

MIDLAND PLANT UNITS 1 AND 2
SOILS REMEDIAL CONSTRUCTION
INDEPENDENT ASSESSMENT
OF AUXILIARY BUILDING UNDERPINNING

CONSUMERS POWER COMPANY
DESIGN PRODUCTION DEPARTMENT
MIDLAND PROJECT

SPEC NO CC-100

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1.0 GENERAL

1.1 Background

Owner (Consumers Power Co) is engaged in a comprehensive program to resolve soils-related issues identified during plant construction.

Excessive settlement of the diesel generator building (DGB), resulting from inadequately compacted plant fill, was identified in July 1978. Since then, extensive exploratory tests and studies have been conducted to determine the exact cause and extent of this problem. Subsequently, other soils related problems have been identified.

In addition to the soils related issues, remedial actions are necessary to correct a design problem affecting the two borated water storage tank (BWST) foundations.

On April 30, 1982 the ASLE issued an order further defining the total scope of the soils project.

1.2 Remedial Action

The following remedial actions of soils related issues are being implemented at the plant site.

- a. The settlement problem of the DGB has been essentially resolved by preloading the area in and around the building to achieve accelerated consolidation of plant fill which supports the building.
- b. Inadequately compacted fill under portions of the auxiliary building and feedwater isolation valve pit (FIVP) will be resolved by constructing underpinning under the auxiliary building and replacing the existing backfill under the FIVP. When completed, the new foundations will carry the loads to the undisturbed natural soils underlying the site. These new foundations will meet newly established seismic design criteria promulgated by the NRC.
- c. Inadequately compacted fill under the overhang portion of the service water pump structure will be resolved by constructing underpinning similar to that under the auxiliary building.
- d. Design problems associated with the BWST foundation will be resolved by the preload of the valve pit, which has been completed, reinforcing the old ring beam with a new concentric ring beam, and releveling the tank for Unit 1.

- e. Potential liquefiable pockets of backfill supporting some Seismic Category I structures and utilities will be resolved by providing a permanent plant dewatering system.
- f. The adequacy of all underground Seismic Category I utilities will be ensured by a variety of actions ranging from acceptance of existing facilities to complete replacement.

1.3 Identification of Contractors

Bechtel Power Corporation (BPC) is under contract to the Owner for construction of the total plant including the soils remedial work. BPC has subcontracted the underpinning of the auxiliary building to Mergentime Corporation. The design and operation of the underpinning instrumentation for the auxiliary building and the service water pump structure has been subcontracted to Wiss, Jenney, Estener and Associates. The service water pump structure underpinning and some associated underground pipe work has been subcontracted to Spencer White and Prentiss. Remaining soils remedial construction will be performed by BPC and others.

2.0 SCOPE OF WORK

2.1 Consultant's Scope

The Consultant shall perform an independent assessment of construction activities related to the auxiliary building and feedwater isolation valve pit remedial work at the Midland site. The diesel generator building, borated water storage tank, service

water pump structure, permanent dewatering system and buried piping remedial work is excluded.

The scope of work involved in this independent assessment consists of the following.

- a. Development of an assessment program and preparation of a Project Quality Plan.
- b. Overview of the design and construction documents to gain familiarity with the work.
- c. Evaluation of the adequacy of technical and related administrative construction and quality procedures.
- d. Evaluation of the degree of compliance with technical and administrative construction and quality procedures.
- e. Daily reviews with the Owner and his contractor to obtain any clarifying information and project documents that are needed to carry out this assessment. The Owner and the consultant will establish a specific communication plan at the start of the assessment.
- f. Submittal of any nonconformance reports to the NRC with a copy to the Owner.
- g. Submittal of brief weekly progress reports and a final report to the NRC with a copy to the Owner.

- h. The final report shall be overviewed by a senior level Consultant management and technical team.
- i. The Consultant and its subcontractors shall not be responsible for implementation of corrective action, however their professional opinion may be requested.

2.2 Owner's Scope

To support the independent assessment, the following information and facilities will be made available by the Owner.

- a. Design and construction drawings, specifications, and procedures.
- b. Building and pier monitoring data.
- c. Test results.
- d. Construction schedules.
- e. Any and all other information and access to facilities needed by the Consultant and it's approved subcontractors.
- f. On-site office facilities.

2.3 Schedule

The duration of the assessment will be determined by the assessment team.

The Owner's commitment to the NRC is that the program will cover, at a minimum, the next three months of the auxiliary building underpinning work as authorized by the NRC. The assessment shall continue until the assessment team concludes that not only is the design intent being implemented but, also that the construction is consistent with industry standards. The assessment will further assure that the QA Program is being implemented in accordance with the construction documents.

Mobilization of the Consultant is required to start during the week of September 20, 1982.

3.0 ORGANIZATION

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 The Consultant shall provide overall management of the program. The ~~Project Manager~~ ^{Site Leader} and other key individuals shall be assigned on a full time basis.

The Consultant shall hire Parsons, Brinkerhoff, Quade and Douglas, Inc as a subcontractor to assist in the assessment and to provide specialized technical expertise for the underground and underpinning work. The Consultant shall provide technical and on-site office personnel as required. Prior to their assignment to the work, the resumes of all technical persons shall be submitted to the Owner to document the professional competence of the assessment team. If additional subcontractors are needed, advance permission from the Owner is required.

4.0 QUALITY ASSURANCE REQUIREMENTS

4.0 Quality Assurance Requirements

4.1 Quality Assurance Program

Stone & Webster shall have a QA Topical Report which is approved by the NRC and which complies with the requirements of ANSI N45.2 as endorsed by USNRC Regulatory Guide 1.28 (6/72). As applicable to the scope of this contract, Stone & Webster shall implement this Topical Report.

4.2 Access to Facilities and Records

At anytime throughout the contract period, Stone & Webster shall provide access to the Owner, the Owner's representatives and the NRC, to all facilities and work records related to the scope of this contract.

4.3 Project Quality Plan

Stone & Webster shall prepare a Project Quality Plan which will be implemented for this contract. The Plan shall address, at a minimum, the following:

- a. The project organization and authorities and responsibilities of each organizational element;
- b. The control of suppliers;
- c. The qualification of personnel performing assessment;
- d. The reporting of non-conformances to the Owner and the NRC.

4.4 Document Submittals

4.4.1 Stone & Webster shall submit the QA Topical Report and the Project Quality Plan for Consumers Power review and approval.

Written Consumers Power concurrence shall be obtained prior to the start of any appraisal activities. In addition, any revisions to the Project Quality Plan shall be submitted for CP Co concurrence prior to implementation.

The above submittals, plus those identified in Section 2.1 shall be submitted to:

Consumers Power Company

1945 West Parnall Road

Jackson, MI 49201

Attention: J A Mooney

5.0 INDEPENDENCE CRITERIA

The following independence criteria shall apply to the Consultant's, its subcontractors and all its employees assigned to this task.

- a. The companies or individuals shall not have had any direct previous involvement with the Midland activities that they will be reviewing.

- b. The companies or individuals shall not have been previously hired by the Owner to perform design, construction or quality work relative to the soils remedial program.
- c. The individuals shall not have been previously employed by the Owner within the last three years.
- d. The individual shall not have present household members employed by the Owner.
- e. The individuals shall not have any relatives employed by the Owner in a management capacity.
- f. The individuals shall not own or control significant amounts of Owner stock.

In addition to the above considerations, the following procedural guidelines will be used to assure independence:

An auditable record will be provided of all Owner comments on draft or final reports, procedures or other documents, any changes made as result of such comments, and the reasons for such changes.

The Consultant shall include these criteria in all subcontracts with certification of compliance provided to the Owner.