



**FPL Energy.**

**Duane Arnold Energy Center**

FPL Energy Duane Arnold, LLC  
3277 DAEC Road  
Palo, Iowa 52324

October 31, 2007

NG-07-0808  
10 CFR 50.55a

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

Duane Arnold Energy Center  
Docket 50-331  
License No. DPR-49

Response to Request for Additional Information Related to the Relief Request for  
Drywell Stabilizer Examinations

- References
1. Letter, Gary Van Middlesworth (FPL Energy Duane Arnold) to Document Control Desk (USNRC) Relief Request for Drywell Stabilizer Examinations, dated May 15, 2007 (ML071430227)
  2. Letter, Karl D. Feintuch (USNRC) to Gary Van Middlesworth (FPL Energy Duane Arnold), Request For Additional Information Re: Relief Request From IWE-2500 Requirement For Drywell Stabilizer Examinations (TAC NO. MD5670), dated October 15, 2007 (ML072750506)

Reference 1 provided a request for relief from performing the VT-3 visual examinations of the reinforcing structure and integral attachment of Drywell Stabilizers X-58C and X-58G.

By letter dated October 15, 2007 (Reference 2), the Staff issued a request for additional information regarding Reference 1. The response to the requests of Reference 2 is provided in the enclosure to this letter.

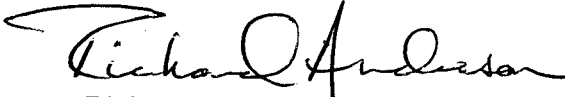
FPL Energy Duane Arnold requests approval of the request of Reference 1 by the end of May 2008.

This letter contains no new commitments nor revises any previous commitments.

A047  
NRR

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If you have any questions, please contact Steve Catron at (319) 851-7234.

A handwritten signature in black ink, appearing to read "Richard L. Anderson". The signature is fluid and cursive, with a large initial "R" and "A".

Richard L. Anderson  
Vice President, Duane Arnold Energy Center  
FPL Energy Duane Arnold, LLC

Enclosures

cc: Administrator, Region III, USNRC  
Project Manager, DAEC, USNRC  
Senior Resident Inspector, DAEC, USNRC

**Enclosure 1**

**Response to Request for Additional Information (RAI) Related  
to the Relief Request for Drywell Stabilizer Examinations**

**Response to Request for Additional Information (RAI) Related  
to the Relief Request for Drywell Stabilizer Examinations**

**NRC Question #1:**

Please provide relevant drawings that show the relative location, structural configuration and general arrangement of Drywell Stabilizers X-58C and X-58G and the drywell coolers to enable the staff to understand the nature of the interference from the upper elevation drywell coolers that prohibits access for removal of the bolting and manhole covers for examination of Drywell Stabilizers X-58C and X-58G.

**FPL Energy Duane Arnold Response:**

Attached are three drawings (BECH-M004, BECH-M341, and BECH-M041) in Enclosure 2. Blowups of sections of BECH-M341 are also provided in Enclosure 2. Drawing BECH-M004 provides the plan view of the drywell at elevations 812 feet 0 inches and 833 feet 6 inches. Drawing BECH-M341 shows the elevation view of the drywell as well as the drywell cooler location and size compared to the other components in the drywell. Drawing BECH-M041 shows the locations of the manholes. As shown in the three drawings and the attached blowups, in conjunction with the photographs already submitted in Reference 1, the drywell coolers interfere with the removal of the Stabilizer manhole covers, thus preventing the visual examination of the integral attachment on the outside of the containment.

**NRC Question #2:**

In the last paragraph of the "Reason for Request" section of the Relief Request, the licensee stated that "Examination of the Drywell Stabilizers X-58C and X-58G, which includes ... and a very disproportionate impact on expenditures of plant manpower and radiation exposure." Please provide a quantitative estimate of the effort involved, time duration required, the area dose-rate and the resulting personnel dose that could result from radiation exposure for each of these drywell stabilizers if the VT-3 examinations were to be performed as required by ASME Code, Section XI.

**FPL Energy Duane Arnold Response:**

Engineering Change Package ECP-1650 replaced the drywell coolers in the lower portion of the drywell (total of 12) which resulted in 41 REM of accumulated dose. Dividing the total accumulated dose for the cooler replacement by 12 results in 3.4 REM per cooler. The total dose to remove the two subject drywell coolers is estimated to be significantly higher than 3.4 REM per cooler since the involved coolers are in the upper elevations of the drywell where clearances are tighter. Even if the total dose to remove both coolers was 3.4 REM, it would not be consistent with the principles of "As Low As Reasonably Achievable" (ALARA) for the performance of the two visual examinations of Stabilizers X-58C and X-58G.

To provide an estimate of the amount of work required to remove the drywell coolers and reinstall them after performing the visual examination, a copy of the "Cooler Moving Plan 1V-CC-2A/2B" from ECP-1650 is attached in Enclosure 3. The weight of each cooler is approximately 2500 pounds. The steps for removing the cooler would consist of removing the structural steel, installing a gantry crane, removal of the necessary fasteners, draining the coolers, prying up the coils for removal, and rigging the coils out of the way. Reinstallation would consist of moving the coils back into position with the gantry crane, reinstallation of the fasteners and reinstalling the structural steel. This is considered to be a significant amount of work to allow access to remove the manhole cover to perform the visual examination of Stabilizers X-58C and X-58G. Based on the amount of work involved as outlined in Enclosure 3, it is clear that the time to prepare for, perform, and restore from the inspections would be significant, on the order of weeks.

**NRC Question #3:**

With regard to the "Proposed Alternative and Basis for Use" section of the Relief Request, since there is no alternative action(s) proposed, please confirm if a general visual examination (as proposed in previous Relief Request MC-R008 listed as Precedent 1) of the accessible surfaces of the Drywell Stabilizers X-58C and X-58G have been or will be performed during the current (last) inspection period of the first 10 year interval of the Containment Inspection Program for which the relief is requested. If already performed, please indicate when and discuss the findings. Indicate schedule if it is planned to be performed. Indicate, with schedule and results, if a Type B test was performed on the manhole penetrations of drywell stabilizers X-58C and X-58G during the current inspection interval.

**FPL Energy Duane Arnold Response:**

A General Visual Examination as required by Category E-A, Item Number E1.11 was completed satisfactorily in Refueling Outage RFO19 (2005) and RFO20 (2007). DAEC Surveillance Test Procedure STP 3.6.1.1-01, "Suppression Chamber and Drywell Visual Inspection," was used to document the examination and results. STP 3.6.1.1-01 requires a visual examination of the following areas above the 822 foot level inside the drywell:

- interior of Drywell section for signs of deterioration,
- shell welds and drywell head flange,
- stabilizer inspection ports at 827 foot level,
- visual portions of male stabilizers at 816 foot level, and
- coating material on the containment, structural steel, and components.

The drywell stabilizers X-58C and X-58G were included in these inspections. Also STP 3.6.1.1-01 requires a more detailed visual examination of the stabilizer shear lug bolting. This examination was performed satisfactorily on the bolting of all eight stabilizers in RFO19 (2005) and four of the stabilizers were examined in RFO20

(2007). The 2007 examination results do not distinguish whether X-58C or X-58G were part of the four that were examined. It is important to note that five of the eight stabilizers have been examined under the IWE Program with no indications identified.

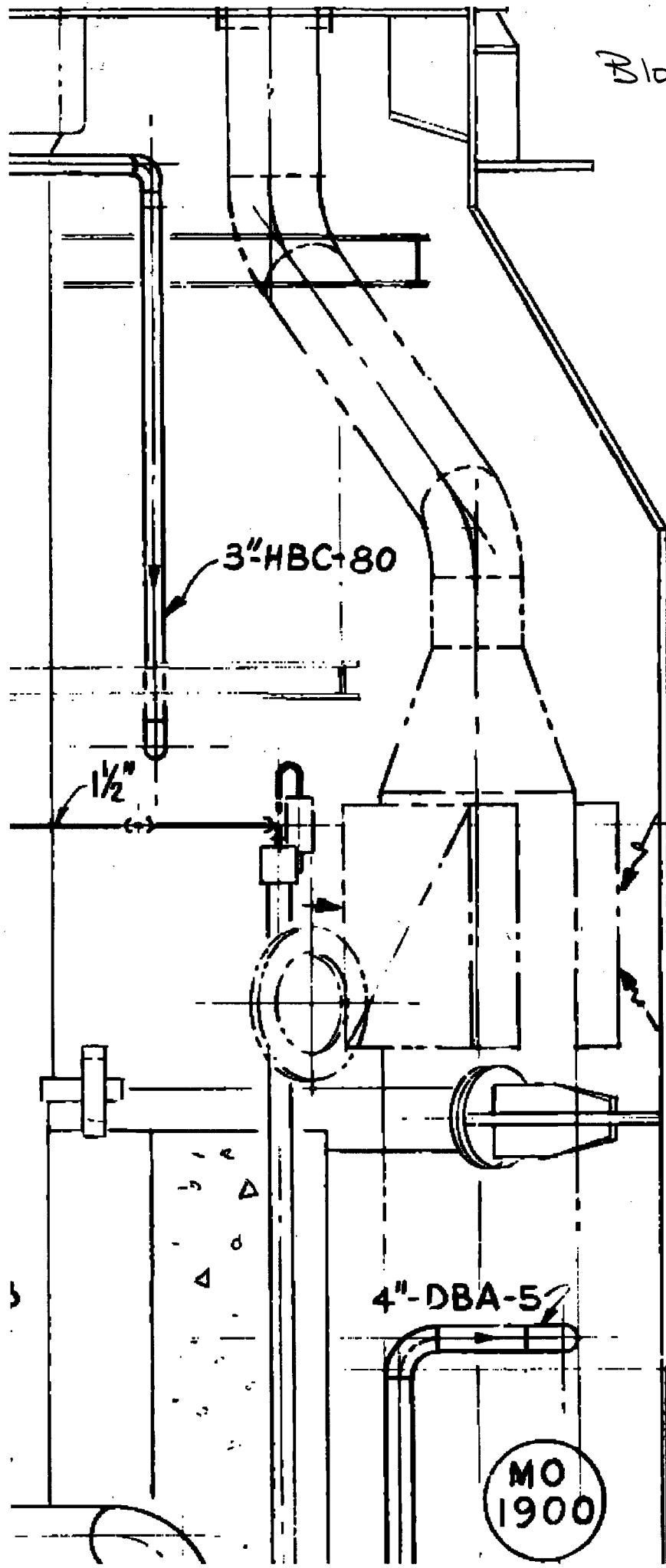
Each of the Drywell Stabilizer Access Ports (X-58A through X-58H) is part of the Performance Based Containment Testing Program. They are leak rate tested on a 10 year frequency with X-58C and X-58G last being leak rate tested in RFO16 (1999) and RFO19 (2005) respectively. Both tests were found acceptable and meet the criteria under 10 CFR 50, Appendix J, Option B. The next scheduled type B test for X-58C and X-58G will be in RFO21 (2009) and RFO24 (2014) respectively.

The type A test (Integrated Leak Rate Test) was last performed in RFO20 (2007) with a 95% Upper Confidence Leakage Rate of 0.3422% weight/day. The maximum allowable leakage rate,  $L_a$  is 2.0% weight/day.

**Enclosure 2**

**Drawings**

Blowup #1



3"-HBC-80

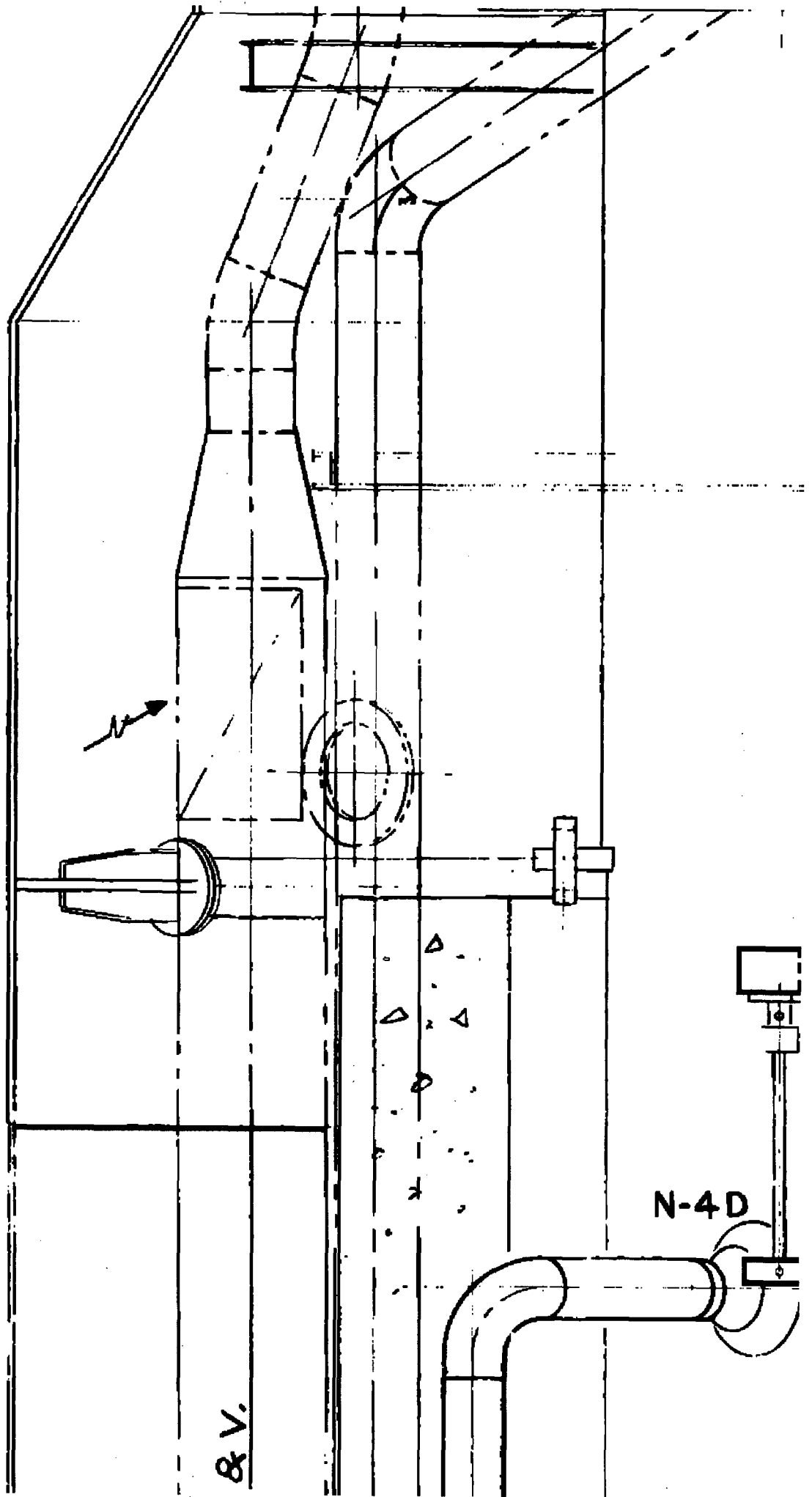
1/2"

4"-DBA-5

MO  
1900



Blowup #2



**Enclosure 3**  
**Cooler Moving Plan 1V-CC-2A/2B**

NUCLEAR MANAGEMENT COMPANY  
DUANE ARNOLD ENERGY CENTER  
DW COOLER REPLACEMENT PROJECT

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ENGINEERING CHANGE PACKAGE  
ECP 1650; INDEX ITEM NO. 7.04  
COOLER MOVING PLAN  
IV-CC-2A/2B

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Prepared By:

Lal Rijhsinghani 3/21/03  
Lal Rijhsinghani Date

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This document is for information only and will not be controlled for subsequent revisions. The steps listed are conceptual based on sequences envisioned by the preparer. Field may deviate from these steps to better sequence the cooler removal/installation process.

COOLER MOVEMENT PLAN IN DRYWELL  
FOR 1V-CC-2A/2B

PURPOSE:

The purpose of this plan is to provide guidance (to the craft) for the removal of the old cooling coils and reinstallation of new cooling coils in the drywell.

The intent of this plan is to safely transport cooling coils in and out of drywell without hindering refueling (outage) related activities while protecting plant system, structure and component from any damage.

This plan requires involvement of quality control (QC) and project lead personnel in the process of rigging and transportation of the cooling coils and coordination of these activities with the Plant Operations department.

COOLER DETAILS:

Note that the new coolers 2A/2B are of same existing design (like-for-like replacement).  
Location: - Drywell, EL. 775'-10", 191 degree Azimuth.

<u>NO. OF COILS</u>	<u>EACH COIL SIZE</u>	<u>WEIGHT/COIL</u>
2	21 7/8" X 55" X 100 3/8"	3250 lb

REFERENCES:

- 1) BECH-M681 - DW Cooling Plans & Sections Between 775'-10 & 793'-2
- 2) BECH-C523 - DW Interior Floor & Framing Plan @ EL. 775'-10"
- 3) BECH-M339 - DW Piping Drawing Section B-B
- 4) BECH-C522 - DW Interior Floor & Framing Plan @ EL. 775'-4½"
- 5) CAL-C02-001 - Design of Lifting Lug for attachment to Drywell Shell
- 6) PENTALIFT Model No. 54TSLC0844 Triple Scissor Lift Table
- 7) AHA-4-12-12 - Adjustable Gentry Crane
- 8) AIRFLOAT - Model No. SS-4-17 Steel Air Skid Specification Catalog Sheets
- 9) AIRFLOAT Platform design sketches.
- 10) M95-10 and 11 1V-CC-2 (A+B) Drywell Cooler drawings.

PRECAUTIONS/LIMITATIONS:

- 1) Cooler loads in drywell are not considered critical loads.
- 2) Slings, hoists, and beam clamps shall comply with GMP-MECH-06.
- 3) Lifting Lugs are qualified for 4000 lb, which include cooler load and rigging devices.
- 4) PENTALIFT Triple Scissor Lift Table is capable of handling max load of 5000 lb.
- 5) Maintain horizontal stability of AIRFLOAT Platform while moving coolers.
- 6) Adjustable Gentry is capable of handling 4000 lb load.
- 7) A project quality control (QC) inspector to verify safe load path and rigging prior to moving the coolers in the drywell.
- 8) Project Lead to keep Operations informed of each step while moving coolers in the drywell.
- 9) All new load-handling devices are load tested, prior to its use in the power block.

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COOLER MOVEMENT PLAN IN DRYWELL  
FOR 1V-CC-2A/2B

OLD COOLER REMOVAL:

Use following instructions for each coil

1. Remove existing "A" frame, located over the opening (between azimuth 210 and 240 degree) at 775'-10" elevation.
2. Install gantry crane over steel opening on 775 elevation near cooler.
3. Remove (10) 5/8" bolts/washers/nuts used for mounting cooler base to the structural steel.
4. Remove filter frame from A-coil.
5. Remove 3/8" bolts connecting HVAC duct to A and B coils.
6. Remove 3/8" bolts to separate A and B coils.
7. Drain coolers and disconnect well water piping to coils.
8. Jack up or pry up the coils. Secure coils using chokers attached to adjacent whip restraints/structural steel.
9. Roll out the separated coil to the floor framing opening, between 210 and 240-degree azimuths, on 775'-10" elevation.
10. Before proceeding to next step, following requirements shall be fulfilled:
  - a. QC to verify Safe Load Path per attached sketch:
11. Lower coil on to 757'-6" elevation.
12. Lay down steel plate and AIR FLOAT assembly on grating at 757'-6" elevation. See attached details.
13. Transport coil section to CRD build room per attached plan. Stay as close to drywell exterior wall as possible.
14. Use 1H-005A (12 Ton) hoist/monorail at North hatch to remove coil section from drywell to reactor building first floor.
15. Helpers to remove coil section from reactor building for disposal using cart/truck.

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COOLER MOVEMENT PLAN IN DRYWELL  
FOR 1V-CC-2A/2B

NEW COOLER INSTALLATION:

Use following instructions for each coil

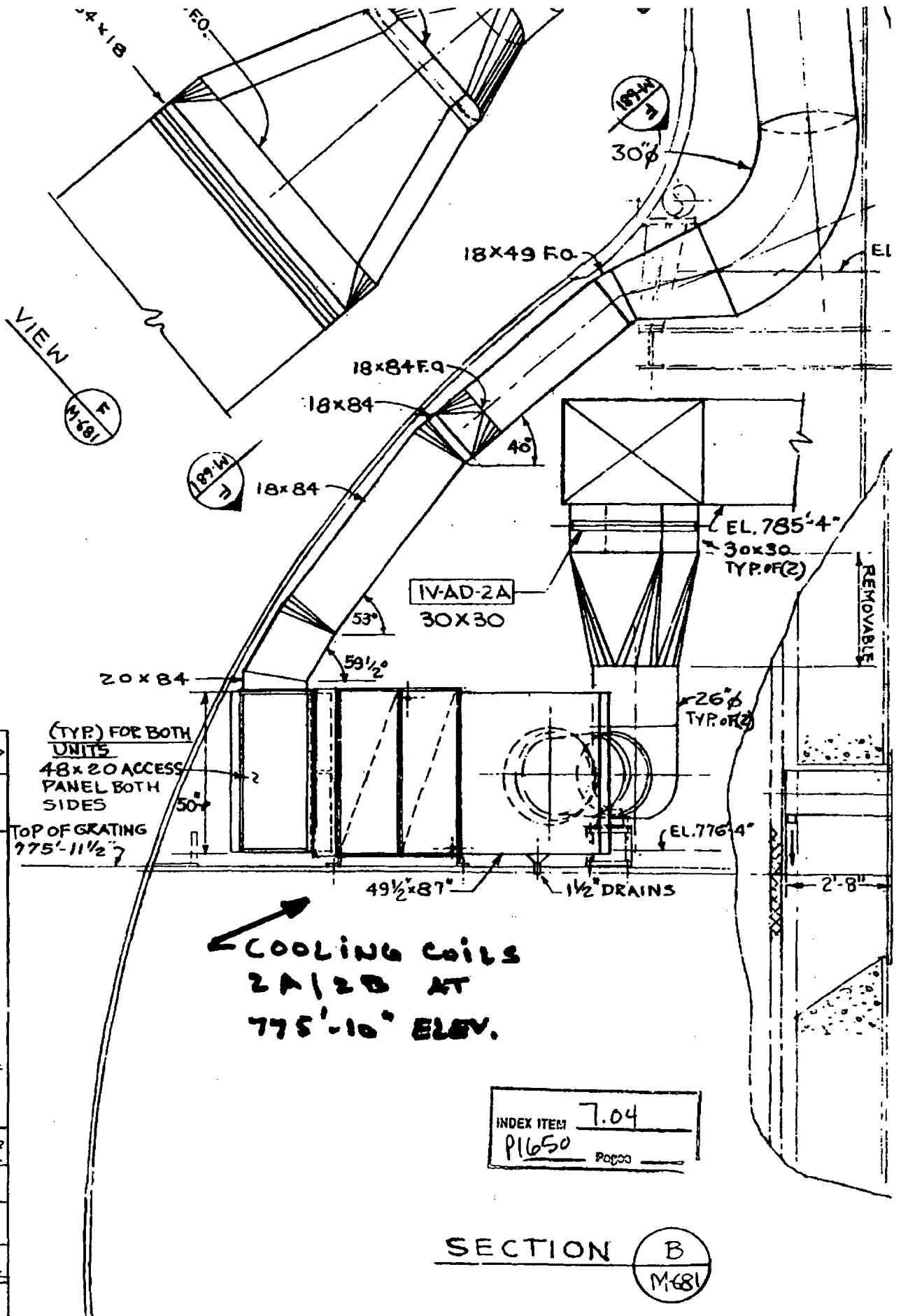
1. Move new cooler units from warehouse to the reactor building railroad bay. Position cooler on cart/truck for transporting to the north end of reactor building equipment hatch.
2. Use 1H-005A (12 Ton) hoist/monorail at North hatch to transport coil section from reactor building to drywell
3. Place coil on to AIRFLOAT Platform. Transport coil section, along established path on 757 elevation, to area between azimuth 210 and 240 degree. Stay as close to drywell exterior wall as possible.
4. Lift coil section to 775'-10" elevation.
5. Lift coil onto rollbacks and position it to its permanent position on the steel frame.

NEW COOLER ASSEMBLY

1. Upon transportation of all new coil sections to the 775'-10" elevation, assemble coils per drawing M95-11.
2. Install (10) 5/8" anchor bolts to mount cooler to the structural steel
3. Install HVAC duct to A and B coils using 3/8" bolts.
4. Install well water connections to A and B coils
5. Install back interferences, if removed.

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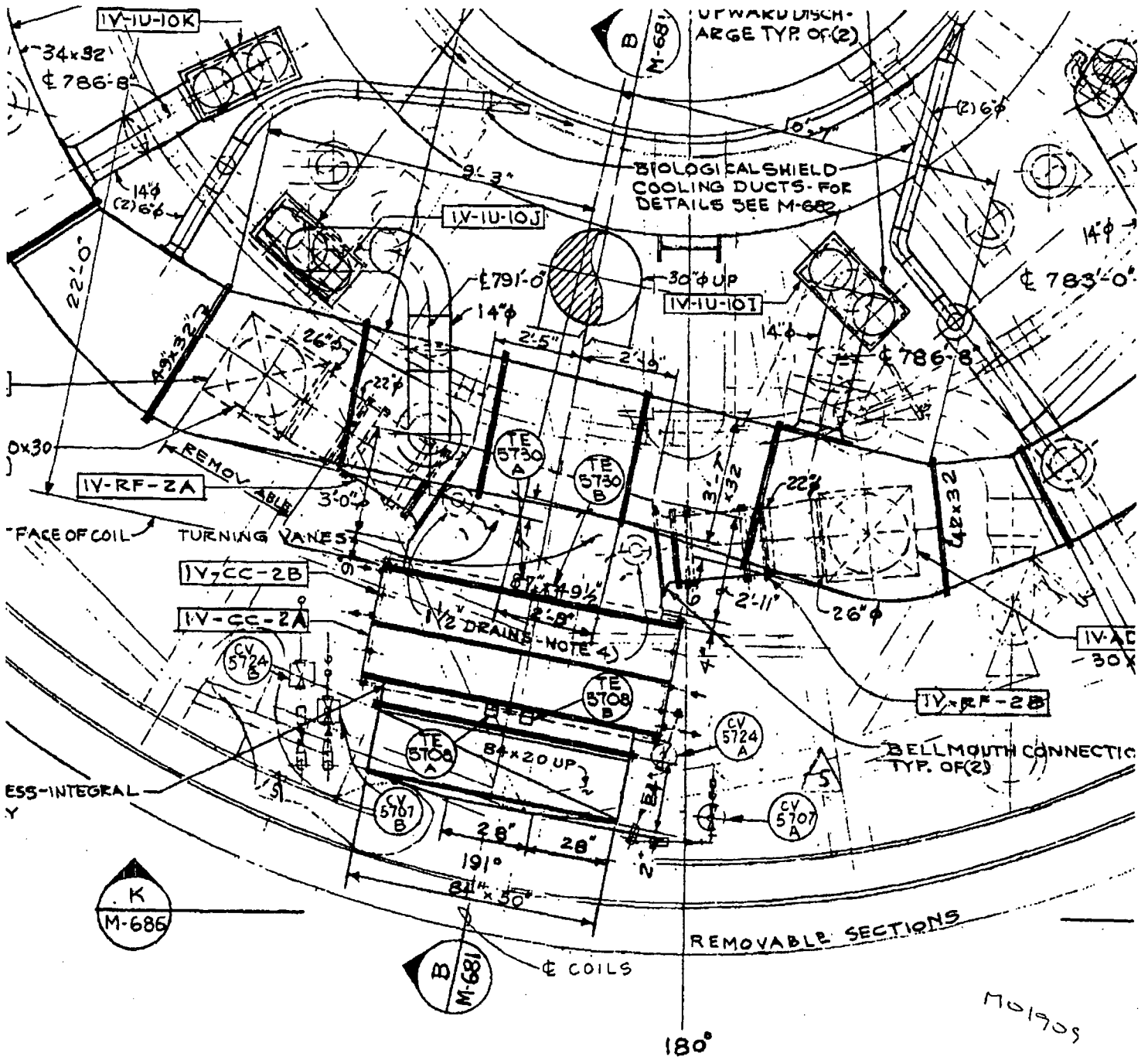


5	5/17/74	REVISED PER "AS-BUILT"	88	L.V.	W	W	W	W	W
4	12/6/72	NOS. ASSIGNED TO INDUCTION UNITS & DUCT DRAINING ADDED	4	L.V.	W	W	W	W	W
3	5/12/72	TEMP. ELEMENTS ADDED AND AUTO DAMPER NOS. ADDED	4	L.V.	W	W	W	W	W
2	3/5/72	UNITS RELOCATED AIR INTAKES	4	L.V.	W	W	W	W	W

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SECTION B  
 M-681

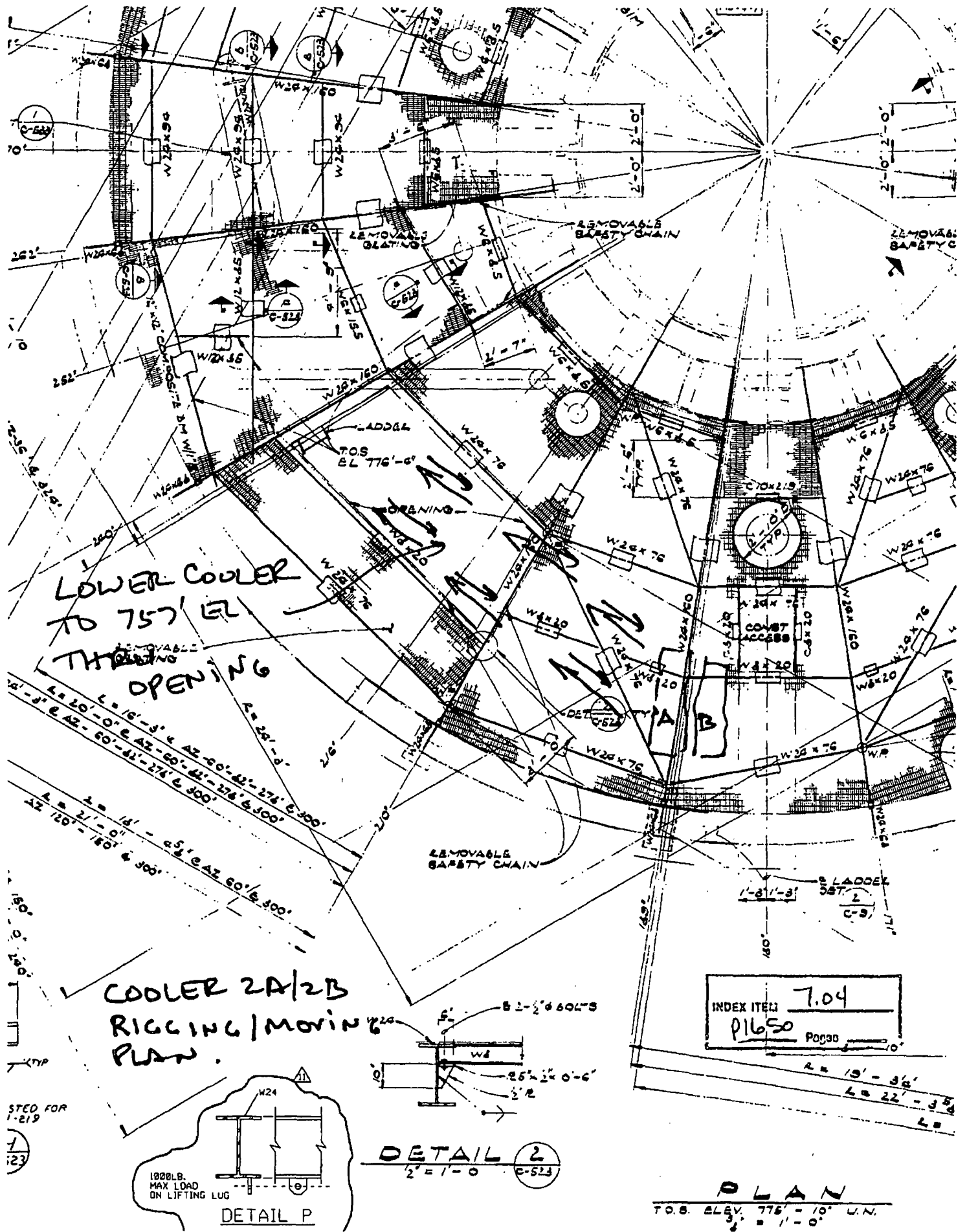




PLAN OF SUPPLY DUCTWORK

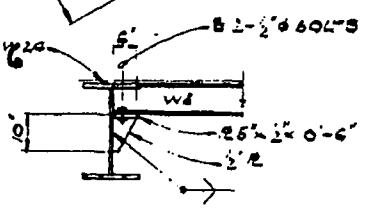
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**THIS DRAWING IS  
 TO BE USED FOR  
 HVAC ONLY**

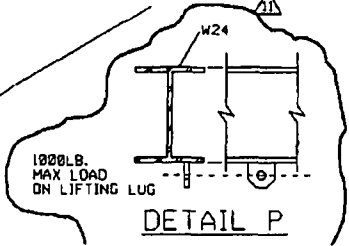


LOWER COOLER  
TO 757' EL  
THROUGH  
OPENING

COOLER 2A/2B  
RIGGING/MOVING  
PLAN



DETAIL 2  
2" = 1'-0" C-523

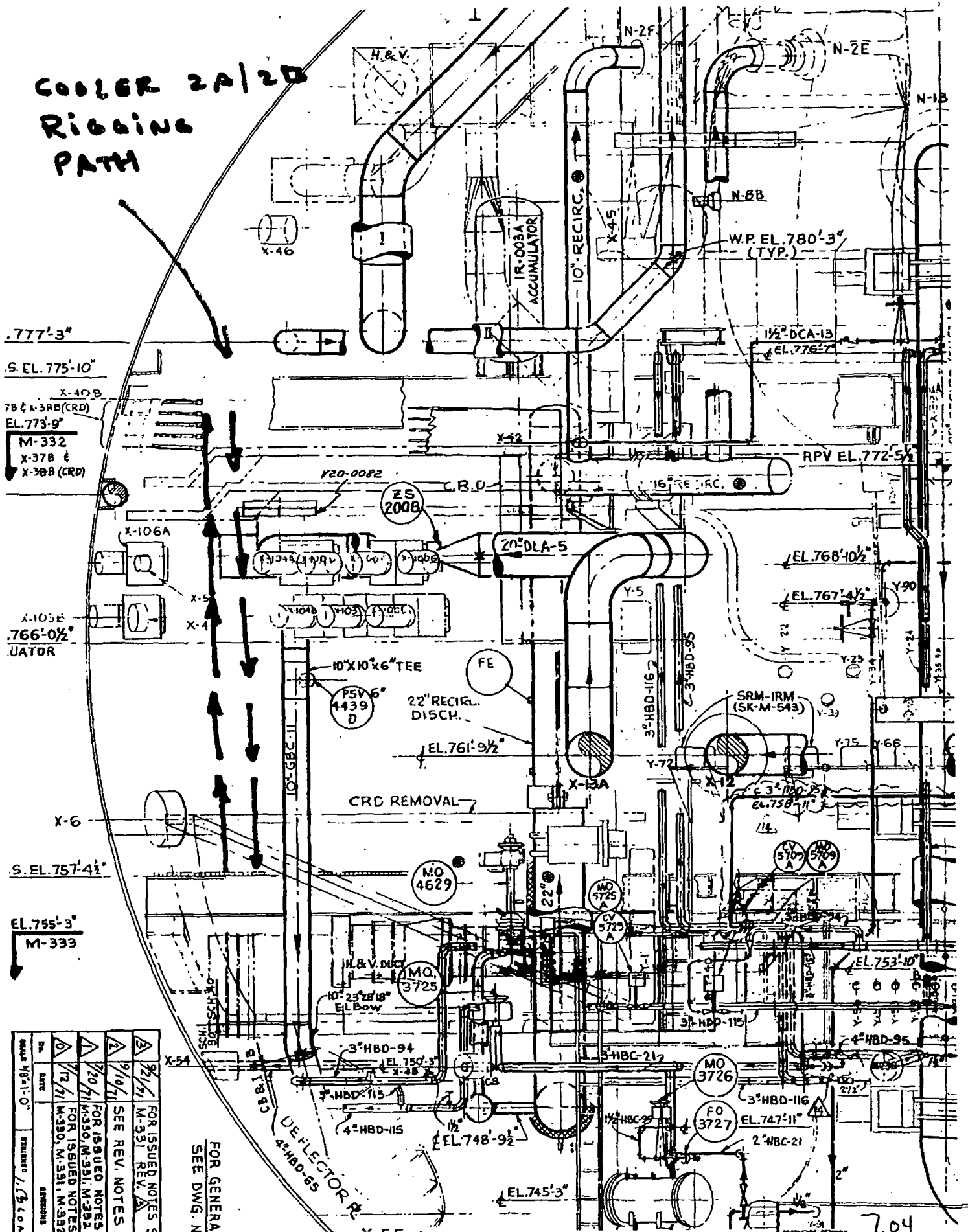


DETAIL P

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PLAN  
T.O.S. ELEV. 775' = 10' U.N.  
3' = 1'-0"

**COOLER 2A/2D  
RIGGING  
PATH**



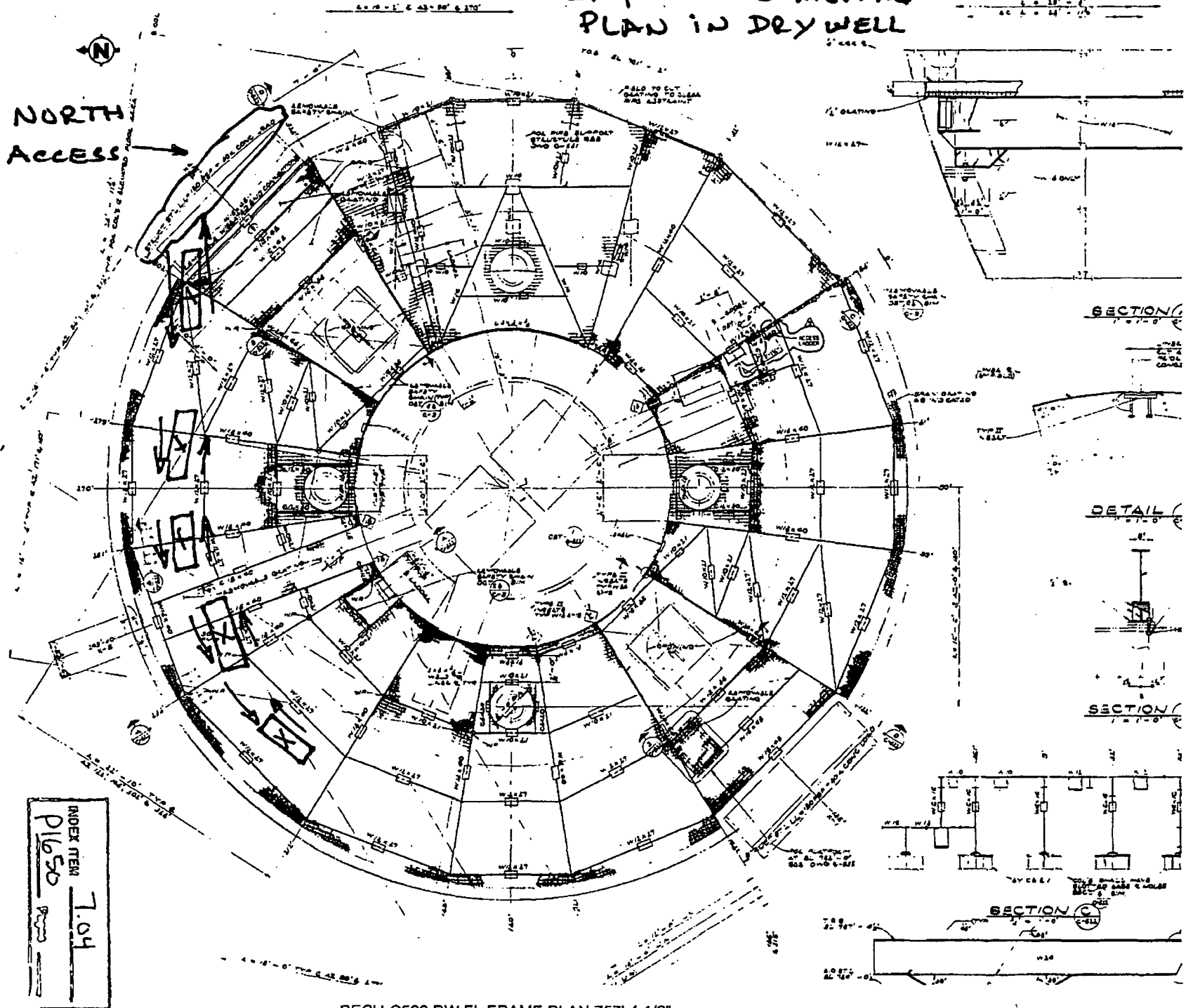
NO.	DATE	REVISION	DESCRIPTION
1	9/20/71	M-330, M-331, M-332	FOR ISSUED NOTES
2	9/10/71	M-331 REV.	SEE REV. NOTES
3	9/2/71	M-331 REV.	FOR ISSUED NOTES
4	12/7/71	M-330, M-331, M-332	FOR ISSUED NOTES

FOR GENERAL  
SEE DWG. N

BECH-M339- DW PIPING DWG SECT B-B

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# 2A/2B COIL MOVING PLAN IN DRY WELL



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BECH-C522 DW FL FRAME PLAN 757-4 1/2"

**THIS PAGE IS AN  
OVERSIZED DRAWING OR  
FIGURE,  
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RECORD TITLED:  
“EQUIPMENT LOCATION  
PLANS AT ELEVS 812' -0“  
& 833' -6”  
DRAWING NO. BECH-M004,  
REV. 17  
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**D-01**

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PENETRATIONS”  
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REV. 22  
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DRAWING SECTION D-D”  
DRAWING NO. BECH-M341”  
DRAWING NO. BECH-M341,  
REV. 14**

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