



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **ACTION:** Requesting Review and Concurrence with,
Associated Equivalent Level of Safety (ELOS) Finding,
SJ30-2 FAR 23.783(f)(1); ACE-98-3
From: **Manager, Airplane Certification Office, ASW-150**

Date: **October 15, 1998**

Reply to **Bob D. May,**
Attn. of: **x5156**

To: **Manager, Small Airplane Directorate,
Aircraft Certification Service, ACE-100**

This memorandum requests your office review and provide concurrence to the proposed finding of equivalent level of safety to the door requirement of Federal Aviation Regulation (FAR) 23.783(f)(1).

Background:

The SJ30-2 is a pressurized twin engine commuter category airplane, of all metal construction, with seating for seven occupants, including the pilot. It is powered by Williams-Rolls FJ44-2A fan-jet engines. The emergency exits are located on either side of the fuselage.

A design review of the SJ30-2 main cabin door revealed that the cabin door opening did not meet the requirements of Section 23.783(f)(1) in regard to the opening height of 48 inches. The SJ30-2 door opening height is 46.75 inches.

Applicable Regulations:

The applicable Federal Aviation Regulation (FAR) paragraph states:

Section 23.783 ****

(f) ****

(1) Each passenger entry door must qualify as a floor level emergency exit. This exit must have a rectangular opening of not less than 24 inches wide by 48 inches high, with corner radii not greater than one-third the width of the exit.

Applicant's Position:

The SJ30-2 main cabin door is defined by attached sketches one through four. The opening is 46.75 inches high and 32 inches wide with a corner radius of three inches. The eight inch increase in width and small corner radius provides an opening that is 36% greater in area than what is required by FAR § 23.783(f)(1). A comparison of door size and cabin diameters is shown for several other commuter airplanes (in

attachments A and A-1), that have greater seating capacity than the SJ30-2. The comparison is made to show that a larger door is impractical for the small diameter fuselage of the SJ30-2.

FAA Position:

Alternatives for compliance to the airworthiness standards are permitted by an equivalent level of safety. In a review of the FAR § 23.807 policy file it has become evident that equivalent level of safety findings are only considered if the exit meets the logical limits which correspond to the standard exit; that is, the total open area is equal to or greater than the open area corresponding to the requirements of the rule. In addition, the most critical dimension of width is not less than 24 inches (in the case of the SJ30-2).

Compensating Features:

The compensating features include, an entry level passenger door that qualifies as a floor level emergency exit that is 46.75 inches high and 32 inches wide with a corner radius of three inches. Due to the increase in width of eight inches over that which is required by the rule, the SJ30-2 entry passenger door will provide an opening that is 36% greater in area than the area that would be required in accordance with FAR § 23.783(f)(1).

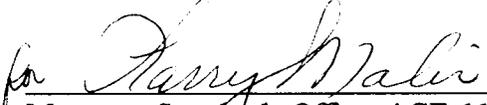
Recommendation:

We concur that the Sino Swearingen Aircraft Company proposed compensating features provide an equivalent level of safety as envisioned in the regulations and thus meets the requirements of paragraph § 23.783(f)(1) of the FAR.

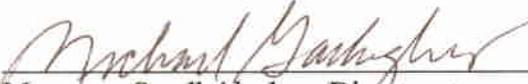


Manager, Airplane Certification Office, ASW-150

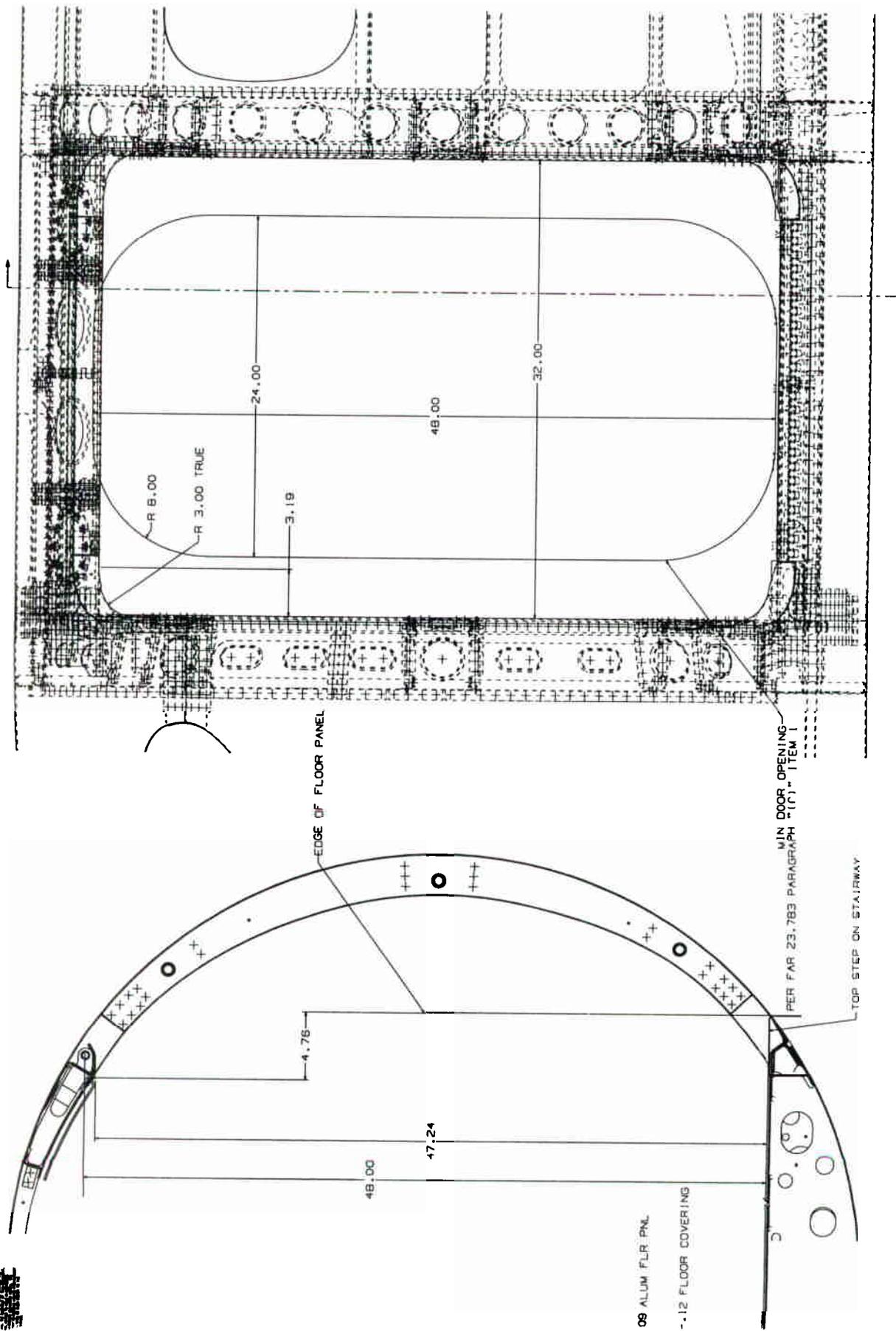
Concurrence:



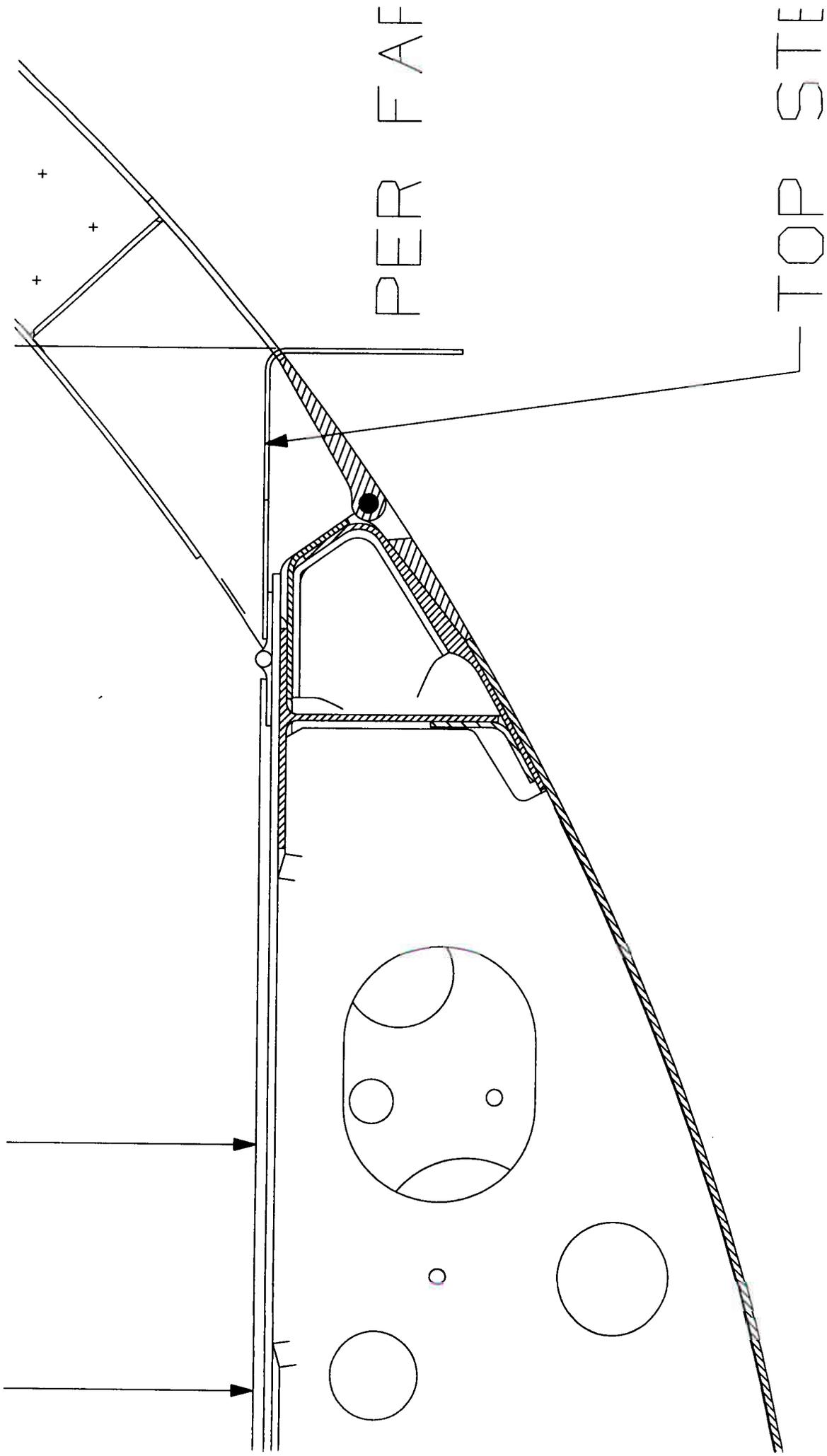
Manager, Standards Office, ACE-110



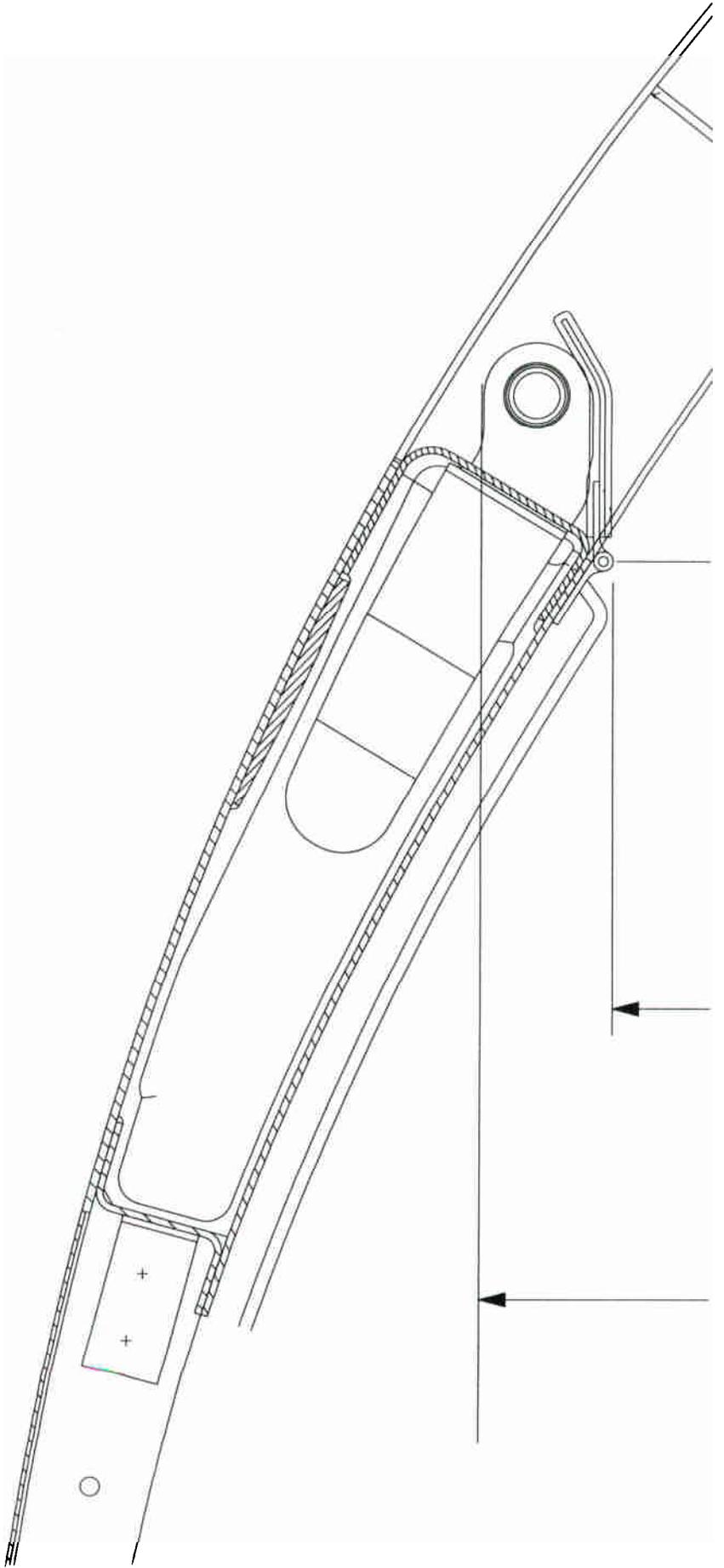
Manager, Small Airplane Directorate,
Aircraft Certification Service, ACE-100



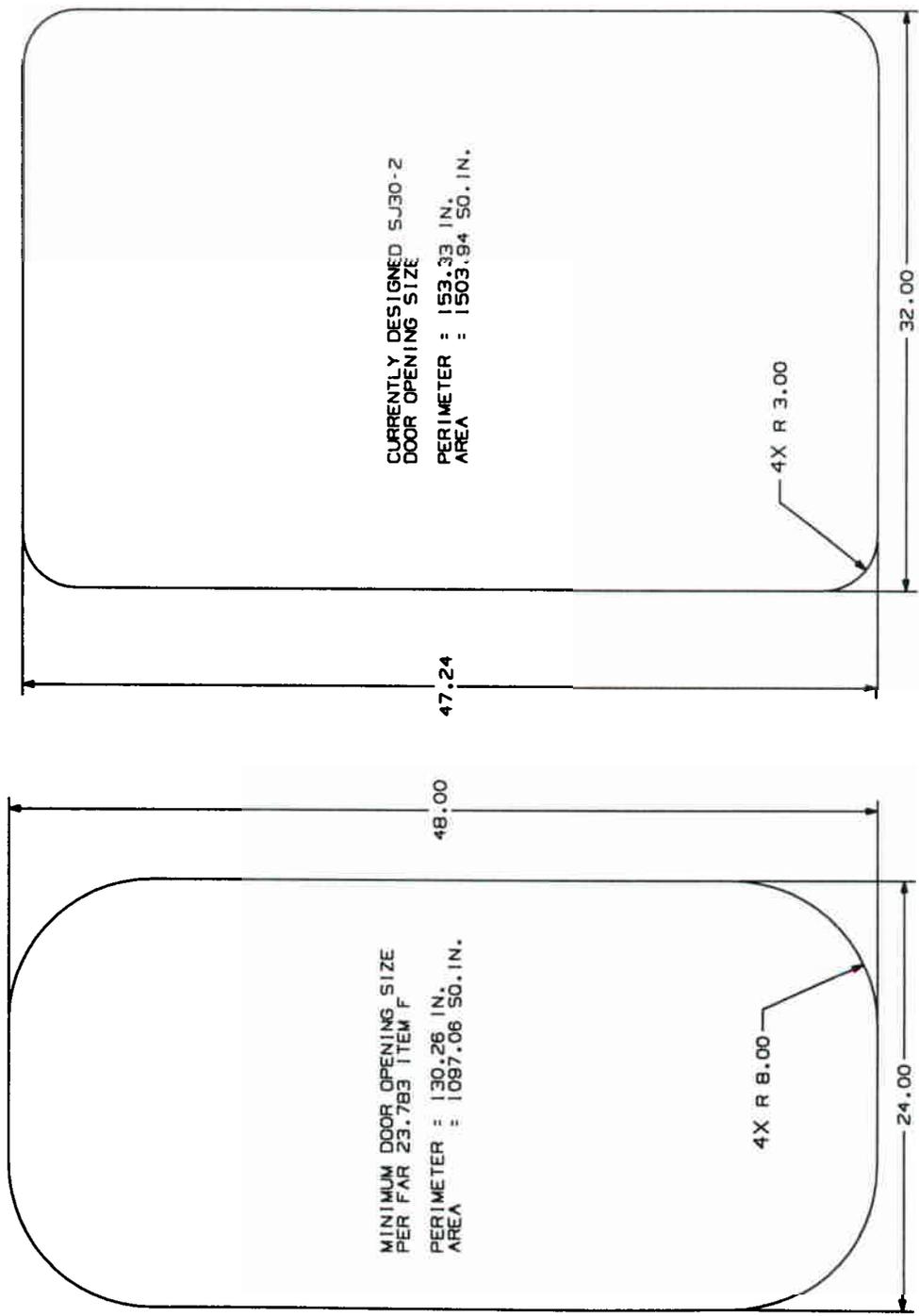
SKETCH 1



SKETCH 2



SKETCH 3



MINIMUM DOOR OPENING SIZE
 PER FAR 23.783 ITEM F
 PERIMETER = 130.26 IN.
 AREA = 1087.06 SQ. IN.

CURRENTLY DESIGNED S.J30-2
 DOOR OPENING SIZE
 PERIMETER = 153.33 IN.
 AREA = 1503.94 SQ. IN.

SKETCH 4