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

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

REPORT ON
TRAINING NEEDS ASSESSMENTS RESULTS

Intercontinental Consultants and Technocrats Pvt Ltd

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Acronyms

ACE	Assistant to Chief Engineer
ACR	Annual Confidential Report
AE	Assistant Engineer
AoR	Analysis of Rates
ASCI	Administrative Staff College of India
BBDM	Benkelman Beam Deflection Method
BoQ	Bill of Quantities
BOT	Build Operate Transfer
CE	Chief Engineer
CPM	Critical Path Method
CRRI	Central Road Research Institute
CSIR	Central Scientific & Industrial Research
DAO	Divisional Accounts Officer
DFO	Divisional Forrest Officer
DPI	Design Planning Inspection
DPR	Detailed Project Report
E-i-C	Engineer in Chief
EE	Executive Engineer
EIA	Environment Impact Assessment
EMP	Environment Management Plan
FGD	Focused Group Discussions
FIDIC	International Federation of Consulting Engineers (Fédération Internationale Des Ingénieurs-Conseils)
GED	General Electric Division
GIS	Geographic Information System
GOI	Government of India
GOO	Government of Odisha
GPH	General Public Health
GPS	Geographic Positioning System
GSB	Granular Sub-Base
HDM	Highway Design and Management
HO	Head Office
HRD	Human Resource Development
HRM	Human Resource Management
HRMIS	Human Resource Management Information System
IAHE	Indian Academy for Highway Engineers
ICT	Information & Communication Technology
IDCO	Industrial Development Corporation of Odisha
IEC	Information, Education & Communication

iOTMS	Integrated Online Treasury Management System
ISAP	Institutional Structuring Action Plan
ISD	Instructional System Development
ISO	International Standards Organisation
ITI	Industrial Training Institute
IT-ICT	Information Technology and Information Communication Technology
JE	Junior Engineer
KSA	Knowledge, Skills, Attitude
Sp. LAO	Special Land Acquisition Officer
M S	Microsoft
MDR	Major District Road
MIS	Management Information System
MLA	Members of Legislative Assembly
MLCs	Members of Legislative Council
MPR	Midterm Progress Report
N.H.	National Highway
N.O.C	No Objection Certificate
NABARD	National Bank for Agriculture and Rural Development
NCB	National Competitive Bidding
IRC	Indian Roads Congress
BIS	Bureau of Indian Standards
NDT	Non-destructive Test
NICMAR	National Institute of Construction Management and Research
NITHE	National Institute for Training of Highway Engineers
O&M	Operation and Maintenance
ODR	Other District Road
OFC	Optic Fibre Cable
OPWD	Odisha Public Works Department
OAS	Odisha Administrative Service
OJS	Odisha Judicial Service
OSD	Officer on Special Duty
OSHB	Odisha State Housing Board
OSRP	Odisha State Road Project
OWD	Odisha Works Department
PERT	Program (or Project) Evaluation and Review Technique
PHE	Public Health Engineering
PMU	Project Management Unit
PPP	Public Private Partnership
QC	Quality Control
R & B	Roads & Bridges
R & R	Rehabilitation and Resettlement

RACI	Responsible, Accountable, Consult, Inform
RD	Rural Development
RD & QP	Research Development & Quality Promotion
ROMDAS	Road Measurement Data Acquisition System
RSID	Road Sector Institutional Development
RTI	Right to Information
S.E (P&D)	Planning & Design
SE	Superintending Engineer
S.E. (D & P)	Design and Planning
SH	State Highway
STAAD software	Structural Analysis And Design software
TIMS	Training Information Management System
TNA	Training Needs Analysis
TOR	Terms of Reference
WAMIS	Work & Accounts Management Information System
WB	World Bank

SECTION 1

PROJECT BACKGROUND

1 Project Background

To upgrade the major road network in Odisha the Government of Odisha (GOO) with the support of the Government of India (GOI) have embarked on a WB assisted project called the Odisha State Road Project (OSRP). The project intends to enhance both the major road transport infrastructure as well as the institutional capacity of the Odisha Works Department (OWD) which has primary responsibility for the State's main road network. Road infrastructure will not only play an influential role in creating this 'new world' for Odisha, but also its effective management will be vital to sustain the transformation and to secure the future for Odisha. This will not only lead to development of the road sector, but also have a cascading effect on the overall development of the State.

The GOO too has realised the need for reforms and is preparing itself for capacity building, organisational restructuring and skill up-gradations to meet the new challenges. The Government is not only thinking for Road Sector, but also planning an all-round re-modeling, restructuring and overall review of regulatory framework, to match the development strategy for the State.

Based on the WB recommendations, the Task Force inputs and GOO requirements, a Road Sector Reforms Plan emerged in 2007, named as ISAP covering major objectives of Institutional Strengthening and Capacity Building of OWD. In order to implement ISAP for the Road Sector in general and the OWD in particular, OWD initiated actions to procure the services of a consultant for Road Sector Institutional Development (RSID).

As a follow up action, ISAP 2008–18 has been endorsed by the State Government to guide the implementation of ISAP activities in the sector and to facilitate monitoring of ISAP results. The ISAP includes clear, monitorable targets and milestones for a planned range of policy, capacity and resource improvements in the following fields:

i. Road Sector Strategy (Regulatory and Strategic Context);
ii. Core Processes in Road Management;
iii. Organisational Structure and Management;
iv. Financial Management, Audit and Administration;
v. ICT and MIS; and
vi. HRD and Capacity Building.

SECTION 2

INTRODUCTION

2 Introduction

2.1 Scope of Services

As per TOR of the consultancy, the scope of work under HRD and Capacity Building component is as follows:

Compilation of an OWD-wide Training Needs Assessment (TNA) followed by implementation of an OWD-centered TNA-based multi-year 'rolling' Staff Training program supported by an over-arching Human Resources Development (HRD) policy statement for the Department. This involves inter alia

i. ***Planning and execution of a comprehensive Training Needs Assessment (TNA) both at head quarter and field level for all OWD staff and officers centered on the foreseeable OWD functions, operating challenges and skills priorities;***

ii. ***Identification of an integrated set of "core technical and management skills and knowledge" required in the OWD technical staff for future effectiveness;***

iii. Developing and facilitating the implementation of a viable multiyear 'rolling' Staff Training program covering the main staff categories and levels (both at head quarter and field) with realistic prioritisation of individual and Departmental skills/capacity needs;

iv. Evaluation of the imparted training as per TNA for any further improvement

v. Identifying desirable changes and enhancements to OWD organisational documentations on positions and establishments to improve their communication of skills and competency requirements;

vi. Preparation and facilitation of HRD policy for OWD along with strategy and action plan

vii. Establishment of an effective Training/HRD functions and capacity in OWD to sustain the delivery and management of new Staff Training and HRD activities, based on an efficient combination of internal HR roles and external training program/course providers; and

viii. Facilitation of a pilot "ISO certification" process (inclusive of training) for staff and managers in ongoing OWD core functions such as Quality Management, Contracts/Procurement, Planning, Design and/or Environment & Social Management.

The deliverables under this task shall include (but not limited to) reports on Training Needs Assessments, proposed TNA-based program(s), Training documents/materials for implementation of first round training programme, Training Evaluation Report, HRD Policy Document and Action Plan for the core functionaries of OWD at head quarter and field level and other related documents highlighting OWD 'Training' Role, HRD functions and capacity etc.

2.2 Role of Training

Definition: Organised activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill.

It is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or changing of attitudes and behaviors to enhance the performance of learners.

Training is the transfer of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, and performance. In addition to the basic training required for a trade, occupation or profession, observers recognise the need to continue training beyond initial qualifications: to maintain, upgrade and update skills throughout working life. People within many professions and occupations may refer to this sort of training as professional development.

Academic education equips a person with knowledge about various theories, definitions, case studies, activities etc. However in a work environment, every person faces complexity in daily office works for the first time. So the new employees require guidance from experienced employees or from external resources who are experts in those specific fields. Training is that medium which extends and develops capabilities for better job performance. For a specific role in the workplace it involves transfer of gathered knowledge from training, skills and behaviors.

Depending on the nature of job, training varies. Sometimes the senior employees guide juniors in their daily office works where basically they share their experience in problem solving. This is an informal method of training, more like coaching, which does not follow a structured schedule, just as and when required juniors approach the seniors for help.

Formal training is to prepare the employees for doing a specific job or to enhance the skill, knowledge, and behavior of an employee. If a person is available in the organisation who is competent enough for training then an in-house training could be arranged otherwise organisations need to hire an expert from outside the organisation.

2.3 Importance of Training

The benefits of having a skilled workforce cannot be overstated. Properly trained employees understand more as to how to perform their job tasks; they understand how their efforts fit within the overall organisational process. This broader comprehension helps employees optimize resources and create solutions to problems. In addition, employees who continue occupational training and development tend to enjoy greater job satisfaction. Employee training always has concrete, measurable benefits.

There is no doubt that training is important in all aspects for an organisation. Training builds teams by expanding their knowledge of the firm. Training lets them trust the skills of others. The real clue to successful training is the follow-through, which employs activity recaps, client reviews, plan revisions and assignments complete with deadlines.

After successful training, trainees exhibit new skills, more opportunities come their way, and are motivated to act and contribute to the organisation. Also, they become part of an organised team, which is better focused.

Training is activity leading to skilled behavior.

- It's not what you want in life, but it's knowing how to reach there
- It's not where you want to go, but it's knowing how to get there
- It's not how high you want to rise, but it's knowing how to take off
- It may not be quite the outcome you were aiming for, but it will be an outcome
- It's not what you dream of doing, but it's having the knowledge to do it
- It's not a set of goals, but it's more like a vision
- It's not the goal you set, but it's what you need to achieve

Training is about knowing where you are (no matter how good or bad the current situation looks) at present, and where you will be after some time. Training is about the acquisition of knowledge, skills, and abilities (KSA) through professional development.

The organisational benefits of training are:

- Training builds better communications skills
- Explores and exposes the hidden talent of a trainee
- Builds better quality in work
- Outcomes are more effective and productive
- Increases the level of understanding in the organisation
- Helps identify staff who require special attention for further support or training
- Helps employees to appreciate professional role

2.4 The Training System

A 'System' is a combination of things or parts that must work together to perform a particular function. The 'Systems Approach' views training as a sub system of an organisation. 'Systems Approach' can be used to examine broad issues like objectives, functions, and aims. It establishes a logical relationship between the sequential stages in the process of training needs analysis (TNA), formulating, delivering, and evaluating.

There are 4 necessary inputs i.e. man, technology, material and time, required in every system to produce products or services, and every system must have some output from these inputs in order to sustain and grow. The output can be tangible or intangible depending upon the organisation's requirement. A system approach to training is planned creation of training program. This approach uses step-by-step procedures to solve the problems.

Organisation are working in open environment i.e. there are some internal and external forces, that pose threats and also present opportunities. Therefore, trainers need to be aware of these forces which may impact on the content, form, and conduct of the training efforts. Under systematic

approach, training is undertaken on a planned basis. Out of these planned efforts, three such basic models are explained below.

The three model of training are:

I. System Model
II. Instructional System Development Model
III. Transitional model

I. System model consists of five phases and should be repeated on a regular basis to achieve continual improvements. Training should achieve the purpose of helping employees to perform their work to required standards. These phases involved in System Model of training are as follows:

Phase 1: **Analyse and identify** the training needs i.e. to analyse the department, job, employees' requirement, who needs training, what do they need to learn, etc.

Phase 2: **Design** training to meet the identified needs. This step requires developing objectives of training, identifying the learning steps, sequencing, structuring the contents and developing a performance measure on the basis of which actual performance would be evaluated.

Phase 3: **Develop** - This phase requires listing the activities in the training program that will assist the participants to learn, selecting delivery method, examining the training material, validating information to be imparted to make sure it accomplishes all the goals & objectives.

Phase 4: **Implementing** is delivery of the training programme and is the most important part of the system, because one wrong step can lead to the failure of whole training program.

Phase 5: **Evaluating** each phase so as to make sure it has achieved its aim in terms of subsequent work performance. It is imperative to make necessary amendments to any of the previous stage in order to remedy or improve practices.

II. Instructional System Development model or ISD training model, a refinement of the System model, is widely used because it is concerned with the training need directly linking it to the job performance. Training objectives are defined on the basis of job responsibilities and job description and on the basis of the defined objectives, individual progress is measured. This model also helps in determining and developing the favorable strategies, sequencing the content, and delivering media for the types of training objectives to be achieved.

Instructional System Development model comprises of five stages:

Stage 1 ANALYSIS – This phase consist of training need assessment, job analysis, and target audience analysis.

Stage 2 PLANNING – This phase consist of setting goal of the learning outcome, instructional objectives that measures behavior of a participant after the training, types of training material, media selection, methods of evaluating the participant, trainer and the training program, strategies to impart knowledge i.e. selection of content, sequencing of content, etc.

Stage 3 DEVELOPMENT – This phase translates design decisions into training material. It consists of developing course material for the trainer including handouts, workbooks, visual aids, demonstration props, etc., course material for the trainee including handouts of summary.

Stage 4 EXECUTION – This phase focuses on logistical arrangements, such as arranging speakers, equipments, benches, podium, food facilities, cooling, lighting, parking, and other training accessories.

Stage 5 EVALUATION – The purpose of this phase is to make sure that the training program has achieved its aim in terms of subsequent work performance. This phase consists of identifying strengths and weaknesses and making necessary amendments to any of the previous stage in order to remedy or improve practices

The ISD model is a continuous process that lasts throughout the training program. It also highlights that feedback is an important element throughout the entire training program. In this model, the output of one phase is an input to the next phase.

III. Transitional model focuses on the organisation as a whole. It describes the vision, mission and values of the organisation on the basis of which training model is executed.

Vision – focuses on the milestones that the organisation would like to achieve after a defined period of time.

A vision statement articulates where the organisation sees itself few years down the line. A vision may include setting a role model, or bringing some internal transformation, or may be committing to meet some deadlines.

Mission statement spells out the reason of organisational existence. The purpose of developing a mission statement is to motivate, inspire, and communicate to the employees regarding the organisational purpose. The mission statement reflects how the organisation would like to be viewed by those it serves, its employees, and all other stakeholders.

Values – is the translation of vision and mission into communicable ideals. It reflects the deeply held values of the organisation and is independent of current environment.

The mission, vision, and values precede the objective of training. This model considers the organisation as a whole. The objective is formulated keeping these three things in mind and then the training model is further implemented.

SECTION 3

OWD ORGANISATION BACKGROUND

3 OWD Organisation Background

3.1 History

Odisha Works Department has been functioning since the creation of a separate Odisha State. This Department was created to provide connectivity across the state and maintain Public Buildings. Odisha Works Department is now in charge of maintaining National and State Highways, Major Districts Roads (MDR), Other District Roads (ODR) and public buildings within the state.

3.2 Mandate

- Construction, repair and maintenance of buildings, roads, bridges and other related structures financed from the State and capital budget allocations to Odisha State.
- Execution of original, renewal and repair works of the National Highways network (including bridges) financed through Government of India.
- Construction of buildings, roads and bridges (R&B) as relief works in the event of floods, cyclones or other natural disasters.
- 'Regulatory Authority' ensuring that no encroachment or structure, whether temporary or permanent is erected on the land and property of OWD and removal of such encroachments.
- Maintaining a register of land, buildings and properties belonging to the GOO under the administration of OWD
- Authorised by the State to carry our Analysis of Rates, and produce Schedule of Rates for all types of public works.

3.3 Functions

The existing functions of OWD are as follows:

1. Construct, repair and maintain major roads (SH, MDR and ODR) and state owned buildings. It is also responsible for construction and maintenance of other related structures financed from the State and Central budget allocations in Odisha
2. Carry out construction and repair work for other government departments, autonomous bodies, local bodies, boards, corporations, trusts, institutions, or corporations as deposit works.
3. Responsible for the execution of development, renewal and repair works of National Highways (NH) within the State, financed by NHAI (National Highways Authority of India) under Government of India.
4. Carry out construction works of buildings, roads and bridges as relief works during famines, floods etc. as part of Disaster relief.
5. Being the construction wing of GOO, OWD undertakes the following additional functions:

a. Provide 'Technical guidance' to various institutions, local bodies and other government undertakings.
b. Carry our Analysis of Rates, and produce Schedule of Rates for all types of public works
c. Assess and issue of condemnation report of unserviceable Government buildings
d. Research pertaining to buildings, roads and bridges;

6. Maintaining a register of assets (land, buildings and properties) belonging to the Government under the charge of OWD (excluding revenue lands).
7. Operation, maintenance and upkeep of important state buildings such as Governor's house, State Assembly Building, Secretariat Building, bungalows of Ministers, MLAs, MLCs and other office bearers nominated by Govt., Circuit Houses, Rest Houses, and Inspection Bungalows;
8. Maintenance and upkeep of buildings under the state housing pool;
9. Collection and accounting for rent of Government buildings under OWD;
10. Carry out assessment of rent and valuation of private buildings acquired by the government on hire or purchase.
11. Ensure that no encroachment or structure, whether temporary or permanent is erected on the land and property of the State and removal of such encroachments
12. Operating and maintaining ferry services;
13. Provide guidance to Local Bodies and Police Department on road safety and traffic management aspects;
14. Execute barricading during special events and VIP visits.

3.4 Manpower Strength

Works Department is headed by the Engineer-in-Chief-cum-Secretary to Government of Odisha who reports to the Minister 'Works Department'. His core group comprises two Additional Secretaries (of Chief Engineer rank) and one Financial Advisor-cum-Additional Secretary, who are further assisted by a team of Deputy Secretaries, Under Secretaries and one Assistant Financial Advisor -cum-Under Secretary.

The operational arm of the OWD has an Engineer-in-Chief (Civil) at the top of the pyramid. Seven Chief Engineers [C.E. (DPI & Roads), C.E.(Buildings), C.E.(NH), C.E.(World Bank), C.E. (RD &QP), C.E. (Designs), Chief Engineer (e-Procurement)] and one Chief Architect heading their respective departments.

There are twelve Road & Building (R&B) Circles, three National Highway (N.H.) Circles, one each Mechanical, Electrical and Public Health Circle. Each of these Circles is headed by a Superintending Engineer. They are responsible to the concerned Chief Engineers for administrative and general professional function of the public works for their respective Circles.

There are forty nine R&B Divisions, fifteen N.H. Divisions, four GED Divisions, four Mechanical Divisions and two GPH Divisions in the State. Executive Engineers at the Divisional level are the

executive heads of these Administrative units. Under them there are 224 Sub-Divisions each headed by Sub-Divisional Officers of the rank of Assistant Engineers.

The total OWD staff strength is presented in Table A.

Table A: OWD Staff Strength

Sl. No.	Position	Filled/Actual strength
1	E-in-C	2
2	CE	18
3	SE	50
4	EE	115
5	AEE	2
6	AE	484
7	JE	608

SECTION 4

SITUATIONAL ANALYSIS

4 Situational Analysis

In the process of analysing various capacity-building initiatives it was essential to understand the current status of human resources development practices as it exists in OWD. Consultant undertook 'situational analysis' to assess the Organisational Capacity Building Needs. Detailed discussions with Officers at various levels within OWD have revealed a very high desire and an equally high level of expectation towards HRD.

On the other hand, discussions with most OWD staff on past efforts brought out significant pessimism on trainings. To quote one such specific example, it was revealed that OWD had recently conducted series of trainings on 'Construction Quality' for more than 400 participating Junior Engineers and Assistant Engineers during November 2011 - January 2012. However, the overall view among the OWD staff was that while it was a commendable effort on the part of the department and the organisers, the training did not really benefit the organisation. A close examination of the related documents and discussions with programme organisers brought forth a series of questions, viz.

- What was the objective of the training?
- What was the specific purpose – aptitude change, knowledge improvement or skills development?
- How were skills expected to be transferred through 'orientation' lectures?
- Doesn't the participant group size, as large as 86 per programme, defy training fundamentals?
- What are the plans for training of remaining 801 JE's & AE's?
- With a '5 hour-training-day', for 3 days, how can 35 topics be covered in 15 hours? (i.e. say 24 minutes per topic)
- What was the objective achieved by conducting an examination?
- Was the quality of the training programme itself assessed?

It is therefore worthwhile to highlight that effort towards 'Training development' within OWD needs a lot of improvement.

4.1 OWD Organisational Issues

Organisational analysis, began with examination of the short and long term goals of OWD, as well as trends/factors that are likely to affect these goals. This analysis required one-to-one discussions with the top-level management examining their own expectations concerning the future of OWD.

It is worth highlighting here that **not** all performance-related problems in an organisation have a "trainable" solution. Changes in the organisation itself, HRM practices, work environment, etc. could be better solutions, and if that be the case, training alone may not be very effective.

A gist from among the issues, not limited to human resource issues alone, which represent the situation prevalent in OWD are presented below:

4.1.1 Cultural Issues

- Reactive organisational culture (legal issues of staff, contractor, stakeholders etc.)
- Lack of learning culture; objective oriented training is missing.
- Formal coordination mechanism with stakeholders needs to be evolved
- Absence of "monitoring" and policy "enforcement" responsibilities
- Lack of information or communication gap within hierarchy.
- Research is not promoted and personal initiatives only attract reprimand

4.1.2 Policy & Strategies Issues

- Policy, planning, monitoring, regulatory functions are missing
- Quality deficiencies and loss of economic benefits due to lack of Quality policy
- Policy to redefine roles and responsibilities missing
- Transfer policy not linked with workload.
- Lack of effective HRM & HRD policy (Need to streamline promotional procedures
- Lack of competency development policy
- Lack of clarity on mandate (e.g. Design wing..)
- Poor dissemination strategy on enforcement and monitoring of policies and regulations
- Multiple authorities (District Administration asking work from OWD officials) and multiple responsibilities (especially MP and MLA fund - works etc.) of the field staff has led to reduced productivity.
- Poor Cadre management; Recruitment planning missing; high level of disparity in recruitment verses retirement
- Accountability towards stakeholders presently (near) absent

4.1.3 Structural Issues

- Need for improvement in use of conventional policies on personnel management (recruitment, confidential reporting, leave records…)
- Functional units like Planning & Cost control, Emerging Technologies, HRM, HRD, PPP, Legal etc. are missing;
- Lack of functional specialisation - Road, Buildings, Bridges; specialised 'Project Management' Units for health and education sector needed
- Need for Financial Analysis, Contract Management and Legal functions in OWD; No legal functionaries.

4.1.4 Resource Issues

- "Adequate" and "appropriate" human resources missing; WORKLOAD DISTRIBUTION - rethink needed; geographical spread too large, manpower resource too less, lack of vehicles
- Quality of work is suffering due to lack of resources
- Lack of adequate financial resources - proper planning of expenditure is missing
- Large establishment costs
- Poor revenue due to poor enforcement of available legal instruments

4.1.5 Processes and System Issues

- Procedures, manuals are outdated and less relevant
- Procedures followed historically appear tardy and inefficient
- Lack of delegation/decentralisation of authority delays decision making
- Without 'in-house' knowledge, outsourcing is failing
- Currently, 'expenditure incurred' is the 'success indicator' of work, quality of work is not considered as an indicator
- Poor access to Data and Information - improved documentation needed
- QUALITY ASSURANCE missing; poor quality monitoring - Central and Zonal Labs unable to provide results within specified time, inadequate staff, ill-equipped.
- Asset Management System missing
- Inadequate use of GIS, Remote sensing and computerised systems
- No preventive maintenance procedures available for O&M of buildings
- Architecture wing producing outdated designs; Design and Research wings are ineffective and need strengthening.
- Training imparted and training received do not feature as indicators in the ACR

4.1.6 People - HRM Issues

- Work load analysis exercise not carried out - rightsizing of all units, combined with multi-tasking needed
- Staffing imbalance correction done at the secretariat where field realities are not considered.
- Roles and responsibilities of various officials not clearly defined (duplication of effort)
- Human Resource Management principles missing (motivation, performance management, manpower planning, career path development, need based training, implementable incentive mechanisms etc.)
- Performance indicators/benchmarks and their measurement missing
- Critical management skills badly needed

- No formal mechanism to integrate best management practices and innovation
- Incorporating new work dimensions relevant to new technologies and practices not done (e.g. GIS, Green Technologies, Non Destructive Testing, etc.)
- Employee competencies to manage emerging factors like social (including community mobilisation, IEC, gender, R&R), environmental management, IT, PPP issues yet to develop
- No incentive to attract quality staff in the design cell.
- No Induction training
- No updation of skills; lack of training and exposure visits resulting in skills and knowledge deficiency
- Big gap between design knowledge and field implementation; need for rotational policy
- Construction management and overall project management are areas of concern among field staff
- Competency matching not done – staff with knowledge and experience in roads works are assigned building works and vice versa
- Circle/Divisional Head do not know how to carry out training assessment since no regular awareness programmes conducted for them
- Before implementation of each posting, introductory coaching for the transferee/appointee is missing before s/he can start work in the new work place.

4.2 Analysis of OWD Functions and Tasks (Functional allocation of authority at various levels)

Conducting a comprehensive TNA exercise involved studying the functions, tasks and subtasks currently being performed in OWD at various levels, both at head office and field level. To link the training needs with the present day plus future tasks required identification of an integrated set of 'core technical plus management skills and knowledge' areas. This required analysing the OWD 'Job Description', which was limited to Chapter 2 of the present OPWD Code.

In the absence of a structured 'OWD Job Description' document, effort was made to evolve the RACI matrix [Responsible, Accountable, Consult, Inform] for task analysis. The RACI matrix tool was a formal way of establishing the role for each stakeholder involved in the hierarchy of OWD. The four elements constituting this matrix form the column headings on the 'X' axis and are defined as follows:

Responsible**:** The person who is ultimately responsible for **'getting the work done'**. This may refer to the individual staff who perform the given task.

Accountable: The person who is accountable to **'oversee that the work gets done'**. This usually means the immediate manager overseeing the work.

Consulted**:** The person who is the **'subject matter expert'** who will do the thinking and suggest any deviations from the Standard Operating Procedure.

Informed**:** The person who have interest in the performance of a given task. This may be a **manager controlling** the execution of the task at hand.

In the RACI matrix 'Key functions, tasks and subtasks' to be performed by the various officials are listed on the 'Y' axis. These were arrived at through a series of discussions with OWD officials, both at head office and field level. The comprehensive list which includes fourteen groupings of the key functional areas, with tasks and sub tasks, are listed under each heading. The gap analysis between the expected and current functions/tasks, using the RACI matrix, lead to identifying the various training needs.

The respondents were asked to insert: GoO, E-I-C, CE, SE, ACE (Assistant to CE), EE, AE, or JE wherever each is appropriately 'expected' to deliver. The results of this exercise are tabulated in the RACI matrix (Table B) below.

Table B: 'R A C I' Matrix

	Key Functional Areas and Tasks	Responsible	Accountable	Consulted	Informed
1	**Policy and Planning**				
	Prepare Strategic Plans (Master Plan: Roads, Master Plan: Buildings)	ACE	CE		E-I-C
	• Identify funding mechanism				
	Promote and Implement Public/Private Sector Participation	CE	E-I-C	GoO	GoO
	Budgeting Process (Preparation, Control and Outcome)	CE		GoO	GoO
	• Prepare annual budget	CE		GoO	GoO
	• Carry out prioritisation of investments	CE		GoO	GoO
	• Carry out phasing of investments				
	Define Policy and implement systems				
	• Prepare 'Quality of Work' policy				
	• Prepare HRM and HRD strategy				
	• Prepare asset maintenance plan and strategy (Roads, Buildings)				
	• Prepare Right of Way – encroachment and land acquisition strategy				
	• Periodically update Standard Bidding document	ACE	E-i-C	GoO	GoO
2	**Project Preparation**				
	Carry out Field surveys				
	• Conduct traffic survey	AE	EE		SE/CE
	• Prepare road/bridge inventory & condition report	AE	EE		SE/CE
	• Carry out soil investigation (Task OUTSOURCED)	AE	EE		SE/CE
	• Conduct hydrology study, (Task OUTSOURCED)	AE	EE		SE/CE
	• Carry out topography survey (Task OUTSOURCED)	AE	EE		SE/CE
	• Conduct deflection test for pavement evaluation (in case of existing roads) (Task OUTSOURCED)	AE	EE		SE/CE
	• Conduct social and environmental impact screening				
	Prepare Geometric design (Task OUTSOURCED for Major works)	AE	EE		CE
	Mark out the right of way	JE/AE	EE		CE
	Initiate Land Acquisition				
	• Acquire revenue plan (with Revenue Officer) from Tehsildar Revenue Department	JE	AE		EE
	• prepare land schedule	JE	AE		EE
	• Calculate value of buildings	JE	AE		EE
	• Filing of requisition and follow up	EE			CE
	Prepare utility shifting plan (for Small, Medium works)	JE	AE		EE
	(for Large works)	EE	SE		CE
	Notify all, concerned with utility shifting	EE	SE		CE
	Prepare Pavement design				

	Key Functional Areas and Tasks	Responsible	Accountable	Consulted	Informed
2	**Project Preparation (Contd..)**				
	Prepare design and final drawings of structures				
	• Bridge design	AE/EE	SE/CE		
	• Culvert design	AE	EE		SE
	• Drainage design	JE	AE		EE
	• Retaining structures in case of high embankments	AE	EE		
	Conduct road safety audit				
	Prepare Traffic management plan (in case of existing roads)	JE/AE	EE		
	Prepare architectural drawings				
	• Assessment of standard drawings with respect to available land area				
	• Conduct contour survey and rainwater drainage criteria	AE	EE		SE
	• For buildings costing more than 10 lacks	Dy ARCH	Ch. ARCH		
	Carry out survey for buildings				
	• Prepare preliminary, alternative site selection report	JE	AE		
	• Participate in site selection committee	AE	EE		CE
	• Assess availability of services – water, electricity and sewerage	JE	AE		EE
	• Connectivity and parking facility at proposed site	JE	AE		EE
	• Habitation coverage by proposed structure (school, hospital etc.)				
	• Surrounding structures and their impact (ill-effects) report				
	• Conduct bearing capacity soil test (Task OUTSOURCED)	AE	EE	CE	SE
	Prepare Building design – Multi-storeyed (seismic zone consideration)	AE/EE	CE		
	– Simple buildings	AE	EE		
	Prepare BoQ				
	• Define Activities	JE	AE		EE
	• Match/Prepare Specifications	JE	AE		EE
	• Prepare Estimates	JE	AE		EE
	Prepare bid documents to include conditions, specifications, drawings, BoQ, contract	AE	EE		CE
3	**Environmental and Social Management**				
	Conduct impact assessments studies				
	• social impact assessment (Task OUTSOURCED)				
	• environmental impact assessment (Task OUTSOURCED)				
	Prepare rehab resettlement plan (R/R) (Task OUTSOURCED)				
	Prepare environment management plan (EMP)				
	Resolve R & R Issues (Policy R & R issues)				
	Implement Land acquisition				
	Manage & Implement Utility shifting				
4	**Procurement Management**				
	Implement FIDIC guidelines				
	Implement BOT/PPP Contracts				
	Implement NCB/State Government tendering procedure (Based on OWD Code)	AE	EE		CE
	Implement e-procurement procedure	AE	EE		CE
5	**Project Management**				
	Prepare Work Program (CPM/PERT using Primavera/MS Project)				
	Allocate Staff & Define responsibilities				
	Implement traffic management plan				
	Define Construction Procedure and Methodology				
	Monitor Physical Progress of Work	AE	EE		
	Monitor Financial Requirement for Work	EE	CE		

	Key Functional Areas and Tasks	Responsible	Accountable	Consulted	Informed
6	**Construction supervision**				
	Preconstruction Design review				
	Data Collection				
	Review contractor's construction Management Plan				
	Review contractor's traffic management plan	JE	AE		EE
	Undertake Inspection of equipment	JE	AE		EE
	Quality monitoring of Works	JE	AE		EE
	Conduct Material Tests				
	• *Field test - for Road*: GSB gradation; GSB Compaction (Sand	JE	AE		EE
	replacement); aggregate crushing value, impact value; Binder quality;				
	bitumen content				
	Field test - for Buildings: Slump test; concrete mix density;	JE	AE		EE
	water cement ratio				
	• *Lab test – for Road*: Sand content in soil; liquid limit; plastic limit;	AE	EE		CE
	CBR Index				
	Lab test – for Buildings: aggregate crushing value, impact value;	AE	EE		CE
	water quality; Steel Tensile test; Concrete cube test (7 & 28 days)				
	Review, Prepare Report of Physical Progress	AE	EE		CE
	Review, Prepare Report of Financial Progress	AE	EE		CE
7	**Contract Management**				
	Monitor Work Program and Time	AE	EE		CE
	Monitor & Exercise Cost Control	AE	EE		CE
	Assess & Justify Variations (extra/substitute items), award extension of time	EE	CE		
	Manage Dispute Resolution and Arbitration	EE	CE		
8	**Quality Management**				
	Implement Quality Assurance				
	Monitor & Exercise Quality Control	AE	EE		CE
	Carry out Quality Audit				
9	**Safety Management**				
	Prepare safety plan and implement during Construction				
	Implement safety plan during Operations				
	Implement safety plan during Maintenance				
10	**Financial Management & System implementation**				
	Manage financial instruments and Tax aspects	DAO/EE	CE		
	Implement Financial MIS – iOTMS and WAMIS	DAO/EE	CE		
	Uti/implement financial powers (as per govt./OWD Code)	EE	SE/CE		
	Apply OWD code within powers of JE	JE	AE		
	- Do - within powers of AE	AE	EE		
	- Do - within powers of EE	EE	CE		
	- Do - within powers of SE	SE	CE		
	- Do - within powers of CE	CE	E-i-C		
	Prepare Accounts	DAO/EE	CE		
	Prepare Accounts Audit replies	DAO/EE	CE		
11	**Maintenance**				
	Identify and assess pavement distress	AE	EE		CE
	Carry out condition survey of Bldgs. and prepare Bldg maintenance plan				
	Prepare Periodic/Routine/special Maintenance plan				
	Prepare (fund) proposal for Maintenance Requirement	AE	EE		CE

	Key Functional Areas and Tasks	Responsible	Accountable	Consulted	Informed
12	**Other Tasks**				
	Carry out Performance appraisal	AE	EE		E-I-C
	- Do -	EE	SE		E-I-C
	- Do -	SE	CE		E-I-C
	Plan and Manage Training				
	Manage Asset Records	JE	AE		EE
	Monitor and Report Encroachments	JE	AE		EE
	Prepare Analysis of Rates and periodically revise Schedule of Rates	CE	E-I-C		
	Prepare to be ready against variety of disasters				
	Prepare 'Legal' replies	EE	SE/CE		
	Issue N.O.C. (OFC cables, fuel pumps etc.)	AE	EE		CE
	Calculate and Certify 'Fair Rent rate' for hiring/renting out of Govt. Assets	AE	EE		
	Facilitate Inter-Departmental Coordination (utility shifting)	AE	EE		CE
	Carry out Public relation	JE	AE&EE		CE
	Resolve Public Grievances	JE	AE&EE		CE
	Prepare and Manage Documentation (MPR, APR, Utilisation Certificate, etc.)				
	Manage Library				
	Manage Public functions/OWD Events	JE	AE&EE		CE
13	**Information Technology**				
	Apply Computer applications – M S Office, Web etc. ,	EE	SE/CE	E-I-C	GoO
	Apply Computer applications – MX Roads,				
	STAAD PRO,	AE(D)	EE(D)	CE(D)	SE(D)
	Auto CAD				
	Apply GIS application for planning				
	Apply Project Management Software – MS Project, Primavera,				
	Implement e-Governance (email, web-site, e-nirman, e-procurement)	EE	SE&CE		
	Implement Management Information System (HRMIS)				
14	**Personnel Management**				
	Apply Monitoring skills				
	Apply Written and Oral Communication skills				
	Apply HR Management skills				
	Implement Decision-making				
	Apply Interview skills				
	Apply Service conditions	EE	SE&CE		E-I-C
	Respond to Right to Information (RTI) act	AE	EE&SE		
	Apply Motivational tools				

Salient observations emerging out of the above analysis (RACI Matrix) are as follows:

- There is overlap of responsibilities i.e. the roles are not clearly defined and communicated; among many such examples, 'Marking out the right of way' or 'Preparation of traffic management plan' both the JE and AE are made responsible, which can easily result in confusion and hence loss in work efficiency.
- Unassigned functions/tasks, which have grey shading in the cells in front of them, indicate the need for further deliberation among OWD management and inclusion in the 'Job Description at various levels. These decisions are then to be communicated to the concerned individuals.

- It is noted that SE's have been assigned limited functions. There is a need to reassess the Job Description of SE's and based on the workload even their numbers.
- Further, it is evident that JE's are practically overloaded with a huge number of delegated plus assigned functions. There is a need for reassessing the workload of JE's and to provide them with the requisite support at the lower level.
- Based on interactions with Field Units and HO Officials, it is apparent that awareness about their respective delegated responsibilities is lacking. This requires an effective Intra-cum-Inter level communication strategy.
- Functional area such as Project Management, Quality, Safely, Environment & Social, Human Resource Management etc. are a few among those areas of concern which require urgent management intervention.

4.3 Present Training System in OWD

There is no OWD training policy laying out the training requirements for staff at the time of their induction in the organisation, or for undertaking a particular assignment, or future requirements, or after every promotion. Most of the trainings are currently at best ad-hoc in nature. No analysis on the training attended in the past is undertaken by OWD at the time of staff annual appraisals, nor are training needs to perform future responsibilities assessed.

It is observed that all training efforts in OWD are mainly reactive. Discussions revealed the mindset of the counterpart staff from OWD, which highlights lack of HRD policy, systematic approach, budget, time towards HRD initiatives, undefined needs/options for trainings etc.

Two processes are carried out in OWD to identify participants for training: one for the staff involved with World Bank (WB) projects and NABARD projects (approx. 40 nos.) under Chief Engineer (WB) and a parallel procedure is carried out for the rest of OWD staff at HO and the field levels. This distinction is governed by the GOO dictum that OWD staff can only go for those training, where course fee is not charged; however, under WB guidelines, staff working on WB assignments (e.g. P-01, P-02, P-03, P-04 Road projects) are eligible for even those courses where fee is levied.

Training at OWD is '*supply*' driven and not '*demand*' driven. Staff of Project Management Unit (PMU), assigned with training function, make their choice of training courses from among those advertised by Indian Academy of Highway Engineers (IAHE, formerly NITHE), and Central Road Research Institute (CRRI) for technical courses. Similarly, for courses on governance, RTI, administration, training delivered by Administrative Staff College of India or Gopabandhu Academy of Administration are considered. No '*demand*' driven efforts have been made till date to match the staff training needs with tailor made courses specific to their needs.

PMU staff (JE/AE/EE), download Annual training calendars from the websites of IAHE and CRRI in the month of April. From this wide range, a match is drawn between the courses available and what may be beneficial or best suited for staff working in the WB unit of OWD and short lists are prepared **(Ref: TNA Annexure 01 A & B)**. The names of prospective participants (based on the available record of their past training) are assigned to respective courses and the lists are put up to Chief Engineer (WB) for screening. This takes two to three days' time before these lists are sent for approval of

Engineer-in-Chief Cum Secretary (Works), GOO, where a final sanction is awarded. This process is concluded within the month of April each year. As planned, May/June onwards staff are deputed for different training courses. It is kept in mind that each staff gets to participate in different courses by rotation over the years. An exception to the above is participation in WB sponsored programmes, where the approval of Engineer-in-Chief Cum Secretary (Works) is not sought and the decision to participate lies with Chief Engineer (WB).

On return, staff are expected to submit a training Report and a 'Tour Note'. These are forwarded by PMU to office of Engineer-in-Chief Cum Secretary (Works), GOO where the Deputy Secretary approves the same. This approval process, under normal circumstances, takes a period of one month before its submission to the finance wing of OWD for clearance of TA/DA bills. The training reports are archived and filed for future reference. Though not mandatory, in the recent past, a few of these reports have been uploaded on Odisha State Roads Project web site www.OSRP.Gov.in. Practice of maintaining training records was initiated in 2011 but is maintained only as hardcopies.

Following a similar process, the training management function for the remaining OWD Staff is carried out by staff in the office of Engineer-in-Chief Cum Secretary (Works), GOO and Engineer-in-Chief (Civil). Since they operate under the caveat of participation in courses where fee is not charged, they are left with a very limited choice of being dependent on courses offered by IAHE or participation in Indian Roads Congress and Indian Building Congress.

Annually, invitation to participate in events are received by the office of Engineer-in-Chief Cum Secretary (Works), GOO, who forward the same to the E-I-C (Civil) office for preparation of a proposal. Generally, this action takes place in the months of May or June. S.E. (P&D) has been assigned the task of collecting names of participants, both from the Head Office as well as from the Field Units. His letter, along with IAHE training calendar is circulated to all CE's, SE's and EE's, asking them to suggest names of team members for the variety of training. Responses normally take one month to arrive, which are then consolidated and the proposal prepared by S.E. (P&D)'s team is recommended to the government by E-I-C (Civil) and sent to Engineer-in-Chief Cum Secretary (Works), GOO for his approval. On award of approval by Engineer-in-Chief Cum Secretary (Works), GOO, within a fortnight, letters are sent to Field Unit Officers (SE's & EE's only) who have administrative control over the staff those who are to participate **(Ref: TNA Annexure 02)**. Only those participants who are working at the Head Office are informed directly regarding their participation in specific training courses. A very common concern voiced by field staff is that they often get information of their participation after the lapse of dates of the training course.

On return from training, the participants are not expected to prepare any training report on lessons learnt or how the new learning is going to benefit their work or OWD. They submit only the 'Tour Diary' along with a copy of the 'Training Certificate' issued by the training provider for approval by the office of Engineer-in-Chief Cum Secretary (Works), GOO. After the FA concurs and Engineer-in-Chief Cum Secretary (Works) approves the said approval is sent to the Office of Accountant General with a copy marked to E-I-C (Civil). The approval document is forwarded to Field Unit Officers (SE's & EE's) where disbursements of TA/DA takes place. Only after the approval is awarded, that the participants become eligible for payment of TA/DA, and this process normally takes one month from the date of submission. Payment is made only if there exists a budgetary provision, else the payment

is deferred to the next financial year. For participants at the OWD head office, the payment of TA/DA is handled by Budget and Cash Branch who also maintains the pertinent records. Another common concern voiced is about the delays or nonpayment of TA/DA bills for training courses attended in the past.

With respect to training history, no records are maintained at the E-I-C (Civil) office. They have past records of participants whose names have been approved, but not of those who have actual participated.

The number of staff approved for participation since 2007 are tabulated below in Table C and D. Numbers of those who actually participated are not known, therefore for the sake of analysis it has been assumed that all those whose names were approved have also participated.

Table C: OWD Staff Training Numbers

Sl. No.	Year	JE's			A.E's			E.E's			S.E's			C.E's			
		Total	Nom..ted	%	Total	Nom..ted	%	Total	Nom..ted	%	Total	Nom..ted	%	Total	Nom..ted	%	Avg
1	2008-2009	597	17	2.8	499	43	8.6	162	22	13.5	24	5	20.8	11	1	9.1	7%
2	2009-2010	597	22	3.6	497	52	10.5	162	31	19.1	24	3	12.5	11	0	0	8%
3	2010-2011	597	40	6.7	496	49	9.87	152	27	17.7	23	4	17.4	11	0	0	9%
4	2011-2012	608	263	43.2	476	157	32.9	148	11	7.4	22	1	4.5	12	0	0	34%
5	2012-2013	608	11	1.8	484	25	5.16	115	11	9.56	50	2	4	18	0	0	4%
Average				**11.8**			**13.4**			**13.45**			**11.84**			**1.82**	**12%**

Overall average = 12%

Table D: OWD Staff Training Cost

Sl. No.	Year	Training Cost		Total in Rs.	Remarks
		WB Unit Staff (approx 40)	Remaining OWD Staff		
1	2008-2009	57,500*	7,02,620	7,60,120	
2	2009-2010	1,80,000*	9,04,360	10,84,360	
3	2010-2011	4,34,570*	10,33,940	14,68,510	
4	2011-2012	1,52,635*	2,76,150 + 32,40,000^	36,68,785	^ Incl. cost of Quality Training of JE + AE = Rs. 32,40,000
5	2012-2013	2,90,788*	4,65,000	7,55,788	
				77,37,563	

*** Annual costs incurred on training for staff of WB Unit are assigned under "ISAP operating Cost"**

As is evident from the tables above, the number of staff nominated for training, and the cost incurred on the same, has been insignificant over the years, except in the year 2011-12, when a

programme on Quality Training was conducted for JEs and AEs on fairly large scale. However there has been no follow-up activity in the subsequent year. This further emphasizes the futility of such isolated initiatives, which do not serve the long term objectives of OWD, as explained in the preceding sections of this report.

4.4 Major weaknesses in present training system

4.4.1 Absence of Training Needs Assessment

No systematic TNA is undertaken in OWD thus not bringing out the 'real needs' leading to non preparation of a 'Training plan' as per the needs. In the absence of a systematic Training Needs Assessment (TNA), the selection of candidates is at best only ad-hoc. In the absence of a proper training plan based on the TNA exercise, there is no way of linking the deficiencies in the job and the desired course content to address these deficiencies.

4.4.2 Lack of proper selection of type of training courses (Demand-based training)

Demand-based training development and planning, often results in defined training durations, quarterly coverage targets, course fees and course content, which is a full time function. This is a departure from the current norm of supply based training followed by OWD. However, appreciation is growing for fact that training demand is determined by the beneficiaries themselves. Supply-driven training has always resulted in over-training and too early training for many participants.

4.4.3 Absence of proper selection of participants

The person nominated to attend a particular training programme might not be concerned with the topic being covered and on return is unable to apply the knowledge or skills in the work that he does. In a situation like this it amounts to a waste of effort on the part of the training provider and wasted man-hours of the nominated person. For the OWD, it results in waste of money in terms of the wages, travelling costs, etc.

It has been observed from the past records and discussions that a select few persons are identified/nominated to a majority of training programmes. They are nominated to attend training programmes, irrespective of their need or interest of learning the topic (s) being covered. The result is that the training providers find the same faces attending a large number of training programmes offered by them.

The TNA survey brought the fact that, officers who require on-the job training are not sent for training as they are overloaded with work, which makes it difficult for them to leave their present duty and attend a training programme. Hence this becomes a handicap for many officers who in order to handle day to day activities, or the position that they are responsible for, may require mandatory training in certain areas but are not able to attend any of the training programmes.

4.4.4 Inadequate/Inappropriate Training Provider Selection

No system exists where by training agencies or resource persons are screened/shortlisted for delivering quality training. A supply based approach is adopted, that too to a limited extent, when

selecting courses offered by IAHE. Training providers are not asked to deliver courses with defined objectives. This results in inappropriate content and effort wasted thereof.

4.4.5 Lack of Feedback or Evaluation

Absence of an evaluation system for the effectiveness of the programme leads to poor quality of training going undetected. Due to lack of an appropriate feedback mechanism the effectiveness and efficacy of a training programme become unknown, thus resulting in poor quality training continuing to be repeated.

SECTION 5

ASSESSMENT OF TRAINING NEEDS

5 Assessment of Training Needs

The primary focus of this training needs assessment is to determine the gaps in competencies of OWD staff and their functional responsibilities. A training need exists when there is a gap between what is required of a person (to perform competently) and what he actual knows. Training Needs Assessment (TNA) is to identify the gaps between the model situation and the actual situation, thus assisting in identifying ways in which the said gaps can be bridged. TNA is the method of determining if a training need exists and if it does, what training is required to fill that gap. The expectation of knowledge, skills and abilities of officials at different levels is different so their training needs are also different.

The purpose of conducting a needs assessment is to validate the hypothetical judgment with actual training needs to ensure that solution addresses the most needed subjects and effectively focuses the appropriate resources, time and effort toward targeted solutions. As the gaps are identified, they are evaluated to determine the manner in which the gaps can be bridged. Some situations will indicate training needs. Some may need non–training solutions (e.g., financial aspects, institutional strengthening, providing the right tools etc.). The results of training needs analysis will highlight the subject wise need to bridge the gap to help in the preparation of training modules and facilitate in the development of Learning Programs.

Following steps were taken when conducting the TNA.

1. One-to-one interviews – consultation with OWD officials on deficiency, gap in their capabilities.
2. Competency Survey – based on a questionnaire, which was developed, tested, circulated, and responses collected
3. Ana lysing the responses to determine specific training needs of each target group
4. Focused Group Discussions – for validation of the data

Besides, assessment of institutional capabilities of OWD to provide training was also undertaken as has already been explained in Chapter 4.

5.1 One-to-One Interviews

A number of one-to-one meetings were held with OWD officers. During these one-to-one interviews with the top-level management, sustainability of quality was a core concern for all. Adopting a participatory approach, the consultant undertook the organisational review and assimilated a variety of core issues.

These interviews were conducted with the objectives of finding out:

- OWD Organisational needs
- Individual training needs/aspirations
- Operational/functional restructuring requirements

- Current training practices and aspirations

These meetings were organised through persistent efforts of Nodal Officer (Project), Nodal Officer (Training) and PMU staff. The officers with whom these interactions took place are listed in Table E.

Table E: List of One-to-One Meeting

Official/s	Dates of Meeting
CE (RD & QP) EE (Training)	31.01.2013
CE (WB)	01.02.2013
SE (Central Circle Bhubaneswar)	08.02.2013
SE (Cuttack Circle)	11.02.2013
SE (P & D)	12.02.2013
CE (Buildings)	13.02.2013
SE (Brahmapur Circle)	16.02.2013
EE (Bhanjnagar)	16.02.2013
CE (Engg) 'OSHB'	16.02.2013
SE (D & P)	16.02.2013
CE (NH); EE (NH)	16.02.2013
CE (RD & QP) EE (Training)	18.02.2013
CE (Design)	06.03.2013
EE & Tech Asstt. To CE (Roads)	11.03.2013
CE (IDCO)	14.03.2013
CE (RD & QP) EE (Training)	15.02.2013
Deputy Director Research	23.03.2013
SE (Sambalpur Circle), EE (Sambalpur), EE (Bargarh)	23.04.2013
EE (Malkangiri), EE (Ganjam)	27.04.2013

The various groups from OWD, with whom FGD's took place, are presented in Table F.

Table F: List of Focused Group Discussions

Group Discussions	Objective	Dates of Sessions
PMU Team + OWD Officers	Testing of Training Needs Survey questionnaire	04.02.2013
Design Engineers Team (EE's + AE's) O/o E-I-C	• Work place issues • Training Needs	12.03.2013
PMU Team + OWD Officers	• Review of OWD HRD Policy	21.03.2013 & 5.03.2013
AE's & JE's Puri Division	• Tasks analysis • Training Needs • Work place issues	18.04.2013
AE's & JE's Sambalpur Circle	• Tasks analysis	23.04.2013

Group Discussions	Objective	Dates of Sessions
	• Training Needs • Work place issues	
AE's & JE's Bramhapur Circle	• Tasks analysis • Training Needs • Work place issues	27.04.2013
AE's & JE's Head Office	• Tasks analysis • Training Needs • Work place issues	02.05.2013

Besides the above, a number of routine meetings were held at PMU office (3/4 times a week), where officials have been consulted and have offered useful inputs at every step of the way of the training needs assessment exercise.

These series of discussion meetings, brainstorming sessions and FGD's led to collection of 'discussion points' **(ref: TNA Annexure 03).** A two-way segregation of these emerging views has been done to present them as management issues and human resource development issues. Some of these have already been discussed under Section 4 and hence are not being repeated.

5.2 Competency Survey

The aim of the competency survey planned by the consultant was to contribute towards *assessing and prioritising the training needs* at various levels. The objective of this exercise was to map the present and required competency of staff at various levels through a 'questionnaire based self assessment survey'. The matrix **(ref: TNA Annexure 04)** evolved through a consultative process within PMU and select OWD officials, is explained below:

'Key Functional Areas' were listed, which cover almost all the tasks performed by staff in OWD. To help in understanding and completing the exercise some of these 'Key Functional Areas' were explained. Respondents were requested to add any additional 'Key Functional Areas'/tasks which may have been missed. The format comprised two sections, 'Section A' focusing on four competency measures (Awareness, Exposure, Basic Knowledge, and Ability to Work) and 'Section B' requesting information on their usage/application of competency in their work sphere.

Column headings under 'Section A' comprised four competency measures in the ascending order, these are defined as:

	Competency measure	Definition
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use

IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

Also assessed under this exercise was the 'usage aspect' as indicated in Column headings under Section B, i.e.

- of having worked in the key functional area in the past,
- working in a specific area at present, and
- the possibility of working in the key functional area in future.

Respondents were asked to put a tick (√) in the appropriate cells of the matrix. If none were applicable, they were asked to leave the cells blank.

Here it must be mentioned that in spite of repeated reminders from the consultant and painstaking continuous follow up by PMU staff, the number of responses received was far less than expectation and these are presented in Table G.

Table G: Number of Responses

Sl. No.	Level	Number of responses received
1	Chief Engineer	2
2	Superintending Engineer	1
3	Executive Engineer	19
4	Assistant Engineer	32
5	Junior Engineer	65

Hence, the competency analysis was carried out for the Executive Engineer, Assistant Engineer and Junior Engineer levels. For the Chief Engineer and Superintending Engineer levels the training needs were assessed and analysed based on one-to-one discussions. The Competency Scores arrived at are based on self assessment by individual respondents, as it was not feasible to assess the competency levels independently for each person. It is assumed that the responses to the competency survey are based on objective and honest assessment by each respondent.

5.3 Analysis

Since it is not feasible to provide training to all personnel in all functional areas, it is necessary to prioritise the training needs for each level. Accordingly, prioritisation of training needs is based on two aspects, namely

- present level of competency in each functional area/task, and
- likelihood of the personnel being required to perform the function/task in the future.

The analysis of the responses to the survey has been carried out through a four step process, to achieve the objective of prioritisation of training needs as described below.

Step 1 Response Assimilation: **(ref: TNA Annexure 05, 06 & 07)** Responses by personnel at each level (EE, AE and JE) against each function have been compiled and presented in the respective tables in Annexure 5, 6 & 7, both in terms of number and percentage of respondents giving a positive response. For example, table in Annexure 5, shows that for the key functional area "Strategic Planning", 11 out of 19 (58%) EEs have responded positively for Awareness, 47% for Exposure, 37% for Basic Knowledge and 58% for Ability to work. Further, 42% of the EEs have worked on Strategic Planning in the past, 21% are working presently and 47% have stated that they are Likely to work in the future.

The logical inference drawn from this compilation is that the response on Competency Measures is high in areas where a person has either worked in the past or is presently working in that particular functional area. This strong correlation between present competencies and past/present engagement of the personnel in respective functional areas, is clearly illustrated through the highlighted rows in all the tables in Annexures 5, 6 & 7. It can be observed that present competencies are in line with the current tasks being performed and therefore the training needs have to be aligned with the tasks where a person is likely to **work in the future**. Future competencies, and therefore the future training needs have to be assessed keeping in mind tasks/responses likely to be performed in future, i.e. column 3 of Section B.

Step 2 Prioritisation based on competency score: **(ref: TNA Annexure 08, 09 & 10)** Responses in Section A have been used to calculate the Competency Score for each function performed by each level (EE, JE, AE) separately. Each successive competency measure represents a relatively higher level of proficiency compared to the previous. Therefore weights have been attached to each successive competency measure i.e. Awareness gets a weightage of 1, Exposure gets a weightage of 2, Basic Knowledge gets a weightage of 3 and Ability to Work gets a weightage of 4. Accordingly, if a respondent has tick marked under all four competency measures, he/she is considered as already having the optimum level of competency for that specific function, and is assigned a Competency Score of 10 (1 + 2 + 3 + 4) for the same.

For arriving at the competency score for each function/task the number of positive responses for each measure are multiplied by the respective weights and the result of all four measures added to arrive at the Competency Score (out of 10). The average competency score for each function/task is arrived at by dividing the above score by the number of respondents. This exercise has been carried out separately for each level of personnel, i.e. JE, AE and EE. As mentioned above, these Competency Scores are based on self assessment by individual respondents, as it was not feasible to assess the competency levels independently for each person. It is assumed that the responses to the competency survey are based on objective and honest assessment by each respondent.

Low average competency score for a function/task indicates a greater need for training and is therefore assigned higher priority. To award priority based on these average competency scores, the same have been categorised in Table H.

Table H: Categorisation of Average Competency Score

Average Competency Score	Priority for Training
0 to 2.50	Priority 1 (high)

Average Competency Score	Priority for Training
2.51 to 5.00	Priority 2
5.01 to 6.00	Priority 3
6.01 and above	Priority 4 (low)

As can be noted in the annexed tables 08, 09 & 10, the last column presents the Priority Rating based on competency scores for respective functions/tasks.

Step 3 Prioritisation based on possibility of working in future: **(ref: TNA Annexure 11, 12 & 13)** On similar lines, priority ratings have been assigned to the functional areas, based on likelihood of personnel at different levels being required to work in each functional area in the future. Those functions/tasks which a higher number of respondents are likely to perform in future need to be given higher priority for training. Hence, to award priority based on possibility of working in future, the same have been categorised in Table I.

Table I: Categorisation of Percentage Range

Percentage range	Priority
Above 50%	Priority 1 (high)
40% to 50%	Priority 2
25% to 39%	Priority 3
Less than 25%	Priority 4 (low)

Step 4 Overall prioritisation: **(ref: TNA Annexure 14, 15 & 16)** The priority ratings for each functional area arrived at in Steps 2 & 3, have been added to arrive at the Combined Priority Rating for each functional area.

These Combined Priority Ratings have been further assigned Overall Priority in terms of need for training, on the following basis in Table J.

Table J: Categorisation of Combined Priority Rating

Combined Priority Rating	Overall Priority for Training
2 up to 4	Priority A (high)
5	Priority B
6	Priority C
Above 6	Priority D (low)

5.4 Outcome of TNA

The results of this TNA are presented in the Table K below and are based on One-to-one interviews, analysis of Competency Survey, Focused Group Discussions and assessment by line managers.

Priority-A	Essential short-term (within one year)
Priority-B	Essential long-term (within two years)
Priority-C	Desirable short-term (within three years)
Priority-D	Non - essential

Table K: Training Priority

		Priority				
	Key Functional Areas	**Chief Engineer**	**Superintending Engineer**	**Executive Engineer**	**Assistant Engineer**	**Junior Engineer**
1	**Policy and Planning**					
	Strategic Planning (Master Plan: Roads, Buildings, etc)	A	A	B	D	D
	Public/Private Sector Participation	A	A	A	D	D
	Budgeting Process (Preparation, Control and Outcome)	B	B	B	C	D
	Prioritisation of Investments	A	B	B	D	D
	Phasing of Investments	B	B	B	D	D
	Quality Policy and systems	A	A	A	B	B
2	**Project Preparation**					
	Field surveys - Roads	D	D	D	B	A
	Geometric design	D	D	B	B	B
	Land acquisition	B	B	B	B	A
	Utility shifting management	D	B	A	A	A
	Pavement design	C	C	B	A	B
	Traffic and transport Engineering	C	B	B	B	B
	Road Safety	B	B	B	B	B
	Storm water drainage design	D	C	B	A	B
	Bridge design	D	C	B	A	B
	Culvert design	D	D	C	A	B
	Field surveys - Buildings	D	D	D	C	B
	Building design – Multi-storeyed	C	C	B	A	B
	- Simple buildings	D	D	C	B	B
	Cost estimation	D	D	B	B	B
	Specification	C	C	C	B	B
3	**Environmental and Social Management**					
	Rehabilitation & Resettlement issues, social assessment	B	B	A	A	A
	Environmental assessment	B	B	A	A	B
4	**Procurement Management**					
	FIDIC Contracts	B	A	A	B	B
	BOT/PPP Contracts	A	A	A	B	B
	NCB/State Government procedure	B	B	B	B	B
	e-procurement	B	B	C	B	B
5	**Project Management**					
	Preparation of Work Program	B	B	B	B	B
	Staffing & assigning responsibilities	A	A	A	B	B
	Construction Procedure and Methodology	B	B	A	B	B
	Monitoring Physical Progress of Work	B	B	B	C	B
	Monitoring Financial Requirement for Work	B	B	B	C	B

		Priority				
	Key Functional Areas	**Chief Engineer**	**Superintending Engineer**	**Executive Engineer**	**Assistant Engineer**	**Junior Engineer**
6	**Construction and Supervision**					
	Preconstruction					
	- Design review	D	B	B	B	C
	- Data Collection	D	B	B	B	C
	Review of Construction Management Plan	D	A	B	B	C
	Assessment of Quality of Works	D	A	B	B	B
	Material Testing	D	C	B	B	B
	Undertaking Inspections and Tests	D	D	B	B	B
	Review/Reporting of Physical Progress	B	B	B	B	B
	Review/Reporting of Financial Progress	B	B	B	B	B
7	**Contract Management**					
	Work Program and Time Management	A	A	A	B	B
	Cost Control	A	A	B	B	B
	Variations	B	B	B	B	C
	Dispute Resolution and Arbitration	A	A	A	A	B
8	**Quality Management**					
	Quality Assurance	B	A	A	B	B
	Quality Control	B	A	A	A	A
	Quality Auditing	B	A	A	B	B
9	**Safety Aspects**					
	During Construction	C	C	B	B	A
	During Maintenance	C	C	B	B	B
	During Operation	C	C	B	B	B
10	**Financial Management & Systems**					
	Management of financial instruments and Tax aspects	B	B	B	C	C
	Financial MIS – IOTMS and WAMIS	B	B	B	B	B
	Delegation of financial powers	B	B	B	B	D
	Application of OWD code	A	A	A	B	B
	Accounts Audit	B	B	B	D	D
11	**Maintenance**					
	Identification and assessment of pavement distress	B	B	B	B	B
	Condition survey and Bldg. maintenance management	D	D	B	B	B
	Periodic Maintenance/Routine Maintenance planning	D	C	B	B	B
	Proposal preparation for Maintenance Requirement	C	C	A	B	B
12	**Other tasks**					
	Performance appraisal	A	B	B	C	C
	Disaster preparedness	B	B	B	B	B
	Legal aspects	B	B	B	B	B
	Analysis of Rates/Schedule of Rates	C	C	B	B	B
	Public relation	B	B	B	B	B
	Misc. public services					
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	D	D	B	C	C
	- calculating 'Fair rent'	D	D	C	C	C
	Inter-Departmental Coordination	B	B	B	B	B

		Priority				
	Key Functional Areas	**Chief Engineer**	**Superintending Engineer**	**Executive Engineer**	**Assistant Engineer**	**Junior Engineer**
13	**Information Technology**					
	Computer applications – M S Office, Web etc.	B	B	A	A	A
	Computer applications – Auto CAD, MX Roads, STAAD	C	C	A	A	A
	GIS application for planning	C	B	B	B	C
	Project Management – Prima Vera, M S Projects	B	A	A	A	A
	e-Governance	A	A	A	A	A
	Management Information System (HRMIS)	A	A	A	A	A
14	**Personnel Management:** Apply					
	Communication skills	B	B	B	C	C
	HR Management skills	A	A	B	C	C
	Decision-making	A	A	B	C	C
	Right to Information (RTI)	B	A	B	C	C
	Monitoring skills	B	B	B	B	B
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	B	B	B	B	B
	Motivation	A	A	B	B	C
	Service conditions	B	B	B	B	B

Using the above table, gaps identified with respect to key functional areas and especially those which can be categorised as 'Essential short-term' for the various levels are enumerated in the Tables L to P below:

Table L: Essential Short-Term Training Needs for CE's

No.	Functions/tasks -
1	Strategic Planning (Master Plan: Roads, Buildings, etc.)
2	Public/Private Sector Participation
3	Prioritisation of Investments
4	Quality Policy and systems
5	BOT/PPP Contracts
6	Staffing & assigning responsibilities
7	Work Program and Time Management
8	Cost Control
9	Dispute Resolution and Arbitration
10	Application of OWD code
11	Performance appraisal
12	e-Governance
13	Management Information System (HRMIS)
14	HR Management skills
15	Decision-making
16	Motivation

Table M: Essential Short-Term Training Needs for SE's

No.	Functions/tasks -
1	Strategic Planning (Master Plan: Roads, Buildings, etc)
2	Public/Private Sector Participation
3	Quality Policy and systems
4	FIDIC Contracts
5	BOT/PPP Contracts
6	Staffing & assigning responsibilities
7	Review of Construction Management Plan
8	Assessment of Quality of Works
9	Work Program and Time Management
10	Cost Control
11	Dispute Resolution and Arbitration
12	Quality Assurance
13	Quality Control
14	Quality Auditing
15	Application of OWD code
16	Project Management – Prima Vera, M S Projects
17	e-Governance
18	Management Information System (HRMIS)
19	HR Management skills
20	Decision-making
21	Right to Information (RTI)
22	Motivation

Table N: Essential Short-Term Training Needs for EE's

No.	Functions/tasks -
1	Public/Private Sector Participation
2	Quality Policy and systems
3	Utility shifting management
4	Rehabilitation & Resettlement issues, social assessment
5	Environmental assessment
6	FIDIC Contracts
7	BOT/PPP Contracts
8	Construction Procedure and Methodology
9	Work Program and Time Management
10	Cost Control
11	Dispute Resolution and Arbitration

No.	Functions/tasks -
12	Quality Assurance
13	Quality Control
14	Quality Auditing
15	Application of OWD code
16	Proposal preparation for Maintenance Requirement
17	Computer applications – M S Office, Web etc.
18	Computer applications – Auto CAD, MX Roads, STAAD
19	Project Management – Prima Vera, M S Projects
20	e-Governance
21	Management Information System (HRMIS)

Table O: Essential Short-Term Training Needs for AE's

No.	Functions/tasks -
1	Utility shifting management
2	Pavement design
3	Storm water drainage design
4	Bridge design
5	Culvert design
6	Building design – Multi-storeyed
7	Rehabilitation & Resettlement issues, social assessment
8	Environmental assessment
9	Dispute Resolution and Arbitration
10	Quality Control
11	Computer applications – M S Office, Web etc.
12	Computer applications – Auto CAD, MX Roads, STAAD
13	Project Management – Prima Vera, M S Projects
14	e-Governance
15	Management Information System (HRMIS)

Table P: Essential Short-Term Training Needs for JE's

No.	Functions/tasks -
1	Field surveys - Roads
2	Land acquisition
3	Utility shifting management
4	Rehabilitation & Resettlement issues, social assessment
5	Quality Control
6	Safety During Construction

No.	Functions/tasks -
7	Computer applications – M S Office, Web etc.
8	Computer applications – Auto CAD, MX Roads, STAAD
9	Project Management – Prima Vera, M S Projects
10	e-Governance
11	Management Information System (HRMIS)

SECTION 6

WAY FORWARD

6 Way Forward

HRD activities have to be a 'continuous' essential function to be introduced in OWD. The possible solutions to overcome weaknesses in the present system can be found in the suggested actions explained in the following text.

6.1 OWD Human Resource Development Policy

Need for **OWD Human Resource Development Policy** – Consultants have developed a draft OWD-HRD policy document to support HRD functions within OWD. Based on the feedback received, an updated/revised OWD draft HRD Policy document has been shared with OWD for concurrence. It is now essential to facilitate adoption of this HRD Policy of OWD.

6.2 Organisational "RE" Structuring

Organisational "RE" Structuring – The situational analysis clearly highlights the need for an institutional mechanism for systematic TNA, implementation of training etc. on an ongoing basis. For this, an 'HRD & Training cell' needs to be put in place within OWD. The proposed HRD & Training Cell should be located in the office of the Engineer-in-Chief cum Secretary, and headed by a Senior HRD Officer in the rank of CE or SE, supported by a team of officers of the rank of Executive Engineers, both within the Cell as well as at the twelve Circle levels. This is important to ensure that the Cell and its officers have the requisite authority and budgetary allocation to function effectively. The 'HRD & Training cell' will have the primary mandate to manage and monitor the 'HRD Policy', as well as to execute the HRD strategies and processes therein i.e.

- *Communications Strategy:* In today's changing scenario, it is essential to educate and train OWD staff about every 'change' through systematic communication strategy.
- *Quality Strategy:* Quality needs to be fostered in OWD staff through a strategic development to bring in Total Quality Management in every sphere of work.
- *Entrepreneurship Strategy:* Every employee needs to be an independent entrepreneur, who can generate ideas and bring them to reality by using the existing resources and support the organisation to create innovative and creative services.
- *Culture Building strategy:* Organisation's valuing its employees have a sustainable competitive edge because employees are highly charged, motivated and committed.
- *Accountability And Ownership Strategy:* Employee's accountability and ownership leads to higher productivity.
- *Learning Strategy:* Continuous development and learning environments promote self development of employees, of self and by self.
- *Systematic Training Strategy:* The planning and organisation of formal on-job training and off-job training leads to improving vital employee characteristics, build and sustain appropriate work culture and brings in more professionalism in their action.

6.3 Training Plan

Training Plan – Translating TNA into Training Courses and Process improvement – Consultants will participate in the development of a training plan, to include details of titles, brief course contents, target participants, training delivery strategies, and duration for each specified training. Consultant will develop a short term (say 2 years) Training Plan to include target numbers, possible organisations/resource persons who can deliver training, tentative schedule, and tentative costs/budget. OWD shall follow a framework for training development and implementation which will include

- Induction Training for New Recruits at various Levels
- Advertised versus customized
- Training of Trainers

The training plan will be a working document. It will be flexible enough to meet all the needs and will be modified, as and when needed, but reviewed every six months. This report shall also include implementation mechanism within OWD.

6.4 Training Delivery Strategies

Training Delivery strategies will include:

- In-house
- Assessment of Training delivery organisations
- Empanelment of resource speakers
- Study visits
- On-site (especially for field officers) trainings (like on the job)
- Web based training and discussion forum

6.5 Development of Training 'Evaluation System'

Development of training 'evaluation system' to monitor training Delivery: Evaluation is a means of monitoring the quality of capacity building efforts. The purpose of evaluating every event is to compare the accomplishments of the programme with the set objectives. Based on the results of the evaluation, revisions in the future programmes can then be made. An evaluation system will be evolved to encourage the participants who might otherwise hesitate to voice their opinion, criticism, suggestion, approvals etc. A formal evaluation, a questionnaire to assimilate corrective actions, will be introduced so as to monitor training context/objective, facilitators'/trainers' performance, workshop/training materials, logistics and participant selection, as appropriate. A report will be submitted in due course of time.

6.6 Development of Training Database

Development of Training database- Training Information Management System (TIMS): To generate and distribute the right type of information in an accessible way, a planning and reporting system

based on standardised formats will be proposed. This will include a set of forms and checklists which shall help to plan various training activities, organise training data, prepare progress reports, and facilitate monitoring and feedback. Discussions will be held with the IT-ICT Consultants to link the TIMS to the overall OWD organisational system. A report on the same will be submitted in due course of time.

6.7 Development of other Training Resources in OWD

Development of Other Training Resources in OWD: **Documentation Center, Library**: As OWD unfolds to the new phase of change, the top management should strive to be a change maker for the emerging generation of OWD engineers with an endeavor to create a knowledge bank. They should facilitate development of a library and Information centre with a knowledge bank of engineering, management, research & development, advocacy information, skills development, training and project documents of OWD.

SECTION 7

CONCLUSION

7 Conclusions

- The TNA exercise that has been conducted shows that the term capacity building is perceived in different ways within the OWD, and in most cases, it does not fully address the technical competence and organisational issues, these being often ignored or underestimated. A major factor, leading to short-comings/systemic failures are found to be
  - lack of understanding/competence of institutional reform processes and capacity building.
  - The need for human resources development to help develop new institutional arrangements, is often underestimated.

  The findings indicate that institutional reform processes and capacity building need to comprise technical competence and organisational frameworks.
- Training needs differ at different levels in the hierarchy of OWD. The TNA exercise carried out has helped in identifying and prioritising the training needs at each level, to enable the OWD staff to build competencies to perform the functions/tasks which they are expected to perform in the future.
- The present Capacity building mechanism through training of OWD staff leaves a lot to be desired and it is already posing formidable challenges to meet the needs of several ambitious changes foreseen. Training and skill enhancement has to be a continuous and well planned/systematic exercise. Therefore, the Training Plan should include periodic training of all staff at various levels, so that they stay abreast of the latest know-how and state-of-art technologies.
- Emerging HRM issues that need to be addressed include
  - The expectations from the engineer in the government are becoming more demanding.
  - The jump in project and contract sizes is adding further complexities.
  - The system does not reward training and constant upgrading of skills.
  - Also there seems to be a lack of incentives for such training and upgrading of skills.
  - Promotions and annual pay hikes are all seniority based and there seems to be no credit for performance or skills.

  It is, therefore, imperative that the state governments attach high priority to the need for addressing the HR issues in OWD.
- The requirement for specialisation and skill development of officers of OWD in core processes of HRM, planning, design, preparation of sound DPR, project development and financial appraisal for BOT projects, social and environment concerns, traffic studies, contract management, etc. should receive regular attention. However, that has not been the case in the past. The training plan should include study visits of projects in India and even abroad by a group of OWD officers, but such an exercise is limited to only those staff working on funded projects.

- Project management, Quality assurance, legal, contract administration, dispute resolution, public/private partnership approaches, social and environment aspects, safety are a few of the core areas where effort need to be made to enhance the competence of staff in OWD across all levels.
- Successful implementation of the training plan that will emerge out of this TNA will require a strong OWD commitment. The management must identify a strong champion/torch bearer of HRD activities for carrying forward the capacity building agenda and designed activities. OWD should give ample support to HRD/Training activities by providing adequate funding support, resources to pursue the program, meet training and capacity building needs for the reformed OWD.
- Adequate training, equipment, knowledge infrastructure and policy support should be provided for pursuing the reforms program as envisaged under the ISAP.

ANNEXURES

Annexure 01 A

OFFICE OF THE ENGINEER-IN-CHIEF (CIVIL), ODISHA
NIRMAN SOUDHA, UNIT-V, BHUBANESWAR

Letter No-PMU-WB-21/06 (Part-B) 16628 **Dt** 25-4-2013

From

Er.Nalinikanta Pradhan,
Chief Engineer, World Bank Projects, Odisha
Bhubaneswar.
Tel: 0674-2396783, Fax: 0674-2390080.
Email:pmuosrp@gmail.com

To

The Engineer-in-Chief (Civil), Odisha ,
Nirman Soudha, Bhubaneswar.

Sub: Nomination of Engineers/Officers to attend training Progrmme at Indian Academy of Highway Engineers (formerly NITHE in 2013-14) at New Delhi.

Ref: - Training Calendar for the year 2013-14.

Sir,

With reference to the above , I am submitting herewith the list of Officers of PMU and officers connected with OSRP, interested to take training at Indian Academy of Highway Engineers (formerly ,NITHE) for the year 2013-14 for approval of Government . The mentioned courses are required for updating / refreshing the knowledge of the officers of P.M Unit.

Details of Interested Participants against the Desired Programme at IAHE for the year 2013-14, New Delhi

Sl No	Name of the Officers with Designations	Programme Details	Period of training
1	Er S.K Misra,E.E,PMU	PPP in Highway sector	(7-11) October 2013
2	Er S.K Misra,E.E,PMU	Contract Management , Dispute Resolution and Arbitration in Highway projects	(18-22) November 2013
3	Er P.K Sethi, A.E,PMU	Construction , Supervision and quality control for roads and bridge projects	(5-8) August 2013
4	Er A.K Sahoo, A.E,PMU	Design and construction of High Embankments on soft soil and Geo synthetics Soil projects	(21-25) October 2013
5	Er A.K Sahoo, A.E,PMU	Computer Aided Road and Bridge design	(16-20) December 2013
6	Er B.C Majhi, A.E,PMU	Computer Aided Road and Bridge design	(16-20) December 2013
7	Er A.R Nayak, A.E,PMU	Planning , Design, construction and operation of Expressways	(20-22) January 2014
8	Er B.B Rao, J.E,PMU	Material testing procedures and Laboratory practices	(2-6) September 2013
9	Er A.R Sinha, J.E , Salepur (R&B) Section	Material testing procedures and Laboratory practices	(2-6) September 2013
10	Er S.C Behera, J.E,PMU	Material testing procedures and Laboratory practices	(2-6) September 2013
11	Er G.N Sethi, J.E,PMU	Material testing procedures and Laboratory practices	(2-6) September 2013
[illegible]	[illegible]	[illegible]	[illegible]
12	Er P.K Sethi, A.E,PMU	Environmental and social issues relating to Highway projects	(4-6) December 2013

13	Er S.K Patro, J.E,PMU	Modern survey techniques including GIS/GPS & Total station	(2-6) December 2013
14	Er A.R Sinha, J.E , Salepur (R&B) Section	Modern survey techniques including GIS/GPS & Total station	(2-6) December 2013
15	Er P.K Misra, J.E,PMU	Modern survey techniques including GIS/GPS & Total station	(2-6) December 2013

An early action in the above matter is requested.

Yours faithfully,

Chief Engineer
World Bank Projects, Odisha

Annexure 01 B

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OFFICE OF THE ENGINEER-IN-CHIEF (CIVIL), ODISHA
NIRMAN SOUDHA, UNIT-V, BHUBANESWAR

Letter No-PMU-WB-21/06 (Part-B) 20570 **Dt** 21-5-13

From

Er.Nalinikanta Pradhan,
Chief Engineer, World Bank Projects, Odisha
Bhubaneswar.
Tel: 0674-2396783, Fax: 0674-2390080.
Email:pmuosrp@gmail.com

To

The Engineer-in-Chief-Cum-Secretary to Govt
Works Department
Bhubaneswar

Sub: Nomination of Engineers/Officers to attend training Programme at CSIR-CRRI , New Delhi for the year 2013-14.

Ref: - CRRI-Training Calendar for the year 2013-14 dtd 29.4.2013.

Sir,

With reference to the above , I am submitting herewith the list of Officers of PMU and officers connected with OSRP, interested to take training at CSIR-CRRI, New Delhi for approval of Government . The mentioned courses are required for updating / refreshing the knowledge of the officers of P.M Unit.

Details of Interested Participants against the Desired Programme at CSIR-CRRI , New Delhi for the year 2013-14, New Delhi

Sl No	Name of the Officers with Designations	Description of Training Programmes	Period of training	Course Fee+ 12.36% Service tax (In ₹)
1	Dr N.C Pal, Executive Engineer, PMU	Bridge Diagnostics, Performance Evaluation and Rehabilitation	17-21, June 2013	8,000/
2	Er Sameer Hota, A.E,PMU	Bridge Diagnostics, Performance Evaluation and Rehabilitation	17-21, June 2013	8,000/
3	Er M.R Misra, EE,PMU	Bridge Diagnostics, Performance Evaluation and Rehabilitation	17-21, June 2013	8,000/
4	Er M.R Misra, EE,PMU	Transport Planning & Economics	1-5, July 2013	8,000/
5	Er A.K Das, A.E,PMU	Design, Construction and Maintenance of flexible pavements	2-6, September 2013	8,000/
6	Er S.K Patro, J.E,PMU	Design, Construction and Maintenance of flexible pavements	2-6, September 2013	8,000/
7	Er.G.N.Sethi,JE, PMU	Design, Construction and Maintenance of flexible pavements	2-6, September 2013	8,000/
8	Dr N.C Pal, Executive Engineer, PMU	International Course on Dissemination of HDM-4	16-27, September 2013	30,000/
9	Er Sameer Hota, A.E,PMU	International Course on Dissemination of HDM-4	16-27, September 2013	30,000/
10	Er P.K Sethi, A.E,PMU	Rigid Pavements: Design, Construction & Quality Control Aspects	18-22, November 2013	8,000/
11	Er R.C Panda, A.E,PMU	Rigid Pavements: Design,	18-22,	8,000/

		Construction & Quality Control Aspects	November 2013	
12	Er Bighnaraj Jena	Rigid Pavements: Design, Construction & Quality Control Aspects	18-22, November 2013	8,000/
13	Er B.B Rao, J.E,PMU	Rigid Pavements: Design, Construction & Quality Control Aspects	18-22, November 2013	8,000/
14	Er A.K Sahoo, A.E,PMU	Bridge Construction and Construction	25-29, November2013	8,000/
15	Er S.S Swain , A.E,PMU	Bridge Design and Construction	25-29, November2013	8,000/
16	Er N.Behera, J.E,PMU	Bridge Design and Construction	25-29, November2013	8,000/
17	Sri A.K Sathpathy, DFO,PMU	Environmental Impact Assessment (EIA) and Environmental Clearance Process for Road & Highway Projects	2-5, December,2013	10,000/
18	Er P,K Misra, JE,PMU	Environmental Impact Assessment (EIA) and Environmental Clearance Process for Road & Highway Projects	2-5, December,2013	10,000/
19	Dr N.C Pal, Executive Engineer, PMU	Pavement Evaluation Techniques and their applications for Maintenance and Rehabilitation	16-20, December, 2013	8,000/
20	Er R.R Bohidar,S.E,ISAP	Geo-Spatial Technology (GIS,GPS,etc) for Road and Transportation	6-9, January , 2014	10,000/
21	Er B.C Tripathy, E.E,PMU (could not avail in 2012-13)	Geo-Spatial Technology (GIS,GPS,etc) for Road and Transportation	6-9, January , 2014	10,000/
22	Er M.R Misra, EE,PMU	Geo-Spatial Technology (GIS,GPS,etc) for Road and Transportation	6-9, January , 2014	10,000/
23	Er A.K Sahoo, A.E,PMU	Geo-Spatial Technology (GIS,GPS,etc) for Road and Transportation	6-9, January , 2014	10,000/
24	Er B.C Majhi, A.E,PMU	Geo-Spatial Technology (GIS,GPS,etc) for Road and Transportation	6-9, January , 2014	10,000/

The cost of the expenditure will be charged to ISAP & Operating cost of World Bank Fund.

An early action may kindly be communicated for approval of the participants in order to take further necessary action at this end.

Yours faithfully

21/5/13

Chief Engineer

World Bank Projects, Odisha

Enu: Trg Brochure & CRR1

Memo No 20571 (24) **Dt** 21.5.13

Copy to person concerned for information and necessary action.

21/5/13

Chief Engineer

World Bank Projects, Odisha

CSIR
CRRI
तरुण कुमार आमला
प्रमुख, सूचना, सम्पर्क एवं प्रशिक्षण
T.K. Amla
Head, Information, Liaison, Training

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सीएसआईआर-केंद्रीय सड़क अनुसंधान संस्थान
CSIR-Central Road Research Institute
Website: www.crridom.gov.in

No.QSP/HRP/01/1(A)
Dated: May 8, 2013

Chief Engineer
World Bank Project, Orissa,
Nirman Soudha,
BHUBANESWAR-751001

Sub: CSIR-CRRI Training Programmes for the year 2013-14 – nomination regarding

Dear Sir / Madam,

CSIR-Central Road Research Institute is organizing 11 training programmes during the year 2013-13 for the in-service highway and transportation engineers and planners.

Sl. No	Title of the Course	Date	Course Fee + 12.36% S.T.
1.	Bridge Diagnostics, Performance Evaluation and Rehabilitation	17-21 June, 2013	Rs. 8,000/-
2.	Transport Planning & Economics	01-05 July, 2013	Rs. 8,000/-
3.	Traffic Engineering & Road Safety Audit	22-26 July, 2013	Rs. 10,000/-
4.	Design, Construction and Maintenance of Flexible Pavements	02-06 Sep., 2013	Rs. 8,000/-
5.	International Course on Dissemination of HDM-4	16-27 Sep. 2013	Rs. 30,000/-
6.	Geotechnical and Landslide Investigation for Highway Projects	21-25 Oct., 2013	Rs. 8,000/-
7.	Rigid Pavements: Design, Construction & Quality Control Aspects	18-22 Nov., 2013	Rs. 8,000/-
8.	Bridge Design and Construction	25-29 Nov. 2013	Rs. 8,000/-
9.	Environmental Impact Assessment (EIA) and Environmental Clearance Process for Road & Highway Projects	02-05 Dec., 2013	Rs. 10,000/-
10.	Pavement Evaluation Techniques and their applications for Maintenance and Rehabilitation	16-20 Dec., 2013	Rs. 8,000/-
11.	Geo-Spatial Technology (GIS, GPS, RS etc) for Road and Transportation	06-09 Jan., 2014	Rs. 10,000/-

A booklet giving detailed information i.e. broad course content, duration, course fee etc. on each of the above training course is enclosed herewith. You are requested to nominate suitable 3-4 officers from your organization to attend these programmes. The nomination may be send in the prescribed format at the earliest along with course fee.

Thanking you,

Yours faithfully,

(T.K. Amla)

Encls: as above

An ISO Institution Contacts: Tel: 26921939, Fax: 26921939, 26845943, 26830480 E-mail: tkamla.crri@nic.in, tkamla.crri@gmail.com

Annexure 02

Govt. of Orissa
Works Department
O/o the Engineer-in-Chief(Civil)

Training Calender for 2011-12

Months	Name of Institution	Name of the Training Programme	Programme Dates	Proposed Participants from PMU	Training Cost	Remarks
August, 2011	IAHE	Environment and Social Issues in Highway Projects	August 8-11, 2011	Mr. Ajit Ku Satapathy, DFO Mr. Sukanta Behera, Spl. LAO		T.O. Ltr No 31992 Dt.05-07-2011 to S.E(P&D), O/o the E.I.C(Civil), Nirman Soudha
		Modern Survey Techniques including GIS/GPS	August 8-12,2011	Er. S.S.Swain, AE Er. Pradyumna Sethy, AE Er. A.K. Sahoo, AE Er. R.C. Panda, AE Er. N. Behera, JE		
		Pavement Material Inspection, Repair & Rehabilitation	August 24-26,2011	Er. B. C. Majhi, AE		
	CRRI					
	ASCI					
September, 2011	IAHE	Refresher Course for Senior Executive Engineers/DS/GM Equivalent	September 12-16,2011	Er. G.K.Prasad, EE		T.O. Ltr No 31992 Dt.05-07-2011 to S.E(P&D), O/o the E.I.C(Civil), Nirman Soudha
		Construction, Supervision and Quality Control for Road & Bridge Projects	September 12-16,2011	Er. B.C. Tripathy, EE Er. Digambar Biswal, EE		
		Senior Level Dispute Resolution and Arbitration in Highway Projects	September 26-28,2011	Er. Saroj Ku Misra, EE		
		Workshop on Modern Trends in Design & Construction of bridges, Elevated Structures, Underpasses and Tunnels	September 26-30,2011	Dr. N. C. Pal, EE Er. B.C. Majhi, AE		
		Material Testing Procedures and Labouratory Practice	September 26-30,2011	Er. K.N. Patrao, JE, Er. B. B. Rao, JE		

Months	Name of Institution	Name of the Training Programme	Programme Dates	Proposed Participants from PMU	Training Cost	Remarks
	CRRI	Design, Construction and Maintenance of Flexible Pavements	Sept 05-09, 2011	Er. Sarat Ch. Behera, JE	Rs7,000.00	
		Geotechnical and Landslide Investigations for Highway Projects	Sept. 19-23, 2011	Er. Saroj Ku Misra, EE Dr. N. C. Pal, EE	Rs.7000.00/ each	
	ASCI	Managng Land Acquisition and R&R for a vibrant stakeholder environment	September 19-23, 2011	Er. B.C.Tripathy, EE Mr. Sukanta Behera,Spl.LAO	Rs.42,500.00+ Service Tax/each	T.O. Ltr Nos 19278 dt.07-04-2011, 27070 dt.02-06-2011 and36227dt2-08-2011
		Training on Project Management for World Bank Aided Projects	September 26-30, 2011	Er. F.M.Panigrahi, EE	Rs.42,500.00+ Service Tax	T.O. Ltr Nos 20129 dt.19-04-2011, 27072 dt.02-06-2011 and36227dt2-08-2011
		October, 2011				
October, 2011	IAHE	Strategic Finance management for Highway Sector Projects	October 10-13, 2011	Er. M.R. Misra, EE		T.O. Ltr No 31992 Dt.05-07-2011 to S.E(P&D), O/o the E.I.C(Civil), Nirman Soudha
		Public Private Partnership in Highway Projects	October 10-14, 2011	Dr. N. C. Pal, EE		
		Environment Impact Assessment(EIA)	October 17-20, 2011	Mr. Ajit Ku Satapathy, DFO		
	CRRI	International Course on Dissemination of HDM-4	October 10-21, 2011	Er. Subhransu Sekhar swain, AE Er. Ramesh Ch Panda, AE Er. Narayan Behera, JE Er. Amiya Kumar Nayak, AE	Rs.25,000.00/ each	
	ASCI	Programme for Young Managers (10th - 21st October, 2011)	October 10-21, 2011	Er. A.K.Sahoo, AE	Rs. 79,000.00 +10.30% Service Tax.	

Months	Name of Institution	Name of the Training Programme	Programme Dates	Proposed Participants from PMU	Training Cost	Remarks
November, 2011	IAHE	Mid Carrier Refrsher Course for Highway Engineers/ Professionals	November 01-04, 2011	Er. F. M. Panigrahi, EE		T.O. Ltr No 31992 Dt.05-07-2011 to S.E(P&D), O/o the E.I.C(Civil), Nirman Soudha
		Safety in Planning Design and Project Preparation in Highway Project	November 15-17, 2011	Er. Pradyumna Sethy, AE Er. Subhransu Sekhar Swain, AE		
	CRRI	Rigid Pavements: Design, Construction and Quality Control Aspects	Nov 14-18, 2011	Er. A.K. Dash, AE Er A. K.Tripathy, EE	Rs7,000.00	
	ASCI	Treasury and Investment Management	November 05-09, 2011	Mr. Jaydev Mishra, Sr. DAO, World Bank Projects	Rs.42,000.00+ Service Tax	T.O. Ltr Nos 19279 dt.07-04-2011, 27071 dt.02-06-2011 and36227dt2-08-2011
		Startegic Finance Management	November 14-16, 2011	Mr. Jaydev Mishra, Sr. DAO, World Bank Projects	Rs.26,500.00+ Service Tax	
		Environment Impact Assessment-Good Practice	November 07-09, 2011	Mr. Ajit Ku. Satapathy,DFO Mr. Sukanta Behera, Spl. LAO	Rs.26,500.00+ Service Tax/each	T.O. Ltr Nos 19279 dt.07-04-2011, 27071 dt.02-06-2011 and36227dt2-08-2011
		December, 2011				
December, 2011	IAHE					
	CRRI	Pavement Evaluation Techniques and their applications for Maintenance and Rehabilitation	December 12-16, 2011	Er. F.M. Panigrahi,EE Dr. N. C. Pal, Ee Er. Digambar Biswal, EE Er. Kasinath Patro, JE Er. B. B. Rao, JE	Rs.7000.00/ each	
		Environment and Impact Assessment (EIA) and Environmental Clearance Process for Road & Highways Projects	December 19-21, 2011	Er. Saroj Ku Misra	Rs6,000.00	

Months	Name of Institution	Name of the Training Programme	Programme Dates	Proposed Participants from PMU	Training Cost	Remarks
	ASCI					
		Road Safety and Road Safety Audit in operational highway projects	January 02-06, 2012	Er. B. C. Tripathy, EE		T.O. Ltr No 31992 Dt.05-07-2011 to S.E(P&D), O/o the E.I.C(Ck...), Nirman Soudha
anuary, 2012	IAHE	Road Safety Audit in operation and Management of Revenue Generating Projects	January 31- Feb 02,2012	Dr. N. C. Pal, EE		
	CRRI					
	ASCI					
February, 2012	CRRI	Geo-Spatial Technologies(GIS, GPS, RS etc) for Road and Transportation	February 06-09, 2012	ER. Gati Krushna Prasad,EE Er. Manoranjan Misra, EE Er. Subhransu Sekhar Swain, AE Er. Sameer Hota, AE Er. K.N. Patra, JE Er. B.B Rao, JE Er. P. K. Misra, JE	Rs.6,500.00/ each	
		Urban and Regional Transportation Planning.	February 13-15, 2012	Er. Manoranjan Misra, EE	Rs6,000.00	

Chief Engineer,
World Bank Projects, Orissa

Annexure 03

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
1.	CE –Buildings	• Organizational Development needs – HRM/HRD Cells essential for OWD – Should be positioned in E-i-C office – Full time function, headed by SE, assisted by team of EE and AE's – HRD/ Training Policy very essential – Current quality deficiencies and economic benefits should be highlighted in the policy document – Specialized 'Project Management' Units to be created for Health and education sectors for construction of Hospital and school buildings respectively under CE Buildings – Core functions of PMU would be planning, design and procurement/contracting – 200 crores for health sector buildings may go unutilised if timely action not taken – This new arrangement will eliminate delays and reduce time between planning and execution – Execution to be done by field staff – To attract quality staff in the design cell, incentive in the form of housing at Bhubneshwar should be awarded; they should be given special allowance like book/journal allowance	○ Staff Development needs – Induction training is missing but is a must for all new entrants – Should be in two parts ▪ on entry, three months training/coaching by senior staff on procedures and techniques covering all functions of OWD ▪ followed by another term of three months training with first 2 years of service covering specialised areas of work – Architecture wing producing outdated designs – Unable to develop 3D models – No updation of skills – Very strong building design team but not updated – Big gap between design knowledge and field implementation, need for rotational policy to be in place – Specialised training needed for Architects, Designers and Construction Staff to build hospitals and schools – Construction management and overall project management are areas of concern among field staff – Field staff at one particular site were unaware of 'Bored compaction piling' technique – No planning of operation and maintenance (O&M) of buildings, no preventive maintenance procedures followed – Training cell should organize ▪ Short MDPs /courses for Senior management at IIM/ NICMAR/ IIT ▪ Short overseas visits/ study tours for CE's – 5 acres land available for OWD's in-house construction academy
2.	CE – Design; EE – Design	• Organizational Development needs – OWD urgently needs its own 'Recruitment', 'Transfer', and 'Promotion' policies. – Two page synopsis of the HRD Policy should be	○ Staff Development needs – There should be regular technical training for JE's & AE's and management training for EE's to CE's. – There has been no recruitment in the past 7-8 years

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		included in the OWD CODE - Design wing' lacks a clear mandate - OWD Code should differentiate between the CE (Design) /CE (RD&QP) and implementation CE's (i.e. Roads, Buildings), defining the functions and responsibilities clearly - CE Design's role and work responsibilities are not clearly defined by the government. - Design Wing should be the final authority for all design works in OWD, but that is not the case. Govt. should give the authority to the Design Wing or close down the wing. - Design wing prepares designs of buildings and bridges but not roads even though there is a position of SE Roads under the CE - Proposed to Govt that Design wing will take up design of Roads from next year. - Staffing of the Design Wing should be done based on the workload. A mismatch exists - No one in OWD wishes to be posted in the Design wing. Have proposed to the Govt to provide a monitory incentive ranging between Rs 5000/- to Rs. 10,000/- PM to attract/motivate the engineers. - System needed to link Field EE's with Design Cell. EE Field Offices to be equipped to down load drawings, uploaded by the Design cell. - Planning and Design functions should be together and under CE Design. - CE Design should be part of the selection process in the Training Cell. - Project conceptualisation process needs to be altered – current practice of preparing Project Estimates first and designing done to fit the estimate has to be discontinued. - Field Engineers prepare Road Project Estimates based on MoRTH norms without actually considering the ground conditions, which affects the quality of roads. - Traffic / Transport Planning and Management are key	hence no one has thought about 'induction process' or induction training, even though its most essential - Induction programme are very much needed within OWD and should include Technical skills development, Design fundamentals, Quality control and management, Management skills, communication skills, Personal Development (Image Building), Administration procedures etc. among other topics. - Though not as an induction programme, many training courses are organised for JE's in RD Department. - Staff in Asset management Cell within OWD's - IT Cell has been training by Asset Management consultant on how to use GPS, GIS & ROMDAS. - 3 Draughtsman in Design Wing are well trained in AUTOCAD - Design Engineers using STADD PRO for the design works but their skills need to be upgraded and updated - Design Engineers need to be sent out on Study tours within India and Abroad to learn about new structures and design practices - Engineers need to be taught principles of Project Management – competence is lacking in OWD - Executive engineers should be trained in financial / investment management principles. - BBMD Test have been carried out by RD&QP intermittently in the past or most times testing is outsourced - Current QC staff is on the verge of retirement and those placed as an interim arrangement lack qualification, direction or interest. - Field trips should be planned to Tamil Nadu and Kerala to study the state organizational functioning

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		functions which should be housed within OWD but because the mandate is with different departments there is very little coordination. - 'Transport Economic Study' should be outsourced. - Four zonal labs to be made fully functional in next financial year but staffing will be an issue - Field staffing needs immediate attention. Most JE's are overloaded with work, they have to be provided support of technicians qualified from ITI's.	
3.	CE – Engg 'OSHB'	• Organizational Development needs - OWD needs a construction academy - Funded by OWD and sustained by contractors paying 0.5% of their bill amount as running cost - HRD Cell is very essential in OWD to carry out training assessment and training planning - 'Analysis of Rates' and 'Schedule of Rates' have not been updated to cater to new techniques e.g. ▪ concrete mix design not followed ▪ placement of concrete using 'concrete placers' is not an item, so not used in the estimate; currently placement of concrete at ground level is @ Rs. 7500/- per CuM and placement at 5th floor is @ Rs. 21000/- per CuM ▪ No use of foam concrete as not an item in the SoR since the technique is not known - 1% staffing cost should be allocated for training - Proper 'asset management' is an important need. - Training imparted and training received should become indicators in the ACR - Currently 'expenditure incurred' has become an indicator of work, quality of work is not an indicator - Research is not promoted and personal initiatives only attract reprimand - Design work should carry an incentive, with the incentive amount being revised periodically, to overcome the current perception of it being a punishment posting	○ Staff Development needs - Training on latest techniques to OWD as well as contractors engineers - Intensive training for engineers during lean work periods like the rainy season - The Indian Administrative Services have a strict training schedule which they adhere to where as training of engineers is not a priority. - It should be mandatory for each staff to be sent for 15 days training per year. - Lack of training and exposure visits is resulting in skills and knowledge deficiency among staff - Focus towards saving the environment is missing; lack of exposure is the main reason - Linkage between research institutes like IITs, NBC and implementing agencies like OWD has to be established through the training cell - Staff, specially CE's, should be sent abroad to gain exposure and to implement what they learn - Lack of knowledge and skills in asset management leading to heavy long term losses on account of poor Operation and maintenance - Since the importance of preventive O&M is not understood by engineers as they have not been trained so they do not communicate the repercussions to the decision makers hence leading to higher costs in the long run. - Engineers are not trained in Bridge maintenance management, so it is not practiced

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
			– Practice of three-day-training for new staff used to prevail 10 years back but was stopped by senior management due to lack of interest – System need to be revived by generating interest among the decision makers
4.	CE – NH; EE – NH	• Organizational Development needs – Workload distribution needs to be rationalized – Works amounting to 1crore per Division has jumped to 50 crores per Division but the manpower continues to remain the same – Quality of work is suffering due to lack of resources – No proper inspection as vehicles are not available to all staff – The fuel limit is not realistic as per the project requirements – Hiring of vehicles is not possible due to taxi fare limits imposed	○ Staff Development needs – In-house training programmes should be evolved to cover all levels of staff – Training should be imparted on all aspect of construction and management – Special training should be imparted on pre-construction activities like Utility shifting – Training on Quality, not just technical aspects, but every activity including reporting is a must – Exposure to latest techniques and equipment is missing at the grass root level – Induction training very necessary as the new entrants are not familiar with ground realities – There should be a separate training budget, training head covering 1% of staffing cost of OWD – Training Policy and Training Cell, headed by a CE, have to be in place for proper staff development
5.	CE – IDCO	• Organizational Development needs – No manpower at the lower end of pyramid – NO JE's & AE's – Need for Financial Analysis, Contract Management and Legal functions in OWD – Recruitment planning urgently needed; high level of disparity in recruitment verses retirement – Poor Cadre management is a major issue. – Expectations are very high but appropriate resources are not provided – Finances are not an issue, proper planning of expenditure is missing – Downsizing of 80's, done blindly, is impacting the present; if corrective actions not considered now, there will be no engineers by 2018	○ Staff Development needs – Every staff member should undergo 1 orientation/reorientation training every 4 years – Both management training + technical innovation awareness programmes for EE/SE/CE's is essential – Technical up gradation training for JE's & AE's is essential – Participation in IRC is a waste of time and money; instead State Roads Congress / Building congress should be organised. – Only focused and selective best practices of STATE should be shared at IRC

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		– Knowledge is being lost due to poor human resource management – Need for reduction in TOP Management – work of 10 EE's to be managed by 1 SE – Workload distribution exercise needed urgently and should be done periodically – 90% JE's & AE's are overworked – Outsourcing is not always the answer, without 'in-house' knowledge outsourcing fails. – In OWD Leadership needed but systems should work; building systems is a major organizational need – CE Training and Human Resource Management (Placement) is most urgently needed	
6.	CE – RD & QP	• Organizational Development needs – No support staff available to CE – No action for last one year on the Staffing plan given to Government – Research wing is defunct, needs to be revitalised by bringing in Research scientists and proper infrastructure – There should be a separate cadre for staff in RD&QP – Persons with research oriented mindset should be posted in the RD&QP Wing – No need for a Knowledge Bank Fund; Training Cost should be part of the works estimate. – Separate budget head for training and full powers with CE should be instituted – Library, its fund, and staff should be part of RD&QP – Provision should be made for 'Journal allowance' for every engineer of OWD to enhance their awareness.	○ Staff Development needs – Training is effective only is learning attitude is there. – CE's should be sent abroad – SE's, EE's should be sent all over the country and Abroad on study tours. – In-house training should only be for JE's & AE's
7.	SE – Behrampur; EE – Bhanjnagar	• Organizational Development needs – Manpower shortage at field level – Workload review not carried out, should be done every 2 to 3 years cycle – Staff posting imbalance correction done at the secretariat where the field reality is not considered in	○ Staff Development needs – HRM/HRD Cell very essential to assess the field staffing requirements based on workload distribution – Headed by CE and assisted by EE's – OWD has to have its own Training Policy – No up-gradation of skills of staff

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		totality – SE should have the flexibility to move staff within the circle depending on the workload – Deficiency in quality of work can only be removed by increased supervision – not though JE's but through skilled supervisors with ITI qualifications. Work-sarkars not suited as do not have any qualifications – Quality audit should be outsourced – independent State Level Monitors should carry out checks – Mandatory mechanism to be put in place for monitoring meetings to be held at CE, SE & EE Levels on monthly basis between 1) all office staff and 2) OWD Officials and contractors – Competency matching not done – staff with knowledge and experience in roads works is assigned building works and vice versa.	– Only limited number of staff are performers and if they are sent for skill up-gradation then who will work and sending the non performers will not benefit OWD – Training participation decided by E-i-C Office through a top-down approach, training needs assessment not done at the field level – Circle / Divisional Head do not know how to carry out training assessment since no regular awareness programmes conducted for them – Computer training held for 50 persons at a time and that too for 1 hour only – how can the participants be expected to apply the learning when they return from training – Induction training should be mandatory – for a duration of six months – Before implementation of each posting, two weeks introductory coaching needed for the transferee before starting in the new work place
8.	SE – Cuttack & EE – Dhenkanal	• Data entry by JE not possible – untrained, has all types of jobs so no time, dependent on data • QUALITY ASSURANCE lacking due to poor quality monitoring by field staff– untrained, have all types of jobs and no time, no vehicle, no data entry operator – Quality Monitoring system needs to be revised on the lines of Rural Department National Quality Monitors -> State Quality Monitors -> for 3rd party Q-Control – Objective - To advise correction and not for punishing individuals • Central and Zonal Labs unable to provide results within specified time, inadequate staff, ill-equipped, current system not working/ desired results not produced - delays of 15-20 days • WORKLOAD DISTRIBUTION - Rethink needed; geographical spread too large, manpower resource too less, no vehicle • HRM/HRD unit essential • Support to JEs very essential – work sarkars concept needs	○ Training on Basic Computer skills is a MUST ○ Technical training needed IN-House, on regular basis ○ Regular periodic (quarterly) lectures on construction advancements / trends needed for JE/AE/EE/SE by visiting faculty ○ Knowledge on design of roads essential for JE/AE/EE ○ Estimation skills using latest techniques not know to field staff. Old method of pen- paper calculations typed estimates pursing due to lack of computer skills/ software knowledge ○ Training on provisions in OWD Code, a/c process strongly needed for all field staff ○ Training to staff needed on all aspects of Tendering - Only 1 person trained on e-procurement, system come to a halt when he's absent ○ Field visit of staff to important projects is also training

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		to be revived – ITI pass outs should be recruited urgently • No VEHICLES available - expected to monitor all field activities **but** – None of the field vehicles in working condition – 140 litres/month for SE's car to cover all Divisions – Hiring of vehicle discouraged by way of too many questions asked as justification – too cumbersome a process so staff avoids – Bills of hired vehicles mostly go unpaid or are endlessly delayed – Staff using personal vehicles are not paid maintenance cost • UTILITY SHIFTING – Lack of support from other departments when it comes to Utility shifting – Field level interdepartmental coordination is zero o Trees – Forest Department o Telephone cables – BSNL o Water lines – PHED o Land issues – Revenue department – None of the above field level agencies care for OWD project outputs, not in direct control of District Collector so he too only requests; success rate at coordination meetings at DC level only 10% – Result - delays in project, means cost escalation – loss to the exchequer – It is suggested to hold planning 1 year in advance at 'all concerned Secretaries' level so that orders can flow down to each department	
9.	SE – Central Circle BBSR	• Replace small buildings with multi-storeyed ones • Design capability missing in OWD • Quality of construction not a issue • Rigid pavements design to be promoted ('water effected' areas - coasts) • Job distribution (workload) is unequal • Unable to control results • Training planning at Secretary's office results in restricted	o Need for new technology o Send staff to China for training - learn about techniques and new construction equipment o No induction programme causes waste o Secretary OWD looks into training needs, as an engineer can decide on type of training o But training planning is incomplete from field point of view

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		budget • HRM/HRD unit essential	
10.	SE –P & D	• Legal – No law officer in OWD – 200-250 establishment cases pending; Tender / contractual cases are separately handled by CE (R) & CE (B) offices – Need a legal cell – headed by OS/ OJS with a law degree • Design Department – Under CE Design – Existing setup includes 5 EE + 15 AE – New entrants include 5 SE + ??? EE – All are post graduate – Well versed with MX Roads – GIS knowledge and skills missing in OWD	○ Training Management – No training budget for OWD so staff sent to NITHE who provide free training – Courses where fee is involved, participation is discouraged E-i-C establishment defines participation level for NITHE courses. – Nomination process takes 15-20 days generally – CE's nominate participants only when asked – No structured training needs assessed – Many times nominations come after the course is over – Participants reached NITHE but communication regarding their nomination had not reached, so they were not allowed participation. – Money for training available only with CE (WB) so his staff can go for training – Q. C. Training done for JE's & AE's by Dy Director Research – Mostly same person sent again and again – One person attends 2 to 3 training per year – No record of training maintained – EE/SE/CE to participate in Executive Management Programmes of 3 to 5 days – FULL TIME TRAINING CELL IS A MUST – headed by SE assisted by 2to3 EE's ○ Career Development – Two exams for technical staff to be cleared once in life time (conducted in June and Dec each year) – Professional exam – Departmental exam – Clearing both exams necessary to facilitate promotion and to get increment benefits – Professional exam conducted by Committee comprising SE & 2 EE's constituted within OWD – Exam on technical aspects through written exam and viva – one design problem has to be solved

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
			- Departmental exam conducted by Revenue Board at Cuttack through Gopabandhu Acadamy of Administration - Exam on 'Laws' through written exam over two days. - The course and context is outdated. - Accounts training for non-gazetted staff at Madhusudhan Institute of Accounts
11.	SE – D & P	• Organizational Development needs - Grass root level needs strengthening; weak link is at the Junior Engineer Level. - Unequal workload distribution causing time and money loss - Two categories among JE's to be created – ▪ Posting based on geographical jurisdiction to cater to O & M works ▪ Specifically posted to cater to projects' needs - All JE's to be provided support by contracted staff with ITI qualifications - EE in consultation with SE should have the man-management powers to be able to transfer JE's based on workload - JE's headquarters can be the Division, with flexibility to be relocated to project location (with a choice to move with or without the family) - Policy level decisions needed to make the above effective - Design and Research cadre should be different - Only those staff with aptitude should be given incentive and be inducted into design cadre - All staff should have minimum 5 years field exposure before they are posted into design wing - Field staff should be regularly updated on understanding of design elements through appropriate training. - Most of the engineering staff time is utilised in administrative tasks - RD & QP should be strengthened by granting it autonomy within OWD	○ Staff Development needs - Due to lack of 'OWD Training policy' training is neither encouraged nor carried out in a planned manner - A proper 'Job Description' document has never been created - There is a need for a workload distribution exercise and a 'Transfer policy' to be evolved - JE's induction is dependent on the reporting officer under whom he works. - Lack of induction training has led to non-uniform knowledge / skill levels - Proper grooming is a must. - Separate levels of training must be defined for all engineers, from JE's to CE's

S. No.	OWD Official	Discussion Points	
		Management issues	**Human Resource Development issues**
		- It should be converted into an institute with the mandate to train OWD Staff - Staff and infrastructure should be added to RD & QP - It should have a parallel independent QC organizational structure / wing at the division level to handle quality control – separate team of EE's, AE's and JE's depending on the quantum of project work - 3rd party independent QC through 'state level quality control monitor' was experimented but failed. - In-house 3rd party independent QC through RD & QP will work better - Technical personal handling establishment or court matters is not working - There should be a separate team of specialised OSD's to handle establishment or court matters at Division, Circle and at CE's office. - The numbers can vary depending on the workload	

All EE's & AE's Design Wing (12.03.2013)

- Work Place Issues
  - Execution of work not in time due to insufficient Infrastructure; Insufficient Manpower
  - Don't have sufficient printers or plotters
  - Lack of incentives – for design people (promotion)
  - Proper software is not available for bridge design
  - Updating the available technology and incorporating new one is not done
  - New technologies need to be introduced
  - Insufficient (Draftsmen) staff for preparation of the building drawings after completion of the design
  - Even if the drawings are completed, the printer facility (plotter) is not available.
  - No guidance for design of bridges; Need expert Training
  - Insufficient staff - there should be at least -2 EEs for preparation of building design and drawings; each EE supported by 5 AE's.
  - There should be at least 6 diploma engineers with AutoCAD knowledge for preparation of drawings
  - No coordination between Architecture, Design and implementation units; The Architects and designers should meet at least once in a week for discussions.
  - Incentive for Design Engineers which has not been released should be released.
  - No good library
  - No guidance/training about the design; non availability of hardware and software training
  - All members of the Wing need proper motivation - Incentives & liberty to work
  - Flexibilities in working should be provided
  - Non availability of data from field.
  - Lack of accuracy in field data like soil exploration - Design Team should be an autonomous body collecting data (investigation) feedback from field using own personals under OWD.
  - Soil exploration should be done accurately under direct control of the autonomous body of OWD i.e. reintroduce "investigation circle"
  - Design wing should be equipped with software as well as hardware so that timely production of drawing can be done
  - Proper training should be imparted to the design team to have sufficient exposure.
  - CADD Engineers with a focused knowledge should be recruited so that structural drawing can be produced in time.
  - Lack of awareness on Establishment aspect, updating with new Innovations.
  - Current practice to be changed
- Training Needs
  - No orientation programme for the new comer - need to have a training programme before joining the design wing.
  - Exposure to new type of bridge design by experts from different organization is needed
  - Training required for different type of new bridges every year
  - Sufficient study materials (Books, codes, hard books etc) should be provided to us
  - We should get a chance to visit the bridge we have designed, so that we can know what are the lacunas in our design process.
  - Provision for higher studies should be there in design wings for the design engineers (M.Tech, P.H.D in structural design)
  - Training needs to be imparted on a regular basis
  - A regular training session for the engineers
  - Training regarding the technical part and knowledge of updated software for design purpose should be provided
  - Doubt clearing classes to be held twice in a year

- Training needed on design of bridges and buildings by using proper software.
- Frequent training programmes to upgrade knowledge
- Design Engineers should be permitted to visit the field
- Training inside the country and abroad should be imported to officers
- Training to Structural Engineers is very essential to upgrade the knowledge imparts confidence for creativity & innovation
- Technical Training in buildings design may be provided at I.I.Ts
- Training particularly in highways, buildings should be provided abroad to have sufficient exposure.
- Training to be given on
  - Soil exploration
  - Laboratory testing
  - Field test like plate load test , pile load test etc
  - Investigation and planning of Surveys
  - Designing structure like in China.
  - solid/ liquid and gas waste management
- Selection of site to execute work based on the technology
- Acceptance of mathematical modelling
- Interaction with the engineers who have earlier designed/executed such projects
- Visit to sites
- Opportunity to execute at least one project, he/she designs
- Allowing to visit other state design cells

- Vision for Design Wing
  - Design Wing will be taken more seriously and become an important part of the Works Department
  - A high-tech design wing with all the latest State of the Art technologies made available
  - If all the requirements as discussed will be fulfilled then the capability shall be doubled (but it depends on the individual).
  - The design capacity can be increased to three times if all facilities extended
  - If all the above issues will be fulfilled, then the productivity of a Engineer will be increased many fold
  - If infrastructure is improved, 300 nos buildings can be designed per year.
  - Currently 70 Buildings, 20 Bridges designed per year but with the availability of all resources, we can increase the output by 100%

JE's - Puri Sub Division (18.04.2013)

- Tasks performed
  - Survey for planned works
  - Preparing estimates of works
  - Quantity monitoring
  - Quality monitoring
  - Personally monitoring maintenance of old buildings
  - Paperwork related to billing
  - Calculate and Certify 'Fair Rent rate' for hire of Govt. Assets
  - Participation in protocol and meetings
  - Participation in removal of unauthorised construction on OPWD land
  - Marking of right of way on acquired land
  - Authenticating/Supervising soil investigation
  - Chasing utility shifting
  - Design of petty and minor works (less than 10 lacks)
- JE's not able to monitor quality of work
- Work verses time not in sync
- Workload distribution – 30 % time in estimate preparation, paperwork related to billing, 35% monitoring of new works, maintenance works, taking measurements, 35% in protocol and meetings.
- Per year 1 JE monitors –
  - 4 new building projects and maintenance work worth 1 crore;
    or
  - 50 km road construction and maintenance work worth 1 to 4 crore
- Lack of time for proper monitoring causing quality loss
- Lack of proper monitory compensation is a disincentive
  - Have to use own vehicle for movement
  - Compensated with Rs. 350/- PM
  - No provision for hiring of vehicles
- Suggested remedies
  - Make quality a responsibility of contractor
  - Make separate quality monitoring unit at Division level
  - Equip them with field testing equipment (NDT)
  - Provide lab at Circle level
  - Build in cost of quality monitoring (vehicle cost) in the project cost
  - OPWD Rotational Transfer policy (3 years for all staff) should be implemented without any exceptions
- Multiple petty works / projects purposely broken to worth of less than Rs. 50, 000/- under MLA funds consuming majority of JE's time and is a major cause for corruption; JE's feel trapped in between 'To do or Not to do'
- Tendering must be made compulsory for such works
- Works of emergent nature should be decided by EE
- No training received at the time of entry in OPWD (no induction training)
- No selection mechanism of trainees - Nominations whimsical – names arbitrarily picked
- Training undertaken does not match with the job requirement e.g. CAD bridge design training received at NITHE of no use on return, further no hardware ware or software of the acquired knowledge
- Training on construction related topics (e.g. pile foundation, multi story building construction) not available.
- Need for computer training for all

- Need for training on commonly used design software
- Need for Computer (DTP) Operator with ability to use design software is needed at every circle/div/sub-div level.
- SE may be entrusted to liaise/ follow up and made responsible for all land acquisition and utility shifting
- For improving land acquisition works, as well as removal of encroachments, services of 'AMIN' are required at circle level.
- PHE (Sanitary) works related to buildings should be under the division.
- Only one – to – one interaction with EE, no quarterly / annual coordination meeting held at the division level.
- Awareness sessions on AoR should be held at Division level – only field staff travels to HO, never the other way round.

AE's, JE's – Sambhalpur (23.04.2013)

- Work done by PPP project contractors is sub standard, using poor grade material; there are no quality checks
- Such examples of poor quality work/material usage by PPP contractors are quoted by regular contractors, questioning the AE's, JE's demand for quality.
- Political pressure w.r.t. early completion of projects is a major cause for poor quality.
- Political interferences in planning is understandable, but interference in work is demotivating
- Local contractors, mostly with political links, monopolize; have formed cartels and don't allow outsiders
- JE's overloaded with unending work, before the earlier projects have completed, new work is assigned, practically on a daily basis
- No support available for JE's – work sarkars are a dying cadre – assistance desperately needed in the form of more JE's or supporting ITI's
- No vehicle available for supervision of work.
- Forced to use own vehicle – Rs. 350/- pm reimbursed to R&B staff, but not for staff working on NH roads. No vehicle maintenance cost paid
- As per code/ past practices, geographical jurisdiction is resulting in unequal distribution of work
- Transfer to neighbouring sub-division where the workload is more in quantum should be allowed and be implemented at the SE level
- A separate team is needed for quality monitoring at the division level / circle level
- Inspection vehicle with trained staff along with all field test equipment should be made available to the team
- Targets defined in 'iOTMS' have no meaning if resources are not provided – staff + equipment.
- Targets unrealistic since they don't consider contractors incompetence
- Contractor's equipment is certified at EE/SE/CE level – these are mostly defunct/outdated but such anomalies cannot be reported by AE's /JE's or else have to face reprimand
- Contractors never post Technical staff on site even though it is mandatory. Again, such a complaint labels AE's or JE's as trouble makers and face rebuke from political masters and seniors.
- Contractor's complaint against AE's or JE's carries more weight hence no one bothers to lodge any complaint
- Senior retired OPWD staff get hired by Contractors which makes it impossible to counter their actions.
- Technical awareness and understanding of specifications among OPWD - AE's or JE's is also not upto the mark. This has resulted due to lack of awareness programmes being conducted on a regular basis - no training sessions held.
- OPWD - AE's or JE's are fabricating field test results e.g. test results quoted go beyond the upper limit prescribed by standards/codes
- Need for change in tendering system ?????
- AoR last updated 2006 need to be revised to keep pace with current work practices
- Cases available where there is no clarity since in a same location NH road, State Highway and NABARD road with same specifications follow three different AoR's
- SoR specifies market rates to be collected from three (3) manufacturers from Odisha only. No manufacturer ready to share company cost since it is against their marketing policy and disturbs their market distribution system
- There are many ambiguities in the SoR, but these never get discussed.
- Posts of 'Estimators' at many Sub Divisions are lying vacant without staff being posted
- No clarity on transfer policy, its implementation is flawed

- No incentive for AE's or JE's to do a professional job, in reality it's the opposite. Too many masters and the blame is always on JE's
- Volume of paperwork work is too large to be able to spend time in the field
- Number of works per AE / JE has become unmanageable.
- No incentive for career growth – even if one gets higher qualifications there is no avenue for promotion.
- JE's enter the organization and retire as JE's
- No coordination/planning meetings held to discuss/resolve issues either at the Division level or Circle level.
- The time clause in project agreements/schedules is erroneous and has been inserted to reduce escalation without taking practical worksite reality into account. ????????
- There is a major mismatch in clauses like '%' work progress being equated to '%' financial expenditure.
- It is expected that surveys will be carried out by total stations, however the reality is that OPWD does not have these equipment and only old defunct unusable dumpy levels are available. No independent checking of work carried out by survey contract can be done
- There is an immediate need for new equipment and
- Following training are a 'must' for all -
  - All Surveys
  - Soil investigation
  - E-nirman
  - Web training with Net connectivity provided to all
  - RTI training at division level
- Training on computers with both software and hardware being made available. Each JE should be equipped with a laptop.
- Current work is 25% Engg. Skills and 75% management skills. Training needed in both
- AE's, JE's have no Legal awareness. Urgent need for programmes
- Create a separate 'Bridge inspection and Rehabilitation unit in OPWD
- Vigilance department should be housed within OPWD and should be a preventive vigilance not a post-mortem department. First investigation on the basis of any complaint should be done at the Division level
- At the age of fifty (50) JE's field work should be lessened and should be provided with an interest free loan to purchase a vehicle for carrying out the field work assigned to him.

AE's, JE's – Brahmapur (27.04.2013)

- Number of works and value of works handled by each JE and AE has to be rationalized urgently.
- Field staff numbers verses workload is absolutely disproportionate.
- Quality of work will not improve till a separate quality control unit is established at the Division Level.
- Third party quality checking is essential.
- Current contractor selection process is the cause for poor quality work. Those bidding (-) 20 to 25%, lesser that the estimate in the BoQ end up winning the contract and use sub standard material & methods to make profits.
- Selection of contractors and defining their responsibilities need to be re-assessed by higher management ; Delink works from political interference.
- **Suggestion**: apply pre tendering process; empanel shortlisted contractors; revise list every year.
- JE cadre urgently need to supported by
  - Rationalization of Geographical jurisdiction
  - Support in the form of trained ITI staff (work sarkars) under them for continuity in site quantity/quality monitoring
  - Vehicles for regularity in site inspection
  - Technical training on each aspect of their job
  - Upgraded equipment for site inspection
- Work quality will improve if SE & EE's make frequent site inspection visits; including surprise visits to site.
- There should be strict action against errant contractors; penalty should be linked to their payment to force them to improve work quality.
- Works valued at Rs. 50,000/- should either be totally stopped and the limit should be raised to works valued at a minimum of Rs. 5,00,000/-
- Power to split value of work should be withdrawn from the EE level.
- AE's delegated by EE's to be on 'Site Selection Committee' under Sub Collector have been questioned since this is not as per the Office order/ OPWD Code.
- No contractor prepares 'Traffic Management Plan' and no one insists for it at the SE/ EE level.
- Quarry selection and approval has to been done periodically and 'Quarry locations list' updated by Revenue Department. SE's office to take the initiative since this causes undue delay in sourcing of material.
- It is becoming increasingly difficult for JE's to manage day-to-day URGENT demands of Collectors /Bureaucrats – each work has to be treated as an emergency work or else have to face reprimand.
- Strong perception prevails that SE & EE do not protect the AE's & JE's, like is the case in Revenue Department/ Home Department where seniors take care of their juniors. There is no team spirit at the field level.
- Work Target setting needs to be rationalized based on staff strength and available resources.
- Miscellaneous items under SoR have not been revised since 2006; SoR needs to be updated immediately
- AoR assumes labour input of 8 hours; this is far from reality. (Re 1/- rice ???????)
- Labour actually available at current market rates is much higher than the cost of labour as per 'minimum wage act', figures available in AoR / SoR.
- Main cause for project overrun is the lack of timely support to JE's from the Revenue Department staff. Takes minimum of 5-6 repetitive visits for one work to be accomplished; but the blame comes on JE.
- There should be one AMIN attached to EE's office at the Division level
- EE should be authorised to exercise eviction powers.

- SE is authorised for sanctioning extra items valued up to 1 lack, EE has no powers and this causes delays
- Non-scheduled items like door shutters, furniture should be approved by EE
- Works awarded, but not begun due to land acquisition problems, end up getting extension of time which leads to higher cost differential and ultimately problems for field staff
- Contractors never deploy engineering staff on site. Same engineering staff names feature in multiple contract document of different contractors.
- Communicating instructions to non-technical staff/contractors leads to lack of understanding and hence impacts quality of work.
- All JE's / AE's should be provided with computer training and be given a laptop; each revenue inspector has been provided with a laptop by their department.
- No meetings conducted by EE to monitor work progress or solve issues. Need for 2-3 meeting per month separately with AE/JE's and jointly with respective contractors.
- Currently, all JE's / AE's are totally de-motivated and there is no team spirit.
- Any good work done by JE's / AE's goes unrewarded; only reprimand received.
- Meeting like the one held should be an annual feature.

AE's, JE's – Head Office (02.05.2013)

- Getting data from field divisions on time is never possible – Reason: lack of sufficient staff
- Data received from field divisions is not reliable, mostly it is fabricated figures – Reason: lack of trained staff
- Only AE's and JE's are made responsible for delivering work quality; CE's, SE's, & EE's are never accountable
- Lack of clarity in job description at every level.
- Workload distribution is biased and uneven.
- Unrealistic targets are thrust on AE's and JE's without a consultative process
- Political interference and pressures leading to disinterest /demotivation among staff leading to poor quality of work
- Due to low staff numbers AE's at Head office do not get proper technical and administrative support.
- Each AE is reporting to 3-4 EE's leading to confusion in work output
- Poor output in the field or at Head office is a result of poor man-management
- AE's should be assigned some financial powers as EE's and 'decision making' by them should be encouraged.
- Field staff should be provided protection (professional indemnity) and their freedom to act should be assured.
- JE's are over loaded with work, some of the work should be undertaken by the AE's.
- Facts about ISAP not known to AE's / JE's in the field units (only AE's from PMU had heard of it but didn't know the details)
- Work being undertaken under ISAP, RSID, Asset Management Project, IT-ICT should be publicized in the media to make general public aware of the efforts towards change
- NO HOPE FOR CHANGE IN OWD
- There is no reward or incentive system prevalent to appreciate good work done by AE's or JE's
- Only AE's and JE's face punitive action
- Transfer policy is never implemented leading to stagnation / frustration
- No avenue of promotion among JE's.
- Those JE's completing degree should be promoted to AE level after serving a defined period.
- All staff should be trained in use of internet and use of email should be made compulsory
- All AE's and JE's should go through a refresher course on every aspect of the their job profile
- New staff should be recruited and be given induction training
- Lack of computer literacy among most JE's adds to further pressure on AE's
- Right person for the right job principle should be put to practice
- Need to improve overall communication system of OWD
- OPWD Code has not be published since a long time it needs to be modified and revised regularly.
- There should be separate teams for investigation, conducting survey, estimation, execution, quality control functions instead of one team performing all functions.
- Training for AE's/ JE's is essential on following topics-
  - Real time monitoring of projects
  - Contract and Project Management
  - MS Office
  - MX Road software
  - Auto Cad
  - Estimation software to check detailed estimation/ calculation
  - Quality control
  - Soil testing
  - Survey using latest equipment

- Field quality testing equipment
- New civil engineering design methods and construction techniques
- Properties of new construction materials
- Establishment matters
- Administrative systems of OWD – File movement - JE’s to AE’s to EE’s
- Government’s accounting system
- R & R policies, principles, activities and conflict resolution
- Social and Environment impact study

Annexure 4

Competency survey for assessing the training needs of OWD:

NOTES:

OWD has undertaken Road Sector Institutional Development and as part of the project, OWS Staff Training and Human Resource Development is a key component. Accordingly, this competency survey will contribute towards assessing the needs of the organization.

The objective of this exercise is to map the present and required competency of staff at various levels through this questionnaire based self assessment survey. Your participation will help in assessing the training needs of OWD. The attached matrix is briefly described below:

- **'Key Functional Areas'** have been listed which cover almost all the tasks performed by staff in OWD. Some of these key **'Key Functional Areas'** are being explained to help in understanding and completing the exercise, these are:
    - Policy and Planning: These functions pertaining to OWD are performed at the S.E. level and above.
    - Strategic Planning: This includes preparation of Master Plan of Roads for the State of Odisha. Likewise, preparation of Master Plans for Buildings (public buildings like Hospitals, staff quarters, Schools, Govt. Offices, etc.) form part of strategic planning.
    - Quality policy: It is yet to be instituted formally within OWD.
    - Communication Skills: Includes written and verbal skills.
    - Management skills: Will cover a vast scope comprising leadership, planning, organization, staffing and control.
    - Motivation: Work challenges, professional recognition and rewards
    - Variations: These are deviations from the BoQ for items and/or quantities including substituted items
    - Computer Application: Use of MS Word, MS Excel, MS PowerPoint and internet mailing for day-to-day work
    - F.I.D.I.C. Contracts: Standard procurement bid documents prescribed by International Funding Agencies like World Bank.
- Any additional **'Key Functional Areas'** which may have been missed, can be included in the list.
- Column headings under Section A has four competency measures in the ascending order, these are defined as:

	Competency measure	**Definition**
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use
IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

- Also assessed under this exercise is the usage aspect as indicated in Column headings under Section B, i.e.
    - of having worked in the key functional area in the past or
    - working in a specific area at present and
    - the possibility of working in the key functional area in future.

Please put a tick (√) in the appropriate cell of the matrix. If none are applicable, leave the cells blank.

Putting your name at the end of the format is 'optional', your honest feedback will help in preparing correct training plans for OWD staff.

Competency survey:

	Competency measure	Definition
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use
IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

Please put a tick (√) in the appropriate cell. If none are applicable, leave the cells blank. Any additional 'Key Areas' which are to be included in the list, can be added under S. No. 14

	Key Functional Areas	Section A				Section B		
		Awareness	Exposure	Basic Knowledge	Ability to work	Worked in Past	Working Presently	Likely to work in future
1	**Policy and Planning**							
	Strategic Planning (Master Plan: Roads, Buildings, etc)							
	Quality Policy and systems							
	Budgeting Process (Preparation, Control and Outcome)							
	Prioritisation of Investments							
	Phasing of Investments							
	Public / Private Sector Participation							
2	**Personnel Management**							
	Communication skills							
	Management skills							
	Decision-making							
	Right to Information (RTI)							
	Performance appraisal							
	Monitoring skills							
	Motivation							
	Service conditions							
3	**Project Management**							
	Preparation of Work Program							
	Staffing & assigning responsibilities							
	Monitoring Physical Progress of Work							
	Monitoring Financial Requirement for Work							
	Construction Procedure and Methodology							
	Specification							
	Material Testing							
4	**Project Preparation**							
	Field surveys							
	Geometric design							
	Pavement design							
	Traffic and transport Engineering							
	Road Safety							
	Storm water drainage design							

	Key Functional Areas	Section A				Section B		
		Awareness	Exposure	Basic Knowledge	Ability to work	Worked in Past	Working Presently	Likely to work in future
4	**Project Preparation (Contd..)**							
	Bridge design							
	Culvert design							
	Building design – Multi-storeyed							
	– Simple buildings							
	Cost estimation							
	Analysis of Rates / Schedule of Rates							
5	**Environmental and Social Management**							
	Land acquisition							
	Rehabilitation & Resettlement issues, social assessment							
	Environmental assessment							
	Utility shifting management							
6	**Construction and Supervision**							
	Preconstruction							
	- Design review							
	- Data Collection							
	Review of Construction Management Plan							
	Undertaking Inspections and Tests							
	Review / Reporting of Physical Progress							
	Review / Reporting of Financial Progress							
	Assessment of Quality of Works							
7	**Contract Management**							
	Work Program and Time Management							
	Cost Control							
	Variations							
	Dispute Resolution and Arbitration							
8	**Quality Management**							
	Quality Assurance							
	Quality Control							
	Quality Auditing							
9	**Safety Aspects**							
	During Construction							
	During Maintenance							
	During Operation							
10	**Information Technology**							
	Computer applications – M S Office, Web etc.							
	Computer applications – Auto CAD, MX Roads, STAAD							
	GIS application for planning							
	e-Governance							
	Management Information System (HRMIS)							
	Project Management – Prima Vera, M S Projects							
11	**Financial Management & Systems**							
	Management of financial instruments and Tax aspects							

	Key Functional Areas	Section A				Section B		
		Awareness	Exposure	Basic Knowledge	Ability to work	Worked in Past	Working Presently	Likely to work in future
11	**Financial Management & Systems (Contd..)**							
	Financial MIS – IOTMS and WAMIS							
	Delegation of financial powers							
	Application of OWD code							
	Accounts Audit							
12	**Procurement Management**							
	FIDIC Contracts							
	BOT/PPP Contracts							
	NCB / State Government procedure							
	e-procurement							
13	**Maintenance**							
	Identification and assessment of pavement distress							
	Condition survey and Bldg maintenance management							
	Periodic Maintenance / Routine Maintenance planning							
	Proposal preparation for Maintenance Requirement							
14	**Others**							
	Disaster preparedness							
	Legal aspects							
	Public relation							
	Misc. public services							
	- issue of N.O.C.(OFC cables, fuel pumps etc.)							
	- calculating 'Fair rent'							
	Knowledge of updated codes (e.g. NCB, IRC, BIS)							
	Inter-Departmental Coordination							

I have identified the following areas/s of improvement for myself and would like to be trained accordingly (also narrate how the new skills will help in your job performance):		
1		
2		
3		

Name: _____ *(Optional)*

Designation: _____ **Division** _____

You are requested to ensure that the filled formats reach the office of **Chief Engineer (WBP),** Office of the EIC (c), Odisha, Nirman Soudha by February 15, 2013.The formats may be delivered directly to Mr. Rashmi Ranjan Bohidar, Superintending Engineer In-charge (ISAP), PMU, World Bank Projects.

Annexure 5

Competency survey: Executive Engineers responses (19)

	Competency measure	Definition
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use
IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
1	**Policy and Planning**															
	Strategic Planning (Master Plan: Roads, Buildings, etc)	11	58	9	47	7	37	11	58		8	42	4	21	9	47
	Public / Private Sector Participation	8	42	2	11	2	11	6	31		1	5	1	5	6	31
	Budgeting Process (Preparation, Control and Outcome)	11	58	5	26	4	21	9	47		7	37	3	16	9	47
	Prioritisation of Investments	8	42	1	5	1	5	7	37		0	0	3	16	7	37
	Phasing of Investments	7	37	1	5	1	5	7	37		0	0	3	16	7	37
	Quality Policy and systems	11	58	9	47	9	47	12	63		8	42	9	47	10	53
2	**Project Preparation**															
	Field surveys	7	37	7	37	7	37	12	63		9	47	6	31	6	31
	Geometric design	10	53	10	53	9	47	16	84		10	53	6	31	10	53
	Land acquisition	7	37	8	42	4	21	8	42		7	37	7	37	5	26
	Utility shifting management	10	53	8	42	11	58	11	58		9	47	8	42	10	53
	Pavement design	10	53	10	53	10	53	16	84		10	53	7	37	11	58
	Traffic and transport Engineering	10	53	9	47	9	47	13	68		9	47	5	26	10	53
	Road Safety	6	31	7	37	6	31	8	42		7	37	5	26	5	26
	Storm water drainage design	9	47	9	47	8	42	11	58		6	31	3	16	9	47
	Bridge design	11	58	8	42	6	31	11	58		5	26	5	26	8	42
	Culvert design	10	53	10	53	8	42	14	74		7	37	7	37	9	47
	Building design – Multi-storeyed	12	63	10	53	7	37	13	68		7	37	4	21	9	47
	– Simple buildings	7	37	5	26	5	26	8	42		4	21	4	21	5	26
	Cost estimation	10	53	9	47	9	47	12	63		9	47	7	37	8	42
	Specification	12	63	11	58	13	68	14	74		12	63	10	53	9	47
3	**Environmental and Social Management**															
	Rehabilitation & Resettlement issues, social assessment	12	63	8	42	5	26	9	47		6	31	4	21	9	47
	Environmental assessment	12	63	6	31	6	31	9	47		5	26	4	21	9	47
4	**Procurement Management**															
	FIDIC Contracts	7	37	9	47	3	16	3	16		4	21	3	16	11	58
	BOT/PPP Contracts	7	37	5	26	4	21	4	21		2	11	1	5	9	47
	NCB / State Government procedure	11	58	12	63	9	47	9	47		9	47	5	26	9	47
	e-procurement	5	26	3	16	4	21	6	31		4	21	6	31	4	21

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
5	**Project Management**															
	Preparation of Work Program	11	58	9	47	12	63	14	74		10	53	10	53	9	47
	Staffing & assigning responsibilities	11	58	10	53	11	58	13	68		10	53	11	58	8	42
	Construction Procedure and Methodology	11	58	13	68	12	63	12	63		12	63	11	58	9	47
	Monitoring Physical Progress of Work	11	58	11	58	13	68	14	74		12	63	11	58	11	58
	Monitoring Financial Requirement for Work	10	53	10	53	8	42	11	58		11	58	9	47	7	37
6	**Construction and Supervision**															
	Preconstruction															
	- Design review	11	58	8	42	7	37	13	68		8	42	5	26	9	47
	- Data Collection	11	58	8	42	8	42	14	74		8	42	6	31	9	47
	Review of Construction Management Plan	11	58	8	42	8	42	12	63		8	42	9	47	8	42
	Assessment of Quality of Works	9	47	8	42	10	53	14	74		9	47	13	68	9	47
	Material Testing	12	63	12	63	13	68	14	74		11	58	14	74	11	58
	Undertaking Inspections and Tests	11	58	11	58	12	63	16	84		10	53	13	68	11	58
	Review / Reporting of Physical Progress	11	58	11	58	11	58	15	79		11	58	8	42	10	53
	Review / Reporting of Financial Progress	9	47	8	42	9	47	13	68		9	47	8	42	9	47
7	**Contract Management**															
	Work Program and Time Management	10	53	10	53	9	47	12	63		9	47	8	42	10	53
	Cost Control	8	42	8	42	7	37	10	53		9	47	7	37	9	47
	Variations	8	42	8	42	7	37	10	53		9	47	7	37	8	42
	Dispute Resolution and Arbitration	4	21	6	31	3	16	5	26		5	26	5	26	8	42
8	**Quality Management**															
	Quality Assurance	7	37	7	37	8	42	11	58		8	42	10	53	7	37
	Quality Control	7	37	6	31	7	37	11	58		8	42	11	58	7	37
	Quality Auditing	10	53	11	58	12	63	11	58		8	42	12	63	11	58
9	**Safety Aspects**															
	During Construction	11	58	9	47	12	63	12	63		6	31	7	37	7	37
	During Maintenance	10	53	8	42	11	58	11	58		6	31	7	37	8	42
	During Operation	10	53	7	37	10	53	10	53		4	21	6	31	8	42
10	**Financial Management & Systems**															
	Management of financial instruments and Tax aspects	8	42	7	37	4	21	5	26		5	26	4	21	5	26
	Financial MIS – IOTMS and WAMIS	5	26	6	31	4	21	7	37		3	16	8	42	3	16
	Delegation of financial powers	8	42	9	47	8	42	10	53		8	42	7	37	7	37
	Application of OWD code	6	31	7	37	7	37	10	53		6	31	8	42	4	21
	Accounts Audit	7	37	9	47	7	37	9	47		6	31	3	16	7	37
11	**Maintenance**															
	Identification and assessment of pavement distress	10	53	9	47	11	58	12	63		6	31	6	31	1	5
	Condition survey and Bldg maintenance management	6	31	5	26	6	31	8	42		3	16	6	31	5	26
	Periodic Maintenance / Routine Maintenance planning	11	58	9	47	10	53	12	63		8	42	7	37	9	47
	Proposal preparation for Maintenance Requirement	11	58	9	47	10	53	13	68		8	42	8	42	10	53

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
12	**Other tasks**															
	Performance appraisal	11	58	12	63	12	63	14	74		11	58	15	79	7	37
	Disaster preparedness	9	47	10	53	7	37	9	47		6	31	2	11	8	42
	Legal aspects	8	42	11	58	6	31	6	31		5	26	3	16	8	42
	Analysis of Rates / Schedule of Rates	6	31	5	26	7	37	8	42		6	31	7	37	4	21
	Public relation	5	26	6	31	5	26	8	42		5	26	7	37	4	21
	Misc. public services	2	11	0	0	3	16	3	16		2	11	2	11	3	16
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	6	31	6	31	7	37	9	47		6	31	7	37	5	26
	- calculating 'Fair rent'	6	31	6	31	8	42	9	47		6	31	8	42	4	21
	Inter-Departmental Coordination	7	37	6	31	7	37	8	42		6	31	7	37	6	31
13	**Information Technology**															
	Computer applications – M S Office, Web etc.	12	63	9	47	9	47	12	63		7	37	13	68	8	42
	Computer applications – Auto CAD, MX Roads, STAAD	3	16	1	5	4	21	2	11		1	5	2	11	8	42
	GIS application for planning	4	21	4	21	8	42	2	11		1	5	3	16	6	31
	Project Management – Prima Vera, M S Projects	4	21	5	26	3	16	1	5		0	0	0	0	9	47
	e-Governance	4	21	5	26	3	16	5	26		1	5	2	11	9	47
	Management Information System (HRMIS)	2	11	4	21	4	21	1	5		0	0	1	5	8	42
14	**Personnel Management**															
	Communication skills	11	58	13	68	11	68	14	74		10	53	11	58	10	53
	Management skills	11	58	12	63	11	58	13	68		9	47	12	63	8	42
	Decision-making	10	53	11	58	11	58	13	68		10	53	13	68	9	47
	Right to Information (RTI)	11	58	13	68	12	63	13	68		11	58	15	79	10	53
	Monitoring skills	9	47	7	37	7	37	11	58		7	37	11	58	6	31
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	7	37	6	31	7	37	8	42		5	26	8	42	7	37
	Motivation	11	58	11	58	11	58	12	63		10	53	14	74	8	42
	Service conditions	9	47	9	47	10	53	10	53		7	37	11	58	7	37

Annexure 6

Competency survey: Assistant Engineers response (32)

	Competency measure	Definition
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use
IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
1	**Policy and Planning**															
	Strategic Planning (Master Plan: Roads, Buildings, etc)	7	22	5	16	9	28	7	22		7	22	3	9	5	16
	Public / Private Sector Participation	7	22	2	6	2	6	2	6		2	6	0	0	4	13
	Budgeting Process (Preparation, Control and Outcome)	7	22	2	6	3	9	1	3		0	0	1	3	8	25
	Prioritisation of Investments	6	19	3	9	2	6	3	9		0	0	1	3	4	13
	Phasing of Investments	6	19	3	9	2	6	5	16		0	0	0	0	6	19
	Quality Policy and systems	6	19	5	16	4	13	4	13		2	6	2	6	4	13
2	**Project Preparation**															
	Field surveys	5	16	6	19	5	16	19	59		10	31	10	31	6	19
	Geometric design	6	19	5	16	7	22	15	47		8	25	6	19	10	31
	Land acquisition	9	28	4	13	8	25	7	22		3	9	5	16	6	19
	Utility shifting management	11	34	4	13	9	28	6	19		3	9	4	13	9	28
	Pavement design	6	19	4	13	9	28	16	50		8	25	9	28	10	31
	Traffic and transport Engineering	6	19	3	9	9	28	13	41		6	19	7	22	13	41
	Road Safety	3	9	2	6	8	25	7	22		3	9	5	16	4	13
	Storm water drainage design	6	19	2	6	15	47	5	16		1	3	2	6	12	38
	Bridge design	7	22	4	13	13	41	5	16		3	9	2	6	14	44
	Culvert design	4	13	2	6	9	28	9	28		4	13	5	16	12	38
	Building design – Multi-storeyed	4	13	6	19	15	47	6	19		1	3	2	6	12	38
	– Simple buildings	4	13	2	6	11	34	6	19		4	13	7	22	10	31
	Cost estimation	5	16	4	13	7	22	21	66		12	38	16	50	10	31
	Specification	5	16	4	13	3	9	22	69		9	28	19	59	4	13
3	**Environmental and Social Management**															
	Rehabilitation & Resettlement issues, social assessment	11	34	6	19	6	19	4	13		2	6	1	3	10	31
	Environmental assessment	11	34	4	13	6	19	1	3		1	3	0	0	11	34
4	**Procurement Management**															
	FIDIC Contracts	5	16	4	13	2	6	2	6		2	6	1	3	7	22
	BOT/PPP Contracts	7	22	3	9	0	0	0	0		0	0	0	0	6	19
	NCB / State Government procedure	5	16	3	9	4	13	3	9		1	3	2	6	6	19
	e-procurement	6	19	4	13	4	13	6	19		1	3	2	6	4	13

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
5	**Project Management**															
	Preparation of Work Program	5	16	4	13	4	13	17	53		8	25	14	44	6	19
	Staffing & assigning responsibilities	4	13	2	6	5	16	15	47		6	19	14	44	4	13
	Construction Procedure and Methodology	5	16	2	6	3	9	21	66		7	22	17	53	5	16
	Monitoring Physical Progress of Work	5	16	5	16	5	16	20	63		9	28	17	53	6	19
	Monitoring Financial Requirement for Work	11	34	2	6	3	9	17	53		6	19	15	47	6	19
6	**Construction and Supervision**															
	Preconstruction															
	- Design review	9	28	3	9	7	22	12	38		4	13	6	19	7	22
	- Data Collection	6	19	3	9	4	13	17	53		4	13	8	25	5	16
	Review of Construction Management Plan	4	13	3	9	3	9	17	53		4	13	6	19	6	19
	Assessment of Quality of Works	5	16	5	16	4	13	20	63		7	22	15	47	5	16
	Material Testing	4	13	3	9	5	16	22	69		10	31	15	47	6	19
	Undertaking Inspections and Tests	5	16	5	16	5	16	19	59		8	25	15	47	3	9
	Review / Reporting of Physical Progress	5	16	3	9	4	13	19	59		10	31	16	50	4	13
	Review / Reporting of Financial Progress	5	16	5	16	4	13	20	63		11	34	17	53	4	13
7	**Contract Management**															
	Work Program and Time Management	9	28	4	13	7	22	17	53		6	19	10	31	10	31
	Cost Control	8	25	5	16	7	22	11	34		4	13	7	22	10	31
	Variations	7	22	2	6	12	38	9	28		6	19	6	19	10	31
	Dispute Resolution and Arbitration	7	22	4	13	7	22	7	22		4	13	3	9	11	34
8	**Quality Management**															
	Quality Assurance	6	19	3	9	4	13	17	53		6	19	7	22	4	13
	Quality Control	5	16	3	9	4	13	17	53		7	22	10	31	4	13
	Quality Auditing	10	31	2	6	6	19	7	22		3	9	3	9	5	16
9	**Safety Management**															
	During Construction	6	19	5	16	6	19	17	53		6	19	12	38	7	22
	During Maintenance	6	19	4	13	6	19	17	53		6	19	12	38	7	22
	During Operation	5	16	4	13	6	19	13	41		5	16	12	38	7	22
10	**Financial Management & Systems**															
	Management of financial instruments and Tax aspects	6	19	4	13	3	9	2	6		1	3	1	3	4	13
	Financial MIS – IOTMS and WAMIS	7	22	4	13	3	9	1	3		0	0	0	0	4	13
	Delegation of financial powers	4	13	7	22	3	9	3	9		0	0	2	6	6	19
	Application of OWD code	3	9	7	22	5	16	7	22		3	9	6	19	5	16
	Accounts Audit	8	25	3	9	3	9	3	9		1	3	2	6	3	9
11	**Maintenance**															
	Identification and assessment of pavement distress	4	13	3	9	6	19	18	56		5	16	12	38	7	22
	Condition survey and Bldg maintenance management	3	9	3	9	8	25	17	53		5	16	11	34	4	13
	Periodic Maintenance / Routine Maintenance planning	5	16	5	16	4	13	22	69		6	19	15	47	7	22
	Proposal preparation for Maintenance Requirement	6	19	4	13	4	13	19	59		6	19	13	41	6	19

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
12	**Others tasks**															
	Performance appraisal	8	25	5	16	7	22	18	56		6	19	11	31	5	16
	Disaster preparedness	8	25	2	6	3	9	5	16		1	3	3	9	4	13
	Legal aspects	6	19	6	19	2	6	1	3		0	0	3	9	3	9
	Analysis of Rates / Schedule of Rates	4	13	3	9	5	16	20	63		9	28	14	44	7	22
	Public relation	4	13	2	6	3	9	6	19		2	6	7	22	4	13
	Misc. public services															
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	3	9	5	16	2	6	5	16		1	3	6	19	1	3
	- calculating 'Fair rent'	4	13	4	13	3	9	10	31		5	16	10	31	3	9
	Inter-Departmental Coordination	2	6	6	19	2	6	7	22		1	3	8	25	5	16
13	**Information Technology**															
	Computer applications – M S Office, Web etc.	6	19	5	16	11	34	12	38		2	6	7	22	9	28
	Computer applications – Auto CAD, MX Roads, STAAD	10	31	8	25	4	13	5	16		1	3	3	9	14	44
	GIS application for planning	12	38	6	19	2	6	0	0		0	0	0	0	15	47
	Project Management – Prima Vera, M S Projects	13	41	2	6	3	9	2	6		0	0	0	0	12	38
	e-Governance	18	56	2	6	2	6	2	6		0	0	0	0	11	34
	Management Information System (HRMIS)	13	41	2	6	3	9	2	6		0	0	0	0	12	38
14	**Personnel Management: Apply**															
	Communication skills	3	9	4	13	7	22	19	59		4	13	11	31	5	16
	HR Management skills	13	41	3	9	9	28	18	56		5	16	14	44	6	19
	Decision-making	2	6	5	16	9	28	18	56		5	16	14	44	6	19
	Right to Information (RTI)	9	28	3	9	7	22	12	38		4	13	12	38	7	22
	Monitoring skills	2	6	4	13	8	25	18	56		6	19	16	50	5	16
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	7	22	5	16	3	9	4	13		1	3	9	28	3	9
	Motivation	5	16	5	16	7	22	16	50		5	16	15	47	5	16
	Service conditions	9	28	5	16	7	22	14	44		2	6	9	28	6	19

Annexure 7

Competency survey: Junior Engineers' responses (65)

	Competency measure	Definition
I.	*Awareness*	have generally heard about the subject
II.	*Exposure*	a broad understanding of the principles
III.	*Basic Knowledge*	knowledge on the subject has been acquired through education and training, but has not been put to practical use
IV.	*Ability to Work*	have the knowledge, skills and attitude to be able to work in a specified area with satisfactory results

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
1	**Policy and Planning**															
	Strategic Planning (Master Plan: Roads, Buildings, etc)	23	35	7	11	22	34	14	22		6	9	4	6	15	23
	Public / Private Sector Participation	15	23	5	8	5	8	7	11		1	2	0	0	3	5
	Budgeting Process (Preparation, Control and Outcome)	14	22	3	5	7	11	5	8		5	8	2	3	10	15
	Prioritisation of Investments	15	23	3	5	4	6	2	3		3	5	2	3	7	11
	Phasing of Investments	13	20	3	5	3	5	3	5		2	3	2	3	4	6
	Quality Policy and systems	21	32	3	5	16	25	12	18		4	6	7	11	12	18
2	**Project Preparation**															
	Field surveys	19	29	15	23	19	29	48	74		29	45	33	51	17	26
	Geometric design	13	20	19	29	27	42	19	29		10	15	9	14	26	40
	Land acquisition	26	40	15	23	16	25	7	11		1	2	8	12	15	23
	Utility shifting management	22	34	21	32	15	23	12	18		4	25	2	3	24	37
	Pavement design	16	25	18	28	35	54	33	51		19	29	11	17	26	40
	Traffic and transport Engineering	19	29	20	31	28	43	21	32		12	18	7	11	24	37
	Road Safety	11	17	10	15	15	23	9	14		2	3	11	17	6	9
	Storm water drainage design	26	40	9	14	14	22	1	2		2	3	0	0	22	34
	Bridge design	23	35	14	22	15	23	9	14		2	3	11	17	6	9
	Culvert design	19	29	8	12	27	42	13	20		10	15	8	12	25	38
	Building design – Multi-storeyed	23	35	22	34	29	45	6	9		4	6	5	8	22	34
	– Simple buildings	16	25	17	26	22	34	17	26		8	12	9	14	19	29
	Cost estimation	21	32	16	25	23	35	47	72		25	38	39	60	23	35
	Specification	18	28	15	23	22	34	49	75		21	32	37	57	21	32
3	**Environmental and Social Management**															
	Rehabilitation & Resettlement issues, social assessment	25	38	15	23	2	3	2	3		4	6	1	2	24	37
	Environmental assessment	23	35	11	17	2	3	2	3		1	35	1	2	22	34
4	**Procurement Management**															
	FIDIC Contracts	19	29	2	3	2	3	0	0		0	0	0	0	16	25
	BOT/PPP Contracts	23	35	3	5	2	3	1	2		2	3	1	2	15	23
	NCB / State Government procedure	27	42	6	9	10	15	5	8		5	8	4	6	15	23
	e-procurement	23	35	6	9	6	9	5	8		4	6	3	5	14	22

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
5	**Project Management**															
	Preparation of Work Program	19	29	13	20	16	25	47	72		21	32	27	42	21	32
	Staffing & assigning responsibilities	15	23	12	18	22	34	27	42		14	22	27	42	23	35
	Construction Procedure and Methodology	15	23	10	15	14	22	41	63		19	29	33	51	23	35
	Monitoring Physical Progress of Work	19	29	16	25	21	32	49	75		22	34	33	51	20	31
	Monitoring Financial Requirement for Work	15	23	11	17	16	25	36	55		18	28	26	40	22	34
6	**Construction and Supervision**															
	Preconstruction	12	18	5	8	5	8	11	17		3	5	5	8	10	15
	- Design review	19	29	8	12	17	26	17	26		7	11	13	20	14	22
	- Data Collection	17	26	9	14	18	28	31	48		12	18	18	28	14	22
	Review of Construction Management Plan	13	20	10	15	11	17	23	35		7	11	18	28	12	18
	Assessment of Quality of Works	15	23	19	29	17	26	39	60		17	26	29	45	19	29
	Material Testing	16	25	10	15	21	32	42	65		24	37	34	52	21	32
	Undertaking Inspections and Tests	17	26	18	28	15	23	41	63		15	23	28	43	16	25
	Review / Reporting of Physical Progress	19	29	16	25	26	40	45	69		22	34	34	52	19	29
	Review / Reporting of Financial Progress	19	29	15	23	15	23	45	69		20	31	31	48	19	29
7	**Contract Management**															
	Work Program and Time Management	18	28	16	25	20	31	33	51		13	20	18	28	23	35
	Cost Control	19	29	15	23	16	25	27	42		9	14	15	23	16	25
	Variations	16	25	10	15	19	29	20	31		7	11	15	23	13	20
	Dispute Resolution and Arbitration	17	26	9	14	10	15	6	9		2	3	2	3	27	42
8	**Quality Management**															
	Quality Assurance	17	26	13	20	13	20	34	52		12	18	22	34	16	25
	Quality Control	15	23	13	20	16	25	29	45		14	22	22	34	17	26
	Quality Auditing	18	28	10	15	9	14	16	25		5	8	10	15	14	22
9	**Safety Aspects**															
	During Construction	23	35	17	26	32	49	35	54		21	32	28	43	26	40
	During Maintenance	24	37	17	26	32	49	36	55		21	32	28	43	24	37
	During Operation	19	29	11	17	22	34	28	43		10	15	19	29	17	26
10	**Financial Management & Systems**															
	Management of financial instruments and Tax aspects	27	42	6	9	7	11	4	6		1	2	1	2	9	14
	Financial MIS – IOTMS and WAMIS	28	43	9	14	4	6	1	2		1	2	2	3	11	17
	Delegation of financial powers	26	40	7	11	4	6	3	5		1	2	2	3	10	15
	Application of OWD code	25	38	11	17	16	25	10	15		6	9	7	11	12	18
	Accounts Audit	19	29	15	23	14	22	6	9		5	8	2	3	11	17
11	**Maintenance**															
	Identification and assessment of pavement distress	15	23	12	18	23	35	32	49		16	25	20	31	14	22
	Condition survey and Bldg maintenance management	12	18	11	17	22	34	29	45		14	22	16	25	15	23
	Periodic Maintenance / Routine Maintenance planning	16	25	15	23	20	31	38	58		13	20	21	32	14	22
	Proposal preparation for Maintenance Requirement	19	29	18	28	18	28	34	52		10	15	17	26	16	25

	Key Functional Areas	Section A									Section B					
		Awareness		Exposure		Basic Knowledge		Ability to work			Worked in Past		Working Presently		Likely to work in future	
		No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
12	**Other tasks**															
	Performance appraisal	32	49	13	20	20	31	28	43		12	18	18	28	16	25
	Disaster preparedness	25	38	12	18	9	14	10	15		5	8	2	3	15	23
	Legal aspects	24	37	2	3	3	5	2	3		2	3	1	2	10	15
	Analysis of Rates / Schedule of Rates	14	22	12	18	17	26	42	65		24	37	37	57	16	25
	Public relation	12	18	4	6	3	5	13	20		2	3	8	12	7	11
	Misc. public services															
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	15	23	8	12	9	14	8	12		7	11	7	11	7	11
	- calculating 'Fair rent'	14	22	10	15	14	22	26	40		13	20	23	35	8	12
	Inter-Departmental Coordination	11	17	6	9	11	17	19	29		2	3	7	11	11	17
13	**Information Technology**															
	Computer applications – M S Office, Web etc.	27	42	17	26	22	34	27	42		13	20	21	32	27	42
	Computer applications – Auto CAD, MX Roads, STAAD	36	55	11	17	16	25	10	15		3	5	2	3	33	51
	GIS application for planning	26	40	3	5	5	8	2	3		1	2	1	2	18	28
	Project Management – Prima Vera, M S Projects	25	38	4	6	0	0	0	0		0	0	0	0	22	34
	e-Governance	35	54	3	5	0	0	0	0		0	0	0	0	21	32
	Management Information System (HRMIS)	29	45	4	6	0	0	0	0		0	0	0	0	23	35
14	**Personnel Management: Apply**															
	Communication skills	14	22	6	9	11	17	35	54		13	20	29	45	14	22
	Management skills	16	25	9	14	16	25	36	55		17	26	28	43	15	23
	Decision-making	16	25	2	3	12	18	35	54		13	20	22	34	13	20
	Right to Information (RTI)	27	42	13	20	19	29	23	35		10	15	21	32	14	22
	Monitoring skills	19	29	10	15	22	34	32	49		11	17	27	42	18	28
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	23	35	6	9	12	18	9	14		4	6	8	12	12	18
	Motivation	19	29	10	15	15	23	32	49		11	17	29	45	13	20
	Service conditions	22	34	16	25	16	25	26	40		8	12	18	28	12	18

Annexure 8

Competency Score: Executive Engineers

	Key Functional Areas	Individual Competency Scores (Out of 10)																			Average Competency Score	Priority
1	**Policy and Planning**																					
	Strategic Planning (Master Plan: Roads, Buildings, etc)	10	10	1	2	0	1	10	10	4	3	6	4	3	1	7	7	10	4	4	**5.11**	3
	Public / Private Sector Participation	8	6	1	1	0	0	1	1	4	0	0	4	2	0	5	5	0	0	4	**2.21**	1
	Budgeting Process (Preparation, Control and Outcome)	10	6	1	4	0	1	1	5	3	0	1	4	4	1	7	7	10	0	4	**3.63**	2
	Prioritisation of Investments	10	0	1	4	0	0	1	1	4	0	0	4	1	0	5	5	0	0	4	**2.11**	1
	Phasing of Investments	10	0	1	4	0	0	1	1	4	0	0	4	1	0	5	5	0	0	4	**2.11**	1
	Quality Policy and systems	10	6	1	4	0	3	10	10	4	0	1	4	3	10	10	10	7	0	4	**5.11**	3
2	**Project Preparation**																					
	Field surveys	10	10	10	4	4	3	10	10	4	3	10	4	3	1	10	10			4	**6.47**	4
	Geometric design	10	6	10	4	4	10	10	10	4	3	10	4	4	3	10	10	0	4	4	**6.32**	4
	Land acquisition	10	3	10	4	2	3	10	10	4	0	3	4							0	**4.85**	2
	Utility shifting management	10	1	10	4	3	6	10	10	4	3	0	4	3	10	10	10	1		4	**5.72**	3
	Pavement design	10	10	10	4	4	10	10	10	4	3	10	4	3	3	10	10	0	4	4	**6.47**	4
	Traffic and transport Engineering	10	1	10	2	4	10	10	10	4	3	10	4	3	1	10	10			4	**6.24**	4
	Road Safety	10	1	10	4	3	3	10	10	4	2	6	4	3	1	10	10			4	**5.59**	3
	Storm water drainage design	1	1	10	3	6	1	10	10	4	2	0	4	3	0	10	10	10	4	4	**4.89**	2
	Bridge design	10	3	1	2	4	1	10	10	3	2	3	4	4	5	10	10	1	4	4	**4.79**	2
	Culvert design	10	10	10	4	2	10	10	10	4	2	3	4	4	5	10	10			4	**6.59**	4
	Building design – Multi-storeyed	10	10	1	2	4	1	10	10	3	0	1	4	4	7	10	10	10	4	4	**5.53**	3
	– Simple buildings	10	10	1	4	0	3	10	10	4	3	3	4	4	7	10	10	10	4	4	**5.84**	3
	Cost estimation	10	6	10	4	3	3	10	10	4	3	0	4	4	6	10	10	1	4	4	**5.58**	3
	Specification	10	6	10	4	4	10	10	10	4	3	10	4	3	10	10	10	1	0	4	**6.47**	4
3	**Environmental and Social Management**																					
	Rehabilitation & Resettlement issues, social assessment	10	3	1	2	2	3	10	10	4	1	1	4	3	0	5	5	10	1	0	**3.95**	2
	Environmental assessment	10	3	10	2	3	1	10	10	4	1	1	4	3	0	5	5	1	1	0	**3.89**	2
4	**Procurement Management**																					
	FIDIC Contracts	0	0	10	1	2	3	0	0	4	3	3	3	2	3	0	0	10	0	2	**2.42**	2
	BOT/PPP Contracts	1	0	10	1	2	0	1	1	4	0	0	3	2	0	7	7	0	0	3	**2.21**	1
	NCB / State Government procedure	10	3	10	1	2	3	10	10	4	3	0	3		3	10	7	10	0	4	**5.17**	3
	e-procurement	10	6	10	4	4	0	1	1	4	0	0	3							4	**3.62**	2

	Key Functional Areas	Individual Competency Scores (Out of 10)																			Average Competency Score	Priority
5	**Project Management**																					
	Preparation of Work Program	10	10	8	4	4	10	10	10	4	3	3	4	3	10	10	10	10	0	4	**6.68**	4
	Staffing & assigning responsibilities	10	10	1	4	4	10	10	10	4	3	3	4	3	10	10	10	10	0	4	**6.32**	4
	Construction Procedure and Methodology	10	6	10	4	4	0	10	10	4	3	3	4	3	10	10	10	10	2	4	**6.16**	4
	Monitoring Physical Progress of Work	10	10	10	4	4	10	10	10	4	3	6	4	3	10	10	10	10	0	4	**6.95**	4
	Monitoring Financial Requirement for Work	10	3	10	4	4	3	10	10	4	3	0	4	3	3	10	10	10	0	4	**5.53**	3
6	**Construction and Supervision**																					
	Preconstruction																					
	- Design review	10	6	8	4	4	3	10	10	4	2	1	4	4	1	10	10	1	4	4	**5.26**	3
	- Data Collection	10	10	10	4	4	3	10	10	4	3	1	4	4	1	10	10	1	4	4	**5.63**	3
	Review of Construction Management Plan	10	3	10	4	4	3	10	10	4	3	1	4	3	1	10	10	1	4	4	**5.21**	3
	Assessment of Quality of Works	10	10	0	4	4	10	10	10	4	3	1	4	3	10	10	10	0	4	4	**5.84**	3
	Material Testing	10	6	10	4	4	10	10	10	4	3	10	4	3	10	10	10	3	0	4	**6.58**	4
	Undertaking Inspections and Tests	10	10	10	4	4	10	10	10	4	3	3	4	3	10	10	10	10	4	4	**7.00**	4
	Review / Reporting of Physical Progress	10	10	10	4	4	3	10	10	4	3	3	4	3	10	10	10	10	4	4	**6.63**	4
	Review / Reporting of Financial Progress	10	10	10	4	4	3	10	10	4	3	0	4	3	0	10	10	1	4	4	**5.47**	3
7	**Contract Management**																					
	Work Program and Time Management	10	10	10	4	4	3	10	10	4	3	1	4	2	0	10	10	6	0	4	**5.53**	3
	Cost Control	10	3	10	0	4	0	10	10	4	3	1	4	2	0	10	10	0	0	4	**4.47**	2
	Variations	10	1	10	0	4	0	10	10	4	3	1	4	2	0	10	10	0	0	4	**4.37**	2
	Dispute Resolution and Arbitration	10	3	10	2	4	0	0	0	4	2	0	3	2	0			1	0	4	**2.65**	2
8	**Quality Management**																					
	Quality Assurance	10	10	10	4	4	10	10	10	4	3	6	4							4	**6.85**	4
	Quality Control	10	10	10	4	4	10	10	10	4	3	1	4							4	**6.46**	4
	Quality Auditing	10	6	10	4	3	10	10	10	3	3	0	4	2	3	10	10	7	3	4	**5.89**	3
9	**Safety Aspects**																					
	During Construction	10	6	10	3	4	3	10	10	4	3	1	4	3	10	8	8	10	2	4	**5.95**	3
	During Maintenance	10	6	10	3	4	3	10	10	4	3	1	4	3	10	8	8		2	4	**5.72**	3
	During Operation	10	3	8	3	4	3	10	10	0	3	1	4	3	10	8	8		2	4	**5.22**	3
10	**Financial Management & Systems**																					
	Management of financial instruments and Tax aspects	0	1	10	1	2	1	0	0	2	0	0	2	4	6	10	10	1	4	4	**3.05**	2
	Financial MIS – IOTMS and WAMIS	3	3	10	4	4	3	0	0	4	3	0	2	4	6	0	0			4	**2.94**	2
	Delegation of financial powers	8	3	10	4	2	0	10	10	4	3	0	2	4	6	10	10	0	4	4	**4.95**	2
	Application of OWD code	10	10	10	4	4	6	10	10	4	3	0	2	4	6	10	10	0	4	4	**5.84**	3
	Accounts Audit	10	3	8	4	2	0	10	10	4	2	0	2	3	0	10	10			4	**4.82**	2

	Key Functional Areas	Individual Competency Scores (Out of 10)																			Average Competency Score	Priority
11	**Maintenance**																					
	Identification and assessment of pavement distress	10	3	10	4	4	10	10	10	4	3	1	3	3	10	10	10	0	0	4	**5.74**	3
	Condition survey and Bldg maintenance management	10	3	8	4	4	3	10	10	4	3	0	3							4	**5.08**	3
	Periodic Maintenance / Routine Maintenance planning	10	3	10	4	4	6	10	10	4	3	1	3	4	10	10	10	1	4	4	**5.84**	3
	Proposal preparation for Maintenance Requirement	10	10	10	4	4	3	10	10	4	3	1	3	4	10	10	10	1	0	4	**5.84**	3
12	**Other tasks**																					
	Performance appraisal	10	10	10	4	4	10	10	10	4	3	3	4	4	10	10	10	6	2	4	**6.74**	4
	Disaster preparedness	10	3	5	4	2	3	10	10	4	3	0	2	3	3	10	10			4	**5.06**	3
	Legal aspects	3	3	3	2	3	0	10	10	4	3	0	2	2	3	10	10			4	**4.24**	2
	Analysis of Rates / Schedule of Rates	10	3	10	4	3	6	10	10	4	3	0	4							4	**5.46**	3
	Public relation	10	10	0	4	4	3	10	10	4	3	0	2							4	**4.92**	2
	Misc. public services																					
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	10	10	10	4	4	3	10	10	4	3	0	3							4	**5.77**	3
	- calculating 'Fair rent'	10	10	10	4	4	3	10	10	4	3	0	3							4	**5.77**	3
	Inter-Departmental Coordination	10	10	8	4	3	3	10	10	4	3	1	2							4	**5.54**	3
13	**Information Technology**																					
	Computer applications – M S Office, Web etc.	10	3	5	4	4	3	10	10	4	1	1	3	4	6	10	10	10	4	4	**5.58**	3
	Computer applications – Auto CAD, MX Roads, STAAD	0	1	5	4	2	0	0	0	3	1	0	3	3	0	0	0			3	**1.47**	1
	GIS application for planning	10	1	1	2	2	0	0	0	3	1	0	2	3	0	0	0	0	0	3	**1.47**	1
	Project Management – Prima Vera, M S Projects	0	0	1	1	2	3	0	0	3	0	0	3	2	0	0	0	6	4	2	**1.42**	1
	e-Governance	0	10	8	4	2	0	0	0	4	1	0	2	2	0	0	0	6	4	0	**2.26**	1
	Management Information System (HRMIS)	0	10	1	3	2	0	0	0	3	0	0	3	2	0	0	0			2	**1.53**	1
14	**Personnel Management:**																					
	Communication skills	10	10	10	2	4	10	10	10	4	3	3	4	4	10	10	10	10	2	4	**6.84**	4
	Management skills	10	6	10	4	4	10	10	10	4	3	1	4	2	10	10	10	10	2	4	**6.53**	4
	Decision-making	10	10	10	4	4	3	10	10	4	3	0	4	3	10	10	10	10	2	4	**6.37**	4
	Right to Information (RTI)	10	10	10	4	4	10	10	10	4	3	6	2	4	10	10	10	10	2	4	**7.00**	4
	Monitoring skills	10	10	10	4	4	0	10	10	4	3	3	4	4	10		10			4	**6.25**	4
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	10	10	8	4	3	3	10	10	4	3	1	2							4	**5.54**	3
	Motivation	10	10	10	4	4	3	10	10	4	3	1	4	4	6	10	10	10	2	4	**6.26**	4
	Service conditions	10	10	8	4	3	0	10	10	0	3	0	4	4	3	10	10	6	2	4	**5.32**	3

Annexure 9

Competency Scores: Assistant Engineers

	Key Functional Areas	Individual Competency Scores (Out of 10)																																Average Competency Score	Priority
1	**Policy and Planning**																																		
	Strategic Planning (Master Plan: Roads, Buildings, etc)	0	0	0	0	0	2	4	10	0	0	0	0	1	0	3	10	3	4	3	4	4	9	3	4	1	1	1	3	0	2	3		**2.42**	1
	Public / Private Sector Participation	0	0	0	0	0	2	3	3	0	0	1	0	0	0	1	8	1	0	0	0	4	3	0	0	1	1	1	0	0	0	0		**0.94**	1
	Budgeting Process (Preparation, Control and Outcome)	0	0	0	0	0	2	3	1	0	0	0	0	0	0	1	0	1	4	3	0	3	1	0	2	1	1	1	0	0	0	0		**0.77**	1
	Prioritisation of Investments	0	0	0	0	0	2	3	10	0	0	0	0	0	0	1	0	1	0	4	0	4	1	0	2	1	0	1	0	0	0	0		**0.97**	1
	Phasing of Investments	0	0	0	0	0	2	3	10	0	0	0	0	0	0	1	0	1	4	4	4	4	1	0	2	1	0	1	0	0	0	0		**1.23**	1
	Quality Policy and systems	0	0	0	0	0	2	3	10	0	0	0	0	0	0	1	10	1	0	0	4	4	1	0	2	1	2	3	0	0	0	0		**1.42**	1
2	**Project Preparation**																																		
	Field surveys	4	4	4	4	4	4	4	10	4	7	0	0	1	4	0	10	0	0	3	0	4	6	3	4	0		3	4	4	4	4		**3.43**	2
	Geometric design	4	4	4	4	4	4	3	10	3	0	1	0	1	0	2	10	2	0	3	0	4	1	2	4	1	3	3	4	4	4	4		**3.00**	2
	Land acquisition	0	4	3	1	4	4	4	10	3	0	1	0	1	1	1	6	1	4	3	3	4							3	4	2	2		**2.76**	2
	Utility shifting management	0	4	4	4	3	4	3	10	2	10	1	0	1	0	1	1	1	0	1	3	4	1	3	3	1		0	3	2	0	0		**2.33**	1
	Pavement design	4	4	4	4	4	4	3	10	3	7	1	0	1	0	3	10	3	0	3	0	4	1	4	4	4	3	3	4	4	4	4		**3.45**	2
	Traffic and transport Engineering	4	4	4	4	3	4	4	10	3	0	1	0	1	0	3	10	3	0	3	0	4	1	2	3	1		3	4	4	4	4		**3.03**	2
	Road Safety	0	4	3	3	3	4	4	10	0	0	2	0	1	1	3	10	3	3	3	0	4							4	4	3	0		**2.88**	2
	Storm water drainage design	0	0	4	4	1	4	4	10	2	0	0	0	1	0	3	1	3	0	0	0	4	1	3	0	1	3	3	3	3	3	3		**2.06**	1
	Bridge design	0	4	4	4	2	3	3	10	2	0	1	0	1	0	1	4	1	0	3	0	3	1	3	4	2	3	3	3	3	3	3		**2.39**	1
	Culvert design	0	4	4	4	4	4	4	10	3	0	1	0	1	0	0	0	0	0	3	0	4	1	3	4	2		3	3	3	3	3		**2.37**	1
	Building design – Multi-storeyed	0	0	4	4	3	3	3	10	2	0	1	0	1	0	2	6	2	3	3	3	3	4	3	4	2	4	3	3	3	3	3		**2.74**	2
	– Simple buildings	0	4	4	4	3	4	3	10	0	0	1	4	1	0	0	6	0	3	3	3	4	4	3	4	2		3	3	3	3	3		**2.83**	2
	Cost estimation	0	4	0	4	4	4	4	10	4	10	3	4	4	0	0	10	0	0	4	3	4	6	4	4		3	1	4	4	4	4		**3.67**	2
	Specification	0	4	4	4	4	4	4	10	4	10	1	0	1	0	0	10	0	4	4	4	4	6	4	4	4	3	4	4	4	4	4		**3.77**	2
3	**Environmental and Social Management**																																		
	Rehabilitation & Resettlement issues, social assessment	0	4	3	1	4	4	3	10	2	0	1	0	0	0	1	1	1	3	1	0	4	1	0	0	1	3	1	2	2	2	2		**1.84**	1
	Environmental assessment	0	4	0	1	3	3	3	0	2	0	1	0	1	0	1	1	1	3	1	0	4	1	0	0	1	2	1	2	2	0	3		**1.32**	1
4	**Procurement Management**																																		
	FIDIC Contracts	0	0	1	0	0	2	2	10	0	0	2	0	0	0	0	0	0	1	1	0	0	1	0	0	4	3	0	0	0	0	0		**0.87**	1
	BOT/PPP Contracts	0	0	0	1	0	2	2	0	0	0	2	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0		**0.42**	1
	NCB / State Government procedure	0	0	4	2	0	3	2	10	0	0	3	0	1	0	0	0	0	1	0	0	0	1	3	0	4	1	0	0	0	0	0		**1.13**	1
	e-procurement	10	4	4	3	0	2	2	10	0	0	4	0	1	1	1	0	1	3	4	0	0							0	0	0	0		**2.00**	1
5	**Project Management**																																		
	Preparation of Work Program	0	0	4	4	4	4	4	10	4	0	1	0	1	4	0	10	0	0	4	0	4	6	4	4	2	2	3	4	4	4	4		**3.06**	2
	Staffing & assigning responsibilities	0	7	4	4	4	4	4	10	4	0	0	0	1	0	0	10	0	0	4	0	4	0	3	4	1	0	3	4	4	4	4		**2.81**	2
	Construction Procedure and Methodology	8	4	4	4	4	4	4	10	4	10	0	0	1	0	0	0	0	4	4	4	4	1	4	4	4	2	3	4	4	4	4		**3.45**	2
	Monitoring Physical Progress of Work	0	0	4	4	4	4	4	10	4	8	0	2	1	4	0	10	0	4	4	4	4	6	4	4	2	2	3	4	4	4	4		**3.61**	2
	Monitoring Financial Requirement for Work	0	4	3	4	4	4	4	10	4	0	0	0	1	0	0	1	0	4	4	4	4	4	0	4	2	1	3	4	4	4	4		**2.74**	2
6	**Construction and Supervision**																																		
	Preconstruction																																		
	- Design review	0	1	4	0	4	4	3	10	3	0	1	0	1	1	1	10	3	0	3	4	4	1	3	4	0	2	1	4	4	4	4		**2.71**	2
	- Data Collection	0	4	4	4	4	4	4	0	4	0	1	0	1	1	1	10	3	0	3	4	4	6	4	4	0	2	1	4	4	4	4		**2.87**	2
	Review of Construction Management Plan	0	4	0	4	4	4	4	10	4	0	0	0	0	1	4	10	4	0	4	4	4	1	0	3	0	2	0	4	4	4	4		**2.81**	2
	Assessment of Quality of Works	0	4	4	4	4	4	4	10	4	10	0	0	1	1	0	10	0	0	4	4	4	6	2	4	4	3	4	4	4	4	4		**3.58**	2
	Material Testing	4	4	4	4	4	4	4	10	4	10	1	0	4	0	0	10	0	4	4	4	4	3	3	4	4	3	4	4	4	4	4		**3.87**	2
	Undertaking Inspections and Tests	0	4	4	4	4	4	4	10	4	10	1	0	1	1	0	10	0	4	4	0	4	6	2	4	0	3	3	4	4	4	4		**3.45**	2
	Review / Reporting of Physical Progress	0	4	4	4	4	4	4	10	4	0	1	4	1	1	0	10	0	4	4	0	4	6	4	4	0	3	3	4	4	4	4		**3.32**	2
	Review / Reporting of Financial Progress	0	4	4	4	4	4	4	10	4	10	0	4	1	1	0	10	0	4	4	0	4	6	4	4	0	2	3	4	4	4	4		**3.58**	2

	Key Functional Areas	Individual Competency Scores (Out of 10)																																Average Competency Score	Priority
7	**Contract Management**																																		
	Work Program and Time Management	0	3	4	4	4	3	4	10	4	10	0	0	1	4	4	10	4	4	4	0	4	1	3	1	2	1	1	4	4	4	4	**3.42**	2
	Cost Control	0	3	2	2	4	3	4	10	4	0	0	0	1	4	3	10	3	0	4	0	4	1	2	0	1	1	1	4	4	4	4	**2.68**	2
	Variations	0	3	3	0	1	3	3	10	4	0	0	0	0	4	3	10	3	0	3	0	4	1	3	3	4	1	1	4	4	4	4	**2.68**	2
	Dispute Resolution and Arbitration	0	3	1	1	1	3	3	10	4	0	0	0	0	4	2	0	2	0	3	0	4	1	0	2	4	1	0	4	3	4	4	**2.06**	1
8	**Quality Management**																																		
	Quality Assurance	0	4	4	4	4	3	4	10	4	10	1	0	1	1	4	10	4	4	4	0	4							4	0	4	4	**3.68**	2
	Quality Control	0	4	4	4	4	3	4	10	4	10	1	0	4	1	4	10	4	0	4	0	4							4	4	4	4	**3.80**	2
	Quality Auditing	0	1	2	1	4	3	4	10	3	0	0	0	1	1	4	0	1	0	3	0	3	4	0	1	1	1	0	4	0	4	4	**1.94**	1
9	**Safety Aspects**																																		
	During Construction	0	3	4	4	4	4	4	10	4	0	1	0	1	1	3	10	3	4	4	4	4	6	1	4	2	2	3	4	4	4	4	**3.42**	2
	During Maintenance	0	3	4	4	4	4	4	10	4	0	0	0	1	1	3	10	3	4	4	4	4	6	1	4	1	2	3	4	4	4	4	**3.35**	2
	During Operation	0	3	0	4	4	4	4	10	4	0	0	0	1	1	3	10	0	4	3	4	0	4	1	0	2	2	3	4	4	4	4	**2.81**	2
10	**Financial Management & Systems Implementation**																																		
	Management of financial instruments and Tax aspects	0	0	4	2	0	2	3	10	0	0	0	0	0	0	1	0	1	0	3	0	0	1	0	0	2	1	3	0	0	2	0	**1.13**	1
	Financial MIS – IOTMS and WAMIS	0	0	2	2	0	2	3	10	0	0	0	0	0	0	1	0	1	0	3	0	0	1	1	0	1		1	0	0	2	2	**1.07**	1
	Delegation of financial powers	0	0	4	2	0	4	3	10	0	0	0	0	2	0	1	0	1	3	0	0	0	1	2	2	2	0	2	0	0	4	0	**1.39**	1
	Application of OWD code	0	3	4	2	0	4	3	10	0	0	3	2	2	1	2	10	2	4	4	0	4	1						0	0	4	2	**2.58**	2
	Accounts Audit	0	3	0	0	0	4	3	10	0	0	0	0	1	1	2	1	2	0	1	0	4	1	0	0	1		1	0	0	2	1	**1.27**	1
11	**Maintenance**																																		
	Identification and assessment of pavement distress	0	4	4	4	3	4	4	10	3	0	1	0	0	0	0	10	3	4	4	4	4	6	4	4	2	3	1	4	4	4	4	**3.29**	2
	Condition survey and Bldg maintenance management	7	4	4	4	3	4	4	10	3	10	3	0	0	0	0	10	3	4	4	4	4							4	4	4	4	**4.04**	2
	Periodic Maintenance / Routine Maintenance planning	1	4	4	4	4	4	4	10	4	10	4	0	0	0	0	10	0	4	4	4	4	6	4	0	2	3	1	4	4	4	4	**3.58**	2
	Proposal preparation for Maintenance Requirement	1	4	4	4	4	4	4	10	4	10	4	0	0	0	0	10	0	4	4	0	4	1	2	4	0	3	1	4	4	4	4	**3.29**	2
12	**Other tasks**																																		
	Performance appraisal	4	1	4	4	4	4	4	10	4	10	0	4	2	4	0	10	0	4	4	4	4	1	3	4	2	0	3	4	4	4	4	**3.68**	2
	Disaster preparedness	1	1	0	4	0	4	4	10	1	0	1	0	0	0	0	10	3	0	0	0	0	1	0	0	0		1	0	0	0	0	**1.37**	1
	Legal aspects	0	1	2	2	0	3	2	10	2	0	2	0	0	0	0	1	1	0	0	0	0	1	0	0	0		1	0	0	0	0	**0.93**	1
	Analysis of Rates / Schedule of Rates	0	4	4	4	4	4	4	10	4	10	4	4	4	0	0	10	0	0	4	3	4							4	4	4	4	**3.88**	2
	Public relation	0	2	3	4	0	4	4	10	4	0	3	0	0	1	0	1	0	1	0	0	0							4	0	0	0	**1.64**	1
	Misc. public services																																		
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	0	0	4	2	0	4	4	10	2	10	0	0	0	0	0	1	2	0	0	0	0							4	0	0	0	**1.72**	1
	- calculating 'Fair rent'	1	0	4	4	4	4	4	10	4	10	4	0	0	0	0	10	2	0	0	0	0							4	4	4	0	**2.92**	2
	Inter-Departmental Coordination	1	2	4	4	2	4	2	10	4	0	2	0	0	0	0	10	4	0	0	0	0							4	4	4	0	**2.44**	1
13	**Information Technology**																																		
	Computer applications – M S Office, Web etc.	0	4	4	2	4	2	3	10	4	0	4	3	1	1	1	10	3	3	4	7	0	4	4	3	1	3	4	3	3	2	3	**3.23**	2
	Computer applications – Auto CAD, MX Roads, STAAD	0	4	4	0	4	2	3	10	2	0	2	0	1	0	1	10	1	1	1	0	0	1	0	0	1		3	2	2	1	2	**1.93**	1
	GIS application for planning	0	1	2	0	3	2	3	0	1	0	1	0	1	0	1	0	1	1	1	0	0	1	0	0	1	2	1	2	1	2	2	**0.97**	1
	Project Management – Prima Vera, M S Projects	0	0	3	1	0	2	3	10	0	0	1	0	0	0	1	0	1	0	1	4	0	1	0	0	1	1	1	1	1	0	1	**1.10**	1
	e-Governance	0	1	3	1	0	2	0	10	1	0	1	0	0	1	1	1	1	0	1	4	0	1	1	0	1	1	1	1	1	0	1	**1.16**	1
	Management Information System (HRMIS)	0	0	3	1	0	2	3	10	1	0	1	0	0	0	1	1	1	0	1	4	0	1	0	0	1		1	1	1	0	1	**1.17**	1
14	**Personnel Management**																																		
	Communication skills	3	3	4	4	4	4	4	10	4	0	1	4	3	0	4	10	4	0	4	4	4	6	0	4	2	0	3	4	4	4	4	**3.52**	2
	Management skills	3	3	4	4	4	4	4	10	4	0	0	0	3	0	3	10	3	4	4	4	4	6	0	4	1	0	3	4	4	4	4	**3.39**	2
	Decision-making	3	3	3	4	4	3	4	10	4	0	0	0	2	0	4	10	4	4	4	4	4	9	0	4	2	0	3	4	4	4	4	**3.48**	2
	Right to Information (RTI)	4	1	4	1	4	4	4	10	3	0	1	1	1	1	3	0	3	0	4	0	4	1	3	4	2	3	2	4	4	4	4	**2.71**	2
	Monitoring skills	3	3	4	4	4	3	4	10	4	0	0	2	3	0	0	10	0	4	4	4	4	9	3	4	2	0	4	4	4	4	4	**3.48**	2
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	1	1	4	0	2	4	2	10	3	0	1	0	1	0	0	10	2	1	0	0	0							4	4	4	0	**2.16**	1
	Motivation	4	3	4	4	4	3	4	10	4	0	0	0	2	1	0	10	0	0	4	0	4	3	0	4	2	0	4	4	4	4	4	**2.90**	2
	Service conditions	4	1	4	2	4	3	4	10	4	10	1	0	1	0	4	6	4	0	4	0	0	1	3	4	2	0	3	4	4	4	4	**3.06**	2

Annexure 10

Competency Score: Junior Engineers

	Key Functional Areas	Individual Competency Scores (Out of 10)																																																																Average Competency Score	Priority
1	**Policy and Planning**																																																																			
	Strategic Planning (Master Plan: Roads, Buildings, etc)	10	10	0	0	0	3	7	7	4	3	2	10	3	0	10	1	0	0	4	10	10	10	1	3	1	3	0	0	0	3	10	0	0	0	0	0	0	0	6	0	0	0	2	7	1	3	7	3	2	8	1	8	7	4	2	0	1	1	1	1	1	1	1	1	2	**3.02**	2
	Public / Private Sector Participation	0	0	0	0	0	3	0	0	0	0	3	10	1	0	10	1	0	0	4	1	10	10	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	**1.06**	1
	Budgeting Process (Preparation, Control and Outcome)	10	10	0	0	0	0	0	0	0	1	3	0	1	0	0	1	0	0	4	0	0	0	0	1	1	1	0	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	3	0	2	5	1	5	7	3	0	0	0	0	0	0	0	0	0	0	0	**1.15**	1
	Prioritisation of Investments	10	10	0	0	0	0	0	1	3	0	3	0	1	0	0	1	1	1	3	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	**0.77**	1
	Phasing of Investments	10	10	0	0	0	0	0	4	0	0	3	0	1	0	0	1	0	0	4	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	**0.75**	1
	Quality Policy and systems	10	10	0	0	0	3	1	3	3	1	1	10	1	0	10	1	0	0	7	1	10	10	1	4	1	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1	0	3	5	10	6	10	4	0	0	0	0	0	0	0	0	0	0	0	**2.09**	1
2	**Project Preparation**																																																																		
	Field surveys	10	0	10	10	10	1	7	7	4	3	3	10	0	4	10	2	4	4	7	10	10	10	0	4	1	4	4	4	4	0	10	5	4	4	3	4	4	4	7	4	4	4		3	0	0	3	0	4	10	1	5	10	4	4	4	4	4	4	4	4	4	4	4	4	**4.66**	2
	Geometric design	10	0	0	10	0	1	3	7	3	10	3	0	2	3	0	2	3	3	3	10	0	0	4	3	1	3	3	2	3	2	0	1	1	4	3	0	2	4	7	3	2	2	3	1	2	2	3	2	3	1	10	8	10	3	4	3	2	3	4	2	4	4	4	4	4	**3.22**	2
	Land acquisition	10	0	0	1	0	1	0	3	4	1	3	6	1	3	3	1	1	1	0	1	6	6	0	1	1	1	1	2	3	1	10	1	1	3	2	2	2	4	6	1	1	2													2	4	3	3	3	3	2	4	4	4	2	**2.47**	1
	Utility shifting management	10	0	0	1	0	1	0	0	0	3	4	1	1	2	1	0	0	0	0	1	1	1	0	1	1	1	2	2	2	1	10	0	0	4	2	2	2	4	10	2	3	2		3	3	3	3	3	2	4	3	1	10	3	0	3	2	3	3	2	0	2	2	2	0	**2.11**	1
	Pavement design	10	0	0	10	10	1	7	7	3	10	3	10	3	3	10	1	3	3	7	10	10	10	4	3	1	3	3	2	3	3	0	5	4	4	3	4	2	4	10	3	2	6	3	1	4	4	3	4	3	1	10	8	10	3	4	4	2	3	4	2	4	4	4	4	4	**4.51**	2
	Traffic and transport Engineering	10	0	0	10	0	1	0	7	3	10	3	10	3	3	10	1	0	0	0	10	10	10	3	3	1	3	3	4	3	3	0	1	1	3	3	2	2	4	1	4	2	2		1	2	2	1	2	3	1	6	5	10	3	4	2	2	3	4	2	4	4	4	4	4	**3.47**	2
	Road Safety	0	0	0	0	0	1	0	0	4	3	3	10	0	0	10	2	3	3	0	10	10	10	3	1	1	0	0	0	0	0	10	0	0	2	3	0	3	4	4	0	4	0													0	2	0	0	0	0	3	0	4	3	3	**2.25**	1
	Storm water drainage design	0	0	0	1	0	0	0	3	0	1	3	1	0	2	1	1	1	1	0	1	1	1	0	1	1	1	3	1	2	0	10	0	0	2	3	2	2	0	1	1	2	0	3	1	1	1	1	1	3	1	1	5	0	3	1	1	2	3	3	2	3	3	3	3	3	**1.51**	1
	Bridge design	0	0	0	6	1	0	0	3	3	1	3	1	1	2	1	1	1	1	0	1	1	1	4	1	1	1	3	2	2	1	0	0	0	2	3	2	2	4	0	1	2	0	3	2	3	3	1	3	3	1	1	5	4	3	1	2	2	3	4	2	3	3	3	3	3	**1.85**	1
	Culvert design	0	0	0	6	10	0	3	3	3	1	3	4	0	3	1	1	0	0	3	1	4	4	4	1	1	1	3	4	3	0	0	4	4	3	4	4	2	4	7	1	2	4		2	3	3	1	3	3	1	1	5	4	3	1	3	2	4	4	2	3	3	3	3	3	**2.59**	2
	Building design – Multi-storeyed	0	0	0	6	3	0	0	7	3	1	2	6	2	2	3	2	3	3	0	1	6	6	0	1	1	1	3	1	2	2	0	0	0	3	3	2	1	0	7	1	1	0		2	3	3	3	3	3	1	10	5	10	3	1	1	2	3	4	2	3	3	3	3	3	**2.48**	1
	– Simple buildings	10	0	0	6	10	1	3	7	4	10	2	10	0	0	3	2	3	3	3	10	10	10	4	1	1	1	3	2	0	0	0	5	4	3	4	4	2	4	7	0	2	4		2	3	3	3	3	3	1	10	5	10	3	1	3	2	4	4	2	4	3	3	4	3	**3.70**	2
	Cost estimation	10	10	10	6	10	7	3	7	4	10	4	10	0	4	3	2	4	4	3	10	10	10	0	1	1	1	4	4	4	0	10	5	4	4	4	4	4	4	10	4	4	4	4	3	4	4	3	4	0	1	10	1	10	3	4	4	4	4	4	4	4	4	4	4	4	**4.74**	2
	Specification	10	10	10	10	10	3	0	0	4	10	4	0	0	4	10	2	0	0	0	10	10	10	3	4	1	4	4	4	4	0	10	4	4	4	4	4	4	4	10	4	4	4	3	3	4	4	3	4	4	8	10	8	10	4	4	3	4	4	4	4	4	4	4	4	4	**4.75**	2
3	**Environmental and Social Management**																																																																		
	Rehabilitation & Resettlement issues, social assessment	0	0	0	0	0	1	0	0	4	0	4	1	1	2	1	0	0	0	0	0	1	1	0	1	1	1	1	1	2	1	10	0	0	2	2	1	1	4	1	1	1	1	0	1	0	0	1	0	1	0	0	0	0	0	2	1	2	2	2	2	2	2	2	2	2	**1.11**	1
	Environmental assessment	0	0	0	0	0	1	0	0	3	0	4	1	1	2	1	0	0	0	0	0	1	1	0	1	1	1	0	1	2	1	0	0	0	1	2	1	1	4	0	1	1	1	0	1	0	0	1	0	1	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	0	**0.83**	1
4	**Procurement Management**																																																																		
	FIDIC Contracts	0	0	0	0	0	3	0	1	1	1	3	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1	0	2	1	0	0	1	0	1	0	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0	**0.43**	1
	BOT/PPP Contracts	0	0	0	0	0	1	0	1	1	0	3	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1	0	0	1	1	0	2	1	0	0	1	0	2	0	0	0	10	0	0	0	1	1	1	1	0	0	0	0	0	**0.58**	1
	NCB / State Government procedure	10	0	0	10	10	3	0	1	1	1	3	0	0	0	0	0	1	1	0	1	0	0	0	1	1	1	0	1	0	0	0	0	0	4	0	0	1	0	0	1	1	0	3	1	3	3	1	3	2	1	3	1	10	3	0	0	1	1	1	1	0	0	0	0	0	**1.40**	1
	e-procurement	10	0	0	10	10	1	1	1	0	1	3	0	1	0	0	0	1	0	1	1	0	0	0	1	1	1	0	2	0	1	0	0	0	3	0	2	1	4	7	1	1	0														0	1	1	1	1	0	0	0	0	0	**1.35**	1
5	**Project Management**																																																																		
	Preparation of Work Program	0	0	10	10	0	3	3	0	4	3	4	10	0	4	10	1	4	4	3	10	10	10	4	1	1	1	4	4	4	0	10	4	4	4	4	4	4	4	7	4	4	4	4	3	4	4	3	4	4	10	3	8	10	4	4	4	4	4	4	4	4	4	4	4	0	**4.31**	2
	Staffing & assigning responsibilities	0	0	0	0	0	3	3	0	4	10	3	10	0	4	3	1	3	3	3	10	10	10	4	1	1	1	4	4	4	0	0	4	4	3	2	4	4	3	7	4	4	4	4	3	4	4	3	4	4	10	10	10	10	4	4	3	3	4	4	3	4	4	4	4	4	**3.89**	2
	Construction Procedure and Methodology	0	1	10	10	10	3	0	0	4	1	3	10	0	4	0	2	4	4	0	10	0	0	3	4	1	4	4	4	4	0	10	4	4	4	4	4	4	4	10	4	4	4	3	1	0	4	3	4	4	1	10	1	10	4	4	3	4	4	4	4	4	4	4	4	4	**3.82**	2
	Monitoring Physical Progress of Work	0	0	10	10	10	3	3	0	4	10	4	10	0	4	3	2	4	4	0	10	10	10	3	5	1	1	4	4	4	0	10	4	4	4	4	4	4	4	7	4	4	4	4	3	4	4	3	4	4	10	10	10	10	4	4	4	3	4	4	3	4	4	4	4	4	**4.65**	2
	Monitoring Financial Requirement for Work	0	0	10	10	0	3	0	0	4	3	4	0	0	4	3	2	4	4	0	10	1	1	3	4	1	4	4	4	4	0	10	0	4	4	0	4	4	4	10	4	4	4	3	3	0	0	3	0	4	10	3	8	10	4	4	3	3	4	4	3	4	4	4	4	4	**3.51**	2
6	**Construction and Supervision**																																																																		
	Preconstruction																																																																		
	- Design review	0	0	0	10	0	1	0	0	4	1	2	10	0	3	3	0	0	0	0	10	10	10	0	0	1	1	3	0	1	3	0	0	0	4	0	0	4	1	1	1	4	1	4	3	3	3	3	3	0	1	1	1	10	3	4	1	4	3	3	4	4	4	4	4	4	**2.51**	2
	- Data Collection	0	0	10	3	0	1	0	0	0	1	2	10	0	4	3	0	0	0	0	10	10	10	3	1	1	4	4	4	4	7	0	4	4	4	4	0	4	4	1	4	4	4	4	3	3	3	3	3	0	1	1	1	10	3	4	1	4	3	3	4	4	4	4	4	4	**3.12**	2
	Review of Construction Management Plan	0	0	0	10	0	0	0	0	0	1	2	6	0	4	3	0	0	0	0	10	10	10	0	4	1	1	2	0	4	0	10	0	0	3	3	4	4	4	0	0	4	0	4	3	0	0	3	0	0	0	1	1	10	3	4	1	4	4	4	4	4	4	4	4	4	**2.55**	2
	Assessment of Quality of Works	0	0	10	10	10	0	3	0	4	10	2	0	0	4	3	0	0	0	3	10	10	10	3	0	1	4	3	4	4	0	10	4	4	4	4	4	4	4	10	4	4	4	4	3	2	2	3	2	4	3	10	1	10	4	4	2	4	4	4	4	4	4	4	4	4	**3.97**	2
	Material Testing	10	0	10	10	10	3	3	3	4	10	4	0	0	0	0	1	0	0	3	10	0	0	4	0	1	4	4	4	4	0	10	0	4	4	4	4	4	4	10	4	4	4	3	1	4	3	3	3	4	8	10	8	10	4	4	4	4	4	4	4	4	4	4	4	4	**4.05**	2
	Undertaking Inspections and Tests	0	0	10	10	10	0	0	0	0	10	2	10	0	4	3	0	0	0	0	10	10	10	4	5	1	4	4	4	4	0	0	1	4	4	4	4	4	4	5	4	4	4	4	3	2	2	3	2	4	0	10	1	10	4	4	2	4	4	4	4	4	4	4	4	4	**3.75**	2
	Review / Reporting of Physical Progress	10	10	10	10	10	1	3	0	4	10	2	10	0	4	3	0	4	4	3	10	10	10	3	4	1	4	4	4	4	0	10	4	4	4	4	4	4	4	10	4	4	4	4	3	3	3	3	3	4	4	10	4	10	4	4	3	4	4	4	4	4	4	4	4	4	**4.77**	2
	Review / Reporting of Financial Progress	10	10	10	10	10	1	0	0	4	1	2	10	0	4	3	0	4	4	0	10	10	10	3	4	1	4	4	4	4	0	10	4	4	4	4	4	4	4	10	4	4	4	4	3	4	4	3	4	4	1	1	1	10	4	4	2	4	4	4	4	4	4	4	4	4	**4.34**	2
7	**Contract Management**																																																																		
	Work Program and Time Management	10	0	0	10	0	1	3	0	4	0	3	10	0	4	10	0	4	4	3	10	10	10	3	1	1	1	4	4	4	4	10	4	4	4	2	4	4	4	10	2	4	2	3	1	3	3	1	3	2	0	0	1	10	3	4	2	4	4	0	4	4	4	4	4	4	**3.69**	2
	Cost Control	0	0	0	0	0	1	0	0	0	0	3	10	4	4	10	0	0	0	0	10	10	10	0	1	1	1	4	4	4	3	10	1	0	3	2	0	4	4	10	2	4	2	2	1	2	2	1	0	2	1	0	1	10	3	4	1	4	4	4	4	4	4	4	4	4	**2.89**	2
	Variations	0	0	0	6	0	1	0	0	0	0	3	10	3	4	10	0	0	0	0	10	10	10	0	1	1	1	1	0	4	3	0	0	0	3	1	0	4	4	4	0	4	0	2	1	3	3	1	3	2	4	0	1	10	3	4	0	4	4	4	4	4	4	4	4	4	**2.63**	2
	Dispute Resolution and Arbitration	0	0	0	0	0	1	0	0	0	0	3	0	3	4	1	0	0	0	0	10	10	10	0	1	1	1	1	1	4	2	10	0	0	3	1	1	1	4	0	1	1	0	2	1	0	0	1	0	2	0	0	1	0	0	4	1	2	3	7	2	3	3	3	3	4	**1.80**	1
8	**Quality Management**																																																																		
	Quality Assurance	0	0	10	10	0	1	0	4	4	0	3	10	4	4	10	1	4	4	0	10	10	10	3	4	1	4	0	0	4	4	10	1	4	4	4	4	4	4	5	1	4	1													4	2	2	3	3	2	4	4	0	4	4	**3.72**	2
	Quality Control	0	0	10	10	10	1	3	4	0	10	3	10	0	4	10	1	4	4	3	10	10	0	3	4	1	4	4	4	4	0	10	7	4	4	4	4	4	4	5	3	4	1													4	2	2	3	3	2	0	0	4	0	4	**3.94**	2
	Quality Auditing	0	0	0	10	0	1	0	4	0	3	3	0	0	3	0	1	0	0	0	1	0	0	0	4	1	4	4	3	3	1	10	0	0	0	4	0	4	1	0	1	4	0	3	1	3	0	1	0	4	5	1	5	10		4	2	2	2	2	2	0	0	0	0	4	**1.89**	1

	Key Functional Areas	Individual Competency Scores (Out of 10)																																																																Average Competency Score	Priority
9	**Safety Aspects**																																																																		
	During Construction	0	0	1	10	10	1	4	3	4	3	3	10	3	4	10	2	4	4	4	10	10	10	3	4	1	4	2	4	4	3	10	4	4	4	4	4	4	3	10	4	4	1	3	3	1	1	3	1	4	10	10	10	8		4	2	4	3	3	4	3	3	3	3	4	**4.39**	2
	During Maintenance	0	0	1	10	10	1	4	3	4	10	3	10	3	4	10	2	4	4	1	10	10	10	3	4	1	4	2	4	4	3	10	4	4	4	4	4	4	3	10	4	4	1	3	3	1	1	3	1	4	10	10	10	8		4	2	4	3	3	4	3	3	3	3	4	**4.45**	2
	During Operation	0	0	1	10	0	1	0	3	0	10	3	0	0	4	1	2	0	0	0	10	1	1	3	4	1	4	2	4	0	0	10	4	4	4	4	4	4	3	10	4	4	1	3	3	1	1	3	1	4	10	10	8	8		4	2	4	3	3	4	3	3	3	3	4	**3.27**	2
10	**Financial Management & Systems**																																																																		
	Management of financial instruments and Tax aspects	0	0	0	0	0	0	0	1	0	1	1	10	1	0	10	0	0	0	0	0	10	10	0	1	1	1	0	1	0	1	0	0	0	3	0	1	1	0	0	1	1	0	2	1	0	0	1	0	3	1	1	1	10	0	3	0	1	1	1	1	0	0	0	0	2	**1.31**	1
	Financial MIS – IOTMS and WAMIS	10	3	3	3	0	0	1	1	0	3	1	10	1	0	0	0	0	0	1	0	10	0	0	1	1	1	0	1	0	1	0	0	0	2	0	2	1	0	0	1	1	0		1	0	0	1	0	3	0	6	1	0	0	3	1	1	1	1	1	0	0	1	0	2	**1.28**	1
	Delegation of financial powers	0	0	3	0	0	1	0	1	0	6	1	1	1	0	1	0	0	0	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	4	0	2	1	0	0	1	1	0	2	1	0	0	1	0	3	1	6	1	10	0	3	0	1	1	1	1	0	0	0	0	4	**1.00**	1
	Application of OWD code	10	10	3	10	10	1	0	1	0	10	3	1	2	0	1	0	3	3	0	10	1	1	0	3	1	3	4	1	0	2	10	3	3	4	0	2	1	3	0	1	1	0	2	1	0	0	1	0	3	1	6	1	10	0	4	1	1	1	1	1	0	0	1	0	4	**2.48**	1
	Accounts Audit	10	0	0	10	10	0	0	1	0	0	3	1	2	0	1	0	0	0	0	10	1	1	0	3	1	3	1	2	0	2	10	3	3	3	0	2	2	3	0	2	2	0		1	0	0	1	0	2	0	0	1	10	0	3	0	1	1	0	1	0	0	3	0	2	**1.84**	1
11	**Maintenance**																																																																		
	Identification and assessment of pavement distress	0	0	10	10	10	3	0	4	4	0	2	10	3	3	10	0	4	4	0	3	10	10	4	3	1	3	0	4	3	3	10	3	3	4	3	4	3	4	10	4	4	0	3	3	4	4	3	4	2	1	3	1	0	4	3	1	4	4	4	4	4	4	4	4	4	**3.77**	2
	Condition survey and Bldg maintenance management	0	0	10	10	10	3	3	4	4	0	2	10	3	3	10	1	4	4	3	3	10	10	4	3	1	3	0	4	3	3	10	3	3	4	3	4	4	4	10	4	4	0													3	2	4	4	4	4	4	4	4	4	4	**4.19**	2
	Periodic Maintenance / Routine Maintenance planning	0	0	10	10	10	0	0	4	4	0	2	10	0	4	10	1	4	4	0	3	10	10	4	3	1	3	0	4	4	0	10	3	3	4	3	4	4	4	10	4	4	0	3	3	4	4	3	4	2	10	3	8	10	4	3	2	4	4	4	4	4	4	4	4	4	**4.11**	2
	Proposal preparation for Maintenance Requirement	10	0	10	10	10	0	1	4	4	0	2	10	0	4	10	1	4	0	1	3	10	10	4	3	1	3	0	4	4	0	10	4	4	4	3	4	4	4	10	4	4	0	3	3	2	2	3	2	2	4	3	1	10	4	3	2	4	4	4	4	4	4	4	4	4	**3.97**	2
12	**Other tasks**																																																																		
	Performance appraisal	10	1	10	10	10	1	0	4	4	10	4	0	0	4	10	1	0	0	3	10	10	10	3	1	1	1	1	1	4	0	0	0	0	4	3	1	1	1	1	1	1	0	0	1	0	3	1	3	2	1	10	1	10	0	3	4	3	4	4	3	4	4	4	4	4	**3.23**	2
	Disaster preparedness	0	0	0	0	0	0	1	3	0	1	0	10	0	1	10	0	1	1	0	0	10	10	4	1	1	1	0	4	1	0	10	0	0	1	3	4	1	1	1	2	1	0		1	0	0	1	0	3	1	1	1	10	0	4	0	2	2	0	2	0	0	0	0	0	**1.75**	1
	Legal aspects	0	0	0	0	0	0	0	3	0	1	1	0	1	2	0	0	0	0	1	0	0	0	0	1	1	1	0	1	2	4	0	0	0	1	1	1	2	1	0	0	1	0		1	0	0	1	0	1	0	1	1	10	0	4	0	1	1	3	1	0	0	0	0	0	**0.80**	1
	Analysis of Rates / Schedule of Rates	10	10	10	6	10	7	3	7	4	3	4	10	0	4	0	2	4	4	3	10	10	0	7	1	1	4	4	4	4	0	10	5	4	4	4	4	4	4	10	4	4	4													4	4	4	4	4	4	4	4	4	0	4	**4.66**	2
	Public relation	0	0	0	0	0	0	0	3	0	1	1	1	0	4	0	0	0	0	0	0	1	1	3	1	1	1	0	4	4	0	10	0	4	1	2	4	4	2	3	4	4	0													4	0	4	4	1	4	0	0	0	0	0	**1.53**	1
	Misc. public services																																																																		
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	10	0	10	10	10	1	0	3	0	1	1	0	5	2	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	5	0	3	3	4	1	2	1	0	0	1	1	0													4	0	4	0	0	4	0	0	0	0	0	**1.72**	1
	- calculating 'Fair rent'	10	0	10	10	10	1	3	3	0	0	1	10	2	4	10	1	0	0	3	0	10	10	3	1	1	1	4	4	4	2	0	7	3	4	4	4	4	0	0	4	4	0													4	0	4	0	0	4	4	4	0	4	4	**3.40**	2
	Inter-Departmental Coordination	0	0	0	0	0	0	0	3	0	0	1	10	7	4	10	1	0	0	0	0	10	10	4	1	1	0	0	4	4	4	0	1	1	0	2	4	4	2	1	4	4	0													4	0	3	4	3	3	4	4	0	4	4	**2.45**	1
13	**Information Technology**																																																																		
	Computer applications – M S Office, Web etc.	10	10	0	10	10	7	1	3	3	10	4	10	3	4	8	0	1	1	1	1	10	10	3	4	1	4	3	4	4	3	0	3	3	4	2	2	4	4	10	4	2	4	0	1	0	0	1	0	0	5	10	5	10	3	1	1	1	4	3	1	1	0	2	1	2	**3.65**	2
	Computer applications – Auto CAD, MX Roads, STAAD	0	0	0	0	0	3	1	3	3	6	4	10	1	2	8	0	1	1	1	1	10	10	0	1	1	1	1	1	2	1	0	1	1	3	1	1	1	4	10	1	2	4		1	0	0	1	0	1	8	6	5	0	1	1	1	1	3	3	1	3	3	2	4	2	**2.33**	1
	GIS application for planning	0	0	0	0	0	0	1	3	3	0	4	0	1	1	0	0	1	1	1	1	0	0	0	1	1	1	0	1	1	1	0	0	0	1	3	0	1	1	0	1	2	4	2	1	0	0	1	0	1	0	0	0	0	0	1	1	1	3	3	1	1	0	1	1	0	**0.83**	1
	Project Management – Prima Vera, M S Projects	0	0	0	0	0	1	0	1	0	0	2	0	1	0	0	0	1	1	0	1	0	0	0	1	1	1	0	1	0	1	0	0	0	1	0	1	1	0	0	1	1	0	2	1	0	0	1	0	3	0	0	0	0	0	0	1	1	2	2	1	1	1	1	1	0	**0.55**	1
	e-Governance	0	0	0	0	0	0	1	1	0	0	2	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	1	1	1	0	2	1	0	0	1	0	2	1	0	1	0	1	0	1	1	0	0	1	1	1	1	1	0	**0.65**	1
	Management Information System (HRMIS)	0	0	0	0	0	1	0	1	0	0	2	0	1	1	0	0	1	1	0	1	0	0	0	1	1	1	1	1	1	1	0	0	0	1	0	1	1	0	0	1	1	0		1	0	0	1	0	2	1	0	1	0	0	0	1	1	2	2	1	1	1	1	1	0	**0.59**	1
14	**Personnel Management**																																																																		
	Communication skills	0	0	10	10	0	4	0	3	4	6	4	0	4	4	0	1	3	3	4	10	0	0	4	1	1	1	4	4	4	4	0	4	4	4	4	4	4	3	0	4	4	4	4	1	0	0	1	0	2	0	6	1	10	0	3	4	4	4	4	4	4	4	4	4	4	**3.08**	2
	Management skills	0	0	10	10	0	4	0	4	4	1	4	10	3	4	10	1	3	3	4	10	10	10	4	1	1	1	4	4	4	3	0	4	4	4	4	4	1	3	0	4	4	4	3	3	0	0	3	0	2	0	1	1	10	0	3	4	4	4	4	4	4	4	4	4	4	**3.52**	2
	Decision-making	0	0	0	0	0	0	0	4	4	3	4	10	4	4	10	1	4	4	4	10	10	10	4	1	1	1	4	4	4	4	10	4	0	3	4	4	2	3	0	4	4	4	3	4	0	0	3	0	2	0	3	1	10	0	3	0	4	4	4	4	4	4	4	4	4	**3.32**	2
	Right to Information (RTI)	10	1	10	10	10	1	0	4	3	10	4	0	3	3	0	1	0	0	4	10	0	0	3	1	1	1	1	1	3	3	0	3	4	3	4	2	2	1	4	1	4	1	0	1	0	3	1	3	2	10	10	1	10	0	3	2	4	4	4	4	4	4	4	4	4	**3.22**	2
	Monitoring skills	0	0	10	0	0	3	0	3	4	10	2	10	0	4	10	1	4	4	3	10	10	10	3	1	1	1	4	4	4	0	10	3	4	4	4	4	4	3	1	4	4	4		3	3	3	3	3	0	1	10	1	10	0	3	4	3	4	4	3	4	4	4	4	4	**3.80**	2
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	10	0	10	10	0	3	0	3	3	1	1	1	2	3	1	1	1	1	0	1	1	1	0	1	1	1	1	0	3	2	0	3	0	4	2	1	1	1	1	1	1	0													4	0	3	0	3	3	4	4	0	4	4	**2.02**	1
	Motivation	0	0	7	10	0	0	0	3	4	3	2	10	0	4	10	1	4	4	3	10	10	10	3	1	1	1	4	4	4	0	0	4	4	3	4	4	4	3	1	4	4	4	0	1	0	0	1	0	2	1	3	1	10	0	3	3	4	4	4	4	4	4	4	4	4	**3.28**	2
	Service conditions	10	1	3	10	10	1	0	0	4	3	2	10	4	0	0	1	4	4	3	10	10	0	4	1	1	1	2	4	4	4	10	4	0	0	4	2	2	1	0	4	2	4	0	1	1	3	1	3	2	0	3	1	10	0	3	3	3	4	4	3	4	4	4	4	4	**3.22**	2

Annexure 11

Prioritization based on possibility of working in future – Executive Engineers

	Key Functional Areas	Likely to work in future (%)	Priority
1	**Policy and Planning**		
	Strategic Planning (Master Plan: Roads, Buildings, etc)	47	2
	Public / Private Sector Participation	31	3
	Budgeting Process (Preparation, Control and Outcome)	47	2
	Prioritisation of Investments	37	3
	Phasing of Investments	37	3
	Quality Policy and systems	53	1
2	**Project Preparation**		
	Field surveys	31	3
	Geometric design	53	1
	Land acquisition	26	3
	Utility shifting management	53	1
	Pavement design	58	1
	Traffic and transport Engineering	53	1
	Road Safety	26	3
	Storm water drainage design	47	2
	Bridge design	42	2
	Culvert design	47	2
	Building design – Multi-storeyed	47	2
	- Simple buildings	26	3
	Cost estimation	42	2
	Specification	47	2
3	**Environmental and Social Management**		
	Rehabilitation & Resettlement issues, social assessment	47	2
	Environmental assessment	47	2
4	**Procurement Management**		
	FIDIC Contracts	58	1
	BOT/PPP Contracts	47	2
	NCB / State Government procedure	47	2
	e-procurement	21	4
5	**Project Management**		
	Preparation of Work Program	47	2
	Staffing & assigning responsibilities	42	2
	Construction Procedure and Methodology	47	2
	Monitoring Physical Progress of Work	58	1
	Monitoring Financial Requirement for Work	37	3
6	**Construction and Supervision**		
	Preconstruction		
	- Design review	47	2
	- Data Collection	47	2
	Review of Construction Management Plan	42	2
	Assessment of Quality of Works	47	2
	Material Testing	58	1
	Undertaking Inspections and Tests	58	1
	Review / Reporting of Physical Progress	53	1
	Review / Reporting of Financial Progress	47	2

	Key Functional Areas	Likely to work in future (%)	Priority
7	**Contract Management**		
	Work Program and Time Management	53	1
	Cost Control	47	2
	Variations	42	2
	Dispute Resolution and Arbitration	42	2
8	**Quality Management**		
	Quality Assurance	37	3
	Quality Control	37	3
	Quality Auditing	58	1
9	**Safety Aspects**		
	During Construction	37	3
	During Maintenance	42	2
	During Operation	42	2
10	**Financial Management & Systems**		
	Management of financial instruments and Tax aspects	26	3
	Financial MIS – IOTMS and WAMIS	16	4
	Delegation of financial powers	37	3
	Application of OWD code	21	4
	Accounts Audit	37	3
11	**Maintenance**		
	Identification and assessment of pavement distress	5	4
	Condition survey and Bldg maintenance management	26	3
	Periodic Maintenance / Routine Maintenance planning	47	2
	Proposal preparation for Maintenance Requirement	53	1
12	**Other tasks**		
	Performance appraisal	37	3
	Disaster preparedness	42	2
	Legal aspects	42	2
	Analysis of Rates / Schedule of Rates	21	4
	Public relation	21	4
	Misc. public services		
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	26	3
	- calculating ‘Fair rent’	21	4
	Inter-Departmental Coordination	31	3
13	**Information Technology**		
	Computer applications – M S Office, Web etc.	42	2
	Computer applications – Auto CAD, MX Roads, STAAD	42	2
	GIS application for planning	31	3
	Project Management – Prima Vera, M S Projects	47	2
	e-Governance	47	2
	Management Information System (HRMIS)	42	2
14	**Personnel Management**		
	Communication skills	53	1
	Management skills	42	2
	Decision-making	47	2
	Right to Information (RTI)	53	1
	Monitoring skills	31	3
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	37	3
	Motivation	42	2
	Service conditions	37	3

Annexure 12

Prioritization based on possibility of working in future – Assistant Engineers

	Key Functional Areas	Likely to work in future (%)	Priority
1	**Policy and Planning**		
	Strategic Planning (Master Plan: Roads, Buildings, etc)	16	4
	Public / Private Sector Participation	13	4
	Budgeting Process (Preparation, Control and Outcome)	25	3
	Prioritization of Investments	13	4
	Phasing of Investments	19	4
	Quality Policy and systems	13	4
2	**Project Preparation**		
	Field surveys	19	4
	Geometric design	31	3
	Land acquisition	19	4
	Utility shifting management	28	3
	Pavement design	31	3
	Traffic and transport Engineering	41	2
	Road Safety	13	4
	Storm water drainage design	38	3
	Bridge design	44	2
	Culvert design	38	3
	Building design – Multi-storeyed	38	3
	- Simple buildings	31	3
	Cost estimation	31	3
	Specification	13	4
3	**Environmental and Social Management**		
	Rehabilitation & Resettlement issues, social assessment	31	3
	Environmental assessment	34	3
4	**Procurement Management**		
	FIDIC Contracts	22	4
	BOT/PPP Contracts	19	4
	NCB / State Government procedure	19	4
	e-procurement	13	4
5	**Project Management**		
	Preparation of Work Program	19	4
	Staffing & assigning responsibilities	13	4
	Construction Procedure and Methodology	16	4
	Monitoring Physical Progress of Work	19	4
	Monitoring Financial Requirement for Work	19	4
6	**Construction and Supervision**		
	Preconstruction		
	- Design review	22	4
	- Data Collection	16	4
	Review of Construction Management Plan	19	4
	Assessment of Quality of Works	16	4
	Material Testing	19	4
	Undertaking Inspections and Tests	9	4
	Review / Reporting of Physical Progress	13	4
	Review / Reporting of Financial Progress	13	4
7	**Contract Management**		
	Work Program and Time Management	31	3
	Cost Control	31	3
	Variations	31	3
	Dispute Resolution and Arbitration	34	3

	Key Functional Areas	Likely to work in future (%)	Priority
8	**Quality Management**		
	Quality Assurance	13	4
	Quality Control	13	4
	Quality Auditing	16	4
9	**Safety Aspects**		
	During Construction	22	4
	During Maintenance	22	4
	During Operation	22	4
10	**Financial Management & Systems**		
	Management of financial instruments and Tax aspects	13	4
	Financial MIS – IOTMS and WAMIS	13	4
	Delegation of financial powers	19	4
	Application of OWD code	16	4
	Accounts Audit	9	4
11	**Maintenance**		
	Identification and assessment of pavement distress	22	4
	Condition survey and Bldg maintenance management	13	4
	Periodic Maintenance / Routine Maintenance planning	22	4
	Proposal preparation for Maintenance Requirement	19	4
12	**Other tasks**		
	Performance appraisal	16	4
	Disaster preparedness	13	4
	Legal aspects	9	4
	Analysis of Rates / Schedule of Rates	22	4
	Public relation	13	4
	Misc. public services		
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	3	4
	- calculating 'Fair rent'	9	4
	Inter-Departmental Coordination	16	4
13	**Information Technology**		
	Computer applications – M S Office, Web etc.	28	3
	Computer applications – Auto CAD, MX Roads, STAAD	44	2
	GIS application for planning	47	2
	Project Management – Prima Vera, M S Projects	38	3
13	**Information Technology**		
	e-Governance	34	3
	Management Information System (HRMIS)	38	3
14	**Personnel Management**		
	Communication skills	16	4
	Management skills	19	4
	Decision-making	19	4
	Right to Information (RTI)	22	4
	Monitoring skills	16	4
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	9	4
	Motivation	16	4
	Service conditions	19	4

Annexure 13

Prioritization based on possibility of working in future – Junior Engineers

	Key Functional Areas	Likely to work in future (%)	Priority
1	**Policy and Planning**		
	Strategic Planning (Master Plan: Roads, Buildings, etc)	23	4
	Public / Private Sector Participation	5	4
	Budgeting Process (Preparation, Control and Outcome)	15	4
	Prioritization of Investments	11	4
	Phasing of Investments	6	4
	Quality Policy and systems	18	4
2	**Project Preparation**		
	Field surveys	26	3
	Geometric design	40	2
	Land acquisition	23	4
	Utility shifting management	37	3
	Pavement design	40	2
	Traffic and transport Engineering	37	3
	Road Safety	9	4
	Storm water drainage design	34	3
	Bridge design	9	4
	Culvert design	38	3
	Building design – Multi-storeyed	34	3
	- Simple buildings	29	3
	Cost estimation	35	3
	Specification	32	3
3	**Environmental and Social Management**		
	Rehabilitation & Resettlement issues, social assessment	37	3
	Environmental assessment	34	3
4	**Procurement Management**		
	FIDIC Contracts	25	3
	BOT/PPP Contracts	23	4
	NCB / State Government procedure	23	4
	e-procurement	22	4
5	**Project Management**		
	Preparation of Work Program	32	3
	Staffing & assigning responsibilities	35	3
	Construction Procedure and Methodology	35	3
	Monitoring Physical Progress of Work	31	3
	Monitoring Financial Requirement for Work	34	3
6	**Construction and Supervision**		
	Preconstruction	15	
	- Design review	22	4
	- Data Collection	22	4
	Review of Construction Management Plan	18	4
	Assessment of Quality of Works	29	3
	Material Testing	32	3
	Undertaking Inspections and Tests	25	3
	Review / Reporting of Physical Progress	29	3
	Review / Reporting of Financial Progress	29	3
7	**Contract Management**		
	Work Program and Time Management	35	3
	Cost Control	25	3
	Variations	20	4
	Dispute Resolution and Arbitration	42	2

	Key Functional Areas	Likely to work in future (%)	Priority
8	**Quality Management**		
	Quality Assurance	25	3
	Quality Control	26	3
	Quality Auditing	22	4
9	**Safety Aspects**		
	During Construction	40	2
	During Maintenance	37	3
	During Operation	26	3
10	**Financial Management & Systems**		
	Management of financial instruments and Tax aspects	14	4
	Financial MIS – IOTMS and WAMIS	17	4
	Delegation of financial powers	15	4
	Application of OWD code	18	4
	Accounts Audit	17	4
11	**Maintenance**		
	Identification and assessment of pavement distress	22	4
	Condition survey and Bldg maintenance management	23	4
	Periodic Maintenance / Routine Maintenance planning	22	4
	Proposal preparation for Maintenance Requirement	25	3
12	**Other tasks**		
	Performance appraisal	25	3
	Disaster preparedness	23	4
	Legal aspects	15	4
	Analysis of Rates / Schedule of Rates	25	3
	Public relation	11	4
	Misc. public services		
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	11	4
	- calculating ‘Fair rent’	12	4
	Inter-Departmental Coordination	17	4
13	**Information Technology**		
	Computer applications – M S Office, Web etc.	42	2
	Computer applications – Auto CAD, MX Roads, STAAD	51	1
	GIS application for planning	28	3
	Project Management – Prima Vera, M S Projects	34	3
	e-Governance	32	3
	Management Information System (HRMIS)	35	3
14	**Personnel Management**		
	Communication skills	22	4
	Management skills	23	4
	Decision-making	20	4
	Right to Information (RTI)	22	4
	Monitoring skills	28	3
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	18	4
	Motivation	20	4
	Service conditions	18	4

Annexure 14

OVERALL TRAINING PRIORITY - EXECUTIVE ENGINEERS

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Score	Overall Priority
1	**Policy and Planning**				
	Strategic Planning (Master Plan: Roads, Buildings, etc)	3	2	5	**B**
	Public / Private Sector Participation	1	3	4	**A**
	Budgeting Process (Preparation, Control & Outcome)	2	2	4	**A**
	Prioritisation of Investments	1	3	4	**A**
	Phasing of Investments	1	3	4	**A**
	Quality Policy and systems	3	1	4	**A**
2	**Project Preparation**				
	Field surveys	4	3	7	**D**
	Geometric design	4	1	5	**B**
	Land acquisition	2	3	5	**B**
	Utility shifting management	3	1	4	**A**
	Pavement design	4	1	5	**B**
	Traffic and transport Engineering	4	1	5	**B**
	Road Safety	3	3	6	**C**
	Storm water drainage design	2	2	4	**A**
	Bridge design	2	2	4	**A**
	Culvert design	4	2	6	**C**
	Building design – Multi-storeyed	3	2	5	**B**
	- Simple buildings	3	3	6	**C**
	Cost estimation	3	2	5	**B**
	Specification	4	2	6	**C**
3	**Environmental and Social Management**				
	Rehabilitation & Resettlement issues, social assessment	2	2	4	**A**
	Environmental assessment	2	2	4	**A**
4	**Procurement Management**				
	FIDIC Contracts	2	1	3	**A**
	BOT/PPP Contracts	1	2	3	**A**
	NCB / State Government procedure	3	2	5	**B**
	e-procurement	2	4	6	**C**
5	**Project Management**				
	Preparation of Work Program	4	2	6	**C**
	Staffing & assigning responsibilities	4	2	6	**C**
	Construction Procedure and Methodology	4	2	6	**C**
	Monitoring Physical Progress of Work	4	1	5	**B**
	Monitoring Financial Requirement for Work	3	3	6	**C**
6	**Construction and Supervision**				
	Preconstruction				
	- Design review	3	2	5	**B**
	- Data Collection	3	2	5	**B**
	Review of Construction Management Plan	3	2	5	**B**
	Assessment of Quality of Works	3	2	5	**B**
	Material Testing	4	1	5	**B**
	Undertaking Inspections and Tests	4	1	5	**B**
	Review / Reporting of Physical Progress	4	1	5	**B**
	Review / Reporting of Financial Progress	3	2	5	**B**

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Score	Overall Priority
7	**Contract Management**				
	Work Program and Time Management	3	1	4	**A**
	Cost Control	2	2	4	**A**
	Variations	2	2	4	**A**
	Dispute Resolution and Arbitration	2	2	4	**A**
8	**Quality Management**				
	Quality Assurance	4	3	7	**D**
	Quality Control	4	3	7	**D**
	Quality Auditing	3	1	4	**A**
9	**Safety Aspects**				
	During Construction	3	3	6	**C**
	During Maintenance	3	2	5	**B**
	During Operation	3	2	5	**B**
10	**Financial Management & Systems**				
	Management of financial instruments and Tax aspects	2	3	5	**B**
	Financial MIS – IOTMS and WAMIS	2	4	6	**C**
	Delegation of financial powers	2	3	5	**B**
	Application of OWD code	3	4	7	**D**
	Accounts Audit	2	3	5	**B**
11	**Maintenance**				
	Identification and assessment of pavement distress	3	4	7	**D**
	Condition survey and Bldg maintenance management	3	3	6	**C**
	Periodic Maintenance / Routine Maintenance planning	3	2	5	**B**
	Proposal preparation for Maintenance Requirement	3	1	4	**A**
12	**Other tasks**				
	Performance appraisal	4	3	7	**D**
	Disaster preparedness	3	2	5	**B**
	Legal aspects	2	2	4	**A**
	Analysis of Rates / Schedule of Rates	3	4	7	**D**
	Public relation	2	4	6	**C**
	Misc. public services				
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	3	3	6	**C**
	- calculating 'Fair rent'	3	4	7	**D**
	Inter-Departmental Coordination	3	3	6	**C**
13	**Information Technology**				
	Computer applications – M S Office, Web etc.	3	2	5	**B**
	Computer applications – Auto CAD, MX Roads, STAAD	1	2	3	**A**
	GIS application for planning	1	3	4	**A**
	Project Management – Prima Vera, M S Projects	1	2	3	**A**
	e-Governance	1	2	3	**A**
	Management Information System (HRMIS)	1	2	3	**A**
14	**Personnel Management**				
	Communication skills	4	1	5	**B**
	Management skills	4	2	6	**C**
	Decision-making	4	2	6	**C**
	Right to Information (RTI)	4	1	5	**B**
	Monitoring skills	4	3	7	**D**
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	3	3	6	**C**
	Motivation	4	2	6	**C**
	Service conditions	3	3	6	**C**

Annexure 15

OVERALL TRAINING PRIORITY - ASSISTANT ENGINEERS

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Priority Score	Overall Priority
1	**Policy and Planning**				
	Strategic Planning (Master Plan: Roads, Buildings, etc)	1	4	5	**B**
	Public / Private Sector Participation	1	4	5	**B**
	Budgeting Process (Preparation, Control & Outcome)	1	3	4	**A**
	Prioritization of Investments	1	4	5	**B**
	Phasing of Investments	1	4	5	**B**
	Quality Policy and systems	1	4	5	**B**
2	**Project Preparation**				
	Field surveys	2	4	6	**C**
	Geometric design	2	3	5	**B**
	Land acquisition	2	4	6	**C**
	Utility shifting management	1	3	4	**A**
	Pavement design	2	3	5	**B**
	Traffic and transport Engineering	2	2	4	**A**
	Road Safety	2	4	6	**C**
	Storm water drainage design	1	3	4	**A**
	Bridge design	1	2	3	**A**
	Culvert design	1	3	4	**A**
	Building design – Multi-storeyed	2	3	5	**B**
	- Simple buildings	2	3	5	**B**
	Cost estimation	2	3	5	**B**
	Specification	2	4	6	**C**
3	**Environmental and Social Management**				
	Rehabilitation & Resettlement issues, social assessment	1	3	4	**A**
	Environmental assessment	1	3	4	**A**
4	**Procurement Management**				
	FIDIC Contracts	1	4	5	**B**
	BOT/PPP Contracts	1	4	5	**B**
	NCB / State Government procedure	1	4	5	**B**
	e-procurement	1	4	5	**B**
5	**Project Management**				
	Preparation of Work Program	2	4	6	**C**
	Staffing & assigning responsibilities	2	4	6	**C**
	Construction Procedure and Methodology	2	4	6	**C**
	Monitoring Physical Progress of Work	2	4	6	**C**
	Monitoring Financial Requirement for Work	2	4	6	**C**
6	**Construction and Supervision**				
	Preconstruction				
	- Design review	2	4	6	**C**
	- Data Collection	2	4	6	**C**
	Review of Construction Management Plan	2	4	6	**C**
	Assessment of Quality of Works	2	4	6	**C**
	Material Testing	2	4	6	**C**
	Undertaking Inspections and Tests	2	4	6	**C**
	Review / Reporting of Physical Progress	2	4	6	**C**
	Review / Reporting of Financial Progress	2	4	6	**C**
7	**Contract Management**				
	Work Program and Time Management	2	3	5	**B**
	Cost Control	2	3	5	**B**
	Variations	2	3	5	**B**
	Dispute Resolution and Arbitration	1	3	4	**A**

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Priority Score	Overall Priority
8	**Quality Management**				
	Quality Assurance	2	4	6	**C**
	Quality Control	2	4	6	**C**
	Quality Auditing	1	4	5	**B**
9	**Safety Aspects**				
	During Construction	2	4	6	**C**
	During Maintenance	2	4	6	**C**
	During Operation	2	4	6	**C**
10	**Financial Management & Systems**				
	Management of financial instruments and Tax aspects	1	4	5	**B**
	Financial MIS – IOTMS and WAMIS	1	4	5	**B**
	Delegation of financial powers	1	4	5	**B**
	Application of OWD code	2	4	6	**C**
	Accounts Audit	1	4	5	**B**
11	**Maintenance**				
	Identification and assessment of pavement distress	2	4	6	**C**
	Condition survey and Bldg maintenance management	2	4	6	**C**
	Periodic Maintenance / Routine Maintenance planning	2	4	6	**C**
	Proposal preparation for Maintenance Requirement	2	4	6	**C**
12	**Other tasks**				
	Performance appraisal	2	4	6	**C**
	Disaster preparedness	1	4	5	**B**
	Legal aspects	1	4	5	**B**
	Analysis of Rates / Schedule of Rates	2	4	6	**C**
	Public relation	1	4	5	**B**
	Misc. public services				
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	1	4	5	**B**
	- calculating 'Fair rent'	2	4	6	**C**
	Inter-Departmental Coordination	1	4	5	**B**
13	**Information Technology**				
	Computer applications – M S Office, Web etc.	2	3	5	**B**
	Computer applications – Auto CAD, MX Roads, STAAD	1	2	3	**A**
	GIS application for planning	1	2	3	**A**
	Project Management – Prima Vera, M S Projects	1	3	4	**A**
	e-Governance	1	3	4	**A**
	Management Information System (HRMIS)	1	3	4	**A**
14	**Personnel Management**				
	Communication skills	2	4	6	**C**
	Management skills	2	4	6	**C**
	Decision-making	2	4	6	**C**
	Right to Information (RTI)	2	4	6	**C**
	Monitoring skills	2	4	6	**C**
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	1	4	5	**B**
	Motivation	2	4	6	**C**
	Service conditions	2	4	6	**C**

Annexure 16

OVERALL TRAINING PRIORITY - JUNIOR ENGINEERS

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Score	Overall Priority
1	**Policy and Planning**				
	Strategic Planning (Master Plan: Roads, Buildings, etc)	2	4	6	**C**
	Public / Private Sector Participation	1	4	5	**B**
	Budgeting Process (Preparation, Control and Outcome)	1	4	5	**B**
	Prioritisation of Investments	1	4	5	**B**
	Phasing of Investments	1	4	5	**B**
	Quality Policy and systems	1	4	5	**B**
2	**Project Preparation**				
	Field surveys	2	3	5	**B**
	Geometric design	2	2	4	**A**
	Land acquisition	1	4	5	**B**
	Utility shifting management	1	3	4	**A**
	Pavement design	2	2	4	**A**
	Traffic and transport Engineering	2	3	5	**B**
	Road Safety	1	4	5	**B**
	Storm water drainage design	1	3	4	**A**
	Bridge design	1	4	5	**B**
	Culvert design	2	3	5	**B**
	Building design – Multi-storeyed	1	3	4	**A**
	- Simple buildings	2	3	5	**B**
	Cost estimation	2	3	5	**B**
	Specification	2	3	5	**B**
3	**Environmental and Social Management**				
	Rehabilitation & Resettlement issues, social assessment	1	3	4	**A**
	Environmental assessment	1	3	4	**A**
4	**Procurement Management**				
	FIDIC Contracts	1	3	4	**A**
	BOT/PPP Contracts	1	4	5	**B**
	NCB / State Government procedure	1	4	5	**B**
	e-procurement	1	4	5	**B**
5	**Project Management**				
	Preparation of Work Program	2	3	5	**B**
	Staffing & assigning responsibilities	2	3	5	**B**
	Construction Procedure and Methodology	2	3	5	**B**
	Monitoring Physical Progress of Work	2	3	5	**B**
	Monitoring Financial Requirement for Work	2	3	5	**B**
6	**Construction and Supervision**				
	Preconstruction				
	- Design review	2	4	6	**C**
	- Data Collection	2	4	6	**C**
	Review of Construction Management Plan	2	4	6	**C**
	Assessment of Quality of Works	2	3	5	**B**
	Material Testing	2	3	5	**B**
	Undertaking Inspections and Tests	2	3	5	**B**
	Review / Reporting of Physical Progress	2	3	5	**B**
	Review / Reporting of Financial Progress	2	3	5	**B**
7	**Contract Management**				
	Work Program and Time Management	2	3	5	**B**
	Cost Control	2	3	5	**B**
	Variations	2	4	6	**C**
	Dispute Resolution and Arbitration	1	2	3	**A**

	Key Functional Areas	Priority based on Average Competency Score	Priority based on Likely to work in future (%)	Combined Score	Overall Priority
8	**Quality Management**				
	Quality Assurance	2	3	5	**B**
	Quality Control	2	3	5	**B**
	Quality Auditing	1	4	5	**B**
9	**Safety Aspects**				
	During Construction	2	2	4	**A**
	During Maintenance	2	3	5	**B**
	During Operation	2	3	5	**B**
10	**Financial Management & Systems**				
	Management of financial instruments and Tax aspects	1	4	5	**B**
	Financial MIS – IOTMS and WAMIS	1	4	5	**B**
	Delegation of financial powers	1	4	5	**B**
	Application of OWD code	1	4	5	**B**
	Accounts Audit	1	4	5	**B**
11	**Maintenance**				
	Identification and assessment of pavement distress	2	4	6	**C**
	Condition survey and Bldg maintenance management	2	4	6	**C**
	Periodic Maintenance / Routine Maintenance planning	2	4	6	**C**
	Proposal preparation for Maintenance Requirement	2	3	5	**B**
12	**Other tasks**				
	Performance appraisal	2	3	5	**B**
	Disaster preparedness	1	4	5	**B**
	Legal aspects	1	4	5	**B**
	Analysis of Rates / Schedule of Rates	2	3	5	**B**
	Public relation	1	4	5	**B**
	Misc. public services				
	- issue of N.O.C.(OFC cables, fuel pumps etc.)	1	4	5	**B**
	- calculating 'Fair rent'	2	4	6	**C**
	Inter-Departmental Coordination	1	4	5	**B**
13	**Information Technology**				
	Computer applications – M S Office, Web etc.	2	2	4	**A**
	Computer applications – Auto CAD, MX Roads, STAAD	1	1	2	**A**
	GIS application for planning	1	3	4	**A**
	Project Management – Prima Vera, M S Projects	1	3	4	**A**
	e-Governance	1	3	4	**A**
	Management Information System (HRMIS)	1	3	4	**A**
14	**Personnel Management**				
	Communication skills	2	4	6	**C**
	Management skills	2	4	6	**C**
	Decision-making	2	4	6	**C**
	Right to Information (RTI)	2	4	6	**C**
	Monitoring skills	2	3	5	**B**
	Knowledge of updated codes (e.g. NCB, IRC, BIS)	1	4	5	**B**
	Motivation	2	4	6	**C**
	Service conditions	2	4	6	**C**