

THE UNIVERSITY OF NEW MEXICO



UNM GALLUP

Facilities Master Plan 2016 - 2025



September 2015

21416.0000



Architectural Research Consultants, Incorporated

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1 Introduction

This document is a facilities master plan for the University of New Mexico-Gallup (UNM-G). It is a collaborative plan developed by UNM-Gallup administrators, faculty, and steering committee in cooperation with the UNM Office of Planning, Design & Construction. The purpose of this plan is to identify and guide capital improvements for facilities and sites serving UNM-Gallup.

A major goal of the plan is to develop and clearly communicate a long-range development strategy and capital requirements to meet the expected program and enrollment growth of the college.

The plan is organized in three parts:

- **An Introduction**
- **A Plan Overview** that discusses:
 - Background information about the mission, programs and existing facilities
 - Expected service area and enrollment
 - Expected facility needs
 - Implications for the future and the chosen development strategy
 - Capital needs and resources required to make the plan a reality
- **An Appendix** that provides supplemental information including:
 - Existing conditions
 - Future conditions

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2 Plan Overview

2.1 Summary

This document is a Facilities Master Plan to guide capital improvements at UNM-G. It identifies specific and general needs anticipated from 2016 to 2025. The plan updates planning data and strategies developed in the previous UNM-G Facilities Master Plan (2006 to 2013).

- **UNM-G enrollment will slowly grow, or at least remain stable.** Architectural Research Consultants, Incorporated's (ARC's) mid-range projection for UNM-G predicts enrollment growth will be about 1% annually. The recent decline in higher education enrollment is a national trend that experts assume to be temporary and not a long-term shift.
 - The overall **quantity** of existing instructional space at UNM-G can accommodate projected enrollment. UNM-G's focus will be on the **quality** of instructional space to meet strategic goals.
- **UNM-G will continue to focus on the delivery of high quality, academic and career technical programs relevant to regional workforce demands and transferable to bachelor's degrees.** UNM-G's strategic plan states that the college will:
 - Focus on and define clear programs and paths allowing students to progress to bachelor's degree programs
 - Develop clearly defined professional programs tied to economic development of the region and the aspirations of students
- **UNM-G will focus on capital improvements that:**
 - **Improve the quality of instructional space to best align with program needs**
 - **Support renewal of existing building systems and infrastructure**
- **The proposed Career Technical Education Center (CCTE) facility is central to UNM-G's strategy to develop workforce training** in regional construction technologies, sustainable green building, mechanical and electrical training, allied health, welding, construction engineering, architectural engineering, and energy-related careers.
- **The proposed Physical Plant Department (PPD) facility is critical to UNM-G's ability to support existing instructional facilities and infrastructure.** The current PPD facility is inappropriately located in the basement of the Child Center and has various other deficiencies.
- **Capital needs will be met through a combination of local general obligation bonds and state matching funds.** Improvements to address capital needs are organized into 2 bond cycles:
 - Cycle 1 (2016 - 2020) Total: \$ 23.8 million
 - Cycle 2 (2021 - 2025) Total: \$ 16.4 million

- **Summary of proposed Cycle 1 improvements:**
 - New Construction (CCTE and PPD): \$ 8.5 million
 - Renovation / Remodel: \$ 8.4 million
 - Site Infrastructure Improvements: \$ 2.9 million
 - Site Improvements : \$ 4.1 million
- **Summary of proposed Cycle 2 improvements:**
 - New Construction: \$ 2.4 million
 - Renovation / Remodel: \$ 7.6 million
 - Site Infrastructure Improvements: \$ 5.8 million
 - Site Improvements: \$ 0.6 million

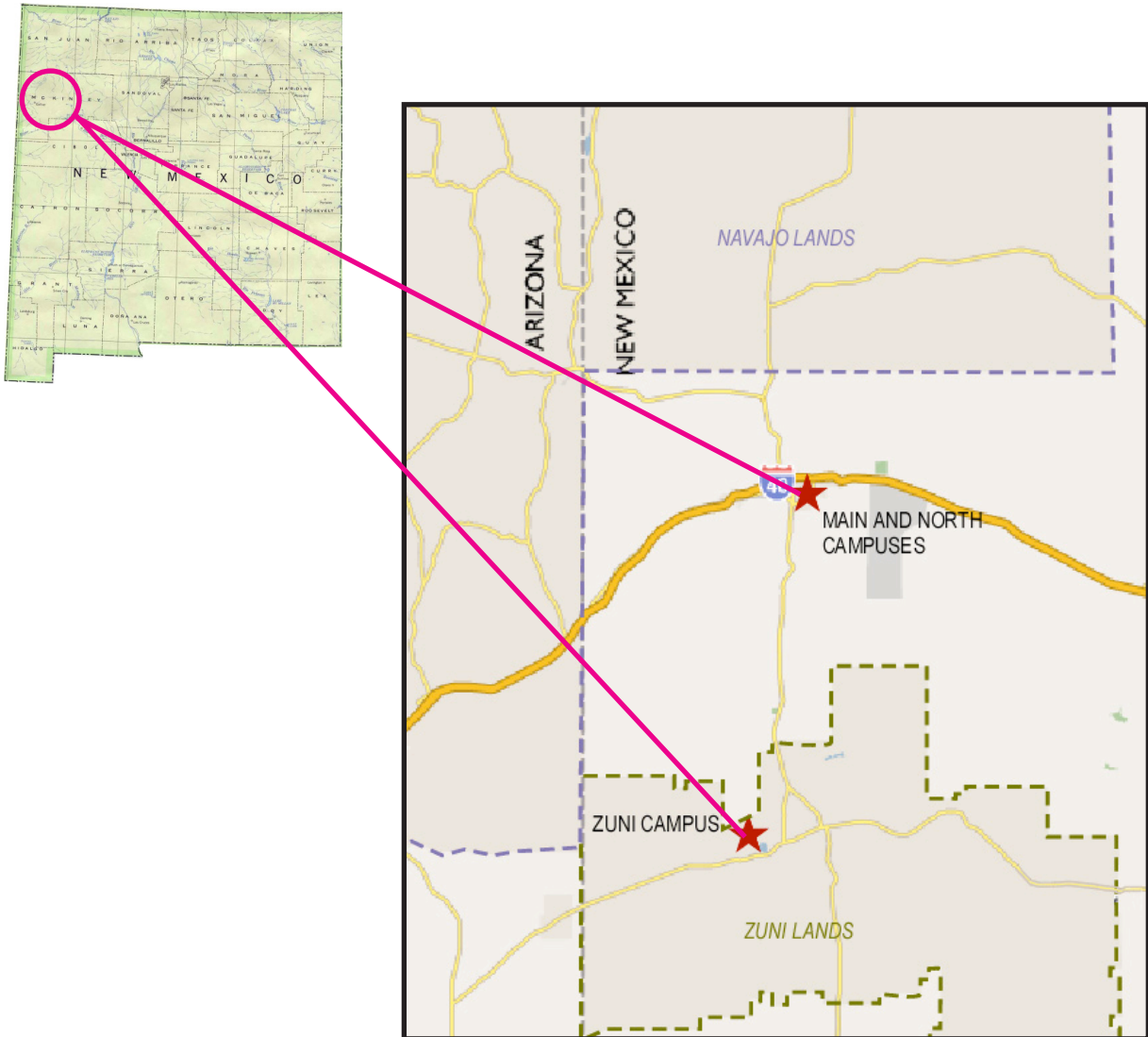


2.2 Background

2.2.1 Location

The UNM-G main campus is located in Gallup, New Mexico. The main campus is in the developing south side of Gallup, and primary access to the site is via New Mexico Highway 564. UNM-G's adult basic education (ABE) north facility is located in downtown Gallup, just north of Interstate 40. The Zuni campus is located in the pueblo of Zuni, adjacent to the high school.

Exhibit 2-1
Location of UNM-G



2.2.2 History

The University of New Mexico has offered courses through extension to Gallup since 1959. In 1968, UNM gave final approval for the establishment of the Gallup branch with classes held at Gallup High School. In 1969, as a service project, the Lions Club donated six acres of piñon-wooded land and a building to the branch; shortly thereafter, Mr. and Mrs. Clair Gurley donated 90 acres of land.

Today, nearly 50 years later, UNM-G is the largest of UNM's branch campuses and serves approximately 5,000 students per year in credit and 2,560 students in non-credit and adult basic education programs. UNM-G graduates more Native American students earning associate degrees and certificates than any other public post-secondary institution in the United States.

The UNM-G branch operates from three campuses: a main campus located on the southern end of the city of Gallup, a facility for adult basic education (ABE) classes located in Gallup north of I-40, and a satellite campus located in Zuni, NM. The architectural style of the facilities is generally southwestern. Buildings on the main campus are laid out in a primarily linear arrangement on the flat top of a ridge.

2.2.3 Governance

UNM-G has an operating agreement with the University of New Mexico. The agreement empowers the local UNM-G board, comprised of five elected members, to serve in an advisory capacity to the UNM regents and to work directly with the UNM-G executive director. According to the agreement, the UNM-G branch local board will be responsible for carrying out specific duties and responsibilities relative to the overall operation of UNM-G. For example, the local board will approve and recommend an annual budget for the UNM-G branch to the UNM Board of Regents; approve and certify the tax levy, as required by law, to the McKinley County Commission; and call elections for tax levies for the Gallup branch, after approval by the UNM Board of Regents.

2.2.4 Vision, Mission, and Core Values

UNM-G is a branch campus of UNM and operates as a community college. UNM-G's vision, mission, and core values are as follows:

Vision

The University of New Mexico - Gallup will be a nationally recognized leader in community focused, regionally specific and culturally vibrant education.

Mission

The University of New Mexico - Gallup prepares people to achieve their educational and professional goals in a context of respect for the traditions and values of the many groups it serves.

Values

We value EXCELLENCE by providing quality decisions and actions through our people, programs and outcomes.

We value INTEGRITY through our commitment to managing our resources wisely, keeping our promises and ensuring accountability to our students, the community and all who serve UNM-Gallup's mission.

We value DIVERSITY by striving to strengthen our university, our community and our society through the respectful treatment of all people. UNM-Gallup recognizes, accepts and values differences of culture, ethnicity, gender, sexual orientation, nationality, religion, language and academic discipline and embraces diversity as a learning opportunity.

We value FREEDOM by encouraging inquiry, candor, creative activity, and the pursuit of ideas.

We value SUSTAINABILITY by meeting the needs of the present while preserving the well-being of future generations.

We value ACCESS WITH SUPPORT TO SUCCEED by offering all who desire the opportunity to take full advantage of the wealth of UNM-Gallup resources and be fully included in the UNM-Gallup community.

We value RESPECTFUL RELATIONSHIPS as demonstrated by our commitment to building trust, inspiring collaboration, and ensuring teamwork essential to UNM-Gallup's success.

Source: <http://www.gallup.unm.edu/main/about/vision-mission.php>

2.2.5 Programs

UNM-G is a comprehensive vocational and transfer institution. As a UNM branch, the college is accredited by the North Central Association of Colleges and Secondary Schools. To fulfill its mission, UNM-Gallup offers five types of educational divisions:

- **Technical Education** for:
 - Computer-aided drafting
 - Information technology
 - Certified nursing assistant
 - Medical coding
 - Office and business technology

- **Certificates and/or Associate of Arts, Associate of Science, and Associate of Applied Science degrees** for: (Exhibit 2-2)
 - Business administration
 - Early childhood multicultural education
 - General science
 - Human services
 - Liberal arts
 - Studio art
 - Health information technology

- **Basic skills** assistance is available so that students who are not adequately prepared for admission for college-level study can improve their skills and meet their educational goals. Developmental credit courses are available in:
 - Reading
 - Writing
 - Math

- **The Community Education Services Program** is comprised of several unique programs providing learning opportunities for citizens of all ages. Programs include:
 - Workforce training
 - Professional development
 - Cultural enrichment
 - Off-campus instruction

- **The Small Business Development Center** provides individual counseling, training workshops, seminars, and individual counseling. Development of course content is in conjunction with the community education program and area economic development groups. The center offers certification to businesses and individuals upon completion of entrepreneurship courses.

UNM-G also provides opportunities for high school students to be concurrently enrolled and earn dual credits. Opportunities include:

- Middle College High School (MCHS)
 - MCHS is a New Mexico public charter school with a rigorous academic- and career-focused program. Students are enrolled both in the high school program to earn their diploma as well as with UNM-G to earn college credits.
- Center for Career and Technical Education (CCTE)
 - Area high schools participate in the CCTE program. CCTE course content aligns with UNM-G coursework and college credit is earned concurrently with credit applicable towards a high school diploma.

Exhibit 2-2
Degrees and Certificates Offered

<p>Associate of Arts</p> <ul style="list-style-type: none"> • Art Studio • Business Administration • Criminal Justice • Early Childhood Multicultural Education • Human Services • Liberal Arts • Pre-Professional Education • Psychology <p>Associate of Science</p> <ul style="list-style-type: none"> • Health Information Technology • Medical Laboratory Technician • Nursing • Science <p>Associate of Applied Science</p> <ul style="list-style-type: none"> • Automotive Technology • Collision Repair Technology • Construction Technology • General Studies • Legal Assistant • Tribal Court Advocate 	<p>Certificates</p> <ul style="list-style-type: none"> • Automotive Technology • Bookkeeping • Collision Repair Technology • Construction Technology • Construction Technology - Carpentry • Construction Technology - Electrical • Cosmetology/Barbering • Dental Assisting • Diabetes Prevention Specialist • Drafting Technology • Early Childhood Multicultural Education • Entrepreneurship • Green Building (ineligible for FAFSA) • Health Information Technology – Coding • Human Services • Information Technology • Organizational Management & Public Administration • Welding Technology
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2.2.6 Strategic Plan

UNM-G has a strategic plan, updated in 2012, that serves as a framework for planning and budgeting. Some selected elements of this plan that potentially influence physical planning include:

- Strengthen Programmatic and Instructional Excellence and Innovation
 - Focus on and define clear programs and paths allowing students to progress to bachelor's degree programs
 - Develop clearly defined professional programs tied to economic development of the region and the aspirations of students
- Develop Robust Technology Infrastructure and Applications
 - Develop networks supporting distance learning and e-learning instruction in all areas
 - Develop funding plan for IT infrastructure development and maintenance
- Enable Professional Development for Faculty and Staff, and Support Organizational Development
 - Review existing data to identify key areas of staffing
- Focus Outreach to the Community and Region
 - Explore partnerships with other institutions to foster community development
 - Engage with communities in educational, cultural, and other initiatives to achieve support for UNM-G
- Strengthen the Management and Acquisition of Resources
 - Update the campus master plan, including south and north campuses
 - Strengthen additional revenue streams beyond tuition and state-appropriated funds
- Enhance Student Academic Experience
 - Institute a Student Life Function with full range of activities and services

2.3 Demographics and Enrollment

2.3.1 Service Area Demographic Context

UNM-G's primary service area is McKinley County. Following 90 years of growth from 1910 to 2000, the county's population contracted between 2000 and 2010. The Census Bureau estimated population declined from 2000 to 2007, then started growing during 2008 to 2010. ARC projects population growth to continue in the future with an annual increase rate of 0.6%. ARC's projections consider the following:

- While the overall county population declined in recent years, the city of Gallup's population grew 0.7% annually from 2000-2010 (an increase of 1,469 persons).
- The pueblo of Zuni also grew from 2000-2010, adding 133 persons.
- In 2000, Native Americans became the largest ethnic group in the city of Gallup. The Native American population in Gallup continues to grow and contributes to the overall growth of the city.
- Gallup Land Partners (GLP) has expressed interest in developing additional rail-served operations and a business park with warehousing and offices spaces northwest of Gallup.
- The Navajo Gallup Water Supply Project will provide San Juan River water to Navajo communities and the city of Gallup. Improved water supply and reliability will allow economic growth and development.
- Widening of U.S. 491 will improve the vehicular connection from Gallup to Shiprock, Navajo communities, and the Farmington metro area.
- Public school district enrollment in both Gallup/McKinley County Schools and Zuni Public Schools has declined since 1993.
- Residential development in McKinley County is slow. Only one project is currently active: a 42-unit affordable family housing complex and an 18 single-resident occupancy units at Coal Avenue and 2nd Street.
- Employment has not recovered since the economic downturn of 2008. Prior to 2008, employment grew from 2001 to 2007.
- Birth rates in McKinley County have decreased drastically since 1990, and are continuing to fall. The McKinley County birth rate is still higher than the U.S. rate, and still creates a natural population increase.
- UNM Geospatial Population Studies (GPS) projects the college age cohort in McKinley County to remain relatively the same or increase slightly through 2020 (although it will decrease in proportion to the total population). After 2020, GPS projects the college-age population to decrease.

Exhibit 2-3
McKinley County
Historic Population

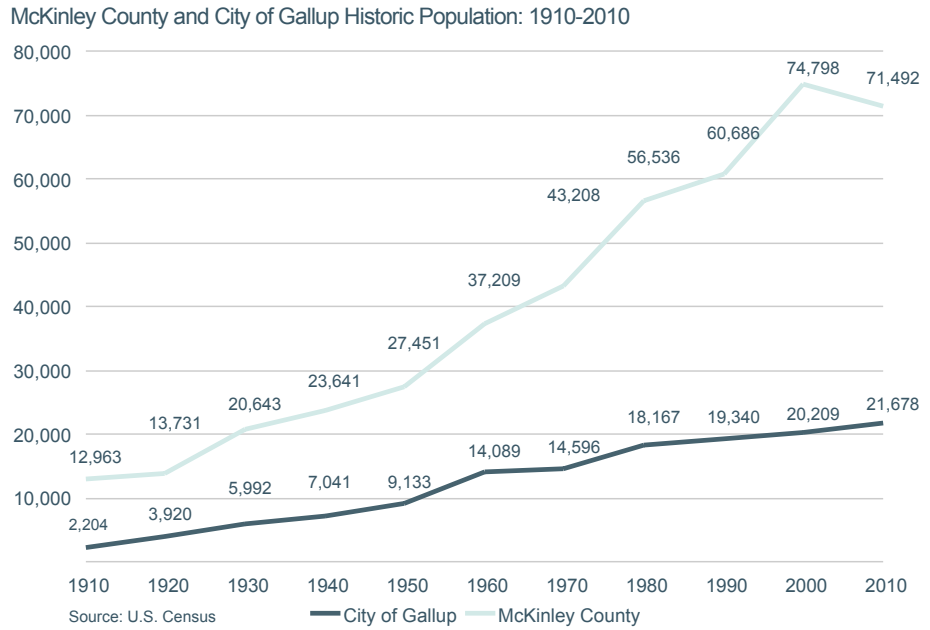


Exhibit 2-4
McKinley County
Projected Population

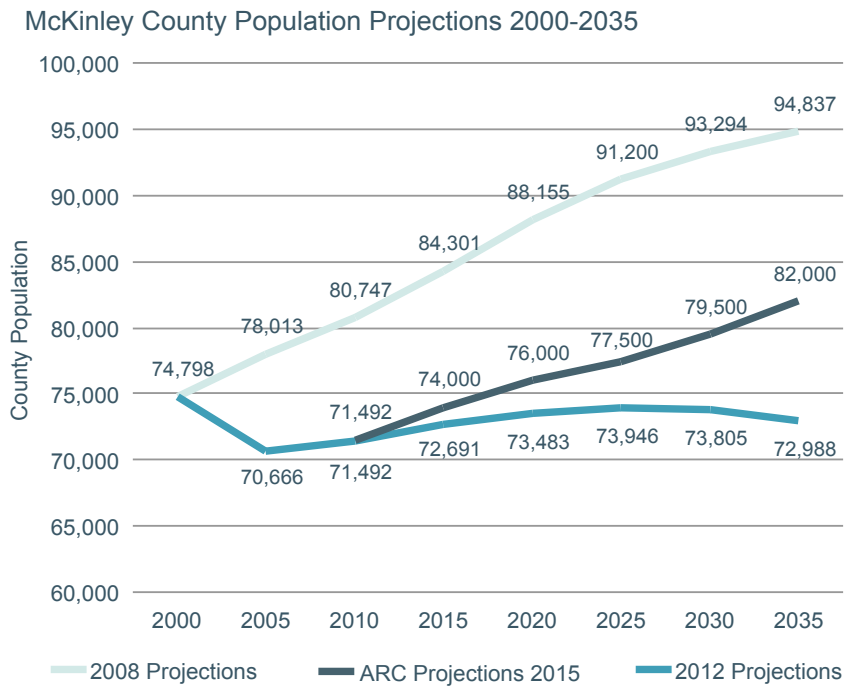


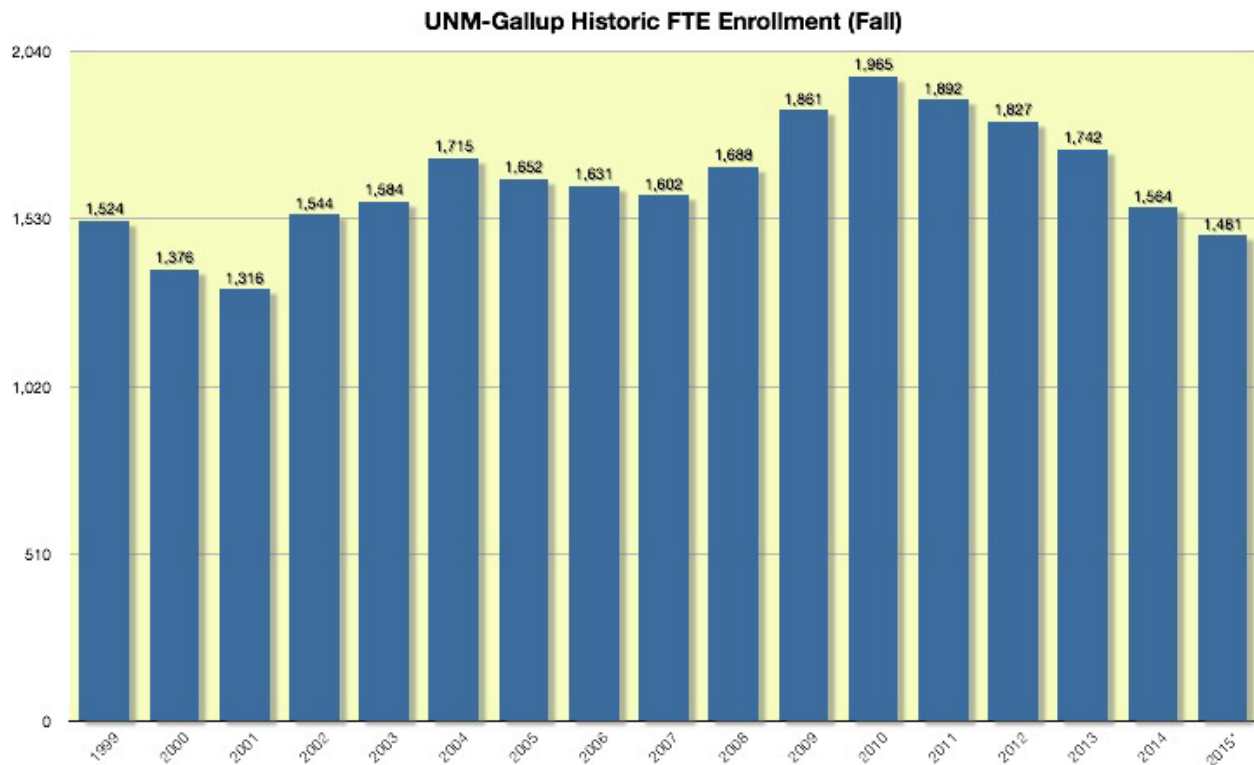
Exhibit 2-4 shows:

- In 2000, McKinley County's population was about 74,800 and UNM projected an annual increase rate of 0.7%.
- In 2010, McKinley County's population had decreased to 71,500 and UNM projected a revised annual increase rate of 0.07%.
- ARC's 2015 projection is for an annual increase rate of 0.6%.

2.3.2 Historic Enrollment

UNM-G FTE enrollment has fluctuated since 2000, but overall, the 2015 FTE enrollment is similar to that of 2000. This enrollment reflects state and national trends of slow growth and the 2008 economic downturn.

Exhibit 2-5
UNM-G Historic
Enrollment



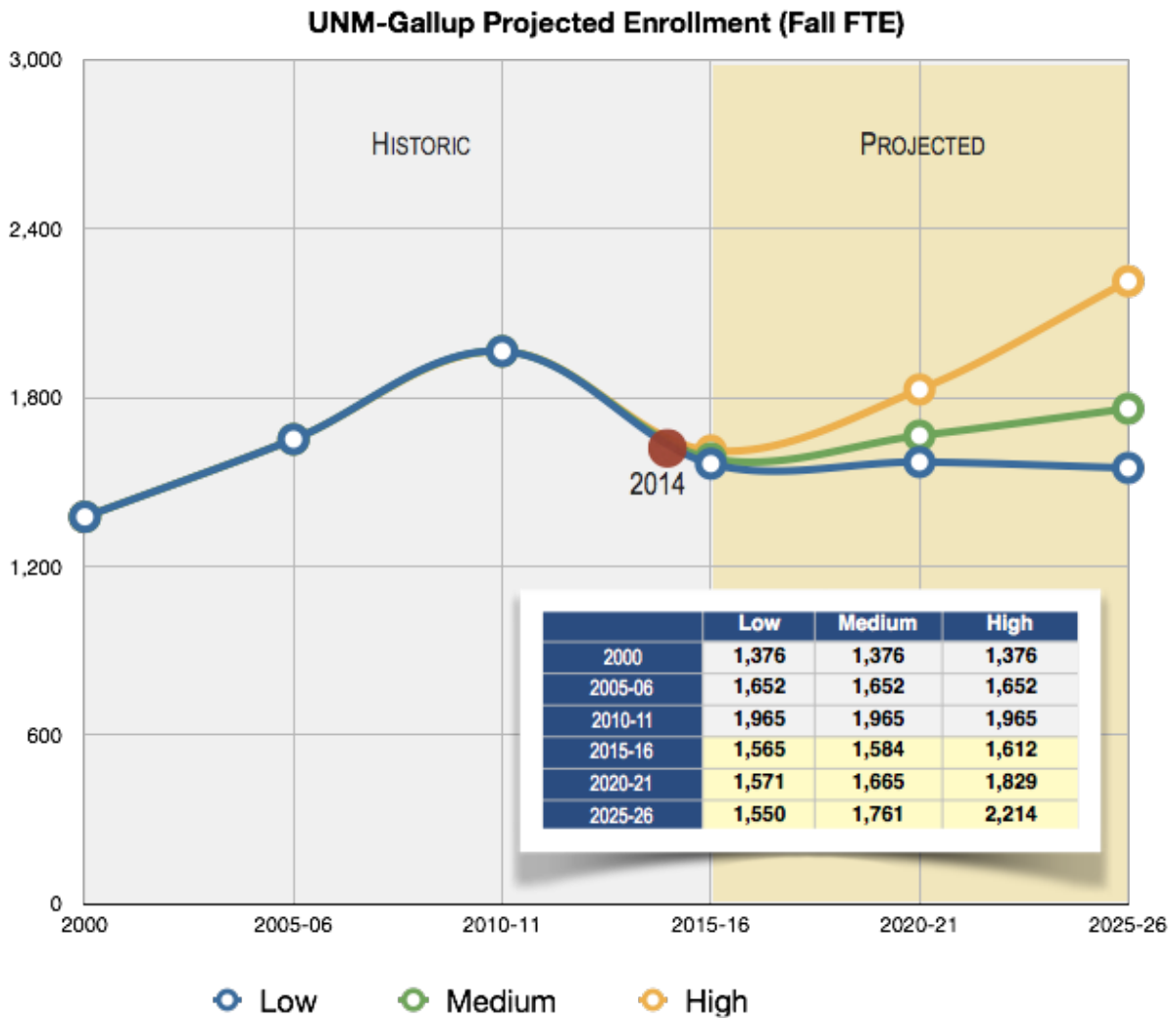
2.3.3 Projected Enrollment

The master plan projects that FTE enrollment at UNM-G will reach 1,665 FTE students by 2020-21 (mid-range projection) in response to service area growth, UNM-G marketing efforts, and program alignment with career opportunities (see Exhibit 2-6).

This projection assumes that:

- ARC's projected McKinley County population growth will create continued demand for UNM-G programs.
- Declining enrollment has reached its lowest level, suggested by national studies.
- Market penetration (as measured by the FTE participation rate per general service population) remains at historical averages (about 44 FTE per 1,000 people).

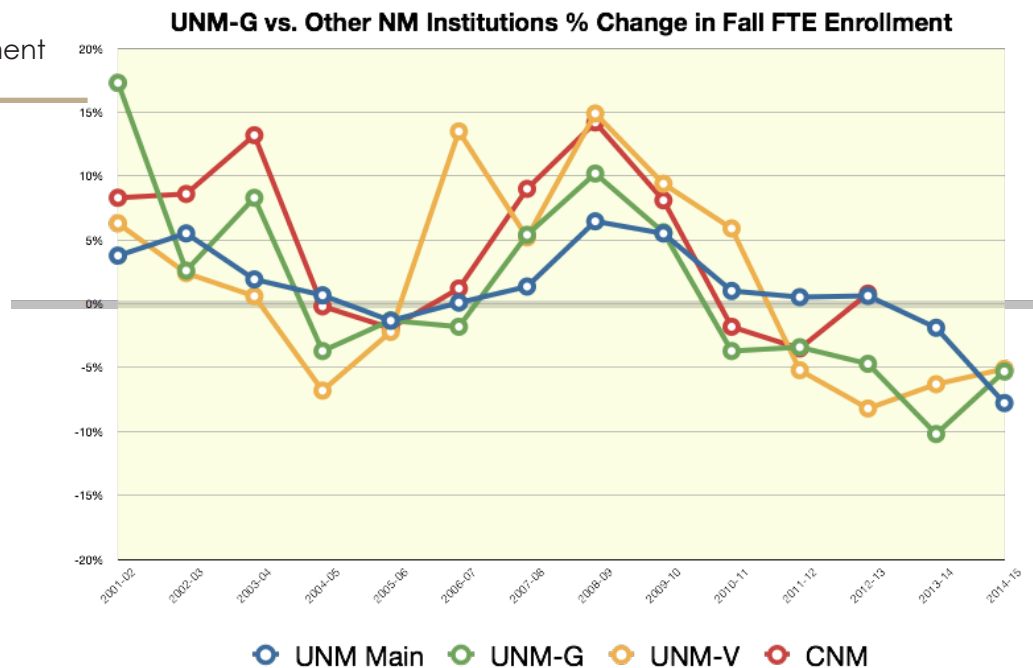
Exhibit 2-6
UNM-G Projected
Enrollment



2.3.4 UNM-G Enrollment Compared to other New Mexico Institutions

- ARC tracked enrollment at UNM-Gallup, UNM-Albuquerque, UNM-Valencia, and Central New Mexico Community College. All institutions exhibit similar enrollment trends. (See Exhibit 2-7.)
 - While still declining, UNM-G's enrollment decreased at a slower rate starting in 2013.

Exhibit 2-7
Regional Enrollment
Comparisons



2.3.5 National and Regional Trends

- Since 2011, national post-secondary enrollment has decreased by about 1 million students to 18.6 million.
- From spring 2014 to spring 2015:
 - Post-secondary institutional enrollment was down 1.9% nationally.
 - New Mexico saw the largest drop in post-secondary institutional enrollment in the nation. New Mexico's enrollment decreased 8.3% (a loss of about 10,915 students).
 - Declining post-secondary enrollment was recorded in 41 states, while just nine states saw post-secondary enrollment increases.
 - The National Student Clearinghouse Research Center reports that nationally, the drop was greatest at four-year, for-profit colleges, 4.9%, and at two-year public colleges, 3.9%. Both sectors tend to attract larger numbers of older students.
- Experts cite a variety of factors that affect enrollment:
 - For the first time in two decades, the number of high school graduates is decreasing.
 - The improving economy has enabled students to leave school and return to work.
 - New Mexico's population is decreasing.
- Education officials expect enrollment swings to level off in coming years, then gradually increase.
- According to projections, New Mexico's high school graduating classes will increase by about 1% annually for the coming decade and reach a high of 22,300 before decreasing again.

(Source: Albuquerque Journal, May 17 and 24, 2015)

2.3.6 Site and Facility Existing Conditions

Site Conditions

UNM-G's main campus occupies about 80 acres. The topography of the campus is hilly. The challenging terrain focuses development on one main ridge and surrounding "valley" areas. Runoff pathways and low wet areas separate buildable areas. Parking facilities tend to be located downhill from the ridge-top developments. Connections between parking areas and buildings are sloped and require ramps and stairs for access. The change in grade creates opportunities for breathtaking vistas and much of the landscape surrounding the core of buildings on campus is undeveloped native vegetation and scenic.

One vehicular access point to the campus creates congestion at peak times. The existing walkways and plazas are aesthetically pleasing, but require rehabilitation. Parts of the campus (Lions Hall and gym areas) are not part of the walkway system and pedestrian pathways are on roads or through unpaved areas. Connections between lower parking lots and the upper ridge present difficulties for pedestrian access, due to elevation differences.

As the campus grows toward the northeastern part of the site, additional access points onto campus should be a consideration. The topography will create greater challenges in accessibility as development moves further along the ridge where the height above the valley increases.

Exhibit 2-8

Existing Topography; View of Calvin Hall Center Built into Main Ridge



UNM-G Facilities

UNM-G occupies 15 buildings at main campus. The campus has grown incrementally, starting with the donation of Lions Hall in 1969 and construction of Old Gurley Hall in 1975. Recent construction at main campus includes the Health Careers 2 building (2007) and the Student Services and Technology Center (2012). The total building area at main campus is about 310,000 GSF.

The Zuni Campus consists of one building of approximately 25,000 GSF. The North Campus consists of one building for adult basic education (ABE). Including the 2008 building addition, the ABE facility is about 5,700 GSF.

Exhibit 2-9 summarizes UNM-G facilities.

Exhibit 2-9 Summary of Existing UNM-G Facilities

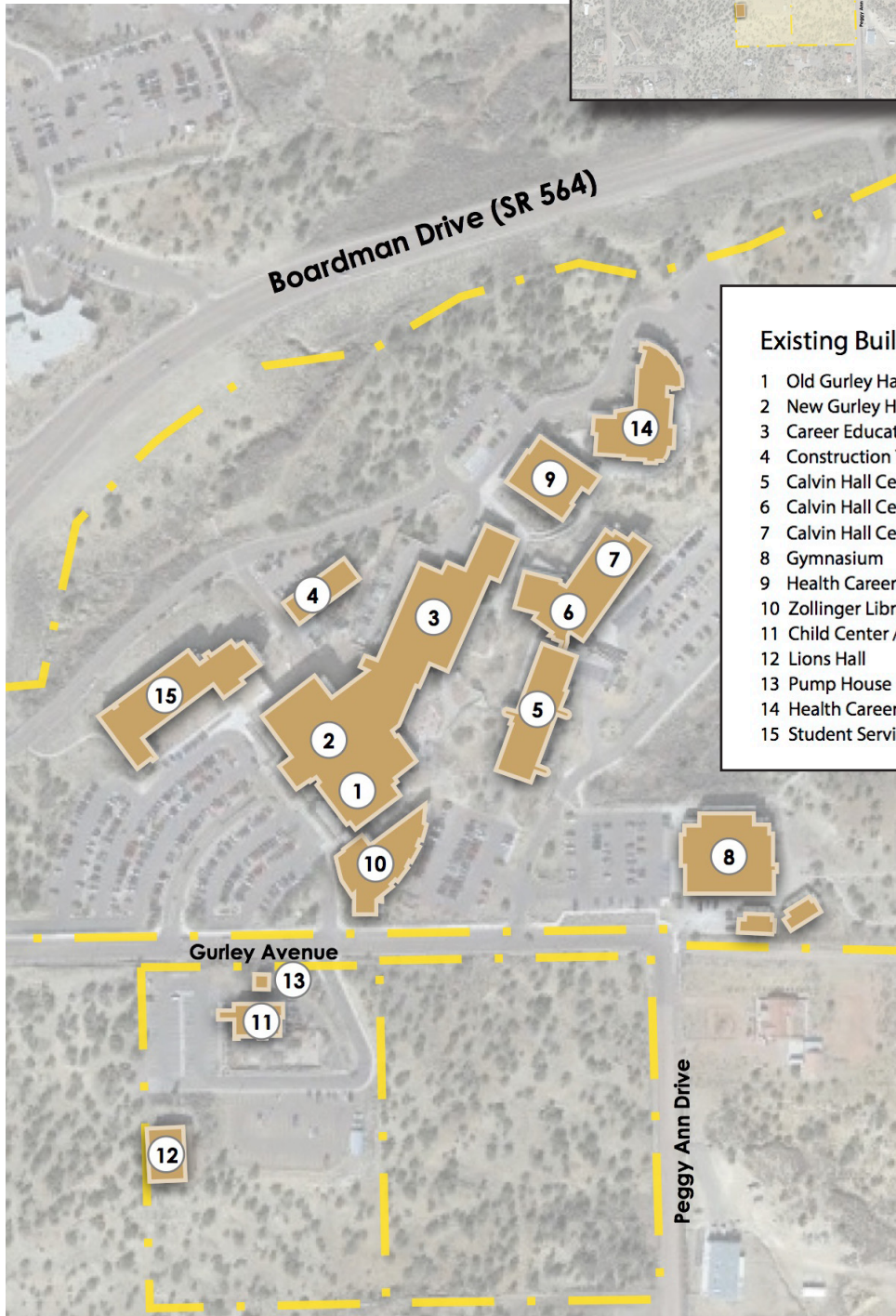
UNM-G Facilities Inventory - 2015 Update

7/24/15


ID	Facility	Dates of Construction	Age	NSF*	GSF*
1	Old Gurley	1975 / Renovated	40		
2	New Gurley	1984-1985	30	63,210	111,415
3	Career Education	1978	37		
4	Construction Tech	1985	30	5,025	6,125
5	Calvin Hall A	1979-1980	35		
6	Calvin Hall B	1996	19	42,385	67,670
7	Calvin Hall C	2000	15		
8	Physical Education	1981 / Addition 1999	34	17,060	20,305
9	Health Careers Center 1	2002	13	8,250	11,525
10	Zollinger Library	2001	14	16,335	20,440
11	Child Center / Physical Plant	1993	22	4,055	9,030
12	Lions Hall	1954	61	3,355	5,780
13	Pump House	1988	27	710	710
14	Health Careers Center 2	2007	8	12,175	18,380
15	Student Services and Technology Center (SSTC)	2012	3	19,100	38,235
16	North Campus	1998 / Addition 2008	17	3,960	5,700
17	Zuni South Campus	2001	14	17,575	24,930
Totals (All Facilities)				213,195	340,245
Total Gallup Main Campus				191,660	309,615

*NSF and GSF obtained from UNM Planning, Design, and Construction documents

Exhibit 2-10
UNM-G Main Campus
Site and Facilities



Existing Buildings



- 1 Old Gurley Hall
- 2 New Gurley Hall
- 3 Career Education
- 4 Construction Technology
- 5 Calvin Hall Center A
- 6 Calvin Hall Center B
- 7 Calvin Hall Center C
- 8 Gymnasium
- 9 Health Careers Center 1
- 10 Zollinger Library
- 11 Child Center / Physical Plant
- 12 Lions Hall
- 13 Pump House
- 14 Health Careers Center 2
- 15 Student Services and Technology Center

Exhibit 2-11
UNM-G North ABE Site and Facility

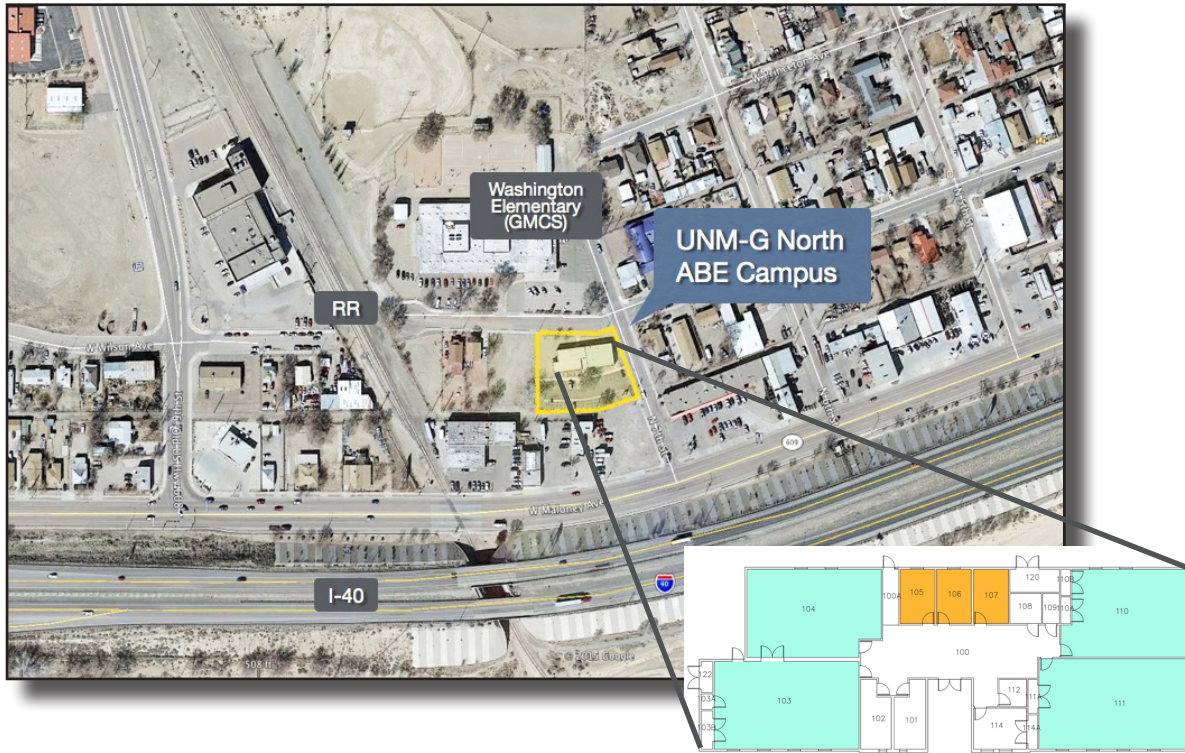
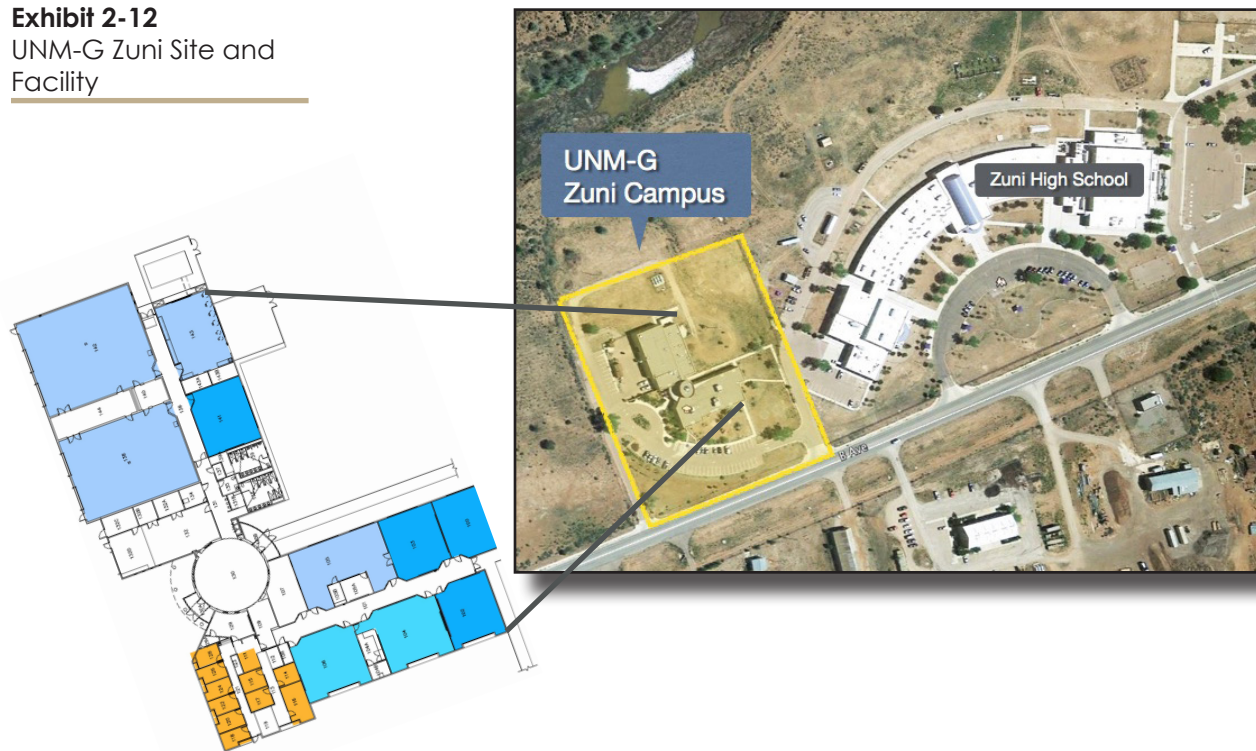


Exhibit 2-12
UNM-G Zuni Site and Facility



Site Utilities

Development of the utility systems that comprise the main campus infrastructure has been incremental along with the buildings they serve. Site utilities are of mixed condition and capacity.

- **Stormwater and Drainage**

- The majority of the campus does not have storm drainage infrastructure, and runoff flows freely to surrounding streets and two existing arroyos. Due to topography and current density of campus, opportunities are limited to add stormwater infrastructure to serve existing facilities. No significant known problems exist that would warrant the addition of stormwater measures to serve existing facilities.

- **Domestic Water Supply**

- This system has been improved since 2006. The City of Gallup and UNM-G are currently involved in joint improvements that will increase capacity and reliability to the main campus. Part of this water supply improvement project includes installation of fire suppression in existing campus facilities.

- **Sewer**

- The campus has a single outfall to the public (Gallup Joint Utilities [GJU]) sanitary sewer system that is reportedly near or at maximum capacity. The limitations are downstream of the main campus.
- Based on campus topography, the higher portions of the campus currently reach the outfall directly by gravity, while the lower areas require lift stations to pump the runoff to higher areas where they then continue under gravity conditions. The nature of lift stations is that their outflow is controlled by the rate of the pumps. As a result, adding facilities using lift stations would impact downstream flow rates less than adding facilities that use gravity systems.

- **Natural Gas**

- The New Mexico Gas Company provides gas to separate meters at various buildings on campus. UNM-G has installed site work and facilities on some NMGC easements. According to the 2013 Utility Master Plan by WHPacific, the condition of buried natural gas piping is unknown, but 50 years is the standard industry lifespan.

- **Electrical Service**

- Electrical service enters the site at one location near Zollinger Library (except for Lions Hall which is fed with a separate overhead line). The distribution system from Zollinger is radial and consists of four branches. Some distribution infrastructure is about 30 years old, with a 40-year life expectancy. The existing radial distribution system has limited additional capacity and lacks redundancy.

- **Telecommunications (Data)**

- UNM Main Campus ITS Department upgraded the campus telecommunications system in 2014. Site upgrades included replacement of all copper cable and installation of new fiber-optic cable to all buildings using existing infrastructure, construction of a main distribution room (MDR) in Calvin Hall, and renovation of the IT center in Gurley Hall. Recent improvements improve system reliability and capacity, but lack redundancy.

2.4 Implications for the Future

Exhibit 2-13 UNM-G Instructional Capacity Used

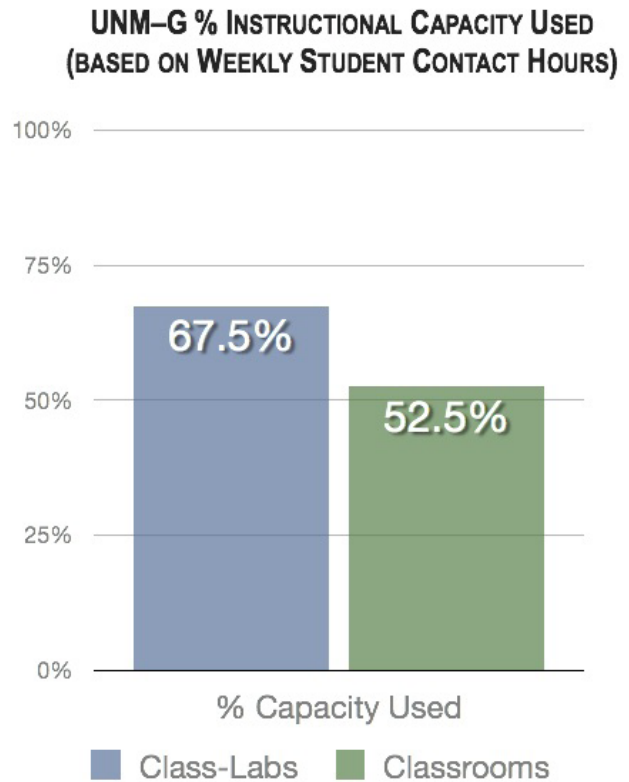
2.4.1 Future Facility Needs

ARC's utilization analysis (see Appendix Section 3.1.6) shows that there is ample instructional space capacity to accommodate existing and projected enrollment. Facility improvements should focus on renewing existing building systems and infrastructure. Construction of new facilities should focus on providing specific kinds of space to meet programmatic needs and educational goals.

2.4.2 Future Program Needs

UNM-G will build on its tradition of providing high quality, academic and career technical programs relevant to regional workforce demands and transferable to four-year institutions. UNM-G requires the right kinds of space to deliver these programs. The spaces need to be:

- Flexible to adapt to changing workforce demands
- Equipped for current technology
- Appropriately located



UNM-G's 2015 submittal to the New Mexico Higher Education Department requests facilities to support future program needs. Priority projects in the HED submittal include:

- Center for Career Technology Education Phase 1 (CCTE)
- Physical Plant Department Facility (PPD)

The CCTE will support the construction technologies program and regional workforce demands. The proposed facility will include woodworking; HVAC/mechanical instrumentation technologies; drafting/pre-engineering and sustainability design and construction technologies labs; and classrooms for student jobs training in the growing sustainable construction and green technologies industries.

The existing PPD facility is poorly located and ill-equipped to support maintenance of existing facilities. Location of the PPD facility in the basement of the Child Center limits PPD's ability to perform work activities that are noisy, produce fumes, or involve other hazards, such as painting and welding. The facility is poorly sited for deliveries and accessibility. The basement has low overhead clearance, and insufficient office space. Exterior storage is extremely limited. A new PPD building will improve UNM-G's ability to maintain existing facilities.

2.4.3 Development Framework

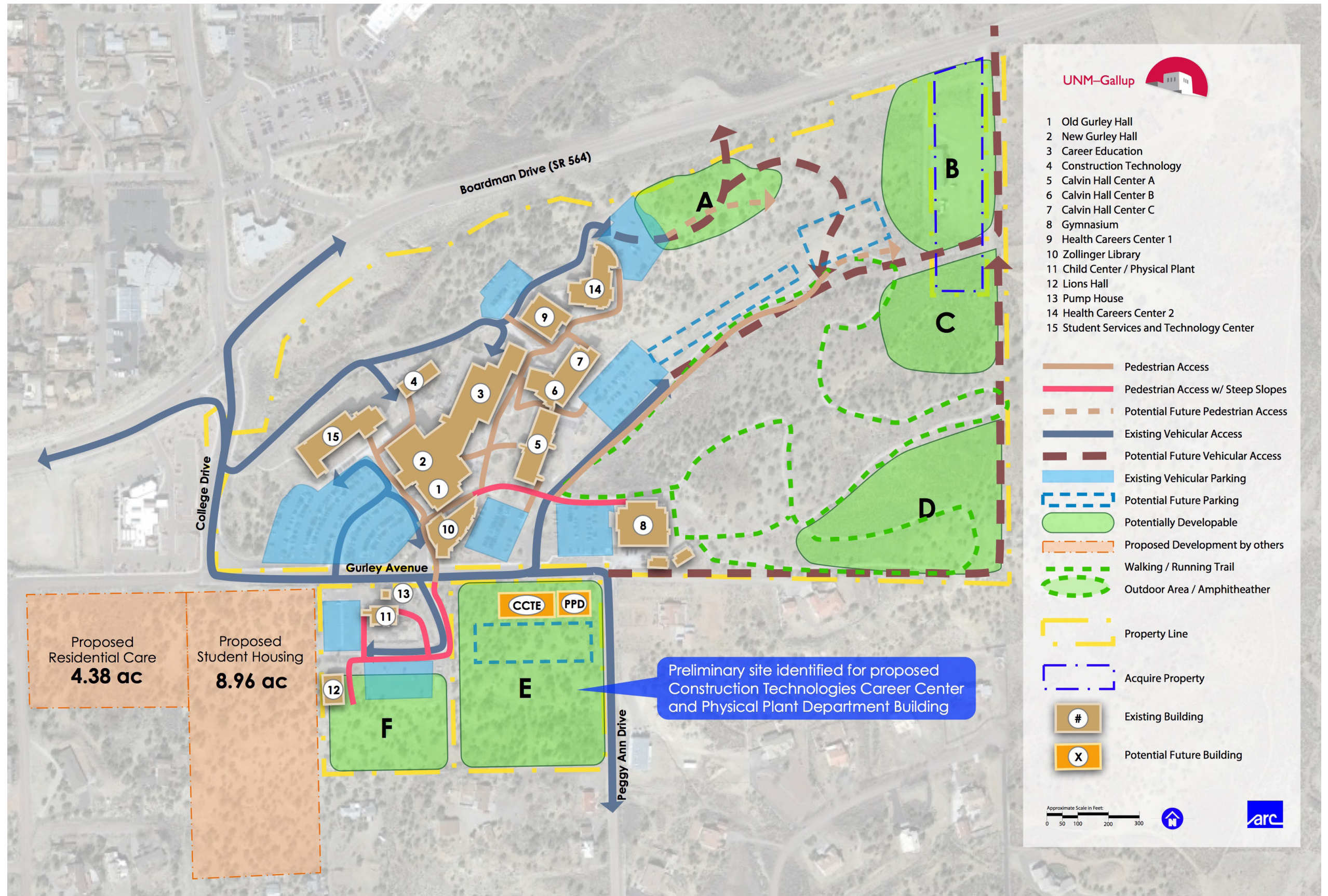
The 2015 FMP steering committee reviewed and endorsed the campus planning goals and development framework established in the 2006 FMP. The framework and planning goals will guide future growth and change on the campus, including the location of new facilities and related infrastructure.

Campus planning goals are summarized as follows. Additional descriptions are located in the Appendix, Section 3.2.2.

Campus Planning Goals

- **Functional Organization:** Organize college functions in a clear and efficient manner reflecting the needs of students, staff, and visitors
- **Wayfinding:** Create a clear and uniform wayfinding system that adds value to the appearance of the campus
- **Student Life:** Create places around campus to encourage informal student interaction
- **Campus Character:** Retain and enhance campus architectural character
- **Outdoor Resources:** Provide more opportunities to use outdoor resources
- **Access / Parking:** Provide safe and convenient pedestrian and vehicular access to all campus areas
- **General Development:** Develop the site in a manner that balances long-term facilities needs and the protection of the unique site environment
- **Sustainability:** Become a model for sustainability practices locally and regionally

Exhibit 2-14
UNM-G Development
Framework



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2.5 Capital Needs

The total identified capital need for UNM-G for 2016 to 2025 is approximately \$40.3 million.

The adopted strategy for improvements to address capital needs is based on a planning framework implemented in increments, and using a combination of local general obligation bonds and state matching funds. The plan will be evaluated and adjusted on a yearly basis to meet UNM-G needs as required.

Organization of improvements to address capital needs is in two bond cycles, summarized in Exhibit 2-15. UNM-G will consider asking voters to approve local general obligation bonds in 2016 and in 2021 for \$6 million each.

Exhibit 2-15
UNM-G Capital Needs
Summary

Project No.	Project Title	Project Category	Estimated Total Project Cost (TPC)
2016 - 2020 Bond Cycle (Projects to be considered)			
1.0	Center for Career Technology Education and Innovation (CCTEI)	New Construction	\$6,480,000
2.0	Physical Plant Department (PPD) Facility	New Construction	\$2,000,000
3.0	Re-Roofing and HVAC Equipment Replacement	Renovation	\$3,550,000
4.0	Restroom and Plumbing Upgrades	Renovation	\$1,560,000
5.0	Building Interior Renovations	Renovation	\$1,820,000
6.0	Zuni Building Re-Roofing and Structural Improvements	Renovation	\$1,390,000
7.0	Site Utility Upgrades	Site Utilities	\$2,940,000
8.0	Site Paving, Access, ADA, and Landscape Improvements	Site Improvements	\$4,100,000
Subtotal			\$23,840,000
2021 - 2025 Bond Cycle (Projects to be considered)			
9.0	Re-Roofing and HVAC Equipment Replacement	Renovation	\$1,060,000
10.0	Restroom and Plumbing Upgrades	Renovation	\$1,010,000
11.0	Building Interior Renovations	Renovation	\$5,610,000
12.0	Site Utility Upgrades	Site Utilities	\$5,800,000
13.0	Site Paving, Access, ADA, and Landscape Improvements	Site Improvements	\$560,000
14.0	Community Education Center	New Construction	\$2,440,000
Subtotal			\$16,480,000
Total			\$40,320,000

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3 Appendices

3.1 Existing Conditions

3.1.1 Content Index

The index below cross-references the contents of the UNM-G Facilities Master Plan with New Mexico Higher Education Department (HED) previous Five-Year Institutional Master Plan components. Although HED no longer publishes requirements for institutional master plans, the former requirements identify critical components of the plan and this index shows where the components are located within this report.

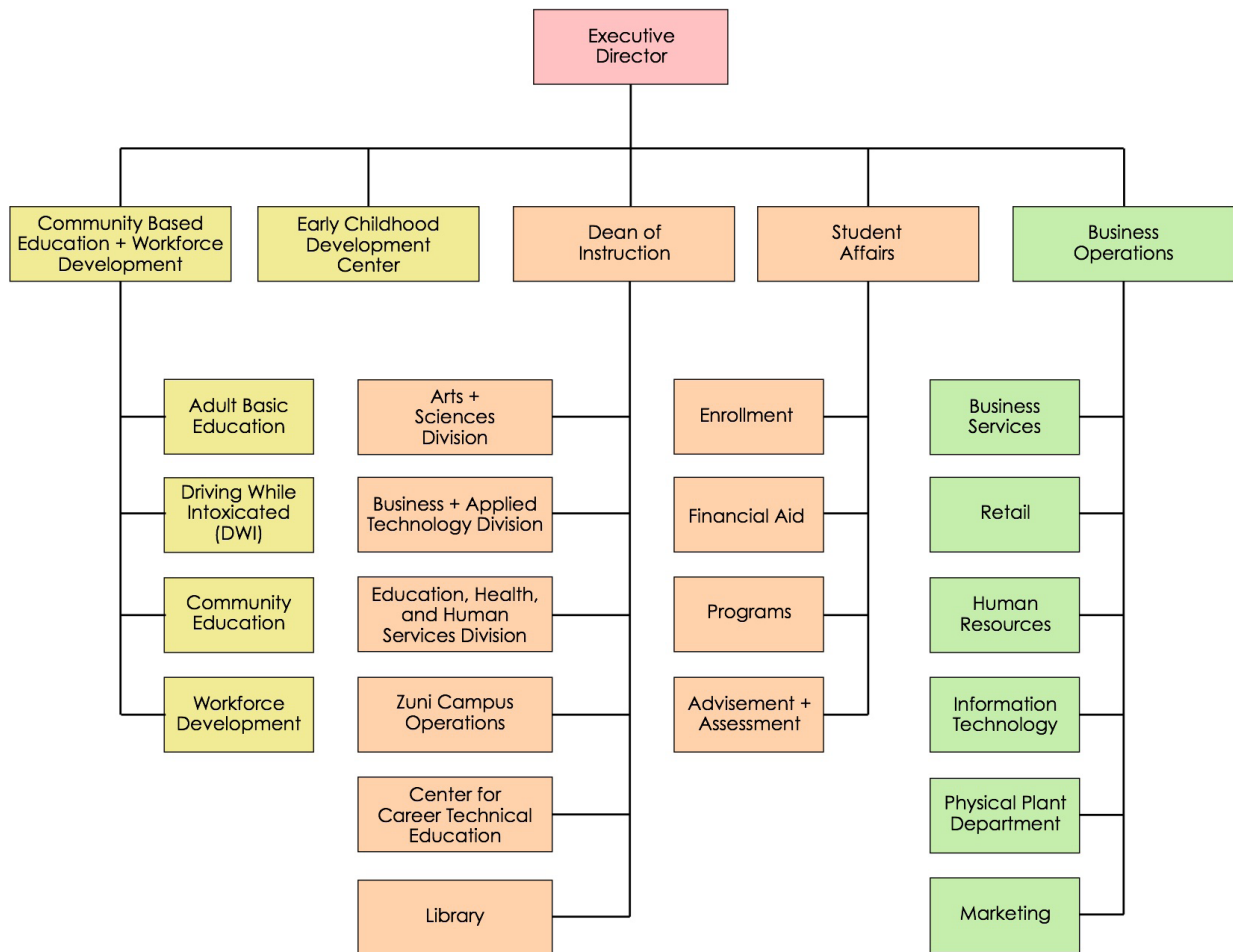
Exhibit 3-1
Matrix Matching Report Format
to Former HED Requirements

Item	Location in Report							
	Background	Demographics and Enrollment	Implications for the Future	Capital Needs	Existing Conditions	Facility + Infrastructure Assessments	Future Conditions	Capital Planning Worksheet
	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4
I. Facility Planning Decisions					■			
II. Needs	■	■	■	■	■	■	■	■
III. Assessment								
A. Instructional Facilities			■		■	■		
1. Adequacy			■		■	■		
2. Room Utilization					■			
B. Non-instructional Facilities			■		■	■		
IV. Projects and Costs				■				■
V. Bonding Capacity					■			
VI. Funding Sources					■			■
VII. Maps								
A. Required Maps								
1. Current Campus Buildings					■	■		
2. Anticipated Changes Resulting from New Projects			■				■	
3. Campus Master Plan Map (10-20 years)			■				■	
B. Other Possible Maps					■	■	■	

3.1.2 Structural Organization

The exhibit below shows UNM-G's structural organization.

Exhibit 3-2
UNM-G Organizational Structure

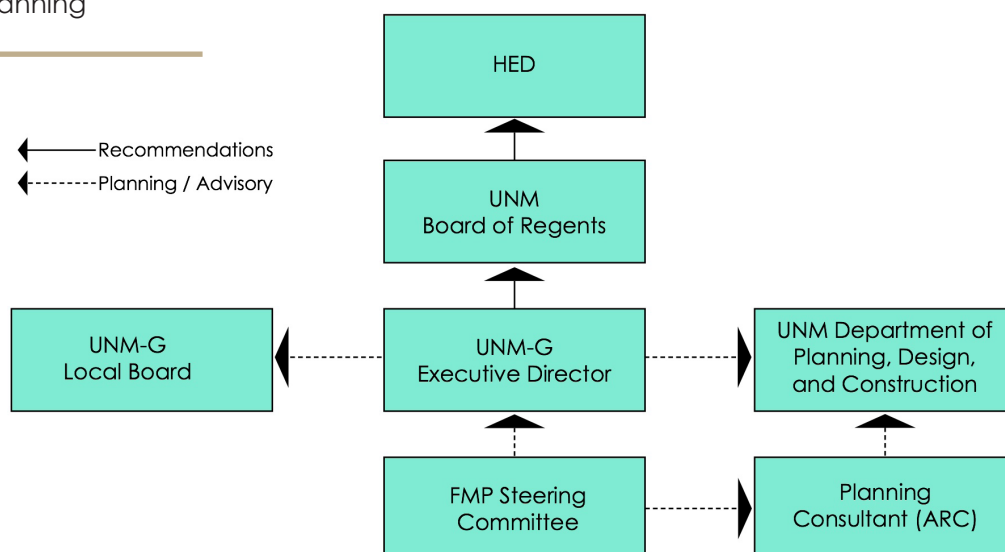


3.1.3 Facility Planning Decisions

The recommendations in this report result from a planning process involving key administrative, instructional, and support personnel, with periodic briefings to the local board. ARC facilitated this process. Exhibit 3-3 shows the decision-making flow with regard to capital outlay planning, and the list below describes roles and responsibilities.

- **Local Board** - The local board advises on the administration's capital outlay recommendations. The board is updated about the progress of the FMP at each board meeting. UNM-G, assisted by ARC, will make a full presentation to the board of recommended courses of action and for endorsement of the FMP.
- **Executive Director** - The executive director establishes an ongoing planning process, organizes the parties involved in the effort, and makes recommendations to the local board regarding future courses of action. The director of business operations assists the executive director in this endeavor.
- **FMP Steering Committee** - The steering committee is an ongoing committee with an advisory role to the executive director and the planning consultant. The steering committee prepared the development framework which provides overall guidance for future UNM-G development. This committee is composed of key members of administration, instructional, and support areas. It meets periodically to review material developed by the planning consultant and advise on capital projects and priorities.
- **UNM Planning, Design and Construction** - This UNM department participates in FMP workshops and reviews master plan recommendations.
- **Planning Consultant** - The planning consultant acts in an advisory role to the executive director. The consultant facilitates the planning process by developing a database of existing and projected conditions. The consultant also develops preliminary concepts regarding future courses of action and prepares verbal and written presentations describing this information.

Exhibit 3-3
Facility Planning
Decisions



3.1.4 Facility Master Plan Process

1. Project Organization

Project stakeholders met to discuss the scope of the FMP update and identify project goals and issues. The team identified participants and established a decision-making process. It agreed on the project scope, schedule and budget. The discussion identified background information, including existing plans, reports, organizational charts, space allocation standards, utilization data and other relevant data.

2. Inventory / Analysis of Conditions

The planning consultant collected project facts, including county demographics/economics, instructional program needs and trends, enrollment history, building and site information and issues, classroom utilization, future facility needs, and financial resources. ARC collected information using questionnaires, interviews, and on-site evaluations. The FMP Steering Committee and UNM-G leadership validated project facts in a workshop.

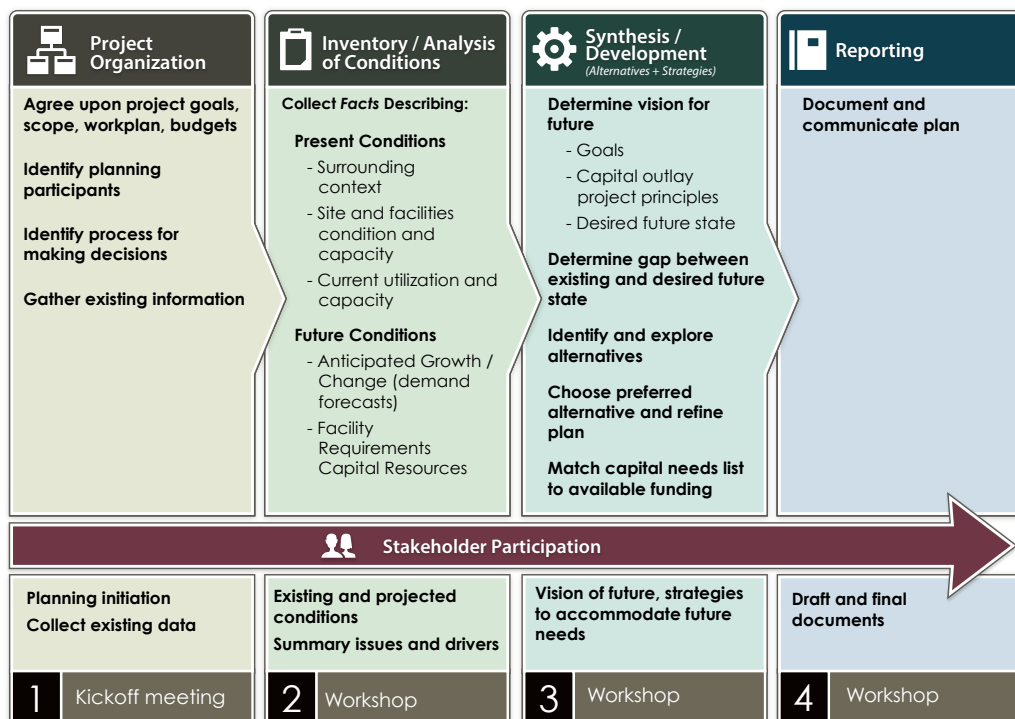
3. Development of Alternatives and Strategies

This step built on the project facts by identifying and exploring development scenarios for meeting future needs. The team developed a capital improvement plan based on the preferred scenario as well as the information collected in previous steps.

4. Final Report

The report documents the work completed in the previous steps.

Exhibit 3-4
FMP Process



3.1.5 Survey Responses

ARC solicited input from students, faculty, staff, and administrators via a web-based survey from spring 2015; 52 people completed the survey. The following exhibits summarize the results of the survey.

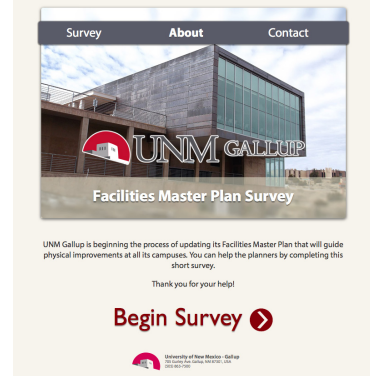
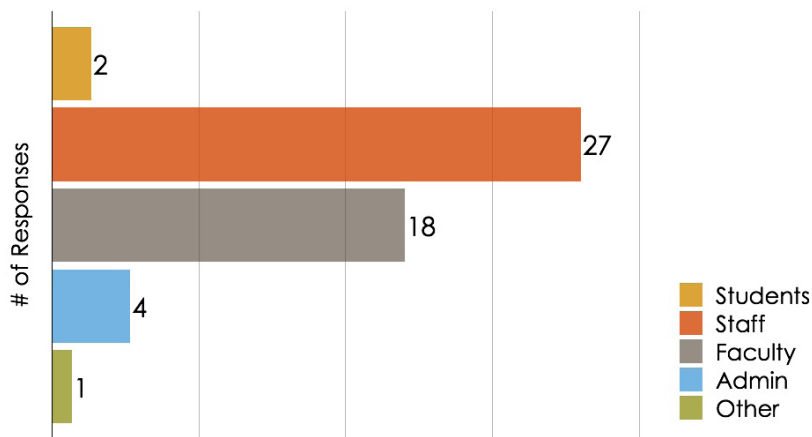


Exhibit 3-5
Survey Participants

Q1A: I am a:



Q1B: My division, department, program, or functional area is:

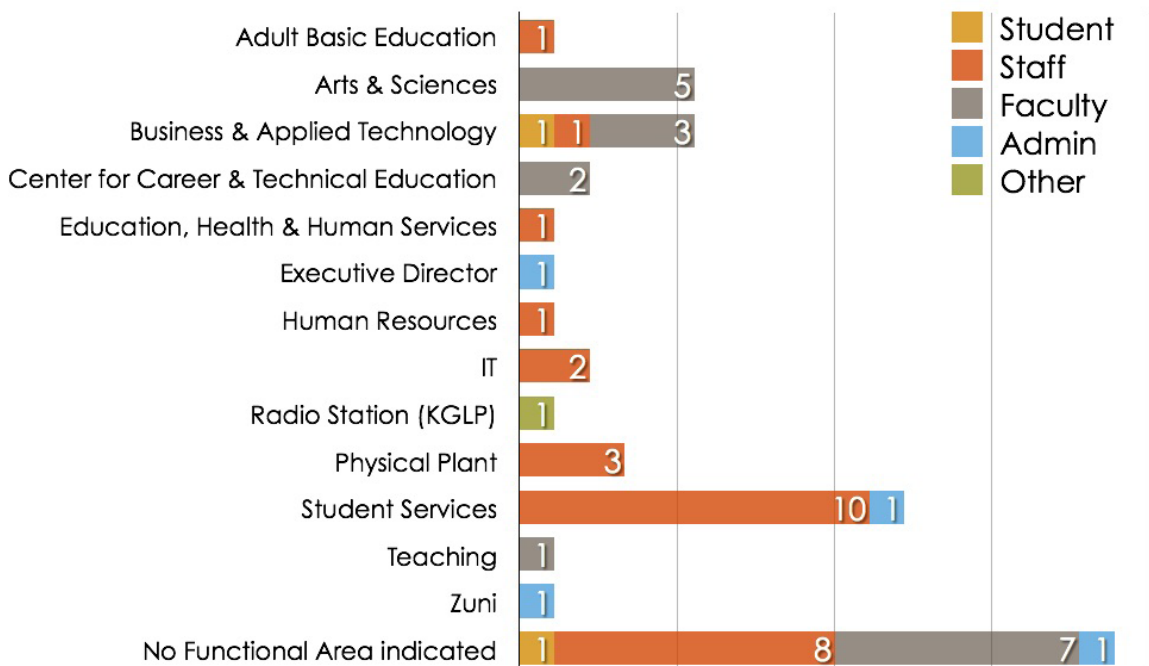
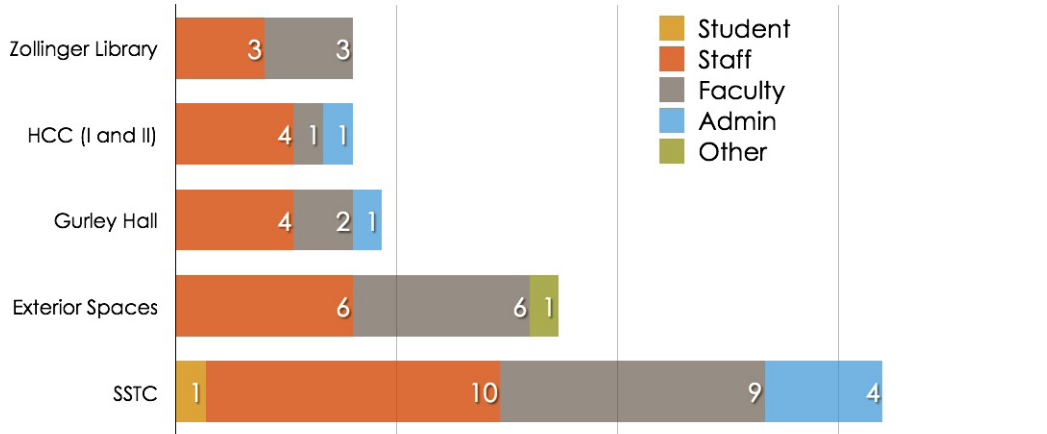


Exhibit 3-6
Best Spaces Question

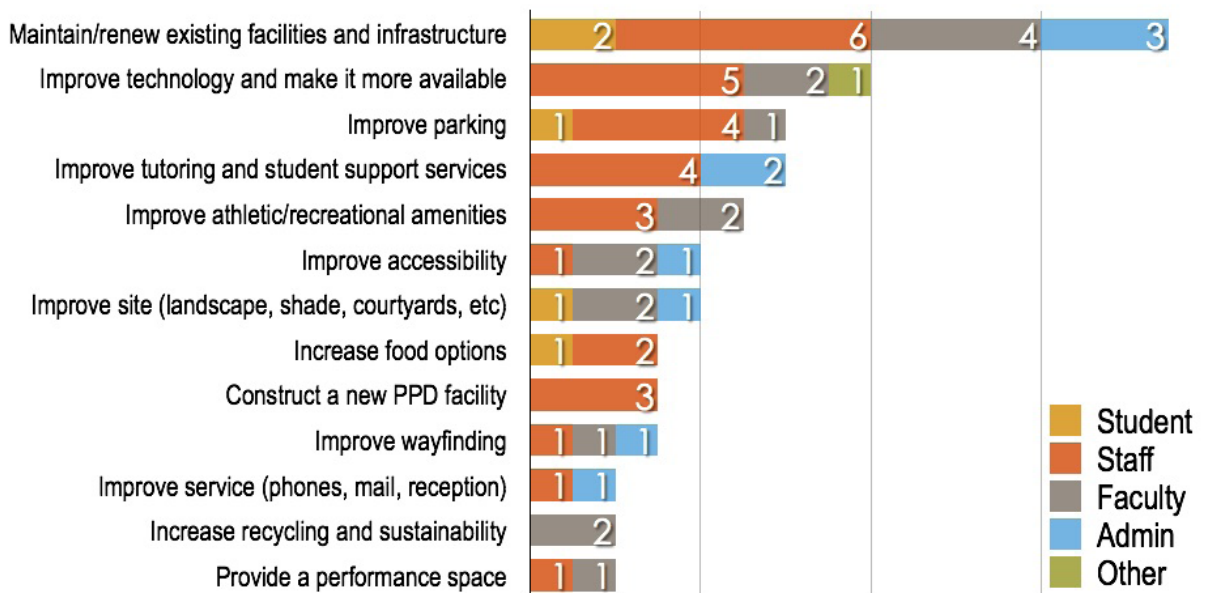
Q2: Which UNM-G facilities or spaces do you like the most?*



* TOP 5 RESPONSES

Exhibit 3-7
Ability to Serve Question

Q4A: What physical building or site related improvements do you recommend to increase UNM-G's ability to serve students, staff, faculty, administration, visitors, and the community at main campus?*



*HIGHEST NUMBER OF RESPONSES (DOES NOT INCLUDE ITEMS WITH ONE RESPONSE)

Exhibit 3-7 Continued
Ability to Serve Question

Q4B: What physical building or site related improvements do you recommend to increase UNM-G's ability to serve students, staff, faculty, administration, visitors, and the community at the ABE center?

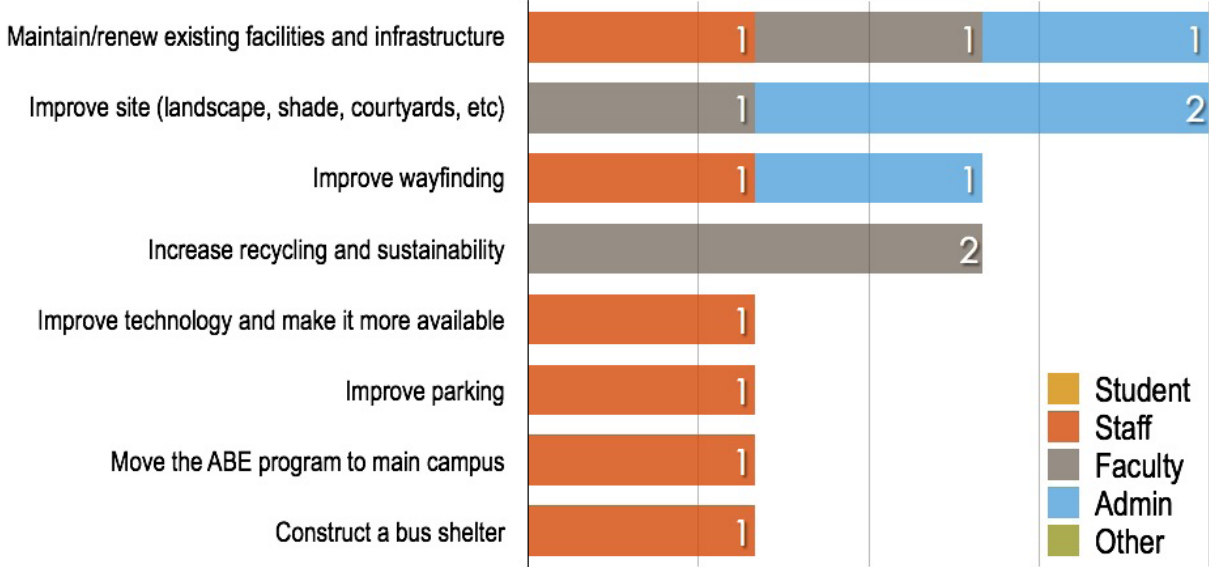


Exhibit 3-7 Continued
Ability to Serve Question

Q4C: What physical building or site related improvements do you recommend to increase UNM-G's ability to serve students, staff, faculty, administration, visitors, and the community at the Zuni campus?

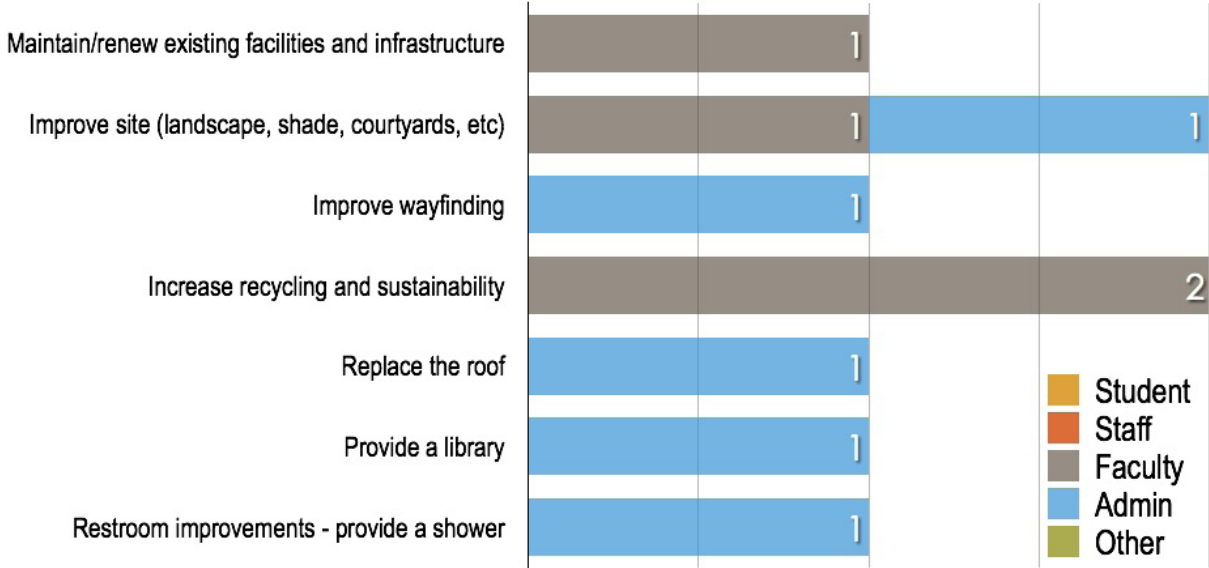
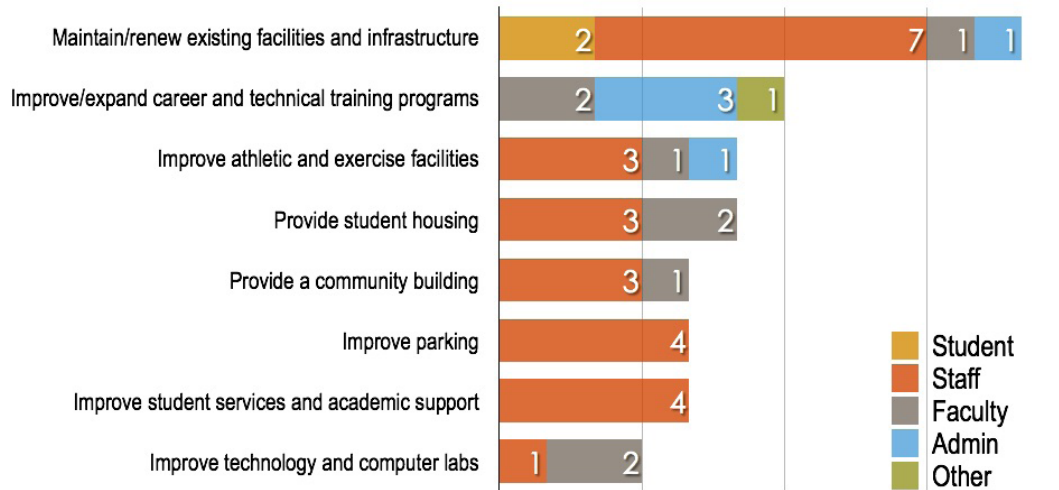


Exhibit 3-8
Most Important
Improvement Question

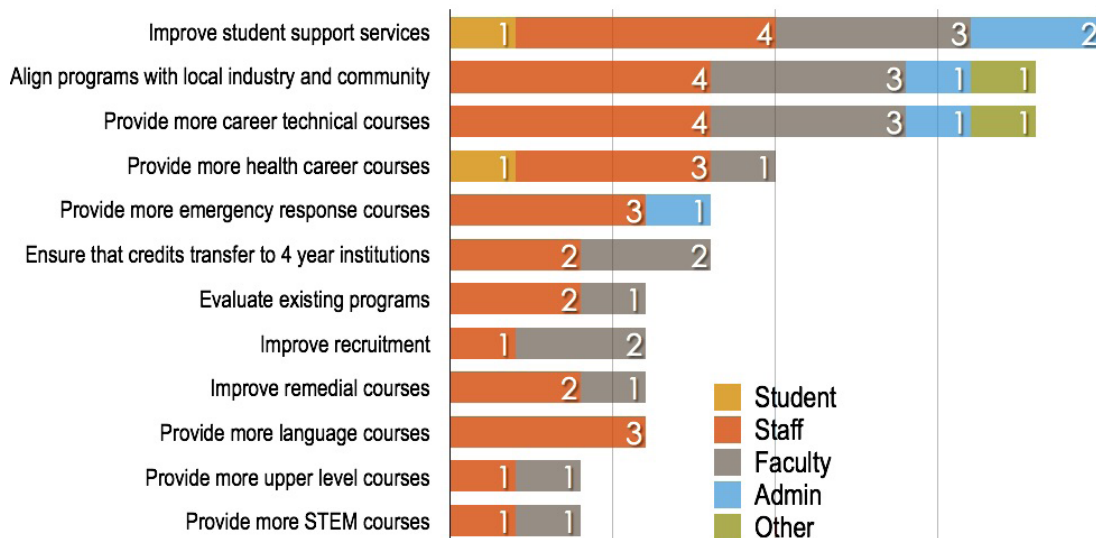
Q5: What do you think is the most important physical building or site related improvement for UNM-G to complete over the next 10 years?*



*HIGHEST NUMBER OF RESPONSES (DOES NOT INCLUDE ITEMS WITH ONE AND TWO RESPONSES)

Exhibit 3-9
Educational Experience
Question

Q6: What academic program changes do you recommend to help UNM-G improve the educational experience for students and value to the community?*



*HIGHEST NUMBER OF RESPONSES (DOES NOT INCLUDE ITEMS WITH ONE RESPONSE)

3.1.6 Room Utilization

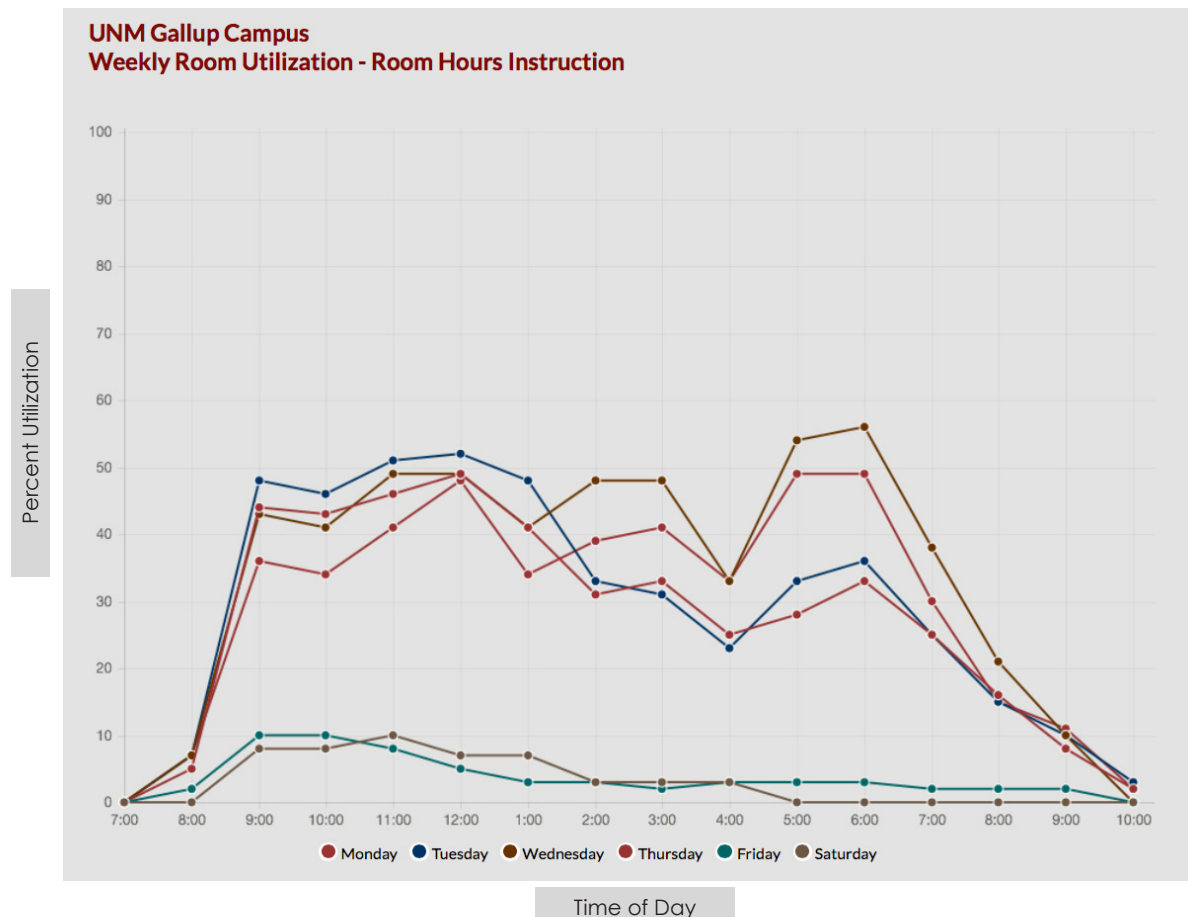
Exhibit 3-10 illustrates instructional room use by day and time (fall 2014) as measured by the number of students in classrooms versus available seats (weekly student contact hours based on the master class schedule).

UNM-G has significant facility use for non-credit activities. These activities include community education, adult basic education, workforce development, and community events. The university schedules activities when rooms are not being used for credit-bearing instructional courses. Exhibit 3-10 does not account for non-credit-bearing use of instructional space.

The chart shows that:

- **UNM-G can accommodate enrollment growth** by increasing utilization of existing space. Industry benchmarks recommend 70% to 80% utilization for higher education institutions.
- **Utilization is higher on Mondays through Thursdays**, and lower on Fridays and Saturdays.
- **Demand for room use is generally level**, without extreme peak demand times that would suggest the need for scheduling adjustments for demand relief.

Exhibit 3-10
Room Utilization



3.1.7 Capital Resources

Capital funds are used to:

- Construct new facilities
- Renovate existing facilities
- Purchase and improve lands for educational use
- Purchase instructional equipment

The most prevalent source of capital funds are general obligation (GO) bonds. This debt financing is paid back through a tax levy on property owners in the taxing district. GO bonds can be local or statewide. Rarely, direct legislative appropriations can provide capital funds.

- Local GO bonds are based on local property tax assessments.
- Statewide GO bonds are competitive, issued every other year, and typically used as a match to local funding of up to 75%.

UNM-G is about 72% bonded to capacity.

- **The current additional local GO bonding capacity is about \$6.6 million.**
- The total local GO bonding capacity is about \$24.58 million. This amount is based on 3% of assessed property values. UNM-G currently has about \$17.96 million outstanding.

In addition to capital funding, UNM-G receives about \$502,000 annually from state funding sources for building renewal and replacement (BR&R) to maintain facilities.

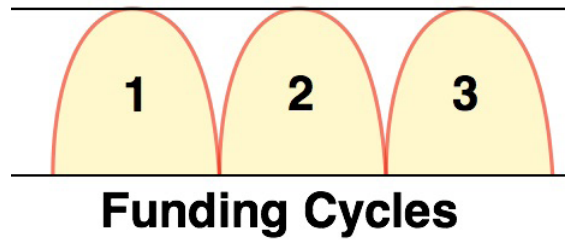


3.1.8 Capital Funding History and Approach

History

UNM-G has a successful history of passing local bonds.

- \$16 million approved by voters in 2004
- \$8 million approved by voters in 2008

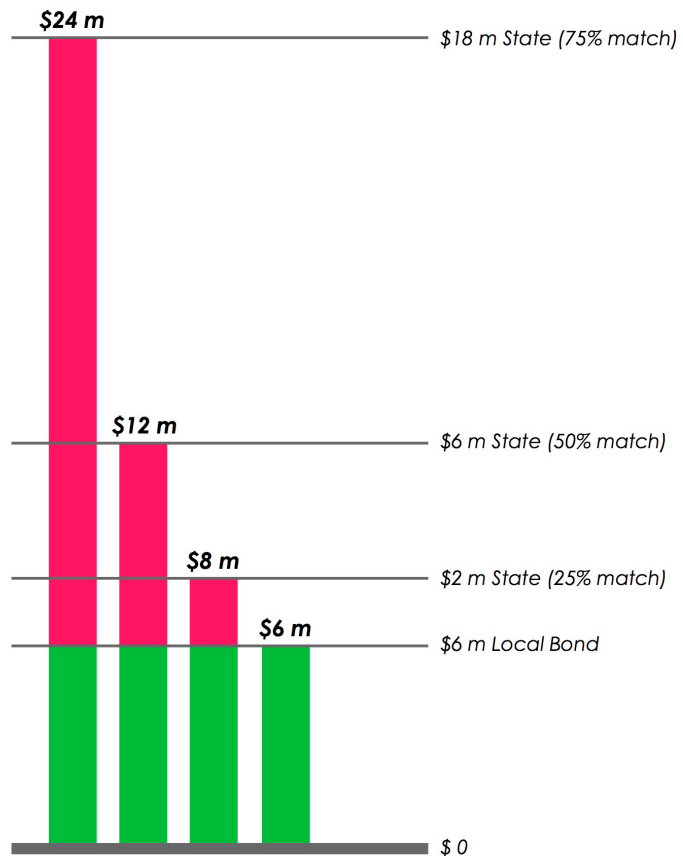


Approach

A cycling approach to funding provides some level of reliable capital funding. This approach:

- Incorporates regular funding cycles (four to eight years) with multiple revenue sources (local and state)
- Maintains an even tax rate (no tax increase)
- Provides the opportunity for a strategic implementation outlook to allow budgeting over an extended period of time

Exhibit 3-11
Funding Strategy Diagrams



Possible funding assuming a \$6 million local GO Bond

- Plus any local donations that UNM-G can activate
- Basic infrastructure and facility renewal can often be a 25% local match
- New construction may require more than 25% local match

Exhibit 3-12
Capital Funding History

YEAR	PROJECT DESCRIPTION	TOTAL PROJECT COST	FUNDING SOURCE (if known)					
			BR&R	Community Donation	General Fund	State of NM GOB	McKinley Co. GOB	Severance Tax Bonds
2015	Zollinger Library remodel	\$1,350,000				\$1,350,000		
2015	Site Water and Fire Suppression Upgrades (main campus)	\$1,350,000						
2015	Childcare Playground Improvements	\$250,000	\$250,000					
2014	Exterior ADA improvements (main campus)	\$500,000						
2014	Gurley Hall Career Education HVAC Replacement	\$1,325,000						
2012	Network IT Improvements (main campus)	\$2,000,000						
2011	Student Services Tech Center & Classroom	\$14,113,242			\$555,000	\$2,000,000	\$11,258,243	\$50,000
2011	Votech Dr. Infrastructure	\$750,000					\$750,000	
2011	GH Backfill	\$910,000					\$910,000	
2009	Calvin Hall Center Infrastructure	\$1,300,000	\$400,000			\$900,000		
2008	Land Purchase (Guadnagoli) 6.64 acres	\$203,464					\$203,464	
2008	Mechanical Industrial Technologies (MIT) Lab Equip	\$272,219			\$50,000		\$222,219	
2008	Walking Trail	\$75,000	\$40,000		\$35,000			
2007	Health Careers I remodel	\$315,700	\$23,700				\$292,000	
2007	Health Careers II & Rad Tech aka HC I phase 2	\$5,664,652				\$1,000,000	\$4,664,652	
2006	Lift Station Improvements	\$71,346						
2006	North Campus build out	\$331,507					\$331,507	
2005	Gurley Parking Lot Repaving	\$382,948						
2002	Health Careers I	\$1,760,960					\$1,760,960	
2001	Zollinger Library built & Gurley Hall Old remodel	\$3,278,650		\$50,000		\$1,175,000	\$2,053,650	
2001	Zuni campus	\$3,246,233					\$3,246,233	
2000	Calvin Hall Center phase C Science labs	\$1,531,100			\$1,179,649	\$268,750	\$82,701	
1999	Gym addition	\$642,211					\$642,211	
1998	North Campus - Land donated by Diocese of Gallup	\$149,700		Land				\$149,700
1997	Renovation of Calvin Hall, Gurley Hall, Career Ed	\$376,000	\$376,000					
1996	Calvin Hall Center phase B Computer Labs, Auditorium	\$2,991,860			\$449,360	\$970,000	\$887,500	\$685,000
1993	Child Care Center & Maintenance	\$815,000					\$815,000	
1991	Sunwest Bank donated Construction Tech House	NA		House				
1984	Construction Technology Building		All documents were burned in the CDL fire August 2004					
1984 - 1985	Gurley Hall new							
1981	Gymnasium							
1979 - 1980	Calvin Hall Center phase A							
1974	Gurley Hall Old							
1973	Gurley Family donated 16 acres	NA		Land				
1969	Clair Gurley Family donated 52 acres	NA		Land				
1969	Gallup Lions Club donated 6 acres and clubhouse	NA		Land				
1968	UNM faculty approved proposal to establish UNM-G	NA						
SUBTOTAL 2006 - CURRENT		\$30,782,130						
TOTAL - ALL YEARS		\$45,956,792						

3.1.9 Instructional Use of Existing Facilities

This section includes floor plans of existing facilities with instructional use (classrooms, class labs, computer labs) notated.

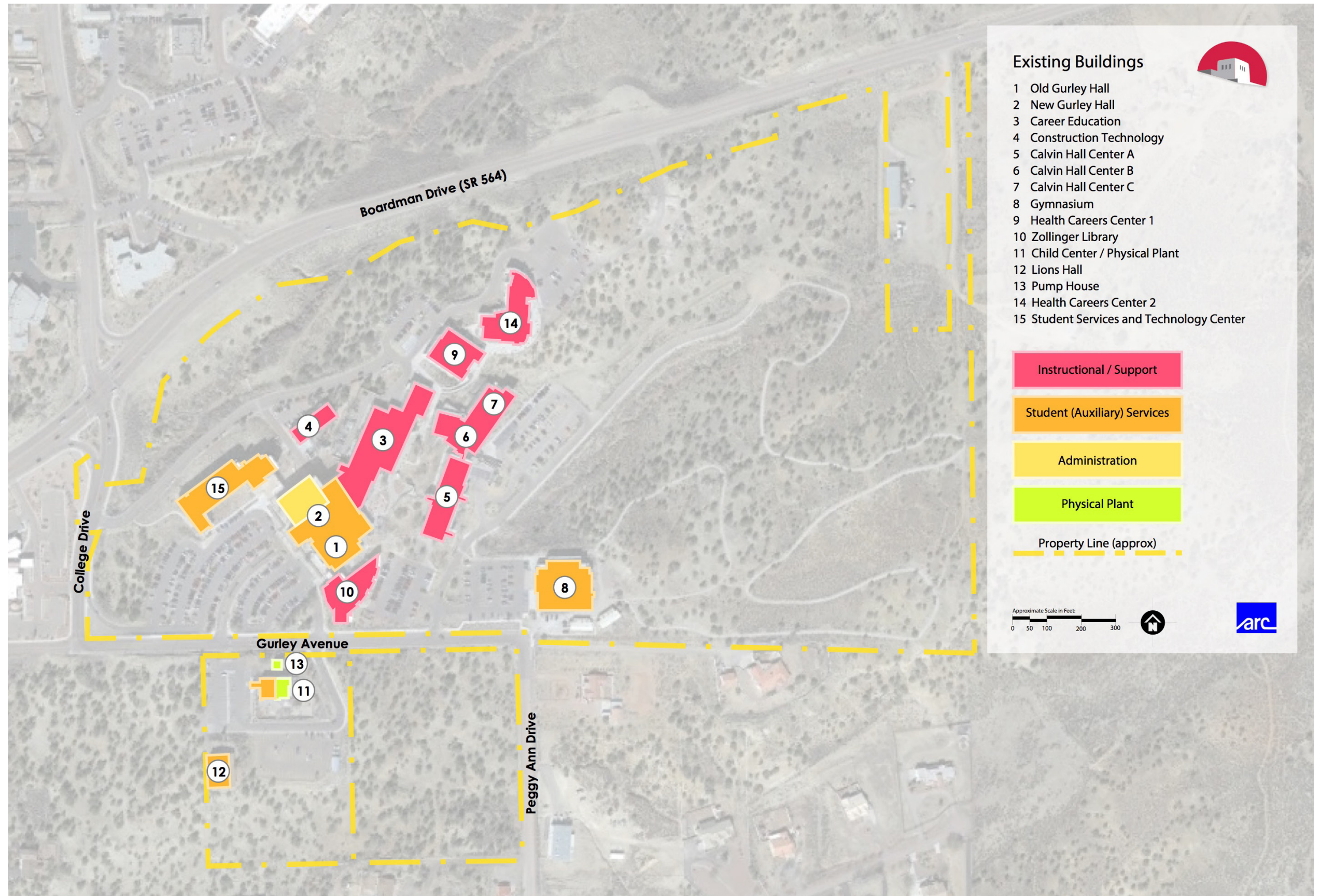
Exhibit 3-13 summarizes instructional space by facility.

Exhibit 3-13
Classroom Inventory

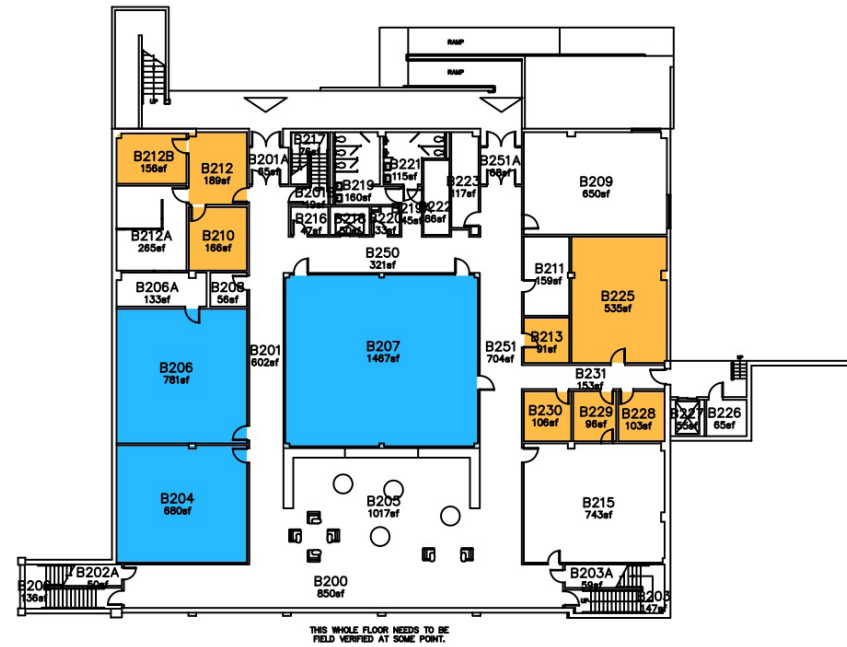
Building	Scheduled				Unscheduled				Total Inventory	
	Classrooms	Class-Labs	Computer Lab	Total	Classrooms	Class-Labs	Computer Lab	Other		
Gurley Hall	5	15		20		2		3	25	Unschedule labs = veterans support and academic resource centers. Other = 3 MCHS classrooms
Construction Technology		2		2					2	High bay shops
Calvin Hall	21	3	8	32					32	
Physical Education				0				3	3	Other = gym, weight room, exercise room
Health Careers	1	4		5					5	
Zollinger Library				0			1		1	
Child Center / PPD				0				4	4	Other = 4 daycare rooms
Lions Hall				0	4				4	Building is vacant. 4 classrooms are not scheduled.
Pump House				0					0	
Health Careers 2	4	5	1	10					10	
Student Services Center	6			6			2		8	2 unscheduled computer labs = compass testing and open for student use
Total, Gallup Campus	37	29	9	75	4	2	3	10	94	
North Campus				0				4	4	Other = ABE; 3 classrooms and 1 computer lab
Zuni Campus	4	3	2	9		1			10	Unscheduled class-lab = resource/tutoring space
Grand Total	41	32	11	84	4	3	3	14	108	

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Exhibit 3-14
Existing Facility Use by
Building











2015



BASEMENT FLOOR

NOT TO SCALE



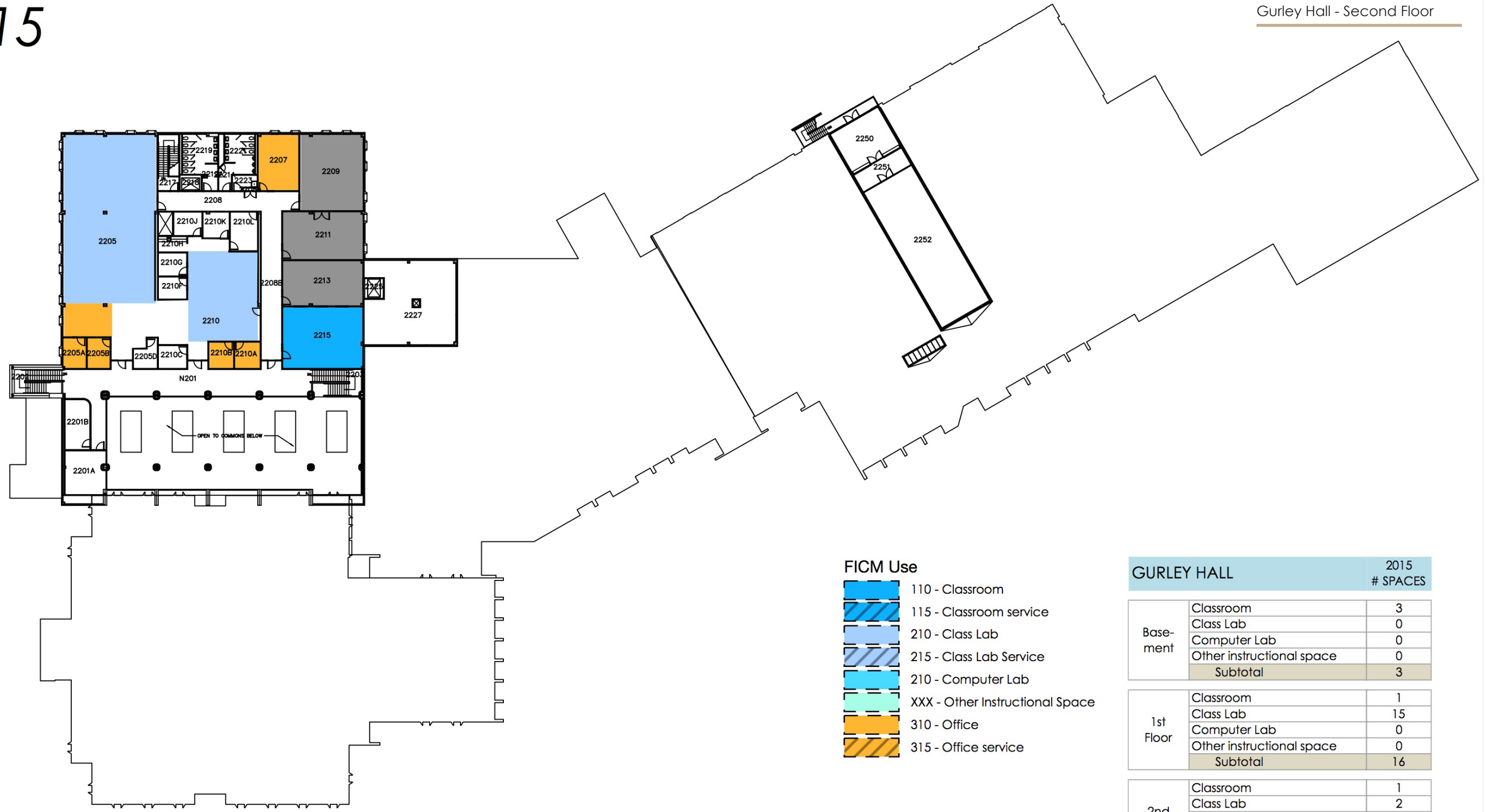
- FICM Use**
-  110 - Classroom
 -  115 - Classroom service
 -  210 - Class Lab
 -  215 - Class Lab Service
 -  210 - Computer Lab
 -  XXX - Other Instructional Space
 -  310 - Office
 -  315 - Office service

GURLEY HALL		2015 # SPACES
Base- ment	Classroom	3
	Class Lab	0
	Computer Lab	0
	Other instructional space	0
	Subtotal	3
1st Floor	Classroom	1
	Class Lab	15
	Computer Lab	0
	Other instructional space	0
	Subtotal	16
2nd Floor	Classroom	1
	Class Lab	2
	Computer Lab	0
	Other instructional space	3
	Subtotal	6
TOTAL		25

2015

Exhibit 3-16
Gurley Hall - First Floor





SECOND FLOOR

NOT TO SCALE



FICM Use

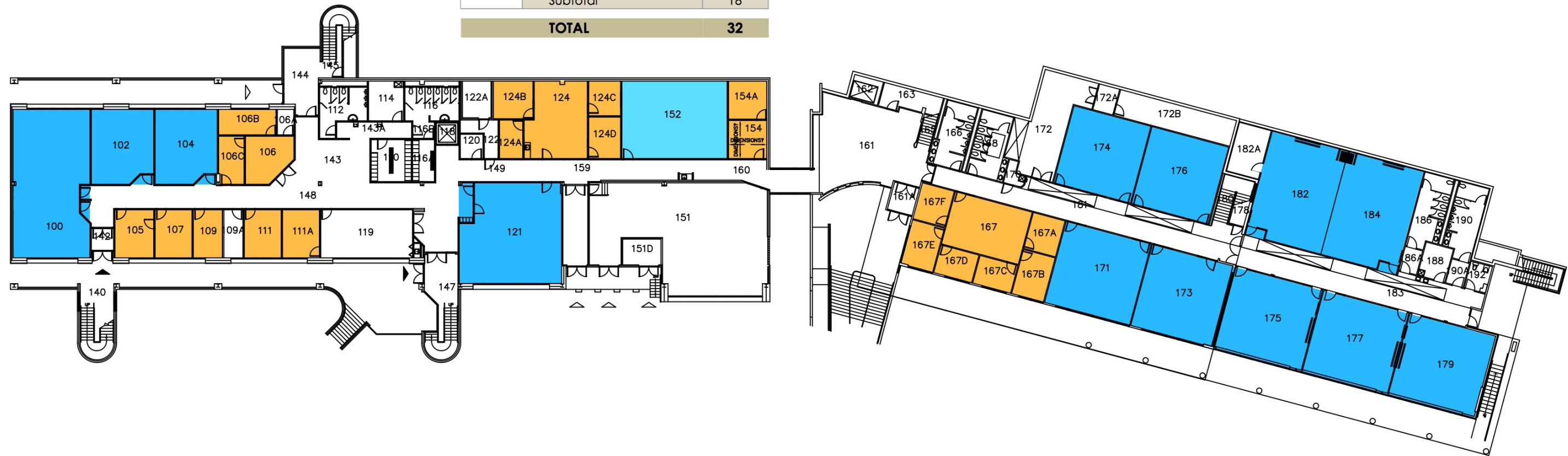
- 110 - Classroom
- 115 - Classroom service
- 210 - Class Lab
- 215 - Class Lab Service
- 210 - Computer Lab
- XXX - Other Instructional Space
- 310 - Office
- 315 - Office service

GURLEY HALL		2015 # SPACES
Base- ment	Classroom	3
	Class Lab	0
	Computer Lab	0
	Other instructional space	0
	Subtotal	3
1st Floor	Classroom	1
	Class Lab	15
	Computer Lab	0
	Other instructional space	0
	Subtotal	16
2nd Floor	Classroom	1
	Class Lab	2
	Computer Lab	0
	Other instructional space	3
	Subtotal	6
TOTAL		25

2015

- FICM Use**
- 110 - Classroom
 - 115 - Classroom service
 - 210 - Class Lab
 - 215 - Class Lab Service
 - 210 - Computer Lab
 - XXX - Other Instructional Space
 - 310 - Office
 - 315 - Office service

CALVIN HALL CENTER		2015 # SPACES
1st Floor	Classroom	13
	Class Lab	0
	Computer Lab	1
	Other instructional space	0
	Subtotal	14
2nd Floor	Classroom	8
	Class Lab	3
	Computer Lab	7
	Other instructional space	0
	Subtotal	18
TOTAL		32



FIRST FLOOR

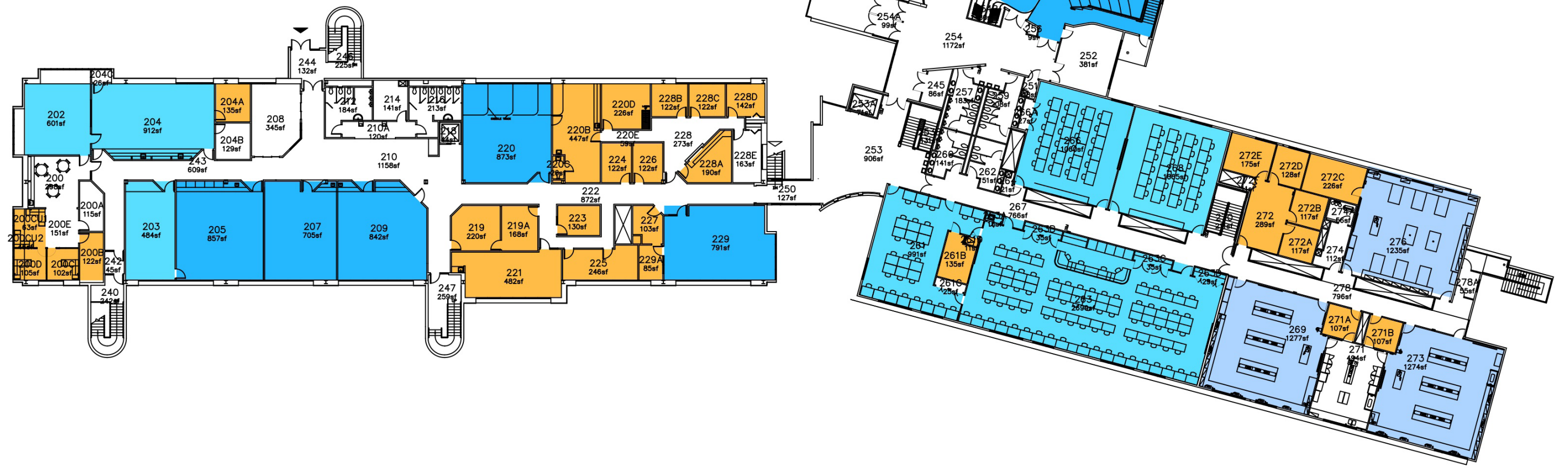
NOT TO SCALE



2015

- FICM Use**
- 110 - Classroom
 - 115 - Classroom service
 - 210 - Class Lab
 - 215 - Class Lab Service
 - 210 - Computer Lab
 - XXX - Other Instructional Space
 - 310 - Office
 - 315 - Office service

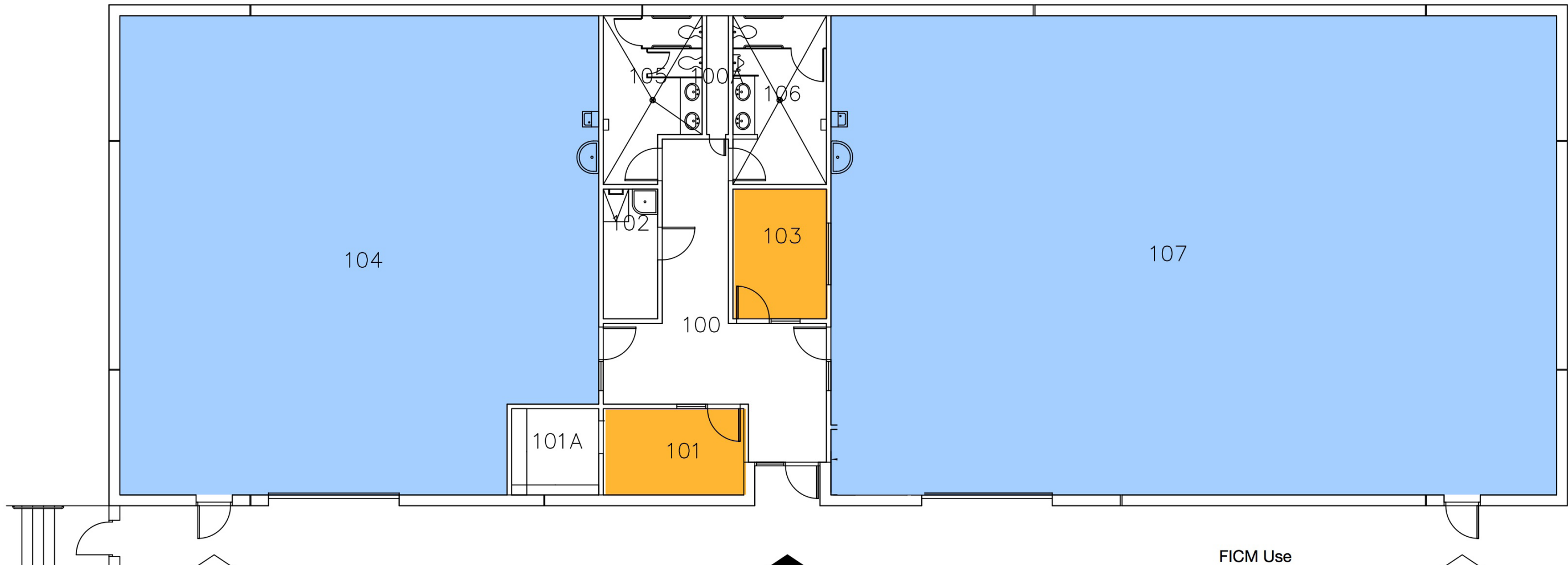
CALVIN HALL CENTER		2015 # SPACES
1st Floor	Classroom	13
	Class Lab	0
	Computer Lab	1
	Other instructional space	0
	Subtotal	14
2nd Floor	Classroom	8
	Class Lab	3
	Computer Lab	7
	Other instructional space	0
	Subtotal	18
TOTAL		32











SECOND FLOOR

NOT TO SCALE





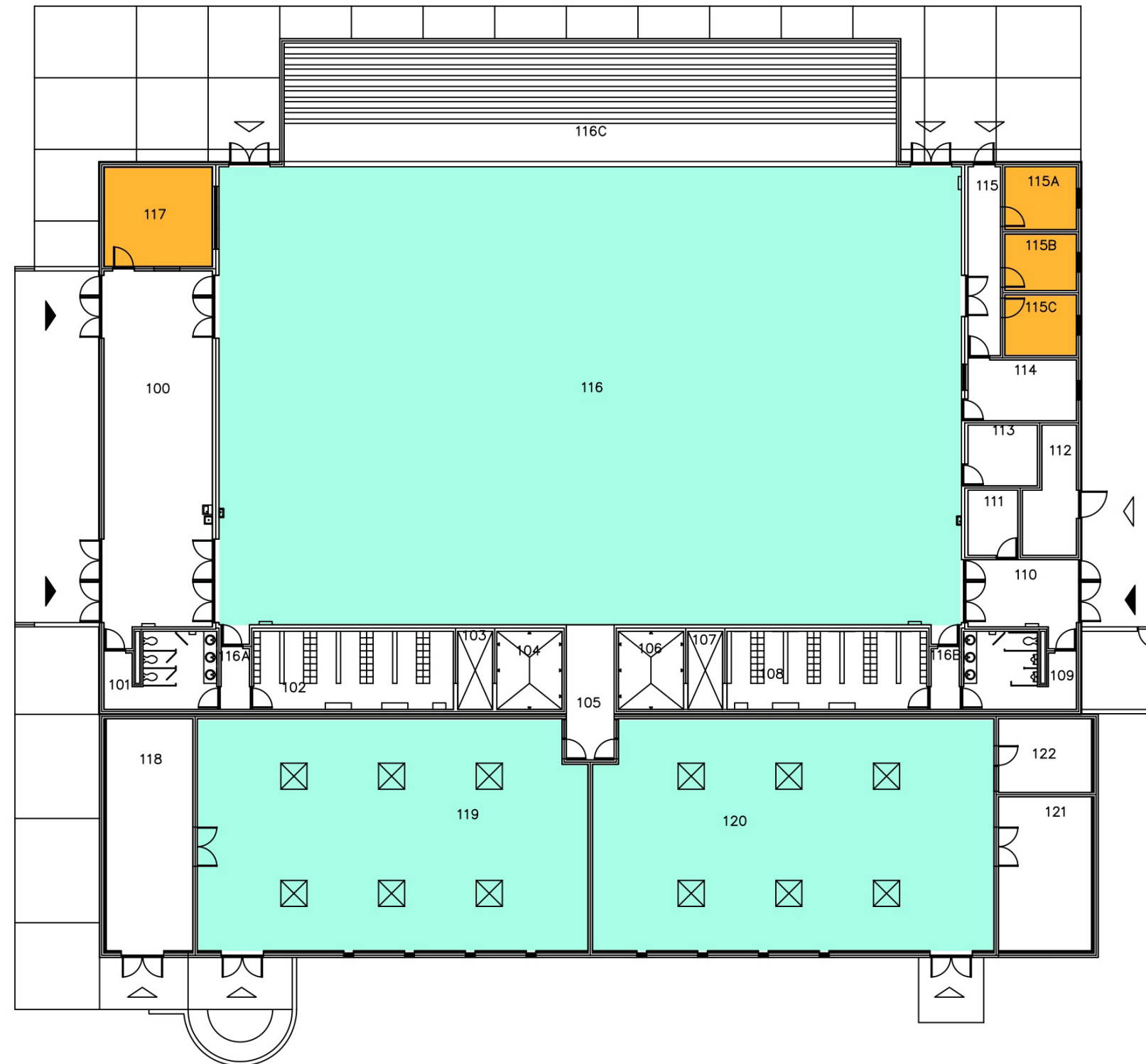
CONSTRUCTION TECH		2015 # SPACES
1st Floor	Classroom	0
	Class Lab	2
	Computer Lab	0
	Other instructional space	0
	Subtotal	2
TOTAL		2

- FICM Use**
-  110 - Classroom
 -  115 - Classroom service
 -  210 - Class Lab
 -  215 - Class Lab Service
 -  210 - Computer Lab
 -  XXX - Other Instructional Space
 -  310 - Office
 -  315 - Office service

FIRST FLOOR
NOT TO SCALE



Exhibit 3-21
Gymnasium



FICM Use

- 110 - Classroom
- 115 - Classroom service
- 210 - Class Lab
- 215 - Class Lab Service
- 210 - Computer Lab
- XXX - Other Instructional Space
- 310 - Office
- 315 - Office service

GYM		2015 # SPACES
1st Floor	Classroom	0
	Class Lab	0
	Computer Lab	0
	Other instructional space	3
	Subtotal	3
TOTAL		3

FIRST FLOOR

NOT TO SCALE



Exhibit 3-22
Health Careers Center 1



Exhibit 3-23
Health Careers Center 2

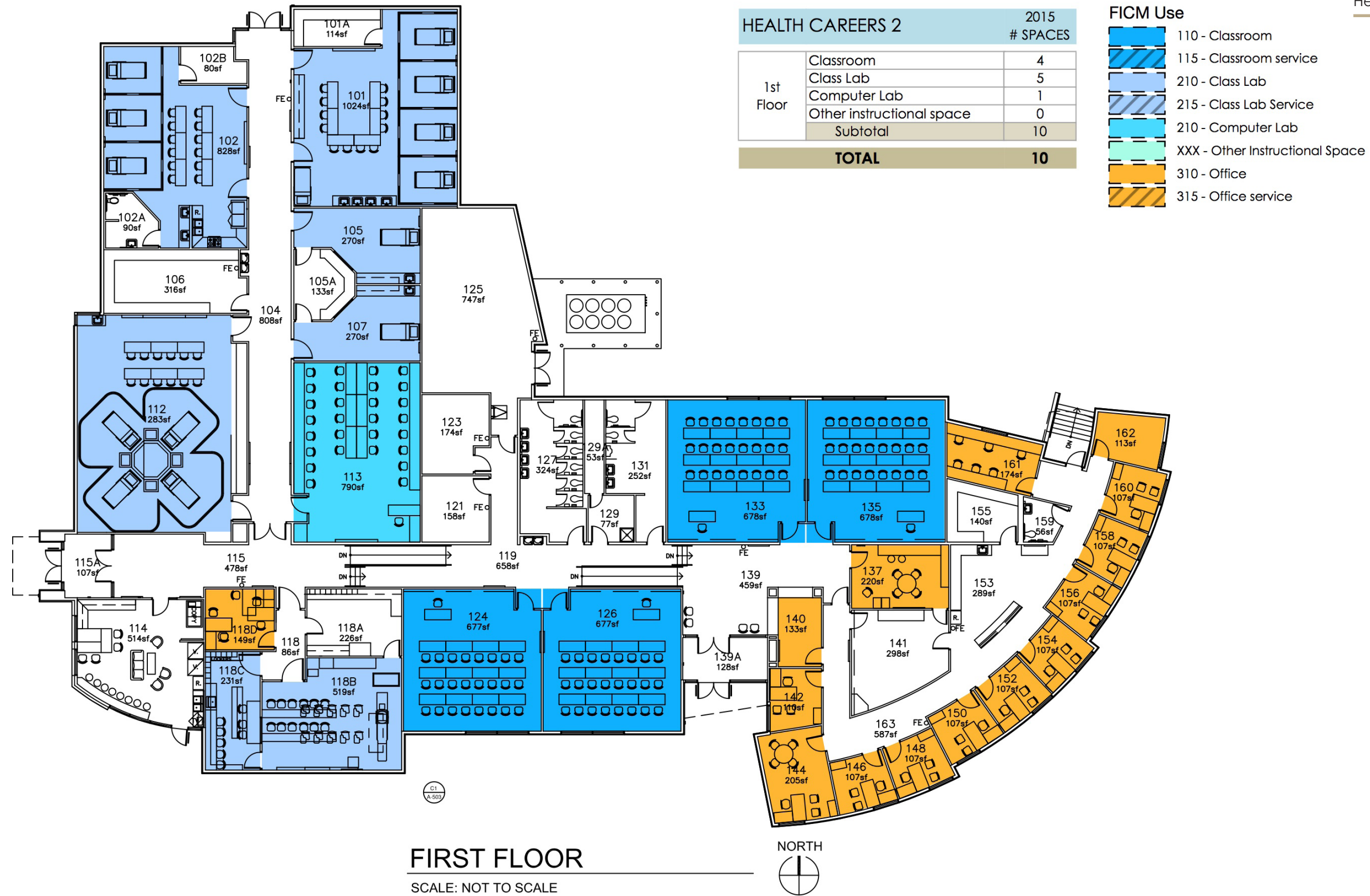
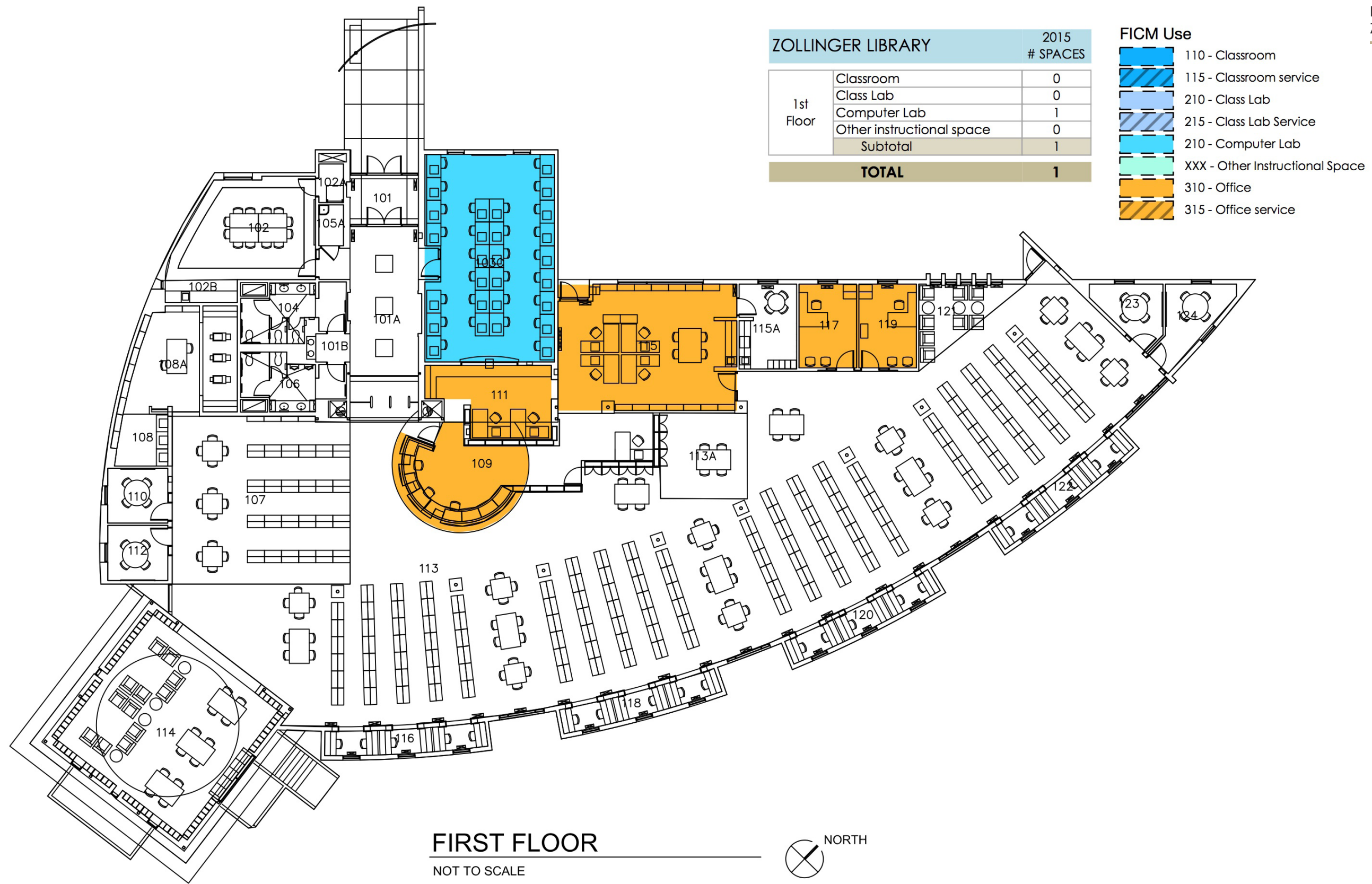
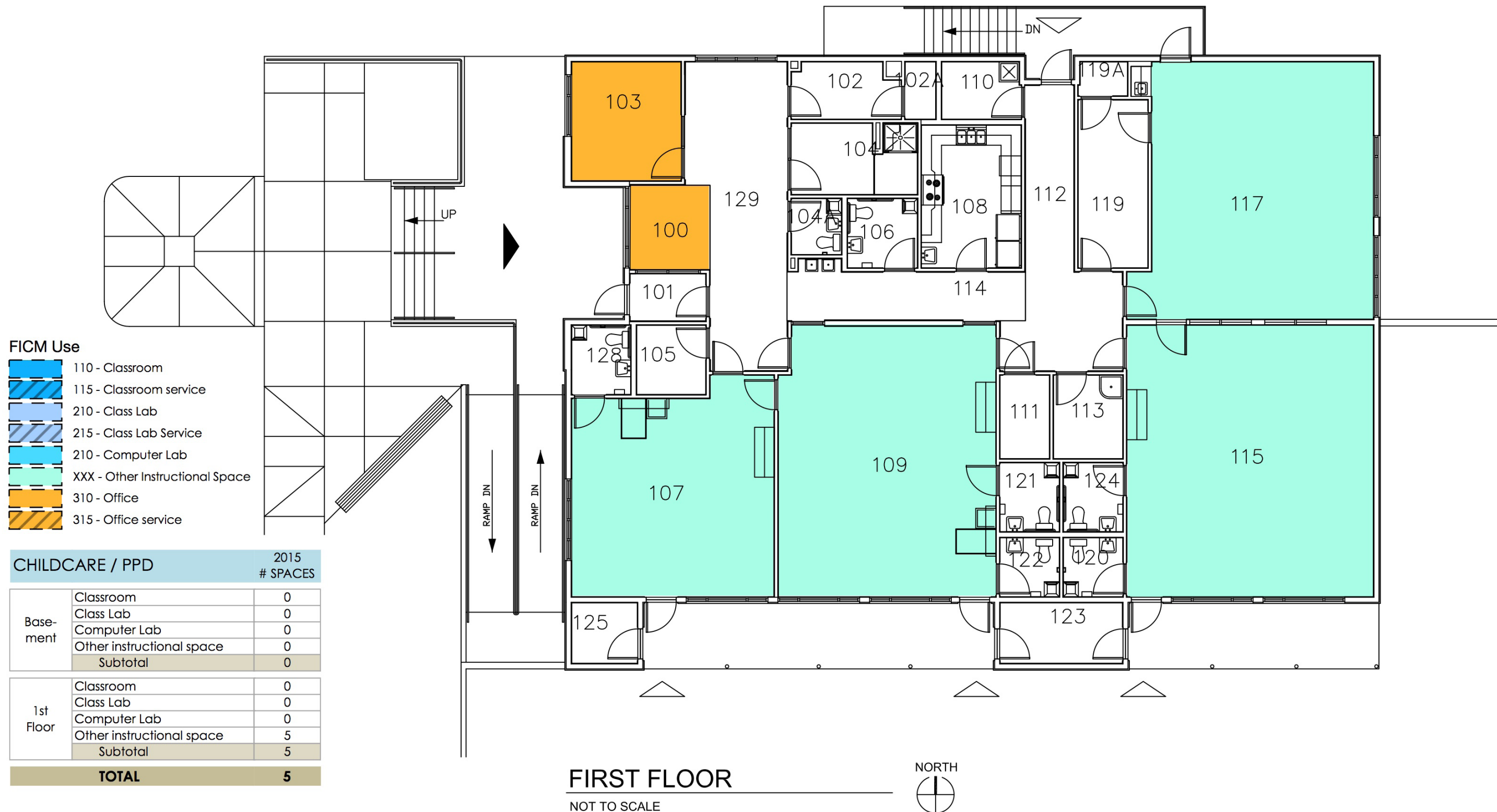










Exhibit 3-24
Zollinger Library

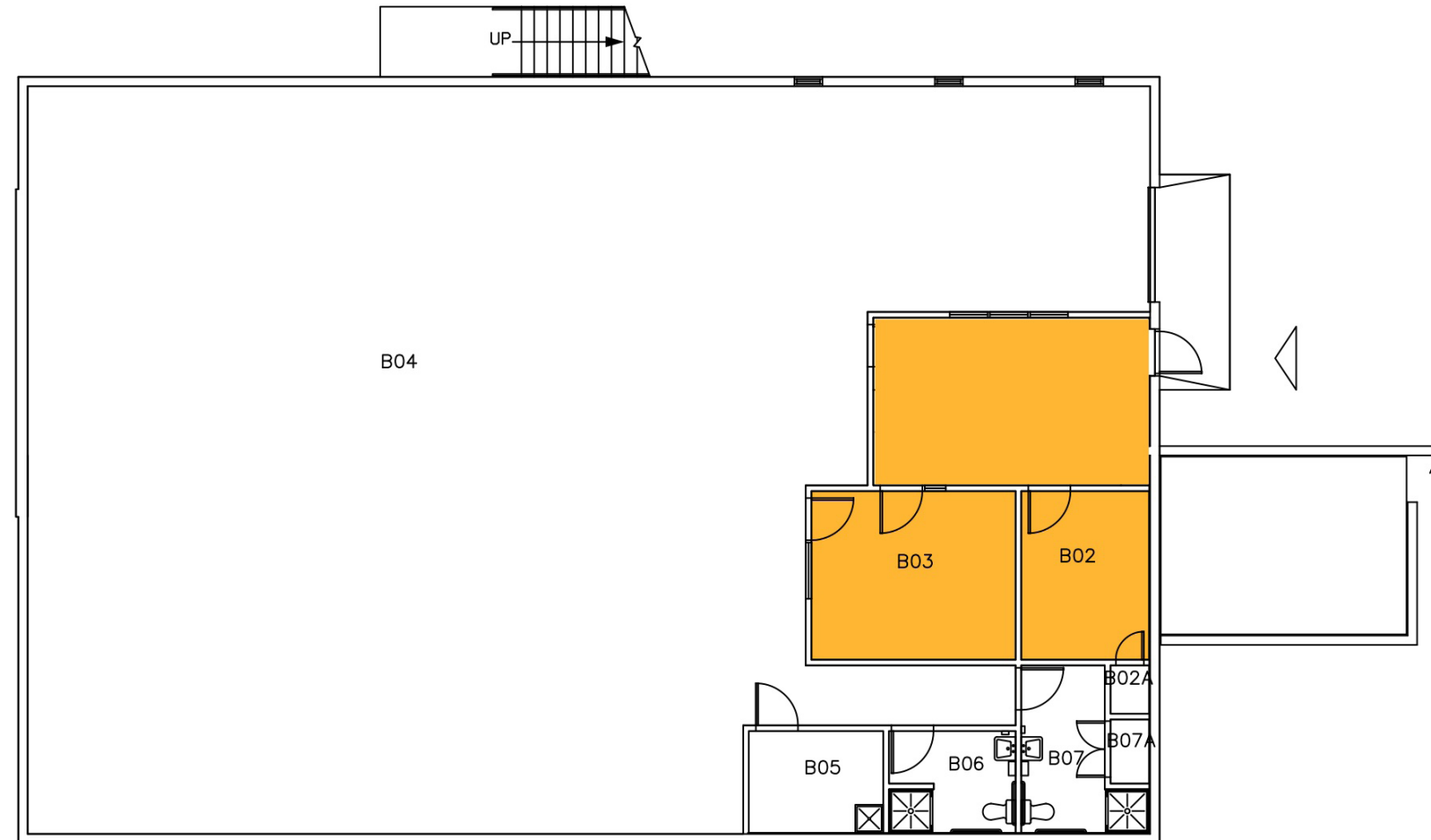




FICM Use

-  110 - Classroom
-  115 - Classroom service
-  210 - Class Lab
-  215 - Class Lab Service
-  210 - Computer Lab
-  XXX - Other Instructional Space
-  310 - Office
-  315 - Office service

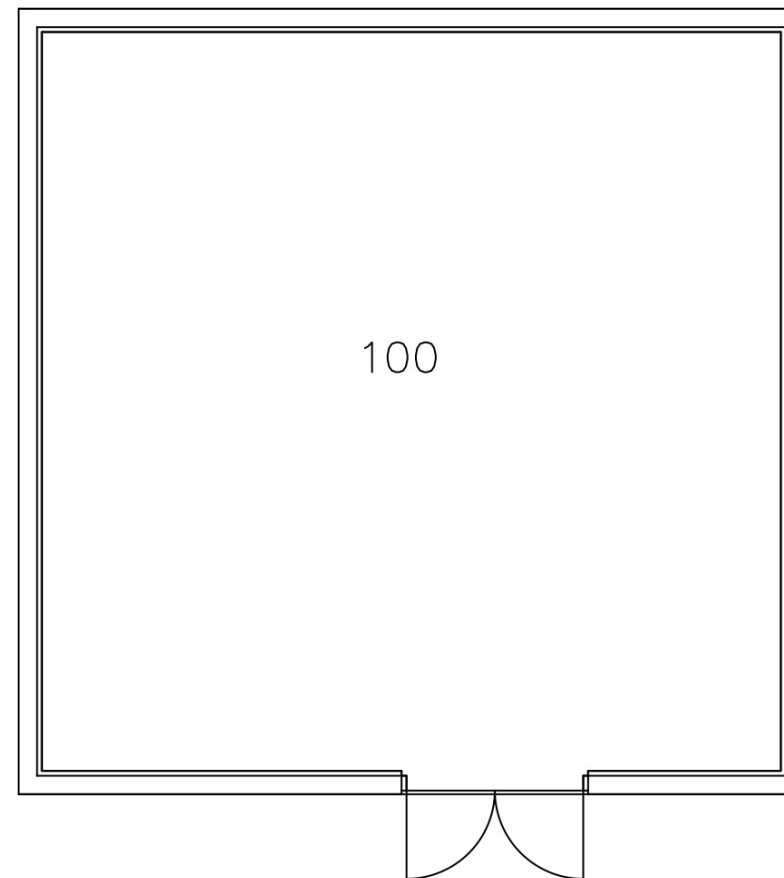
CHILDCARE / PPD		2015 # SPACES
Base- ment	Classroom	0
	Class Lab	0
	Computer Lab	0
	Other instructional space	0
	Subtotal	0
1st Floor	Classroom	0
	Class Lab	0
	Computer Lab	0
	Other instructional space	5
	Subtotal	5
TOTAL		5



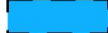







BASEMENT FLOOR

NOT TO SCALE





FICM Use

-  110 - Classroom
-  115 - Classroom service
-  210 - Class Lab
-  215 - Class Lab Service
-  210 - Computer Lab
-  XXX - Other Instructional Space
-  310 - Office
-  315 - Office service

PUMP HOUSE		2015 # SPACES
1st Floor	Classroom	0
	Class Lab	0
	Computer Lab	0
	Other instructional space	0
	Subtotal	0
TOTAL		0

FIRST FLOOR PLAN

SCALE: NTS





FICM Use

- 110 - Classroom
- 115 - Classroom service
- 210 - Class Lab
- 215 - Class Lab Service
- 210 - Computer Lab
- XXX - Other Instructional Space
- 310 - Office
- 315 - Office service

LIONS HALL

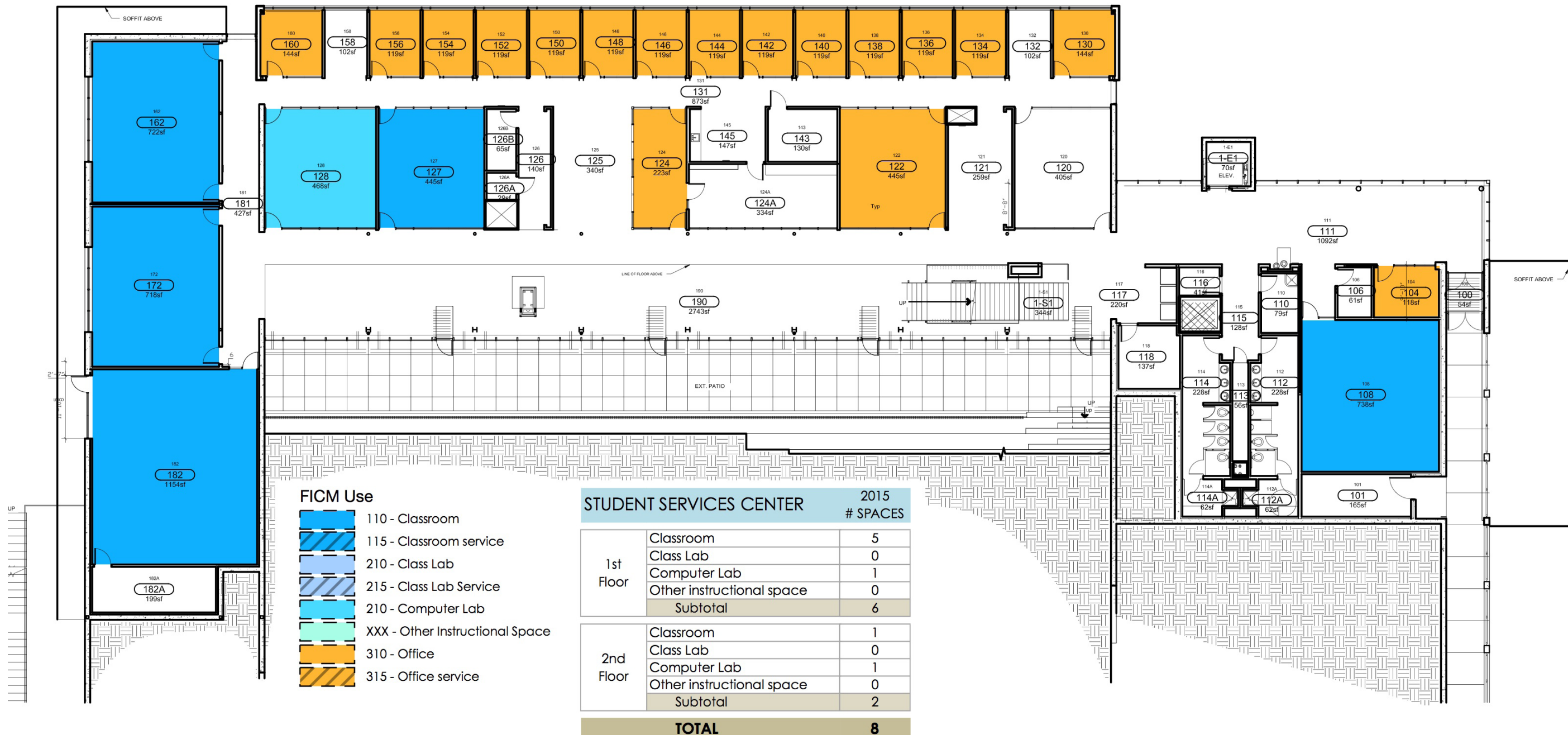
2015
SPACES

1st Floor	Classroom	4
	Class Lab	0
	Computer Lab	0
	Other instructional space	0
	Subtotal	4
TOTAL		4

FIRST FLOOR

NOT TO SCALE

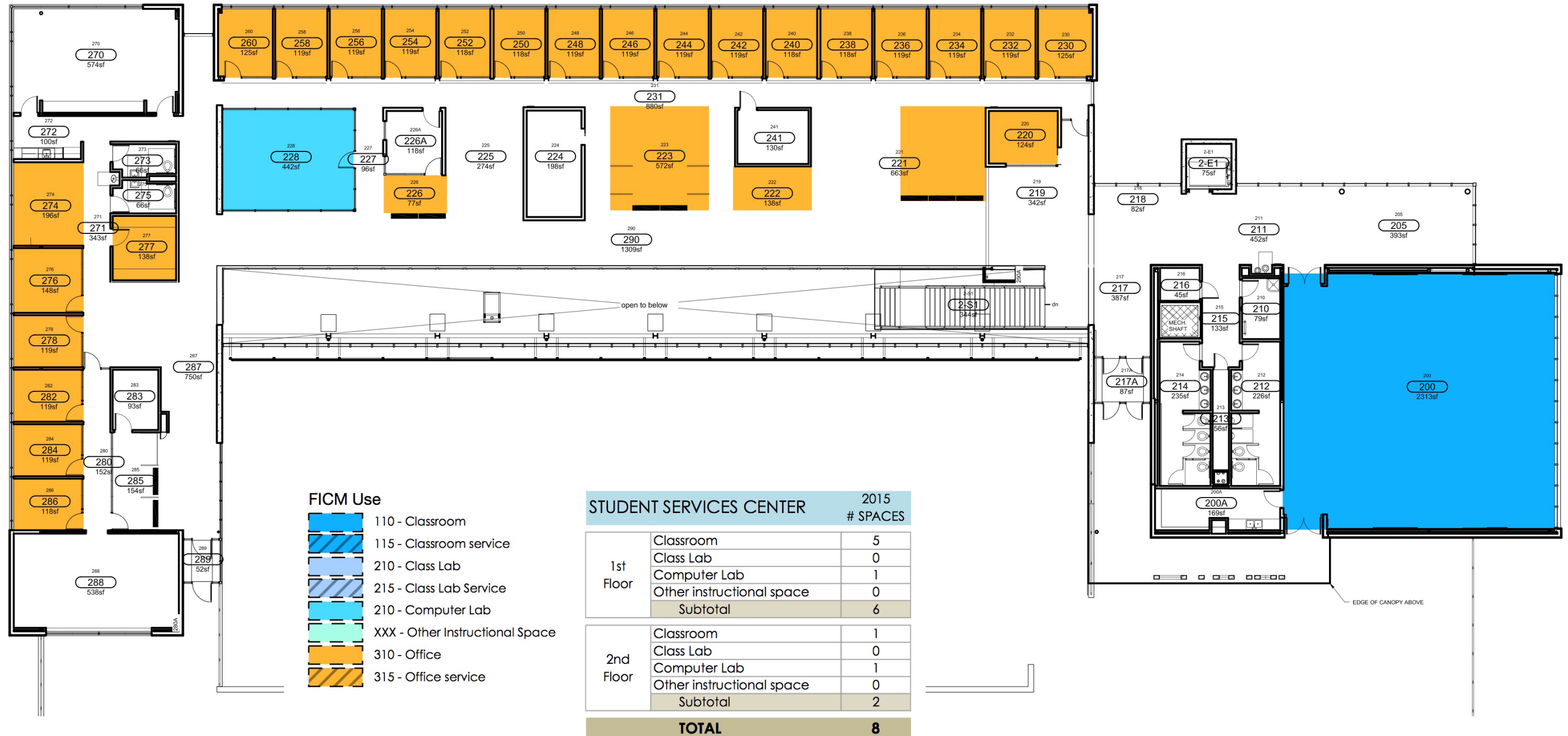




FIRST FLOOR

SCALE: NTS





SECOND FLOOR

SCALE: NTS





NORTH EDUCATION CENTER		2015 # SPACES
1st Floor	Classroom	0
	Class Lab	0
	Computer Lab	0
	Other instructional space	4
	Subtotal	4
TOTAL		4

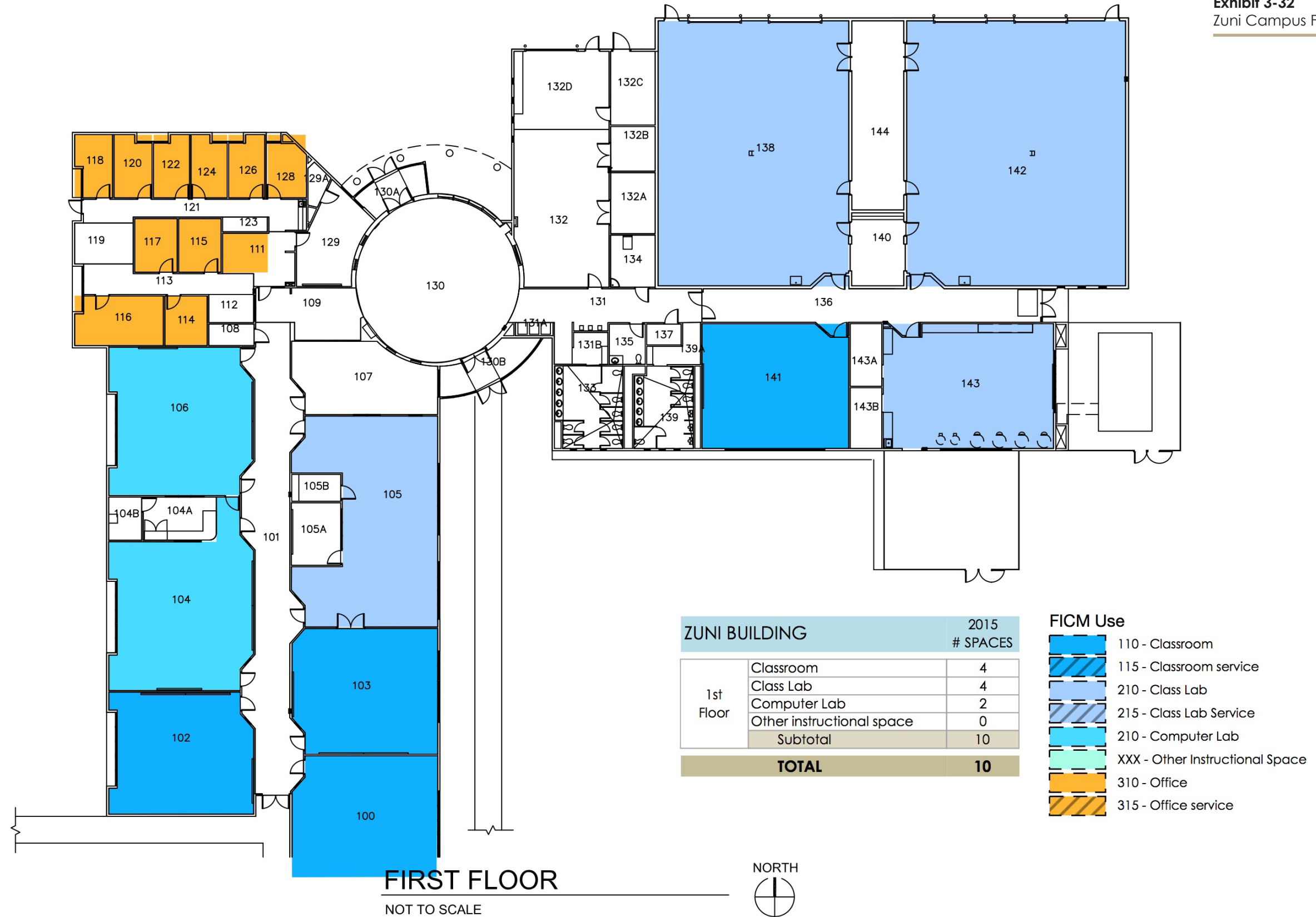
FIRST FLOOR

NOT TO SCALE



FICM Use

- 110 - Classroom
- 115 - Classroom service
- 210 - Class Lab
- 215 - Class Lab Service
- 210 - Computer Lab
- XXX - Other Instructional Space
- 310 - Office
- 315 - Office service



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3.1.10 Site, Facilities, and Infrastructure Assessments

This section documents the physical evaluation of UNM-G campus facilities that provided the basis for the 2016-2025 site and facility renewal projects reflected in the facilities master plan. See Section 3.1.10 for an assessment of campus infrastructure (civil, landscape, mechanical / electrical and IT systems).

Site Size

UNM-G main campus consists of a large parcel that is about 69 acres and toe smaller parcels of about 6 acres each. Gurley Avenue separates the large parcel from the smaller parcels.

Facility Age

The campus was constructed incrementally. Exhibit 3-34 shows the chronological development of facilities on the site.

Facility Condition

UNM-G PPD has maintained existing facilities, reducing the need to repair and replace building system components. However, funding realities cause some deferred maintenance and even properly maintained systems eventually need to be replaced. Exhibit 3-33 quantifies site and facilities renewal needs. Exhibit 3-36 through 3-44 and exhibits in the engineering narratives provide a more detailed description of need.

Exhibit 3-33
Sites and Facilities Renewal Summary

		BUILDING													
		Gurley Hall/ Career Education	Construction Technology	Calvin Hall	Physical Education	Health Careers 1	Zollinger Library	Childcare / PPD	Lions Hall	Pump House	Health Careers 2	Student Services and Technology Center (SSIC)	North Campus	Zuni Campus	Total
GSF		111,415	6,125	67,670	20,305	11,525	20,440	9,030	5,780	710	18,380	38,235	5,700	24,930	
BUILDING ELEMENT	Roofing / Structure														\$5,040,000
	HVAC														\$960,000
	Restrooms / Plumbing														\$2,570,000
	Renovation / Remodel														\$7,430,000
Subtotal, Buildings		\$7,634,000	\$0	\$2,741,000	\$1,030,000	\$695,000	\$20,000	\$980,000	\$0	\$20,000	\$20,000	\$20,000	\$1,430,000	\$1,410,000	\$16,000,000
SITEWORK	Utility Upgrades														\$8,740,000
	Paving, ADA, Landscape														\$4,660,000
	Subtotal, Site														\$13,400,000
Total															\$29,400,000

Legend

- Significant work
- Limited work

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Exhibit 3-34
Construction Dates of
Main Campus Facilities



LEGEND

- No significant findings
- Observation
- Recommendation

Building ID	1	2	3	4	5	6	7	8		9
	Old Gurley	New Gurley	Career Education	Construction Tech	Calvin Hall Center A	Calvin Hall Center B	Calvin Hall Center C	Physical Education	Physical Education Addition	Health Careers Center 1 (HCC 1)
Construction Date	1975	1984-1985	1978	1985	1979-1980	1996	2000	1981	1999	2002
Age of Building (years)	40	30	37	30	35	19	15	34	16	13

Category	Sub-Category	Observation			Recommendation			No significant findings		
		1	2	3	4	5	6	7	8	9
Site Exterior	General	UNM-G has an active project to improve site signage, including the marquee sign on Boardman Avenue. The existing marquee sign is dull and faded and the electronics do not work.		The cramped site compromises access to the high bay shop areas.						
	Paving	Vehicular circulation and parking in front of Gurley is confusing for drivers. Consider modifying the parking layout, circulation, and/or signage.		Vehicular access for construction equipment is limited by the sloped, triangular site.	Extend Calvin Hall Center Drive to Boardman Avenue for secondary site access/egress.					
	ADA Accessibility	UNM-G provided ADA compliant handrails at the ramp between Gurley Hall and the SSTC building per OCR recommendations.		UNM-G installed new ADA parking and access ramp in 2014/15 per OCR recommendations.	UNM-G provided directional signage, handrail extensions, and edge protection at the ramp from the parking area near the loading dock at Calvin Hall Center per OCR recommendations.		Provide an accessible sloped walkway from the courtyard space between Gurley Hall and Zollinger Library to the Gymnasium.		UNM-G provided extensions at the handrail from the parking area to the HCC 1 building per OCR recommendations.	
Envelope	Structure									
	Roofing	Replace roofing at Career Education. The membrane is old and worn and flashing is dried out. Built-up roofing at Old and New Gurley is in good condition.		Repair and maintain severely deteriorated EFIS parapets. Roofing membrane is in fair condition.	Replace roofing at Calvin Hall Center B and C. Membrane is old and worn, missing granule surface, and dry and brittle. Roofing on Calvin Hall Center A is in fair to good condition.			Asphalt roofing is in fair to good condition. ARC did not observe evidence of roof leaks inside the building.		Replace roofing. Membrane is old and worn and flashing is dried out. North side roof drains freeze up and clog.
	Exterior Walls			Repair and maintain EFIS. Exterior building facades have numerous holes in the EFIS and sections of underlying insulation are damaged.						Stucco has some minor spider cracks.
	Fenestration			The building lacks windows and natural light.						

Exhibit 3-35 Continued
Facilities Condition Summary

LEGEND

- No significant findings
- Observation
- Recommendation

Building ID	10	11		12	13	14	15	16		17
	Zollinger Library	Child Center	Physical Plant	Lions Hall	Pump House	Health Careers Center 2 (HCC 2)	Student Services and Technology Center (SSTC)	North Education Building	North Education Building Addition	Zuni South Campus
Construction Date	2001	1993	1993	1954	1988	2007	2012	1998	2008	2001
Age of Building (years)	14	22	22	61	27	8	3	17	7	14

Category	Finding	Child Center		Physical Plant	Lions Hall	Pump House	HCC 2	SSTC	NEB	NEBA	Zuni
		Child Center	Physical Plant								
Site Exterior	General		The Child Center playground was upgraded in 2015 with new equipment and fencing.		The building perimeter has erosion issues, particularly on the south and west sides.					The ABE program prefers a location that is separate from UNM-G main campus. Many ABE students rely on public transportation and hitchhiking to get to classes. Student transportation impacts class scheduling.	The UNM-G Zuni facility is located adjacent to Zuni High School and close to the elementary/middle school currently under construction.
	Paving		Repair sections of loose and broken asphalt.		Exterior concrete steps are cracked and crumbling. Metal pipe railings are rusted.					Repave asphalt parking area to eliminate broken, crumbling, and uneven surfaces.	The site has soils with poor drainage that are contributing to building settlement issues.
	ADA Accessibility		Provide accessible, ramped access to the child center and PPD building from the intersection of Gurley Avenue and the access road.		The exterior elevator from the parking area does not work and maintenance is no longer supported by the manufacturer. Exterior handrails are not ADA compliant.				UNM-G completed slope modifications at accessible parking per OCR recommendations.		The site is flat and ADA accessibility is good.
Envelope	Structure				The building has settlement concerns. A structural study is recommended. The study needs to compare the cost of renovation vs new construction.						UNM is in the process of completing a study that includes recommendations and a cost estimate to address differential structural settlement.
	Roofing	TPO is in good condition.	Asphalt roofing is in fair to good condition. ARC did not observe evidence of roof leaks inside the building.		The asphalt shingle roofing is in poor condition.	Built-up roofing is in poor condition. Continue maintaining the roofing until the pump house is phased out by water supply infrastructure improvements.	Built-up roofing is in fair to good condition.	TPO is in good condition.	Repair roof leaks, especially at joint between older and newer portions of the building. The asphalt roofing membrane is in fair condition.	Replace roofing. The ballasted roofing is in poor condition with low slope and large caulk joints. Many ceiling tiles are stained from roof leaks.	
	Exterior Walls	The stucco has some spider cracking. If deterioration continues, repair the stucco and provide a fog coat.			Exterior walls have extensive cracks and stucco is in poor condition. Sections of stucco have completely fallen off the building revealing a poorly insulated envelope.		Minor spider cracking observed on west building façade.		Stucco has minor spider cracking.	Repair stucco cracks after building settlement is resolved. Fog coat the building.	
	Fenestration			The overhead service door is undersized for equipment and operational support.	Windows are poorly insulated and paint is peeling at exterior metal doors and frames.						

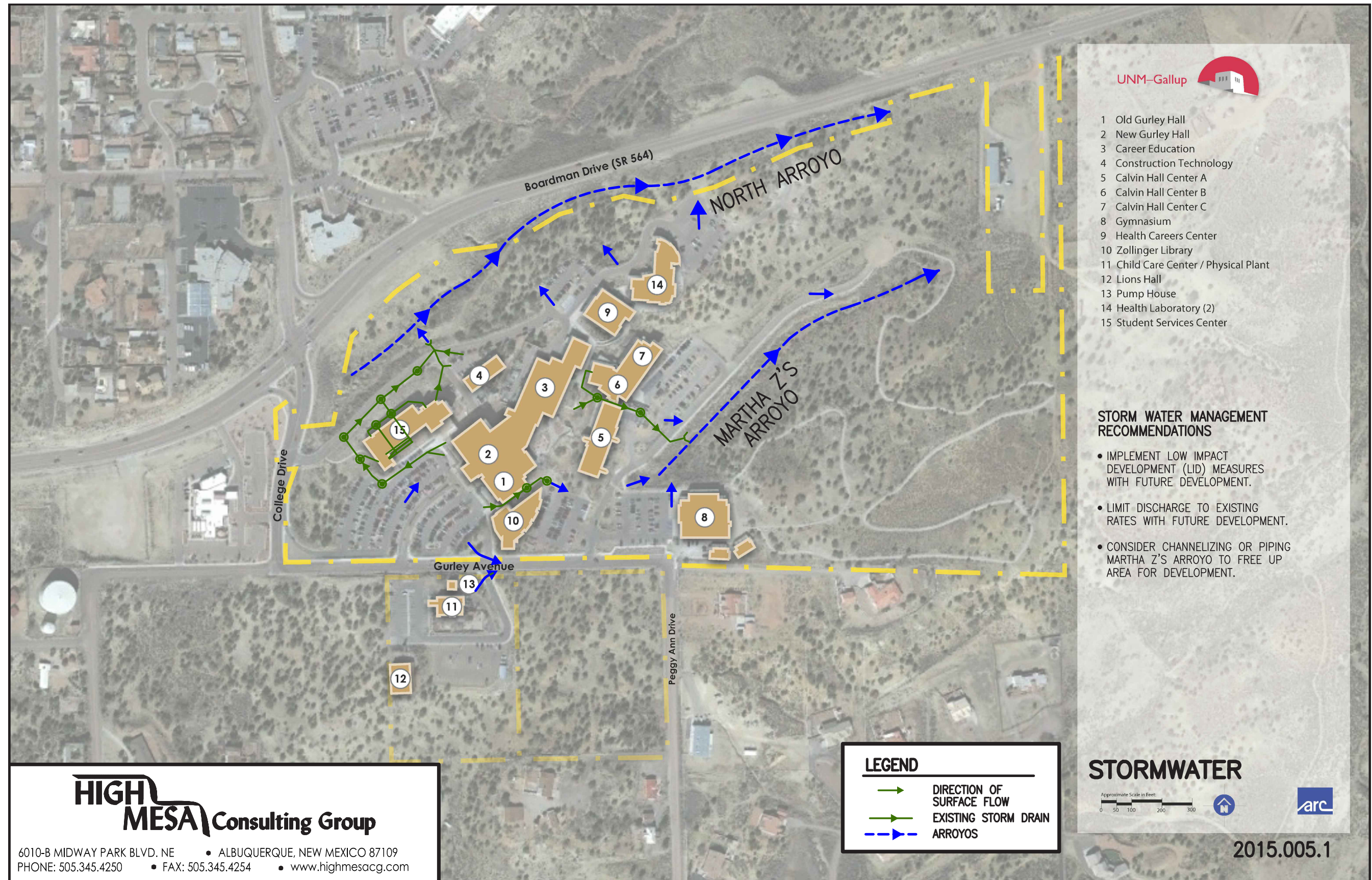
Building ID	1	2	3	4	5	6	7	8		9
	Old Gurley	New Gurley	Career Education	Construction Tech	Calvin Hall Center A	Calvin Hall Center B	Calvin Hall Center C	Physical Education	Physical Education Addition	Health Careers Center 1 (HCC 1)
Construction Date	1975	1984-1985	1978	1985	1979-1980	1996	2000	1981	1999	2002
Age of Building (years)	40	30	37	30	35	19	15	34	16	13

Interior Finishes	Flooring	Replace worn flooring in Gurley Hall, including in the class labs. Clean and reseal concrete in automotive and welding labs.		Calvin Hall Center A was renovated about 5 years ago with new interior finishes, lighting, and HVAC. Interior systems, including flooring, in Calvin Hall Center B and C are older (15 to 20 years) and show moderate wear and tear.				
	Ceilings	Replace some damaged and stained acoustical ceiling tiles.	The space is open to structure above (no ceiling).					
	Interior Partitions	UNM-G recently relocated Student Senate, Student Life, and student lounge areas to the basement. UNM-G also recently remodeled administration, IT, TRIO, Workforce Development, Academic Resource Center (ARC), Veterans Support, math and science tutoring, and student lounge and study areas.		In Calvin Hall Center A, replace older knob-style door hardware for ADA compliance, renovate dean's conference area to replace worn finishes, and renovate office areas to improve layout and efficiency. UNM-G recently relocated the Community Education program from Lions Hall to Calvin Hall Center A.				
	Casework and FF+E	Replace older, ghosted chalkboards in New Gurley classrooms. In Career Education spaces, upgrade lab casework, replace visual display surfaces, and replace old, mismatched and worn furniture.	Visual display surfaces are worn and ghosted.	Casework in Calvin Hall Center B and C is worn with moderate wear and tear.				
MEP Systems	HVAC	Replace HVAC in welding technology spaces. (HVAC in automotive and cosmetology labs was recently replaced in 2014.)	UNM-G replaced the HVAC in the shop areas about 5 years ago.	In Calvin Hall Center A, continue regular maintenance. Consider replacing condensing unit if recurring issues continue.	In Calvin Hall Center B, reconfigure the combustion air duct.	At Calvin Hall Center C, replace roof mounted air handlers.	Provide insulation at hot water piping. Replace boiler with high efficiency type as part of scheduled life cycle replacement.	Replace with high efficiency units as part life cycle renewal. The boiler was installed in 2007. Classroom 105 is sometimes too hot.
	Plumbing	Some restrooms have been recently renovated, but others require renovation to replace old fixtures and finishes and to meet ADA requirements. The basement men's restroom has line of sight issues.	Restroom fixtures and finishes are old and do not meet ADA requirements.	Renovate restrooms in Calvin Hall B and C to replace old fixtures and finishes and to meet ADA requirements. Restrooms in Calvin Hall Center A were renovated about 5 years ago.			Renovate locker rooms and restrooms. Fixtures and finishes are old, worn, and do not meet ADA requirements.	
	Fire Suppression	The building has a fire suppression system. The portion of the system in Career Education is new. It was installed in 2014.	The building does not have a fire suppression system.	Calvin Hall Center A has a fire suppression system. Calvin Hall Center B and C are included in the 2015 fire suppression installation project.			The gymnasium is included in the 2015 fire suppression installation project.	The building has a fire suppression system.
	Electrical	Replace older light fixtures with new fixtures for energy efficiency and improved color rendition. The cosmetology hair dryers trip electrical breakers.						
	Lighting	Replace older lighting fixtures to improve color rendition and energy efficiency. Classrooms in the basement lack natural light.	UNM-G replaced the lighting in the shop areas about 5 years ago.					
Other Notes			Maintain the construction technology building until the new CCTE facility is complete. The construction technology building may be demolished following completion of the CCTE.					

Exhibit 3-35 Continued
Facilities Condition Summary

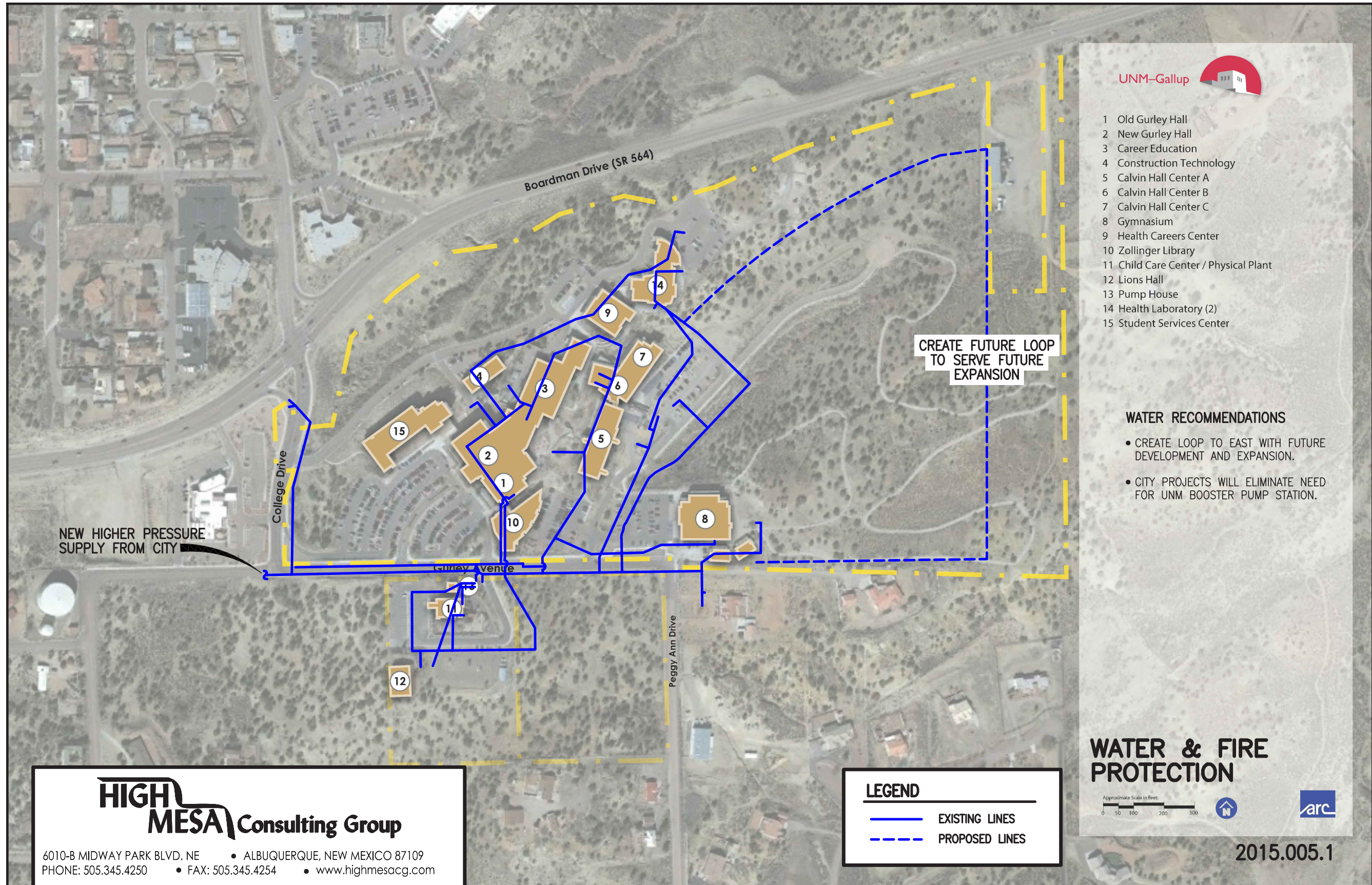
Building ID	10	11		12	13	14	15	16		17
	Zollinger Library	Child Center	Physical Plant	Lions Hall	Pump House	Health Careers Center 2 (HCC 2)	Student Services and Technology Center (SSTC)	North Education Building	North Education Building Addition	Zuni South Campus
Construction Date	2001	1993	1993	1954	1988	2007	2012	1998	2008	2001
Age of Building (years)	14	22	22	61	27	8	3	17	7	14

System	Category	11		12	13	14	15	16		17
		Child Center	Physical Plant	Lions Hall	Pump House	Health Careers Center 2 (HCC 2)	Student Services and Technology Center (SSTC)	North Education Building	North Education Building Addition	Zuni South Campus
Interior Finishes	Flooring	Finishes are old and dated, but still functional.		Carpet is torn and stained.			Infrastructure below raised flooring is difficult to access.	Flooring shows moderate wear and tear.		
	Ceilings	UNM-G has an active project to relocate some stacks to the basement and expand student services on the first floor.	The ceiling is low. High bay space would be more practical for shop functions.					Replace stained ceiling tiles after roof leaks have been repaired.	Replace stained ceiling tiles after roof leaks have been repaired.	
	Interior Partitions		The office area is poorly configured to accommodate administrative, managerial, and supervisory staff.	Interior office partitions limit flexibility of space.				Replace interior wall surfaces where they have been damaged by flooding from restroom back-ups.		
	Casework and FF+E			Classroom furniture is old and mismatched.				The ABE program recommends renovation of the breakroom to support options for student nutrition.		
HVAC	Complete a load analysis to determine if existing equipment can meet current and anticipated loads.		Provide ventilation to the open work area per code requirements.		Provide air intake and exhaust to prevent excess heat and dissipate fumes.	Complete a load analysis to determine if the server room unit is sized appropriately.	Install an exhaust fan and outside air intake in the boiler room to prevent excess heat.	Replace gas fired furnaces and evaporative coolers with high efficiency units as part of life cycle renewal.	Test and balance the HVAC system in the career education shop areas. Air movement is causing excessive noise.	
MEP Systems	Plumbing	Fixtures are old and worn, but functional and scaled for children.		Restroom fixtures and finishes are old and worn.				ARC recommends a plumbing study due to frequent back-ups and flooding of restrooms and adjacent spaces. Resolve plumbing back-up issues and replace worn fixtures and finishes with more durable equipment/materials.		
	Fire Suppression	The library is included in the 2015 fire suppression installation project.	The Child Center / PPD building does not have a fire suppression system.	The building does not have a fire suppression system. UNM-G may run fire water to the facility as part of the 2015 fire water improvement project.			The building has a fire suppression system.	This building does not have a fire suppression system.	The building does not have a fire suppression system.	
	Electrical									
	Lighting									
	Other Notes	PPD uses the Zollinger basement for storage. The current basement remodel project will reduce PPD storage.	The location of PPD below the Child Center limits PPD's ability to perform work activities such as painting, welding, and noisy tasks. PPD has limited exterior storage areas.	Lions Hall is vacant. Vacated spaces include 4 classrooms and 8 offices.	The pump house may not be required after supply water improvements are completed jointly by the city and UNM-G.			This building is LEED Gold Certified.	The ABE program desires additional classroom and office space. The program recommends adding a portable building to the site and acquiring the adjacent lot for future facility expansion.	



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UNM-Gallup

- 1 Old Gurley Hall
- 2 New Gurley Hall
- 3 Career Education
- 4 Construction Technology
- 5 Calvin Hall Center A
- 6 Calvin Hall Center B
- 7 Calvin Hall Center C
- 8 Gymnasium
- 9 Health Careers Center
- 10 Zollinger Library
- 11 Child Care Center / Physical Plant
- 12 Lions Hall
- 13 Pump House
- 14 Health Laboratory (2)
- 15 Student Services Center

WATER RECOMMENDATIONS

- CREATE LOOP TO EAST WITH FUTURE DEVELOPMENT AND EXPANSION.
- CITY PROJECTS WILL ELIMINATE NEED FOR UNM BOOSTER PUMP STATION.

WATER & FIRE PROTECTION

Approximate Scale in Feet:
0 50 100 200 300

arc

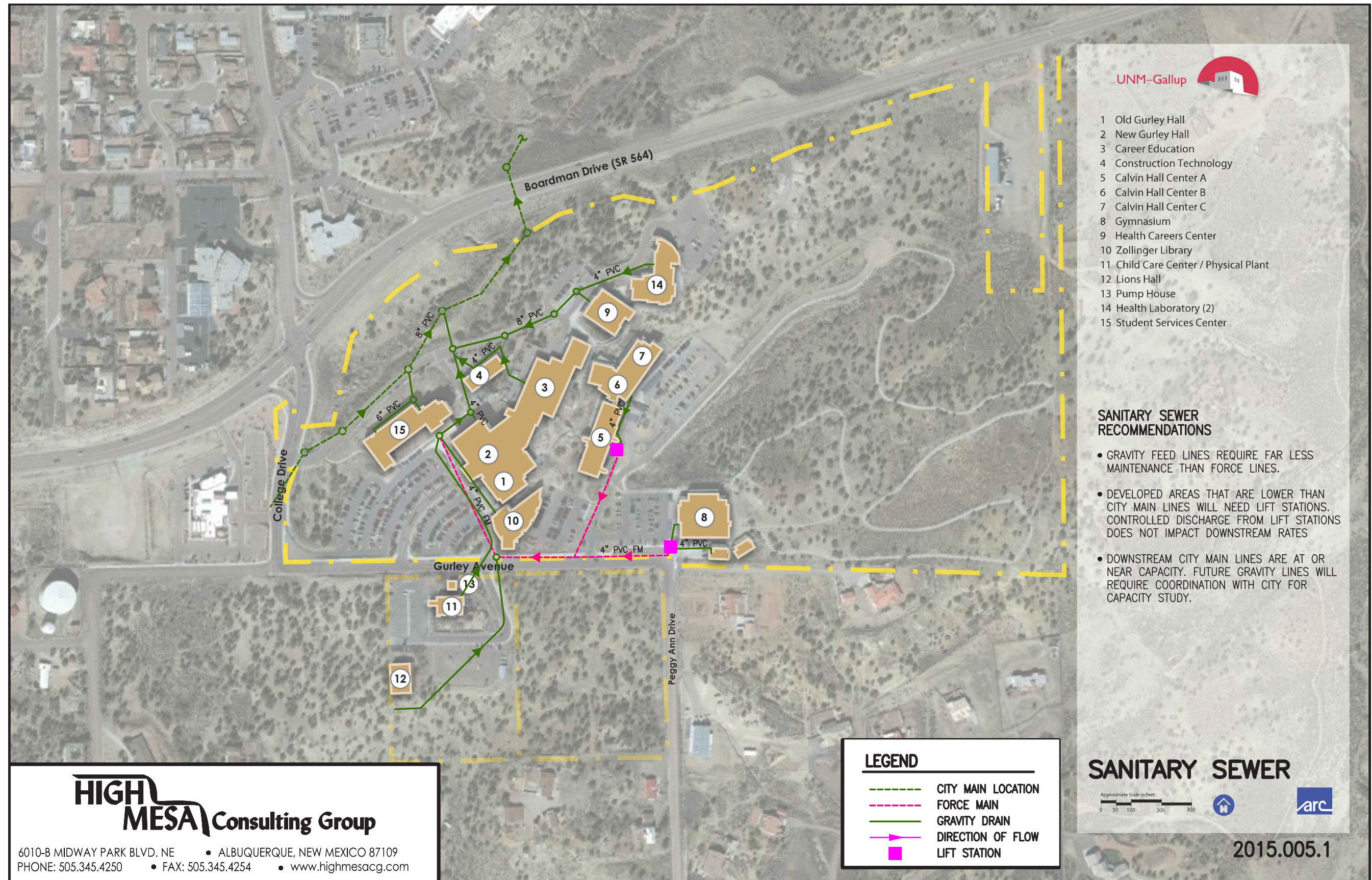
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LEGEND

- EXISTING LINES
- - - PROPOSED LINES

2015.005.1



- 1 Old Gurley Hall
- 2 New Gurley Hall
- 3 Career Education
- 4 Construction Technology
- 5 Calvin Hall Center A
- 6 Calvin Hall Center B
- 7 Calvin Hall Center C
- 8 Gymnasium
- 9 Health Careers Center
- 10 Zollinger Library
- 11 Child Care Center / Physical Plant
- 12 Lions Hall
- 13 Pump House
- 14 Health Laboratory (2)
- 15 Student Services Center

SANITARY SEWER RECOMMENDATIONS

- GRAVITY FEED LINES REQUIRE FAR LESS MAINTENANCE THAN FORCE LINES.
- DEVELOPED AREAS THAT ARE LOWER THAN CITY MAIN LINES WILL NEED LIFT STATIONS. CONTROLLED DISCHARGE FROM LIFT STATIONS DOES NOT IMPACT DOWNSTREAM RATES
- DOWNSTREAM CITY MAIN LINES ARE AT OR NEAR CAPACITY. FUTURE GRAVITY LINES WILL REQUIRE COORDINATION WITH CITY FOR CAPACITY STUDY.

LEGEND

- CITY MAIN LOCATION
- FORCE MAIN
- GRAVITY DRAIN
- DIRECTION OF FLOW
- LIFT STATION

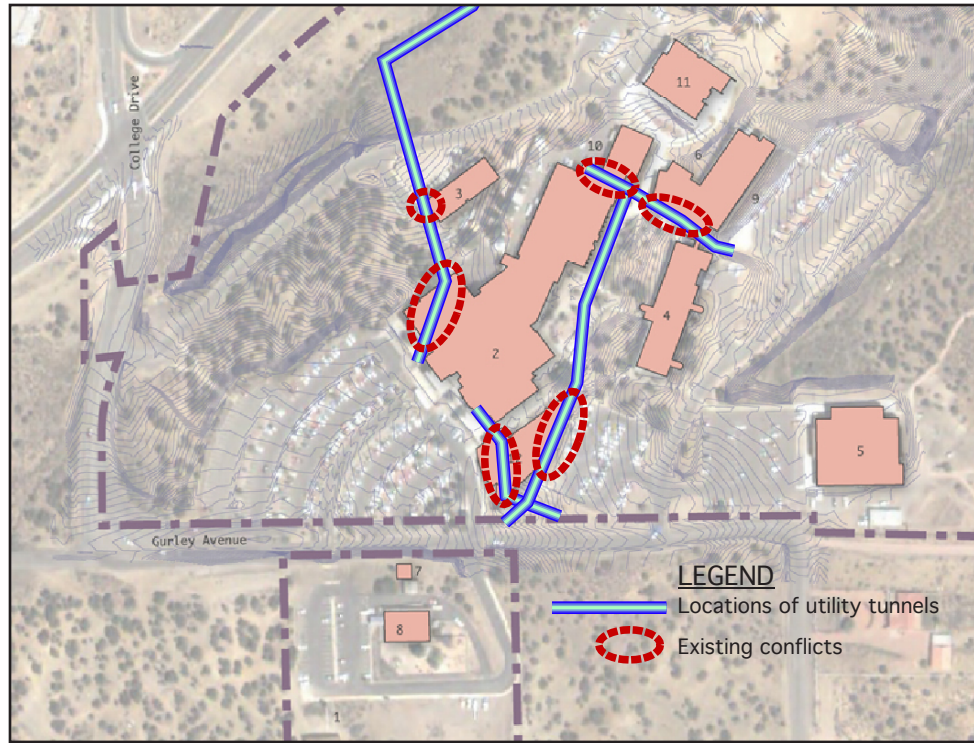
SANITARY SEWER



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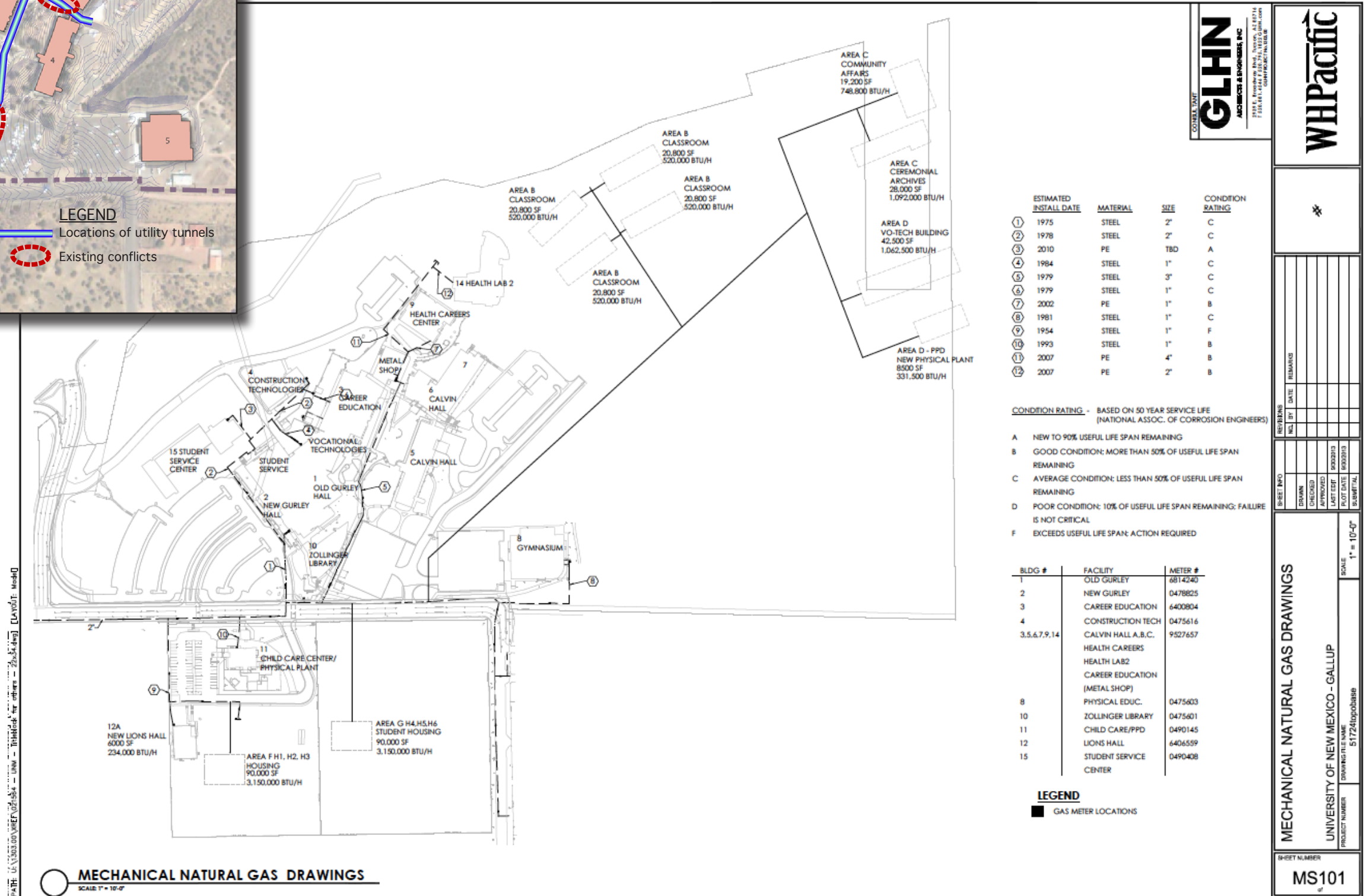
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LEGEND
 — Locations of utility tunnels
 ○ Existing conflicts

Exhibit 3-39
 Natural Gas Utility
 Easement Violations

Exhibit 3-40
 Natural Gas



GLHN
 ARCHITECTS & ENGINEERS, INC.
 1100 E. UNIVERSITY BLVD., SUITE 200, GALLUP, AZ 87304
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 WWW.GLHN.COM

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CONDITION RATING - BASED ON 50 YEAR SERVICE LIFE (NATIONAL ASSOC. OF CORROSION ENGINEERS)

A NEW TO 90% USEFUL LIFE SPAN REMAINING
 B GOOD CONDITION: MORE THAN 50% OF USEFUL LIFE SPAN REMAINING
 C AVERAGE CONDITION: LESS THAN 50% OF USEFUL LIFE SPAN REMAINING
 D POOR CONDITION: 10% OF USEFUL LIFE SPAN REMAINING; FAILURE IS NOT CRITICAL
 F EXCEEDS USEFUL LIFE SPAN: ACTION REQUIRED

LEGEND
 ■ GAS METER LOCATIONS

D:\PATH\U:\1\303.000\XREF\021154 - UNW - Titleblock for others - 21x35.dwg [LAYOUT: Mech]

MECHANICAL NATURAL GAS DRAWINGS
 SCALE 1" = 10'-0"

MECHANICAL NATURAL GAS DRAWINGS

UNIVERSITY OF NEW MEXICO - GALLUP

PROJECT NUMBER: 51724topbase

DRAWING FILE NAME: 51724topbase

SCALE: 1" = 10'-0"

SHEET NUMBER: **MS101**

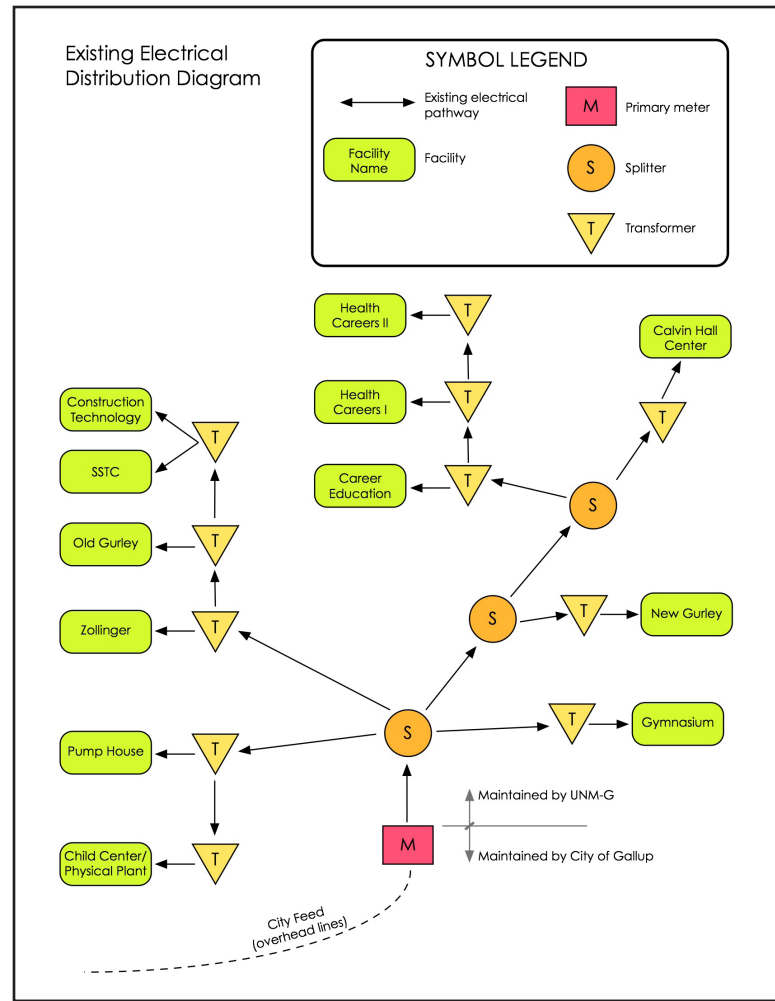
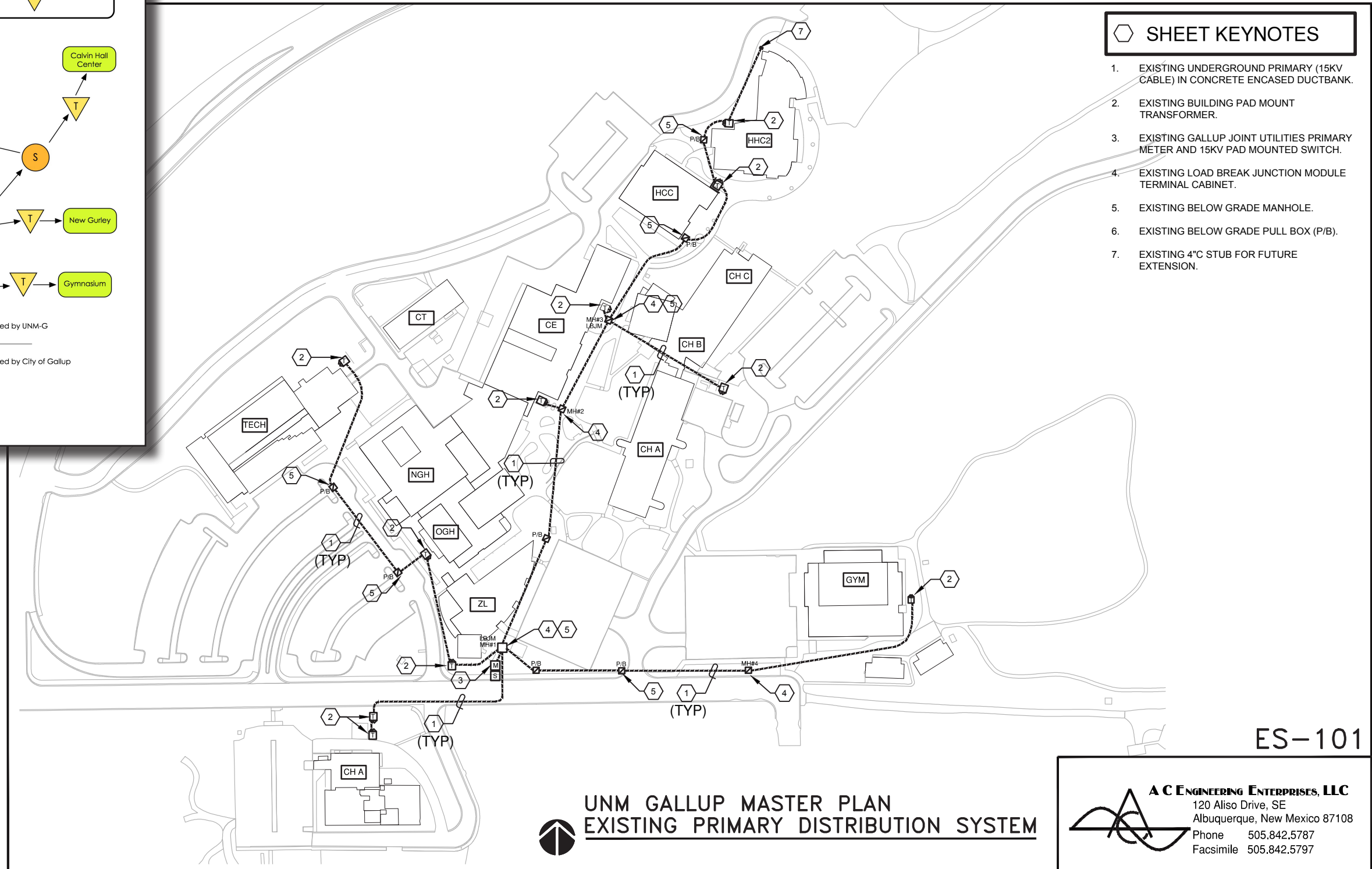


Exhibit 3-41
Primary Electrical
Distribution Diagram



Existing Telecommunications Diagram

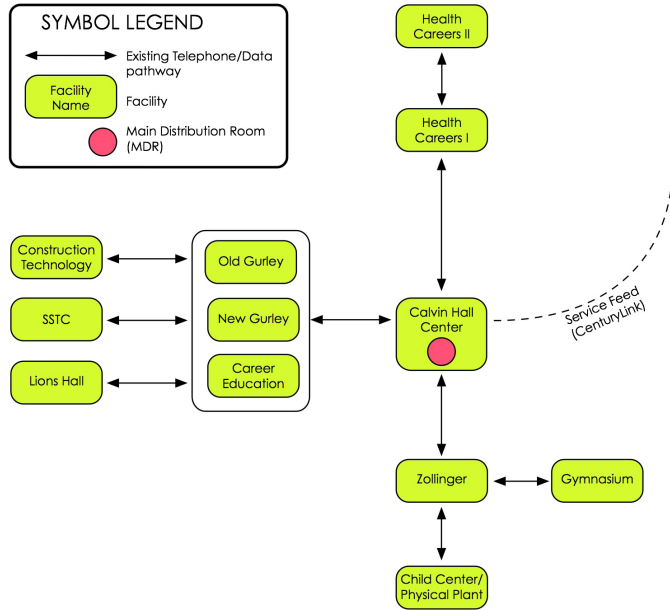
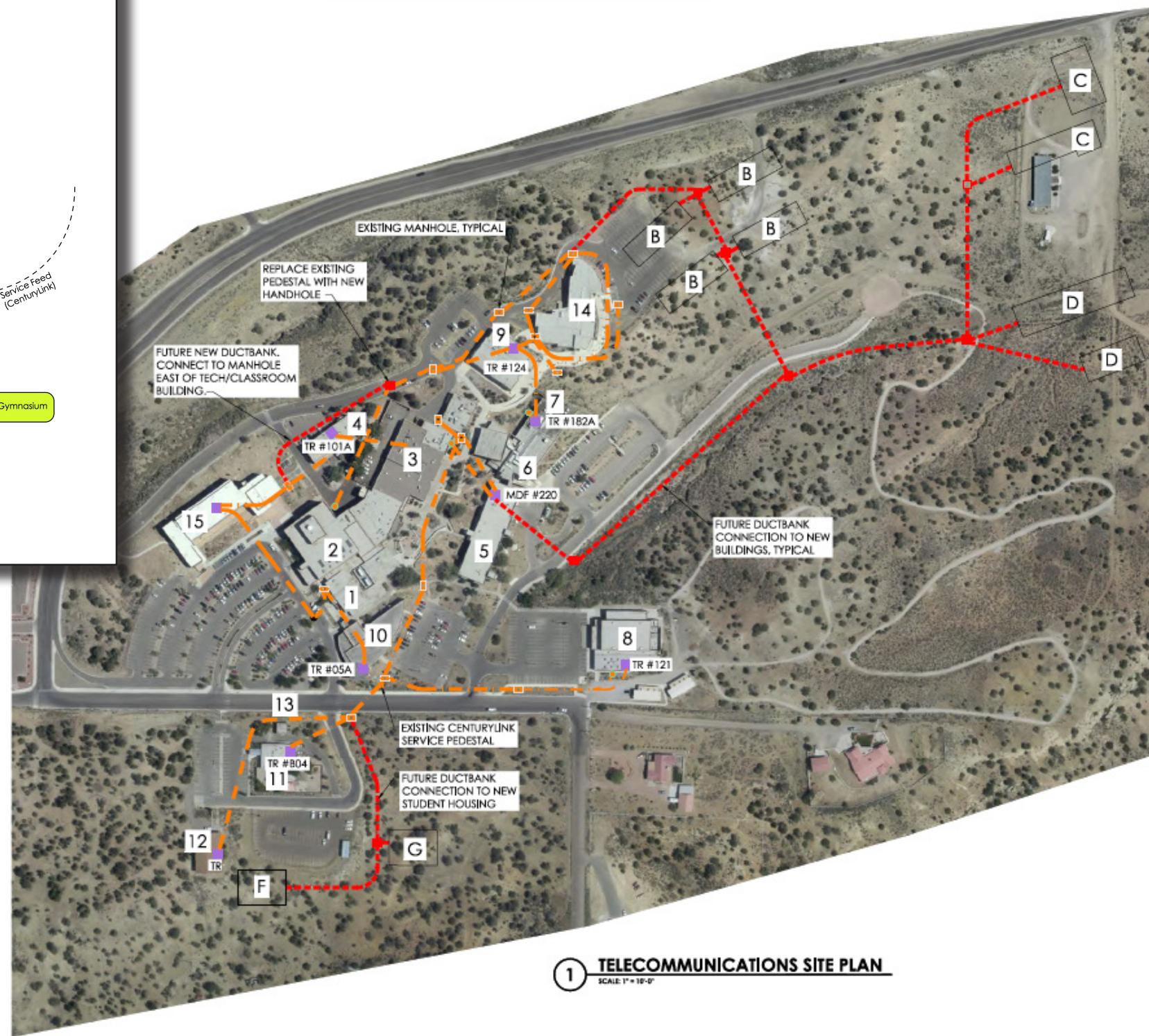


Exhibit 3-43
Telecommunications
Distribution Diagram

Exhibit 3-44
Telecommunications
Distribution



- SYMBOLS**
- EXISTING UNDERGROUND DUCTBACK/CONDUIT
 - FUTURE UNDERGROUND DUCTBACK/CONDUIT
 - EXISTING COMMUNICATIONS HANDHOLE
 - FUTURE COMMUNICATIONS HANDHOLE
 - EXISTING COMMUNICATIONS MANHOLE
 - BUILDING TELECOMMUNICATIONS ROOM
 - COMMUNICATIONS CONDUIT ENTRY INTO BUILDING

- EXISTING BUILDINGS**
- OLD GURLEY HALL
 - NEW GURLEY HALL
 - CAREER EDUCATION
 - CONSTRUCTION TECHNOLOGY
 - CALVIN HALL CENTER A
 - CALVIN HALL CENTER B
 - CALVIN HALL CENTER C
 - GYMNASIUM
 - HEALTH CAREERS CENTER
 - ZOLLINGER LIBRARY
 - CHILD CARE CENTER/PHYSICAL PLANT
 - LIONS HALL
 - PUMP HOUSE
 - HEALTH CAREERS CENTER
 - TECH/CLASSROOM BUILDING

- FUTURE BUILDINGS**
- B CLASSROOMS
 - C COMMUNITY AFFAIRS/ARCHIVES
 - D VO-TECH BUILDING/PPD
 - F HOUSING
 - G STUDENT HOUSING

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CONSULTANT
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WHPacific

1 TELECOMMUNICATIONS SITE PLAN
SCALE: 1" = 10'-0"

TELECOMMUNICATIONS SITE PLAN

UNIVERSITY OF NEW MEXICO - GALLUP

PROJECT NUMBER: DRAWING FILE NAME

SHEET NUMBER: **TS101**

REVISIONS		SHEET INFO	
NO.	DATE	DESCRIPTION	DATE

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3.1.11 Service Area Demographics

Population Growth

Population in the service area, both city and county, grew every decade between 1910 and 2000.

- The city of Gallup has experienced continuous growth, at an annual rate of 0.7% since 1910, and added 1,469 people from 2000 to 2010.
- From 2000 to 2010, Zuni added 133 people.
- From 2000 to 2007, McKinley County lost 4,000 people.
- From 2007 to 2010, McKinley County grew slowly, gaining over 1,530 people.
- Since 2010, the county's growth trend has increased and grown at a rate of 0.9% per year until 2014.
- ARC projections show county will grow by an average annual rate of 0.6% from 2010-2030 for the mid-range series, considered the most likely, and 1.4% for the high range.

Exhibit 3-45

Historic Population Growth

McKinley County and City of Gallup Historic Population: 1910-2010

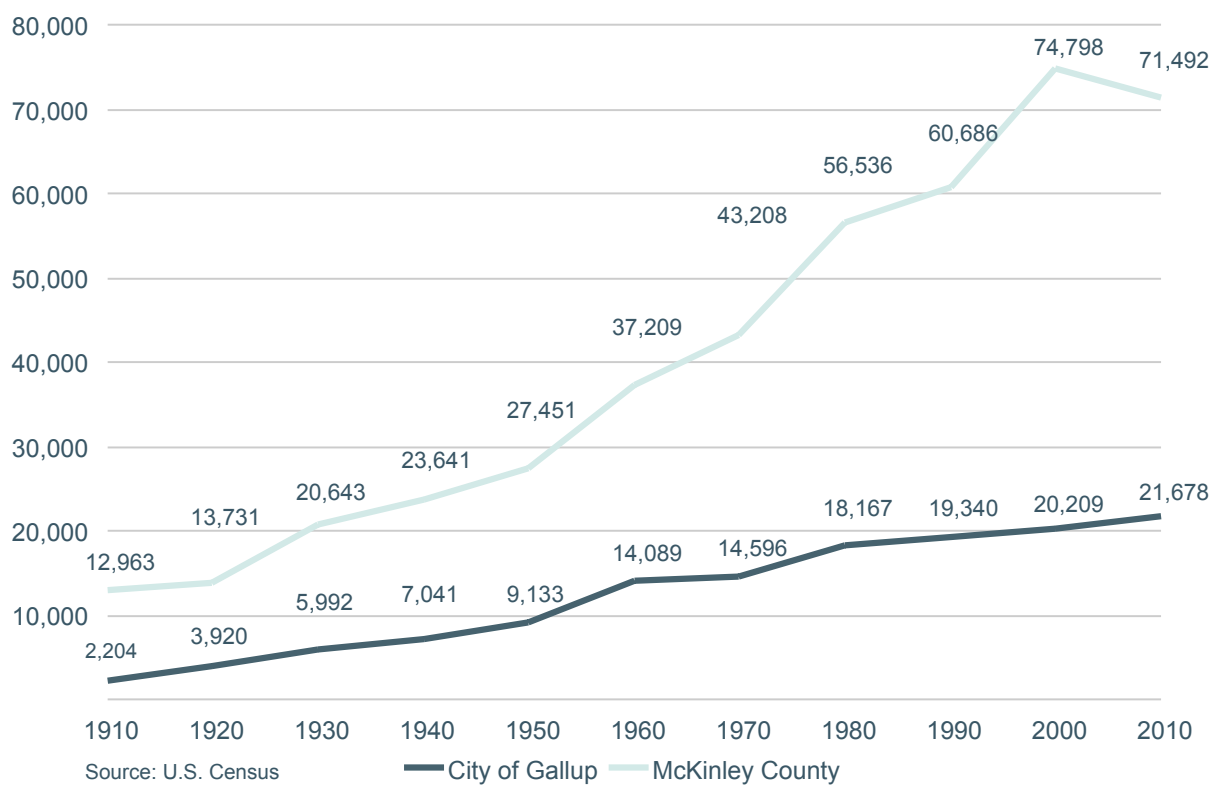
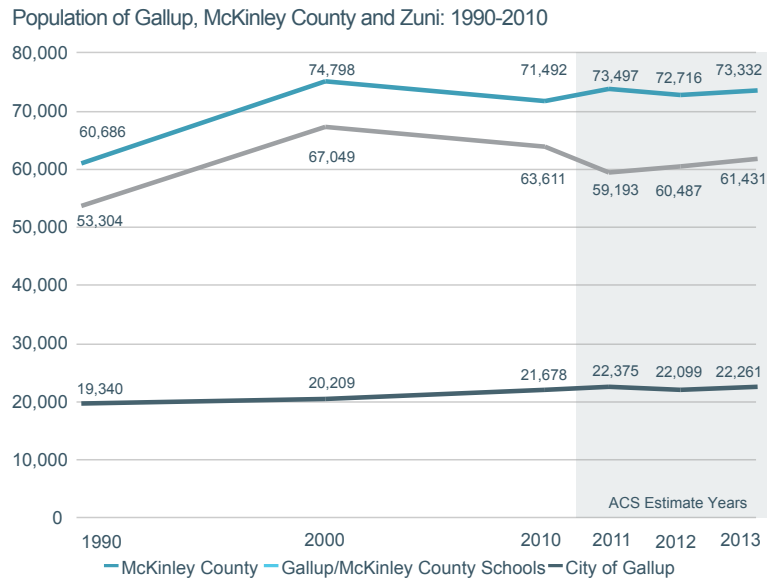


Exhibit 3-46
 Historic Population Growth -
 Census Estimates



Selected Demographic Factors

• **Ethnicity**

- The county has strong ethnicity: Hispanic, 13.3%, Native American, 75.5%, and other, 11.2%.
- The majority of land in McKinley County is Tribal Land (Exhibit 3-47)
- 33 out of 116 Navajo Chapters are located in McKinley County (Exhibit 3-48).
 - » Some of the chapters include additional area outside of McKinley County.
- From 2000 to 2010, population declined in 28 of the 33 Navajo Chapters (Exhibit 3-49).
- The percentage of Native Americans living in the city of Gallup increased from 37% in 2000 to 44% in 2010, according to the U.S. Census (Exhibit 3-50).
 - » Both migration and natural increase (births over deaths) contribute to growth.

• **Age**

- The county has a young population: the median age is 30.7 years, compared to 36.7 in the state and 37.2 in the nation.
- The county population is getting older.
 - » The median age in the county has increased faster than the state and the nation since 2000.
 - » County population age distribution curves for 1990, 2000, and 2010 indicate an aging population (Exhibit 3-51).
 - » UNM Geospatial and Population Studies projections for 2020 and 2035 support the trend of an aging population (Exhibit 3-52).

• **Births**

- The birth rate in McKinley County is higher than that of the state and the nation, but is decreasing at a faster rate (Exhibit 3-54).
- Birth rate decline corresponds to a decrease in household size in McKinley County.

Exhibit 3-47
 McKinley County Land Status

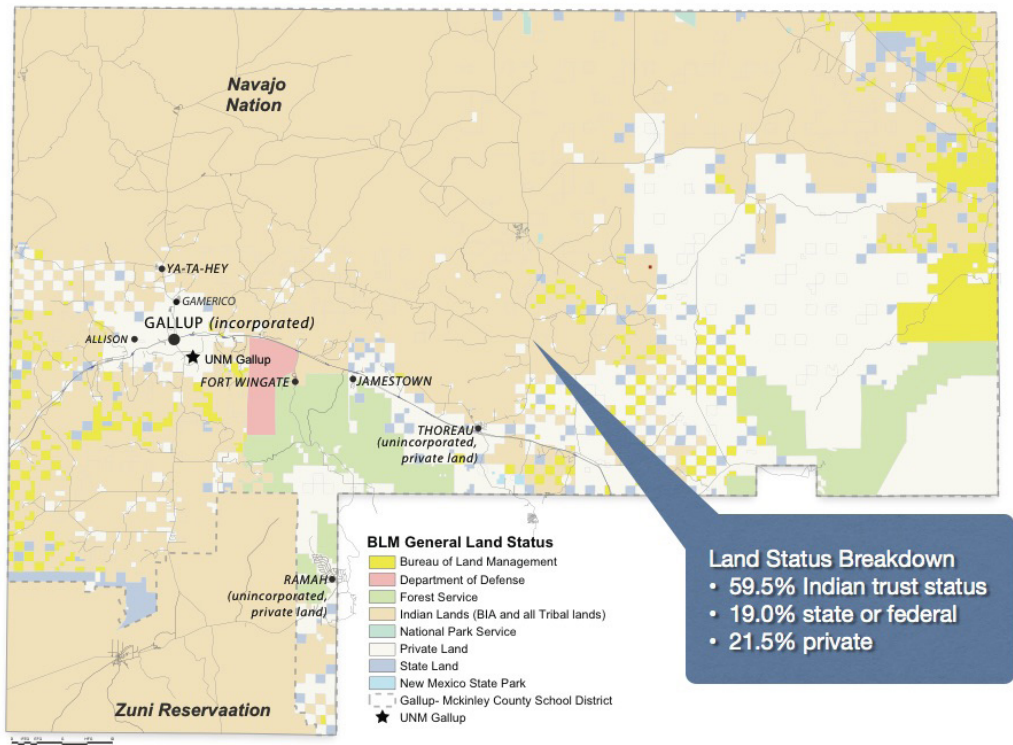


Exhibit 3-48
 McKinley County, Navajo Nation Chapters

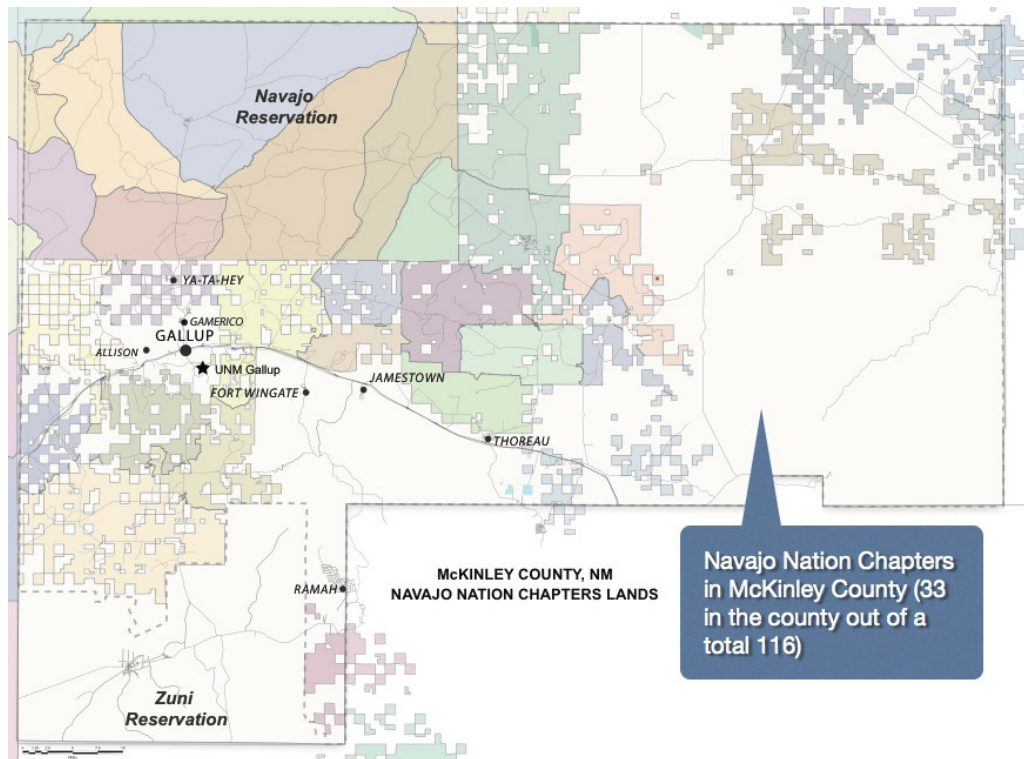


Exhibit 3-49
Navajo Nation
Population Changes

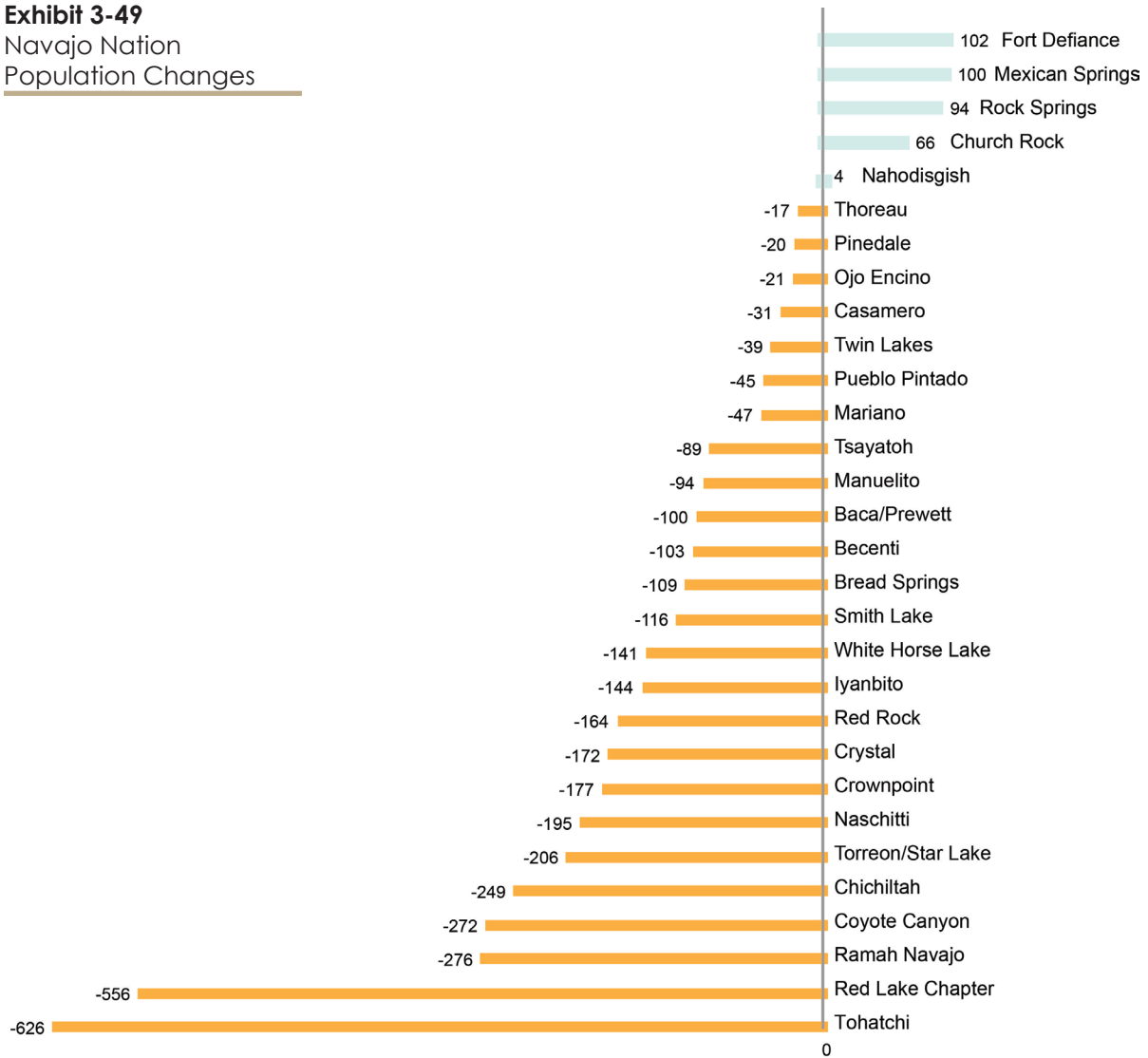


Exhibit 3-50
City of Gallup Ethnicity

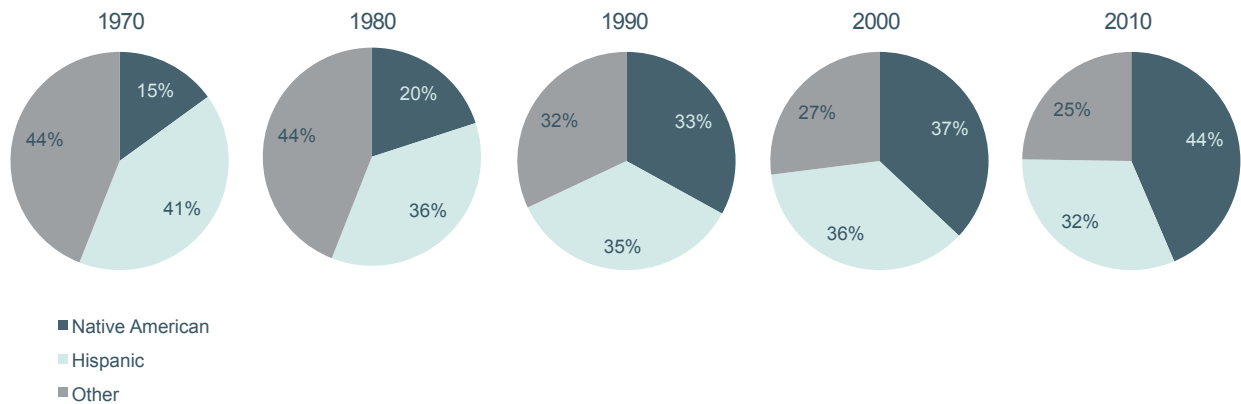


Exhibit 3-51
 McKinley County Population
 Distribution: 1990, 2000, 2010
 Source: U.S. Census

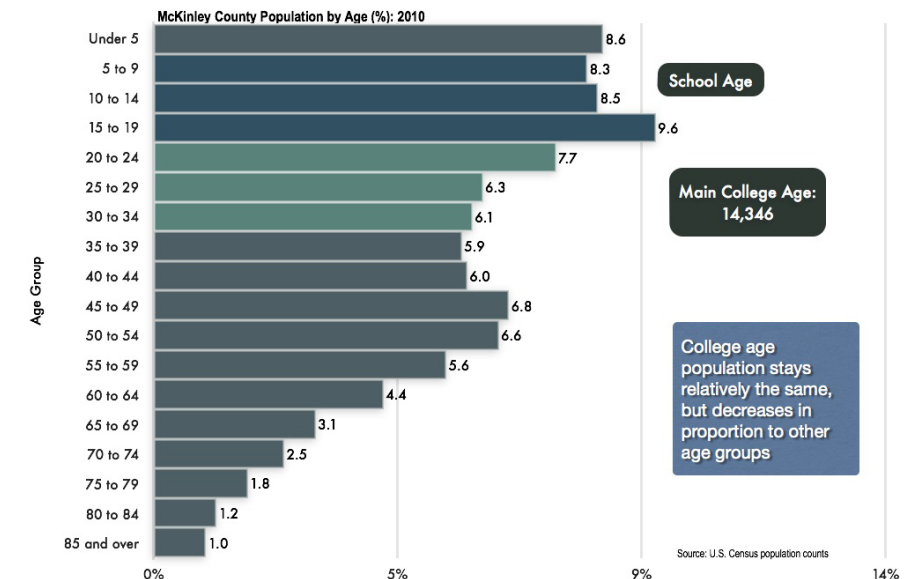
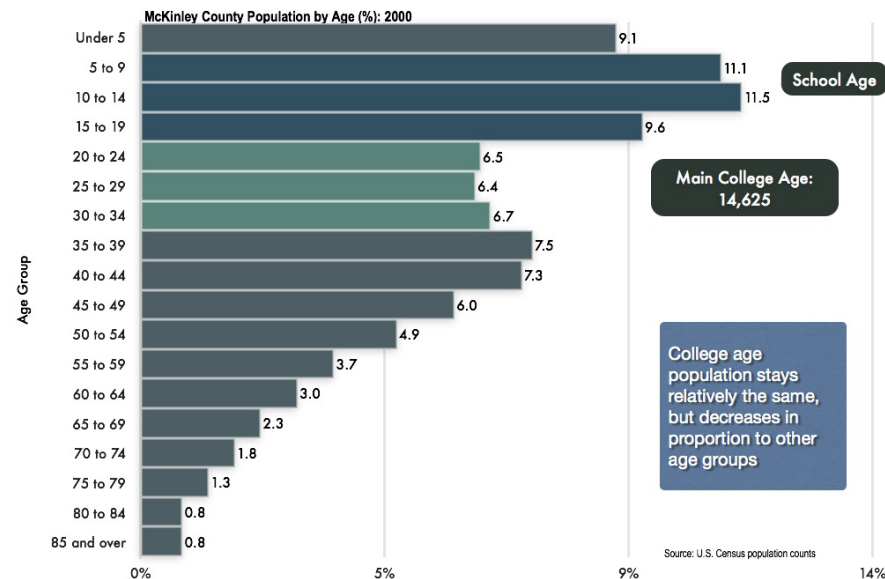
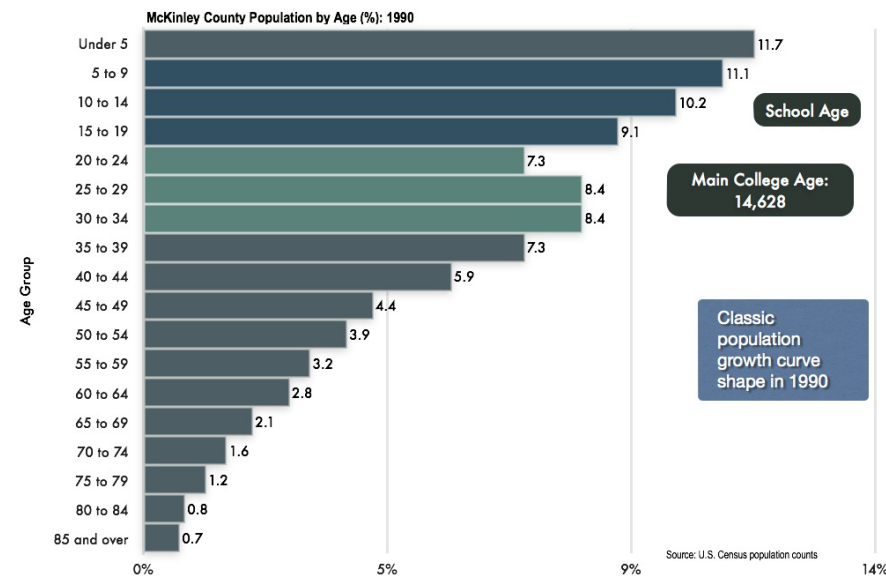


Exhibit 3-52
 McKinley County Population Distribution
 Projections: 2020 and 2035
 Source: UNM Geospatial and Population Studies

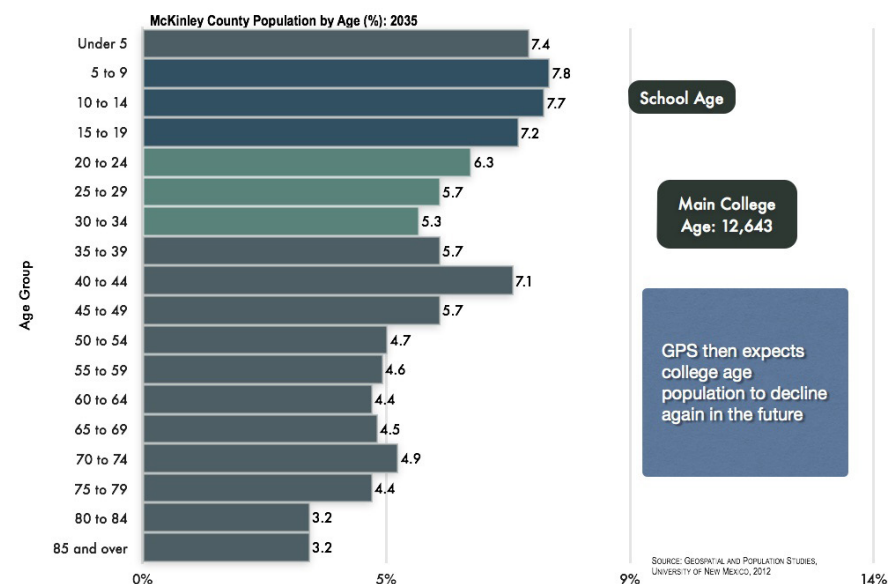
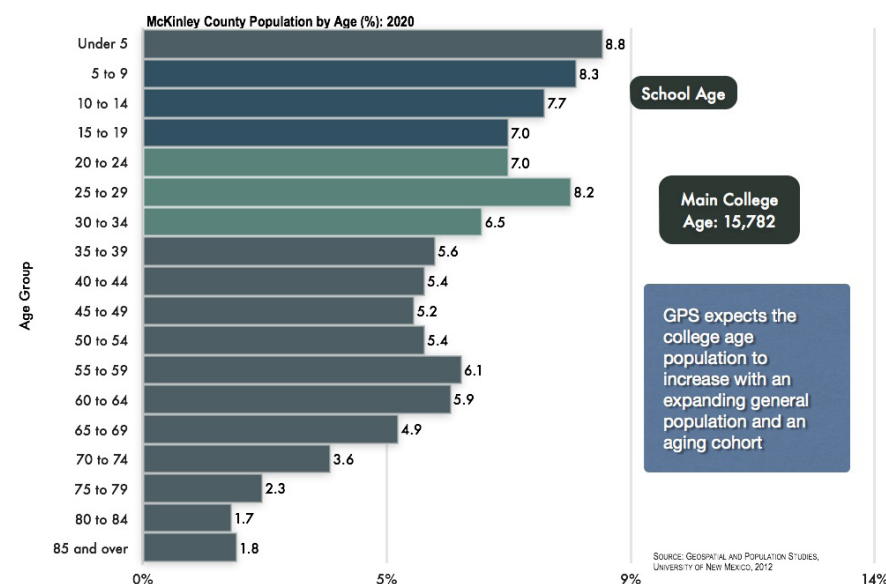


Exhibit 3-53
 McKinley County Median Age

Median Age in McKinley County Compared to State and U.S.

	2000	2010	Change 2000 to 2010
City of Gallup	31.1	31.9	0.8
McKinley County	26.9	30.7	3.8
Zuni Reservation	28.0	31.0	3.0
New Mexico	34.6	36.7	2.1
United States	35.3	37.2	1.9

Source: U.S. Census 2000 and 2010

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Exhibit 3-54
 McKinley County Birth Rates

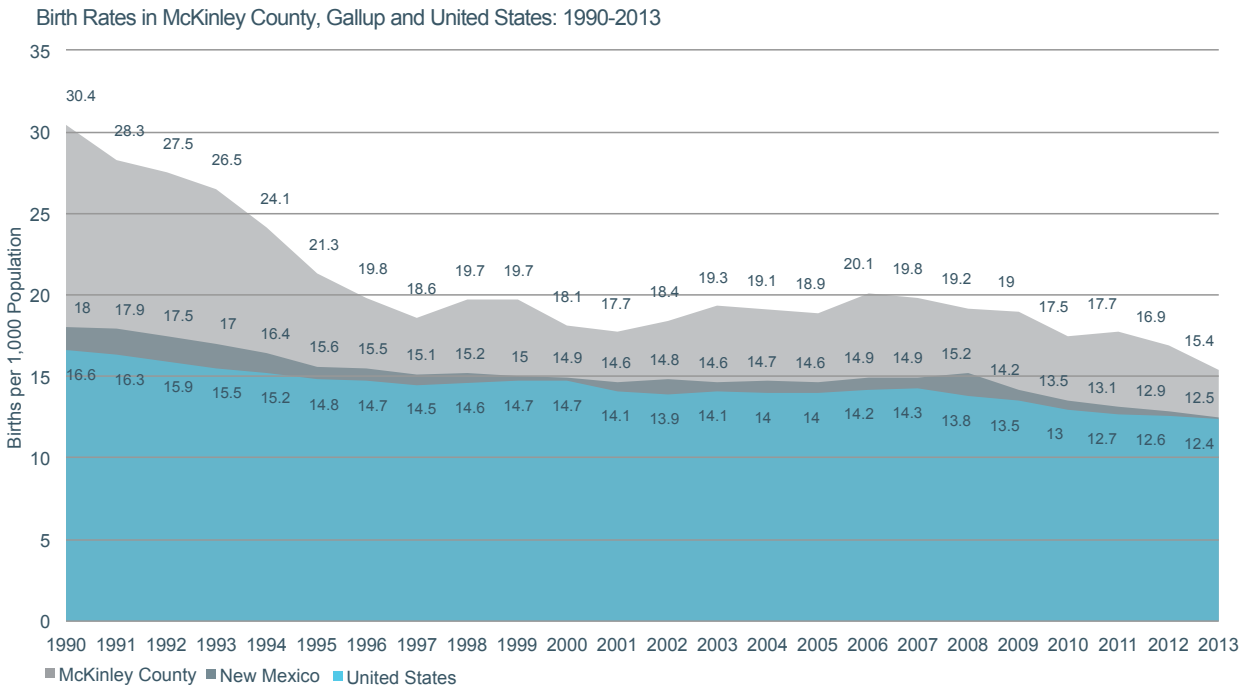


Exhibit 3-55
 McKinley County Household Size

Average Household Size				
Geographic Area	1990	2000	2010	Change 1990 to 2010
City of Gallup	3.01	2.85	2.79	-0.22
McKinley County	3.61	3.44	3.22	-0.39
Gallup-McKinley County Schools	3.46	3.38	3.14	-0.32
Zuni Reservation		4.16	3.99	
New Mexico	2.74	2.63	2.55	-0.19

Selected Economic Factors

• Income and Employment

- McKinley County has the highest poverty rate and the lowest per capita income in New Mexico. (U.S. Bureau of Economic Analysis)
 - » The median income is 23% lower than the state average (Exhibit 3-56).
 - » 30% of families live below the poverty level (Exhibit 3-57).
- Employment has declined in McKinley County since 2007 (Exhibit 3-58).
 - » Unemployment is higher in McKinley County than in New Mexico and the U.S. (Exhibit 3-59).
- 87% of McKinley County jobs are located in Gallup.
- McKinley County's most important employers are in the medical sector. Other sectors that have seen growth from 2001 to 2013 are the gaming industry, social assistance, local government (including schools), and accommodations and food services (Exhibit 3-60).
- Mining, retail trade, wholesale, construction and real estate declined from 2001 to 2013. The most significant decline in employment by sector was in retail trade, which saw a decrease of over 300 jobs between 2001 and 2013 (Exhibit 3-61).

• Educational Attainment

- The percentage of McKinley County's population with an associate's degree or higher is 17.6%, lower than in other northwest New Mexico counties and significantly lower than in either New Mexico or the U.S. (Exhibit 3-62).

• Residential Development

- The housing market has not recovered since 2008.
 - » Only three residential building permits were issued in 2014, compared to 77 residential permits in 2008. Many residential development projects are stalled (Exhibit 3-63a).
 - » Many residential projects have been halted or abandoned (Exhibits 3-63b and 3-63c).

Source US: Census 2000 and Bureau of Business and Economic Research; Mainstreet Community Economic Assessments 2004 - 2007.

Exhibit 3-56

Median Income

Estimated Median Household Income: 2009-2013		
Geographic Area	Annual Income	Difference from New Mexico's
United States	\$53,046	\$8,119
New Mexico	\$44,927	-
McKinley County	\$30,458	-\$14,469
Gallup/McKinley County Schools*	\$30,853	-\$14,074
City of Gallup	\$47,932	\$3,005

Source: U.S. Census 2009-2013 American Community Survey 5-Year Estimates.

Exhibit 3-57

Families in Poverty

Estimated Portion of Families Living Below the Poverty Level: 2009-2013	
Geographic Area	Percent
United States	11.3%
New Mexico	15.6%
McKinley County	30.2%
Gallup/McKinley County Schools*	26.9%
City of Gallup	18.8%

Source: U.S. Census 2009-2013 American Community Survey 5-Year Estimates.

Exhibit 3-58
 McKinley County Employment

McKinley County Employment: 1999-2013

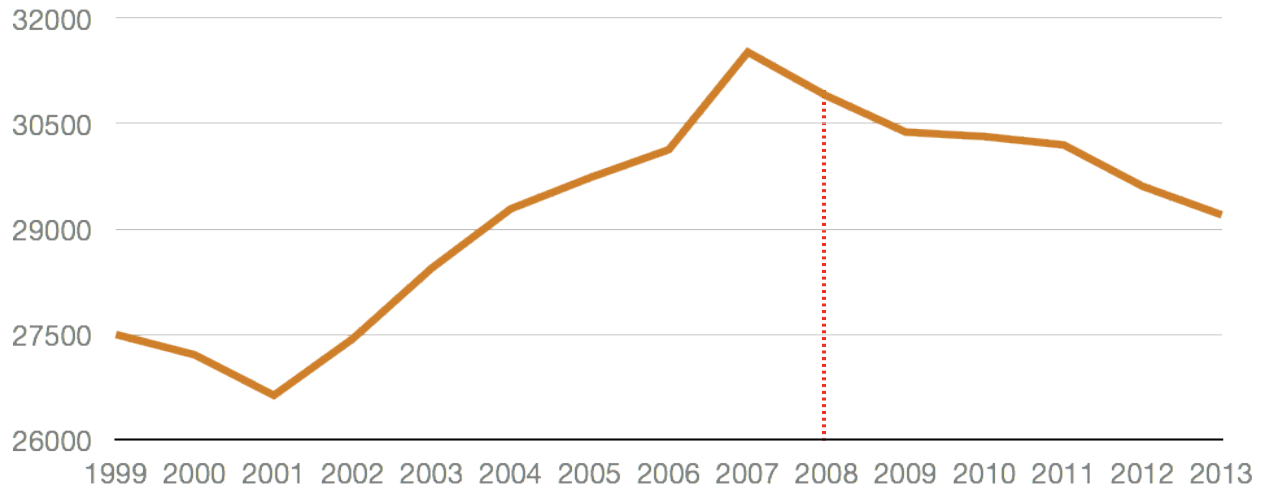
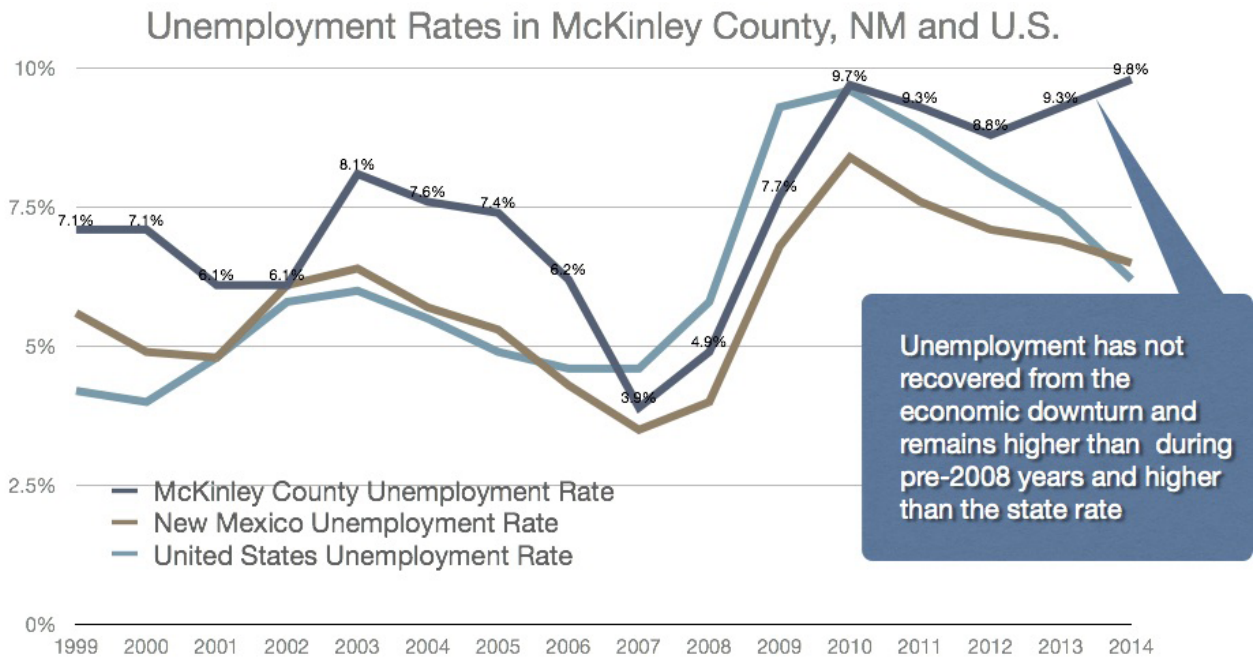


Exhibit 3-59
 McKinley County Unemployment



SOURCE: NEW MEXICO DEPARTMENT OF WORKFORCE SOLUTIONS ECONOMIC RESEARCH AND ANALYSIS (NMDWS), LOCAL AREA UNEMPLOYMENT STATISTICS PROGRAM IN CONJUNCTION WITH U.S. BUREAU OF LABOR STATISTICS AND NMDWS, TABLE A- CIVILIAN LABOR FORCE, EMPLOYMENT, UNEMPLOYMENT AND UNEMPLOYMENT RATE

Exhibit 3-60
 McKinley County Employment
 by Industrial Sector

McKinley County Average Annual Covered Employment by Major Industrial Sector														Change
Sector	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2007-2013
Grand Total	19,895	20,403	21,138	21,479	21,531	21,530	22,130	21,837	21,620	21,363	20,944	20,989	20,502	607
Total Private	13,038	13,472	13,590	13,965	14,099	14,051	14,564	14,181	13,599	13,405	13,364	13,550	13,153	115
Ag., Forestry, Fishing & Hunting	D	0	D	0	0	0	0	0	0	0	D	D	D	
Mining	D	697	D	534	569	576	438	151	118	75	D	116	72	
Utilities	155	154	152	151	149	163	163	142	161	160	152	155	150	-5
Construction	619	494	679	715	617	761	1,031	922	759	737	602	611	574	-45
Manufacturing	534	592	568	714	709	662	659	648	558	570	531	531	523	-11
Wholesale Trade	672	680	748	690	692	684	622	598	506	545	524	495	460	-212
Retail Trade	3,522	3,600	3,544	3,408	3,384	3,347	3,372	3,333	3,267	3,109	3,130	3,206	3,218	-304
Transportation & Warehousing	296	305	330	372	411	412	406	422	394	388	385	413	299	3
Information	175	170	170	191	203	189	188	215	223	221	214	206	195	20
Finance & Insurance	283	322	324	347	418	390	411	414	402	402	405	368	382	99
Real Estate & Rental & Leasing	299	465	153	162	150	146	161	170	182	183	179	168	179	-120
Professional & Technical Services	D	D	262	251	256	271	282	252	223	212	227	236	250	
Management of Companies & Enterprises	D	D	17	19	31	24	19	38	40	39	38	38	38	
Administrative & Waste Services	363	322	276	280	278	271	310	281	254	266	255	246	258	-105
Educational Services	330	311	189	205	203	209	249	234	205	139	160	175	143	-187
Health Care & Social Assistance	1,896	2,174	2,553	2,803	2,790	2,762	3,008	3,088	3,182	3,289	3,388	3,412	3,287	1,391
Arts, Entertainment & Recreation	30	27	29	26	32	36	38	35	31	35	37	33	D	
Accommodation & Food Services	2,278	2,331	2,454	2,588	2,684	2,620	2,680	2,660	2,607	2,555	2,579	2,659	2,676	398
Other Services, ex. Public Administration	575	561	525	509	522	527	578	486	482	461	460	415	415	-160
Unclassified	0	1	0	1	1	4	1	0	0	0	1	D	0	0
Total Government	6,857	6,931	7,548	7,515	7,432	7,479	7,566	7,656	8,023	7,959	7,580	7,439	7,349	492
Federal	2,446	2,489	2,552	2,605	2,593	2,598	2,539	2,524	2,570	2,696	2,590	2,597	2,580	134
State	538	551	551	557	561	568	555	563	562	554	537	532	545	7
Local	3,873	3,891	4,444	4,354	4,278	4,313	4,472	4,569	4,891	4,709	4,453	4,310	4,295	422

Note: All years have been revised in accordance with U.S. Dept. of Labor, Bureau of Labor Statistics, databases.
 D: Withheld to avoid disclosing confidential data
 Source: U.S. Dept. of Labor, Bureau of Labor Statistics, *Quarterly Census of Employment and Wages*.

Exhibit 3-61
 Gallup Area Major Employers

Area Large Employers	2005 and 2011	2015
USPHS Gallup Indian Medical Center	1000*	1,250
Rehoboth McKinley Christian Hospital	649	420
City of Gallup	601 (full- and part-time)*	390 (full- and part-time)
Wal-Mart	637	460
McKinley County	300	280
El Segundo and Lea Ranch Mines	240	370
California Supermarket (now Lowe's)	240**	66
Pittsburgh and Midway Coal	50**	0
Fire Rock Casino	0	320
Total	3,717	3,556

Sources: Gallup/ McKinley County Chamber of Commerce, 2001 and ARC- calls to employers or published information (*) 2005 (**) 2011 and all of 2015 data

Exhibit 3-62

McKinley County Educational Attainment

Educational Attainment of Population 25 Years and Older

	McKinley County	San Juan County	Cibola County	New Mexico	United States
Population 25 years and over	41,857	79,445	18,015	1,358,996	208,797,616
Less than 9th grade	10.8%	6.6%	6.4%	7.2%	5.8%
9th to 12th grade, no diploma	15.2%	11.4%	12.3%	8.9%	7.9%
High school graduate (includes equivalency)	33.2%	32.1%	41.3%	26.4%	28.0%
Some college, no degree	23.3%	24.4%	20.3%	23.6%	21.2%
Associate's degree	6.4%	10.7%	8.1%	7.8%	7.9%
Bachelor's degree	6.9%	9.6%	8.2%	14.7%	18.2%
Graduate or professional degree	4.3%	5.3%	3.3%	11.2%	10.9%
Associate's and higher degrees	17.6%	25.6%	19.6%	33.7%	37.0%

Source: U.S. Census, American Community Survey 3-Year Estimates, 2013

Lower rate than other NW NM counties, New Mexico and U.S.

Exhibit 3-63a

Gallup Residential Building Permits

City of Gallup: New Residential Units: 2000-2014

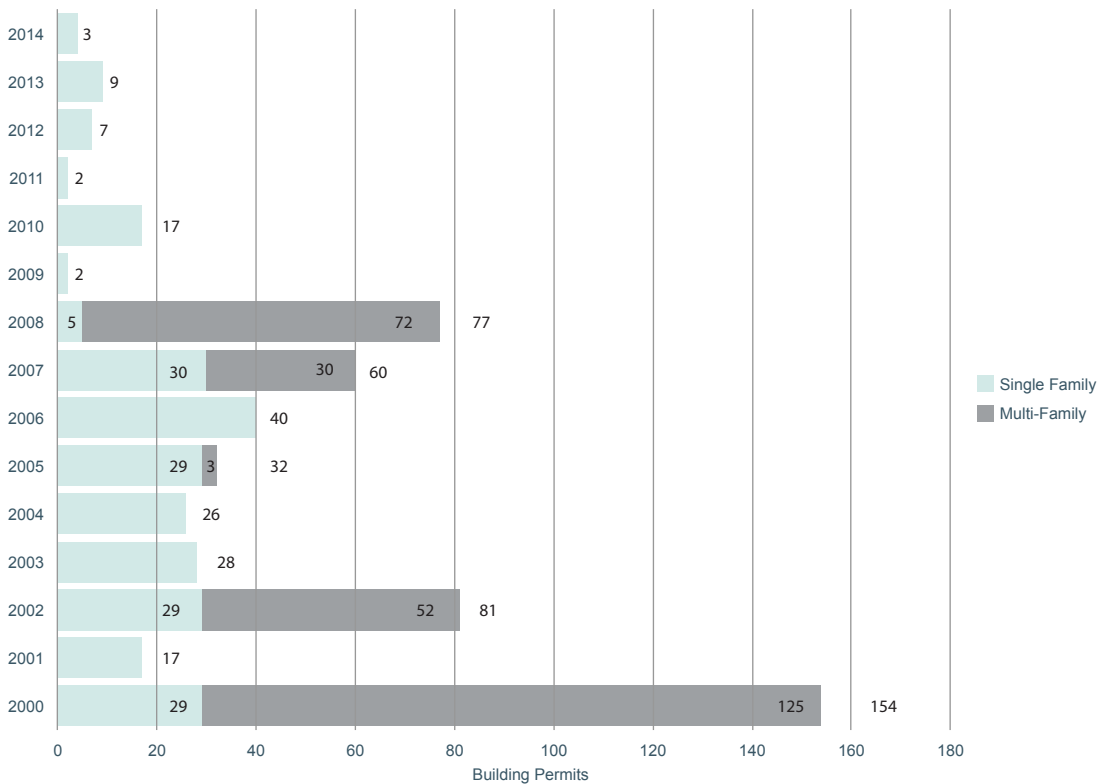


Exhibit 3-63b
 Gallup Residential Development

Major Residential Developments and Development Areas in McKinley County

Developments	Location	Development Status	Current Conditions
City of Gallup			
2009: New Activity			
Hooghan Hozho' Housing and Liberty Hotel	Coal Avenue and 2nd Street	Project	42 units of affordable family housing (3 bedroom units) in complex under construction and 18 single resident occupancy (SRO) units in Liberty Hotel
VIRO	Stagecoach Neighborhood	Prospect	Mixed income community concept; has not moved forward
Rehoboth Foundation Red Mesa (former project name)	East of Hogback	Prospect	Portion in City zoned "planned mixed use" in 2005 has not developed. City annexed school and nearby property. New owner from Tampa, FL, intends to prepare new master plan.
UNM-Gallup Student Housing Project	South of campus	Prospect	Private property adjacent to campus purchased for project to create housing for up to 300 residents
<i>Unnamed</i>	Southwest from Mendoza Blvd	Prospect	Prospective subdivision lot configuration may need to change in difficult, hilly terrain
GLP Subdivision Near UNM-Gallup campus	North and northeast of UNM-Gallup campus	Prospect	Interest in creating 1-acre lots Gallup Land Partners hold 27,000 acres, some of which may be used for residential development
Activity in Existing Developments or Identified In Past			
Mentmore	West end of Gallup	Existing Subdivision	No recent activity; east portion of platted area undeveloped
Sky West Subdivision	North of Miyamura High School	Existing Subdivision	600 lots, ~80 units were built, ~6 houses built in past 5 years
Rico Menapace	Near Miyamura High School	Prospect	No activity. Rumored site for replacement GIMC. Potential for significant development activity.
Stagecoach	West of Hwy. 602 Bypass	Existing Subdivision	Potential for additional development, no recent activity
Chartwell Homes	Crestview Court south of Nizhoni, east of 2nd St.	Existing Subdivision	23 lots built during 2009-2012; project built out
Mendoza Boulevard Area	South of Airport	Prospect	No activity. Much buildable land in area, while some is steep or sandstone. GLP owns portion of land.
South Fork MHP	South end of Patton Drive	Existing Subdivision	.
Coyote Canyon	Canyon Drive on east side	Existing Subdivision	2 of 5 phases built. Additional development possible south on both sides of Hogback.
Mossman Subdivision	South of Aztec and west of Boardman St.	Existing Subdivision	Mostly built out. High end development, no recent activity.

Source: C.B. Strain, City Planner, City of Gallup

Exhibit 3-63c
Gallup Residential Development

McKinley County

2009 New Activity

Tampico Springs Mountain Monks Subdivision	South of McGaffey	Re-subdivision	Some sales but no building activity; resubdivision of area to back of subdivision creating 30-35 lots
Whispering Cedars	Jamestown	Existing Subdivision	Gradual build-out
South and east of Whispering Cedars	Jamestown	Prospect	USFS-private land trade and consolidation of land, owner may subdivide
Diné Estates	China Springs Loop, Red Rock Chapter area	Existing Subdivision	GLP interested in resubdividing into some larger lots and some urban density single family and duplex lots.

2009: Activity in Existing Developments or Identified In Past

Navajo Housing Authority Subdivisions	Various Sites	Expansion of Existing and Creation of New Subdivisions	Significant housing needs have been identified, however, little activity has occurred in recent years. Navajo Gallup Water Supply Project and 4-laning of U.S. 491 may spur additional housing development.
Scattered housing on Tribal Trust land allotments	Various Sites	Individual Allotments	Allotment holders incrementally build new housing. As the county improves roads, new housing units develop nearby.
Church Rock - Ft. Defiance Housing Corp.	Church Rock Chapter	Existing Subdivision	69 units built in 2003 and 2004. No new activity.
Sundance Subdivision	Sundance Road/Coal Mine area south of Church Rock	Existing Subdivision	Incremental growth
Springstead Estates	4 miles north of Church Rock Village in Church Rock Chapter	Prospect	No activity on 900 lot subdivision
Bread Springs/Pine Haven	Bread Springs Chapter	Individual Properties	Incremental growth on private land within the chapter
Lindsey Subdivision	Chichiltah Chapter	Existing Subdivision	24 lots on private land within the chapter, only 4 houses built
Spencer Valley	Spencer Valley/Manuelito Chapter area	Existing Subdivision	Incremental growth
Gamerco Subdivision	North of Gallup	Existing Subdivision	Some new development
Timberlake Subdivision	Ramah Area	Existing Subdivision	Some new houses
Bluewater Lake	South of Thoreau	Existing Subdivision	No new developments; new state park master plan may result in more recreational amenities that could spur growth
Navajo Township CDC Subdivisions	Navajo, NM	Prospect	New fire station (2015). A homeownership subdivision was proposed in 2005. While infrastructure was built, no housing activity.
Crownpoint Planned Community	East of Crownpoint	Prospect	Conceptual plan for new town was proposed by NHA in 2005. No activity.

South of McGaffey
 Proposal for subdividing of 5 sections of private land submitted then withdrawn.
 According to Navajo Housing Authority's recent NAHASDA Annual Performance Reports, construction of 76 new units in FY 2009 and at least 46 new units in FY 2010. Locations were not identified.

Source: Doug Decker, McKinley County Attorney

- **Gallup and the Area Economy**

- Gallup is the only major trade and employment center in a radius between 50 and 200 miles (Exhibit 3-64).
 - » Halfway between Albuquerque and Flagstaff, Gallup serves an extensive area of rural communities and is an important center for culture and commerce.
- Gallup has about twice as many residents as the county's second most populous area, Zuni. All other communities in the area have fewer than 200 residents (Exhibit 3-65).
- The 2009 City of Gallup Growth Management Master Plan identified several large areas of targeted residential development, representing significant room for growth in the city. Before the economic downturn in 2008, there was substantial interest in developing in the Gallup area.
- As an economic hub for such a large area, visitor expenditures are an important part of the economy in Gallup. The majority of expenditures are for lodging, food and beverage, and retail, but spending is also notable for transportation and second homes. Recreation spending accounts for about as much as second homes and may represent a growth sector (Exhibit 3-67).
- The gaming economy has had two significant additions in the last few years. In 2007, the Navajo Nation opened the Fire Rock Casino outside Gallup which, by 2010 was producing over \$40 million in winnings annually. In 2011, the Northern Edge casino opened near Farmington. Although not in McKinley County, the casino is on the Navajo Nation and has brought the total winnings at Navajo Nation casinos to over \$80 million per year (Exhibits 3-66 and 3-68).



- **Infrastructure Projects and Potential Development**

- U.S. Highway 491
 - » The current widening of the connection between Shiprock and Gallup from two to four lanes will improve the connection to the Gallup metro area from Shiprock, Navajo communities, and Farmington. The schedule for completion of the final 28 miles is within two years.
- Navajo-Gallup Water Supply Project
 - » This major infrastructure project will convey a reliable municipal and industrial water supply from the San Juan River to the eastern section of the Navajo Nation, southwestern portion of the Jicarilla Apache Nation, and the city of Gallup, New Mexico via about 280 miles of pipeline, several pumping plants, and two water treatment plants.
 - » The project will improve water supply reliability to allow economic development and population growth in Gallup and other areas.
 - » Expected completion of the project is by 2020 - 2025.
- Gallup Land Partners: Energy Logistics Park
 - » This potential project includes development of the Gallup Energy Logistics Park just outside of the city of Gallup on land currently held by Gallup Land Partners. The site currently maintains a rail spur and coal transportation services. Potential development may include additional rail-served operations and a business park with warehousing and office spaces. Fully developed, the site could cover 3,000 acres.
- The Greater Gallup Economic Development Committee (EDC) and community leaders have identified industries to target for expansion:
 - » Oil/gas/mining equipment
 - » Plastic products production
 - » Warehousing/distribution
 - » Industrial machinery
 - » Food processing
 - » Medical services, research, and manufacturing



Exhibit 3-64
Gallup Market Area

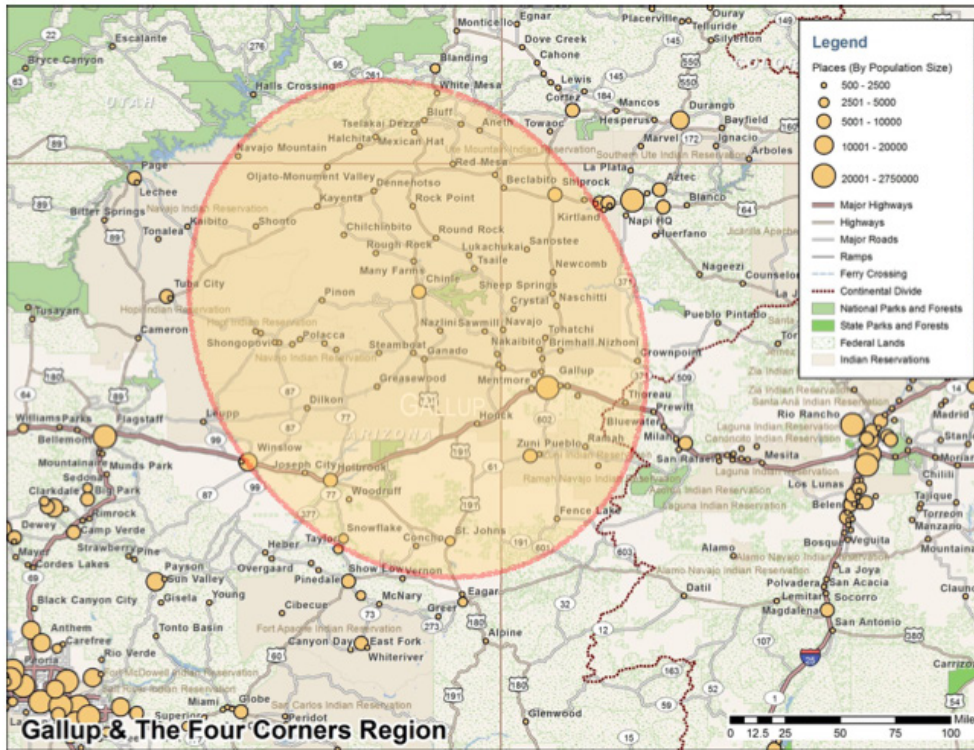
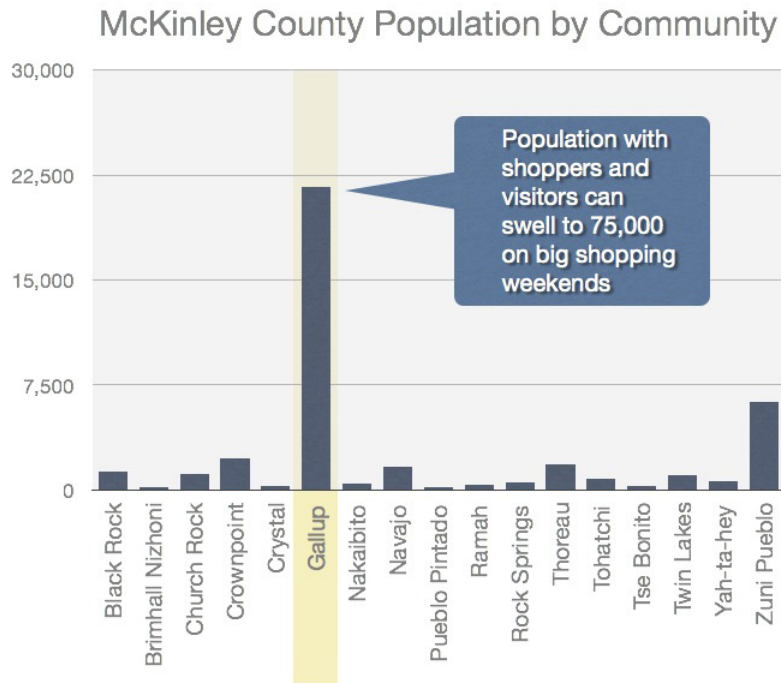


Exhibit 3-65
McKinley County Population by Community



SOURCE: U.S. CENSUS BUREAU 2010 POPULATION OF GALLUP AND CENSUS DESIGNATED PLACES, AND BUREAU OF BUSINESS AND ECONOMIC RESEARCH: MAINSTREAM COMMUNITY ECONOMIC ASSESSMENTS, 2004-2007

Exhibit 3-66
Navajo Nation Casino Locations

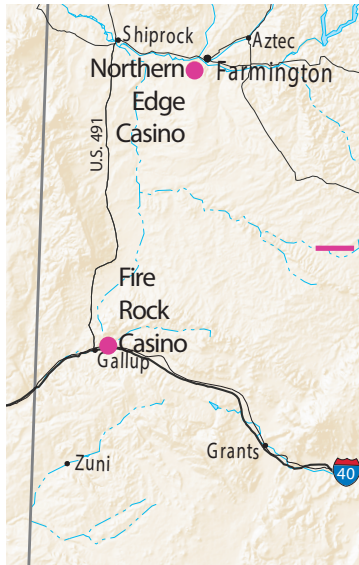
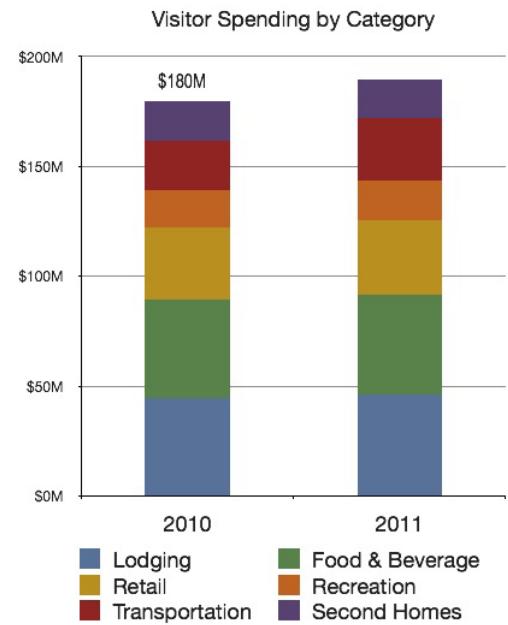
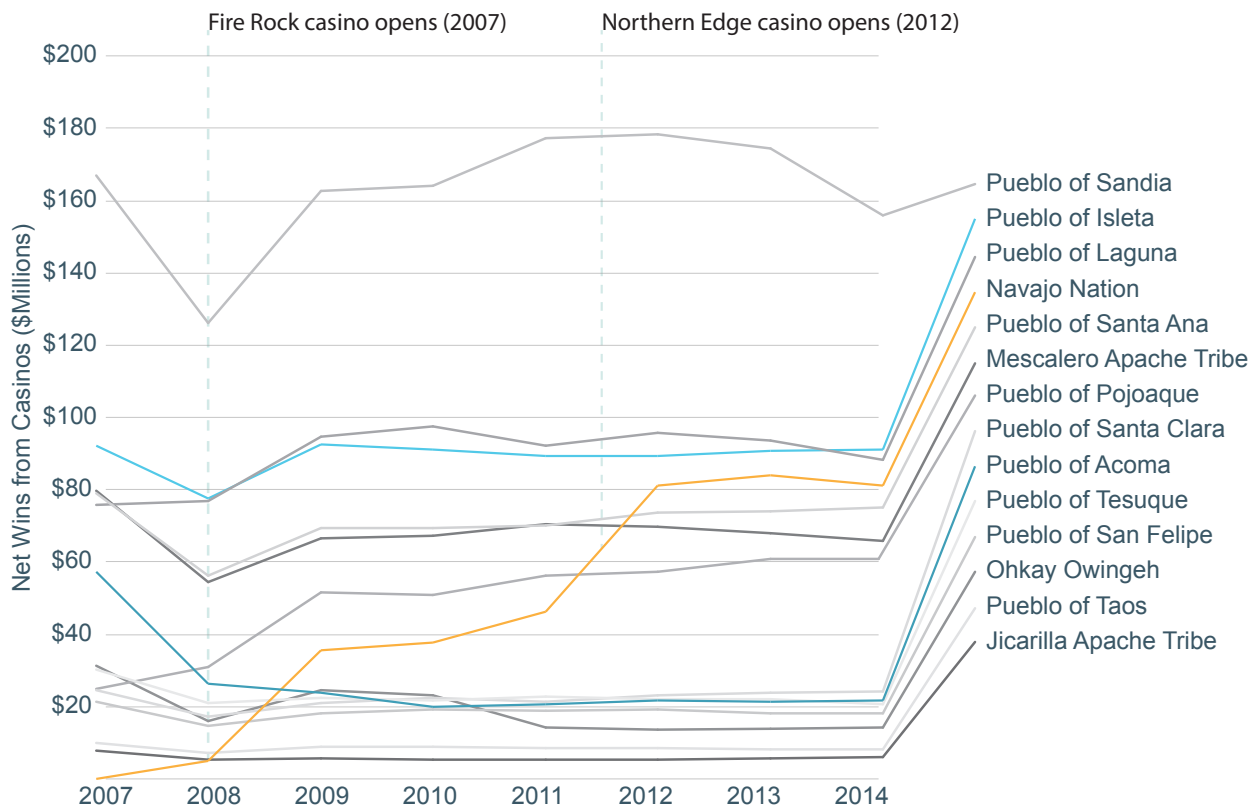


Exhibit 3-67
Gallup Visitor's Spending Breakdown



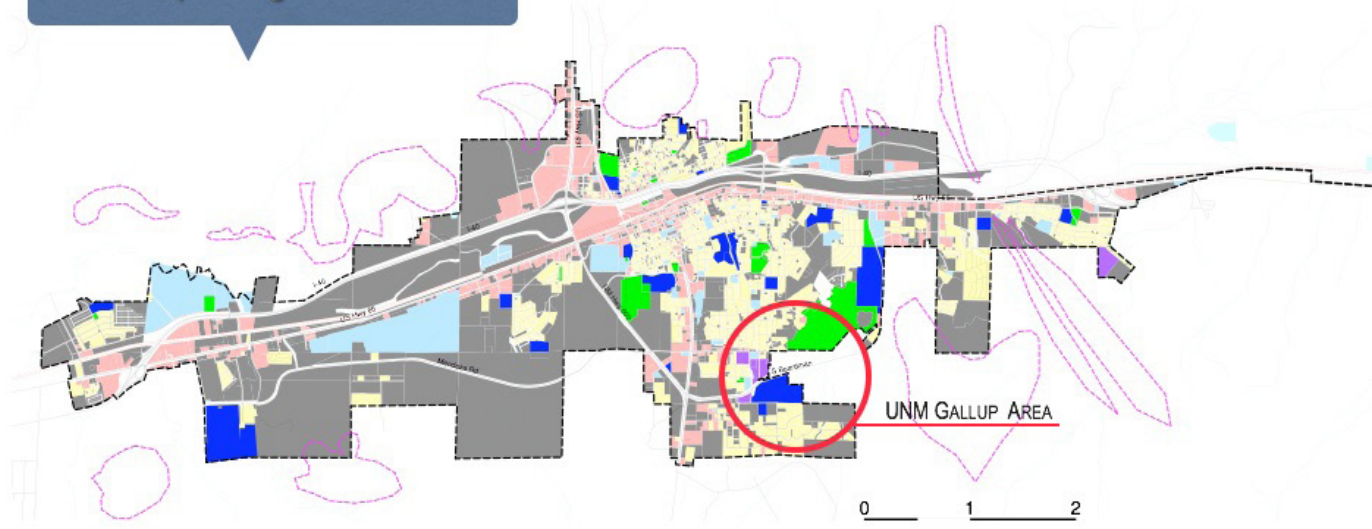
SOURCE: "ECONOMIC IMPACT OF TOURISM IN NEW MEXICO (2011, OXFORD ECONOMICS COMPANY)"

Exhibit 3-68
Net Wins from NM Casinos



- 55% developed (4,800 acres)
- 45% undeveloped
- Substantial room for development growth

Exhibit 3-69
Gallup Existing Land Use

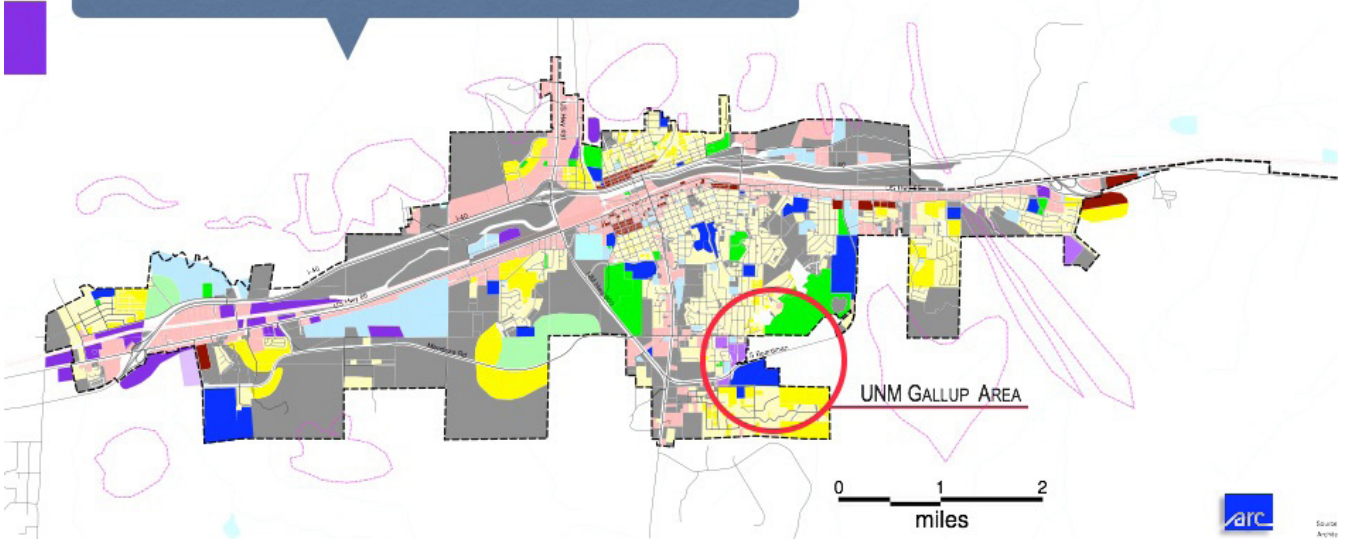


SOURCE: 2009 CITY OF GALLUP GROWTH MANAGEMENT PLAN

Exhibit 3-70
Gallup Proposed Land Use

- 2009 City of Gallup Growth Management Master Plan:**
- 1,200-1,600 acres of new development land (+24-34%) over next 20 years
 - Room for development near UNM-G campus

Future Concept Land Use	
 New Residential	 School
 Existing Residential	 Open Spaces
 Business	 Parks and Recreation
 Public, Church, Cemetery	 Industrial, Warehouse
 Hospital	 Mixed Use
 New Hospital	 Vacant



SOURCE: 2009 CITY OF GALLUP GROWTH MANAGEMENT PLAN

Exhibit 3-71
U.S. 491 Widening Project

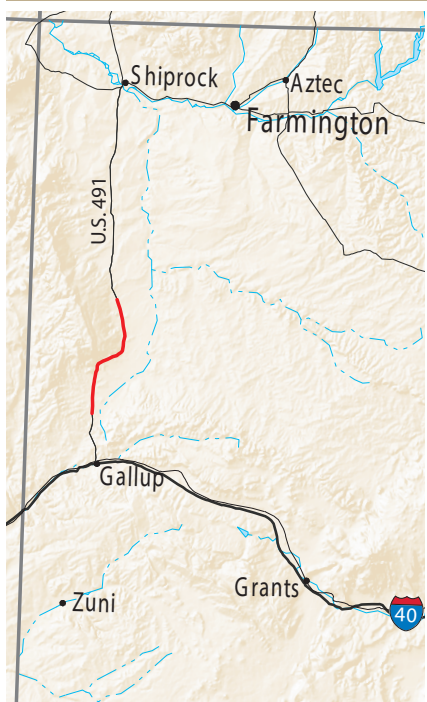


Exhibit 3-72
Navajo / Gallup Water Supply Project

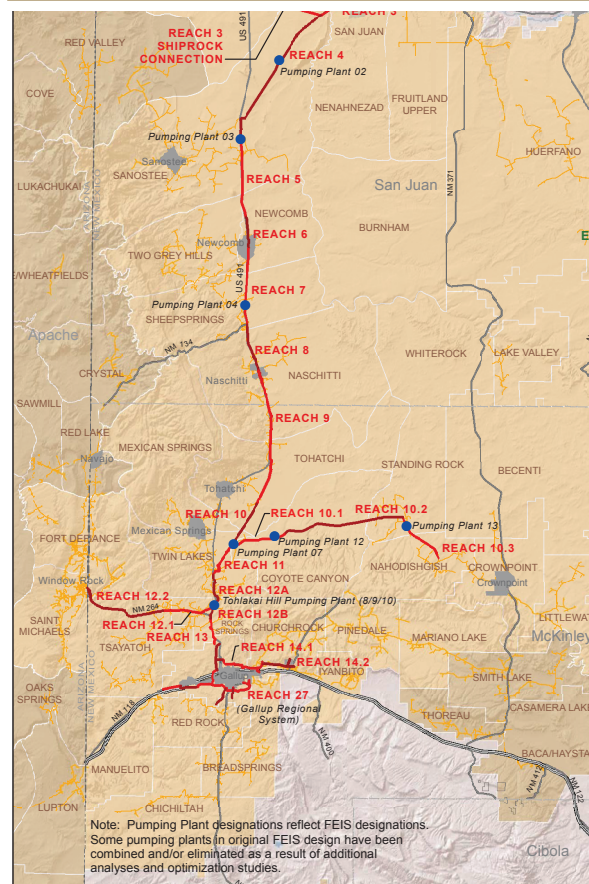
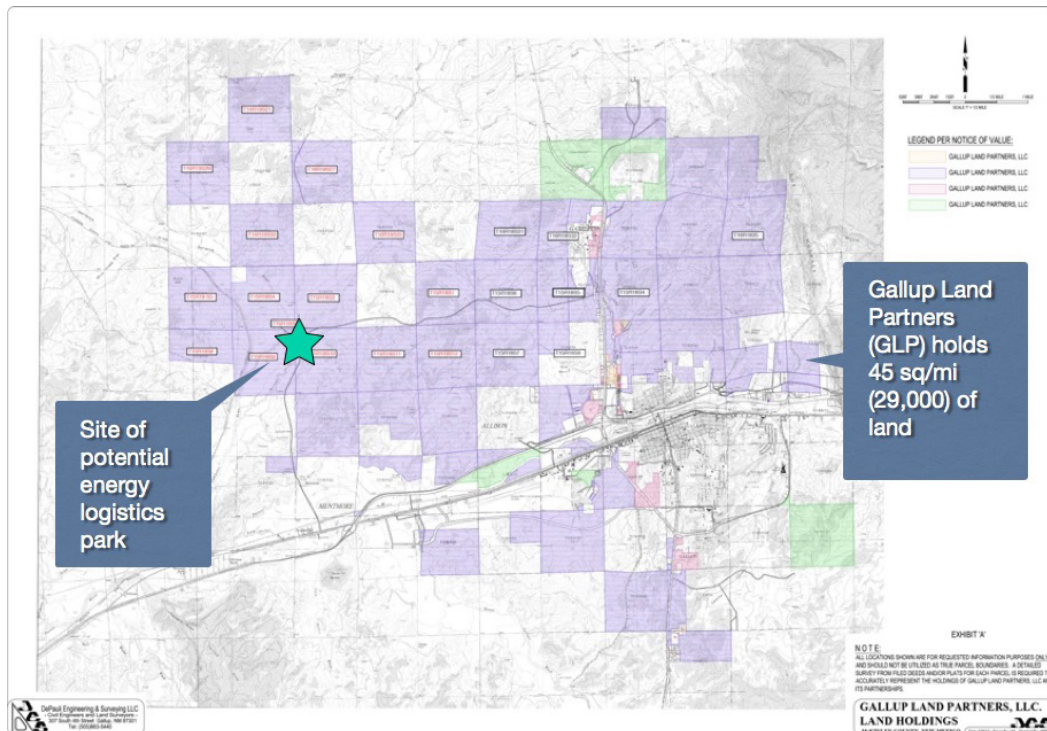
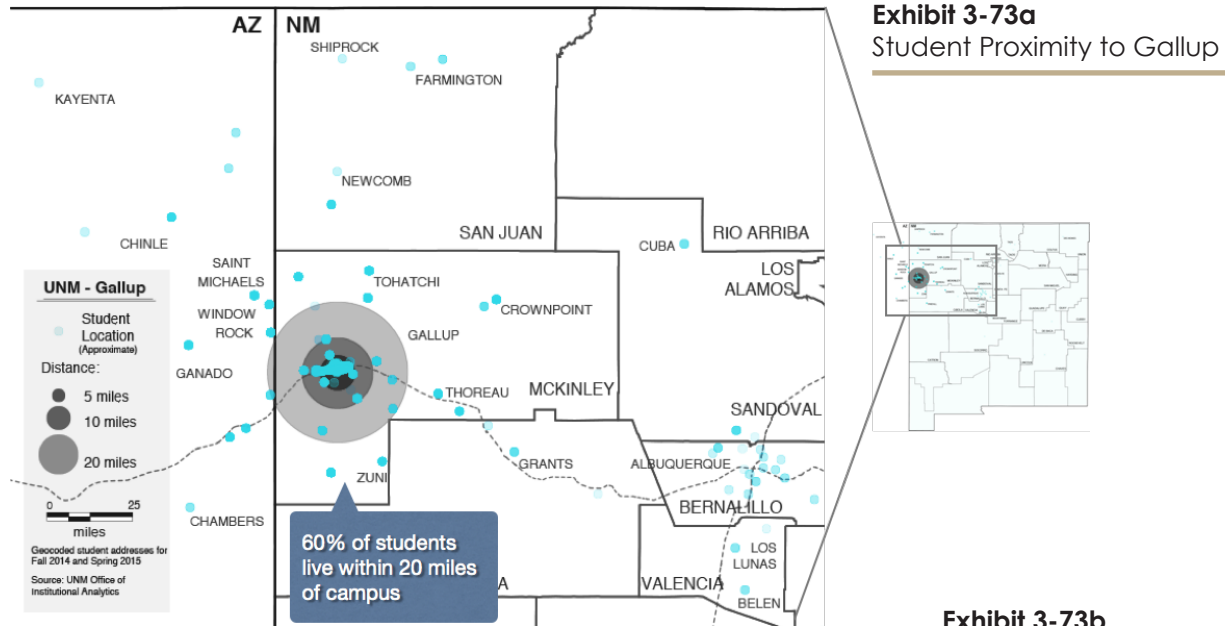


Exhibit 3-73
Gallup Land Partners Holdings

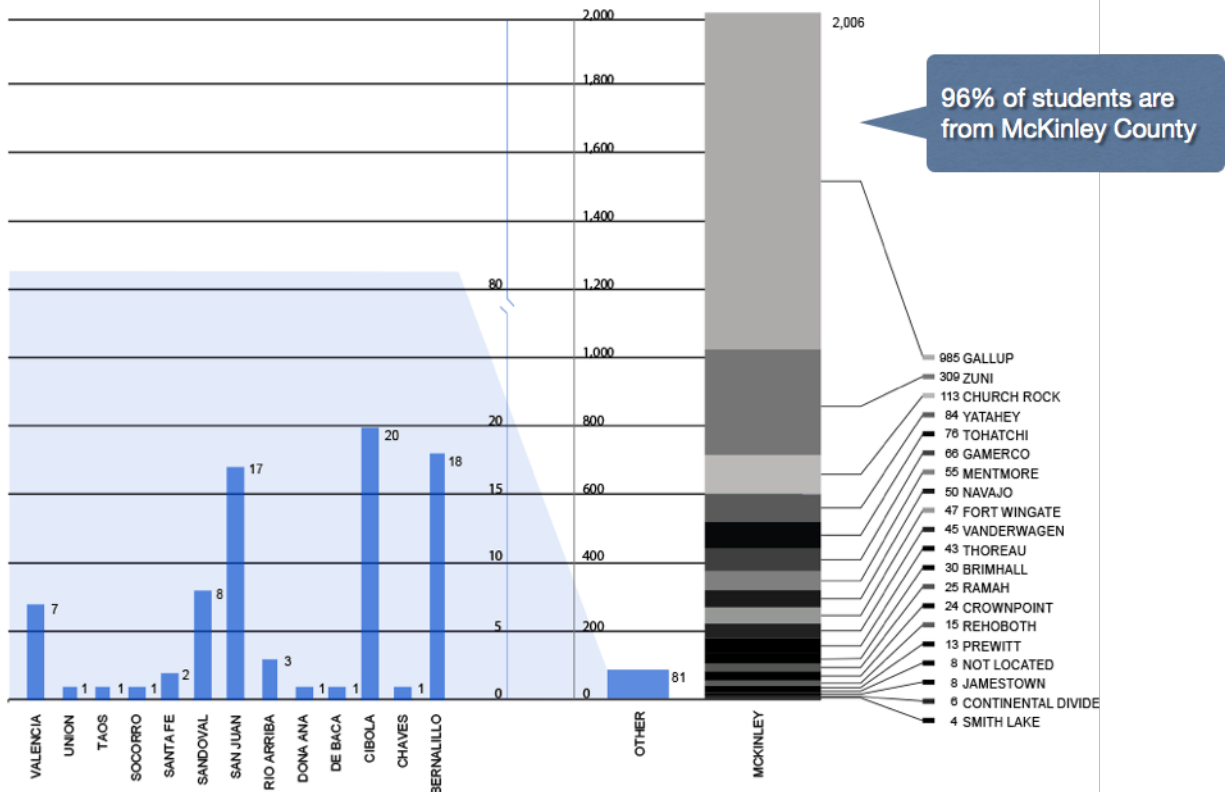


3.1.12 Student Locations

- Based on Fall 2014 enrollment:
 - 60% of UNM-G students live within 20 miles of campus (Exhibit 3-a)
 - 96% of UNM-G students are from McKinley County (Exhibit 3-b)



UNM - Gallup | Student Locations, Fall 2014



3.2 Future Conditions

3.2.1 Enrollment Projections

The master plan projects that FTE enrollment at UNM-G will grow in response to service area growth, UNM-G marketing efforts, and program alignment with career opportunities. The low, middle, and high range projections assume different rates of increase, all of which are possible based on historical trends. Existing instructional square footage is sufficient to accommodate all projected enrollment ranges through 2025, so UNM-G should focus providing space that aligns with program needs rather than significant increases to overall square footage.

Space Projection Method

- 1. Assess Service Area Growth**
ARC assessed the overall growth of the service area population (see demographic analysis)
- 2. Project Full-Time Equivalent (FTE) Enrollment**
ARC calculated FTE, based on the projected participation rate (number of FTE per 1,000 of the service population). The projected participation rate is based on past trends and examination of peer institutions in New Mexico.
- 3. Identify Classrooms/Labs Required**
ARC calculated the number of classrooms and laboratories required to satisfy program needs for each projection period by assessing historic pattern of weekly student contact hours per FTE, and assigning a maximum enrollment
- 4. Identify Total Square Footage Required**
ARC calculated the net assignable square feet (NASF) required by assigning square footage to each space type and multiplying by number of instructional spaces required. Calculation of gross square feet (GSF) for instructional space and total space is by commonly accepted norms.
- 5. Identify Strategy to Accommodate Needs**
The facilities master plan steering committee identified a strategy to supply instructional square footage to meet future needs. The strategy may involve a combination of existing square footage and proposed new construction.

Exhibit 3-74
UNM-G Enrollment
Projection Range (Table)

Year (Fall)	McKinley County Population	Fall UNM-G FTE	Service Pop (/1,000) / FTE Ratio
1999	73,633	1,524	48.32
2000	74,798	1,376	54.36
2001	73,972	1,316	56.21
2002	73,145	1,544	47.37
2003	72,319	1,584	45.66
2004	71,492	1,715	41.69
2005	70,666	1,652	42.77
2006	70,831	1,631	43.43
2007	70,996	1,602	44.32
2008	71,162	1,688	42.16
2009	70,388	1,861	37.82
2010	71,492	1,965	36.38
2011	71,994	1,892	38.06
2012	72,495	1,827	39.69
2013	72,997	1,742	41.92
2014	73,498	1,564	47.00
2015	74,000	1,481	49.96
Low Projection			
2015-16	74,000	1,565	47.28
2020-21	76,000	1,571	48.37
2025-26	77,500	1,550	50.00
Mid Projection			
2015-16	74,000	1,584	46.73
2020-21	76,000	1,665	45.64
2025-26	77,500	1,761	44.00
High Projection			
2015-16	74,000	1,612	45.91
2020-21	76,000	1,829	41.55
2025-26	77,500	2,214	35.00

* Actual Fall FTE

**Fall FTE Per 1,000 Service Population

*** Projections assume a 65% ratio of FTE to Headcount

3.2.2 Development Goals and Concepts

The 2015 master plan steering committee reviewed the development goals and concepts established in 2006 and concurred that they are still applicable and well suited for adoption into the 2015 FMP update. Development goals and concepts are as follows:

Functional Organization

Observations:

- Some departments are scattered rather than colocated with their instructional areas.
- Some “public” functions are not clearly visible to visitors.

Goal:

- Organize college functions in a clear and efficient manner, reflecting the needs of students, staff and visitors.

Concepts:

- Consolidate and colocate academic departments with their instructional areas in a manner that addresses functional and operational requirements and capacity for future growth.
- Centralize common student use facilities.
- Locate public and visitor functions near main entrances with accessible parking.
- Consolidate campus support functions.

Wayfinding

Observations:

- Major streets adjacent to the campus do not have enough campus signs.
- Many out-of-date signs are still displayed and are confusing to visitors and new students.
- The building naming system is confusing. Students need to know building functions as well as names.
- Students have difficulty finding faculty offices.

Goal:

- Create a clear and uniform wayfinding system that adds value to the appearance of the campus.

Concepts:

- Install additional monument signs at the edges of campus to direct visitors on to campus.
- Establish a clear labeling system for buildings.
- Update building and wayfinding signage around campus.
- Provide campus location maps.

Student Life

Observations:

- The campus does not have enough public areas for students to gather for social and impromptu group studying.
- Commuting students need spaces to study and relax in between classes.

Goal:

- Create places around campus to encourage informal student interaction.

Concepts:

- Create study areas scattered throughout campus.
- Create comfortable, sheltered outdoor spaces for group study and activities.
- Create lounge areas in every building near faculty offices to encourage faculty-student interaction.

Campus Character

Observations:

- The campus gives a very good impression.
- The campus has Southwestern-style architecture.
- The campus has pedestrian orientation.
- The site has natural landscaping and trees, open space, views, walking trails, and an undulating topography.

Goal:

- Retain and enhance campus architectural character.

Concepts:

- Retain and enhance campus character features:
 - Southwest architecture
 - Defined color pallet
 - Integrated pedestrian walkways and plazas

Outdoor Resources

Observations:

- The campus outdoor environment is an asset, but underused
- There are not enough places outdoors to gather in groups for study or recreation.
- No outdoor space exists for large gatherings.
- No outdoor spaces exist adjacent to food service.
- The campus has no sheltered outdoor areas.
- The campus has an excellent outdoor walking / running trail.

Goal:

- Provide more opportunities to use outdoor resources.

Concepts:

- Create an amphitheater for outdoor events that draw large audiences.

- Retain “natural” areas.
- Create spaces for outdoor learning and studying, including areas for cultural expression.
- Create opportunities to combine curriculum and hands-on learning with natural resources on campus.
- Create an outdoor eating/seating area adjacent to the new food service venue.

Access/Parking

Observations:

- Vehicular access to the ridge areas is challenging and limited.
- An opportunity exists to create an additional campus entrance on the north and east.
- Parking can be improved by increasing the number of spaces distributed closer to facilities and by improving lighting.
- While the central pedestrian spine is an excellent unifying feature, some campus areas are not connected and existing topography makes access to some areas difficult.

Goal:

- Provide safe and convenient pedestrian and vehicular access to all campus areas.

Concepts:

- Continue to develop the site in a manner that:
 - Provides safe and clear vehicular access to the site
 - Separates vehicular and pedestrian circulation
 - Provides accessible pedestrian connections to all campus areas
 - Provides emergency vehicle access to all campus areas
 - Provides safe and convenient parking and drop-off areas

General Development

Observations:

- Challenging site topography creates opportunities and constraints.
- Opportunities include spectacular views and multistory building.
- Sites take advantage of the slopes. Constraints include:
 - Increased development cost, access, and drainage issues.

Goal:

- Develop the site in a manner that balances long-term development with protection of the unique site environment.

Concepts:

- Adopt a flexible development framework that:
 - Seeks to acquire selected, contiguous land parcels for long-term expansion and improved access
 - Focuses building development to ridge and valley areas with low to moderate slopes

- Protects sensitive drainage and native landscape areas

3.2.3 Sustainability Concepts

The 2015 master plan update adopts the sustainability concepts developed in the 2006 master plan:

The UNM-Gallup campus is located in a natural setting that is, for the most part, undisturbed by development activities, and the campus' ecology is relatively fragile, subject to erosion and drought. Other natural systems are affected by the development and operational activities of campus life. Awareness of the negative effects of non-renewable energy consumption and environmental pollution has heightened around the country, and this awareness is encouraging preventative measures on campuses nationwide. UNM-G can become a model and teaching tool for sustainability practices locally and regionally.

Sustainable Concepts

- Site
 - Create standards for future property development that minimize negative impacts on the natural environment: erosion, habitat destruction, storm water runoff, and light/heat pollution.
- Water
 - Create methods for capturing and utilizing storm water runoff for nonpotable uses.
 - Strive to include water-efficient systems in all new buildings and site development projects: a grey water treatment and recycling system, low-water-use plant materials, low-water-use irrigation systems, and low-water-use fixtures.
- Energy
 - As existing heating/cooling equipment becomes obsolete, replace it with energy-efficient equipment. Eliminate refrigerant products that contribute to global warming and ozone depletion in all refrigerated air cooling systems.
 - Create a strategy to reduce campuswide energy use.
 - Install zoned digital controls at all new buildings.
 - Promote alternative vehicle use by students and employees by providing special parking accommodations.
 - Continue to promote bicycle commuting by providing more bicycle racks and shower facilities.
 - Discuss with local transit companies opportunities to improve transit links for commuting students and employees.
- Materials and resources
 - Create a campuswide recycling system for solid waste such as paper, metals, plastic and glass, and provide staff to manage the program.
- Indoor air quality

- Examine exhaust and filtration equipment to determine if improvements in ventilation and air filtration can be made to create cleaner indoor air quality.
- Examine all products used in cleaning, maintenance and photocopying and plan to eliminate products that contain volatile organic compounds that contribute to indoor air toxicity.
- Teaching sustainability
 - Create curricular opportunities to teach sustainability.
 - Create opportunities to encourage sustainability through community outreach activities and continuing education.

3.2.4 Development Framework

The 2015 master plan steering committee reviewed and endorsed the development framework established in 2006. The development framework identifies areas of the site that are potentially developable (Exhibit 3-75), and overlays circulation and infrastructure associated with the development (Exhibit 3-76). Recent site development, including the Health Careers Center II (2007) and the SSTC (2012) followed the framework. Future improvements, such as the proposed Center for Career Technical Education and Physical Plant Department building should be developed within the framework.

The 2006 FMP identified the following site constraints and opportunities and they remain applicable in the 2015 update:

Site Characteristics and Development Challenges

- Challenging terrain focuses development on one main ridge and selected “valley” areas.
- Ridge development is more expensive due to topography, soils, and access.
- Runoff pathways and low wet areas separate buildable areas.
- Pedestrian pathways require negotiating grades via slopes, ramps, and stairs.
- Sloped pathways can be dangerous for pedestrians during winter months.
- Vehicular access and parking in the ridge areas are limited.
- Much of the undeveloped areas are used for recreation (i.e., running and walking trails).
- Much natural landscaping remains throughout the site.
- UNM-G has the opportunity to acquire adjacent sites contiguous to the existing campus.
- The sloped site creates opportunities for breathtaking vistas.

Site Access

- **Access to Development Areas**
 - The areas identified as potentially developable would require associated paved access drives and parking. Site topography will challenge development, but also create unique opportunities.

- **Vehicular Access**
 - The campus has one point of access for vehicles. UNM-G would like to develop a second point of access by continuing Calvin Hall Drive to Boardman Avenue at the northeast portion of the property. This access would decrease congestion and provide additional emergency access.
- **Pedestrian Access**
 - Exterior pedestrian walkways connect most of the campus. The walkways and exterior courtyards are aesthetically pleasing, but have some limitations and deficiencies:
 - » Some exterior areas are deteriorated and need rehabilitation.
 - » Parts of the campus (Lions Hall, Child Center, PPD, and the gymnasium) are not part of the ADA walkway system.
 - » Connections between lower parking lots and the main ridge are challenged by elevation differences.
- **Parking**
 - UNM-G has successfully completed an ADA parking study and improvements to comply with Office of Civil Rights requirements.
 - Interviews and surveys suggest that the overall amount of parking meets UNM-G's needs, but that many parking areas are inconvenient because they are located far from buildings served. Users cite a need to improve exterior lighting. The distance is a safety concern for some drivers, especially during shorter, winter days.
 - Users cite that the parking area in front of Gurley Hall is limited and awkwardly configured.

Utility Development

This section summarizes utility improvement recommendations. The engineering narratives in this FMP update and the 2013 Utility Master Plan by WHPacific provide additional details.

UNM-G's Physical Plant Department is effective. Good maintenance has reduced the need to repair and replace building system components. However, funding realities cause some deferred maintenance and even properly maintained systems eventually need to be replaced.

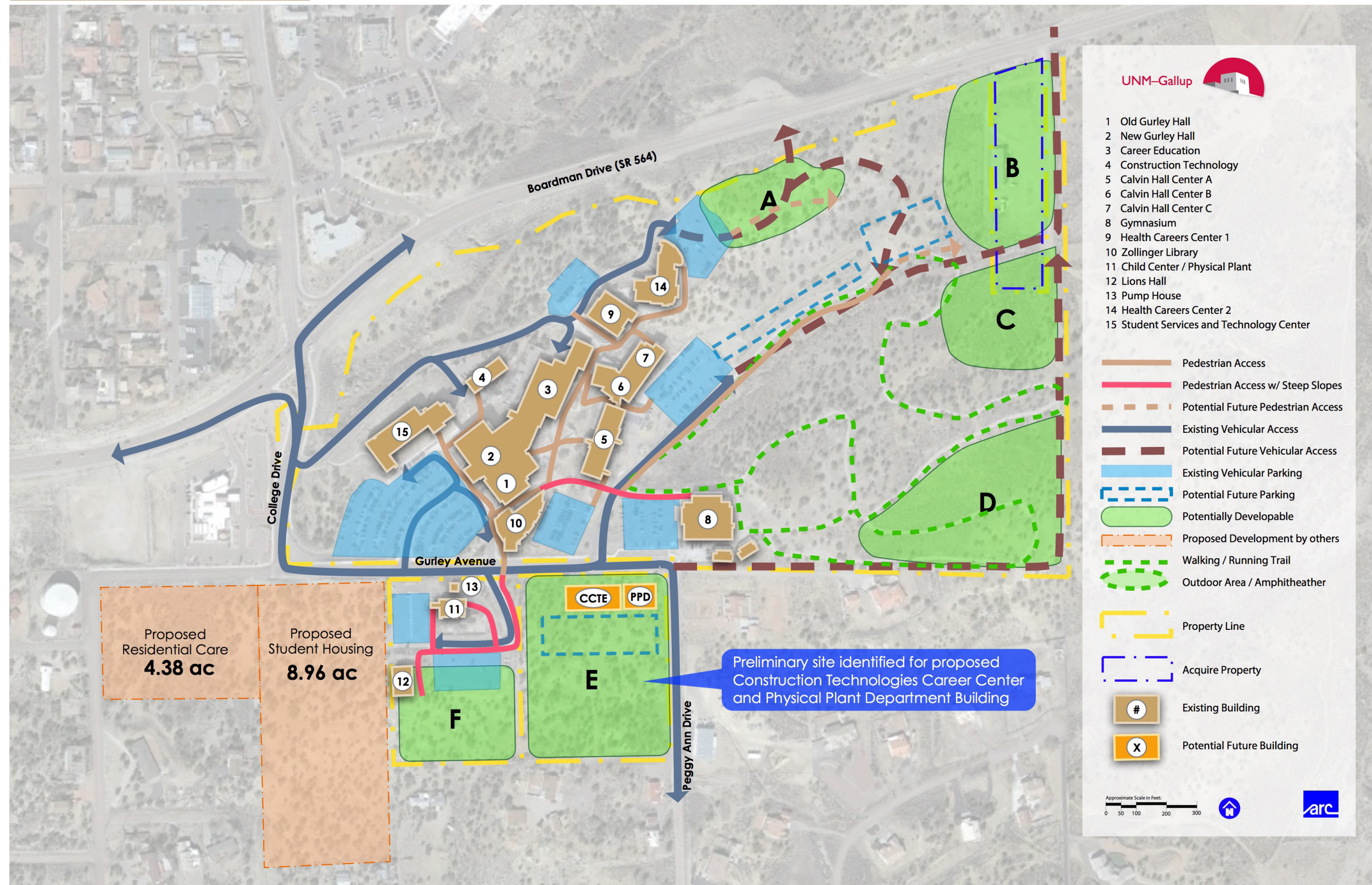
- **Stormwater and Drainage**
 - No significant known problems exist that would warrant the addition of stormwater measures to serve existing facilities. Future projects should implement stormwater detention and retention measures to offset increases in runoff attributable to added impervious areas.
- **Domestic Water Supply**
 - The current joint project between UNM-G and the City of Gallup will provide main campus with a reliable water supply and pressures to meet the needs of existing facilities. Additional supply line looping will be required to serve future expansion and development.

- **Sewer**
 - Sewer limitations are downstream and off site of main campus. Future campus development in lower areas will use lift stations, and these stations will minimize the impact to downstream flow rates.
 - Beyond UNM-G, downstream limitations are a challenge for the City of Gallup's overall development. Community stakeholders could benefit from a collaborative approach to resolve infrastructure limitations.
- **Natural Gas**
 - The 2015 FMP update recommendation aligns with the 2013 Utility Master Plan recommendation to create a database of the existing natural gas system in order to facilitate future system renewal.
- **Electrical Service**
 - Upgrade and replace the existing primary electrical distribution system to provide redundancy and capacity for future growth.
- **Telecommunication Service**
 - UNM-G significantly upgraded the telecommunication system in 2013 with new fiber-optic cable to all buildings on the main campus. In the future, UNM-G should expand the system to provide redundancy.



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Preliminary site identified for proposed Construction Technologies Career Center and Physical Plant Department Building

Proposed Residential Care
4.38 ac

Proposed Student Housing
8.96 ac

13 12

CCTE PPD

E

F

UNM-GALLUP
Proposed Parking at Gurley Hall
Option A: ~ 222 Spaces, Total

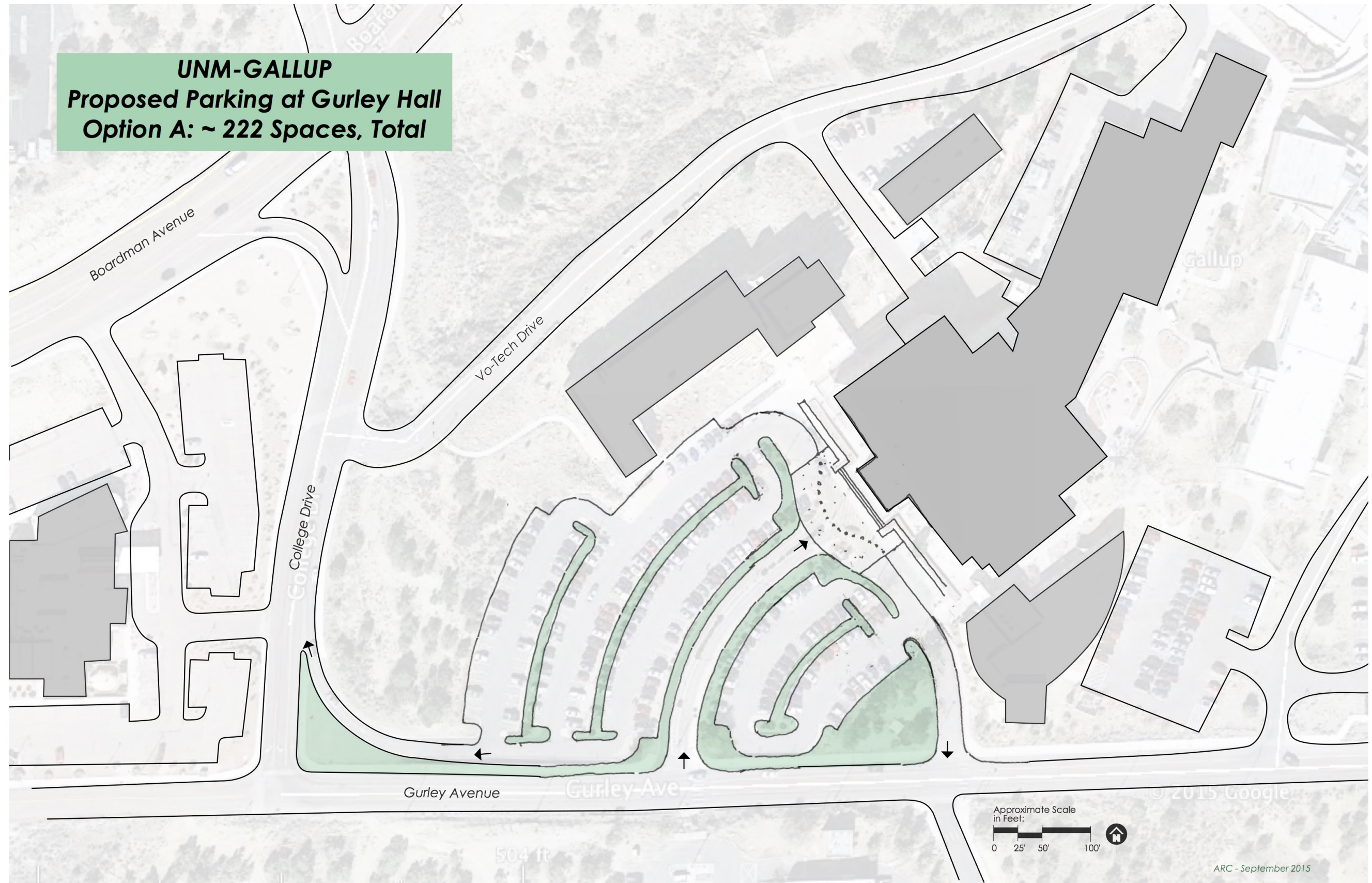
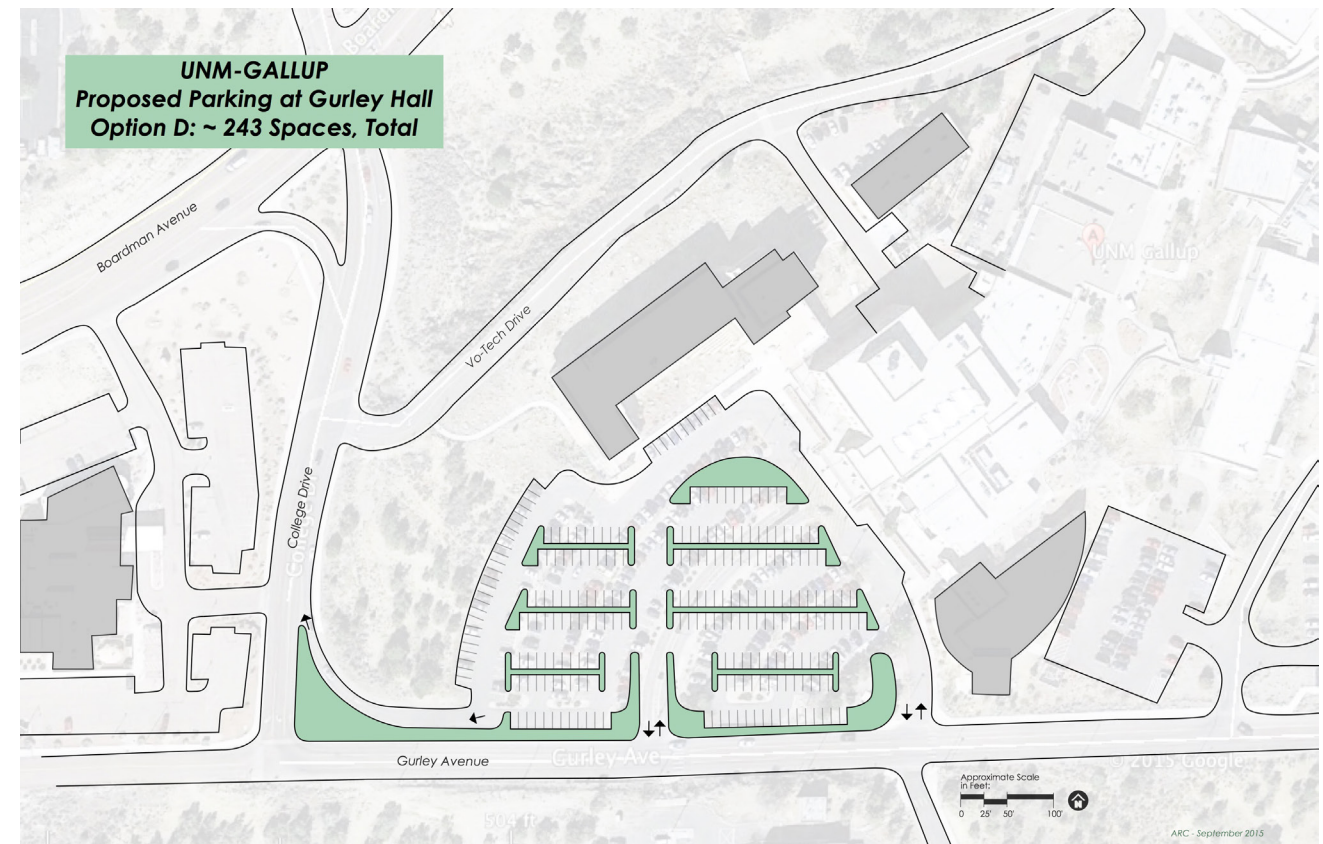
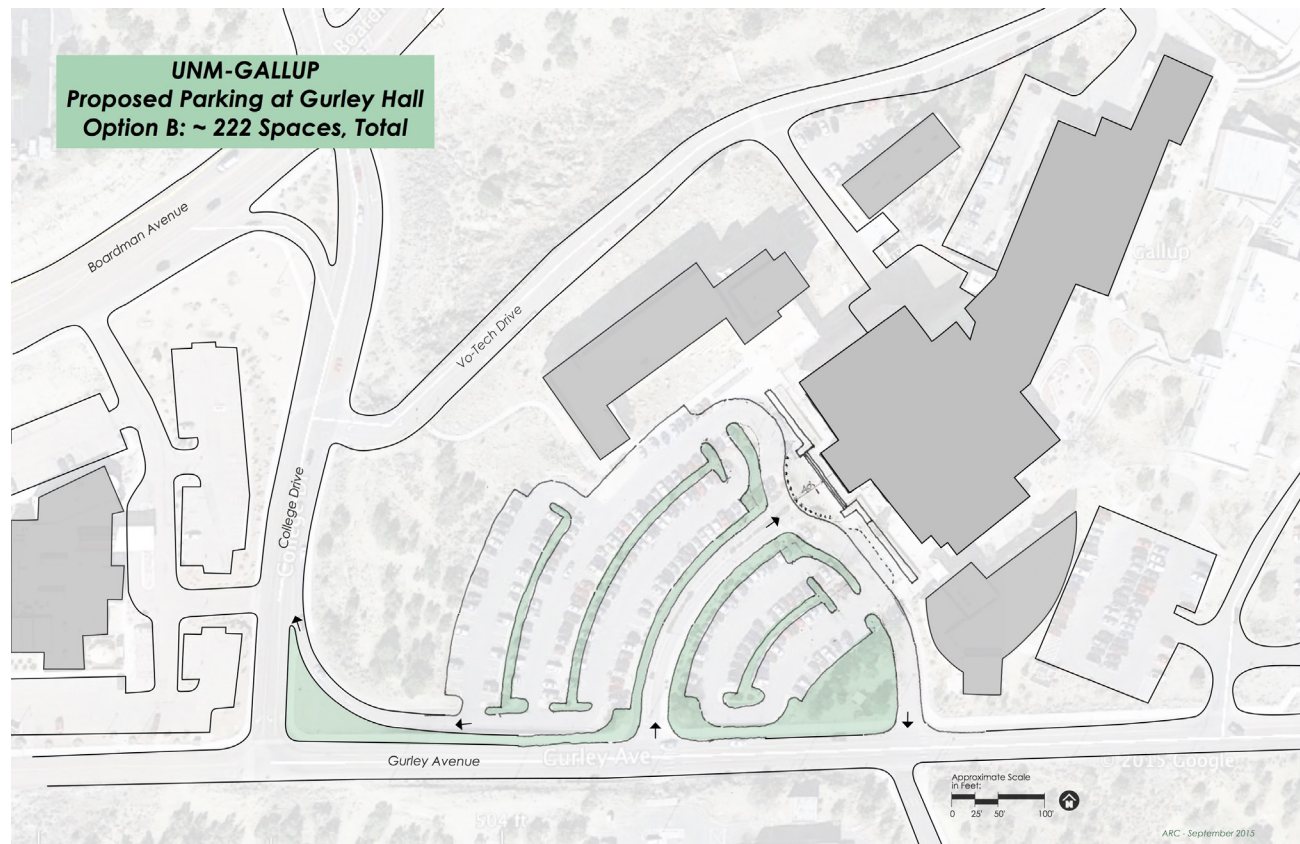
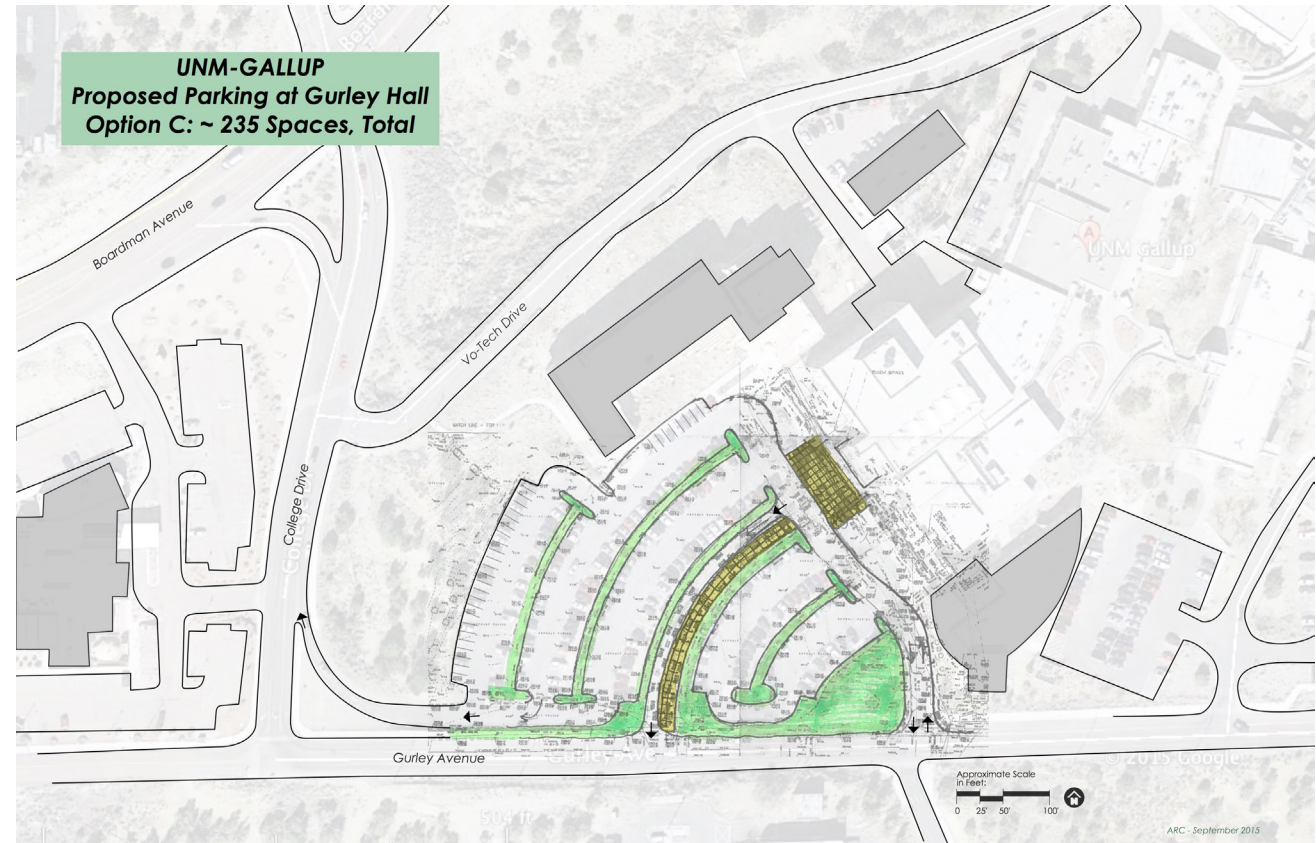


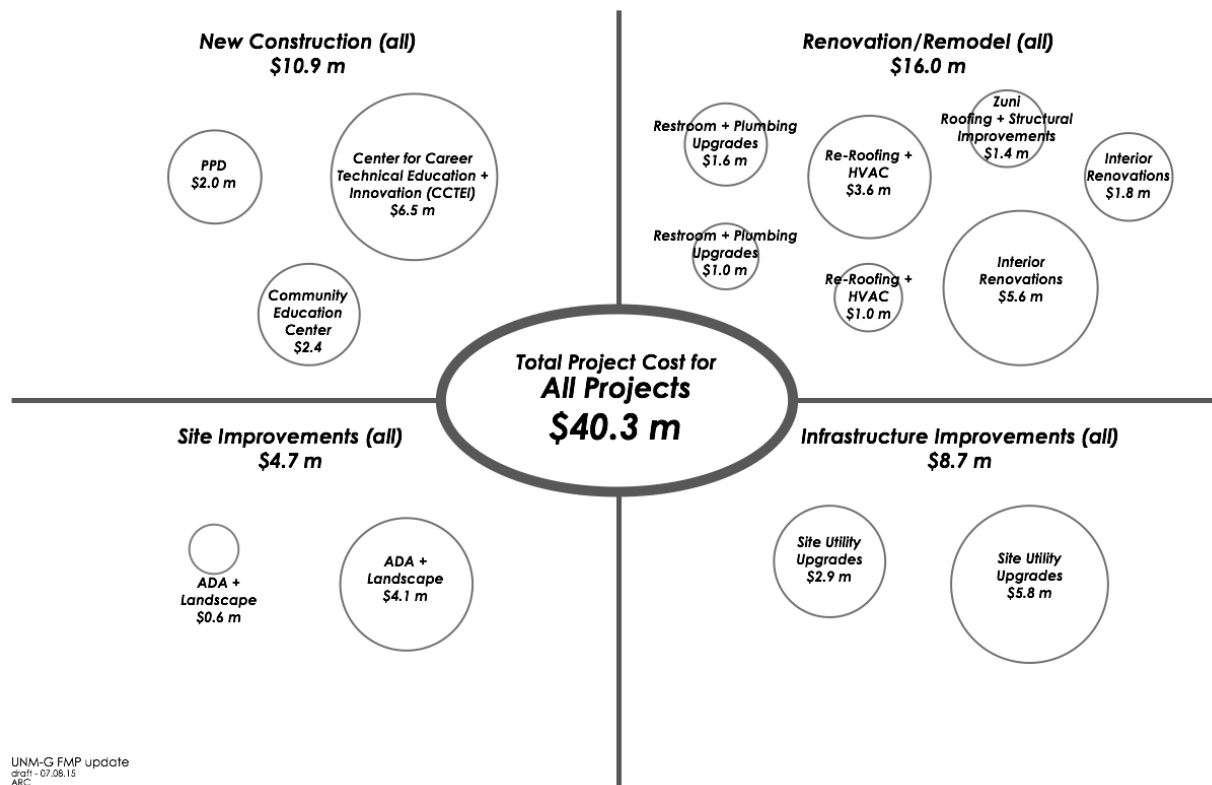
Exhibit 3-78
Additional Parking Modification Studies for Gurley Hall



3.3 Capital Planning

The total identified need is approximately \$40.4 million. The 2015 facilities master plan steering committee prioritized and organized the projects to address capital needs into two funding cycles, 2016 - 2020 (\$23.9 million) and 2021 - 2025 (\$16.4 million). Exhibits 3-77, 3-78 and 3-79, and the capital improvements planning worksheet describe the strategy for addressing capital needs.

Exhibit 3-79
UNM-G Capital Needs
2016 - 2015 Diagram



UNM-G FMP update
draft - 07.06.15
ARC

Exhibit 3-80
UNM-G Capital Needs
2016 - 2020 Diagram

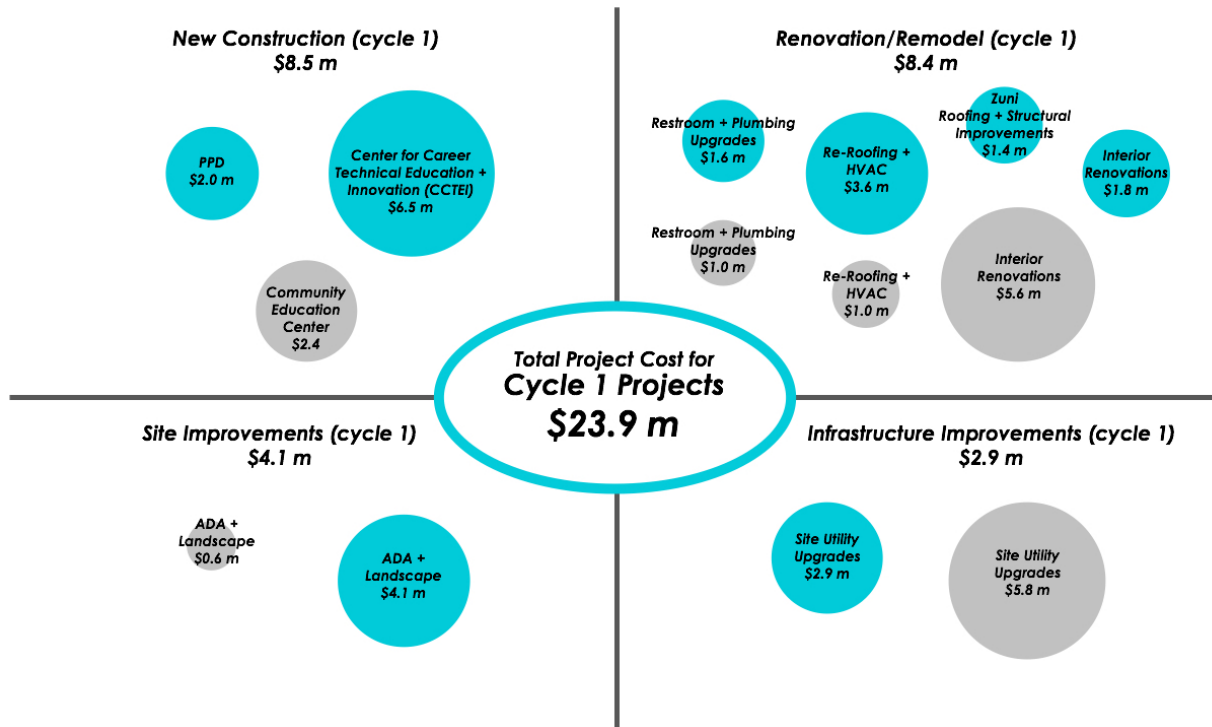
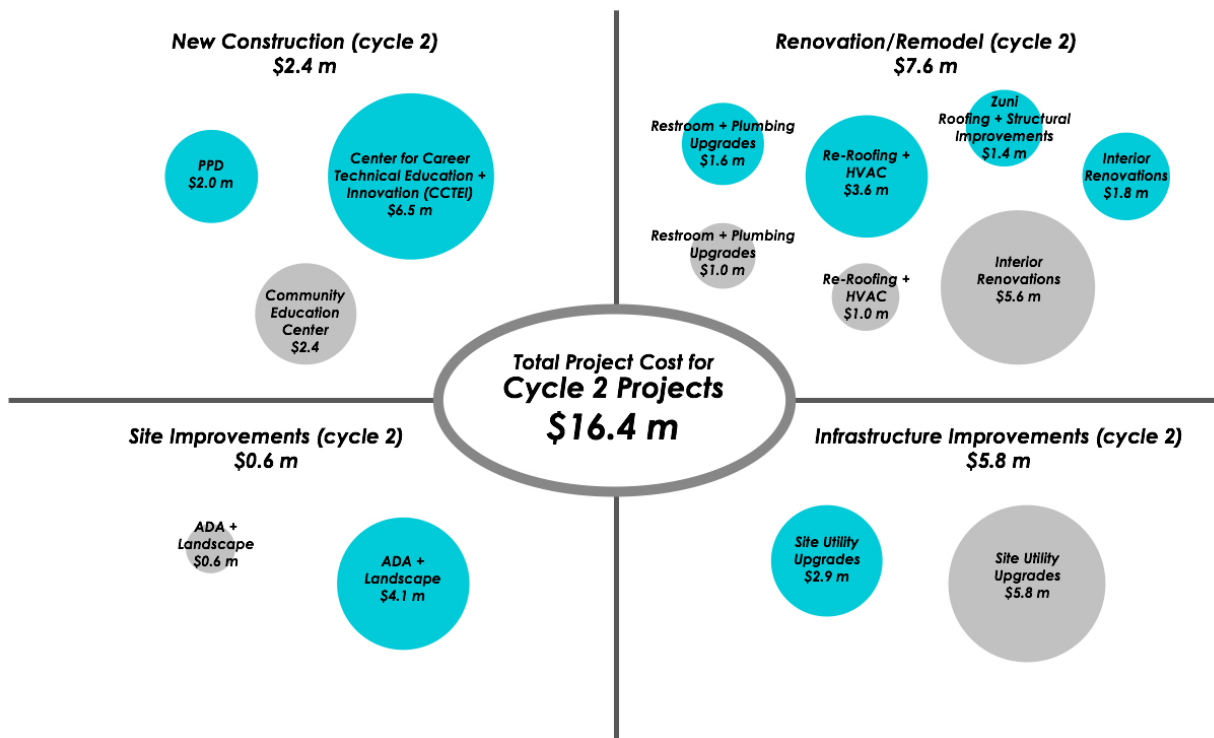


Exhibit 3-81
UNM-G Capital Needs
2021 - 2025 Diagram



UNM-G Capital Improvements

7/24/15

Project No.	Project Title	Project Category	Estimated MACC (rounded)	Estimated TPC (rounded)	Local Share %	Local \$	State Share %	State \$	Project Narrative	Impact / Benefit
2016 - 2020 Bond Cycle (Projects to be considered)										
1.0	<i>Center for Career Technology Education and Innovation (CCTE)</i>	New Construction	\$4,780,000	\$6,480,000	25%	\$1,620,000	75%	\$4,860,000	Plan, design, construct, furnish and equip the Center for Career Technology Education and Innovation (CCTE) classroom and lab fabrication facility. Include a feasibility study for Lions Hall to determine the programmatic use and whether to renovate Lions Hall or build new. Programs that could potentially be accommodated in Lions Hall include Workforce Training, Career Technology, Adult Basic Education, and Child Center. Align the programmatic fit for Lions Hall with programming of the CCTE for effective space utilization.	Educational programmatic
2.0	<i>Physical Plant Department (PPD) Facility</i>	New Construction	\$1,600,000	\$2,000,000	25%	\$500,000	75%	\$1,500,000	Construct a new, appropriately sited PPD building to better support existing facilities. The existing PPD space in the basement of the Child Center facility limits the type of work that PPD can do because of noise, fumes, low clearances, and site access. As part of this project, include a feasibility study to determine how to re-use the Child Center basement once PPD vacates the area.	Facility Support
3.0	<i>Re-Roofing and HVAC Equipment Replacement</i>	Renovation	\$2,830,000	\$3,550,000	25%	\$887,500	75%	\$2,662,500	Re-roof facilities. Membranes are old and worn, dry and brittle, and missing granule surface. Replace HVAC equipment that is at the end of useful life. Coordinate replacement of rooftop equipment with re-roofing projects.	Building Systems Cyclical Replacement
4.0	<i>Restroom and Plumbing Upgrades</i>	Renovation	\$1,240,000	\$1,560,000	25%	\$390,000	75%	\$1,170,000	Renovate restrooms, including those in the ABE facility, Calvin Hall Center B + C, Gurley Hall, and Career Education, to replace worn and fixtures and finishes and to meet ADA requirements. As part of the ABE restroom renovation, complete a plumbing study and make corrections to resolve the plumbing back-up problems.	Building Systems Cyclical Replacement
5.0	<i>Building Interior Renovations</i>	Renovation	\$1,450,000	\$1,820,000	25%	\$455,000	75%	\$1,365,000	Replace older, worn interior finishes and light fixtures in Gurley Hall. Replace light fixtures and interior finishes in the art, jewelry, and photography class lab areas.	Building Systems Cyclical Replacement
6.0	<i>Zuni Building Re-Roofing and Structural Improvements</i>	Renovation	\$1,110,000	\$1,390,000	25%	\$347,500	75%	\$1,042,500	Complete structural improvements to resolve building settlement, then re-roof the facility and repair stucco and architectural elements damaged by building settlement.	Building Systems Cyclical Replacement / Prevent Additional Deterioration
7.0	<i>Site Utility Upgrades</i>	Site Utilities	\$2,350,000	\$2,940,000	25%	\$735,000	75%	\$2,205,000	Upgrade the primary electrical system for redundancy, capacity, and renewal. Document the natural gas system for future system upgrades.	Site Utilities Cyclical Replacement
8.0	<i>Site Paving, Access, ADA, and Landscape Improvements</i>	Site Improvements	\$3,290,000	\$4,100,000	25%	\$1,025,000	75%	\$3,075,000	Improve site paving, landscape, vehicular access, and development opportunities.	Site and ADA Improvements
Total, 2016 - 2020			\$18,650,000	\$23,840,000		\$5,960,000		\$17,880,000		
2021 - 2025 Bond Cycle (Projects to be considered)										
9.0	<i>Re-Roofing and HVAC Equipment Replacement</i>	Renovation	\$850,000	\$1,060,000	25%	\$265,000	75%	\$795,000	Re-roof facilities. Membranes are old and worn, dry and brittle, and missing granule surface. Replace HVAC equipment that is at the end of useful life. Coordinate replacement of rooftop equipment with re-roofing projects.	Building Systems Cyclical Replacement
10.0	<i>Restroom and Plumbing Upgrades</i>	Renovation	\$810,000	\$1,010,000	25%	\$252,500	75%	\$757,500	Renovate restrooms to replace worn out fixtures and finishes and to meet ADA requirements, including the gymnasium restrooms and locker areas.	Building Systems Cyclical Replacement
11.0	<i>Building Interior Renovations</i>	Renovation	\$4,490,000	\$5,610,000	25%	\$1,402,500	75%	\$4,207,500	Study, design, and renovate instructional space for program needs. Consider renovating spaces in Gurley Hall and Career Education for educational program needs including ABE and the Child Center.	Educational programmatic
12.0	<i>Site Utility Upgrades</i>	Site Utilities	\$4,640,000	\$5,800,000	25%	\$1,450,000	75%	\$4,350,000	Expand the existing fiber optic system to provide redundancy for seamless continuity and uninterrupted use of the campus telecommunication system. Refer to electrical narrative in this FMP and the 2013 Utility Master Plan by WHPacific.	Site Utilities Cyclical Replacement
13.0	<i>Site Paving, Access, ADA, and Landscape Improvements</i>	Site Improvements	\$440,000	\$560,000	25%	\$140,000	75%	\$420,000	Improve site paving, landscape, vehicular access, and development opportunities.	Site and ADA Improvements
14.0	<i>Community Education Center</i>	New Construction	\$1,950,000	\$2,440,000	50%	\$1,220,000	50%	\$1,220,000	Construct a building to house all community education classes. This project is included in the 2015 HED submittal.	Educational programmatic
Total, 2021 - 2025			\$13,180,000	\$16,480,000		\$4,730,000		\$11,750,000		
Total, All Cycles			\$31,830,000	\$40,320,000		\$10,690,000		\$29,630,000		

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3.4 Landscape, Civil, Mechanical, and Electrical Engineering Reports

Landscape and engineering planning team members conducted site evaluations, interviewed facilities personnel, and documented findings in individual reports, presented in the following section. The campus development framework and in the capital plan include recommendations from these reports.

Landscape Report

Completed by: GRJ Landscape Architect

INTRODUCTION

The UNM-G campus is located on a high mesa overlooking the city of Gallup with outstanding views to the north and east. Over the years, this mesa location with steep side slopes has created a challenge for building siting, pedestrian and vehicular access, location of utilities and landscaping. Further complicating landscaping are poor soil such as shale, coal and expandable clay, some of which are erodible.

Installation of campus landscaping, in general, has been piecemeal with new building projects at the recently completed Student Services & Technology Center and Health Careers 2 buildings. A comprehensive landscape plan for the campus has never been prepared. Such a plan could serve as a guide for future landscaping (planting, irrigation, access and materials) as well as identify opportunities for outdoor uses and activities.

2006 LANDSCAPE GOALS:

The 2006 facilities master plan identified four campus-planning goals relating to landscape. The planning team recommends that these goals continue to be included in the current master plan:

- Wayfinding – create a uniform system for the campus.
- Student Life Center – create places to encourage student interaction.
- Outdoor resources – provide opportunities to use outdoor resources.
- Sustainability – become a model for sustainability practices.

RECOMMENDATIONS FOR FUTURE:

Retain services of a registered landscape architect to prepare a comprehensive landscape plan of the UNM-G campus. The plan should:

- Conduct a detailed landscape survey identifying conditions, needs and opportunities.
- Define landscaping zones (close-in highly used, mid-zones, around the buildings and natural undisturbed areas). Identify materials and uses for each zone.
- Identify plants historically used by Native American communities.
- Identify site sustainability opportunities such as water harvesting, water retention and appropriate plant selection.
- Identify possible outdoor learning and socializing spaces.
- Define landscaping priorities, depending on space and need.

- Address landscape maintenance issues (cost to replace and/or repair, planting, irrigation, pavement and site furnishings).
- Determine yearly operating budget for grounds maintenance as a separate line item within the university's annual budget.

POTENTIAL LANDSCAPE PROJECTS:

- Construct a water feature, pedestrian ramp and slope repairs north of Zollinger Library.
- Install shade structures with seating (ramadas) on Central Plaza. Make repairs to pavement, walls and plant materials.
- Make landscape improvements such as irrigation and planting east and west side of Calvin Hall buildings A, B and C.
- Complete minor landscape improvements throughout the campus as may be identified.
- Construct a large outdoor gathering space for graduation, lectures and concerts.

POTENTIAL PEDESTRIAN/VEHICULAR ACCESS PROJECTS:

- Continue to improve handicapped access throughout the campus as required.
- Implement new building, traffic and wayfinding signage.
- Improve vehicular entry to main campus at Gurley Hall and provide entry plaza with pedestrian drop-off to address safety issues.
- Install campus identity sign at intersection of College Drive and Gurley Avenue.

PROPOSED ANNUAL BUDGET:

- Services by a landscape architect to prepare a landscape plan, a one-time-only expenditure - approximately \$8,000
- Annual landscape maintenance budget for personnel, materials and equipment (planting, irrigation and related landscape repair) - \$30,000
- Miscellaneous yearly landscape improvements and additions (planting, irrigation, paving, site furnishings, etc.) - \$40,000
- 2% of any new building cost to be allotted for landscaping of project site

End of Landscape Report

Civil Engineering Report

Completed by: High Mesa Engineering Consulting Group

INTRODUCTION

The purpose of this study is to provide an update to the Civil Engineering Components of the 2006-2013 UNM Gallup (UNM-G) Master Plan for which High Mesa Consulting Group (HMCG) was a sub-consultant to ARC. This update included the following tasks:

- Visit the Campus and Talk with the Facility Director and his Staff
 - We conducted an initial telephone interview with Ron Petranovich, UNM-G Physical Plant & Facilities Director, followed by a site visit and meeting held April 6, 2015. Through these efforts, we reviewed plans and record drawings of all construction that has occurred since 2006 that did not involve HMCG (for which we have record plans), and also obtained and reviewed the plans for the current water line and fire protection improvements project.
- Review the Changes that Have Been Done Since 2006
 - HMCG has been involved in many projects at UNM-G since 2006, and has first-hand knowledge of many recent projects, including preparation of a campuswide pavement conditions survey and evaluation in December of 2013. During the time since the last update, HMCG has conducted several partial topographic and utility surveys at UNM-G to support site paving, storm drainage, and utility infrastructure projects where we were the Civil Engineering consultant directly for UNM, and also for the building design and construction for the Health Careers 2 and the Student Life & Technology Center as members of the Contract Architect's A/E team.
- Review the Previous Master Plan Recommendations
 - HMCG reviewed the previous Master Plan Recommendations contained in the 2006-2013 Facilities Master Plan. We also obtained and reviewed the 2013 Utility Master Plan Prepared for UNM by WHPacific dated November 6, 2013.
- Recommend any Course Corrections Necessary along with Updated Cost Estimates as Applicable
 - The following narrative summarizes recommendations identified through this task.
- Miscellaneous Meetings/Reviews with the Owner and [our] Office
 - In addition to the site meeting with Ron Petranovich, HMCG held a meeting with Gallup Joint Utilities (GJU) on April 6, 2015. GJU provides water and sanitary sewer service to the campus, and the status of their current and future service capabilities and projects were discussed.
- Document the Work in a Format Provided by ARC
 - Exhibits 3-36, 3-37 and 3-38, and the following narrative summarize the preceding information.

CIVIL NARRATIVE

The focus of HMCG's efforts to support this update were to update the previous status and recommendations for Stormwater and Drainage, Domestic and Fire Protection Water, and Sanitary Sewer.

- Stormwater and Drainage
 - Except as noted below, the campus does not have any significant storm drainage infrastructure, and developed runoff flows freely to surrounding streets and two existing arroyos; the “North Arroyo” to the north, and “Martha Z’s Arroyo” to the south. The campus does have some storm drain facilities that drain to these arroyos, with a main system in Vo-Tech Drive (constructed with recent HMCG project), and with two smaller systems that run between Gurley Hall and Zollinger Library, and between Calvin Hall Centers A and B.
 - Due to topography and current density of campus, opportunities are limited to add stormwater infrastructure to serve existing facilities, and there are no significant known problems that would warrant stormwater measures being added to serve existing facilities.
 - Future projects should implement stormwater detention and retention measures to offset increases in runoff attributable to added impervious areas. Not increasing existing runoff rates is a responsible approach to drainage management, and is the City’s policy (although UNM is exempt). It would also eliminate the possibility of unintentionally causing new drainage problems that might result from added runoff. This approach would also be in keeping with current EPA policies regarding stormwater quality.
- Sanitary Sewer:
 - The campus has a single outfall to the public (City) sanitary sewer system that is reportedly near or at maximum capacity. The known limitations are a reach of sewer within the golf course, and also the area north of the high school where the lines are old, relatively flat, and in unknown condition.
 - Based on elevations, the higher portions of the campus currently reach the outfall directly by gravity, while the lower areas require lift stations to pump the runoff to higher areas where they then continue under gravity conditions. A definitive determination of whether there is additional capacity to serve the campus will be required prior to adding any new loads that would have free gravity outfalls. This is a limiting factor when considering construction of new facilities that would not physically be capable of draining without lift stations.
 - According to Gallup Joint Utilities, they do not plan to undertake or fund a study to determine downstream capacity, which would be a “developer” cost for anyone proposing to add to current flow rates.
 - Development in the lower areas that are incapable of gravity drainage would require new lift stations. The nature of lift stations is such that their outflow is controlled to the rate of the pumps. As a result, added facilities using lift stations would not necessarily result in added flow rates downstream, similar to filling a bathtub half-way or all of the way, but the outflow rate would be the same when opening the drain for both cases.
- Domestic Water and Fire Protection:
 - The current City water lines supplying the site do not have adequate flow and pressure to serve most of the campus on their own. UNM has a private pump station that increases the pressure and flow rates, however, it is limited in capacity to serve current fire protection needs.

- The current UNM fire protection project is the first step in providing more reliable flow rates and pressures while also adding sprinklers that will reduce the required flow rates. This project will also facilitate a single point of metering for the campus, as opposed to the current multiple connection points.
- A City project, to which UNM has reportedly contributed \$500K, will provide a new higher pressure line in Gurley Road that will eliminate the need for the UNM pump station. This line will initially be fed by a City booster pump, as opposed to the reservoir tank that currently serves the campus. The current UNM project is providing stubouts for future connection to the proposed City line that will result in increased pressure, eliminating the need for the booster pumps. As described during our April 6, 2015 meeting with Gallup Joint Utilities, the design is 90% complete and funded. Construction is anticipated in 2016, pending archaeological clearances.
- A subsequent City project will construct a new reservoir tank at a higher elevation. Once operational, the feed to the University will be switched over from the City booster pump to this reservoir, resulting in additional pressure and volume beyond that which will be provided by the interim City booster pump condition. In the absence of the proposed City projects (if they do not go to completion), UNM would need to upgrade and expand their private booster station to meet current and future conditions.
- As previously recommended, additional campus looping will be required to serve expansion and development to the east of the existing facilities.

COST ESTIMATES

- The preceding analysis and recommendations do not identify any specific improvements in the foreseeable future, as existing infrastructure can serve the campus for the foreseeable future upon completion of the current UNM Fire Protection project and the City water system upgrades. The future water line loop routing to the east will be a function of the timing and location of future facilities and should be implemented as a staged construction as projects occur. Similarly, future sanitary sewer lines or lift stations will need to be designed and constructed as a specific function of individual projects.
- A sanitary sewer capacity study is needed to accommodate additional gravity outfalls. Although the City has indicated that it is not their responsibility, we recommend that the University work with the City to re-evaluate this position, as it would seem appropriate that the analysis would benefit their entire service area above and beyond the needs of the University. The WHPacific 2013 Master Utility Plan identified several options for downstream gravity lines to City systems, but without a study to support them, they cannot be implemented. WHPacific identified a preliminary estimate of this study to be \$33,000, but after talking with the City, we feel that this cost may be low as they will require a complete survey of their downstream system to the treatment plant, including elevations, inverts, pipe sizes, materials, and conditions. A study that includes those requirements would likely cost \$100,000.

End of Civil Engineering Narrative

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Mechanical Systems Study

Completed by: ArSed Engineering Group LLC

Mechanical Systems

General

The purpose of this study is to review the existing campus HVAC systems. This report is based on field surveys, review of the available construction drawings and interviews with maintenance and administrative personnel. A previous Master Plan Study was completed in November of 2005 by ArSed Engineering Group, LLC. Based on our initial review of construction documents, the campus construction began in the early 1970's and continues to the present. Each building is provided with its own self-supporting heating and cooling systems. It does not appear that the intent was to serve individual buildings from a central campus heating and cooling system.

HVAC

The campus is divided into two areas, the north campus and the south campus, divided by the main access road. The south campus has Lion's Hall, Pump House and the Child Care Building. The Child Care is located on the upper level and the Maintenance and Operations department is located on the lower level. The north campus has the main educational buildings, cafeteria, gymnasium and the administrations offices (Gurley Hall, Construction Technology, Calvin Hall Center, Gymnasium, Health Careers Center, Health Careers Center 2, Student Services Building and Zollinger Library).

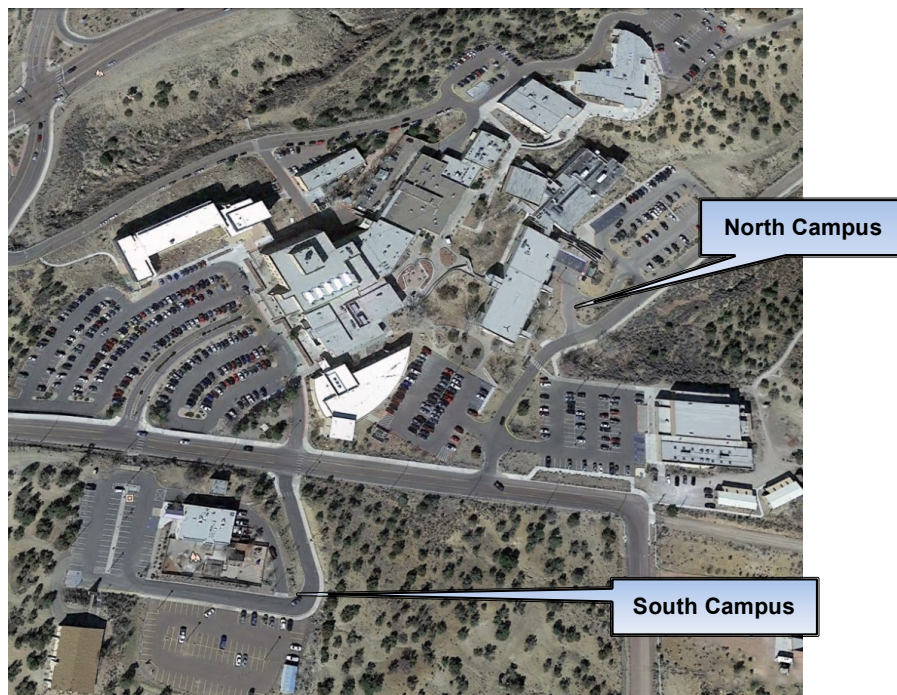


Figure 1: Overall Campus Site Plan

South Campus

Lions Hall

Lions Hall is served by four ground mounted DX cooling/natural gas heat, package units. Supply air and return air distribution ductwork from the units to the building is exposed. Units are controlled by thermostats associated with each unit. Lions Hall is also connected to an Automated Logic Controls System. The building has not been occupied in the last year. The temperature is set at a minimum to prevent freezing and conserve energy.



Figure 2: Lions Hall Package Ground Mounted HVAC Units

Child Care/Maintenance and Operations Area

Child Care and Maintenance is located within the same building. Childcare is located on the top floor. Maintenance and Operations is located on the ground floor/basement area.

Child Care is heated with up-flow natural gas fired furnaces. Cooling is provided with roof mounted evaporative coolers. The control is local to the building with manual switches for operation.

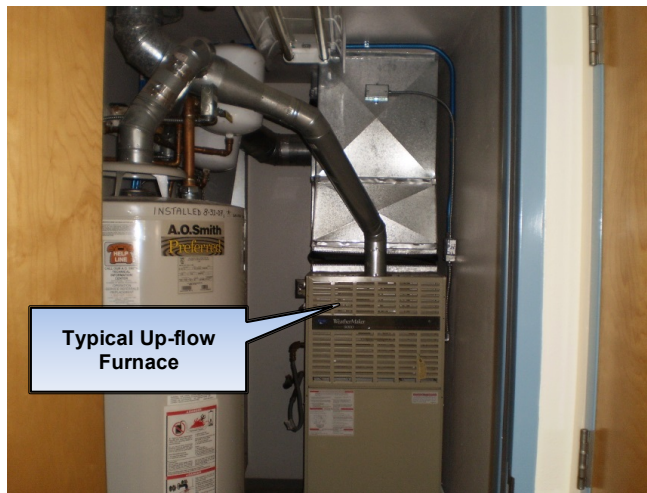


Figure 3: Child Care Up-flow Gas Fired Furnace

Maintenance and Operations Area

The Physical Plant offices are heated and cooled with a ground mounted package natural gas heating and DX cooling single zone unit. The distribution is side wall through the building and ducted through the office area only. The package unit is controlled by local thermostat controls. The work area of the Physical Plant is heated with natural gas fired unit heaters.

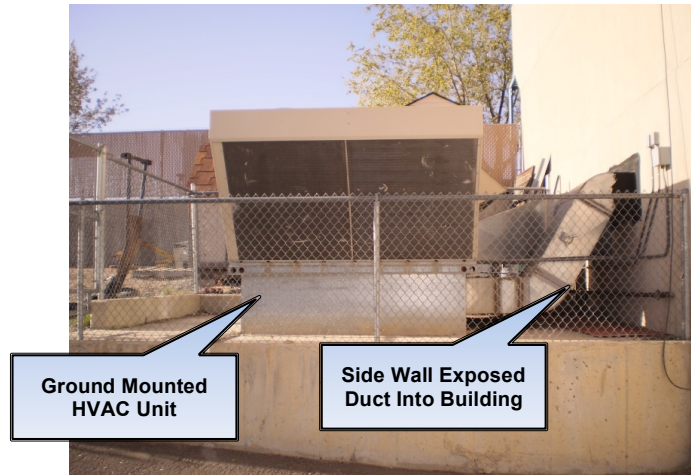


Figure 4: Physical Plant Package Unit

Pump House

The Pump House is heated with two electric unit heaters. There is no cooling provided for the Pump House.



Figure 5: Pump House Electric Heater

North Campus

Gymnasium

The Gymnasium was constructed in two phases. The main gym is served by a central heating and ventilating air handling unit, hot water heating coils and heating hot water boiler, with two hot water pumps, air washers, and fan coil. Evaporative cooler serves individual office area. The addition is served by a separate roof mounted furnace and evaporative cooler and two roof mounted furnaces with air washer sections. No refrigerated air is provided for this facility. The Gymnasium is controlled by Automated Logic Controls.



Figure 6: Gymnasium Heating Hot Water Boiler

Health Careers Center

The Health Careers Center is served by a roof mounted DX cooling/natural gas heat units with VAV boxes with hot water reheat. The hot water is provided by a boiler. Automated Logic provides controls for the building.

Zollinger Library

The library is served by an interior air handling unit located in the basement with a remote condensing unit and hot water heat. VAV boxes throughout building have hot water reheat coils. Heating hot water is provided from two recent replaced natural gas hot water high efficiency boilers. There are two heating hot water distribution pumps. The basement is currently unoccupied. The basement is currently being used as storage. Tracer Summit controls the air handling unit. The Tracer Summit Controls are integrated into the Automated Logic front end.



Figure 7: Zollinger Library Air Handling Unit



Figure 8: Zollinger Library New Heating Hot Water High Efficiency Boilers

Calvin Hall

Calvin Hall is divided into three phases, A, B, and C. Each has their own independent HVAC system. All systems have had Automated Logic Controls integrated.

Calvin Hall A, 1st and 2nd floors are served with an air handling unit with hot water heat and remote air condensing unit. Heating hot water is provided by a natural gas boiler. Hot water distribution is provided by two hot water pumps.



Figure 9: Calvin Hall A Boiler

Calvin Hall A has a server room that is served by a Mitsubishi City Multi Variable Refrigerant Flow System. The system is a recent addition to the building and only serves the server room.



Figure 10: Calvin Hall VRF System Dedicated to Server Room

Calvin Hall B is served by five rooftop units with hot water heat and air washers for cooling. The terminal VAV boxes are also served by hot water reheat. Heating hot water is provided by a natural gas boiler.



Figure 11: Calvin Hall Heating Hot Water Boiler



Typical of Five Air Handling Units for Calving Hall B

Figure 12: Calvin Hall B Air Handling Unit

Calvin Hall C is served by two rooftop units with hot water heat and air washers for cooling.



Typical of Two Rooftop Units for Calving Hall C

Figure 13: Calvin Hall C Rooftop Unit with Air Washer

Gurley Hall

The old portion Gurley is served by two roof mounted Multi Zone units, DX cooling and natural gas heat. The East zone has 6 zones and the West unit has 4 zones with the corresponding number of remote condensing units. Automated Logic has been integrated into the HVAC system.

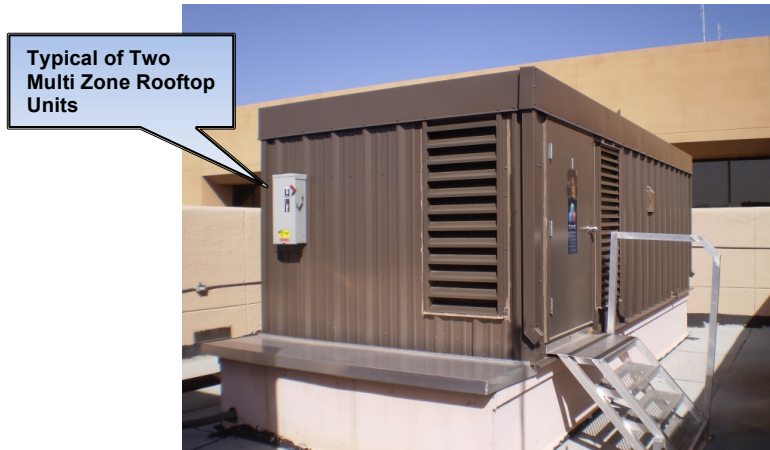


Figure 14: Gurley Hall Multi Zone Unit

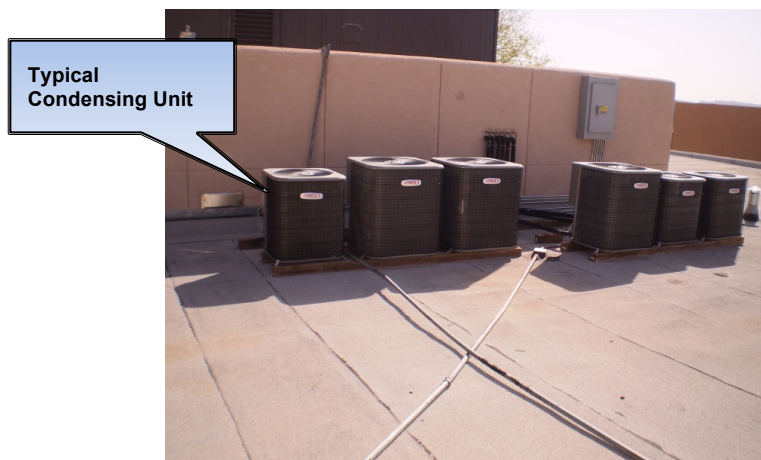


Figure 15: Gurley Hall East Multi Zone Condensing Units

Newer areas of Gurley Hall are served by air handling units with hot water heat, air washers and terminal VAV boxes. Air handling units are located within building mechanical rooms. Hot water heat is provided by natural gas boiler. Automated Controls has been integrated into the building control system.



Figure 16: Air Handling Located within Mechanical Room



Figure 17: Gurley Boiler

Career Education

An extension of Gurley hall is Career Education. The Career Education building had a complete HVAC redesign in 2013/2014. The building is served by three air handling units. There is one Air Handling Unit with hot water heat and DX cooling. The other two Air Handling Units are heating only by hot water. Hot water is provided by new high efficiency boilers. Evaporative cooling is also used within the building. Terminal unit VAV boxes with hot water reheat are located throughout the building. HVAC equipment is controlled with Automated Logic Controls



Figure 18: Career Education High Efficiency Boilers



Figure 19: Career Education Mechanical Room

Construction Technology

The construction technology building is served by structure mounted electric unit heaters and roof mounted evaporative coolers. The office area has a fan powered electric unit that is ducted to each office.

Health Careers Building

The Health Careers Building is provided with three package roof top units with natural gas heating and DX cooling. The rooftop units have a 15 ton cooling capacity. Units are controlled with Automated Logic Controls.



Figure 20: Health Careers Rooftop Units

Health Careers 2 Building

Health Careers 2 Building is served with an air handling unit with hot water heat and remote air condensing unit. Hot water is provided by a natural gas boiler. There are two heating hot water circulation pumps. Building controlled by Automated Logic controls. The server room has a dedicated rooftop package unit, natural gas heating/DX cooling unit.



Figure 21: Health Careers 2 Mechanical Room



Figure 22: Health Careers 2 Remote Condensing Unit

Student Services Building

The Student Services Building is the newest building on campus. It is approximately three years old. The HVAC is completely automated by Automated Logic controls. Student Services is served with two air handling units with hot water heat and two remote air condensing units. Heating hot water is provided by two high efficiency boilers with two heating hot water pumps. All mechanical equipment is located within basement mechanical room with exception to the remote condensing units located outside.



Figure 23: Student Services High Efficiency Boilers

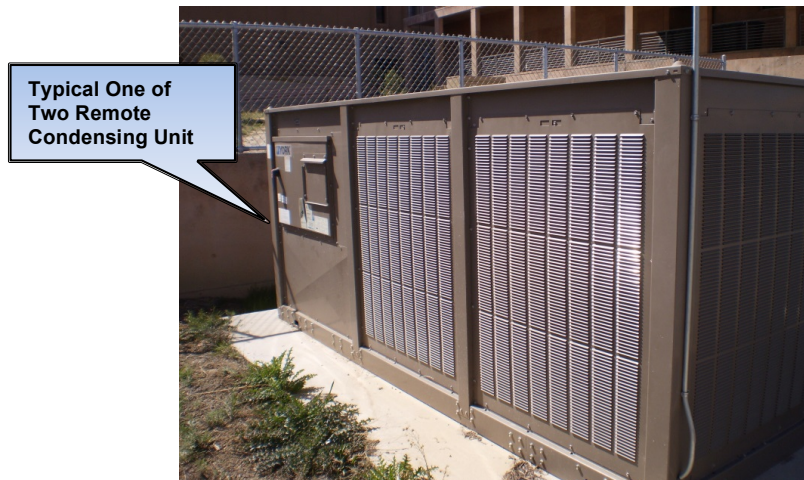


Figure 24: Student Services Remote Condensing Unit

Findings

General

In General, the Maintenance and Operations has done a good job at maintain, replacing mechanical equipment and integrating building into the Automated Logic as the front end controls system. There have been many examples of old inefficient equipment having been replaced within the last ten years with new high energy efficiency equipment. A few minor items were noted through the inspection of the campus. Most of the mechanical equipment is in good to fair operating condition. The condition of the equipment directly relates to the maintenance performed by Maintenance and Operations personnel. Most of the issues found during the inspection are routine maintenance items that should be corrected as part of normal maintenance. Normally, maintenance budgets could be used to correct any found problems; this includes equipment replacement.

Lions Hall

There were no problems reported from maintenance personnel at Lions Hall. The building has been unoccupied for the last year. It was reported that the building is inspected weekly to determine if all systems are still functioning. The units were manufactured in 1993. The units look to be in fair/poor condition. There is some damage to the unit due to no hail guards. It does not appear that there is an outside air source for outside air ventilation.

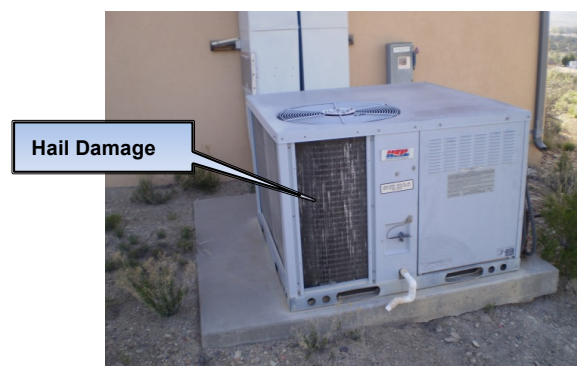


Figure 25: Lions Hall Package Unit with Hail Damage

Child Care

There are no problems reported from maintenance personnel at Child Care. The evaporative cooler condition is unknown. The gas fired furnaces look to be in good condition with proper combustion air and flue connections.

Maintenance and Operations

There are no problems reported from maintenance personnel at Maintenance and Operations. The work area of the Maintenance and Operations department only has unit heaters. There is not a source of mechanical outside air ventilation. There is a garage door that can be opened.

Pump House

There are no problems reported from maintenance personnel at Maintenance and Operations. There is no ventilation within the pump house.

Gymnasium

The central heating and ventilating unit was replaced approximately three years ago. The evaporative coolers were recently replaced as well. The boiler is the original boiler and appears to be in fair condition. It was noted that there is insulation missing on the heating hot water piping that is connected to the boiler.

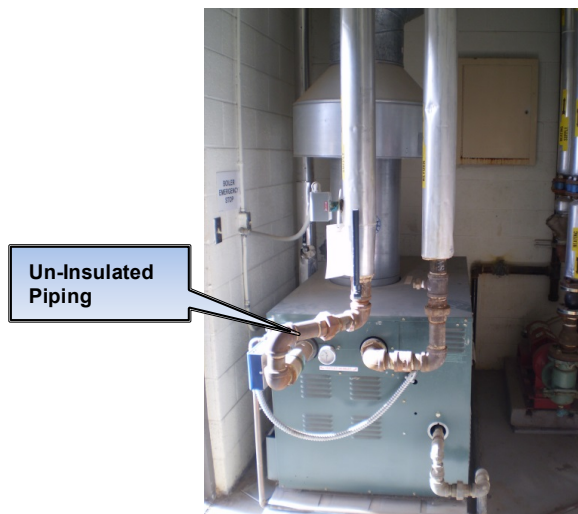


Figure 26: Gymnasium Boiler

Health Careers Center

There are no problems reported from maintenance personnel at Maintenance and Operations at the Health Careers Center

Zollinger Library

It is reported by maintenance that the unit does not seem to have enough capacity to serve the building properly. There are also reports of the building being warm. The controls program also reports that the air flow requirements at the VAV boxes are not being met. The fan motors for the air handling unit have also been replaced. The fan motors have burned out the past. The fan motor replacement has been necessary multiple times. The basement is currently being used as storage. There are future plans to expand the Library into the basement into an occupied space.

The existing high efficiency heating hot water boilers were recently replaced within the past year. The boilers are in new condition.

Calvin Hall

Calvin Hall A

There are no problems currently reported from maintenance personnel at Calvin Hall A and equipment appears to be in fair condition. Hot water coils were replaced approximately four years ago in the air handler. The campus' natural gas supply was shut off. The hot was coils froze. There have been no issues reported with the coils since the replacement.

The remote condensing unit has had many service calls with compressor leaks. The condensing unit is an ongoing issue for the Maintenance and Operations Department.

Calvin Hall B

There are no problems reported from maintenance personnel at Calvin Hall B and equipment appears to be in fair condition.

The combustion air duct has been obstructed by maintenance personnel placing cardboard under the combustion air duct. This has been done to prevent the heating hot water pumps and piping from freezing.

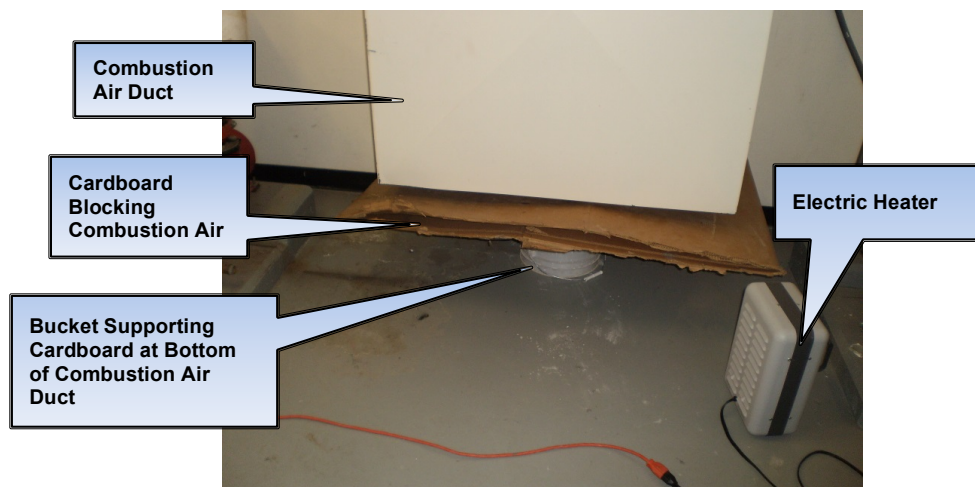


Figure 27: Calvin Hall B Combustion Air Duct

Calvin Hall C

The rooftop units serving Calvin Hall C have a considerable amount of calcium build-up and rust. Maintenance personnel aside from the condition of the units, no other problems have been noted. The build-up is apparent inside and outside of the unit.



Figure 28: Calvin Hall C Rooftop Unit Rust and Calcium

Gurley Hall

The Multi Zone units and remote condensing units were replaced approximately four years ago serving the old Gurley Hall. The units look to be in new condition. No issues are being reported by maintenance personnel.

It is reported by maintenance staff that the kitchen is always warm in Gurley Hall. The exhaust hood does not seem to have the capability to remove the heat from the kitchen. Maintenance has been called to service the short circuit hood, exhaust and evaporative cooler make-up air unit several times. There has been no resolution.

There are no issues to report in the new Gurley Hall. There was a sewer smell noted in the mechanical room located in the penthouse. Maintenance report that the smell comes and goes.

Career Education

There were no issues reported from Maintenance personnel for Career Education. All equipment is new and is good working condition. It was noted that the duct from AHU -201 was emitting heat that could be felt when standing next to the duct. It is believed that the leaving air temperature set too high. The temperature should be set to 90 to 100 degrees F.

The building air compressors located in the mechanical room do not seem to have a ducted vent to the outside. This was an item that was in the construction documents.

Construction Technology

The electric unit heaters are approximately two years old and in good condition. The evaporative coolers are reported to be in fair condition per maintenance personnel.

Health Careers Building

There were no issues reported from Maintenance personnel for Health Careers main mechanical equipment. Equipment is in fair conditions. Rooftop units are approximately fourteen years old.

It was reported that the roof drains on north wall have frozen. It is not known if the roof drains are insulated with vapor barrier.

Health Careers 2 Building

All equipment reported to be in good condition.

The server room unit seems to be undersized per maintenance personnel comments.

There were no issues reported from Maintenance personnel for Health Careers main mechanical room. The hot water pumps were recently replaced. The combustion air has been reconfigured to prevent freezing of heating hot water pumps.

The server room has its own dedicated unit. However, it was reported by maintenance personnel that the unit does not seem to have enough capacity to satisfy the demands of the server room.

Student Services Building

All equipment reported to be in good working condition. The building is approximately three years old. The boiler room did not have any ventilation. The boilers were direct vent. Therefore, no ventilation air is introduced into the boiler room. Boiler room doors remain open to make sure room does not get overly hot. The boiler pumps have been replaced.

RECOMMENDATIONS

General

Maintenance and Operations should continue, as they have, on replacing old equipment with new high efficiency equipment and maintaining existing equipment on a regular schedule. Maintenance and Operations has done a good job at maintain, replacing mechanical equipment and integrating building into the Automated Logic as the front end controls system. There have been many examples of old inefficient equipment having been replaced within the last ten years with new high energy efficiency equipment. A few minor items were noted through the inspection of the campus.

Lions Hall

It is recommended that the existing package unit be replaced when and if there is a new purpose for the building. The building system should follow the similar mechanical systems that have been found across the campus of central located air handling unit, with high efficiency boilers and remote air cooled condensing unit.

Child Care

There are no recommendations for Child Care at this time. Regular maintenance should continue.

Maintenance and Operations

Ventilation should be introduced into the work area of Maintenance and Operations. The work area is an occupied space and per code requirements, should have ventilation.

Pump House

Exhaust and air intake should be added to the pump house. This will prevent excess heat and will exhaust any fumes that may be in the space.

Gymnasium

The heating hot water piping should have the insulation repaired and patched as needed. The boiler can follow along the maintenance schedule and eventually be replaced with a similar high efficient boiler that has been installed in other campus buildings. Regular maintenance should continue.

Health Careers Center

There are no recommendations for Health Careers at this time. Regular maintenance should continue.

Zollinger Library

A complete load analysis should be completed on Zollinger Library to determine the current heating and cooling loads. This will determine if the existing mechanical equipment can handle the existing loads and potential future loads. Regular maintenance should continue.

Calvin Hall

Calvin Hall A

There are no recommendations for Calvin Hall A at this time. Regular maintenance should continue.

Ongoing maintenance for an existing unit can be costly. It may be more cost effective to replace the condensing unit if recurring issues continue.

Calvin Hall B

Calvin Hall B combustion air should be modified. The combustion air duct should be relocated away from any piping that has the potential of freezing. Regular maintenance should continue.

Calvin Hall C

Rooftop units should be to be replaced. With the amount of calcium and build-up on the units, indoor air quality can be compromised.

Gurley Hall

There are no recommendations for old and new Gurley Hall at this time. Regular maintenance should continue.

Career Education

AHU-201 controls should be checked and determine if the exiting temperature of the air handler is too high. Regular maintenance should continue

The compressor manufacture installation manual should be verified if the vent is required to be ducted to the outside. Different manufactures have different requirements and an outside air vent may not be required by the manufacture of the installed equipment.

Construction Technology

There are no recommendations for Construction Technology at this time. Regular maintenance should continue.

Health Careers Building

The rooftop units should continue to have regular maintenance. If increased maintenance is becoming apparent, it is recommended that the rooftop units be replaced. They are fifteen years old and are reaching the end of their life cycle. The replacement of high efficiency units would benefit with saved energy cost.

Health Careers 2 Building

The heating/cooling load analysis should be performed on the server roof to determine if the unit is appropriately sized for the equipment. Regular maintenance should continue

Student Services Building

An exhaust fan and an outside air intake louver should added to the boiler room and be controlled by a thermostat to prevent excess heat from building up in the boiler room. All regular maintenance should continue

End of Mechanical Systems Study Narrative

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Electrical and Special Systems Engineering Report

Completed by AC Engineering Enterprises, LLC

INTRODUCTION

The purpose of this study is to review the existing campus electrical systems, and make recommendations and define budgets for future improvements to meet the functional needs of UNM-G facilities. A previous Facilities Master Plan Study was completed in November of 2005 by Architectural Research Consultants, Incorporated for the years 2006 through 2013. A Utilities Master Plan 2013 was previously prepared by WHPacific. Both Master Plans focused primarily on site electrical systems (primary power distribution and telephone/data).

EXISTING CONDITIONS

Refer to the 2013 Utility Master Plan by WHPacific for descriptions of existing power, telephone, and data systems.

UPDATES SINCE THE 2006 FACILITIES MASTER PLAN

- Telecommunications:
 - UNM Main Campus ITS Department upgraded the campus telecommunications system with a \$2M construction project that included replacement of all copper cable and installation of new fiber-optic cable to all buildings utilizing existing infrastructure. The new fiber-optic cable installed was Berk-Tek SM 24 Fiber plenum rated with interlocking armor, Part No. LTPKOKO24AB040. Refer to the attached Telecommunications drawings for location and routing of the fiber-optic cable. All Telecommunication work is properly reflected in the 2013 Utility Master Plan prepared by WHPacific.
- Primary Power Distribution:
 - The only electrical load added to the primary distribution system, since the 2006 Facilities Master Plan was completed, was the Technology/Classroom Building, which was constructed in 2010. The electrical load is reflected in the 2013 Utility Master Plan prepared by WHPacific.

RECOMMENDATIONS FOR FUTURE AND COST ESTIMATES

- Telecommunications:
 - It is recommended that a fiber-optic loop be constructed to provide redundancy for seamless continuity and uninterrupted use of the campus telecommunication system. Refer to the 2013 Utility Master Plan prepared by WHPacific, Sheet TS101 which identifies the future underground ductbank, conduit and fiber optic routing for creating the fiber-optic loop system. The recommended budget (MACC) for this improvement is \$3,775,000.
- Exterior Lighting Upgrades:
 - It is highly recommended to replace all existing exterior lighting, both pedestrian and roadway lighting, with new LED type Luminaires, similar to the standards that have been developed for the UNM Main Campus. Numerous upgrades projects have been completed on the UNM Main Campus, including all pedestrian lighting at the Duck Pond, along the "super pedestrian highway" from

the Student Residence Center to west end of Hokona Hall. The recommended budget (MACC) for this improvement should be phased, based upon available funds.

- Interior Lighting Upgrades:
 - It is recommended to upgrade and replace interior lighting throughout all buildings, as funds become available, with new LED-type luminaires, including lighting controls such as occupancy sensor switches, wireless remote switches, daylight controls, etc. A similar project was recently completed at the Career Education Building.
- Secondary Electrical Distribution:
 - It is recommended to upgrade and replace electrical distribution equipment in the older buildings as funds become available. The buildings most appropriately requiring upgrades would be the Gym, Old Gurley Hall, Calvin Hall, and Career Education.
- Primary Power Distribution: The electrical Master Plan for the Primary Distribution System will present three (3) electrical upgrade recommendations:
 - RECOMMENDATION NO. 1: PRIMARY SELECTIVE (DUAL RADIAL):
 - » Highly recommended. Provides redundancy of primary feeders; provides capability for manual or automatic source transfer; and provides flexibility for future electrical load growth.
 - » The dual radial primary selective system would normally be provided with two (2) primary sources and two (2) independent switchgears and associated redundant feeders. A single power source, however, can be used with this system. The benefit of this option is that the system provides a redundant backup in power sources, main switchgear, feeders and distribution cable system in the event of a main switchgear or cable failure. In other words, it provides redundant power source availability down to the building transformer. The dual feeders are installed in a common ductbank, preferably with redundant manholes, and cables are terminated at the load in a primary selector switch, normally provided with kirk-key interlock (to prevent simultaneous primary source energization — either source can be selected to energize a building transformer). The dual primary radial selective system provides a high degree of reliability, however, the cost for such a system is relatively higher than the other systems, described below.
 - » Based upon the critical nature and functions of the buildings and the need for redundancy in the power distribution system, this system would strongly be recommended
 - RECOMMENDATION NO. 2: LOOP PRIMARY DISTRIBUTION SYSTEM:
 - » Provides capability to isolate a cable fault and to allow all loads to remain energized once switching is complete.
 - » The looped-primary distribution system can consist of either a single or preferably a dual source of primary power. A single primary feeder extends from one fusible switch and “loops” from transformer to transformer, through loop feed switches of 15kV pad-mounted gear. The primary feeder loops around the campus and terminates back at the primary source gear. There

is one normally open sectionalizing point installed near the center of the loop so that the building transformers are not fed simultaneously from two power sources. Interruptions due to cable failures can therefore be restricted to half of the loop, and correspondingly half of the buildings. Additional sectionalizing points are provided within the loop to allow power to be supplied to each load from either end of the loop. In the event of a failure within the loop, manual switching can be performed to isolate the failed section and simultaneously provide power to all of the loads in the loop.

- » The looped primary distribution system has good benefits, but lacks the capability of implementation due to existing conditions with numerous radial feeds in the distribution system.

- RECOMMENDATION NO. 3: RADIAL DISTRIBUTION SYSTEM:
 - » Provides no flexibility; cost effective and easy to maintain and understand.
 - » The radial primary distribution system consists of a single primary source terminating in distribution switchgear. Single primary feeders extend from the distribution switchgear, in a radial fashion, to individual loads (or transformers). This system has no redundancy. If a cable fault occurs, there is no option to provide an immediate medium voltage system back-up source. Only standby engine generators, installed on the secondary side of the building transformers, would provide power to critical building loads (emergency and egress lighting and other life safety functions such as fire alarm systems). This is the distribution system which is presently installed, but is in extremely poor condition, due primarily to the age and to the initial "poor quality" of equipment provided. A radial primary distribution system, although the least expensive, is not recommended due to its less reliable operation and operating characteristics.

GEAR OPTIONS

Options for medium voltage distribution gear, recommended to be used for the electrical upgrade, are as follows:

- METAL-CLAD SWITCHGEAR (MCS): Metal-clad switchgear, with power circuit breakers is considered the premium gear to use for medium voltage distribution, however, because of initial cost and maintenance requirements, it is not being considered for this application.
- FREE STANDING METAL ENCLOSED SWITCHGEAR (MES): This gear is unitized and compartmentalized and provides individual bays with overcurrent protection and circuit switching features. Metal enclosed switchgear nominal size is 42"x48"x90" high for each bay and can be installed indoors or outdoors. If installed outdoors, the gear can be of the walk-in type, with front access only. Metal enclosed switchgear provides greater system flexibility by allowing interrupter switches, power fuses, automatic source transfer equipment, etc. to be incorporated into a single line-up. Metal enclosed switchgear consumes a larger footprint than pad-mounted switchgear and is considerably more expensive.
- PAD-MOUNTED GEAR (PMG) with Fusible Protection: This gear is compact in design and can be provided with a maximum of four bays, with a combination of gang-operated switches and fuses. This type of gear is conventionally provided for the

majority of exterior medium voltage campus distribution systems, due to its compact size, cost and flexibility. Pad-mounted gear is commonly provided with gang-operated in-coming and out-going switches and fuses for overcurrent protection. The pad-mounted gear provides readily visible components to allow the operator the ability to visualize the circuit arrangement and all of the components being operated. Pad-mounted switchgear is front and rear accessible and requires minimum 10'-0" clearance on all sides where doors are provided. There are several disadvantages with type of gear:

- 1) Pad-mounted gear is front and rear accessible and therefore cannot be installed in areas of limited access or areas where space is limited.
- 2) Pad-mounted gear cannot prevent single phasing on feeders (i.e., if there was a cable fault on one phase, the other phases would still be energized, possibly creating single phasing downstream and potentially damaging large three-phase motor loads).
- SF6 GEAR (Electronic protection): This gear is similar in design to the pad-mounted fusible gear, with several major differences. The switch construction consists of a fuseless, electronically controlled, resettable overcurrent protection, utilizing deadfront SF6 gas insulated device. Overcurrent protection is provided with vacuum interrupters integrated with electronic fusing. The SF6 gear provides greater flexibility in protection over the pad-mounted gear. The SF6 switches can be provided in either vault style construction, with front access design. Automatic source transfer can be supplied with SF6 switch. The SF6 gas is a non-toxic, non-flammable medium used in the construction of the gear. The SF6 gear offers numerous benefits including totally dead-front construction, no routine maintenance, no fuse replacement, and no risk of dielectric (SF6) contamination. The SF6 style of gear was installed on the UNM Main Campus, North Campus, and South Campus Electrical Upgrade Projects. SF6 gear, with front access, requires the least space requirement when compared to the alternate pad-mounted gear and is recommended for use at all critical loads and buildings.
- CABLE:
 - a. Medium voltage cables manufactured today are many times superior to those installed in the 1960s. The available insulation types and jackets presently used on the UNM South Campus include the following:

» INSULATION TYPE	JACKET TYPE
» EPR (ethylene propylene rubber)	PVC
» XLPE (cross-linked polyethylene)	Hypalon
 - b. There are pros and cons to using the different types of insulation and jackets, however, for the UNM Gallup campus, it is recommended to utilize an ethylene-propylene rubber (EPR) cable and a PVC jacket. The EPR method of construction utilizes a superior thermosetting compound, triple tandem extruded product, and provides the optimum balance of electrical and physical properties. The additional cost for an EPR cable, when compared to an XLPE cable, are far exceeded by the benefits of longevity and problem free service. The EPR cable was used for the UNM Main Campus, North Campus and South Campus Electrical Upgrade Projects.

- CABLE SYSTEM FLEXIBILITY:
 - a. LOAD BREAK JUNCTION MODULES (LBJM): Load break junction modules are utilized in the primary electrical distribution system, at junction points. They provide an economical method for tapping the primary cable and extending cables to additional loads. The modules can be removed under load, in the event of an emergency situation. The load break junction modules can be installed in either manholes or above grade in terminal cabinets appropriately sized.
- MANHOLES:
 - a. Manholes are utilized in the medium voltage distribution system as pulling points between termination of cable at electrical gear. Manholes are normally constructed of either poured-in-place concrete or pre-cast concrete, and sized 10'x10'x8' deep.
 - b. In the dual radial primary selective system, it is common to provide two (2) manholes, one for each of the radial system cable feeders. The purpose of this is to be able to work in a manhole with one dual radial feeder de-energized, as the need occurs. A single manhole can be utilized in the dual radial selective system, however, it does present a safety concern since either one of the cables would be energized, if for any reason access was required to the manhole by maintenance personnel.

DISCUSSION OF RECOMMENDATIONS:

A. DISTRIBUTION SYSTEM UPGRADE RECOMMENDATIONS: In review of the existing primary electrical distribution system, there are several options that are recommended, based upon time frame, construction cost, budget constraints, and phasing.

- 1. RECOMMENDATION NO.1 -- DUAL RADIAL PRIMARY SELECTIVE SYSTEM: This option involves a rather extension upgrade of the primary electrical distribution system, including new metal enclosed switchgear, new underground ductbanks, feeders, and new concrete pads. This recommendation includes the following:
 - The existing GJU source of power will be utilized. New 15kV metal enclosed switchgear would be located in the vicinity of the existing electrical equipment and would be provided with two (2) line-ups, one for each of two sources of primary power.
 - There will be three (3) dual feeders for each line-up (Feeders 1A/1B, 2A/2B, and 3A/3B). Dual radial primary feeders 1A/1B will be extended to the northeast to feed Career Education, Calvin Hall, Health Career Center and HCC2. Dual radial primary feeders 2A/2B will be extended to the west to feed Zollinger Library, Gurley Hall, and Technology Classroom Building. Dual radial primary feeders 3A/3B will be extended to the south to feed the Pump House, Child Care, Lions Hall and proposed new building, including CCTE and PPD.
- 2. RECOMMENDATION NO.2 -- LOOP PRIMARY DISTRIBUTION SYSTEM: This recommendation involves a major upgrade of the primary electrical distribution system, including new underground ductbank and feeders, and new 15kV pad-mounted switchgear.
 - a. The existing point of service will be reused (from the existing GJU primary meter). New metal enclosed switchgear would be provided and would include

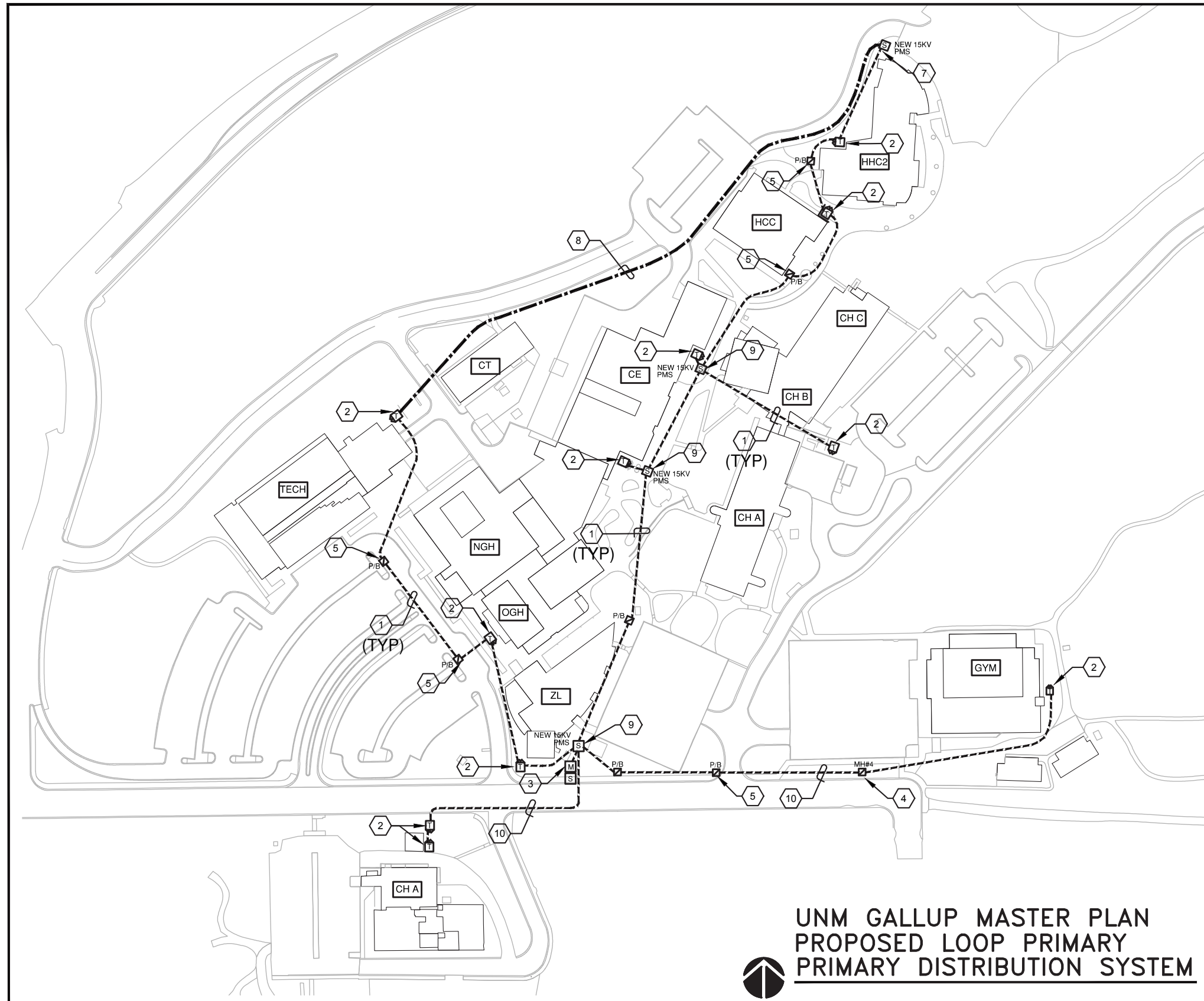
a single gang operated switch and four fuse bays. Fuse Bay No. 1 and Fuse Bay No. 2 would provide the loop provisions for all buildings on the campus with the exception of the Gym and the buildings on the south campus. Fuse Bay No. 3 would back-feed the existing Gym, and Fuse Bay No. 4 would back-feed buildings on the south campus (Pump House, Child Center, Lions Hall, and proposed future buildings).

- 3. RECOMMENDATION NO. 3 -- PRIMARY RADIAL DISTRIBUTION SYSTEM: This recommendation involves a minor upgrade of the existing primary electrical distribution system.
 - a. The existing point of service will be reused (from the existing GJU primary meter). New free-standing metal enclosed switchgear would be provided with a single gang operated switch and three fuse bays. Fuse Bay No. 1 will back-feed existing radial circuit No. 1 for the Gym, Fuse Bay No. 1 will back-feed existing radial circuit No. 2 for Zollinger Library, Gurley Hall, and Technology Classroom Building; Fuse Bay No. 3 will back-feed existing radial circuit No. 3 for the south campus to feed the Pump House, Child Center, Lions Hall and proposed new building, including CCTE and PPD.
 - The 2006 Facilities Master Plan recommended a "open loop 15kV" electrical distribution system for isolating buildings. A primary distribution "loop" system is not recommended due to the fact that the existing primary distribution system consists of a multiple radial feeders terminating at load break junction modules, either above grade in sectionalizing enclosures or below grade in manholes. The existing primary distribution system could be converted to a "partial" loop system involving a major upgrade including a new 15kV pad-mounted switchgear at the service entrance location and other 15kV pad-mounted switchgear at various other locations on the campus, with a new 15kV feeder installed between the existing transformers at the Technology/Classroom Building, at the west end of the campus and the HHC2 Building at the northeast end of the campus, approximately 950', to complete the "partial" loop. Unfortunately, the campus primary electrical distribution system was never fully conceptualized from the beginning, and as buildings were constructed, radial feeders were extended from existing manholes and from existing pad-mount transformers, making a "loop" distribution system impractical.
 - The recommendation identified in the 2013 Utilities Master Plan is more practical, however, it does not provide an electrical distribution system that allows for some form of redundancy. The recommendation was identified as follows:
 - » "The existing arrangement indicates that the City can provide 3200 KW more than the UNM distribution system is capable of handling. The short range improvement is to insert a 15KV switch board with three 200 Amp switches. New 4/0 Aluminum, 15 KV wires would leave each switch to provide three distribution circuits, each capable of handling up to 200 amperes or 4115 KW of demand. A second phase revision would be to extend one of the circuits to the new areas of potential physical growth of the campus. This ultimate arrangement is shown on primary distribution map (ES102)."
 - It is also recommended to upgrade the primary distribution system with a dual radial primary selective system, also for redundancy and reliability, similar to the fiber-optic telecommunications recommendations. The probable construction cost for the dual radial primary selective system is estimated to be approximately

\$1,250,000, which includes new 15kV metal-clad free-standing switchgear, new 15kV SF6 switchgear, new dual radial feeders, new manholes, and new terminations.

End of Electrical Engineering Narrative

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SHEET KEYNOTES

1. EXISTING UNDERGROUND PRIMARY (15KV CABLE) IN CONCRETE ENCASED DUCTBANK.
2. EXISTING BUILDING PAD MOUNT TRANSFORMER.
3. EXISTING GALLUP JOINT UTILITIES PRIMARY METER AND 15KV PAD MOUNTED SWITCH.
4. EXISTING LOAD BREAK JUNCTION MODULE TERMINAL CABINET.
5. EXISTING BELOW GRADE MANHOLE.
6. EXISTING BELOW GRADE PULL BOX (P/B).
7. NEW 15KV PRIMARY AND NEW EXTENSION TO FROM EXISTING 4°C STUB TO NEW 15KV PAD MOUNTED SWITCH (PMS).
8. NEW 15KV UNDERGROUND FEEDER BETWEEN BUILDING PAD MOUNT TRANSFORMERS AS SHOWN WITH PULL BOXES AT 300' ON CENTERS.
9. REMOVE EXISTING LOAD BREAK JUNCTION MODULE TERMINAL CABINET AND PROVIDE NEW 15KV PAD MOUNT SWITCH (PMS) WITH LOOP FEED SWITCH AND FUSE BAYS FOR RADIAL FEED TO EXISTING BUILDING PAD MOUNT TRANSFORMERS.
10. EXISTING PRIMARY FEEDERS REMAINS AS RADIAL FEED (NO LOOP FEE PROVISIONS).

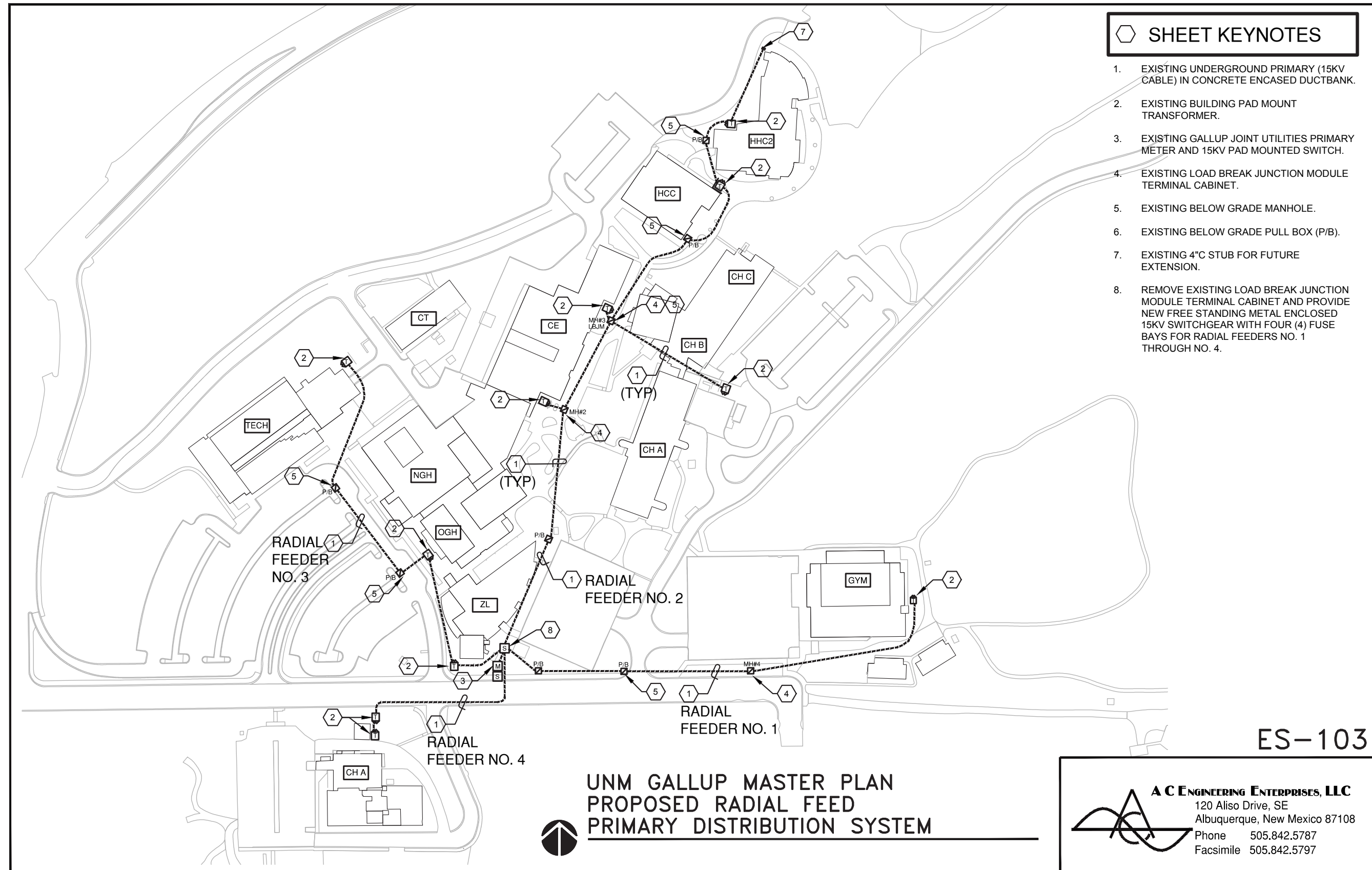
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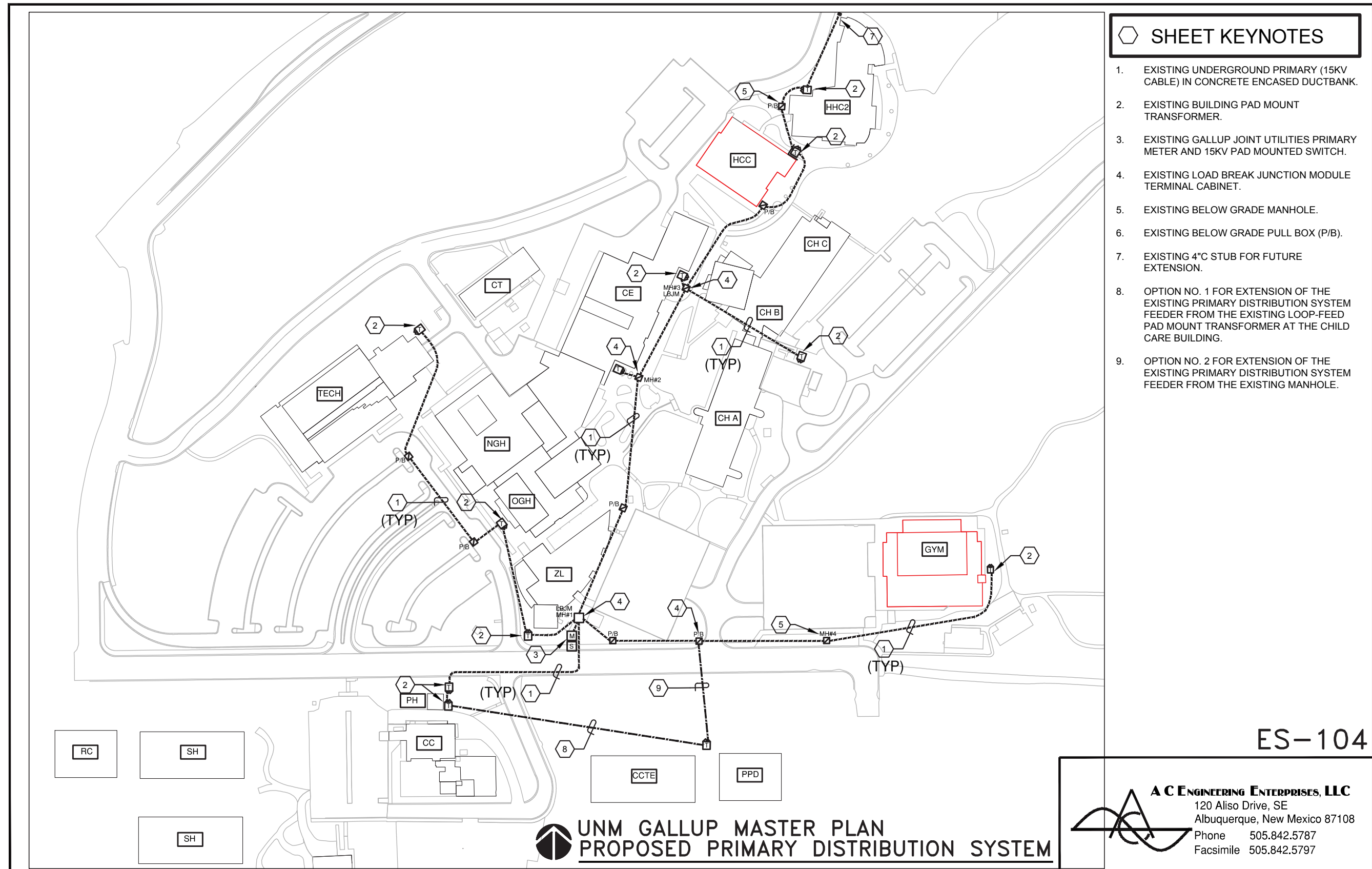


**UNM GALLUP MASTER PLAN
PROPOSED LOOP PRIMARY
PRIMARY DISTRIBUTION SYSTEM**



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SHEET KEYNOTES

1. EXISTING UNDERGROUND PRIMARY (15KV CABLE) IN CONCRETE ENCASED DUCTBANK.
2. EXISTING BUILDING PAD MOUNT TRANSFORMER.
3. EXISTING GALLUP JOINT UTILITIES PRIMARY METER AND 15KV PAD MOUNTED SWITCH.
4. EXISTING LOAD BREAK JUNCTION MODULE TERMINAL CABINET.
5. EXISTING BELOW GRADE MANHOLE.
6. EXISTING BELOW GRADE PULL BOX (P/B).
7. EXISTING 4"C STUB FOR FUTURE EXTENSION.
8. OPTION NO. 1 FOR EXTENSION OF THE EXISTING PRIMARY DISTRIBUTION SYSTEM FEEDER FROM THE EXISTING LOOP-FEED PAD MOUNT TRANSFORMER AT THE CHILD CARE BUILDING.
9. OPTION NO. 2 FOR EXTENSION OF THE EXISTING PRIMARY DISTRIBUTION SYSTEM FEEDER FROM THE EXISTING MANHOLE.

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**UNM GALLUP MASTER PLAN
PROPOSED PRIMARY DISTRIBUTION SYSTEM**

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