BOARD OF REGENTS
BRIEFING PAPER

1. **AGENDA ITEM TITLE:** U.S. Department of Human Services, Health Resources and Services Administration Grant, Notice of Federal Interest – Science and Engineering Building, UNLV Maryland Campus

MEETING DATE: November 30 – December 1, 2023

2. BACKGROUND & POLICY CONTEXT OF ISSUE:

Background Information

The UNLV School of Integrated Health Sciences (the "**School**") Brain Health Department was awarded a $4,515,000 grant from the U.S. Department of Human Services, Health Resources and Services Administration (the "**HRSA**") to repurpose existing space to accommodate the installation of a 3 Tesla functional MRI scanner (the "**Project**"). The Project will fundamentally improve UNLV's research capacity and potential for community benefit and will immediately advance numerous initiatives across multiple Colleges/Schools at UNLV. Additionally, the Project will have profound impacts for health care and health training in Southern Nevada, by providing the opportunity for student training as part of the UNLV Health Physics curriculum.

The Project will be located within the Science and Engineering Building (the "**Building**") on a portion of the UNLV Maryland Campus (the "**Campus**"). The parcel where the Building is located is approximately 72.03 acres (3,137,627 square feet), commonly known as Clark County Assessor Parcel Number 162-22-601-001 (the "**Property**"). An aerial map of the Building location, is incorporated herein as **Attachment "A."**

When the Federal Government provides funding for a substantial improvement to, or construction on, real property, the party receiving the grant is required to attach a lien to the property called a Notice of Federal Interest (the "**NFI**").
The NFI protects not only the Federal Government's interest in the encumbered property, but also protects HRSA to ensure that the purpose for which the funds were originally awarded by the Federal Government is followed through with for the implementation of the funds, with options for recourse available via the NFI if there is a compliance issue. The NFI is essentially a lien against real property that has benefitted by the HRSA grant, and which is used to deliver health care services. After the NFI is filed against the property, activities such as new mortgages, selling the facility, or leasing the facility to an entity that does not provide healthcare, requires prior approval from the HRSA. The NFI will not affect existing mortgages or modifications being made to the facility. The NFI due date for the Project is January 30, 2024. The sample NFI and FAQ addressing Federal Interest in Real Property, are incorporated herein as **Attachment "B" and Attachment "C."**

Currently the process for removing the NFI lien from the Property (after UNLV's commitment has been satisfied) is not fully defined as to how the NFI lien would be reduced or removed (for example, a depreciation schedule or some other similar approach). As a general matter, under applicable Federal regulations, the NFI lien will be removed upon the full depreciation of the subject improvements and equipment and/or the expiration of the economic life of the improvements and equipment. The Grant Management Specialist with the Office of Federal Assistance Management (the "**OFAM**") will be advised of UNLV's intent to pursue removal of the NFI within a reasonable amount of time that reflects the useful life of the Project improvements. The nonbinding notice letter to OFAM is incorporated herein as **Attachment "D"** (the "**Notice Letter**").

UNLV requested approval for an NFI from the Board of Regents, for a $2,000,000 HRSA grant for improvements at the UNLV Shadow Lane Campus, at the March 9-10, 2023 Board of Regents meeting. The Board of Regents approved this NFI, which was procedurally similar to this request for NFI approval.

The Building where the subject MRI scanner will be installed is located on the Property referenced above. Therefore, the NFI lien will apply to the entire Property. In the future, it's UNLV's intent to subdivide the Building from the Property, thus creating a smaller parcel whereby the NFI would be re-recorded and only affect the specific parcel where the Project is located.

Due to the lien commitment and policies outlined in Title 4, Chapter 10, Section 1(9), Table 9.1, of the Board of Regents' Handbook, approval of the NFI by the Board of Regents (the "**BOR**") will be required.

Similar to the NFI for a $2,000,000 HRSA grant for improvements at the UNLV Shadow Lane Campus approved by the Board of Regents at the March 9-10, 2023 Board of Regents meeting, UNLV intends to undertake a parcel mapping process associated with this NFI item, to create a campus land parcel for the Science and Engineering Building, and, with the

consent of the OFAM Grant Manager, re-record the NFI once this new parcel is created, to target the NFI property encumbrance more directly to the Building, which may yield future benefits, with the Building being a research-purpose building, which may be subject to future grants and associated NFI's. The estimated budget for subdivision mapping expenses is up to thirty thousand dollars ($30,000), subject to further assessment, and costs to re-record the Notice of Federal Interest are estimated to be no more than two hundred dollars ($200.00). UNLV intends to fund these costs using campus real estate operating funds.

Project Description

The Project will enable training students as part of the Health Physics curriculum at UNLV. It will also provide an opportunity for scanning capabilities for students in the UNLV School of Medicine and serve as a clinical resource for many UNLV initiatives that will engage with the surrounding community. It is rare that the addition of a single piece of infrastructure can advance so many initiatives at UNLV and it cannot be emphasized strongly enough the need for the fMRI being available to researchers in order to accomplish complex imaging protocols that currently don't exist.

Over the last few years UNLV has made tremendous strides in both the quality and impact of biomedical research projects in Southern Nevada. These advances have resulted in increased publications, a greater number of collaborations with other strong research groups, and receipt of additional funding from the National Institutes of Health (NIH). This work has also greatly expanded the training for the very diverse graduate and undergraduate students at UNLV and in Southern Nevada. The recent achievement and continuation of Tier 1 status further demonstrates the advances in research at UNLV. Despite such outstanding progress, UNLV still lacks some vital capabilities as compared to other Tier 1 institutions that are required to continue the growth in biomedical research and its community impact.

In the current environment, to be competitive for NIH funding it is necessary to leverage imaging approaches as part of clinical research and clinical trial work. Imaging is an immensely powerful research tool that increasingly is a requirement in the areas where UNLV is poised to assert national leadership in this area. Presently, there are several groups at UNLV that need capacity to partner with various collaborators to accomplish imaging, however, at greater cost and limited capability. Not having imaging capability has been a large impediment in recruiting strong faculty that have funded research utilizing imaging. The lack of this one UNLV resource represents a weakness that impacts numerous UNLV Colleges and Schools, and limits community benefit.

It is estimated the Project will take twenty-four (24) months to complete and will be managed by the UNLV Department of Planning and Construction. State of Nevada prevailing wage laws will apply. The more detailed Project description, installation assessment, and project timeline is incorporated hereto as **Attachment "E."**

Project Budget

The budget will be used to renovate and equip the Building to accommodate installation and purchase the fMRI scanner and associated equipment. Below is the budget summary for the Project.

- Equipment - $3,420,000
- Other Direct Costs (Outlined Below) - $1,095,000
    - Design/Consultant Services - $198,000
    - Construction - $675,000
    - Furnishings - $26,000
    - Miscellaneous Fees and Costs - $36,000
    - Contingencies - $100,000
    - Project Management - $60,000
- **Total Project Costs - $4,515,000**

Once the federal funding is fully expended, UNLV will fund ongoing operations of the facility with internal revenue sources.

More detailed budget information is provided in the Budget Narrative, incorporated hereto as **Attachment "F."**

3. SPECIFIC ACTIONS BEING RECOMMENDED OR REQUESTED:

UNLV President Keith E. Whitfield requests Board approval to execute the Notice of Federal Interest, which will grant the Federal Government the ability to record a lien against a portion of NSHE owned real property, commonly known as the UNLV Maryland Campus, bearing Clark County Assessor Parcel Number 162-22-601-001, for the purposes of HRSA grant compliance requirements. UNLV further requests the Chancellor be authorized to finalize, approve, and execute any other ancillary agreements or documents required to proceed with the project, including, but not limited to, documents needed to

finalize the subdivision mapping process and re-recording the Notice of Federal Interest. Additionally, UNLV requests President Whitfield be authorized to execute the Notice Letter. All aforementioned agreements and documents shall be reviewed and approved by NSHE Chief General Counsel (or, at the Chief General Counsel's request, NSHE Special Real Property Counsel) in order to implement the terms and conditions required to finalize the Notice of Federal Interest, subdivision of the Property, and re-recording of the Notice of Federal Interest.

4. IMPETUS (WHY NOW?):

The UNLV School of Integrated Health Sciences, Brain Health Department was awarded a HRSA grant in the amount of $4,515,000. In order to execute a grant agreement, a Notice of Federal Interest is required. If a Notice of Federal Interest is not executed, the grant agreement cannot be executed, and UNLV cannot receive the grant award.

5. CHECK THE NSHE STRATEGIC PLAN GOAL THAT IS SUPPORTED BY THIS REQUEST:

X Access (Increase participation in post-secondary education)
X Success (Increase student success)
X Close the Achievement Gap (Close the achievement gap among underserved student populations)
X Workforce (Collaboratively address the challenges of the workforce and industry education needs of Nevada)
X Research (Co-develop solutions to the critical issues facing 21st century Nevada and raise the overall research profile)

❑ **Not Applicable to NSHE Strategic Plan Goals**

INDICATE HOW THE PROPOSAL SUPPORTS THE SPECIFIC STRATEGIC PLAN GOAL

Installation of the fMRI will advance clinical research activities, improve health care services for the Southern Nevada community, and expand training for the very diverse graduate and undergraduate students at UNLV. The Project is consistent with and will further the Top Tier 2.0 vision, mission, and values.

6. BULLET POINTS TO SUPPORT REQUEST/RECOMMENDATION:

- Improves UNLV research capacity and advances numerous initiatives across multiple Colleges/Schools at UNLV.
- Provides increased student training activities as part of the Health Physics curriculum.
- Facilitates the recruitment of strong faculty that have funded research utilizing imaging.
- Furthers the growth in biomedical research at UNLV.
- Allows UNLV to be more competitive in acquiring funding from the National Institute of Health.

7. POTENTIAL ARGUMENTS AGAINST THE REQUEST/RECOMMENDATION:

The grant requires that a real property lien, via a Notice of Federal Interest, be recorded against the Property, which will impact NSHE's property rights as long as the Notice of Federal Interest remains on the property title.

8. ALTERNATIVE(S) TO WHAT IS BEING REQUESTED/RECOMMENDED:

Don't accept the grant.

9. RECOMMENDATION FROM THE CHANCELLOR'S OFFICE:

The Chancellor's Office supports this request.

10. COMPLIANCE WITH BOARD POLICY:

X Consistent With Current Board Policy: Title # 4 Chapter # 10 Section # 1(9), Table 9.1

❑ Amends Current Board Policy: Title #_____ Chapter #_____ Section #_____

❑ Amends Current Procedures & Guidelines Manual: Chapter #_____ Section #_____

❑ Other:_____

X Fiscal Impact: Yes **X** No_____

Explain: UNLV will fund subdivision mapping expenses which are estimated to be up to thirty thousand dollars ($30,000), subject to further assessment, and costs to re-record the Notice of Federal Interest are estimated to be no more than two hundred dollars ($200.00). UNLV intends to fund these costs using campus real estate operating funds. Once the federal funding is fully expended, UNLV will fund ongoing operations of the facility with internal revenue sources.

ATTACHMENT "A"

SAMPLE NOTICE OF FEDERAL INTEREST

On *(insert date),* the *(insert name of OPDIV)* awarded Grant No. _____ to *(insert name of recipient).* The grant provides Federal funds for *(describe purpose of grant, e.g., construction, major alteration and renovation, mortgage, or acquisition of a building*),* which is located on the property described below in _____County, State of_____:

(GRANTEE INSERT LEGAL DESCRIPTION OF PROPERTY)

The Notice of Award for this grant includes conditions on use of the aforementioned property and provides for a continuing Federal interest in the property. Specifically, the property may not be (1) used for any purpose inconsistent with the statute and any program regulations governing the award under which the property was acquired; (2) mortgaged or otherwise used as collateral without the written permission of the Associate Administrator, Office of Federal Assistance Management (OFAM), Health Resources and Services Administration (HRSA), or designee; or (3) sold or transferred to another party without the written permission of Associate Administrator, Office of Federal Assistance Management (OFAM), Health Resources and Services Administration (HRSA), or designee. These conditions are in accordance with the statutory provisions set forth in *[insert authorizing Federal law name and citation, or insert the name of the appropriations bill authorizing the award of the earmarks for that particular year],* Title 45 CFR part 74 or 92 (as appropriate), the HHS Grants Policy Statement, and other terms and conditions of award.

These grant conditions and requirements cannot be nullified or voided through a transfer of ownership. Therefore, advance notice of any proposed change in usage or ownership must be provided to the Health Resources and Services Administration (HRSA), Office of Federal Assistance Management (OFAM).

Signature: _____

Typed Name: _____

Title: _____

Date: _____

** Description should include specificity to determine if the Federal Interest applies to the land, building, or part thereof. Street or campus address should be included whenever possible*

FAQ: Federal Interest in Real Property

What is Federal Interest?

- Federal Interest is the Federal government's share in a property, based on the Federal funding that went towards acquiring or upgrading it. The Federal government has a Federal Interest in Equipment, Supplies, and Real Property (land and buildings). Property, equipment, and supplies are "tools" needed to help support and deliver the various health care services that HRSA funds through its grant programs.

Federal Interest in Real Property

A grantee's property may be used to deliver health care services long after a grant is closed. When the Federal Government has provided funding for a substantial improvement (property construction or major renovations), the grantee may be required to attach a lien to the property called a **Notice of Federal Interest (NFI)**.

Notice of Federal Interest

The NFI protects not only the Federal Government's interest in the property, but also the purpose for which the funds were originally awarded. An NFI is required for:

- New Construction Projects—result in an increase in usable square footage, regardless of total project cost.
- Major Renovation Projects—total project costs greater than $500,000, excluding moveable equipment costs.

Frequently Asked Questions

Q1: Is a Notice of Federal Interest required for e capital projects?

A1: Yes. NFI filings are required for:

- **ALL** construction projects.
- **Each** alteration/renovation project having a total (Federal and non-Federal) allowable project cost of more than $500,000, **excluding moveable equipment costs.**

Q2: Does Federal interest exist if I don't file a NFI?

A2: Grantees that are not required to file a NFI must be aware that the Federal Interest still exists irrespective of the filing of the NFI. For alteration/renovation projects less than $500,000, the grantee shall maintain adequate documentation regarding protection of all Federal Interest. This will include communications with a lessor related to protecting such interest during the lease period, in accordance with the standard award terms and conditions. Such documentation should be available for subsequent review.

Q3: Will HRSA take a subordinate position to existing mortgage holders and lenders on potential debt financing for projects?

A3: HRSA's NFI is subordinate to all pre-existing mortgages or obligations recorded against the property. Also, the NFI is also subordinate to any pre-existing loans and obligations identified by the grantee in the grant application as sources of financing for the project. Future modifications to existing mortgages and new mortgages will require HRSA review and prior approval.

Q4: The grant award requires that the facility owner file a NFI against a facility deed. What if the owner wants to secure additional mortgages, lease the facility to an entity that does not provide healthcare, or sell the facility?

A4: A NFI is essentially a lien that protects HRSA's financial and public interests in the real property being used to deliver health care services. After a NFI is filed against the property, activities such as new mortgages, selling the facility, or leasing the facility to an entity that does not provide healthcare, requires prior approval from the HRSA. The NFI will not affect existing mortgages or modifications being made to the facility.

Prior approval must come in the form of a written request from the grantee to HRSA, either by letter or by email, with the following information:

1. What is the action that the owner wants to undertake (new loan, refinancing, expansion, sale, etc.)?
2. What is the grantee or owner requesting from HRSA (permission to secure a new loan, transfer to another site, etc.)?
3. If applicable, details of the project financing (the combination of loans and internal funding), or proposed sale (whether there is an identified buyer, the proposed sale price).
4. Copy(s) of all HRSA NFIs, associated Notice(s) of Grant Award, and/or funding information associated with the NFI. A copy of the deed, with a legal description of the property, to which the Federal Interest is attached.
5. Appraised value of the property at the time of project completion.
6. Terms of the proposed loan, i.e., interest rate, period of loan, amortization schedule.
7. Last three years of audited Financial Statements.

Reviewing Federal Interest requests takes time and HRSA requests patience and cooperation in the process. Providing detailed requests and supporting documentation up front will aid in expediting reviews.

Q5: Will the value of the Federal interest change over time, especially as the useful life of the renovation/alteration expires?

A5: Each alteration/renovation project having a total (Federal and non-Federal) allowable project costs of more than $500,000, excluding moveable equipment costs, is required to file a NFI.

HRSA acknowledges that the market value of ARRA supported renovations/alterations will change over time. HRSA will work with grantees to recognize the changing market value of improvements and other activities made by the grantee or property owner of the facility.

How to Record a Notice of Federal Interest (NFI)

General

1. Within the United States, except Hawaii, the NFI must be filed in the county or district office in which the facility is located. Often this is the County Court Clerk, Probate Office or the Register of Deeds. In the State of Hawaii, the NFI must be filed with the State Department of Land and Natural Resources, Bureau of Conveyances.
2. Please understand that local governments may have different formatting requirements. It is important to check with the office before filing, as it may save you an extra trip.
3. The county government will provide a copy of the recorded NFI with the county stamp, with a date, and either receipt information, or the final reference number (book and page, file, etc.).

NFI Document[1]

1. The grant number must reference to the appropriate Grant No, i.e., CXXCSXXXXX.
2. The description of the project should clearly describe the new construction project, or alteration and renovation. The NFI does not apply to moveable equipment (though equipment does have Federal Interest, as do alteration and renovation projects below the NFI filing threshold).
3. The legal description should be preferably the full legal description of the property in the deed. However, Township and Range, or Map, Block, and Lot number will be accepted. A physical address may be included, but does not constitute a legal description in itself.
4. The restrictive language of the template may not be modified.
5. The signatory of the NFI should be the owner of the property. This indicates the owner's consent to have a lien filed on the property.
6. The NFI must then be notarized and embossed with a notary seal.
7. The NFI must then be recorded with the county government.

[1] A sample NFI is available at http://bphc.hrsa.gov/policiesregulations/capital.

Example of a Correctly Filed NFI
[Page 1]

STATE OF ALABAMA

A COUNTY

Correct Grant No. and purpose of award.

NOTICE OF FEDERAL INTEREST

On June 25, 2009, the Health Resources and Services Administration awarded Grant Number [redacted] Inc. The grant provides funds for the construction of What Health Services' What Health Center, which is located on the land described below in A County, Alabama:

SEE EXHIBIT "A" ATTACHED HERETO AND INCORPORATED HEREIN BY THIS REFERENCE.

The Notice of Award for this grant includes conditions on use of the aforementioned property and provides for a continuing Federal interest in the property. Specifically, the property may not be (1) used for any purpose inconsistent with the statute of any program regulations governing the award under which the property was acquired; (2) mortgaged or otherwise used as collateral without the written permission of the Associate Administrator, Office of Federal Assistance Management (OFAM), Health Resources and Services Administration (HRSA); or (3) sold or transferred to another party without the writtenpermission of the Associate Administrator, OFAM, HRSA. These conditions are in accordance with the statutory provisions set forth in the American Recovery and Reinvestment Act, Title 45 CFR part 74 or 92 as applicable, the HHS Grants Policy Statement, and other terms and conditions of award.

These grant conditions and requirements cannot be nullified or voided through a transfer of ownership. Therefore, advance notice of any proposed change in usage or ownership must be provided to the Associate Administrator, OFAM, HRSA.

Correct restrictive information

WHAT HEALTH SERVICE

By: X
X

Its President and CEO

Date: July 17, 2009

Signed by the property owner (in this case, the grantee)

Recorded In RPB BK 23 PG 62, 07/22/2009 02:16:33 PM Recording Fee 15.50, TOTAL 15.50
Jerry C. Pow, Probate Judge, A County, Alabama

Recorded with the County Records Office

Example of a Correctly Filed NFI
[Pages 2 and 3]

STATE OF ALABAMA
A COUNTY

On this the 17TH day July, 2009, before me, the undersigned, a Notary Public for the State of Alabama at Large, personally appeared before me and is known to be the person who executed this instrument on behalf of said What Health Service, and acknowledged to me that he executed the same as the free act and deed of said Corporation.

Witness my hand and official seal.

[redacted]
Notary Public
My Commission Expires: 4/21/2012

RPB 23 62

Notarized

Recorded with the County Records Office

EXHIBIT "A"

A parcel of land 230' x 15' beginning at the NE corner of Lot #6, Blk 4, Bloc Height, Then W and S ROW of First Avenue, 230'(S), Then S 145', Then W 20', Then S 22'(S). Then E 15'(S), Then N 50', Then E 220', Then N with W ROW of School Street, 158' (S) to POB. West Bloc, Alabama Book 2 Page 37.

Correct Legal Description

RPB 23 62

UNLV

UNIVERSITY OF NEVADA, LAS VEGAS

Date: _____

_____
_____
_____

RE: Grant Award Number: 1CE1HS52140-01-00
Unique Federal Award Identification Number: CE152140

Dear _____:

Enclosed please find the recorded Notice of Federal Interest (the "NFI") related to the referenced Grant Award and Unique Federal Award Identification Numbers, which are referenced above. Repurposing existing space to accommodate the installation of a 3 Tesla functional MRI scanner for which the grant was awarded will be located within the Science and Engineering Building (the "Building") at the UNLV Maryland (the "Campus"). The Building is located on an approximately 72.03 acre-parcel that makes up a portion of the Campus. Please see the attached aerial map indicating the location of the Building on the larger parcel.

The Nevada System of Higher Education, on behalf of the University of Nevada, Las Vegas ("UNLV"), intends to subdivide the Building from the larger parcel, thus creating and individual parcel with its own legal description. Once the Building is subdivided from the larger parcel, UNLV will request that the NFI be released from the larger Campus parcel and be re-recorded against the new Building parcel, where the project is located. It is our understanding that that is your intent as well.

It is also UNLV's understanding that Office of Federal (the "OFAM") is open to recognizing the changing market value of Project and will consider a reduction or removal of the NFI lien as improvement depreciation occurs, or when they are fully depreciated. Please be advised that when the grant funded improvements are fully depreciated, UNLV plans to request removal of the NFI. UNLV may also request a reduction in the amount of the NFI prior to full depreciation, for example, a 50% reduction in the NFI to reflect partial depreciation of the improvements and associated items.

UNLV understands that this letter is not a binding agreement associated with this Grant Award, and our intent with this letter here is to communicate our future plans, to assist with clarity and collaboration related to the future modification and/or removal of the NFI.

We very much appreciate your assistance and ongoing cooperation in this matter. Please contact us with any questions or concerns.

Very truly yours,

Keith E. Whitfield
President
University of Nevada, Las Vegas

Project Description

Project Name: Functional fMRI Scanner for Biomedical Research
Applicant: University of Nevada, Las Vegas
PI: Dr. Jefferson Kinney

UNLV is requesting funding to bring a 3 Tesla functional MRI (fMRI) scanner to campus that would fundamentally improve UNLV research capacity and potential for community benefit. A fMRI will immediately advance numerous initiatives across multiple Colleges/Schools as well as provide an immediate impact on the quality of faculty that can be recruited to UNLV. It will also have profound impacts for health care and health training in Southern Nevada. The fMRI we are seeking will enable training students as part of the Health Physics curriculum at UNLV. It will also provide an opportunity for scanning capabilities for students in the UNLV School of Medicine and serve as a clinical resource for many UNLV initiatives that will engage with the surrounding community.

It is rare that the addition of a single piece of infrastructure can advance so many and initiatives at a University. We cannot emphasize strongly enough the need for a fMRI that is available to researchers in order to accomplish complex imaging protocols that currently does not exist, and to bring benefit to Southern Nevada.

Over the last few years UNLV has made tremendous strides in both the quality and impact of biomedical research projects in southern Nevada. These advances have resulted in increased publications, increased collaborations with other strong research groups, and increased funding from the National Institutes of Health (NIH). This work has also greatly expanded the training for the very diverse graduate and undergraduate students at UNLV and in southern Nevada. The recent achievement and continuation of Tier 1 status further demonstrates the advances in research at UNLV. Despite such outstanding progress, UNLV still lacks some vital capabilities as compared to other Tier 1 institutions that are required to continue the growth in biomedical research and its community impact.

In the current environment, to be competitive for NIH funding it is necessary to leveraging imaging approaches as part of clinical research and clinical trial work. Familiar to many of us through modern medical practices, imaging is an immensely powerful research tool that increasingly is a requirement in the areas where UNLV is poised to assert national leadership. Presently, several groups at UNLV that need this capacity partner with various collaborators to accomplish imaging, however, at greater cost and limited capability. Not having imaging capability has been a large impediment in recruiting strong faculty that have funded research utilizing imaging. The lack of this one UNLV resource represents a weakness that impacts numerous Colleges and Schools, and limits community benefit.

The equipment will not be purchased until funding has been secured. The University is committed to this project and if federal funds are not available to assist in the acquisition of the equipment, renovation of space, and hiring of technical staff to operate the equipment we will pursue local, state, and private sources of funding to ensure this capability is made available to the campus. There is no expectation that federal sources will be used for ongoing operation of the facility. Once the federal funding is used UNLV will turn to other revenue sources to operate the facility.

Siemens Magnetom Prisma 3T Install Assessment

The purpose of this document is to summarize the site install requirements for a Siemens 3T medical imager, the suitability of existing space on UNLV's main campus, and estimated improvements required to fit out the instrument. One proposed site is SEB-1235, which was originally constructed as a production studio. This program never moved into SEB and the space was repurposed to house the Electro-Energetics Physics and Engineering Lab (EEPEL), in which the main instrument is a large Anechoic Chamber installed in 2010. In comparison to all other potential spaces on campus, this room appears to be the best fit by a significant margin with regards to existing infrastructure, such as specialty utility proximity, room size, cooling, install access, and adjacent preparation space. Therefore, this space will be reviewed for compatibility with the instrument and does not take into account the current occupant, or disruption to this program if this project were to proceed and relocation was required.

Space: SEB-1235 is attached to a suite off the North main entrance that includes 7 large offices, shown in Fig 1.

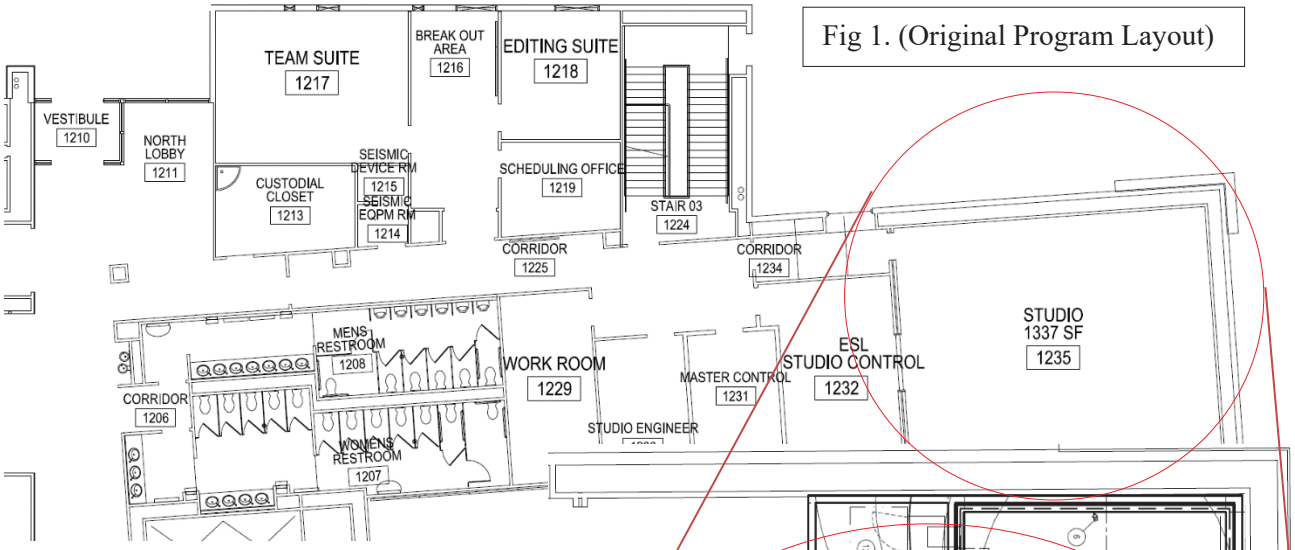

Fig 1. (Original Program Layout)

SEB-1235 has an unobstructed floor plan of ~ 35.5' Wide x 38' Deep x 14.5' Tall. This will allow for the standard Siemens layout of an exam room, equipment room, and control room to be constructed within, while allowing extra distance to mitigate lateral fringe fields, as shown in Fig. 2. The lateral adjacencies are as follows: **North**-landscape and public sidewalk; **East**-landscape, public sidewalk, and parking structure access road; **South**-building high ceiling storage and classroom storage; **West**-Dry lab and segment of

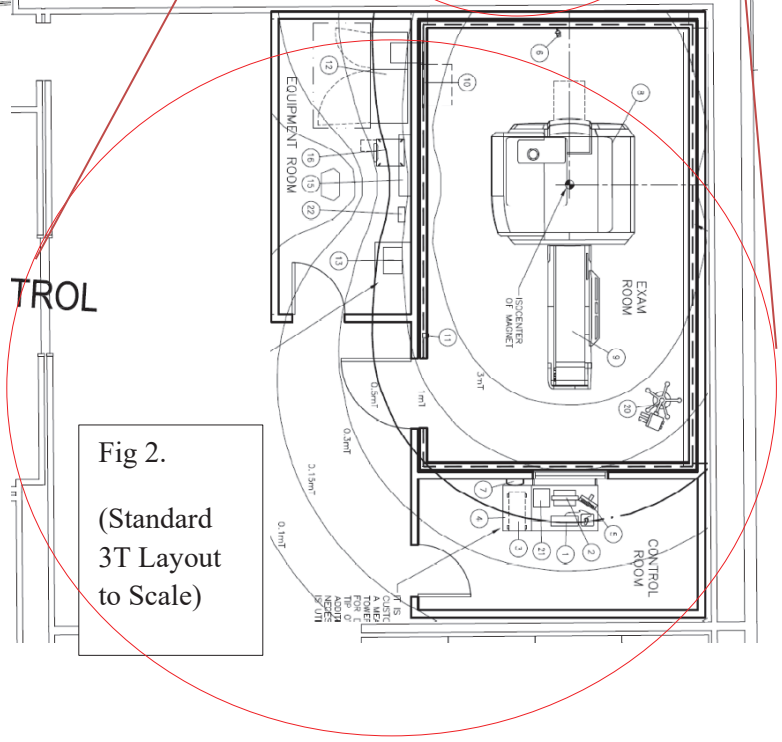

Fig 2.

(Standard 3T Layout to Scale)

72 seat classroom. The above adjacency is a 24-seat graduate student cubicle area and corridor. The elevation to the next floor is 20 feet, although mechanical and support infrastructure begins at 14.5' above the finished floor.
Fringe Fields/EMI: The 3T produces an outward magnetic field that requires "Authorized Personnel Only" access within 11.15' laterally and 19.36' vertically from the center bore. The lateral fringe fields can be accommodated with the available distance, while the vertical elevation will need review for potential added shielding. The upper floor plate is expected to have enough intrinsic shielding as to not require additional shieling above. Other sensitive research tools in SEB affected by outward fringe magnetic fields are located well outside the radius of influence (~36') and are therefore not a concern. External factors such as vehicles can have a disruptive influence on the magnetic field, including carts, small cars, and delivery trucks within 23', 26', and 31' respectively. SEB-1235's exterior East wall is within 12' of a pedestrian pathway, and 40' from an access road. When considering the instrument location within the room, external magnetic influence from moving vehicles due to their distance, mass, and velocity are not anticipated to be an issue.

Foundation: The 3T has a maximum floor loading of 5,600 pounds/sqft, as well as vibration requirements. The SEB entire first floor was constructed with a 4,500 PSI concrete slab 6" thick with polypropylene fibers and ½" rebar every 16" on center. Reinforcements beneath the magnet can have disturbing influences on the magnetic field, which can be partially corrected by shimming. It is not anticipated that the floor reinforcing steel will need to be demolished and fiberglass rods installed in a new slab, although modeling will need to confirm. The wet lab side of SEB was designed to VC-A vibration criteria, or an amplitude less than 2000 micro inches/second. The dry side slab appears to be constructed in an identical manner to the wet side, except for the lack of isolation joints to eliminate vibration from adjacent spaces. VC-A criteria were confirmed by a consultant on the wet side during building turn over, but no testing was done on the dry side. A vibration study should be performed to verify if walker or vehicle vibrations from the nearby sidewalk and access road would exceed the instrument's -80dB(g) requirements. A preliminary review of intra-slab utilities shows that none exist, so saw-cutting isolation joints may be possible if deemed necessary. This room also has a 6" depressed slab from the rest of the building that could be beneficial if a topping slab or shimming is required.

Instrument Entry: The largest part of the instrument is the magnet at 98.4" Wide x 94" Tall. The exterior service entry into SEB-1235 consists of two doorways, each 96" Wide x 96" Tall and oriented at 90 degrees to each other (formerly to allow for large studio set installs). This large opening would be beneficial for the MRI install. The doorframes would need to be removed, or partially cut, and replaced/repaired during install, but no major wall demolition of the precast panels or reconstruction would be required. Other models, such as General Electric's 3T, would fit through the existing doorways without modification. The pathway is also rated for the weight of the magnet and rigging hardware.

Power: The 3T requires 400 Volt three-phase power within 10%. SEB has a 480 Volt service, so a step-down transformer would be required. The closest 480V distribution panel is ~250 linear feet away in the main electrical room, SEB-1322, which has both the extra capacity to service the instrument as well as an existing pathway to reach the instrument room.

HVAC: The exam room requires a temperature of 65ºF to 72ºF and a relative humidity of 40% to 60%, which are both within SEB capabilities as currently equipped (see more below in Building Maintenance). SEB-1235 is on the Honeywell variable air volume (VAV) system that supports all offices, hallways, classrooms, and dry lab spaces of the building. For the areas this system supports, it currently provides ~4 air changes/hour and 74ºF ±2ºF temperatures, and the return air recirculates when the building is in normal cooling mode. The return and supply air test flows from the mechanical test and balance report, show the space air exchange rate may be increasable to ~7.7 air changes per hour, which meets the exam room minimum requirement of 6. Due to its tighter environmental reequipments compared to surrounding spaces, the exam room only may require installation of a new dedicated VAV for supply air, which is not uncommon added infrastructure during SEB lab improvements. A quench pipe is required to vent helium directly from the instrument. Given the high ceiling and outside wall, a vent to the outside is easily manageable and can meet the required distance from pedestrians through elevation alone.

Process Cooling: The 3T systems reject < 21,000 BTU to the air and is well within the HVAC cooling capabilities of the space as built. The system actually produces up to 225,000 BTU in total, although 93% of this heat is designed to be rejected through process water cooling. SEB is equipped with a 50-ton process chilled water loop, along with an air-cooled back-up chiller to support the loop if the central plant fails. The latest energy audit of this loop shows only 10% capacity is currently utilized, providing enough capability to reject the additional ~17 tons of heat the instrument would create. The closest connection point to this loop is ~225 feet away and an accessible pathway exists to extend to this area.

Process Cooling Backup: In the event of loss of building process cooling (see more below in Building Maintenance), it is recommended to have a domestic water flow to drain backup. This system is designed to automatically flow domestic water at 120 gallons per hour through the instrument's chiller to drain, rejecting the heat the process loop would typically handle. SEB-1235 has a ¾" domestic water line within 20' that can meet this flow rate, along with a stubbed sewer line within 10'. Although this system is optional, given the close proximity to these utilities, it should be installed with minimal expense.

Specialty Gases: The initial liquid helium charge of the instrument at commissioning is ~1,200 liters. Once the system is stable, loss of helium is minimal. Infrequent top-offs will be manageable through the East service entrance and will not need liquid helium dewar transport through the lobby.

RF Shielding: The instrument will require a freestanding room shielded on all six sides to house the instrument. Rooms like this are typically designed and constructed specifically for the instrument by a specialty vendor such as ETS-Lindgren. This very vendor was contracted to supply and install the current anechoic chamber room in the space, which is essentially a modified RF room. The 3T RF room requires a very flat foundation not to exceed ± 2mm. In 2010, the room was ground flat to meet this spec and VCT installed, potentially providing an added value to any new RF room install.

Flooring: An antistatic floor covering is necessary. The existing VCT flooring may need to be removed to allow for slab shaving if the flatness level is out of specification where the RF room

will reside. The existing VCT does have antistatic properties and is expected to be sufficient. If it needs removal for slab improvement, an upgraded floor should be considered.

Building Maintenance: The SEB is on the Satellite Energy Plant's (SEP) central chilled and boiler water loops, which provide for the building's main cooling and heating. The SEP was designed and outfitted with redundancy to ensure stable water temperatures so systems work properly in SEB. Historically, these required parameters are often out of spec, or down completely, making it difficult to provide equipment cooling and stable temperature requirements for our specialty equipment. SEB also has a local 50-Ton air-cooled chiller designed to start if chilled water is lost from the SEP in order to support the building's Process Chilled Water Loop, Greenhouse, and IDF Rooms. However, this backup system has under a 2% success rate when SEP chilled water is lost. Lastly SEB was originally equipped with eight steam generators designed to maintain 35% relative humidity building-wide. These units were decommissioned after 1 year and multiple requests to restart and maintain this system have been unsuccessful. Without this system operational, a local humidity make up system will need to be consider at the instrument. The complex Facilities / Maintenance issues causing the poor performance of these support systems would need to be addressed for effective operation of this instrument.

Summary: SEB-1235 does not have any obvious deficiencies that would rule out the use of this space for the 3T. If the project is deemed to move forward, investment in base environmental site requirement testing and modeling would be prudent to confirm these findings. Below is a table of estimated best- and worst-case costs to fit out the 3T, based on case studies of other installs, past SEB tenant improvements, and average rates to run utilities per linear foot. This estimate does not consider any adjacent patient prep space and is based solely on the equipment, exam, and control room alone.

Estimated Project Timeline	
Item	**Duration**
Design	4 months
Bid & Negotiations	3 months
Pre-construction work	3 months
Construction	12 months
Install Equipment	2 months
Total Estimated Time	24 months

Budget Narrative

Functional MRI Scanner for Biomedical Research
Dr. Jefferson Kinney
University of Nevada, Las Vegas

The budget will be used to renovate and equip a building for installation of an fMRI, and purchase an fMRI Scanner and associated equipment.

EQUIPMENT - $3,420,000
Equipment funds are requested to purchase the fMRI Scanner and associated equipment items to include:

fMRI Machine: **$2,600,000**
Computers, software, controller access panel, data storage and backup**: $820,000**
(Itemization TBD).

OTHER DIRECT COSTS - $1,095,000
fMRI Installation will require design and engineering services, including magnetic shielding, air monitoring, environmental engineering, and patient prep space. Estimated costs provided by UNLV's Planning and Construction Department are listed below.

Design/Consultant Services:
Design (including Engineering): $190,000
Environmental Engineering: $8,000

Construction:
Patient Prep Space: $90,000
Demolition: $25,000
General Construction: $360,000
Shielding: $200,000

Furnishings:
Furniture: $26,000

Miscellaneous Fees and Costs:
Plans Review: $7,000
Moving Cost: $11,000
Special Inspection: $6,000
Prevailing Wage: $12,000

Contingencies: $100,000
Project Management: $60,000

TOTAL COST: $4,515,000