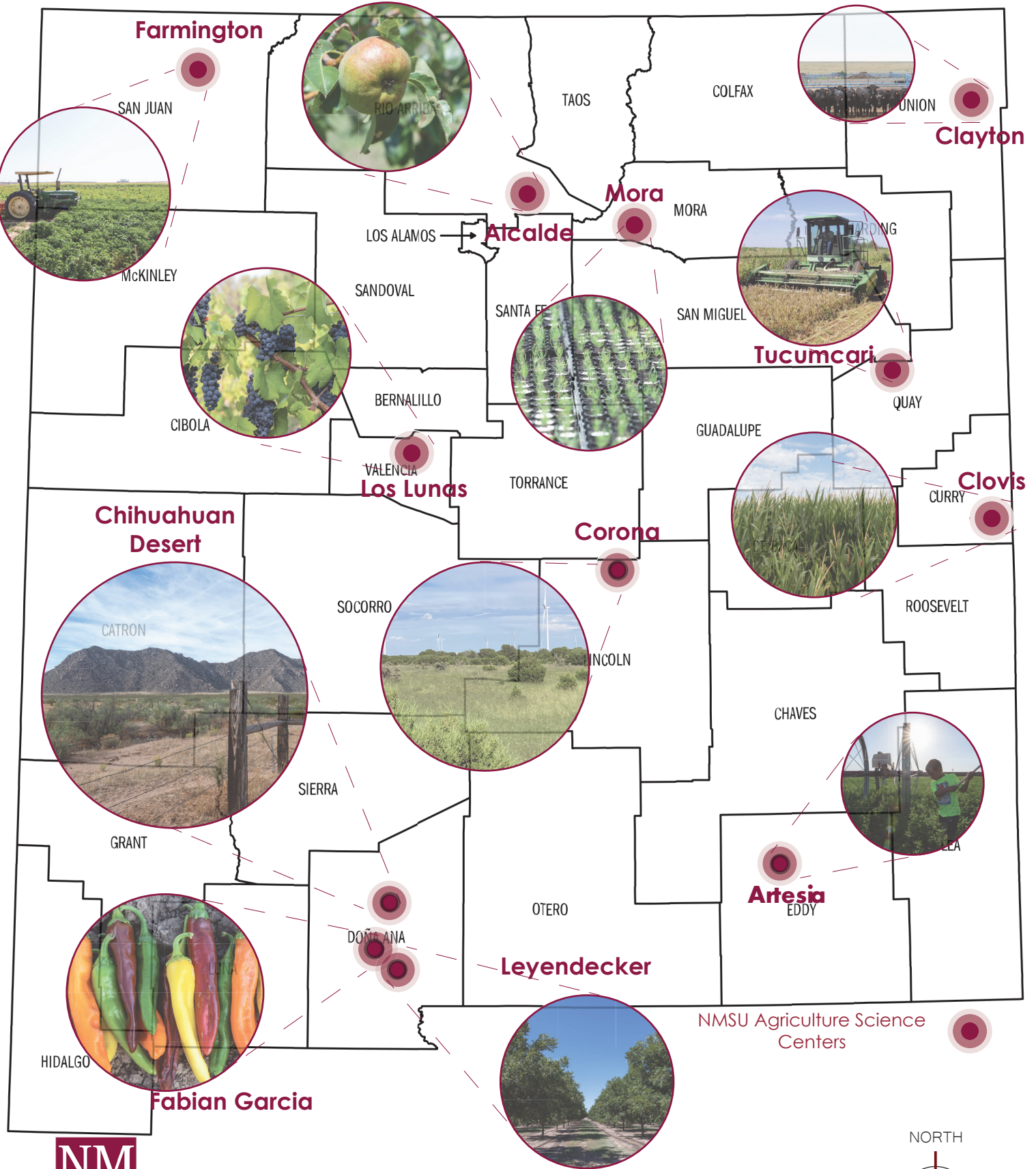


New Mexico State University

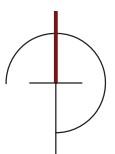
College of Agricultural, Consumer, and Environmental Sciences



BE BOLD. Shape the Future.
College of Agricultural,
Consumer and Environmental
Sciences.

NMSU Alcalde Sustainable Agricultural Science Center

NORTH



BOOK 2 OF 12

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ACKNOWLEDGMENTS

*Dr. Rolando A. Flores Dean & Chief Administrative Officer College of Agricultural,
Consumer and Environmental Sciences*

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Shad Cox AES Livestock Operations Director
Dave Lowry AES Farm Operations Director*

*Heather Watenpaugh University Architect Facilities and Services
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Additional thanks to representatives of the research center:

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Shad Cox- Corona Range and Livestock Research Center
Kevin Lombard, PhD- Farmington Agricultural Center
Mark Marsalis- Los Lunas Agricultural Science Center
Dave Lowry- Fabian Garcia Research Center
Dave Lowry- Leyendecker Plant Science Research Center
Andrew Cox- NMSU College Ranch
Jason Box- R. E. Kirksey Agricultural Science Center at Tucumcari
Dr. Robert Flynn- Artesia Science Center
Dr. Owen Burney- J. T. Harrington Forestry Research Center at Mora
Lara Phihodko- Alcalde Agricultural Science Center*

Planning Consultant

*Staff of NINE DEGREES ARCHITECTURE AND DESIGN, INC.
NMSU-ACES IT DEPARTMENT - Information Technology*

FACILITIES MASTER PLAN REPORT

Executive Summary | July 2023

OVERVIEW

New Mexico State University Facilities Group (NMSU) commissioned Nine Degrees Architecture and Design, Inc. (NDA&D) in the Fall of 2021 to perform a facility assessment study and master plan of the institution's agricultural research centers that are located throughout the State of New Mexico. As identified in this report, this consortium of twelve agricultural research facility locations is an integral part of the **College of Agricultural, Consumer, and Environmental Sciences (ACES) academic, research, and public service program** for the New Mexico State University System. These assessment efforts required NDA&D to complete this evaluation plan under an open and transparent methodology to ensure a fair data-driven **Facility Master Plan (FMP)** effort. The Facilities Master Plan is intended to inform NMSU of the College of ACES agricultural research facilities building conditions for operations, use, and future capital investment decisions that may be needed for these agricultural centers' next five years of operations. Together with the College of ACES administration, NMSU Facilities and Services Department Staff, and ACES research centers' staff, our architectural staff members undertook an assessment effort and outreach process that included extensive field visits and data gathering at all twelve research center locations.

The Facilities Master Plan (FMP) findings that informed our team of the specific recommendations are summarized in this document, thus providing NMSU with an outsider's snapshot of the state of operations, facilities conditions, and functional suitability to maintain the center's successful operations. Our team's expectations are that, as this plan is implemented, it will assist the staff at NMSU College of ACES to continue its educational and research vision and mission by having their centers equipped and capable of meeting the needs of their academic endeavors for upcoming research grants and being able to achieve a balance of their existing needs. Through this balance ACES will be able to increase capacity utilization, and by being able to improve their research programs – both being crucial and beneficial issues to all **New Mexico State University College of Agricultural Consumer Environmental Sciences** students today and in the future.

FINDINGS

After a series of on-site visits and through visual assessment of each facility, the findings included in this Facility Master Plan (FMP) begin to illustrate that many of the College of ACES research center facilities appear to be in relatively poor condition and/or declining conditions. These conditions can be attributed to the historically low level of state funding for critical maintenance and capital investment for basic building maintenance, structural repairs, facility erosion control, mechanical systems repairs, and roof replacement. In addition, based on the data that was discovered during our assessment process, it appears that all research centers, in some form or another, have suffered from issues such as a shortage of maintenance personnel, staff attrition, and financial cutbacks, which have exacerbated their poor facilities' conditions. The annual maintenance and operation budget awarded to each of the agricultural centers has directly impacted the number of repair projects required to improve and maintain each of the centers to perform to their optimal capabilities.

After evaluating demographic information for the State of New Mexico from 1990 to 2020, as reported in the annual assessment by the State of New Mexico Economic Development Department, the state increased its population by an average of 240,000 citizens per decade since the 1990s. It leveled off in 2020 for a total of 2.1 million citizens. Over the past three years since, the population has continued to grow but at a slower and smaller pace. Current assessment predicts a smaller but steady increase in population, with a projected student enrollment for the next 2 to 3 years that will continue to remain relatively level with smaller incremental growth. Additionally, the assessment describes that there will be growth and/or decline in specific geographic areas as the state experiences regional population immigration or interstate migration.

<i>NMSU ACES</i>	
FACILITY DEFICIENCY COST - PRESENT	\$17,604,854.00
5-YEAR LIFE CYCLE FORECAST- ESCALATION	\$6,402,251.14
TOTAL 5-YEAR NEEDED - OVERALL BUDGET	\$24,007,105.46

This facilities assessment has identified the need for a minimum expenditure of around \$24,007,105.46 million in projected Operations & Maintenance funding for facility-related needs within the next five years (in 2022 dollars), comprised of \$13,843,194.00 million for the repair of current deficiencies, and additional \$3,761,660.00 million for instructional technology infrastructure improvements. Furthermore, an add is anticipated over the next five years for end of life-cycle repairs

of \$6,402,251.14 million premium to the O&M Budget. This budget does not include any additional funding that may be required to transition each center to a renewable energy system as currently being studied by NMSU Facilities Team. Each agricultural center's physical condition and functional adequacy were determined by thoroughly inventorying all buildings and accessory structures against their current scheduled use. By comparing the operational capacity of each center against current and projected enrollment predictions based on existing utilization capacity, utilization percentages were developed to inform our assessment team on how to develop individual strategies for facility repair and replacement efforts. These strategies created the best use and value for all college of ACES research facilities. It is certain that continued degradation of the research facilities will financially strain NMSU College of ACES's academic and research mission. The operational expenditures, such as utilities, annual maintenance, and growing extensive repairs caused by buildings and operational systems reaching the end of their life-cycle, will become overwhelming and create greater difficulty to repair the existing buildings.

RECOMMENDATIONS

To determine whether an asset is critical to the continuation of the mission of the University, a needs assessment must be scheduled and performed every five-years and, in some facilities, even sooner, when regulations, curriculum shift, or just a change in the facilities conditions, warrants a new assessment. Our recommendations are based on a mixture of both basic general building systems performance and institutional priorities. Institutional priorities are based on academic necessities as they are balanced against the maintenance and maintenance budgets provided within the annual system's expenditure strategy. Our observations of the buildings' performance were based on assessing the life expectancy of the building systems as they are collectively beginning to reach their end of the life-cycle or by analyzing the systems' age.

Based on the field conditions and facility historical data, Nine Degrees Architecture and Design, Inc., recommends to the NMSU College of Agricultural, Consumer, and Environmental Sciences and NMSU Facilities Planning Team to begin taking additional operational and capital funding steps that will provide opportunities for improving each Ag Center and create the possibility for a more balanced utilization program for each of their research centers.

These additional operational and capital actions are detailed below.

OPTION ONE: Divest Surplus Landholdings.

Divesting surplus landholdings with strategic time-to-market transactions will replenish the NMSU College of Agricultural, Consumer, and Environmental Sciences funding budget and create additional resources for potential reinvestment into their current research center facilities. This recommendation directly aligns with research center staff recommendations towards enhancing the center's mission and vision.



OPTION TWO: Review Land Use for the Surplus Landholdings.

Rethinking and reallocating surplus landholdings with strategic lease transactions to the private sector to create wind farms, grazing farms, solar farms, or any other public-minded use that will allow for a cash flow increase while still retaining land ownership that should replenish NMSU College of Agricultural, Consumer, and Environmental Sciences fund balance and create financial resources for additional reinvestment into each research center facility and infrastructure. This recommendation directly aligns with each research center's mission and vision.



OPTION THREE: Explore Public Bond Support.

The evaluation team advises the institution to consider using non-state funding sources and develop a plan for a multi-million bond referendum to fund facility improvements at each of the twelve research centers. If approved by the voters, these funds would optimize the immediate safety concerns and modernization of the research centers while addressing top-priority facility repair and infrastructure needs in the near term. Consequently this would defer the remaining \$6,402,251.40 million in lower priorities for future implementation due to construction escalation over the next 5-year cycle. In an effort to assist the bond steering committee, the planning team defined a list of recommended high-importance/ high-impact enhancements for each research center focusing on critical facility replacements, repairs, and high technology needs.



OPTION FOUR: Explore Public-Private Partnership.

The evaluation team also recommends that the NMSU College of Agricultural, Consumer, and Environmental Sciences team and the institution consider identifying and developing specific strategic public partnerships aligned with their 5-year cycle to secure targeted sponsorship and ventures with key industry leaders that each center serves. This proposed association can work with donors or sponsors with a vested interest in the success of the research agenda of each center. This option will require a more detailed analysis to engage the private sector in identifying suitable candidates for each research center.



INTRODUCTION AND METHODOLOGY

In concurrence with the academic offering by New Mexico State University, the College of Agricultural, Consumer, and Environmental, the expected outcome for this assessment effort is to provide the New Mexico State University Planning and Design team with a snapshot assessment of the “present day” state of their existing facilities with the expectations of developing a sound strategy for the maintenance, upgrades, and/or replacement of their agricultural centers’ building facilities. This assessment also serves as an inventory of the building conditions of each center intended to inform the College of Agricultural, Consumer, and Environmental Science leadership as they continue to prioritize their needs for academic, research, and public service. In order for the system to help fulfill the NMSU College of ACES educational and research vision, the NMSU Board of Regents and Administration determined the necessity to develop the Facility Master Plan (FMP) and assessment that will inform and guide the potential of needed facility rehabilitation and capital investment decisions for the next 5-year cycle. Entrusted with first putting College of ACES research excellence in the forefront and then emphasizing the effective stewardship of the university’s assets, NDA&D engaged and undertook an exhaustive visual assessment of every research center facility, evaluated demographic studies, and facilitated a transparent assessment and planning process. This process included the participation of staff members from the NMSU team and administrative members of each agricultural center.

The Facility Master Plan findings and recommendations from our assessments and reviews are summarized within this document, providing the NMSU Board of Regents with an independent, unbiased snapshot and near-term forecast of all ACES facilities’ condition, suitability, and utilization. This document summarizes the results of a comprehensive assessment performed in the Fall of 2022 through the Summer of 2023, culminating in this Facility Master Plan with recommendations for NMSU College of ACES that identifies options for future investments in the enhancement and maintenance of its agricultural centers’. We have included a review of the entire facility portfolio, an educational/ research adequacy assessment, a facility condition assessment, a five (5) year life-cycle forecast, and a review of College of ACES’s current enrollment statistics.

NMSU ACES RESEARCH AT EACH SITE

NMSU ALCALDE SUSTAINABLE AGRICULTURE SCIENCE CENTER

371 Country Road 40, Alcalde, New Mexico, 87511

The research mission of the Alcalde Sustainable Agriculture Science Center (SASC) is to conduct agricultural and natural resource research to benefit small-scale family farms and ranches in north-central New Mexico. Testing different crops, varieties, and production techniques aims to provide new information that producers/farmers can adapt into their independent operations for greater productivity and profitability.

Future research efforts - a continuation of current efforts on fruit studies, vegetable and alternative crops, and ongoing hydrology & cropping systems.

NMSU Alcalde Sustainable **Agriculture Science Center** - **WAYFINDING**



NMSU Alcalde Sustainable Agriculture Science Center -
WAYFINDING



NMSU Alcalde Sustainable
Agriculture Science Center



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NMSU Alcalde Sustainable **Agriculture Science Center** - **LOCATIONS**



NMSU Alcalde Sustainable **Agriculture Science Center** -
LOCATIONS



NMSU Alcalde Sustainable
Agriculture Science Center



Property Boundary



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NMSU Alcalde Sustainable **Agriculture Science Center** -
LOCATIONS



NMSU Alcalde Sustainable
Agriculture Science Center

- 1. Offices **350H** (FCI Score 0.015)
- 2. Guest House **350F** (FCI Score 0.731)
- 3. Residence **350G** (FCI Score 0.349)
- 4. Steel Building **350A** (FCI Score 0.009)
- 5. Storage **350C** (FCI Score 1.042)
- 6. Storage **350D** (FCI Score 1.042)
- 7. Mobile Home Office Trailer **350I** (FCI Score 1.042)
- 8. Storage **350E** (FCI Score 1.042)
- 9. Lab Trailer **641** (FCI Score 0.243)



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NMSU Alcalde Sustainable **Agriculture Science Center** - **DEFICIENCIES LIST**



NMSU Alcalde Sustainable **Agriculture Science Center** - Deficiencies **List**



STORAGE 350E

The building has extensive eroded foundations and damaged load bearing walls. The building also has negative water drainage from site and street towards the building. It's a prime candidate for removal and replacement.



STORAGE 350D

The building has extensive eroded foundations and damaged load bearing walls. The building also has negative water drainage from site and street towards the building. It's a prime candidate for removal and replacement.

NMSU Alcalde Sustainable **Agriculture Science Center** - Deficiencies **List**



STORAGE 350C

The building has extensive eroded foundations and damaged load bearing walls. The building also has negative water drainage from site and street towards the building. It's a prime candidate for removal and replacement.



RESIDENCE 350G

The stucco around living room window (south) and east wall is cracked additionally loose around living room window (south) and east wall. The window header at the living room window has extensive rot and is visibly deflecting and the rotted canales on West elevation needs to be replace. The door header into mechanical room and window headers along East elevation is rotted. Need down-leaders drains from canales to stop water from running along sidewalk. Needs a new concrete apron all around the building and regrade for positive drainage along all sides. The house is not ADA accessible and the entry door it needs a ramp. The stucco along the South and East elevations needs to be removed to evaluate the adobe for erosion, wood columns at back porch need resealing along with fascia, Southwest corner of house has exposed wood that requires resealing, stucco cracks at other elevations need repair and repainting, all windows need to be resealed, sidewalk leading to the porch entry needs retaining walls as its being undermined.

NMSU Alcalde Sustainable **Agriculture Science Center** - Deficiencies **List**



GUESTHOUSE 350F

Cracked stucco along the walls needs repairs and repainting, concrete apron all around need to be regraded for positive drainage away from house, replace rotted wood canales, exposed wood columns and vigas at entry porch needs resealing. Need to seal around the viga extensions at entry porch, and windows need to be replaced with double pane. The wood front door needs to be refinished, the roof is leaking around canales at kitchen, the bathtub drain is leaking and is not connected to septic tank (safety). The floor at the restroom needs reconstruction as it is wet and mushy (possible mold), all exterior window vigas need sealing, all parapets need refinishing at transition between roof cap sheet and stucco, house needs ADA access ramp.



OFFICE 350H

The railings at the entry courtyard are rotted, the roof needs re coating around entry courtyard over the veranda, the wood bases at columns need metal caps, and wood stairs to higher roof areas need repair. Existing wood splits needs re coating, and existing dirt roof over lookout tower needs to be replaced with new roof to match all others. The garden wall along arroyo has collapsed and needs to be rebuilt, downleaders and rotted wood jambs at door by the staircase need to be replaced. The soffit around veranda is rotted/ water damaged, the patio entry doors rotted out and need replacing, building requires ADA parking and ramp. The concrete apron around perimeter walls and along East needs regrading for positive flow away.

NMSU Alcalde Sustainable **Agriculture Science Center** - Deficiencies **List**



LAB TRAILER 641

Repair roof leak over restroom, repaint exterior walls, building needs ADA ramp-deck, needs ADA parking complete with signage, etc. All interior lights need to be replaced with LED fixtures, gutters and downleaders are needed, repaint exterior doors, reseal all moldings, concrete apron and regrade all around the facility.



STEEL BUILDING 350A

Repair metal wall panels, and provide ADA hardware at main entrance doors. The concrete apron at South and East sides needs to be regraded to provide positive flow away from building. The facility needs to have all gutters cleaned, reroute East downleaders toward South side, and repair roof leaks (replace roof screws and washers). There is need to repaint HM doors and frames, repaint overhead door jambs, need bollards at overhead doors jambs, need concrete apron repairs, need new weatherstripping and kits at all doors and overhead doors, seal AC unit wall penetration at Northeast corner.

NMSU Alcalde Sustainable **Agriculture Science Center** - **FLOOR PLANS**





NMSU Alcalde Sustainable
Agriculture Science Center

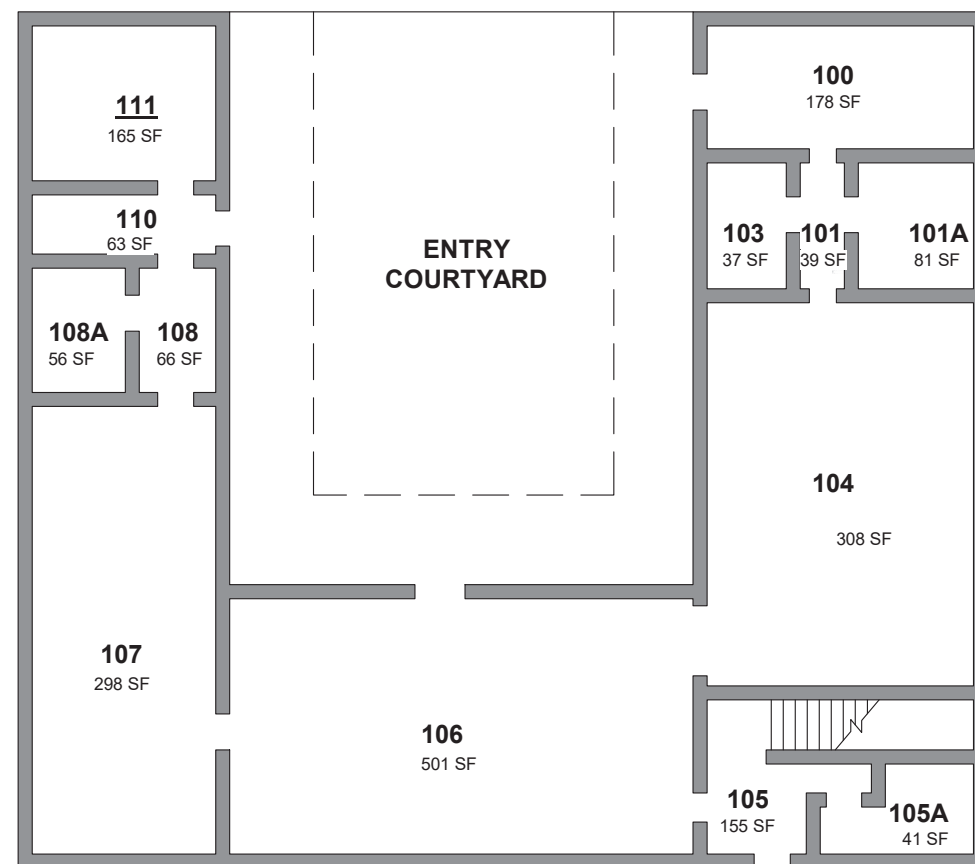
1- Office 350H



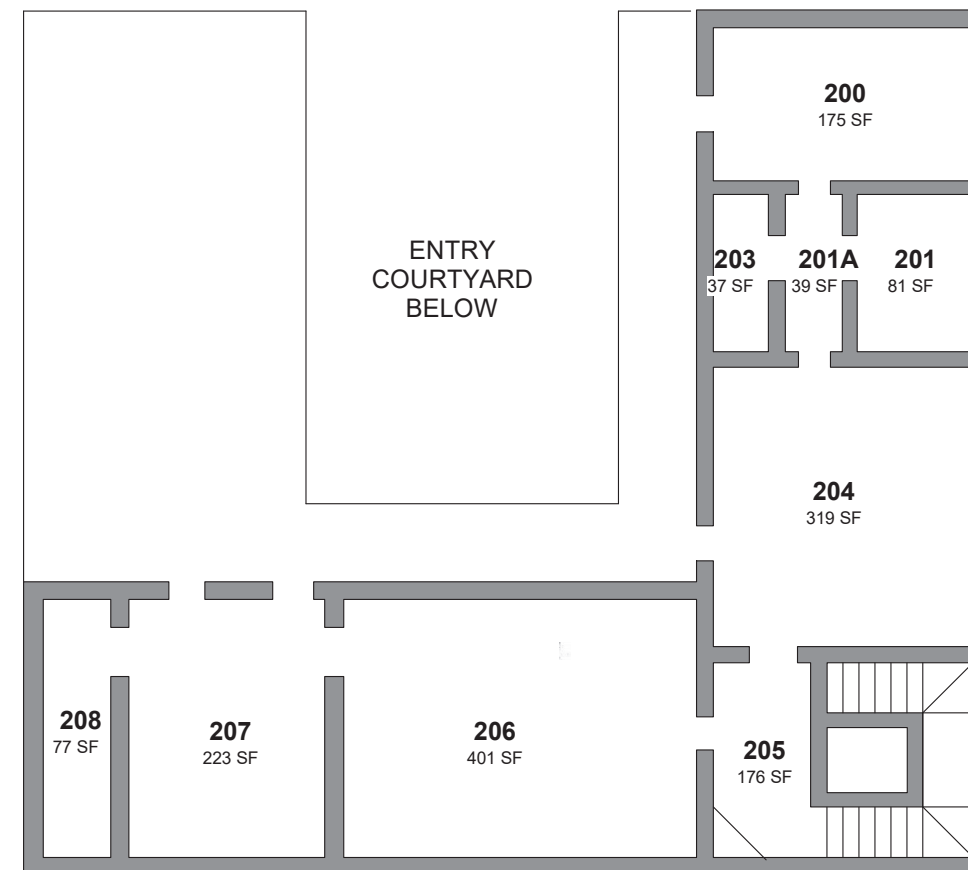
Key Map



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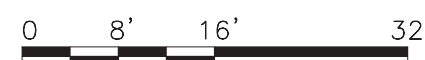


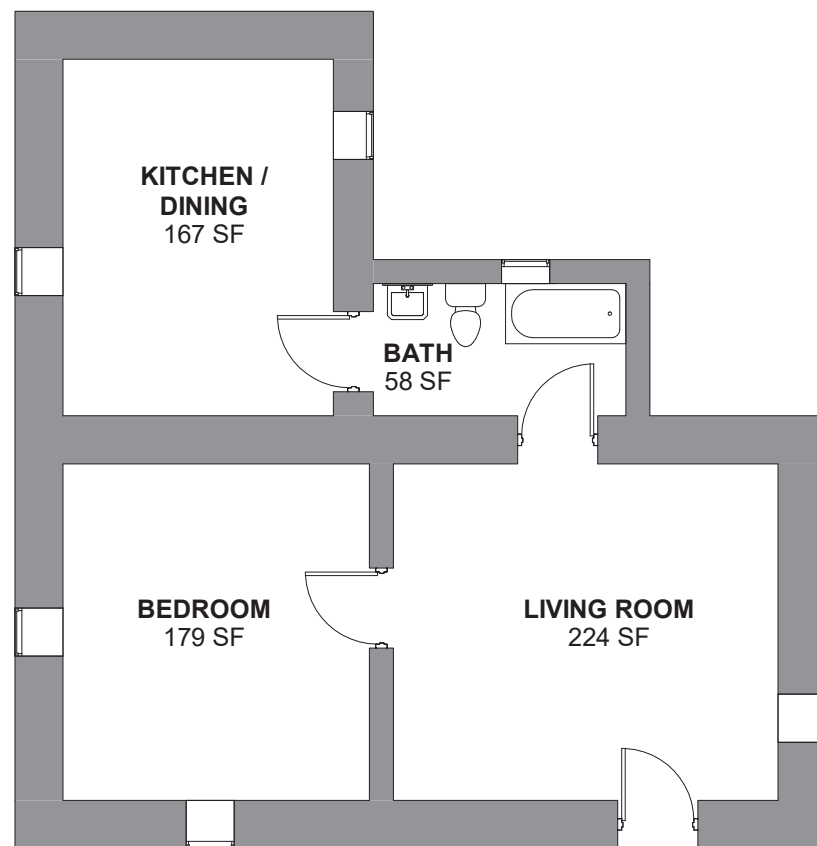
350H OFFICE 1ST FLOOR
SCALE 1/16" = 1'-0"



OFFICE 2ND FLOOR

SCALE 1/16" = 1'-0"





350F GUEST HOUSE

SCALE 1/8" = 1'-0"



NMSU Alcalde Sustainable Agriculture Science Center

2- Guest House 350F



Key Map



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NMSU Alcalde Sustainable Agriculture Science Center

4- Lab Trailer 641

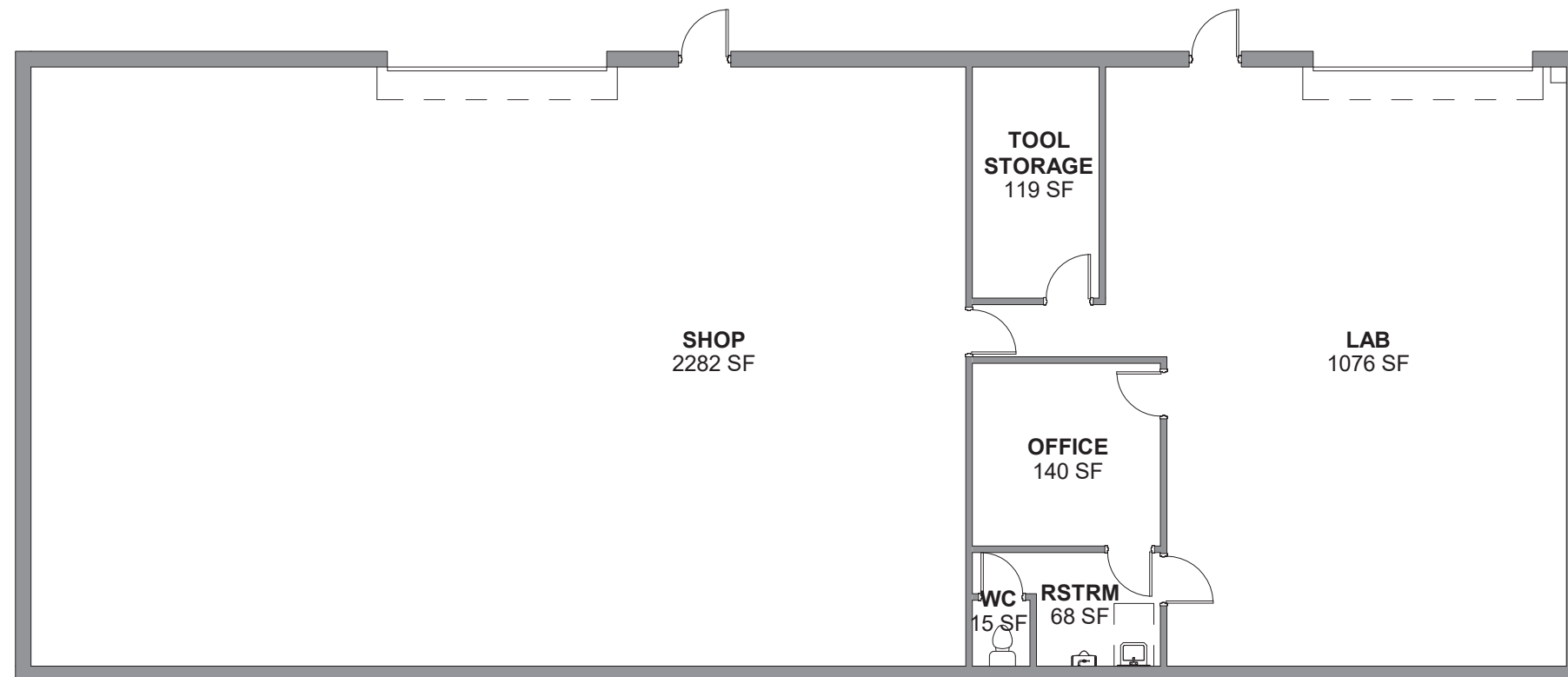
9- Steel Building 350A



Key Map

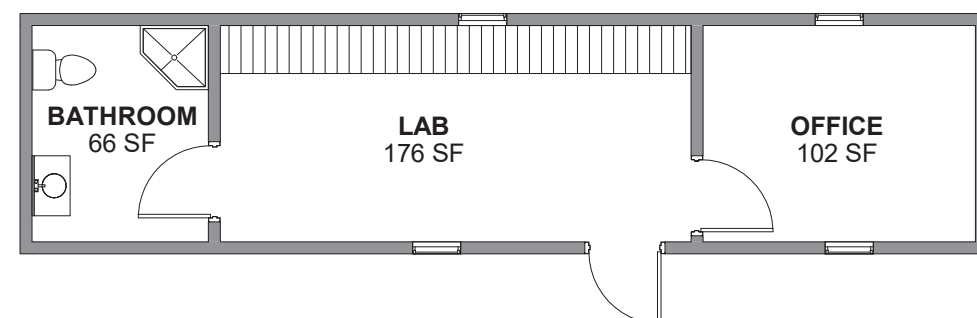
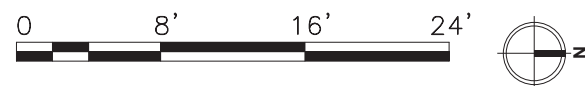


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350A STEEL BUILDING

SCALE 3/32" = 1'-0"



641 LAB TRAILER

SCALE 1/8" = 1'-0"





NMSU Alcalde Sustainable Agriculture Science Center

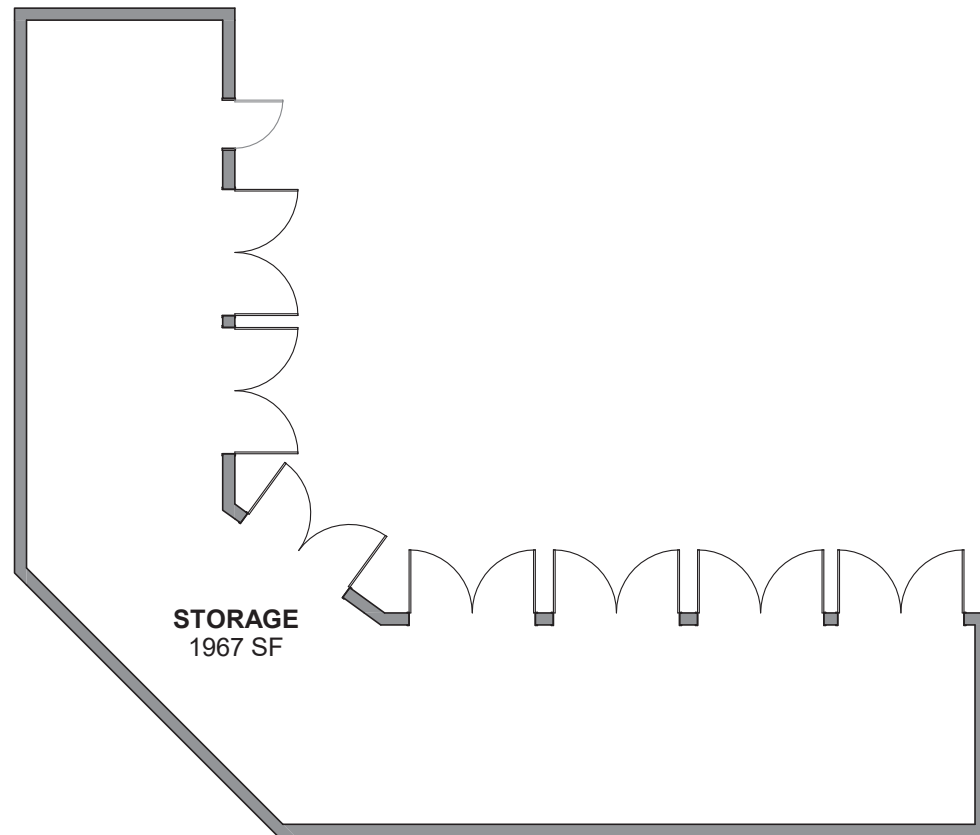
- 3- Storage 350D
- 4- Storage 350C
- 7- Mobile Home Office Trailer 350I



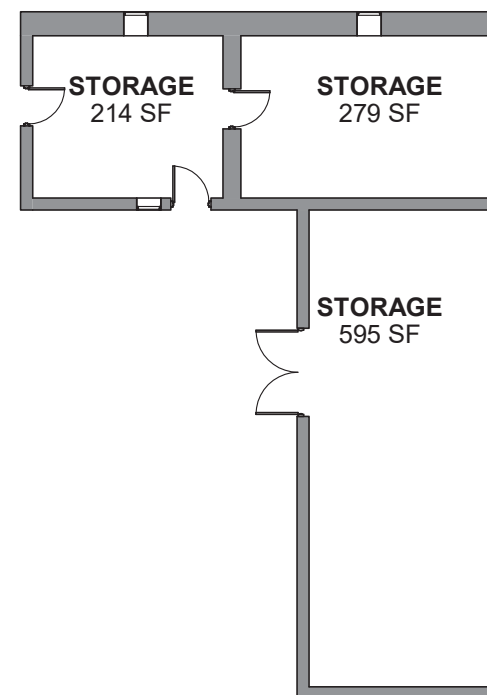
Key Map



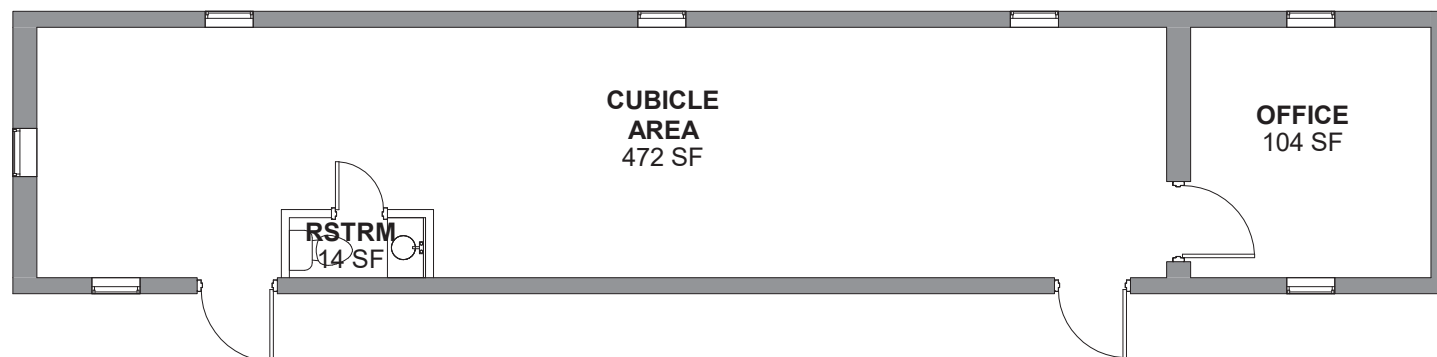
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350C STORAGE
SCALE 1/16" = 1'-0"



350D STORAGE
SCALE 1/16" = 1'-0"



350 I MOBILE HOME OFFICE TRAILER
SCALE 1/8" = 1'-0"





NMSU Alcalde Sustainable
Agriculture Science Center

3- Residence **350G**

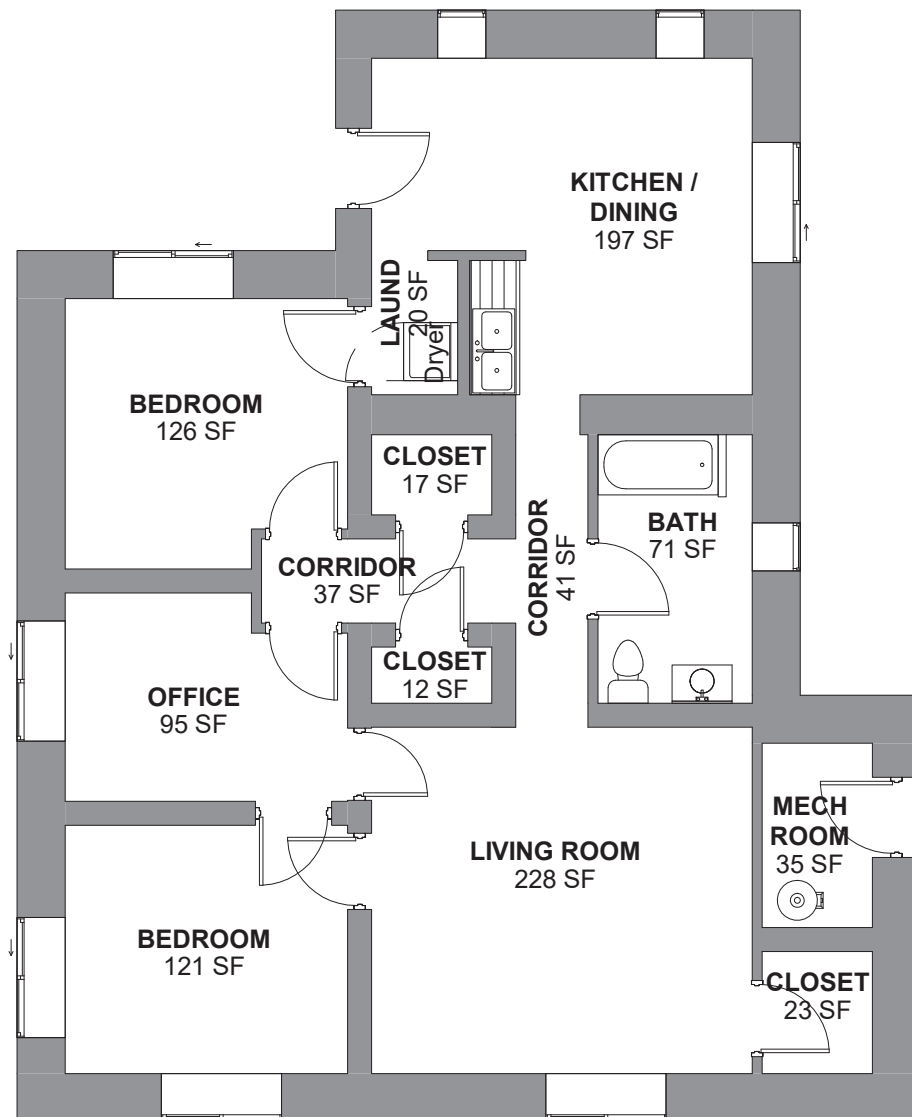
8- Storage **350E**



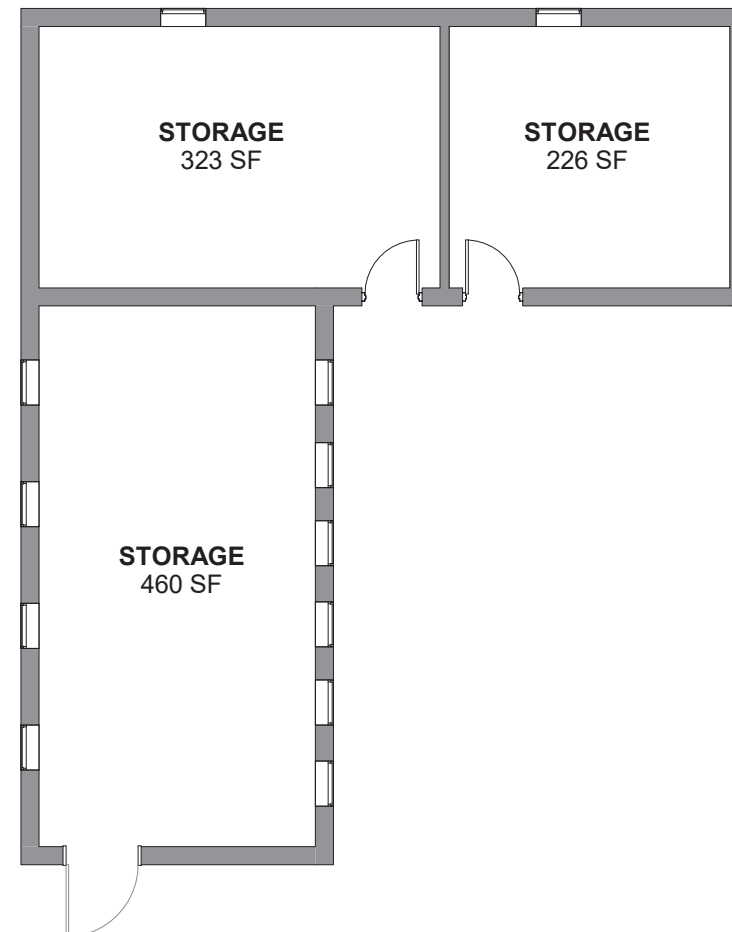
Key Map



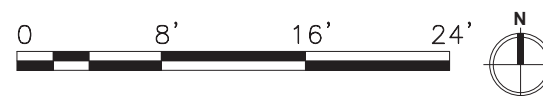
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350G RESIDENCE
SCALE 1/8" = 1'-0"



350E STORAGE
SCALE 3/32" = 1'-0"



NMSU Alcalde Sustainable **Agriculture Science Center** - **CANDIDATES FOR DEMOLITION**



April 8, 2022

Gary Martinez, Project Manager
NMSU Facilities & Services -- PD&E
Box 30001, MSC 3545
Las Cruces, NM 88003-8001



**RE: NMSU Alcalde Agricultural Research Center
Evaluation of Three Adobe Storage Buildings**

Dear Gary:

Our firm visited the referenced site to conduct a visual investigation and assessment of the condition of the three referenced facilities (see attached site plan image).

The first adobe building is condemned and is slated for demolition. No further evaluation was conducted on this building.

The second adobe building is an "L" shaped storage building which has been temporarily reinforced with wood framing along the perimeter load-bearing adobe walls to aid in the support of the wood vigas. The adobe walls have eroded beneath the exterior stucco layer in various locations due to years of water intrusion, thereby weakening the walls' load bearing capacity. The perimeter walls along the street elevation have been penetrated by street water run-off and have washed away the base of the load-bearing adobe walls in several areas. Thru-wall cracks indicating differential settlement are evident in several areas along the perimeter walls. The concrete floor inside this building is heaving in multiple areas creating walking hazards for users and making the opening of one of the entry doors nearly impossible. The roof system is in need of repairs and the building is in need of separation from the drainage canal running along its Eastern wall.

The third adobe building is another "L" shaped farm implement storage building which lies downhill of the adjacent North drive way. This downhill location allows street water run-off and rain water run-off to enter it along this elevation. The adobe walls have eroded beneath the exterior stucco layer in various locations due to years of water intrusion, thereby weakening the walls' load bearing capacity. The perimeter walls along the street elevation have been penetrated by street water run-off and have washed away the base of the load-bearing adobe walls in several areas. Thru-wall cracks indicating differential settlement are evident in several areas along the perimeter walls facing the street. The roof system is in need of repairs and the building is in need of separation from the drainage canal running along its Eastern wall.

Based on our observations, it is our opinion that these buildings are beyond restoration as it would not be cost-effective to attempt to rehabilitate/ restore them while addressing their site erosion and vast structural problems. It is our belief these buildings present a safety hazard for users and should be considered candidates for demolition.

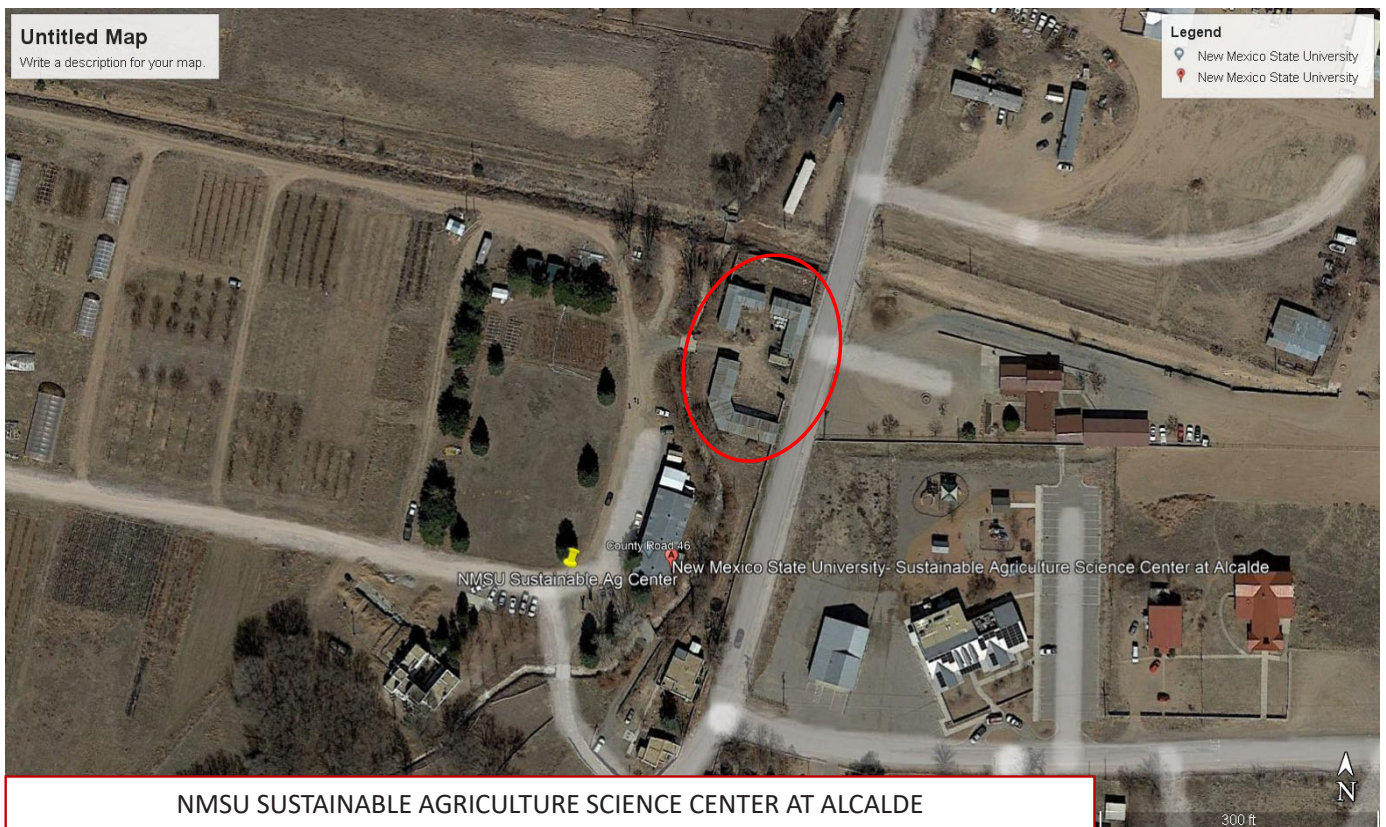
Please do not hesitate to call if we can be of further assistance on this or any other matter.

Sincerely,

**Cesar Molina, AIA, LEED AP
President
Nine Degrees Architecture + Design Inc.**

Member of the American Institute of Architects
cesarm@nine-degrees.com

P.O. Box 4135
Sunland Park, New Mexico 88063
915-526-8739 f 915-533-3282





View of water damage to the adobe walls and adobe erosion below the stucco surface. This is typical.



View of through-wall cracks, street runoff water infiltrating building at base of wall and differential settlement.



Upclose view of street water runoff cutting through adobe wall and undermining the adobe foundation causing differential settlement.



View of adobe erosion below stucco surface. This condition is typical.



View of adobe erosion below stucco surface. This condition is typical.



Up close view of street water runoff cutting through adobe wall and undermining the adobe foundation causing differential settlement of second building along roadway.



Interior view of water coming in through bottom of adobe wall and flooding the building.



Interior view of water coming in through bottom of adobe wall eroding the base of wall and causing differential settlement.



Interior view of water coming in through bottom of adobe wall eroding the base of wall.

Interior view of thru-wall cracking at storage building due to water erosion of adobe wall base and differential settlement. This condition is typical.



ALCALDE

The following buildings are candidates for replacement:



View of storage building that is condemned.



Seed storage structural problems. Building beyond feasible repair



Implement storage structural problems. Building beyond feasible repair

NMSU Alcalde Sustainable **Agriculture Science Center** - **INVENTORY COMPARISON**



ALCALDE

The following structures are not included in the current inventory for this site:



Storage Shed by acequia:

Needs: Entry stoop, rain gutters and down leaders, level structure, pull away from shop building.



Storage Shed by acequia:

Needs: Entry stoop, rain gutters and down leaders, regrade around building.



Tool storage wood shed:

Needs: Entry stoop, repair rotted siding and trim, repaint all exterior surfaces, rain gutters and down leaders, regrade 3 sides.



Tool storage wood shed:

Needs: Entry stoop, rain gutters and down leaders, regrade sides.



Mobile home office building:

Needs: Skirting repairs, replace wood trim around doors, repaint doors, new roof, ADA access ramp and deck at each door, reattach upper edge of metal wall panels, regrade all around, repair all damaged ceiling areas, replace ceiling light fixtures, replace windows, rain gutters and down leaders.



Greenhouse:

Needs: Electric fence repairs and access door through fenced perimeter.



Twin shades:
Needs: none noted.



Walk-in freezer:
Needs: none noted.



Filter shade:
Needs: none noted.

NMSU Alcalde Sustainable **Agriculture Science Center-** **UTILITY OVERVIEW**



NMSU Alcalde Sustainable **Agriculture Science Center**

Utility **Overview**

Sustainable Architecture Science Center at Alcalde

Address: 371 Country Road 40, Alcalde, New Mexico, 87511

Contact: Lara Prihodko, Interim Superintendent – (575) 646-2514
prihodko@nmsu.edu



Description:

As described by the NMSU System, the New Mexico State University's Sustainable Agriculture Science Center (SASC) at Alcalde sits on 60 acres of property formerly known as the San Gabriel Ranch. The San Gabriel Ranch was originally part of a large land grant given to General Juan Andres Archuleta, an officer in the Spanish Army, in the early 1700s by the Spanish Crown. Two buildings served as the seat of justice for an area now encompassing three counties. The name "Alcalde" means "mayor" or "Justice of the Peace." The original building, which was used as the courthouse, still stands on the property. In 1950, Ms. Bartlett deeded the ranch property to the State of New Mexico. Since 1952, New Mexico State University has used the site for agricultural research. NMSU obtained the main office building that had been Ms. Bartlett's house in the late 1960s from the Welfare Department. Today, the Sustainable Agriculture Science Center conducts agricultural and natural resource research to benefit small family farms and ranches in north-central New Mexico. Past research methods/crops include fruit trees, chile, small grains, dry beans, Christmas trees, alfalfa, flowers, potatoes, water management, sweet corn, tomatoes, various berries, and medicinal herbs. The Science Center has also investigated relay-intercropping green-manure legumes and forages into sweet corn and chile. We continue to research and educate around the subject matters of acequia culture, forages, fruit production, herbs, high tunnels and hoop houses, organic production, row crops, and sustainable agricultural techniques. We hold various workshops and events throughout the year, including beekeeping, pest management, fruit tree, and bramble pruning, and of course, our very popular annual field day.

NMSU Alcalde Sustainable Agriculture Science Center

Utility Overview Findings

Water System:

Based on the information provided, this facility has a connection to the local water distribution system and one well on its campus. The water supply comes from the Alcalde Mutual Domestic Water system, which is augmented by an additional well. As reported, the primary use of the wells is to supply water to both the Shop and Administration Building and possibly the student housing component of the campus. The domestic well is not under the supervision of the NM Office of the State Engineer, and all others are no longer active and are capped. The campus is considering adding additional wells to provide water for domestic and/or irrigation purposes. Additionally, the campus would consider future connections to the Alcalde Mutual Domestic for their water needs.

Electrical System:

Based on the information provided, this facility receives its power from the overhead utility grid from the Jemez Mountain Electric Cooperative, Inc. They are connected to the main regional electrical grid. The campus is open to expanding its electrical service depending on the campus’s growth and increased power demand. Since the power is provided by the Jemez Mountain Electric Cooperative, Inc., any expansion, repairs, or oversight needs to be coordinated with them.

Waste Water System:

Based on the information provided, these campus facilities’ sewer needs are being handled by their collection of several existing septic tanks that can service the Admin, Shop, Housing Buildings, and NMSU Trailers. The tanks are cleaned and emptied as required for maintenance and for peak performance. The system is under the oversight of the Rio Arriba County Planning and Zoning Department and the State New Mexico Environment Department.

Sustainable Architecture Science Center at Alcalde

All domestic water needs are supplied by the Alcalde Mutual Domestic Water Infrastructure				
Well Number 1	Not Applicable	Existing well is not regulated by the NM Office of State Engineer	Not Applicable	Not Applicable

NMSU Alcalde Sustainable **Agriculture Science Center** - **INFORMATION TECHNOLOGY**



NMSU Alcalde Sustainable **Agriculture Science Center** Information **Technology**

Network and Wireless LAN

Wireless Network Coverage	Main and Aux Buildings
Condition of Physical Cabling	20 Year and Exposed Cabling
Distribution Closet	No
Central Tower	No
Monthly Internet Usage	
Registered Devices	64
Upload	249.78 GB
Download	207.78 GB

Alcalde's DMARC enters the main office from the south side illustrated below. The DMARC and network equipment are located in a storage closet underneath a stairwell. The equipment is properly mounted, but accessible to any employee and does have heating/cooling capabilities.

Recommended:

The main office building was rewired almost 20 years ago, and should be rewired. Cat 5e network cables run underneath this building. Auxiliary buildings have exposed network cables but wireless is installed in most building.



IT Spaces/Network Closets

Recommended:

Network space is needed at this ASC and needs to meet standards. It is our recommendation to build out an IT/network space for this ASC. If there is no room that can be modified into this space, it is our recommendation to build a separate IT/network space outside, close to the existing DMARC, that is cooled, isolated only for IT needs, has proper lighting, floor loading, power, network racks and equipment, airflow, and meets standards.

UPS

Recommended:

Multiple, 2 minimum, network UPS's are needed for the network equipment at the Alcalde ASC. Each employee should also have a computer UPS for their individual workstations because of the known power issues at Alcalde ASC.

NMSU Alcalde Sustainable **Agriculture Science Center**

Information **Technology**

Network Tower

Recommended:

70 – 80 ft network tower erected to provide broadband INTERNET to different parts of the center. This network tower would also need to be installed with power to provide power to the network devices on the tower.

The location of the tower can be close to the main building on the site where the DMARC is to allow the easier network access to be broadcast. If that is not possible, another location can be determined by the availability of line of site from the main building to the tower.

POP/PtMP

Recommended:

Alcalde ASC needs one PtMP, point to multi point, and at the minimum three POPs, point of presence, to help saturate different parts of the center with wireless. The POPs are mobile and can be moved and adjusted as needed.

Cable Plan

Recommended:

Existing cabling, jacks, ports, patch cables and patch panels be upgraded to Category 6, at minimum. Connectivity between buildings can be accomplished by trenching and laying conduit, or to create wireless bridges through line of sight wireless broadband devices.

Conduit needed at this ASC to conceal exposed cable throughout the adobe building.

VoIP

Recommended:

It is recommend replacing antiquated phone systems and currently, the standard is VoIP. VoIP phones will tie into the network infrastructure and allow us to control the phones off of one system, and gives us the availability to manage the phone systems from each ASC remotely.

Conference Room/Collaboration Spaces

Recommended:

Smart screens, interactive touch displays, conference room cameras, speakers and mics, etc. can all be implemented to help bring these conference room spaces into the modern era and allow them to be utilized on a moments notice.

This conference room should include one smart interactive display, either Dell or Samsung, laptop or mini computer to be mounted on the display, a wall mount or portable mount, at least one Stem wall speaker/mic and Stem Hub, one Huddly camera, a Logitech Swytch for BYOD (bring your own device), a PoE Ethernet switch, and an AV station/equipment rack.

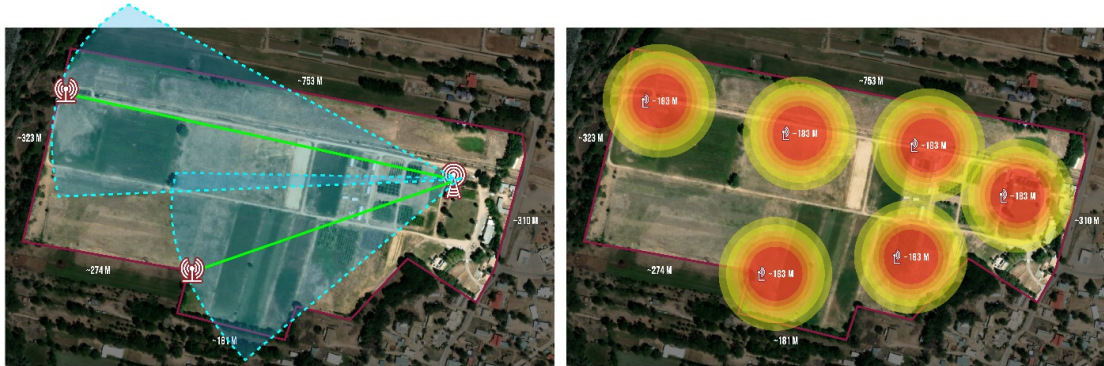
NMSU Alcalde Sustainable **Agriculture Science Center**

Information **Technology**

Security & Surveillance Systems

Recommended:

This ASC should have a minimum of two cameras, one showing the entrance/exit when vehicles arrive, and one on the main office building. This ASC would benefit from multiple cameras across the center to deter theft and increase visibility. Different locations at the center would allow for cameras to be installed and configured.



 **UBIQUITI ROCKET 5AC P-TMP (2)**
 INSTALLATION HEIGHT: 8 M (26 FT)
 OUTPUT POWER: 28 dBm
 CHANNEL WIDTH: 40 MHz
 ANTENNA GAIN: 22 dBi

UBIQUITI ROCKET 5AC



SPECS:
 - 5GHz WIDE BAND OPERATING FREQUENCY
 - POINT-TO-MULTIPOINT LINKS (PTMP)
 - DEDICATED MANAGEMENT RADIO

 **UBIQUITI ISOSTATION 5AC**
 INSTALLATION HEIGHT: 3 M (10 FT)
 OUTPUT POWER: 25 dBm
 CHANNEL WIDTH: 40 MHz
 ANTENNA GAIN: 15.5 dBi

UBIQUITI ISOSTATION 5AC



SPECS:
 - 45° ISOLATION ANTENNA
 - SUPERIOR THROUGHPUT UP TO 450 MBPS
 - HIGH CAPACITY AND SCALABILITY
 - CAPABLE OF HIGH-SPEEDS

 **UBIQUITI MESH PRO**
 INSTALLATION HEIGHT: 2 M (6 FT)
 MAXIMUM POWER: 20 dBm
 POWER SUPPLY: 24 V, 0.5A
 ANTENNAS: 2.4 GHz, 5 GHz

UBIQUITI MESH PRO ACCESS POINT



SPECS:
 - OMNIDIRECTIONAL 360° COVERAGE
 - LONG RANGE SYMMETRICAL TRANSMISSION UP TO 183 METERS
 - 802.11AC WAVE 1 WIFI
 - 2.4 GHz (802.11N) BAND WITH A 450 MBPS THROUGHPUT RATE
 - 5 GHz (3X3 MIMO) BAND WITH A 1.3 GBPS THROUGHPUT RATE



NMSU Alcalde Sustainable **Agriculture Science Center** Energy Report



NMSU Alcalde Sustainable **Agriculture Science Center** **Energy Report**

Energy Audit:

For detail information regarding conservation strategies for the Alcalde Agricultural Center please refer and review the AAE Energy Master Plan study.