action taken or suggested; and

(viii) To discover problem areas and demand/ look for their solution.

II. Checklist of Buildings. Important aspects to be examined shall be:

(i) Plinth level of buildings keeping in view the floodability and adjoining road level;

(ii) Drainage of roof and the area surrounding the building;

(iii) Dampness in walls;

(iv) Points of leakage, seepage, fungus growth or ingress of moisture;

(v) Bulging of concrete or plaster breaking off;

(vi) Loss of cover of a concrete member, exposure of reinforcement or its rusting;

(vii) Cracks in walls or concrete members (slab, beam, column, etc.);

(viii) Sinking or tilting of wall or column;

(ix) Perceptible sway, vibrations, deflection/ sagging of a structural member;

(x) Damage to column or load-bearing wall by impact or unauthorised chases/ cuts;

(xi) Condition of expansion joints/separation joints;

(xii) Unwarranted additions or alterations;

(xiii) Unauthorised usages (e.g. using ordinary area as stack area);

(xiv) Breakages (floors, glass panes, etc.);

(xv) Condition of joinery, especially presence of white-ant / termite;

(xvi) Working of fittings, fixtures, etc.;

(xvii) Safe and proper working of electric wiring, points and installations (fans, air conditioners, room heaters, geysers, communication system, stand by generators, etc.);

(xviii) Working of water supply and sanitary installations, inspection chambers, etc.;

(xix) Fire detection, fire alarm and fire fighting system (refer Chapter 22);

(xx) Susceptibility of basements to flooding; adequacy of drainage, pumping/dewatering system; and

(xxi) All aspects of safety, in general.

III. Checklist of Bridges. Important aspects to be examined shall be as given in the following list. For carrying out bridge inspection, it is essential to provide adequate means of access to all parts, which may be in-built or semi-mobile arrangements like, ladders and platforms or mobile inspection units.

(i) Approaches (any unevenness, settlement, cracking, pot holes; movement away from the dirt wall; erosion of embankment; side slopes - condition of pitching, turfing, rain water chutes; damage to approach slab; condition of retaining walls; guard rails; approach geometrics, etc.);

(ii) Protective works (guide bunds, spurs, pitching, launching apron etc.); any undue scour; availability of reserve stones/boulders against floods;

(iii) Waterway (maximum observed floods, HFL, scour - and their comparison with the designed values; abnormal change in flow pattern including meandering; restriction of waterway by undergrowth or ineffectiveness of some spans); mining of bed material at the bridge site or 3 km upstream/downstream;

(iv) Foundations (settlements, scour, cavitation, disintegration, decay, erosion);

(v) Sub-structure viz. piers, abutments and wing walls (any disintegration, spalling, cracking, bulging, sinking, tilting, functioning of weep holes of abutments, etc.);

(vi) Bearings - checklist will depend on the type whether metallic, concrete, or elastomeric. But general points to be checked would be: cleanliness, rusting, greasing; functional aspects like excessive movements, tilting, seizing, jumping off guides; any cracking in supporting members; secureness of anchor bolts and guides; condition of pads (oxidation, creep, flattening, bulging, splitting, etc.);

(vii) Superstructure - checklist will depend on the type whether reinforced concrete, prestressed concrete, steel, masonry arch or suspension. But, generally look out for: any cracking/spalling/leaching/scaling of concrete or signs of distress or deterioration; corrosion of reinforcement; rusting of steel

members; loss of camber, undue deflection sway or vibrations; secureness of bolts, rivets and welds; damage to articulations; and locking up or ingress of moisture, etc.;

(viii) Expansion joints (general functioning; any locking, rattling; any cracking of deck in the neighbourhood; condition of sealing materials; secureness of joints; and debris collection, etc.);

(ix) Deck (riding quality; thickness of wearing course as compared to that designed to check any excessive overlays; functioning of drainage spouts);

(x) Handrails (any rusting, cracking, spalling, breakages, undulations or abruptness in profile; missing or broken parts);

(xi) Footpaths (general condition, any missing footpath slabs);

(xii) Utilities (leakage of water and sewer pipes; any damage to cables; condition of lighting)

(xiii) Aesthetics (any visual intrusion by billboards; vegetation, general appearance, painting and bridge numbering); and

(xiv) Overall assessment regarding load carrying capacity (refer para 22.8.1).

IV. Checklist of Roads. Important aspects to be examined shall be:

(i) Pavement riding quality (surface unevenness, pot holes, cracking, rutting, disintegration, edge wear);

(ii) Shoulders (condition, width, any obstruction);

(iii) Road signs, pavement markings and signals (provision, visibility, maintenance);

(iv) Speed breakers (design, advance warning signs, visibility and maintenance);

(v) Drainage (surface and sub-surface);

(vi) Hoardings, structures, roadside trees and objects which obstruct traffic/ vision;

(vii) Boundaries of highways (whether demarcation done by fixing stones; identification of encroachments);

(viii) Existence of structures in violation of Punjab Scheduled Roads and Controlled Areas (Restriction of Unregulated Development) Act, 1963 (Haryana Amendment);

(ix) Unauthorised means of access to private property;

(x) Embankments (erosion, rain cuts, turfing, chutes, etc.);

(xi) Medians including plantation; and

(xii) Identification/ diagnosis of areas prone to accidents.

V. Checklist of Urban Roads. The responsibility of inspection of urban roads by Public Works Departments lies in respect of such roads as are maintained by them. The important aspects to be examined here would be:

(i) Pavement riding quality;

(ii) Road signs, pavement markings and signals (provision, visibility, maintenance);

(iii) Rotaries, traffic islands, channelisers;

(iv) Footpaths, railings, subways;

(v) Speed breakers (design, advance warning signs, visibility and maintenance);

(vi) Drainage system (adequacy of capacity of drains or sewers, their performance and maintenance; proper invert slope; desilting, cleaning of weeds, clearing of obstructions/ debris/blockages; repair of lining; proper slope and cleanliness of kerb channels; cleanliness of kerb inlets/road gullies, etc.);

(vii) Drainage arrangement at the foot of flyovers (provision of good many inlets to arrest the longitudinal flow/spread of water);

(viii) Road profile, pavement crown and cross slope; identification of areas prone to ponding;

(ix) Parking issues, if they relate to Public Works Department;

(x) Hoardings, branches of trees, structures and objects which obstruct traffic or vision; and

(xi) Encroachments, etc.

VI. Checklist of Electrical Works

(i) Verify compliance with various IS codes and Indian Electricity Rules, 1956;

(ii) Check that all equipments, fittings, accessories, wires/cables used in the installations are of adequate rating and quality to meet the load requirements;

(iii) Check external electrical works (cables, HT switch gear, transformers, LT switch gear) and that prescribed tests for each unit are satisfactorily carried out;

(iv) Check earthing, insulation, fuses, main panels, MCBs, bus-bars, cable route marking, identification labels, head room and side clearances, soundness of terminals, operation of switches, ventilation, drainage, fencing, safety devices, protective circuits, compatibility of components/systems, painting, etc.;

(v) Verify guarantee and warranty certificates from suppliers and initiate requisite action before their expiry;

(vi) Check for safe and smooth functioning of lifts, appliances and equipment;

(vii) Check for desired illumination levels at functional areas; and

(viii) General workmanship of the electrical works with regard to layout, finish, neatness and compliance with drawings.

VII. Checklist of Irrigation Works: Important aspects to be examined shall be:

(i) Availability, condition and soundness of sign boards, RD stones, burjis, km stones and water gauges;

(ii) Condition and maintenance of canal embankments, dowels, service roads, including signs of any erosion;

(iii) Adequacy of capacity of canals, drains, their condition and maintenance;

(iv) Any encroachment by farmers or commercial or private interests;

(v) Proper working of gates and other regulating/ gearing equipment;

(vi) Evidence of any cut, breach or theft on canals and damage/ tampering of outlets;

(vii) Condition of canals, siphon beds; and their proper cleaning;

(viii) Condition of lining above and below FSL (full supply level);

(ix) Adequacy of distance of tubewells from the canals as per Canal Act;

(x) Condition of structures impacting their safety;

(xi) Checking the presence of obstructions in the waterway; and any heading up resulting in over-drawal of water by upstream outlets;

(xii) Proper jungle clearance and stump removal; filling up of hollows following removal of trees and stumps;

(xiii) Checking the quality of water in the light of permissible norms;

(xiv) Checking that disposal of de-silted earth is on the outer slope and not the bank;

(xv) Checking that there is no plying of un-authorised vehicles on the canal banks;

(xvi) Checking registers of gauges and records of running supplies at heads and tails (whether kept);

(xvii) Checking of discharge gauges and their calibration;

(xviii) Checking that there are no trees/plantation in the bed, inner slopes, dowels, banks and outer slopes of the canals, drains and embankments; and

(xix) Checking of any un-authorised discharge of sewage or industrial effluent into canals and drains.

VIII. Checklist of Water Supply Works

(a) Canal Based

(i) Proper alignment/ levels of inlet channels with respect to bed of canal/minor;

(ii) No earth filling to be allowed in the bed of underground tanks in case of extra excavation;

(iii) Proper specifications of steel, CI pipes and fittings, mortar and concrete;

(iv) Proper specifications of RCC pipes and specials;

(v) Proper level of all structures for gravity flow (from storage and sedimentation tanks to suction wells; from high level tank to filter beds to clear water tank);

(vi) Proper alignment of and cover over the pipe;

(vii) Proper fixing level of V-notch in filter beds; and

(viii) Proper installation of pumping machinery to maintain positive suction; proper priming arrangements, if positive suction is not available.

(b) Tubewell Based

(i) Diameter of the pit to be according to design;

(ii) Proper depth and diameter of the bore;

(iii) Proper thickness of MS pipe being lowered;

(iv) Record of various strata encountered during drilling;

(v) Development of the tubewell and its record; and

(vi) Check if tubewell is developed properly.

IX. Checklist of Sewerage/ Storm Water Drainage System

(i) Check level of excavation and gradient of sewer being laid;

(ii) Use of sight rail and boning rod for laying sewers;

(iii) Construction of burjis/ temporary bench marks for transfer of levels;

(iv) Check of concrete bedding/ cunette;

(v) Stringing of the sewer using two strings;

(vi) Use of tarred yarn of proper quality and quantity for jointing of sewers;

(vii) Proper jointing of sewers and its finishing, especially at the bottom;

(viii) Check location of manholes and their workmanship;

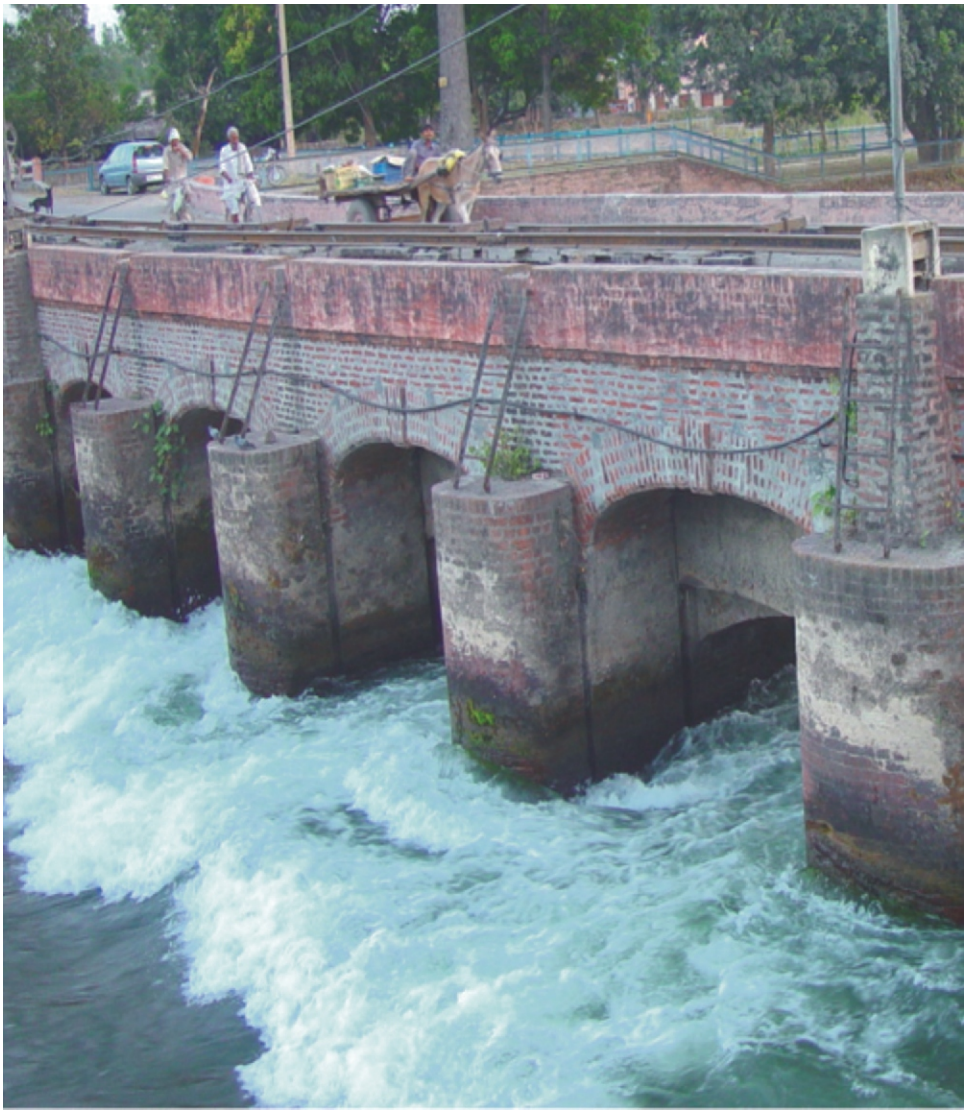
(ix) Check specifications of PVC / stone ware pipes including their fixing;

(x) Check quality of manhole covers/ frames including location/construction;

(xi) Proper construction of drain and benching in the manhole;

(xii) Hydraulic testing of sewers; and

(xiii) Refilling of trenches as per specifications to avoid subsidence and accidents.



Chapter 24
Disputes - Avoidance, Management, Resolution

24.1 DISPUTE

24.1.1 Dispute connotes an assertion of a right or claim by one party and its denial or repudiation by the other party, whether expressed or implied and whether by words or by conduct.

24.2 DISPUTE AVOIDANCE

24.2.1 It shall be the policy of every Public Works Department to engage its energies towards successful completion of the project rather than being involved in contentious and fruitless pursuits. The departmental officials handling the contract should thoroughly understand the various clauses of the contract and their implications, recognise rights and obligations of the parties, and administer the contract in a reasonable and businesslike manner. It is also imperative to handle correspondence with the contractor very carefully.

24.2.2 The Engineer-in-Charge of the work and the superior officers supervising the work shall make efforts to ensure that all genuine issues of the contractor are resolved in time.

24.2.3 In the case of large or special projects, Engineer-in-Chief, with approval of the State Government, may constitute a Steering Committee to address the issues and to facilitate early decisions thereon.

24.3 DISPUTES AND STAGES OF THE PROJECT

24.3.1 Disputes may have their origin at different stages of the project. Three such important stages of a project are tender stage, pre-construction stage and construction stage. At every stage, the officials concerned shall consciously avoid actions/ situations likely to result in disputes, but without showing laxity in effectuating the provisions of the contract or neglect of their prescribed duties.

24.3.2 To avoid disputes relating to tender stage, the tender documents shall be clear, unequivocal and complete, and consistent with one another. Specifications capable of more than one interpretation or prescribing materials which are not easily available shall be avoided. Conflict between actual physical conditions and those promised or implied shall be obviated with due diligence and, if necessary, peer review should be undertaken. Depending on the circumstances, it may sometimes be advantageous to have the same consultant for DPR and construction supervision. Tender accepting authority shall give proper time for tendering as well as completion, commensurate with the nature of work and its complexity. Questions raised during pre-bid conference shall be answered by responsible and competent person and

proceedings duly recorded and issued (refer para 13.10). The procedure of allotment of work shall be clearly defined in the tender document and there shall be no deviation from that.

24.3.3 To avoid pre-construction stage disputes, the Engineer-in-Charge shall take timely and effective steps to discharge the obligations cast on the employer such as availability of site, cutting of trees, shifting of utilities, removal of encroachments, availability of design, etc. It is also important that necessary clearances (forest, environmental) are obtained well in time, preferably before award of work.

24.3.4 Disputes at construction stage can be largely reduced if the parties to the contract understand their respective obligations carefully and apply their efforts towards the welfare of the project and its timely completion. So far as the departments are concerned, Engineers-in-Chief shall issue detailed instructions in this regard to the departmental officers.

24.3.5 Effective communication between the parties during the construction phase is essential. This is best achieved by frequent discussions, backed by regular project meetings. Correspondence shall record discussions and agreements and supplementary information. Action taken report shall be reviewed in the subsequent meeting(s) till compliance.

24.4 DISPUTE REDRESSAL

24.4.1 All disputes or differences of any kind whatsoever in connection with or arising out of the contract or the execution of work or its maintenance, whether before its commencement or during the progress or after termination, abandonment or breach of the contract shall be settled in accordance with the dispute redressal system laid down in the contract. Engineers-in-Chief, with approval from the Government, shall issue detailed instructions in this regard.

24.4.2 In case of disputes involving amount lesser than the value prescribed (Rs. 2 crore or as prescribed by the respective PWD), the tender document may only provide for an appeal procedure and the appellate authority be asked to take time-bound decision. In case of dissatisfaction on the part of the contractor, he can go to the Court after this appeal.

24.4.3 In case of projects of value greater than the one prescribed in para 24.4.2 and less than the amount prescribed (between Rs. 2 crore and 10 crore or as prescribed by the respective PWD), if the contractor is not satisfied with the appeal, he can go for arbitration. Adjudication of the dispute shall be done by a sole arbitrator to be appointed by the Engineer-in-Chief from the list of arbitrators approved by the Government.

24.4.4 For disputes relating to contracts of value higher than prescribed in para 24.4.3, the contract may provide for an appeal procedure and arbitration. The arbitration shall be done by a three member tribunal of whose appointment procedure shall be laid down in the tender document.

24.4.5 To safeguard that the contractors do not go in for frivolous claims, it shall be

laid down in the agreement that while invoking arbitration, the claimant shall deposit with the Engineer-in-Charge a claim fee @ 2% of claim amount or as prescribed in tender document. On termination of the arbitration proceedings, this fee shall be adjusted against the cost, if any, awarded by the arbitrator (or arbitral tribunal) against the claimant party and the balance remaining after such adjustment, and in the absence of such cost being awarded, the whole of the sum will be refunded within one month of the date of the award.

24.5 DISPUTES OF CONSULTANCY SERVICES

24.5.1 To avoid disputes in consultancy assignments, the employer's objectives and requirements and output expected shall be clearly specified in the Terms of Reference (TOR).

24.5.2 Any dispute in case of services costing up to Rs. 1 crore or such other limit as may be fixed by the Government shall, in the first instance, be decided by the employer concerned. Appeal shall lie with the Dispute Resolution Committee, the manner of whose constitution shall be laid down in the bid document.

24.5.3 For services costing more than the limit prescribed in para 24.5.2, the dispute shall be settled by a three member arbitral tribunal. The tribunal will be constituted as laid down in the bid document.

24.6 DISPUTES OF FOREIGN-AIDED OR CENTRALLY FUNDED PROJECTS

24.6.1 For foreign-aided or centrally funded projects, dispute redressal system may be in accordance with special requirements/ stipulations, if any, of the aid-giving or funding agency. Such arrangements shall be got approved from the Government beforehand and be clearly spelt out in the contract.

24.6.2 In case the funding agency does not insist on a special dispute resolution mechanism, the dispute resolution system of the department shall be adopted.

24.7 GENERAL PROVISIONS REGARDING ARBITRATION

24.7.1 Law Governing Arbitration. Arbitration, whether relating to works or consultancy services, shall be conducted in accordance with the Arbitration and Conciliation Act, 1996, as amended from time to time.

24.7.2 Settlement during Arbitration Proceedings. As per section 30 of the above Act, the arbitral tribunal, with the agreement of the parties, may at any time during the arbitration proceedings use mediation, conciliation or any other procedure to encourage settlement. If the parties reach a settlement, arbitral tribunal will terminate the arbitration proceedings, and if requested by the parties and not objected to by the tribunal, record the settlement in the form of an arbitral award on agreed terms.

24.7.3 The State Government may also constitute a Standing Settlement Tribunal or Special Tribunal for some specific projects to sort out the pending matters before different arbitral tribunals or the matters which are pending for reference to the arbitrators.

24.7.4 The fee payable to the members of the arbitration tribunals or to the arbitrators or to the members of the Committee/tribunals as referred to above, shall be regulated by instructions of Haryana Government issued from time to time. The parties i.e. the Government and the contractor/ consultant shall agree to the fee structure through a written agreement.

24.8 ACCEPTANCE/ CHALLENGE OF AWARD

24.8.1 No authority lower than the Chief Engineer shall have power to accept an arbitral award. Power to accept the award shall be as per delegation by the Government.

24.8.2 Award can be challenged on the grounds specified in the Arbitration and Conciliation Act, 1996. The option to do so shall be exercised within the limitation provided.

24.8.3 Every award against the department shall be examined from factual, technical and legal points of view. The Engineer-in-Charge shall, within 7 days of the receipt of the award, send a self-contained report and his comments to Superintending Engineer. The Superintending Engineer shall send his considered comments to the Chief Engineer within 4 days. The report shall be examined at the Headquarters by the Arbitration Committee comprising the Chief Engineer concerned, Director (F&A), Law Officer and the Superintending Engineer concerned to decide or make recommendation, as the case may be, whether to accept the award or challenge it.

24.8.4 If it is decided by the competent authority to accept the award or the challenge before the courts ultimately fails, payment may be authorised by the Chief Engineer if funds are available under the 'charged head'; otherwise, assurance on single file should be obtained from the Government for provision of funds. It shall be desirable to pay the award as soon as possible to avoid the incidence of interest liability.

24.8.5 The reasons for an award going against the department shall be examined, initially by the Superintending Engineer and then by the Chief Engineer. Responsibility for any lapse should be fixed, and if any system weakness is discovered, measures should be taken to plug it for the future.

24.9 MANAGEMENT OF DISPUTES

24.9.1 The disputes may cast a heavy liability on the Government. Therefore, it is necessary that the status of disputes, especially those involving arbitration, is periodically monitored by the Chief Engineer concerned, and that Engineer-in-Chief holds a quarterly review. Information regarding progress or peculiarity of any special case shall be periodically sent to the Government. Administrative Secretary may also hold a review at least once a year.

24.9.2 Engineer-in-Charge shall ensure that all files connected with the work are properly page-numbered, stitched and sealed. Copies of all important letters in respect of issues raised, notices received/ issued, and instructions or replies given etc. shall be put in a separate folder. All important documents like, agreements, plans,

designs, measurement books, site order book, bank guarantees, daily reports (showing resources employed by the contractor, his handicaps and reasons thereof), etc. shall be kept in safe custody.

24.9.3 The statement of defence or claims, as the case may be, counter-claims and rejoinder (if any) shall be prepared with due diligence and filed in time. Legal/ techno-legal services may be engaged, as considered necessary, to prepare the case and argue. Recourse to extensions or adjournments shall be avoided as far as possible.

24.9.4 In the event of transfer of Engineer-in-Charge, he shall hand over to his successor a self-contained note giving full background of all the disputes, various developments, decisions taken and all the attendant circumstances.

24.9.5 In case of works where a supervision consultant is appointed, there shall be provision in the contract making it the responsibility of the consultant to assist the employer in the matter of all disputes/differences which may arise up to the defects liability period, and thereafter to give complete handing-over notes to the Engineer-in-Charge. The consultant shall, if required, appear as witness on payment of expenses, and also render any additional services on mutually agreed terms.

24.9.6 If the award is contested in the court, the Engineer-in-Charge shall keep close liaison with the counsel, brief him properly, keep track of the case, and ensure that at no time the case goes by default. Legal advice should be taken to avoid/ reduce the incidence of interest in case the challenge fails.

24.9.7 Engineers-in-Chief shall issue detailed instructions laying down the duties of the various officers regarding arbitration.

24.9.8 Causes of major arbitral disputes and of arbitral awards against the departments shall be analysed and collated every year by the Chief Engineer concerned and report put up by him to the Engineer-in-Chief. The latter will consider these reports and after consultation with the Chief Engineers take necessary corrective measures and issue suitable guidelines to minimise the incidence of disputes and their adverse financial impact.

Chapter 25
Stores and Procurement of Materials

25.1 GENERAL

25.1.1 Stores which are peculiar to PWDs are divided into the following classes:

(a) Stock or general stores;

(b) Tools and plants;

(c) Road metal; and

(d) Materials charged direct to work.

25.1.2 Some of these articles are purchased in centralised manner while a few others are purchased by the field units, i.e. the offices of the Superintending Engineers, the Executive Engineers, Sub-Divisional Engineers and Junior Engineers.

25.1.3 The PWDs shall computerise the management of stores, including their receipts, issues and balances.

25.1.4 The PWDs shall review the need for various locations (sites/godowns) used for stores every year, especially from cost point of view and take corrective measures, if so required. The sites/godowns, which have become dysfunctional, should be closed. The HODs shall cause to prepare a statement on the usage of the sites/godowns every year and send the statement to the Government in the prescribed format, especially highlighting the site where maintenance expenditure is more than the storage charges. An annual meeting on the issue shall be held by the HOD and decisions taken reported to the Government.

25.2 SAFE CUSTODY OF STORES

25.2.1 The Divisional Officer is overall responsible for seeing that proper arrangements are made throughout his Division for the custody of stores/ materials, consistent with their value. Depending on the importance of the store, Sub-Divisional Engineer or Junior Engineer will be put in charge of the store.

25.2.2 Junior Engineer shall be directly responsible for the receipt, issue and safe custody of work stores and he shall exercise strict control and vigilance over it.

25.2.3 When the work stores are sufficiently extensive, a store-keeper can also be appointed to assist the Junior Engineer. Such stores should be equipped with facilities of telephone, computer and internet to transmit, receive, store and retrieve information.

25.3 PURCHASE OF STORES

25.3.1 Purchase of stores required by the public works departments shall be governed by comprehensive instructions and purchase policy issued by the Directorate of Supplies and Disposals, Government of Haryana. As regards the power to purchase, provisions of DFR/PFR shall apply.

25.3.2 In case of purchases which are not covered by instructions referred to in para 25.3.1, Engineers-in-Chief, in consultation with the State Government, shall issue appropriate instructions. Procedure of procurement shall be transparent. It shall be seen that goods are not purchased if they are not required in the near future (say next one year or as specified in the instructions).

25.3.3 The following broad guidelines shall be followed when planning procurement and placing supply orders:

(a) Once the necessity for the purchase of stores, with reference to the requirements of a particular work or works, has become obvious, it is considered financially and administratively prudent that a comprehensive indent be prepared.

(b) Care shall be taken not to purchase stores much in advance of actual requirements.

(c) In order to avoid the carrying cost of heavy inventory and at the same time the 'out-of-stock' situation of essential items, A-B-C analysis should be carried out, especially for central stores, and the frequency and volume of supply orders for different items planned accordingly. (In A-B-C analysis, store items classified as 'A' would mean items which have high velocity but low value, and they can be stocked in plenty; items classified as 'C', would be those items of which the cost is high but movement is slow their holding should be minimum; items under class 'B' would fall between these two extremes).

(d) The powers of procurement of stores, whether against rate contracts or indenting with the Directorate of Supplies and Disposals or through tenders, are laid down in PFR and Purchase Policy/Procedure of the Government.

(e) The indenting officer shall ensure that correct and complete description of stores is given in the supply order.

(f) When stores are procured through the Directorate of Supplies and Disposals or Director General Supplies and Disposals, Government of India, the indenting officer shall not enter into direct correspondence with the suppliers.

(g) Cancellation or reduction of demands shall be done with extreme caution, after fully considering the financial and legal repercussions, and on sound legal advice.

(h) Specifications, conditions of inspection, time and place of inspection, tests to be carried out, the test house, and acceptance criteria, etc. shall all be clearly spelt out.

(i) Advance payments shall generally be discouraged. In case such recourse is inevitable, it is imperative that adequate safeguards are provided to protect Government interest, and the administrative authority is fully satisfied on this account.

(j) Rush of expenditure on the purchase of stores towards the close of the financial year shall be avoided.

(k) Quantities of heavy items of consumption like, cement, steel, bitumen, pipes, etc. available at various locations/stores in a Department should be circulated through an appropriate return, and before planning procurement particularly of sizeable magnitude, it should be considered whether it is prudent and economical to arrange goods through inter-divisional transfer or through fresh supplies.

(l) Stores which are likely to deteriorate rapidly, or which carry guarantees for a fixed period, or which are readily available in the market should not be procured much in excess of the foreseeable immediate requirements. Further, such materials should be used as quickly as possible.

(m) **Local Purchase.** Purchase of stores which are not on rate or running contracts and which are urgently required may be done locally/direct in accordance with the delegation of powers. Engineers-in-Chief shall issue guidelines as to the procedure and safeguards to be observed to avoid misuse.

25.4 PURCHASE OF VEHICLES, PLANT AND MACHINERY

25.4.1 The purchase of motorcars, motor vehicles, plant and machinery shall be regulated by the procedure prescribed by the Stores Department, Haryana, and/or special orders issued by the State Government.

25.4.2 When procuring vehicles, plant and machinery, a decision should be taken as to the quantity of spares to be purchased along with main equipment. The manner and source of spares required in the future should also be considered including any tie-up with the manufacturers.

25.5 RESERVE OF STOCK

25.5.1 Where it is necessary, in consequence of the delay that would otherwise occur in manufacturing or procuring materials, to collect a reserve of supply of stores, and as these stores cannot be debited immediately to any specific work since it is not known on which work they may be used, such stores shall be accounted for in a suspense account of stock.

25.5.2 Ordinarily, materials should be purchased only for works in progress. But on account of the location of the work or its importance or conditions of market or any other reason, it may be necessary to maintain a 'Reserve of Stock' up to a certain limit to be fixed annually by the Government. If it is desired to exceed this limit on account of any exigencies, approval of the competent authority shall be obtained to revise the limit.

25.6 DISPOSAL OF STORES

25.6.1 When the stores become (i) surplus or (ii) unserviceable or (iii) in the case of machinery, obsolete or unwanted after use, they should be disposed of at the earliest to save storage space and to avoid loss of value with the passage of time.

25.6.2 Surplus stores. The Divisional Officer shall make a list of all articles of stock (excluding tools and plants) which are not likely to be required for the specified period. He shall report the same to the competent authority as prescribed in instructions issued by the Engineers-in-Chief. In the first place, the surplus materials may be transferred to other Divisions where these may be required; otherwise, these should be disposed of as per policy laid down by the State Government in the Industries department.

25.6.3 Unserviceable stores. When stores of any kind (including tools and plants) become unserviceable, a report shall be made in the Survey Report Form, immediately on discovery of the fact so as to avoid keeping unserviceable materials on stock. In the report, all proper explanations shall be given, and the period stated during which the articles had been in store or use, and the cause of deterioration. However, non-availability of the information should not deter the disposal of unserviceable material expeditiously. Stores which are completely unserviceable, shall be written off and either sold by public auction or otherwise disposed, as may be ordered by the authority competent to sanction the write-off.

25.6.4 Surplus/Obsolete Machinery Stores. Stores may become surplus/ obsolete as the anticipated breakdowns (for which contingency they had been initially procured) may not take place or the manufacturers may have changed/improved models. At the end of each financial year, Superintending Engineer (Mechanical) or, in his absence, Superintending Engineer concerned, shall send to Head-office a list of surplus/obsolete stores with a certificate that these items are not required in the Department in the near future. This list shall be forwarded to Directorate of Supplies and Disposals for appointing a committee for physical inspection and for fixing the reserve price. Director, Supplies and Disposals shall circulate the above list to other Government departments to indicate if they need any of the items on the list. Survey Reports shall be got sanctioned from the competent authority and disposal done by call of tenders, as per delegation of powers.

25.6.5 Old/Used Machinery Stores. Every quarter, a consolidated machine-wise list of all such stores shall be prepared and got checked and scrutinised by the concerned Divisional Officer (Mechanical) or, in his absence by the concerned Divisional Officer before disposing them as scrap as per rules. In this case, there is no need of framing any survey reports. Before disposal, all such parts shall be defaced or cut into pieces to render them unfit for any further use.

25.6.6 A machine may be got condemned when it has outlived its useful life or when it has reached the stage, which is called 'beyond economical repairs'. The methodology prescribed for the purpose by the Directorate of Supplies and Disposals shall be followed.

25.7 ISSUE OF MATERIALS

25.7.1 Materials, whether from stock or by transfer or manufacture, may be issued to:

(a) Contractors (as per provisions of contract); and

(b) Direct to Work, when the work is done either departmentally or through contractors on labour rate basis.

25.7.2 While issuing materials care should be taken that the stores procured earlier are issued first. This is particularly necessary in case of materials which deteriorate with time, like paints and distempers, cement, bitumen, disinfectants, timber and plywood, etc.

25.7.3 Store Issue Rate. Store issue rate of an article should generally be fixed at the beginning of each year. However, for materials showing wide fluctuations, like cement, steel, bitumen, etc., it should be fixed every month to regulate their issue to another department/public undertaking or to a contractor where such issue is not prescribed in his contract.

25.7.4 Materials to be issued to the contractor and the rates at which they will be charged shall be stipulated in the contract. The schedule of issue of materials shall specify the following:

(a) Issue rate of each category of material (to be rounded off to the nearest rupee) and storage charges as a percentage of the issue rate;

(b) Place (s) of delivery; and

(c) Rate of recovery of materials issued in excess of the theoretical consumption, after allowing for specified wastage/ variation.

25.7.5 Issue of materials shall be commensurate with the actual requirement at site. Recoveries for the materials issued to the contractor shall be affected by deductions from his bills, at the issue rates specified, regardless of fluctuations in the market rate or stock rates of the Division. The timing, extent and periodicity of these recoveries shall be as specified in the contract.

25.7.6 As a rule, no material, of which the issue by the Government is not stipulated in the contract, shall be supplied to the contractor. If, at any time, the contractor desires the issues to him, for use on the work, of such non-stipulated materials as are available in the Government store, the materials may be issued with the express authority of the Superintending Engineer, provided:

(a) The Divisional Officer makes out a cogent case to the Superintending Engineer, explaining the circumstances of the contingency and gives his recommendations as to the issue rate;

(b) The rate charged for the material is the stock issue rate plus storage charges or market rate, whichever is higher; and

(c) The contractor furnishes a written undertaking that no claim of any kind will be lodged by him for departure from the contractual provision.

25.7.7 Surplus materials on completion of work shall not be disposed by the contractor without the written permission of the Engineer-in-Charge. The Engineer-in-Charge may, in his judgment, receive back serviceable materials and give credit for them at such rates which he considers to be reasonable having regard to their

condition, provided these rates are not higher than the issue rates and no credit is given for storage charges.

25.8 STOCK TAKING

25.8.1 Stock taking of all the stores in a Division shall be done at least once a year. Important stores shall be counted/ verified by an officer not below the rank of Sub-Divisional Engineer. Superintending Engineer will be the authority to decide the stores which should be so checked and depute the officer for stock taking.

25.8.2 Verification shall be done in the presence of the authority responsible for the custody of the stores or a person deputed by him in writing. If such an authority fails to be present during physical checking of stores or fails to depute a person, the verification shall be carried out in the presence of another officer, not in-charge of stores.

25.8.3 All discrepancies noted shall be brought to account immediately so that the stores account may represent the true state of the stores.

25.8.4 Shortages and damages, as well as unserviceable stores, shall be reported to the authority competent to write off the loss.

25.9 LOSSES ON STORES

25.9.1 Losses of stores by theft, robbery, destruction by fire, fraud, negligence or any other cause shall be reported by Sub-Divisional Engineer/ Junior Engineer to the Divisional Officer and the Superintending Engineer. The Divisional Office shall also report the matter demi-officially to the Engineer-in-Chief.

25.9.2 An immediate report of the actual/physical loss of stores shall also be made by the Divisional Office to the higher authorities, and where necessary, to the police, and all proper steps taken for the recovery of the property. When an enquiry is held either by the police authorities or others, the Divisional Officer shall cooperate in every possible way.

25.9.3 In the case of serious losses, the Divisional Officer should also hold a departmental enquiry, and record evidence and his findings thereon, including findings as regards responsibility and culpability of the persons concerned.

25.9.4 The loss may be written off as per the delegation of powers. For this, the Divisional Office shall make a proper reference on a proforma as prescribed in consultation with the Finance Department. However, the write-off order shall be subject to the following:

(a) In case where FIR has been lodged with the police, 'no-trace' report is available;

(b) The loss does not disclose a defect of system the amendment of which requires the orders of the higher authority; and

(c) There has not been any serious negligence on the part of some individual officer which may possibly call for disciplinary action requiring orders of any higher authority.

Chapter 26
Public Buildings

26.1 GENERAL

26.1.1 Over the years, the stock of public buildings has increased exponentially. The State Government and its agencies (State Public Undertakings, other societies etc.) own a number of buildings. Every department shall have a register of buildings in electronic format as well as in hard copy (format prescribed by B&R department) and this shall be updated every six months. It shall be desirable to have GIS co-ordinates of location of every building.

26.1.2 The B&R department shall, in addition, maintain the register of those buildings which are not owned by the department per se, but are on its books for maintenance purpose. The register will contain all buildings including those which might be maintained by the departments concerned temporarily. Engineers-in-Chief will issue detailed instructions in this regard.

26.1.3 All departments shall ensure that there is an officer/official in-charge of every building under their charge and the name and designation of the officer/official shall be clearly brought out in the register. In case of buildings not owned by B&R but maintained by it, there will be two officers/officials responsible, one designated by the department owning the building and other by the concerned Divisional Officer.

26.1.4 There are a few buildings which are only notionally owned by a department other than B&R, but the allotment, collection of rent or vacation etc. is all done by the B&R. It will be better if, in respect of such buildings, the ownership is also got transferred in the favour of B&R department to avoid any legal complications.

26.1.5 Principally, it is the duty of the B&R department to advise the State Government on public buildings. It should bring out a manual on specifications to be used in the construction of public buildings and also a maintenance manual, and revise them periodically.

26.1.6 Normally, public buildings are to be constructed by the concerned PWDs and in case of other owner departments, by the B&R department, unless some other special agency is in place for construction. In all other cases, the buildings shall be got constructed from B&R department, but if the owner department wants to have a different arrangement/agency, it shall send the case to the B&R department, giving reasons for the departure and get comments of B&R department on its proposal. The department shall then submit the case to the Chief Minister with the comments of B&R department and proceed as per decision given by the Chief Minister and the Finance department.

26.1.7 The department which owns the building shall be mainly responsible for its proper and economic planning and its optimum use. As the final drawings are

approved by the owner department before preparation of estimates is undertaken, it is obligatory on its part to exercise the requisite vigilance and acumen at the planning stage.

26.2 PROVISIONS AT PLANNING AND CONSTRUCTION STAGE

26.2.1 Para 10.9.3 lists the various components which may have to be provided in a public building. The case for administrative approval shall contain estimates for all of such components as are necessary. If a department has any additional requirements, those shall be clearly spelt out at the planning stage. If it wishes to engage a specialised agency, the fact should be clearly brought out at the time of administrative approval.

26.2.2 The Divisional Officer will neither supply nor repair furniture and other furnishing items like screens, curtains. Furniture for new offices may, however, be supplied by him and charged to the works accounts, provided the Government authorises the inclusion of the cost of such furniture in the estimates of projects concerned. However, the maintenance of such furniture shall be carried out by the client department. This provision does not apply to furniture for rest houses, inspection bungalows, civil rest houses or circuit houses, the outlay on the supply and repair of which will be treated as charge on the Major Head 'Public Works'.

26.3 MAINTENANCE/RENOVATION/FURNISHING OF RESIDENCES OF HIGH DIGNITARIES

26.3.1 The maintenance/renovation/furnishing of residences of high officials shall be handled with the utmost sensitivity it deserves. There are norms prescribed for incurring such expenditure. The issue acquires further sensitivity as the expenditure may have to be incurred on the buildings which are not owned by the State Government and some of these may be on rent.

26.3.2 In all cases where the building is in the ownership of the State Government, another State or Union Territory (UT), the expenditure on renovation/maintenance may be incurred if it is as per norms. In cases where the expenditure is beyond norms or the money is required to be spent on private buildings, the estimates shall be brought before a Committee of Ministers constituted by the Chief Minister (this committee will have Finance Minister and Minister in-charge of B&R department as members among others) and the expenditure shall be done as per the decision of this Committee. In case of an emergency, the Minister in-charge of B&R department will take decision pending ratification by the Committee. However, for renovation of private buildings taken on rent, it shall be desirable to do so with the approval of the owner and at his cost. If it entails any demand for increase of rent, it may be negotiated by a Committee constituted by the Government for the purpose.

26.3.3 The B&R department shall frame a schedule of norms for the purpose of renovation/maintenance/furnishing and get it approved from the competent authority. These shall be revised periodically, but at least once a year. The list of dignitaries to be covered by these norms shall be prepared.

26.3.4 The hiring of buildings for the use of dignitaries or other purposes can be done only on specific orders of the Chief Secretary. The decision to select a particular building will be taken by the Committee constituted for the purpose by the Chief Secretary. The Committee shall include Special Secretary/Joint Secretary, Secretariat Establishment and the Divisional Officer B&R department concerned, among others. The rent determination shall also be done by this Committee, though with the approval of the Chief Secretary.

26.3.5 Furniture provided at the residences of the dignitaries shall be properly accounted for. To avoid any embarrassment, proper inventory of the furniture and other movable items such as invertors, refrigerators, etc. should be made along with their digital photographs and the Engineer-in-Chief shall issue instructions fixing up clear responsibility in this regard. The instructions shall also provide for duties of the supervisory officer in this regard.

26.3.6 If it becomes necessary to provide additional facilities at the camp offices/residences of officers attached to the Chief Minister, the matter shall be considered in the same way as provided in para 26.3.2

26.3.7 As regards the facilities to be provided for the Governor and the Chief Minister, the orders of the latter shall be considered final and there will not be any need to go through the Committee as mentioned in para 26.3.2

26.4 GOVERNMENT RESIDENCES

26.4.1 A number of departments provide residences for the use of their officers/officials. The norms regarding built-up area and specifications of such residences will be determined by the B&R department and got approved from the Government. The norms should be revised periodically. The departments concerned shall ensure that the departmental houses are constructed by them as per these approved norms.

26.4.2 The departments shall have rules regarding allotment of houses. It shall be seen that, as far as possible, houses do not lie vacant, but if such a situation arises, procedure laid in para 26.4.12 will be followed.

26.4.3 The unauthorised occupation of houses shall be viewed very seriously. The Supreme Court has also ordered that the State shall not allow anybody to stay in the house without proper authorisation. The competent authority shall give notice for the vacation of the houses immediately after the officer/official becomes an unauthorised entity (after making allowance for the grace/concession period referred to in para 26.9.3) due to transfer or retirement or change of posting or any other reason and take necessary steps to get the house vacated at the earliest. The case under Haryana Public Premises (Eviction and Recovery) Act, 1972 shall be filed immediately on completion of two months of unauthorised use unless the occupant has been allowed by the competent authority to over-stay. The officer in-charge of the department owning the house shall immediately write to his Head of department to recover penal rent from the defaulter as per rules.

26.4.4 To weed out sub-letting of government houses, the allotment authorities shall have periodic and surprise checks conducted. In case of detection of such an instance, not only the house should be got vacated and penal rent levied and collected, the officer/official should also be proceeded against departmentally.

26.4.5 The officers/ officials occupying Government buildings can be of great assistance in averting the imminent danger to a building because they being on the spot are in a better position to notice and report any sign of impending failure, e.g., a crack in a wall or sinking of floor or sagging of roof which may become manifest between the period of inspections by PWD officers/other concerned. It, therefore, becomes the responsibility of all officers/ officials occupying Government buildings to bring to the notice of PWD officers/other concerned immediately any unusual defect or signal or mark of distress so that timely action may be taken to attend to the defects.

26.4.6 The rent shall be recovered from the occupants of the buildings by the competent authorities as per the rules in force (refer para 26.9.1). Notwithstanding any other provision, intimation of allotment of a house by the designated authority or the House Allotment Committee shall be sent by it to the controlling office of the employee concerned, which will be responsible for recovering the rent from the pay bills of the said employee. The Finance department shall issue instructions in this regard from time to time and examine revising the same every five years or whenever there is a general pay revision.

26.4.7 Out-houses, if any, should be utilised for storage of stationery, old records or any other appropriate purpose. Where this is not possible, these should be let out to members of 'Group D' establishment and rent recovered from them under the rules in force.

26.4.8 The subletting for residential purpose of buildings hired as offices will require the approval of Government and consent of Finance Department, and any recovery of rent for portions sublet will be made by the Head of the Office concerned and credited to the revenue head of the department concerned.

26.4.9 Public buildings let out to private individuals shall not be altered or enlarged at Government expense to suit the needs of the tenant. Persons occupying public buildings on rent are prohibited from making any alterations, even at their own expense, except with the express concurrence of the Divisional Officer and also the authority competent to approve the plans. The fact of any additions or alterations being made by the tenant confers no right of ownership on him nor can the fact of the occupant having made additions or alterations at his own expense be considered as giving him any claim to a set off against or diminution of rent. These conditions shall be entered in the agreement or lease.

26.4.10 Government servants occupying Government buildings as residences are strictly prohibited from making any kind of additions or alterations therein whether structural, sanitary or electrical, without the express permission of the Divisional Officer and also the authority competent to approve the plans.

26.4.11 Every officer occupying a Government residence is expected to leave it in a fit state for occupation by his successor. Except for natural wear and tear to be made good at Government cost, other damages, which can be proved to be due to carelessness on the part of the licensee, shall be recovered from him. Towards this end, the officer in-charge of the building shall arrange to have each residential building inspected immediately after it is vacated.

26.4.12 Whenever a residence cannot be allotted to the incumbent of the post to which it is attached or to a Government servant of the class for which it was constructed, it may be let to a Government servant not holding the particular post or not belonging to that class subject to such conditions that may be determined by the Government.

26.5 RENOVATION AND DEMOLITION OF BUILDINGS

26.5.1 There is considerable demand for renovation of buildings as a whole or in parts. As far as possible, a building should be taken up for renovation as a whole and only after the approval of the authority owning the building as well as the Finance department. The specifications should be as per norms and in case of any change, the approval of the competent authority should be taken.

26.5.2 If on inspection, a building is found to be unsafe, a report to that effect shall be sent by the Divisional Officer to the district administration as well as the departmental head in the district. Recommendations should also be made as to whether it is advisable to demolish the building altogether or it can be brought to use with major renovations. The building shall be demolished only after necessary approvals. In case of demolition, proper methodology shall be adopted and proceeds, if any, deposited in the appropriate head.

26.6 PURCHASE AND SALE OF PUBLIC BUILDINGS

26.6.1 No building shall be purchased for public purposes without the orders of the Government, to whom a survey and valuation report shall be submitted by the Divisional Officer. Concurrence of the Finance department shall be obtained as per rules.

26.6.2 No building shall be sold unless it has been previously ascertained that it is not required by any other department of the Government. The procedure (including fixation of reserve price, auction, etc.) to be followed for disposal of Government buildings which are declared surplus shall be as laid down by the Government.

26.6.3 No building shall normally be dismantled unless it is in a dangerous condition or is beyond economic repairs or it is necessary to vacate the site for an important public purpose, such as construction of another building, structure or road etc.

26.6.4 A purely temporary structure, of which the life is not more than two years may, after its having served the purpose for which it was erected, be sold or dismantled under the sanction of the Divisional Officer. If the structure is to be sold without land, the Divisional Officer will fix the reserve price, taking into

consideration the condition of the structure and other local circumstances, obtain the approval of the Superintending Engineer thereto, and sell it by open auction, tender/ quotation. He will be competent to accept the highest bid at or more than the reserve price. Discretion to accept bids below the reserve price shall vest with the Superintending Engineer.

26.6.5 An officer permitting occupation of a Government or licensed buildings by any private person or local body should at once inform the authority in-charge of the building of such occupation. The authority in-charge will be the Divisional Officer concerned in the case of buildings in the charge of the Public Works department, and the Head of the department concerned in the case of buildings of other departments.

26.7 HIRING PRIVATE BUILDINGS FOR OFFICE PURPOSE

26.7.1 When no suitable Government building is available, private buildings may be hired for use as offices, the rent being charged to the contingencies of the office concerned. When the building is entirely used for office accommodation, the rent is wholly chargeable to Government, while when it is partly used for office purposes and partly for residential or other purposes, the share of rent payable by Government will be proportionate to the amount of the main buildings set aside solely for office use.

26.7.2 The department concerned will be responsible for (i) assessing the non-availability of suitable Government accommodation (ii) selection of the building to be hired (iii) reasonableness of rent as determined by it on the basis of market rates and competitive bids. Approval of competent authority shall be taken wherever required. The lease deed shall be entered into between the owner and the State Government and executed by the department concerned.

26.7.3 Lease deeds should ordinarily provide that the owner will execute all structural repairs before the building is occupied and carry out such additions, alterations and repairs as are necessary to render the building habitable and suitable for which it is required. In the event of any addition or alteration being made subsequent to the signing of the lease at the request of the occupant and at Government expense, the consent of the owner shall first be obtained in writing. This will be further subject to the condition that the owner agrees to take over the work done on the expiry of the lease and to pay to Government the original cost of that work, less an allowance for deterioration, which should be fixed before undertaking the work, but if the owner refuses to agree to this arrangement, then at the time of release of the building, Government shall have the right to remove any installation or material added to it and restore the building to its original condition.

26.7.4 Private accommodation (residential or non-residential) shall be annually maintained by the owner of the building at least to the extent of one month's rent amount, and provision to this effect made in the agreement.

26.8 TAXES AND WATER/ ELECTRICITY CHARGES

26.8.1 Municipal taxes on public buildings, other than those occupied as residences, are payable by the department occupying them and are debitable to that department.

26.8.2 The responsibility for the acceptance of the assessment of taxes rests with the Officer in-charge of the building. If the assessment appears unduly high, action should be taken by him to obtain appropriate redress.

26.8.3 No municipal taxes are leviable on public buildings situated in cantonments. In any case in which a lump sum is paid as tax for all Government buildings, or for a number of Government buildings in a municipality, it shall, provided the buildings are in the occupation of more than one department of Government, be paid in the Revenue department. If a part of the building is in occupation of corporation or such like body, the Government department shall recover the proportionate amount from the concerned body.

26.8.4 In the case of buildings occupied as residences, all municipal and other taxes in the nature of house or property tax payable by Government in respect of such buildings shall be taken into account in calculating standard rents as provided for in relevant rules of CSR Vol. 1 Part 1. Taxes other than these shall be paid by the occupant in addition to the rent, except those who are enjoying rent free concession under relevant rule of CSR Vol. 1 Part 1.

26.8.5 Municipal and other taxes (in the nature of house or property tax or otherwise), when payable by Government in respect of buildings occupied as residences, shall be adjusted as part of the cost of maintenance of the buildings. Taxes payable by tenants under the local rule or custom shall be paid by them direct. In case of buildings where the tax payable to the municipality has to be borne partly by Government, the tax will be paid in full by Government in the first instance and the amount payable by the Government servant, will be recovered from him later on by the Government.

26.8.6 The occupants of Government residences shall be responsible for the payment of charges for water and electricity except where especially exempted under Government rules or orders, in which case the said charges shall be treated as maintenance expenditure payable by the Public Works Division concerned. Where camp office is attached to the residence, the electricity and water charges between the two premises should be clearly identifiable on the basis of actual fittings/installations and payment governed accordingly.

26.8.7 The Municipal tax assessed on the annual value of the building in which office accommodation is provided, or on the land appertaining to them, should be treated as separate from the rent. If it is local rule for the tax to be chargeable to the owner, the tax for the entire building shall be paid by the owner of the building, otherwise the occupant officer shall pay tax corresponding only to the share of the rent payable by him and Government should be debited with the difference.

26.9 RENT RULES FOR RESIDENCES

26.9.1 The rules governing the recovery of rent for Government buildings used as residences, its remissions and reduction are laid down in relevant rules of CSR Vol. 1 Part 1. Any point not covered therein should be referred to Government for orders.

26.9.2 The recovery of rent for government buildings occupied as residences by members of work charged establishment is governed by the principles laid down in relevant rules of CSR Vol. 1Part 1.

26.9.3 Occupation of a Government residence by a Government servant's family, whether after his transfer to another station, on superannuation or premature death, is subject to Government instructions. Action to get the government accommodation vacated shall be initiated as per instructions of the Government from time to time.

26.10 BUILDINGS OF HISTORICAL INTEREST

26.10.1 Buildings and monuments of historical or archaeological interest are under the control of the department of archaeology. If assistance of PWD is required in any technical matter or execution of any work, it shall be rendered on payment of fee as may be prescribed by the State Government from time to time.

26.11 LOSSES AND ACCIDENTS

26.11.1 Any serious loss of immovable property caused by fire, flood, earthquake or any other natural cause or act of sabotage shall be promptly reported by the Junior Engineer/ Sub-Divisional Engineer to the Divisional Officer, and by the latter to the Superintending Engineer and the Chief Engineer/ Engineer-in-Chief. A copy of the report shall be forwarded by the Divisional Officer to the Accountant General, Haryana. When full enquiry as to the cause and extent of loss has been made, the detailed report shall be sent by the Divisional Officer to Superintending Engineer/ Chief Engineer /Engineer-in-Chief with copy to Accountant General, Haryana. Detailed investigation shall be carried out, if so merited by any special feature of the report.

26.11.2 In the case of a building, if any portion of it is abandoned or dismantled or is destroyed by fire, flood, cyclone, earthquake or any other natural cause, without there being a replacement, the capital value thereof should be written off the total capital cost of the building by the competent authority.

Chapter 27
Asset Management and Maintenance

27.1 ASSETS - DEFINITION

27.1.1 For the purposes of this chapter assets mean the permanent assets which are under the administrative control and charge of any PWD, viz.:

(a) Land (which may be the land falling in the right-of-way of a road, land appurtenant to a canal or drain, or land attached to a residential area/colony, institution, laboratory, workshop or office, nursery, irrigation head-works, water works, sewage treatment plants, or land otherwise owned by the public works department);

(b) Roads (including roadside furniture), drains, canals, distributaries, water supply lines, sewer/ storm water line;

(c) Buildings, bridges, pump houses, cross-drainage works, embankments, river training works, spurs, pumps, dams, weirs, head-works, water works, sewage/ storm water treatment plants, and other such structures, etc.

27.2 REGISTERS, RECORDS AND INVENTORIES

27.2.1 For effective management of the assets owned by any PWD, the department shall have complete and up-to-date records. The record shall be kept in hard as well as soft copy. Typically, the records would include the following as relevant to the department:

(a) Inventory of land (separately for line assets such as roads, canals, etc. and other structures such as building campuses/ colonies, water works, etc.) with appropriate reference to land records available;

(b) Inventory of roads, drains, canals, distributaries, water supply lines, sewer/ storm water line;

(c) Inventory of land available due to abandonment of road, canal or some other structure; (sometimes, public works department may possess some land but use only a portion of it; a record of the whole of the land shall be kept.);

(d) Register of buildings and services;

(e) Register of bridges;

(f) Register of inlet stations, water treatment plants, sewage treatment plants, pumping and booster stations, tanks and reservoirs, outfalls and other structures appurtenant thereto;

(g) Register of dams, weirs, head-works, regulators, canals, distributaries, siphons, outlets, aqueducts, super-passages, pump houses, pumps, workshops, silt excluders/ ejectors and other related structures;

(h) Register of flows of rivers by plain tabling, modern techniques and remote sensing; and

(i) Any other relevant record.

27.2.2 Every PWD shall notify one office in every district to be the custodian of all records pertaining to the district. The old records shall be re-arranged so that they are available district-wise. However, if a particular work pertains to two or more districts, the Engineer-in-Chief may order the record to be kept in one particular district.

27.3 LAND MANAGEMENT

27.3.1 Every PWD shall maintain a record in the prescribed form in which particulars of the lands vested with it shall be entered. In the case of line structures (e.g. highways, canals, water channels, drains etc.) proper land/strip plans shall be prepared. These records shall be reviewed /revised periodically, as prescribed.

27.3.2 The boundaries of the land shall be demarcated and secured by a wall, fence or pucca boundary pillars, as considered necessary.

27.3.3 As and when a PWD acquires fresh land for any purpose (or gets land by voluntary donation), it shall get mutation of the land in revenue records done in its favour and simultaneously include it in the inventory.

27.3.4 Annual Check of Boundaries. It shall be the duty of the Divisional Officer to arrange an annual check of the boundaries of land in his charge with a view to detecting any unauthorised encroachment and cause a report to be prepared. Unless prescribed otherwise, this annual exercise shall be completed in September/October each year. A copy of this report shall be also sent by him to the Superintending Engineer.

27.3.5 Encroachments. When, as a result of annual check or otherwise, it is discovered that an encroachment has taken place, the Divisional Officer shall initiate steps for its removal. If needed, the case will also be filed as per provisions of the Haryana Public Premises and Land (Eviction and Rent Recovery) Act, 1972. The laxity on the part of staff, which allowed such encroachment go un-checked, shall also be enquired into on urgent basis and action taken against the officers/officials found responsible or involved.

27.3.6 Surplus Land. Surplus land may be kept in reserve for future needs of the department or, with the approval of the State Government, given on annual lease or put to commercial use or transferred to other departments or disposed to fetch the best return. The option to be exercised shall be considered and evaluated objectively and in a transparent manner. The approval of the competent authority shall be obtained.

27.4 MANAGEMENT OF ROADS

27.4.1 Road Land. The boundary pillars referred to in para 27.3 shall be fixed all along the roads at suitable intervals. Cost of new pillars or replacement of lost ones is appropriate charge on maintenance of roads.

27.4.2 B&R department shall maintain authoritative land plans (certified by the revenue department) for the roads under its charge. Such plans shall show clearly the

boundaries of the roads, detailed measurements of road widths, distances between boundary marks and sufficient measurements from permanent/ fixed points to enable the location of boundary marks in case they have been displaced or tampered with.

27.4.3 Prevention of Unauthorised Occupation. No person, without the written permission of the Divisional Officer and deposit of such fee as may be prescribed by Haryana Government from time to time, shall occupy any highway/road land by way of putting up temporary awning, tent or pandal, storing or depositing goods, making excavations, laying pipe lines or cables, erecting poles for electric or telephone lines, or other manner. The Divisional Officer concerned shall ensure that any application received in this regard is decided within minimum possible time, not exceeding 15 days. The Engineer-in-Chief shall issue detailed instructions in this regard.

27.4.4 The permission so granted shall clearly specify the date up to which the person is authorised to occupy the highway land, the purpose of occupation and the exact portion permitted to be occupied, along with supporting plan or sketch, if necessary. It shall also be accompanied by an undertaking that the cost of removal/ shifting of the said structures/ utilities, if required by the highway controlling authority, shall be borne by the person/ authority to which the said permission is granted. The said person/authority shall produce the permit for inspection whenever called upon to do so by any highway official and shall, on the expiry of the permit, release the land occupied by him after restoring it to its original state.

27.4.5 Building and Control Lines. Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963, as modified by Haryana Government from time to time, lays down the limits of building and control lines to be observed in the case of roads included in the Schedule of the Act. The purpose is (i) to ensure safety and convenience of traffic and welfare of public; (ii) check ribbon development and haphazard growth; and (iii) meet future needs regarding up-gradation of the roads.

27.4.6 Executive Engineers of B&R department, who have been declared Director under the above Act, perform the duties and exercise powers of the Director. Informatory boards (in English and Hindi) shall be fixed prominently along these roads intimating the public the basic requirements of the said Act. The concerned officers shall diligently perform their duties under the Act. To establish violations of the Act, they shall demarcate on land plans, the existence of all structures along the schedule roads as on the applicable date and supplement the same with videography. Funds required in this behalf will be a valid charge on maintenance. Action taken and progress made by the Executive Engineers in this behalf shall be reviewed periodically by the Superintending Engineers and Engineers-in-Chief.

27.4.7 Limited Access. Government may, by notification in the Official Gazette, declare a highway or any portion thereof to be limited for access in the manner as specified and may also impose any restriction or control on such access to, from or across such highway as specified in that notification.

27.4.8 Any person desirous of obtaining specific access shall make to the Divisional

Officer concerned of B&R department an application specifying therein the means of access and accompanied by such fee as may be fixed by the Government. The Divisional Officer shall forward, through the Superintending Engineer, his comments/recommendations to the Chief Engineer for orders. Appeal shall lie with the Administrative Secretary to the State Government in the B & R department.

27.4.9 In case permission is granted, the applicant shall obtain from the department a license, containing terms and conditions, if any, and its validity period. Permission for renewal shall be obtained in the manner prescribed.

27.4.10 If any person contravenes these provisions or violates any terms and conditions, his act of access shall be deemed to be unauthorised, and the Divisional Officer shall have the power, after issuing show cause notice and the response of the person being found unsatisfactory, to remove such access and where necessary use force with the assistance of police to do so.

27.4.11 Regulation of Construction for Public Utilities and Drains. No person, other than the one authorised in this behalf by the PWD, shall construct or instal any pole, pillar, advertisement tower, bill board, transformer, cable, pipe, drain, sewer, canal, railway line, tramway, telephone boxes, repeater stations, street, path or passage of any kind on highway land or across, under or over any highway, except with the prior permission in writing of the Divisional Officer, B&R department. The Divisional Officer shall grant the permission with the approval of the competent authority notified by the Engineer-in-Chief. The permission shall be subject to such conditions as may be prescribed.

27.4.12 The person intending to obtain such permission shall make an application stating therein the purpose and period of occupancy of highway land, location and part of the highway to be occupied, method of execution of work, period of construction and method of restoration of such part of highway. The applicant shall give an undertaking that if land is required by the highway controlling authority, he shall remove/ shift the said structures/ utilities at his own cost and within the time prescribed. The applicant shall also authorise the B&R department to take any required action regarding removing/shifting/burying the structures/utilities at the cost of the applicant.

27.4.13 The competent authority in B&R department shall consider the application and if it is satisfied that there is no alternative to the highway land where the utility in question can be located, it may accord written permission subject to the payment of fees and charges as may be prescribed and further subject to conditions regarding (i) protection of highway from damage (ii) safety of traffic against obstruction and (iii) repair/ restoration of highway if any damage is caused. The permission shall be further subject to the condition that in case land is required by the highway authority, the applicant shall shift the service(s) expeditiously at his own cost. In case the service owner fails to shift/ remove the service in a reasonable time, on a notice being served by the Divisional Officer, the department shall be free to enter and remove/ bury the service at the cost of the service owner, and any consequent damage/ loss shall be the

responsibility of the service owner.

27.4.14 Where permission is sought by other Government departments/ Boards/ Corporations for laying of utilities, such as sewer lines, water supply lines, telephone lines, electric poles or lines, etc., an agreement shall be drawn with the organisation concerned that in case the highway authority requires the occupied land, the utilities shall be shifted at the cost of owner of the utilities. In that case, the permission may be granted by the competent authority for location of utilities at the farthest end of the right of way.

27.4.15 Median Openings and Unauthorised Median Cuts. On divided highways, median openings shall generally be limited to intersections with public roads, and not permitted for individual business needs. Where intersections happen to be far apart, additional openings may be provided at intervals of 2 kilometers for U-turns or diversion of traffic. Unauthorised median cuts shall be closed as soon as they come to notice and suitable action against the person/ agency responsible for the offence initiated including lodging FIR with the police.

27.4.16 Location and Layout of Petrol Pumps. Location and layout of petrol pumps shall be regulated by Indian Roads Publication IRC: 12 'Guidelines for Access, Location and Lay-out of Roadside Fuel Stations and Service Stations'. For providing access through public land, a lease agreement in the prescribed form shall be entered into with the sanction of the competent authority. In case of National Highways, guidelines and instructions of the Ministry of Shipping, Road Transport & Highways, Government of India, shall apply.

27.4.17 Location of Bus Stands. Bus Stands should be located outside the right of way, and set back sufficiently from the building line prescribed for the road so as to permit space for a service road, subject to a minimum of 30 metre from the centre of the road. Access to the bus stand should normally be limited to one point of the road.

27.4.18 Roadside Advertisements. The roads have become important and attractive means of advertisement. As a general rule, the field staff shall not allow the roads to be used for any such purpose. However, if roadside advertisement is to be permitted, guidelines of IRC publication "IRC:46: A Policy of Roadside Advertisement" shall be followed, for which purpose Engineer-in-Chief shall issue suitable instructions. If the conditions imposed in the permission are violated, Junior Engineer in-charge shall issue show cause notice to the owner and ask the violation to be remedied immediately. If the owner fails to do so in a reasonable time, the Junior Engineer shall, by notice, have the structure removed and take police help if needed. Sub-Divisional Engineer and the Divisional Officer shall also exercise control and vigilance in this behalf, and take the help of district administration where required. Inaction on the part of the Junior Engineer/ Sub-Divisional Engineer/ Divisional Officer resulting in pronounced misuse of roadside land in an area shall be viewed seriously and the official / officer concerned shall be answerable.

27.4.19 Removal of Obstructions. Obstructions caused by accidents, vehicle breakdown, spillage of goods, inundation of road, landslide, failure of a structure,

blockage of road etc. shall be removed as soon as possible, using means best suited to the situation, including solicitation of police help, medical assistance and intervention of district administration.

27.4.20 Traffic Census and Axle Load Survey. Seven days traffic census on major roads and at such locations, as are designated by the Chief Engineer, shall usually be carried out twice a year, in the months of April and December. Census may be done manually, but in case of heavily trafficked sections, particularly which are candidates for tolling on PPP (Public Private Participation) mode, smart automatic traffic counters may be used.

27.4.21 Axle load survey shall be done at strategic locations as decided by the Chief Engineer to build a reliable data base for pavement design and appropriate investment decisions.

27.4.22 Preventing Over-loading. As over-loading causes severe damage to the road structure resulting in poor riding quality, safety hazards, reduced life of pavement, higher demand for maintenance and huge pressure on limited financial resources, mechanism shall be evolved to enforce axle load restrictions notified by the Government. Weigh bridges shall be installed where necessary. Inter-agency co-ordination of various departments, especially Transport and Police, shall be effectuated with clear assignment of responsibilities for effective enforcement and generation of awareness among transport operators.

27.5 MANAGEMENT OF OTHER ASSETS

27.5.1 Detailed instructions for management issues of other assets such as those relating to Irrigation department or Public Health Engineering department, which are not specifically covered in this chapter, shall be issued by the departments concerned.

27.6 ABANDONMENT OF A ROAD, CANAL OR DRAIN

27.6.1 As a fundamental rule, without the previous sanction of the State Government, no main artery of communication, such as trunk road or canal or drain shall be abandoned or allowed to fall out of repairs. All proposals for the removal of bridges etc. shall be submitted for consideration and orders of the Government. In respect of road bridges etc., declared to be of military importance by the President of India, the proposals for their removal and abandonment shall be referred to the Government of India for orders.

27.7 MAINTENANCE OF ASSETS

27.7.1 Maintenance of assets is very important, especially for getting maximum output from the same and for the optimum satisfaction of the users. Three broad methods for execution are usually followed, viz. (i) Input-based Maintenance; (ii) Performance-based Maintenance; (iii) Toll-based Maintenance. There can be, however, other innovative methods too. The three broad methods are slightly further elaborated in the following paras.

27.7.2 Input- based Maintenance. This is a mix of gang labour and contract work wherein most of the items of ordinary/routine maintenance (which are not susceptible

to accurate measurements) are done by permanent gang labour, and only some, like painting of kilometer stones and sign boards in case of road works, are contracted out. In certain cases such as maintenance of roads, mobile maintenance vans may be used to improve quality and reduce response time.

27.7.3 Performance-based Maintenance. This is maintenance by contract where all of the maintenance works, whether ordinary/routine repairs or special repairs, are contracted out and payment is made on the basis of appraised performance. To encourage contractors to invest in suitable machinery/ equipment and to efficiently carry out the operations, contracts should preferably be for a larger value and for longer tenures (1 to 3 years). These maintenance contracts should follow a pre-qualification procedure and should have a performance guarantee requirement. Bid documents should clearly spell out all aspects of maintenance and requirements, such as:

(a) Various activities or BOQ items;

(b) Specifications to be followed;

(c) System of quoting rates e.g. lump sum per km per month for routine maintenance; unit rate per km for periodic renewal; unit rate per tonne of bituminous mix for profile correction, etc. ;

(d) Contractor's field set-up;

(e) Contingent liabilities such as patrolling; management of traffic, provision and maintenance of diversions and safety measures and environment management during construction/maintenance operations;

(f) Expected service levels and permitted tolerances;

(g) Method/ arrangement of discovery or detection of defect;

(h) Response time for rectification of defect or distress;

(i) Frequency and level of intervention;

(j) Procedures of inspection, testing, measurement and payment; and

(k) Penalties for sub-standard or delayed performance or non-compliance, etc.

27.7.4 In performance based maintenance system, monthly payment for maintenance work and services will be made to the contractor at agreed rates if he has complied, during the month in question, with the service levels stipulated in the contract. Together with his monthly invoice, the contractor will report the result of his own evaluation of compliance with the required service levels, based on his own monitoring system which is mandatory. His statement will be verified by the Engineer-in-Charge (or supervision consultant) through inspections. If the service levels are not met, payment will be withheld for that particular month. The system of reducing the payment for incomplete or less than satisfactory performance must not be allowed. The withheld payments will not be carried over to the next month on compliance being shown subsequently.

27.7.5 Toll-based Maintenance. This method may be used for roads carrying

heavy volume of traffic so as to attract private capital or some other facilities such as parking spaces, bus stands etc. Scope of work and level of maintenance are defined, toll rates are fixed (with penalties for non-performance or sub-standard performance), period for initial improvement of the road/other facility to the specified standard and period of concession or share of toll revenue are also laid down, and the work is allotted to the entrepreneur offering maximum payment to the Government.

27.8 MAINTENANCE OF BUILDINGS

27.8.1 The provisions of this para apply only to the buildings which are either constructed by B&R department out of public funds for its own use or for other Government departments including rest houses, or those buildings which are entrusted by Haryana Government to B&R department for maintenance. Responsibility of maintenance of buildings constructed by Irrigation Department and Public Health Engineering Department for their own use shall be of the concerned departments.

27.8.2 Responsibility of maintenance of buildings constructed by PWD (B &R) as deposit works will be of the owner. In a special case, maintenance of such buildings may be undertaken by PWD (B &R) as a deposit work.

27.8.3 Non-engineering maintenance like, dusting, sweeping, washing, scavenging, up-keep of hygiene, disposal of waste material and garbage, etc. shall be the liability of the user department. The said department shall also be responsible for maintenance of furniture and equipment.

27.8.4 It should be understood that neglect of maintenance hastens deterioration of the structure and services besides causing dissatisfaction and unsafe conditions. Maintenance must receive the same concerted attention as original construction and should follow a rigorous schedule of planning, budgeting, monitoring, inspection and quality control. Superintending Engineer should hold quarterly review meetings to ensure that maintenance activities are evenly spread and that there are no undesirable arrears. In no case should building maintenance be relegated towards the concluding month (s) of the financial year.

27.8.5 Programme of maintenance should be preceded by detailed inspection. Inspection should be done preferably in the company of a responsible person of the user department as he is expected to be in the best position to highlight any problem of maintenance or to list out the items requiring attention. The inter-se priority between various requirements should be determined on the following criteria:

(a) Safety aspects including drainage, should be given the upper-most priority;

(b) Functional aspects like, cracked floor, broken glass-panes, defective services; and

(c) Routine maintenance, such as white-washing, painting etc.

27.8.6 Various maintenance operations should be properly sequenced and coordinated to avoid unnecessary disruption, inconvenience and repetitive visits. Underlying cause of a problem should be first tackled before undertaking repairs. For

example, seepage of roof may be due to one or more of factors like, defective slope, infiltration of water, choked pipe, leaking faucet, porous surface, opening out of joints, development of cracks, etc. Having identified the root of the problem, appropriate remedial measures should be taken.

27.8.7 Annual repairs of public buildings should be taken in hand as soon as possible. However, repairs of court buildings should be done on holidays or when the courts are closed for vacation, in consultation with the judicial officer in-charge. Similarly, repairs of educational buildings should be undertaken when the institution is on vacation.

27.8.8 Decentralisation. Considering the ever-increasing number of Government buildings, the strategy of their maintenance should be geared towards decentralisation. The features of this system would generally be as follows:

(a) Residential buildings which are for the exclusive use of a department should be maintained by the concerned department itself. Where structural aspects or safety or estate services are involved, PWD should be approached for advice or execution;

(b) Routine maintenance of non-residential buildings and special repairs of a minor nature (up to the financial limit as may be fixed by the Government from time to time) may be done by the concerned department at its own level. The department will, with the approval of the Government, lay down a procedure for preparation, scrutiny and sanction of estimates, and execution of repairs. For this purpose, it may engage technically qualified personnel as required or draw them on deputation. Significant or major special repairs and additions and alterations involving structural safety should be done through B&R department;

(c) Departments (like Education, Health) having a large stock of buildings may set up engineering cells for execution of works of petty nature, routine maintenance and minor special repairs. Staff for manning these cells should preferably be drawn from the engineering departments of the State Government or engaged on contract;

(d) Important buildings and campuses like, Medical College, Mini Secretariat, State Guest House, etc. should be maintained entirely by PWD. If situation demands, a dedicated construction and maintenance wing may be set up for such institutions;

(e) To meet the requirement of funds for maintenance carried out by the user department at its own level, the following procedure will be followed:

  (i) B&R department will, with the approval of Finance department, transfer to the concerned department a suitable tranche of maintenance grant received by it through budgetary allotment. Alternatively, the Finance department may directly allocate maintenance funds to the concerned department; and

(ii) The concerned department will augment the above allocation by creating a building fund, and wherever permitted by the Government, through levy of user charges.

27.8.9 User Complaint/ Feedback Register. Whatever may be the agency of maintenance, a system should be instituted through which the user can register his complaint and record his requirement of maintenance or minor changes. This may be in the form of service centre / complaint cell, which will be appropriately manned and preferably have a telephone. On-line registration of complaints may be introduced in due course.

27.8.10 Complaints should be attended to on the basis of priority combined with seniority and severity. Date and time of receipt of complaints as also their attendance should be recorded in the register, which should be periodically checked by a responsible official. Feedback of the user may be obtained through interaction.

27.9 MAINTENANCE OF ROADS

27.9.1 The maintenance of roads is very important from the citizen point of view and economic considerations, and constitutes high priority for the State. The basic policy parameters in this regard aim at:

(a) Providing safe and comfortable riding quality to users and preventing deterioration of road assets of the State (safety of bridges being the first consideration);

(b) Providing sufficient funds, preferably dedicated funds, for road maintenance;

(c) Establishing mechanism for allocation of funds between ordinary maintenance, bridge maintenance and periodic maintenance of pavement and special repairs;

(d) Using a rational Pavement Management System (PMS) for optimisation of maintenance strategy, prioritisation of maintenance programme, judicious allotment of funds, effective execution of works, their monitoring and control; (a similar approach for Bridge Management System to be followed in respect of maintenance of bridges);

(e) Appropriate procedures of inspection, checks and technical audit; and

(f) Keeping history sheet of maintenance (like, health chart) of every road, kilometre-wise and year-wise, in a suitable format, as also of all bridges.

27.9.2 The road maintenance/repairs usually get classified into three main heads:

(a) Ordinary repairs;

(b) Periodic renewals; and

(c) Special repairs and flood damage repairs

27.9.3 Ordinary repairs and maintenance include pothole repairs, crack sealing, pavement edge and shoulder repair, clearance of side drains, maintenance of

embankment, cross-drainage repair works, repair or replacement of road-side furniture and road signage, bridge and culvert repairs, vegetation control, clearance of litter and debris etc.

27.9.4 Periodical renewals include leveling the surface, path repairing, and providing black-topping by way of surface dressing or premix carpet or mixed seal surfacing (or white topping, where required).

27.9.5 Special repairs and flood damage repairs include (i) special repairs like pavement riding quality improvement (PRQI) including any profile correction (ii) treatment of damages caused by floods, cyclones and other natural calamities (iii) special repair of bridges.

27.10 WORK PROGRAMME FOR ROADS

27.10.1 The Chief Engineer in-charge of roads shall, in January every year, get the entire road length inspected at the Divisional level for identification of stretches requiring treatment and the nature thereof, and prepare a draft work programme. This will comprise all repair works (including special repair of bridges) other than ordinary repairs. The Chief Engineer, in consultation with Engineer-in-Chief, shall (i) devise suitable proper proforma(s) as will bring out complete information regarding the rehabilitation / improvement proposals of the roads including bridges & culverts; and (ii) issue detailed instructions regarding the method of preparing the work programme. The work programme shall be prepared in a professional manner, based on site conditions.

27.10.2 The work programme so prepared at the Divisional level shall be test checked by the concerned Superintending Engineer and scrutinised by the Chief Engineer designated for the purpose. Chief Engineer concerned shall carry out random check of selected works in every Circle to know/assess the parameters used in preparing the work programme.

27.10.3 The work programme shall be discussed at the Headquarters level, taking into account the observations of the inspections carried out at different levels, and modified as required. This shall be submitted (preferably by Feb 15) to the State Government, indicating inter se priorities. The Administrative Secretary shall also hold a meeting in this regard (especially in view of the availability of funds) and submit the programme to the competent authority for approval.

27.10.4 After receipt of approval, the work programme shall be put into operation within the minimum possible time. Chief Engineer concerned will be responsible for its proper implementation. Any changes made at the time of implementation shall be brought (preferably by June) to the notice of the State Government, detailing the reasons for the departure.

27.10.5 As regards ordinary repairs, the respective Divisional Officers shall draw up their programme and obtain approval of the Superintending Engineers before the closure of the previous Financial Year. The implementation of the programme shall be continuously monitored at Circle and Headquarters levels.

27.10.6 Instructions regarding judicious use of funds for the purpose shall be issued by the Engineer-in-Chief and reiterated from time to time.

27.11 PAVEMENT MANAGEMENT SYSTEM (PMS)

27.11.1 PMS is a computer-based, long term pavement management tool. In the first instance, B&R department shall build a road database comprising the list of all roads and their features. For the purpose of PMS, the road shall be defined from node to node. Appropriate deterioration model shall be developed and optimisation and prioritisation strategies selected in accordance with the maintenance requirements and availability of funds. The department will try to ensure that PMS is implemented quickly and in a phased manner. To start with, State Highways and Major District Roads may be covered by PMS.

27.12 WORK PROGRAMME FOR BUILDINGS

27.12.1 On the lines of work programme for maintenance of roads, the departments shall also prepare work programme for the maintenance of buildings under their charge and get it approved as in the case of roads. Engineers-in-Chief shall issue detailed instructions in this regard on the analogy described in para 27.10.

27.13 MAINTENANCE OF HIGHWAY STRUCTURES

27.13.1 The Divisional Officer has a duty to maintain road structures owned by the PWD and, subject to an agency agreement, those structures of which the maintenance has been entrusted to PWD. These structures would include bridges, tunnels, underpasses, cattle crossings, pedestrian foot-bridges/sub-ways, toll booths/plazas, sign gantries, retaining/breast walls etc. Maintenance of highway structures is an integral part of highway maintenance and should receive due attention, priority and fund allocation.

27.13.2 Bridge Maintenance. Bridges occupy a pre-eminent position in the list of highway structures. Bridge maintenance will include all operations needed to keep the bridge in good order till it is replaced. In this regard, the following systematic approach shall be followed:

(a) In the first place, bridge maintenance management requires preparation of accurate records, such as:

- (i) Register of bridges;
- (ii) Design loads/ Load capacity assessment calculations;
- (iii) Results of any special investigation;
- (iv) Copies of 'as-built' drawings;
- (v) Original specifications;
- (vi) Later works carried out as maintenance or modification;
- (vii) Copies of maintenance manual, if any;
- (viii) Subsequent inspection records; and
- (ix) Estimates and actual cost of work done.

These records shall be properly maintained.

(b) Maintenance policy will be guided by:

(i) Safety aspect, which is paramount;

(ii) Traffic considerations like, importance, traffic volume, traffic risks;

(iii) Economics; and

(iv) Engineering aspects.

27.13.3 Every scheme of repairs, other than routine maintenance, shall be preceded by a detailed inspection. Load- carrying capacity should be evaluated, if required. Outside expert advice may be procured where necessary. For detailed procedure, Indian Roads Congress Publication 'IRC: SP: 35: Guidelines for Inspection and Maintenance of Bridges' may be referred. The estimates of repairs so drawn up shall be technically sanctioned by the competent authority without delay. Requisite funds should be provided, by budget allocation, re-appropriation or additional grant, as necessary. The schemes of bridge repairs shall be included in the work programme of the year and implemented on priority.

27.14 MAINTENANCE OF CANALS AND DRAINS

27.14.1 The distribution network of canal is: main canal, branch canal, sub-branch, distributaries, minors, and sub-minors. Since availability of water is generally less than the requirement, channels are run on rotation basis to ensure equitable distribution. Drinking water should be given priority over agriculture needs. Tendency on the part of the users to overdraw by any means shall be checked and curbed by patrolling. All outlets shall be periodically checked, and record maintained. The farmers can form Water Users Association (WUA) for participatory irrigation management.

27.14.2 The design sections of canals and their distribution system as well as of the drains, including their banks and outer slopes, shall be maintained to avoid reduction in carrying capacity and cuts and breaches. No plantation shall be allowed on canal/ drain sections, banks etc. Greater control shall be exercised before and after the monsoons.

27.14.3 The drainage system shall be maintained for effective functioning. Beds of streams, canals, drains and choes shall be kept free of obstructions, like weeds, garbage and encroachments. To ensure that no obstruction results in injury to land, public health or public inconvenience, action to prohibit and remove such obstruction shall be promptly taken under section 45 of The Haryana Canal and Drainage Act, 1974.

27.14.4 Regulation huts/Guard houses should be provided on the irrigation channels at suitable distances to avoid pilferage and any other damage to the channel. A local area network of mobile phones may be maintained on these channels for facilitating coordination of information with the concerned officials.

27.14.5 The concerned Superintending Engineer shall visit each channel twice in a

year, determine the magnitude of aquatic weed problem and suggest environmentally safe methods of its control.

27.14.6 The Superintending Engineer will investigate the issues of maintenance and suggest remedial measures to the Chief Engineer for his concurrence to implement.

27.15 MAINTENANCE OF DAMS AND ALLIED STRUCTURES

27.15.1 Dams and allied structures shall be inspected from time to time and any structural defect attended to immediately. The galleries and other works shall be carefully examined for any cracks, settlements, leakages, egress of silt, etc. Suitable remedial measures as warranted shall be taken forthwith.

27.15.2 Frequent inspection of the reservoir area is essential, especially when there are heavy rains in the catchment area. Stability of slopes shall be constantly watched against the possibility of movements, subsidence and impending failure.

27.15.3 Spillways and spillway gates shall be kept under regular surveillance. In the case of anticipated floods and heavy releases from the reservoir, suitable flood warnings shall be conveyed to all concerned. After the floods, the crest, visible parts of walls, surface of spillways, etc. shall be inspected, while the submerged part of spillways and apron should be examined with the help of divers and under-water television cameras to ascertain the nature and extent of any damage. Immediate notice of damage or tendency of surface erosion shall be taken and reported to competent authority for requisite remedial action.

27.15.4 Inspection and maintenance of gates, hoisting mechanism and electric controls shall be carried out once a month when the water is below the crest. Designer's criteria and maintenance manual shall be duly observed.

27.15.5 Guidelines as laid down by Bureau of Indian Standards and Ministry of Water Resources (GOI) shall be followed.

27.16 MAINTENANCE OF HEADWORKS, BARRAGES, WEIRS

27.16.1 Maintenance of headworks, barrages, weirs involves civil maintenance of structures and mechanical and electrical maintenance of gates and regulators, all of which shall be duly attended to. Special inspection shall be carried out before and after the floods.

27.16.2 The catchment area and the reservoir area shall be notified. The maximum reservoir area shall be marked and no encroachment in this area allowed. Conservancy measures shall be adopted in the catchment area, including construction of check dams, preventing de-forestation, etc. Hydrological data of catchment area shall be collected on regular basis, analysed, and also shared with adjoining States.

27.16.3 No unauthorised mining shall be permitted within stipulated distances, up-stream and down-stream of the structures. Excessive deposit of silt up-stream of the gates, and rusting or pitting of steel parts/ components shall be carefully watched, prevented and remedied.

27.17 MAINTENANCE OF RIVER TERRAIN

27.17.1 The river terrain shall be maintained by strengthening of the embankments in sensitive areas, providing protective bunds, and providing studs and aprons, as required or permitted under the extant controls. Irrational jacketing of the river should be avoided. Stone boulders to be used in the aprons shall be of size suitable for the reach. Studs should be kept functional, and aprons should be restored after they have launched.

27.18 MAINTENANCE OF DRINKING WATER SUPPLY SCHEMES

27.18.1 Underlying every scheme of supply of drinking water is the philosophy that water should be safe and potable; supply should be adequate, and that water should be conserved and not wasted. To safeguard against any mischief or sabotage, premises of waterworks, tubewells, boosting stations and pumping stations etc. should be properly protected.

27.18.2 Maintenance Policy. Maintenance policy shall be directed towards:

(a) Regular cleaning of raw and clear water storage tanks and other allied structures;

(b) Scrapping, stacking, washing and replenishment of filter media; filtration rate to be as per specification;

(c) Regular checking of bacteriological and chemical quality of water at the source, headworks and the consumer end;

(d) Regular disinfection of water and ensuring sufficient residual chlorine at the tail end;

(e) Proper upkeep of open spaces in water works area;

(f) Regular survey of household connections to prevent contamination of water;

(g) Preventive maintenance coupled with immediate repair to machinery, electrical equipment and structures;

(h) Checking and preventing unauthorised/ illegal water connections;

(i) Avoiding/ plugging wastage of water through public stand-posts, consumer connections, leakages in the main/ distribution pipe lines;

(j) Proper co-ordination with Irrigation Department for supply of sufficient water in case of canal-based water supply schemes, as also with power supply agencies such as HVPN (Haryana Vidyut Prasaran Nigam) authorities for supply of electric power with sufficient voltage at the required hours; and

(k) Automation and monitoring of the system.

27.18.3 Transfer of water supply schemes to municipalities and village panchayats. As per the 73rd and 74th Constitutional Amendments, strategy shall be formulated to hand over the maintenance of water supply schemes in a phased manner by:

(a) Capacity building of the municipalities and village panchayats, and

(b) Initial handing over of certain activities and later on complete handing over in a phased manner.

27.19 MAINTENANCE OF SEWERAGE AND STORM WATER DRAINAGE

27.19.1 Basic purpose of a sewerage and storm water drainage scheme is to carry sewage, sullage and storm water to prevent nuisance, damage, disease and inundation, etc. to the designated area/ outfall, whether at source, enroute or disposal point.

27.19.2 Maintenance Policy. Principal aspects of maintenance requiring attention are:

(a) Preventive maintenance of plant and machinery for desired efficiency as per the maintenance schedule;

(b) Avoiding overflow of sewage from manholes and maintenance of manholes;

(c) Regular desilting of sewers and collecting tanks;

(d) Treatment of sewage to the norms prescribed by Central/ State Pollution Control Board;

(e) Preventing entry of solid waste and road/ street sweepings into sewerage/ storm water drainage system;

(f) Preventing entry of storm water into sanitary sewers;

(g) Checking and prevention of unauthorised/ illegal connections;

(h) Regular checking of prescribed parameters of treated effluent for conformity to norms;

(i) Taking preventive steps before onset of monsoon season to avoid over-flooding;

(j) Arranging additional pumps and generator sets to take care of rain water during rains;

(k) Safe disposal of gas generated in the sewers to avoid foul smell in the area; and

(l) Upkeep of lawns and open spaces within the plant areas.

27.19.3 Transfer of Sewerage and Storm Water Schemes to Municipalities. As per the 73rd and 74th Constitutional Amendments, strategy shall be formulated to hand over the maintenance of sewerage and storm water schemes to municipalities in a phased manner by:

(a) Capacity building of the Municipalities; and

(b) Initial handing over of certain activities and later on complete handing over in a phased manner.

27.20 GEOGRAPHICAL INFORMATION SYSTEM (GIS)

27.20.1 Every Public Works Department, for proper management of the assets

spatially distributed like, roads, bridges, canals, drains, pipe lines, sewers, etc. shall reduce the same to computerised GIS data base. This will require mapping the entire network, node-wise, thereby enabling strategic planning, up-gradation and maintenance. The data should contain all the essential physical attributes of the facility, and should be up-dated at least annually, to account for changes and developments.

27.21 SPECIAL PROVISIONS

27.21.1 Assets like lifts, air-conditioning plants, stand by generators, plant and equipment will be maintained as per departmental instructions and maintenance manuals issued by the manufacturers. In some cases, it may be desirable to enter into annual maintenance contracts with the suppliers. For vehicles and machinery maintained departmentally, B&R department's Technical Memo No. 6 shall be followed.

27.21.2 For important bridges, hydraulic structures (such as head regulators, dams, etc.) designed and constructed with specialised techniques or non-conventional materials, maintenance will be guided by maintenance manual laying down the special requirements of construction method and design philosophy. Preparation and submission of such a manual by the construction agency should be made a contractual requirement.

27.22 DEDICATED FUNDS

27.22.1 For proper maintenance of assets which have been created with huge capital inputs, assured availability of funds is of prime importance. Apart from budgetary allocations, each department should, with the approval of the Government and depending on its requirements, work out a financial system to build a corpus of funds for maintenance e.g. Road Fund in the case of roads and bridges, or user fee. Other non-budgetary sources should be tapped as possible.

27.23 GENERAL POLICY

27.23.1 The most beneficial approach in the matter of asset management is to exercise prescribed checks and controls, carry out stipulated operation and maintenance procedures on routine and periodic basis, and keep strict surveillance against encroachments, cuts and breaches, un-planned/ illegal usage of the facility. Special repair measures, as required, should be initiated and completed well before major damage or irretrievable harm takes place.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Chapter 28
Miscellaneous

28.1 MAINTENANCE OF ACCOUNTS

28.1.1 The existing accounting system in PWDs is archaic and needs to be amended and made computer friendly. Till this is done, the Engineers-in-Chief shall ensure that the accounts are maintained as per the relevant Code and extant instructions on the subject. It will be proper if the Engineers-in-Chief hold the meeting of the accounts personnel at least once a quarter.

28.1.2 Regarding audit paras, it should be understood that they are much better handled at the draft stage. It will be efficacious if the Superintending Engineer discusses the issues with the audit officer to thrash out the matter at the inception stage. To ensure a satisfactory and prompt disposal of audit paras, Superintending Engineers should hold a quarterly meeting with the Divisional Officers on pending audit paras and send a progress report to the concerned Chief Engineer who will hold meeting with Accountant General to sort out un-settled issues. Monitoring shall also be done by Engineer-in-Chief himself (under the instructions, once a month review is compulsory) as delegation in this area is usually not productive.

28.1.3 The various audit notes and paras (draft or final) should be critically examined to understand the weaknesses afflicting the department. Director (Finance & Accounts) shall put up critical matters to the Engineer-in-Chief so that frame work of action is developed to avoid recurrence of the lapses and irregularities most commonly observed in the working of the department.

28.2 LETTER OF CREDIT (LOC)

28.2.1 The PWDs make payments through LOC issued by the Finance Department from time to time. Usually, the Finance department will like to release LOC once a month. The case for release of LOC for the next month shall be moved by the 25th instant in a computerised format, giving details of likely payments to be made in the various offices. In case of LOC meant for works, work-wise details shall be given. The Administrative Secretary shall ensure that the case is processed expeditiously at Government level and sent to the Finance Department within first two working days of the month. It shall be desirable that LOC is issued by the Finance Department by the tenth of the month in question. This, however, does not debar the Department from sending cases for additional LOC in a specific case.

28.2.2 On receipt of LOC from the Finance department, Engineer-in-Chief (and Chief Engineer concerned for LOC meant for works) shall have the LOC released to the respective disbursing units without delay (within 3-4 working days) so that there is enough time for its effective utilisation, and there is little occasion to seek re-validation of lapsed LOC. Sometimes, it might become necessary to keep in reserve a

certain amount of LOC to meet emergencies or urgent requirements. The option shall be exercised only by the Head of department.

28.2.3 It will be proper to keep the Finance Department in picture on various works undertaken by the Pubic Works Departments. Therefore, the departments should send quarterly reports (on 21st April, 21st July, 21st October and 21st January) giving head-wise details of works in hand, cumulative expenditure up to the quarter under report, and anticipated expenditure during the next quarter so that Finance Department is aware of the need of the funds for public works and is in a position to issue suitable instructions as deemed fit.

28.3 LOSS OF CASH

28.3.1 Officers shall report to the higher authority all losses of cash which are beyond their power to write off, as soon as the loss comes to their notice. A detailed report on how the loss occurred with their findings shall be made at the time of obtaining sanction of its write off. Any incident of theft in an office should be reported immediately by the officer concerned to his immediate superior with copy to the Head of department. The officer shall also lodge FIR with the concerned police station.

28.4 WORKS FUNDED BY OTHER AGENCIES

28.4.1 In respect of works sanctioned against funds of Central Government, World Bank, Asian Development Bank or other funding institutions, the guidelines/ procedure laid down by the concerned authorities shall be followed, if so required. Approval to adopt this course shall be taken from the Administrative Secretary.

28.5 PURCHASES AGAINST CONTINGENCIES

28.5.1 Purchases of non-consumable items (like, computer, GPS instrument, field camera, laboratory equipment, etc.) made out of contingencies against a work shall be first entered in the stock register available at Divisional level (even if the purchase has been made at lower level) and then issued to any office/officer/official. This stock shall be verified at least twice a year in every office where such purchases have taken place. No payment in respect of any such purchase shall be made unless the certificate of its entry in the stock register at Divisional level is made available.

28.6 ANNUAL INSPECTIONS OF OFFICES

28.6.1 Inspection of various offices has been mandated in Chapter 6, under duties of officers. As a general provision, periodic inspection of every field office and various branches at the head-office shall be carried out to assess the efficiency of their working and pendency of business. The field offices shall be inspected by the officers in charge and also by other officers who may be especially deputed for the purpose. Inspections shall be followed up with 'action taken reports'. Registers of such inspections shall be maintained in Division offices, Circle offices and Head-office, which shall be reviewed by the Divisional Officers, Superintending Engineers and Chief Engineers to ensure that these instructions are duly followed. The proformas for inspection shall be prescribed and amended, as required.

28.7 LABORATORIES

28.7.1 The PWDs shall keep their laboratories well-equipped and well-manned to undertake the required tests and investigations relevant to their operations. The working of the laboratories shall be checked periodically to ensure that the methodologies adopted by them are appropriate and that their reporting is correct and independent. If required, an outside expert/academic may be engaged for the purposes of inspection, up-gradation and modernisation. Efforts shall be made to computerise the laboratories, and to start with, at least the test reports shall be computerised.

28.8 CONSTRUCTION OF WORKS OF PUBLIC UTILITY ON GOVERNMENT LAND

28.8.1 Construction by a private party of work(s) of public utility on Government land may be permitted with the approval of the Government. Agreements for the purpose shall be prepared on prescribed Form. Such agreements are subject to the provisions of the Indian Stamps and Registration Act. The lay-out and plan of the utility shall be subject to approval and a time limit for the commencement and completion of the work shall invariably be prescribed in the agreements. The area of land to be leased or licensed shall be stated in the agreement and the drawing.

28.8.2 Lease for Petrol Pumps. Applications for lease of site for petrol pumps should be dealt with expeditiously at all stages so that final decision by the competent authority can be communicated to the applicant within reasonable time. The site shall be liable to rejection if it does not comply with the prescribed stipulations and standards. The rent of land leased shall be at the rates fixed by the Government from time to time. No lease should be for more than five years at a time. All such leases shall provide for the removal of pumps, structures and appurtenances by the lessee at his own cost on expiry of the lease if it is not renewed or earlier if the land is required by the Government or if there is breach by the lessee of any conditions of the lease.

28.8.3 In the case of lease for petrol pumps on National Highways, decision lies with Government of India.

28.9 NAMING OF WORKS

28.9.1 Sometimes proposals are received for naming public works in memory of a particular individual or some other body. In all such cases, the report of concerned Executive Engineer, Superintending Engineer, Deputy Commissioner, M.L.A., M.P., Municipal Committee/ Panchayat concerned, as the case may be, shall be taken and the case submitted for approval of the Chief Minister. Financial implication, if any, shall also be brought out before sending the proposal. Any instructions issued by the Chief Secretary in this regard shall be complied with.

28.10 PRIVATE WORKS

28.10.1 Sometimes, a party may approach the Public Works Department to undertake the improvement of an asset owned by the Department, out of the party's own funds. In such cases, a written request shall be taken from the party by the Engineer-in-

Charge and the case sent to the authority competent to accord technical sanction. The said authority, after examining the project details and credentials of the party, may give permission with the condition that the asset shall not be altered in any way and that the party shall not use any space for advertisement. Necessary departmental supervision should be provided so that the asset does not suffer loss of character or value and that the party provides the improvement it had promised. Departmental charges @ 2% of the estimated cost or as prescribed by the Government in the administrative department shall be levied in all such cases.

28.11 TRANSPARENCY OF PROCEDURES AND TRANSACTIONS

28.11.1 In the execution of public works, whether by way of original construction or repair/ maintenance, the PWDs incur large amounts of expenditure. All the works so executed are in the public domain. It is the societal expectation, and also the requirement of the profession, that the assets being built or maintained possess the basic attributes of functionality, quality, strength, durability and level of service, as designed. Financial propriety demands that money is spent with high sense of responsibility and accountability, and that every financial transaction stands the test of strictest scrutiny. Various checks and balances provided in the Code are intended to fulfil these requirements, and their compliance at every level is mandatory. Nevertheless, the Engineers-in-Chief shall also, at their own level, devise procedures so as to impart transparency to the entire working, weed out unfair or corrupt practices, and enhance credibility of their respective departments.

28.12 INDEPENDENT EVALUATION STUDIES

28.12.1 It is in the interest of the PWDs that they earmark a part of the budget for independent evaluation studies to be done in respect of various projects and programmes. Based on these studies, the Engineers-in-Chief shall cause to prepare a list of recommendations for 'system improvement' along with plan of action. Government approval shall be sought where required.