

University of Arizona as the Global Leader in Desert Ag Research and Innovation: Realizing that Vision

Infrastructure Needs at the Yuma Agricultural Center to support that Vision

Agriculture in Yuma has national and local impactⁱ, and is sensitive to new challenges

- Provides 90% of the North American leafy greens and winter vegetables from November-March
- Provides a \$3.2B annual economic impact to Yuma County, and accounts 25% of the County's jobs
- Is sensitive to emerging challenges of access to irrigation water and skilled labor, rising temperatures, and new pests and diseases

Recent Progress to Realize the Vision at Yuma Ag Center (YAC)ⁱⁱ

- University of Arizona (UA) President's Commissionⁱⁱⁱ identified YAC as one of four Innovation Hubs
- Success of the YCEDA^{iv} public-private partnership linking UA expertise with stakeholder needs
- Ongoing hires of UA Extension faculty: Integrated Pest Management and Organic Farming
- \$360K from NSF for 10GB data access to support Precision Ag Research and Innovation

Potential New and Expanded Research Areas at YAC

Precision Agriculture supported by Big Data, Water Conservation, Soil Health, Emerging Pests and Pathogens, Plant-Soil interactions, and Farming System Design

More Lab and Meeting Space is Needed at YAC to realize the Vision

- 10-15 new labs needed in next 5 years
 - Existing 13 labs are occupied, and 3 labs have double occupancy
 - Immediate need for 5 more labs: 2 new Extension faculty in Pest Mgmt and Organic Farming, New YCEDA projects with collaborators, and 2-3 new industry occupants
 - Next 3-5 years, 5 more labs needed: UA President's Commission: 4 new faculty supporting Innovation Hubs, and additional industry occupants
- More meeting space needed to support growth in conferences and workshops
 - Current space (1100 ft²) is insufficient to support large, interacting groups

Exploring Options for New Infrastructure Investments

- Needs Assessment, Funding Options, Timeline, and Next Steps
- A Conceptual Design for discussion and reference^v
 - Lab Building (21,000 ft²) includes 12 labs (BSL2 level); Conference Center (5,400 ft²) capacity 120 people; and projected cost \$40M according to UA Planning Design and Construction

For more information: Mitch McClaran, Director, Arizona Experiment Station, mccclaran@arizona.edu

ⁱ Kerna, A., Duval, D., & Frisvold, G. 2017. *Arizona Leafy Greens: Economic Contributions of the Industry Cluster*. [file:///C:/Users/pcadmin/Downloads/FINAL leafy greens september 2017.pdf](file:///C:/Users/pcadmin/Downloads/FINAL%20leafy%20greens%20september%202017.pdf)

ⁱⁱ <https://experimentstation.arizona.edu/>

ⁱⁱⁱ Condon, L.E., et al. "The Presidential Advisory Commission on the Future of Agriculture and Food Production in a Drying Climate." *Final Report, August 2023*. <https://doi.org/10.2458/10150.669555>

^{iv} Yuma Center for Excellence in Desert Agriculture <https://desertagsolutions.org/>

^v See Conceptual design on <https://experimentstation.arizona.edu/centers-and-locations/yuma-agricultural-center>

UNIVERSITY OF ARIZONA YUMA AGRICULTURAL CENTER STUDY

UA PROJECT NO.: 23-9698
CONCEPT DOCUMENT
JAN. 04, 2024

SEARS
GERBO
ARCHITECTURE

SEARS GERBO ARCHITECTURE
4547 E. FT. LOWELL RD, STE 421
TUCSON, ARIZONA, 85712
TEL: 520-722-5079



YUMA AGRICULTURAL CENTER STUDY

UNIVERSITY OF ARIZONA
BUILDING ADDRESS:
TBD

UA Project No.: 24-9698

Plot Date	01.04.2024
Project No	1008-037

COVER

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Plotted Scale	AS NOTED
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Introduction

The University of Arizona's Yuma Agricultural Center (YAC) needs more lab and meeting space to meet the expected increase in research and outreach focused on sustaining the \$3B agricultural industry in the Yuma region in the face of climate uncertainty, water insecurity, and potentially for new diseases and pests. Currently, the existing space at the YAC is over-committed with many labs and offices in double-occupancy. Yet, the University is pursuing external funding to increase research and extension activities, increasing research collaborations with private and public partners, and developing a strategic plan to sustain desert agriculture. Therefore, to support these current and future needs, we present this conceptual design and preliminary budget estimate for new labs and meeting spaces at the YAC. We expect this plan to generate dialog and support for expanding the capacity of the YAC to deliver on the land grant mission of the University of Arizona.

To this end, the University of Arizona Office of Planning Design & Construction (PDC), on behalf of the University's Arizona Experiment Station, engaged Sears Gerbo Architecture (SGA) to provide conceptual programming and design for a new laboratory and support, faculty offices, classroom and meeting spaces be located on the YAC in Yuma, Arizona. The proposed laboratory will provide space for as many as 12 new faculty hires. The new facility will provide additional research opportunities for new and existing outside partnerships. The proposed facility will also provide a new exchange center, meeting and gathering spaces that will relieve pressure on the existing structures on campus. This conceptual design will be used by the YAC as a mechanism for the University to focus budgeting and philanthropic fundraising opportunities.

Biweekly programming and design meetings were held between October 2023 and January 2024 with YAC faculty and staff to discuss project goals, ascertain functional needs, operational concerns, and organizational relationships summarized below.

Program Elements

Three functional areas are provided

- Laboratory and support spaces
- Faculty Offices, open access work spaces, and meeting spaces
- Exchange Center for meetings and classes to accommodate 120 people
- Outdoor covered courtyard

Concepts

The proposed 26,723 square foot for two buildings, strategically located on 8th Street, Yuma, integrates seamlessly with the existing Glen C. Curtis Laboratory building, infrastructure, and greenhouses on the YAC. A central covered courtyard serves as a unifying element, connecting new and existing structures. The proposed laboratory building comprises 12 modular laboratories designed for phased construction, allowing flexibility in building six labs at a time. The proposed future laboratory function intended to have an insectary, BSL-2 laboratories, and laboratory shop space for research equipment maintenance. Support spaces, including tissue culture, chemical storage, freezer farm, and server room, and are strategically placed to optimize laboratory functions. The faculty and office spaces, featuring both closed and open office plans, promote adaptability and collaboration. Notably, a kitchenette at the main entrance, with an operable glass partition, enhances connectivity to the covered courtyard, bridging the indoors and the outdoors. The adjacent Exchange Center building, located on the south side of the courtyard, accommodates up to 120 people, offering a versatile space for academic and community outreach events.

Sustainability lies at the core of the design, with a focus on energy conservation and environmental responsibility. The building's east-west orientation maximizes exposure to the north and south façades,

capitalizing on energy efficiency in the hot-arid climate. Overhangs, covered courtyards, and strategically planted trees on the west and east façades minimize sun exposure. The project leverages existing site infrastructure and buildings to reduce demolition and environmental impact. Water harvesting strategies, coupled with the use of native plants, aim to minimize landscaping water usage. The incorporation of solar photo-voltaic panel systems on roofs, covered courtyards, and parking areas demonstrates a commitment to clean energy generation. Windows on the north side optimize natural daylight, with clerestory windows facilitating light penetration throughout the building. South-facing windows are equipped with overhangs for sunlight control, ensuring a balance between natural illumination and shading.

In conclusion, the proposed laboratory and Exchange Center buildings at the YAC not only address the immediate needs for additional space at the YAC, but also represents a sustainable and forward-thinking approach to architectural design. This conceptual design serves as a catalyst for positioning the University of Arizona as a leader in innovative research in desert agriculture, and for future budgeting and fundraising endeavors to support the new infrastructure.

At the request of CALES, separate preliminary total project budget estimates were prepared for the following conceptual options:

- A) Full build-out of Lab Building, includes Exchange Center, PV covered roofs, parking and outdoor courtyard \$40,000,000
- B) Full build-out of Lab Building, excludes Exchange Center, includes PV covered roof, parking and outdoor courtyard \$35,000,000
- C) 6 Lab build-out with 6 Lab shell space, includes Exchange Center, PV covered roof, parking and outdoor courtyard \$36,000,000

These total project budgets were based on historical cost data for similar building types and site development allowances for utility infrastructure and solar covered parking/solar roof installations. Budgets include one year of escalation and will be refined as the project is further developed.

Acknowledgements

Sears Gerbo Architecture would like to thank the following people for their valuable time and participation in this effort.

UA Yuma Agriculture Center

Mitchel McClaran Director, Arizona Experiment Station
Humberto Hernandez Director, Yuma Agricultural Center
Sonnet Nelson Associate Director of Operations, Yuma Center for Excellence in Desert Agriculture
Stephanie Slinski Interim Director, Yuma Center for Excellence in Desert Agriculture

Planning Design & Construction

Ralph Banks P.E., P. Eng., CEM, LEEDAP

Sears Gerbo Architecture

Tom Gerbo AIA, LEEDAP
Fateme Sharaf Zadeh LEED Green Associate

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ARCHITECTURE

SEARS GERBO ARCHITECTURE
4547 E. FT. LOWELL RD, STE 421
TUCSON, ARIZONA, 85712
TEL: 520-722-5079

YUMA AGRICULTURAL CENTER
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UA Project No.: 24-9698

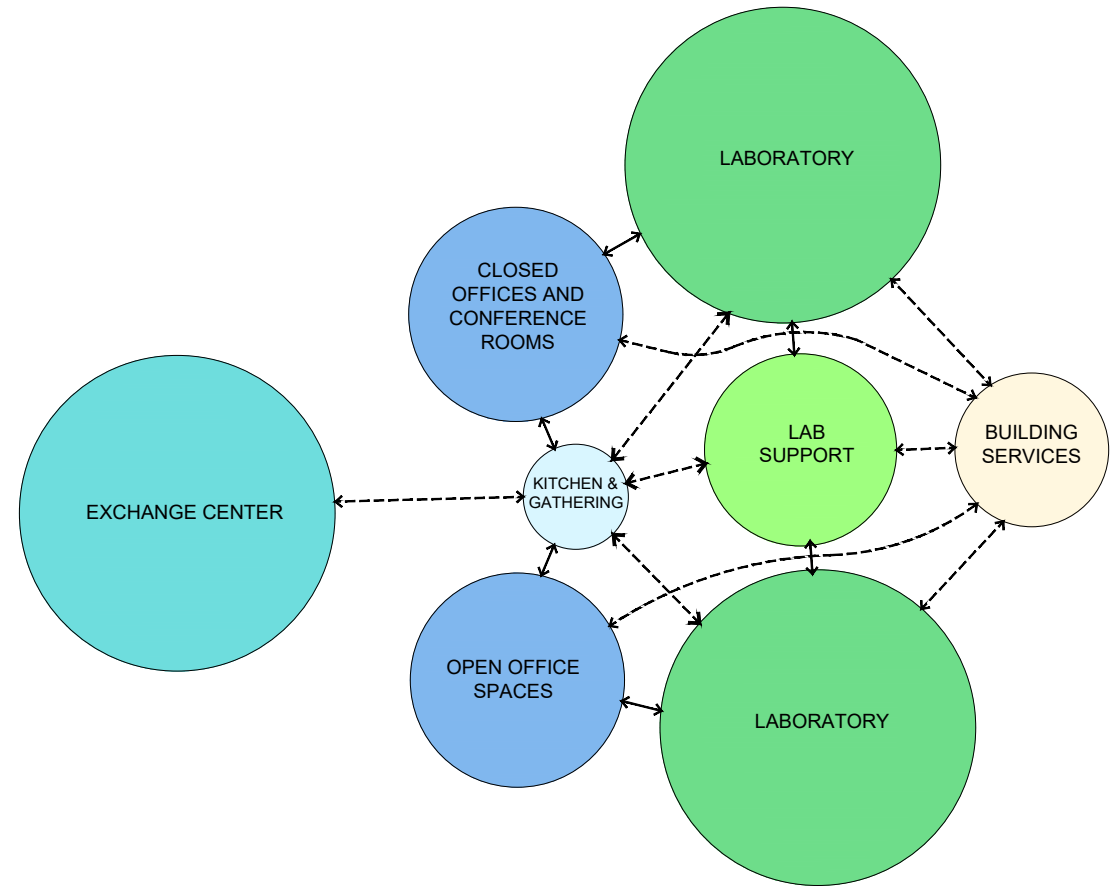
Plot Date	01.04.2024
Project No	1008-037

EXECUTIVE SUMMARY

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Plotted Scale AS NOTED

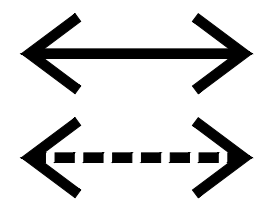
SPACE SUMMARY							
							12.13.2023
R. NO.	SPACE	HEAD COUNT	QTY	AREA	NASF	GF	CGSF
YAC Laboratory							
Laboratory Spaces	laboratory		12.00	510	6,120	1.20	7,344
	Tissue culture		1.00	195	195	1.15	224
	laboratory shop		1.00	640	640	1.20	736
	server room		1.00	240	240	1.15	276
	chemical storage		1.00	135	135	1.15	155
	cold room		1.00	240	240	1.20	276
	Freezer farm		1.00	240	240	1.20	288
Exchange Center	Exchange center	120	1.00	5,400	5,400	1.00	5,400
Office Spaces	Faculty office - PI	12	12.00	120	1,440	1.20	1,728
	Open office - workstation (24 SEATS)	24	24.00	48	1,152	1.50	1,728
	Hoteling - closed office	1	1.00	155	155	1.20	233
	Conference room (20 seats)	...	1.00	410	410	1.20	492
	Conference room (8 seats)	...	1.00	250	250	1.20	300
	Huddle room (4 seats)	...	1.00	155	155	1.20	186
	Breakroom/Kitchenette (shared)		1.00	615	615	1.20	738
	Breakroom/seating area		2.00	480	960	1.15	1,152
	Restroom - office & staff		2.00	300	600	1.15	720
	Restroom - event center		2.00	270	540	1.15	621
Support Spaces	Loading Dock		1.00		0	1.00	0
	Mechanical/Electrical Room		1.00	640	640	1.00	640
	Receiving Vestibule		1.00		0	1.00	0
	TOTAL NET AREA				20,127	1.15	23,237
	TOTAL GROSS AREA						26,723



LEGEND

DIRECT ACCESS

INDIRECT ACCESS

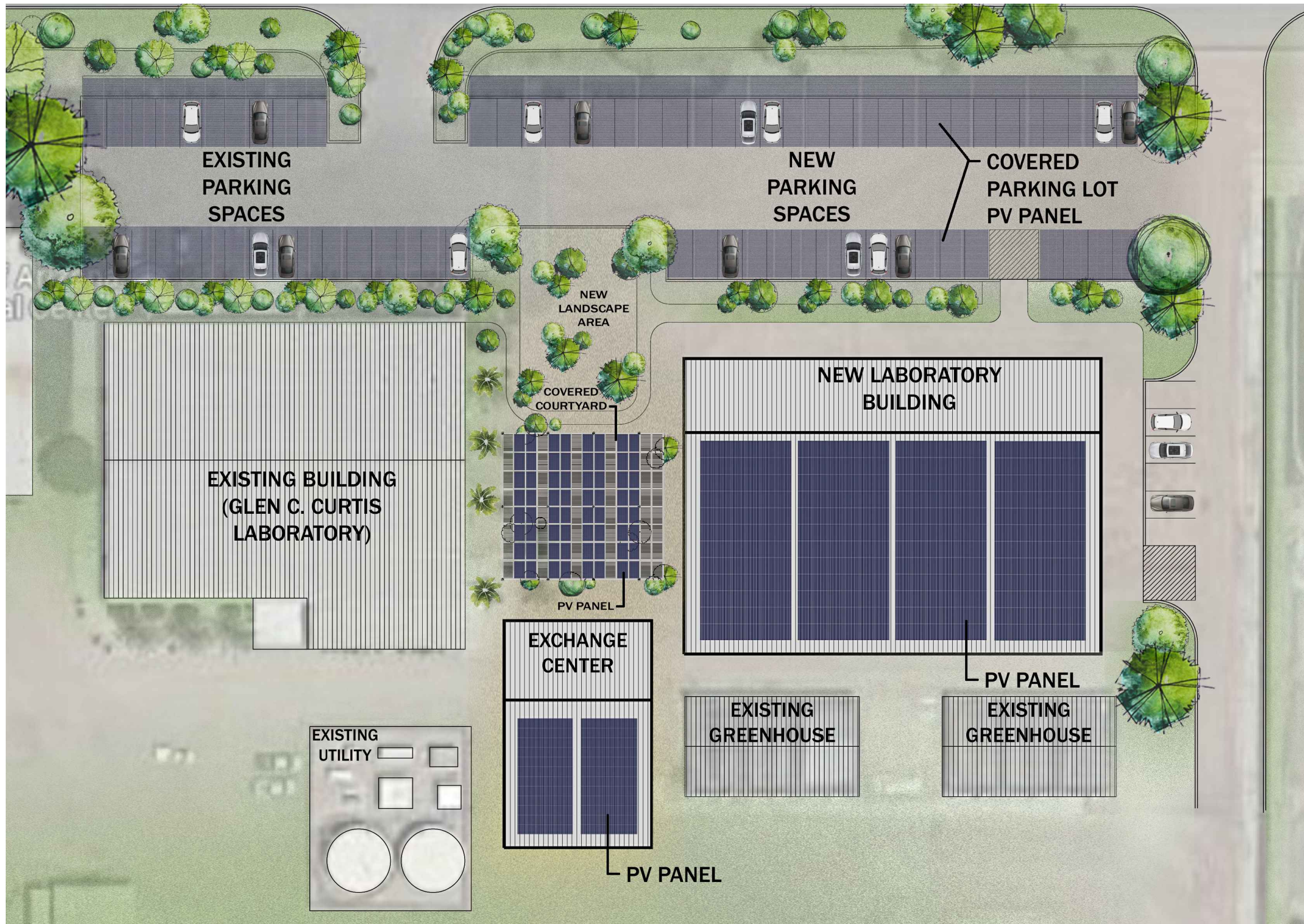


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SPACE SUMMARY & GRAPHIC SPACE DIAGRAM

A0.2

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1 SITE PLAN
SC: N.T.S



BUILDING GROSS AREA = 26,723 SF

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SITE PLAN

A0.3

Plotted Scale AS NOTED



ZONING LEGEND

- EXCHANGE CENTER
- LABORATORY
- LABORATORY SUPPORT
- OFFICE/CONFERENCE
- KITCHENETTE
- BUILDING SERVICES/
CORRIDOR

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ZONING PLAN

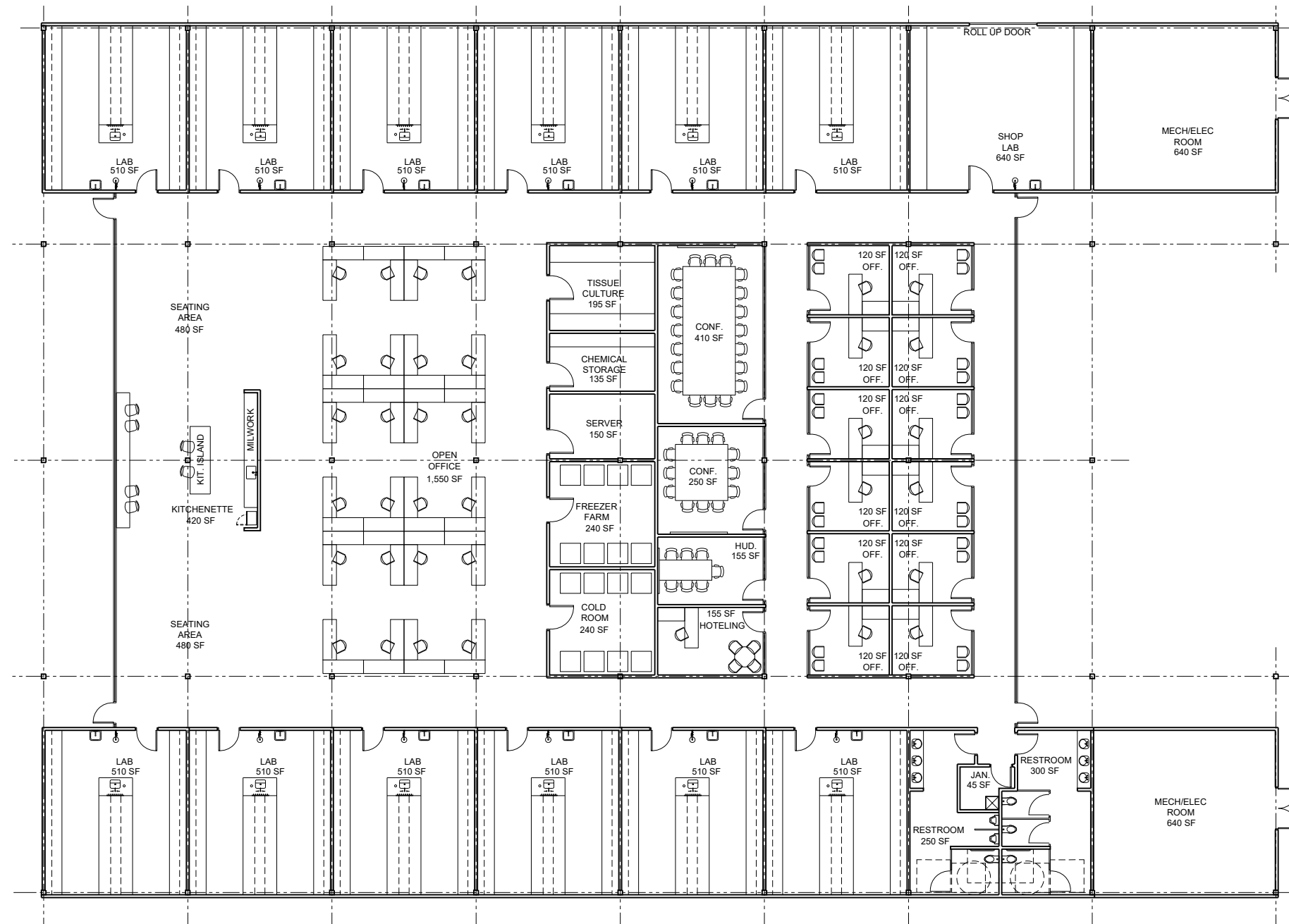
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Plotted Scale AS NOTED

1 ZONING PLAN
SC: N.T.S



BUILDING GROSS AREA = 26,723 SF



1 FLOOR PLAN - LABORATORY & OFFICES
SC: N.T.S



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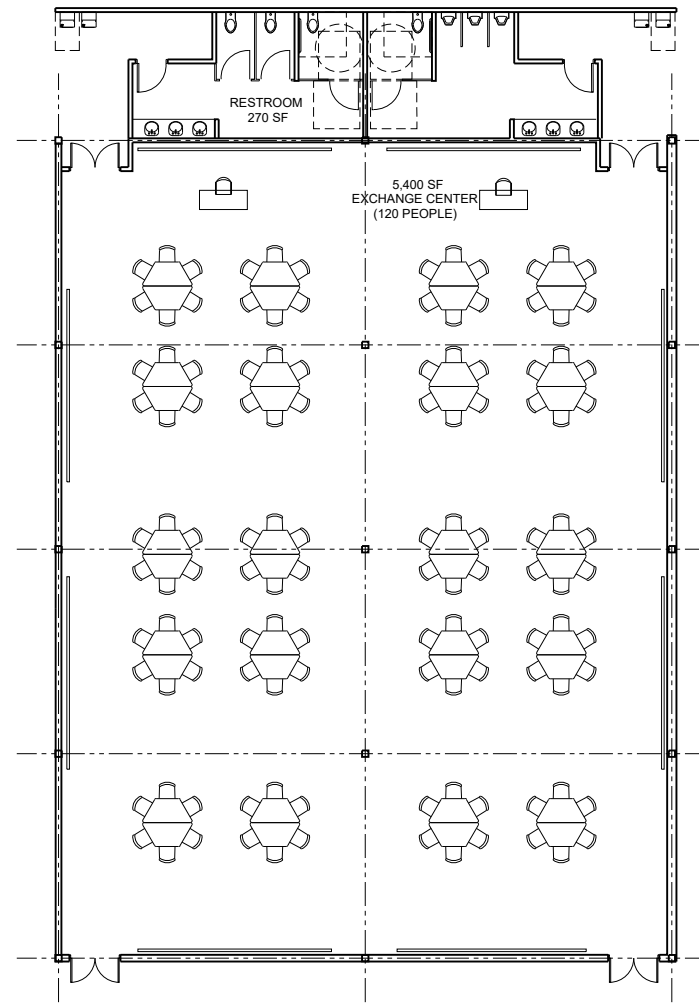
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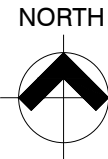
FLOOR PLAN

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Plotted Scale	AS NOTED
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1 FLOOR PLAN - EXCHANGE CENTER
SC: N.T.S



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FLOOR PLAN

A1.2

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EXTERIOR VIEW

A2.0

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1 EXTERIOR VIEW - COURTYARD
SC: N.T.S



1 EXTERIOR VIEW - NORTH ELEVATION
SC: N.T.S

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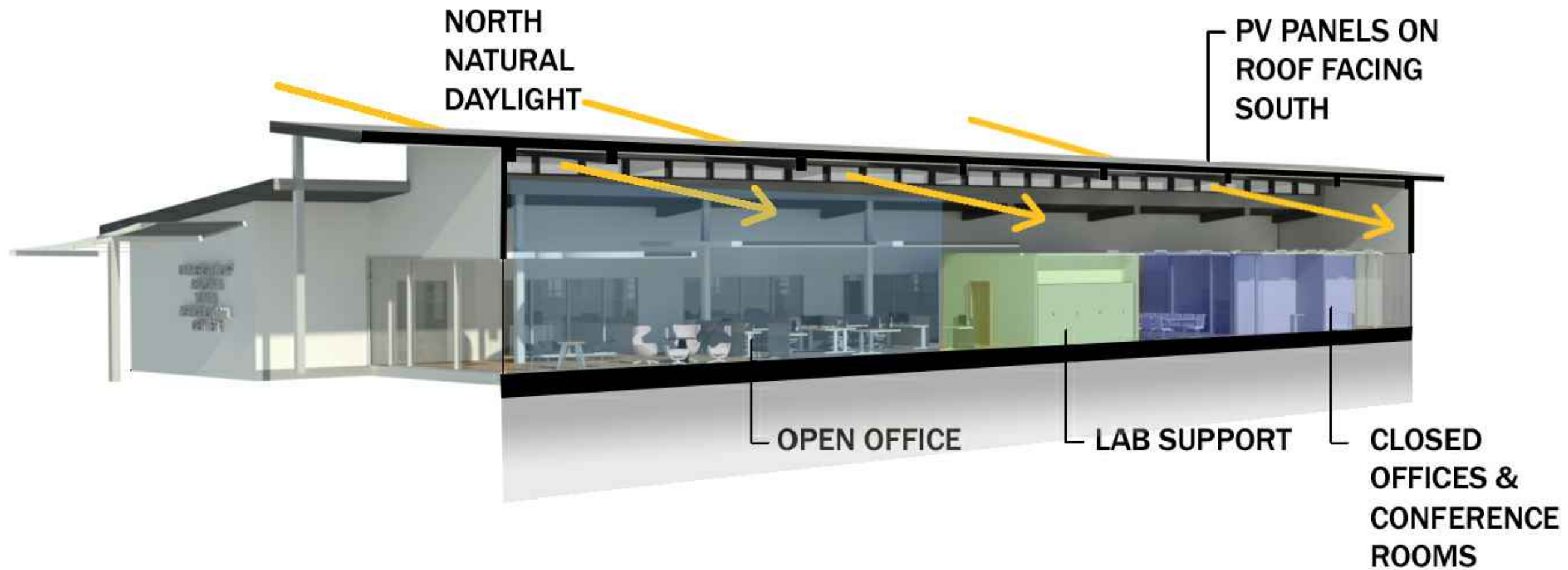
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EXTERIOR VIEW

A2.1

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1 BUILDING SECTION
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BUILDING SECTION

A3.0

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INTERIOR VIEW

A4.0

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1 INTERIOR VIEW - OPEN OFFICE
SC: N.T.S



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INTERIOR VIEW

A4.1

Plotted Scale AS NOTED

1

INTERIOR VIEW - LABORATORY

SC: N.T.S