

SECOND TARGET STATION (STS) PROJECT Interface Sheet for Instrument Bunker Wall Feedthroughs and the Bunker Wall Structure



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SECOND TARGET STATION (STS) PROJECT

Interface Sheet for Instrument Bunker Wall Feedthroughs and the Bunker Wall Structure

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1. PURPOSE

This document defines the interface between the Instrument Systems (IS) Bunker wall Feedthrough and the Bunker wall structure provided by Conventional Facilities (CF). Items specifically covered can include the following:

- Bunker Wall Feedthrough loading applied to the Bunker wall.
- Bunker Wall Feedthrough types and associated geometric detailing regarding fit and function specific to the Bunker wall.
- Location of Feedthroughs in Bunker wall.

2. SCOPE

The scope of this document is the interface definition for the interfaces listed in section 2.1 of this document. It includes the Feedthroughs in the Bunker walls. The parent Interface Control Document S01020500-IC0007 identifies requirements between Instrument Systems, Target Systems and Conventional Facilities.

2.1 INTERFACING PARTS OR COMPONENTS

No.	Components (Instrument Bunker Wall Feedthroughs)		Components (Bunker Wall Structure)	
	Name	Functional Reference Number	Name	Functional Reference Number
1	QIKR Feedthrough	BWF-QIKR.asm	Level 1 Structural Plan - Overall	ST010
2	Standard Feedthrough	S04030201-m8u-8800-a10103.asm	Feed Through Insert Support Stand	TBD
3	Dual-Channel Feedthrough	BWF-DCI.asm		

3. ACRONYMS AND DEFINITIONS

CF Conventional Facilities
 ICD Interface Control Document
 IS Instrument System
 SSC Structure, System or Component

4. REFERENCES

4.1 DOCUMENTS APPLICABLE TO THE INTERFACING SSC'S

Ref	Document Titles	Document Control System Location
[1]	Interface Control Document for Instrument Systems and Conventional Facilities	EDRM / S01020500-IC0007

[2]	STS Bunker Systems Feedthrough Interface Drawing Bunker Wall Feedthroughs to CF	S04030200-m8u-8800-a10140
[3]		
[4]		

5. INTERFACE DEFINITION

5.1 TECHNICAL DESCRIPTION OF THE INTERFACE & SCOPE DELINEATION

5.1.1 Scope Delineation of Interface

Instrument Systems (IS)

- Owner of Bunker Wall Feedthroughs
- Responsible for design, procurement, and installation drawings
- Responsible for delivery of the feedthrough to CF

Conventional Facilities (CF)

- Owner of Bunker Wall
- Responsible for bunker wall design and construction
- Responsible for placement and support of the feedthroughs

The IS team will be responsible for design, procurement, installation procedures/drawings and delivery to CF team. CF team will provide any loading on the feedthroughs because of construction activities so that IS verifies adequacy of the feedthroughs for sustaining construction loads such as concrete pressure. IS will provide the allowable tolerances for the final position of the feedthroughs. CF will convey the tolerances to the contractor to ensure that the feedthroughs are installed within the tolerances. Once the construction is completed and feedthroughs are in the final position, IS will survey their location and orientation.

Design and procurement of shoring or supporting structure for the feedthroughs to secure them during construction, placement of reinforcing bars and concrete and vibration of concrete shall be CF's responsibility. These may be means and methods that would be implemented by the contractor. However, CF shall oversee and will be responsible for adequate implementation of that.

IS will provide the location of the feedthroughs as dimensions to a reference point or coordinates. The dimensions will be used as a reference only in CF drawings. IS is also responsible for providing geometry/shape of the feedthrough. IS will be responsible for designing the embedment of the feedthrough into the concrete. CF will ensure that the concrete surrounding the feedthrough provides sufficient strength to support the feedthroughs. The support attachments on the feedthrough and any concrete anchorage that interface with the feedthroughs will be provided by the IS team.

5.1.2 Technical Description

Bunker Wall Feedthrough functions:

Provide volume through which instrument beamlines and related utilities may pass through the bunker

wall. The feedthrough ensures rad safety measures are addressed (apart from instrument hardware, the wall feedthrough houses the necessary radiation shielding).

Bunker Wall Feedthrough and Bunker wall interface:

All Bunker Wall Feedthroughs consist of a steel formwork embedded within the concrete bunker wall. Feedthrough formwork will remain in place for the lifetime of the facility. There are three types of feedthroughs used within the bunker wall: standard feedthrough, QIKR feedthrough, and dual-channel feedthrough. Each feedthrough is anchored to the concrete using welded studs on the perimeter of the formwork. The standard formwork consists of a steel plate weldment which measures approximately 44 X 49 inch at one end and 54X58 inch at the other end. The QIKR formwork consists of a steel plate weldment with two passages to accommodate the double beamline layout. The dual-channel formwork is a steel plate weldment with an increased width compared to the standard feedthrough formwork to accommodate two beamlines in a single passage through the bunker wall. The feedthroughs will lie horizontally inside the bunker wall. Images of each type of feedthrough are included in Figures 1,2, and 3 below.

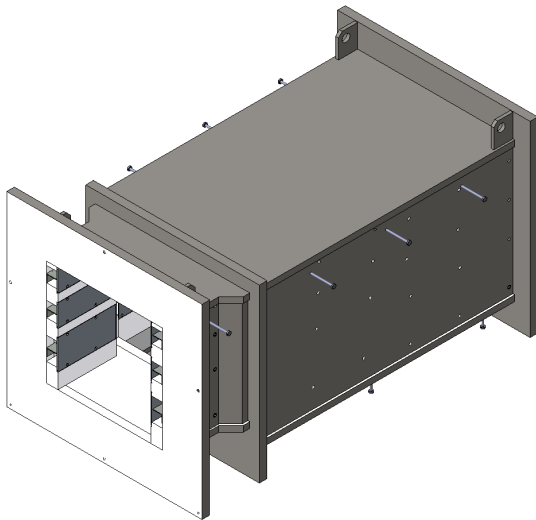


Figure 1: Standard Feedthrough

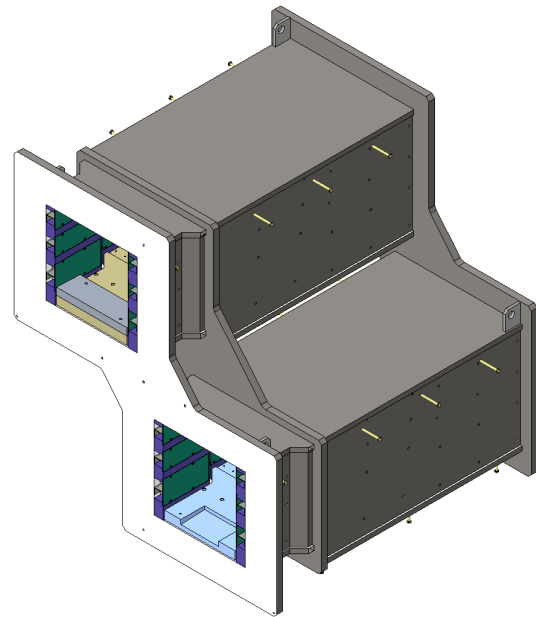


Figure 2: QIKR Feedthrough

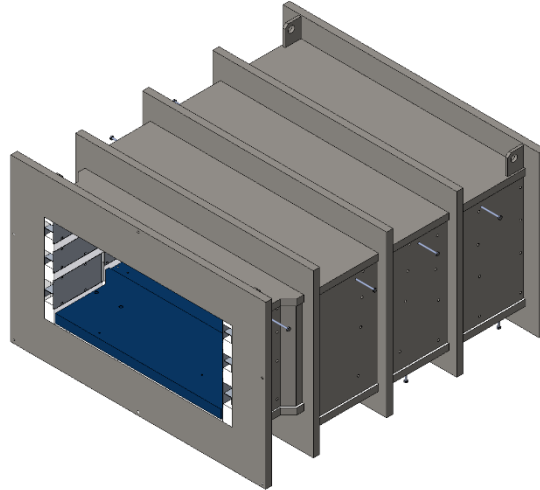


Figure 3: Dual-Channel Feedthrough

5.2 INTERFACE DATA

5.2.1 Geometric Conformance and Tolerance Requirements

The feedthrough inserts are aligned with the beamline alignment, which varies from beamline to beamline. Construction tolerances for the installation of the feedthroughs are specified within the interface drawing [2]. The support locations of each feedthrough are specified in [2] and reference images of the support locations are included in figures 4, 5, and 6 below.

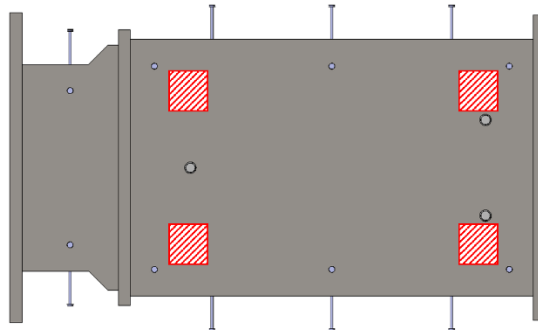


Figure 4: Support Locations of a Standard Feedthrough

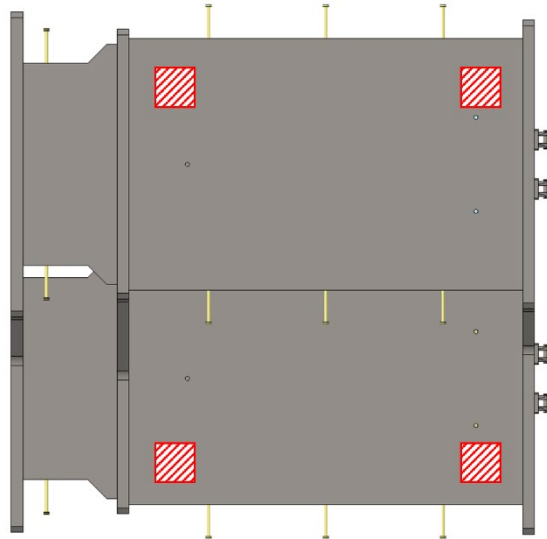


Figure 5: Support Locations of the QIKR Feedthrough

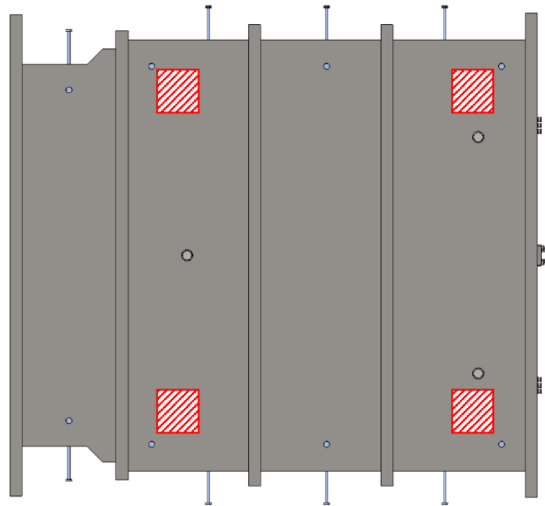


Figure 6: Support Locations of a Dual-Channel Feedthrough

5.2.2 Imposed Loading Conditions

The weight and center of gravity of the assembly and appropriate parts and components are as provided on the interface drawing: S04030200-m8u-8800-a10140.