Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515

December 15, 1995

ComEd

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

SUBJECT: LaSalle County Nuclear Power Station Units 1 and 2
Supplement to August 28, 1995 Request for Application for Amendment to Facility Operating Licenses NPF-11 and NPF-18, Appendix A, Technical Specifications, and Exemption to Appendix J of 10CFR50 Regarding Elimination of MSIV Leakage Control System and Increased MSIV Leakage Limits
NRC Docket Nos. 50-373 and 50-374

REFERENCES:

1. August 28, 1995 G. Benes letter to USNRC, Request for Application for Amendment to Facility Operating Licenses NPF-11 and NPF-18.

2. November 16, 1995 R. Latta letter to D. Farrar, Request For Additional Information - LaSalle County Station, Units 1 and 2.

The Reference 1 letter transmitted the original application for amendment to propose changes to revise LaSalle Unit 1 and LaSalle Unit 2 Technical Specifications to support elimination of the Main Steam Isolation Valve Leakage Control System (MSIV LCS) and instead use the main steamline drains and condenser to process MSIV leakage. The proposed changes would also increase the allowable MSIV leakage from 100 scfh for all four main steam lines to 100 scfh per steam line (400 scfh for all four main steam lines). The Reference 2 letter is a request from the NRC for additional information in regards to the Reference 1 proposed amendment. The attachments to this letter provides ComEd's response to the Reference 2 Request for Additional Information.

The original Significant Hazards Consideration, that was included in the Reference 1 submittal, remains valid based on the information provided as the response to the NRC request for additional information.

To the best of my knowledge and belief, the statements contained above are true and correct. In some respect these statements are not based on my personal knowledge, but obtained information furnished by other Commonwealth Edison employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

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A017

Drawings located in Central Files.

Commonwealth Edison is notifying the State of Illinois of this supplemental application for amendment by transmitting a copy of this letter and its attachment to the designated state official.

Please direct any questions you may have concerning this submittal to this office.

Very truly yours,

Gary G Benes

Gary G. Benes
Nuclear Licensing Administrator

Subscribed and Sworn to before me
on this 15th day of
December, 1995.

OFFICIAL SEAL
MARY JO YACK
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11/29/97

Mary Jo Yack
Notary Public

Attachments: Response to NRC Request for Additional Information

cc: H. J. Miller, Regional Administrator - RIII
P. G. Brochman, Senior Resident Inspector - LSCS
R. M. Latta, Project Manager - NRR
Office of Nuclear Facility Safety - IDNS

RESPONSE TO NRC QUESTIONS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

NRC Comment 1

The August 28, 1995, submittal indicated that the application of the Main Steam Isolation Valve Leakage Control System (MSIV LCS) amendment partly relied on the earthquake experience database contained in the Boiling Water Reactor Owners' Group (BWROG) Topical Report, "BWROG Report for Increasing MSIV Leakage Rate Limits and Elimination of Control Systems," NEDC-31858P, Revision 2. The NRC has not completed its review of the Topical Report. Subsequent to the issuance of the report, the NRC has sent the BWROG questions pertaining to the ground motion estimates developed in the database. The BWROG has not, as yet, responded to the NRC request for information.

For each of the earthquake-facility pairs in the experience database which are being relied upon to demonstrate the seismic adequacy of the alternate leakage path for LaSalle, Units 1 and 2, provide the following information:

a. The name, location (latitude and longitude), and foundation geology (i.e., rock, deep soil, shallow soil) of the facility.

b. The name, date, time, epicenter (latitude and longitude), and magnitude of the earthquake and the closest distance from the facility to the earthquake rupture.

c. The 5 percent of critical damping response spectra of the ground motion estimated at the facility from the earthquake.

d. The method used to estimate the ground motion at the facility. If the ground motion is based on actual ground motion recordings, provide the location (latitude and longitude) and foundation geology of the recording station and its distance from the facility and its distance to the closest part of the fault rupture. If the estimation is based on a method other than an actual recording of the earthquake ground motion or if the recording station is not collocated with the facility, describe the method used to estimate the ground motion in detail and provide any ground motion attenuation equations which may have been used to obtain the estimate.

RESPONSE TO NRC [illegible]NS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

Response to Comment 1

LaSalle has relied on the earthquake experience database only as additional evidence that piping systems, turbine building structures and condensers are inherently rugged components and structures based on their design criteria to perform their normal operating functions.

LaSalle main steam piping within the boundaries of the Alternate Leakage Treatment (ALT) path has been designed and built to resist a seismic event (for details see responses to the questions below). The turbine building and condenser have also been shown, through an evaluation of other design loads, to be capable of surviving a seismic event and capable of performing the ALT function after the seismic event.

Many of the structural details and materials utilized in the construction of safety-related structures at LaSalle were also utilized in the design and construction of LaSalle's turbine building.

For the above noted reasons and the responses indicated below, LaSalle did not need to utilize the information in the "Earthquake Experience Database" and did not rely upon it to demonstrate the seismic adequacy of the ALT path.

NRC Comment 2

The submittal stated that the turbine building would not collapse under a safe shutdown earthquake (SSE). This conclusion appears to be based on the fact that there have been no known cases of structural collapse of either turbine buildings at power stations or structures of similar construction from an earthquake. To support the conclusion that the LaSalle turbine building will not collapse under an SSE, provide the following information:

a. Clarify whether the word "collapse" used in the submittal implies a total building collapse or a partial collapse, such as a roof beam collapse.

b. Justify the conclusion that the LaSalle turbine building will not collapse under an SSE, which has drawn on the basis that no other turbine buildings collapsed in past

earthquakes.

c. Discuss the ground motion associated with the Uniform Building Code (UBC) seismic zone factor used for the LaSalle turbine building design. Since UBC dictates a seismic demand which is usually less conservative than an SSE, provide an evaluation or analysis to substantiate the structural integrity of the turbine building subject to the LaSalle SSE ground motion.

d. Provide in further detail (beyond what is already in the submittal), a description of the turbine building design features that are relied upon to resist seismic loads, and which would enable a determination of its structural behavior (e.g., concrete shear walls, steel moment resistant or braced frames, or a steel frame/concrete shear wall dual system).

Response to Comment 2a

The words 'not collapse' used in the submittal implies the Turbine Building Structure as a whole will not collapse and individual structural members such as roof beams will not collapse.

Response to Comment 2b

The basis of the seismic ruggedness of the turbine building at LaSalle is based on its design and construction. This basis is described in the initial submittal and in the additional responses to Questions 2c and 2d below. The fact that no other turbine buildings collapsed in past earthquakes is an additional assurance of the building's structural integrity.

Response to Comment 2c

The 1970 UBC seismic zone 1 (z=0.25) was used in the seismic evaluation of the turbine building roof structure. However, the design was governed by the tornado wind loads. The following paragraphs and responses to comment 2d provide a detailed description of LaSalle County Station seismic modeling and qualification of roof structure for seismic loads.

RESPONSE TO NRC QUESTIONS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

At the LaSalle station, the turbine building shares the north-south wall with the auxiliary building and the diesel generator room (both category I structures). Therefore the turbine building was included in the seismic model. The structural elements i.e., the shear walls and slab diaphragms included in the seismic model have been designed for the appropriate seismic forces (shears and moments) obtained from the seismic analysis. The turbine building structure is therefore capable of resisting the SSE seismic load.

The turbine building roof structural steel was designed to resist seismic loads, wind loads and tornado wind loads. The seismic loads were obtained using the 1970 Uniform Building Code for zone 1. However the design of the roof steel structure was governed by the tornado wind loads. Using the tornado loading shears in the N-S and E-W directions and converting these shears to equivalent seismic acceleration levels, one obtains a horizontal acceleration of about 0.7g in the N-S direction and about 0.6g in the E-W direction at turbine building operating floor. Roof structural steel is supported on this operating floor. The peak 5% damped SSE response spectra of the turbine building operating floor are 1.3g and 1.2g in the N-S and E-W directions respectively. Therefore, the tornado loading corresponds to ground acceleration of at least 0.1g(i.e., 0.2x0.6g/1.2g=0.1g). Based on note(e) of Table 2-3 of EPRI NP-6041-SL Rev.1, for steel frame structures designed for a SSE of 0.1g or greater, evaluation is not required for plants for considering Seismic Margin Earthquake (SME) level of 0.3g peak ground acceleration (pga). On this basis the roof steel structure is capable of resisting SME of 0.3g pga which is greater than the SSE ground acceleration for LaSalle.

Response to Comment 2d

The structural framing system and construction details of the Turbine Building are similar to category I structures of the plant. These plant structures were constructed under the same construction specifications i.e., J-2533 (concrete structures) and J-2932 (structural steel).

The seismic analysis of Reactor-Auxiliary-Turbine Building complex for LaSalle County Nuclear Power Station - Units 1 & 2 is included in Design Criteria book DC-SE-02-LS entitled as "Seismic Response spectra design criteria". Attached, as an example, are

the following Exhibits from this design criteria book which show the layout of various shear walls and braced bays with their specific spring numbers, as included in the seismic model of various building structures for LaSalle County Station.

Exhibit 18 : Slab 2 (El. 710'-6"), springs from Slab 2 to slabs 3 and 10.

Exhibit 19 : Slab 10 (EL. 731'-0"), springs from slab 10 to slabs 3, 11, 13, 14, 18.

Exhibit 25 : Slab 14 (El. 768'-0"), springs from slab 14 to slabs 5, 6, 8.

Exhibit 31 : Vertical seismic model of Turbine Heater Bay and Radwaste Buildings.

Note the 'Seismic Walkdown Report' for Unit 1 and 2, respectively, submitted earlier show the layout of various plant structures on pages 20 and 21.

The Turbine building for Units 1 and 2 is bounded by column lines 1 and 29 in North-South direction and column lines R and W in East-West direction. The shears and moments for operating and design basis seismic for various springs as obtained from the seismic analysis are listed in the above referenced design criteria book. The shear walls, and concrete slab diaphragms have been designed for these seismic forces for appropriate allowables. The corresponding calculations for Turbine Building area springs are included in Sargent & Lundy calculation book #143.

NRC Comment 3

NRC has not approved the use of a probabilistic approach to justify the adequacy of the condenser anchorage. Provide additional information or perform a deterministic evaluation to substantiate the assertion that the condenser anchorage system is indeed seismically adequate.

RESPONSE TO NRC QUESTIONS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

Response to Comment 3

The adequacy of the condenser anchorage under a safe shutdown earthquake (SSE) was determined using a deterministic method. Calculation No. 8.36.0-4 determined the capacity of the anchorage to be above the SSE acceleration level. This deterministically calculated capacity is called "high confidence low probability of failure" (HCLPF) capacity using the methodology of EPRI NP. 6041. The calculated HCLPF was determined to be 0.30g which is above the SSE design basis ground acceleration of 0.2g.

NRC Comment 4

The submittal stated that the piping supports and anchorages in the alternate leakage treatment (ALT) path were visually inspected during walkdowns. However, it is not clear whether the anchorages were evaluated for an SSE loading. Provide a justification for the adequacy of the anchorages for the piping supports. Refer to the criteria contained in the NRC IE Bulletin 79-02, "Pipe Support Base Plate Designs Using Concrete Expansion Anchors," and the USI A-46 Generic Implementation Procedure (GIP), developed by the Seismic Qualification Utilities Group, for the verification of seismic adequacy of nuclear power plant equipment, which are considered acceptable by the staff.

Response to Comment 4

The affected piping (except pressure sensing lines and the Unit 2 main steam downstream drain line subsystem 2MS-71) have been seismically analyzed in accordance with the ASME Boiler & Pressure Vessel (B&PV) Code Section III, Class 2 and 3 rules, using uniform response spectrum analysis techniques for OBE and SSE loads. The corresponding pipe supports were also designed for these seismic loads using ANSI B31.1 code for hardware design and applicable AISC allowables for auxiliary steel design. The expansion anchor assemblies for the pipe supports were designed in accordance with the criteria contained in the NRC IE Bulletin 79-02, as documented in Commonwealth Edison submittal, dated March 15, 1982 "Final Report on Pipe Support Base Plate Design Using Concrete Expansion Anchor Bolts" to US NRC Region III office.

A walkdown of drain line 2MS-71 was performed to the same criteria as used for Class D piping and no outliers were identified. However, for the drain line 2MS-71, additional seismic qualification and or modifications will be performed so that the design of 2MS-71 piping and supports will be consistent with the remaining drain lines as noted above. An operational "hold point" will be added to the modification that replaces the MSIV-LCS with the ALT path for Unit 2.

As noted in the initial submittal, the pressure sensing lines from the main steam lines to the pressure sensors in the turbine building are classified as non-seismic (Class D) designed to the requirements of the ANSI B31.1 code and are manufactured from heavy wall (Sch 80 and 160) pipe. During the plant walkdown it was noted that the pressure sensing instrument lines were supported by vertical rod hangers and 'U' bolts. Further, it was demonstrated by tug test that the piping position retention and anchorage of the supports will be reasonably maintained under normal and earthquake loading. These pressure sensing lines were therefore qualified based on USI A-46 Generic Implementation Procedure (GIP) guidelines developed by seismic qualification Utilities Group (SQUG). Additionally, the concrete block walls supporting the piping have been qualified and necessary reinforcement issued for construction to withstand seismic loads. The completion of the reinforcement of these block walls is an operational hold point for plant start-up following leakage control system abandonment assuring the pressure integrity of these branch lines.

NRC Comment 5

Provide a legible piping and instrumentation diagram specifically for MSIV ALT path, which clearly indicates all the lines and equipment as well as system boundary included in the amendment request. Refer to the similar information provided on the same issue under the Susquehanna dockets.

Response to Comment 5

As requested, attached are the following piping and instrumentation diagrams for MSIV alternate path indicating impacted lines, equipment and system boundaries:

RESPONSE TO NRC QUESTIONS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

1) P&ID Main Steam:
M- 55 Sh.1 Rev.N
M- 55 Sh.2 Rev.N
M- 55 Sh.3 Rev.R
M- 55 Sh.7 Rev.T
M-115 Sh.3 Rev.E
M-159 Sh.3 Rev.B
M-116 Sh.1 Rev.H
M-116 Sh.2 Rev.J
M-116 Sh.3 Rev.S
M-116 Sh.7 Rev.T

2) Updated Figure 1: Isometric view of leakage control path for Unit 2 (Unit 1 is mirror image of Unit 2)

3) LaSalle received a copy of Susquehanna's submittal on December 14, 1995 and was unable to refer to it for this response. LaSalle does not have a single sheet P&ID similar to Susquehanna's. Significant effort would be required to develop one at this time. LaSalle has provided copies of affected Main Steam P&ID marked-up with "*" to show valves isolating the ALT path and "scoped" to show the portion of Main Steam evaluated for this effort.

NRC Comment 6

Provide an example document of a bounding seismic analysis for a representative portion of the ALT path piping that would yield the most conservative piping stresses and support loads, including the seismic input motion and methodology used.

Response to Comment 6

Stress reports which document the seismic input motion methodology, piping stresses and support loads for the following two representative subsystems are attached:

(a) Subsystem 2MS-31B (Main Steam Warm-Up Bypass Lines to Valve 2B21-F020)
(b) Subsystem 2MS-56 (Main Steam Drain Lines to Condenser and Valve 2B21-F071)

These subsystems were analyzed using UFSAR seismic input data for OBE and SSE conditions (for 2MS-56, an OBE analysis was performed and SSE was conservatively estimated as 1.875 x OBE; while for 2MS-31B, both OBE and SSE analyses were performed) based on Reg. Guide 1.61 methodology. Faulted allowables were used to qualify non-safety-related Class D, (D seismic) and D+ piping. For pipe support qualifications, appropriate operating and emergency basis allowables have been used.

NRC Comment 7

Ensure that all the supports associated with the ALT path piping have been analyzed for their seismic capability, using seismic inputs and methodologies acceptable to the staff. Provide examples of analyses and calculations for representative pipe supports for staff review.

Response to Question 7

Please refer to the response to comment 4, which has addressed the seismic analysis and design of the piping supports as well as the piping.

Attached for NRC review are the following two sample calculations of the pipe supports for 26 inch diameter Main Steam header line (MS09 subsystem) in Unit 1 Turbine Building and one support for 3 inch diameter line from subsystem 2MS31 in Unit 2 auxiliary building.

Pipe supports: M09-MS01-1230S
M09-MS01-1301S
M09-MS14-2821S

NRC Comment 8

For the portions of the ALT path lines which utilized earthquake experience database as a method of demonstrating seismic adequacy, provide a comparison for the pipe thickness and pipe diameter-to-thickness ratio between LaSalle piping and database piping, for each pipe diameter involved.

RESPONSE TO NRC QUESTIONS

MAINSTEAM ISOLATION VALVE-ALTERNATE LEAKAGE TREATMENT SYSTEM

LASALLE UNITS 1 & 2

Response to Comment 8

"Earthquake experience database" was not utilized for demonstrating seismic adequacy of the piping which is part of Alternate Leakage Treatment Path. For seismic qualification of the piping, please refer to the 'Response to Comment 4'.

NRC Comment 9

Provide a detailed comparison between pipe spans in the ALT path and those in the database plants, considering both typical pipe runs as well as those with more unique layout configurations.

Response to Comment 9

Earthquake experience data base was not utilized for comparing pipe spans in the ALT path. However, the pipe spans are based on the respective seismic analysis results. The only piping in the ALT path which is not seismically designed are the pressure sensing lines and subsystem 2MS-71. The pipe spans for pressure sensing lines are based on ASME B31.1 recommendations which limits the dead weight stresses to approximately 1500 psi. As noted in the 'Response to Comment 4', the subsystem 2MS-71 will be qualified and or modified such that the spans will be based on a seismic analysis for OBE and SSE loads.

NRC Comment 10

Provide the basis for concluding that the earthquake floor motions which excite the ALT piping are bounded (in terms of acceleration and frequency content) by those experienced by the corresponding database piping.

Response to Comment 10

Piping related information contained in the "Earthquake Experience Database" were not relied upon for the seismic qualification of the ALT path piping.

In addition to designing the ALT path piping for seismic loads as described in 'Response to Comment 4', a plant walkdown of the non-seismically analyzed ALT piping was also conducted to verify

their seismic capability. The walkdown procedure followed the recommendations given on pages A-10 through A-12 of EPRI NP-6041-SL Rev. 1. The qualified walkdown team verified that the ALT piping does not have the construction details which may become inoperable during a seismic event. As documented in Section 8.0 of Attachments H and I to the 'submittal', outliers identified during the walkdown along with their method of resolutions were documented.

NRC Comment 11

Provide calculations that demonstrate the seismic adequacy of the condenser structural components and support members, by using an acceptable analytical methodology.

Response to Comment 11

Calculations have not been performed to seismically qualify the condenser structural components. However, the condenser anchorage has been seismically qualified by performing calculations, as documented in calculation book No. 8.36.0-4 and as addressed in the response to Comment 3.

The condenser structural configuration is a very rigid single shell with three extension necks, having shell dimensions as 90 feet long, 35 feet wide and 71 feet high, constructed from 7/8" thick ASTM A-285 Grade C plate material. The manufacturer has designed the condenser shell for 15 psig pressure and tested for 20 psig. The condenser is seated on eight concrete piers and anchored using six 1-5/8" diameter anchor bolts at each pier. The piers are supported by the Turbine Building mat foundation.

A review of the condenser specification (J-2515) shows that for design of the condenser, seismic load was not included as the design requirement. However, based on the following reasons it can be concluded that during a seismic event the condenser will continue to be stable and perform its MSIV leakage treatment function based on the following reasons.

1. The condenser is a very rigid shell supported by a rigid foundation.

2. As documented in Section '6' of the 'Seismic Walkdown Report', based on the comparison of the condenser capacity, condenser anchorage and demand parameters with the 'Experience Data Base', the condenser seismic demand and its anchorage fall within the bounds of the 'Experience Data Base'.

3. A review of the condenser vendor drawing No. 731J391 shows that in both longitudinal and transverse directions, there is an insignificant gap available between the condenser extension necks and the turbine foundation piers. As such, during a seismic event the condenser at the upper level will be laterally restrained by the adjacent structural elements and therefore the condenser shell and its anchorage will not experience significant seismic inertia loads.

NRC Comment 12

Provide a copy of LaSalle's seismic verification walkdown procedure used for the ALT path walkdown.

Response to Comment 12

The subject walkdown procedure was an Appendix to the Report EMD-067927, Rev.00, but was not duplicated again in Rev.01 and 02 of the subject report. Therefore, this Appendix together with the cover and signature pages of the Report EMD-067927, Rev.00 are being enclosed.

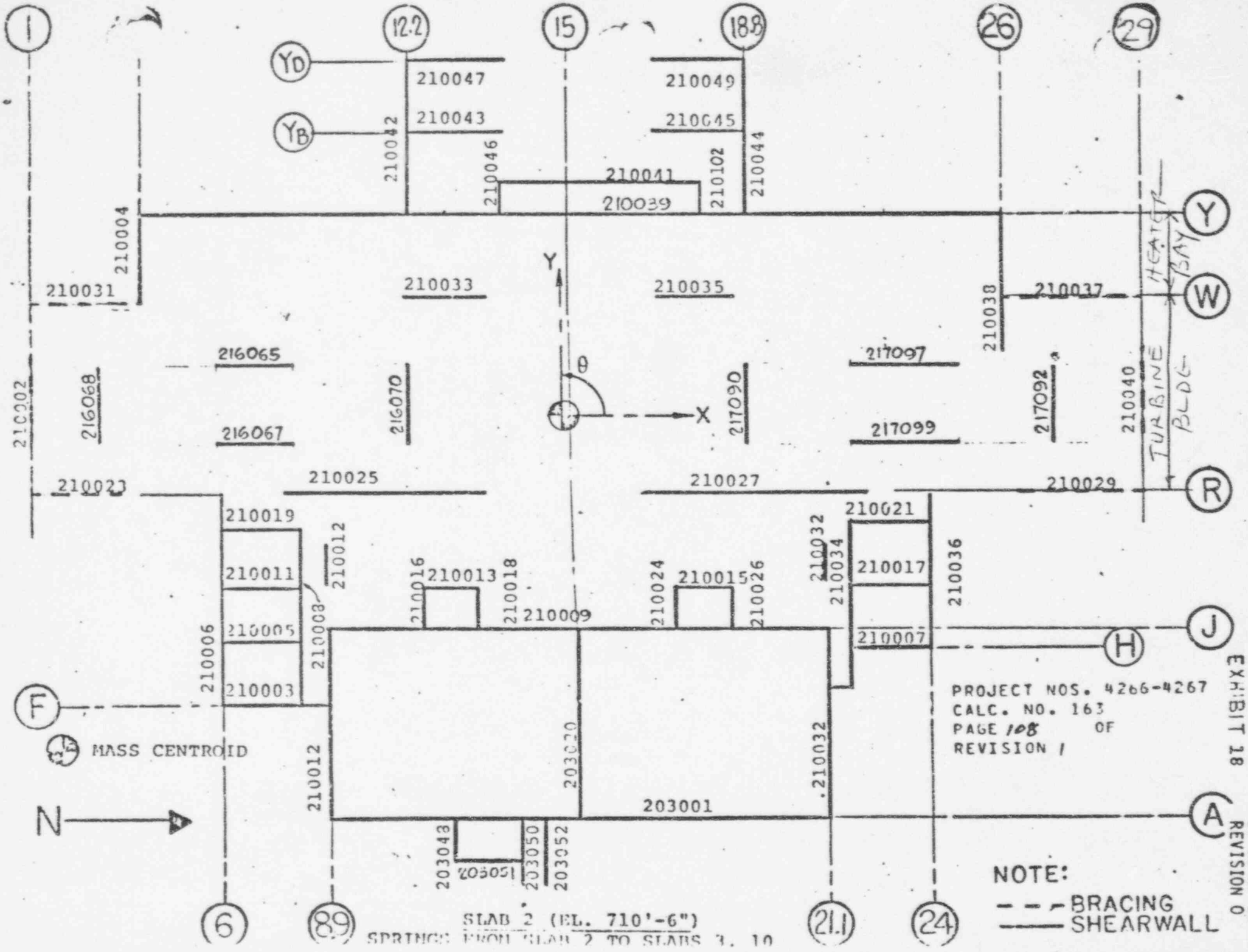

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EXHIBIT 18
REVISION 0
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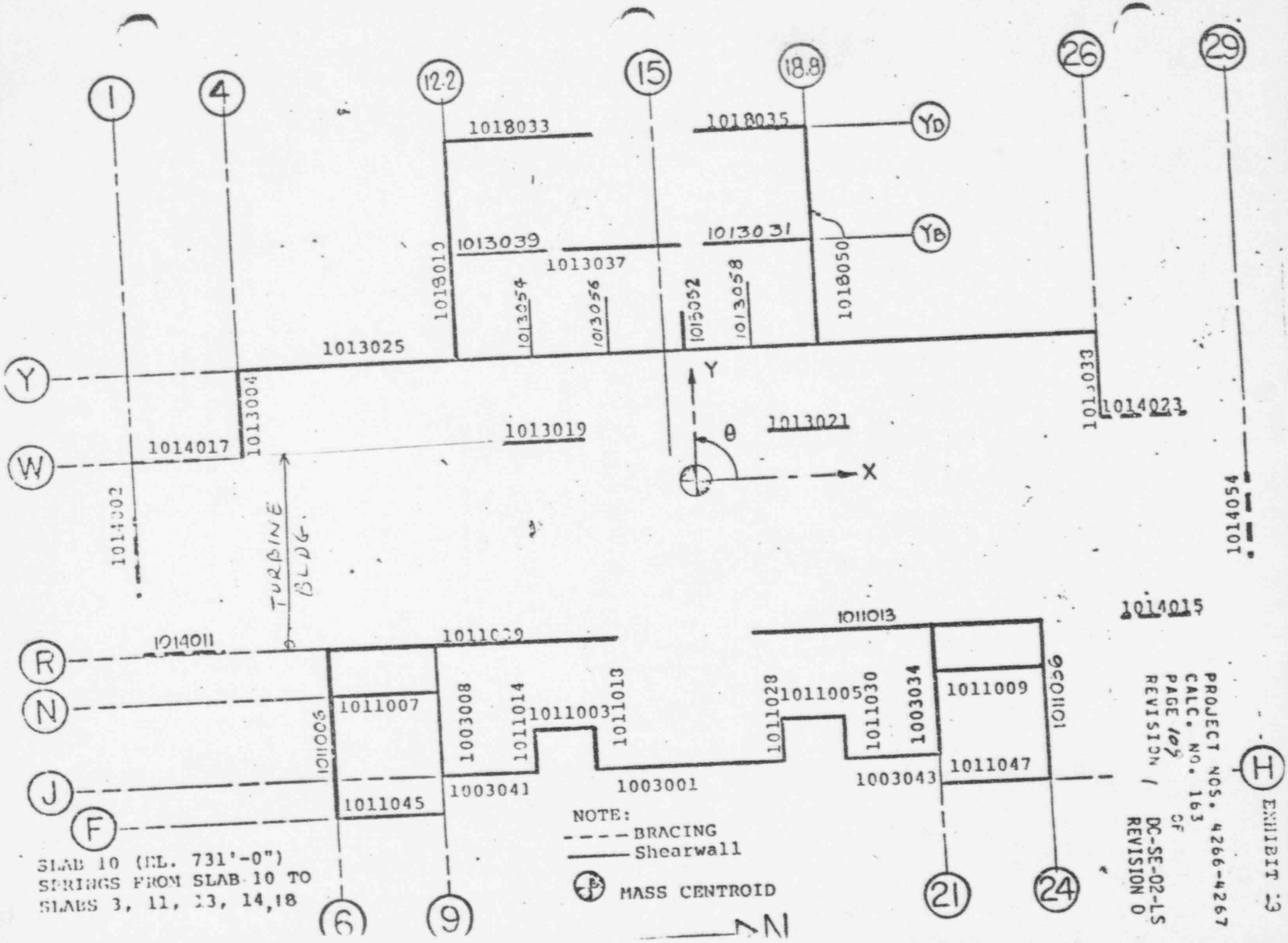
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NOTE:
BRACING
Shearwall
MASS CENTROID
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SLAB 10 (EL. 731'-0")
SPRINGS FROM SLAB 10 TO
SLABS 3, 11, 13, 14, 18
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REVISION 0
EXHIBIT 13

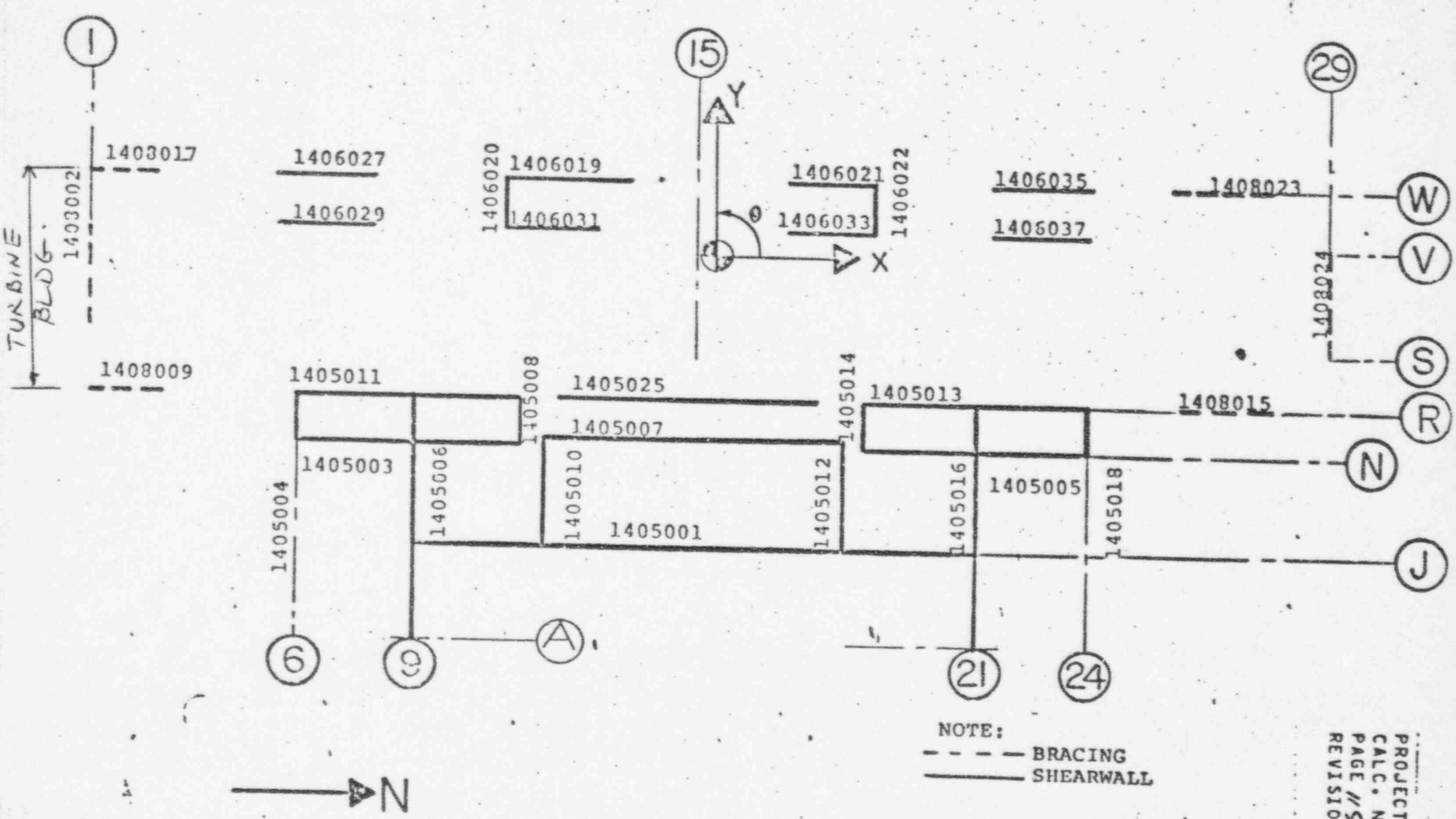

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EXHIBIT 31

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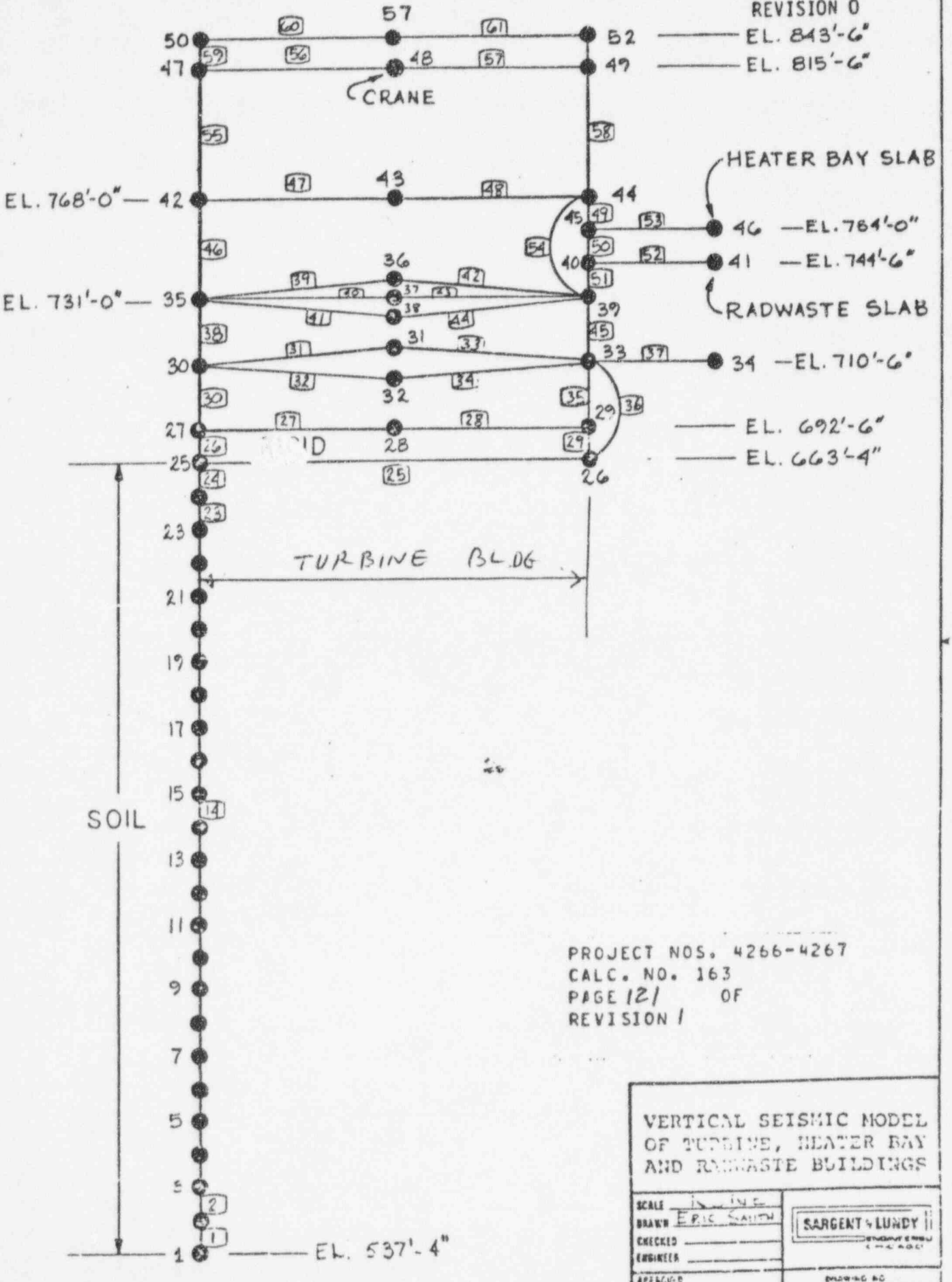

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VERTICAL SEISMIC MODEL OF TURBINE, HEATER BAY AND RADWASTE BUILDINGS

SCALE 1" = 1'-0"
DRAWN ERIC SMITH
CHECKED
ENGINEER
APPROVED
JOB NO.

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO.