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Georgia Power
the southern electric system

October 8, 1979

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555

NRC DOCKET 50-366
OPERATING LICENSE NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNIT 2
BUILDING SETTLEMENT

Gentlemen:

Your letter of July 20, 1979, requested additional information with regard to our proposed Technical Specifications for settlement of Category I structures. The request for additional information was further clarified in a meeting with your staff on August 30, 1979.

The attached report responds to the questions asked by your July 20, 1979, letter and the concerns discussed at the August 30, 1979, meeting.

Very truly yours,

R. J. Kelly

R. J. Kelly

RDB/mb

Attachment

xc: Mr. Ruble A. Thomas
George F. Trowbridge, Esquire
Mr. R. F. Rogers, III

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GENERAL

The intent of the proposed Technical Specification for settlement of Class I structures at Hatch Nuclear Plant, Unit No. 2 is to monitor the long term settlement patterns of the Category I structures. It establishes allowable settlement values which when reached in the periodic measurements will indicate a potential for structural damage and a need for further investigation and possible action. Since settlement readings are taken only once per 31 days (actually once per 6 months now that observed settlements have stablized), the settlement monitoring program cannot detect an instantaneous or abrupt change in settlement if and when it happens. An abrupt, unanticipated change in settlement, such as that which might be caused by an earthquake, or other extreme environmental condition, falls outside the scope of the proposed Technical Specification.

Following an earthquake, a visual survey to ascertain damage is required of all buildings at the jobsite. If damage is discovered, an engineering study would be undertaken to determine its effect on the integrity of the plant's building and operational systems. Based on the visual inspections and engineering studies, repairs and/or modifications would be made to enable the plant to become operational. Specific actions to be taken after a seismic event are described in Section 3.7A of the HNP-2 FSAR.

A. SETTLEMENT MEASUREMENT

A.1 The locations of the reference benchmarks are shown in Figure A.1-1. Elevations of the benchmarks were originally established from a USGS benchmark in Toombs County. The benchmarks are situated in the yard in such a way as to avoid accidental displacement and facilitate the settlement surveys of the Category I buildings. They are far enough away to avoid settling with the buildings and are placed in areas isolated from traffic which might disturb the marker. Precautions were also taken to provide proper soil and anchorage conditions to ensure the stability of the benchmarks. There is no procedure for periodically checking the elevations of the reference benchmarks.

A.2 Plant Hatch Procedure No. HNP-3475 establishes a detailed method for monitoring settlement of Category I structures for Units 1 and 2. A series of special drawings were also drawn to clearly locate the benchmarks and establish a fixed survey route. These drawings are referenced in and supplement the procedure. The procedure establishes the order in which specific survey routes are followed and requires closure of each survey route for a specific building or structure before continuing. Acceptance criterion for closure error is 0.005 feet. The procedure establishes a specific format for recording the final elevation data. This procedure establishes as much consistency as possible from one survey to the next in order to make any change or abnormality immediately apparent. Only vertical measurements are taken. Horizontal movements, significant enough to be measured, are not considered possible (see response A.5).

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A.3 There are no construction drawings or procedures for setting the benchmarks at Plant Hatch. The benchmarks established inside all buildings except the Reactor Building are 1/2" to 3/4" self-drilling "red head" expansion anchor bolts set in the floor or walls of the structure. Benchmarks on the exterior walls of structures are similar. Benchmarks in the Reactor Building are 3/4" x 3/4" x 6" to 12" brass bars embedded in the concrete floor. This leaves approximately 1/4" of the bar exposed above the floor resulting in a 3/4" to 3/4" x 1/4" exposed benchmark. Outside benchmarks are poured in place concrete posts approximately 1' x 1' square by 2' - 6" long with a maximum of 1' exposed above ground level. This leaves a minimum of 1' - 6" embedded below ground. A 3/4" galvanized bolt is embedded in the center of the top of the post, and the top is sloped away from the center for drainage.

A.4 The relative locations of all penetrations, including electrical conduit penetrations, with respect to the benchmarks for the east wall of the Unit 2 Reactor Building are shown in Figures A.4-1 and A.4-2. The arrangement shown is typical for all the Category I structures.

The assumption made in developing the Technical Specification was that the settlement at a particular penetration was the settlement recorded at the nearest benchmark. Since in almost all cases the piping was installed in the penetrations well after the buildings were complete (see Figures A.6-1 and A.6-2), building adjustments during construction, such as concrete shrinkage, cracking, creep, etc. had stablized, and therefore what was measured was due to differential settlement. Allowance was also made to allow building settlement to occur before attaching the pipe to the penetration (see bottom detail Figure D.3-2), which would further allow the building itself to adjust.

Linear interpolation was considered for determining settlement values for penetrations located between benchmarks but was determined to be unnecessary in terms of accuracy. Each of the 12 critical penetrations listed in Tables 3.7.8.3-1 and 3.7.8.4-1 of the Technical Specification was examined to determine the difference between using interpolated values of settlement and the values obtained by using the nearest benchmark. In the majority of cases, assuming the value of the nearest benchmark was found to be conservative, or made no difference. For the remaining cases, the maximum amount of difference which could have resulted to date was on the order of 0.004 feet, which is at about the limit of surveying accuracy. Given these results, and the fact that considerably more surveying and subsequent reduction effort would be required if interpolation or extrapolation were used, it is felt that assuming that settlement of critical penetrations is the same as settlement of the nearest benchmarks is appropriate.

A.5 The benchmark arrangement at the Hatch jobsite is used to measure vertical displacements of the buildings. Using the measured vertical displacements at the corners of a building and the known distance between benchmarks, the tilt or slope of the building can be computed in both the north - south and east - west directions and diagonally.

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from corner to corner. Consideration of tilt or rotation about the horizontal axes of the buildings is provided in the section on 'Differential Settlements Across Structures' in the proposed Technical Specification. A description of the criteria used to establish the allowable value for the Reactor Building, Unit 2 were submitted as a part of our response, dated August 14, 1979, to the first round questions.

As has already been mentioned, horizontal displacements of the benchmarks are not measured. Without horizontal measurements, sliding of structures and rotation of a structure abc t a vertical axis cannot be determined. The reason for not taking horizontal measurements is that horizontal movement is not significant enough to measure even under extreme environmental conditions. Section 3.8.5.5 of the HNP-2 FSAR states "The horizontal forces were assumed to be resisted by sliding friction, and a minimum factor of safety against sliding for the most severe loading combination was well above 1.50." In addition, seismic response summari s shown in Table 3.7A-3 of the HNP-2 FSAR show horizontal displaceme s at the base of the Reactor Building Unit 2 on the order of 1/32 of an inch for a DBE. Therefore, even if horizontal displacements of the structures do or could occur, the magnitude of the movement would be at the limit of surveying accuracy.

A.6 The penetration installation dates are shown in Figure A.6-1. Differential settlements of the penetrations are measured after these dates. These installation dates were used to determine the reference dates shown in Table 3.7.8.3-1 'Penetration Differential Settlement Structure to Soil' of the proposed Technical Specification.

The building completion dates are shown in Figure A.6-2. These dates correspond to the point in time when the building superstructure was complete, and the majority of the dead and live loads were in place. For the buildings in the Powerblock, the date also indicates when adjacent buildings w re finished, and the 3 inch gap between the buildings was established. Differential settlements across the structures are measured after these dates. These completion dates are used as the reference dates shown in Table 3.7.8.2-1 'Differential Settlement Across Structures' of the proposed Technical Specification.

A.7 At each structure where settlements are being recorded, there are in general 4 benchmarks, one near each corner of the structure. The "average measured settlement" is the mean of settlements recorded at the 4 benchmarks. The average value is useful for comparison with the predicted settlement, which is given also in terms of an average value. Extreme values of settlement at each benchmark are given in Table A.7-1.

B. COMPARISON OF PREDICTED VS. MEASURED SETTLEMENTS

From the settlement curves, it can be observed that no significant settlement of any of the structures has occurred in the last two years. As predicted, the large majority appears to have taken place during construction due to the mainly granular nature of the foundation soils. The majority also took place before the piping was installed in the penetrations and before the 3 inch gap was established at the top of the buildings in the Powerblock. In short, all evidence points to the fact that any settlements, and therefore differential settlement, of the structures in the future will be small, and the actual values are unlikely to reach the allowable values established in the proposed Technical Specification. The continuous settlement monitoring program at the plant, along with the Technical Specification, guarantees action, if this stable condition should change.

The proposed Technical Specification directly addresses all piping and potential structural damage due to excessive differential settlement. There are electrical conduits which run from the buildings out into the yard and between the structures, but they use flexible connections which allow 3/4" differential movement in any direction per the manufacturer's specification. A typical expansion coupling detail is shown in Figure B.1-1. There are no Category I sheet metal-type ducts which run between buildings or from one building out into the yard.

Consideration of tilting or rotation about horizontal axes has been discussed in A.5. Consideration of horizontal displacements, rotation about a vertical axis, and sliding have been discussed in the Introduction, A.2 and A.5.

With regard to potential causes of soil deformations, it is important to note that neither allowable or measured values of settlement depend on the causes. Allowable settlement is based on structural considerations, such as overstressing of penetrations, distress in structural members, or touching of buildings during a seismic event. Measured settlement is the actual settlement that takes place, whether caused by elastic compression, soil consolidation, or by the effects of thermal gradients, loss or gain of interstitial water, floods, etc. Thus, whatever the causes or potential causes of settlement, they are encompassed in the settlement provisions of the Technical Specification.

It is during the early design phase of the project, when the amount of potential settlement is being predicted, that the individual causes of settlement are considered. Before plant construction, it is verified that predicted settlement is less than allowable settlement. Because of the thickness of the reinforced concrete mats beneath the reactors, the nature of the foundation soil (mostly dense sand), and the surrounding ground water, it is considered that any thermal gradients created in the soil will have no significant effect on soil behavior. With regard to seismic phenomena, HNP-2 FSAR Section 2.A.5.2 concludes that "--- the soils at this site display a very large margin of safety against liquefaction failure if subjected to earthquake shocks of the magnitude postulated for this site." The lack of liquefaction potential is attributed to the preconsolidated nature of the foundation soils and the fact that the soils contain up to 14% fines. Loss or gain of interstitial water, floods, and variations in underground water levels will not have a significant effect on structure settlement. The dense, mainly granular soil is not subject to swelling or densification, due to changing water levels, and will allow rapid equalization of interstitial pressures.

C. DIFFERENTIAL SETTLEMENTS ACROSS STRUCTURES

C.1 The relationship in space between penetrations and benchmarks and the possibility that the displacements of penetrations may differ from the displacement of benchmarks is discussed in response A.4.

C.2 The analysis procedure for analyzing buried elements, such as piping or electrical duct banks, is documented in the HNP-2 FSAR Section 3.7A.B. For differential settlement stress calculations, the buried portion of the pipe was treated as a beam on an elastic foundation. The pipe which is attached to the penetration is assumed to move according to the nearest benchmark. Knowing the modulus of subgrade reaction of the soil and the movement at the penetration allows the settlement profile of the pipe away from the building to be established. The movement of the pipe is the same as the nearest benchmark at the penetration and gradually reduces to zero with distance away from the building.

C.3 The limiting value for settlement tilt of 0.002 was established for the structures which were not in close proximity to other buildings, i.e. the Main Stack, the Intake Structure, and the Diesel Generator Building. It limits the tilt of the building to insure the appearance and proper functioning of all operating systems and equipment. The number is based on experience for structures with rigid foundations and is tabulated in the Navy Design Manual.(1)

The most important requirement for a piece of equipment is to be leveled to the manufacturer's specified leveling requirements when originally installed. This assures that all internal pieces or subcomponents are properly aligned with respect to each other and with respect to all attached piping and other attached components for proper fit-up. A 0.002 slope of the building after o iginal setting of equipment will result in slight inertial effects which should not impair the operability of any piece of equipment.

An equipment review of the three buildings for which the 0.002 value was specified reveals the following: The Main Stack has no major piece of equipment which would be affected by structure tilt. In the Intake Structure there are vertical pumps which are safety related. These are removed periodically for maintenance, and the level of the base plates are checked for alignment per the manufacturer's recommendations before the pumps themselves are placed back into the structure. The Diesel Generator Building houses the diesel generators which are originally leveled to 1/4" over 20 ft or approximately 0.001 radians of slope which is 2 times less than the proposed 0.002 value.

The limiting values for settlement tilt of the buildings in the Powerblock are more stringent than 0.002 and are based on preventing the buildings from touching during a seismic event. The allowable slopes are shown in Table C.3-1. In the case of the Reactor Building, the allowable slope results in an allowable differential settlement value of 0.033 ft (approximately 3/8") between benchmarks 1 and 2 (104.45 ft).

(1) "Soil Mechanics, Foundations, and Earth Structures", NAVFAC DM-7, Department of the Navy, Naval Facilities Engineering Command, 1971.

Seventy-five percent (75%) of this results in a value of 0.025 ft (approximately 5/16") for signaling an engineering review. These allowable differential settlement values are shown in Table 3.7.8.2-1 of the proposed Technical Specification.

D. PENETRATION DIFFERENTIAL SETTLEMENTS

D.1 All Category 1 piping including drains and piping components, such as valves, elbows, and connections, were considered in the stress evaluation procedure which determined allowable settlement values based on differential settlement between adjacent structures and differential settlement between structure and soil.

Electrical conduit and HVAC ducts were discussed in response B.

D.2 The possibility that the displacements of penetrations differ from the displacement of the benchmarks is discussed in response A.4.

D.3 A detailed sketch of a typical penetration anchor is shown in Figure D.3-1. As is shown, the anchor is located at the interior side of the wall penetration. Additional penetration details are shown in Figure D.3-2. A description of each penetration type is provided in the figures.

By definition, the penetration anchors are designed to take moments, shears and axial loads. They are not constituted of snubber-like devices although an effort was made to reduce the load on the anchors due to building settlement by allowing the building to settle as much as possible before setting the penetration anchor (see bottom detail of Figure D.3-2). The HNP-2 FSAR Section 3.9 covers the design and analysis requirements for the HNP-2 Class I piping. The load types and loading combinations used in the original design of the piping and piping supports are those found in the Winter 1972 Addenda to the ASME Boiler and Pressure Vessel Code, Section III, 1972. The loads considered were sustained, dynamic, and thermal and combinations of the three. The safety margins provided by the anchors are the margins provided by the ASME Code, 1972. Stresses due to building settlement were not considered either in the FSAR or the revision of the ASME code that the original design was based on.

D.4 In order to establish allowable stresses in the piping, due to building settlement, the criterion in the ASME Boiler and Pressure Vessel Code, Section III, Sub-section NC-3652.3(b), 1977, was used. In this section, building settlement is given as an example of a non-repeated load. The code also implies that the stresses from building settlement need not be combined with the stresses from any other loading condition.

Using this criterion, the maximum allowable settlement was calculated for each pipe penetrating the wall of each Category I building. The allowable value is equal to the settlement which stresses the weakest member of the piping system to the allowable limit. All piping

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components were considered in the area of the wall penetration from the first anchor point inside the building (not necessarily the penetration anchor) to the assumed point of zero pipe deflection in the soil. The components examined included pipe, pipe supports, fittings and equipment. Even the pipe supports were examined by component; plates, beams, columns, bolts, etc. The stresses produced by all forces and moments resulting from a 'building settlement' condition were combined.

The building settlement which occurred since the penetration anchors were installed was subtracted from the allowable settlement to determine the remaining allowable settlement for each penetration. The penetration with the lowest remaining allowable settlement was chosen as limiting for each of the buildings. The allowable settlements are shown in the proposed Technical Specification in Tables 3.7.8.3-1 and 3.7.8.4-1.

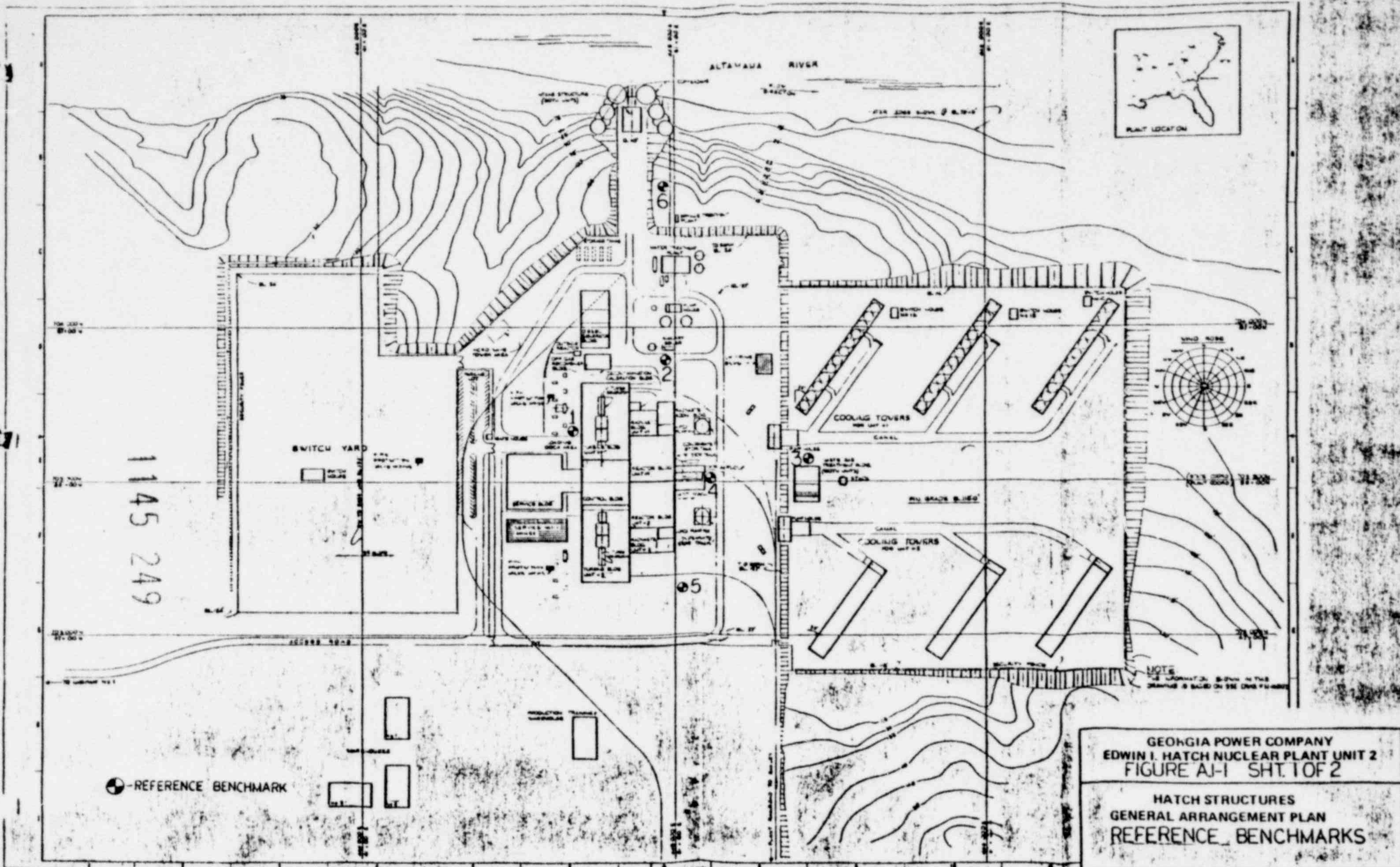
The conservatism involved in the calculation of allowable settlement values based on pipe stresses include both soil behavior and time effects. No account is taken of the fact that some settlement of the soil adjacent to the building will take place as building settlement occurs. Movement of the soil with the building will reduce the amount of differential settlement between building and soil. In addition, time and relaxation effects are not taken into account. Settlement of a building is slow enough to insure that potential stresses built up in the soil and piping system due to penetration movement will be redistributed with time, reducing the actual stress in the pipes and anchors.

REFERENCE BENCHMARK LOCATIONS*

BM #1	N53+81.24 (Plant Coord.) E47+59.49 EL. 129.498
BM #2	N56+16.5 E50+60.47 EL. 129.147
BM #3	N53+02.01 E55+48.9 EL. 119.908
BM #4	N52+05.3 E52+31.3 EL. 131.994
BM #5	N48+47.5 E51+03.5 EL. 129.407
BM #6	N61+68.04 E50+16.75 EL. 117.230

*Ref. SCSI drawing H-12523 'General Arrangement - Plant Site Outdoor Benchmarks'

FIGURE A.1-1: REFERENCE BENCHMARKS
(SHT. 2 OF 2)



GEORGIA POWER COMPANY
EDWIN I. HATCH NUCLEAR PLANT UNIT 2
FIGURE AJ-1 SHT. 1 OF 2

HATCH STRUCTURES
GENERAL ARRANGEMENT PLAN
REFERENCE BENCHMARKS

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GENERAL ENGINEERING DEPARTMENT

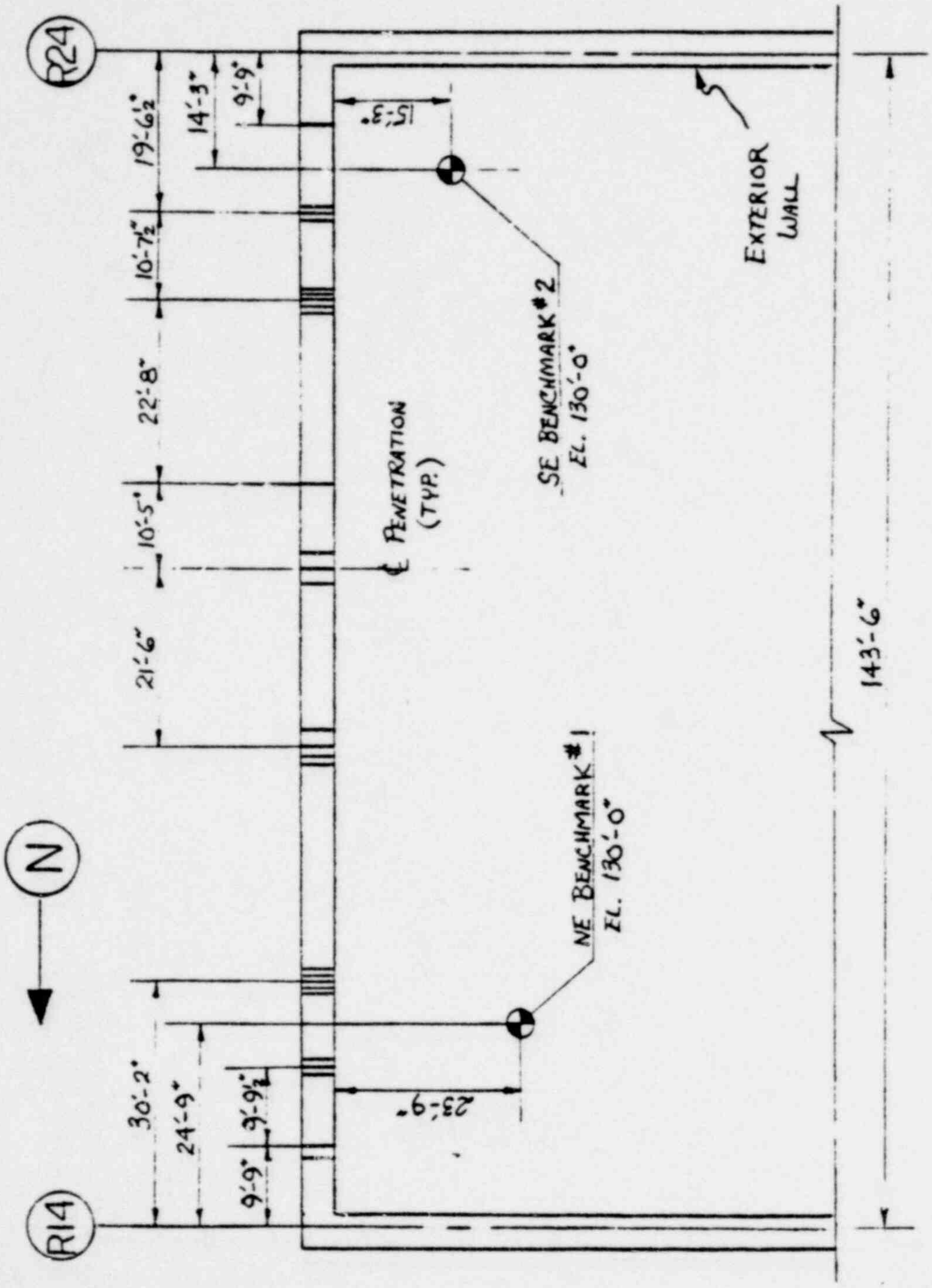

FIGURE A.4-1: RELATIVE LOCATIONS OF BENCHMARKS AND PENETRATIONS

PARTIAL PLAN EAST WALL - El. 130'-0" - REACTOR BUILDING UNIT 2

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BECHTEL ASSOCIATES JOB 6511	EDWIN I. HATCH NUCLEAR PLANT - UNIT No. 2
SOUTHERN SERVICES, INC.	
DRAWN ___ DR ___ DATE ___	REVISIONS
CHECKED ___ SCALE ___	NUMBER: LOCATION 10-502 / DRAWING A—
APPROVED ___	

GEORGIA POWER COMPANY ATLANTA, GEORGIA

GENERAL ENGINEERING DEPARTMENT

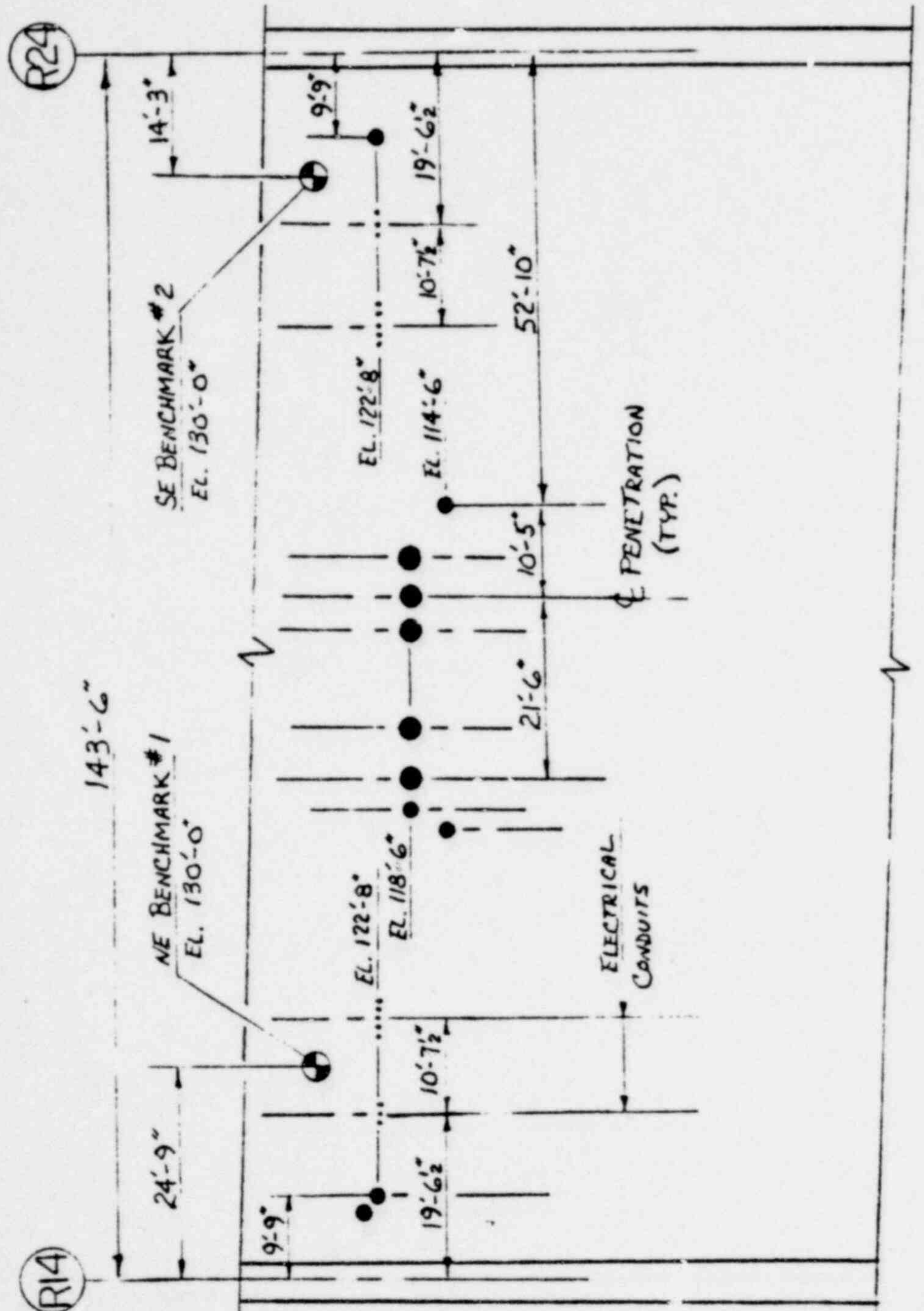

FIGURE A.4-2: RELATIVE LOCATIONS OF BENCHMARKS AND PENETRATIONS

PARTIAL ELEVATION EAST WALL - REACTOR BUILDING UNIT 2

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BECHTEL ASSOCIATES JOB 6511	EDWIN I. HATCH NUCLEAR PLANT - UNIT No. 2
SOUTHERN SERVICES, INC.	

DSGN. ______ DR ______ DATE ______	REVISIONS	NUMBER	
CHECKED ______ SCALE ______		LOCATION	DRAWING
APPROVED ______		10-502	A.—

PENETRATION INSTALLATION DATES

Reactor Building Unit No. 2 and Soil

PENETRATION	INSTALLATION
8" No. 1	11-77
10" No. 2	12-77
18" No. 3	4-78
18" No. 4	3-78
6" No. 8	11-77
10" No. 10	1-78
18" No. 11	3-78
20" No. 12	1-78
18" No. 13	4-78
14" No. 24	11-77
10" No. 41	2-77
16" No. 42	3-78
14" No. 134	3-78
20" No. 161	1-78

Diesel Generator Building and Soil

PENETRATION	DATE OF INSTALLATION
6"	1-78
10"	12-71

Main Stack and Soil

PENETRATION	DATE OF INSTALLATION
18"	6-74
12"	5-74
20"	6-74
6"	5-74

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FIGURE A.6-1: PENETRATION INSTALLATION DATES
(SHT. 1 OF 3)

Intake Structure and Soil

PENETRATION	DATE OF INSTALLATION
30" El. 97.28'	1-78
12"	7-74
18" (II)	2-78
30" El. 91.75'(I)	1-78
30" El. 91.75'(II)	1-78
18" (I)	2-78
6"	4-76

Reactor Building Unit No. 2 and Radwaste Building Unit No. 2

PENETRATION	DATE OF INSTALLATION
1" No. 51	10-77
6" No. 51	10-77
1.5" No. 102	11-77
8" No. 153	2-77

Reactor Building Unit No. 2 and Control Building

PENETRATION	DATE OF INSTALLATION
24" No. 59	5-78
[illegible] No. 60	1-78
18" No. 61	8-77
24" No. 61	9-76
4" No. 68	1-78
4" No. 69	1-78

FIGURE A.6-1: PENETRATION INSTALLATION DATES
(SHT 2 OF 3)

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Reactor Building Unit No. 2 and Turbine Building Unit No. 2

PENETRATION	DATE OF INSTALLATION
10" No. 43	5-78
4" No. 44	1-78
3" No. 57	11-77
18" No. 57	7-77
24" No. 57 (El. 154.46)	9-76
24" No. 57 (El. 154.55)	9-76
8" No. 84	2-77
10" No. 90	1-78
3" No. 92	12-77

Reactor Building Unit No. 2 and Reactor Building Unit No. 1

PENETRATION	DATE OF INSTALLATION
8" No. 183	1-78
8" No. 184	12-77

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FIGURE A.6-1: PENETRATION INSTALLATION DATES

(SHT 3 OF 3)

Building Completion Dates

STRUCTURE	DATE
Reactor Building Unit No. 2	5-76
Radwaste Building Unit No. 2	10-75
Control Building	1-75
Turbine Building Unit No. 2	5-76
Diesel Generator Building	1-75
Main Stack	10-74
Intake Structure	10-74
Reactor Building Unit No. 1	5-76
Turbine Building Unit No. 1	1-75

FIGURE A.6-2: BUILDING COMPLETION DATES

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Structure	Benchmark	Extreme Movements in Inches	Date of Max. Settlement	Movements as of 6/79 in Inches
Reactor Bldg. No. 2	1, NE	1.73	6/79	1.73
	2, SE	1.76	5/78	1.68
	3, NW	1.85	6/79	1.85
	4, SW	1.94	11/77	1.91
Radwaste Bldg. No. 2	5, NE	0.31 (1)	1/79	+0.02
	6, SE	0.0 (1)	1/79	+0.14
	7, NW	0.26 (1)	1/79	+0.09
	8, SW	0.26 (1)	1/79	+0.06
Control Building	9, NE	1.06	6/79	1.06
	10, SE	1.48	6/79	1.48
	11, NW	0.89	7/76	0.86
	12, SW	1.16	10/78	1.14
Turbine Bldg. No. 2	13, NE	0.17	7/76	0.03
	14, SE	0.08	4/77	+0.12
	15, NW	0.26	6/76	0.14
	16, SW	0	3/75	+0.11
Diesel Generator Building	17, NE	1.04	6/79	1.04
	18, SE	0.66	6/79	0.66
	19, NW	0.77	6/79	0.77
	20, SW	0.64	6/79	0.64
Main Stack	21, NE	0.20 (2)	5/75	0.08
	22, S	0.0 (2)	10/74	0.00
	23, W	0.06 (2)	6/76	0.05
Intake Structure	24, NE	1.31 (3)	1/79	1.30
	25, SE	1.33 (3)	6/79	1.33
	26, NW	1.30 (3)	6/79	1.30
	27, SW	1.22 (3)	8/78	1.18

Note: (1) No settlement records prior to 6/76.
(2) No settlement records prior to 10/74.
(3) Original benchmark destroyed. Settlement as of 7/78 assumed to be 1.20 inches.

TABLE A.7-1: MAXIMUM VALUES OF SETTLEMENT

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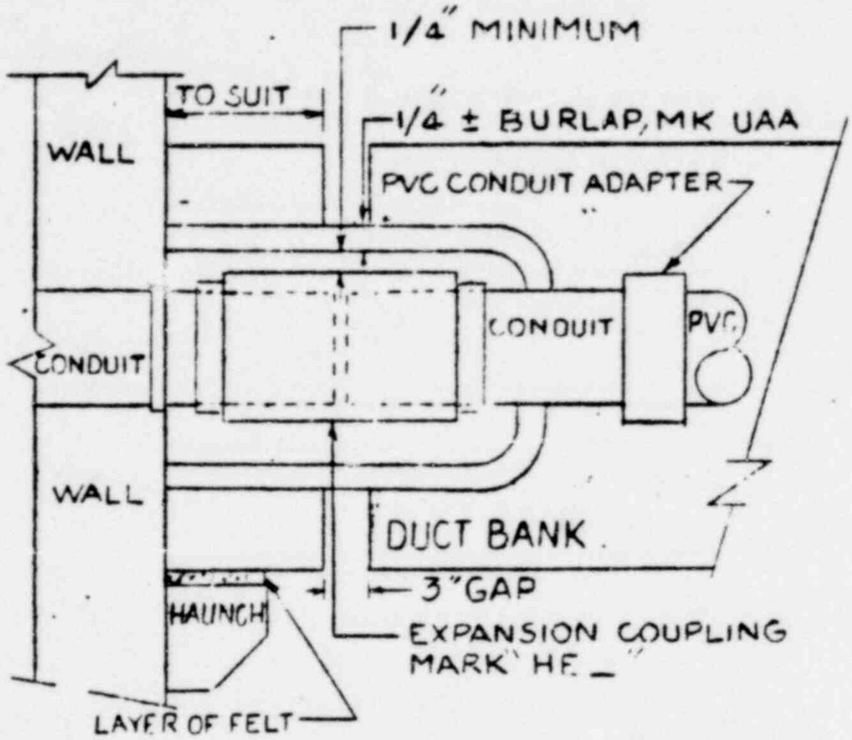

DETAIL

EXPANSION COUPLING INSTALLATION
(TYPICAL)

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FIGURE B.1-1: CONDUIT EXPANSION COUPLING DETAIL

BECHTEL ASSOCIATES JOB 6511	EDWIN I. HATCH NUCLEAR PLANT - UNIT No. 2
SOUTHERN SERVICES, INC.	

DSGN. ___ DR ___ DATE ___	REVISIONS	NUMBER	
CHECKED ___ SCALE ___		LOCATION	DRAWING
APPROVED ___		10-502	A—

STRUCTURE	DIRECTION OF TILT	ALLOWABLE SLOPE (RADIANS)
Reactor Building	East-West towards Control Building	0.00130 (1)
Unit No. 2	East-West towards Turbine Unit 2	0.00130 (1)
	North-South towards Reactor Unit 1	0.00032 (1)
	North-South towards Radwaste Unit 2	0.00113
Control Building	East-West towards Reactor Unit 2	0.00199 (1)
	North-South towards Turbine Unit 2	0.00087 (1)
	North-South towards Turbine Unit 1	0.00087
Turbine Building	East-West towards Reactor Unit 2	0.00199 (1)
Unit No. 2	East-West towards Radwaste Unit 2	0.00208
	North-South towards Control Building	0.00087 (1)
Radwaste Building	East-West towards Turbine Unit 2	0.00180 (1)
Unit No. 2	North-South towards Reactor Unit 2	0.00142 (1)

Note: (1) Designates controlling value used in developing allowable settlement values for Technical Specification.

TABLE C.3-1: ALLOWABLE SETTLEMENT PROFILE SLOPES ACROSS POWERBLOCK STRUCTURES

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GENERAL ENGINEERING DEPARTMENT

NOTE: ITEM 1 TO HAVE SNUG FIT AROUND PIPE AND INSIDE SLEEVE.

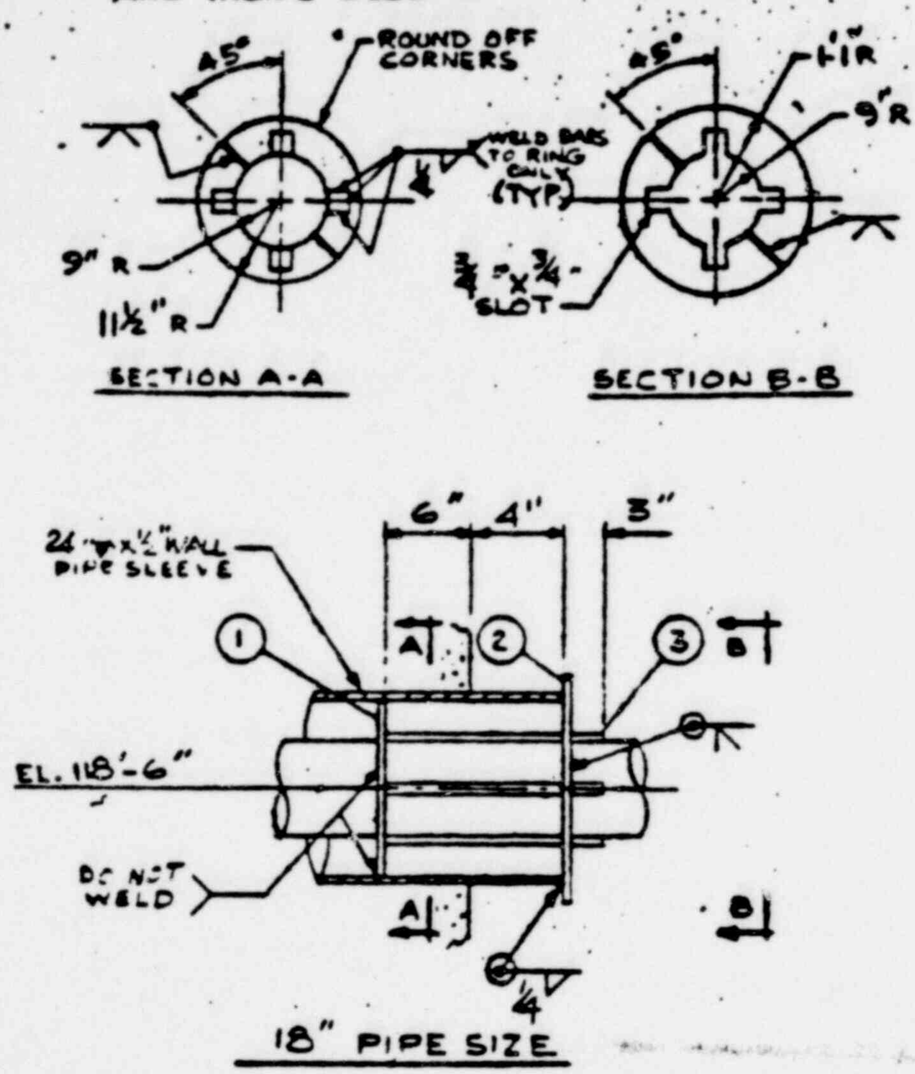


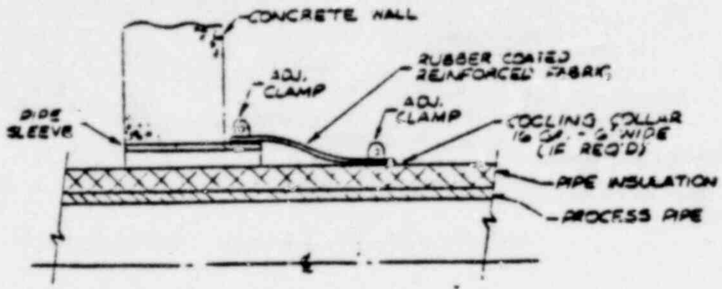
FIGURE D.3-1: TYPICAL PENETRATION ANCHOR DETAIL 1145 259

BECHTEL ASSOCIATES JOB 6511	EDWIN I. HATCH NUCLEAR PLANT - UNIT No. 2
SOUTHERN SERVICES, INC.	

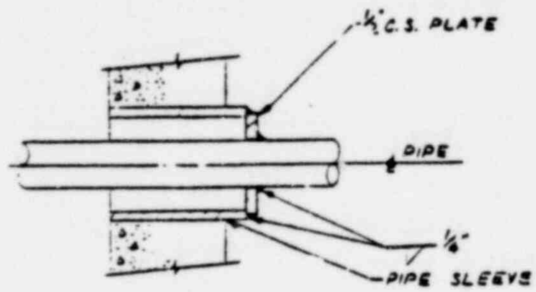
DRWN. ______ DR ______ DATE ______	REVISIONS	NUMBER	
CHECKED ______ SCALE ______		LOCATION	DRAWING
APPROVED ______		10-902	A—

GEORGIA POWER COMPANY ATLANTA, GEORGIA

GENERAL ENGINEERING DEPARTMENT

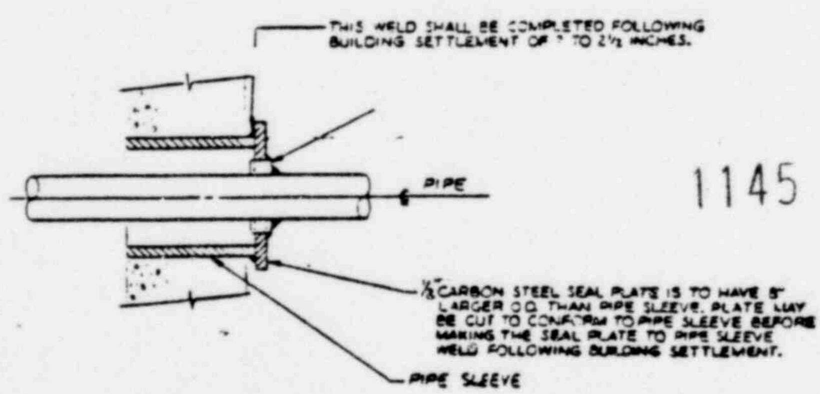


This detail to be used for Main Steam & Feedwater piping at Reactor Building wall and any other pipe penetration where the pipe cannot be anchored at the penetration.



POOR ORIGINAL

Used as air or water seal for cold and hot pipes which can be anchored at penetrations.



1145 260

Used for buried piping entering a building at the exterior wall.

FIGURE D.3-2: TYPICAL PENETRATION DETAILS

BECHTEL ASSOCIATES JOB 6511	EDWIN I. HATCH NUCLEAR PLANT - UNIT No. 2		
SOUTHERN SERVICES, INC.			
DSGN. ___ DR ___ DATE ___	REVISIONS	NUMBER	
CHECKED ___ SCALE ___		LOCATION	DRAWING
APPROVED ___		10-802	A—