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Director, Office of Nuclear Reactor Regulation
Attention: J. A. Zwolinski, Chief
Operating Reactors Branch No. 5
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-206
Masonry Wall Test Program
San Onofre Nuclear Generating Station
Unit 1

On September 5 and 6, 1984, SCE met with the NRC to discuss the results of the masonry wall test program for San Onofre Unit 1. During that meeting the NRC Staff requested additional information regarding the Unit 1 masonry walls. The requested information is provided as an enclosure to this letter.

If you have any questions regarding this information, please call me.

Very truly yours,

M. O. Medford

Enclosure

A001
1/1

ENCLOSURE

Item

The NRC asked an for assessment of the significance of the roof loads on the masonry walls in the Reactor Auxiliary and Ventilation Equipment Buildings.

Response

Ventilation Equipment Building

In the Ventilation Equipment Building the roof is relatively light metal decking and is carried by the masonry walls. The maximum load from the roof is estimated at 110 lb per foot of wall. This weight represents approximately 8% of the weight of the wall itself.

The Ventilation Equipment and Fuel Storage Building walls were represented by Test Panel Type 1 because they had identical heights and reinforcing ratios. The Fuel Storage Building walls did not carry any roof load but had significantly larger input motions than the Ventilation Equipment Building (by a factor of almost 2). In our judgement, the much higher input was a far more significant factor than the effect of the 8% added load from the Ventilation Equipment Building roof. Consequently, the Fuel Storage Building walls were selected to represent the "worst case" of these walls for the test program. The test walls represent very much an upper bound on the Ventilation Equipment Building wall response even if the roof load is included.

Reactor Auxiliary Building

This building has gravel surfacing and insulation over a metal deck roof. The maximum load carried by any masonry wall would be approximately 220 lb. per foot about 23% of the weight of the wall itself.

Until cracking occurs, the effects of this added load would be beneficial in that the bending tensile stress would have to overcome the compressive stress caused by the dead loads in addition to the tensile strength of the mortar before the wall could crack. In fact, this wall, represented by Test Panel Type 2, did not crack in the large amplitude test. Therefore, the effects of any added load would in fact delay the onset of cracking to an even larger motion than the DBE level used for the test program.

Item

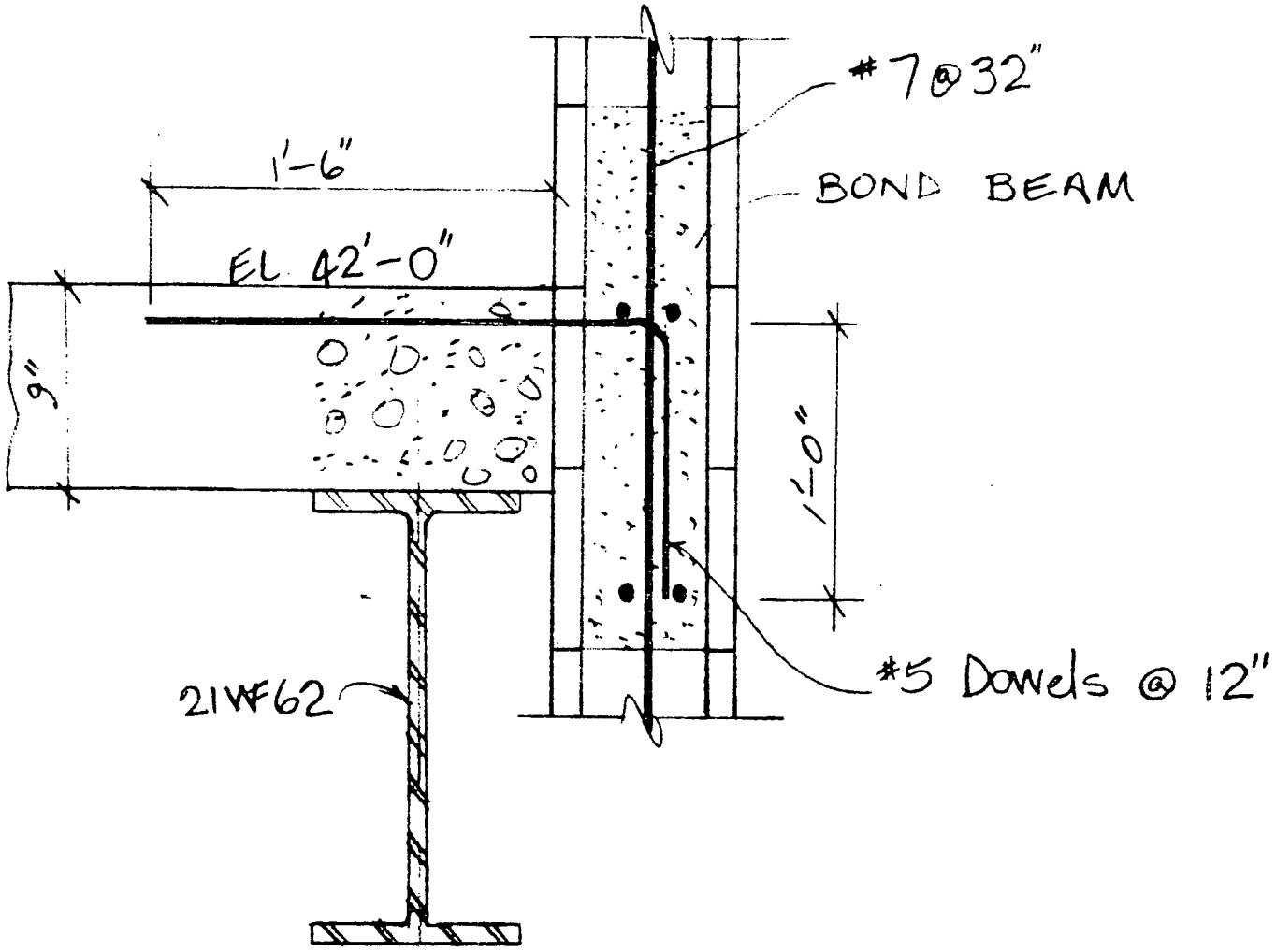
The NRC asked for an assessment of the effects of the connection of the 480V Switchgear Room walls in the Fuel Storage Building on the test program and the wall evaluation.

Response

Around the switchgear room the masonry walls have a total height of 52 feet, from Elevation 14'-0" to the roof at Elevation 66'-0". These walls are structurally connected to the steel members of the floor at Elevation 31'0" and the concrete slab at Elevation 42'-0". This provides a 3 span continuous wall with span heights (from the base) of 17 feet, 11 feet and 24 feet. The uppermost span was that selected for testing both because it was the largest span and also because it had the highest level of input motion.

The connection at the base of this span (Elevation 42'-0") is as shown on the attached sketch. The vertical reinforcing (#7 @ 32") is continuous past the diaphragm and the wall is dowelled into the slab by #5 dowels at 12" centers. This is in fact a "better" connection than that used in the test walls, which was based on the condition of the majority of the Fuel Storage Building masonry walls which are supported on the Fuel Pool concrete slab at Elevaton 42'-0". These latter masonry walls had #5 dowels at 16" o.c. rather than continuous reinforcing and #5 dowels at 12" centers tied to the concrete slab. Therefore, the continuous walls are likely to have better moment capacity where they are continuous than the dowelled test specimens.

For the wall evaluation it was assumed that a plastic hinge could develop at Elevations 42'-0" and 31'-0" based on the continuity of the rebar. The maximum reaction loads from the analysis were used to assess the adequacy of the dowels and connections at these levels. This assessment was included in the results of the evaluation.



SONGS-1 FUEL STORAGE BLDG.

DETAIL AT EL 42'-0"

(DWG 56B140)

Item

The NRC requested that assurance be provided that the masonry walls at San Onofre Unit 1 were constructed in accordance with the specifications and are therefore representative of the test walls.

Response

The requested information is provided in the attached report.

JLR:2593F