

Washington State University

**Dodgen Nuclear Science
Center**

Pullman, WA

NAC Project No. 111-23066

HOT CELL ADDITION STUDY

DATE: September 1, 2023

Executive Summary

In July of 2023, WSU engaged NAC Architecture to study a potential addition to the Dodgen Nuclear Science Center located on the Pullman campus. This addition is intended to facilitate an expansion of the nuclear research currently ongoing at the existing facility. The extent of this study included plan layout, 3d massing, site access, and preliminary budgeting. The following captures the background, thoughts, and assumptions relative to an addition to the facility.

Background

The Nuclear Radiation Center at Washington State University was established in 1961 as an all-university facility to provide an on-campus nuclear reactor and to provide facilities for nuclear-related educational and research programs for the entire campus. Completion of the facility and reactor startup occurred in 1961. The original building was laid out on three levels with a total of approximately 7,800 sf including the reactor as well as laboratory research space. In 1969, the facility was expanded to the east with an approximately 8,700 sf addition providing more lab and office space.

The 1969 addition also provided two loading docks for the building on the east end. The existing topography of the site allowed for both loading docks to be near each other even though they are on two different levels. One loading dock is on the first floor level and accessed directly from the east. The second loading dock is on the second floor level with access from the north along the drive that extends all the way to the original building. The first floor loading dock is used regularly. The second floor loading dock is seldomly used partly because of the awkward stair access from the drive.

The existing split in elevation between the two adjacent loading docks as well as access back to the original portion of the building creates a difficult access situation for deliveries to the facility. The driveway to the upper loading dock is quite steep and with its poor condition, is especially difficult in the winter months. The new proposed addition along with improved grading would seek to alleviate this access problem.

New Addition

The intent of a new addition to the facility would be to provide high bay space immediately adjacent and connected to the north side of the 1969 addition. The addition would be approximately 5,000 sf and provide space for several hot cells, additional laboratory work space, and high bay storage in support of the hot cells.

The new addition is intended to be fairly utilitarian in design, with cast-in-place exterior concrete walls and slab on grade floor. The floor level would align with the second floor level of the existing facility. The addition would include a new HVAC system separate from the existing facility to accommodate the hot cells. Interior connection to the existing facility would be provided in more than one location. A new separate loading dock would be

provided.

In an effort to alleviate the aforementioned site access problem, the addition would be designed such that the new loading dock would be set at the first floor level of the existing facility with an internal lift provided to bring incoming materials to the second floor level. This configuration would allow significant regrading to occur which would lower the current slope and provide adequate turning space for large delivery trucks.

The accompanying graphic images illustrate this new site configuration.

Cost Information

A preliminary construction cost study indicated a budget of approximately \$4.65M would be needed. This amount includes the construction costs only, and does not include traditional soft costs such as sales tax, A/E fees, furniture, fixtures and equipment, permitting, etc. The estimate includes the following assumptions:

Site

- Regrading and asphalt drive replacement to existing and new loading areas.
- Concrete retaining wall alongside the new driveway to accommodate existing topography.
- Exterior lighting at new access drive.
- Basic landscaping and irrigation repair.

Structure

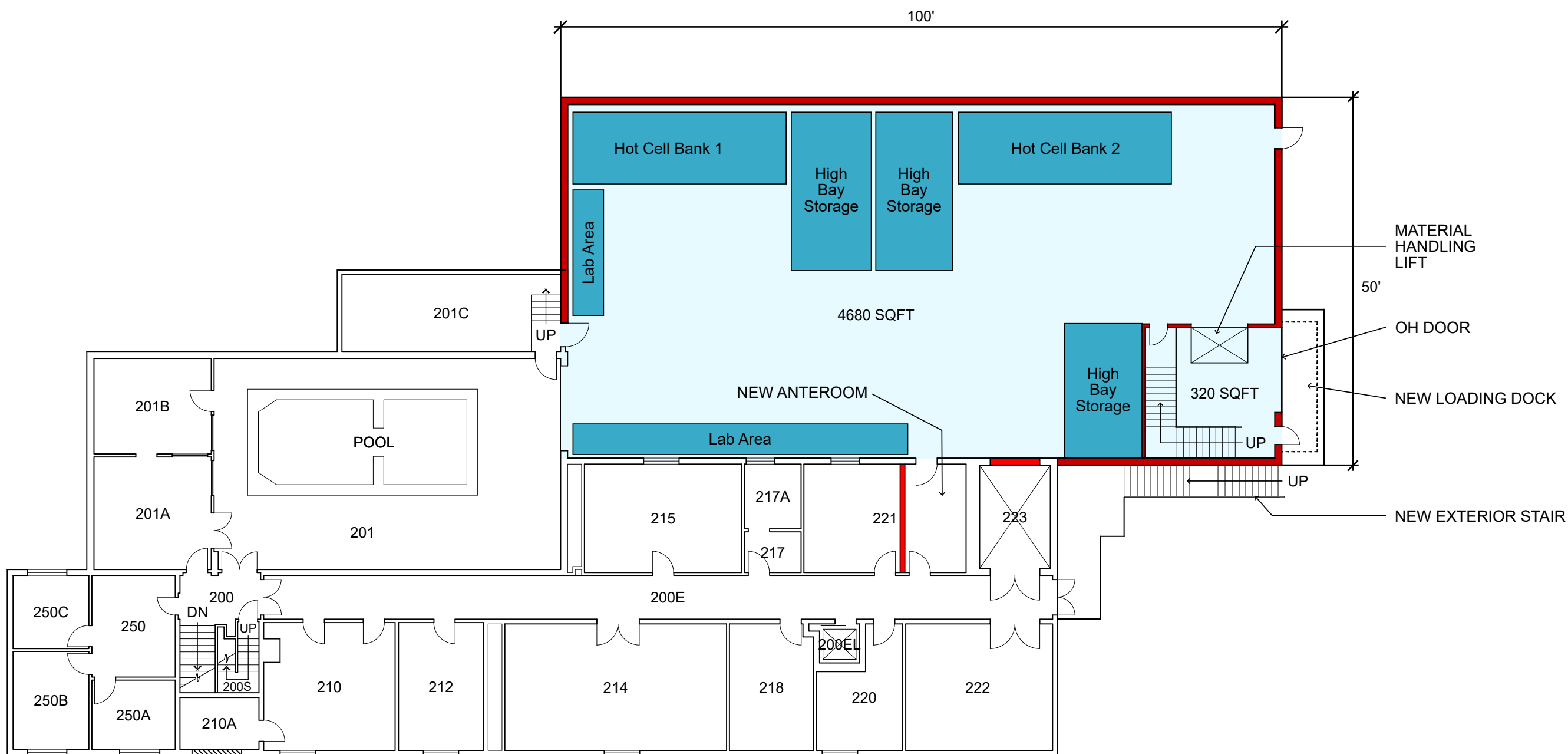
- Cast in place concrete exterior bearing walls (no insulation).
- Steel structure at locations where the addition interfaces with existing building.
- Structural steel framed roof with steel deck (no concrete). Single ply membrane roofing (TPO) with R38 insulation.

Interiors

- Receiving room off of new loading dock with material lift and steel framed stair for access to the second floor level.
- Two new laboratory work benches.
- Minimal interior finishes.

Systems

- All utilities (water, sewer, fire protection, power, telecom, etc.) to connect into existing building systems (no new services).
- New dedicated HVAC system.
- Lighting, power, and low voltage systems to accommodate the needs of the program.

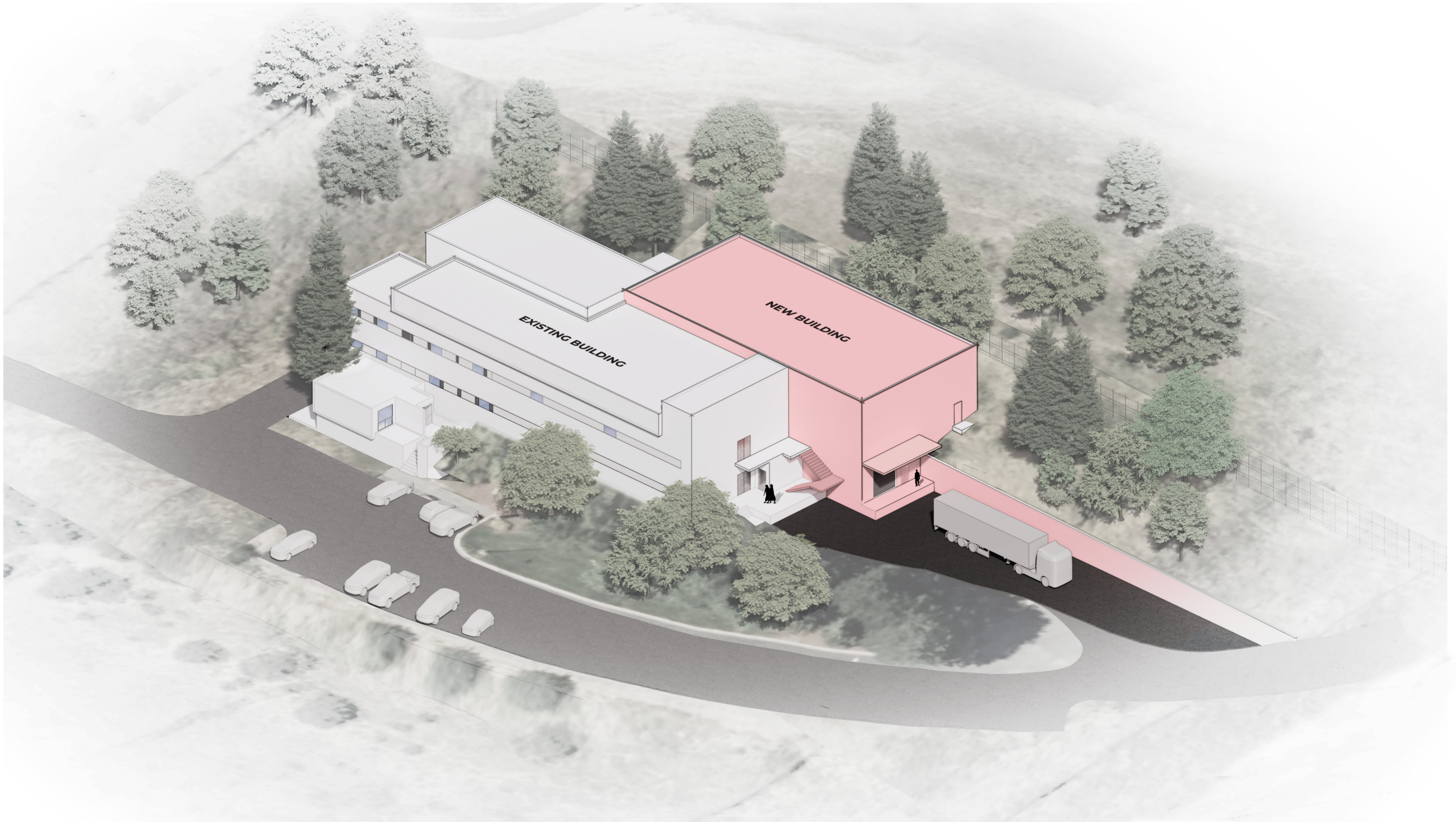


NOTICE TO USERS

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SECOND FLOOR PLAN

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Dodgen Research Addition 8.29.2023

NAC



Estimate of Probable Project Costs

WSU Dodgen Nuclear Research Facility

NE Roundtop Dr, Pullman, WA

PD Phase

Proj. No: 111-23066-4Fb

02/08/24

5,000 gsf

Budget =

KEY	DESCRIPTION	SF COST	COMPONENT	PERCENT	REMARKS
A	GENERAL CONDITIONS	64.30	321,500	9.71%	12 months of construction
					Asphalt drive replacement to new loading area; exterior concrete stair; concrete retaining wall along new drive; lighting at new drive; landscaping and irrigation
B	SITE WORK	71.10	355,475	10.73%	repair
C	BUILDING DEMOLITION	5.40	27,000	0.82%	Demo of existing small metal building
					Perimeter foundations/footings; loading dock and lift room walls; 6" reinforced SOG
D	FOUNDATIONS & SOG	44.71	223,560	6.75%	
					Full ht CIP walls; steel roof framing; roof decking; steel framing at building
E	STRUCTURE	183.80	919,000	27.75%	TPO membrane; R38 rigid insulation; cover board & vapor barrier; coping & flashing
F	ROOFING	43.10	215,500	6.51%	
G	EXTERIOR WALLS	3.95	19,750	0.60%	Painting of concrete walls
					(3) man doors; overhead coiling door at loading dock
H	EXTERIOR DOORS & OPENINGS	3.75	18,750	0.57%	
I	INTERIOR DOORS & OPENINGS	0.75	3,750	0.11%	(3) 3'x7' metal doors
					6" metal stud and drywall partition at lift room
J	INTERIOR PARTITIONS	1.81	9,050	0.27%	
					Painting of interior concrete walls; doors & frames
K	WALL FINISHES	3.57	17,850	0.54%	
L	FLOORING & BASE	0.00	0	0.00%	
					Painting of exposed roof structure
M	CEILING & SOFFITS	2.50	12,500	0.38%	
					Steel stair from loading dock to main level
N	INTERIOR STAIRS & RAILINGS	7.70	38,500	1.16%	
O	ACCESSORIES & SPECIALTIES	2.20	11,000	0.33%	Signage; fire extinguishers
P	FIXED EQUIPMENT	0.00	0	0.00%	
Q	CASE & MILLWORK	7.15	35,750	1.08%	Lab work benches
R	FURNISHINGS	0.00	0	0.00%	
S	SPECIAL CONSTRUCTION	0.00	0	0.00%	
T	CONVEYING SYSTEMS	15.00	75,000	2.26%	Material handling lift
					Connect to existing water & sewer
U	SITE UTILITIES, MECHANICAL	4.00	20,000	0.60%	
					(4) lab sinks; roof drains; emergency fixtures; floor drains
V	PLUMBING	15.52	77,600	2.34%	

WSU Dodgen Nuclear Research Facility
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KEY	DESCRIPTION	SF COST	COMPONENT	PERCENT	REMARKS
W	FIRE PROTECTION	5.50	27,500	0.83%	Full sprinkler system
X	HVAC & CONTROLS	121.00	605,000	18.27%	Dedicated HVAC system & controls
Y	SITE UTILITIES, ELECTRICAL	9.00	45,000	1.36%	Site lighting
Z	ELECTRIC POWER	19.50	97,500	2.94%	New panel(s); branch circuiting; devices
AA	LIGHTING	12.50	62,500	1.89%	General LED lighting
BB	SPECIAL SYSTEMS	14.50	72,500	2.19%	Fire alarm; security/access control; telecom
	GENERAL SUBTOTAL	460.79	2,303,935	69.57%	
	MECHANICAL SUBTOTAL	146.02	730,100	22.05%	
	ELECTRICAL SUBTOTAL	55.50	277,500	8.38%	
	SUBTOTAL	662.31	3,311,535	100.00%	
	CONTR. O & P - GENERAL	46.08	230,394	10.00%	
	CONTR. O & P - MECH / ELECT	20.15	100,760	10.00%	
	BOND & INSURANCE	14.57	72,854	2.00%	
	B & O TAX	3.72	18,578	0.50%	
	SUBTOTAL	746.82	3,734,120	112.76%	
	CONTINGENCY	149.36	746,824	20.00%	
	SUBTOTAL	896.19	4,480,944	135.31%	
	ESCALATION ()	134.43	672,142	15.00%	
	ESTIMATED BID AMOUNT	1,030.62	5,153,086	155.61%	