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Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

12 DEC 2016

DEPARTMENT ORDER)
)
NO. 224)
Series of 2016)

SUBJECT: **Revised Guidelines on the Design Assessment of DPWH Regional and District Engineering Offices**

In order to attain efficiency in the preparation of architectural and engineering plans, and to enhance the capability and improve the performance of Regional and District Engineering Offices in the delivery of infrastructure projects in terms of cost, time, function, and design life, the Revised Guidelines on the Design Assessment of DPWH Regional and District Engineering Offices, hereto attached as Annex A and the Design Audit Checklists as Annex B are hereby issued for the annual assessment of DPWH Field Offices.

The said Guidelines comprise the procedures on assessment, mechanics of rating, and areas to be audited for plans and design processes, including Variation Order occurrences and Road Safety requirements for projects undertaken by the Regional and District Engineering Offices. This shall be used as basis for the design auditors in undertaking Design Assessment and the preparation of reports and final rating.

This Order shall take effect immediately.

MARK A. VILLAR
Acting Secretary

Department of Public Works and Highways
Office of the Secretary
WIN6R01377

5.1 DBP/RCA

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1.0 Rationale

The DPWH as the engineering arm of the government is tasked to continuously develop its technology for the purpose of ensuring the safety of all infrastructure facilities and securing for all public works and highways the highest efficiency and quality of construction.

The Bureau of Design, as the leading support group in providing quality infrastructure through sound engineering design, developed the Design Audit that covers the evaluation/assessment of detailed architectural and engineering design and processes undertaken by the Regional and District Engineering Offices as to compliance with the latest edition of the DPWH Design Guidelines, Criteria and Standards (DGCS) and other existing applicable laws, codes and Department Orders/Issuances relative to design.

The Design audit aims to enhance the capability and improve the performance of the Regional and District Engineering Offices – Planning and Design Division/Section to ultimately improve the delivery of infrastructure projects in terms of cost, time, function and design life.

2.0 Objectives

The main objectives of the design audit are as follows:

1. To establish best practices within the Planning and Design Division/Section with a view to encouraging such practices to be adopted as appropriate by other offices.

2. To establish those areas where the design process could be strengthened, improved and enhanced.

3. To establish a comparative design performance rating of Regional and District Engineering Offices.

3.0 Areas to be audited

3.1 Compliance to D.O. 56, series of 1995 – All Detailed Engineering Plans, "As-Staked" plans, "As-Built" plans and other related plans should be prepared in conformity with D.O. 56 series of 1995, Re: Quality of Plans, in order to have a good quality in workmanship, and of one standard uniform size of plans for the implementation of the projects.

3.2 Availability of Design Tools – Covers the methodology including the use of engineering tools (computer hardware/software, references, survey equipment, etc.) in the actual execution of design works.

3.3 Proper Document Management – Covers the recording and encoding of the incoming and outgoing Documents (i.e. Letters/Memos, Design Plans, etc.) including storage, archiving and retrieval.

3.4 Survey Data (Topographic/Hydrographic/Drainage Survey) – This covers the conduct of engineering survey which include data gathering of existing manmade and natural features, right-of-way limits and also the establishment of horizontal and vertical controls connected to existing Bureau of Lands Location Monument (BLLM)/NAMRIA PRS Control Station/Benchmark. These data are the basic input for an efficient and economical design of infrastructure projects.

3.5 Geological/Geotechnical Data – Geological investigation covers the collection of geological information & mapping of existing ground formation through ocular inspection relative to the project alignment while geotechnical investigations are among the basic input to achieve a safe and economical detailed design structures and foundations.

3.6 Completeness of Drawing Details – All Detailed Architectural and Engineering plans and other related plans of proposed structures should be complete to include data for survey, geological/geotechnical investigation and other details as indicated in the checklist of requirements for highways, bridges, water engineering projects, and buildings.

3.7 Road Safety – Covers the evaluation of Detailed Engineering Design Plans for Highways and Bridges in terms of compliance to Road Safety requirements.

3.8 Completeness of Design Analysis and Calculation – Include all necessary field investigation data/reports, design analysis and quantity calculations.

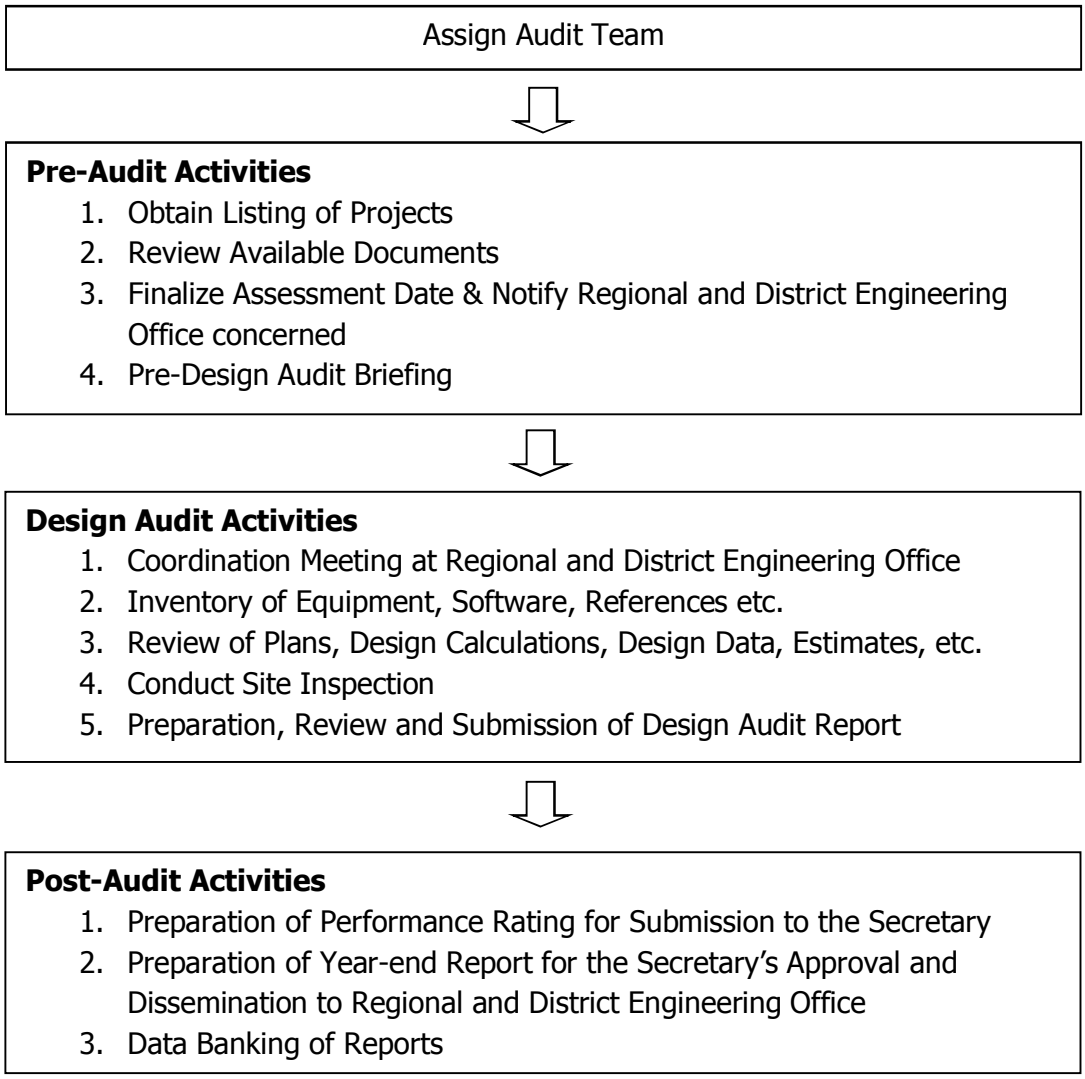
3.9 Variation Order Occurrences – Covers the evaluation of As-Staked/Revised Plans/As-Built Plans of previously audited Detailed Engineering Plans to determine the causes of variation order occurrences in the implementation of projects.

3.10 Site Inspection – Covers the inspection of on-going projects as designed by the concerned office to verify appropriateness of design plans with the actual site condition. Field verification of plans will only be task of the Regional Office Teams. The projects to be inspected shall be chosen from the on-going projects implemented by the Regional and District Engineering Offices.

4.0 Activities in the Design Audit

In the conduct of Design Audit the following activities shall be undertaken (refer to Figure 1).

Figure 1 – WORKFLOW OF ACTIVITIES IN DESIGN AUDIT OF DPWH REGIONAL AND DISTRICT ENGINEERING OFFICES



4.1 Assign Audit Team

The Director, Bureau of Design shall designate the composition of the Central Office Design Audit Team.

The Regional Director/District Engineer shall designate their representative to form part of the Regional/District Design Audit Team.

4.2 Pre-Audit Activities

Upon receipt of the Directive to undertake Design Audit of the specific Regional and District Engineering Offices, the Audit Team shall take the necessary action, to wit:

4.2.1 Obtain Listing of Projects

The Bureau of Design shall prepare a Memorandum to be signed by the Undersecretary for Technical Services requesting the Regional and District Engineering Offices concerned to submit listing of all projects designed and implemented by their respective Offices including listing of all available documents/plans enumerated in the checklist.

4.2.2 Review Available Documents

The list of documents/plan sent by Regional and District Engineering Offices shall be initially evaluated/reviewed by each member of the Design Audit Team relative to their area of concern.

4.2.3 Finalize Assessment Date and Notify Regional and District Engineering Offices concerned

Once initial evaluation is completed, the concerned Regional and District Engineering Offices shall be notified thru a Memorandum to be signed by Undersecretary for Technical Services on the final date of Assessment by the Design Audit Team. Advance information shall be made on what documents shall be needed by the Audit Team.

4.2.4 Pre-Design Audit Briefing

Before departure, the team should be well equipped with enough knowledge and familiarity of their individual role in the field. All issues and concerns shall be thoroughly discussed and clarified.

4.3 Design Audit Activities

During the conduct of actual audit the Design Audit Team shall at all time observe neutrality and will be an instrument to the impartial evaluation of the actual design capability of the Regional and District Engineering Offices. The following activities shall guide the Audit Team.

4.3.1 Coordination Meeting at Regional and District Engineering Offices

The Design Audit Team shall meet the Officials concerned and request their full support and cooperation.

4.3.2 Inventory of Equipment, Software, References, etc.

This involves assessment of their document management system and methodology including the use of engineering design tools in the actual execution of design works.

4.3.3 Review of Plans, design calculations, design data, estimates, etc.

This will require the copy of approved plans of on-going projects being implemented by the Regional/District Engineering Offices. Design Reports, quantity calculations, design analysis, laboratory test result/s and related studies which may be considered as supporting documents in the preparation and subsequent approval of plans are also needed. In addition, As-Staked/Revised Plans/As-Built Plans will be evaluated to check the Variation Order Occurrences of previously audited Detailed Engineering Design Plans.

4.3.4 Conduct site inspection

The ocular inspection shall include on-going projects as designed by the concerned office to verify appropriateness of design plans with the actual site condition. The projects to be inspected shall be chosen from the on-going projects implemented by the Regional and District Engineering Offices.

4.3.5 Preparation, review and submission of Design Audit Report

This is the most crucial activity where decision shall be based on facts and documents on hand. Before finally submitting the draft report, the BOD Staff or Committee designated by the BOD Director shall undertake a thorough review where necessary corrections/ recommendations shall be deliberated and considered.

The Regional Director shall submit to BOD the design audit report for all concerned District Engineering Offices for review/evaluation and validation prior to submittal to the Secretary for approval.

4.3.6 Approval of Design Audit Report

The final report shall be submitted for approval by the Undersecretary for Technical Services.

4.4 Post Audit Activities

Upon approval of the Design Audit Report, appropriate action is required to determine the rating of each office being evaluated.

4.4.1 Preparation of Performance Rating for Submission to the Secretary

Based on the approved Design Audit Report, Performance of the Office concerned shall be rated according to Equipment, Output and other relevant factors. For fairness and transparency, only one rating form shall be used for all Regional/District Engineering Offices performance rating.

4.4.2 Preparation of Year End Report for the Secretary's approval and dissemination to Regional and District Engineering Offices.

Summary of all the Design Audit Reports for the calendar year shall be submitted to the Secretary for approval not later than 15th of December of the current year. The approved reports shall be transmitted to all the Regional and District Engineering Offices for their information and appropriate action.

4.4.3 Data Banking of Reports

The Secretariat as appointed by the BOD Director shall keep the reports and all essential documents relative to the function/activity of the Design Audit Team. For proper and faster dissemination of the Audit Reports and documents, the Secretariat will do the necessary data banking.

5.0 Number of Projects to be Audited

Refer to Tables 1.A & 1.B below, for the number of plans to be audited for each type of plan: Detailed Engineering Design, As-Staked Plans/Revised Plans/ As-Built Plans, and plans subjected to field verification.

Field verification of plans will only be the task of the Regional Office Teams. The projects to be verified on field shall be chosen from the on-going projects implemented by the ROs and DEOs.

Table 1.A: FOR REGIONAL OFFICE

Project Category	No. of Projects to be Audited			No. of Projects for inspection
	DED	Variation Order (As-Staked/ Revised/As-Built Plans)	Total No. of Plans	
Highways	7	3	10	1- Highway project implemented by RO 1- Highway project implemented by DEO
Bridges	2	1	3	
Water Engineering Projects	2	1	3	
Buildings	1	-	1	
Total	**12**	**5**	**17**	**2**

Table 1.B: FOR DISTRICT ENGINEERING OFFICE

Project Category	DED	Variation Order (As-Staked/ Revised/As-Built Plans)	Total No. of Plans
Highways	3	2	5
Bridges	1	1	2
Water Engineering Projects	1	1	2
Buildings	1	-	1
Total	6	4	10

Note:
Plans from other categories shall be substituted in order to complete the required plans (17 for RO, 10 for DEO) to be audited in case the abovementioned requirements cannot be met or not available for Detailed Engineering Design (DED) and/or Variation Order (VO).

6.0 Frequency of design Audit

The design audit shall be done once a year.

7.0 Duration of Audit

The conduct of actual audit in the Regional and District Engineering Offices shall not be longer than one (1) week and three (3) weeks respectively. The draft report shall be submitted within ten (10) working days after the audit.

8.0 Report Format

1. Project Information:

Name of Project :

Location:
Contractor (if any):
Project Cost:
Implementing Office (if any):
Design Engineer:
Reviewed/Checked by:
Approved by:

2. Findings/Observations:

The team shall make analysis of the accomplished checklist and provide specific observation as to compliance with the Design Guidelines, Criteria and Standards and identify the strengths and weaknesses of the design office.

It shall also describe what are shown on the design plans and what was found compliant with Design Guidelines, Criteria and Standards and appropriateness with the actual site condition. Include documents/ evidences to substantiate the findings.

3. **Recommendations:**
Should contain possible action plans relative to the findings/observations.

4. **Annexes:**
Include necessary project documents associated with findings for references purposes.

Prepared by:

_____ _____
Member Team Leader

Date: _____

Date: _____

The Regional Director
District Engineer

DPWH Regional Office No. : _____

District Engineering Office : _____

Sir/Madam:

The BOD Design Audit Team has received and will conduct design audit on the following project design documents:

	PROJECT NAME /LOCATION/ SCOPE OF WORKS	SHEET CONTENTS	DESIGN ANALYSIS/ COMPUTATIONS	QUANTITY CALCULATIONS
1				
2				
3				
4				
5				

	PROJECT NAME /LOCATION/ SCOPE OF WORKS	SHEET CONTENTS	DESIGN ANALYSIS/ COMPUTATIONS	QUANTITY CALCULATIONS
6				
7				
8				
9				
10				

OTHER DOCUMENTS PRESENTED:

_____

_____

Very truly yours,

BOD Design Audit Team:

_____

_____

Conformed:

_____ _____

Chief, Planning & Design Division/Section
(Signature over printed name)

RO Designated Design Audit Representative
(For DEO Audit Only)

9.0 Composition of design Audit Team

The Design Audit Team shall be composed of at least two (2) members headed by Division Chief/Section Chief.

10.0 Design Audit Report Review Committee

The BOD Director shall form a review committee composed of at least five (5) members.

11.0 Rating System

11.1 Areas for Evaluation

The performance of Regional and District Engineering Offices shall be evaluated on the following areas:

A. Detailed Engineering Plans

I. Field Investigation Data
1. Survey Data (Topographic/Hydrographic/Drainage Survey)
2. Geological/Geotechnical Data

II. Quality of Plans
1. Compliance to DO 56, Series of 1995
2. Completeness of Drawings/Details

III. Road Safety
1. Roads and Bridges

IV. Efficiency of Design Management
1. Completeness of Design Analysis and Calculation
2. Adequacy of Design Tools
3. Proper Document Management System

B. Variation Orders (Roads, Bridges, & Flood Control)

I. Compliance to DPWH Issuance
II. Cost

C. Field Inspection

11.2 Performance Level

The Performance of Regional and District Engineering Offices shall be rated in accordance with the scale as shown in Table 2:

Table – 2

Adjective Rating	Numerical Rating (Total Score)
Outstanding	91-100
Very Satisfactory	81-90
Satisfactory	71-80
Fair	61 -70
Unsatisfactory	Below 61

11.3 Mechanics of Ratings

The score of each of the areas to be audited shall be based on the capability of the DPWH Regional and District Engineering Offices in the preparation of detailed engineering and architectural design plans within a given evaluation period.

The rating/evaluation shall be done per category (i.e. roads, bridges, flood control and buildings) based on the checklists provided percentage weight assigned to areas to be audited as shown in Table 3.

Table – 3

Areas for Evaluation	Percentage Weight		
	RO	**DEO**	
A. Detailed Engineering Plans	**80%**	**90%**	
I. Field Investigation Data			
1. Survey Data (Topographic/Hydrographic/Drainage Survey)			15%
2. Geological/Geotechnical Data			15%
Sub-Total			***30%***
II. Quality of Plans			
1. Compliance to DO 56, Series of 1995			5%
2. Completeness of Drawings/Details			30%
Sub-Total			***35%***
III. Road Safety			
1. Roads and Bridges			10%
Sub-Total			***10%***
IV. Efficiency of Design Management			
1. Completeness of Design Analysis and Calculation			15%
2. Adequacy of Design Tools			5%
3. Proper Document Management System			5%
Sub-Total			***25%***
Total (I+II+III+IV)			***100%***
B. Variation Orders (Roads, Bridges, & Flood Control)	**10%**	**10%**	
I. Compliance to DPWH Issuance			5.0%
II. Variation from the Original Plan			5.0%
Total (I+II)			***10%***
C. Field Inspection	***10%***	***N/A***	
FINAL RATING (A+B+C)	***100%***	***100%***	

11.3.1 Rating for Detailed Engineering Plan (DED)

The following are the guidelines for scoring the design capability of DPWH Regional and District Engineering Offices, using the checklists provided and percentage weight assigned to areas to be audited as shown in Table 3.

A. Rating for each area except for Item A.II.3 - *Proper Document Management System* shall be computed from the accomplished checklists as follows:

Step 1 – $\textit{Score per Area} = \dfrac{\textit{Total No. of YES answers}}{\textit{Total No. of Questionnaires - N/A answers}}$

Step 2 – *Rating per Area = Percentage Weight x Score*

Step 3 – *Total Rating per Category = Sum of rating per area of different stages of design process except Item A.II.3*

B. Rating for Item A.II.3 shall be computed based from the accomplished checklists and in separate detail as follows:

B.1 Proper Document Management System (DMR) =5%

Proper Document Management System	Yes	No	Remarks
I. Proper indexing of plans and other design documents			
II. Adequate/specific storage of design plans and other related documents			
III. Plans and other design documents on file (hard copy)			
IV. Plans and other design documents on file (electronic files)			

11.3.2 Rating for Variation Order (As-Staked/Revised/As-Built Plans)

The guidelines for rating/scoring the Variation Order (As-Staked/Revised/As-Built Plans) shall be based on the prepared checklists provided and percentage weight assigned to areas to be audited.

Ratings for each area shall be computed from the accomplished checklists as follows:

Step 1 – *Score per Area* = $\frac{\textit{Total No. of YES answers}}{\textit{Total No. of Questionnaires - N/A answers}}$

Step 2 – *Rating per Area = Percentage Weight x Score*

Step 3 – *Total Rating per Category = Sum of rating per area of different stages of design process*

OVERALL Rating (OvR) - The overall rating shall be the average of the computed Ratings for the three categories (Bridges, Roads, & Water Engineering Projects).

$$\textbf{OvR} = \frac{(\text{BrR}+\text{RdR}+\text{FcR})}{\text{No. of Required Projects}}$$

Required Projects: RO= Five (5) As-staked projects;
DEO=Four (4) As-staked projects

Where:

- **BrR** - Bridge rating
- **RdR** - Road rating
- **FcR** - Water Engineering Projects rating

11.3.3 Rating for Plans/Project subjected to Site Inspection for Regional Office

Required On-going Projects: RO= One (1) project;
DEO=One (1) project

The guidelines for rating/scoring the plans/project subjected to field inspection shall be based on the prepared checklists provided and percentage weight assigned to areas to be audited.

Ratings for each area shall be computed from the accomplished checklists as follows:

Step 1 – *Score per Area* = $\frac{\textit{Total No. of YES answers}}{\textit{Total No. of Questionnaires - N/A answers}}$

Step 2 – *Rating per Area = Percentage Weight x Score*

Step 3 – *Total Rating per Category = Sum of rating per area of different design process*

OVERALL Rating (OvR) **-** The overall rating shall be the average of the computed Ratings for all categories, (Bridges, Roads, Water Engineering Projects, and Buildings).

$$\textbf{OvR} = \frac{(\text{BrR}+\text{RdR}+\text{FcR})}{\text{No. of Required Projects}}$$

Where:

- **BrR** - Bridge rating
- **RdR** - Road rating
- **FcR** - Water Engineering Projects rating

12.0 Final Rating

The Final audit rating for ROs and DEOs shall be computed with the given as the average the computed Ratings for all categories, (Bridges, Roads, water engineering projects, and Buildings).

For **DISTRICT OFFICES:**

$$\textbf{OvR} = \left(\frac{(BrR+RdR+FcR+BuR)}{\text{No. of Required Projects}} + DTR + DMR\right)90\% + V.O.R.(10\%)$$

For **REGIONAL OFFICES:**

$$\textbf{OvR} = \left(\frac{(BrR+RdR+FcR+BuR)}{\text{No. of Required Projects}} + DTR + DMR\right)80\% + V.O.R.10\% + F.I.R.(10\%)$$

Where:

- **BrR** - Bridge rating
- **RdR** - Road rating
- **FcR** - Water Engineering Projects rating
- **BuR** - Building rating
- **DTR** - Design Tools rating
- **DMR** - Document Management System rating
- **V.O.R.** - Variation Order Rating
- **F.I.R.** - Field Inspection rating