Progress Energy

Serial: NPD-NRC-2009-035 10CFR52.79
March 9, 2009

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 2 AND 3
DOCKET NOS. 52-022 AND 52-023
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 056 RELATED TO STABILITY OF SUBSURFACE MATERIALS AND FOUNDATIONS

Reference: Letter from Manny Comar (NRC) to James Scarola (PEC), dated February 6, 2009, "Request for Additional Information Letter No. 056 Related to SRP Section 02.05.04 for the Shearon Harris Units 2 and 3 Combined License Application"

Ladies and Gentlemen:

Progress Energy Carolinas, Inc. (PEC) hereby submits our response to the Nuclear Regulatory Commission's (NRC) request for additional information provided in the referenced letter.

A response to the NRC request is addressed in the enclosure. The enclosure also identifies a change that will be made in a future revision of the Shearon Harris Nuclear Power Plant Units 2 and 3 application.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or me at (919) 546-6107.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 9, 2009.

Sincerely,

Garry D. Miller
General Manager
Nuclear Plant Development

Enclosure/Attachments

cc : U.S. NRC Director, Office of New Reactors/NRLPO
U.S. NRC Office of Nuclear Reactor Regulation/NRLPO
U.S. NRC Region II, Regional Administrator
U.S. NRC Resident Inspector, SHNPP Unit 1
Mr. Manny Comar, U.S. NRC Project Manager

Progress Energy Carolinas, Inc.
P.O. Box 1551
Raleigh, NC 27602

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NRO

Shearon Harris Nuclear Power Plant Units 2 and 3
Response to NRC Request for Additional Information Letter No. 056 Related to SRP Section 02.05.04 for the Shearon Harris Units 2 and 3 Combined License Application, Dated February 6, 2009

NRC RAI #	Progress Energy RAI #	Progress Energy Response
02.05.04-15	H-0418	Response enclosed – see following pages

NRC Letter No.: HAR-RAI-LTR-056

NRC Letter Date: February 6, 2009

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 02.05.04-15

Text of NRC RAI:

The Westinghouse AP 1000 DCD, Revision 17, Tier 2, Table 2.5-1, incorporated into the application, provides the limits of acceptable settlement without additional evaluation. The table states that the total settlement for the nuclear island foundation mat is 3 inches and the differential settlement across the nuclear island foundation mat is limited to ½ inch in 50 ft. Additionally, the differential settlement between the nuclear island and the turbine building is limited to ½ inch, and the differential settlement between the nuclear island and other buildings is also limited to ½ inch.

In the case of a nuclear island founded on rock and the turbine building and other surrounding buildings founded on shallow foundations supported on fill, please provide a description of the program/method that you will implement to ensure that the actual settlement/differential settlement of the structures do not exceed the DCD settlement criteria.

PGN RAI ID #: H-0418

PGN Response to NRC RAI

PGN has verified that the differential settlements between the HAR 2 and HAR 3 nuclear islands and the adjacent structures will be less than ½ inch. As shown in HAR FSAR Figures 2.5.4-211A and 212A, the existing soil profile will be removed and replaced with compacted granular fill underneath the Turbine and Radwaste Buildings. A new commitment is made to replace excavated rock with concrete fill to a higher minimum elevation of 242 ft. beneath the Turbine Buildings. This will limit the elastic compression of granular fill over concrete fill beneath these structures. FSAR Figures 2.5.4-211A and 212A will be modified for this commitment, as shown in Attachments 02.05.04-15A and 02.05.04-15B. These revised figures also clarify that compacted cohesive backfill is not being used under adjacent buildings. The Annex Buildings will be founded on concrete fill or rock, and the corresponding differential settlements between the Annex Buildings and the nuclear islands will be less than ½ inch.

Conservative and appropriate engineering parameters were assigned to the compacted granular fill for these calculations, based on the planned fill properties listed in HAR FSAR Table 2.5.4-212. As discussed in HAR FSAR Subsection 2.5.4.5.3, the engineering properties listed in Table 2.5.4-212 will be included in the construction specifications, and backfill sources, once identified, will be tested to demonstrate that they are consistent with these properties.

Associated HAR COL Application Revisions:

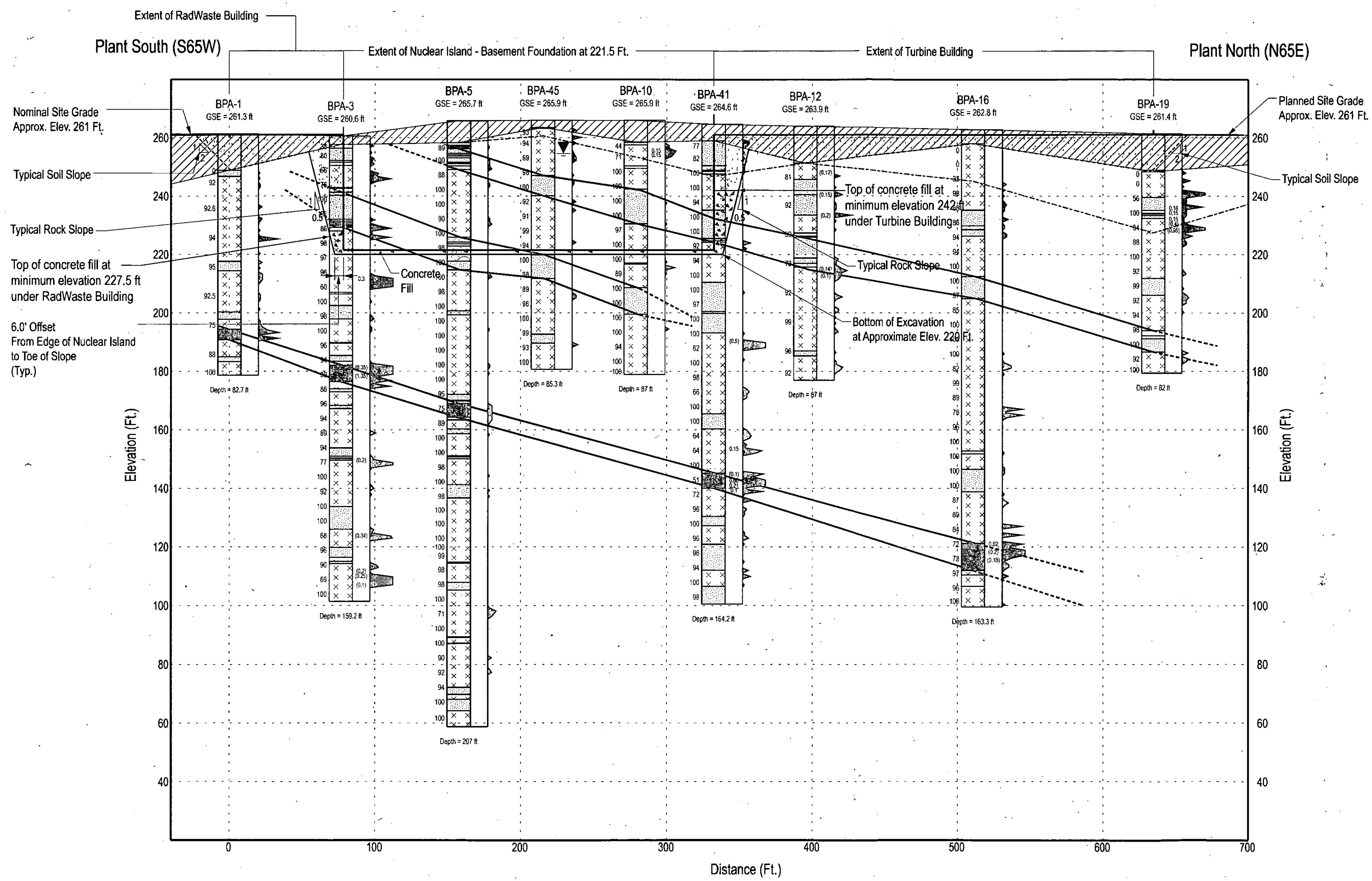
The following changes will be made to the HAR FSAR in a future revision:

Revise FSAR Figures 2.5.4-211A and 2.5.4-212A as shown in Attachments 02.05.04-15A and 02.05.04-15B.

Attachments/Enclosures:

Attachment 02.05.04-15A: Revised Figure 2.5.4-211A (1 page)

Attachment 02.05.04-15B: Revised Figure 2.5.4-212A (1 page)



LEGEND

- Extent of Excavation For Safety-Related Structures
- Conceptual Excavation Extent For Other Related Structures
- Concrete Fill
- Compacted Granular Fill or Concrete Fill
- Ground Water Level

NOTES:

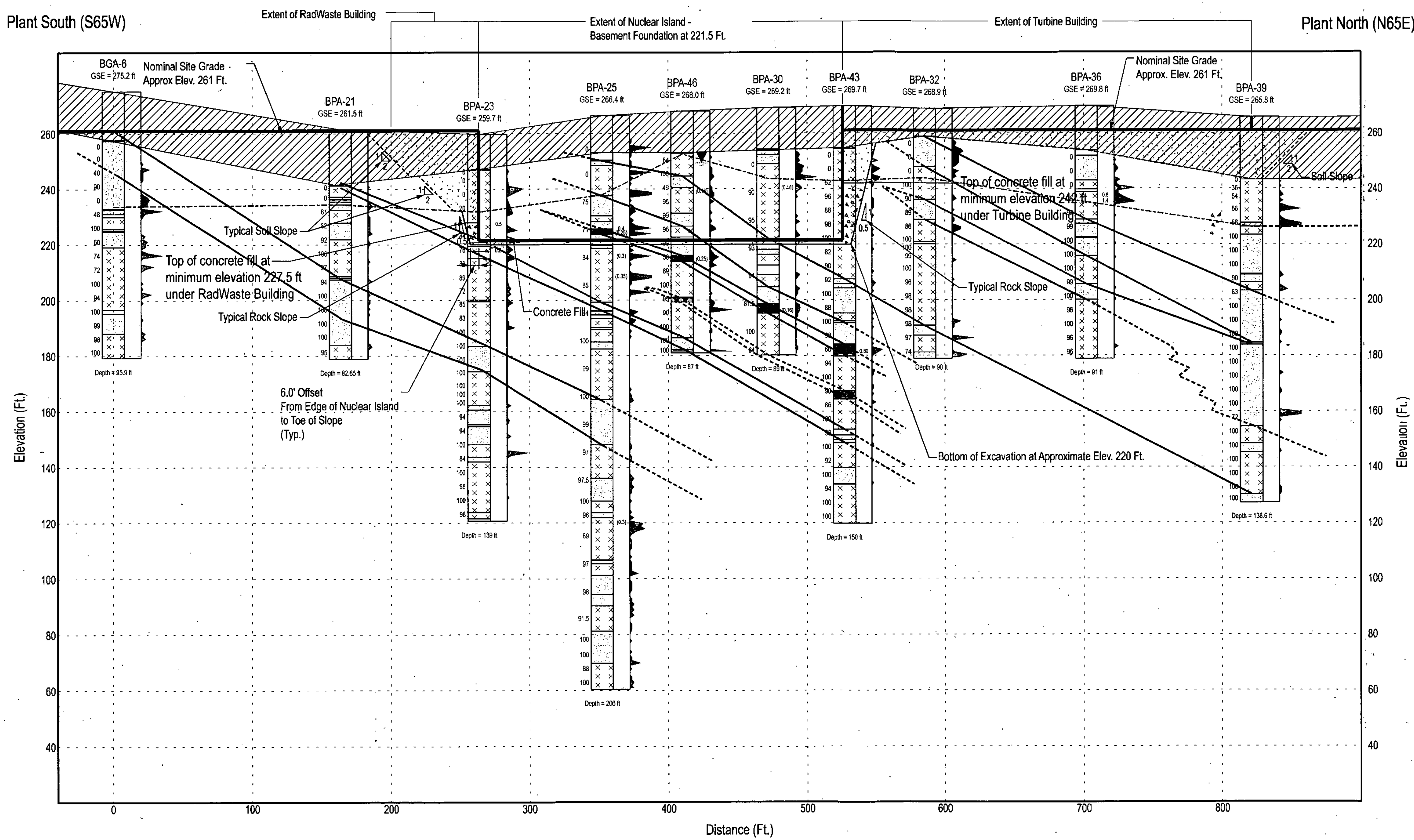
1. Clay seams or fracture zones with total clay thickness >0.1 ft. thick are shown at their approximate observed elevation.
2. See Table 2.5.4-201 for depths and descriptions of soil and top of sound rock.
3. See Figure 2.5.4-202 for Cross-Section locations.
4. Depth of excavation under non safety related structures shown as conceptual and subject to change during detailed design.
5. Excavation extents for nuclear island shown are typical and subject to change based on subsurface conditions encountered during construction. Soil excavation sideslope may range from 0.25H:1V to 0.5H:1V, and rock excavation sideslope may range from 0.25H:1V to 0.5H:1V.
6. See Figure 2.5.4-204A for lithology symbols and correlation lines between boreholes.

DATA SOURCE:

1. CH2M HILL Borehole (Appendix 2BB)

Progress Energy Carolinas
Shearon Harris Nuclear Power Plant Units 2 and 3
Part 2, Final Safety Analysis Report
New Hill, North Carolina

Structure Foundation and Excavation Extents - HAR 2 Plant South to North
FIGURE 2.5.4-211A
Attachment 02.05.04-15A



LEGEND

- Extent of Excavation For Safety-Related Structures
- Conceptual Excavation Extent For Other Related Structures
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- Compacted Granular Fill or Concrete Fill
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NOTES:

1. Clay seams or fracture zones with total clay thickness >0.1 ft. thick are shown at their approximate observed elevations.
2. See Table 2.5.4-201 for depths and descriptions of soil and top of sound rock.
3. See Figure 2.5.4-202 for Cross Section locations.
4. Depth of excavation under non-safety related structures shown as conceptual and subject to change during detailed design.
5. Excavation extents for nuclear island shown are typical and subject to change based on subsurface conditions encountered during construction. Soil excavation sideslope may range from 1.5H:1V to 2H:1V, and rock excavation sideslope may range from 0.25H:1V to 0.5H:1V.
6. See Figure 2.5.4-205A for lithology symbols and correlation lines between boreholes.

DATA SOURCE:

1. CH2M HILL Borehole (Appendix 2BB)

Progress Energy Carolinas
Shearon Harris Nuclear Power Plant Units 2 and 3
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New Hill, North Carolina

Structure Foundation and Excavation Extents - HAR 3 Plant South to North
FIGURE 2.5.4-212A

Attachment 02.05.04-15B