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Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

River Bend Station-Unit 1
Docket No. 50-458

Your letter dated December 22, 1980, "Request for Additional Information on Control of Heavy Loads", requested a review of the controls for handling heavy loads at River Bend Station, the implementation of certain recommendations regarding these controls prior to operation, and the submittal of information to demonstrate that the recommendations have been implemented. As denoted in a letter from J. E. Booker to D. G. Eisenhut dated August 9, 1983, this information will be submitted in two phases.

The first phase of the requested review of River Bend Station has been completed. Enclosure 1 of this letter describes the results of this review and responds to the items in Section 2.1 of Enclosure 3 to your December 22, 1980 letter.

With regard to the implementation of interim actions, River Bend Station has identified the required changes to procedures to satisfy the NRC staff positions. These changes will receive necessary reviews and approvals and will be implemented prior to fuel loading.

Your letter of December 22, 1980 also requested information regarding the implementation of design changes. The information requested involved (1) confirmation that such changes would be implemented as soon as possible and (2) justification for any changes not believed to be necessary. No design changes have yet been identified. If design changes are identified in the second phase of the review, the requested information will be provided.

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The second phase will corsist of providing responses to the additional information requested to address the applicable items in Sections 2.2, 2.3, and 2.4 of Enclosure 3 to your December 22, 1980 letter. This information will be provided by October 1, 1984.

Sincerely,

J. E. Booker

J. E. Booker
Manager-Engineering
Nuclear Fuels and Licensing
River Bend Nuclear Group

JEB/MDH/JEP/tf
Enclosures

RESPONSES TO REQUESTS FOR INFORMATION IN SECTION 2.1 OF ENCLOSURE 3 TO DECEMBER 22, 1980 LETTER FROM D. EISENHUT

ITEM 1: Report the results of your review of plant arrangements to identify all overhead handling systems from which a load drop may result in damage to any system required for plant shutdown or decay heat removal (taking no credit for any interlocks, technical specifications, operating procedures, or detailed structural analysis).

RESPONSE: The fixed overhead handling systems for which a load drop could result in damage to safe shutdown equipment or could impact irradiated fuel at River Bend Station are listed below:

TABLE 1

Handling System	Capacity (Tons)	Location
Reactor Building Polar Crane/Aux Hoist	100/5	Reactor Building
Drywell MSIV and Relief Valve Monorail	3	Reactor Building
Fuel Building Bridge Crane	15	Fuel Building
Spent Fuel Cask Trolley/Aux Hoist	125/15	Fuel Building
MSIV Monorails	8/5	Auxiliary Building
MSIV and Feedwater Isolation Valve Monorails	3	Auxiliary Building
Feedwater Valve Hoists	3	Auxiliary Building
RHR A Pump Monorail	8	Auxiliary Building

Handling System	Capacity (Tons)	Location
RHR B & C Pump Monorail	8	Auxiliary Building
Auxiliary Building Tunnel Plug Monorail	6	Auxiliary Building
Hoist Area Monorails	5	Control Building
Floor Plug Monorail	5	Control Building
Control Building Equipment Handling Area Monorail	5	Control Building

Polar Crane (IMHR-CRN1)

The 100-ton Polar Crane, with an auxiliary hoist of 5-ton capacity, is located at the 214' elevation of the Reactor Building. The crane was designed by Whiting Corporation. Its principal function is to move major components as required by operations.

Crane travel allows load handling over or in the vicinity of the reactor core, the in-containment fuel storage racks, the equipment hoist space located in the northeast quadrant, or safe shutdown related piping and cables at several elevations beneath the containment refueling floor. Virtually the entire refueling deck (186' el.) is exposed to load handling operations. In addition to the potential for a heavy load drop to impact irradiated fuel in the core or spent fuel in the in-containment storage racks, safe shutdown related equipment, piping or cables at several elevations below the refueling deck could be impacted by a load drop.

Drywell MSIV and Relief Valve Monorail and Hoist (I MHR-CRN2)

This monorail/hoist system is composed of two major sections in the drywell. There is a straight monorail above the drywell hoist area in the northeast quadrant and straight and curved monorails from above the MSIVs and SRVs to the hoist area. A 3 ton electric wire rope hoist with a motor driven tractor/trolley manufactured by Whiting Corporation is restricted to the hoist area straight monorail system as is a 3 ton capacity hand chain tractor also supplied by Whiting Corporation. A 3 ton capacity hand chain tractor supplied by

Whiting Corporation is used on the other curved and straight monorails around the drywell and above the MSIVs and SRVs. These monorails and hoists are located at approximately the 155 foot elevation and are primarily used for servicing the four inboard MSIVs (el. 129') and the sixteen Safety Relief Valves located on the main steam lines.

The monorail system would be used when the reactor is shutdown and on long-term decay heat cooling. In this mode, the critical equipment to protect in the drywell would be pipes and cables associated with decay heat removal and instrumentation lines for vessel level monitoring. A review of piping isometrics and cable routing diagrams shows that the RHR common suction pipe for shutdown cooling and reactor vessel level instrumentation are located under this monorail, and potentially could be impacted by a drop of a valve or valve operator. A single load drop could not cause a loss of all vessel level instrumentation because of physical separation. Of primary concern is potential damage to the common RHR suction piping or valves.

Fuel Building Bridge Crane (IMHF-CRNI)

The Fuel Building Bridge Crane is a general service crane for the fuel handling area at elevation 113' in the Fuel Building. The crane is located on tracks at the 138' elevation, is supplied by Dresser Industries, Inc., and has a capacity of 15 tons. The Fuel Building Bridge Crane is described in the RBS FSAR section 9.1.4.2.2.2. Its range of travel includes virtually the entire width of the fuel handling area from the fuel receiving area to the edge of the spent fuel pool. The Fuel Building Bridge Crane is precluded from carrying heavy loads over the spent fuel pool due to the existence of crane stops which will be in place prior to placing any spent fuel in the fuel pool. The primary function of the bridge crane is the handling of new fuel between the receiving area in the northwest part of the building and the new fuel inspection stand and/or new fuel storage vault. Additionally, the crane is used for handling equipment in the receiving area, removing floor plugs and servicing equipment in the Fuel Building.

The safety issue that must be addressed for the Fuel Building Bridge Crane is the potential of dropping a heavy load near and subsequently onto spent fuel in the spent fuel pool. In addition, based on a review of piping isometrics and cable routing diagrams, loads may be handled above piping necessary for cooling of the Spent Fuel Pool and the upper containment pool.

Spent Fuel Cask Trolley (IMHF-CRN2)

The Spent Fuel Cask Trolley, manufactured by Whiting Corporation, has a main hoist and auxiliary hoist with capacities of 125 ton and 15 ton, respectively. The Spent Fuel Cask Trolley is described in RBS FSAR section 9.1.4.2.2.1. The trolley is located at the east end of the fuel building and travels in a north-south direction on a straight runway. The main hoist hook portion is fixed laterally at the midpoint of the trolley span. The auxiliary bridge consists of two wide flange double beam girders and is permanently fixed to the main trolley. The auxiliary bridge is not provided with a separate drive but is driven by means of the main trolley drive. The auxiliary trolley rails are mounted on the centerlines of the auxiliary bridge girder and span their entire length. The auxiliary trolley moves in a plane of travel perpendicular to the main runway. The primary function is cask handling in the Fuel Building.

Although the spent fuel cask trolley is restricted mechanically from traveling over the spent fuel pool, the potential for damage to the spent fuel storage facility due to drops of the cask into its storage pit exists. Additionally, the cask washdown area is located above a pipe and cable tunnel. A review of piping isometrics and cable routing diagrams indicates both Division I and Division II raceways which include safe shutdown related cables are located beneath the cask washdown area.

MSIV Monorails

The MSIV lifting device consists of seven monorails located at the 162' elevation of the Auxiliary Building. Each monorail uses a geared trolley and portable hand operated hoist, six with a capacity of 8-tons, and one with a capacity of 5-tons. The monorail system is used to move access hatches at the 141' elevation and MSIV#2 valve operators and feedwater check valves at the 114' elevation.

Certain cable trays and conduit associated with the RCIC and RHR systems are located below the MSIV area (114' elevation). Also RHR piping is in the MSIV area. Further evaluation of the potential effects of a load drop on safe shutdown equipment will be performed.

MSIV and Feedwater Isolation Valve Monorails (IMHP-CRN3)

This load handling system consists of curved and straight monorail sections rated at 3-ton capacity and positioned above the MSIV No. 3 valves and the feedwater isolation valves. An electric wire rope hoist/motor driven trolley unit is used in conjunction with the monorail sections to assist in servicing these valves. The monorail is located at the 133' elevation of the Auxiliary Building. Whiting Corporation is the manufacturer of this load handling system.

Some RHR loop A and B piping and RHR cross-connect piping is located in the vicinity of the valve handling operations and could be impacted by a dropped load. This area will be evaluated to determine the potential for damage to safe shutdown equipment associated with a load drop.

Feedwater Valve Hoists

Also located at elevation 133' of the Auxiliary Building are two straight monorails. These monorails are used for feedwater isolation valve handling. The monorails are equipped with a trolley/hoist having a capacity of 3-tons.

Loads carried by this handling system have the potential, if dropped, for impacting certain RHR piping. The effects of postulated load drops on safe shutdown equipment will be evaluated.

RHR A Pump Monorail

The RHR A Pump Monorail is located at the 134' elevation of the Auxiliary Building. Its purpose is to move access hatches at the 114' and 95' elevations and RHR loop A equipment from/to the 70' elevation. The trolley and portable chain hoist used in conjunction with the monorail each have a capacity of 8-tons.

Certain safe shutdown equipment, such as piping and/or electrical cable trays for RHR systems, standby service water (SSW), and ADS are located in the vicinity of load handling operations. This area will be further evaluated for the potential effects of a dropped load.

RHR B and C Pump Monorail

The RHR B and C Pump Monorail has a capacity of 8 tons and is located at the 134' elevation of the Auxiliary Building. This handling system is also used to move access hatches at the 114' and 95' elevations and components of an inoperable RHR system (B or C) from/to the 70' elevation. A geared trolley and portable chain hoist are used in conjunction with the monorail.

A load drop from this handling system could potentially damage some safe shutdown system components such as RHR and SSW piping and cables. Therefore, this area will be evaluated for the effects of a postulated load drop.

Auxiliary Building Tunnel Plug Monorail

At the 108' elevation of the Auxiliary Building, a monorail is installed to permit movement of the access plug in the 95' elevation floor. This monorail is rated at a 6-ton capacity. This provides access to the pipe and electrical tunnel at the 70' elevation. This load handling system employes a trolley and portable chain hoist combination.

No safe shutdown equipment is located in the load handling area at the 95' elevation. Certain SSW piping and cables and RHR cables are located at the 70' elevation, in the piping and electrical tunnel, such that they have the potential for being damaged due to an access plug drop. Further evaluation of the effects of a postulated load drop from this handling system will be performed.

Control Building Hoist Area Monorails

In the Control Building hoist area, monorails are located at the 133' and 156' elevations. The lower monorail is removable and both share the same hoist path up to their respective elevations. The purpose of the monorails is to lift hatch covers and miscellaneous equipment. Each monorail has a rated capacity of 5 tons. Loads handled with these monorails will be lifted above certain safe shutdown system cables at the 70' elevation. The potential effects of a dropped load in this area will be evaluated.

Floor Plug Monorail

The subject monorail is located at the 115' elevation of the Control Building. This monorail and associated trolley/hoist are rated at 5 tons. The principal function of this handling system is to move the access plug in the floor at elevation 98'. Some safe shutdown system cable trays, below elevation 98', pass in close proximity to the hatch. This area will be evaluated to assure that the potential damage due to a load drop will not prevent safe shutdown.

Control Building Equipment Handling Area Monorail

A 5-ton capacity removable monorail is located at elevation 115' in the Control Building. The purpose of this monorail is loading and unloading of Control Building equipment. Loads handled with this monorail will be lifted above certain safe shutdown system cables at the 70' elevation. The potential effects of a dropped load in this area will be evaluated.

ITEM 2: Justify the exclusion of any overhead handling system from the above category by verifying that there is sufficient physical separation from any load impact point and any safety-related component to permit a determination by inspection that no heavy load drop can result in damage to any system or component required for plant shutdown or core decay heat removal.

RESPONSE: Monorails, hoists, and cranes in the Turbine Building/Off-Gas Building, Radwaste Building, Aux. Control Building, Service Building and Circulating Water Pump Structure have been excluded on the basis that no safe shutdown equipment is located in these areas. Although this plant contains a large number of monorails and hoists in the Auxiliary and Reactor Buildings that were installed to facilitate maintenance, the handling systems were located so as to minimize the potential for damaging plant equipment when they are used. The review of plant load handling systems, plant arrangements, and location of safe shutdown equipment found that the monorail, hoist, and crane systems listed in Table 2 can be excluded from further detailed consideration for the reasons described below.

TABLE 2
MONORAILS, HOISTS AND CRANES
EXCLUDED FROM FURTHER CONSIDERATION

Handling System	Capacity (Tons)	Location
HPCS Pump Monorail	12/6	Auxiliary Building 108'
Control Rod Drive Maintenance Area Hoist	0.5	Auxiliary Building 108'
RCIC Pump Monorail	3	Auxiliary Building 85'
LPCS Pump Monorail	8	Auxiliary Building 108'
Hoist Area Monorail	8	Auxiliary Building 164'
Elevator Machine Room Hoist	3.5	Auxiliary Building 199'

Handling System	Capacity (Tons)	Location
Jib Crane and Channel Handling Boom	0.5/0.1	Reactor Building 186'
Recirc Pump Motor/In-Core Detector Cask Monorail	30/6	Reactor Building 114'
Steam Tunnel Floor Plug Monorails (Reactor Building and Annulus)	3	Reactor Building 145'
Fuel Transfer Tube Floor Plug Monorail	3	Reactor Building 156'
Drywell Access Monorail	8	Reactor Building 110'
Containment Access Monorail	12	Reactor Building 116'
Crated Guide Tube Monorail	2.5	Reactor Building 114'
Fuel Transfer Tube Floor Plug Monorail	8	Fuel Building 143'
Jib Crane and Channel Handling Boom (future)	0.5/0.1	Fuel Building 113'
Diesel Generator Unit Monorails	2	Diesel Gen. Bldg. 125'
Standby Service Water Cooling Tower I Monorails	3	SSW Cooling Tower I 161'

HPCS Pump Monorail

The HPCS pump monorail, with an 12-ton capacity, is located at the 108' elevation of the Auxiliary Building. Hoists rated at 12 and 6 tons are used in conjunction with this monorail. The HPCS space is at the 70' elevation below an access hatch. HPCS is not required to achieve safe shutdown. Reactor inventory can be maintained during plant shutdown operations using RCIC or RHR in the LPCI mode with ADS. No safe shutdown equipment is located in the HPCS space. Certain electrical cables and cable trays are located at the 95' elevation; however, this equipment is above or well separated from the monorail and would not be impacted by a drop of hatch covers or HPCS equipment.

Control Rod Drive Maintenance Area Hoist (IMHP-CRN9)

The ½-ton capacity CRD maintenance area hoist is located at the 108' elevation of the Auxiliary Building. The only safety related equipment in this area is electrical cable trays that are above the monorail and would not be impacted during a postulated load drop. Thus this lifting device may be excluded from consideration.

RCIC Pump Monorail

At the 85' elevation of the Auxiliary Building is the 3-ton capacity RCIC pump monorail. This monorail is in the RCIC Pump space and would be used to service an inoperable RCIC system. Certain (non-RCIC) safety related piping, electrical conduit, and cable trays pass through the RCIC space but are well separated from the monorail and carried loads and would not be impacted by a load drop. Therefore this monorail may be excluded from consideration.

LPCS Pump Monorail

The LPCS pump monorail is an 8-ton capacity monorail located at the 108' elevation of the Auxiliary Building. The LPCS space is at the 70' elevation below an access hatch. The LPCS system is not part of either of the redundant equipment trains relied on to achieve safe shutdown. The only equipment in this area that is associated with a safe shutdown system is electrical conduit that is well separated from the monorail and any load impact point. Therefore, there is no safe shutdown equipment potentially damaged by a load drop.

Jib Crane and Channel Handling Boom

The jib crane in the containment consists of a motor driven swing boom monorail and a motor driven trolley with an electric hoist. The jib crane is mounted along the north edge of the containment fuel storage pool to be used during refueling operations primarily for fuel preparation activities. The jib crane is used for handling channel assemblies, control rods, guide tubes and other loads that are lighter than a fuel assembly plus its handling tool.

A channel handling boom is located along the north edge of the containment fuel storage pool between the jib crane and the fuel preparation machines. The channel handling boom has a capacity of 200 pounds and is used to assist the operator in supporting a portion of the weight of the channel after it is removed from the fuel assembly. Both of these handling systems have rated capacities less than the weight of a heavy load.

Recirc Pump Motor/In-Core Detector Cask Monorail (IMHR-CRN3)

The recirc pump motor/incore detector cask monorail is a 30-ton capacity monorail located in the drywell above the recirc pumps and motors and the in-core detector/CRD mechanism servicing tracks and connects these areas with the drywell equipment access area. This monorail has two 15-ton hoists which are used for recirc pump motor replacement and a 6-ton hoist for in-core detector cask and cart removal and CRD mechanism removal. This monorail can be used only when the plant is shutdown and already on decay heat removal. When on decay heat removal, the equipment in the drywell that is being used is piping for RHR suction and return and certain instrument lines. All safe shutdown instrument lines are located above the elevation of the monorail. RHR shutdown cooling lines and the cables for associated valves are located in an area of the drywell not serviced by this monorail and therefore will not be impacted when handling a load by this monorail. Should a recirc pump motor drop on and damage recirc piping, the system design is such that adequate core coverage is maintained as are makeup and core cooling capabilities. Based on the above, handling of loads or a load drop will not result in loss of safe shutdown or decay heat removal equipment.

Steam Tunnel Floor Plug Monorails

There are 2 steam tunnel floor plug monorails at elevation 145' in the containment. One monorail is located inside the containment above the steam tunnel and the other (IMHR-CRN4) is located in the annulus between the containment and the shield building. These monorails/hoists each have a capacity of 3-tons and are used to lift steam tunnel plugs at elevation 137' for access to the in-containment steam tunnel. These plugs would be removed only when the plant is shutdown and already on shutdown cooling. Based on a review of piping isometrics and cable routing diagrams, handling of these loads or a load drop would not result in loss of shutdown cooling or reactor vessel monitoring equipment.

Fuel Transfer Tube Floor Plug Monorail - Annulus (IMHR-CRN5)

The fuel transfer tube floor plug monorail is located at elevation 156' in the annulus between the containment and the shield building. This monorail has a rated capacity of 3 tons and is used to remove a fuel transfer tube floor plug at elevation 148'. This floor plug would only be removed to allow access to the fuel transfer tube when fuel handling operations are not being conducted. Removal of this plug and subsequent load drop would not be a safety concern since there is no safe shutdown related equipment beneath this monorail.

Drywell Access Monorail

The drywell access monorail is located at elevation 110' at the drywell equipment access hatch and has a rated capacity of 8 tons. This monorail is used for removing the drywell equipment access hatch. No safe shutdown equipment is located beneath or in close proximity to the drywell access monorail and therefore a load drop would not affect the ability to safely shutdown the plant.

Containment Access Monorail

The containment access monorail is located in the annulus region between the shield building and the containment at elevation 116'. This monorail is used for removal of the containment equipment access hatch and has a rated capacity of 12 tons. No safety related or safe shutdown equipment is located beneath or in close proximity to the containment access monorail and therefore a load drop would not effect the ability to safely shutdown the plant.

Crated Dry Tube Monorail

The crated guide tube monorail has a rated capacity of 2.5 tons and is located at elevation 114' in the containment. This monorail is used for assisting the reactor building polar crane during a lift of the crated LPRMs up the hoist space and onto the refueling floor. No safe shutdown related equipment or cabling is located beneath or in close proximity to the created guide tube monorail and therefore a load drop would not affect the safe shutdown of the plant. The evaluation of the consequences of a load drop in the containment hoist space will be covered under the review of the reactor building polar crane load handling operations.

Fuel Transfer Tube Floor Plug Monorail

The fuel transfer tube floor plug monorail is located at elevation 143' in the fuel building above the fuel transfer tube and has a rated capacity of 8 tons. This monorail is used for lifting a floor access plug above the fuel transfer tube. This floor plug would only be removed to allow access to the fuel transfer tube area when full transfer operations are not being conducted. There is no safe shutdown related equipment or cable located beneath this monorail such that a load drop would effect the safe shutdown of the plant or the spent fuel cooling function. Removal of this plug and subsequent load drop during any plant operations other than fuel transer would not be a safety concern.

Jib Crane and Channel Handling Boom (future)

A jib crane and channel handling boom may be installed in the future along the west side of the spent fuel pool in the fuel building. However, like the jib crane and channel handling boom located in the containment, they will be used for handling channel assemblies, control rods, guide tubes, and other loads that are lighter than a fuel assembly plus its handling tool. The channel handling boom is only used to assist the operator in supporting a portion of the weight of the channel after it is removed from the pool assembly. Therefore, if these cranes are installed in the future, they will not handle loads greater than the weight of a heavy load.

Diesel Generator Unit Monorails

Four small monorails, each with a 2-ton capacity, are located above the diesel generators. Two of the monorails are located above the HPCS diesel generator and one monorail above each of the emergency diesel generators. Each diesel generator is in a separate compartment. These lifting devices are located at the 120' elevation in the Diesel Generator Building and are used for servicing an inoperable diesel. The equipment in each diesel generator compartment is associated with that diesel, therefore, a load drop from one of these lifting devices would not damage operable safe shutdown equipment.

Standby Service Water Cooling Tower I Monorails (IMHW-CRN2A & 2B)

These 3-ton capacity monorails are located at the 161' elevation of the cooling tower structure. Each monorail uses trolley/hoist equipment to service inoperable SSW cooling tower fans. Each monorail passes above 2 of the 4 cooling cells in the tower and a load could only be carried over one cell at a time (by design). Only 2 cells are necessary for safe shutdown (FSAR pg. 9.2-30) and at least 3 cells are available following a load drop. No other safe shutdown equipment is in the vicinity of load handling operations; therefore, these handling systems may be excluded from consideration.

Hoist Area Monorail (IMHP-CRN5)

A removable 8-ton capacity monorail is located at elevation 164' in the Auxiliary Building hoist area. The hoist area extends down to the 70' elevation. This monorail is used to move miscellaneous equipment between elevations without necessitating use of the Maintowoc Crawler.

The hoist area is located in the northeast corner of the Auxiliary Building. There is no safe shutdown equipment in the vicinity of the hoist area or subject to damage due to a postulated load drop at any elevation below the monorail. Therefore, safe shutdown capability will not be affected by a load drop from this monorail.

Elevator Machine Room Hoist (1MHP-CRN12)

The elevator machine room hoist is a monorail located at the 199' elevation of the Auxiliary Building. The capacity of this hoist is 3.5 tons. The hoist is located in the top of the elevator shaft which extends down to the 70' elevation. The hoist is used to mive miscellaneous equipment in the elevator shaft.

No safe shutdown equipment is located in or below the elevator shaft; therefore, a postulated load drop will not affect the capability to safely shutdown.

ITEM 3: With respect to the design and operation of heavy load-handling systems in the containment and spent-fuel-pool area and those load-handling systems identified in 1, above, provide your evaluation concerning compliance with the guidelines of NUREG 0612, Section 5.1.1. The following specific information should be included in your reply:

ITEM 3.a Drawings and sketches sufficient to clearly identify the location of safe load paths, spent fuel, and safety-related equipment.

RESPONSE: With regard to the thirteen handling systems identified in the response to Item 1 above, there are many different load handling situations encountered. Defining safe load paths in the manner described in NUREG-0612, Section 5.1.1(1), is neither required nor prudent for every situation. To do so would unnecessarily restrict plant operation and maintenance activities. To address this problem, the possible load handling situations that could be encountered have been identified in Table 3 below. Each load handling situation has been assigned a safety class designation, roughly in order of safety significance. Safe load path and load handling procedural requirements have been defined for each safety class.

TABLE 3

LOAD SAFETY CLASSES AND SAFE LOAD PATH ACTIONS

Heavy Load[1] Handling Situation	Safe Load Path/Procedural Actions Required
Safety Class 1. Load must be carried directly over (i.e., there are no intervening structures such as floors) spent fuel, the reactor vessel or safe shutdown equipment.	1. Procedurally limit time and height load is carried over the area of concern.

TABLE 3 (continued)

Heavy Load[1] Handling Situation	Safe Load Path/Procedural Actions Required
Safety Class 2. Load could be carried directly over spent fuel, the reactor vessel, or safe shutdown equipment, i.e., load can be handled during the time when spent fuel or the reactor vessel is exposed or safe shutdown equipment is required to be operable and there are no physical means (such as interlocks or mechanical stops) available to restrict load movement over these objects.	2. Procedurally define an area over which loads shall not be carried so that if load is dropped, it will not result in damage to spent fuel or operable safe shutdown equipment or compromise reactor vessel integrity.
Safety Class 3. Load can be carried over spent fuel or safe shutdown equpment, but the fuel or equipment is not directly exposed to the load drop, i.e., intervening structures such as floors provide some protection.	3. See 3A and 3B.
Safety Class 3A. Preliminary evaluation indicates that intervening structures will protect spent fuel or safe shutdown equipment.	3A. No load travel path is required at this time. General precautions limiting load travel height is prudent.
Safety Class 3B. Preliminary evaluation can not conclusively demonstrate that intervening structures will protect fuel or safe shutdown equipment.	3B. Define safe load paths that follow, to the extent practical, structural floor members. Limit load travel height to minimum height practical.
Safety Chass 4. Load cannot be carried over spent fuel or over safe shutdown equipment when such equipment is required to be operable, i.e, design or operational limitations prohibit movement.	4. No safe load path required.

1 A heavy load is defined as a load that is greater than the weight of a channeled fuel assembly and its associated handling tool.

Each of the heavy loads listed in the response to Item 3.c has been assigned to one or more safety classes (see Tables 4-15). In some cases, more than one safety class assignment is required because more than one of the load handling situations described in Table 3 could be encountered when handling the load.

For each of the heavy loads listed in the response to Item 3.c, the safe load path/procedural requirements corresponding to the assigned safety class will be added to the appropriate plant procedures. When more than one safety class assignment was made for a particular load, the safe load path/procedural requirements of all safety class assignments will be included in the procedures.

The loads of principal concern are those that have been assigned to Safety Classes 1, 2, or 3B. The actions taken to address each of these loads are summarized below for each of the handling systems listed in the response to Item 1.

POLAR CRANE

Safety Class 1 Loads - The Safety Class 1 loads of principal interest because of their weight are the Reactor Pressure Vessel Head, Steam Dryer, the Shroud Head/Steam Separator, and the Drywell Head. They have been assigned Safety Class 1 because they must be carried directly over the reactor vessel during reactor assembly and disassembly operations. The general arrangement of the containment operating deck is indicated in Figure 6. With regard to these lifts, steps will be included in their handling procedures that minimize both the time and height that these loads are carried directly over the vessel.

Safety Class 2 Loads - A number of the loads listed in Table 4 have been assigned to Safety Class 2. This is because there are no physical or design restrictions that prevent them from being carried over the reactor vessel or the in-containment fuel storage racks. A procedural restriction will be included in the appropriate plant procedures, that prohibits movement of these loads over the reactor vessel when spent fuel is in the vessel or over the in-containment fuel storage racks. A prohibition for carrying loads over the in-containment storage racks is also included in Tech Spec 3/4.9.7.

Safety Class 3 Loads - The principal concern with Safety Class 3 loads in containment is the potential for impacting equipment required to maintain shutdown that is located below the operating deck. There are 2 general areas of concern. The first is made up of those areas that could be subjected to drops of the heavier loads, i.e., Loads 1-5 in Table 4 (see Figure 12) for the storage locations of these loads.)

The travel paths of these loads to their storage locations are very direct and very limited in the extent of travel over floor structures. Accordingly, detailed travel paths are not required. However, to address the issue of dropping these loads on floor structures, the plant procedures governing lifting of these loads include steps that minimize the height that the load is carried over the floor structures. In addition, match marks have been permanently affixed to the crane rails, trolley and end trucks to assure proper alignment of the crane during these lifts. Use of the match marks will assure that the most direct and unobstructured path is taken to and from the storage locations.

The second area of concern involves several areas of metal decking and grating in the northeast, northwest, and southwest quadrants of the operating deck (see Figure 12) which could also be affected by drops of the smaller loads. These areas contain piping and some cable for safe shutdown systems including Spent Fuel Pool Cooling and Cleanup, RHR, SSW, and ADS which are required for certain modes of operation. Several loads in Table 4 have been assigned Safety Class 3B on the basis that they could be moved over these areas. To address this concern, a prohibition will be included in the appropriate plant procedures that prevents movement of these loads over the areas when the systems are required.

FUEL BRIDGE CRANE

The safety concern posed by this handling system is described in the response to item I as the potential for dropping a hatch cover or a piece of heavy equipment onto the operating deck at elevation 113 or the receiving area floor at elevation 95'. Certain areas beneath these floors contain piping and some cables necessary for spent fuel pool or in-containment fuel pool cooling. To address this concern, the plant procedures governing lifting of loads with this crane includes restrictions on the height of the loads over the structure or prohibits movement of the loads over these areas.

SPENT FUEL CASK TROLLEY

The safety concern with the Spent Fuel Cask Trolley includes a potential drop of the cask in the cask washdown area. Located beneath this area are several cable trays containing Division I and II cables for safe shutdown systems. To address this concern, steps and precautions will be included in the applicable procedures which alert operators to the potential safety concern and minimize the time the cask is lifted over this area.

DRYWELL MSIV AND RELIEF VALVE MONORAIL/HOIST

The safety concern posed by this handling system involves a postulated drop of one of the loads identified in Table 7 onto the common RHR shutdown cooling suction piping or valves. To address this safety concern, the plant procedures governing lifts by this monorail system includes precautions to hoist operators that alert them to the concern and direct them to take extreme care. In addition, steps in the procedure minimize the time loads are handled over this area.

MSIV MONORAILS

The safety concern posed by this handling system involves a load drop which could potentially impact the RHR Shutdown Cooling suction isolation valve (MOV F008). Additionally, cable associated with RCIC and RHR and additional RHR piping is located beneath these monorails below the 114' elevation. To address these concerns, plant procedures governing lifts by these monorails includes precautions to hoist operators to alert them to the potential safety concerns and minimize the time the loads are handled over this area.

MSIV AND FEEDWATER ISOLATION VALVE MONORAILS

The safety concern for these monorails involves a load drop which could potentially impact RHR A and B piping or RHR cross-connect piping which are located in the vicinity of the valve handling operations. To address this concern, the applicable load handling operations include precautions which alert the operator to these potential safety concerns.

FEEDWATER VALVE HOISTS

The safety concern for these hoists is the same as that identified above for the MSIV and FIV monorails. As indicated, the procedures include appropriate precautions.

RHR A PUMP MONORAIL

As indicated in response to item I above, certain safe shutdown equipment is located in the vicinity of load handling operations. To address this concern, the appropriate load handling procedures include precautions to alert the operators to the applicable safety concerns.

RHR B AND C MONORAIL

A load drop from this handling system could potentially damage some safe shutdown system components such as RHR and SSW piping and cables. Therefore, the applicable load handling procedures include precautions to alert the operators to these safety concerns.

AUXILIARY BUILDING TUNNEL PLUG MONORAIL

The potential safety concern for this monorail involves a drop of the access plug which could affect some SSW piping and cables and RHR cables located at the 70' elevation. To address this concern, the appropriate load handling procedures include precautions to the operators to alert them to the safety concerns and to minimize the time loads are handled and height of loads in this area.

CONTROL BUILDING HOIST AREA MONORAILS

CONTROL BUILDING FLOOR PLUG MONORAIL

CONTROL BUILDING EQUIPMENT HANDLING AREA MONORAIL

All of these monorails have safe shutdown related cables in close proximity to the hatches or beneath the monorails with intervening floors. In all cases, the appropriate load handling procedures include precautions to the operators to alert them to the potential safety concerns and to minimize load handling time in these areas.

ITEM 3.b: A discussion of measures taken to ensure that load-handling operations remain within safe load paths, including procedures, if any, for deviation from these paths.

RESPONSE: As indicated in the response to Item 3.a above, measures will be included in a number of plant procedures utilized in performing the heavy lifts identified in the response to Item 3.c. Each such heavy lift will be supervised by a designated individual who will be responsible for enforcing the procedural requirements. Any deviation from these requirements will require the prior approval of the Operations Supervisor.

ITEM 3.c. A tabulation of heavy loads to be handled by each crane which includes the load identification, load weights, its designated lifting device, and verification that the handling of such loads is governed by a written procedure containing, as a minimum, the information identified in NUREG 0612, Section 5.1.1(2).

RESPONSE: The requested information is provided in Tables 4 through 15 below:

TABLE 4
POLAR CRANE (1MHR-CRN1) HEAVY LOADS[1]

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS) 2	APPLICABLE LIFT PROCEDURES 3/	LIFTING EQUIPMENT
1.	Reactor Pressure Vessel Head (RPV)	1/3B	84		Head Strongback Carousel
2.	Steam Dryer	1/2/3B	36		Dryer & Separator Strongback
3.	Shroud Head/ Steam Separator	1/3B	49		Dryer & Separator Strongback
4.	Drywell Head	1/3B	56.3		Head Strongback Carousel
5.	Portable Refueling Shield	2/3B	33		Shackles & Slings
6.	RPV Head Insulation with Support Structure	1/3A	15.3		Head Strongback Carousel
7.	Load Block	2/3B	3		N/A
8.	RWCU Regenerative & Non-Regenerative HX Hatches (5)	2/3B	7.3		Shackles and Slings
9.	RWCU Filter Demineralizer Hatches (8)	2/3B	7.5		Shackles and Slings

TABLE 4

(continued)

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES	LIFTING EQUIPMENT
10.	FPCCU Valve/Equipment Area Concrete Plug (El. 186')	2/3B	3.6		Shackles and Slings
11.	FPCCU Valve/Equipment Area Concrete Plug (El. 174')	2/3B	3.6		Shackles & Slings
12.	Crated LPRM	2/3B	2.2		Lift Bar Shackles and Slings

1. A heavy load is defined as a weight exceeding the weight of a channeled fuel assembly and its associated handling tool (approximately 1,200 pounds).

2. Approximate weight includes weight of load and lifting device if applicable.

3. Procedures will be developed prior to fuel load.

TABLE 5

FUEL BRIDGE CRANE (1MHF-CRN1) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	New Fuel Shipping Containers/New Fuel	2/3B	1.5		Slings and Shackles
2.	Fuel Handling Area Floor Plugs	3B	3.5(max)		Slings and Shackles
3.	Hoist Area Floor Plug	3B	5.25		Slings and Shackles
4.	Miscellaneous Equipment	3B	5 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 6

SPENT FUEL CASK TROLLEY (1MHF-CRN2) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	Spent Fuel Cask	3B	125		2/

1/ Procedures will be developed prior to fuel load.

2/ Spent fuel cask and lifting equipment to be determined later.

TABLE 7

DRYWELL MSIV AND RELIEF VALVE MONORAIL
(1MHR-CRN2) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES[1/]	LIFTING EQUIPMENT
1.	MSIV Operator and Components	3B	2.5(max)		Slings and Shackles
2.	SRVs	3B	1.6		Slings and Shackles
3.	Miscellaneous Equipment	3B	3 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 8

MSIV MONORAILS (MHP - CRN 7A, B, C, D, E, F AND CRN5) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	MSIV 2 Operator and Components	2/3B	2.5 (max)		Slings and Shackles
2.	Feedwater Check Valves	2/3B	3.2		Slings and Shackles
3.	Access Hatch Covers	2/3B	8.2 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 9

MSIV 3 AND FEEDWATER ISOLATION VALVE MONORAILS (1MHP-CRN3) AND FEEDWATER VALVE HOISTS (1MHP-CRN1A, B) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES1/	LIFTING EQUIPMENT
1.	MSIV3 Operator and Valve Components (1B21*MOVF098 A, B, C, D)	2	3 (max)		Slings and Shackles
2.	Feedwater Isolation Valve, Operator and Valve Components (1B21*MOVF065A,B)	2	3 (max)		Slings and Shackles
3.	Feedwater Isolation Valve, Operator and Valve Components (1FWS*MOV7A,B)	2	3 (max)		Slings and Shackles
4.	Equipment Removal Concrete Plugs (El. 114')	3B	2.4 (max)		Slings and Shackles

---

1/ Procedures will be developed prior to fuel load.

TABLE 10

RHR A PUMP MONORAIL (1MHP-CRN8A) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES[1/]	LIFTING EQUIPMENT
1.	RHR Pump Motor	2	3.0		Slings and Shackles
2.	RHR Motor Stand, Discharge Head Assembly and Pump Element	2	6.5		Slings and Shackles
3.	RHR Pump Lower Shell	2	3.0		Slings and Shackles
4.	RHR Heat Exchanger Access Plugs (El. 114')	3B	5.4 (max)		Slings and Shackles
5.	RHR Pump Access Plugs (El. 114')	3B	4.7 (max)		Slings and Shackles
6.	RCIC Pump	2	2.64		Slings and Shackles
7.	RCIC Turbine	2	2.5		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE II

RHR B AND C PUMP MONORAIL
(1MHP-CRN8B) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	RHR B and C Pump Motor	2	3.0		Slings and Shackles
2.	RHR B and C Motor Stand Discharge Head Assembly and Pump Element	2	6.5		Slings and Shackles
3.	RHR B and C Pump Lower Shell	2	3.0		Slings and Shackles
4.	RHR Hx Access Plugs (El. 114')	3B	5.4 (max)		Slings and Shackles
5.	RHR Pump Access Plugs (El. 114')	3B	4.7 (max)		Slings and Shackles

---

1/ Procedures will be developed prior to fuel load.

TABLE 12

AUXILIARY BUILDING TUNNEL PLUG MONORAIL
(1MHP-CRN2) HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	Tunnel Access Plug	3B	5.1		Slings and Shackles
2.	Miscellaneous Equipme	2/3B	6 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 13

CONTROL BUILDING HOIST AREA MONORAILS
HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES[1/]	LIFTING EQUIPMENT
1.	Hatch Covers (El. 115')	3B	3.3 (max)		Slings and Shackles
2.	Hatch Covers (El. 135')	3B	2 (max)		Slings and Shackles
3.	Miscellaneous Equipment	3B	5 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 14

CONTROL BUILDING FLOOR PLUG MONORAIL
HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES 1/	LIFTING EQUIPMENT
1.	Floor Access Plug (El. 98')	3B	2		Slings and Shackles
2.	Miscellaneous Equipment	2/3B	5 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

TABLE 15

CONTROL BUILDING EQUIPMENT HANDLING AREA MONORAIL
HEAVY LOADS

	LOAD	SAFETY CLASS	APPROX. WEIGHT (TONS)	APPLICABLE LIFT PROCEDURES[1/]	LIFTING EQUIPMENT
1.	Miscellaneous Equipment	3B	5 (max)		Slings and Shackles

1/ Procedures will be developed prior to fuel load.

ITEM 3.d: Verification that lifting devices identified in 2.1.3.c, above, comply with the requirements of ANSI N14.6-1978 or ANSI B30.9-1971 as appropriate. For lifting devices where these standards, as supplemented by NUREG-0612, Sections 5.1.1(4) or 5.1.1(5), are not met, describe any proposed alternatives and demonstrate their equivalency in terms of load-handling reliability.

RESPONSE: With regard to special lifting devices, there are three identified in Item 3.c. above that are used to handle heavy loads in the containment. These special lifting devices are:

1) Head Strongback Carousel
2) Dryer/Separator Strongback

A description of each of these devices and the plant function or operations in which these devices are used is contained in the following paragraphs:

(1) Head Strongback Carousel (Figure 13)

The head strongback carousel combines the functions of stud tensioning and relaxation, nut and washer handling and storage, and reactor vessel head transport. The strongback frame is a cruciform structure of box beams with four intermediate radial beams which together provide an eight-point support for the carousel track. A lift box is welded to the top of the frame and carries two lift pins for attaching the frame to the crane hook. Four laterally braced support legs extend vertically down from the box beam support arms to the reactor vessel head lifting lugs. Eight slings are attached at the ends of the support arms and intermediate radial beams to carry the nut tray storage ring.

Each of the four vertical supports consists of a tubular assembly comprising a support pipe, lifting clevis, and two brace arms which are bolted to the frame. The lifting clevis rod is housed within the support pipe and extends through sleeves in the frame arms where it is secured by a backing plate and nut. A threaded tube in the lower end of the support pipe provides an adjustable extension.

(2) Dryer and Separator Strongback (Figure 14)

The dryer and separator strongback is used during refueling or reactor servicing operations to remove and install the steam dryer and the shroud-head and steam separator. The strongback is also used to remove and install the auxiliary platform components which include the vessel platform and vessel platform polar track.

The dryer and separator strongback consists of a frame which is made of four quadrangular steel beams aligned to intersect at a central hook box. The beams are flanged at the bottom and welded to top and bottom support plates. The top plate has a cut-out for the crane sister hook. The ends of the tapered beam are fitted with lift sockets for remote engagement of socket pins to the lifting eyes of the dryer and the separator. There are two separate compartments in each lift socket: the outer compartment for dryer engagement and the inner compartment for separator engagement. The socket pins are actuated by double-acting air cylinders which are mounted at the ends of the beams.

A lifting eye is also provided at the end of each beam to connect four single-legged slings that are used to lift the vessel platform polar track. Lifting eyes are provided on the braces between each pair of support beams for attaching lifting cables to lift the vessel platform. Separate wire rope cable slings are used for the vessel platform and the platform polar track.

The two devices described above were evaluated against ANSI N14.6-1978. For the reasons listed below, the detailed comparison of the devices to ANSI N14.6 was limited to Sections 3.2 and 5 of the standard.

1) ANSI N14.6-1978 was written for special lifting devices for shipping containers for nuclear materials. The devices described above were designed and fabricated prior to a decision by NRC to apply this standard to other types of special lifting devices. Accordingly, ANSI N14.6-1978 was not specifically applied in the design and fabrication of these devices. In this regard, there are a number of sections in the standard that are not appropriate to apply in retrospect. These sections are the sections entitled, Designer's Responsibilities (Section 3.1); Design Considerations (Section 3.3); Fabricator's Responsibilities (Section 4.1); Inspector's Responsibilities (Section 4.2); and Fabrication Considerations (Section 4.3). Because documentation is not available to assure that all subparts of these sections were met, they have not been addressed item by item for the purpose of identifying and justifying exceptions. However, information on drawings and in letters indicate that sound engineering practices were placed on the fabricator and inspector by the designer for the purpose of assuring that the designer's intent was accomplished. For example, these lifting devices were designed and supplied in accordance with the Project Quality Assurance Program, as appropriate for Category I structures.

   To insure against improper use, the special lifting devices will be used only in the controlled environment of the containment. Procedures will exclude their use with any loads except those intended, except for special test loads.

On this basis, there is reasonable assurance that the intent of the sections of the standard listed above was, in fact, accomplished in the design, fabrication, inspection, and testing of these devices.

2) Section 1.0, Scope; Section 2.0, Definitions; Section 3.4, Design Considerations to Minimize Decontamination Efforts in Special Lifting Device Use; Section 3.5, Coatings; and Section 3.6, Lubricants are not pertinent to load-handling reliability of the devices and, therefore, have not been addressed for purpose of identifying and justifying exceptions.

3) Section 6, Special Lifting Devices for Critical Loads, is applicable to critical loads. A critical load is defined in the standard as:

> "Any lifted load whose uncontrolled movement or release could adversely affect any safety related system when such system is required for unit safety or could result in potential offsite exposure comparable to the guideline exposures outlined in Code of Federal Regulations, Title 10, Part 100."

None of the loads lifted by the devices identified above have as yet been determined to be a critical load. Such a determination would require an analysis of the consequences of various load drop scenarios. Since such analyses are not required to be performed until the final report to the NRC, it is premature to designate certain loads as critical loads and, accordingly, to apply Section 6 of ANSI N14.6-1978 to their designated lifting devices.

ANSI N14.6 - Section 3.2

Section 3.2 of ANSI N14.6-1978 establishes design criteria for special lifting devices. Specifically, it establishes (1) stress design factors for load-bearing members and (2) requirements to assure that materials used in load-bearing members have adequate toughness.

Stress Design Factors -- The Head Strongback Carousel and Dryer/Separator Strongback were designed with stress design factors consistent with ANSI N14.6, Section 3.2.

Fracture Toughness Considerations -- The materials utilized to fabricate the load bearing components in each of the lifting devices have been evaluated in terms of their fracture toughness properties. All materials have been determined to possess adequate resistance to brittle fracture.

ANSI N14.6 - Section 5

A program for inspection, testing, and maintenance of the devices will be established that meets the provisions of ANSI N14.6-1978, Section 5 with the following four exceptions.

Exception 1: Plant procedures will not specify a visual inspection by maintenance or other nonoperating personnel at intervals of three months or less as required by Section 5.3.7 of ANSI N14.6-1978. Between periods of usage, these devices are stored in a specific location under controlled environment and are not subjected to any other usage except the dedicated and specific usage mentioned in the description of the devices. Procedures have been revised so that the devices are inspected by qualified personnel prior to each usage and a thorough testing and nondestructive examination is performed at five year intervals. Based on the controlled storage, dedicated single usage, and the complete inspection schedule, the equivalency of Section 5.3.7 is demonstrated.

Exception 2: Section 5.3.3 of ANSI N14.6-1978 requires that special lifting devices be load tested according to Section 5.2.1 to 150% of maximum load following any incident in which any load-bearing component may have been subjected to stresses substantially in excess of those for which it was qualified by previous testing, or following an incident that may have caused permanent distortion of load-bearing parts. Since distortion may already have occurred or since defects may have already developed due to the overstressed condition, it seems more prudent and practical to perform the dimensional examinations for deformation and the nondestructive examinations for defects to determine whether the device is still acceptable for use rather than to subject the device to 150% load testing. If defects or deformation are detected, then the device shall be repaired or modified and then tested to 125% load (consistent with the initial proof load tests) followed by examination for defects or deformation. This alternative achieves the same objective as Section 5.3.3 of the standard.

Exception 3: The lifting devices were subjected to proof load tests of 125% of rated load as compared to 150% required by Section 5.2.1 of ANSI N14.6-1978. Following the proof tests, all load bearing welds were subjected to NDE. The potential for overloading these devices is extremely remote because the devices are dedicated to one or two specific loads throughout their service life. In addition, they will receive thorough periodic examinations and, if damaged or repaired, will be subjected to a 125% load test before being returned to service as required by ANSI N14.6. For these reasons, the 125% initial proof test is judged to be adequate.

Exception 4: Several components of the lifting devices will be subjected to NDE and dimensional inspections on intervals longer than those required by Section 5.3.1(2) of ANSI N14.6-

1978. These are components that require disassembly or removal of paint. They will be inspected on a 5-year interval based on the very limited and dedicated use of these devices.

The inspection frequencies that have been established for these devices are judged to be equivalent to the intent of ANSI N14.6-1978 in that this standard was intended for cask lifting rigs that are used on a frequent basis (potentially 50 to 100 times in a year), and such lifting rigs would be subjected to potential abuse in transportation between sites as well as harsh environments during transportation.

Since the lifting devices identified above for River Bend are typically used on an annual basis only to support refueling operations, the frequency of use is considerably less than that of the lifting rigs for which ANSI N14.6-1978 was intended. Additionally, these River Bend special lifting devices are stored and used in an area where they will not be subjected to harsh environments.

Accordingly, while the visual inspections of the lifting rigs will be performed on an annual basis, the more difficult and time consuming nondestructive examinations and dimensional examinations will be performed at a five year interval.

With respect to lifting devices not specially designed (i.e., slings), the criteria of ANSI B30.9 apply. Therefore, to assure that slings are appropriately used and maintained, load handling procedures are being developed which will require that:

a) The use of ANSI B30.9 and NUREG-0612 Section 5.1.1(5) criteria for sling selection and rigging techniques;

b) A preventive maintenance procedure specifying annual inspections of slings;

c) A visual inspection of slings for damage prior to making a lift;

d) A preventive maintenance procedure which includes tagging requirements to identify: sling rating, application, last examination, and expiration date of examination; and

e) Sling selection, use, and marking will be based on rated loads which include the sum of both maximum static and dynamic load.

ITEM 3.e. Verification that ANSI B30.2-1976, Chapter 2-2, has been invoked with respect to crane inspection, testing, and maintenance. Where any exception is taken to this standard, sufficient information should be provided to demonstrate the equivalency of proposed alternatives.

RESPONSE: Procedures for inspection, testing, and maintenance of the three overhead cranes identified in the response to Item 1 (Reactor Building Polar Crane, Fuel Building Bridge Crane, Spent Fuel Cask Trolley) will be prepared following the guidelines of ANSI B30.2-1976, Chapter 2-2. With the implementation of these procedures, the criteria of ANSI B30.2-1976, Chapter 2-2, are satisfied. No exceptions to the standard are taken.

ANSI B30.2-1976, Chapter 2-2 is not directly applicable to the inspection, testing, and maintenance of the monorail/hoist systems identified in item 1. The activities for these monorail/hoist systems are, however, covered extensively by plant procedures which have been prepared following the guidelines of ANSI B30.16-1973, Section 16-2.2 and ANSI B30.11-1980, Chapter 11-2.

ITEM 3.f. Verification that crane design complies with the guidelines of CMAA Specification 70 and Chapter 2-1 of ANSI B30.2-1976, including the demonstration of equivalency of actual design requirements for instances where specific compliance with these standards is not provided.

RESPONSE:

The overhead cranes listed in response to Item 1 are the Reactor Building Polar Crane, the Spent Fuel Cask Trolley and the Fuel Building Bridge Crane. The SWEC design specifications for these cranes were compared to the 1975 revision of CMAA-70 and to the additional safety requirements of ANSI B30.2-1976, Section 2-1. Based on these comparisons, we find that the Reactor Building Polar Crane, Spent Fuel Cask Trolley and the Fuel Building Bridge Crane comply with the guidelines of CMAA-70-1975 and ANSI B30.2-1976, with one minor exception with respect to initial testing.

With regard to the monorail lifting systems, the guidelines of CMAA-70 and ANSI B30.2-1976 are not directly applicable. However, the design of these monorail systems does meet the applicable industry standards as described below.

The monorails used at River Bend Station were either designed by SWEC or procured under a special specification. The appropriate industry standards applicable to these systems are ANSI B30.16, "Overhead Hoist - 1973" and ANSI B30.11, "Monorail Systems and Underhung Cranes". In all cases, the monorails at River Bend Station comply with the appropriate sections of these two ANSI standards.

ITEM 3.g. Exceptions, if any, taken to ANSI B30.2-1976 with respect to operator training, qualification, and conduct.

RESPONSE: A procedure for the qualification and training of overhead crane operators will be developed which meets the provisions of ANSI B30.2-1976, Chapter 2-3. This procedure will include training, examination, experience, and physical requirements for crane operators as well as precautions and instructions to assure proper conduct of crane operation. In addition, required crane operator training will include, among other things, instruction in crane operator conduct, such as proper hand signals, testing of controls, limit devices, attaching the load, and moving the load. No exceptions to the guidance in ANSI B30.2-1976, Chapter 2-3 are taken.

With regard to the monorail/hoist systems identified, the provisions of ANSI B30.2-1976 are not directly applicable. Appropriate requirements, however, will be included in plant procedures regarding the control and use of hoists. These procedures require that hoist operators be trained in hoist operation and certified as hoist operators by the Mechanical Maintenance Supervisor.

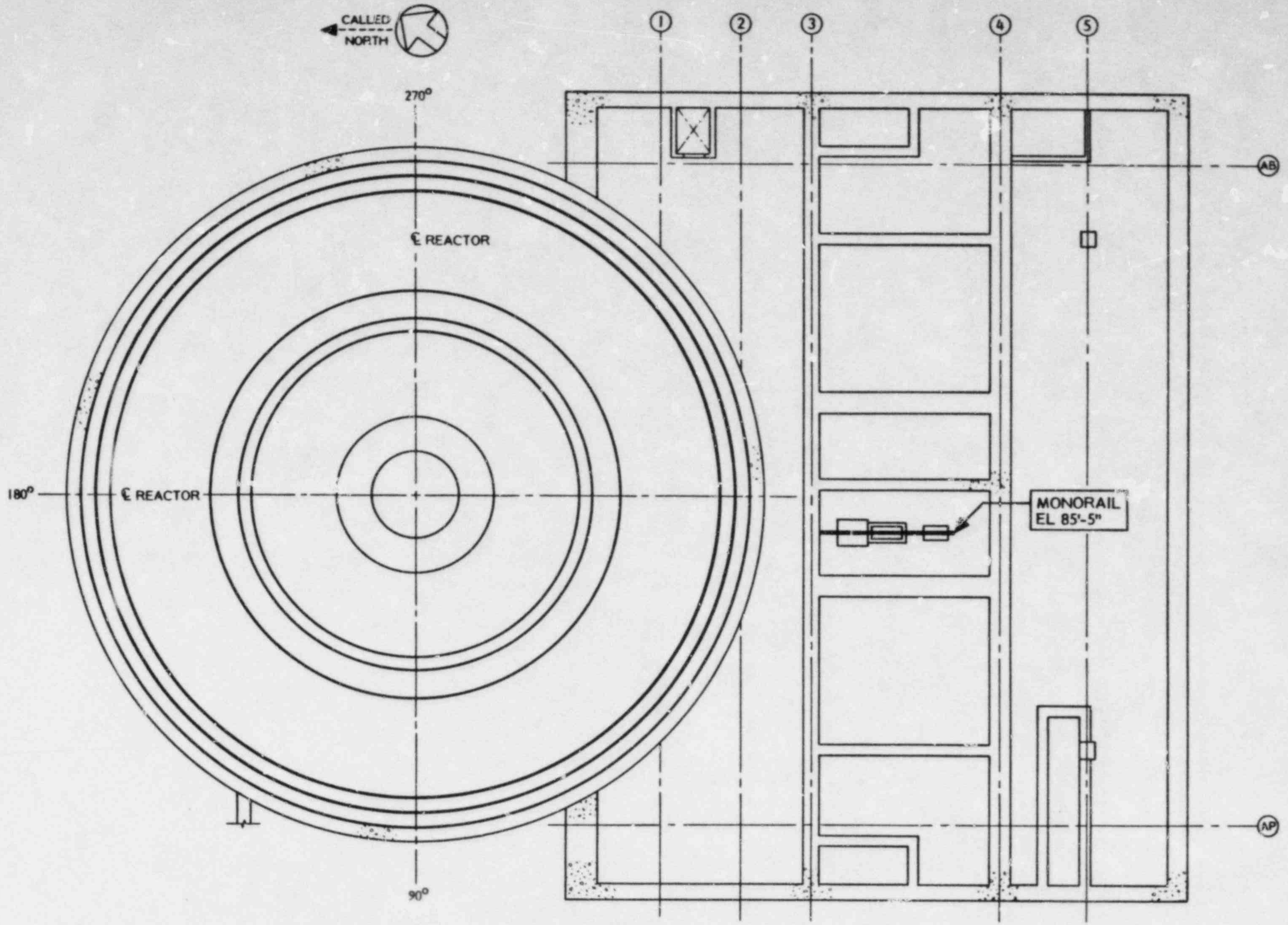

FIGURE I

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 70'-0"

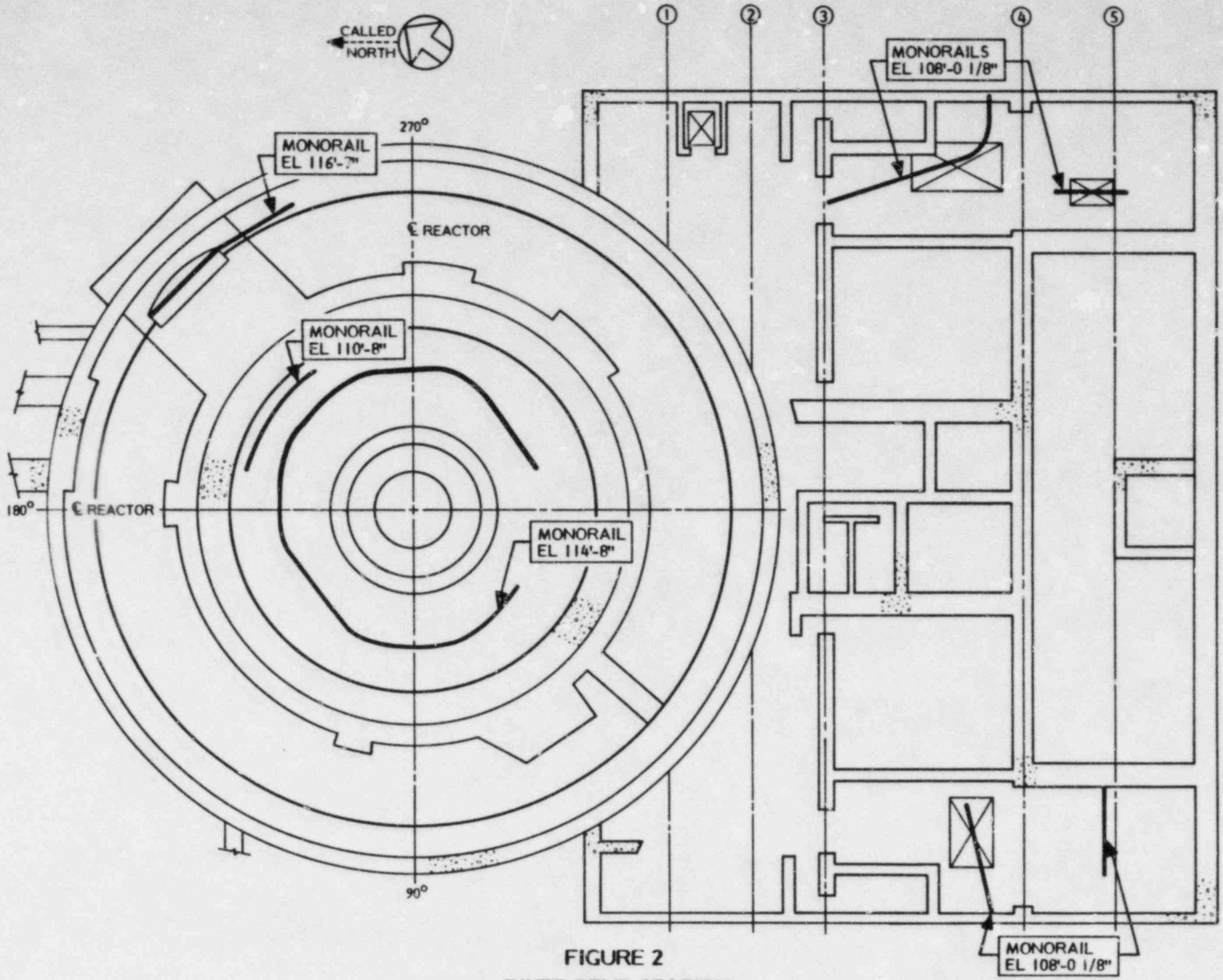

FIGURE 2

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 95'-9"

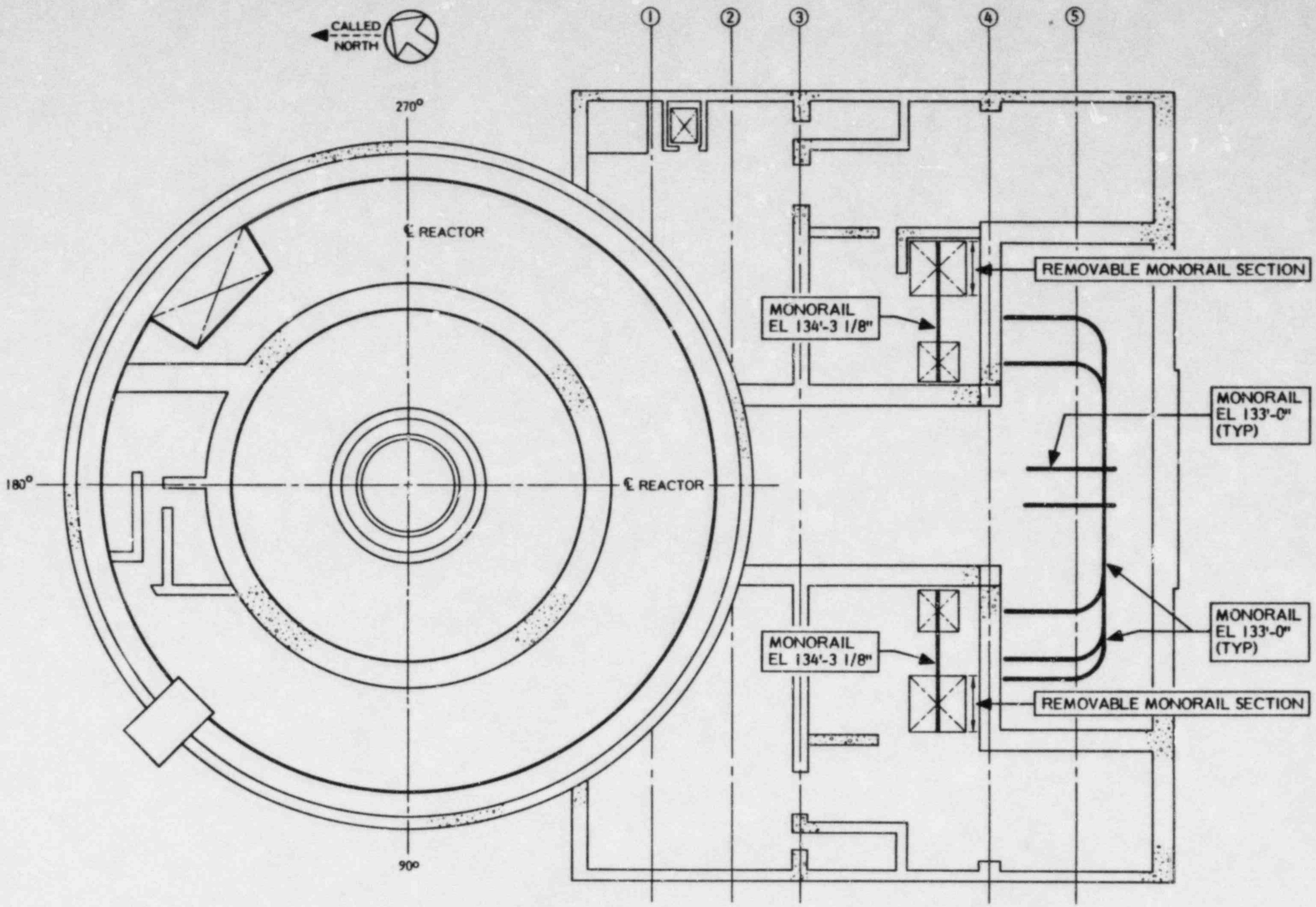

FIGURE 3

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 114'-0"

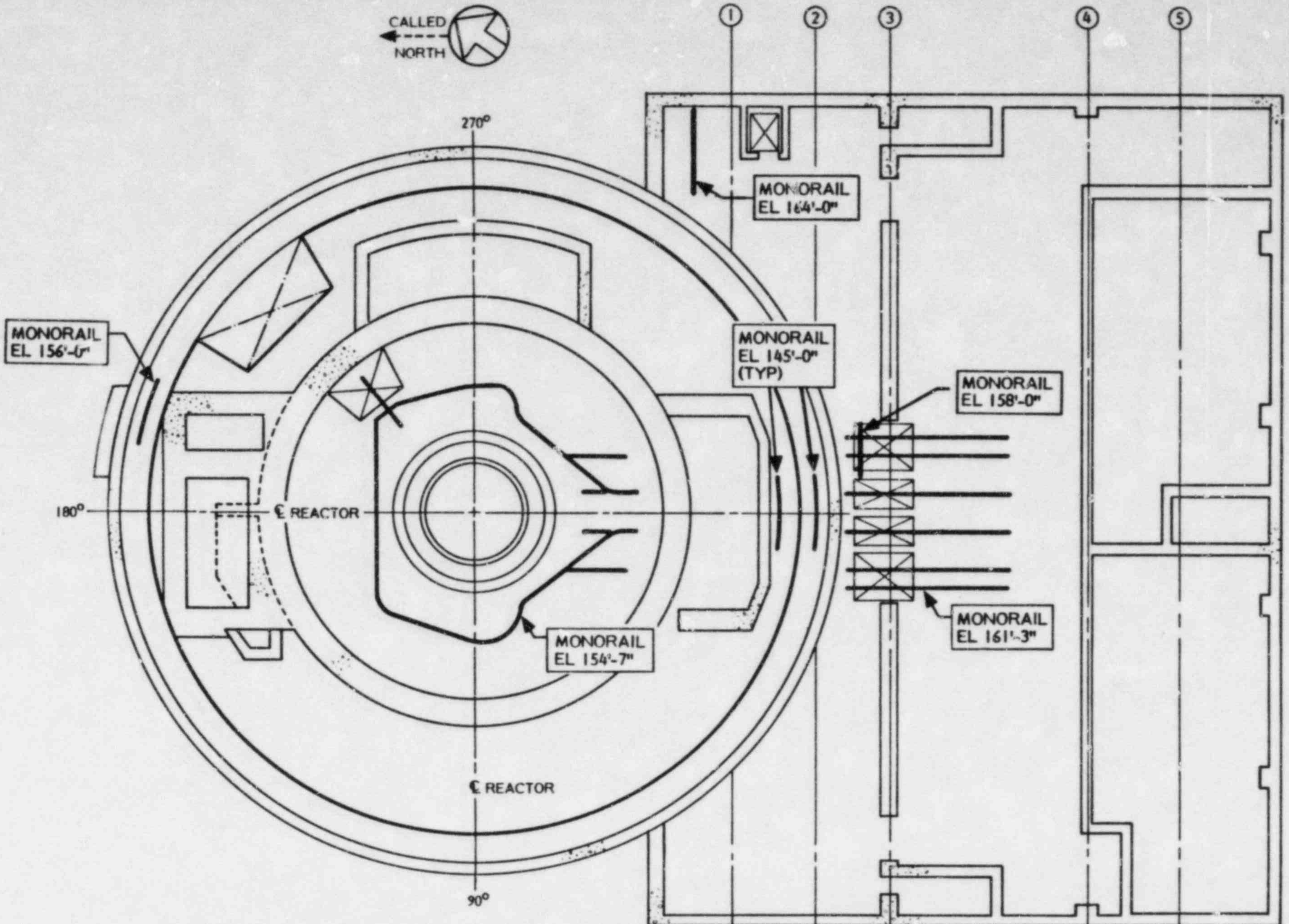

FIGURE 4

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 141'-0"

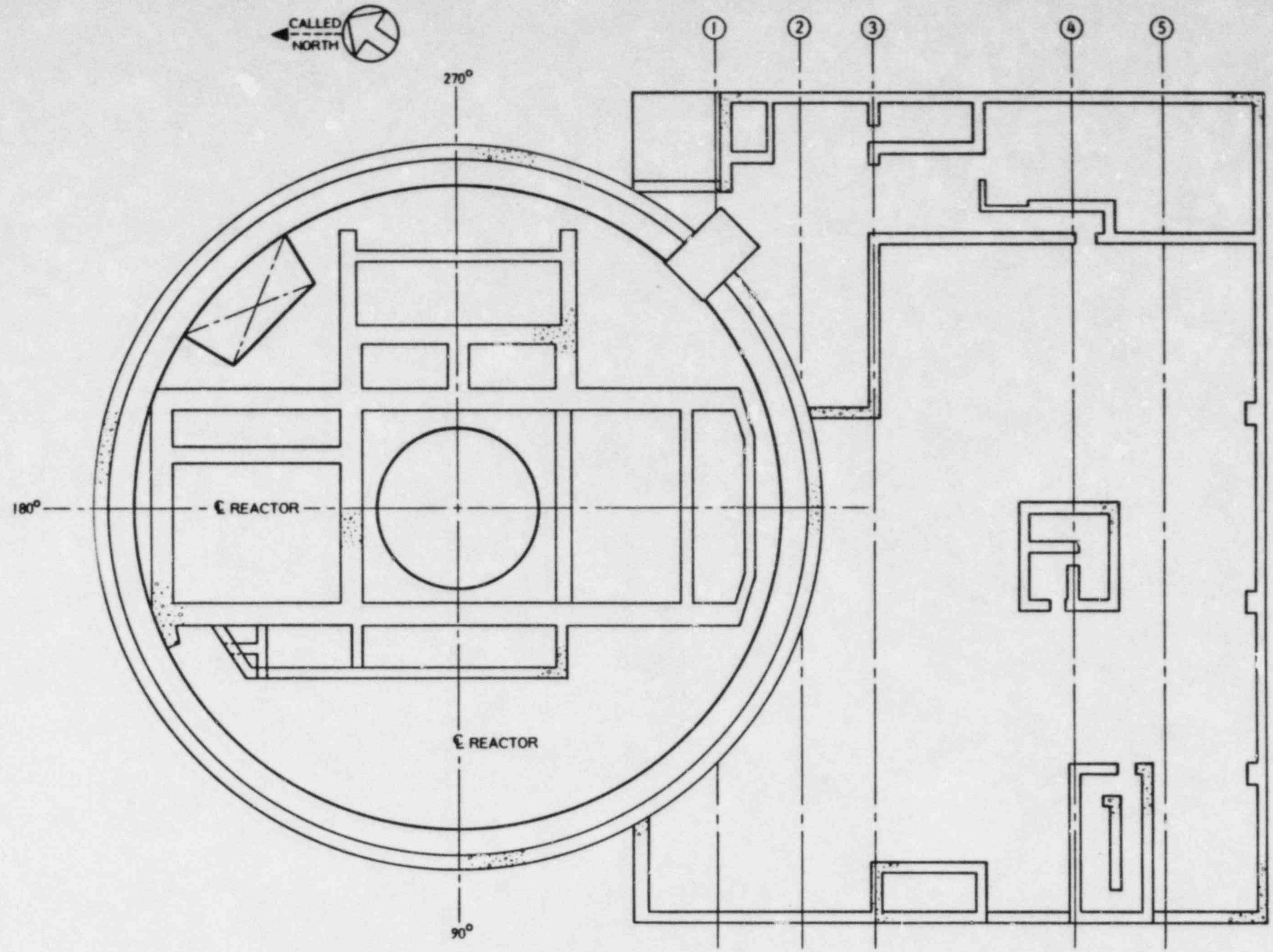

FIGURE 5

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 162'-3"

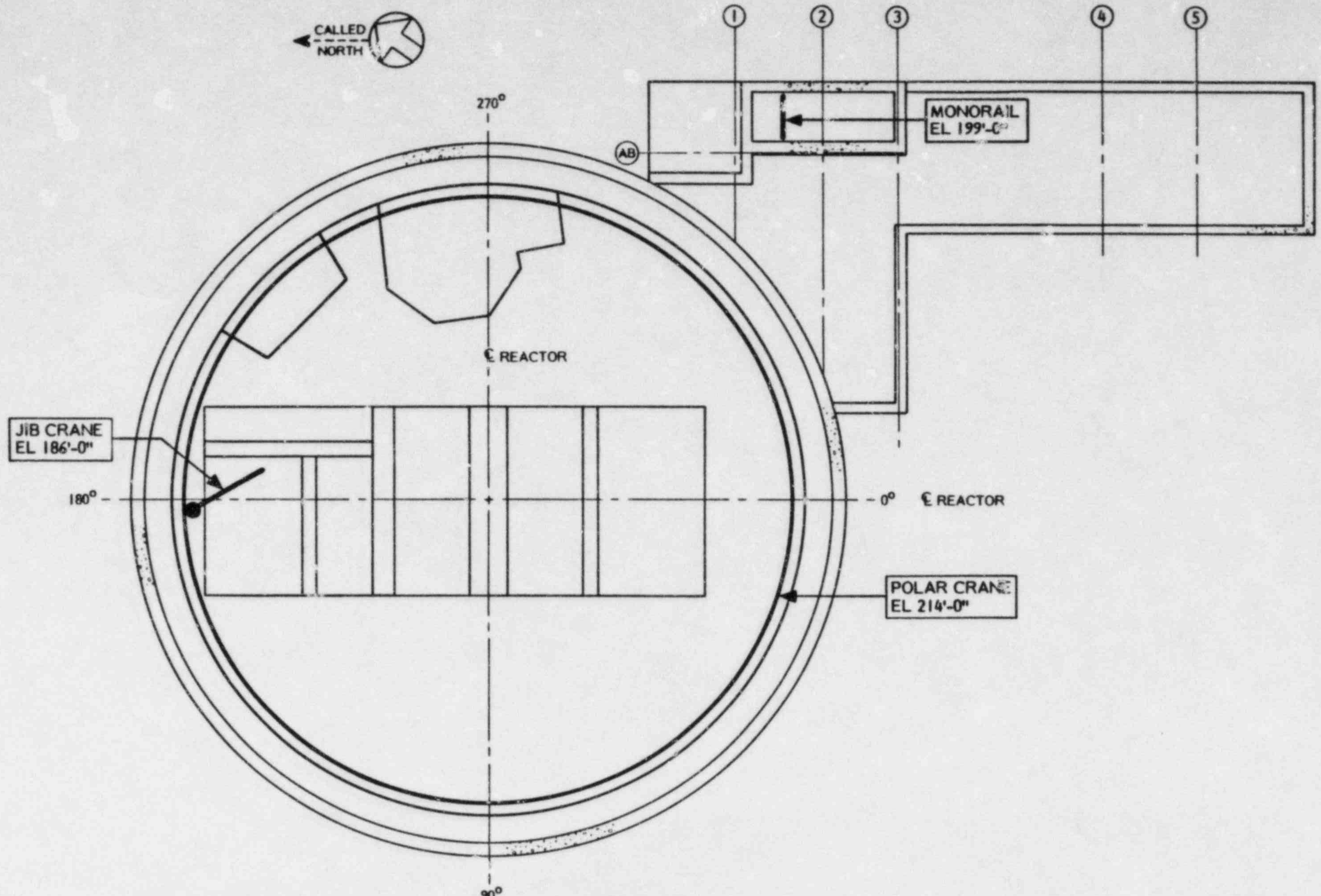

FIGURE 6

RIVER BEND STATION
REACTOR BUILDING/AUXILIARY BUILDING
EL 186'-3"/ EL 185'-0"

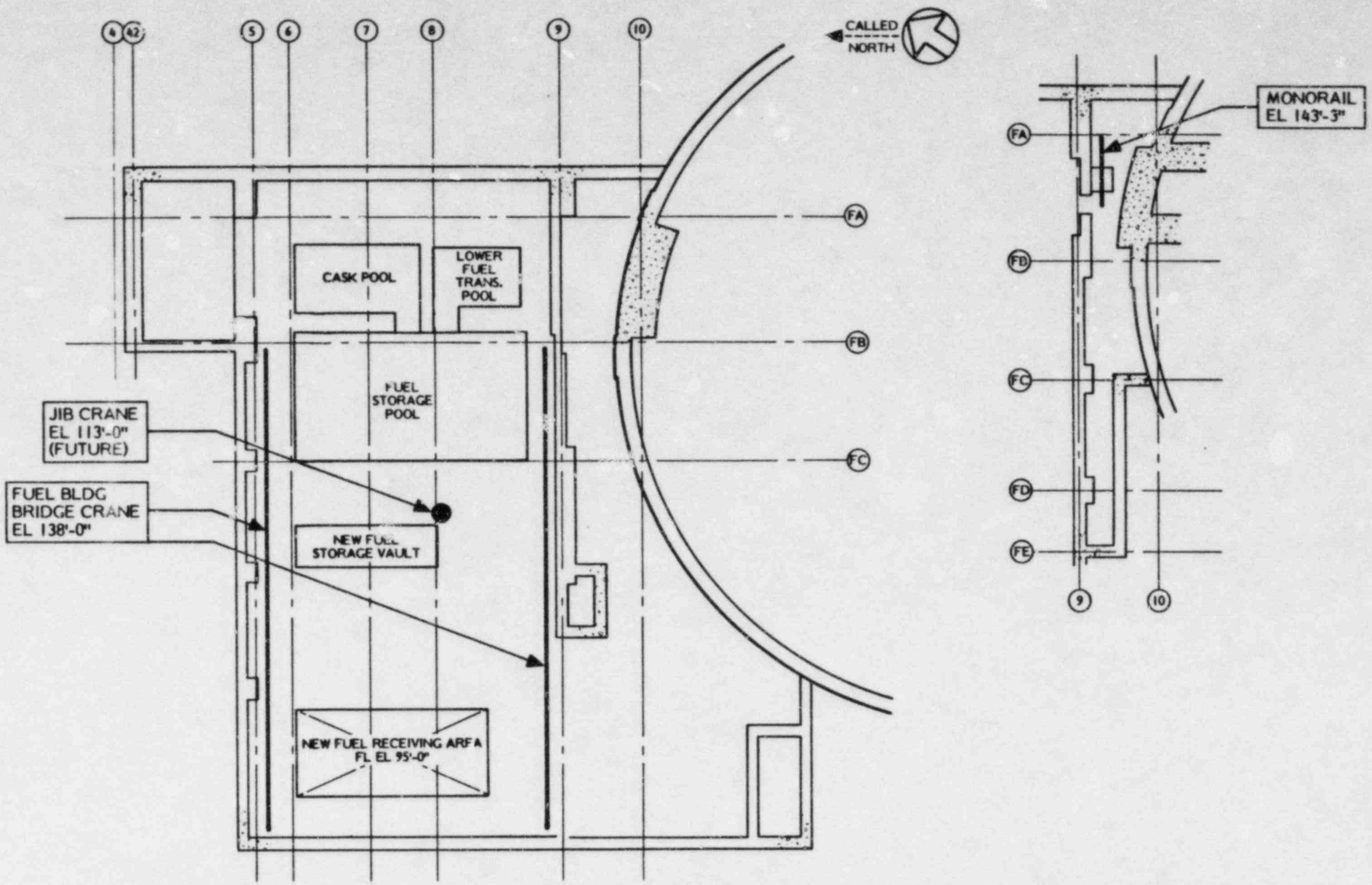

FIGURE 7

RIVER BEND STATION
FUEL BUILDING
EL 113'-0"

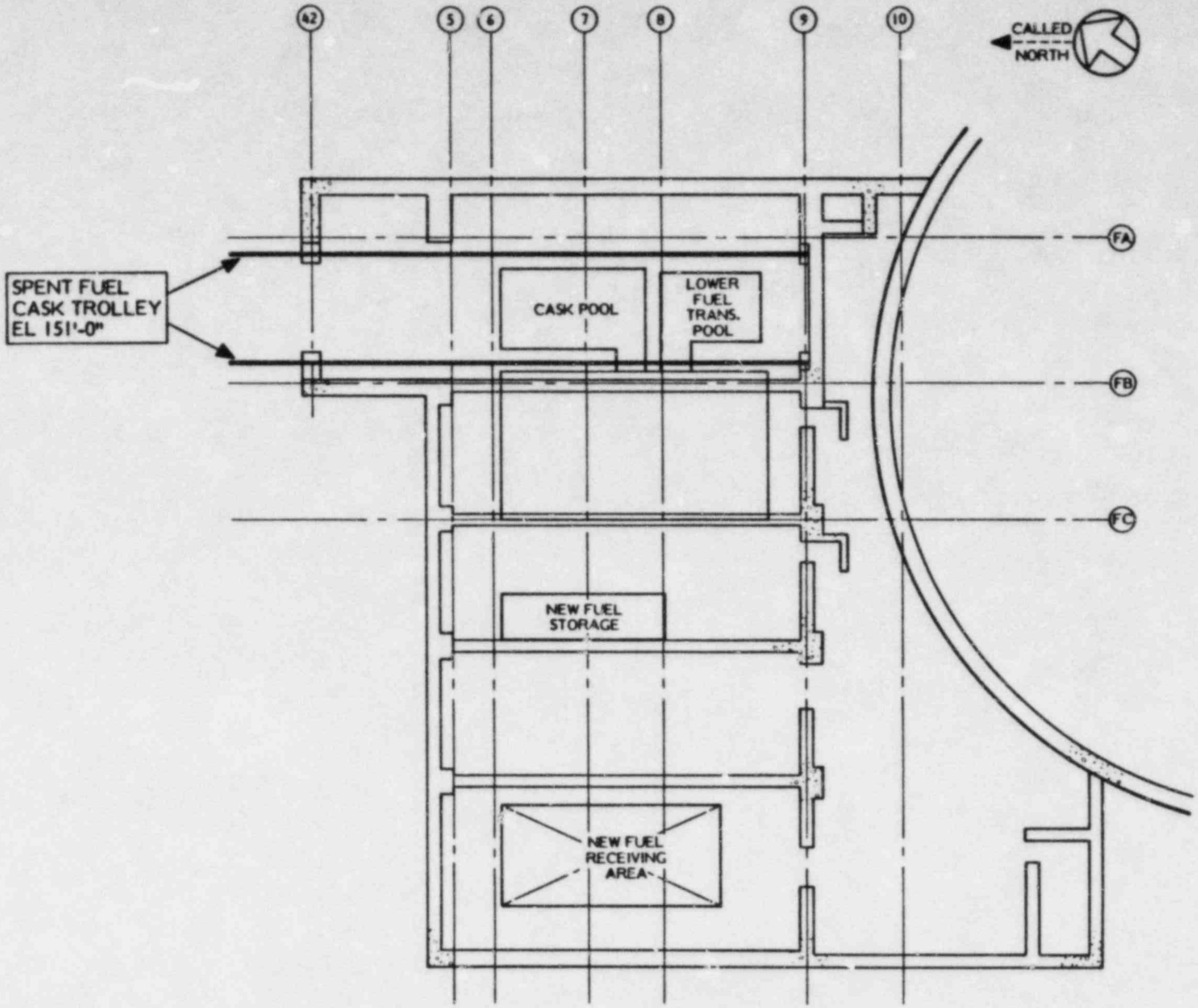

FIGURE 8

RIVER BEND STATION
FUEL BUILDING
EL 148'-0"

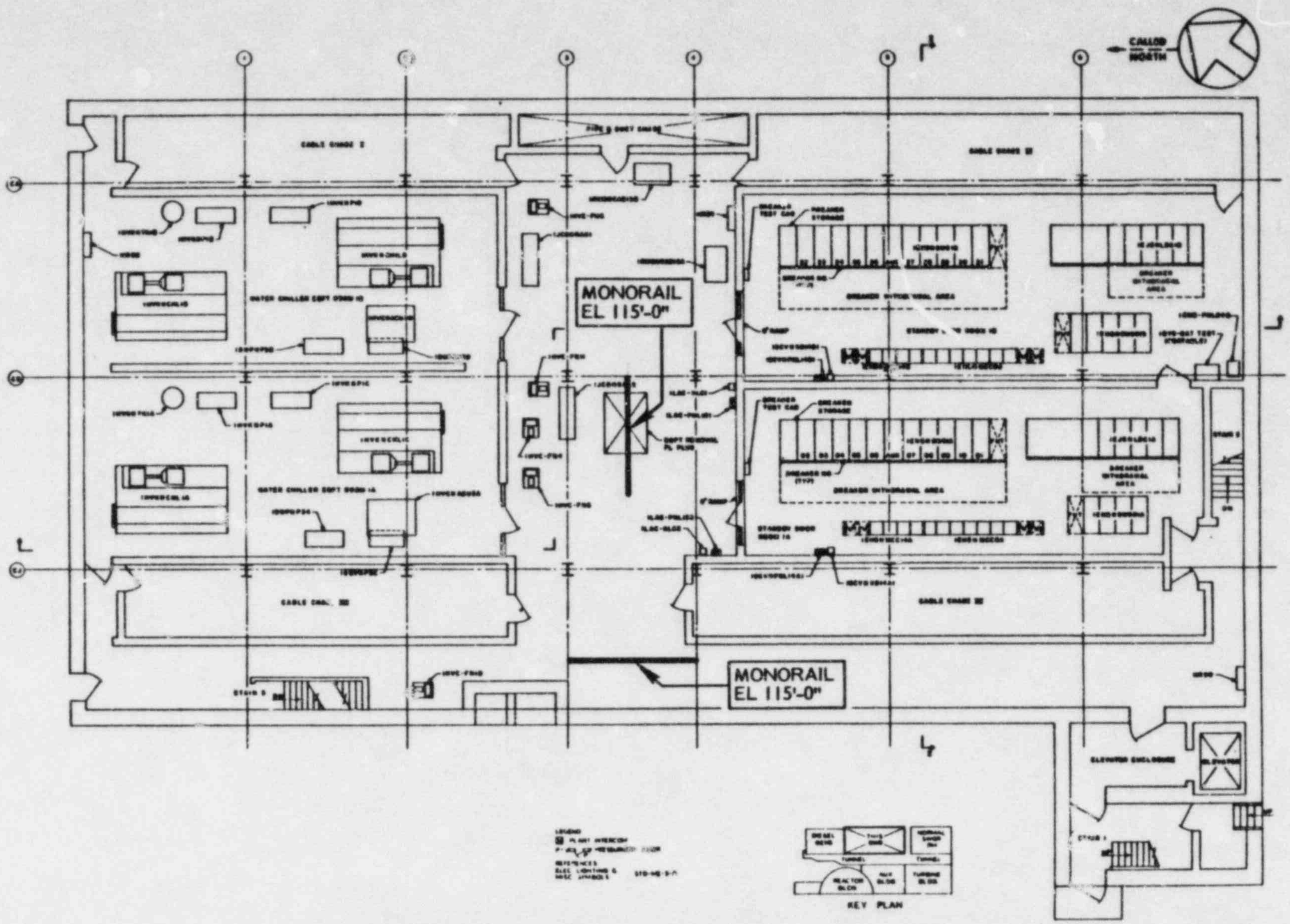

FIGURE 9

CONTROL BUILDING
EL 98'-0"

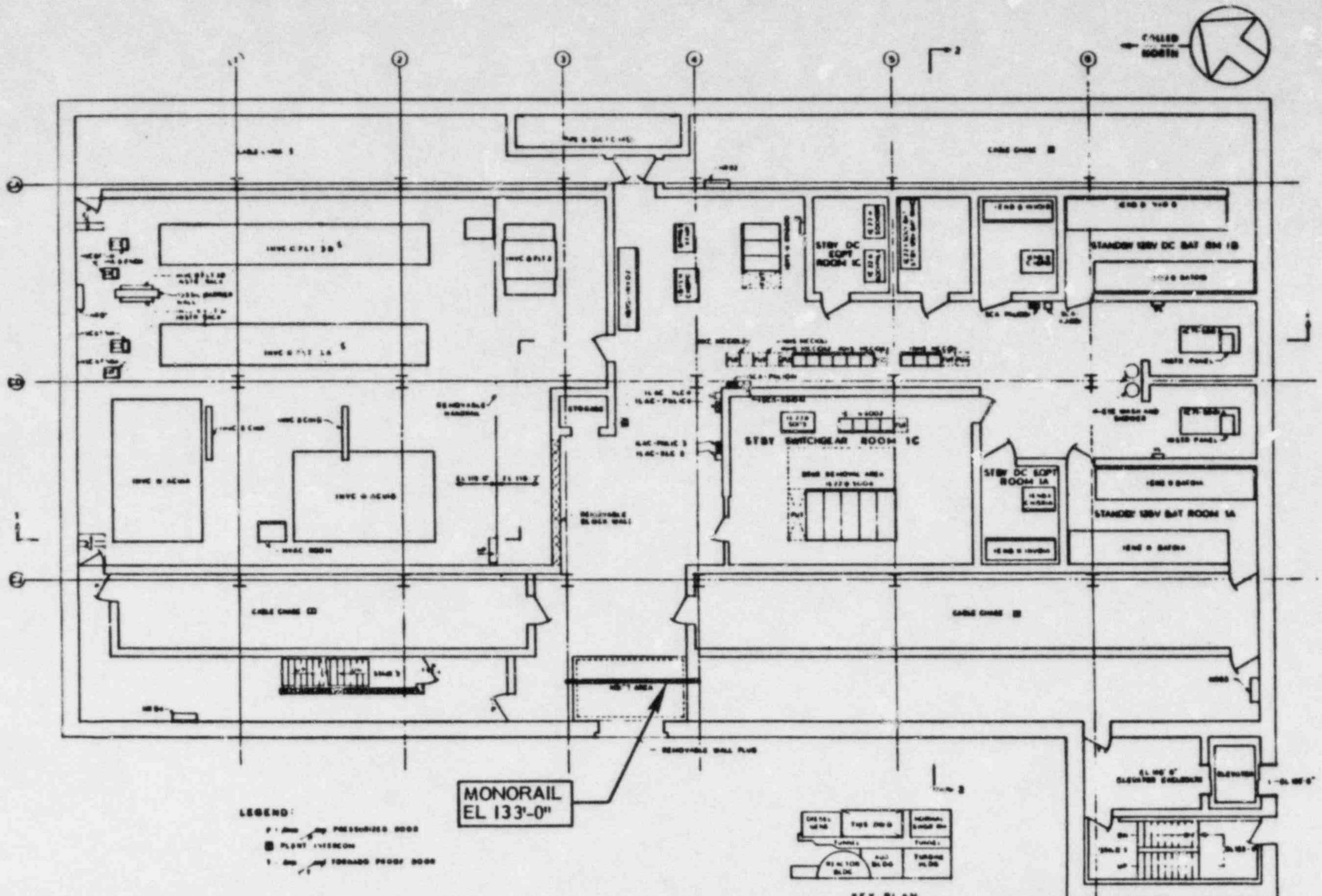

FIGURE 10
CONTROL BUILDING
EL 115'-0"

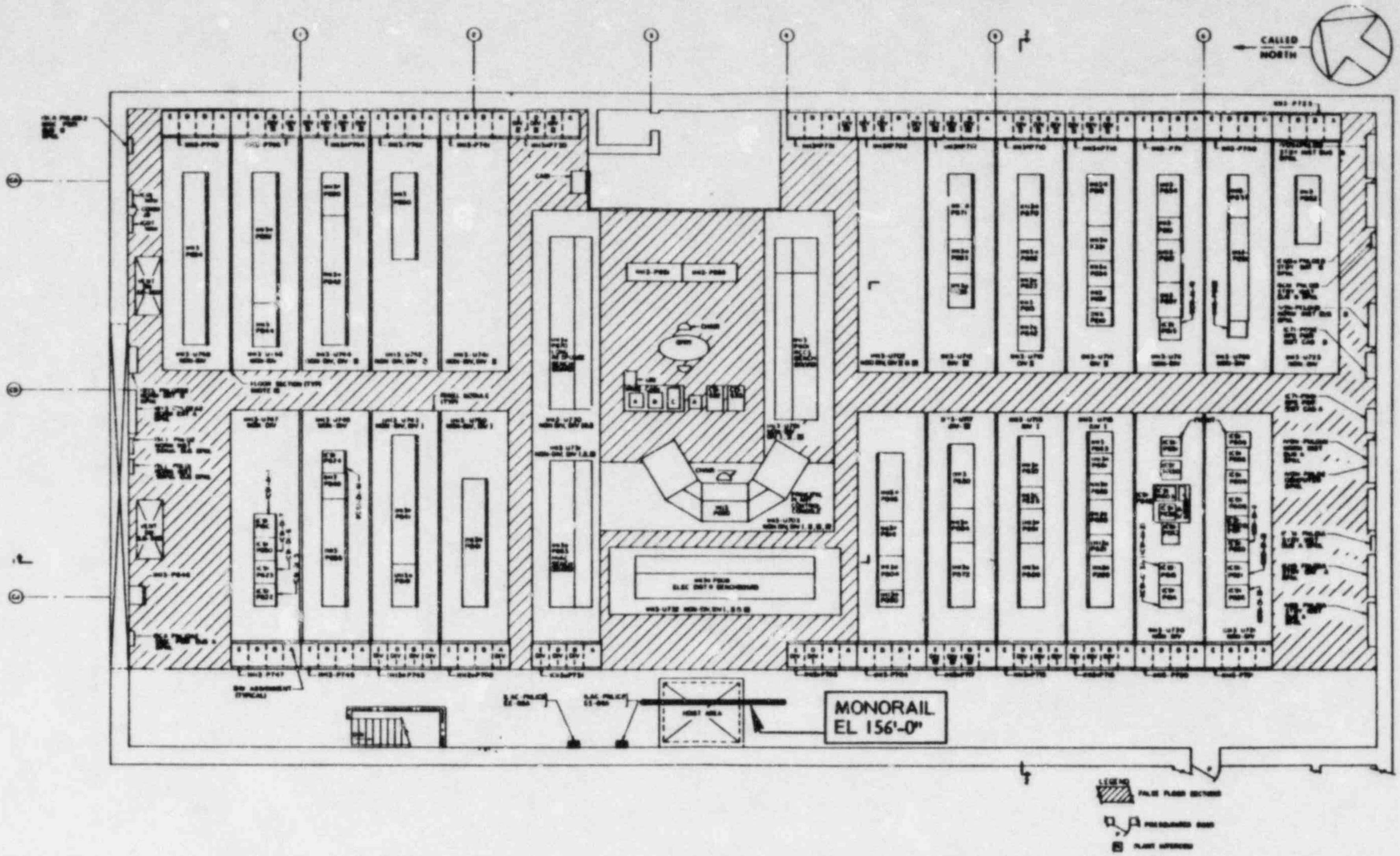

FIGURE 11

CONTROL BUILDING
EL 136'-0"

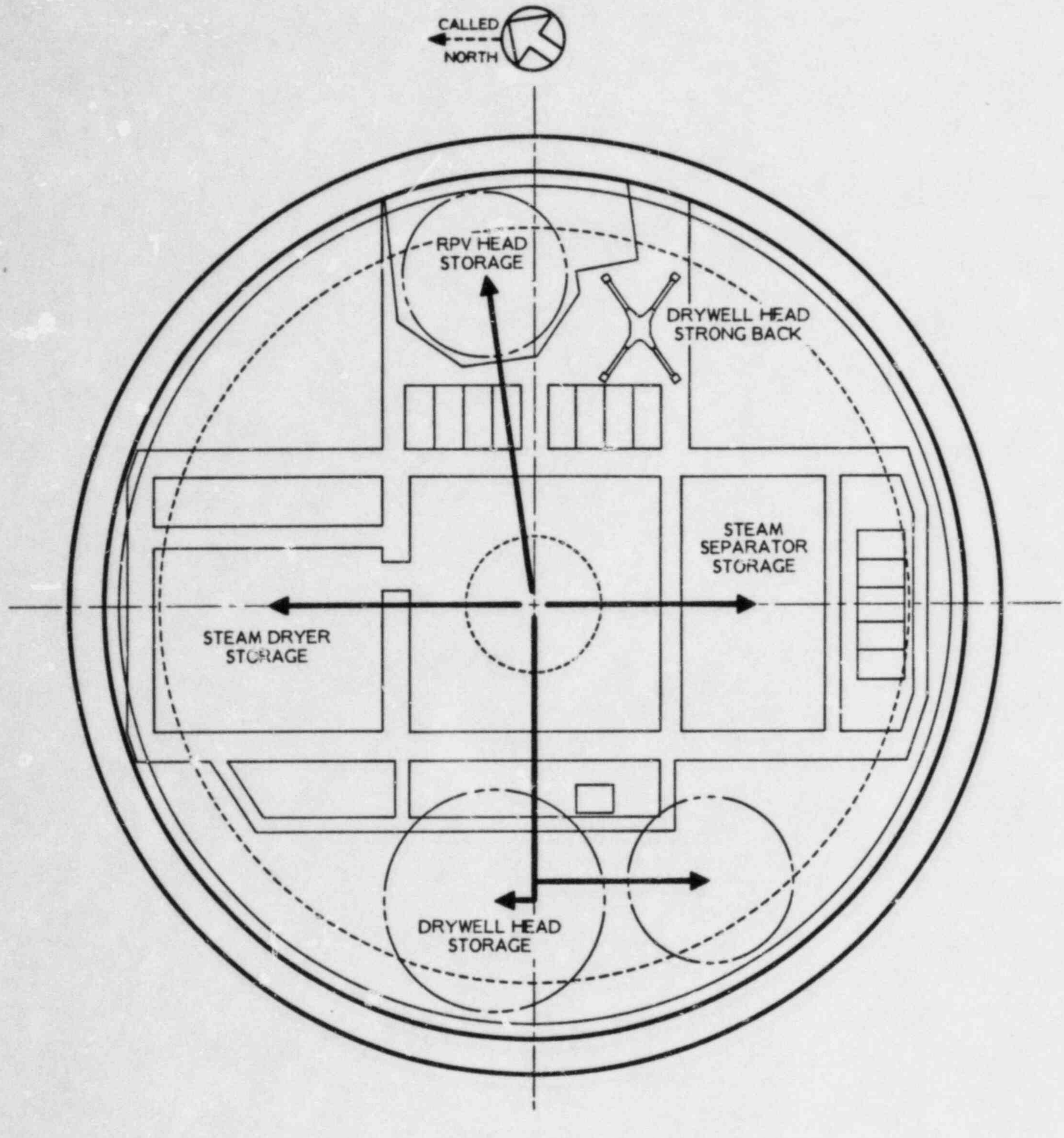

FIGURE 12

RIVER BEND STATION HEAVY LOADS EVALUATION
EL 186'-3"

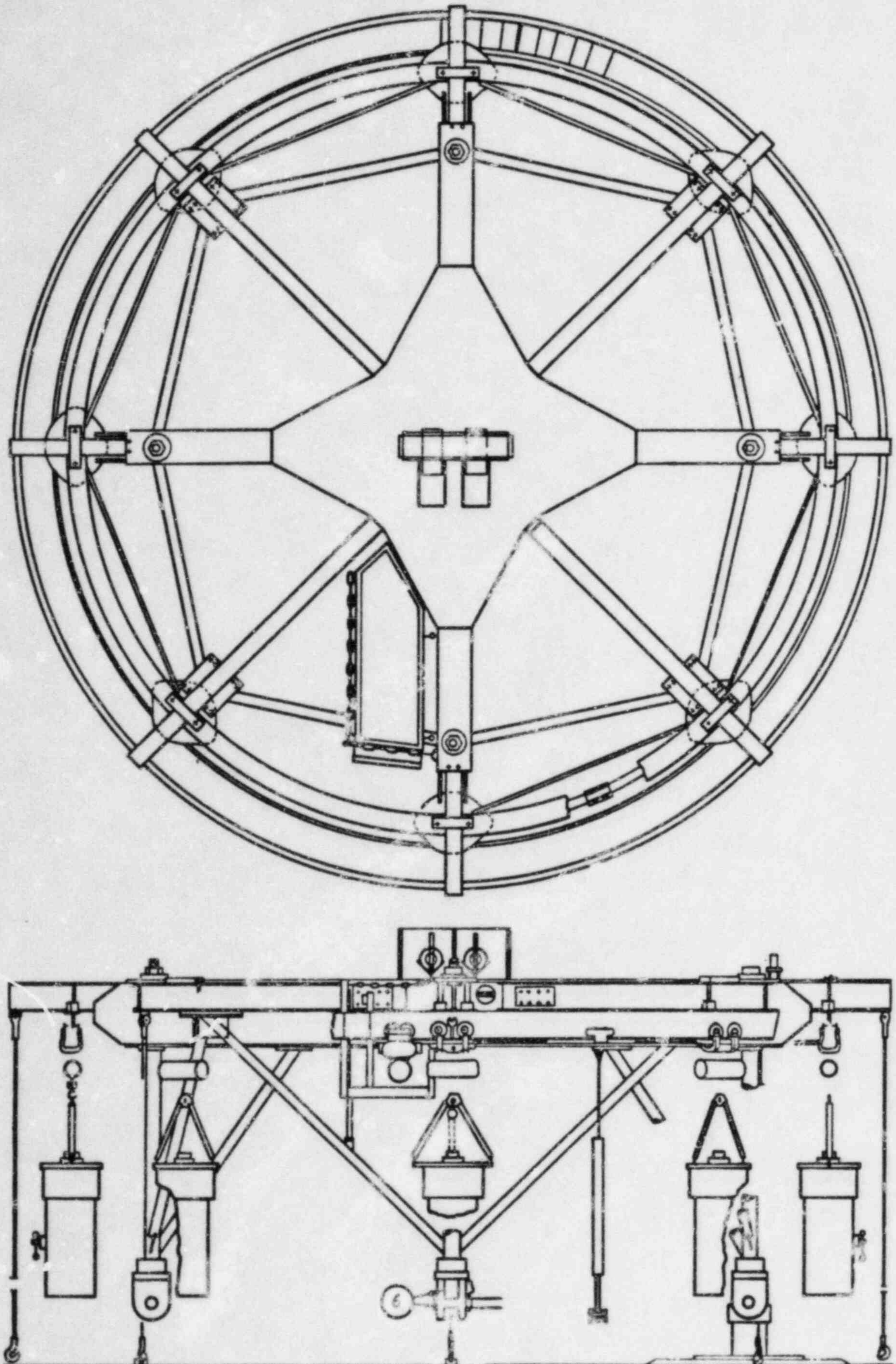

FIGURE 13

HEAD STRONGBACK CAROUSEL

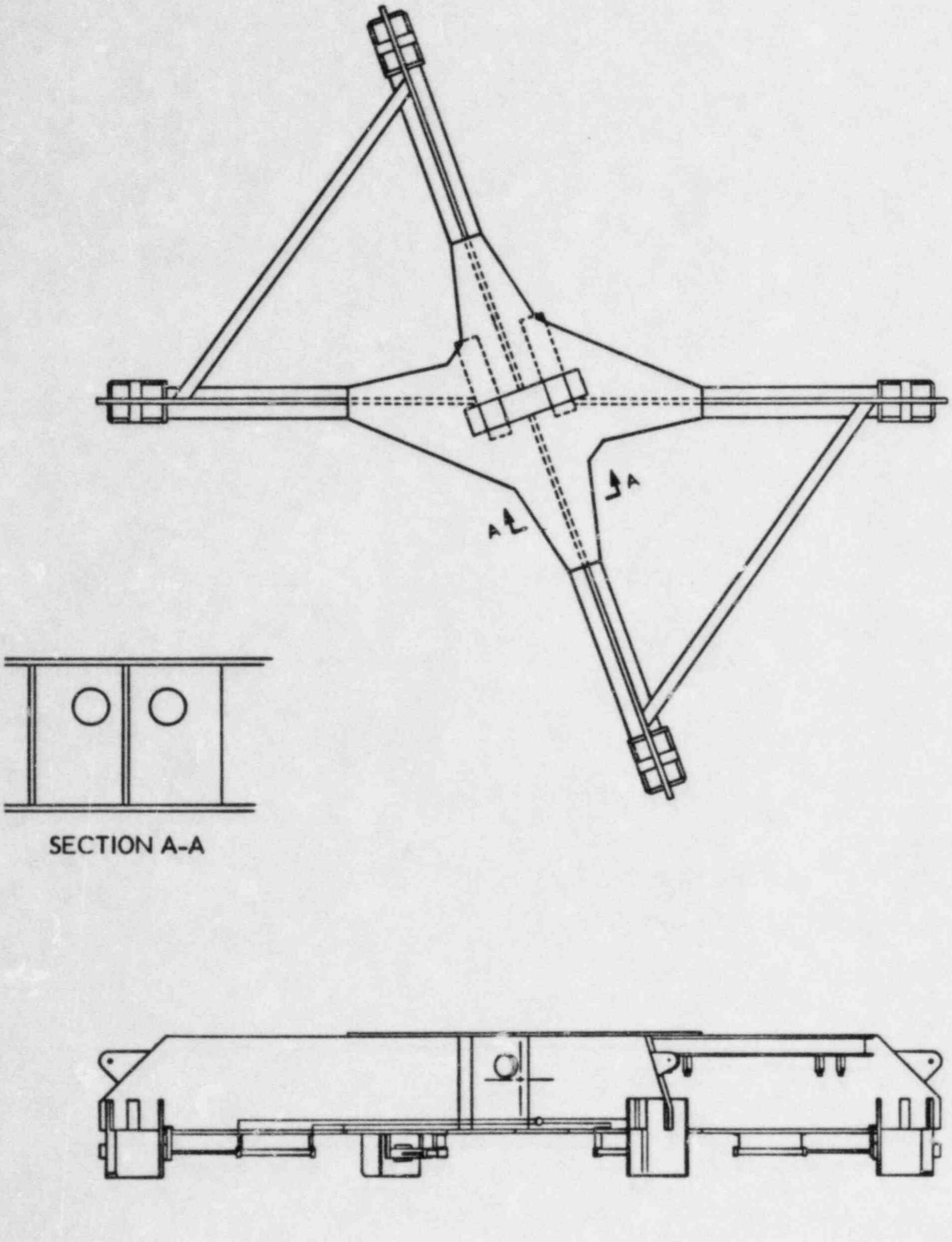

FIGURE 14

DRYER AND SEPARATOR STRONGBACK