

## Construction Management (WAC 463-42-245)

**WAC 463-42-245 PROPOSAL — CONSTRUCTION MANAGEMENT.**

*The applicant shall describe the organizational structure including the management of project quality and environmental functions.*

*[Statutory Authority: RCW 80.50.040(1) and chapter 80.50 RCW. 81-21-006 (Order 81-5), §463-42-245, filed 10/8/81.]*

## **2.13 CONSTRUCTION MANAGEMENT (WAC 463-42-245)**

### **2.13.1 CONSTRUCTION MANAGEMENT - ORGANIZATION**

Duke Energy Grays Harbor, LLC (DEGH) will be the contracting entity for the entire project and will contract for the turnkey engineering, procurement and construction (EPC) of the project with the EPC contractor. DEGH will assemble and maintain a staff of professional engineering and construction personnel to monitor the EPC contractor's performance and to ensure adherence to all contract specifications and requirements throughout the execution of the work.

Organization charts depicting the project's anticipated DEGH construction oversight organization and the EPC contractor's engineering and construction organization are shown on Figures 2.13-1 and 2.13-2, respectively. The EPC contractor will be responsible for the design, engineering, and construction of the entire project, for field quality assurance and quality control (QA/QC), and for environmental compliance. Where appropriate, subcontractors will be used to accomplish portions of the work. As shown on Figure 2.13-2, the DEGH Project Manger will be responsible for all work accomplished on the project, with subcontractors reporting to the Project Manager or the Project Manager's designee.

### **2.13.2 QUALITY ASSURANCE AND QUALITY CONTROL**

DEGH will implement QA/QC procedures throughout the project. A formal QA/QC Program will be in place during all phases of the project to ensure that the equipment suppliers deliver their components as designed and specified and the installation of the equipment is completed as specified. DEGH will prepare a Project Procedures Manual that describes project activities from the initiation of final design activities through startup of the plant. This document will include a Project QA/QC Plan to be used during all phases of the work. The QA/QC Plan will address key aspects of the project such as vendor shop and field work activities and the activities each contractor will use to ensure and document that work accomplished for the project is of acceptable quality.

DEGH's engineering and construction personnel will periodically audit the EPC contractor, including reviews of documentation and surveillances of field activities to ensure compliance with the project specifications and with the requirements of the QA/QC Plan. For the installation and alignment of major equipment, the acceptance of DEGH's field inspectors will be required prior to final sign-off of the project. The audits, inspections, and surveillances of DEGH will be described in a written plan that will include the checks listed below.

#### 2.13.2.1 Gas Turbine Generator

- Verify drawings and weld procedure specification (WPS) review/accepted status
- Verify materials
- Review all applicable non-destructive examination (NDE) records
- Witness or review results of hydrostatic, operational, performance, rotor balance, rotor runout, hi-pot, overspeed testing
- Check flange finish/protection
- Check painting/marketing/preparation for shipment

#### 2.13.2.2 Steam Turbine Generator

- Verify drawings and weld procedure specification (WPS) review/accepted status
- Verify materials for casting(s) and appurtenances
- Review all applicable non-destructive examination (NDE) records
- Review all casting repair procedures and witness repairs
- Witness or review results of hydrostatic, operational, performance, rotor balance, rotor runout, hi-pot, overspeed testing
- Check flange finish /protection
- Check painting/marketing/preparation for shipment

#### 2.13.2.3 Heat Recovery Steam Generator

- Verify drawings and WPS review/accepted status
- Verify materials
- Review all applicable NDE records
- Verify dimension
- Witness hydrostatic, performance and run testing
- Witness control panel operational testing
- Check overall visual (including welding)
- Inspect refractory
- Check flange finish/protection
- Check painting/marketing/preparation for shipment
- Inspect all associated subordered equipment (e.g., stacks, ladders, platforms, and expansion joints)

#### 2.13.2.4 Pumps

- Verify drawings and WPS review/accepted status
- Verify materials
- Review all applicable NDE records
- Dimension verification
- Witness or review hydrostatic, performance, net positive suction head (NPSH) test results
- Check overall visual (including welding)

- Check flange finish/protection
- Check painting/marketing/preparation for shipment

#### 2.13.2.5 Water Treating System

- Verify drawings and WPS review/accepted status
- Verify materials
- Review all applicable NDE records
- Verify dimensions
- Witness hydrostatic (piping) and operational testing
- Check visual (including welding)
- Check flange finish/protection
- Check painting/marketing/preparation for shipment
- Inspect associated subordered equipment (e.g., pumps, vessels, and vessel lining installations)

#### 2.13.2.6 Piping and Piping Specialties

- Verify materials
- Verify dimensions
- Witness, or review results of pressure testing and NDE
- Check flange finish/protection
- Check visual (including welding)
- Check painting/tagging/preparation for shipment

#### 2.13.2.7 Pressure Vessels

- Verify drawings and WPS review/accepted status
- Verify materials
- Review all applicable NDE records
- Review hardness test records
- Review post-weld heat treatment (PWHT) records
- Verify dimensions
- Witness hydrostatic and nozzle reinforcing pad air/soap testing
- Check overall visual (including welding)
- Check flange finish/protection
- Check painting/marketing/preparation for shipment

#### 2.13.2.8 Control Valves 6 Inches and Larger, Displacer Level Instruments and Special Relief Valves

- Verify compliance to engineering specifications
- Verify materials
- Witness pressures and operational test

- Check flange finish/protection
- Check painting/marketing/preparation for shipment

#### 2.13.2.9 Distributed Control System

- Review hardware and software engineering
- Review materials and assemblies per specifications
- Witness selected subsystem tests
- Witness full system functional testing
- Verify tagging/wiring/preparation for shipment

#### 2.13.2.10 Main Transformers

- Witness and/or review winding resistance measurements
- Witness and/or review polarity and phase displacement tests
- Witness and/or review no load losses and excitation current at rated voltage and frequency
- Witness and/or review high potential and induced potential tests
- Witness and/or review impulse tests, reduced full wave, chopped wave and full wave
- Witness and/or review regulation and efficiency calculations
- Verify compliance to engineering specifications
- Check painting/tagging/preparation for shipment

#### 2.13.2.11 Main Breakers

- Witness and/or review rated continuous current
- Witness and/or review short circuit current rating
- Witness and/or review dielectric withstand tests
- Witness and/or review switching tests
- Witness and/or review insulator tests
- Witness and/or review mechanical life tests
- Witness and/or review terminal loading tests
- Witness and/or review partial discharge tests
- Witness and/or review sound level limits
- Witness and/or review insulation coordination tests
- Verify compliance to engineering specifications
- Check painting/tagging/wiring/preparation for shipment

#### 2.13.2.12 Environmental Compliance

The Certificate Holder has an active Environmental Protection Control Plan for the Satsop Combustion Turbine (CT) Project that was approved by EFSEC on September 19, 2001. Where appropriate, this plan will be revised to include environmental protection procedures specific to the Phase II Project, including revisions necessary to comply with the stipulations of the amended Site Certification Agreement (SCA).

This Environmental Protection Control Plan covers all construction activities. The DEGH Project Manager or the Project Manager's designee will be responsible for complying with the requirements of the Environmental Protection Control Plan. Both Energy Northwest and DEGH will audit the project for environmental compliance, including periodic reviews of documentation and surveillance of field activities, as follows:

- Review erosion control plan
- Review spill prevention plan
- Witness construction implementation
- Witness erosion control performance
- Observe spills and cleanup
- Review spill reports

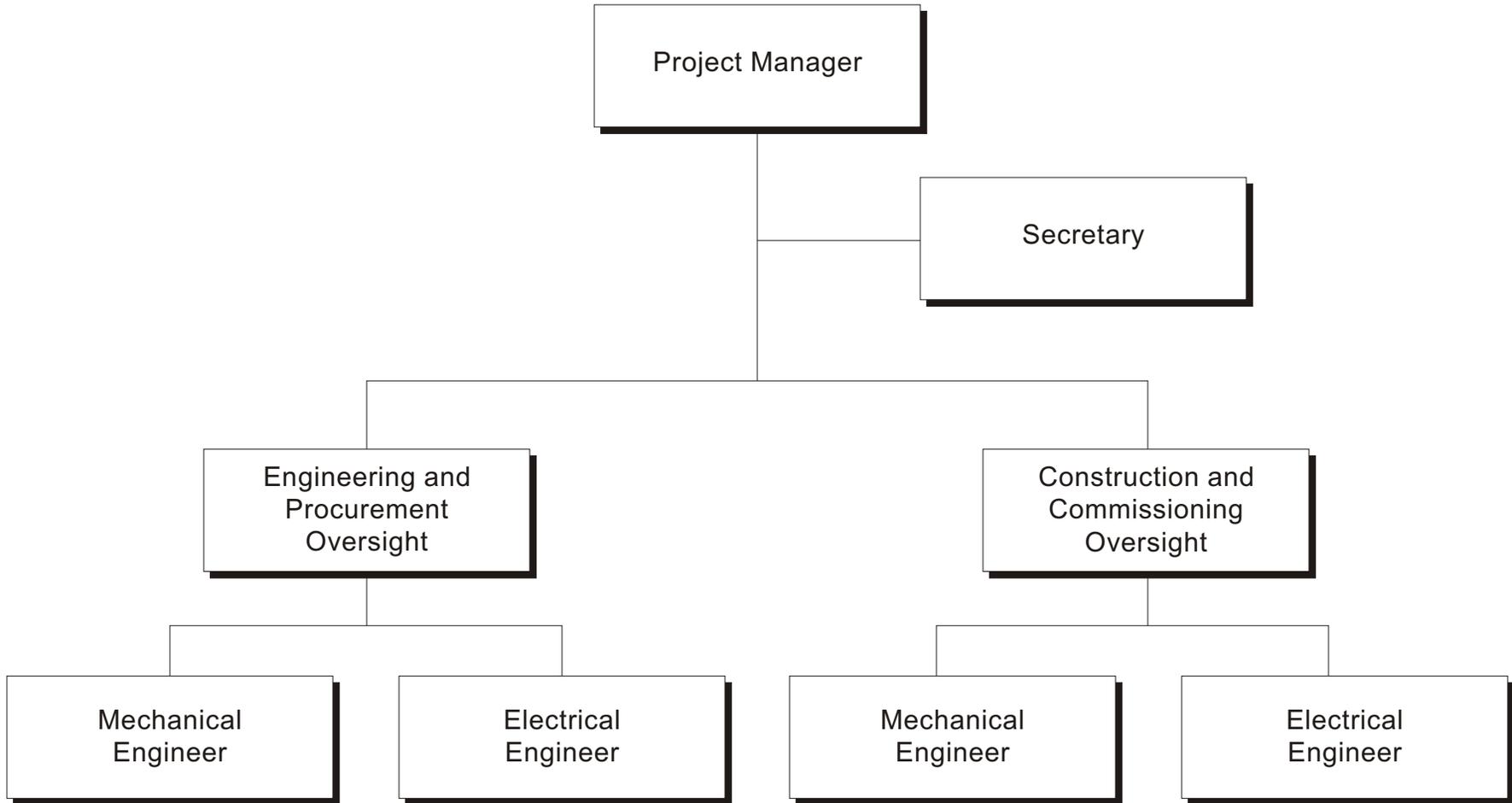


Figure 2.13-1  
**Duke Energy Grays Harbor Construction Organization**

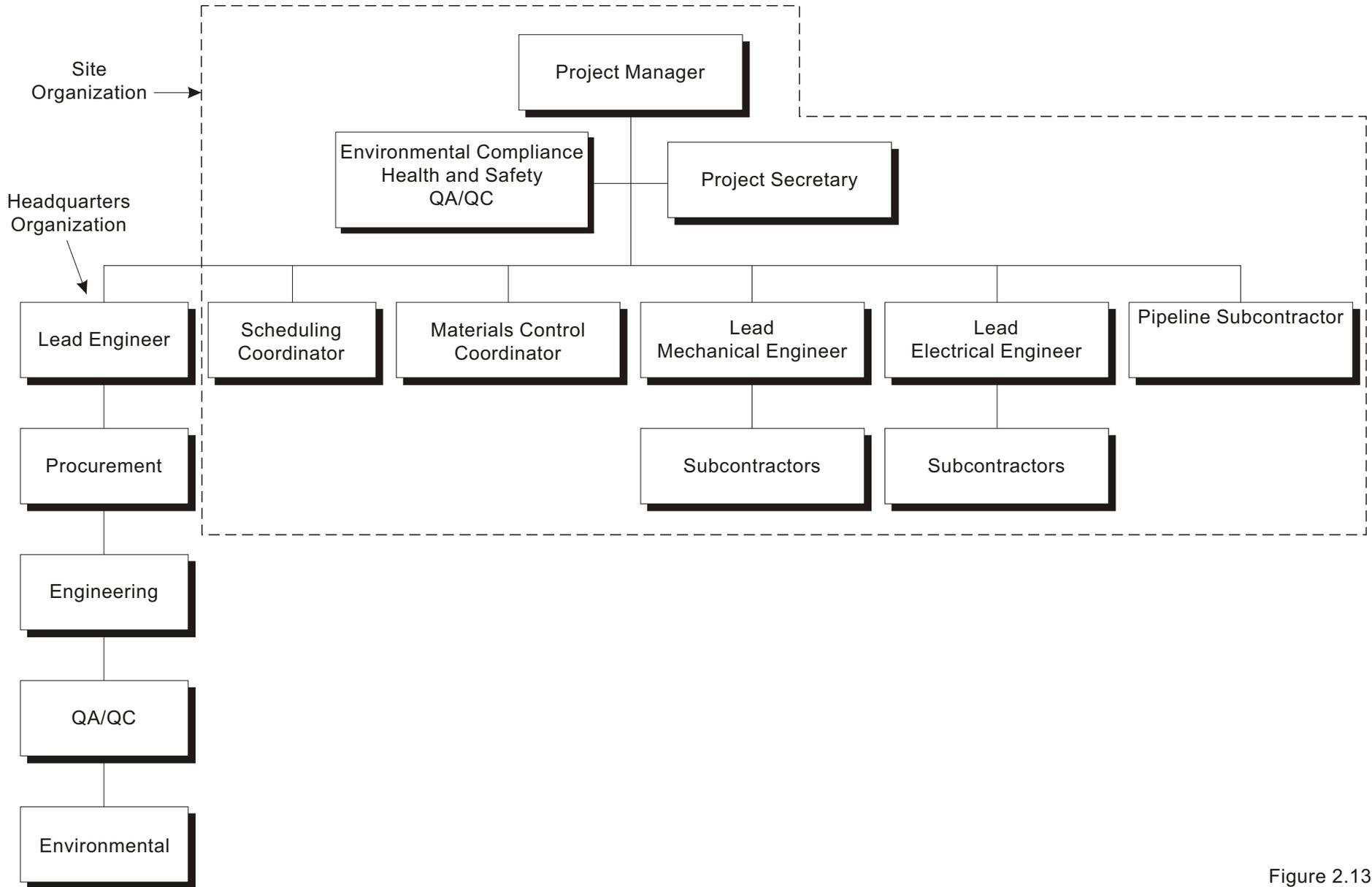


Figure 2.13-2  
**EPC Contractor Anticipated Organization**