097.13 DPWH
20-2169 03-28-2020

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

FEB 27 2020

DEPARTMENT ORDER)
NO. 30)
Series of 2020 Mar. 24. 2020

SUBJECT: Guidelines and Checklists of Requirements in the Preparation of Engineering Plan for Feasibility Study (FS) and Conceptual Design Plan for Highways, Bridges, and Water Engineering Projects

To ensure uniformity and clearly define the engineering plan components for the Feasibility Study and Conceptual Design Plans for highways, bridges, and water engineering projects, the following guidelines and attached checklists marked as Annexes "A1, A2, and A3" and Annexes "B1, B2, and B3", respectively, are hereby prescribed for the guidance and compliance of the Consultants and concerned offices of this Department:

A. Feasibility Study Engineering Plan: Part of the study report shall be the preparation of engineering plans for three (3) or more possible options/schemes in the alignment and/or design of structures considering the technical, financial, environmental, aesthetic, economic and social aspects, among others, in order to determine the most viable scheme. Attached are checklists of requirements in the preparation of engineering plan components of a Feasibility Study Report (Annexes "A1, A2, and A3" for highways, bridges, and water engineering projects, respectively).

B. Conceptual Design Plan is prepared based on the recommended option/scheme from Feasibility Study. It is during this stage of project planning where general concepts, other illustrations and typical details/drawings are presented. The conceptual plan will be the basis for Detailed Engineering Design phase where the design is refined, and plans, specifications, and estimates are established. Attached are checklists of requirements for preparation of conceptual design plan (Annexes "B1, B2, and B3", for highways, bridges, and water engineering projects, respectively).

For compliance.

MARK A. VILLAR
Secretary

5.1.3 DLB/ECM/AMD

Department of Public Works and Highways
Office of the Secretary
WIN0R01527

ANNEX "A1"

CHECKLIST FOR FEASIBILITY STUDY ENGINEERING PLAN (HIGHWAYS)

I. List of Drawings for Feasibility Study Engineering Plan (Highways)

- ☐ Location Plan and Vicinity Map
- ☐ Topographic Plan
- ☐ Typical Roadway Section
- ☐ Plan and Profile
- ☐ Detailed Cross-Sections (100m interval)
- ☐ Other Structures as may be necessary

II. Technical Reports

- ☐ Geological Assessment and Geotechnical Investigation Report
- ☐ Test Pit/Auger Hole (500m interval)
- ☐ Traffic Data/Study Report
- ☐ Pavement Type Recommendation
- ☐ Hydrological Analysis
- ☐ Drainage Structure Recommendation
- ☐ Slope Protection Structure Recommendation
- ☐ Estimated Quantity Calculations
- ☐ Material Source Maps

III. Checklist for Feasibility Study Engineering Plan (Highways)

A. Title Sheet

Verify if the following are indicated:

- ☐ Project Title;
- ☐ Project length and limits; cross check its veracity in the plan and profile; and
- ☐ Convenient scale in the layout of the project.

B. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province of city) of the project;
- ☐ Vicinity Map.

C. Topographic Plan (To be incorporated in the design plan)

- ☐ Verify and check if the Consultant conducted surveys in accordance with the requirements of the DPWH-DGCS, Volume 2-B Engineering Survey 2015 Edition;
- ☐ Verify if all the existing structures are reflected.

D. Typical Roadway Section

Verify if the following are indicated:

- ☐ Width of pavement and shoulder;
- ☐ Type and thickness of pavement structures;
- ☐ Pavement cross slope;
- ☐ Embankment and cut slope;
- ☐ Slope protection works; and

- ☐ Road Right-of-Way limit.

E. Plan and Profile Plan

Plan

Verify if the following are indicated:

- ☐ Centerline, edge of pavement, shoulder edge and road right-of-way limits;
- ☐ Stations at the centerline (at every 100m interval);
- ☐ Drainage structures (existing and proposed) with description/dimension;
- ☐ Locations and construction limits of intersecting roads;
- ☐ Contour lines with standard intervals (major contour interval with label: flat terrain – 1.0m, rolling terrain – 5.0m, hilly/mountainous terrain – 10m);
- ☐ North Arrow Indicator;
- ☐ Description, type, and limits of slope protection works, and other roadside facilities/structures (existing and proposed).

Profile

Verify if the following are indicated:

- ☐ Gradient of finished grade and natural ground profiles, and elevations plotted at every 100m interval;
- ☐ Existing and proposed/possible locations of drainage structures (RCPC/RCBC) including its descriptions;
- ☐ Original ground and finished/designed grade elevation at every 100m interval; and
- ☐ Ordinary and maximum flood elevation (with respect to return period) for drainage structures including the flooded areas/sections.

F. Detailed Cross-Sections (100m interval)

The following should be verified:

- ☐ Embankment and cut slope (if appropriate for the type of soil materials requirement, e.g., indicated for rocks, rippable rocks, and common earth);
- ☐ Finished grade and natural ground elevations templated at 100-meter interval;
- ☐ If templating of cross-sections is consistent with the standard typical roadway section including the requirements for superelevation and widening;
- ☐ Area of cut and fill are indicated per station, including other relevant items of work involved; and
- ☐ Necessity and appropriateness of the indicated existing and proposed slope protection works.

G. Structures

- ☐ Indicate all the proposed structures.

H. Others

- ☐ Indicate all other requirements as specified in the Terms of Reference.

ANNEX "A2"

CHECKLIST FOR FEASIBILITY STUDY ENGINEERING PLAN (BRIDGES)

I. List of Drawings for Feasibility Study Engineering Plan (Bridges)

- ☐ Title Sheet
- ☐ Index of Drawings
- ☐ Location Plan and Vicinity Map
- ☐ General Notes
- ☐ Topographic Plan (showing bridge alignment)
- ☐ Boring Data and Borehole Location
- ☐ General Plan and Elevation
- ☐ Typical Section of Superstructure
- ☐ Typical Section of Abutment
- ☐ Typical Section of Pier

II. Technical Reports

- ☐ Technical Study of Alternative Types of Structure
- ☐ Geotechnical Investigation Report including borehole location plan, boring logs and laboratory test results (One for each proposed abutment location and one for proposed pier foundations at every 100m length of bridge)
- ☐ Hydrologic Analysis / Report
- ☐ Hydraulic Analysis / Report
- ☐ Philippine Coast Guard Navigational Clearance (horizontal and vertical), if applicable
- ☐ Vertical clearance from Civil Aviation Authority of the Philippines (CAAP) whenever bridge project is within the vicinity of an airport

III. Checklist for Feasibility Study Engineering Plan (Bridges)

A. Title Sheet

Verify if the following are indicated:

- ☐ Project Title;
- ☐ Project length (showing beginning and end stations);
- ☐ Convenient scale in the layout of the project; and
- ☐ Name and signature of approving and recommending officials.

B. Index of Drawings

- ☐ Index of drawings with sheets in correct order

C. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province / city) of the project; and
- ☐ Vicinity Map (showing project location).

D. General Notes

- ☐ Design Codes and Specifications; and
- ☐ Material Specifications.

E. Topographic Plan

- ☐ Project area plotted with grid coordinate system;
- ☐ Plan/baseline map indicating the North Arrow direction, Azimuth, distance and stationing, existing natural and man-made structures, contour lines with labels;
- ☐ Established concrete monument: Global Positioning System (GPS), Benchmarks (BMs), and Intermediate Benchmarks (IBMs);
- ☐ Water line elevation; and
- ☐ Borehole location.

F. Boring Data and Borehole Location Plan

- ☐ Borehole Location Plan;
- ☐ Boring Logs with corresponding n-values, description and soil classification; and
- ☐ Elevation and stationings of SPT.

G. General Plan and Elevation

- ☐ Bridge Type ;
- ☐ Span Lengths and Total Bridge Length;
- ☐ Stationings (Piers, Back of Backwalls);
- ☐ Ground Profile showing the elevation of ordinary water level (OWL) and design flood level (DFL at Q_{50} or maximum experienced flood level (MEFL), whichever is greater);
- ☐ Type of foundation (dimensions and arrangement of piles);
- ☐ Hydraulic data (Catchment Area, Discharge, Velocity); and
- ☐ Clear roadway and sidewalk width.

H. Typical Sections of Superstructure

Verify if the following are indicated:

- ☐ Plan and Elevation (including sidewalk, railing and rail post) showing dimensions; and
- ☐ Typical roadway cross section showing sidewalk, railing and rail post.

I. Typical Sections of Abutment

Verify if the following are indicated:

- ☐ Plan, Front and Side Elevations showing dimensions;
- ☐ Section showing backwall, wingwall, coping, shaft and footing dimensions; and
- ☐ Footing / Pile cap plan and elevation showing dimensions including pile size and locations.

J. Typical Sections of Pier

Verify if the following are indicated:

- ☐ Plan, Front and Side Elevations showing dimensions;
- ☐ Section showing coping, column and footing dimensions; and

- Footing / Pile cap plan and elevation showing dimensions including pile size and locations.

K. Structures

- Indicate all the proposed structures.

L. Others

- Indicate all other requirements as specified in the Terms of Reference.

ANNEX "A3"

CHECKLIST FOR FEASIBILITY STUDY ENGINEERING PLAN (WATER ENGINEERING PROJECTS)

I. List of Drawings for Feasibility Study Engineering Plan (Water Engineering Projects)

- ☐ Location Plan and Vicinity Map
- ☐ Topographic Plan
- ☐ Typical Cross Section
- ☐ Plan and Profile
- ☐ Detailed Cross Sections (100m interval)
- ☐ Other Structures as may be necessary

II. Technical Reports

- ☐ Topographic Survey (Ground or Aerial)
- ☐ Hydrographic Survey (Bathymetric for coastal project)
- ☐ Geological Assessment and Geotechnical Investigation Report
  - ☐ A minimum of two (2) exploration points every kilometer with maximum spacing of 500m
- ☐ Hydrologic Analysis (With climate change adaptation)
- ☐ Hydraulic Analysis (Water Surface Profile for different return periods with and without improvement)
- ☐ Oceanographic and Hydrodynamic Analysis (for coastal projects)
- ☐ Inundation Map for different return periods (with and without improvement)
- ☐ Proposed Structural Measures
  - ☐ Alternatives
  - ☐ Comparison
  - ☐ Preliminary Design
- ☐ Estimated Quantity Calculations
- ☐ Material Source Maps

III. Checklist for Feasibility Study Engineering Plan (Water Engineering Projects)

A. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province/city of the project);
- ☐ Vicinity Map

B. Topographic Plan (To be incorporated in the design plan)

- ☐ Alignment
- ☐ Stationing/Limits
- ☐ Contour lines with elevations
- ☐ Direction of flow
- ☐ Wave propagation direction (for coastal projects)
- ☐ Centerline
- ☐ Directional sign/informatory sign (northing)
- ☐ Existing structures (bridges, private and public structures/utilities)
- ☐ Easement Zone

C. Typical Cross Section

- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Freeboard Clearance
- ☐ Type of Structure
- ☐ Side slope/s

D. Plan and Profile

Plan

Verify if the following are indicated:

- ☐ Alignment
- ☐ Stationing/Limits
- ☐ Contour lines with elevations
- ☐ Direction of flow
- ☐ Wave propagation direction (for coastal projects)
- ☐ Centerline
- ☐ Directional sign/informatory sign (northing)
- ☐ Existing structures (bridges, private and public structures/utilities)
- ☐ Easement Zone

Profile

Verify if the following are indicated:

- ☐ Stationing/Limits
- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Elevation of proposed top of structure
- ☐ Existing left and right banks
- ☐ Design riverbed (for dredging only)
- ☐ Existing riverbed/channel bed
- ☐ Natural Ground Line (NGL)
- ☐ Seabed (for coastal projects)

E. Detailed Cross Sections (100m interval)

Verify if the following are indicated:

- ☐ Stationing/Limits
- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Side slope/s
- ☐ Existing left and right banks
- ☐ Existing riverbed
- ☐ Seabed (for coastal projects)
- ☐ Proposed and existing structures

F. Structures

- ☐ Indicate all the proposed structures.

G. Others

- ☐ Indicate all other requirements as specified in the Terms of Reference.

ANNEX "B1"

CHECKLIST FOR CONCEPTUAL DESIGN PLAN (HIGHWAYS)

I. List of Drawings for Conceptual Design Plan (Highways)

- ☐ Coversheet
- ☐ Index of Drawings
- ☐ Location Plan and Vicinity Map
- ☐ General Notes
- ☐ Summary of Quantities (Lump Sum)
- ☐ Topographic Plan
- ☐ Typical Roadway Section
- ☐ Plan and Profile
- ☐ Detailed Cross-Sections (50m interval)
- ☐ Detailed Drainage Cross-Sections
- ☐ Roadway Lighting Plans, if any
- ☐ Other Structures as may be necessary

II. Supporting Documents

- ☐ Geotechnical/Soil Materials Report (Soil Classification, Partial Boring Logs and/or Assumptions)
- ☐ Hydrologic Analysis/Report
- ☐ Traffic Data/Study Report
- ☐ Test Pit/Auger Hole (500m interval)
- ☐ Design Analysis (assumed parameters should conform to the minimum requirements/tolerance):
  - ☐ Pavement Design
  - ☐ Drainage (hydrological analysis and hydraulic calculations)
  - ☐ Slope protection works (slope stability and soil bearing capacity analyses)
  - ☐ Embankment (stability and settlement analysis)
- ☐ Quantity Calculations for every item category (e.g., Earthworks, Surfacing, Drainage and Slope Protection, Miscellaneous Structures, etc.)

Checklist for Conceptual Design Plan (Highways)

A. Title Sheet

Verify if the following are indicated:

- ☐ Project Title;
- ☐ Project length and limits; cross check its veracity in the plan and profile;
- ☐ Convenient scale in the layout of the project; and
- ☐ Signatories/recommending officials and completeness of their corresponding signature

B. Index of Drawings

- ☐ Verify and check if the index of sheets/drawings are complete and in order.

C. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province of city) of the project;
- ☐ Vicinity Map

D. General Information Sheets

- ☐ Verify and check if the general notes indicated are applicable to the project; and
- ☐ Verify the reference of the specifications and special provisions.

E. Summary of Quantities (Approximate)

- ☐ Estimated quantities of all items of work involved

F. Topographic Plan

- ☐ Verify and check if the Implementing Office/Consultant conduct surveys in accordance with the requirements of the DPWH-DGCS, Volume 2-B Engineering Survey 2015 Edition; and
- ☐ Reflecting all the existing structures, reference stations, benchmarks, etc.

G. Typical Roadway Section

Verify if the following are indicated:

- ☐ Width of pavement and shoulder including widening due to superelevation;
- ☐ Type and thickness of pavement structures;
- ☐ Pavement and shoulder cross slopes including the rate of superelevation;
- ☐ Embankment and cut slope, widening, slope protection works, warping and rounding;
- ☐ Road Right-of-Way limit;
- ☐ Pavement design parameters and assumptions; and
- ☐ Slope protection design parameters and assumptions.

H. Plan and Profile Plan

Verify if the following are indicated:

Plan

- ☐ Centerline, edge of pavement, shoulder edge and road right-of-way limits;
- ☐ Stations at the centerline (at every 100m interval);
- ☐ Drainage structures (existing and proposed) indicating the direction of flow and the description/dimension of the structure;
- ☐ Locations and construction limits of intersecting roads;
- ☐ Contour lines with standard intervals (1m interval for flat sections and 5m interval for mountainous sections);
- ☐ Elements of horizontal curves;
- ☐ North Arrow Indicator;
- ☐ Description, type, limits of slope protection works, and other roadside facilities/structures (existing and proposed); and
- ☐ Matchline in every sheet.

Profile

Verify if the following are indicated:

- ☐ Gradient of finished grade and natural ground profiles, and elevations are plotted at every 50m interval;
- ☐ Matchline in every sheet;
- ☐ Existing and proposed drainage structures (RCPC/RCBC) including its descriptions;
- ☐ Profile of the proposed side drainage indicating its slope gradient; and
- ☐ Ordinary and maximum flood elevation for drainage structures including the flooded areas/sections;

I. Detailed Cross-Sections (50m interval)

The following should be verified:

- ☐ Embankment and cut slope (if appropriate for the type of soil materials requirement e.g., rocks, rippable rocks, and common earth);
- ☐ Finished grade and natural ground elevations templated at every 50m interval
- ☐ If templating of cross-sections is consistent with the standard typical roadway section including the requirements for superelevation and widening;
- ☐ Area of cut and fill are indicated, including other relevant items of work involved; and
- ☐ Necessity and appropriateness of the existing and proposed slope protection works/structures.

J. Detailed Drainage Cross-Sections

The following should be verified:

- ☐ Templating of drainage structures at the proper invert elevations;
- ☐ Finished grade and natural ground elevations;
- ☐ Headwall and wingwall of drainage structure;
  - ☐ Scour protection are provided as needed
- ☐ Quantity of different items of work involved

K. Roadway Lighting Plans (if applicable)

- ☐ General Notes and/or Specifications;
- ☐ Legends and Symbols;
- ☐ Plans of Streetlights;
- ☐ Plans for Pedestrian Overpasses/Underpasses Lighting;
- ☐ Plans for Lighting Protections;
- ☐ One Line and Schematic Diagrams; and
- ☐ Other Details

L. Structures

- ☐ Indicate all the proposed structures.

M. Others

- ☐ Indicate all other requirements as specified in the Terms of Reference.

ANNEX "B2"

CHECKLIST FOR CONCEPTUAL DESIGN PLAN (BRIDGES)

I. List of Drawings for Conceptual Design Plan (Bridges)

- ☐ Title Sheet
- ☐ Index of Drawings
- ☐ Location Plan and Vicinity Map
- ☐ General Notes
- ☐ Summary of Quantities (Lump Sum)
- ☐ Topographic Plan (showing bridge alignment)
- ☐ Boring Data and Borehole Location
- ☐ General Plan and Elevation
- ☐ Typical Section of Superstructure
- ☐ Typical Section of Abutment
- ☐ Typical Section of Pier
- ☐ Construction Procedure, if necessary

II. Supporting Documents

- ☐ Feasibility Study Report
- ☐ Geotechnical Investigation Report including borehole location plan, boring logs and laboratory test results (at every proposed location of abutment and pier foundation)
- ☐ Hydrologic Analysis / Report
- ☐ Hydraulic Analysis / Report
- ☐ Philippine Coast Guard Navigational Clearance (horizontal and vertical), if applicable
- ☐ Design Analyses
  - ☐ Structural Design and Analysis
  - ☐ Seismic Analysis
  - ☐ Foundation Design and Analysis
- ☐ Quantity Calculations for every item category (e.g. Bridge Construction, etc.)

III. Checklist for Conceptual Design Plan (Bridges)

A. Title Sheet

Verify if the following are indicated:

- ☐ Project Title;
- ☐ Project length (showing beginning and end stations);
- ☐ Convenient scale in the layout of the project; and
- ☐ Name and signature of approving and recommending officials.

B. Index of Drawings

- ☐ Index of drawings with sheets in correct order

C. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province / city) of the project; and
- ☐ Vicinity Map (showing project location).

D. General Notes

- ☐ Design Codes and Specifications;
- ☐ Design Loadings; and
- ☐ Material Specifications.

E. Topographic Plan

- ☐ Project area plotted with grid coordinate system;
- ☐ Plan/baseline map indicating the North Arrow direction, Azimuth, distance and stationing, existing natural and man-made structures, contour lines with labels;
- ☐ Reference points and Elements of Curve;
- ☐ Established concrete monument: Global Positioning System (GPS), Benchmarks (BMs), and Intermediate Benchmarks (IBMs);
- ☐ Water line elevation; and
- ☐ Borehole location.

F. Boring Data and Borehole Location Plan

- ☐ Borehole Location Plan;
- ☐ Boring Logs with corresponding n-values, description and soil classification; and
- ☐ Elevation and stationings of SPT.

G. General Plan and Elevation

Verify if the following are indicated:

- ☐ Bridge Type;
- ☐ Span Lengths and Total Bridge Length;
- ☐ Stationings (Piers, Back of Backwalls);
- ☐ Ground Profile showing the elevation of ordinary water level (OWL) and design flood level (DFL at Q_{50} or maximum experienced flood level (MEFL), whichever is greater);
- ☐ Type of foundation (dimensions and arrangement of piles);
- ☐ Hydraulic data (Catchment Area, Discharge, Velocity); and
- ☐ Clear roadway and sidewalk width.

H. Typical Sections of Superstructure

Verify if the following are indicated:

- ☐ Plan and Elevation (including sidewalk, railing and rail post) showing dimensions;
- ☐ Typical roadway cross section showing sidewalk, railing and rail post; and
- ☐ Typical superstructure section showing dimensions.

I. Typical Sections of Abutment

Verify if the following are indicated:

- ☐ Plan, Front and Side Elevations showing dimensions;
- ☐ Section showing backwall, wingwall, coping, shaft and footing dimensions; and

- ☐ Footing / Pile cap plan and elevation showing dimensions including pile size and locations.

J. Typical Sections of Pier

Verify if the following are indicated:

- ☐ Plan, Front and Side Elevations showing dimensions;
- ☐ Section showing coping, column and footing dimensions; and
- ☐ Footing / Pile cap plan and elevation showing dimensions including pile size and locations.

K. Structures

- ☐ Indicate all the proposed structures.

L. Others

- ☐ Indicate all other requirements as specified in the Terms of Reference.

ANNEX "B3"

CHECKLIST FOR CONCEPTUAL DESIGN PLAN (WATER ENGINEERING PROJECTS)

I. List of Drawings for Conceptual Design Plan (Water Engineering Projects)

- ☐ Cover Sheet
- ☐ Index of Drawings
- ☐ Location Plan and Vicinity Map
- ☐ General Notes/Legends, Abbreviations & Symbols
- ☐ Summary of Quantities
- ☐ Topographic Plan
- ☐ Soil Boring Logs
- ☐ General Layout Plan
- ☐ Typical Cross Section
- ☐ Plan and Profile
- ☐ Detailed Cross Sections (100m interval)
- ☐ Details

II. Supporting Documents

- ☐ Hydrographic Survey Plan
  - ☐ River Cross Sections
  - ☐ River Profile
  - ☐ Bathymetric survey (for coastal projects)
- ☐ Geotechnical/Soil Materials Report
  - ☐ A minimum of two (2) exploration points every kilometer with maximum spacing of 500m
- ☐ Design Analysis (assumed parameters, should conform to the minimum requirements/tolerance)
  - ☐ Hydrologic Analysis
  - ☐ Hydraulic Analysis (Water Surface Profile)
  - ☐ Slope Stability Analysis
  - ☐ Oceanographic and Hydrodynamic Analysis (for coastal project)
- ☐ Quantity Calculations for every item category (e.g., Structure Excavation, Embankment, Concrete Slope protection, etc.)

III. Checklist for Conceptual Design Plan (Water Engineering Projects)

A. Cover Sheet

Verify if the following are indicated:

- ☐ Letter head/logo of Proponent Office
- ☐ Name and location of Project
- ☐ Name and signatures of officials with designation who prepared/submitted, recommended and approved plans
- ☐ For project prepared by consultants-includes the standard format for the waiver of responsibility

B. Index of Drawings

- ☐ Verify and check if the index of sheets/drawings are complete and in order

C. Location Plan/Vicinity Map

Verify if the following are indicated:

- ☐ Location (province/city of the project);
- ☐ Vicinity Map

D. General Information Sheets

Verify if the following are indicated:

- ☐ Codes and References
- ☐ Hydraulic Parameters (return period, drainage area, discharge, velocity)
- ☐ Civil and Structural
- ☐ Legends/symbols and abbreviations

E. Summary of Quantities (Approximate)

- ☐ Estimated quantities of all items of work involved

F. Topographic Plan

- ☐ Stationing/Limits
- ☐ Contour lines with elevations
- ☐ Direction of flow
- ☐ Wave propagation direction (for coastal projects)
- ☐ Centerline
- ☐ Location, description and elevation of benchmarks
- ☐ Directional sign/informatory sign (northing)
- ☐ Existing structures (bridges, private and public structures/utilities)
- ☐ Easement Zone

G. Soil Boring Logs

Verify if the following are indicated:

- ☐ Elevation and Stationing of SPT
- ☐ N-Values
- ☐ Description and Soil Classification

H. General Layout Plan

Verify if the following are indicated:

- ☐ Stationing/Limits (beginning to end of project)
- ☐ Contour lines with elevations
- ☐ Location of boreholes
- ☐ Direction of flow
- ☐ Centerline
- ☐ Location, description and elevation of benchmarks
- ☐ Directional sign/informatory sign (northing)
- ☐ Existing structures (bridges, private and public structures/utilities)
- ☐ Easement Zone

I. Typical Cross Section

- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Freeboard Clearance
- ☐ Type of Structure
- ☐ Side slope/s
- ☐ Type of embankment material and degree of compaction

J. Plan and Profile

Plan

Verify if the following are indicated:

- ☐ Alignment
- ☐ Stationing/Limits
- ☐ Contour lines with elevations
- ☐ Location of boreholes
- ☐ Direction of flow
- ☐ Wave propagation direction (for coastal projects)
- ☐ Centerline
- ☐ Location, description and elevation of benchmarks
- ☐ Azimuths, Distances, and PI No. and check the orientation of the azimuth and accuracy of distances between PI's.
- ☐ Directional sign/informatory sign (northing)
- ☐ Existing structures (bridges, private and public structures/utilities)
- ☐ Elements of horizontal curves including its limit
- ☐ Easement Zone
- ☐ Matchline/s

Profile

Verify if the following are indicated:

- ☐ Stationing/Limits
- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Freeboard Clearance
- ☐ Elevation of proposed top of structure/berm
- ☐ Elevation at the top of cut-off wall/pile cap at the foot of revetment
- ☐ Existing left and right banks
- ☐ Design riverbed (for dredging only)
- ☐ Existing riverbed/channel bed
- ☐ Invert elevations for drainage structures
- ☐ Drainage slope
- ☐ Natural Ground Line (NGL)
- ☐ Seabed (for coastal projects)

K. Detailed Cross Sections (100m interval)

Verify if the following are indicated:

- ☐ Stationing/Limits
- ☐ Ordinary Water Level (OWL)
- ☐ Design Flood Level (DFL)
- ☐ Mean Sea Level (MSL)
- ☐ Mean Lower Low Water (MLLW)
- ☐ Mean Higher High Water Level (MHHW)
- ☐ Design High Water Level (DHWL)

} For coastal projects

- ☐ Freeboard Clearance
- ☐ Side slope/s
- ☐ X and Y coordinates and required dimensions
- ☐ Elevation of proposed top of structure/berm
- ☐ Existing left and right banks
- ☐ Existing riverbed
- ☐ Seabed (for coastal projects)
- ☐ Tabulated quantity of Items of Works involved

L. Details

Verify if the following are indicated:

- ☐ End Protection Works
- ☐ Slope Protection Works
- ☐ Scour Protection
- ☐ Foot Protection

M. Structures

- ☐ Indicate all the proposed structures.

N. Others

- ☐ Indicate all other requirements as specified in the Terms of Reference.