Element Z General Design Requirements

Room Standards Z4060 Controlled Environmental Rooms

PART 1 - GENERAL

1.01 **OVERVIEW**

A. This document provides design and construction criteria for low temperature controlled environmental rooms at The University of Texas MD Anderson Cancer Center (Owner).

PART 2 - DESIGN CRITERIA

2.01 GENERAL

- A. Locate the Controlled Environmental Room (CER) per lab program plan, allowing for 4" insulated walls in addition to architectural enclosure walls as may be necessary. Room is to have a 4" insulated ceiling at 9'-0" above room floor, and a 2" insulated floor placed in a slab depression to avoid the need for a ramp. A door threshold plate may account for up to 1/4" positive transition from finished floor elevation outside to finished floor elevation inside the room. Where a depressed slab cannot be provided, a ramp and landing which is TAS (Texas Accessibility Standards) compliant shall be provided outside the door to the room. Allow for a 4" deep control panel to be mounted on the outside of the CER adjacent to the door (at least 18" from door, if on the strike side). The design for access to the CER, including door approach clearance from exterior side, door hardware, and door operating force/sweep period, etc. shall comply with TAS.
- B. Locate condenser equipment in an approximately 8' x 10' room having a lay-in ceiling 9'-0" above room floor. It is preferable that this equipment room be adjacent to the CER. A single equipment room this size may serve condenser equipment for up to two (2) CER. Provide a curb and/or cove around each equipment room, as well as a ¼" high raised threshold at the door to mitigate the affect of water migration to adjacent spaces, should a leak occur.
- C. When required by the building program, locate refrigeration package dehumidifier cabinet in condenser equipment room.
- D. Provide fresh air ventilation of 15 CFM +5/-0 CFM for each CER from building HVAC systems while maintaining the CER pressure neutral. Building supply air shall be ducted to the process air inlet side ductwork of any dehumidifier. Building exhaust air shall be ducted to 4" room connection(s) provided by the CER fabricator. Dampered bypass between lab track valves may be necessary.
- E. Provide ventilation as required for each condenser equipment room from building HVAC systems while maintaining the room pressure neutral. Consider providing this ventilation via fan and coil units which may be incidental to the design of adjacent space. Design for heat loads such as for personnel and lighting, but not for air cooled condenser coil heat rejection, as these coils are included in the refrigeration package only as an emergency backup means of cooling.
- F. Provide closed loop chilled water heat dissipation for CER condenser equipment. The CER loop shall be served by redundant N+1 plate heat exchangers connected to the source (i.e.,

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TECO/Central Plant) chilled water system upstream of any building heat exchangers and shall have provision to circulate domestic cold water on loss of source chilled water service.

- G. Provide emergency standby electrical support for the CER which includes, and is not limited to, panel space, circuits and equipment disconnects for the control panel and all related equipment and surface mounted raceway and receptacles inside the room. Provide a fire alarm system strobe device inside the CER.
- H. Provide a low oxygen and high carbon dioxide sensing and alarm system having horn and strobe unit mounted both inside and outside of the CER.
- BAS connections shall be provided for the CER critical alarms which include, and are not limited to personnel emergency alarm, oxygen/carbon dioxide Air Quality sensor alarm, mechanical failure alarm, and an independent (installed by controls contractor) thermal sensor for reporting room temperature inside the CER.
- J. Provide Dry Head Fire suppression within the CER.
- K. Provide plumbing support for the CER including, but not limited to, domestic hot and cold water and lab waste. Provide a hose bib and a floor sink in each condenser equipment room. Condenser room floor drain shall be connected to the sanitary waste system. Plumbing piping shall not be routed within, but may penetrate through insulated walls.

PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

3.01 GENERAL

- A. Indicate where the CER vendor is responsible for placing conduit in insulated walls to support installation of surface mounted metal raceway, or data drops by Division 26, fire alarm strobes by Division 28, or pass-through openings by CER vendor.
- B. Indicate that all required penetrations are to be coordinated with the CER contractor.

PART 4 - PRODUCTS

4.01 GENERAL

A. Refer to Master Construction Specification 13 21 00 and Divisions 20 - 28.

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PART 5 - DOCUMENT REVISION HISTORY

Issue	Date	Revision Description	Reviser
	20190301	Original Issuance	
Rev. 1			
Rev. 2			
Rev. 3			
Rev. 4			
Rev. 5			

END OF ELEMENT Z4060