John D. O'Toole
Vice President

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June 22, 1981

Re: Indian Point Unit No. 2
Docket No. 50-247

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Darrel G. Eisenhut, Director
Division of Licensing

Dear Mr. Eisenhut:

Your letter dated July 31, 1980, requested a review of the controls for handling heavy loads at Indian Point 2, the implementation of certain recommendations regarding these controls, and the submittal of information to demonstrate that the recommendations have been implemented. This information was to be submitted in two installments.

We have conducted the first phase of the requested review of the Indian Point 2 facility. The enclosed information describes the results of this review, the interim actions that have been or will be taken, and the additional measures taken to assure that the general guidelines of Section 5.1.1, NUREG 0612, are satisfied. The information is presented in Attachment I as responses to the items in Section 2.1 of Enclosure 3 to your July 31, 1980 letter, and also describes the changes to procedures and minor facility modifications that were and will be required in order to meet these interim measures and general guidelines.

Your letter of July 31, 1980 requested implementation of these interim actions within 90 days; however, this was subsequently extended to the same schedule as other operating nuclear power plants, which is May 15, 1981. Accordingly, we have developed

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the required changes to procedures to satisfy the interim measures guidelines, the changes have received the necessary reviews and approvals, and the changes have been issued.

The additional information requested to address the applicable items in Sections 2.2, 2.3, and 2.4 of Enclosure 3 to your July 31, 1980 letter will be provided within approximately three months of the date of this letter.

Very truly yours,

John D. O'Toole

John D. O'Toole
Vice President

50-247

RESPONSES TO REQUESTS
FOR
INFORMATION IN SECTION 2.1
OF ENCLOSURE 3 TO JULY 31, 1980
LETTER-EISNHUT TO CAHILL

Received wth ltr dtd 6/22/91

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RESPONSES TO REQUESTS FOR INFORMATION IN SECTION 2.1 OF ENCLOSURE 3 TO JULY 31, 1980 LETTER - EISENHUT TO CAHILL

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 of sufficient capacity to be of interest at the Indian Point 2 facility are listed below along with their location and capacity:

Handling System	Capacity (Tons)	Location
Polar Crane	175 (35)	Containment
Fuel Storage Building Crane	40 (5)	Fuel Storage Bldg.
Turbine Hall Crane	250 (25)	Turbine Bldg.
Heater Bay Cranes (2)	20/Crane	Turbine Bldg.
Monorail Hoist - PAB	1	PAB (98' el)
Monorail Hoist - PAB	7	PAB (80' el)
Waste Drum Storage Area Crane	5	PAB (80' el)
Auxiliary Feed Pump Monorail	5	Auxiliary Feed Pump Bldg.
Diesel Generator Building Overhead Hoist	2	Diesel Gen. Bldg.

The Polar Crane and Fuel Storage Building Crane are addressed below in the response to Item 3. Plant arrangement drawings were reviewed and a survey of the area conducted to determine if any of the other handling systems listed above could carry a heavy load over components in systems required for plant shutdown or decay heat removal. The location of components of interest with respect to the handling systems was determined by review of these plant arrangement drawings, review of the fire zone descriptions previously submitted to the NRC as part of the "Review of the Indian Point Station Fire Protection Program," Volumes 1 and 2, Revision 1, April 15, 1977 (letter Cahill to Stello), and area surveys. The fire zone descriptions identify the safety-related components within fire zones and the location of the fire zones within the plant.

This review revealed that three of the handling systems above could carry loads over components in systems required for plant shutdown or decay heat removal, as described in the following:

(1) The seven-ton capacity PAB monorail at the 80' elevation includes three spur tracks, each of which runs over a single charging pump, and a fourth spur that is routed over the three component cooling water pumps. The monorail arrangement is illustrated in Figure 1. The tracks over the charging pumps are only used to service the pumps over which they run, i.e., they are only used when the pump is shut down for maintenance or repair requiring disassembly, lifting and movement of heavy parts. No other loads are carried on these spur tracks.

The spur which runs over the three component cooling water pumps would solely be used for servicing the component cooling water pumps, but only when a pump or motor requires replacement. In performing such replacement, this hoist would also be used to remove and re-install steel grating and piping supports to provide access to the pump. The handling of the pumps, motors, grating, or piping supports may require that these loads be moved over conduits that carry the power supply cabling for the two component cooling water pumps that are not being serviced.

(2) There are two separate five-ton capacity monorail tracks in the Auxiliary Feed Pump Building that run over the Auxiliary Feedwater (AFW) Pumps. One of the monorails services the two motor driven AFW pumps and the other services the steam turbine driven pump as indicated in Figure 2. The monorail over the two motor driven pumps services only these pumps;

however, a load drop during such servicing could potentially affect operability of the motor driven pump that is not being serviced. The monorail over the steam turbine driven auxiliary feedwater pump is only used to service this pump. The only heavy load that needs to be addressed is the movement of the steel turbine missile shield to provide access for servicing of the turbine. A drop of this shield when moved over the pump could result in impact of the eight (8) inch suction line to the steam driven pump. If this line were to break, it could potentially result in damage to the other auxiliary feedwater pumps by flooding or lead to degraded performance or possible pump run-out of the motor driven pumps because of the common suction line for all three auxiliary feedwater pumps. Adverse effects due to a break in the suction line at the steam driven pump can be avoided by isolating this segment of the supply prior to movement of the shield.

(3) There is a hand operated two-ton overhead crane in the Diesel Generator Building that is used for servicing the diesel generators. This hoist is used for handling small components from the diesel generator units, such as removing and replacing lube oil cooler assemblies. Such components could be carried over one of the other diesel units from the one being serviced or could, although very unlikely, be carried over to the electrical control panels for the three diesels. These panels are located at the far end of the diesel generator building (See Figures 3 and 4).

The Waste Drum Storage Area contains conduit carrying power supply cables for all three charging pumps, however, these conduits are routed along the ceiling and down one wall, and thus would not be damaged by a load drop in this area. There is no safety-related equipment in areas served by the Turbine Hall Crane, Heater Bay Cranes, or the PAB Monorail Hoist at Elevation 98 ft.

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: The PAB Monorail spurs at the 80 ft. elevation serving the charging pumps can be excluded from further detailed consideration. As indicated in the response to Item I above, the drop of a load from any one of the three monorail spur tracks could do no more than damage a single charging pump that has already been removed from service for maintenance or repair. The remaining two charging pumps are located in separate rooms. Normal plant shutdown can be accomplished with any one of the three charging pumps. Accordingly, a heavy load drop from any of the three spur tracks would not result in loss of an operable charging pump and therefore would not prevent the charging system from accomplishing its safety function.

The Turbine Hall Crane, Heater Bay Cranes, the PAB Monorail Hoist at the 98 ft. elevation, and the Waste Drumming Storage Area Crane are also excluded from further consideration, because no safety-related equipment is located in the areas served by these handling systems.

Based on the discussions in response to Item I above, the Diesel Generator Building Overhead Hoist, the Auxiliary Feedwater Pump Building Monorail, and the PAB Monorail Spur (El. 80 ft.) over the Component Cooling Water Pumps cannot be excluded from further considertion.

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 2.1-1, 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:

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

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: Containment - The containment is served by a Polar Gantry Crane supported on rails on the crane wall at the operating floor level (95' elevation). This crane was designed by Whiting Corporation and possesses a 175-ton main hoist and a 35-ton auxiliary hoist. The heavy loads that are periodically handled by the Polar Crane are identified in Table I of the response to 3.c. below. Figure 5 shows the general layout of equipment inside containment. The operating procedure for the Polar Crane defines two areas over which loads are not to be carried except under certain situations. Area I is over the reactor vessel. With the exception of the reactor vessel head, the upper internals and the reactor vessel weld ISI inspection tool, no heavy loads are permitted to be carried over Area I when the reactor vessel head is removed. This restriction includes the Polar Crane main and auxiliary hoist load blocks.

Area 2 is over RHR Heat Exchanger #22. Although this heat exchanger is located below the operating floor at the 66' level, it is exposed to load drops by the Polar Crane because it is located below an opening that is covered by a grating. RHR Heat Exchanger #22 is normally utilized for RHR cooling during cold shutdown and refueling operations. The drop of a heavy load onto RHR Heat Exchanger #22 and its associated piping could potentially disable the RHR system. Plant emergency operating procedures define operator actions, including alternative methods of cooling for various reactor coolant system conditions, should a loss of RHR cooling occur during these plant conditions. Nonetheless, the Polar Crane operating procedure prohibits any loads from being carried over Area 2 when there is fuel in the reactor vessel.

Fuel Storage Building - The Fuel Storage Building is served by an overhead crane supported on rails that traverse the entire length of the building as indicated in Figure 6. This crane was also designed by Whiting Corporation and possesses a 40-ton capacity main hoist and a 5-ton capacity auxiliary hoist. The loads that are periodically handled by the Fuel Storage Building Crane are listed in Table 2 of the response to 3.c. below.

At this time, there are no heavy loads handled by the Fuel Storage Building Crane. In addition, mechanical stops located on the crane rails prevent travel of the crane over the pit. Removal of these stops is controlled by the Fuel Storage Building Crane operating procedure which requires the approval of the Operations Engineer before removing the stops. The only routine operation that requires removal of the stops is the movement of new fuel assemblies from their fuel cells at the south end of the building to the new fuel elevator in the southeastern corner of the spent fuel pit (see Figure 6), and movement of a neutron source rod or burnable poison rod from the truck loading area to the fuel storage pit. Fuel assemblies do not qualify as heavy loads as defined in NUREG 0612, and movement of new fuel assemblies to the elevator does not require movement over spent fuel in the pit. The neutron source rod and burnable poison rod, with associated handling tools, also do not qualify as heavy loads (See Table 2).

The spent fuel storage capacity of the Indian Point 2 spent fuel pool has been increased from 264 to 482 assemblies. This increased capacity provides storage space for all spent fuel discharged until approximately 1984. Accordingly, no spent fuel cask handling operations are planned or anticipated until that time. Prior to any such operation, decisions will have to be made to select the capacity and type of spent fuel cask to be utilized. Consolidated Edison is not currently licensed to handle a specific spent fuel shipping cask. Following these decisions on selection of a cask, the need for modification of the Fuel Storage Building Crane will be assessed and detailed cask handling procedures developed in order to satisfy the criteria in NUREG 0612.

Based on the current situation wherein no heavy loads are handled by the Fuel Storage Building Crane, no detailed heavy load handling procedures have been developed or preferred load travel paths defined for specific lifts by the Spent Fuel Building Crane. If at any time this situation changes, safe handling of heavy loads in the area of the spent fuel pool will be assured by the development of more detailed procedures, administrative controls and/or design features that are consistent with the guidelines of NUREG 0612.

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 load 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 1 and 2 below:

TABLE 1
POLAR CRANE HEAVY LOADS[1]

Load	Safety Class[4]	Weight (Tons)	Applicable Operating Procedures	Lifting Device
Reactor Vessel Head	1	169 (with lifting rig)	2CM-2.4[2]	Reactor Vessel Head Lifting Device & Sling Assembly
Upper Internals	1	67 (with lifting rig)	2CM-2.4[2]	Internals Lifting Device and Sling Assembly
Reactor Vessel Inservice Inspection Tool	1	5	SOP29.8.A[3]	ISI Tool Lifting Device
Concrete Hatch Cover	2	7.3	SOP29.8.A[3]	Slings
Polar Crane Load Blocks	2	4.5	SOP29.8.A[3]	N/A
Lower Internals	3	159 (with lifting rig)	2CM-2.4[2]	Internals Lifting Device and Sling Assembly
Reactor Coolant Pump Motors	3	32	N/A[6]	RCP Motor Lifting Rig

TABLE I
(cont.)

Load	Safety Class[4]	Weight (Tons)	Applicable Operating Procedures	Lifting Device
CRDM Missile Shield Bocks(4)	3	N/A	N/A[6]	Slings
PZR Missile Shield	3[5]	7.5	N/A[6]	Slings
CRDM Shield Support Beams	3	N/A	N/A[6]	Slings
Reactor Vessel Head Stud Tensioners	3	N/A	N/A[6]	Slings

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1 For reference, the weight of a fuel assembly plus its handling tool is 2,300 lbs.

2 2CM-2.4-"Reactor Disassembly and Reassembly"

3 SOP-29.8.A-"Polar Crane Operation"

4 Safety Classes are defined as follows:

Class 1 - Loads of greater than the weight of a single fuel assembly plus its handling tool (about 2,300 lbs.) that must be carried over fuel in an open reactor vessel.

Class 2 - Loads of greater than about 2,300 lbs. that could be lifted and moved by the polar crane when the head is off and fuel is in the reactor vessel, but are not required to be moved over the reactor vessel.

Class 3 - Loads of greater than about 2,300 lbs. that are lifted only when the reactor vessel head is in place or the reactor is defueled. Movement is restricted by design constraints.

The Equipment Hatch Plug is lifted and laid down outside of the Crane wall, i.e., it is never carried over the operating floor.

5 This load is normally moved only when the reactor vessel head is on.

6 Procedural control is not required by NUREG 0612 for Class 3 type loads, although precautions in SOP 29.8.A "Polar Crane Operation" pertain to all heavy load handling operations in containment and prohibit movement of Class 3 loads over the reactor vessel cavity, fuel transfer canal, and RHR Heat Exchanger No. 22.

TABLE 2

FUEL STORAGE BUILDING CRANE LOADS[1]

Load	Weight
New Fuel Shipping Containers	N/A[2]
Irradiated Specimen Shipping Cask	200 lbs[3]
Neutron Source	200 lbs.[4]
FSB Crane Load Block	1 ton
Failed Fuel Container	N/A[5]
Burnable Poison Rod & Handling Tool	650 lbs.

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1 This table lists several items brought into this area, however, this crane does not handle any heavy loads. Mechanical stops are provided to prevent movement of the crane over the spent fuel pit. For reference the weight of a fuel assembly plus its handling tool is 2,300 lbs.

2 These containers are not removed from the trailer that transports them into the area.

3 The cask for shipment of the irradiated specimen is not offloaded from the trailer truck; the irradiated specimen is transferred in a container to the spent fuel pit, then hoisted from the pit and lowered into the shipping cask. The weight of the specimen plus its transfer container is approximately 200 lbs.

4 The cask for shipment of the neutron source is also not offloaded from the trailer truck. The neutron sources are loaded into and unloaded from the cask at the truck loading deck level. The weight shown is for the neturon source pin plus its handling tool.

5 The failed fuel containers stay in the fuel pool and are not moved. Leaking fuel is loaded into these containers, where it remains until the fuel assembly is removed from the container and loaded into a cask for shipment offsite.

TABLE 3
PRIMARY AUXILIARY BUILDING MONORAIL
HOIST OVER CCW PUMPS

Load	Approx. Weight(lbs.)	Approx.O.A. Dimensions(Ft)	Applicable Procedure	Lifting Device
Steel Grating	800-1,000	8' x 10'	SOP29.8.E	Slings
Piping Support (I-Beam)	500-600	12" x 10'	SOP29.8.E	Slings
CCW Pump Motors	1,475	1' diam x 2' long	SOP29.8.E	Slings

TABLE 4
DIESEL GENERATOR BUILDING
OVERHEAD HOIST LOADS

Load	Approx. Weight(lbs.)	Applicable Procedure	Lifting Device
Misc. Diesel Generator Components	200-2,000 lbs.	SOP29.8.G	Slings

TABLE 5
AUXILIARY FEEDWATER PUMP
BUILDING MONORAIL LOADS

Load	Approx. Weight(lbs)	Applicable Procedure	Lifting Device
Steam Turbine Missile Shield	3,800	SOP29.8.F	Slings
Auxiliary Feedwater Pump Motors	2,860	SOP29.8.F	Slings

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, Section 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 lifts identified in 2.1.3.c, above, that utilize slings, plant procedures require that sling selection and use be in accordance with ANSI B30.9.

With regard to special lifting devices, there are 3 identified in 2.1.3.c above that are used for lifts over an open reactor vessel. These are:

1) The Reactor Vessel Head Lifting Device and Sling Assembly (RV Head Lifting Rig)

2) The Internals Lifting Device and Sling Assembly (Internals Lifting Rig)

3) Reactor Vessel Weld Inservice Inspection Tool Lifting Device (Reactor Vessel ISI Tool)

For the reasons listed below, the detailed comparison of these devices to ANSI N14.6-1978 was limited to Sections 3.2 and 5.

1) All 3 of the devices listed above were designed by Westinghouse prior to the existence of ANSI N14.6-1978. In this regard, there are a number of sections in the standard that are difficult to apply in retrospect. These are those 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 of the subparts of these sections were met, they have not been addressed item by item for the purpose of identifying and justifying exceptions. Our review did include review of information provided by the designer, including drawings and procurement specifications. The

information did indicate that sound engineering practices were utilized by the designer and that requirements were placed on the fabricator and inspector for the purpose of assuring that the designer's intent was accomplished. On this basis, there is reasonable assurance that the intent of the sections 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 Effects in Special Lifting Device Use; Section 3.5 Coatings; and Section 3.6, Lubricants are not pertinent to the load handling reliability of the devices and therefore have not been addressed for the purpose of identifying and justifying exceptions.

3) Section 6 is applicable to lifting devices used for 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 off-site exposures comparable to the guideline exposures outlined in Code of Federal Regulations, Title 10, Part 100."

None of the loads lifted by the 3 lifting devices identified above has, 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 9-month report to the NRC (due September 22, 1981), 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.

The detailed comparison of each of the 3 devices to Sections 3.2 and 5 of ANSI N14.6-1978, as supplemented by NUREG 0612, Section 5.1.1(4), revealed that the devices comply[1], but with certain exceptions. Below, each of the devices is described, the exceptions to ANSI N14.6-1978 are identified and their potential for affecting load handling reliability is discussed.

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1 See footnote, page 3-17.

1 Although the designer has verified that a criteria of 5 to 1 on ultimate strength was used, all of the necessary materials information and stress calculations have not yet been retrieved and made available for our review. For this reason, we cannot at this time confirm that all of the criteria in Sections 3.2.1.1, 3.2.3, 3.2.4, and 3.2.6 of ANSI N14.6-1978 have been met for these devices. However, based on our review of the sizes of the principal structural members and reasonable assumptions regarding the materials of construction, we are confident that this information, when provided, will demonstrate that large safety margins are present for the lifts of interest. We will confirm this when we submit our response to the information requested in Sections 2.2, 2.3, and 2.4 of Enclosure 3 to the NRC's July 31, 1980 letter.

Description of the Reactor Head Lifting Rig

The Reactor Head Lifting Rig (Figure 7) consists of a welded and bolted structural steel frame with rigging for removal and storage of the reactor head. The device, an annular ring girder, is left attached at all times to three lifting lugs, which are an integral part of the reactor head. The three leg assemblies are pinned to the lugs and held fastened by a jam nut. They extend vertically upward and pass through the girder and a circular platform assembly to which they are braced and welded. A removable handrail is placed around the outer periphery of the platform. A ladder hooked to the top of the platform assembly provides a means of access. Located around the outside bottom portion of the ring girder is an I Beam. This beam is positioned directly over the stud positions and three rail cars ride on it to support the three hoists that raise and lower the stud tensioners, while positioning them on the studs during refueling tensioning and detensioning. An adjustable tri-pod lifting sling is pinned to the hook of the crane and lowered over the platform assembly of the lifting rig. Each leg of the sling is attached to the top of the three legs of the lifting rig in the same manner as to the head (lifting lugs, pins and jam nuts). The lifting sling (tri-pod) is removed and stored on the head laydown pad on the operating deck when not in use.

Description of the Internals Lifting Rig

The Internals Lifting Rig (Figure 8) is a structural frame device, designed for removal and installation of the reactor upper and lower internals. The frame consists of a spreader assembly, a support ring assembly, and three leg assemblies each of which consists of three channels forming a column open at one end. It is suspended from the main hook of the Polar crane with a sling assembly similar to that used for lifting the reactor vessel head. Located on the top portion of the rig is the spreader assembly, constructed of a series of I beams welded together in a y-shaped fashion. Grating placed on top of the fabricated member with removable handrails positioned on both sides of each walkway provides an operating platform for personnel. Pad eyes are installed through reenforcements in the webs of two of the three channels of each leg assembly for attaching the lifting rig to the sling assembly. Located on the bottom portion of the rig is an annular support ring assembly. The spreader and support ring assemblies are maintained in vertical alignment and on a horizontal plane with respect to each other by the three columns spaced 120^{o} apart. Each of the three leg assemblies contains a spring loaded "torque tube." An operating rod extends out the top of each leg assembly and is equipped with a handwheel. A bolt secured to the end of each torque tube engages a threaded hole located in the core barrel flange for removal of the lower internals or on the lip of the upper support structure for removal of the upper internals.

Description of the Reactor Vessel ISI Tool

The ISI tool consists of a central lift stud which engages the in-service tool adaptor with a positive locking bayonet-type grip. The lifting tool has three equally spaced pads that extend out at approximately a 45^{o} angle and load the three support legs of the inspection tool vertically downward. A hydraulic cylinder that is an integral part of the lifting tool supplies the downward force of the pads. The upward lift of the stud and the downward force of the pads provide the means of leveling the inspection tool. The top of the lifting tool is attached to a load indicator and position system which provides a means of gently setting the tool on the vessel ledge or core barrel flange.

Exceptions to ANSI N14.6-1978

Exception 1: The special lifting devices were designed to be capable of lifting five times the static weight load without exceeding the ultimate strength of the materials as specified in Section 3.2.1.1 of ANSI N14.6-1978. The design stress factor did not include the dynamic loads that may be imparted on the handling device based on the characteristics of the crane which will be used, as recommended by NUREG 0612, Section 5.1.1(4). We have calculated the dynamic load factor using conservative methods. The highest factor calculated was 2.1% of the static load for the main hoist and 5.5% for the auxiliary hoist. This occurs during load descent for suddenly applied brakes. In the calculations we considered only the rotational inertia of the motor and neglected the rotational inertia of brake drums, cable drums, gears, and sheaves, all of would act to decrease the dynamic load factor. Based on the calculations, the dynamic load effects of the crane characteristics reduce the design stress factor by no more than 5.5% and therefore, do not significantly affect the load-handling reliability.

Exception 2: The special lifting devices were not subjected to a load test equal to 150% of the maximum load to which the device is to be subjected prior to their initial use as required by Section 5.2.1 of ANSI N14.6-1978. Instead, the Head Lifting Rig and the Internals Lifting Rig have successfully lifted loads equivalent to 100% of their rated load on various occassions during reactor disassembly/reassembly operations with no signs of deformation or overstress. The ISI tool was subjected to a 137% rated load test.

Further, with regard to the Internals Lifting Rig, the actual weight of the lower internals plus lifting rig is 318,000 pounds while the actual weight of the upper internals plus lifting rig is 146,000 pounds. Since the upper internals load is the load of interest, the Internals Lifting Rig has in effect been load tested to greater than 200% for this load.

In the case of both the Head Lifting Rig and the ISI tool, the operating procedures effectively preclude overloading the special lifting devices beyond the 100% rated load. Inspection and maintenance procedures for these devices prior to use provide assurance that no latent defects are present up to the stress levels to which the devices are limited by procedures. Also, these lifting devices are not subjected to any use or loads other than the design loads. They are sole-purpose devices, dedicated to only one use and are therefore not subjected to abuse or to a deteriorating environment.

Procedures which prevent overloading and inspections to detect incipient failures or deformation afford adequate assurance of lifting device reliability. The fact that none were initially load tested to 150% of the rated load is judged to have little effect on the lifting devices' current load handling reliability.

Exception 3: Plant procedures do not now specify a visual inspection by maintenance or other non-operating personnel at intervals not-to-exceed 3 months in length as required by Section 5.3.7 of ANSI N14.6-1978 for the Reactor Head Lifting Rig and the Internals Lifting Rig. Between usage, these rigs are stored in a specific location under controlled environment. The devices are inspected by qualified personnel at specific intervals. This includes a visual, dimensional and NDE inspection prior to each use, unless the device has received such inspections within the last 12 months. In any event, a visual examination prior to each use will be performed. Based on this controlled use, storage, handling, and inspections, the equivalency in load-handling reliability provided by Section 5.3.7 is demonstrated.

Exception 4: The Reactor Vessel ISI Tool is owned by Westinghouse Electric Corporation and, therefore, its use and maintenance are not always within the direct control of Consolidated Edison. For this reason, it is not possible to assure that every item in Sections 3.2 and 5 of ANSI N14.6-1978 have been met. Nonetheless, we believe that the design, performance history and actions required of Westinghouse prior to use of the tool at Indian Point Unit 2 provide reasonable assurance of the load handling reliability of the tool. These are discussed below.

The ISI Tool has been used in 22 nuclear plants over a five-year period with no evidence of bending or visible cracks. The lifting tool was subjected to a pull test of 137% of full load at the time of fabrication in 1975. A dye penetrant test of all welds was made subsequent to the pull test. When the lifting tool was designed, a Charpy impact test was not required. However, the materials chosen for the tool remain ductile in the normal operating range and there is no expected use outside this range. The supplier who fabricated the lifting tool for Westinghouse was required to perform under a quality control system which met certification requirements.

With regard to inspection and maintenance, a visual inspection for defects and deformation is required by plant procedures prior to each use of the ISI tool at Indian Point Unit 2. In addition, Westinghouse will be required to verify prior to use at Indian Point 2, that either the 150% load test required by Section 5.3.1(1) or the inspections required by 5.3.1(2) of ANSI N14.6-1978 are performed annually (period not-to-exceed 14 months), and that the validity of the most recent test or inspection has not expired. Westinghouse will be requested to maintain complete records on the devices' use, inspection, testing, maintenance, and damage.

Exception 5: As to the Reactor Head Lifting Rig and the Internals Lifting Rig, there are several components whose inspection in accordance with all of the requirements of 5.3.1(2) on an annual frequency, is impractical. These components are those that require disassembly not normally performed or removal of protective coatings. The proposed inspections of all load bearing components and critical areas including exceptions for these rigs are indicated in Tables 6 and 7. The component numbers refer to those on Figures 7 and 8.

The basis for the extended intervals on several of the rigs' components is again the controlled use, storage and handling of the rigs. Further, it is only certain types of inspections for some components that are proposed for the longer intervals. These same components will be inspected on the shorter intervals using other techniques (see tables).

TABLE 6 - Reactor Vessel Head Lifting Equipment Inspection

FREQUENCY OF NDE AND DIMENSIONAL EXAMINATIONS - The NDE and dimensional examinations specified in this table of all load bearing components and welds should be conducted prior to utilizing the equipment to remove the reactor vessel head from the vessel, except that if these examinations have been performed within the last 12 months, they need not be repeated. Exceptions to this frequency are noted in the table.

FREQUENCY OF VISUAL EXAMINATIONS - The visual examinations specified in this table shall be conducted prior to each use of the lifting equipment to lift the head, except as noted on Page 3-25.

COMPONENT	ITEM NO. FROM FIGURE NO. 7	TYPE OF INSPECTION	NOTES
Hook pin connecting plates	1	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of pin holes for circularity.
Hook pin	2	Ultrasonic examination, visual inspection, and, dimensional examination.	Dimen. check of pin for warpage.
Sling block eye connecting pin	3	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage.
Sling block	4	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin holes and sling block eye for circularity. Also see Note on Page 3-25.
Sling leg upper connecting pins (3 each)	5	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage. Also see Note on Page 3-25.
Sling legs upper clevis (3 each)	6	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin hole for circularity. Also see Note on Page 3-25.
Sling legs (3 each)	7 & 8	Magnetic particle examination and visual inspection.	Examination to be conducted at each threaded end of legs.

COMPONENT	ITEM NO. FROM FIGURE NO. 7	TYPE OF INSPECTION	NOTES
Sling leg lower clevis (3 each)	9	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin hole for circularity.
Sling leg lower connecting pins (3 each)	10	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage.
Platform leg clevis (3 each)	14	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin holes for circularity Also see Note on Page 3-25.
Head lift lug connecting pin (3 each)	15	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage. Also see Note on Page 3-25.
Head lift lug (3 each)	16	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of pin holes for circularity. Also see Note on Page 3-25.
Platform legs (3 each)	17	Visual inspection and magnetic particle examination of weldments to leg clevis at lower end.	
Hook pin retainer plate and screws.	18	Visual inspection.	
Sling block connecting pin retainer pin and jam nuts.	19	Visual inspection.	
Sling leg upper connecting pin jam nuts and cotter pins.	20	Visual inspection.	
Sling leg upper lock nut (3 each)	21	Visual inspection.	
Sling leg lower lock nut (3 each)	22	Visual inspection.	
Sling leg lower connecting pin jam nuts and cotter pins (3 each)	23	Visual inspection.	

COMPONENT	ITEM NO. FROM FIGURE NO. 7	TYPE OF INSPECTION	NOTES
Head lift lug connecting pin jam nut and cotter pins (3 each)	24	Visual inspection.	
Annular Ring Girder	26	Visual inspection and dimensional examination.	Dimen. check for deformation.
Platform leg upper clevis block	27	Visual inspection, magnetic particle examination, and dimensional examination.	Dimen. check of clevis pin hole for circularity.
Upper clevis block weldment to top cover plate	28	Visual inspection and magnetic particle examination of weldments.	Examination of Items 28 and 29 is in lieu of a preferred examination of the weldments of Item 17 to Item 27.
Platform leg brace and weldments to platform leg and lower cover plate.	29	Visual inspection and magnetic particle examination of weldments.	

NOTE: Dimensional examination of Items 4, 5, 6, 14, 15 and 16 which require disassembly shall be done at a five-year interval. Thorough visual examination shall also be conducted at a five-year interval (partial visual examination of exposed surfaces shall be conducted at the normal intervals). Examination of portions of threaded ends of Items 5, 7 and 8 that are not visible shall be conducted at a five-year interval.

Examinations which require removal of protective coatings shall be conducted on a five-year interval.

TABLE 7 - Internals Lifting Equipment Inspection

FREQUENCY OF NDE AND DIMENSIONAL EXAMINATIONS - The NDE and dimensional examinations specified in this table of all load bearing components and welds should be conducted prior to utilizing the equipment to remove the upper or lower internals from the vessel, except that if these examinations have been performed within the last 12 months, they need not be repeated. Exceptions to this frequency are noted in the table.

FREQUENCY OF VISUAL EXAMINATIONS - The visual examinations specified in this table shall be conducted prior to each use of the lifting equipment to remove the internals, except as noted on Page 3-28.

COMPONENT	ITEM NO. FROM FIGURE NO. 8	TYPE OF INSPECTION	NOTES
Hook pin	1	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage.
Side plate	4	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of pin holes for circularity.
Adaptor pin	6	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage.
Load cell	11	Ultrasonic examination and visual inspection.	Assure the signal wire is in good condition, the indicator box undamaged and note the calibration date on COL. Assembly to be calibrated before each use.
Adaptor	12	Magnetic particle examination and visual inspection.	
Load block	14	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin holes for circularity.
Clevis pins (3 each)	18	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pins for warpage.

COMPONENT	ITEM NO. FROM FIGURE NO. 8	TYPE OF INSPECTION	NOTES
Sling leg upper clevis (3 each)	18a	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of pin holes for circularity.
Sling legs	20	Magnetic particle examination and visual inpsection.	Examination to be conducted at each threaded end of the sling leg. Also see Note on Page 3-28.
Clevis bolts (6 each)	21	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of bolt shank for warpage. Also see Note on Page 3-28.
Sling leg lower clevis (3 each)	21a	Magnetic particle examination, visual inspection, and dimensional examination.	Dimen. check of clevis pin holes for circularity. Also see Note on Page 3-28.
Spreader assembly	22	Visual inspection and dimensional examination for deformation.	
Leg assembly	23	Magnetic particle examination at upper end match to clevis bolt and spreader assembly, visual inspection overall, and dimensional examination.	Dimen. check of clevis bolt hole for circularity. Also see Note on Page 3-28.
Ring assembly	25, 26 & 27	Visual inspection overall.	
Torque tube assembly	28	Magnetic particle or ultrasonic examination and visual inspection.	Check the operation of the torque tube assemblies and assure threads are clean, in good condition, and not deformed. Also see Note on Page 3-28.
Hook pin retainer parts	2, 3 & 43	Visual inspection of nuts, spacers, and cotter pins.	

COMPONENT	ITEM NO. FROM FIGURE NO. 8	TYPE OF INSPECTION	NOTES
Adaptor pin retainer parts	7, 8 & 42	Visual inspection of nuts, spacers, and cotter pins.	
Side plate spacer parts	5 & 40	Visual inspection of threaded rod and jam nuts.	
Load cell retainer pins	10, & 13	Visual inspection of pins.	
Removable pin	15	Ultrasonic examination, visual inspection, and dimensional examination.	Dimen. check of pin for warpage.
End cap and pull rod assembly	16, 17, 31, 32, 40, and 44	Visual inspection of pull rod, end cap, screws, lock washers, jam nuts, and cotter pins.	
Spacer and retaining parts	24, 35, 36 37, 38 & 39	Visual inspection of all parts.	
Pick-up assembly and protective ring assembly	29 & 30	Visual inspection	
Sling leg lock nuts	20a	Visual inspection.	

NOTE: Examination of threaded portions of Item 20 that are not visible shall be conducted at a five year interval.

Examinations of Item 28 which require disassembly shall be conducted on a five-year interval. Examinations of Items 21, 21a, and 23 which require disassembly shall be conducted at a five-year interval.

Examinations which require removal of protective coatings shall be conducted at a five-year interval.

Examination of Part 28 also incudes attachment to the bottom of channel iron legs.

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: A procedure for inspection, testing, and maintenance of the polar crane has been developed that satisfies the criteria in ANSI B30.2-1976 Chapter 2-2. This procedure is "Maintenance Procedure for the Polar Crane and Certain Special Lifting Equipment." No exceptions to ANSI B 30.2-1976, Chapter 2-2 are taken.

The criteria in ANSI B30.2 are not easily applied to such handling systems as monorails and hand driven hoists. Accordingly, ANSI B30.11-1973, "Monorail Systems and Underhung Cranes" and ANSI B30.16-1973, "Overhead Hoists" were used in developing the inspection, test, and maintenance procedure for the PAB monorail, auxiliary feedwater pump building monorail, and the diesel generator building overhead hoist. This procedure is "Maintenance Procedure for Certain Monorails and Hoists." No exceptions to the criteria in ANSI B 30.11 and B 30.16 are taken.

ITEM 3.f. Verification that crane design complies with the guidelinés 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: Evaluations were performed of the handling system designs for those systems not excluded from further consideration as described in Items 1 and 2 above using the design criteria in applicable current standards. The following summarizes the results of these evaluations.

Polar Crane - The IP-2 polar crane was built prior to the issuance of ANSI B30.2-1976 and CMAA 70-1975. This crane was procured, designed and fabricated by Whiting Corporation in accordance with the criteria in United Engineers and Constructors Specification 9321-01-257-1, 9/20/66 revision with 3 addenda. This specification addressed only certain of the criteria in ANSI B30.2-1976 and CMAA 70-1975. Accordingly, we have obtained additional information from Whiting Corporation and performed a detailed point-by-point comparison of the IP-2 polar crane with the criteria in ANSI B30.2-1976 and CMAA 70-1975. This comparison considered only those components that are load bearing or are necessary to prevent conditions that could lead to a load drop. The components considered are those listed in Table 8. In performing this comparison it was necessary to calculate stress levels in various components, moments of inertia, gear ratings (strength and durability), dimensional proportions, factors of safety, and other mechanical characteristics in order to verify compliance with ANSI B30.2-1976 and CMAA 70-1975.

Based on this evaluation we find that the IP-2 polar crane design complies with the guidelines of CMAA 70-1975 and ANSI B30.2-1976, with the exception of Specification 3.2 in CMAA 70-1975 and Section 2-1.4.1 of ANSI B30.2-1976. These require that welding be performed in accordance with the latest edition of AWS D1.1, "Structural Welding Code" and AWS D14.1, "Specifications for

Welding Industrial and Mill Cranes." These current standards are more recent and were not available at the time of the construction of the IP-2 polar crane; however, the welding procedures used for the IP-2 polar crane are judged to be equivalent to the welding criteria in ANSI B30.2-1976 and CMAA 70-1975 based on the following:

(a) Welding was performed in accordance with the version of AWS D1.1 "Structural Welding Code" that was current at that time,

(b) AWS D14.1 "Specification for Welding Industrial and Mill Cranes" was not issued at that time, however, the Whiting practices and procedures used for the welding were equivalent to what was later issued as AWS D14.1,

(c) The welders were qualified to AWS criteria,

(d) All welds were visually inspected, and

(e) The IP-2 polar crane was used to perform a 450-ton construction lift. This demonstrated the structural integrity of welds on the trolley frame and at least portions of the girders (supports were installed at two locations on each girder for the construction lift).

Based on this evaluation, we find that the design of the IP-2 polar crane is equivalent to the criteria in ANSI B30.2 and CMAA-70.

Primary Auxiliary Building (El. 80 feet) Monorail - This handling system is a single mono-track suspended from the reinforced concrete ceiling. The monorail track, supports, switches and carrier were designed and fabricated by Louden Machinery Co., and the 7-ton hoist for this system was designed and fabricated by Wright Hoist. The criteria in ANSI B30.2 and CMAA-70 are not applicable to handling systems such as this monorail and hoist. Accordingly the design of the PAB monorail and hoist system was compared to the criteria in applicable standards, i.e. ANSI B30.11, "Monorail Systems and Underhung Cranes - 1973," and ANSI B30.16, "Overhead Hoists - 1973." Based on a comparison to these standards, it was found that this monorail system conforms to the criteria in these current standards with the exception that latch type hooks required by

ANSI B30.16 are not provided on this hoist. The hooks on this hoist will be modified to include safety latches as required by ANSI B30.16.

Auxiliary Feedwater Pump Building Monorail - This handling system is similar in design to the PAB monorail, and was also supplied by Louden Machinery Co. The carrier on this system does not have a hoist permanently attached. To assure that hoists of adequate design are used with this monorail, hoist selection criteria have been included in SOP 29.8.F, "Auxiliary Feedwater Pump Building Monorail Operation" that require use of Wright-Safeway Hoists or hoists certified as complying with ANSI B30.16-1973. The comparability of the Wright-Safeway Hoist to ANSI B30.16 criteria was demonstrated by the evaluations of the PAB Monorail System and the Diesel Generator Building Overhead Hoist. The design of the monorail system was compared to ANSI B30.11 and found to comply in all aspects.

Diesel Generator Building Overhead Hoist - This handling system is a manually operated underhung hoist, with a single I-beam type girder that is moved by a hand chain through a rack and pinion drive. The handling system was designed and fabricated by Louden Machinery with a Wright-Safeway Hoist and a load rating of two tons. The criteria in ANSI B30.2 and CMAA-70 are also not applicable to this type handling system. Accordingly, the design of the diesel generator building overhead hoist was also compared to the criteria in ANSI B30.11 and ANSI B30.16. This comparison found that the design satisfied the criteria in these current standards with the exception of the following:

> Safety Lugs: The bridge end trucks are not provided with safety lugs as required by ANSI B30.11 to limit drop to less than one inch in case of wheel, axle or load bar failure. This crane will be modified to include safety lugs on the bridge end trucks.
>
> Latch Type Hooks: The hoist hooks are not latch type as required by ANSI B30.16. These hooks will be modified to include safety latches as required by ANSI B30.16.

TABLE 8
CRITICAL CRANE COMPONENTS

Critical load bearing parts are those parts whose failure as a single component would result in a drop of the load, or would result in conditions that could lead to a load drop.

1. Hoist Gear Case Units

   All the gearing and shafts are critical excluding mechanical brake parts.

2. Extra Reduction Gearing

   The gearing and the pinion shaft, also the pinion bearing housing structure and pedestal, including their related welds, are critical.

3. Hoisting Cable

   The hoisting cable is critical.

4. Drum

   The drum bearings and drum bearing housing structure and pedestal are critical. So are their related welds. The drum tube, hub, shaft and all welds are critical, as well as the cable clamp.

5. The Block

   The hook, nut, swivel, and sheaves are critical. In the case of a long type block the sheave pin and hanger plates become critical.

6. Sheave Nest

   The sheave pins, equalizer sheave hanger and the major parts of the structural sheave nest including welds are critical.

7. Trolley Frame

   The separators and connecting angles including their related welds are critical.

TABLE 8
(CONTINUED)

8. Bridge

   The girders and related cover plate and web plate welds are critical.

9. Gantry Legs

   The gantry legs and welds are critical, including the structural cross members and the bridge trucks.

10. Gantry End Girder Connections

    The structural end girder connection and welds are critical.

11. Trolley Spacers

    The trolley spacers and related welds and connections are critical.

12. Brakes

    Hoist motion holding brakes and hoist control brakes are critical.

13. Motor Shafts and Couplings

    Motor shafts and couplings required to hold the load under braking are critical.

14. Bridge and Trolley Wheels

    Bridge and trolley wheels and their axles are critical.

15. Controller

    The controller pendant, cabling, resistors used for braking, and hoist upper limit switches are critical.

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

RESPONSE: Procedures for the qualification and training of crane operators have been developed which meet the provisions of ANSI B30.2-1976. No exceptions to the guidance in ANSI B30.2-1976 are taken. Crane operator qualification and training is addressed in the following:

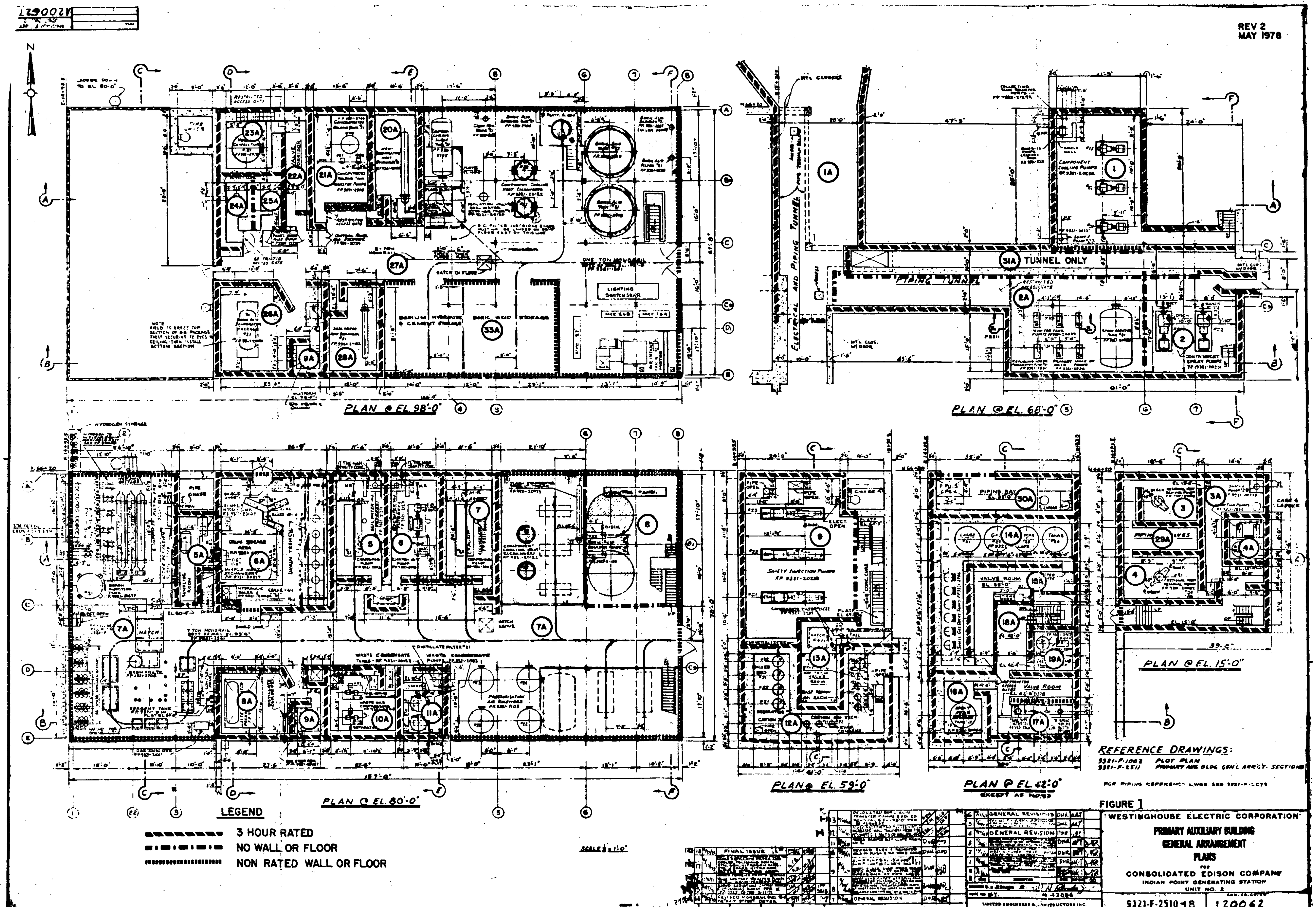
- "Polar Crane Operator Qualification Procedure"

SOP29.8E, "PAB Monorail Operation - 80' Elevation"

SOP29.8F, "Auxiliary Feedwater Pump Building Monorail Operation"

SOP29.8G, "Diesel Generator Building Bridge Hoist Operation"

The above procedures and SOP29.8A, "Polar Crane Operation" include precautions and instructions to assure proper conduct of crane operation. In addition, required crane operator training includes instruction in crane operator conduct, such as proper hand signals, testing of controls, limit devices, attaching the load, and moving the load.


REV 2
MAY 1978
PLAN @ EL. 98'-0"
PLAN @ EL. 68'-0"
PLAN @ EL. 80'-0"
PLAN @ EL. 59'-0"
PLAN @ EL. 62'-0"
EXCEPT AS NOTED
PLAN @ EL. 15'-0"
TUNNEL ONLY
PIPING TUNNEL
ELECTRICAL AND PIPING TUNNEL
ONE TON MONORAIL
LIGHTING SWITCHGEAR
SODIUM HYDROXIDE & CEMENT STORAGE
BORIC ACID STORAGE
COMPONENT COOLING PUMPS
CONTAINMENT SPRAY PUMPS
SAFETY INJECTION PUMPS
PIPING BAY
VALVE ROOM
WASTE CONDENSATE TANKS
PRESSURIZATION AIR RECEIVERS
LEGEND
3 HOUR RATED
NO WALL OR FLOOR
NON RATED WALL OR FLOOR
REFERENCE DRAWINGS:
9321-F-1002 PLOT PLAN
9321-F-2511 PRIMARY AUX BLDG GEN'L ARR'G'T. SECTIONS
FIGURE 1
GENERAL REVISION
FINAL ISSUE
WESTINGHOUSE ELECTRIC CORPORATION
PRIMARY AUXILIARY BUILDING
GENERAL ARRANGEMENT
PLANS
FOR
CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2
UNITED ENGINEERS & CONSTRUCTORS INC.
9321-F-2510-18
120062

REV. I
APRIL 77

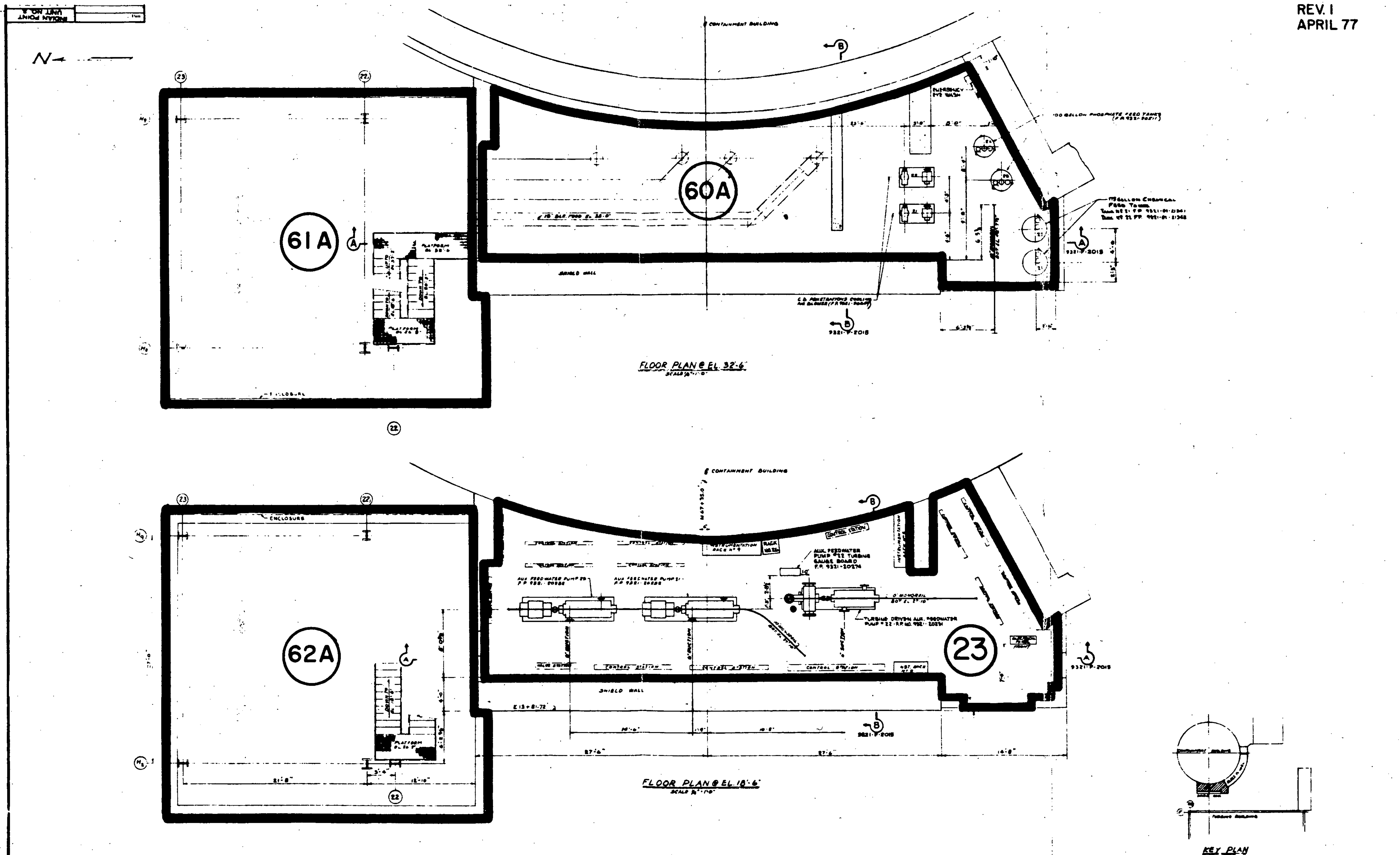


FIGURE 2

WORK WITH DWG NO 9321-F-2018

FINAL ISSUE

For Construction

UNITED ENGINEERS & CONSTRUCTORS INC.

WESTINGHOUSE ELECTRIC CORPORATION

AUXILIARY FEED PUMP BUILDING
GENERAL ARRANGEMENT
PLANS - SHEET NO. 1

FOR

CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2

9321-F-2014-6 | A 200570

REV. 1
APRIL 77

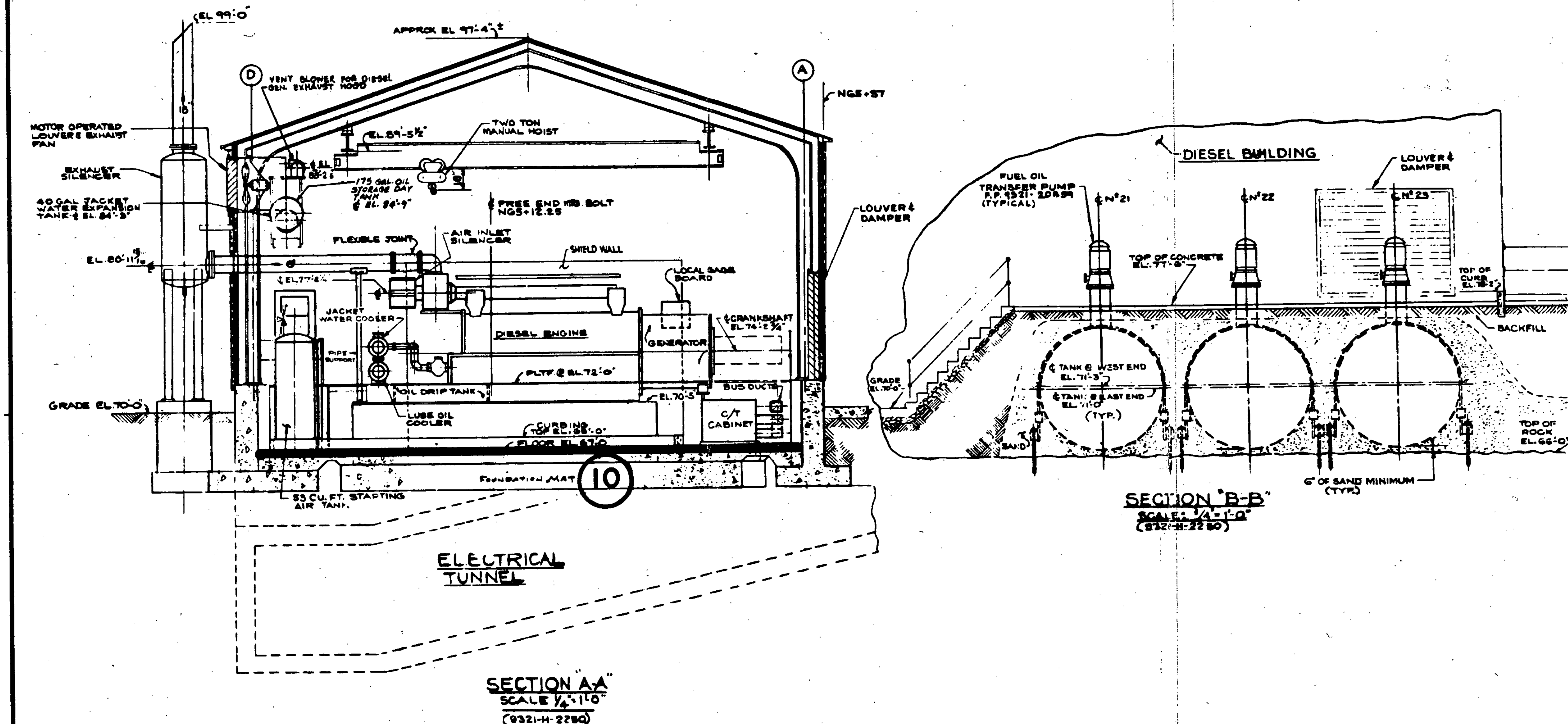


FIGURE 3

WORK THIS DWG. WITH DWG. 9321-H-2250

5	FINAL ISSUE	
4	ADDED SHIELD WALL	
3	[illegible]	
2	[illegible]	
1	[illegible]	
0	FOR CONSTRUCTION	

NEW YORK

UNITED ENGINEERS & CONSTRUCTORS INC.

WESTINGHOUSE ELECTRIC CORPORATION

DIESEL GENERATOR BUILDING
GENERAL ARRANGEMENT
SECTIONS

FOR

CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2

U.E.&C. DWG. NO. 9321-H-2251-5
CON. ED. CO. DWG. NO. B 200565

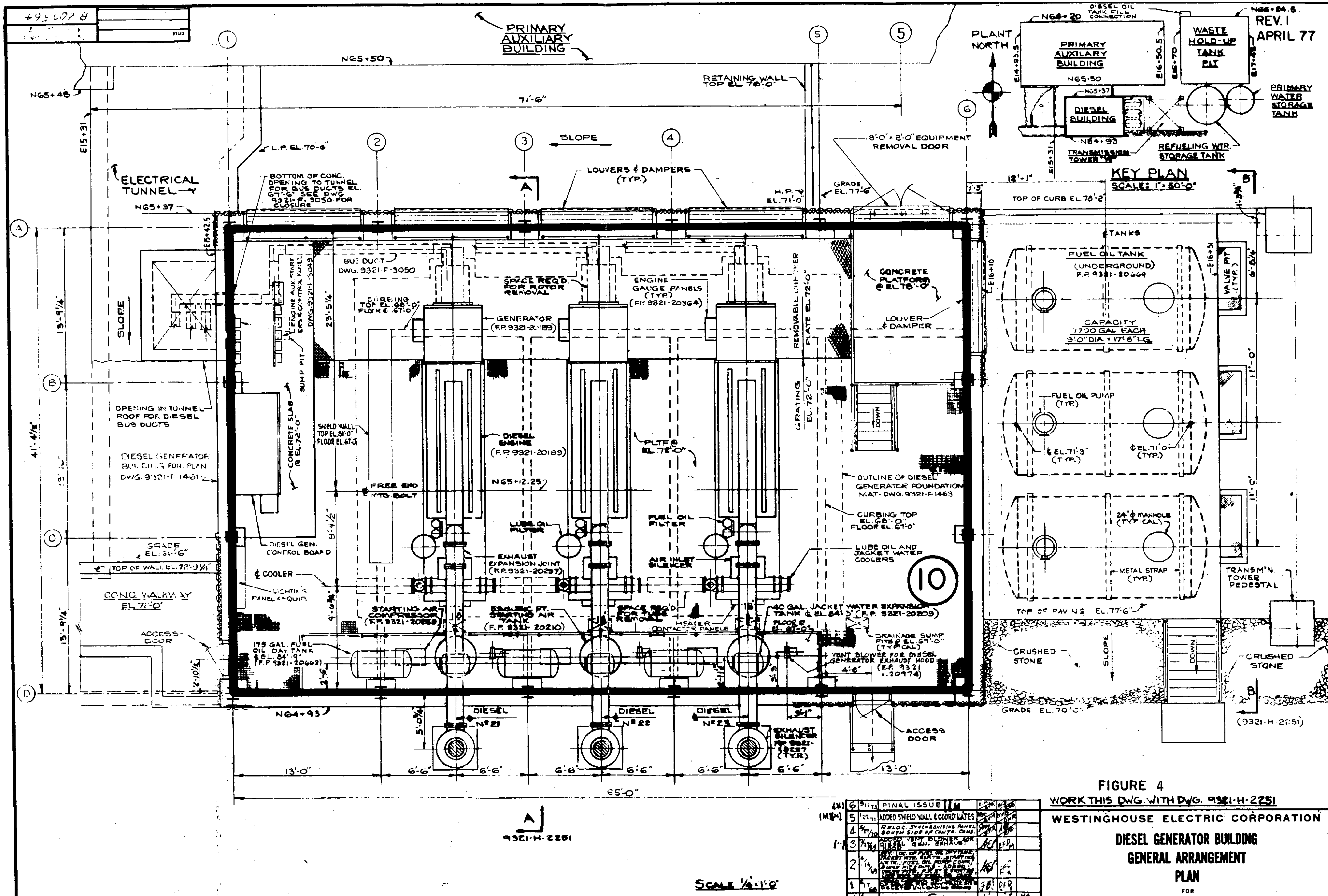


FIGURE 4

WORK THIS DWG. WITH DWG. 9321-H-2251

REV	DATE	DESCRIPTION	ENGR	SUP ENG
6	6/11/73	FINAL ISSUE		
5	1/22/71	ADDED SHIELD WALL & COORDINATES		
4	5/11/70	RELOC. SYNCHRONIZING PANEL SOUTH SIDE OF CONTR. CONS.		
3	7/17/69	ADDED VENT BLOWER FOR DIESEL GEN. EXHAUST		
2		RELOC. OF FUEL OIL DAY TANK, JACKET WTR. EXP. TK., STARTING AIR TK., FUEL OIL PUMP CONN., SUMP PIT ...		
1				
0		FIRST ISSUE FOR CONSTRUCTION		

ENGINEER: F. Bernard Smith
STATE REG: NEW YORK NO. 42881

UNITED ENGINEERS & CONSTRUCTORS INC.

WESTINGHOUSE ELECTRIC CORPORATION

DIESEL GENERATOR BUILDING GENERAL ARRANGEMENT PLAN

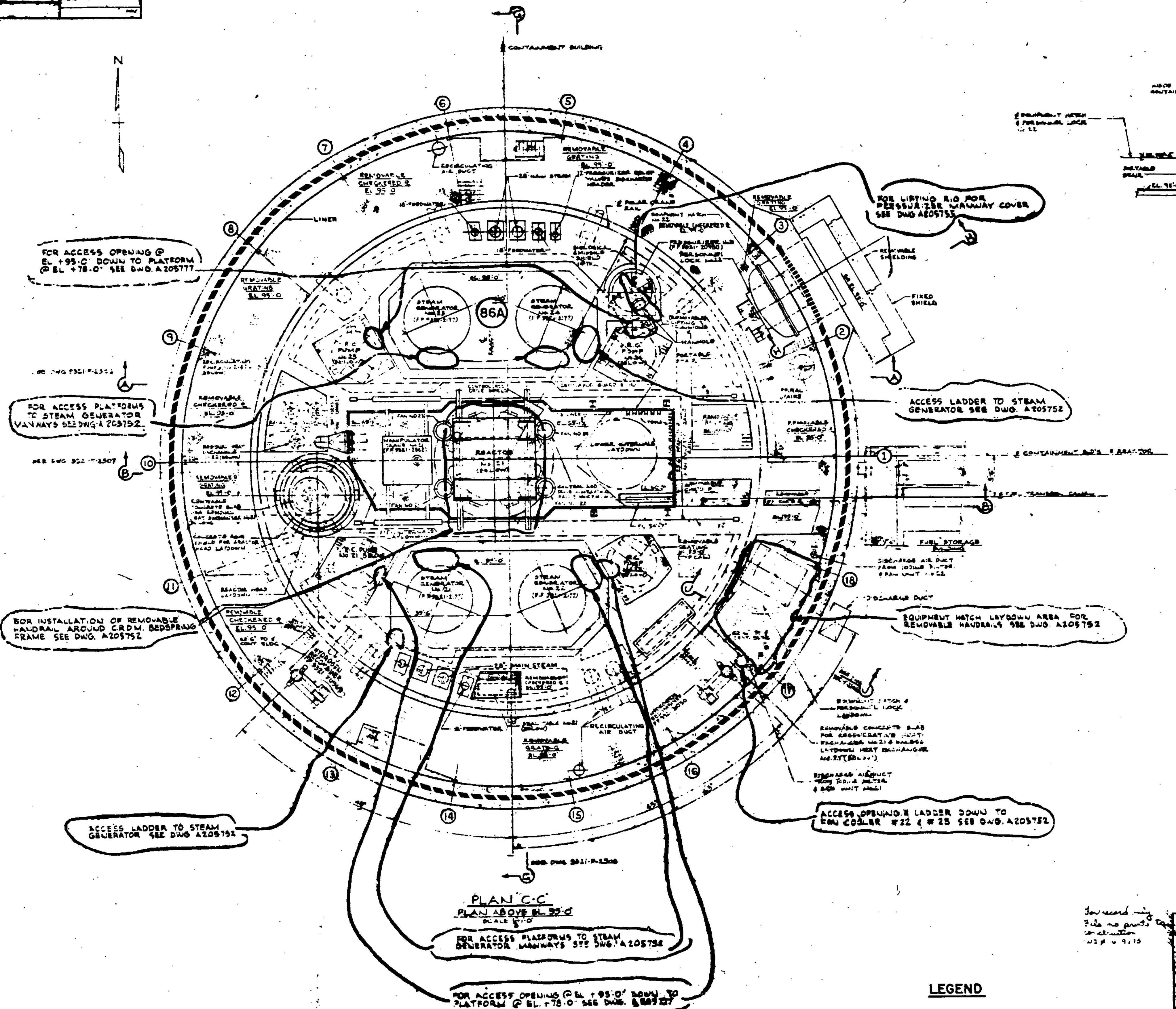
FOR

CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2

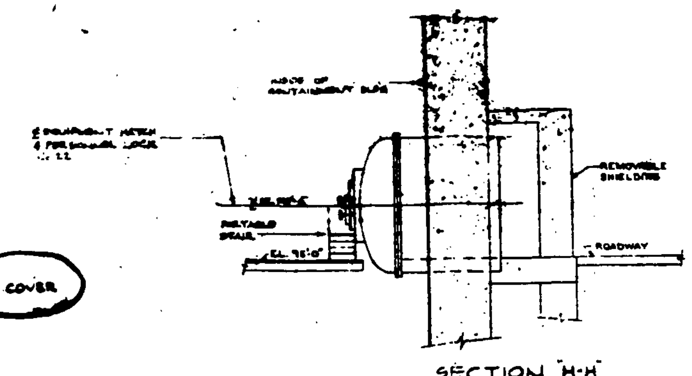
U.E.&C. DWG. NO. 9321-H-2250-6

CON. ED. CO. DWG. NO. B 200564

REV 2
MAY 1978



PLAN "C-C"
PLAN ABOVE EL. 95'-0"



SECTION "H-H"

REFERENCE DWGS.

LEGEND

- 3 HOUR RATED
- NO WALL OR FLOOR
- NON RATED WALL OR FLOOR

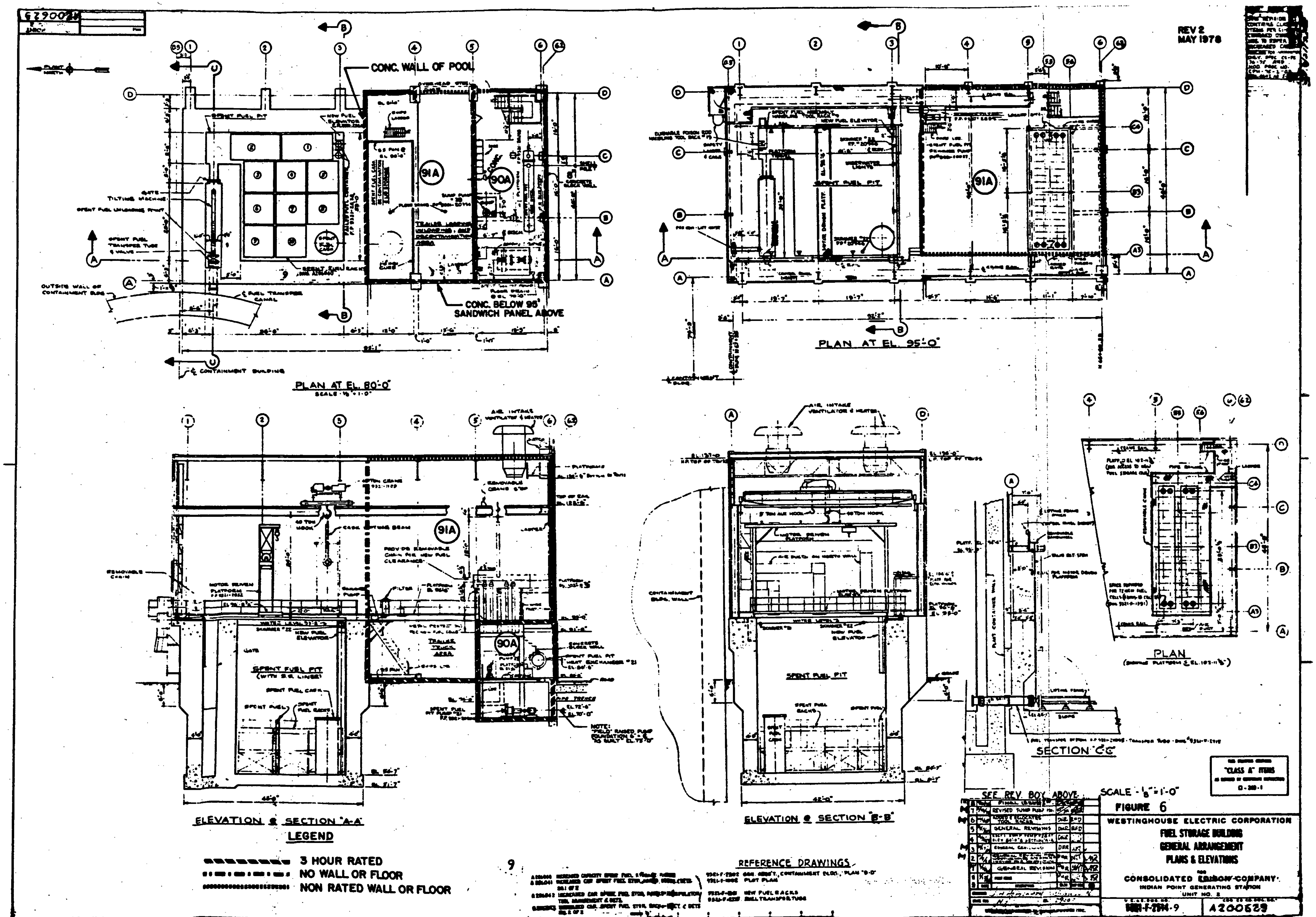
FIGURE 5

WESTINGHOUSE ELECTRIC CORPORATION

CONTAINMENT BUILDING
GENERAL ARRANGEMENT
PLAN "C-C" ABOVE EL. 95'-0"

CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2

9321-F-2501-10


REV 2
MAY 1978
CONC. WALL OF POOL
91A
90A
CONC. BELOW 95'
SANDWICH PANEL ABOVE
PLAN AT EL. 80'-0"
PLAN AT EL. 95'-0"
ELEVATION @ SECTION "A-A"
ELEVATION @ SECTION "B-B"
SECTION "C-C"
PLAN
SPENT FUEL PIT
LEGEND
3 HOUR RATED
NO WALL OR FLOOR
NON RATED WALL OR FLOOR
REFERENCE DRAWINGS
SEE REV. BOX ABOVE
REVISED SUMP PUMP No.
GENERAL REVISIONS
GENERAL REVISION
SCALE - 1/8" = 1'-0"
FIGURE 6
WESTINGHOUSE ELECTRIC CORPORATION
FUEL STORAGE BUILDING
GENERAL ARRANGEMENT
PLANS & ELEVATIONS
CONSOLIDATED EDISON COMPANY
INDIAN POINT GENERATING STATION
UNIT NO. 2
"CLASS A" ITEMS
A200629

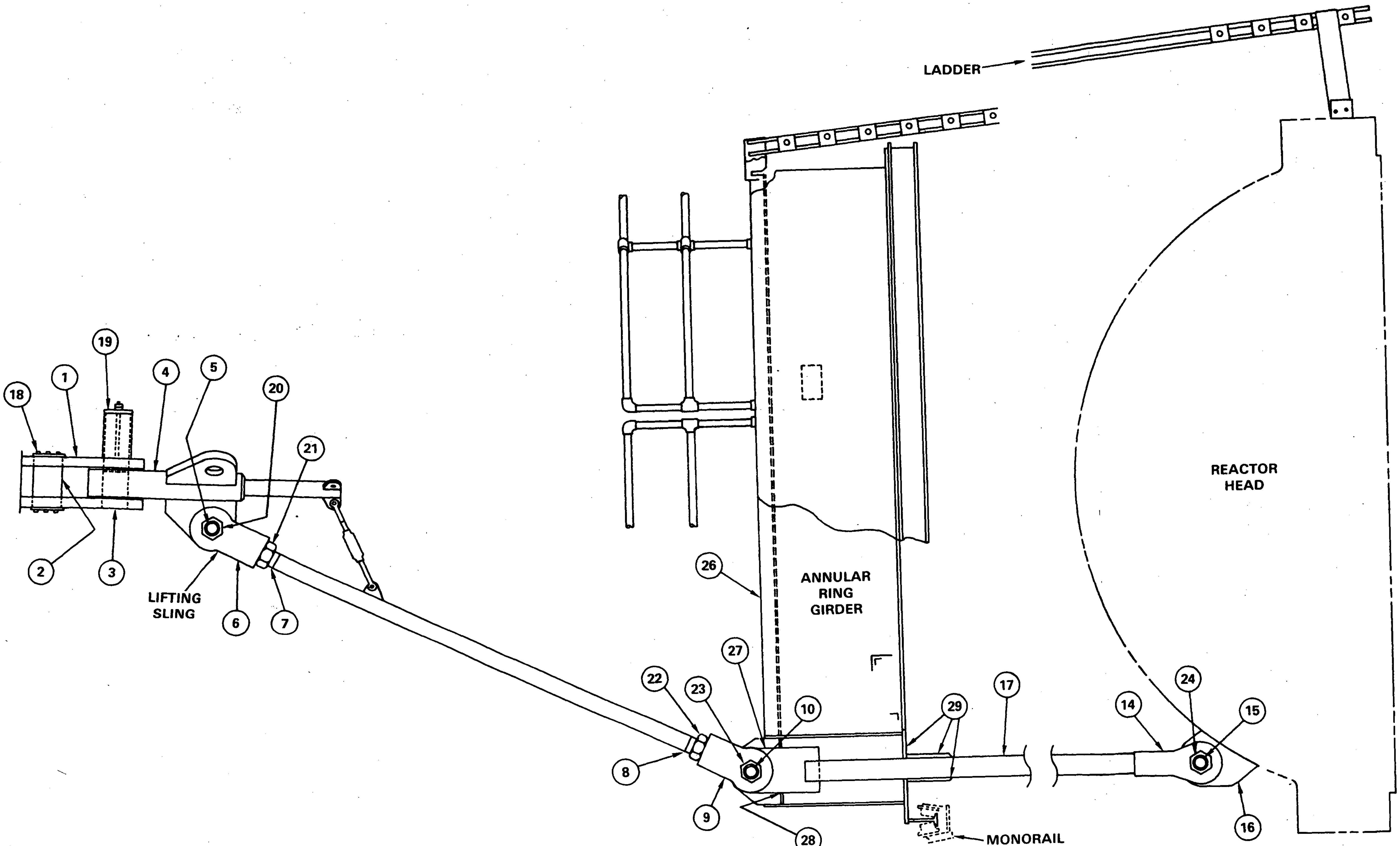


FIGURE 7
REACTOR HEAD LIFTING RIG

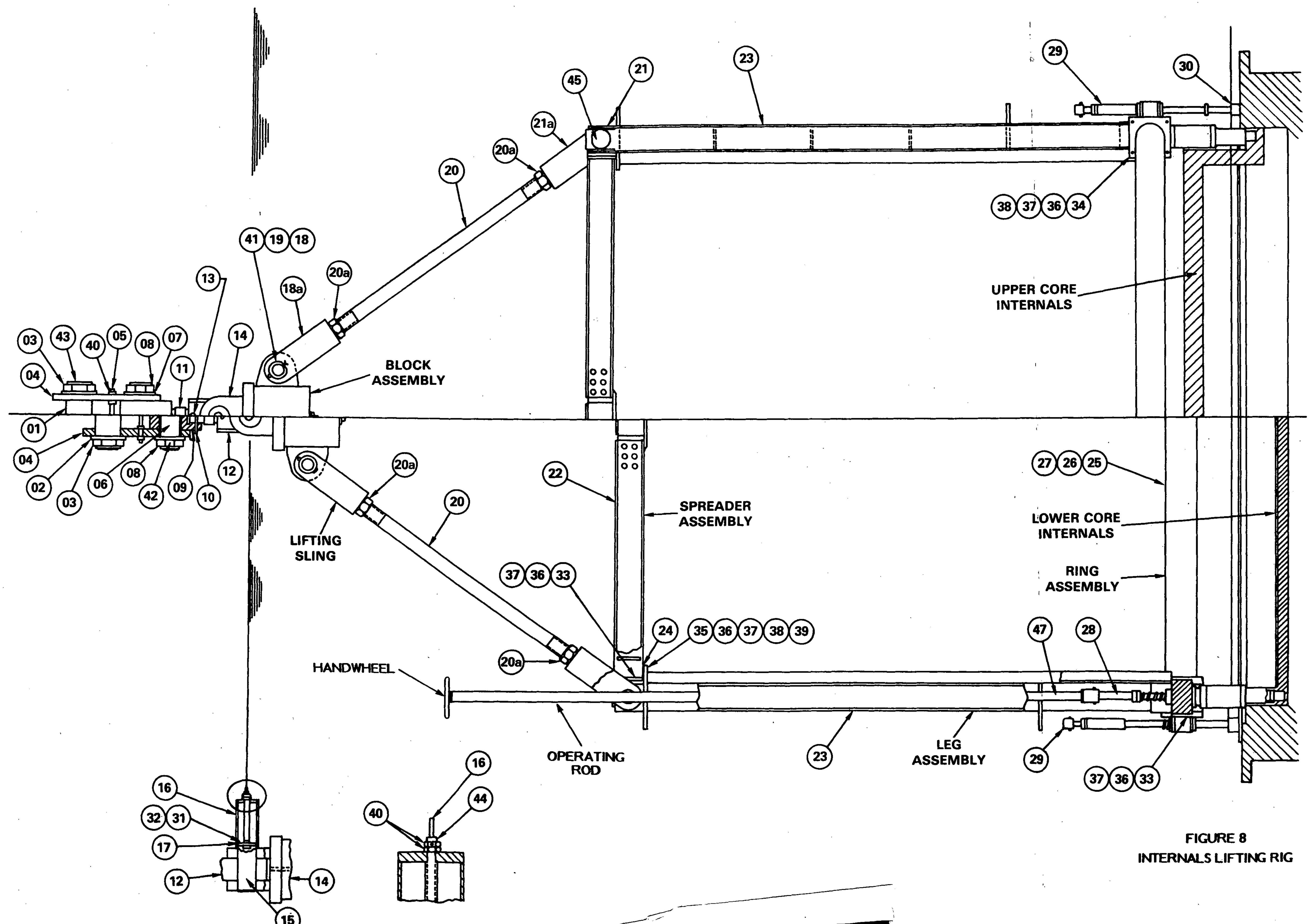


FIGURE 8
INTERNALS LIFTING RIG