<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th>Radiobiology Research Suite Expansion 540/013-XX-2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institution</strong></td>
<td>UT Health Science Center</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This project is for the renovation and addition of the TriMetis Animal Facility into an FDA approved test site to test radiation countermeasure drugs. Includes all related work to complete the project. This project will equip the UTHSC Life Sciences Animal Facility (LSAF) with a radiation biology suite suitable for development of radiation countermeasure, radioprotective and radiosensitizer drugs under the animal rule. The TriMetis Animal Facility is a 26,000 square foot state-of-the art Good Laboratory Practice (GLP) facility on the campus of the University of Tennessee Health Science Center. Detailed Building System Description as follows:</td>
</tr>
</tbody>
</table>

**Architectural Description**
The LINAC vault addition is designed around the Elekta Versa HD linear accelerator and CT radiation therapy system. The room is approximately 20' by 20' and requires a 3' high density concrete enclosure (walls and ceiling) for shielding requirements. The remaining clear floor area for the LINAC provides the necessary clearances as well as adequate area around the table to transfer and maneuver the subject into position for irradiation. A 48” wide, power assisted lead entry door provides a direct route into the vault. The irradiator will be moved to the vault from the loading dock ramp on the west end of the building via the 15+ ft-wide hallway leading to the vault entrance The Control Room is adjacent to the vault and in between the vault and the irradiation-planning room of the radiation therapy system. The irradiation-planning determines the individual anatomy of the animal to be irradiated and controls the LINAC irradiator filed and movements. The room is constructed with lead lined gypsum wall board shielding to meet the shielding requirement for the system. See Illustration A5 Enlarged Floor Plan for the architectural layout. The existing building floor elevation is approximately 6’ below the exterior grade and the new floor slab for the LINAC addition will match the existing floor elevation. The existing building also has a 9’ high interstitial space above the finished ceiling for system distribution throughout the facility. The LINAC addition will also have an interstitial space above its ceiling for system distribution however much lower at 3’ clear. The resulting overall height of the addition will be less than the height of the existing building placing the roof of the addition below the roof plaza preventing public access to the roof of Irradiator Vault. The roof structure over the irradiator addition will be an approximately 3'-0” thick cast in place high density concrete roof, to be confirmed by final shielding requirements, spanning to the exterior concrete walls. The walls of the irradiator addition including the wall adjacent to the existing building |

"
will be 3'-0" thick high-density concrete walls founded on the pile supported mat foundation. The exterior walls will extend to and bear on the pile supported mat foundation. The foundation will be a 3’ thick pile supported concrete mat foundation. The mat foundation will be located approximately 6'-0" below the finish grade of the exterior courtyard to the east and will match the elevation of the existing pile cap under the adjacent walls to the east. The ground floor on the LINAC will be a concrete slab on grade located a minimum of 12" above the pile supported mat foundation and will match the finished floor elevation of the existing vivarium.

**Structural Description**

The foundation will be a pile supported mat foundation consisting of micro piles or helical piles extending 40 feet or more below the mat foundation. The piles will be connected to matt foundation located under the entire footprint of the proposed LINAC. The extent and design capacity of the helical or micro piles will be confirmed by a geotechnical investigation and report on the subsurface conditions by a reputable geotechnical engineer licensed in the state of Tennessee. The ground floor will be a concrete slab on grade located a minimum of 12" above the pile supported mat foundation.

**Electrical System Description**

All new electrical power circuits will be derived from the existing electrical distribution system which presently serves the building. The utilization voltage for the two new radiography systems will be 480 volts, three phase. Based on the original construction documents dated 9/15/2011, the existing electrical distribution system does have the capacity to accept the additional load presented by the new radiation therapy systems. New 120V branch circuits for convenience receptacles and small equipment will be derived from the existing 120V branch circuit panelboards. Artificial lighting design for new renovated area will be based primarily on recessed fixtures that utilize LED light sources. The LED light color will be selected to match that of the existing fluorescent lighting in the adjacent areas. Basis of lighting level design will be based on the recommendations of the radiography systems manufacturers. Control of new lighting will be designed to be consistent with the existing low-voltage lighting control system. Emergency egress lighting design will be consistent with the existing concept of light fixtures connected to the building’s emergency standby (generator) power system. Emergency power circuits required will be derived from the building’s existing emergency power distribution system. The existing Fire Detection & Evacuation Alarm System will be modified and extended as necessary for the renovations and new construction.

**Mechanical System Description**

For the LINAC, the air-cooled equipment heat gain is approximately 18,000 Btu/hr for the equipment room and 6,900 Btu/hr for the treatment room. The water-cooled equipment heat gain is approximately 41,000 Btu/hr for the
The mechanical supply design provides for one (1) new venturi type supply air valve with an integral hot water reheat coil. The air valve shall serve the treatment room, be equal to Phoenix Controls and sized for a total airflow of 800 cfm (approximately 13 air changes per hour) and a heating airflow of 320 cfm. A new 12” diameter runout duct from the existing 28” diameter medium pressure supply main shall be routed to the new air valve. The design provides for a new 14”x12” low pressure supply ductwork downstream of the air valve with four (4) 2’x4’ ceiling-mounted high volume, low velocity radial diffusers each balanced to 200 cfm. A 10” diameter runout from the 14”x12” low pressure duct will supply each diffuser.

The exhaust system shall require one (1) new venturi type exhaust air valve. Air valve shall serve the treatment room, be equal to Phoenix Controls and sized for a total airflow of 800 cfm. A new 12” diameter runout duct from the existing 18” diameter medium pressure holding rooms exhaust main shall be routed to the new air valve. An 18”x10” low pressure exhaust ductwork upstream of the air valve with a 16” diameter runout to a 2’x2’ ceiling-mounted eggcrate exhaust grille balanced to 800 cfm. Other miscellaneous features include a new controller and wall-mounted thermostat for the supply and exhaust air valves integrated with the existing BAS. A new 1/2” hot water supply and return piping from the new supply air valve to the existing 2” mains will be added. One (1) computer room air-conditioning (CRAC) unit equal to Liebert model MMD24E to satisfy the air-cooled requirements of the linear accelerator equipment will be located in the equipment room. CRAC unit shall have a minimum sensible cooling capacity of 18,000 Btu/hr (72°F & 50% relative humidity room conditions at 98°F ambient). One (1) closed loop process chiller equal to Filtrine model PCP-300G-44-A-WP to satisfy the water-cooled requirements of the linear accelerator equipment will be located in the equipment room. Chiller shall have a minimum total cooling capacity of 41,000 Btu/hr (60-70°F discharge temperature at 98°F ambient).

Mechanical equipment, ductwork and piping shall be supported and or attached per the local code seismic requirements. Mechanical equipment that requires isolation shall be certified to withstand the seismic forces as required by the International Building Code.

**Plumbing/Fire Protection System Description**

New pre-action fire sprinkler systems will be installed to serve the ELECTA irradiator system and Control Rooms. Connect a new 2” fire line to existing fire line to serve a 1-1/2” double lock pre-action sprinkler valve with trim to serve new project area. All piping and fittings shall be SCH 40 galvanized piping.

The LINAC equipment room will be served by a new 1” domestic water line with backflow preventer to serve the water-cooled equipment. A 3” floor drain in the equipment room will be provided for the condensate from CRAC Unit.

Plumbing equipment and piping shall be supported and or attached per the local code seismic requirements. Plumbing equipment that requires
isolation shall be certified to withstand the seismic forces as required by the
International Building Code.

| Project Schedule | Designer Award by SBC Executive Sub-Committee – October 24, 2022  
(Pending SBC Approval on October 13, 2022)  
Desired Design Schedule: November 2022 – August 2023  
Desired Construction Schedule: Desired Substantial Completion by December 2024 |
|--------------------------------|--------------------------------------------------------------------------------------------------|
| Anticipated Licensed Professionals and consultants for Basic Services: | All disciplines as required for Basic Services  
Additional service consultant fees for movable equipment, data/AV, surveys, geotechnical services, hazardous material testing, and an allowance for future construction testing will be negotiated after award of selected designer firm and prior to release of agreement for the overall project. These consultants should be listed in proposal with pertinent experience. |
| Estimated Total Project Cost | $4,350,000 |
| Maximum Allowable Construction Cost (MACC) | $3,740,000 |
| Designer Fee: | $3,740,000 X .06454 X 1.25 = $301,731 |
| Insurance Coverage | Commercial General Liability  
Each Occurrence - $1,000,000  
Aggregate - $1,000,000  
Commercial Automobile Liability  
Any Auto – Each Accident, Combined Single Limit - $1,000,000  
Workers’ Compensation as required by statute, including employers’ liability with limits of:  
Each Accident - $100,000  
Disease, each employee - $100,000  
Disease, policy limits - $500,000  
Professional Liability Insurance  
Each Claim - $1,000,000  
Annual Aggregate - $2,000,000 |
| Project Category: | Standard |
| Designer Solicitation Date | September 15, 2022 |
| Email Intent to Submit Date | Email by September 22, 2022, your intent to submit to designer@tennessee.edu  
Only designers who intend to submit will be notified of any updates to this solicitation. |
<table>
<thead>
<tr>
<th>Letter of Interest Due Date</th>
<th>September 29, at 12:00 pm (Noon) ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions received until:</td>
<td>September 21, 2022, at 5:00 pm ET</td>
</tr>
<tr>
<td></td>
<td>Any updates regarding this solicitation will be emailed to potential proposers if request for notification is received via email to <a href="mailto:designer@tennessee.edu">designer@tennessee.edu</a> by the date and time of the deadline for questions listed above.</td>
</tr>
</tbody>
</table>
ILLUSTRATION A5 - OPTION 2, ENLARGED FLOOR PLAN

SEE NARRATIVE FOR MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION MODIFICATIONS TO SUPPORT THE RENOVATIONS.