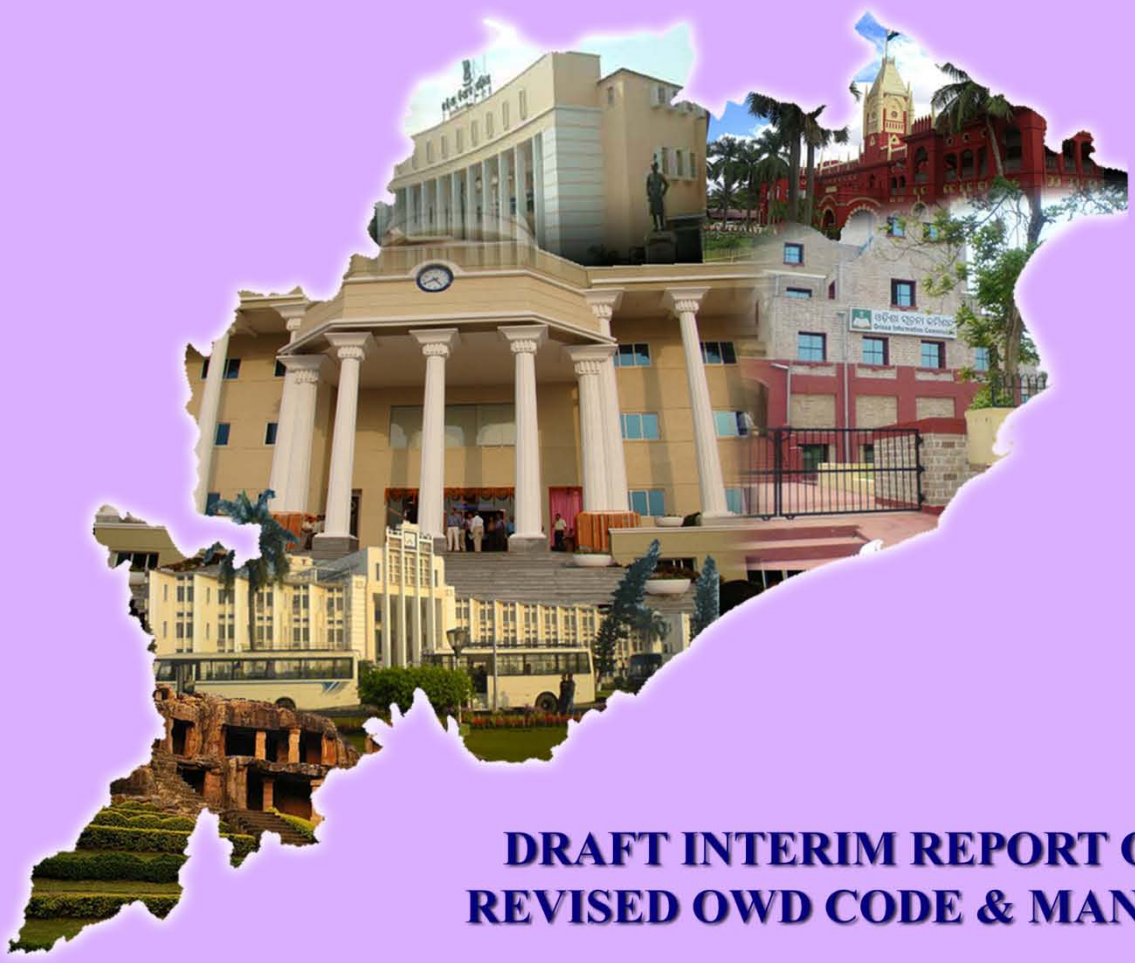
Government of Odisha (GOO)
Chief Engineer, World Bank Projects, Odisha
Odisha State Roads Project

Consultancy Services for Road Sector Institutional Development Loan # 7577-IN



DRAFT INTERIM REPORT ON REVISED OWD CODE & MANUAL

Intercontinental Consultants and Technocrats Pvt Ltd

In joint venture with
Grant Thornton Advisory Pvt. Ltd.

In association with
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IMPORTANT ABBREVIATIONS

ACR	Annual Confidential Report
AP	Andhra Pradesh
AR	Asset Register
BE	Budget Estimate
BMS	Bridge Maintenance Management System
BOT	Build, Operate and Transfer
BT	Black Topped
CE	Chief Engineer
CIDC	Construction Industry Development Council
CRRI	Central Road Research Institute
'D' Code	Departmental Code
DL	Double Lane
EIC	Engineer-In-Chief
EMP	Environmental Mitigation Plan
FIDIC	Federation International Des Ingenieurs Conscils
FMS	Financial Management System
GAAP	Governance & Accountable Action Plan
GIS	Geographical Information System
GOI	Government of India
GOO	Government of Odisha
HOD	Head of the Department
HQ	Head Quarters
HRD	Human Resource Development
ICT	Information and Communication Technology
ID	Institutional Development
IDS	Institutional Development Strategy
IRC	Indian Roads Congress
ISAP	Institutional Strengthening Action Plan
IT	Information Technology
KRA	Key Result Area

M&E	Monitoring and Evaluation
MDR	Major District Roads
MIS	Management Information System
Mpl	Municipal
NAC	National Academy of Construction
NCB	National Competitive Bidding
NH	National Highway
NITHE	National Institute for Training of Highway engineers
OBCC	Odisha Bridge Construction Corporation
ODR	Other District Road
O & M	Operation and Maintenance
ORDC	Odisha Road Development Corporation
OSRP	Odisha State Road Project
OWD	Odisha Works Department
PBMC	Performance Based Road Maintenance Contracts
PIU	Project Implementation Unit
PMGSY	*Pradhan Mantri Gram Sadak Yojana*
PMS	Pavement Management System
PPP	Public Private Partnership
PR	Periodic Renewals
PRI	*Panchayati Raj* Institutions
PWD	Public Works Department
RM	Road Maintenance
RAMS	Road Asset Management System
RMMS	Road Maintenance Management System
ROW	Right of Way
R&R	Resettlement and Rehabilitation
RS	Road Safety
RSC	Road Safety Council
RTA	Regional Transport Authority
RTC	Road Transport Council

RTI	Right to Information
RUSS	Road User Satisfaction Survey
SBD	Standard Bidding Document
SH	State Highway
SMEC	Snowy Mountains Engineering Corporation
TNA	Training Needs Assessment
TOR	Terms of Reference
UP	Uttar Pradesh
SE	Superintending Engineer
STA	State Transport Authority
TA	Technical Assistance

SECTION 1

INTRODUCTION

1 Introduction: Odisha Works Department Code & Manual

1.1 General Background

Odisha Works Department (OWD) is one of the oldest Public Works Department (PWD) engaged in construction of engineering projects carried out by the State of Odisha for creating and improving various facilities. The execution of public works has been an organised function of the state since time immemorial. The increasing role and contribution of OWD in a progressive, industrialised and welfare State of Odisha has stretched beyond the traditional domain of public buildings, water supply, electrification and roads. The increasing role and contribution has stretched beyond the traditional work to high growth areas of road and building sectors coupled with institutional development. Demand of infrastructure has grown manifold and public works have come to have a sizable share of annual spending.

PWD in Odisha was thus one of the oldest such departments in the State. 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 and Irrigation were constituted at different times. The original PWD mainly became Odisha 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 go downs, parks, tourist centers 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 Scope of Code

The Code defines the scope of administrative and executive functions of the OWD 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.

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 PWD, as well as in other departments of Government, are binding on PWD 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 OWD shall, however, endeavor to get the amendments effected in other rules so that they are in consonance with the provisions in this Code.

1.3 Revision in the Code & Manual

The State Government of Odisha (GOO) through the Government of India (GOI) has received a loan from the International Bank for Reconstruction and Development (IBRD) for implementation of the Odisha State Roads Project (OSRP) and intends to apply a portion of this loan to finance technical

assistance and advisory services for institutional development support to assist GOO to improve its road sector policy, institutional capacities and legal framework and revision of OWD Code and Manual to align it with the rapidly changing environment and context of development of the state.

The World Bank assisted OSRP will help the GOO to achieve its roads sector objectives by inter alia integrating the main elements of the developments strategy into the Project's overall design and by funding technical and consultancy services for implementation of planned Institutional Strengthening (IS) activities. An Institutional Strengthening Action Plan (ISAP) for 2008-2018 has been prepared and endorsed by the State Government to guide implementation of IS activities in the sector and to facilitate monitoring of IS results by the GOO and the World Bank. The ISAP includes clear, monitorable targets and milestones for a planned range of policy, capacity and resource improvements in the fields of Organisational Restructuring & Management including Revision of Works Code and Manual for working of OWD.

The GOO decided to seek external technical expertise and inputs to achieve the more substantive and challenging ISAP targets and to provide implementation support to the overall ISAP program. It has also been decided to secure this assistance in the form of consulting services for Road Sector Institutional Development for GOO through Intercontinental Consultants and Technocrats Pvt. Ltd. (ICTPL) in Joint Venture with Grant Thornton Advisory Pvt. Ltd. (GTAPL) and in association with ARKITECHNO Consultants (India) Pvt. Ltd.

The Consultants have taken up this task in right earnest as per date of award of consultancy services as 9th April 2012 including the work of "Revision of Works Code and Manual". The scope of work of the same is as follows:

Comprehensive revision and updating of the Odisha Public Works Department (OPWD) Code and (procurement) Manual as the framework of policy, standards, responsibilities and powers for planning, preparation, contracting and execution/management of public works in Odisha (including Buildings), assisting their submission for GOO endorsement and subsequently facilitating their promulgation Operationalisation. This involves inter alia (i) updating of procedures, responsibilities and accountabilities in all works stages from project inception, planning to completion, in conformity and consistency with GOI and GOO accounting and audit requirements; (ii) revision of provisions on dispute redressal mechanism(s) including relevant 'complaints handling and RTI Act aspects; (iii) inclusion of new sections on PPP policy and guidelines, on Environment and Social (safeguards) Management, on e-procurement requirements and processes, on Construction Zone Safety guidelines and on Road Safety Engineering/Design requirements; (iv) assistance to OWD for completion of the already underway review/updating of contractual documents for all GOO procurement of goods, works and services, with their integration/cross-referencing in the contents of the revised Code & Manual where appropriate; and (v) facilitating Workshops and other 'consultation' initiatives for the progressive review of the evolving revised draft Code & Manual by both OWD and by other concerned GOO agencies.

The deliverable under this task included interim report on Revision of OPWD Code & Manual (Structuring, Content, Issues, Timing) followed by the final revised OPWD code Procurement Manual

and all Standard Procurement Documents (goods, works & services) after completion of related workshop/consultation with various stake holders.

1.4 Functions and Responsibilities

The functions and responsibilities of OWD, as given in the OPWD Code, are as follows:

- Construction, repair and maintenance of buildings, roads, bridges and other related structures financed from the State and capital budget allocations in Odisha;
- Execution of original, renewal and repair works of the National Highways (NH) network financed through Ministry of Road Transport & Highways (MoRTH) after levying agency charges at the rates agreed between GOI and the GOO. Construction of buildings, roads and bridges as relief works in the event of floods, cyclones or other natural disasters;
- Ensuring that no encroachment or structure, whether temporary or permanent is erected on the land and property under the control of OWD. It is also responsible for removal of such encroachments as per GOO rules; and
- Maintaining a register of land, buildings and properties belonging to the GOO and under the administration of OWD.

1.5 Definitions

Unless there is anything repugnant in the subject for context, the terms defined in this chapter are used in these rules in the sense as explained below.

1. **Accountant General** – means Accountant General, Odisha. He is the head of office of audit and accounts in the State under the Comptroller and Auditor General of India and when used in relation to a Public Works Division, the head of office of whom the accounts of the Division are rendered.
2. **Appropriation** – means appropriation of funds by means of appropriation Bill. Allotment means the assignment to meet specified expenditure of funds in favour of subordinate authority (subordinate spending unit).
3. **Administrative Approval** – This term denotes the formal acceptance by the Administrative Department Concerned, of the proposal for incurring any expenditure in the PWD on a, work, initiated by or connected with, the requirement of such Administrative Department. It is, in effect, an order to the PWD to execute certain specified works at a stated sum to meet the, administrative needs of the Department requiring the work. Administrative approval is not required in the cases of petty works and repairs.
4. **Competent Authority** – means Government or any other authority to whom the relevant power may be delegated.
5. **Controlling Officer** – means Head of a Department or other Departmental Officer who is entrusted with the responsibility of controlling the incurring of expenditure and/or the collection of revenue by the authorities subordinate to the Department. In relation to the

Departments in charge of public works, a list of officers declared as controlling officers is given in **Appendix I**.

6. **Chief Engineer** – means the Chief Engineer (CE) or any other engineer to whom the State Government have delegated powers and functions of a CE. He is the administrative and professional head of that branch of the public works of which he is in-charge and is responsible to the respective Administrative Department for the efficient working of that Department of branch.

7. **Contract & Contractor** – The term 'contract' means any kind of undertaking written or verbal, express or implied, by a person not being a Government Servant or by a syndicate of firm, for the construction, maintenance or repairs of one or more works, for the supply of materials, or for the performance of any service in connection with the execution of works or the supply of materials. The term 'contractor' means a person syndicate or firm, that has made such an undertaking but often its use is restricted to contractor for the execution of works or for service in connection therewith.

8. **Drawing and Disbursing Officer** – means a head of an office and also any other gazette officer designated by the GOO or Head of a Department or an Administrator, to draw bills, cheques and make payments on behalf of the State Government The term shall also include a Head of a department or an Administrator where he himself discharges such functions. The head of an office may also authorize any gazetted officer serving under him to sign a bill or order for him in terms of provisions of S.R. 102 of the OTC Vol. I and notes there under whenever such a course is considered necessary in the interest of the office.

9. **Department of Government** – means the Department of the GOO as specified in the Rules of Business.

10. **Deposit Works** shall – mean works of construction or repairs the cost of which is met not out of Government funds, but is financed from non-Government sources, which may either be deposited in cash or otherwise placed at the disposal of a Divisional Officer. Works executed for municipalities, local bodies and public undertakings etc. fall under this category.

11. **Financial Year** – means the year beginning on the 1st of April and ending on the 31st of March following.

12. **Government or State Government** – means the Government of Odisha.

13. **Governor** – means the Governor of the State of Odisha.

14. **Government Account** – means the total of the consolidated Fund Account, Contingency Fund Account and the Public Account of the State.

15. **Head of a Department** –means any authority, declared to be such by the competent authority with reference to Rule 20 of the Odisha Service Code. The declaration is made in general terms, and not with reference to certain specified rules only and include any other officer, declared to be such by the competent, authority.

16. **Local Body** – means an authority legally entitled or specially empowered by Government to administer a local fund.
17. **Project** – means irrigation, navigation, embankment and drainage, water storage, civil or electrical works costing more than ₹ 25 lakhs which consist of several works and are to be executed by more than one Division.
18. **Major Work –** means an original work, the – estimated cost of which is ₹ 10,000 or above.
19. **Minor Work –** means an original work, the estimated cost of which is over ₹ 10,000 but less than ₹ 1,00,000.
20. **Petty Work** – means an original work, the estimated cost which is ₹ 10,000 or less **(subtd. by Works Department No. 22791., dt. 18.8.84)**
21. **Public Buildings** – used in this Code apply only to buildings borne in the books of the PWD and maintained from funds provided to them.
22. **Public Work** –means civil works, public health engineering works, irrigation navigation, embankment and drainage works and electricity works.
23. **Public Works Department** – means a Department of the State Government in administrative charge of Public Works.
24. **Re-appropriation** – means the transfer of funds from one unit of appropriation to another such unit.
25. **State** – means the State of Odisha.
26. **Subordinate Authority** – means a Department of the State Government or any authority subordinate to it.
27. **Treasury Rules** – means the Treasury Rules of the State Government of Odisha embodied in the Odisha Treasury Code.
28. **Work-Charged Establishment** – means the establishment employed on the supervision or execution of a particular work, the cost of which is debitable to the work concerned.
29. **The terms** – used in this Code but not defined shall have the same meanings as explained in the CPWA Code.

SECTION 2

ORGANISATION

2 Organisation

2.1 General

OWD is in charge of the design, planning, construction and maintenance of all Public Works undertaken by the State Government, such as buildings, roads, bridges etc. irrespective of the source of funds for the same. It maintains buildings, roads, bridges and other structures belonging to the State Governments even if the Department did not construct these. The OWD shall also take up works on BOT, Turnkey or Annuity payment basis with National and International support and funding. The functions of the organisation include the following:

- Construction, repair and maintenance of roads, bridges and buildings other related structures financed from the State and capital budget allocations in Odisha;
- Execution of original, renewal and repair works of the NH network financed through MoRTH after levying agency charges at the rates agreed between GOI and the GOO. Construction of buildings, roads and bridges as relief works in the event of floods, cyclones or other natural disasters;
- Ensuring that no encroachment or structure, whether temporary or permanent is erected on the land and property under the control of OWD. It is also responsible for removal of such encroachments as per GOO rules; and
- Maintaining a register of land, buildings and properties belonging to the GOO and under the administration of OWD.
- Enhance the capacity of OWD and where appropriate other GOO agencies concerned to carry out road and building infrastructure development.
- Road Development Programmes under state plan, NABARD-RIDF Assistance, Road Improvement in KBK Districts, Rural Road under PMGSY, roads of Tourism and Mining Importance, Odisha State Road Projects under World Bank assistance etc.
- Updating Works Code and Manual preferably once in five years for improved performance.
- Emphasis on Audit and Accounting Requirements
- Ensure Safety in Construction
- Optimism use of PPP Project Management Mechanism
- Improve Dispute Redressal Mechanism, Contract & Standard Bidding Documents etc.
- Innovation in Road Sector Policy and Strategy
- Updating HRD & Training Policies
- Restructuring of OWD for capacity building
- Road Sector Institutional Development and Future Options

- Road Sector Network Master Planning for uniform development of road network throughout the state

2.2 Organisational Set Up

The OWD is headed by an Engineer-in-Chief (EIC)-cum-Secretary to the GOO, Works Department. As 'EIC'; this position carries technical responsibility for the OWD and as 'Secretary' exercises administrative control over the OWD. The EIC-cum-Secretary provides the vital link between the Government and the OWD.

In the OWD, there are six Chief Engineers (CEs), and one Managing Director (MD), Bridge and Construction Corporation who report to the EIC-cum-Secretary and EIC-Civil. Each CE is responsible for a functional unit called a 'wing'. The senior most CE holds the title of EIC (Civil) and, is responsible for all the administrative functions of the OWD. This includes financial reporting and personnel functions. A brief description of each wing is given below.

The three wings, i.e. the Roads, NH, and Buildings have field offices called circles, which are headed by the Superintending Engineers (SEs). Each circle in turn is subdivided into a number of divisions, each headed by an Executive Engineer (EE). The head office is responsible for overall coordination and monitoring activities, while execution of works is carried out by the EE at divisional level. Divisions manage a number of sub-divisions located at taluka level, each headed by an Assistant Executive Engineer (AEE)/Assistant Engineer (AE); further lower level are the 'sections', managed by Junior Engineers (JEs).

2.3 Organisation

1 Administrative Set up in State Secretariat headed by EIC (Civil) cum Secretary Bhubaneswar

2 EIC (Civil), Nirmana Soudha, Bhubaneswar

3 CE, DPI and Roads, Nirmana Soudha, Bhubaneswar

4 CE, Buildings, Nirmana Soudha, Bhubaneswar

5 CE, World Bank Projects, Nirmana Soudha, Bhubaneswar

6 CE, NH, Bhubaneswar

7 CE, Research Development and Quality Promotion, O/o CE, NH, Bhubaneswar

8 Architecture Wing, Nirman Soudha, Bhubaneswar

As a part of restructuring a post of CE (Design) has since been created along with a ..... post of Additional Secretary, OWD following restructuring of OPWD in December 2011.

2.4 General Functions

2.4.1 Roads Wing

The Roads Wing is headed by a CE (Roads), reporting to the EIC-cum-Secretary. It is responsible for the maintenance and upgrading of 14,557 km of existing SHs, MDRs and ODRs and construction of new roads at the State and District level. The Wing is responsible for routine and periodic maintenance together with supervision of contracts for works on roads and bridges.

The Wing comprises seven geographically based circles and a specialist Mechanical Circle, each headed by an SE reporting to the CE. The SEs in turn, supervises the activities of 40 divisions (36 R&B, 4 Mechanical), who execute the works. Each of these divisions is managed by an EE. There are 224 sub-divisions in the OWD under the charge of AEE or AE.

2.4.2 Design Planning and Investigation Wing

The design and planning activity in the organisation, is provided through a separate Design, Planning and Investigation (DPI) Wing in the OWD. The CE (Design Planning and Investigation) heads the Wing and has a reporting responsibility to the EIC-cum-Secretary, but at present Roads and DPI Wing heads, i.e. CE positions are combined together; where a CE (Roads and DPI) takes care of both the functions.

2.4.3 Research, Development and Quality Promotion Wing

R&D and quality promotion activity is under the control of CE (Research, Development and Quality Promotion). A laboratory was established in 1965 to cater to the need for testing of materials involved in road and building construction. The function expanded in 1982 to include a research development and quality promotion cell.

The bulk of the investigative and reporting work of the unit is related to the work undertaken in the Roads Wing. The unit is also responsible for monitoring and reporting on the quality of work undertaken in other operational wings, including NH, and Buildings Wings.

2.4.4 Buildings Wing

In addition to its responsibilities for roads, OWD has the task of supervising the construction and maintenance of public buildings on behalf of a wide range of State Government organisations. For this purpose, the organisation of OWD includes a specific wing devoted to this activity. It is headed by a CE (Buildings) reporting to the EIC-cum-Secretary.

The divisions, sub-divisions and sections in the field, which look after the roads, are also responsible for maintenance and construction supervision of public buildings within their jurisdiction but report to CE (Buildings) in building matters.

This Wing has a dedicated SE who is responsible for electrical works including installation, repairs and maintenance of electrical works in Government buildings. Four EE's (Electrical) are also part of

this Wing. Similarly, there is an SE and two EEs responsible for Public Health, i.e. water supply and sanitation.

2.4.5 National Highways Wing

The responsibility for improvement and maintenance works on NHs is under the jurisdiction of CE (NHs). There are three NH circles and 15 NH divisions.

This Wing was set up to comply with the requirements of MoRTH to:

- Reduce the line of communication between the GOI and the State authorities; and
- Achieve efficiencies in implementation by avoiding the cumbersome and outdated delegations for administrative and technical sanction which limit the ability of the OWD to respond quickly.

Achieve uniform maintenance and construction standards on NHs.

2.5 Restructuring of Engineering Cadre in Works Department 2011-12

Restructuring of Engineering Cadre in Works Department was carried as communicated vide GOO Resolution No. 12723/FE-II(p)97/2011, dated 23-12-2011.

The present strength of OWD Engineers and restructured strength have become as follows:

Sl. No.	Category of Post	Existing sanctioned strength		Total	Post newly created		Total		Total strength after creation
		Works	RD		Works	RD			
1	2	3	4	5	6	7	8	9	10
1	EE	105	67	172	24	10	129	77	206
2	SE (Level II)	9	11	20	7	1	16	12	28
3	SE (Level-I)	5	4	9	10	5	15	9	24
4	CE	9	2	11	2	1	11	3	14
5	EIC (Civil)	2	1	3	0	1	2	2	4

It is seen that in Works Department newly posts created are 24 EEs, 17 SEs, and 2 CEs.

In Rural Development Department newly created posts are 10 EEs, 6 SEs, 1 CE and 1 EIC (Civil).

Broadly the positions of deployment had been identified in cadre restructuring proposal, but the same is yet to be carried out by OWD. The posts sanctioned were much less than what were included in the proposal to GOO.

It is seen that the additional posts created in December 2011 restructuring are not adequate. We shall have to recommend creation of appropriate number of posts further in different categories of engineers.

2.6 Additional Restructuring of Engineering Cadre

Following changes in organisation of OWD are suggested for efficient functioning with improved supervision and working in conformity with engineering standards and specifications, quality assurance and procedures of accounting, budgeting and transparency in working (although this needs to be discussed further with officials of OWD before finalisation).

- Presently the average workload of the Division is about one and a half times what a Division is reasonably capable of handling as per practical norms. Keeping in view sound planning and design, sound high quality construction, proper supervision of works and effective maintenance, there is need to create more number of zones, circles and divisions with commensurate other administrative staff to achieve this objective;
- It is suggested that we may have four posts of CE (Roads/Buildings), each with 4 SEs and 4 EEs each. Each EE may have 3 to 4 Assistant Engineers/Assistant EEs with 3 to 4 JEs each and adequate administrative staff;
- In view of the requirements of work of planning, supervision, original works, maintenance etc. spread over 30 districts located in length and breadth of the state, two number posts of Engineer In Chief (Civil) and one post of EIC (Civil) cum Secretary (Works) are considered desirable;
- In addition to posts of CE (NH), CE (World Bank), CE (DPI), CE (e-Procurement), Managing Director (OBCC), Chief Architect, four posts each of CE (Roads & Buildings) following additional posts are considered essential:

    a. CE (Vigilance)/SE (Vigilance)
    b. CE (Quality Assurance)
    c. CE (Training)
    d. CE (Electrical)

Write up of functions of above CEs are enclosed. (This needs to be also examined by DTL since this is also a part of "OWD Restructuring and Reorganisation").

It is considered necessary to have adequate number of CEs for better technical management and administrative control. It is worth mentioning that there is only a limited gap between salary of CE

and SE, and as such there is hardly any extra financial implication overall. Increased opportunities of promotion are likely to be useful motivating factor for the engineering cadre towards better performance towards improved working of OPWD.

The post of CE (Vigilance)/SE (Vigilance) is commensurate with the recommendations of GAAP Committee, which places a lot of importance on transparency in working and keeping a check on possible corrupt practices in the working of OWD. The post of SE (Vigilance) has been agreed to in the restructuring proposal already.

2.7 Functions of Suggested Additional CE Units

2.7.1 Chief Engineer (Vigilance)/SE (Vigilance)

2.7.1.1 General Function

- Investigate complaints received relative to works, individuals and related matters including those referred to by CEs or other concerned persons or departments;
- Carry out vigilance inspections on a random selection basis of working of at least one division and one circle in each zone every year to see that proper vigilance and administrative instructions are being followed in the functioning; and
- Internal vigilance administration.

2.7.1.2 Disciplinary Function

- Processing disciplinary cases received from Investigating Unit under CCS (CCA) Rules 1965 including processing of Review and Appeal eases;
- Court cases arising out of matter related to above functions;
- Issue of Vigilance Clearance Certificate in respect of all gazetted and non gazetted staff as required;
- Keeping Vigilance records updated from time to time according to position of the cases in respect of concerned individuals;
- Decision regarding imposition of penalties on individuals;
- Deal with disciplinary cases, appeal cases, court cases etc; and
- Issue of Vigilance related circulars for proper functioning in offices of OWD/GOO.

2.7.1.3 Enquiry Function

- Function of inquiry unit is to conduct inquiry of cases referred for the same by the concerned Authority;
- After completion of Inquiry proceedings, the Inquiry Report is submitted to Disciplinary Authority; and

- Monitoring of implementation of penalty cases.

2.7.2 Chief Engineer (Quality Assurance)

- CE (QA) is an organisation to achieve conformance to specifications and required quality of work through frequent inspection of works by officers of said units at different stages of implementation.
- Ensure continuous check on quality of works through field staff, and contractor's staff through periodic check by the independent Quality Control Unit.
- Quality Assurance Wing headed by AE(Quality Control) to function under each SE for quality checking of works under his jurisdiction.
- For carrying out inspection of large works beyond power of acceptance of SE, Core Wing of CE (QC) along with of SE (QC), EE (QC) and AE (QC) are to carry out three stage inspection of works under various divisions under different CEs from time to time.
- To carry out comprehensive examination and technical audit of at least two works per zone costing more than five crore every year.
- To inspect any work or carry out inspection and enquiries with reference to quality related aspects assigned by any competent authority of OWD.
- To lay down norms/guidelines/circulars for quality assurance and carrying out periodic inspection by Supervising Staff of field units of the department.
- To keep itself update with modern testing equipments and methods and keep the laboratories up-to-date in respect of equipment, personnel and resources.

2.7.3 Chief Engineer (Training)

- Foundation Training for JEs/AEs/AEEs/A. Arch/Dy. Arch at induction stage;
- Orientation courses for middle level officers before their promotion;
- Conducting customized courses for officers of various concerned Departments of OWD & GOO;
- Management development programmes at Institutes of repute at State and National level;
- Sponsoring officers for various seminars and workshops;
- Sponsoring officers for higher studies and specialised courses in India & Abroad;
- Conducting departmental examinations;
- Mandatory training programmes for various level officers at different stages of the carrier from time to time; and
- Co- ordination function of Construction Academy being run by L&T.

2.7.4 Chief Engineer (Research Development and Contracts)

It is proposed to enhance function of CE (R&D) as detailed below:

2.7.4.1 Research and Development Function

- Review liter above in fields of research pertaining to Roads & Buildings and circulate the same as six month/annual publications;
- Review performance of new materials and techniques and incorporation of the same in specifications & schedule of rate;
- Develop Cost Index for various places in Odisha for preparation of plinth area rates for preparation of preliminary estimates, Revision of Schedule of Rates say once in three years or so; and
- Give recommendations regarding changes in specifications and schedule of rates of suitable items of work requiring such changes.

2.7.4.2 Contracts Functions

- Revision, improvement and amendments to contract forms as per need of time and issue guidelines for contract document related procedures;
- Review rules and guidelines pertaining to enlistment of contractors, decide upon cases of promotion to other categories of enlistment etc.;
- Deal with court cases pertaining to contractors filed against OWD;
- Disciplinary cases against contractors and dealing with blacklisting of contractors; and
- Advise officers of OWD on various unforeseen issues related to contracts encountered in discharge of their duties and obligations pertaining to interpretation of contract conditions
- Issue of Technical Circulars pertaining to contract management.

2.7.4.3 Techno Legal Functions

- Making a panel arbitrators from outside OWD for appointment of Arbitrators;
- Advice on complicated arbitration matters referred to by CEs;
- Keeping a pool of legal councils readily available for defending the arbitration cases as referred to by CEs; and
- Issue of Technical Circulars pertaining to technical matters, case laws and arbitration.

2.7.5 Chief Engineer (Electrical)

CE (Electrical) is basically a technical advisor to the State GOO on all works pertaining to electrical constructions, transmission of electricity, power generation, road and bridge lighting, air conditioning, fire-fighting, lift etc, which require in depth knowledge, vision and experience for use of appropriate technology and proper development of the state in the right perspective in the fields mentioned above.

Considering that the Odisha has 30 districts and works have to be carried out in different parts of the various districts, it is considered necessary to have an organisation with three numbers SE

(Electrical), out of which one SE (Electrical) shall function as SE (Planning) at the Head Quarter, one SE Mechanical already in place shall perform routine functions as at present, and two SEs shall be having suitable jurisdiction of construction of buildings and roads, and each one of them shall be assigned work of group of CEs (Civil) keeping in view the jurisdiction, workload and administrative convenience. This is likely to ensure overall better supervision and quality control and more focus on major works.

SECTION 3

ESTABLISHMENT: DUTIES AND RESPONSIBILITIES OF OFFICERS

3 Establishment: Duties & Responsibilities of Officers

3.1 General

- The business of Government is transacted in the various departments as per allotment of such business in accordance with the Rules of Business;
- The Departments responsible for public work are divided into several branches, each being in charge of a CE as decided upon by the Government from time to time. For administrative purposes each branch is divided into circles, a circle into divisions, a division into subdivisions and a subdivision into Sections having territorial or functional jurisdiction as may be decided by the State Government from time to time;
- The Administrative Departments of Government, EIC, CEs and SEs are responsible for various public works in the State as per powers vested in them; and
- The Administrative Departments in charge of public works are required to execute works of other Departments of the State Government. They may also execute works on behalf of local bodies, public undertakings, recognised public institutions, GOI and other State Governments or other works specified by the State Government.

3.2 Duties, Responsibilities and Powers

In this chapter, the terms 'Duty', 'Responsibility' and 'Power' will generally have the meanings given below:

Duty: means what an officer shall do or shall cause to be done, in the discharge of his official obligation.

Responsibility: means what an officer is answerable for, either solely or jointly with such other subordinates as are also concerned in the said works.

Power: means the authority to take decisions on a particular matter and implement the same in accordance with rules or orders on the subject as given in Works Code and Manual.

The duties and responsibilities of the officers of the department are given below. As regards other officers, they shall continue carrying out such duties and hold such responsibilities, as at present, based on existing rules, orders of superior officers and or conventions until they are modified.

The duties and responsibilities of various officers in regard to the subject matter dealt with in the chapter are given in detail. The officers shall also be responsible for carrying out of the duties and responsibilities assigned to the subordinate officers reporting to him in the office.

In addition, the following shall be considered as part of the duties of every officer of the department.

- Every officer shall, if called upon by his superior officers, carry out as a temporary measure, in addition to his duties and responsibilities, those of another officer who is on leave or otherwise not available.

- If an officer has to be absent from his post on leave or for other reasons, he, or his superior officer shall make necessary arrangement, for the conduct of the work in the absence of the officer.
- Every officer shall bestow adequate care on the protection of Government property entrusted to his charge.
- Every officer shall carry out such work as he may be called upon to do from time to time by the CE or any competent authority of the Government
- Every officer must safeguard the interest of the State particularly, in emergencies and unforeseen circumstances.
- Every officer shall co-operate with other officers of the department and officers of other departments wherever necessary for the proper conduct of Government business.
- OWD Officers in charge of works shall see that the provisions of the safety code and protection arrangements are strictly observed. Inspecting officers shall particularly take necessary action in this regard.
- All Engineers are responsible for ensuring the environment requirements incorporated in the Works Code & Manual.
- In respect of structures under maintenance of the OWD vulnerable portions shall be inspected and if any weakness is noticed steps shall be taken urgently to strengthen or replace the weak portions of the structure. CEs shall issue appropriate detailed instructions in this regard applicable to various types of structures like roads, buildings, bridges, under passes, flyovers and culverts etc.
- OWD Officers shall see that sufficient environment protection arrangements are strictly observed in the office premises as well as at work sites. Inspecting officers shall take necessary action in this regard.
- Every officer shall guide and control the work of his subordinates and shall there be any disobedience, malingering, insolence, etc, it is open to the officer controlling him to initiate disciplinary proceedings against him after reporting the matter to the higher authority.

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.

3.3 Duties of Various Branches in the Chief Engineers, Circle and Division

Each OPWD officers shall have technical, financial and establishment personnel. Each branch shall have the following duties.

3.3.1 Technical Branch

The Technical branch in a PWD officer shall be responsible for taking action on the following:

- Approval of structural designs;
- Scrutiny of estimates;
- Issuing Administrative and Technical Sanction for estimates as applicable;
- Preparation of tender schedule Submission of tenders to higher authorities;
- Scrutiny of tenders;
- Preparation of agreement documents;
- Scrutiny of bills – This shall include checking of issue of departmental materials, extra items, revised estimates, level calculations etc;
- Checking of initial and final level calculations;
- Processing of survey report – verification of rates;
- Scrutiny of maintenance estimate for Tools and Plants;
- Progress report and inspection notes of works;
- Correspondence on all technical matters and works;
- Maintaining Indent Register Scrutiny of consolidated indent if any; and
- Any other work entrusted by the head of office.

3.3.2 Finance Branch

The Finance Branch shall be responsible for:

- Preparing monthly accounts and forwarding the same to Accountant General;
- Preparing cheque for payment on passed bills;
- Preparation of works budget;
- Preparation of performance budget and revised budget;
- Preparation of schedule of settlement with treasuries and maintaining proper registers;
- Follow up action on audit notes of Accountant General relating to works;
- Maintenance of audit files relating to works;
- Scrutiny of bills and closing of work bills after audit;
- Maintenance of relevant registers such as MAS account, Survey Report, Cash Book, Work Abstract, Contractor's Ledger etc.;
- Processing of Survey reports;
- Correspondence on finance matters; and
- Any other work entrusted by the Head of the Office.

3.3.3 Establishment Branch

Establishment Branch is responsible for the following:

- Transfers and postings;
- All establishment matters including leave, salaries, medical reimbursement etc.;
- Disbursing salary and allowances of staff;

- Scrutiny of TA Bills;
- Preparation of establishment budget and revised budget;
- Sanctioning of pension and preparation of pension papers;
- Maintain the accounts regarding contingency funds;
- Maintaining Service Books of all employees;
- Registration of contractors;
- Maintain all relevant registers;
- Maintenance of all files;
- Follow up action on audit notes by Accountant General;
- General correspondence on establishment matters;
- Maintain inward and dispatch registers;
- Any other work entrusted by the Head of the Office.

3.4 Major function and duties of level of EIC, CE, CA, SE, EE are as follows

3.4.1 Engineer-in-Chief (EIC)

EIC 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 before the Government all subjects reserved for its decision. He will exercise full technical and supervisory control on the CEs and all other officers working in the department.

The OWD shall endeavour that the EIC, 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 EIC and he will get an annual plan of action prepared for the department by February every year listing the targets of every unit including that at the level of CE.

EIC 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 ensure use personnel in the best possible manner.

EIC 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, drains, sewers, etc. as the case maybe;
e. Roads &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.

EIC shall exercise concurrent control with the Audit Officer viz. Accountant General (AG), Odisha, 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.

EIC 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, EIC shall seek additional funds by re-appropriation, supplementary grant or excess grant, as considered appropriate or advised by Finance Department.

As soon as possible after the close of each year, EIC 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 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.

The major function of the department is to get the public works completed in time, without cost over-run and with appropriate quality standards. EIC 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.

EIC 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 Works to have a meeting for resolving them. The issues shall not be kept pending unnecessarily.

In the Irrigation department, the EIC is the overall custodian of all water resources. He is supposed to have close liaison with the neighboring States and other agencies for availability, equitable distribution and regulation of water. 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 EIC, who shall cause to frame the necessary estimates and arrange regular watch on the progress of realisations during the course of the year. EIC, Irrigation shall initiate proposals for periodic revision of water rates, for consideration and approval by the Government.

3.4.2 Chief Engineer

CE shall be responsible for adopting proper strategies to achieve the objectives in respect of the domain assigned to him.

CE shall assist the EIC 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.

CE shall be responsible for monitoring of all **IT** related applications pertaining to his sphere of work and the introduction of the same in emerging design, construction and management practices.

CE 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.

CE 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.

Each CE is responsible to the government in the administrative Department for the efficient administration of the respective Department of branch thereof a general professional control of public works within his jurisdiction. He shall exercise full technical and supervisory control over all the officers under him.

Each CE will exercise control over the duties of the officers of the Department in connection with the maintenance of the accounts, custody and disbursement of money, the custody of stores and timely submission of accounts to the AG. He shall also ensure that all contracts, vouchers, muster rolls, work charged establishment bills, works accounts, store accounts material-at-site accounts and other documents required by the AG in connection with the audit of the transactions of the OWD are made available to him or the officers authorized by the latter.

Each CE will prepare annually the portion of the budget estimates relating to establishment and works under his control. It will be his duty to administer the grant and to keep a close watch over the progress of expenditure against it with a view to see that no excess is permitted to occur and that if additional funds are necessary, application for the same is made. It will further be his duty to see that the grant is fully utilised in so far as it is consistent with general rules and procedure. He will ensure the prevention of large expenditure in the last months of the financial year. He will also be responsible for ensuring that provision which is not likely to be needed during the financial year is surrendered immediately so as to enable the competent authority to appropriate if for other purposes and for the timely submission of the budget estimates to the government.

Whenever the expenditure on a work administratively approved is likely to exceed the approved limits, it is the responsibility of the CE to submit a revised estimate to the competent authority in time before excess expenditure is incurred.

Similarly, in case of projects which have been approved by government sub-head wise, the CE should submit a revised project estimate if the sub-head wise expenditure (sub-heads of Administrative Approval Sanction) is likely to exceed by more than 10 percent of the original provision, irrespective of the fact whether the project estimate as a whole exceeds the prescribed limit of original estimate or not.

The responsibility for all important structural designs under execution vests with the CE who shall exercise careful control over the work of the Designs Directorate and the technical sections.

It is the duty of the CE to approval all designs and drawings, of all component parts of the works of the projects for which he is required to give technical sanction as a whole.

The CE may delegate powers of approval to designs and drawings of such component parts of a project the total cost of which comes within the power of technical sanction of the subordinate officers.

Whenever heavy damages are sustained by public works due to natural calamities like flood, rain, and earthquake or accidents involving loss of life and/or Government property etc., the CE should inspect the spot at the earliest opportunity and submit a detailed report to Government.

It will be duty of the CE to inspect at least two Circle Officers and four Divisional Officers in a year with a view to see that prompt action is being taken at all levels for timely disposal of cases and correct and up-to-date maintenance of accounts and other records with reference to sanctions and allotments. He will specifically review serious irregularities, lapses and losses brought out by, the Stores Verification Party.

Besides, he will cause the Branch Officers working in his office to inspect the respective branches of his own office twice in a year. He should inspect his own office once in a year. Copies of notes of inspection by the CE should be submitted to Government within a month of such inspection.

The CE, while inspecting the works under execution should invariably record his observations in the Register of Inspections maintained at the site of work for which the tender has been accepted by him or by government. He shall make final inspection of such works after completion thereof but before the payment of the final bills.

The general supervision and control of the assessment of revenue from works and from other sources on which the department has control will vest with the CE, who will frame necessary estimates and watch carefully the progress of the realisation during the course of the year.

3.4.3 Chief Architect

It will be the duty of the Chief architect to prepare plans for buildings and other works on the requisitions placed on him through the CE, Roads & Buildings or by any of the Heads of Departments of OWD.

He will inspect the sites of proposed buildings where this is considered desirable by the CE, Roads & Buildings and also inspect buildings under construction from time to time.

He may advise the Engineer-in-charge regarding minor variations in the architectural portions of buildings designed by him during execution and the Engineer-in-charge will be responsible to carry them out. In case of difference of opinion, the decision of the CE will be final.

Chief Architect is the adviser to Government in regard to preparation of type plans and designs for all types of new buildings and other works. He will work under the general supervision and control of the CE, Roads & Buildings. He will assign such duties to Architects, Assistant Architects and Architectural Assistants as may be considered necessary in consultation with the CE, Roads & Buildings.

Although the Chief Architect has furnished the Architectural designs, the concerned Engineer for according technical sanction should satisfy himself about the soundness of the structure.

3.4.4 Superintending Engineer

The administrative unit of OWD is the Circle in charge of a SE who is responsible to the concerned CE for the administrative and general professional control of public works in charge of officers of the department within his circle.

It will be the duty of the SE to inspect the various works in progress within his Circle and to satisfy himself that the system of management prevailing is efficient and economical that the different stores are duly verified according to the Rules laid down and that there is no accumulation of stock in any Division beyond its requirement and that the executive and administrative work of the Circle is satisfactorily performed. He should also see that no delay is allowed to occur in the submission of completion reports of work. It will also be his duty to watch and control the expenditure for works and he shall require a Divisional Officer to report to him details of expenditure on a monthly basis.

The SE will inspect all the Divisional Officers in his Circle and two Sub-divisional Offices at least once a year and report on the efficiency of the subordinates, office and party establishments, and see that the staff employed in each Division is, actually necessary and adequate for its management. He will forward for the information of the CE, reports of his inspection of Divisional offices detailing therein the results of his examination of initial accounts, accounts of stock, tools and plant and stock manufacture, register of works and other Divisional books, mode of preparation of estimates, contract/agreements, contractors accounts, system of recording plans and office work generally. He is required to make it his special duty during his inspection and tours to see that measurement books are carefully kept and measurements properly recorded. He will ensure that these measurement books are a complete record of the actual measurement of each kind of Work done for which certificates have been granted by the Divisional Officer. He should see that instructions regarding check measurement are duly observed. He should also ensure that the Divisional Officers are attending to audit objections, inspection reports and the reports of the Stores Verification Party promptly.

He should inspect his own office at least once a year.

In the discharge of his responsibilities for the maintenance of the authorized system of accounts throughout the Circle, the SE should examine the books of the Divisional Officers and their

subordinates and see that matters relating to primary account are attended to personally by the Divisional and Sub-divisional Officers and that the accounts fairly represent the progress of each work.

The SE is responsible for the supervision, and control of the timely assessment and collection of those items of revenue within his circle of superintendence for which his, branch of the Department if responsible

The SE is responsible to bring to the notice of the CE any unusual occurrence or accident involving loss of life and/or Government property.

The SE will be responsible for the engineering features of all designs and the accuracy of the rates in the estimates submitted from his office. While submitting any report, design or estimate to the CE, he will invariably state his own recommendation and opinion.

The SE while inspecting the various works under execution should invariably record the results of his inspection in the Register of Inspections maintained at the site of works for which tenders have been accepted by him by or a superior authority. He shall make final inspection of such works after completion thereof but before payment of the final bill.

SE 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 CE, are submitted in time.

SE 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.

SE is a direction and controlling officer. He is responsible to EIC/CE 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 EIC/CE in regard to technical and professional matters, and with respect to the suitability of projects or reasonability of designs.

SE 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.

3.4.5 Director of Design (Superintending Engineer-Designs)

Whenever any designs Organisation is attached to the Departments, the duties of the Director of Designs or the SE, Designs will be as follows:

a. To prepare designs and drawings of the works on the requisitions placed on him or as directed by the CE.
b. To inspect the site for the proposed works and inspect the works under construction for preparation or modification of the designs as and when directed by the CE.

c. To compile the general technical data and keep all the technical records of all designs and important works as directed by the CE.
d. To revise the specifications and manuals of works from time to time and bring them up-to-date to keep pace with the latest technical development.
e. To maintain the technical library of the Department.

3.4.6 Divisional Officer (Executive Engineer)

The executive unit of the department is the Division in charge of an EE, who is called a Divisional Officer. He is responsible to the SE of the Circle or CE if the Division is directly under the control of the CE, for the efficient execution and management of all works and in all matters within his Division. It is, therefore, a part of his duty to organise and supervise the execution of works and to see that they are suitably and economically carried out.

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.

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 Officer/Headquarters Office. The Divisional officer shall be responsible for arranging reconciliation of the accounts with the Accountant General's office.

The Divisional Officer should ensure the preparation of plans and estimates for all works to be executed in his Division, any error in the sanctioned plan and any variation in the conditions at site and the sanctioned plans and estimates should be promptly set right to brought to the notice of higher authorities to get the defects remedied before the actual execution of work, as the case may be.

He should ensure prompt and efficient execution of works according to the terms of the contract; should ensure that no act is done to nullify or vitiate a duly executed contract; that materials are not issued to works in excess of requirements; that the cost of materials issued to contractors is recovered as per the terms of the contract, that the register of hire charges of tools and plant is properly maintained and the hire charges are regularly recovered; and that site accounts of materials issued direct to works are maintained according to Rules.

In case of works executed departmentally, he should see that the work is executed strictly according to the plan, design and specifications, that materials are not issued to work in excess of requirement; that the hire charges of tools and plant engaged in the work are properly adjusted and that site accounts of materials are maintained according to rules.

He must inspect important works in his Division to ensure their execution according to the sanctioned plans and estimates.

In order to ensure that his subordinate staff are performing their duties properly, specially in respect of measurements of work, preparation and maintenance of muster rolls and work done by work charged establishment, he should inspect and test check some of the primary records.

Before passing a contractor's bill, he must satisfy himself that the work has actually been executed in accordance with the detailed measurements recorded and should check measure the work; whenever necessary, in accordance with the instructions in this respect. He should see that payments due are promptly made in accordance with the prescribed procedure and terms of the agreement.

He is responsible for the preparation of the budget estimates of expenditure and revenue of his Division according to the Rules prescribed in the Odisha Budget Manual and instructions of the Controlling Officer issued from time to time. He is also responsible for obtaining necessary sanction for modification in allotment of funds, re-appropriation and effective control over the expenditure in his Division.

He is responsible for the timely and correct assessment and prompt recovery of such items of Government revenue and other dues collect through his Division and will maintain such records and accounts for the purpose as may be prescribed.

He is responsible for careful collection of data necessary for the preparation of designs in the Designs Directorate.

Divisional Officers are responsible for taking proper measures to preserve and maintain all Government works and assets within their jurisdiction. They should keep accurate plans of Government lands borne on departmental registers. They should also see that their sub ordinates make themselves acquainted with the boundaries and see that Government land is not encroached upon.

It is the duty of the Divisional Officer to report immediately to the CE through the SE any important accident or unusual occurrence connected with his Division and to state how he has acted in consequence.

He should intimate the Collector of the district cases of unusual occurrence which may cause a law and order problem, under intimation to the SE.

Any loss of cash, stores etc., caused by any reason whatsoever, when discovered should be immediately reported to the SE as well as to the Accountant General. Petty cases involving losses not exceeding ₹ 1000 each need not be reported to the Accountant General unless there are in any case important features which merit detailed investigation and consideration.

Divisional Officers are strictly prohibited from commencing the construction of any work or extending public funds without the sanction of competent authority and from making, or permitting any except trifling deviation from any sanctioned design in the course of execution except under specific authority or in case of emergency, when the changes should be reported to the SE immediately.

Immediately on the completion of a work it will be the duty of the Divisional Officer to close the accounts of the work and prepare the completion report in the prescribed form.

a. The Divisional Officer should take necessary steps to obtain funds for the works and establishment under his control and submit accounts punctually for the money received and spent by him to the Audit Office according to the Rules and orders in force.
b. He should maintain relevant initial records referred to in OTC Vol. I in respect of personal claims of gazetted and non-gazetted Government servants of his establishment and exercise due scrutiny over the personal claims before the same are passed for payment as laid down in OTC Vol. 1.

He should exercise a thorough check an efficient control over his Divisional Account. He should before submitting monthly accounts, carefully examine the books, returns and papers from which the accounts are compiled. He has to ensure that the accounts furnished to the Accountant General are in accordance with the books maintained in the Division and they present a true and correct state of affairs.

He is responsible for the correctness of the original records of cash and stores, receipts and expenditure, in all respects and to ensure that complete vouchers are obtained.

He should see that the Sub-divisional Officer submit their accounts, various returns etc., complete in all respects on the due dates to the Divisional office.

It is his responsibility to see that the accounts are regularly posted from day to day and that the Divisional Account carries out his duties regularly and promptly.

He should undertake surprise verification of cash at least once a month in his own office and in the offices of the Sub-divisional Officers periodically and record a certificate of verification in the cash book.

He should pay prompt attention to all audit objections and reports and take steps to regularize the objections promptly and to avoid recurrence of irregularity of a similar nature. He should see that replies to inspection reports and reports of Stores Verification Party are sent promptly.

He should pay special attention to the timely procurement, storage pricing, issue, proper utilisation and timely verification of stores in his Divisions.

The Divisional Officer is held primarily responsible for affording information in cases of probable excess of actual over the estimated cost of work and should report any such probability to the SE at-once, describing the nature and cause of the excess and asking for orders. This report should be made on the work slip from Divisional Officers must also submit to the SE the work slip with such explanation as will enable him to pass orders in the case, on the occurrence of any irregularity in the rate or cost of a sub-head. All important liabilities not brought into account should also be noted in the work slip. He need not, however, submit the work slip in cases in which he can pass the excess over estimates finally under the Rules.

Every Divisional officer, is responsible to see that the surveying and mathematical instruments in his Division are properly maintained and will report on their condition to the SE at the end of each year. He should, at the same time take steps to-repair them where necessary. Any damage to the instruments due to neglect or carelessness should be properly enquired into the responsibility fixed.

It will be the duty of the Divisional officer concerned to furnish or Sub-Treasury Officer, after due inspection, with to furnish Treasury Officer, after the certificate prescribed in S.R. 71 of the Odisha Treasury Code Vol. 1, as to the security of strong rooms used or proposed to be used for the storage of money or other valuable property.

Note: Any selected sub-divisional officer may be deputed by the Divisional Officer.

If so required by the State Government the Divisional Officer concerned will inspect, at specified intervals and will report on, and suggest measures for the protection of any public monument or building of local architectural or historical interest, whether public or private property, which appear likely to fall into decay. It will be for the State Government to decide what steps are to be taken to obviate further neglect or destruction.

The Divisional Officer in addition to his other duties will consider himself to be the ex-Officio professional adviser of all departments of the State Government within the limits of his charge. In connection with such matters, he will deal with the civil authorities within his jurisdiction and it will be incumbent on him to see that no undue formalities are allowed to interfere with the performance of those duties which are essential or pressing.

Every Divisional Officer will inspect all Sub-divisional Offices, all independent Sectional Offices and some of the other Sectional Offices, in his Division at least once a year and record the results or such inspection in the prescribed manner. He must have the accounts of each of the Sub-divisional Officer under his jurisdiction (cash, stock, stores, tools & plant etc.) inspected by his Divisional Accountant twice a year.

He is required to make it his special duty during his tours to see that measurement books are carefully kept and measurements properly recorded and that they are complete records of the actual measurements of each kind of work done for which certificates have been granted. He should also see that any order of the Government regarding check measurement is duly observed.

Note: Appendix II may be seen for rules regarding test check of measurement by superior officers.

Every Divisional Officer is responsible for the proper upkeep and utilisation of all the special tools and plant in his Division and should report their condition to the SE at the end of each working season. Any damage to the special tools and plan due to the neglect or carelessness should be properly enquired into and responsibility fixed. He should at the same time take steps to have their repair and bring them to proper working condition.

It is the duty of every Divisional Officer to inspect every important work under his jurisdiction at least once a year and furnish a report on its condition to the SE with suggestions for improvement repair or otherwise as specified in the statutory or executive instructions issued by each Department.

It should be the duty of the Divisional Office to review the Register of Agreements once a month. As soon as a work under an agreement is completed, he should ensure that the final measurements are recorded and duly checked by the competent authority within three months from the date of completion of the work. He should see that the bill is finalised as early as possible.

The Divisional Officer should review the register of purchase orders once in a month to see that suppliers are made according to the terms specified in the purchase orders. Whenever suppliers are not made within the stipulated time, he should investigate whether the materials are still required or not and accordingly take steps to extend the time delivery or cancel the purchase order in full or part. He should also ensure that the rates allowed in the supply orders are competitive and reasonable and that the goods are brought at the DGS&D. rates wherever available.

The Divisional Officer should prepare the completion plan for record and submit to the Design Directorate or rather authorities as required.

The Divisional Officers under the CE, Roads & Buildings are responsible for issuing certificates of fair rent and cost of buildings hired by Government for public purposes. The Divisional Officer may also empower the Sub-divisional Officers working under him for issue of such certificates.

Other Divisional Officers are responsible for the issue of certificates of fair rent in respect of buildings hired by Government for use in their respective branches of Department concerned.

3.4.7 Sub-Divisional Officer (Assistant Executive Engineer/Assistant Engineer)

Each Division is divided into a number of Subdivisions which are kept in charge of Sub-divisional Officers. A Sub-divisional Officer is responsible to the Divisional Officer in all matters concerned with the efficient management and execution of works within his Subdivision.

The Sub-divisional Officer should amongst other items of duties pay particular attention to the following:

a. Timely and careful field survey and investigation, preparation of plans and estimates including revised estimate for all works to be done in his Subdivision. Any mistake in sanctioned plans and any variation in the conditions as site and the sanctioned plan should be promptly brought to the notice of the Divisional Officer so as to get the defects remedied before actual execution of the work.
b. Prompt and efficient execution of work according to the terms of each contract. He should ensure that no act is done to nullify or vitiate a duly execute contract that materials are not issued to work in excess of requirement; that the cost of materials issued to the contractor are recovered as per the terms of contract; that the Register of Hire charges of tools and plant lent to contractors is properly maintained and hire charges regularly recovered; and that site accounts of materials issued to works are maintained according to Rules.

Note: It is an invariable principle that unstamped hand receipt should be obtained when materials are issued either to a worker or a contractor.

a. He must regularly inspect works in his Subdivision to ensure their execution according to sanctioned plans, estimates, specifications and orders of higher authorities.
b. In order to ensure that his subordinate staff are performing their duties properly, specially in respect of measurement of works, preparation and maintenance of muster rolls and work done by work charged establishment, he should regularly inspect and check these primary records. He should also ensure that all unused materials of the Department are brought into account.
c. Before preparing a bill, he must satisfy himself that the work has actually been executed in accordance with the detailed measurements recorded and personally inspect all works of any magnitude before recommending final payment in connection therewith. He must satisfy himself about the correctness of the previous and current measurements and must also take measurement of all important works and check-measure the prescribed percentage of measurements as laid down in the Appendix-II of this Code. He must satisfy himself about the correctness of all the measurements recorded.
d. He is responsible to see that proper accounts of stores and tools and plant are maintained in his Subdivision in accordance with the prescribed Rules and procedure and the periodical returns connected therewith submitted to the Divisional Officer punctually and in a complete form. He must physically count all the articles of stock in the Subdivision twice a year and submit a report to the Divisional Officer of all articles of stock which are not likely to be required during the following twelve months. A certificate regarding the actual verification of stock should be recording in the stock books under his dated signature. Similarly, verification of tools and plant articles and materials at side should be conducted annually on the prescribed date and a report submitted promptly of the results of the verification to the Divisional Officer. At the time of change of incumbency, the stores in the personal custody of the Sub-divisional Officer should be physically verified.
e. He should ensure that all serviceable surplus materials at site of works which have been completed, abandoned or stopped indefinitely are utilised in other works within a reasonable time or transferred to works in progress or brought into the stock accounts with the prior approval of the competent authority so as to effectively ensure utilisation of all useful materials without any loss to Government.
f. He will take necessary steps to obtain the cash and stores for works under his control and to keep accounts in the prescribed manner and submit them completely and punctually to the Divisional Officer as prescribed under the Rules in force. Case book, initial accounts and other registers prescribed under the appropriate Rules should be maintained and periodical returns in respect of them submitted to the Divisional Officer promptly and punctually. He should verify the case balance by actual counting at frequent intervals apart from doing so at the time of closing of the month. Before submission of his monthly accounts to the Divisional Officer he should again carefully examine the works returns and papers from which the accounts are compiled as it is his responsibility to ensure the correctness in all respects of the entries of the transactions made in these primary records with reference to vouchers and receipts.

g. He is responsible for the preparation of budget requirements of expenditure and revenue of his Subdivision and for obtaining the necessary sanction for modifications in allotment of funds, re-appropriation and for effective control of expenditure.
h. He should maintain the prescribed registers in respect of all items of assets such as land, buildings, trees, canals, other structures, boats, motor launches and all special tools and plant and is responsible for the proper care of all Government properties in his jurisdiction.
i. He is responsible for the correct assessment and prompt recovery of all Government revenue and other dues relating to the Development under his jurisdiction.
j. He must report immediately any unusual, extraordinary or peculiar occurrence, which takes place within his subdivision to his Divisional Officer and to any other authorities as may be necessary.

3.4.8 Junior Engineer

Each Subdivision is divided into a number of Sections which are kept in charge of a JE.

JEs are responsible for all matters connected with the efficient management of the Sections to their Sub-divisional Officers or their Divisional Officers direct, in cases where the Sections are directly under the charge of the Divisional Officer.

JEs should pay particular attention to the followings among other items of duties –

a. Timely and careful field survey and investigation and preparation of plans and estimates entrusted to their charge. Any mistake in sanctioned plans and, any variation between the conditions at site and the sanctioned plan should be promptly brought to the notice of the Sub-divisional Officer or the Divisional Officer concerned with a view to get the defects remedied before actual execution of the work.
b. Timely and efficient execution of work entrusted to their charge.
c. Proper maintenance of muster rolls and record of work charged establishment,
d. Proper upkeep of measurement books issued.
e. Record of measurements in the measurement books of all works done by contract or otherwise as well as supplies received from all sources and preparation and submission of bills in prescribed forms for payment.
f. Proper preservation and care of tools and plant, stock and other stores kept in their charge.
g. Timely submission of budget, accounts and prescribed returns etc. to the Sub-divisional Officers concerned.
h. Correct assessment and prompt collection of revenue entrusted to their charge.

The JEs must report immediately any unusual, extraordinary or peculiar occurrence connected with their Sections to their Sub-divisional Officers and other authorities as may be necessary.

3.4.9 Divisional Accountant

To assist the Divisional Officer in the discharge of his responsibilities regarding accounts and financial regularity of the transactions of the Division, a Divisional Accountant is posted to each Divisional Office by the Accountant General. The Divisional Accountant is responsible to the Divisional Officer

for the correct compilation of accounts. He will exercise all the functions of the Treasury Accountant so far as check personal claims of gazetted non-gazetted persons are concerned whose pay is drawn by the Divisional Officer by cheque.

To enable him to perform the functions as an accountant, internal checker and financial assistant, he is treated as a senior member of the Divisional Officer Establishment. The relative position of a Divisional Accountant to the Divisional Officer in respect of accountant is analogous to that of Sub-Divisional Officer to the Divisional Officer in respect of works. Other duties and responsibilities of the Divisional Accountant are to be governed in accordance with relevant provisions of the CPWA Code.

3.4.10 Work-Charged Establishment

Work charged establishment falls under two broad categories (i) those who are engaged on general supervision of a specific work or of sub-works of specific project or upon the subordinate supervision of departmental labour, stores and machinery; (ii) establishment as is employed upon the actual execution of work, i.e. in doing certain specified items of works as distinct from general supervision of work.

In case of employees failing under category (i), whether brought on transfer from the regular establishment or recruited directly, for supervision in connection with a work, the pay and allowances should be charged direct to work and the cost should invariably be shown under a separate sub-head of the estimate of the work and accounted for accordingly in the works abstract. In regard to employees coming under category, (ii) the pay and allowances should be debited to the concerned item of work and the outturn thereof should invariably be compared to see that the expenditure on the establishment is commensurate with the volume of work done.

Notes: (1) For the work charged establishment under category (I), provision should generally be made at 2% of the estimated cost excluding the Departmental charges except the Rural Engineering Works costing ₹ 1 lakh and below, the provision should not exceed 3% of the estimated cost.

(2)Regarding service conditions of work-charged establishment, Appendix II should be seen.

The CE, SE and Divisional Officer may subject to such restrictions which the State Government may impose, sanction the entertainment of work charged establishment may impose, sanction the entertainment of work charged subject to the provision under a separate sub-head of the sanctioned estimate. So far as employment of work-charged establishment for certain specified items of work is concerned (i.e. execution of work through departmental labour), the expenditure on the establishment should be correlated with the corresponding provision in the sanctioned estimate, estimate and if there is no such provision in the sanctioned the estimate should be recast with the approval of the competent authority in order to see that the expenditure in within the sanctioned estimate.

The following powers are delegated for employment of work-charged personnel to the condition that no post is sanctioned except on a time scale of pay prescribed by Government.

Chief Engineer: Posts, the maximum of the time scale of which does not exceed ₹ (2000)

Superintending Engineer: Posts, the maximum of the time scale of which does not exceed ₹ (1500)

Divisional Officer: Posts, the maximum of the time scale of which does not exceed ₹ (750)

If it is necessary to create a new post on a time scale of pay not conforming to the scale of pay Prescribed by Government, prior sanction of Government in the respective Administrative Department has to be obtained.

3.4.11 Employment of Medical Establishment

If in connection with the execution of any project a labour strength of 500 or more is collected or owing to the unhealthiness or remoteness of the locality, it considered necessary to make special arrangements for medical treatment of the staff and labour force, necessary provision for the purpose should be made in the estimate of the project or work. Dispensaries and hospitals set up for the above purpose will work under the technical control of the Director of Health Services.

These dispensaries or hospitals should be placed in charge of medical officer of the appropriate status deputed from the state medical cadre. The competent authority concerned may appoint, non-gazetted medical and sanitary staff if these personnel cannot be obtained on deputation from the Health Department.

3.4.12 Police and Other Guards

When travelling or when income on public duty, officers are allowed a guard for the protection of public property. Such guards are supplied without charge by the Police Department in respect of works connected with roads and buildings and on payment of charges in respect of irrigation and electricity works. Application for provision of such guards may be made to the Superintendent of Police by an officer in charge of a Division. Such guards will not, however, be supplied unless the officer travelling is in charge of Government money or valuable Government property or unless the country is disturbed. In all cases, where, through the inability of the Police Department to supply a guard from the regular police force, special guards have to be entertained, the sanction of the State Government will be necessary. Officers may, however, in urgent cases entertain the guards in anticipation of sanction, reporting their action at once to the next higher authority. The services of such extra guards should be dispensed with directly if they are no longer required.

3.4.13 Employment of Labour Officers and Teaching Staff in Projects

In major projects or when a large labour strength of 500 or more is collected for the execution of any work, Labour Officers maybe appointed, for the maintenance of harmonious relation between the Department and labour. The main function of the Labour Officer is to help in setting by conciliation and arbitration all disputes between administration and labour and between the contractors and labour. They are also charged with the function of ensuring fulfillment of statutory and other obligations by the department towards contractors labour and for organism's welfare activities and securing provision of amenities for labour, Labour Officers when appointed shall be brought on

deputation from Labour Department. Provision shall be made in the estimate of projects or large works for a Labour Officer.

In cases where normal minimum educational facilities are not available near about any project area, the project authorities may set up schools, subject to the provision in the project estimate. The teaching staff for the schools may, as far as practicable, be obtained on deputation from the Education department and the appropriate authority may appoint the required teaching staff, if staff is not available on deputation. The schools, thus set up, would be under the technical supervision of the Education department.

3.4.14 Miscellaneous Rules

Persons employed in the Department and officers connected with execution of works, shall have no pecuniary interest directly or indirectly in the construction of any public work or in the manufacture, supply or sale of materials. They are further subjected to the Rules laid down in The Government Servants' Conduct Rules.

Every member of the Department must bear in mind that the receipt of commission or any consideration directly or indirectly on account of any business or transaction in which he may be concerned on behalf of Government is prohibited. Every officer of Government is bound to report to his departmental superior any infringement of this rule which may come to his knowledge.

3.5 Outsourcing of Services

With a view to enhancing the capacity as well supplementing the efforts of the department, outsourcing of services may have to be carried out for a variety of jobs and services such as given below:

a. Feasibility studies;
b. Preparation of detailed project reports;
c. Preparation of tender documents;
d. Survey and investigation;
e. Traffic census and planning;
f. Proof checking;
g. Construction supervision;
h. Inspection and quality testing;
i. Financial audit, technical audit and performance audit;
j. Structural analysis, design and drawings;
k. Environment studies, Environment impact assessment/Environment management plan, etc, Social impact assessment, Resettlement &Rehabilitation plans;
l. Architectural design and services;
m. Condition surveys; and
n. Landscaping.

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.

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.

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 whom in the department will be responsible for taking work from the consultant on time and of the best quality.

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.

3.6 Types of Consultancy Services Contract

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 para do list a few systems:

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.

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.

Percentage Contract: These contracts are best suited for architectural services, procurement, inspection agents, etc. Payments are related to the project cost.

3.7 Methods for Selection of Consultant

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 below:

Quality and Cost Based Method: This selection method combines the twin aspects of a proposal, namely its quality and the cost, with suitable weight ages to be assigned to the two.

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.

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.

3.8 Bids for Appointment of Consultants

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. For this purpose, Terms of Reference (ToR), qualifications of consultants, procedure for selection and other terms and conditions shall be clearly specified.

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.

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 the competent authority.

The bid document to invite proposals for consultancy shall be approved by the competent authority. 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

3.9 Individual Consultants/Experts

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.

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 lump sum basis or on the basis of daily fee.

Retired senior officers of the rank of CEs and SEs, 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.

3.10 Proof Consultant

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 proof checked 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.

The officers concerned of the department shall be associated with the proof consultant for better interaction and to strengthen their own skills and knowledgebase. As earlier indicated, one of the objectives of hiring consultants is to enhance the capabilities of the department and its officers.

3.11 Professional Liability

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 State Government. He shall be responsible for accuracy of data, designs, drawings, estimates and other documents prepared by him. The consultant shall indemnify the OWD against any negligence, deficiency in service or inaccuracy/deficiency in the work.

The OWD 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.

3.12 Settlement of Disputes

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.

3.13 Monitoring of Performance

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.

3.14 Taking Work from Consultant

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.

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.

SECTION 6

CLASSIFICATION AND STAGES OF EXECUTION OF WORKS

6 Classification & Stages for Execution of Works

6.1 Classification of Works

The works undertaken by OPWD are classified as follows:

6.1.1 Original Works

These shall mean:

i. All new constructions;
ii. All types of additions, alterations and/or special repairs to newly acquired assets, abandoned or damaged assets that are required to make them workable; and
iii. Major replacements or remodeling of a portion of an existing structure or installation or other works, which results in a genuine increase in the life and value of the property.

6.1.2 Repairs and maintenance works

These cover operations undertaken to maintain the assets in a proper condition and include maintenance and operation of all services. The "Repairs" are further classified into two categories as follows:

i. **Annual repairs:** These cover the routine as well as yearly operation and maintenance works.

ii. **Special repairs:** These cover major repair or replacement or remodeling of a portion of an existing structure or installation or other works due to major breakdowns, or deterioration, or periodic renewal, which do not result in a genuine increase in the value of the property.

Original works cover all new constructions including extension and improvement (or addition and alteration) to the existing works except as hereinafter provided.

- Original Works brings within its ambit the expenditure on repairs to newly acquire or previously abandoned buildings.
- In irrigation works case, any extension and improvement includes such works which increases either the efficiency of any system of work or its scope of action by any extension or addition to it. (For allocation of expenditure between Capital and Revenue, Rule 6 of statement 'A' to Appendix 2 of the CPWA Code may be seen).

When a portion of existing structure or other works not being a road surface, road bridge, causeway, embankment ferry approach protective or training work in connection with a road, is to be replaced or remodeled (whether or not the change involves any dismantlement and the cost of the change represents a genuine increase in the permanent value of the property as an asset, the work of replacement or remodeling, as the case may be, should be classed as "original work", the cost (which should be estimated if not known) of the portion replaced or remodeled being credited to the estimate for "original works" and debited to "repairs". In all other cases, the whole cost of the new work would be charged to "repairs".

Note : The SE's discretion may be classified towards the expenditure on minor additions and alterations to residential buildings up to 5% of the capital cost and ₹ 10,000 in respect of non-residential buildings as party works expenditure and debited to 'repairs', provided for such additions and alterations, separate estimates are sanctioned.

When an existing portion of a road, road bridge, causeway, embankment, ferry approach, protection or training work in connection with a road is to be replaced or remodeled (whether or not the change involves any dismantlement) and the change represents an appreciable increase in the value of the property, the whole cost of replacement of remodeling as the case may be should be classified as 'new work' and the cost or value of the portion replaced, or remodeled should not be debited to "repairs".

Exception – For classification of petty and miscellaneous item see Appendix-2 of CPWA Code.

The capital value of any portion of a building or on asset of capital nature which is abandoned or dismantled without replacement should be written off the total capital value in accordance with the Rules in the Odisha General Financial Rules and/or provisions made in this Code.

Note: Where due to normal calamity, any damage has been caused to any immovable property, which is not restored or party restored, such loss will have to be written off, otherwise the capital cost of the property and also the proforma account would be affected. But, it will not be necessary in case such damage is fully restored. This is the position both in case where the work is already completed or is in progress.

The terms "repairs" or "maintenance and operation" includes all operations required to maintain in proper condition or put to service buildings and works in ordinary use. It also includes new works in circumstances indicated in para 3-1-2. (b) and notes there under and those indicated in Appendix-2 of CPWA Code.

Original works are described as major, minor and petty when they cost ₹ 1,00,000 or above over ₹ 10,000 but less than ₹ 1,00,000, and, ₹ 10,000 or less respectively.

6.2 Pre-Requisites for Execution of Works

There are four main stages as follows in the execution of a work:

- Administrative approval
- Expenditure sanction
- Technical sanction
- Availability of funds.

No work should normally be commenced or any liability thereon incurred until an administrative approval has been obtained, a properly prepared detailed estimate has been technically sanctioned and where necessary expenditure sanction has been accorded and allotment of funds made.

6.2.1 Administrative Approval

"Administrative approval" is the communication of formal acceptance of the proposals by the competent authority of the Administrative Ministry/Department requiring the work.

6.2.1.1 Accord of administrative approval

The concurrence of the competent authority of the Administrative Ministry/Department requisitioning the work should be obtained to the Preliminary Estimate for the work. However, no such concurrence is required for normal repairs and maintenance works.

The Preliminary Estimate should be framed or countersigned by the competent authority and sent in triplicate to the Administrative/Department requisitioning the work. The requisitioning authority shall be requested to return one copy of the estimate, duly countersigned in token of acceptance, while communicating the administrative approval.

One copy of the administrative approval shall be endorsed to the concerned Accounts Officer.

6.2.1.2 Powers for accord of administrative approval

Various Authorities who get their works executed through the OWD, have been delegated specific powers to accord administrative approval to the works.

The amount of administrative approval accorded, in all cases, shall include departmental charges, wherever it is leviable.

In case of estimates for residential accommodation, it has to be seen by the authority concerned before the issue of administrative approval that the scale of accommodation provided for therein does not exceed the one approved by OWD.

If the estimated cost of a work exceeds the powers of any officer, the administrative approval of the State Government in the Administrative Ministry must be obtained.

Various officers have been delegated powers as in Section-6 to accord administrative approval for construction work.

6.2.1.3 Approval to work of additions and alterations

No authority, with the exception indicated in sub-para (b) below, is empowered to accord administrative approval to an estimate of additions and alterations to a building, if the expenditure contemplated would result in increase of the capital cost of the building to a figure which is beyond the authority in question entitled to accord the administrative approval in case of a new residence.

The EIC cum Secretary (Works), EIC (Civil), CEs, SEs and EEs may accord administrative approval, as per powers delegated to them.

6.2.1.4 Material deviations over original sanctioned scheme

Material deviations that significantly alter the scope of work from the original sanction should not be made without the approval of the authority that accorded administrative approval to the work, even though the cost of the same may be covered by savings on other items.

6.2.1.5 Excess over administrative approval

Excess up to 10% of the amount of the administrative approval may be authorised by Officers of the OWD, up to their respective powers of technical sanction. In case it exceeds this limit, a revised administrative approval must be obtained from the authority competent to approve the cost so enhanced. No revised administrative approval is, however, necessary if the excess is covered by the requisite expenditure sanction.

6.2.1.6 Expenditure Sanction

Expenditure sanction is to be accorded by the Administrative/Department to indicate that funds for the project/work have been provided, and liability can be incurred.

An order of appropriation or re-appropriation of funds shall operate as sanction to incur expenditure on minor works, and it shall not be necessary to issue any formal order conveying sanction to incur expenditure in such cases.

6.2.1.7 Powers for accord of expenditure sanction

Ministries/Departments of the Central Government may issue expenditure sanction in respect of major works costing up to a specified limit without consulting the Ministry of Finance.

In the case of works under the Administrative control of National Capital Territory of Delhi, necessary expenditure sanction will be issued by the Lt. Governor, Delhi after obtaining concurrence of the Delhi State Division of the Ministry of Finance, where necessary.

The Director General (Works) and Additional Directors General have been delegated powers as in Appendix-I to accord expenditure sanction for construction of houses for CPWD project staff in major projects, and for CPWD maintenance staff.

6.2.1.8 Excess over expenditure sanction

Expenditure sanction can be exceeded up to 10%, beyond which revised Expenditure Sanction shall be necessary. This should be applied for as soon as such excess is foreseen.

6.2.1.9 Technical Sanction

A "technical sanction" amounts to a guarantee that the proposals are technically sound, and that the estimates are accurately prepared and are based on adequate data and appropriate specifications.

6.2.1.10 Accord of technical sanction

After receipt of administrative approval and expenditure sanction, detailed estimates are required to be prepared for technical sanction. The technical sanction should be accorded by the competent authority before a work is taken in hand. In case of revised estimates, it is not necessary to wait for the revised administrative approval or the revised expenditure sanction to accord revised technical sanction.

A copy of the technical sanction for the building work should also be endorsed to the concerned Architect, EE (Electrical) as well as the Deputy Director of Horticulture for initiating action at the appropriate time on electrical, air conditioning, horticulture and other works. The municipal/Local Bodies and Electrical Supply Companies should also be approached by the EE, Civil and Electrical, well in time for providing External Services including power supply.

Before an estimate is technically sanctioned, the following shall be desirable:

i. Detailed architectural drawings and specifications.
ii. Preliminary structural drawings for foundations
iii. Preliminary structural drawings of superstructure at least up to slab at level 2
iv. Preliminary drawings for internal and external services.

The authority competent to accord such sanction shall ensure that the design and specification etc., adopted in the detailed estimate are adequate enough for the building to last till its desired life.

In case of work for which tenders are called on "Design and construct" basis, technical sanction of such works may be accorded only on finalisation of structural drawings, services drawings and other detail on submission of the same by the contractor. However it would be necessary that all the Architectural and structural data/parameters, details of functional requirement and complete specifications including preliminary drawings are finalised before the call of tenders on "Design and construct" basis.

For Technical sanction, detailed estimate shall be prepared based on applicable schedule of rates. Market rates shall be followed for the items not covered under schedule of rates.

Effect of prevailing cost index over the hypothetical cost Index of schedule of rate should be taken on the amount of detailed estimate for items for which rates are based on schedule of rate. Estimate should be technically sanctioned for the amount inclusive of effect of Cost Index.

6.2.1.11 Deviation in Technical Sanction

The technical sanction can be exceeded up to 10% beyond which revised 'technical sanction' shall be necessary.

6.2.1.12 Packages for accord of technical sanction

The authority of OWD who submitted the preliminary estimate to client should decide the project in to packages for inviting tenders.

The authority who decides the package will also decide the manner in which technical sanction(s) (one or many under each package) is/are to be accorded.

6.2.2 Appropriations & Re-Appropriations

Appropriation means assignment to meet specified expenditure of funds included in a primary unit of appropriation. Re-appropriation means the transfer of funds from one unit of appropriation to another under such unit. It is a fundamental principle that no outlay on a work shall be incurred without funds having been allotted for it by appropriation or re-appropriation. In exceptional cases, where expenditure is authorised in anticipation of the allotment of funds or in excess of the funds allotted for the purpose, the authorisation must be followed by a formal allotment of funds to the extent required.

Allotment of funds is intended to cover all the charges including the liabilities of past years to be paid during the year or to be adjusted in the accounts of it. It is operative until the close of the financial year. Any unspent balance lapses and is not available for utilisation in the following year, but Government will ordinarily endeavour to include any anticipated lapse in the demand for the following year. The financial year closes on 31st March, and after that date all cash and stock transactions are treated as pertaining to the following year.

However, the Transfer Entry Book and the stock accounts should be kept open for transfer entries relating to rectification of errors and settlement of outstanding. These accounts should be closed on the 20th May or on such other date, as may be prescribed by the Accountant General.

6.2.2.1 Powers for appropriation and re-appropriation

The powers to appropriate and re-appropriate funds to meet the expenditure on public works are vested with the EIC cum Secretary (Works)/CEs.

6.3 Execution of Works

6.3.1 'Pre-construction' and 'construction' stages

The execution of a project/work has two stages, viz. the 'Pre-construction stage' and the 'Construction stage'. The following activities are involved in these stages:

1. Pre-construction stage:

   i. Requisition from the client.
   ii. Preparation of site/soil data, and assessment of feasibility of services such as water supply, electricity, drainage and sewerage etc.

iii. Discussions with the client to assess and appreciate their requirements, incorporation of the same and preparation of preliminary plans.
iv. Approval of the preliminary plans by the client.
v. Preparation of preliminary estimate.
vi. Approval of the preliminary estimate by the client.
vii. Preparation of architectural drawings and review with client and modification of drawings, if required.
viii. Preparation and submission of the plans to the Local Bodies for their approval.
ix. Approval of plans by the Local Bodies.
x. Preparation of preliminary structural sizes.
xi. Preparation of services drawings.
xii. Preparation of detailed working drawings.
xiii. Preparation of detailed estimates for buildings and all services (civil, electrical and mechanical).
xiv. Preparation of NIT and call of pre-qualification applications, wherever applicable.
xv. Preparation of structural drawings.
xvi. Selection of contractors from the pre-qualification applications wherever applicable.
xvii. Call of tenders and pre-bid conference wherever applicable.
xviii. Receipt/Opening of tenders.
xix. Decision on tender and award of work.

2. Construction stage:—

i. Execution of work and contract management.
ii. Completion of work.
iii. Testing and commissioning.
iv. Completion certificate from Local Body including fire clearance.
v. Handing over to client.
vi. Settlement of accounts

6.4 Co-ordination of Works

6.4.1 Pre-construction stage

The co-ordination up to the stage of preparation of detailed estimate/NIT for execution of a project/work shall be done by the Senior Architect/Chief Architect handling the project. The preparation of lay out, preliminary and detailed working drawings of buildings shall be done by the Senior Architect/Chief Architect in consultation with the client Ministry/Department as well as with the SE (Planning), civil and electrical, after obtaining their proposals and requirements. For this purpose, the Senior Architect/Chief Architect shall send advance copies of the drawings to all the concerned officers and call for their comments. The detailed working drawings shall be finalised by him after taking into account such comments/data into consideration, and after further mutual discussions as may be necessary.

These drawings shall be sufficiently detailed to enable the field officers to relate it with the schedule of items for execution of work without any ambiguity or lack of clarity.

In case of works where architectural input is not required, such as road work, the EE (Planning) in Circle/SE (Planning) in Zone shall co-ordinate the work up to the NIT stage.

6.4.2 Construction stage

The co-ordination during the construction stage shall be done by the concerned SE (Civil) or by the Nodal Officer so appointed by the CE. He shall hold regular co-ordination meetings with the concerned officers of the four disciplines (including horticulture) to review the progress of the work, and to sort out hindrances or bottlenecks wherever these occur. He shall also invite the client's representative to participate in the co-ordination meetings for regular appraisal of progress of work, appreciation of client's needs and desire, and to sort out inter-departmental issues, if any. He shall issue regular minutes of such meetings to all concerned.

The EEs, Civil and Electrical, shall work in close co-ordination to ensure that all the preceding activities involving work of other disciplines are completed well in time before the subsequent activities as per the program of work are taken up. Activities that may conflict or cause avoidable damage to the work already done shall be avoided by proper planning.

Any change from the provisions in the architectural drawings that becomes necessary during the execution of work due to any practical difficulty etc., shall be brought to the notice of the Senior Architect/Chief Architect and his approval obtained.

6.4.3 Local Bodies

In all cases, where the OWD has to depend upon the local Municipal and other authorities for the provision of external services, viz. roads, drains, water supply mains, sewerage, electric mains, etc. there should be proper co-ordination between the OWD Officers concerned with the project and Municipal and other authorities. To avoid any infringement of building and health bye-laws of local Municipal Committee/Corporation, the building plans should be prepared by Senior Architects keeping in view the provisions and requirements of these bye-laws.

The Senior Architect shall pursue with the Local Bodies in close co-ordination with the EE (Civil) for obtaining the necessary clearances/approvals.

On commencement of work, the local bodies should also be moved simultaneously for provision of ancillary services. Provision for such external services, wherever required to be provided for by the Department should invariably be made in the main project estimate.

6.4.4 Horticulture works

When the building work has sufficiently advanced, the concerned DD (H)/AD (H) should initiate action for horticulture works.

6.4.5 Completion of Works

The administrative Department/Ministry shall be kept informed at regular intervals about the stages of progress of work so that the client's observations, if any, could be responded to before the work is completed.

On completion of the work, the Administrative Department/Ministry should be intimated of the same and formal handing over arranged in writing. Reasonable advance intimation of completion of the work should be given to the concerned Department to enable them to make arrangements for taking over.

Completion plans of the project, including all services, should be prepared and submitted along with the completion report showing the expenditure incurred on the project.

The Completion Report should be prepared from the Works Registers indicating the expenditure incurred till the date of completion and passing the excess, if any, as it may be within the competence of OWD Officers.

The EE in charge of the Building work should maintain a register called "Consolidated Register of Works" so as to exhibit the total cost of the project including all components viz., building, water supply, sanitary installation, electrical installations, etc. For this purpose, the concerned Divisional units, on completion of their portion of the work will intimate the audited figures of expenditure to the building Division through a Completion Report, and get the excess, if any, passed. The overall responsibility for obtaining the revised administrative approval and expenditure sanction for the project as a whole, wherever required, will rest with the EE (Civil).

Subsequent to the computerisation of accounts and Progress Monitoring System developed by the NIC in co-ordination with OWD, the actual expenditure figures from the Monthly Accounts that are entered and are being uploaded every month by the individual Divisional units to the Central Server. The Server automatically consolidates the actual expenditure figures of the various Divisional units' technical sanction wise under the respective administrative approvals of the works. The EE (Civil) shall, therefore, watch the expenditure figures from the website for taking action as above.

6.5 Works of Emergent Nature

Various works of emergent nature can be classified under two categories as under:

6.5.1 Emergency Works

Emergency works are those kinds of works which arise all of sudden and are inescapable requiring immediate action that cannot brook any delay. Emergency works may be taken up by CPWD under following situations:

i. Earth quakes
ii. Blizzards
iii. Hurricanes/lightening

iv. Tornados
v. Tsunami waves
vi. Floods
vii. Explosions/Arson
viii. Fire
ix. War
x. Sudden collapse of building, bridge
xi. Terrorist attack
xii. Mass strike affecting civic services such as water, sewer and power supply
xiii. Ceremonial functions at the time of death of Ministers, VVIPs etc.
xiv. Spread of epidemic
xv. Works required to maintain law and order in abnormal situations
xvi. Any work declared emergent by CE in case the interest of work so demands

In case of emergency, the work may be executed in absence of any or all of the above mentioned prerequisites. On such aforesaid situations or on receipt of such written order of the CE in case any work declared emergent by him, the EE/AE shall proceed to carry out the necessary work, and shall immediately intimate the AO concerned that he is incurring such a liability, stating therein the approximate amount of liability that he is likely to incur. The EE/AE should obtain the administrative approval and expenditure sanction and accord of technical sanction of the competent authority to regularise the liability as early as possible.

6.5.2 Urgent Works

The urgent works need not to be treated as par with the works to be taken up under emergency situations. Urgent works may be defined as those kinds of works which requires fast start/completion within compressed schedule and are to be taken up on top most priority at the instructions of competent authority. Under such situation availability of funds needs to be ensured before taking up execution of works.

Urgent works can be taken up at specific request of user department with prior in principle approval of OWD officers competent to approve the work order to be issued to take up such works if work is to be executed through work order. CE shall be final authority to approve the execution of urgent works.

The financial powers under emergency and urgent situation should be exercised with great caution after watching the financial Interest of Government.

SECTION 7

DEPOSIT WORKS

7 Deposit Works

7.14 Definition

The term 'Deposit Works' is applied to works of construction or repairs and maintenance, the cost of which is met out of Government grants to autonomous or semi-autonomous bodies or institutions through their Administrative Departments.

7.15 Taking Up of Deposit Works

The work shall be executed in accordance with the procedures laid down for the OWD works. However, the norms regarding plinth areas and specifications of the client department may be adopted even if such norms are at variance with OWD norms. In such cases the client should be intimated beforehand about the government norms and financial repercussions.

The OWD should normally decline to undertake as deposit work the maintenance of buildings that were not originally constructed by OWD, and maintenance of mechanical/electrical equipments that were not originally procured and installed by OWD. Maintenance works of such buildings and installations may, however, be undertaken if it is in the interest of State Government to do so, e.g. when the Body or Institution is financed largely from State Government grants and defects in construction or maintenance might lead to demand for further financial assistance from the Government, or where the buildings concerned are Government buildings, which, if and when vacated by the Body or Institution occupying the same, could be used for Government purposes or leased at a profit.

7.16 Powers to Undertake Deposit Works

The officers of the OWD have been delegated powers to undertake deposit works. No deposit work should be undertaken without the prior approval of the competent authority.

Before acceptance of any deposit by the EE, it is essential that an estimate should be sent to the client Department/Body/Institution after fully ascertaining all necessary site details, technical feasibility, topographical details, ownership of land etc. In case any preliminary works like soil testing, site survey/contour etc. are to be done before hand, a small estimate may be sent to the client and deposits received.

7.17 Realisation of Deposit

Whenever a deposit work is to be undertaken, the deposit should be realised before any liability is incurred on the work. 1% of the anticipated project cost should be realised before preparation of preliminary estimates. In addition to the outlay on the work in the preliminary estimate, departmental charges at such percentages as are prescribed by the GOI from time to time shall also be realised in advance. No interest will be allowed on sums deposited from any source, including private contributions.

In the case of deposit works of autonomous bodies which are financed entirely from Government grants, and from whom receipt of deposits is assured, 33-1/3% of the estimated cost of the work may be got deposited in advance. Thereafter, the expenditure incurred may be got reimbursed through monthly bills simultaneously with rendering of monthly accounts on the progress of work. The deposit of 33-1/3% obtained as the first installment should be retained for adjustment against the last portion of the estimated expenditure.

To enable the client to provide additional funds in time whenever the expenditure is anticipated to exceed the preliminary estimate figure, a revised preliminary estimate should be submitted to the client well in time during the execution of work.

Where a client has defaulted in making the required deposit, and where the outstanding amount exceeds ₹ 10 lakhs, or where the works outlay is predominantly for purchase of capital equipments and machineries, the entire deposit including departmental charges should be realised in advance.

The client is to be clearly made to understand that the OWD does not bind itself to complete the work within the amount of the preliminary estimate, and that they should agree to pay for the excess expenditure that may occur. An acknowledgement of this clear understanding shall be obtained from the client before the deposit work is taken in hand.

The EE should ensure that at any time during the progress of the work, the expenditure is not more than the deposits received for the work. Where the EE is doubtful about the timely receipt of deposits, he should notify the client that if further deposit is not received, the work would be stopped, and any contractual liability arising out of such stoppage of work will be borne by the client. He should also bring this to the notice of his higher officers for taking up the matter with the client.

While submitting preliminary estimates for deposit works for obtaining administrative approval and expenditure sanction, a copy of the terms and conditions under which the works would be taken up by OWD should also be enclosed.

7.18 Transfer of Deposits

It is incumbent on the part of the Civil Division to transfer to the concerned Electrical/Civil/Horticulture Divisions a part of the deposit in requisite proportion.

7.19 Execution of Deposit Works and Settlement of Accounts

With regard to design, estimate and execution of work, instructions as contained above should be followed. The scope of work should not be altered without written permission of the client.

The EEs shall send to their Accounts Officers every month the Statement of Expenditure with the Schedule of Deposit Works in for transmission to the concerned client after verification.

The EEs should also send a quarterly report to the clients showing the amount deposited and the expenditure incurred against each of the works for settlement of accounts.

It is necessary that the EEs settle their accounts against the deposit works expeditiously.

SECTION 8

PREPARATION OF ESTIMATES

8 Preparation of Estimates

8.1 Preliminary Estimate

Preliminary estimate is to be prepared on the basis of plinth area of building or length of road etc. worked out on the rate per unit area/length/number, or such other method adopted for ready and rough calculation, so as to give an idea of the approximate cost involved in the proposal.

The preliminary estimate shall be prepared on the basis of the preliminary drawings prepared by the Senior Architect, and shall appropriately indicate in the history sheet the items that are included or excluded in the estimate.

Provisions as required by the Chief Architect/Sr. Architect for architectural planning jobs shall be made in the preliminary estimate/enabling estimate as the case may be, to be submitted to the competent authority for accord of Expenditure Sanction.

8.1.1 Preliminary survey, etc

Where any preliminary survey, site/soil investigation, preparation of project reports including appointment of consultant and/or other essential preliminary steps connected with the schemes, is needed to be done before the preliminary estimate for the requisitioned work can be finalised, a separate estimate for such purpose(s) may be prepared, and sent to client department for sanction. Where, however, such works are required to be carried out after the receipt of administrative approval and expenditure sanction and at the time of preparation of detailed estimate, necessary provision for this purpose may be made in the preliminary estimate.

8.1.2 Preliminary data and drawings

Whenever a requisition is received for a work, the same should be passed on to the concerned Senior Architect for preparation of preliminary drawings. On receipt of the requisition, the Senior Architect shall obtain the detailed requirements from the concerned Administrative Ministry/Department or client (in respect of deposit works), in the relevant proforma placed at Appendix-4.

Where required, he shall also obtain the survey plan and site particulars and other site data from the concerned EE in the relevant proforma placed at Appendix-4.

He shall consult the representatives of all the concerned disciplines for incorporating their requirements in the preliminary plans.

He shall thereafter prepare preliminary plans and brief specifications according to the requirements for the work, and obtain the approval of the client department for the same. The preliminary drawings should indicate sufficient details for preparation of preliminary estimate.

He shall then forward these approved plans and brief specifications to the concerned CE/SE/EE, Civil and Electrical, for preparation of the preliminary estimate.

8.1.3 Plinth areas for residential buildings

The plinth area as per norms should be followed for all construction works in the General Pool houses as well as houses for other Ministries/Departments where such norms are applicable.

No deviation from the prescribed scales should normally be made, unless specifically desired by the client department. In such circumstances specific reference to the deviation should be made in the history sheet of the estimate.

8.1.4 Preparation and forwarding of preliminary estimate

CE/SE/EE of the major component shall be the nodal officer for forwarding estimates.

Estimates solely for Civil, Electrical, Horticulture works up to the value for which EE/SE/CE is competent to accord technical sanction, shall be sent at the Division/Circle/Zone level respectively.

Estimates for works requiring input from more than one division and/or more than one discipline shall be sent only at the circle level. That SE can submit PE including civil, E&M and Horticulture components up to the sum of combined power of Technical Sanction of individual concerned. Copy of the estimate is to be sent to CE Civil and Electrical and Horticulture units.

The SE in charge of major discipline of work will send the consolidated estimate after obtaining input from all concerned units to all the other disciplines as well.

For all major works only single estimate covering all aspects of building and services will be sent through concerned CE (Civil).

Provision for services like sanitary, water supply, drainage and electric installations etc., should be made on the basis of plinth area rates. Provisions for items for which plinth area rates are not available, shall be made on rough cost estimation basis and included in the estimate.

Provisions for various services shall be incorporated in consultation with the concerned disciplines.

While forwarding the preliminary estimate to the client department for accord of administrative approval and expenditure sanction, an indication shall be given in the history sheet that the cost and time of the project is liable to revision due to probable escalation in cost of construction apart from reasons such as change in scope, area, design and specifications etc. if so desired by the client at a later date.

While sending the estimates it shall be made clear to the client department that execution of the works will depend upon the receipt of the funds through authorisation or through allocation well in time during the financial years.

Works for which sanctions are received after the month of November should be ordinarily taken up for actual execution in the next financial year and the client departments should be informed accordingly so that necessary budget etc. can be arranged by them for the Financial year in which works are liable to be executed.

In respect of maintenance operations for buildings other than those in general pool, the concerned departments should be requested to give a complete list of works required to be carried out and estimates given to them latest by the month of April.

8.2 Provision for Contingencies and Its Utilisation

In addition to the provision for all expenditure which can be foreseen for a work, a provision of contingency shall be kept as follows:

a. Estimated cost up to ₹ 1 crore 5%
b. Estimated cost more than ₹ 1 crore ... 3%, subject to minimum of ₹ 5 lakhs

This provision is also intended to cover the cost of work-charged establishment for which no provision should be made separately except in the case of annual maintenance estimate where provision is made for such establishment under a separate sub-head of the estimate.

The contingencies can be utilised for construction of site office, engagement of watch & ward staff and job works like surveying, material testing, estimating, structural design, drawings, models and other field requirements etc.

8.3 Preparation of the Detailed Estimate

The preparation of detailed estimate and drawings and designs should be taken up only after obtaining an assurance from the Department/Ministry sponsoring the proposal, that the site is available, and without any encumbrances or is likely to be made available within a reasonable time.

On receipt of the administrative approval and expenditure sanction, and confirmation about the availability of site, the concerned authority shall decide on the packages for the purpose of accord of technical sanction. The SEs/EEs (P), Civil and Electrical, shall forward to the Senior Architect all relevant structural and service data based on the approved preliminary plans, for preparation of detailed working drawings and architectural specifications for the work. On receipt of such drawings, the competent authority shall take up the preparation of the detailed estimate, and accord technical sanction.

The detailed estimate should be complete and as comprehensive as possible, and should be supported by detailed architectural drawings, preliminary structural plans, preliminary lay-out drawings of the various services, detailed drawings and specifications for the various components of work involved, etc., as applicable.

The work is to be executed strictly as per the detailed working drawings and specifications finalised by the department.

The detailed estimate should give broad details for each item of the work involved. Other details shall be covered by the accompanying detailed drawings and specifications. The detailed estimate should be based on the rates given in the Schedule of Rates for those items of work covered by it, and by analysed market rates for the remaining items.

The plan and design of the external services shall be got vetted from the technical sanctioning authority for the main building work before the detailed estimate for the external services is technically sanctioned by the competent authority at a lower level.

The detailed estimate should invariably contain the following information:

i. Necessary details in support of the lump-sum provisions made in the estimate, if any.
ii. Basis on which the rates have been provided, i.e. reference of the schedule of rates or market rates.
iii. A brief note on the special construction difficulties, if any, which are likely to be encountered during the construction stage.

8.4 Format for Detailed Estimate

The detailed estimate shall consist of a report plans, specifications 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 like-wise the specifications, but details of measurements and abstracts of costs may conveniently be prepared for each work, supplemented by a general abstract bringing the whole together.

The estimate for a project/work should be comprehensive, supported by complete details and based on drawings and design, where necessary.

The 'Report' of the estimate should be prepared in a lucid form, understandable by non-technical officers of the administrative Department or the client. It should be comprehensive enough under each sub-head as mentioned below.

i. History: Particulars relating to the initiation of the proposal, and events leading up to it, and its general purpose, including references to previous correspondence, documents and specifications, where necessary.
ii. Design: A description of the proposal, particularly with regard to its location and design, also with reference to standards and specifications, calculations and drawings, where necessary. In case of a revised estimate, a description of the original proposals and those finally adopted should be given.
iii. Scope: An explicit statement as to what work is and is not covered by the estimate, also a reference to what arrangements are being made for any portion(s) of the work which are not included in the estimates.
iv. Rates: Particulars as to how the rates have been arrived at, giving reference to the relevant standard schedule of rates or market rates and also to the details accompanying the estimate, where necessary, with any special explanation connected therewith.
v. Cost: Cost of the work, and in case of revision, a comparison with the amount originally provided under any previous administrative sanction or detailed estimate.
vi. Method: The method proposed for carrying out the work, whether by contract or daily labour, or any combination of these.

vii. Establishment: Details of any provision made in the estimate for work-charged establishment, when necessary.

viii. Construction Plant: Any special methods of construction to be adopted with reference to specifications, etc. and details of the provisions that have been made in the estimate for necessary construction plants and machineries, etc.

ix. Land: Provisions for details of land, when necessary.

x. Time: The estimated time of completion from the date of receipt of A/A & E/S. indicating break up for pre-construction and construction stage activities.

Full reference should be given in respect of the Architectural, structural and services drawings accompanying the estimates in support of the details submitted therein.

8.5 Schedule of Rates

To facilitate the preparation of estimates, as also to serve as a guide in settling rates in connection with contract agreements, a schedule of rates for each kind of work commonly executed should be maintained up-to-date in the Department. It should be prepared on the basis of the rates prevailing in each station and necessary analysis of the rates for each description of work and for the varying conditions thereof should, so far as practicable, be recorded.

The rates entered in the estimates should generally agree with the scheduled rates, but where due to any reason, the later are not available, market rates may be considered.

8.6 Supplementary Estimate

Any development that is thought necessary while a work is in progress, and which is not fairly contingent on the proper execution of the work as first sanctioned, may be covered by a supplementary estimate. This estimate must be accompanied by a full report of the circumstances that render it necessary. The abstract must show the amount of the original estimate and the total of the sanction required including the supplementary amount.

8.7 Revised Estimate

When an excess beyond permissible variation over the sanctioned estimate is foreseen, and 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.

8.8 Estimates for Additions and Alterations

Normally all cases of additions and alteration should be carried out after preparations of detailed working drawings. While submitting estimates containing the proposals for additions and alterations, the fact that the concurrence of the client/occupant has been obtained should be stated explicitly.

Normally no work of addition/alteration which involves structural changes in the residential buildings, or alters the aesthetics of the external facade, shall be carried out except with the approval of concerned Architect.

8.9 Details to be Provided with the Estimate

While submitting estimates for additions and alterations to various residential buildings owned by the Government, capital cost thereof should invariably be furnished in the forwarding letter along with the following information:

i. Complete justification for each item of additions and alterations desired by the requisitioning authority, with comment on the necessity or otherwise thereof.
ii. Whether such work has already been carried out in any other residence of the same type and if so agreed by the Ministry. Reference to such cases should be quoted.
iii. Whether acceptance of the proposal is likely to have repercussions.
iv. Whether the proposal has the approval of the competent authority in the case of residences of Members of Legislative Assemblies.
v. Whether the proposed additions and alterations will result in increase of the prescribed scale of certain item. The existing number or area, sanctioned scale for similar type or house and maximum or minimum number or the area of requirement provided elsewhere should also be supplied.
vi. If the additions and alterations result in increase of the plinth area, what will be the additional license fee? In such cases, pay of the officer occupying the house and the pooled standard license fee of the house should be indicated.
vii. Information regarding availability of funds to finance the proposal.

Where a portion of the house/premise is required to be demolished, the estimate should provide for the cost of dismantling. Credit for the value of dismantled materials should be given to the estimate. Report of the estimate should contain proposals for utilizing the useful materials obtained from the dismantled material, and for disposal of unserviceable items.

8.10 Estimates for Petty Works

In case of new petty works, which do not come under ordinary repairs, a requisition for the same shall be obtained from the client department.

On the requisition thus received, the Divisional Officer, or an AE/JE empowered by him to act in such cases, will record his opinion as to what work should be done, and give on the face of the requisition a rough estimate in lump sum or otherwise of the probable cost of the work asked for.

8.11 Estimates for Road Works

Projects for the construction of new roads must be accompanied by the following documents:

i. Report, including a brief note on the proposed gradients.
ii. Abstract estimate of cost.

iii. Index map.
iv. A detailed survey and longitudinal section and cross section at suitable intervals, which should show not only the existing ground levels, but also proposed formation levels.
v. Quarry charts showing the various quarries from where road metal is proposed to be obtained.
vi. Drawings of all masonry, concrete, iron or timber works in the order in which they occur in the line of the road.
vii. Detailed estimate sheets.

Estimate for new lines of road should include the cost of all dwellings and inspection houses intended to be built along it for accommodation of subordinates and others.

Necessary provision should also be made for shifting of pipe line, drainage and electric poles and cables, telephone lines, if any coming in the way of new alignment.

8.12 Estimates for Furniture

Estimates for interior decoration, furniture and furnishing shall be prepared based on client's requirements.

The cost of furniture in cases of OWD offices will be chargeable to the contingent grant of the office of CEs and SEs, Divisional and Sub-Divisional Offices as the case may be.

The Superintendent/Head-Clerk in the various offices, or the official so designated for the purpose, shall maintain the numerical account of the office furniture in their office. Annual physical verification shall be conducted by an independent officer at least of the level of AE or Section Officer, who shall record the required certificates.

The supply of and repairs to furniture for any of the Government Inspection Bungalows in charge of the OWD, Inspection Bunglows and Hostels managed by GOI will be carried out by the OWD. The first supply of such furniture should be charged to the estimate of the building for which the same is required.

The furniture in the Governor House specified and entitled officers bungalows and residences and Guest Houses at stations outside Bhubaneswar will be provided and maintained by the OWD.

8.13 Estimates for Purchase of Buildings

In case of purchase of built up accommodation to house the offices of GOI/UT Administration wherever authorised by the Ministry, a separate estimate is required to be prepared after confirming the structural soundness of the building, and after a survey and valuation report of the EE is submitted to the Ministry/Administrator and concurrence thereto obtained from the Ministry of Finance.

The maintenance of such buildings will normally be carried out on the same plinth area rates/percentages basis as laid down in case of other Government buildings, unless there are constraints in doing so.

8.14 Estimates for Repairs to Leased and Requisitioned Properties

The Government takes on rent/lease or by requisition some buildings if and when considered necessary, for residential and office accommodation. The repairs estimate for these buildings should be prepared on the same plinth area rates/percentages basis.

While submitting estimates for repairs or additions and alterations to such buildings, following information should invariably be furnished in the report of the estimate:

i. Whether or not the building in question is a leased or requisitioned one.
ii. In case the building is a leased or requisitioned one, the following further information should be furnished:
iii. Whether the proposed repairs or additions and alterations are due to Structural defects or not.
iv. Whether or not the land lord was approached, and whether he has consented to the carrying out of the repairs or additions and alterations in question.
v. If the land lord has not consented to the proposed repairs etc., how the Government is interested in carrying out the proposed work.
vi. Whether the proposed work is inescapable or otherwise, and whether the work of additions and alterations may be carried out at Government expenses.
vii. What expenditure will be incurred for restoration of the building to its original condition?

In case of additions and alterations, if any portion of the building is to be demolished, necessary credit for the dismantled materials should be afforded to in the estimate, as done in case of Government buildings.

SECTION 9

SAFETY MANAGEMENT

9 Safety Management

9.1 Introduction

The accident rate in construction industry including roads and buildings is much larger than what is generally believed. Construction workers are exposed to a wide variety of hazards. Such 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 on the subject such as the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, f996; Industrial Disputes Act, f947; Workmen Compensation Act, f923 and other Labour Acts, besides provisions of the Indian Penal Code.

Structural safety shall be observed during construction and maintenance stages. National Building Code of India, 2005 and other applicable safety codes shall be referred.

Safety in design construction and maintenance of road and building activities has many facets. It relates to the safety of the roads, structure, safety of the workers, safety of the public, fire safety etc. Safety in roads and safety in buildings have been dealt with separately.

9.2 Safety in Design and Construction of Roads

Road safety has certain aspects requiring mutual co-ordination as multiple agencies are involved as detailed below:

a. OPWD/other Highways Authority which are responsible for road construction and maintenance
b. Motor Vehicles Department/Licensing Authority which are responsible for issuing of driving licenses and certificate of 'vehicle fitness;
c. Police Department which is responsible for regulating traffic, enforcing laws and educating people and prosecution in case of accidents;
d. Town Planning Department/Development Authority which are responsible for land use planning; and
e. Health Department which is responsible for treatment of accident cases and management of trauma centers.

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 Government Department needs to 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 could further advise the concerned departments on road signs, road geometry, etc.

For enhancing safety measures to be undertaken some of the following aspects need to be considered:

a. Improvement of geometries (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.

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 man oeuvre; 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 behavior;
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.

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 (IRC) Publication No. IRC: SP: 55 titled 'Guidelines on Safety in Road Construction Zones' may be referred.

9.2.1 Road Safety during Driving

Driving on highways requires skill, SAFETY MANAGEMENT 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) familiarize 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.

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 license (issue, disqualification, suspension, cancellation), roadworthiness 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.

9.2.2 Important Measures for Road Safety

In order to tackle safety problems effectively via engineering, it is necessary to apply measures at various stages in the development of road networks. By incorporating good design principles from the start it is possible to avoid many problems simply by planning new roads in a safety-conscious manner; for example, widening through roads at T-junctions to permit protected turns. Furthermore, incorporation of safety features (e.g. channelisation or guardrails) during the design and construction phases can usually be undertaken at lower cost whilst roads are being built and can make the road environment more ‘forgiving’, when a driver makes an error.

Even where the opportunities to intervene at the planning and design stages have not been taken, it may still be possible (although more expensive) to anticipate future problems and to improve existing roads by the introduction of safety or environment related measures, such as road humps to reduce speeds or lorry gates to prohibit heavy goods vehicles from residential areas. It is also essential to identify hazardous sections of the existing road network so that appropriate remedial measures can be undertaken to reduce the likelihood and severity of accidents at those locations.

9.2.3 Planning, Design and Operation of Roads

Various road safety strategies and countermeasures have been used at different stages of road network development. This method of seeking to prevent road accidents has been termed as safety conscious planning, design and operation of roads as detailed below:

- **Planning** has a profound effect upon the level of road safety and can have a major impact upon pedestrian accidents in particular.
- **Geometric design** normally seeks to ensure uniformity to alignment and maximum levels of safety and comfort for drivers using the road, within given economic constraints.
- **Traffic Management of the Network** approaches have been developed to tackle the problems of road safety and congestion on existing road networks. Although many of these

traffic management measures are aimed primarily at reducing congestion or improving traffic circulation, there are often associated benefits in terms of general traffic safety.

- **Systematic Identification and Treatment of Hazardous Locations** has proven to be successful. Although the countermeasures used may need to be different to reflect the differing social, cultural and economic circumstances of the country concerned, the systematic methods and techniques for identifying black spots and analyzing the problem are directly transferable to the developing world.

9.2.4 Safety Features in Design of Roads

In order to focus the attention of central and local road authorities on road safety, the improvement of road safety deserves to be made a statutory duty. Under such legislation, each level of local authority is required to undertake road safety activities on its road network. This often includes the collection of accident data, accident analysis, the definition of "Black-spots" and the design of remedial measures. In recent years, mandatory "Road Safety Audits" have also been added to the list of responsibilities.

Road safety audit is a formal procedure for assessing accident potential and safety performance in the provision of new road schemes, the improvement and the rehabilitation of existing roads and in the maintenance of existing roads. These should be an integral part of highway planning, design, construction and maintenance. A team which is independent of the design team should undertake the safety audit for independent assessment of schemes by persons unconnected with the original design. Accordingly, the team should have specialist expertise in the fields of road safety engineering, accident investigation and prevention.

To be fully effective, the process requires commitment amongst politicians, both in central and state government, top management and line managers in any road commissioning, design or construction organisation, together with an awareness of the role and benefits of safety audit.

9.2.5 Safety of Existing Roads

The statutory duty on road safety (noted above) often includes studies into road accidents on roads within the area of the authority and implementation of engineering measures for the reduction and prevention of such accidents. These include construction, improvement, maintenance or repair of roads and other measures for controlling, protecting or assisting the movement of traffic. Road authorities should be entrusted with statutory responsibility to promote and improve road safety on all roads in their area.

9.2.6 Improvement of Black Spots

There is often insufficient money to cover routine and periodic maintenance so road safety and related matters are usually low on the list of priorities. This is despite road safety improvements being cost effective with very high savings (in reduced accidents) being achieved which are many times the cost of countermeasures implemented. Hence the improvement of known hazards should form part of every road authority's annual programme.

Drivers are often presented with misleading information or no advance warning, sight lines may be inadequate, pedestrians may not be catered for, and accidents may occur because of a driver's inability to cope with the particular combination of circumstances and environment. By identifying and eliminating the features which make sites hazardous, engineers can improve road safety.

For example, the use of road signs and markings to channelize traffic through complex junctions, or to provide safe waiting areas for turning vehicles, can often result in substantial reductions in accidents. Yet, because of a lack of funds and poor maintenance capability, known hazardous locations are often left untreated and remain the cause of accidents.

9.2.7 Public Transport

Despite increasing car ownership, public transport is and will continue to be a key component of people's mobility in fulfilling their needs for work, social and recreational travel. Public transport provides an efficient use of road space and, by the correct planning of transport and peoples' activities, the number of road accidents can be reduced and the overall safety and efficiency of the road network increased.

9.2.8 Other Road Users

Other than four wheel vehicles, the more vulnerable category of road users include pedestrians, cyclists, motor-cyclists and moped-riders, auto-rickshaws, those riding or driving animals or with animal driven carts. Driver behavior towards those in smaller vehicles or on foot is generally unsympathetic. Although some segregated crossings are provided, facilities for pedestrians are still far from adequate, with few channelising devices or traffic islands to break up the traffic flows and provide a safe refuge for pedestrians to cross several streams of traffic. This contributes to a substantial proportion of road accidents in urban areas and probably also in a high proportion in rural areas where under reporting of accidents is considered to be most prevalent.

9.3 Road Safety Audit

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.

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.

9.4 Highway Patrolling, Traffic-Aid Posts and Trauma Centers

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.

9.5 Safety in Construction of Buildings and Other Structures

Provision for safety at the construction stage shall cover the following:

Foundation safety, which requires proper geo-technical investigations, 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, appropriate choice of foundation and its adequate design to prevent sinking and differential settlement; and protective works like benching, shoring, timbering or other measures to avoid falls or collapse of side walls.

Structural safety during normal conditions requires appropriate choice of materials taking into account the usage, location, climate and the requirements of durability, proper design by a qualified structural engineer in accordance with codal requirements, proper detailing; and sound construction with emphasis on quality.

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

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 behavior and strength.

9.6 Workers' Safety

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.

Unsafe conditions like the following shall be strictly avoided:

- Inadequate or missing guards of moving machines;
- Improper storage of inflammable and combustible materials;

- Non-erection of caution boards and danger signs at wanted locations of trenches or face of excavation;
- Storage of excavated material close to the edges;
- Inadequate fire warning and fire fighting system;
- Improper illumination;
- Unsafe methods and processes while performing various tasks;
- Protrusion of steel rods, pipes and other objects;
- Improper working platforms, poorly erected scaffolding without firm base ,and inadequate lateral ties and bracing;
- Inadequate timbering/shoring of excavations or unfenced excavations;
- Quicksand conditions;
- Sudden lowering of water table;
- Openings, cutouts, stair-wells, lift wells, etc. without or inadequate hand rails and toe boards around them;(n) Improper and unsafe access to work areas;
- Keeping loose materials at elevated places;
- Inadequate earthing of electrical equipments;
- Faulty electrical connections and cabling;
- Defective cranes and lifting tackles;
- Poor housekeeping; and
- Missing covers over the opening of water/sewage storage tanks.

9.6.1 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:

- Inserting bare wires in sockets instead of using plug tops;
- Exposed extension boards without on-off switches;
- Loose connections;
- Non-use of earth-leakage-circuit-breakers (ELCBs);
- Disengaging a person in contact with a live circuit without self-insulation from earth or without switching off the mains;
- Poorly maintained and poorly insulated portable equipment;
- Long, dangling cables from the place of supply to the place of use;
- Use of undersize cables;
- Working on energised circuits without sufficient precautions;
- Non-provision of temporary lightning arrestors for high rise buildings;
- Deployment of un-qualified/un-skilled electricians;
- Poor preventive maintenance;
- Improper earthing of electrical equipments; and
- Overloading of circuits due to replacement with higher load rating equipment or rewinding of motors, etc.

9.6.2 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.

9.6.3 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.

9.7 Public Safety

Public safety shall be improved by observing requisite safeguards like the following:

i. Display of safety signs, caution signals and boards;
ii. Design and construction of windows, parapets, railings, etc. to concentrate on safety aspects in the matter of height, strength of elements and size of openings
iii. Wells, cut-outs, tanks, pools, accessible roofs etc. to have protective railings/parapets around them;
iv. Avoiding/minimising storage of materials on public roads or public places;
v. Preventive measures against damage to adjoining property because of deep excavations;
vi. Provision of barricading and curtains against fall of construction materials;
vii. In the case of driven piles, safeguarding adjacent structures and service lines against the effect of vibrations;
viii. Preventing unauthorised and direct access to construction sites;
ix. Adequate warning signs near danger zones like high tension lines, deep excavations, blasting areas, etc.;
x. Keeping the manholes covered; providing immediate replacement of covers in case of loss or damage;
xi. Proper fencing of dangerous pits/excavations;
xii. Preventing access to water, sewage and sludge containing structures;

9.8 Safety Features for Water Supply and Sanitation Works

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 guardrails. 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.

9.9 Fire Safety

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 firefighting 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, compart mentalisation, 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.

9.10 Safety Features for Irrigation Works

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.

SECTION 19

QUALITY ASSURANCE MANAGEMENT

19 Quality Assurance Management

19.1 Introduction

The Quality Assurance has to ensure a progressively improved and uniform quality of the finished work. Experience gained over years indicate that "Process Control" is essential in construction work to ensure that the work in different phases is executed in a manner pre-determined and as per laid down specifications. In order to achieve the above, the pre-requisites cover among other things, an inbuilt provision in the contract for a system of continuous check on quality by the field staff and the contractor for ensuring quality of work; availability of adequately manned and equipped supervision agency for overseeing the quality aspects, and periodical appraisal of quality and a system of feedback for effecting possible improvements.

Maintenance of quality has to be imbibed in the minds of the contractor as well as the engineers of the department supervising the work. It is better to have a system in which the quality of work is achieved during the construction stage itself. Quality control has to be exercised as a means of enforcement, to ensure that the quality of work is checked and controlled as a continuous process of conformance to specifications during the construction stage.

19.2 Quality Assurance Plan

Quality Assurance Plan includes all the required quality control tests to be done during the construction stage consistent with the specifications in keeping with all the relevant norms and applicable Codes, Specifications and Standards as well as the acceptance criteria for each of the item of work, materials used, and the processes employed. All these have to be checked/tested periodically at the required intervals by the contractor and the departmental field officers and staff, and the reports generated shall have to be signed by the contractor or his authorized representative, as well as the JE, AE and EE as required. Copies of all such reports at various stages shall be appended with each running account bill and the final bill before payment is released to the contractor. It will be deemed that work so measured, checked and paid is of the required quality both in respect of ingredients as well as the intended functions it is supposed to perform. The work should not only meet the required specifications but also the workmanship as per sound engineering practice.

The SE has a major role in quality management and shall also check and sign the reports of quality check at suitable intervals in token of his ensuring compliance of the ‘Quality Assurance Plan’ for the work. The SE shall not be absolved of his responsibility to ensure that the ‘Quality Assurance Plan’ is complied with in every work under his charge. It will be his responsibility to locate the lapses or deficiency and take suitable remedial action if the Quality Assurance Plan is not implemented in spirit and action by the field officers.

19.3 Method Statement

In all major works of contract costing more than ₹ 10 crores, provision shall be made in the tender documents for the contractor to submit a 'Method statement' for the approval of the department

soon after the award of work to him. The 'Method statement' is a statement by which the requisite construction procedures for important activities of construction are stated, checked, and approved. The 'Method statement', should have a description of the item with elaborate procedures to implement the same, the specifications of the materials involved, their testing and acceptance criteria, equipments to be used, precautions to be taken, mode of measurement, etc.

19.4 Responsibility for Quality Assurance

The direct responsibility for ensuring proper quality of work as per approved specifications for achieving the intended performance and structural, functional and aesthetical parameters, and the desired life of the building/installation/structure rests with the construction team of EE, AE and JE. The responsibility of various staff for supervising quality of work is given in Annexure 18 (VIII). The SE shall be overall responsible for management of Quality System and Procedures for the works under his charge. The powers of acceptance of substandard work under exceptional circumstances are delegated to the SE and should be used sparingly and judiciously. The CE shall periodically review and monitor the Quality Assurance System.

19.5 Quality Assurance Set-up

Independent Quality Assurance set up which keeps a watch on the effectiveness/adequacy of quality control measures at site and also provides guidance to the field engineers shall comprise of the following:

i. QA wings headed by AE (Quality Control) under each SE for works under his jurisdiction.
ii. Core Wing under CE (QC). This will consist of SE (QC), EE (QC) and AE (QC) for Quality Control inspection of works in three stage inspection format for works. The first stage shall be when 10-20% work has been carried out, second stage when 40-50% work has been carried out and third stage when 85-95% work has been carried out.

19.6 Organisational set-up of Quality Assurance Unit

The implementation of Quality Assurance in the field will require close co-operation among the three agencies, namely (a) field engineers (b) the construction agency, and (c) the Quality Assurance team at Circle level or at CE (Quality Control) level for strict compliance of proper Quality Assurance Procedure.

19.7 Responsibilities for Quality Control Units

The broad responsibilities of the field staff and the EE & SE will be as under:

i. To ensure that materials duly approved by the competent authority are used in the work, samples of various materials in repetitive type, important/large works within the power of SE and above shall be approved by SE concerned and for works up to the power of EE, the samples of various materials shall be approved by the EE.
ii. Wherever necessary the EE/SE shall approve the make/sources for respective materials.

iii. Samples of important materials should be approved by the EE/SE and signed by either and the contractor and preserved till the end of the project.

iv. Samples of various materials shall be approved well in advance and displayed at site of work.

v. As early as possible after award of work, full-scale sample of important items of work should be prepared for repetitive items. Such samples should be approved by the EE/SE with regard to their specifications and workmanship.

vi. It will be ensured that all the mandatory field and laboratory tests as laid down in the specifications are carried out at appropriate time and materials failing to conform to the required specifications are promptly rejected and removed from site.

vii. As far as practicable all tests on materials will be carried out at the construction site in a field laboratory, which will be set up under the control of the EE. The equipments for such field laboratories may be purchased directly, charging their cost to the work or otherwise. A JE/AE of the Division with aptitude for material testing should be selected by the EE for manning the laboratory. Results of routine tests carried out in the field laboratory shall be promptly communicated simultaneously to the Engineer-in-charge and the Quality Assurance team functioning at the Circle level. The AE/JE of the field laboratory will be responsible for carrying out tests correctly, and for timely communication of test results to authorities mentioned above. These test results shall be analyzed, interpreted and acted upon for the purpose of ensuring quality in the work as per Quality Assurance Plan.

viii. Although testing of materials is a very important requirement for quality assurance, often testing is not carried out by the AE/JE at site till the lapse is pointed out by an inspecting officer. It is essential that the officers who have to get the work executed at site, should be aware of the various tests required to be carried out during the progress of work, and should be adequately prepared for the same before the actual work starts. A consolidated test register, duly signed by the EE should be issued from the Divisional Office soon after the award of work.

ix. It will be incumbent upon the EE to keep a watch over regular testing of materials before making payment at the stage of each running bill.

x. Samples for tests are taken mostly by the JEs, or by the Assistant Engineers.

xi. A guard file shall be maintained at all work sites, with copies of all inspection reports up to-date, whether these be of the AE(QA), CE (QA) units, EE, SE or CE.

xii. Inspection Register, Site Order book, Record of tests, Hindrance Register, etc. should be put up for entries and review by every inspecting officer.

xiii. The inspecting officers of the rank of SE and above shall not confine themselves only to review of progress, co-ordination and general matters, but shall also inspect the work from quality assurance aspects.

xiv. The EE and SE should invariably review and sign the guard file of earlier inspections, Inspection Register, Site Order Book, Register of tests carried out, Hindrance Register, etc.

xv. The EEs should ensure that the AEs and JEs, as well as the contractor's supervisor in-charge are fully aware of the specifications and method of execution of any new/fresh item of work to be taken up in the next few weeks. The AEs/JEs/Supervisors should ensure that this important aspect is not overlooked. The JEs/AEs shall carry the required field testing

instruments to ensure on site quality assurance check on a regular basis, and to enable the senior officers to conduct checks during their site visits.

xvi. Checklist

a. As and when any important item is taken up for execution, the JE/AE should go through the specifications and invariably make a checklist. This checklist should be got approved from the EE, and should be shown to the inspecting officers. The important items inter-alia include foundation work, including reinforcement and shuttering, brickwork, cast-in-situ mosaic flooring, doors & windows, plumbing, including water supply pipe lines, roof treatment, earth filling etc. which are a few illustrative items for checklist purpose.

b. Sample checklists for items of concrete for raft, columns/beams/slabs, water supply lines, brickwork and plastering etc. are given in Annexure 18 (IV) for guidance.

xvii. To avoid dampness and leakage, the EE shall ensure that necessary tests are carried out for proper slopes of canopies, chajjas, terracing, drainage arrangements, water tightness of expansion joints, joints in the water supply, drainage and sanitary works before these are covered and concealed, and also ensure rectification of defects noticed.

xviii. The EEs shall ensure availability of the required test equipments for field tests, as well as an updated copy of specifications, copies of agreement at sites of works.

19.8 Quality Assurance Team at Circle Level

1. The Quality Assurance team with the SE of the Circle as its head will comprise the AE(along with his JEs for field inspection and laboratory work), whose main job is quality assurance. In order that the role of the AE (QA) is effective in the process of Quality Assurance, the following points are essential:

   i. The periodicity of visit of works should be such that the process control at various stages is possible.
   ii. There should be minimum delay between inspection of work and communication of inspection report to the field formation.
   iii. The AE(QA) should carry out his tasks in a work that relates to the quality specifications and standards laid down for the work. Thus the AE (QA) should assess those aspects which are important to the overall quality of the finished work.

2. The function of the Quality Assurance team at Circle level is to check the compliance of Quality Assurance system by the field units, to locate the lapse/deficiency in the implementation of the Quality Assurance Plan, and to guide the field engineers in quality related aspects of the work. Inspection of works shall be systematically followed as mentioned below:

   i. Every AE (QA) should carry out minimum four visits to different works every month.
   ii. The AE (QA) should prepare his program and take approval of the SE. The program should be sent to site in advance of inspection.

3. Such inspections by the QA team shall, however, not absolve the responsibility of the JE/AE/EE supervising the work for accepting quality work from the contractor.
4. The following norms shall be followed for inspection to be carried out by the AE (QA) of the Circle Office:

i. Construction works costing more than each work to be inspected at least normal tender acceptance powers of the thrice during currency of work. **SE**
ii. Construction works costing less than the normal each work to be inspected at least tender acceptance powers of the Superintending twice during currency of work. Engineer but more than or equal to the normal tender acceptance powers of the EE
iii. Construction works of the power of Executive. Each work to be inspected Engineer at least once.
iv. Maintenance works Frequency to be decided by SE.

5. During periodical visits, efforts of the AE (QA) should be directed at:

i. To check the quality of materials accepted by the field units for use in the work and to see whether the laid down system of 'Quality Assurance Plan' has been followed.
ii. To check the overall quality of the finished items. Random checks shall be applied by the AE (QA), with the help of handy instruments like impact hammer for determining the strength of concrete, portable, penetro meter for testing strength of mortar of plaster, electronic moisture meter for testing moisture content of timber, etc.
iii. To randomly check the field tests carried out by the field staff during the progress of the work. This is to be with particular reference to the mandatory tests laid down in the OWD Specifications. In case of any abnormal test results coming to his notice, the AE (QA), with the approval of the SE, shall send samples of such items to the laboratory for repeat tests or to an independent laboratory.
iv. To provide guidance to the field staff in case of any problem relating to routine field tests.
v. Finally, on the basis of these observations with regard to the quality of works, general adherence to the quality assurance procedures and the standard of progress, he shall submit an overall assessment report to the SE of the Circle, the EE concerned and a copy of the Inspection Report is to be endorsed to the Zonal CE also.

19.9 Action by SE on AE (QA) Report

Based on the report of the AE (QA), the SE shall assess the following:

i. The general standard of quality of the work at the particular site. This assessment is to be based on the regularity of the routine tests carried out in the field, and general adherence to the quality control procedures.
ii. Remedial action required to avoid defects of the nature mentioned in the Inspection Report.

19.10 Chief Engineer QA units (Core QA Units) and their functions

i. These shall generally inspect works awarded by CE in various parts of the State.
ii. The Core QA units shall follow the guidelines and norms relating to Quality Systems and Procedures as laid down by the Quality Assurance Core Wing from time to time. These Core QA units shall function under the control of CE (QA), who shall be fully responsible for effective quality assurance in various works of different Zones. However, the CE (QA) shall

also inspect the works in the Zone on behalf of the Engineer in Chief to see the effectiveness of Quality Assurance as well as cases referred to him by the CEs.

19.11 The Role and Functions of Chief Engineer (QA) Units (Core Wing)

In general, the QA units shall exercise the role of management of Quality Systems and Procedures to achieve and sustain quality of works executed by the OWD, and to offer necessary guidance to the field units in this regard.

Major functions assigned to QA Units are as under:

i. To carry out inspection of original works costing more than the CE's power of acceptance of tenders in general, and maintenance works from the Quality Assurance angle on selective basis. The QA units will check and comment on the Quality Assurance system in place. They are not supposed to supersede the existing Quality Assurance system. The QA units may also inspect any work irrespective of its value with the approval of Zonal CEs.
ii. In selecting works for inspection, their uniqueness, complexities and special characteristics, if any, shall be kept in view. For effective quality assurance, any major work shall be inspected 3 to 4 times during the progress of the work at various stages. Each QA unit headed by an EE shall visit minimum 4 works per month.
iii. To carry out comprehensive examination and **technical audit** of at least one Division per Zone in a year for works costing more than ₹ 1 Crore. Such examination shall encompass all aspects of the work, right from the requisition stage till its completion and payment of final bill.
iv. To provide guidance in setting up laboratories at various stations/work sites.
v. To review the performance of new materials and techniques introduced in the Department from time to time on the basis of the field inspections.
vi. To convey observations regarding electrical works having bearing on the planning and execution of civil works to the appropriate unit in electrical wing and vice versa.
vii. To inspect any work, or carry out investigations and enquiries with regard to quality related aspects assigned by the EIC (Civil)/Secretary works/CVO.
viii. To submit quarterly reports in brief to the EIC (Civil) covering list of major works inspected and observations regarding defects/deficiencies etc.

The Core Wing headed by CE (QA) shall have the over-all responsibility of constantly reviewing the existing quality assurance procedures, and updating them on the basis of feedback from the Quality Assurance Teams .It performs the following other functions:

i. To deal with policy issues pertaining to Total Quality Management (TQM) system for the OWD as a whole.
ii. To review the feedback from the AE (QA) units, and to issue guidelines/instructions to ensure uniformity, consistency and reliability in implementation of Quality Assurance systems and procedures in the OWD.
iii. To lay down norms/guidelines for periodic inspection and effective functioning of the QA units at Circle level.

iv. To keep itself updated with modern testing equipments and methods, and disseminate information in this regard to all concerned in the Department.

v. To review the existing tolerance limits, and to lay down the tolerance limits in respect of finished items for which such limits are not specified in the relevant OWD specifications. Such tolerance limits will be fixed on the basis of the accumulated experience in various works.

vi. To issue guidelines/instructions for assigning accountability for different items of works.

vii. To carry out investigations and enquiries with regard to quality related aspects for specific works or any other functions assigned by any of the CEs.

19.12 Calendar of returns

1. To enable the functioning of Core Wing at the level of CE (QA) as well as the Quality Assurance teams at the Circle level, the information as detailed below is to be furnished by the Divisions and the Circles:

   a. To be submitted by the Divisions to the Circle office

      i. Quarterly statement of works in progress in respect of all works under the tender acceptance power of CE and above level officers, as on 31st March, 30th June, 30th September, and 31st December every year as per proforma at Annexure 18(VI).

      ii. Quarterly statement of works under the tender acceptance power of SE as per proforma at Annexure 18(VI).

   b. To be submitted by Circle Office to the Core Wing/QA Unit Quarterly statement showing the progress of original works under the tender acceptance power of CE and above level officers, as on 31st March, 30th June, 30th September and 31st December, every year.

19.13 Issue of Inspection Reports by Chief Engineer Core Wing/SE (QA) Units

1. During the inspection, the QA unit will prepare the necessary observations based on the inspection of works.

2. The emphasis of QA inspection should be on enforcing the required quality of work. The QA cell should also consider itself to be a part of the team with the field units to achieve the quality, and at the same time retain its independent status to ensure the required quality standards in the work. The QA inspections should, therefore, focus on ways and means to give the desired results in terms of quality of work. Defects/deficiency in the Quality Assurance system at the field unit level, lapses in the implementation of the Quality Assurance Plan should be indicated for corrective action. The inspection report should consequently be broadly in two parts-the first, being corrective in nature, and the second, mandatory.

   i. The first part should be on the shortcomings that are noticed, with necessary directions, and where necessary with necessary ways/methods, to rectify them. The field units should immediately act upon them, and report compliance to the QA cell.

ii. The second part should cover serious shortcomings that affect the structural safety or life of the structure or installation. These may be due to oversight, carelessness, inadvertent miscalculation, or deliberate action of a functionary or functionaries in the field formation. Such observations shall require immediate remedial measures that could include rejection of the item of work or supply and re-doing the same, or reduction in payment, or in additional safety/corrective measures. The inspection report should indicate the action to be taken by the field units. Where such shortcomings are due to, or are suspected to be due to deliberate and/or mala fide motives, the QA cell shall refer the case to the CE for action to be taken against the erring officer(s) and/or official(s).

3. After finalisation of the report, the EE (QA) shall sign and send the report to the concerned EE, simultaneously enclosing copies to the concerned CE and the SE. A copy of the report will also be endorsed to the CE by the Core Wing.

4. Any point considered serious enough to be brought to the specific notice of the concerned SE/CE will be intimated by the SE/CE through a separate letter by name in addition to the normal report.

5. Where some observation paras have been brought to the notice of the SE/CE, they should send their comments/replies after personal inspection in case the work is located at the same station/headquarter. For outside works, the SE/CE can take the assistance of the Assistant Engineer(QA)/SE (P&A) in order to ensure that the replies are sent within 4 weeks from the date of receipt of the Inspection Reports/letters from the SE (QA)/CE (QA).

6. Notwithstanding the above, serious irregularities/defaults, over-payments, shortages, frauds like wrong certification, or wrong report of rectification of defects etc. may be referred to the CE (Vigilance/CVO) immediately by CE (QA).

19.14 Action in Divisions on the Inspection Report of Core Wing/Circle QA Unit

Proper attention by the field units to the concept of Quality Assurance as dealt with appropriately and a continuous check over process control should normally ensure good quality of work. However following action needs to be taken by the EE on receipt of the Inspection Report from the Core Wing/Circle QA unit:

i. It should be immediately brought to the notice of the AE and the JE in charge of the work.
ii. The following further action should be taken:
   a. The various observations involving the contractor's work or any other obligation of the contractor shall be brought to the notice of the contractor through the Site Order Book.
   b. The work should be checked up for defects similar to the ones observed at other locations, and all such findings also brought to the notice of the contractor suitably as above. It should be ensured that similar defects do not recur in further work.
   c. Wherever the defects are rectifiable, action should be taken for their rectification, simultaneously ensuring that such works are not placed in a position beyond rectification. No further work shall be done at the specific location till the defects are

rectified. Also to investigate why such defects were not arrested by process control quality assurance set-up in the Divisional Office in the first instance.

d. For items of observations pertaining to contractor's work/obligations, the EE shall ensure that due action is taken in time.
e. Wherever any para is referred to the SE/CE, the EE should send an action taken report to the SE on priority.
f. The EE concerned shall take action on the observations, and send compliance report on rectification of defects/deficiencies to the QA Unit within a period of 4 weeks from the date of receipt of the Inspection Report.
g. There should be concerted efforts on the part of the field units to comply with the observations of the QA cell, and finally settle all the paras during the progress of the work itself so that the bill for the work is finalised in time. Such observations should not be allowed to linger on indefinitely.

19.15 Action in Circle Office on Inspection Reports of Core Wing/Circle QA units

Following action shall be taken by the SE on receipt of the Inspection Report from the Core Wing/Circle QA unit:

i. To analyze the reason for occurrence of the reported defects/shortcomings as to how the QA setup in Divisional and Circle levels failed to arrest them in the first instance, and taking action including seeking explanation from the concerned field officers.
ii. Watching the compliance of the observations by the EE and his Assistant Engineers/JEs, and to ensure that replies to the Inspection Reports of the Core Wing are sent expeditiously.
iii. On paras referred to the SE/CE by the QA Wing, they shall not endorse the reply of the EE. They shall duly satisfy themselves about the same before sending their comments/reply to the QA unit.
iv. Further, action on similar lines shall be taken by the SE on the inspection reports of the QA unit.
v. It is necessary that the observations made by the QA unit are attended to on priority and compliance reported. The SE (P&A) of the Zone shall be responsible to monitor the compliance of observations made by the QA unit.
vi. The CE should have regular quarterly review of pending Inspection Reports. Similarly review should be done at SE's level at monthly intervals.

19.16 Responsibility for quality

In respect of all works, the responsibility of various officers for checking of materials and workmanship of items of works shall be as given in Annexure 18 (VIII). However, this does not absolve the JE, AE and other officers of their responsibility to get the work executed as per specifications and provisions of Manual.

19.17 Field testing laboratories

The Field Testing Laboratories and OWD Testing Laboratories shall be utilised in exercising control of quality. A list of field equipments for a typical field laboratory is given in Annexures 18 (I) and 18 (II). The SE shall from time to time review the functioning of these Field Testing Laboratories, and suggest ways and means of improving the standard of their performance, in consultation with the Core Cell if necessary.

In all major works of contract costing more than ₹ 10 crores, the contractor shall be required to establish complete field testing laboratory, and arrange all the relevant Codes and Standards. The list of such testing equipments, Codes, and Standards shall be specified in the tender documents. The contractor shall also arrange for more equipments, Codes, and Standards, if they are needed during the execution of the work. The contractor shall also provide the minimum staff, as specified, for quality assurance. He shall also provide for a temporary building, of the specified size and specifications, at the allotted space at site, for housing the testing laboratory.

19.18 OWD laboratory

The OWD Laboratory shall provide guidance in setting up the field level and circle level laboratories, both in respect of equipping them and training the testing personnel. These laboratories shall carry out confirmatory tests of samples collected by the AE (QA)/QA units during routine inspections of various works at the site. Besides, checking of calibration of equipments of the field laboratories is another task assigned to OWD Laboratory.

19.19 Outside/Independent Testing Facilities

Extensive testing of the materials used for construction is a pre-requisite for attaining high quality of the work. This shall also require specialised tests, physical, chemical, ultrasonic, x-ray and various other types of tests which cannot possibly be carried out in a site laboratory. These tests also require specialised personnel who regularly deal in such testing. Therefore the need arises for carrying out the tests in outside laboratories. These laboratories may be in the Government sector, Semi Government or Private sector. The outside private laboratories shall be short-listed before hand by EE and approval obtained from SE. In case of laboratories in the private sector, the past record and reputation of the laboratory must invariably be given due consideration.

However, testing of material in any Government Lab/Public Undertaking Lab/IIT or NIT Lab/Government Engineering College may be allowed by EE without prior approval of SE or higher officers provided these labs have necessary facility to carry out the required tests.

19.20 Quality Control of Roads

This can be followed as per IRC:SP:31-1988 (latest edition) of “Handbook of Quality Control for Construction of Roads and Runways” as well as “Specifications for Road and Bridge Works” published by MoRTH and Indian Roads Congress.

19.21 Important Annexures for Quality Control Management

Some Annexures pertaining to different aspects of Quality Management have been included for guidance, which are as follows:

18(I) General list of Equipment for Field Testing Laboratories for Building and Road Works.
18(II) Important Field Testing Instruments
18(III) Proforma for Mandatory Tests to be attached with Running Bills
18(IV) Checking For Various Items

- Foundation Concrete
- Columns/Beams/Slabs
- Brickwork
- Plastering
- Water Supply Lines

18(V) OWDProforma for Quality Control Inspection and Technical Audit
18(VI) Quality Statement of Works
18(VII) Proforma for Preparing Observations by CE (QA), Core Wing and SE QA Units
18(VIII) Responsibility for Quality of OWD Engineers

Annexure – 18(I) : General List Of Equipment For Field Testing Laboratory

A. For Building Works

1. Balances
   i. 7 kg. to 10 kg. capacity, semi-self indicating type - accuracy 10 gm.
   ii. 500 gm. capacity, semi-self indicating type - accuracy 1 gm.
   iii. Pan balance- 5 kg. capacity - accuracy 10 gms.
2. Ovens-electrically operated, thermostatically controlled up to 110°C - sensitivity 1 °C.
3. Sieves: as per IS 460-1962.
   i. I.S. sieves - 450mm internal dia, of sizes 100 mm, 80 mm, 63mm, 50 mm, 40 mm, 25 mm, 20mm, 12.5 mm, 10 mm, 6.3 mm, 4.75mm, complete with lid and pan.
   ii. I.S. sieves- 200mm internal dia (brass frame) consisting of 2.36mm, 1.18mm, 600 microns, 425microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns, with lid and pan.
4. Sieve shaker capable of 200 mm and 300 mm dia sieves, manually operated with timing switch assembly.
5. Equipment for slump test- Slump cone, steel plate, tamping rod, steel scale, scoop.
6. Dial gauges, 25 mm travel - 0.01 mm/division least count – 2 Nos.
7. 100 tonnes compression testing machine, electrical-cum manually operated.
8. Graduated measuring cylinders 200 ml capacity - 3 Nos.
9. Enamel trays (for efflorescence test for bricks).
   i. 300 mm x 250 mm x 40 mm- 2 Nos.
   ii. Circular plates of 250 mm dia - 4 nos.

B. For Road Works

1. Balances
   i. 7 kg to 10 kg capacity, semi-self indicating type - accuracy 10 gm.
   ii. 500 gm capacity, semi-self indicating type, accuracy 1 gm.
   iii. Chemical balance, 100 gm capacity - accuracy- 0.1 gm.
   iv. Pan balance - 5 kg. capacity - 10 gm accuracy.
   v. Platform scale- 300 kg capacity.
2. Oven electrically operated, thermostatically controlled.
   i. Up to 200°C for determination of loss on heating of bitumen.
3. Sieves as per IS 460-1962.
   i. I.S. sieves - 450 mm of internal dia of sizes 100 mm, 80mm, 63mm, 50mm, 40mm, 25mm, 20mm, 12.5mm, 10mm, 6.3mm, 1.75mm, complete with lid and pan.
   ii. I.S. sieves - 200 mm internal dia (brass frame) consisting of 2.36mm, 1.18mm, 600 microns, 425microns, 300 microns, 212 microns, 150 microns, 90 microns and 75 microns with lid and pan.
4. Sieves shaker capable for shaking 200mm and 300mm dia sieves, electrically operated with timer.
5. Dial gauge
   i. 25mm travel - 0.01 mm/division.
6. Load frame-5 tonnes capacity, electrically operated with speed control.
7. Aggregate impact test apparatus as per IS 2386-Part IV-1963.
8. Compaction apparatus (Proctor) as per IS 2720-Part VII-1974.
9. Modified ASHO compaction apparatus as per IS 2720-Part-III-1974.
10. Sand pouring cylinder with control funnel and tube complete as per IS 2720-Part XXVIII-1974.
11. Sampling tins with rods 100mm dia x 50mm ht., ½ kg capacity, and miscellaneous items like moisture tins etc.
12. Constant temperature bath for accommodating bitumen test specimen, electrically operated and thermostatically controlled.
13. Penetro meter with automatic time controller and with adjustable weight accessories and needles as per IS 1203-1958.
14. Oxhlet extraction apparatus complete with extraction thimbles etc.
15. Laboratory mixer, about 0.02 cu-meter capacity, electrically operated with heating jacket.
16. Hubbard field stability test apparatus complete.
17. Marshall compaction apparatus as per ASTM 1559-62T, and complete with electrically operated leading unit, compaction pedestal bearing head assembly, dial micrometer, and bracket for flow measurement, load transfer bar, specimen mould (4 inch. dia) with base plate, columns, mould (4 inch, dia) with base plate, collars, specimen extracted. Compaction hammer, 4.53 kg (10lb)/457 mm (18inch) fall.
18. Distant reading thermometers.
19. Graduated cylinder 1000 ml. capacity.
20. Enamel tray.

Annexure –18(II): Important Field Testing Instruments

1. Steel tapes - 3 m
2. Vernier calipers
3. Micrometer screw 25 mm gauge
4. A good quality plumb bob
5. Spirit level, minimum 30 cms long with 3 bubbles for horizontal vertical
6. Wire gauge (circular type) disc
7. Foot rule
8. Long nylon thread
9. Rebound hammer for testing concrete 10 Dynamic penetrometer
11. Magnifying glass
12. Screw driver 30 cms long
13. Ball pin hammer, 100 gms
14. Plastic bags for taking samples
15. Moisture meter for timber
16. Earth resistance tests (for Electrical Divisions)
17. Meggar (for Electrical Divisions)

Annexure -18(III): Proforma For Mandatory Tests To Be Attached With Running Bills

Name of the work: .....Name of contractor.....

Agreement no. and date ..... R/A Bill No .....

Sl. No.	Item	Quantities as per agreement	Frequency as per specification	No. of tests required	Up to date quantity	No. of tests required	No. of tests actually done	Remarks
1	2	3	4	5	6	7	8	9

Note: If the number is less than that required, then reasons shall be recorded.

Signature of Junior Engineer

Signature of Assistant Engineer

Signature of Executive Engineer

Annexure -18(IV): Sample Check Lists for Various Items

PART — A

CHECK LIST FOR ITEMS OF FOUNDATION CONCRETE

Name of work: ……

Name of contractor: ……..

Agreement No.: ……..

1.	Date of inspection	
2.	Location	
3.	Material used for concrete whether tested	
	(a) Sand	Yes/No
	(b) Coarse aggregate	Yes/No
	(c) Water	Yes/No
	(d) Admixture, if any	Yes/No
4.	Raft top level, whether provided as per details	Yes/No
5.	Architectural/structural drawing correlate	Yes/No
6.	Whether location of construction joint has been discussed with EE, and he has approved it	Yes/No
7.	Cleaning over water proofing surface and construction joint done	Yes/No
8.	CC cover blocks of 60 mm, thickness provided (min 2 in one square meter area)	Yes/No
9.	Reinforcement placement as per relevant structural drawing checked	Yes/No
10.	Layout of columns as per relevant structural drawing checked	Yes/No
11.	Placement of shuttering plates and key board for proper construction joint with shuttering oil	Yes/No
12.	Cement slurry applied on construction joint before pouring of concrete	Yes/No
13.	Trained mason available	Yes/No
14.	Concreting to start from farthest point to nearest point with respect of weight batching plant	Yes/No
15.	Concrete mix has been designed	Yes/No
16.	Plasticiser being used	Yes/No
17.	Adequate number of concrete vibrators in working condition available	Yes/No
18.	Slump checked	Yes/No
19.	Sample cubes taken	Yes/No
20.	Signature of Junior Engineer ……..	
21.	Signature of Assistant Engineer……..	
22.	Signature of Executive Engineer……	

PART — B
CHECK LIST FOR COLUMNS/BEAMS/SLABS

1.	Date of inspection	
2.	Drawing no.	
3.	Location	
4.	Whether materials used conform to relevant Specifications?	
	(a) Sand	Yes/No
	(b) Coarse aggregate	Yes/No
	(c) Water	Yes/No
	(d) Admixture, if any	Yes/No/NA
5.	Whether structural drawings correlated with architectural drawings?	Yes/No
6.	Whether the centre line of column/beams checked with reference to grid lines as per architectural drawings?	Yes/No
7.	Whether treatment of expansion joint, wherever required, is done?	Yes/No
8.	Whether cleaning, repairing and approval of shuttering plate, application of quality shuttering oil is done?	Yes/No
9.	Whether shuttering is in true plumb and vertical and properly done and maintained during concreting?	Yes/No
10.	Whether reinforcement detailing, their placement are as per structural drawings?	Yes/No
11.	Whether proper gauge binding wire is used and with full cross binding and tightening of reinforcement bars with stirrups?	Yes/No
12.	Whether required minimum cover to reinforcement is maintained?	Yes/No
13.	Whether stainless steel cramps, angle irons for holding stones and any holding arrangement for electrical/mechanical/fire fighting/other services have been seen and approved by JE (E)/AE(E)	Yes/No
14.	Whether conduits for various electrical/mechanical/fire fighting/other services have been seen and approved by JE(E)/AE(E)?	Yes/No
15.	Whether concrete of approved design mix within maximum permissible water-cement ratio is used?	Yes/No
16.	Whether admixture of good brand quality approved by Engineer-in-charge is used?	Yes/No
17.	Whether technical supervision at batching plant/mixer and at point of concreting done?	Yes/No
18.	Whether concreting is placed within initial setting time of mixing?	Yes/No
19.	Whether proper compaction with vibrator is done?	Yes/No
20.	Whether the concreting has been done in a lift not exceeding 1.5 m?	Yes/No
21.	Whether cubes as per requirement filled for testing?	Yes/No

22. Signature of Junior Engineer …….

23. Signature of Assistant Engineer …….

24. Signature of Executive Engineer ……..

Post-concreting:

25. Whether shuttering stripped off as per specification, and laitance removed immediate thereafter? Yes/No

26. Whether proper arrangement of curing and curing period maintained as per specifications? Yes/No

27. Whether hacking of RCC surface by proper hacking tool for subsequent plastering/finishing is carried out? Yes/No

28. Signature of Junior Engineer …….

29. Signature of Assistant Engineer …….

30. Signature of Executive Engineer ……..

PART — C
CHECK LIST FOR BRICK WORKS

1. Date of inspection

2. Drawing no.

3. Location

4. Whether materials used conform to relevant Specifications and whether mandatory tests done?
   (a) Sand Yes/No
   (b) Bricks Yes/No
   (c) Water Yes/No

5. Whether structural drawings co-related with architectural drawings? Yes/No

6. Whether the centre line of brickwork checked with reference to grid lines as per architectural drawings? Yes/No

7. Whether bricks soaked in water before use for sufficient period? Yes/No

8. Whether queen closers are used at junction of walls? Yes/No

9. Whether brickwork is in true plumb and vertical and all layers truly horizontal? Yes/No

10. Whether graduated wooden straight edge storey rod being used for keeping height of brick courses uniform? Yes/No

11. Whether wall height being constructed in a day is being restricted to 1 m height? Yes/No

12. Whether parts of wall left at different levels are raked back at an angle of 45 degrees or less with the horizontal? (Toothing is not to be permitted) Yes/No

13. Whether top courses of all plinths, parapets, steps and top of walls below floor and roof slabs laid with brick on edge? Whether marucona provided at corners in such brickwork? Yes/No

14. Whether thickness of joints in brickwork is kept 1 cm ± 20%? Yes/No

15. Whether mortar of approved mix within maximum permissible water cement ratio is used? Yes/No
16. Whether all horizontal and vertical joints are being filled? Yes/No
17. Whether proper arrangement of curing and curing period maintained as per specification? Yes/No
18. Whether date of work done written? Yes/No
19. Signature of Junior Engineer ……
20. Signature of Assistant Engineer ……
21. Signature of Executive Engineer ……..

PART — D
CHECK LIST FOR PLASTERING

1. Date of inspection
2. Drawing no.
3. Location
4. Whether materials used conform to relevant specifications and whether mandatory tests done? Yes/No
5. Whether surface cleaned of all loose mortar and efflorescence? Yes/No
6. Whether all conduiting and electrical piping done? Yes/No
7. Whether all doors, windows etc. fixed? Yes/No
8. Whether all defects of brickwork/CC/RCC rectified? Yes/No
9. Whether preparation of surface done? Yes/No
10. Whether 2.5 m long aluminum straight edge and plumb bob being used to check verticality and evenness of surface? Yes/No
11. Whether 15 cm x 15 cm bunda at every 2 m horizontally and vertically being provided to serve as gauges? Yes/No
12. Whether uniform groove provided at junctions of all plaster and ceiling plaster? Yes/No
13. Whether mortar of approved mix within maximum permissible water cement ratio is used? Yes/No
14. Whether proper arrangement of curing and curing period maintained as per specifications? Yes/No
15. Whether date of work done written? Yes/No
16. Signature of Junior Engineer.....
17. Signature of Assistant Engineer .....
18. Signature of Executive Engineer .....

PART — D
CHECK LIST FOR WATER SUPPLY LINES

1. Date of inspection	
2. Drawing no.	
3. Location	
4. Whether materials used conform to relevant Specifications and whether mandatory tests done?	Yes/No
5. Whether plumber employed is licensed plumber or not?	Yes/No
6. Whether plan for piping system has been prepared and got approved?	Yes/No
7. Whether all pipes and fittings are ISI marked?	Yes/No
8. Whether a sample system has been prepared and got approved?	Yes/No
9. Whether clamps provided at specified spacing?	Yes/No
10. Whether pipe lines checked at required pressure before covering?	Yes/No
11. Whether weight of flushing pipe checked?	Yes/No
12. Whether flushing cistern is ISI marked and internally painted with bitumastic paint?	Yes/No
13. Whether fittings like wash basin, sink pan, cistern, bib cock, stop cock, wheel valves, etc. are ISI marked?	Yes/No
14. Whether PVC water storage tank is ISI marked? If not, whether sample sent for testing?	Yes/No

15. Signature of Junior Engineer .....
16. Signature of Assistant Engineer.....
17. Signature of Executive Engineer.....

Annexure –18(V): OWD Proforma for Quality Control Inspection

PART - I

1. General
   - 1.1 Name of work.
   - 1.2 Division and Sub-Division.
   - 1.3 Inspecting officer.
   - 1.4 Assisted by.
   - 1.5 Date of present inspection.
   - 1.6 Reference to memos of previous Inspection.
2. Particulars of work
   - 2.1 Estimated cost put to tender.
   - 2.2 Tendered amount.
   - 2.3 Agreement no.
   - 2.4 Name of contractor.
   - 2.5 Registration class of contractor.
   - 2.6 Date of start of work.
   - 2.7 Due date of completion.
   - 2.8. % age progress of work at the time of inspection
3. Routine Quality Control
   - 3.1 Quality control aids.
     - 3.1.1 Is field staff equipped with:
       - (a) Copy of agreement with relevant specifications (detailed as well as special).
       - (b) Copy of preliminary estimate, detailed estimate and measurements.
       - (c) Up to date architectural as well as structural drawings.
       - (d) Testing facilities with the help of necessary field instruments/equipments (List of equipments available at site including level, the odolite, etc. may be given).
4. Observations on compliance of Quality Control system after intensive inspection under following subheads:
   - 4.1 Earthwork.
   - 4.2 Concrete work.
   - 4.3 R.C.C. work.
   - 4.4 Brick work.
   - 4.5 Stone work.
   - 4.6 Steel work.
   - 4.7 Flooring (including marble work, if any).
   - 4.8 Roofing.
   - 4.9 Finishing.
   - 4.10 Miscellaneous.
   - 4.11 Services, etc.
5. Quality and Testing of materials/Products
   - 5.1 Comment on:
     - 5.1.1 Testing facilities available with the Department at site.
     - 5.1.2 Testing facilities arranged with other Department/institution.
     - 5.1.3 Testing facilities further required to be arranged.
   - 5.2 Testing
     - 5.2.1 Are all mandatory tests being carried out at the frequency mentioned in CPWD Specifications?

5.2.2 No. of tests failed and approximate quantity rejected.
5.2.3 General observations on tests, viz. erratic results, consistently low or high results etc.
5.2.4 Follow up action taken on unsatisfactory results, with lapses in prompt follow up action.
5.2.5 Samples tested by AE (P) and their results (Samples should invariably be taken where material/product at site does not appear to conform to the latest test results.

5.3 Is material/product of make borne on approved list of Department/ISI?
5.3.1 Are tests carried out on materials/products (covered under 5.3) found satisfactory?

6. Comments on adequacy of resources employed by the contractor at site for timely completion of work.

PART - II
PROFORMA FOR TECHNICAL AUDIT

1. General details of work.
   1.1 A/A & E/S amount for the work and corresponding provision available for this work in the sanction.
   1.2 Amount of detailed estimate.
   1.3 Item rate/percentage rate/lump sum tender.
   1.4 No. of tenders received and tendered amount (call of tender).
   1.5 Authority accepting the tender.
   1.6 Is the detailed estimate technically sanctioned on the basis of complete set of architectural and structural drawings?
2. Deviation from plan/drawings.
   2.1 Deviations, if any.
   2.2 Reasons for deviation, financial implication and sanction of competent authority.
3. Deviation in quantities of items.
   3.1 Reasons for deviations.
   3.2 Sanction of competent authority for the deviation.
4. Extra and substituted items.
   4.1 Amount of items sanctioned so far.
   4.2 Sanction of competent authority.
   4.3 Any minus extra item paid? Detail the reasons.
5. Issue of materials.
   5.1 The theoretical consumption commensurate with the work executed and quantity lying at site.
   5.2 Check recovery memo from the last running bill/final bill and short recovery made, if any.
   5.3 Any material not stipulated issued?
      5.3.1 Sanction/approval of competent authority for such issue.
      5.3.2 Approval of rate under three rate formula.
6. Payment to contractor.
   6.1 Amount of last bill paid to the contractor.
   6.2 Normal frequency of payment.
   6.3 Test check of measurements by Assistant Engineer/EE.
   6.4 Part rates paid/justification for the same.

6.5 Advances to contractor.

6.5.1 Checking up of secured advance, if any, with reference to materials lying at site.

6.5.2 Reasonableness of advance for unmeasured work.

6.5.3 Hypothecation of documents and safe custody of materials for which advances have been given.

PART – III

PROGRESS MONITORING

1. System adopted at site for monitoring progress.
2. Percentages progress achieved vis-a-vis time given for completion.

2.1 Steps taken to accelerate progress when shortfall is noticed.

3. Any extension of time required?
4. Co-ordination amongst various agencies involved in execution of work.
5. Constraints noticed in smooth progress of work and directions if any, received from EE/SE/CE to overcome them.

PART - IV

RECOMMENDATION

1. Give specific recommendations for immediate attention of SE on:

1.1 Improving quality control on specific items.

1.2 Comments on items lagging behind for want of drawings, materials, decision etc.

[Assistant Engineer (QA)]

To
SE

PART - V

DIRECTION OF SE ON THE REPORT

1. EE to improve quality of following items.
2. EE to issue notice to contractor for rectification of following defects at .....
3. EE to improve slow progress.
4. Directions, if any, for solving deadlocks/problems at site.
5. Further follow up action by AE(QA) on next inspection.

[Superintending Engineer]

To
AE (QA)

Annexure –18(VI): **Quarterly Statement of Works**

Sl. No.	Name of work	Est. cost (₹ lakhs)	Tender cost (₹ lakhs)	% age above/ below estimat-ed cost	Agree-ment No.	Agency	Date of commen-cement	Stipulated date of completion	Physical progress of work	Name of Engineer in charge with address	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

Annexure – 18(VII): Proforma for Preparing Observations by CE Core Wing/SE QA Units

1.0 Particulars of work
1.1 (a) Name of work:
(b) Description/scope of work:
1.2 (a) Sub-Division and name of Assistant Engineer:
(b) Division and name of EE:
(c) Circle and name of SE:
(d) Zone and name of CE:
1.3 Agency/contractor:
(a) Name:
(b) Registration class:
1.4 Agreement no:
1.5 Stipulated date of start:
1.6 Stipulated time and date of completion:
1.7 (a) Estimated cost put to tender:(b) Schedule of rates applicable:
1.8 Accepted tendered cost with overall percentage:
1.9 Percentage progress at the time of inspection vis-a-vis expected as per contract and reasons for delay, if any:
1.10 Inspecting officer:
(Name & Designation)
1.11 Officers and contractor present during inspection:
(Name & Designation)
1.12 Date of inspection and number:
2.0 Quality Control aids:
2.1 Is site equipped with:
(a) Copy of agreement:
(b) CPWD Specifications/along with (up to date) correction slips:
(c) List of ISI marked/approved materials to be used:
(d) Guard File containing Inspection Reports of CTE/QCTA/AE(QC)/CE/SE etc.
(e) Testing facilities to check conformance to acceptance criteria:
(f) QACW Circulars on Quality Control.
2.2 Is field laboratory existing and well equipped?
3.0 Departmental procedure aspects:
3.1 Maintenance of Inspection Register
3.2 Highlights of inspections by CE, SE, AE(P) requiring compliance
3.3 Are Test Registers maintained in standard forms?
3.4 Are Test Registers reviewed by EE/SE with dates?
3.5 Cement Register:
(a) Is Cement store checked by AE/EE periodically as stipulated?
(b) Comment on cement stock with reference to Cement Register:
3.6 Site Order Book and Schedule of defects:
(a) Is Site Order Book properly maintained?
(b) Is the Site Order Book reviewed by EE and SE?
(Mention details)
(c) Have timely notices been issued to the contractor with the Schedule of defects/damages and date of compliance?
In case of failure to rectify defects/damages whether action under clause 14/17 initiated?
4.0 Process control aspects:

4.1 Is soil investigation done? (give brief details)
4.2 Suitability of water for construction:
(a) What is the source of water?
(b) Has water been tested and approved by Engineer-in-charge before construction?
(c) Has water been tested subsequently (i.e. after every 3 months) and found fit for use in works?
4.3 Are 10% (25% for concrete) of all samples for testing taken in presence of EE as per DG(W)'s OM No. 28/7/86-WI(DG), Circular No. 9/87 dated 1.9.1987/6.10.1987?
4.4 Are all mandatory tests carried out at stipulated frequency?
4.5 Are materials approved by Engineer-in-charge? If so, are samples available at site?
4.6 Are sample units/items completed and approved by EE before start of mass finishing work?
4.7 Specific control on RCC work like centering/shuttering, proportioning with boxes: mixing by full bag capacity hopper fed mixer: control of slump: placing/compaction with vibrator:
4.8 Any other particular comments on adequacy of process control:
5.0 Site inspection for observations and comments on Quality Control system in place:
5.1

Sub-head of work in progress	Whether in progress (If so, tick mark)	Whether inspected (If so, tick mark)	Location
(a) Earth work (b) Concrete work (c) RCC work (d) Brick work (e) Stone work (f) Marble work (g) Wood work (h) Steel work (i) Flooring (j) Roofing (k) Finishing (l) Internal Services (m) External Services (n) Road/pavement (o) Others (specify)			

5.2 Observations on floor slope (especially in Bath, WC, Kitchen, Terrace, Balcony etc.)
5.3 Observations on QC for dampness/leakages prevention.
If dampness/leakage noticed, then state locations and probable reasons.
5.4 Samples collected by QC Core/Cell
6.0 Observations on site material QC aspects.
(Keeping in view the requirements of contract specifications:
BIS marked/CPWD approved products etc.)(Attach separate sheet, if required)
7.0 Observations on workmanship QC aspects.
(Attach separate sheet, if required)
8.0 Test audit of RA bill:
(Indicate RA bill no., gross amount, Vr. no. and date)
8.1 Whether deviation in quantities noticed?
If so, state reasons thereof:
8.2 Items not conforming to specifications:
(a) Whether notice was issued as specified in contract?

(b) Whether approval in principle was obtained from competent authority before acceptance of substandard work?

8.3 Extra/substituted items:
(a) Are justification of items proper?
(b) Sanction of competent authority:

8.4 Part Rates - whether rates held back are adequate?

8.5 Comments on secured advance paid with reference to materials lying at site.

8.6 Test Check by AE/EE
(a) Critical item:
(b) Hidden items:
(c) Extent (whether satisfactory?)

8.7 Any other observation?

[The observation made about quality of material and workmanship relate to only what could be randomly seen at locations specified. EE and supervisory staff shall thoroughly inspect the entire work for such defects as observed as well as for other defects and take suitable remedial measures properly. The EE shall be responsible for accepting any defective work that went unnoticed but pointed out during such inspection.

Annexure – 18(VIII): **Responsibility For Quality of OWD Engineers**

Item of work	**Works costing**	
	Above ₹ 50 lakhs	**Up to ₹ 50 lakhs**
A. Materials		
a. Sand, stone, metal & chips, bricks, ordinary glass panes	AE & EE	JE & AE
b. Timber, paints, polish, door, shutters, windows, door/window fittings, sanitary and water specials, glass panes	JE & AE	JE
c. Marble, granite, kota stone and similar stone work items	AE & EE	JE & AE
d. Cement and steel	AE & EE	JE & AE
e. Bitumen, bitumen emulsion, mastic	AE & EE	JE & AE
B. Items of work		
a. Foundation up to plinth	AE & EE	JE & AE
b. Brick masonry/stone masonry	JE & AE	JE
c. Centering and shuttering excluding sunshades/shelves	AE & EE	JE & AE
d. Reinforcement and RCC	AE & EE	JE & AE
e. Structural steel work	AE & EE	AE
f. Steel work	AE	JE & AE
g. Aluminum work	AE & EE	JE & AE
h. Wood work/wood substitutes	AE & EE	JE & AE
i. Flooring - CC, mosaic glazed/ceramic tiles	AE & EE	JE & AE
j. Flooring & cladding - marble, granite, kotas and stone etc.	AE & EE	AE

Item of work	Works costing	
	Above ₹ 50 lakhs	**Up to ₹ 50 lakhs**
k. Plastering, painting & polishing	JE & AE	JE
l. Joints in pipes i/c testing, slopes in flooring i/c veranda, balcony, toilets, terrace	AE & EE	JE & AE
m. Bitumen painting of roofs	JE & AE	JE
n. Water proofing treatment	AE	JE & AE
o. Fittings of doors/windows	AE	JE & AE
p. False ceiling work	AE & EE	AE
q. (i) Storage tanks	AE & EE	JE & AE
(ii) Sluice valves, fire hydrants	AE	JE & AE
(iii) CI/Hume pipes & specials and their leadcaulked joints	AE & EE	JE & AE
r. (i) Manholes i/c covers & frames	JE & AE	JE
(ii) CI Inspection bends & chambers	JE & AE	JE
s. General quality of work with particular reference to lines & levels/adherence to drawings and specifications & functionality	EE & SE	AE & EE
t. Road works		
(i) Preparation of sub grade	JE & AE	JE & AE
(ii) Sub base/base course	JE & AE	JE & AE
(iii)Wearing course	AE & EE	JE & EE
C. Other important material/items	To be decided by tender accepting authority	

E&M Works

Item of work	Works costing	
	Above ₹ 20 lakhs	**Up to ₹ 20 lakhs**
A. Material		
a. Conduit wires, switches, accessories internal wiring, MCB's, MCB DB's	JE & AE	JE
b. Finished goods of Internal EI i.e. fans, electrical fittings, exhaust fans, call bells etc.	AE & EE	JE & AE
c. L T/HT cables	AE & EE	JE & AE
d. S/STN equipments, LT Panel/HT Panel Elect. main boards, DG Sets, Bus trunking, rising mains	AE & EE	JE & AE
e. All the major equipment concerning wet riser/ sprinkler system, fire detection system etc. like pumps, DG Sets, pipes, valves ,hoses, cabinets, panels, sprinklers, detectors, detecting panels, manual call boxes, PA system equipments etc.	AE & EE	JE & AE
f. Air conditioning equipments like chilling units, cooling towers, Pump AHU's, duct insulation, GI sheets, pipes, control instrument etc.	AE & EE	JE & AE

Item of work	Works costing	
	Above ₹ 20 lakhs	**Up to ₹ 20 lakhs**
g. Major equipments of other special services like CCTV, BMS, EPABX, computer networking etc.	AE & EE	AE & EE
B. Items of Works		
a. Internal EI work i/c UG cabling etc.	JE & AE	JE
b. Sub Station work	JE & AE	JE & AE
c. Fire fighting, fire detection work	JE & AE	JE
d. A/C works & other specialised Services	JE & AE	JE
C. Items of Works	To be decided by tender accepting authority	

SECTION 20

LAND ACQUISITION

20 Land Acquisition

20.1 Land Acquisition Process

20.1.1 Introduction

In all projects or works undertaken by the PWDs, unless they are situated in the boundaries of existing available land, involve acquisition n 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 lndia;
d. A public body of/with the State Government or the Government of lndia; and

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 NH, separate and more effective land acquisition laws are there. For GOO relevant notification is Odisha Gazette Revenue and Disaster Management Department Notification No 31248-(R&REH)-66/2010-R&D.M, dated 5th August 2010. If there is no such special law, land shall be acquired under the Land Acquisition Act, 1894, as amended from time to time.

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 OWD concerned.

In case land belongs to the Government of lndia and is required for a State Government project, then the appropriate Department/Ministry in the GOI 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.

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.

20.1.2 Important Features of Land Acquisition Act, 1894

Salient Features of Land Acquisition Act, 1894, Act with up-to-date amendments are as follows:

For legal private property holders, the acquisition of the land would be done under the aegis of the Land Acquisition on Act 1894 (amended 1984). The LA Act is applicable to all parts of India except to the State of Jammu and Kashmir.

The important elements of Land Acquisition on Act, 1894 are as follows:

Section 3A - Preliminary Survey of land and the power of officers to carry out the survey

The purpose of determining whether any lands are needed for public purpose, the officer of the State Government in the PWD or any other officer specially authorized by the State Government can:

1. Enter upon and conduct survey.
2. Take level of the land. Mark such levels. Cut down and clear away any part of any standing crop, fence or jungle.
3. Ascertain whether the land is suitable for the purpose.

Section 4 – Publication of Preliminary Notification

Whenever it appears to the appropriate Government Authority that land is needed for Public purpose a notification to that effect may be issued in the official Gazette u.s.4(1) of the Land Acquisition Act 1894, (amended 1984). The Notification shall also be issued in two locally circulated newspapers, one of which shall be in the regional language. In addition the collector shall ensure the "public notice of substance of such notification "to be given at a convenient place in the locality. The date of publication of the notification shall be considered as the date of the notification.

It shall be lawful on the behalf of the officer of the State Government in the PWD or any other officer specially authorized by the State Government

a. To enter upon, conduct survey and take levels
b. Dig and bore into the soil
c. Set out the boundaries of the proposed acquisition and
d. To take levels, boundaries and lines by placing marks and cutting trenches.

Section 5 – Hearing of Objections

Any person interested in the land notified u.s. 4(1) shall within 30 days of the publication of the notice file an objection u.s 5(1).

Every objection shall be made to the Collector in writing. The objector shall be given an opportunity to present his case in person or through an authorized representative. After hearing such objections and making such inquiry as he feels necessary the Collector shall present a report u.s.5(2) to the

respective Government Authority along with the records of proceedings held by him. The decision of the appropriate government authority shall however be final.

Section 6 – Declaration that land is required for Public Purpose

The appropriate Government after considering the report submitted by the Collector u.s.5(2) if satisfied that the land is required for public purpose shall issue a notification in the Official Gazette u.s.6(1). The Notification shall also be issued in two locally circulated newspaper, one which shall be in the regional language. In addition the collector shall ensure the "public notice of substance of such notification be given at a convenient place in the locality. The declaration shall be made under the signature of a secretary to such government or some officer duly authorized to certify the orders. Different declarations may be made for different parcels of land covered by the notification u.s.4(1).

No Notification to the effect of declaration of land required for public purpose shall be issued after the expiry of one year of the publication of the notification u.s. 4(1).

Section 7 – Collector to take order for acquisition

Whenever land has been declared for Public Purpose u.s. 6(1) the appropriate Government or any person authorized on behalf of the appropriate Government shall direct the collector to take order for the acquisition of land.

Section 8 – Mark and measure the land to be acquired

The Collector shall thereupon cause the land to be measured and marked unless it has already been done u.s. Section 4.

Section 9 – Notice to Persons Interested

The Collector shall issue a public notice u.s. 9(1) be displayed at a convenient place on or near the land stating the Government's intention to take possession of the land and that claims for compensations and all other interests may be made to him.

The notice shall state particulars of land needed and require the person to appear personally or represented by his agent before the Collector at the stipulated time and place and state the nature of their respective interest in land and particulars of their claims to compensation. The date of such hearing shall not be earlier than fifteen days from the date of publication of the notice.

The collector shall also serve notice u.s. 9(3) to the same effect to all such person believed to be interested in the property, to the person or his authorized agent.

In case the person interested resides elsewhere and has no such agent within the revenue district where such land is situated in such cases the notice shall be sent by registered post (u.s. 28 & 29 of the Indian Postal Act 1898) to his last known residence/address.

Section 10

Power to require and enforce the making of statement as names and interest. The collector may direct any person to deliver to him names of all person possessing interest in land, co-proprietorship, mortgagee, tenant and nature of such interest and also the rents and profits receivable from such property.

Section 11 – Enquiry and Award by the Collector

The Collector shall enquire into the objections in pursuant to the notice u.s. 9, measurements made u.s. 8 and into the value of land on the date of publication of notification u.s. 4(1) and shall make an award on:

1. The true area of land,
2. Compensation for the land
3. The apportionment of the compensation

The award for the compensation however shall be made only with the previous approval of the appropriate government authority or any officer as the appropriate government may authorize.

Section 12 – Award by the Collector

The Collector shall make an award u.s. 11 within two years of the date of publication of the declaration. If the award's not made within two years of the date of publication of the notice in such cases the entire proceeding will lapse. However in the calculation of the period during which the action of the proceedings of land acquisition was stayed by an order of the court, shall not be included within the time period.

Section 13 – Adjournment of inquiry

The collector, if he thinks can, adjourn the inquiry till such day to be fixed by him. He may make correction of clerical errors at any time not later than six months of the date of award or where he has to make correction under the orders of the court.

On completing the 'award', section 16 empowers LAO to take possession of the land and hand over to the protect proponent.

Government of Odisha's Land Acquisition Act

The Government of Odisha follows the National Land Acquisition Act 1894/1984 for the requisition of land, with appropriate amendments from time to time in its application to the State of Odisha as follows.

- The Land Acquisition (Odisha Amendment) Act, 1948
- The Land Acquisition (Odisha Amendment and Validation) Act, 1959

- Revenue & Disaster Management Department notification No. 31248-(R&REH)-66/2010-R&DM dated 5th August 2010 (attached as annexure)

The above-mentioned amendments have simplified the process of land Acquisition, provided names of appropriate authorities and have further safeguarded the interests of the affected people.

20.1.3 Role of OWD Officers in Land Acquisition

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.

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 OWD, therefore, should pursue the case at different stages. If the land to be acquired falls in a number of Divisions, the EIC/CE/SE will make one or more Divisional Officers responsible for the same.

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's 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 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.

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 atun usually high rate becoming the basis of determination of rates for the proposed acquisition); and
g. Approximate value of the structures.

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. 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.

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.

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 OWD 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).

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.

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. OWD 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.

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.

SECTION 21

ENVIRONMENT PROTECTION POLICY

21 Environment Protection Policy

21.1 Introduction

This reviews the policies, regulations and administrative framework within which the project is to be implemented. The review includes sector specific Environmental Policies & Regulations of the GOI and the institutional profile of various agencies such as MoEF, PCB and other bodies associated with the project.

The GOI has laid down various policy guidelines, regulations, acts and legislations pertaining to sustenance and protection of environment and its various components. The details of relevant environmental legislations and implementing agencies for highway projects are given in tabular form in the subsequent text.

Even though the Acts and Regulations on Environmental Management is fairly extensive and take care of most of the aspects involved and the laws are quite stringent, inadequate funds as well as manpower and lack of enforcement is a major issue. Lack of agencies/units enforcing the standards for vehicular pollution and maintaining emission standards is also an aspect of concern. Though, at present this power lies with the State Transport Authority, yet the enforcement is highly inadequate.

21.2 Policy and Regulatory Framework of GOI

The GOI has laid down various policy guidelines, regulations, acts and legislations pertaining to sustenance and protection of environment and its various components. The following are the key regulations in India applicable for various development projects.

- Constitutional Provisions
- Wildlife Protection Act, 1972
- Water (Prevention and Control of Pollution) Act, 1974 – as amended in 1978 & 1988
- Forest (Conservation) Act, 1980 – as amended in 1988
- Air (Prevention and Control of Pollution) Act, 1981
- The Environment (Protection) Act, 1986
- Hazardous Wastes (Management & Handling) Rules, 1989; and
- EIA Notification, 1994 and EIA Notification in 2006

21.3 Constitutional Provisions

The Constitutional of India in its Article 48 provides for the protection and preservation of the environment and states “the state shall endeavor to protect and improve the environment and to safeguard forests and wild life of the country.” Further Article 51-A (g) on fundamental duties emphasizes that, “It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures”. These two provisions of the constitution are the guiding principles for various environmental legislations in the country and to safeguard the environment.

21.4 The Environment (Protection) Act, 1986

The Environment (Protection) Act, popularly known as EP Act, is an umbrella legislation that supplements existing environmental regulations. Empowered by the EP Act, the Ministry of Environment & Forests (MoEF), GOI has issued the following notifications regulating siting of industry and operations, procuring clearance to establish industries and development of projects with appropriate EIA studies, coastal zone regulations and other aspects of environment care.

21.5 EIA Notifications

The EIA notification dated 27th January, 1994 impose restrictions & prohibitions on the expansion & modernisation of any activity or new projects listed in the Schedule I of the notification unless Environmental Clearance has been accorded by the MoEF.

21.6 Forest (Conservation) Act, 1980 (As amended in 1988)

As per Section 26 of Indian Forest Act, 1927 a number of activities are prohibited in forest areas and prior approval is required from the central government to use forest land for non-forest purposes. The Forest (Conservation) Act, 1980 prohibits large-scale diversion of forestland for non-forest use. As amended in 1988, no State Government or authority shall make such diversions except with the prior approval of the Central Government.

21.7 The Forest (Conservation) Rules, 1981

Rule 4 states that the procedure for state Governments to make a proposal seeking prior approval to de-reserve a forest for non-forest purposes (section 2 of Forest Act, 1980), provided all proposals involving clearing of naturally grown trees in forest land or portion thereof, for the purpose of using it for afforestation, shall be sent in the form of a working plan/management plan.

21.8 Wild life Protection Act, 1972

This act is promulgated to provide for the protection of wild animals, birds and plants and for matters connected therewith.

21.9 Water (Prevention and Control of Pollution) Act, 1974

Water Act is the first environmental regulation that was introduced at the State and Centre levels, Pollution Control Boards to control/regulate environmental pollution in India. Amended twice in 1978 and 1988, the Act vests regulatory authority on the State Pollution Control Boards and empowers them to establish and enforce effluent standards for industries and local authorities discharging effluents. This provide for the prevention and control of water pollution besides maintaining and restoring of the wholesomeness of water.

21.10 Air (Prevention and Control of Pollution) Act, 1981

Similar to Water Act, the Air Act vests regulatory authority on the State Pollution Control Boards and empowers them to enforce air quality standards to prevent air pollution in the country.

21.11 The Motor Vehicle Act 1988

In 1988, the Indian Motor Vehicles Act empowered the State Transport Authority (usually the Road Transport Office) to enforce standards for vehicular pollution and prevention control. The authority also checks emission standards of registered vehicles, collects road taxes, and issues licenses.

21.12 The Ancient Monuments and Archaeological Sites and Remains Act, 1958

According to this Act, area within the radii of 100 m and 300 m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (including building, mining, excavating, blasting) is permitted in the "protected area" and development activities likely to damage the protected property are not permitted in the "controlled area" without prior permission of the Archaeological Survey of India (ASI) if the site/remains/monuments are protected by ASI or the State Directorate of Archaeology, if these are protected by the State.

21.13 Environmental Guidelines and Norms set by Indian Roads Congress

Following are the road construction standards and norms and management procedure to be adopted to adhere to standards and guidelines maintained by the Indian Roads Congress (IRC):

- Guidelines for Environmental Impact Assessment of Highway Projects, IRC: 104-1988.
- Recommended Practice for Treatment of Embankment slopes for erosion control, IRC: 36-1974.
- Recommended Practice for Borrow pits for Road Embankment for Road manual operation, IRC: 10-1961.
- Recommended Practice for the construction of Earth Embankments for Road Works, IRC: 36-1970.
- Highway Safety Code, IRC, special publication no. 44.

21.14 Summary of Applicable Environmental Regulations

Table GoI Legislations relevant to the project

Sl. No.	Act/Regulation	Objectives	Implementing/Responsible Agency
1	Air (Prevention and Control of Pollution) Act, 1981	To control and monitor air pollution as per prescribed limits set by CPCB.	UP State Pollution Control Board

Sl. No.	Act/Regulation	Objectives	Implementing/Responsible Agency
2	Indian Motor Vehicles Act, 1988 (1989)	To check vehicular air and noise pollution	Motor Vehicle Department, Government of UP
3	The Water (Prevention and Control of Pollution) Act, 1977	To control and monitor water pollution as per prescribed limits	UP State Pollution Control Board
4	The Forest Conservation Act 1980	To check deforestation by restricting conversion of forested areas into non forested areas	Forest Department, Government of UP – up to 5 Ha and less than 40% canopy closure) • Regional Chief Conservator of Forest – 5 – 20 Ha. • MoEF – Above 20 Ha and more than 40% canopy closure)
5	National Forest Policy, 1988	To preserve and restore biological diversity	Forest Department, GoI and Government of Uttar Pradesh.
6	Wildlife (Protection) Act, 1972	To protect wildlife through creation of Wildlife Sanctuaries and National Parks	Chief Conservator of Wildlife, or Chief Wildlife Warden, Wildlife Wing, State Forest Department, National Wild Life Board, MoEF
7	Environment Protection Act, 1986	To protect and improve the overall environment	Department of Science, Technology & Environment (DST&E)
8	Ancient Monuments and Archaeological Sites and Remains Act, 1958	Preservation of culture and historical remains	Archeological Survey of India (ASI), State Archeological Department
9	The Land Acquisition Act (1894, revised in 1984)	Rules for acquisition of land by Government	Department of Settlement and Land Records
10	EIA Notification (January 1994 and New EIA Notification dated 14th September, 2006	For all Development Projects	State Pollution Control Board
11	National Environmental Appellate Authority Act, 1997	For grievance redressal	Ministry of Environment and Forests
12	Public Hearing Notification	For obtaining public response to EIA application	State Pollution control Board

Sl. No.	Act/Regulation	Objectives	Implementing/Responsible Agency
13	Notification on roadside trees (February, 1998)	For maintenance and preservation of roadside trees	State Forest Department
14	The Public Liability Insurance Act & Rules, 1991	Imposes liability on the owner to provide immediate relief in respect of death/injury or damage to any person/property arising out of accident/activity implementation	All project proponents including the State Public Works Department
15	The Explosives Act (& Rules), 1884 (revised in 1983). Other relevant codes of BIS and National Building Codes issued in 1983	Regulations regarding the use of explosives and precautionary measures while blasting and quarrying	State Revenue Department
16	The National Environment Tribunal Act, 1992	Liability for damages due to any accident while handling hazardous substances	Chairman, National Environmental Tribunal

21.15 Rehabilitation and Resettlement Policy

Provision of public facilities or infrastructure often requires the exercise of legal powers by the state under the principle of eminent domain for acquisition of private property, leading to involuntary displacement of people, depriving them of their land, livelihood and shelter; restricting their access to traditional resource base, and uprooting them from their socio-cultural environment.

A National Policy on Resettlement and Rehabilitation for Project Affected Families was formulated in 2003, and it came into force w.e.f. February, 2004.

There is imperative need to recognise rehabilitation and resettlement issues as intrinsic to the development process formulated with the active participation of the affected persons, rather than as externally-imposed requirements. Additional benefits beyond monetary compensation have to be provided to the families affected adversely by involuntary displacement. The plight of those who do not have legal or recognised rights over the land on which they are critically dependent for their subsistence is even worse. This calls for a broader concerted effort on the part of the planners to include in the displacement, rehabilitation and resettlement process framework not only those who directly lose land and other assets but also those who are affected by such acquisition of assets. The

displacement process often poses problems that make it difficult for the affected persons to continue their earlier livelihood activities after resettlement. This requires a careful assessment of the economic disadvantages and social impact of displacement. There must also be a holistic effort aimed at improving the all round living standards of the affected people.

The aim should be to minimise large-scale displacement, as far as possible. Only the minimum area of land commensurate with the purpose of the project may be acquired. Also, as far as possible, projects may be set up on wasteland, degraded land or un-irrigated land. Acquisition of agricultural land for non-agricultural use in the project may be kept to the minimum; multi-cropped land may be avoided to the extent possible for such purposes, and acquisition of irrigated land, if unavoidable, may be kept to the minimum.

Where large numbers of families are affected, it must be mandatory to do social impact assessments and provide all required infrastructural facilities and amenities in the resettlement area.

The provisions of the National Rehabilitation and Resettlement Policy (NRRP) 2007 provide for the basic minimum requirements, and all projects leading to involuntary displacement of people must address the rehabilitation and resettlement issues comprehensively. The State Governments, Public Sector Undertakings or agencies, and other requiring bodies shall be at liberty to put in place greater benefit levels than those prescribed in the NRRP-2007.

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. 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.

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.

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 OWD 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).

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.

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. OWD 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.

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.

SECTION 22

PUBLIC PRIVATE PARTNERSHIP

22 Public Private Partnership

22.1 Project Implementation through Public Private Partnership

Policy Guidelines

Public Private Partnership means an arrangement between a government/statutory entity/government owned entity, on one side and a private sector entity on the other, for the provision of public assets and/or public services, through investment being made and/or management being undertaken by the private sector entity, for a specified period of time, where there is well defined allocation of risk between the private sector and the public entity and the private entity receives performance linked payments that conform (or are benchmarked) to specified and pre-determine performance standards, measurable by the public entity or its representative

Essential conditions in the definition are as under:

i. Arrangement with private sector entity: The asset and/or service under the contractual arrangement will be provided by the Private Sector entity to the users. As entity that has a majority non-governmental ownership, i.e., 51 percent or more, is construed as a Private Sector entity.
ii. Public asset or service for public benefit: The facilities/services being provided are traditionally provided by the Government, as a sovereign function, to the people. To better reflect this intent, two key concepts are elaborated below:
    a. 'Public Services' are those services that the State is obligated to provide to its citizens or where the State has traditionally provided the services to its citizens.
    b. *'Public Asset'* is that asset the use of which is inextricably linked to the delivery of a Public Service, or, those assets that utilize or integrate sovereign assets to deliver Public Services. Ownership by Government need not necessarily imply that it is a PPP.
iii. Investments being made by and/or management undertaken by the private sector entity:
iv. The arrangement could provide for financial investment and/or non-financial investment by the private sector; the intent of the arrangement is to harness the private sector efficiency in the delivery of quality services to the users.
v. Operation or management for a specified period: The arrangement cannot be in perpetuity. After a pre-determined time period, the arrangement with the private sector entity comes to a closure.
vi. Risk sharing with the private sector: Mere outsourcing contracts are not PPPs.
vii. Performance linked payments: The central focus is on performance and not merely provision of facility or service.
viii. Conformance to performance standards: The focus is on a strong element of service delivery aspect and compliance to pre-determined and measurable standards to be specified by the Sponsoring Authority.

The-above definition puts forth only the essential conditions for an arrangement to be' designated as a Public Private Partnerships (PPP). In addition to these, some of the desirable conditions or 'good practices' for a PPP include the following:

a. **Allocation of risks** in an **optimal** manner to the party best suited to manage the risks;

b. Private sector entity receives cash flows for their investments in and/or management of the PPP either through a performance linked fee payment structure from the government entity and/or through user charges from the consumers of the service provided;
c. Generally a **long term arrangement** between the parties but can be shorter term dependent for instance on the sector or focus of PPP: -
d. **Incentive and penalty based structures** in the arrangement so as to ensure that the private sector is benchmarked against service delivery;
e. **Outcomes of the PPP are normally pre-defined as output parameters** rather than technical specifications for assets to be built, though minimum technical specifications might be identified. Such a structure is expected to leave room for innovation and technology transfer in project execution/implementation by the private sector entity.

Execution of infrastructure projects by public-private participation (PPP) aims at tapping not only the finances but also the innovativeness, management skills and more efficient delivery system of the private sector.

Public Private Partnership (PPP) is increasingly becoming the preferred mode of construction and operation of infrastructure services such as highways, airports, ports etc. PPP offers significant advantages in terms of attracting private capital in creation of public infrastructure as well as capacity adding to the provision of services to the users. It enables the Government to transfer construction and commercial risks to the private sector, which is better suited to manage them. PPPs can be undertaken through a range of alternative modes such as Build-Operate-and –Transfer (BOT), Build-Own-Operate-and-Transfer (BOOT), Build-Own-and-Operate (BOO), Design- Build-Finance- Operate and Transfer (DBFOT), Build-and-Transfer (BT), Build-Lease-and-Transfer (BLT), Lease-Management-Agreement (LMA) etc.

GOO is committed to rapid industrial and economic development in the State. With its rich natural resources and investor friendly policies, Odisha is slated to become a favorable investment destination for investors/developers, both Domestic and International. The State has vast scope to bring in substantial investments in the sectors like Mining, Industries, Information Technology and Tourism. For this it is imperative that the Government not only follows investment friendly policies but also provides high quality physical and social infrastructure. This needs significant investment, which is not possible out of public financing alone because of limitation of Government resources. GOO recognises that greater private sector participation would be critical for development of quality physical and social infrastructure in the State. With this broad objective, the State Government has promulgated a PPP policy i.e. “Policy for facilitating Public Private Partnership for Infrastructure Development in the State of Odisha”.

22.2 Implementation of Public Private Partnership

For broad based and sustainable growth, the Government recognises the need to engage with the private sector in diverse sectors through PPP frameworks. The overarching objectives of such partnerships are:

- Harness private sector efficiencies in asset creation, maintenance and service delivery;

- Provide focus on life cycle approach for development of a project, involving asset creation and maintenance over its life cycle;
- Create opportunities to bring in innovation and technological improvements; and
- Enable affordable and improved services to the users in a responsible and sustainable manner.

The PPP would be developed keeping in mind the following broad principles:

- Provide a fair and transparent framework to facilitate and encourage PPP mode of implementation for provision of public assets and/or related services;
- Ensure that the projects are planned, prioritized and managed to benefit the users and maximize stakeholders' economic returns;
- Adopt an efficient, equitable, consistent, transparent and competitive process for selection of private partners, and ensure efficient governance over the project life cycle;
- Protect the interests of end users, project affected persons, private and public sector entities and other stakeholders;
- Encourage efficient delivery of public services by engaging proficient and innovative practices with the utilisation of best available skills, knowledge & resources in the private sector;
- Achieve increased efficiency in the deployment of investments by setting out enabling frameworks for greater private sector participation in building future public assets and ensuring their long-term maintenance; and
- Provide requisite provision in budgets for contingent liabilities for the sponsoring government, in various forms, such as, liabilities towards lenders in case of contract termination or minimum revenue guarantees.

Recognising the imperatives to accelerate the delivery of efficient PPP to achieve the overall development goals, the Government would develop programmes, guidelines and practices based on the broad principles enumerated above and if deemed necessary, introduce changes to legislation and business rules to optimally deliver public services.

22.3 The PPP Process

To make the decisions needed to plan, develop, and execute successful PPPs, the process can be broadly divided into four phases, viz., identification stage, development stage, procurement stage and contract management and monitoring stage.

Phase 1: PPP identification covers activities such as strategic planning, project pre-feasibility analysis, Value for Money analysis, PPP suitability checks, and internal clearances to proceed with PPP development.

Some of the critical drivers are discussed below.

PPP Plan to generate a steady pipeline of PPP projects

To make efficient use of existing assets and harness new investments for greater efficiency, the Government shall set out, over a period, a long term vision and plan document for each sector which defines the role of public and private participation. For each financial year, based on a pre-

determined and envisaged level of public services to be rendered, different agencies would set out an annual PPP Plan which would identify a shelf of projects flowing from the overall vision and specify the extent of private investment for each project in the Plan. -

Pre-feasibility analysis would be undertaken by the project proponents to assess broad viability of every project envisioned to be procured on a PPP mode. Identification of the key risk factors for the project shall also be undertaken to establish the likely cost and revenue streams of the projects.

Value for Money Drivers

Value for Money assessment plays a central role in decision around investment prioritisation and in the selection and presentation of the choice of procurement approach. This is particularly relevant to annuity based payment schemes, where a framework is needed to assess whether or not it is the appropriate procurement route given the alternative of more traditional procurement approaches.

i. Value for Money (VFM) analysis shall be undertaken to support key decisions. At the outset, VfM analysis shall be undertaken to establish whether to develop a project as a PPP project. Subsequently, the VfM analysis should be undertaken to affirm whether to award a PPP contract on the basis of the bids received. A VfM analysis is most eminent upon structuring a PPP by comparing a shadow bid resulting from the financial analysis with a public sector comparator (or costs in case of conventional procurement). (A brief note on VfM is furnished at Annexure)
ii. VfM analysis should be conducted for every project in order to ascertain whether the Project being procured as a PPP is in a way offers good Value for Money to the public sector. VfM analysis would be conducted, even if no fiscal support is required, as the costs may be recovered through user charges (as there is an obligation to ensure that charges users pay are fair and reasonable).
iii. VfM assessment would be based on the efficiency savings that can be realised by utilizing the private sector managerial skills, integration and synergy between the design, build and service operation, optimal risk allocation, whole of life costing, innovation, focus on outputs and a robust competitive process to elicit the best bids.
iv. It is recognised that information availability is a constraint in the formulation of VfM analysis and also that sectors have different characteristics that influence the VfM outcomes. The public sector entities, either directly or through agencies such as PPP Cells, would set in place mechanisms for creation of a database which would facilitate this exercise.

Conformance with State and Sector Legislation

Before structuring a PPP project, an assessment would be carried out to ascertain whether private participation in the delivery of a public service is permissible under the extant legislations. If the same is not allowed but it is deemed prudent to adopt a PPP framework, suitable modifications/amendments would be made to the legislations.

Adherence to Processes

In addition to the above, a project would be deemed suitable for PPP, only if risks could be allocated in such a manner that maximizes the stakeholder benefits and the implementing agency commits to

adhere to the process of development, procurement and post award governance of the project. If a project is found not suitable after the PPP suitability assessment, the implementing agency would consider alternative methods of taking up the project including EPC contracts, corporate sponsor, community participation, etc.

Phase 2: Development Stage covers project preparation (including technical feasibility and financial viability analysis), project structuring, preparation of contractual documents and obtaining of project clearances and approval. During this stage, activities would be undertaken with the following objectives:

a. Articulate the scope of the project, implementing agency's requirements and set forth roles/responsibilities of the parties;
b. Establish that the revenue model is robust and sustainable over the project life;
c. Ensure that the underlying risks are defined and appropriately allocated between the contracting parties;
d. Ensure that the contractual arrangements and documentation accurately reflect the scope of the project, roles and obligations of parties, performance standards, monitoring arrangements, penal provisions, reporting requirements, dispute resolution mechanism and termination arrangements as well as & and effective post award governance mechanisms;
e. Ascertain that contractual arrangements are permissible under the policy, legal and regulatory regime; and
f. Establish stakeholder buy-in and commitment is ensured throughout the process.

As part of the project development activities, implementing agencies would undertake studies and investigations relating to technical, market analysis, financial, legal aspects, with the assistance from advisors/consultants wherever required. The output of the project development activities, to the extent feasible, would be made available to the potential bidders during bid process. Some of the core activities critical at this stage are discussed below

Economic, Financial and Affordability Assessment

i. To structure the projects optimally, the implementing agency would evaluate the project from an economic perspective (to ascertain whether the project is warranted - public need), then whether the project generates positive value to *the* private sector (financial viability), and finally ascertain whether defined viable PPP is better than conventional procurement or which of the defined viable PPPs is most attractive (VfM analysis). All these analyses would be based on the same valuation methodology - calculation of net present value where future benefits (revenues), and costs (capital, O & M), are discounted to reflect the current value.
ii. Economic analysis would form a key input for decisions regarding the (public) need for a project, and would encompass, in addition to the cash flows and items that have financial impact, other external costs and benefits to the stakeholders, regardless of whether they have any financial impact. The future economic benefits and costs will be assessed and discounted using a discount rate that reflects the systematic risk of the projects.
iii. Financial analysis would assess whether the project generates sufficient revenues for the capital providers to generate an acceptable rate of return. The future financial benefits and costs (in terms of cash flows) are discounted, using a discount rate reflecting the cost of capital, and which also takes into account the systematic risk of the project.

iv. Affordability analysis, with respect to both the implementing agency (viz., committed and contingent liabilities, such as land acquisition costs, rehabilitation and resettlement costs, annuity payments, management fees, etc.) and the likely users (tariffs, user charges, etc) would be a critical determinant in addition to the VfM analysis, on whether to take up\the project on the PPP mode. It is also an effective tool to establish the reasonableness of assumptions underlying the financial analysis.
v. Bankability assessment would also be carried out to assess the debt service capabilities of the proposed project structure. A Debt Service Coverage Ratio (DSCR) (a ratio of cash flow available for debt servicing divided by the amount of debt service) is a key measure to assess the credit worthiness of a project. In case the analysis suggest that the project is not bankable, the implementing agency might consider developing credit enhancement mechanisms, such as viability gap funding, capital grant or maintenance grant, alternative revenues structures, including shadow user fees, etc. Such credit enhancement structures would be facilitated through institutional and contractual provisions.
vi. Existing loans, guarantees, other statutory and contractual liabilities and contingent liabilities affect the fiscal resources of the project proponents and would be considered while structuring PPP contracts.

Value for Money Analysis

A similar (as adopted for economic and financial analysis) methodology would be utilised for quantitative assessment of Value for Money. The future benefits and costs of applying PPP in comparison with conventional procurement are assessed and discounted using a discount rate reflecting the systematic risk of the project.

Management of Risks

i. The Government, through the implementing agencies, shall identify different types and degree of risks during the project life cycle, and configure appropriate mitigation measures. The objective would be to optimally allocate the project risks, rather than maximize their transfer to the private sector. The attempt would be to allocate risks, taking into account the legitimate concerns of the stakeholders, to the entity that is best suited to manage the same.
ii. In the normal course, the public sector would not retain the risk that the private sector has better ability to bear. However, risks that the public sector is more competent to mitigate/bear in the normal course of its business, such as ensuring availability of unencumbered land for the project or obtaining mandatory clearances of regulatory authorities prior to commencement of the project, would be retained by the public sector.
iii. The allocation of risk shall be **enshrined in the contract document** and under normal circumstances **shall not be subject to modification after the award of the project.** Contractual documentation would provide adequate protection to tenders against non-commercial risks related to force majeure, regulatory changes, contract termination etc. The contract would also prescribe the key performance indicators and. output parameters to ensure that the delivery of services adheres with the aspired levels.
iv. To ensure that the projects conform to the guiding principles of PPPs, the Government has notified the Guidelines **for** Formulation, Appraisal and Approval **of** Central Sector PPP Projects. The procedure enshrined in these guidelines shall continue to be observed for all central sector projects. States are encouraged to put in place a similar mechanism.

v. Government, where required, would set out mechanisms for periodic review and reallocation of the risks that could not be transferred for the entire contractual period.

Phase 3: Procurement stage would cover procurement and project award. Transparent, accountable, non-discriminatory, competitive and timely procurement processes would be followed so as to encourage maximum participation by private sector and to imbibe public confidence in the procedure. The PPP rules notified by the Government would define the norms and procedures for procuring PPP projects.

The bid documents used for procurement of private sector entities may comprise one or more of expressions of interest, request for qualifications, arid request for proposals. Technical proposals would be invited, depending on the complexity of a project, to assess the ability of the private entity of their appreciation of the desired outcomes. Financial proposals would ideally be in the form of a single objective parameter.

The Government has prescribed the bid process and the model bidding documents (viz., model Request for Qualification and model Request for Proposal) for PPP projects in infrastructure sector, through notifications issued from time to time. The implementing agencies shall observe the prescribed process or take necessary approvals of the competent authority on the process, relevant to their sector, proposed to be undertaken prior to commencement of the bid process.

A web based market places, including e-tendering and auction would be promoted based on the project requirements to promote wider participation and transparency in the process.

Draft contract agreement, containing provisions on the roles and obligations of the parties, performance standards and monitoring arrangements, reporting requirements; penalty conditions, force majeure conditions, dispute, resolution mechanism and termination arrangements, shall be provided to the prospective bidders as part of the bid documents.

Timelines to be followed during the procurement process would be indicated by the procurement entity in the bidding documents. In order to minimize delays, the procurement entity would endeavor to obtain all necessary approvals for a project, from the agencies concerned in a timely manner.

Procuring entities would, on best efforts basis, facilitate all necessary clearances for speedy implementation of a PPP project.

Phase 4: PPP contract management and monitoring stage, covers project implementation and monitoring over the life of the PPP project. Contract management is not a passive box ticking/reporting exercise: it is an active process that involves a wide range of skills. Projects are not static, conditions change and the capability of the public authority at the interface with the private sector party is therefore crucial. The contract manager needs to be empowered to take action responsively and effectively only, escalating up the chain issues that cannot be managed, at the project interface. This calls for effective and efficient governance processes and people with the right mix of skills (or at time access to skills) including project management, commercial expertise and negotiation skills;

The Government and the implementing agencies shall endeavor to ensure timely and smooth implementation of the project. The implementing agency shall put in place a suitable contract administration framework for monitoring project performance milestones over the contract period.

The project implementing agency shall establish appropriate mechanisms for project monitoring such as Project Monitoring Unit (PMU) and inter-department committees that would oversee project implementation, facilitate coordination between departments and render assistance during events of dispute resolution or arbitration. The contract management teams identified would be well prepared and resourced in advance of the contract management stage. In particular, those charged with managing the contract would have a close knowledge and understanding of the relevant terms of the contract, especially, where relevant, the performance criteria and payment mechanisms;

The dispute resolution mechanism would be in accordance with contract conditions and applicable legislation. The implementing agency shall endeavor to speedily resolve and dispose disputes during the contract period through appropriate mechanisms including mediation processes.

The Government recognises that appropriate capacity is critical to effectively undertake project monitoring and, therefore, appropriate human resources and management systems would be established for the above.

22.4 Enabling Framework

The government is committed to continue to create an enabling environment for PPPs across the country, through initiatives including enabling funds and schemes, guidelines, institutional structures as well as processes. Some of these critical enabling elements are elaborated below and would be explored and extended as relevant to applicable sectors, geographies and projects.

Financing Mechanisms

The GOI has a progressive financial support system for PPP projects. Government has put in place a number of schemes, to support PPPs either for project development or for gap financing capital and life cycle investments. A few key initiatives include the India Infrastructure Project Development Fund (UPDF), Viability Gap Funding (VGF), resources for annuities/availability based payments, long tenor lending, re-financing facility, infrastructure debt funds, etc. The Government shall explore and provide more interventions to facilitate more PPP projects as relevant from time to time. The GOI recognises that in new sectors seeking PPPs, such as in health and education sectors, annuity based PPPs can make a significant impact.

Government would continue to provide, legislative and policy support for developing equity, debt, hybrid structures and appropriate credit enhancement structures targeted towards various domestic and international financial investors such as equity providers, debt and capital markets, insurance sector etc.

The implementing agencies would encourage leveraging monies available from schemes such as JNNURM, Bharat Nirman etc., and alternate sources of finance like Municipal Bonds, Pooled Finance Structures, Pension Funds, etc. for PPP.

The Government, where necessary and appropriate, would consider levy of user fees to generate financial resources for rehabilitation or redevelopment or construction or replacement of project assets and their ongoing operations and maintenance in order to provide good quality public assets and/or related services. The determination of such user charges, where there is no regulator, would be based on the principles including, but not limited to, partial or full recovery of the costs, savings to users, efficiency gains, willingness to pay, need for explicit subsidies, and affordability.

In order to facilitate quick mobilisation of financial resources and to develop new innovative financial instruments for the PPP projects, the Government shall have regular interface with banks, financial institutions and the private sector.

22.5 Land

Expeditious legal and physical provision of unencumbered land/right of Way in i time bound manner, is critical for provision of public assets and/or related services. Government agencies sponsoring the PPP project, while retaining all responsibility for making available unencumbered land for the project and obtaining clearances from relevant regulatory authorities, shall also ensure that the interest of land owners are fully protected under the extant laws.

In cases, where the asset need not be located on a particular site, bidders may be allowed to propose various location specific solutions and to take responsibility for acquiring the site. The risk associated with the ground condition, geology and other factors will be preferably passed on to the private entity.

22.6 Capacity Building Measures

The Government recognises that to identify projects that are amenable to PPPs, to structure them in a commercial format, creating contract documents that apportion appropriate risk to the public and private partners and to manage the transaction for bidding out such projects in a transparent manner, capacities have to be built in public institutions, public officials, private sector, users and other stakeholders.

22.7 Participation and Communication Mechanisms

The Government recognises the need for clear and consistent communication while developing PPP projects PPPs often generate a range of responses among stakeholders. A coherent and strategic approach to communication so as to inform and engage stakeholders is critical for mobilizing a broad-based support for successful project development and implementation.

Public Private Partnership Cell in the Department of Economic Affairs will provide a center of expertise and technical support to government ministries and other authorities developing PPPs. It will have specialists from different areas (finance, law, engineering, planning, etc.) and will have

mixture of experience in both public and private sectors. The PPP Cell will be entrusted with capacity building, developing initial pilot projects to test PPP models, providing technical advice and support, communicating lessons from project evaluations and coordinating the PPP programme of the country.

22.8 Odisha PPP Policy – 2007

The Odisha PPP Policy – 2007 envisages following key objectives:

- To leverage State and Central Government funds, support private investment and to create a conductive environment to utilize the efficiencies, innovativeness & flexibility of the private sector to provide better infrastructure & service at an optimal cost.
- To set up a transparent, consistent, efficient administrative mechanism to create a level playing field for all participants and protect interest of all stakeholders.
- To prepare a shelf of projects to be offered for PPP and take them forward with assistance of the owner departments through a transparent selection process.
- To put in place an effective and efficient institutional mechanism for speedy clearance of the projects.
- To provide necessary risk sharing framework in the project structure so as to assign risks to the entity most suited to manage them.
- To create a robust dispute redressal mechanism/regulatory framework for PPP projects.
- To provide the required viability gap funding (VGF) where the essential projects are intrinsically unviable.
- To create Odisha Infrastructure Development Fund (OIDF) to facilitate implementation of the objectives of the Policy.

Some of the important mandates of the PPP Policy formulated by the State Government are:

- Formation of a High Level Clearance Authority (HLCA) consisting of a group of Ministries under the Chairmanship of the Hon'ble Chief Minister to clear PPP Projects having investments of over ₹ 500.00 crore and also to grant any special concessions.
- Formation of an Empowered Committee on Infrastructure (ECI) consisting of a group of Secretaries under the Chairmanship of Chief Secretary to sanction PPP Projects up to ₹ 500.00 crore and to adopt, adapt, develop Model Concession Agreements for various' sectors and grade and supervise the PPP initiatives in the State. The ECI shall be the nodal agency to co-ordinate all effort of the State Government regarding development of infrastructure sections involving private participation and funding from various sources.
- Creation of a PPP Cell and its Technical Secretariat to take forward and guide the PPP Initiatives of different Departments to create a Shelf of PPP Projects, to act as secretariat of the ECI and HLCA, to interact with Planning Commission, GOI and other funding agencies like World Bank particularly for arranging Viability Gap Funding (VGF).
- Taking necessary steps for protecting rights of all stakeholders by way of structured concession agreements, necessary legislative support, dispute redressal mechanism, setting up of Special Purpose Vehicles (SPVs).
- Formation of Odisha Infrastructure Development Fund (OIDF) to provide direct financial support to the essential projects for enhancing project viability and also to support PPP initiatives like taking up technical and financial pre-feasibility and feasibility studies,

preparation of reports and bid documents and other activities that need to be undertaken for PPP Projects including capacity building and training.

- Systematic project identification and structuring for implementation in PPP mode.

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:

- 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 incentivize early completion, period of construction is included in the concession period.
- 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 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.
- Build Own and Operate (BOO): In this, the project proponent is authorized 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.
- Build Lease and Transfer (BLT): In this arrangement the project proponent is authorized 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.
- Design Build Finance Operate Transfer (DBEOT): This model is used for an extension of BOO, which involves the design of the Project by the Concessionaire in addition to finalizing and transfer the project after completion of concession period.
- 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.
- Procurement Process: 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

For detailed understanding of Public Participation Model especially for Roads, Planning Commission Documents on "Public Private Publications Participation" in NH and State Highways respectively, may be referred to.

22.9 Infrastructure Sectors Covered under PPP Policy

The infrastructure sectors covered under the PPP Policy are:

- Roads, Bridges and Bypass
- Ports and Harbours
- Airports, Airstrips and Heliports
- Inland container depots and logistics hubs
- Industrial parks, Theme Parks like Information Technology (IT)/Bio-Technical (BT) Parks, Knowledge parks, Special Economic Zones and Townships.
- Water supply, Treatment and Distribution
- Power Generation, Transmission and Distribution Systems
- Solid waste Management
- Sewerage & Drainage
- Inland water Transport
- Tourism and related infrastructure
- Healthcare Facilities
- Education
- Trade fair, convention, exhibition, cultural centers
- Urban infrastructure including entertainment and recreational facilities
- Urban Transportation Systems/Improvement of Public Transport Facilities including construction of state of art bus-stands.
- Railway & related projects
- Agricultural Production and Marketing
- Any other sector/facility as may be included by the Government from time to time

22.10 Operationalisation of PPP Policy

In conformity with the PPP Policy, State PPP Cell has been set up under the Planning and Co-ordination Department, which is headed by a Special Secretary as per the recommendations that emerged in the National level conference of the Chief Secretaries organised by the Planning Commission on 20th May, 2006. A Society has been formed and registered in the name and title of "Odisha PPP Technical Society" to assist the State PPP Cell and to discharge the functions of the Technical Secretariat as laid down in the Odisha PPP Policy 2007. Minister P & C is the President of this society with Chief Secretary as its Vice-President and the Special Secretary PPP its Managing Director-cum-Member Secretary. Further it has been decided to have a PPP Cell in each department, headed by a Nodal Officer to look after the departmental PPP projects including co-ordination with State PPP Cell.

The goals envisaged in the PPP Policy are being operationalised as per the following strategy:

- Each Department is to prepare a PPP Plan outside the regular Plan, giving details of the projects proposed to be taken up in PPP mode and the amount of additional private sector resources it would try to attract.
- Each Department has to set up a PPP Cell with a Nodal Officer to look after the PPP projects including co-ordination with State PPP Cell.
- Each Department has to identify, conceptualize probable PPP projects and prepare a preliminary report/concept note wherein the need for the project, the benefits of doing under PPP mode, the responsibilities of the State and the concessionaires, outlines of the project and its structure, its main features, value for money (VFM) test etc may be indicated. This would be done by the department in close co-ordination with the State PPP Cell.
- All projects should normally be tested for PPP amenability and only strong reasons {Economic Rate of Return (ERR) if not Internal Rate of Return (IRR)} need to justify for fully state funded projects.
- The above shelf of probable of ECI/HLCA (as the case may be) on the basis of concept note, the Departments will have to get prepared an Initial Screening Report (ISR) of projects either in-house or through suitably hired consultants.
- After in-principle approval of ECI/HLCA (as the case may be) on the basis of concept note, the Departments will have to get prepared an Initial Screening Report (ISR) of projects either in-house or through suitably hired consultants.
- After ascertaining the feasibility of the projects through the ISR, the same shall again be put up to ECI/HLCA (as the case may be) through the State PPP Cell for approval.
- Further modalities including preparation of Detailed Project Report (DPR), other structuring details, concessions required, details of land requirement, VGF requirement, types of State support, value for money analysis, proper risk allocation etc need approval of ECI/HLCA.
- Proposal for VGF, if any, is to be processed through the State PPP Cell, at all stages.
- The Departments have to go for preparation of bid documents and also adoption & modification of Model Concession Agreements (MCAs).
- The bid and concession documents and the outcome of bid process is to be got approved from ECI/HLCA as the case may be, before award of the project to the Developer.
- Appropriate structure to manage, run and supervise the project both in its construction and Operation and Maintenance stage shall be worked out by the departments concerned.
- Provision for contingency of failure and abandoning of the project by Developer should be made at the conceptualisation/Project report preparation stage.

22.11 Capacity Development

Under the National PPP Capacity Building Programme (NPCBP), GOO has signed a tripartite agreement with the Department of Economic Affairs (DEA), GOI and IDFC Foundation for PPP Capacity building in the State. The Programme envisages creating a cadre of trainers through selection and training and thereafter rolling out training programmes on PPP in different modules to suit different target groups at the State level, through State Administrative Academies with the help of these trainers.

In Odisha, *Gopabandhu* Academy of Administration (GAA) has been identified as the center for organising roll out training programmes on PPP under NPCBP. In the meantime eight Officers of different departments/agencies of the State Government have participated in the Training of Trainers (ToT) programmes organised by the IDFC Foundation at different centers. These Officers

along with other identified resource persons will act as trainers in the roll out training programmes to be organised by GAA.

In the 17th meeting of the Empowered Committee on Infrastructure held on 2nd March, 2012 under the Chairmanship of Chief Secretary, a presentation on NPCBP was made by the IDFC Foundation. The urgent need for capacity building among the officials of different Government departments/agencies implementing PPP projects was appreciated and it was decided to take early steps to organise roll out training programmes on PPP at GAA in different modules for different categories of participants. It was further decided that the GAA, with the technical support of IDFC Foundation, will draw up an Action Plan for the purpose, with training calendar for different PPP modules and submit this to Government for necessary budget provision.

22.12 State Plan Support

As per the provision of the Odisha PPP Policy–2007, State PPP Cell and Odisha PPP Technical Society (OPPPTS) have been created to attend following activities:

- To identify, conceptualize and create a shelf of projects in consultation with the owner departments/agencies and recommend approval of such projects for PPP from time to time to the ECI.
- To assist different government departments/agencies in preparing prefeasibility reports by itself or through consultants.
- To assist the respective departments/agencies for preparing Detailed Project Reports.
- To appoint/select consultants to take the projects up to selection of developer stage in consultation with the concerned department.
- To help respective departments/agencies to conduct the bidding process for appointment of developers.
- To interact with the Planning Commission, GOI and other funding agencies like World Bank for obtaining approval under VGF and any other fund created for such purpose.
- To recommend the requirements of multilateral/bilateral funding for furthering the objectives of the Policy.
- To act as the nodal agency for capacity building for PPP in the state. To further this function it shall conduct/recommend exposure visits and training programs on PPP.
- To recommend appropriate regulatory mechanism/robust grievance redressal mechanism as per requirement of the project.
- To recommend requirements from the PPP Fund for development of projects, gap funding and for any other requirement for furthering the objectives of the PPP Policy. Formulation and recommendation of any legislation if required for creation, administration and monitoring of the Fund.
- To develop internal evaluation guidelines by PPP Cell in consultation with the respective departments/agencies to evaluate and assess the projects whether the projects are to be funded by the State Government through multilateral/bilateral funding and/or implemented with Private Sector participation.
- In the first stage, the department concerned shall publish in the press and also posts 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 envelop 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 the Committee 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 from. 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.
- The bidder may be 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.
- 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/agreement, and copies of these agreements have been supplied to the Government. It signifies the start of the concession period, as 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, as provided.
- In all PPP models, 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.
- 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 it 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; if otherwise, it will be borne by the department.

- 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.
- 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.
- 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.
- During the Operation and Maintenance 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 provision 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.
- 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.
- Usually, the PPP agreements provide for issue of 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 State Government or force majeure, the State 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 satisfactory and complete. 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.
- 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 to the State 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 during Detect Liability Period.

- If a party commits a default as specified in the agreement, the other party is entitled to cause Termination of 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 right and interest by the project proponent/concessionaire etc. shall be as laid down in the agreement.
- The State 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.
- It shall be proper that the agreement clearly provides the methodology for Resolutions of 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. It mediation is not successful, the dispute shall be referred to the Steering Committee and 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.

OUTLINE

AN OUTLINE OF REVISED ODISHA WORKS DEPARTMENT CODE

1. **Introduction**
   - General Background
   - Functions
   - Applicability of Code
   - Scope of Code
2. **Organisation**
   - Organisation Structure and Functions
   - Headquarter Office
   - Field units
   - Institutional Set up (OWD, OBCC, Training Academy)
   - Creation of Additional posts in short term through Restructuring of Engineering Cadre approved by GOO in December 2011
   - Long Term Restructuring Requirements of OWD
   - Miscellaneous
3. **Establishment**
   - General
   - Establishment Matters
   - Work Charged Employees
   - Duties of Officers
   - Miscellaneous
   - Outsourcing of Services (Consultants, Independent Engineers, Survey Work etc.)
4. **Information Technology & Management Information System**
5. **Powers of Sanction of Government and of Officers of Development In Charge of Public Works (Old Chapter VI of OPWD Code)**
   - General
   - Powers of Head of Administrative Departments and other Civil Officers
   - Powers of officers in charge of public works
   - Miscellaneous powers
     - Expenditure on Survey Work
     - Expenditure on Exhibitions
     - Expenditure on Inauguration
     - Expenditure on Architectural Models
     - Disposal of Government Buildings etc.
     - Expenditure on Workshops, Conference, Symposium etc.
6. **Stages in Execution of works**
   - Classification of Works
   - Original Works
   - Repairs

- Pre requisites for execution of works
- Administrative Approval
- Expenditure Sanction
- Technical Sanction
- Allotment of Funds
- Pre-Construction and Construction Stages
- Completion of Works
- Process for completion of "Uncompleted Works"
- Miscellaneous
- Emergency Works

7. Deposit Works

- Taking up Deposit Works
- Powers to Undertake Deposit Works
- Realisation of deposits
- Execution of deposit works

8. Preparation of Estimates of Projects

- Preparation of Project Reports
- Preliminary Estimate
- Detailed Estimate
- Schedule of Rates, Analysis of Rates
- Estimates for Addition and Alternations
- Estimates for Petty Works
- Estimates for Road Works
- Estimates for Building Works
- Revised Estimates

9. Safety in Construction (New Chapter)

- General
- Safety During Construction
- Post Construction Phase
- Workers Safety
- Safety Education and Training
- Public safety
- Safety on Roads
- Safety of Bridges and Other Structures
- Road Safety Audit
- Safety Features for Water Supply and Sanitation Works
- Safety Features in Irrigation Works.

10. Works Accounts

- Measurement Books
- Standard Measurement Books
- Preparation and passing Bills for Payments

- Documentation of Accounts
- Departmental Charges

11. (a) Contracts

- Standard Bidding Document (Procurement Manual)
- Contracts (Bid Document) and Forms
- Preparation of Tender Documents
- Tenders for Specialised Works
- Contract System for Maintenance and Minor Works
- Publicity of Tenders
- Sale of Tender Documents
- Earnest money, Bank Guarantee
- Receipt Opening Evaluation and Acceptance of Tenders
- Security Deposit and Performance Guarantee
- E-Procurement of Works

(b) Contractor Management

- Enlistment of Contractors
- Disqualification of Contractors
- Change of class of Contractors
- Pre Qualification of Contractors
- Blacklisting of Contractors

12. Essential Features of Agreements/Contracts

- General Principles and Guidelines
- Execution of Agreements
- Supplementary Agreements
- Issue of Materials, Tools and Plants to Contractors
- Materials Arranged by the Contractor

13. Guidelines for Operation of Clauses of Contract

14. Extra, Substituted and deviated items of works

- Deviations
- Extra and substituted items
- Rates for deviated, extra and substituted items

15. Extension of time and compensation for delay

- General Principles
- Requirements of EOT Clauses of Contract
- Powers of Officers to Grant Extension of Time
- Grant of EOT without Application
- Recording of hindrances
- Extension of Time without Levy of Compensation
- Compensation Under Relevant Clause of Contract

16. Payment to Contractors

- Requirements of Relevant Clauses of Contract
- Time Schedule for Payment of Running Account Bills
- Advance Payments
- Deduction of Income Tax at Source
- Deduction of Vat and Cess
- Payment of substandard Work
- Contractor's Labor Regulations
- Final bill

17. Dispute Redressal, Arbitration and RTI Act 2005

18. Stores

- Acquisition of Stores
- Purchase of stores
- E- procurement
- Payment for the supplies
- Insurance
- Losses/Damage to Stores
- Receipt of Stores
- Safe Custody of Stores
- Issue of Stores
- Disposal of Stores
- Losses on Stores/Write off
- Stock Taking

19. Quality of Works (New Chapter)

- Introduction
- Quality Assurance Plan
- Responsibility for Quality Assurance
- Quality Assurance Set Up
- Responsibility of Construction Staff
- QA Units Under CE
- QA Units Under SE Level
- Issue of Quality Inspection Report
- Responsibility for Quality
- Field Testing Laboratories
- Central Laboratories
- Independent Testing Laboratories

20. Land Acquisition (New Chapter)

21. Environment and Social Management (New Chapter)

22. Public Private Partnership (New Chapter)

- General
- Public Private Partnership Concept

- Preparation of Bid Documents
- Selection of Concessionaire
- Independent Engineer
- Monitoring of Construction
- Change of scope
- Operation and Maintenance
- Completion Certificate
- Financial Close
- Dispute Resolution

23. Maintenance Management/Asset Management

- Assets (-- Depreciation, Valuation of Assets)
- Registers, Records
- Land Management
- Maintenance of Roads
- Maintenance of Buildings
- Maintenance of Road Structures
- Maintenance of Drinking Water Supply Schemes
- Maintenance of Sewerage and Storm Water Drainage
- Maintenance of Irrigation Structures

24. Budget

- General
- Preparation of Budget
- Savings, Excesses and Supplementary Demands
- Distribution of Grants
- Reconciliation of Accounts
- Appropriation and Re-appropriation of Accounts
- Regulations of Excesses

25. Accounts Procedures, Audit Inspection etc

- General
- Chief Accounting Authority
- Accounting Procedures
- Procedure Regarding Accounts in Respect of Divisional Offices
- Completion of Accounts
- Final Consolidation and Submission of Accounts
- Audit Inspection