



Northern Indiana Public Service Company

General Offices / 5265 Hohman Avenue / Hammond, Indiana 46325 / Tel.: 853-5200 (219)

EUGENE M. SHORB
FIRST VICE PRESIDENT

June 29, 1979

Mr. Dominic B. Vassallo, Acting Director
Division of Project Management
Office of Nuclear Reactor Regulations
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Northern Indiana Public Service Company
Bailly Generating Station - Nuclear 1
Docket No. 50-367

Dear Mr. Vassallo:

To facilitate the staff's review of the foundation design for Bailly Generating Station - Nuclear 1, the following reports and responses have previously been submitted:

- Design Analysis and Installation of Driven H-Pile Foundation, Report SL-3629, submitted on March 8, 1978
- NIPSCO's Responses to NRC Staff Questions, submitted on July 14 and July 20, 1978
- Indicator Pile Program, submitted on September 26, 1978
- Supplementary Information on Driven H-Pile Foundation on December 4, 1978

Subsequent to these submissions, NIPSCO has had discussions with the NRC Staff and continued to evaluate foundation pile design. On the basis of these further evaluations, we have developed alternative proposals for improving subsoil conditions within preconstruction

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areas and for defining criteria for pile placement, pile splices, and pile load tests. As a result, enclosed are forty (40) copies of the document, "Supplementary Information, Clarifications, and Alternatives to the Foundation Pile Design," which presents these alternatives and further details of our proposed pile installation techniques.

We believe that this enclosure may serve to resolve some of the staff's questions and clarify our positions with regard to:

Remedial measures in preconstruction areas;

Delineation of load test procedures;

Tolerance criteria for placement of production piles;

Pile splices.

These clarifications are intended to aid the staff in finalizing review of the Bailly foundation design. We shall appreciate receiving staff views concerning the alternatives outlined in the enclosure, which in our opinion, are equally acceptable to our previous proposals.

Very truly yours,



EMS:cgs
Enclosure

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SUPPLEMENTARY INFORMATION, CLARIFICATIONS, AND
ALTERNATIVES TO THE FOUNDATION PILE DESIGN

1. Preconstruction Areas

During the fall of 1978, Northern Indiana Public Service Company conducted an extensive program of investigations within the areas that were influenced by preconstruction activities to evaluate soil conditions within these areas and to collect sufficient data to develop a program of remedial measures to improve these areas.

The results of these studies were submitted to the NRC for review in the form of a supplementary report titled:

"Supplementary Information on Driven H-Pile
Foundations, Bailly Generating Station -
Nuclear 1" December 4, 1978, Chapter 2

The proposed remedial programs included grouting in the immediate vicinity of the source of disturbance, as explained in detail in the December 4, 1978, report, and driving H-piles to densify soils encountered within the areas which were influenced by the preconstruction activities.

On the basis of further evaluations, we suggest the following, equally acceptable, alternative program for improving the subsoil conditions within the preconstruction areas:

- a. Ten-inch nominal diameter pipe piles would be driven within the preconstruction areas. The piles would be driven with

a Vulcan 016 hammer with a rated energy of 48,750 ft.-lbs. or equivalent.

- b. Grouting would be eliminated. The original intent of grouting was to fill the holes that could have been created by the extraction of test piles, anchor piles, jet pipes, or holes created by drilling. The same objectives would be achieved by the compaction resulting from the displacement of soil by the 10-inch nominal diameter pipe piles.
- c. Other specific details of the program would be defined within the general guidelines provided in Chapter 2 of the December 4, 1978, report for each of the preconstruction areas.

2. Pile Driving Criteria

As part of the driving criteria for the production H-piles that will be seated in the glacial lacustrine interbedded dense sand/hard clay deposit, we submit the following alternative criteria, which would supplant the criteria presented in Chapter 4 of the December 4, 1978, report.

The piles would be driven in accordance with the following criteria:

- a. A minimum pile tip elevation, as defined by Figure 5 of the Indicator Pile Program report (September 26, 1978.)
- b. A minimum of 500 blows for the last five feet
- c. A minimum of 100 blows for the last one foot
- d. A minimum of 30 blows for the last three inches

Item a. has been added for clarification and Item d. would replace the previously proposed criteria of a minimum of 10 blows for the last inch.

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3. Pile Placement Tolerance Criteria

The installation of the proposed H-piles would satisfy the following criteria with respect to placement tolerances as an alternative to the proposed tolerance criteria in Chapter 5 of the December 4, 1978 report:

a.	<u>Tolerance</u>	<u>Acceptable</u>	<u>Deviation, Consulting Engr.'s Approval Required</u>	<u>Deviation, Consulting Engr.'s Approval Required, NRC will be Informed of the Deviation and the Resolution</u>
	Location	0 - 3"	3" - 6"	> 6"
	Rotation	0 - 10°	10° - 20°	> 20°
	Plumbness	0 - 2%	2% - 4%	> 4%

4. Pile Splices

This alternative would revise the criteria presented in Chapter 5 of the December 4, 1978 report.

The occurrence of a splice within the top 30 feet of the pile shall be reviewed by the Consulting Engineers, who will determine the resolution and the nature of remedial measures, if required.

5. Pile Load Test

A minimum of six production piles would be load tested as follows:

- The load test would be conducted using ASTM D1143-74, quick optional procedure, up to a total load of 400 tons.
- The 400-ton load would be maintained for 24 hours and deflection readings will be obtained during this time.
- At the end of 24 hours, the load would be increased further in accordance with the quick optional procedure to failure or to a maximum load of 600 tons.

These criteria are alternatives to the information presented in Chapters 3 and 4 of the December 4, 1978 report.