CHET

GE Nuclear Energy

ABWR

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Date 5/1/92

To Butch Burton

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This page plus 2 page(s)

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Subject Info on HECW system

Message the attached sheets provide the info you requested today. These two sheets replace the ones sent to you by Fax on 4/29/92.

(3) The system shall be designed and constructed in accordance with Seismic Category I, ASME code, Section III, Class 3 requirements.

(4) The system shall be powered from Class 1E buses.

(5) The HECW system shall be protected from missiles in accordance with Subsection 3.5.1.

(6) Design features to preclude the adverse effects of water hammer are in accordance with the SRP section addressing the resolution of USI A-1 discussed in NUREG-0927.

These features shall include:

(a) an elevated surge tank to keep the system filled;

(b) vents provided at all high points in the system;

(c) after any system drainage, venting is assured by personnel training and procedures; and

(d) system valves are slow acting.

(7) The HECW system shall be protected from failures of high and medium energy lines as discussed in Section 3.6.

9.2.13.2 System Description

The HVAC emergency cooling water system consists of ~~redundant~~ subsystems in three divisions. ~~Each division consists of~~ two 50% ~~chiller~~ units, two 50% pumps, instrumentation and distribution piping and valves to corresponding cooling coils. A chemical addition tank is shared by all HECW divisions. Each HECW division shares a surge tank with the corresponding division of the RCW system. The ~~chiller~~ capacity is designed to cool ~~all heat loads with two chillers, but also cool the heat load of the main control room with one chiller.~~

(AA) → Equipment is listed in Table 9.2-9. Each cooling coil has a three-way valve controlled by a room thermostat. Alternately, flow may be controlled by a temperature control valve. ~~The subsystems are designed Division I and Division II power, respectively. One compresser is the operating unit, while the other is on standby.~~ Condenser cooling is from the corresponding division of RCW.

Piping and valves for the HECW system, as well as the cooling water lines from the RCW system, designed entirely to ASME Code, Section III, Class 3, Quality Group C, Quality Assurance B requirements. The extent of this classification is up to and including drainage block valves. There are no primary or secondary containment penetrations within the system. The HECW system is not expected to contain radioactivity.

High temperature of the returned cooling water causes the standby ~~chiller~~ unit to start automatically. Makeup water is supplied from the MUWP system, at the surge tank. Each surge tank has the capacity to replace system water losses for more than 100 days during an emergency. (A)

9.2.13.3 Safety Evaluation

The HECW system is a Seismic Category I system, protected from flooding and tornado missiles. All components of the system are designed to be operable during a loss of normal power by connection to the ESF buses. Redundant components are provided to ensure that any single component failure does not preclude system operation.** The system is designed to meet the requirements of Criterion 19 of 10CFR50. Each chiller is isolated in a separate room.

9.2.13.4 Tests and Inspection

Initial testing of the system includes performance testing of the ~~chillers~~, pumps and coils for conformance with design capacity water flows and heat transfer capabilities. An integrity test is performed on the system upon completion.

The HECW system is designed to permit periodic in-service inspection of all system components to assure the integrity and capability of the system.

refrigerant
refrigerant
refrigerant
*** in divisions B and C
refrigerator
* Division A has one ~~chiller~~ and pump and divisions' refrigerator
** the diesel generator zone and electrical equipment room

INSERT

(A) The only non-safety-related portions of the HECW divisions are the chemical addition tank and the piping from the tank to the safety related valves which isolate the safety related portions of the system.

(AA) The system is shown in Figure 9.2-3. The refrigerators are located in the control building as shown in Figures 1.2-20 and 1.2-21. This system shares the RCW surge tanks which are in the reactor building as shown in Figure 1.2-12.

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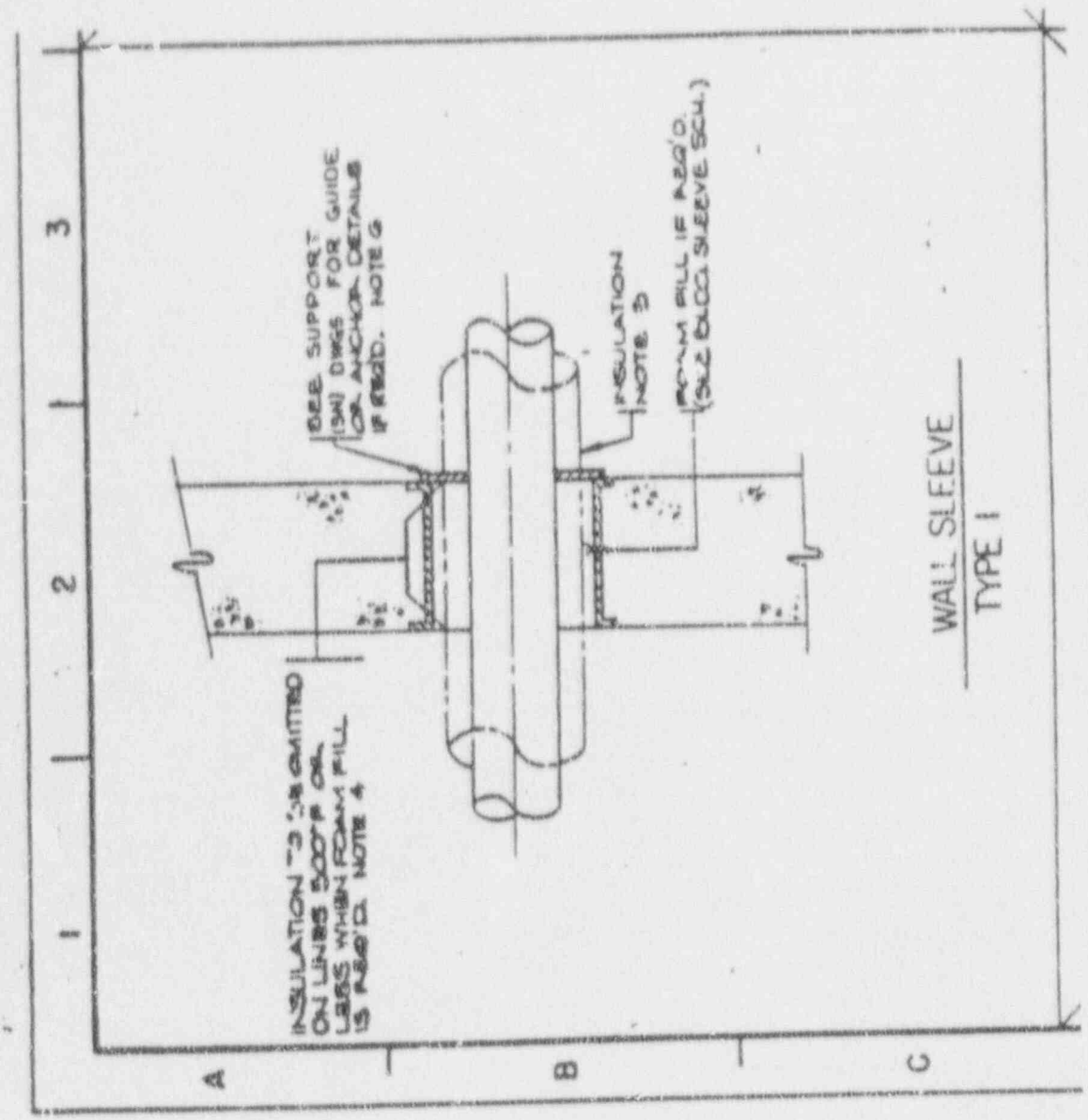

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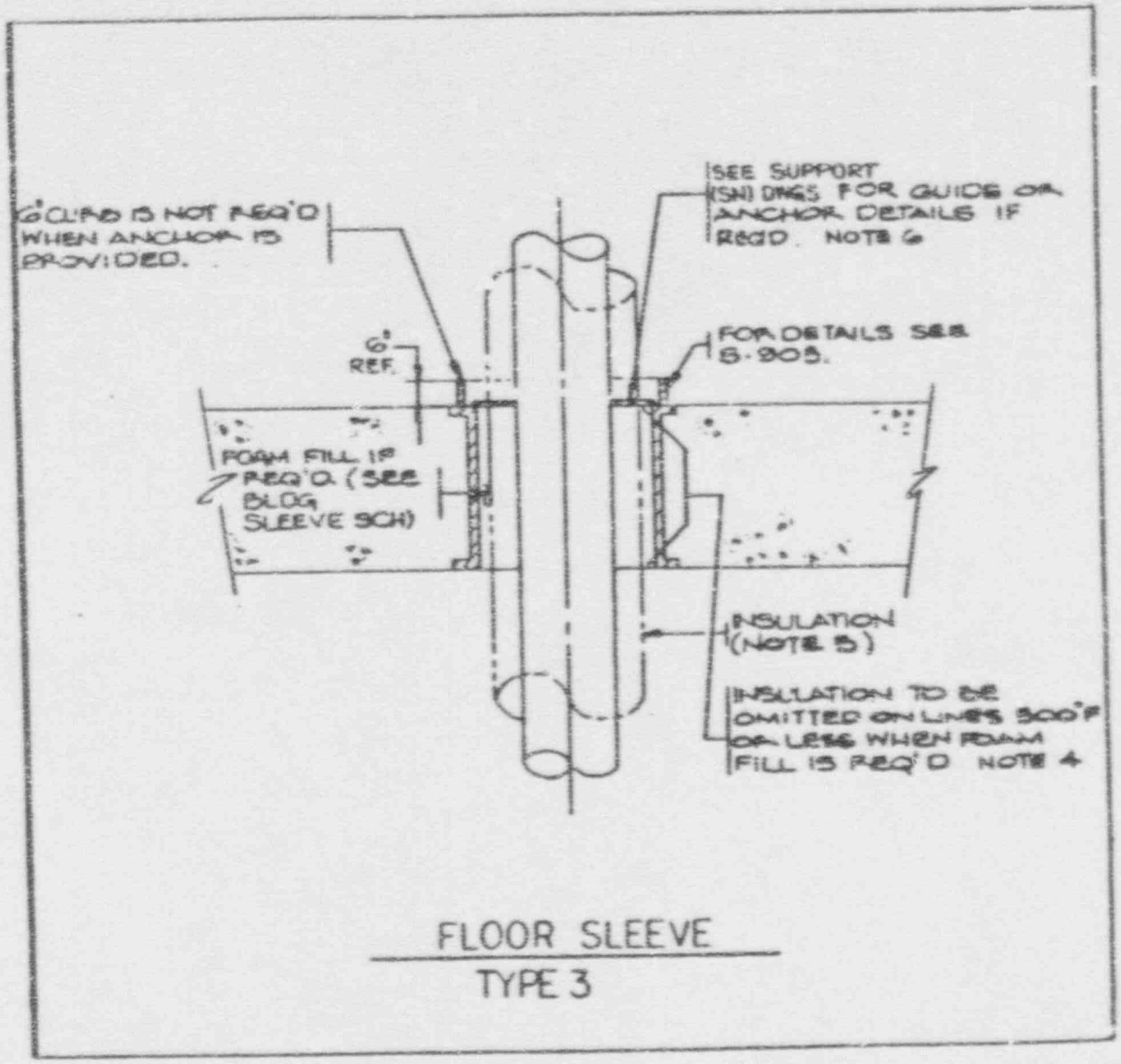
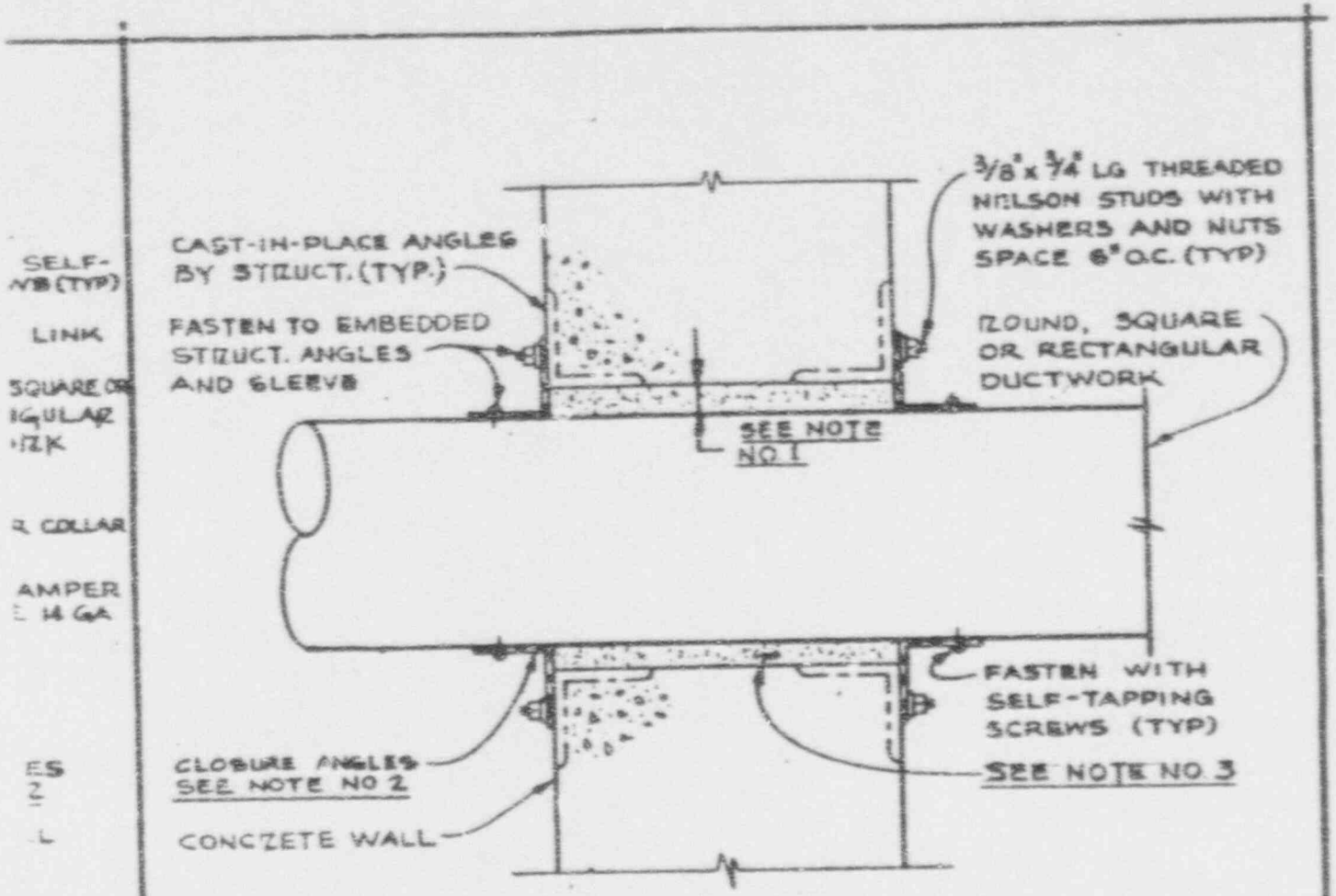
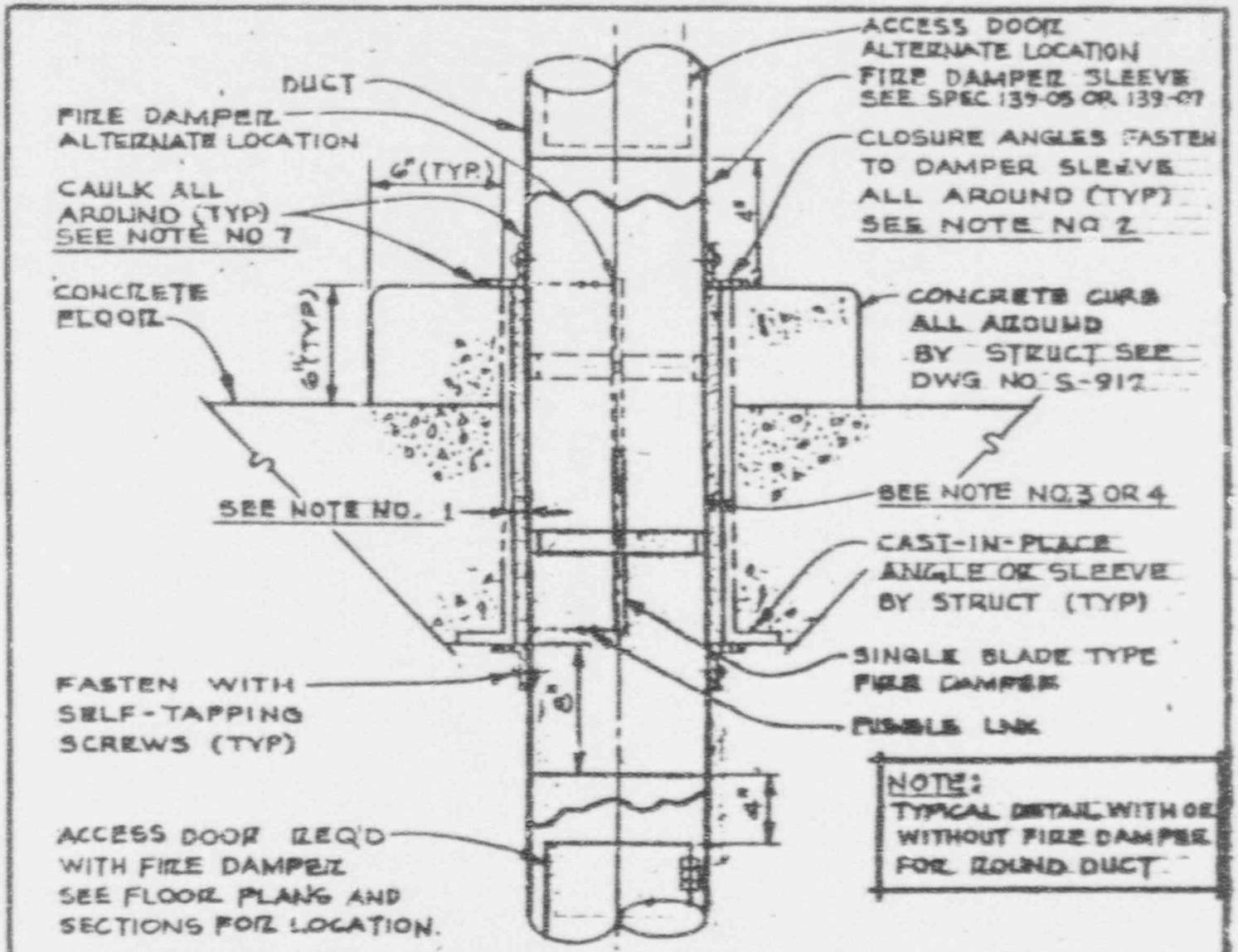


FLOOR SLEEVE

TYPE 3



HVAC DUCT THRU CONCRETE WALL



HVAC DAMPER SLEEVE THRU FLOOR W/ OR W/O FIRE DAMPER

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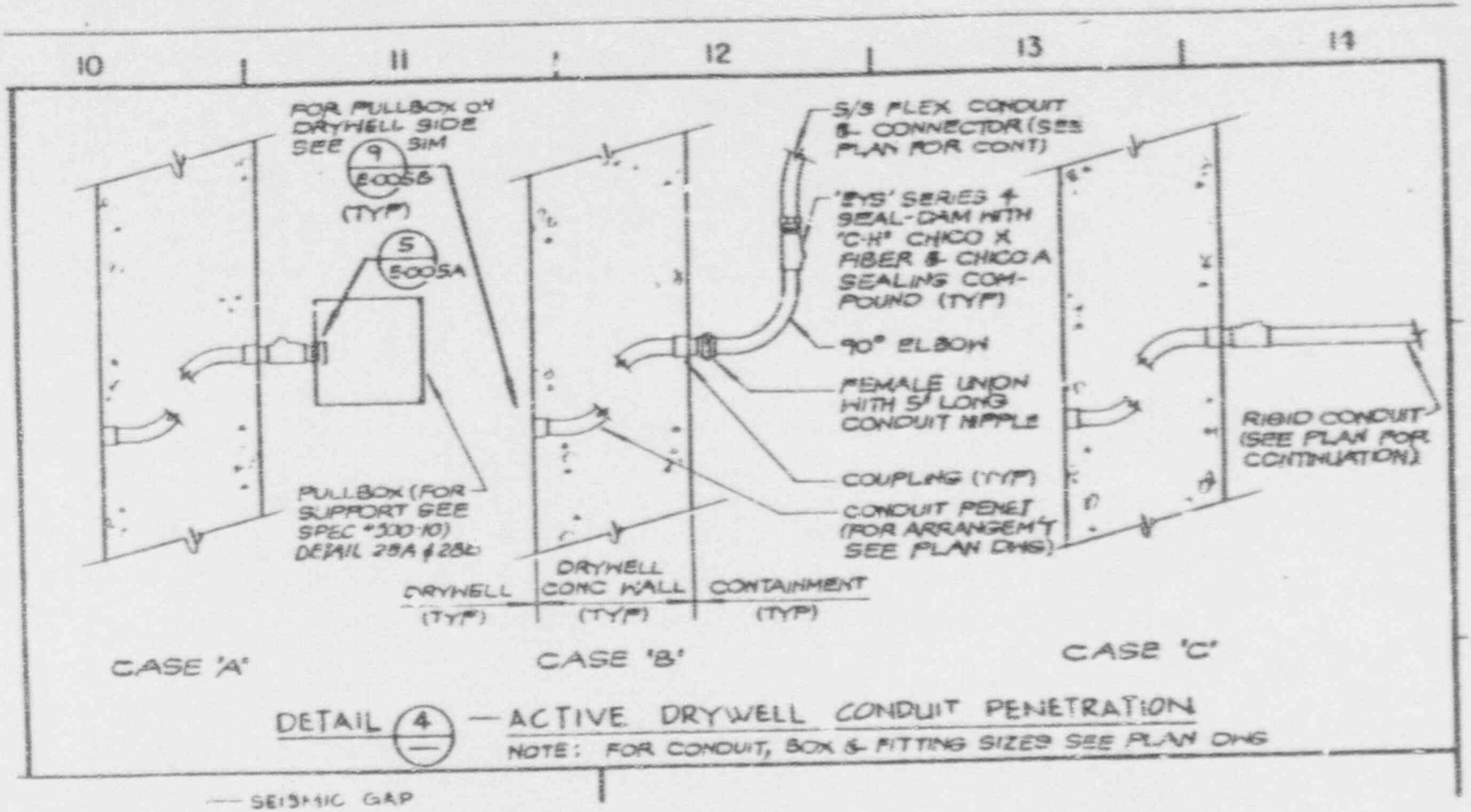
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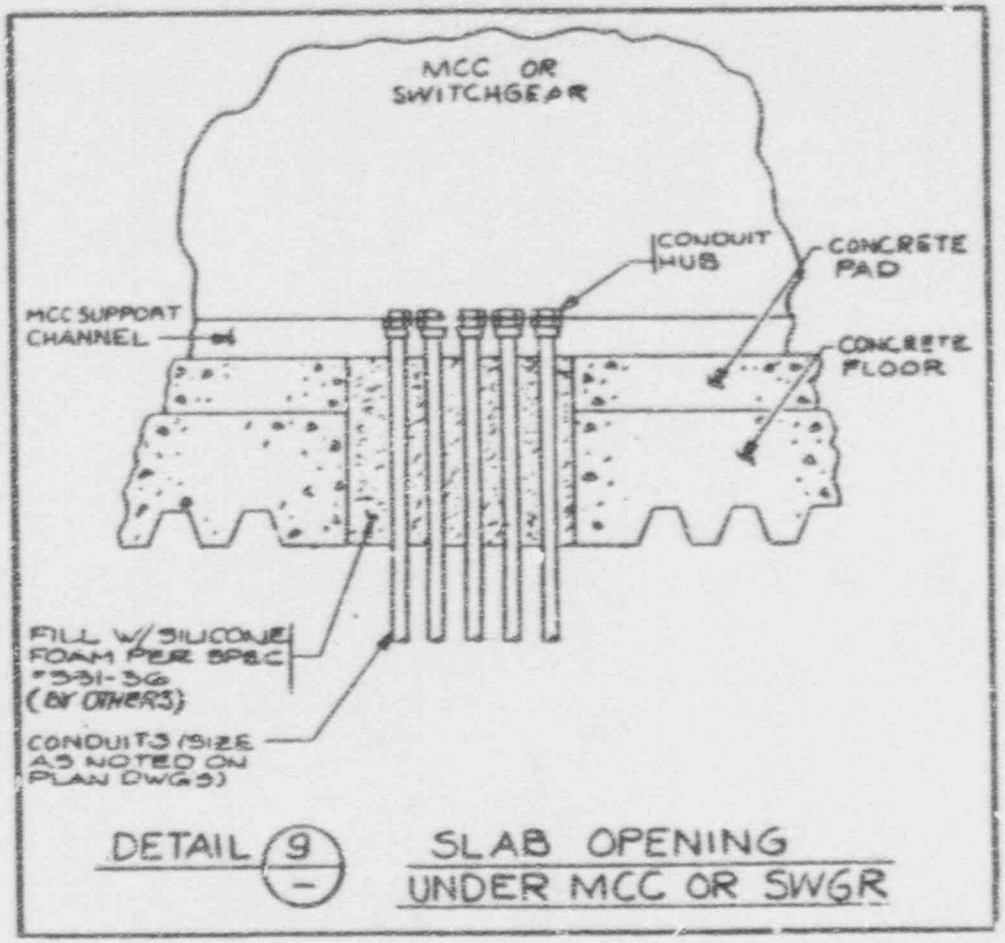
12
13
14
FOR PULLBOX ON DRYWELL SIDE SEE 9 E005B 3IM (TYP)
5 E005A
PULLBOX (FOR SUPPORT SEE SPEC #300-10) DETAIL 28A & 28B
S/S FLEX CONDUIT & CONNECTOR (SEE PLAN FOR CONT)
'EYS' SERIES 4 SEAL-DAM WITH 'C-K' CHICO X FIBER & CHICO A SEALING COMPOUND (TYP)
90° ELBOW
FEMALE UNION WITH 5' LONG CONDUIT NIPPLE
COUPLING (TYP)
CONDUIT PENET (FOR ARRANGEMENT SEE PLAN DWG)
RIGID CONDUIT (SEE PLAN FOR CONTINUATION)
DRYWELL (TYP)
DRYWELL CONC WALL (TYP)
CONTAINMENT (TYP)
CASE 'A'
CASE 'B'
CASE 'C'
DETAIL 4/— ACTIVE DRYWELL CONDUIT PENETRATION
NOTE: FOR CONDUIT, BOX & FITTING SIZES SEE PLAN DWG
— SEISMIC GAP



DETAIL 9/- SLAB OPENING UNDER MCC OR SWGR