



FERMILAB
ENGINEERING NOTE

SECTION

A

PROJECT

E-831

SERIAL-CATEGORY

PAGE

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SUBJECT

NAME

PETER DEVERE

DATE

SEPT. 12, 1995

REVISION DATE

NUMBER: MSD - 009 - E 831 **DATE:** September 11, 1995

TITLE: Anchorage of Cantilevered Detector Support-Structure on top of μ -Filter Steel.

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REVIEWER:  9-4-95

KEY WORDS: Steel-Cantilevered Support Structure; Aluminum Beams & Extrusions

ABSTRACT / SUMMARY:

Presents two methods of anchoring the steel-cantilevered support structure to the top of the μ -Filter steel; Welding and Anchor-Bolting. A detailed procedure for welding and NDE is included in this Engineering Note.



SUBJECT

NAME

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DATE

10-09-95

REVISION DATE

Problem Statement

This Engineering Note addresses the load carrying capacity of the Scintillator Support Structure ; anchored to the top of μ -filter steel in the Wide-Band Laboratory.

This investigation uses 2400. lbs for the weight of one "future Scintillator." The maximum design loading uses seven, 2400. pound "future Scintillators" supported from the upstream cantilever shown in Sketch No.1. Two anchoring methods are presented for retrofiting; welding and anchor-bolting.

A disparity exists between fabrication drawing 922.687-ME-202540, Sheet 3 of 3, dtd. 06-13-85 and the actual method used to anchor the cantilever support structure to the μ -filter steel . Figures No. 1,2, 3 & 4 show 1/4 inch shim-plates between the μ -filter and the bottom-1/2 inch plate; these shims are not indicated on the referenced drawings. The welds which fasten the μ -filter steel, shim plates and bottom-1/2 inch plate cannot be measured; therefore the tension and shear capacity of these welds is indeterminate. The bolts used to fasten the top and bottom plates shown in drawing 922.687-ME-202540 are not identified as required by Technical Memo 1664, dtd. 1990. Thus, the tension load capacity of the tension anchorage is also indeterminate. Figure No. 5 shows the arrangement of two bolts at the tension anchorage of the cantilever support structure.

EN009



Fig. 1
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Fig. 2
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Fig. 3
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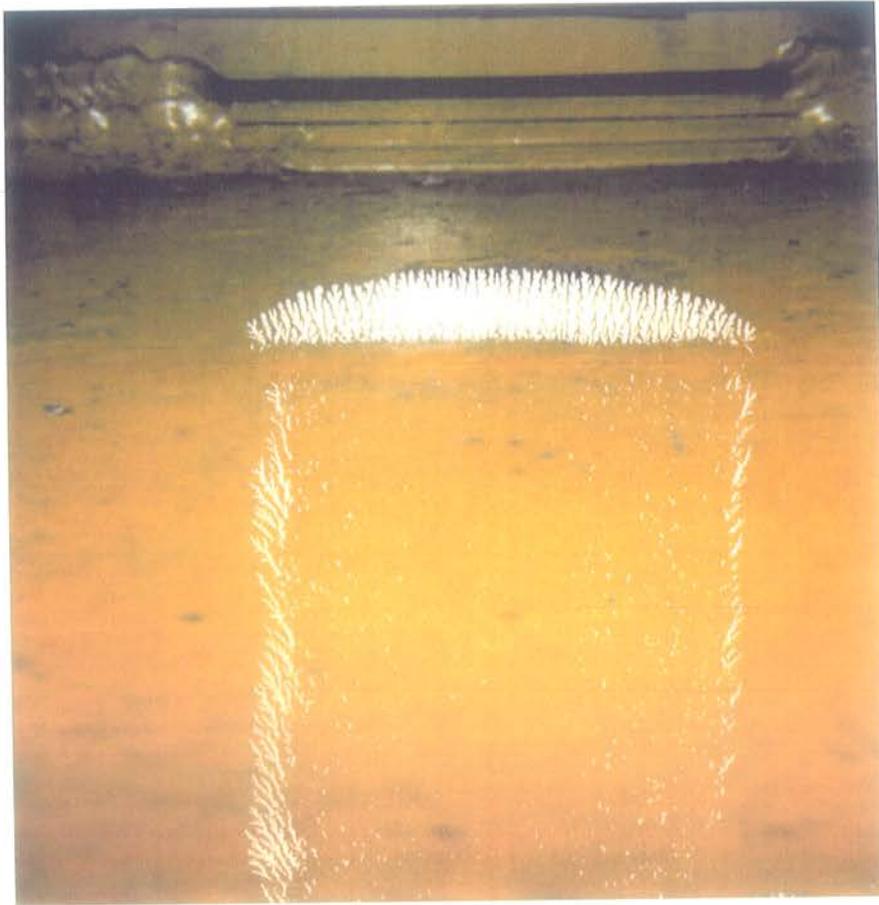


Fig. 4
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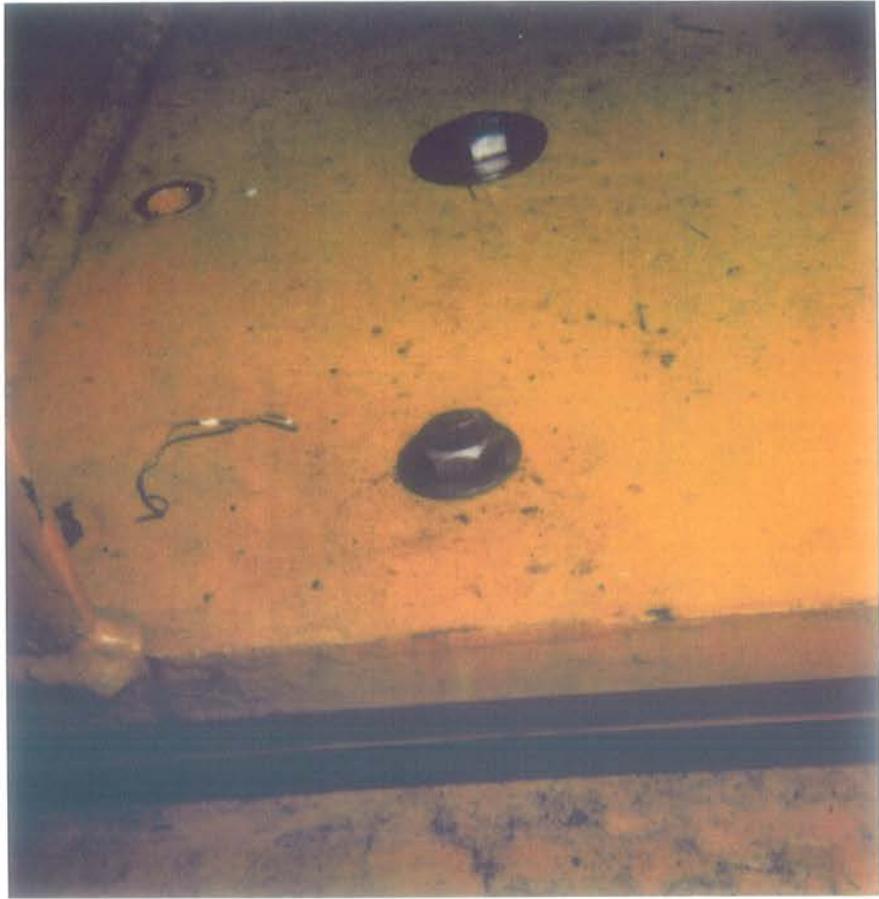


Fig. 6
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19'-0" REF.

20'-6"

W12 (TYP.)

5'-0"

68"

48"

9'-6"

11'-7"

A

4'-0"

DETAIL No 1

78"

90"

BEAM

⌀

62"

39"

45"

23"

6"

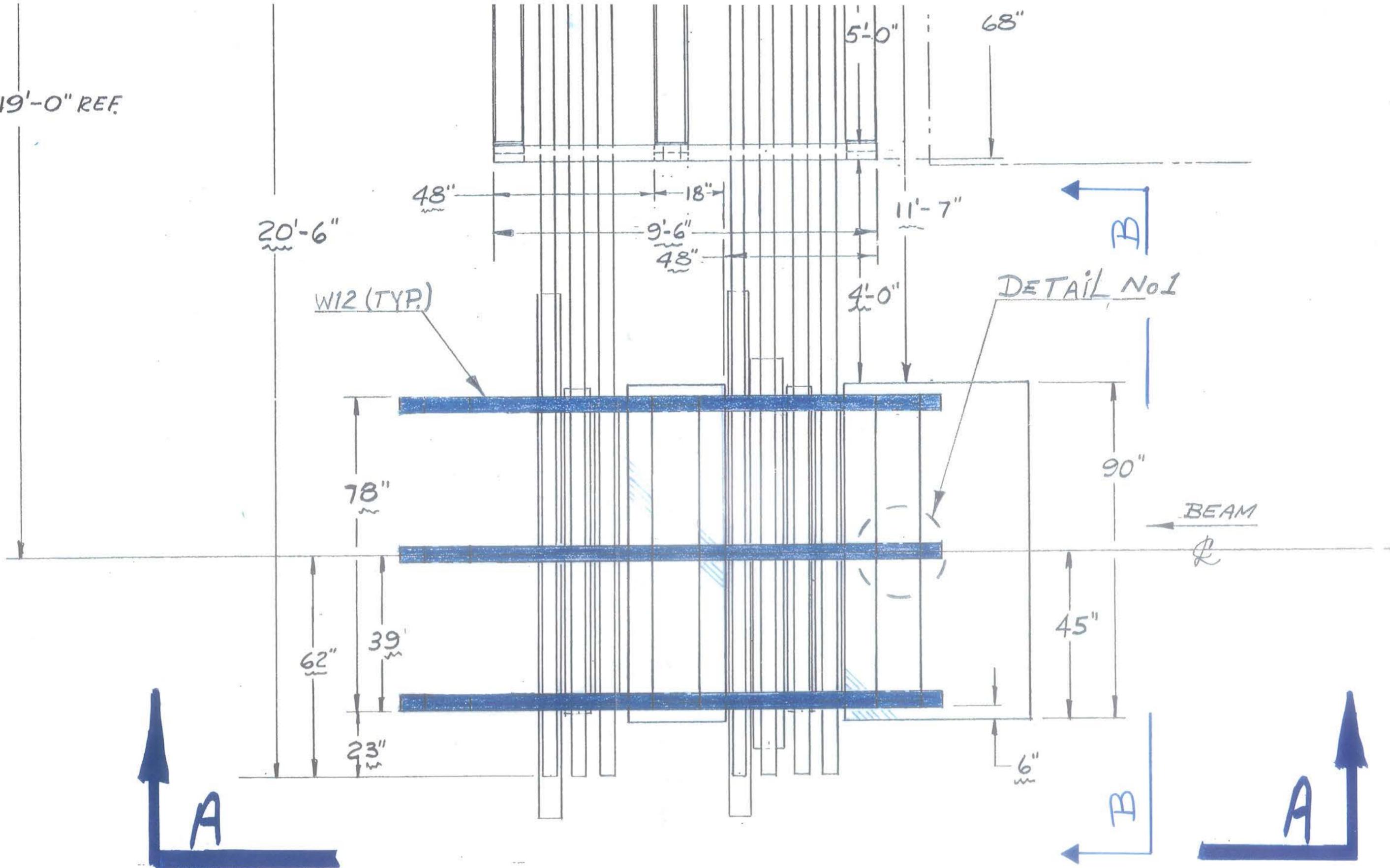
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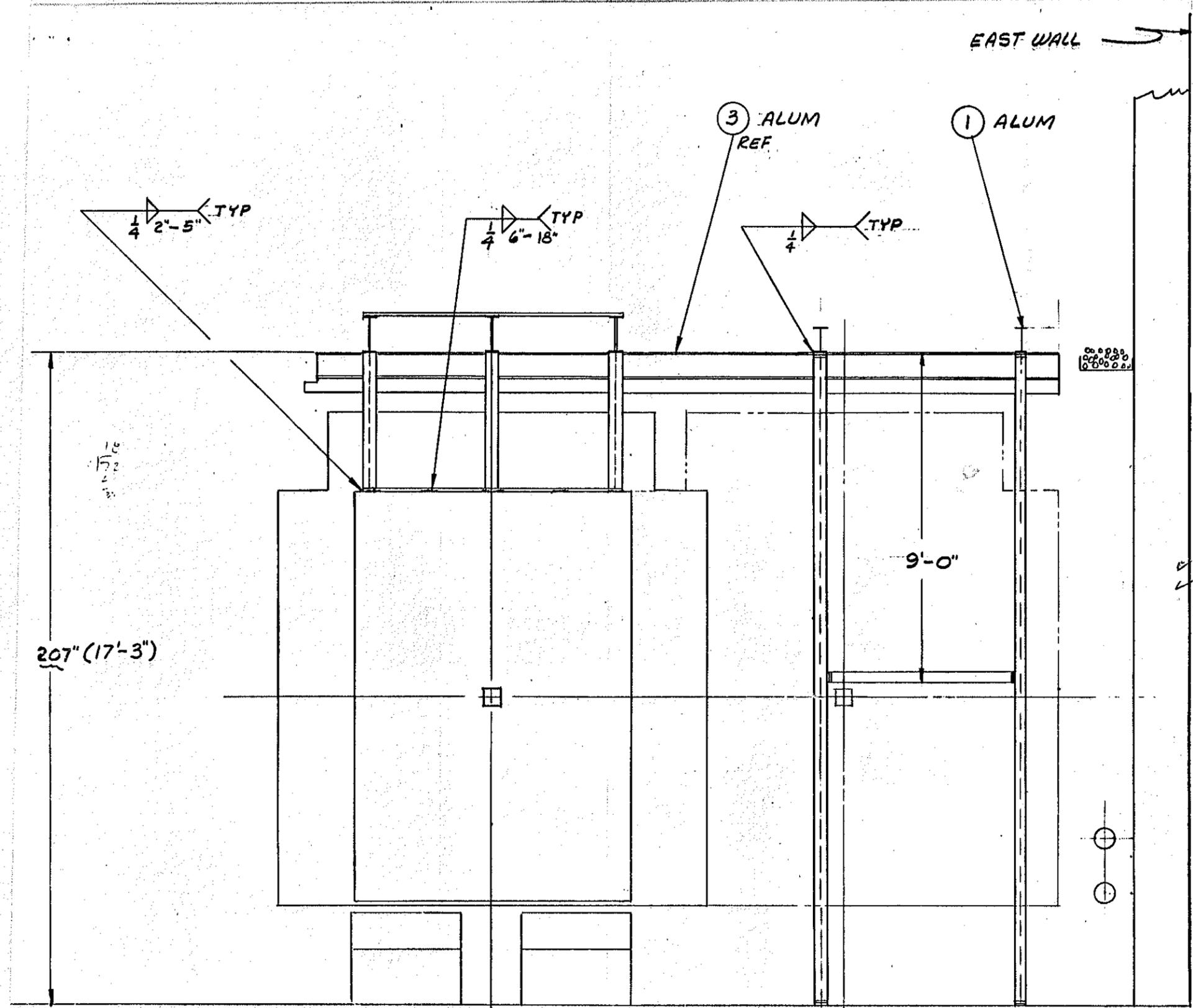
B

A

PLAN VIEW

Fig 6
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SEC. B-B

Fig. 6 SECBB
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