Consumers Power Company

Stephen H. Howell
Vice President

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August 4, 1978
Howe-136-78

Mr J G Keppler, Regional Director
Office of Inspection & Enforcement
Region III
US Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND NUCLEAR PLANT -
UNIT NO. 1, DOCKET NO. 50-329
UNIT NO. 2, DOCKET NO. 50-330
SEISMIC CABLE TRAY SUPPORTS

Reference: 1) Letter, S H Howell to J G Keppler, Midland Nuclear Plant - Unit No 1, Docket No 50-329; Unit No 2, Docket No 50-330; Seismic Cable Tray Supports, Serial Howe-75-78, dated May 12, 1978.

2) Letter, S H Howell to J G Keppler, Midland Nuclear Plant - NRC Items of Noncompliance, Inspection Report No 50-329/78-03 and No 50-330/78-03; dated June 7, 1978

3) Letter, S H Howell to J G Keppler, Midland Nuclear Plant - Unit No 1, Docket No 50-329; Unit No 2, Docket No 50-330; Seismic Cable Tray Supports, Serial Howe-107-78, dated June 30, 1978.

The referenced letters were interim 50.55(e) reports as is this letter. Enclosed is Bechtel's final report to MCAR-23. It provides a detailed description of the corrective actions taken and reports that the "as fabricated" conditions do not present a potential detrimental effect to the public safety. The final 50.55(e) report will be sent following approval of the proposed changes to Specification 7220-C-304, which is the only remaining corrective action to be implemented.

Another report, either interim or final, will be sent on or before September 8, 1978.

B. M. Mogg for S. H. Howell

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Enclosure: MCAR-23, Cable Tray Support Construction Welding Discrepancy, Final Report, Revision 1, dated August 3, 1978

CC: Director of Office of Inspection & Enforcement
Att: Mr John G Davis, Acting Director, USNRC (15)

Director Office of Management
Information and Program Control, USNRC (1)

Bechtel Associates Professional Corporation

SUBJECT: MCAR #23 (Issued 4/17/78)

Cable tray support construction welding discrepancy

FINAL REPORT, REVISION 1

DATE: August 3, 1978

PROJECT: Consumers Power Company
Midland Plant Units 1 & 2
Bechtel Job 7220

Introduction

This final report supersedes the final report dated July 24, 1978, and is prepared in response to Midland Project Management Corrective Action Report #23, dated April 17, 1978. Project engineering's dispositions of NCRs 1287, 1306, and 1360 are summarized in this report.

Engineering Evaluation of NCRs 1287 and 1306

NCRs 1287 and 1306 address weld discrepancies in the lower cable spreading room of the auxiliary building. Connections involved are of four types and are shown in Figures 1-4. The discrepancies consisted of oversize, undersize, and weld defects. Engineering's evaluation effort was to examine the adequacy of the actual reported weld size to the specified design load at each connection. The above engineering evaluation led to the conclusion that the project design stress requirements have been met. The welds were inspected in accordance with Section 8.15 of AWS D1.1, Rev 2-77 and the inspection did not reveal any cracks or lack of fusion between the weld metal and base metal. Therefore, there was no adverse effect and the deviations from the AISC code for minimum weld size are found to be acceptable.

Engineering Evaluation of NCR 1360

To evaluate the adequacy of welds in areas other than the lower cable spreading room, project engineering selected at random 50 welded support connections from the installed cable tray supports in the auxiliary building on April 25, 1978. The number of welds to be inspected was

determined on the basis of accepted principles of the theory of probability using a binomial distribution chart for a one-sided (lower) confidence limit. The field quality control group conducted a detailed inspection of the sample connections and forwarded the inspection findings to project engineering for evaluation through NCR 1360.

The maximum undersize noted in the inspected welds was 1/16 inch. Engineering evaluation of these weld connections indicated that the stresses under as-built conditions do not exceed the design stresses.

Specification C-304, Rev 4 permits an oversize of 3/16 inch for the welds under discussion. Nine welds were found to exceed this limit, but the stresses under as-built conditions are well below the design stresses.

Convexity height, rollover, and weld reinforcement can be accepted without limit because these conditions occur at a minimal rate and do not reduce the efficiency of the weld joints in this type of application.

Based on the above evaluation, project engineering concludes that all connections inspected are adequate to meet the desi[illegible] conditions specified. Because all inspected welds are adequate and m[illegible] specified design conditions and based on the sample size used, it can be stated with a 95% level of confidence that at least (but not limited to) 94% of all the weld assemblies meet or exceed the design requirements. Therefore, project engineering concludes that the adequacy of the quality of all the inspected welds is representative of the quality of welds in the uninspected support connections.

NCR 1360 was dispositioned on June 29, 1978.

Corrective Action

The following corrective actions have been taken:

I. The quality control engineers received training on February 13 and April 6, 1978, designed to prevent further problems. Although the session conducted on February 13 preceded issuance of MCAR #23, the subsequent discrepancy reports and nonconformance reports issued since the training session in this area and a review of the quality trend program indicate that the referenced welds were performed prior to the training. The instruction required two training sessions and provided direction in the following topics:

   A. Undersized Fillet Welds

   B. Fillet Welds

      1. Proper use of "fibermetal" fillet gage.
      2. Actual weld coupons were examined which showed known defects and irregularities.
      3. Discussion of tolerances.

   C. AWS D1.1 weld symbols were discussed including their definitions.

II. The weld engineers were directed by Welding Notice 28, dated February 13, 1978, to provide instruction to the craft welders pertinent to this problem. Employing the same rationale used above, it is felt this training also postdates the deficiency.

III. The technical specification has been revised to mitigate further problems. SCN-C-304-8002, issued March 30, 1978, states in part, "Welds shall conform to the visual inspection acceptance criteria of AWS D1.1...Minimum fillet weld sizes shall be per AWS D1.1, Section 8.15.1.6...Maximum underrun for fillet weld lengths shall not exceed 1/4 inch, except for weld end returns, underrun shall not exceed 1/8 inch for each return." This specification change notice originally written to address MCAR #21 is applicable to and clarifies the welding specification for MCAR #23.

IV. A more rigorous application of the QCI instructions has been instituted through training and monitoring by quality control. The stated inspection technique is no longer being modified by applying qualifying judgement and practical experience. QC welding engineers have been directed to perform weld inspections on all hanger field fillet attachment welds in strict accordance with Special Instruction 8 and ACT/TASK 3.1 of PQCI/7220 W-1.000, Rev 3.

Special emphasis is being placed on Special Instruction 8 regarding the definition of (V&M) which states, "Visually examine to detect the apparent worst condition, take a measurement to verify acceptance, and visually compare the other items based on this measurement."

V. The initial placement of hold tags prevented the use of possibly deficient cable tray supports. Training and strict implementation of the inspection procedure should prevent further problems in this area. Nonconformance reports 1287 and 1306, which prompted the issuance of MCAR #23, have both been dispositioned "use as is." All hold tags were removed on May 30, 1978.

VI. Revisions to weld acceptance requirements have been developed to modify inspection criteria for electrical supports in Specification 7220-C-304. These revisions have been submitted for review by Consumers Power Company and will be issued after coordination with them is complete.

Reportability

Project engineering's evaluation indicates that the discrepancies of the weld sizes are reported in NCRs 1287, 1306, and 1360 do not present a potential detrimental effect to the public safety and are not a reportable condition within the requirements of the Nuclear Quality Assurance Manual, Section V, Number 10.

Prepared by: V. Valentinuzzi

Reviewed by: G. W. Krewson

Approved by: D. C. Castleberry

Concurrence by: Karl Wieduwilt

VL/jp

JOB 72.5
MCAR NO 23

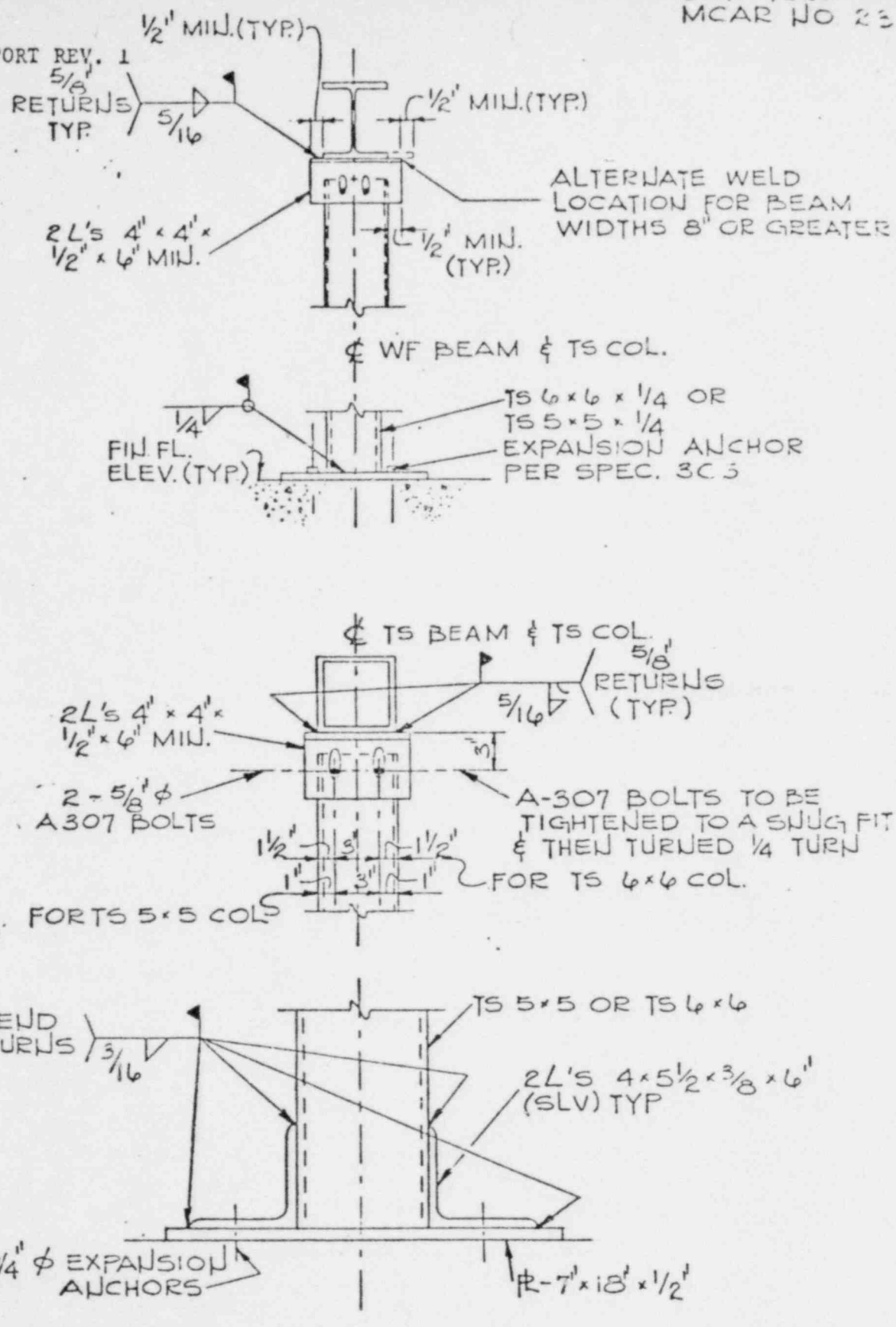
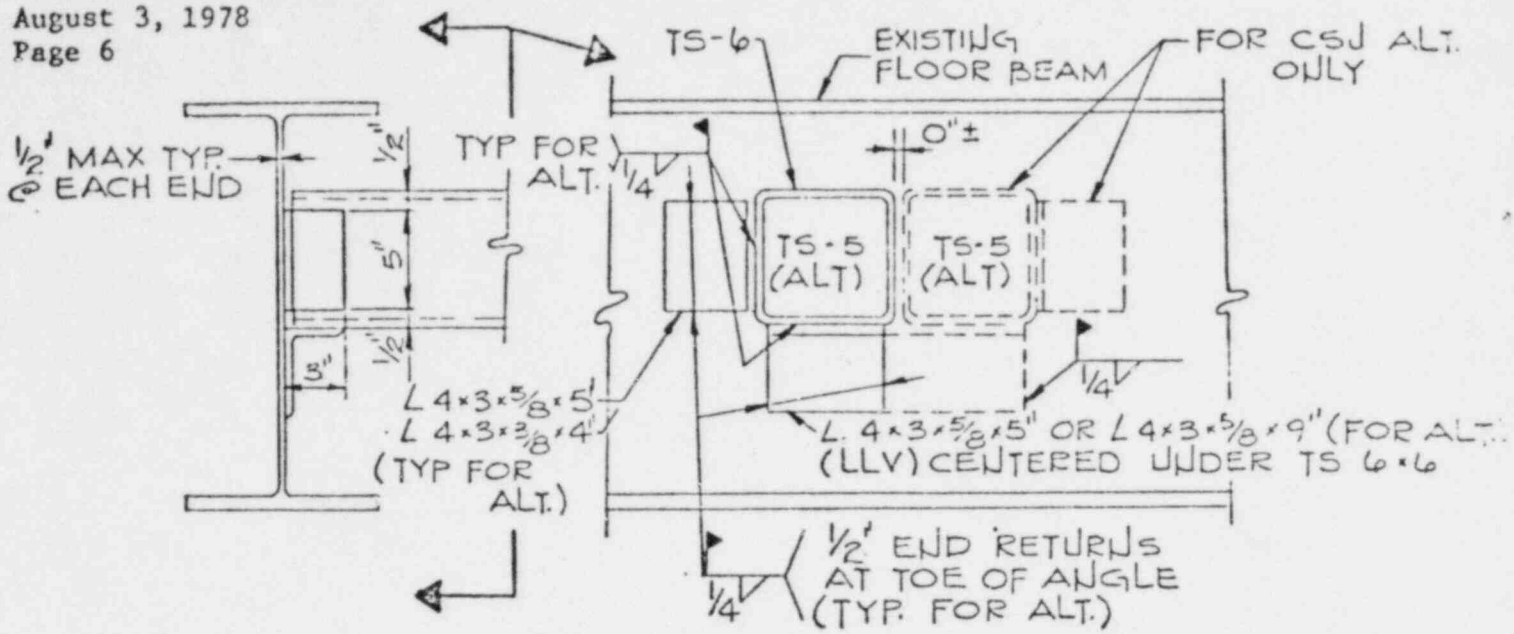


FIG 1 TYPICAL UPPER & LOWER SUPPORT COLUMN CONNECTION



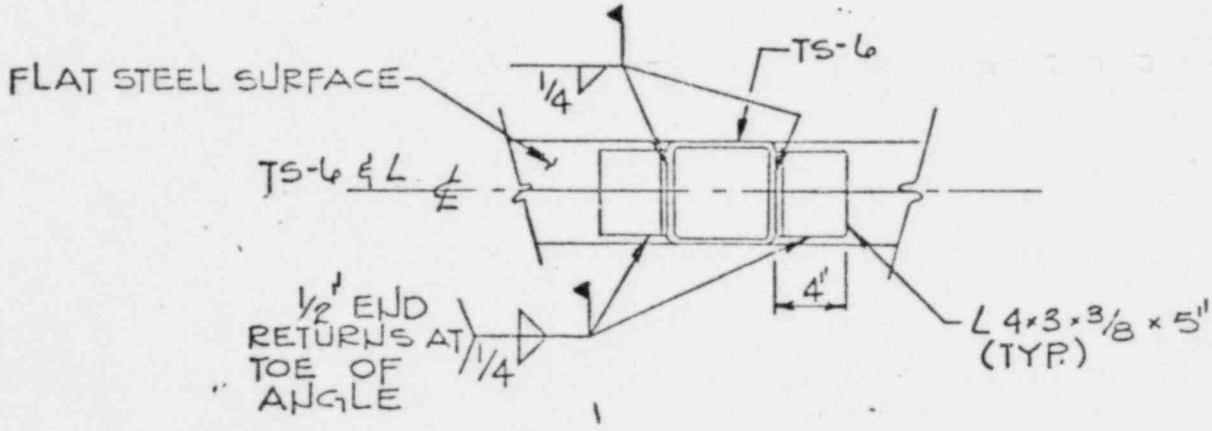


FIG. 2 TYPICAL CROSSOVER BEAM CONNECTION

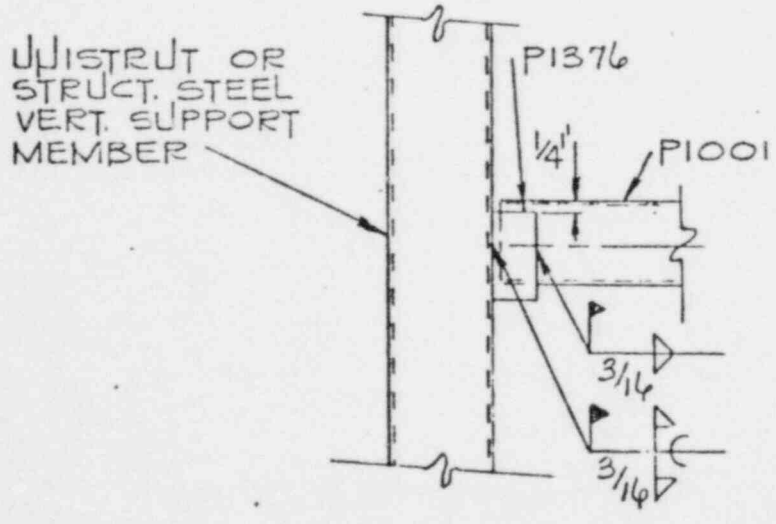


FIG. 3 TYPICAL HORIZONTAL TO VERTICAL STRUCT. MEMBER CONNECTION

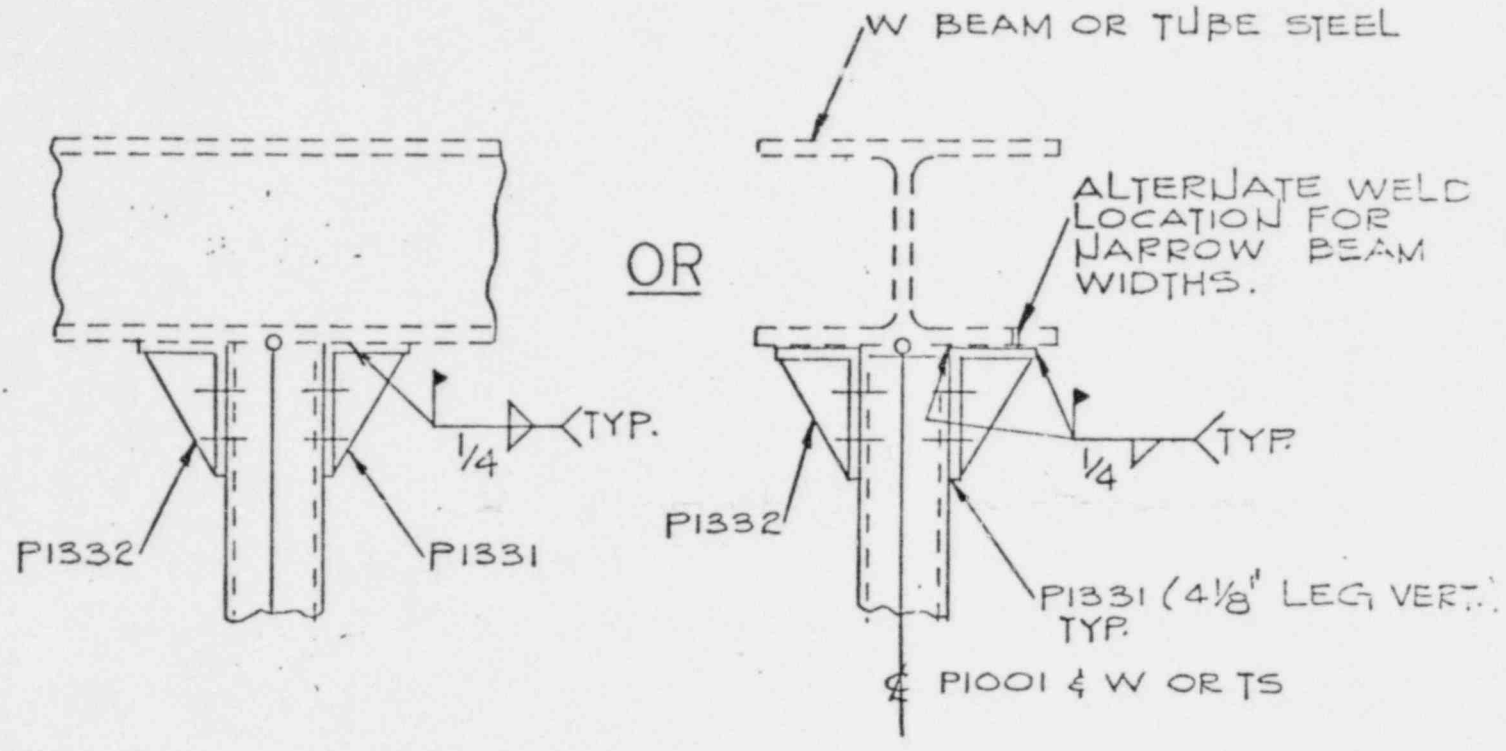


FIG. 4 TYPICAL VERTICAL HANGER CONNECTION

C 8/11/78

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SUBJECT:
FORWARDING BECHTEL"S FINAL CONSTRUCTION DEFICIENCY REPT TO MCAR-23, CONCERNING DISCREPANCY IN THE CABLE TRAY SUPPORT CONSTRUCTION WELDING...W/ATT DRAWINGS.

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