

NMSU Carlsbad Campus Southeast New Mexico College



Nine Degrees Architecture & Design, Inc. is providing counsel in the development of both a facility and a curriculum for a Vocational/Trades Building for NMSU Carlsbad, which will provide access to quality educational opportunities and support the economic and cultural life of the people of Southeastern New Mexico. NMSU Carlsbad's goal is to have career-orientated courses focusing on oil and gas, alternative energy, or building trade industries. These courses will combine learning labs and lectures with hands-on projects. The program emphasizes real-life job site experiences while utilizing a state-of-the-art equipment and a building compound.



PROJECT INCENTIVES

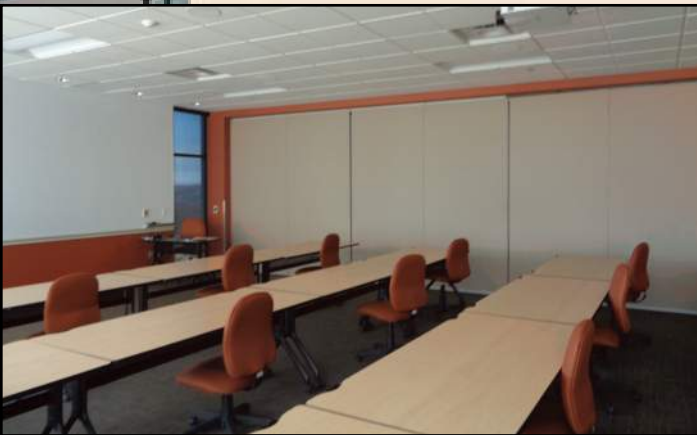
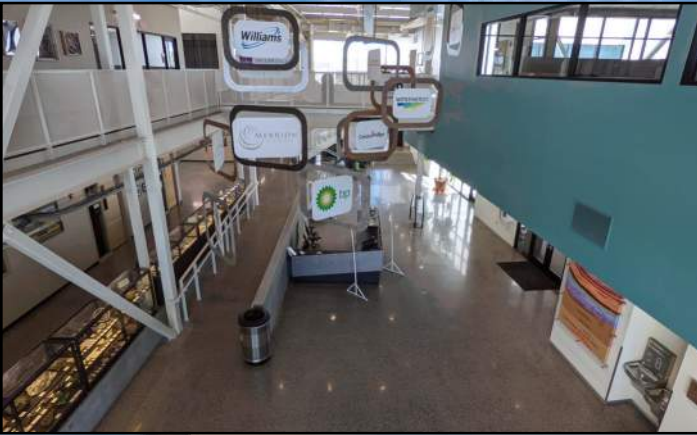


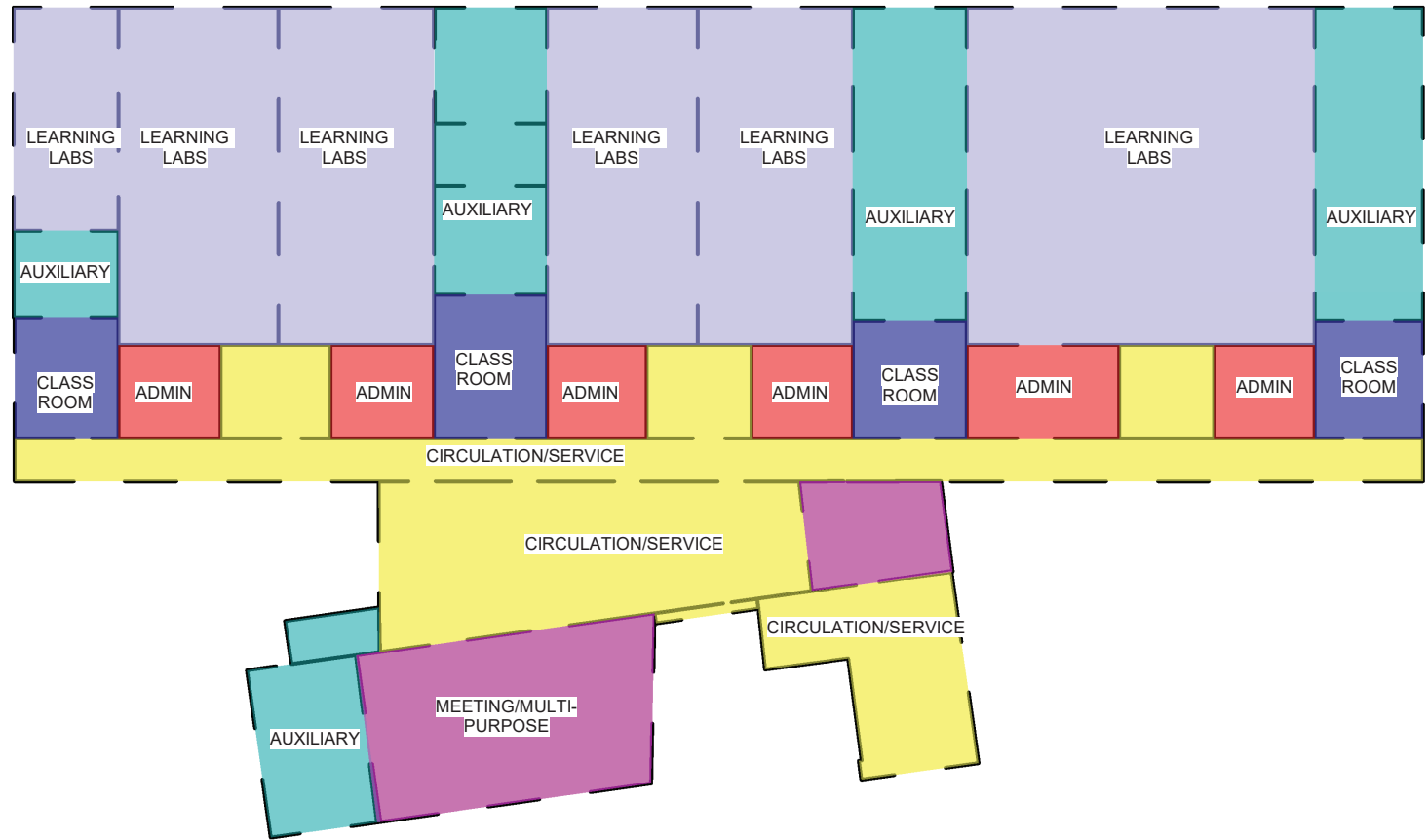
The scope of work consists of a feasibility study to ascertain an additional **NMSU Carlsbad Vocational Building**. The new building will provide an experience in a career and provide opportunities in the oil and gas industry and other various fields of study. The overall goal is to offer some of the most innovative and state-of-the-art training and workforce facilities in the Carlsbad region for upcoming trades and industries.

The School of Energy offers a variety of degrees and training in the energy industry. With a new 65,000 square foot facility, students will continue to receive training and experience in state-of-the-art training labs taught by educators and professionals from the industry, ensuring students achieve their career goals.

CASE STUDY 01

1. Energy Core Curriculum
2. Petroleum Production Operations
3. Advanced Petroleum Production Operations
4. Industrial Maintenance Mechanic
5. Industrial Process Operator
6. Occupational Safety
7. Instrumentation and Controls Technology
8. Tribal Energy Management Seminar Series.





SPACES

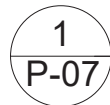
LEVEL 1: 53,110 SF

- 6X LEARNING LABS (80 x 35 = 2,800 = SF EA)
- 6X ACADEMIC CLASSROOM (30 X 25 = 800 SF EA)
- 2X MEETING/MULTI-PURPOSE (30 X 25 = 800 SF EA)
- KITCHEN = 600 SF
- AUXILIARY = 2,660 SF
- MUSEUM/SHOWCASE = 750 SF
- 4X ADMIN (25 X 25 = 625 SF EA)
- CIRCULATION/SERVICE/CORE (INCL RESTROOMS) = 7,500 SF

LEVEL 2: 13,292 SF

- ADMIN = 5,120 SF
- COMPUTER LAB = 672 SF
- 9X ACADEMIC CLASSROOMS (30 X 25 = 800 SF EA)
- CIRCULATION/SERVICE/CORE (INCL RESTROOMS) = 3,000 SF

TOTAL AREA: 66,400 SF

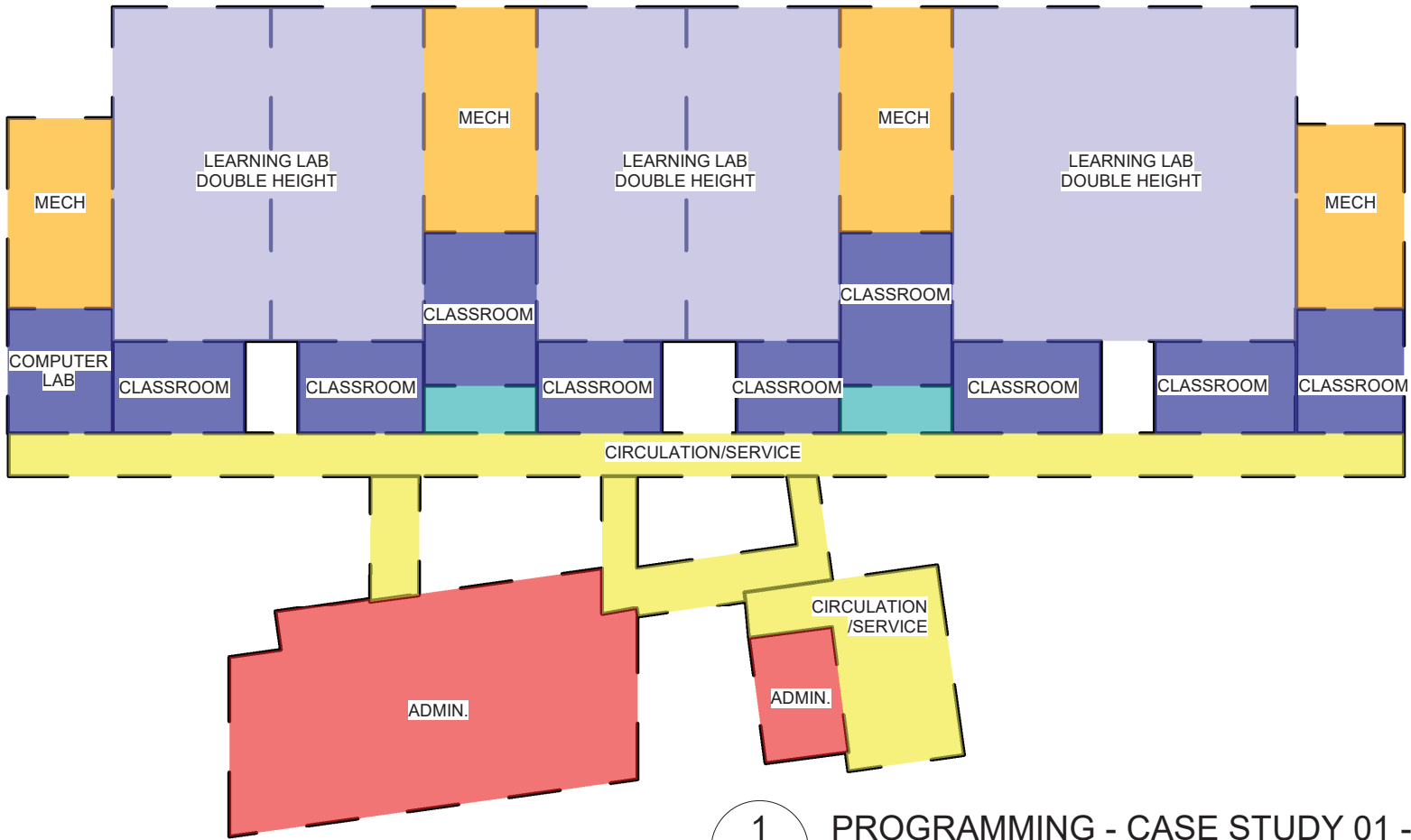


PROGRAMMING - CASE STUDY 01 - SJ

School of Energy - San Juan College

NMSU Carlsbad Campus - Vocational Building | Case Study





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PROGRAMMING - CASE STUDY 01 - SJ L2

School of Energy - San Juan College

NMSU Carlsbad Campus - Vocational Building | Case Study



Energy & Manufacturing Institute at LSC-University Park

The Division of Business, Applied Sciences, Computing, and Engineering Technologies at LSC-University Park Institute focuses on providing career and leadership opportunities for students of all ages and experience levels. This program is focused on students seeking a career in business or looking for opportunities in the oil and gas industry. At half the cost of four-year universities, the program offers degrees and certificates in various fields of study

CASE STUDY 02

PROJECT SPECIFICS

Project Category: Higher Education

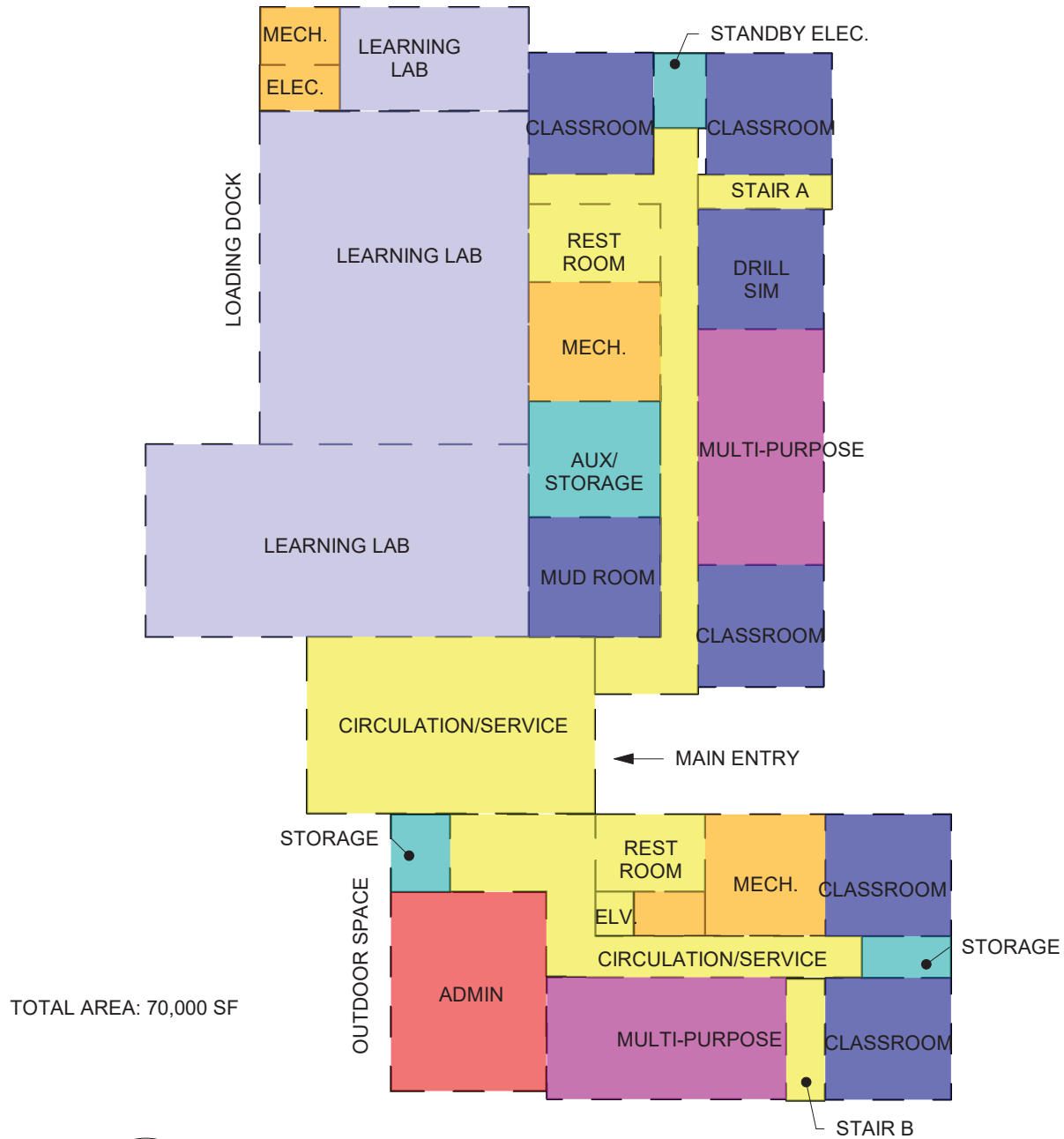
Building Types: Classroom Building
College & University
Laboratory

Finishes: Concrete (Raw/Sealed)

Features: Cantilevered Panels
Reveals

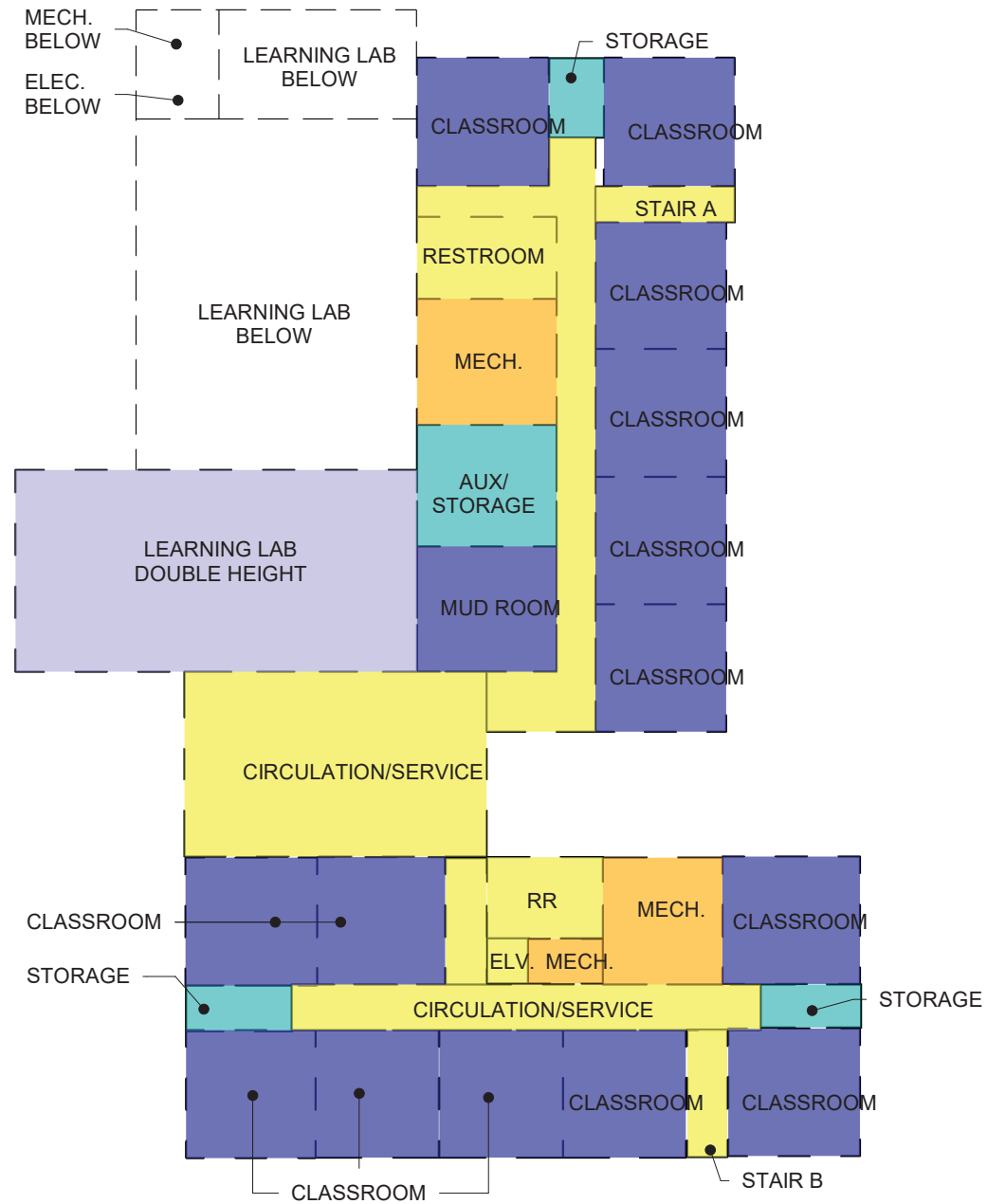
Square Feet: 70,000-square-foot





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PROGRAMMING - CASE STUDY 02 -LSC L1



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PROGRAMMING - CASE STUDY 02 - LSC L2

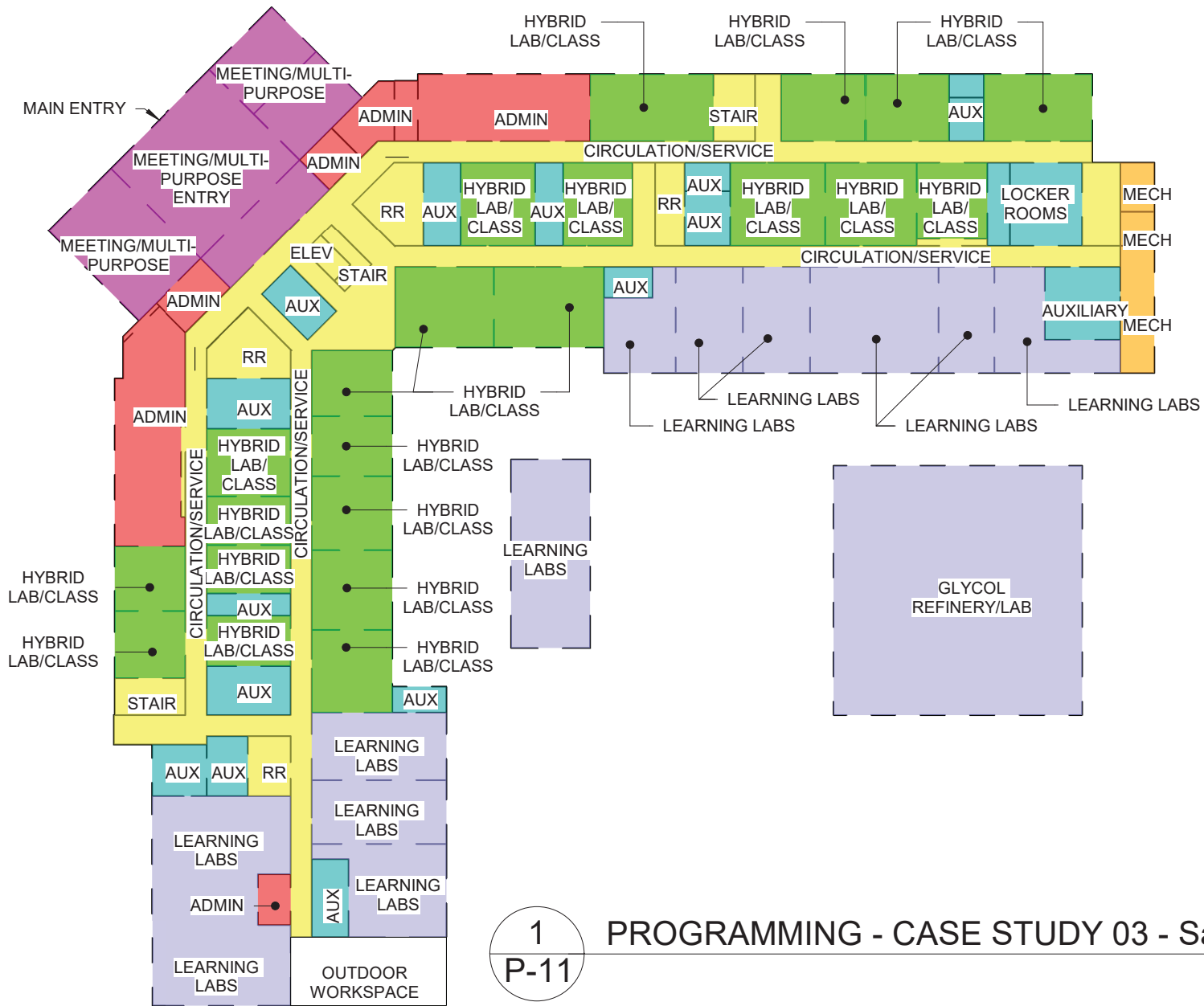
San Jacinto College: LyondellBasell Center for Petrochemical, Energy, & Technology
This college has the largest petrochemical training facility in the Gulf Coast Region that meets the demands of petrochemical industry professionals. The 151,000 SF instructional complex features a process training glycol distillation unit (8,000 SF) to develop troubleshooting skills for students, incumbent workers, and space to house the process operations program, instrumentation, electrical, nondestructive testing, and craft trades.

CASE STUDY 03

PROJECT SPECIFICS

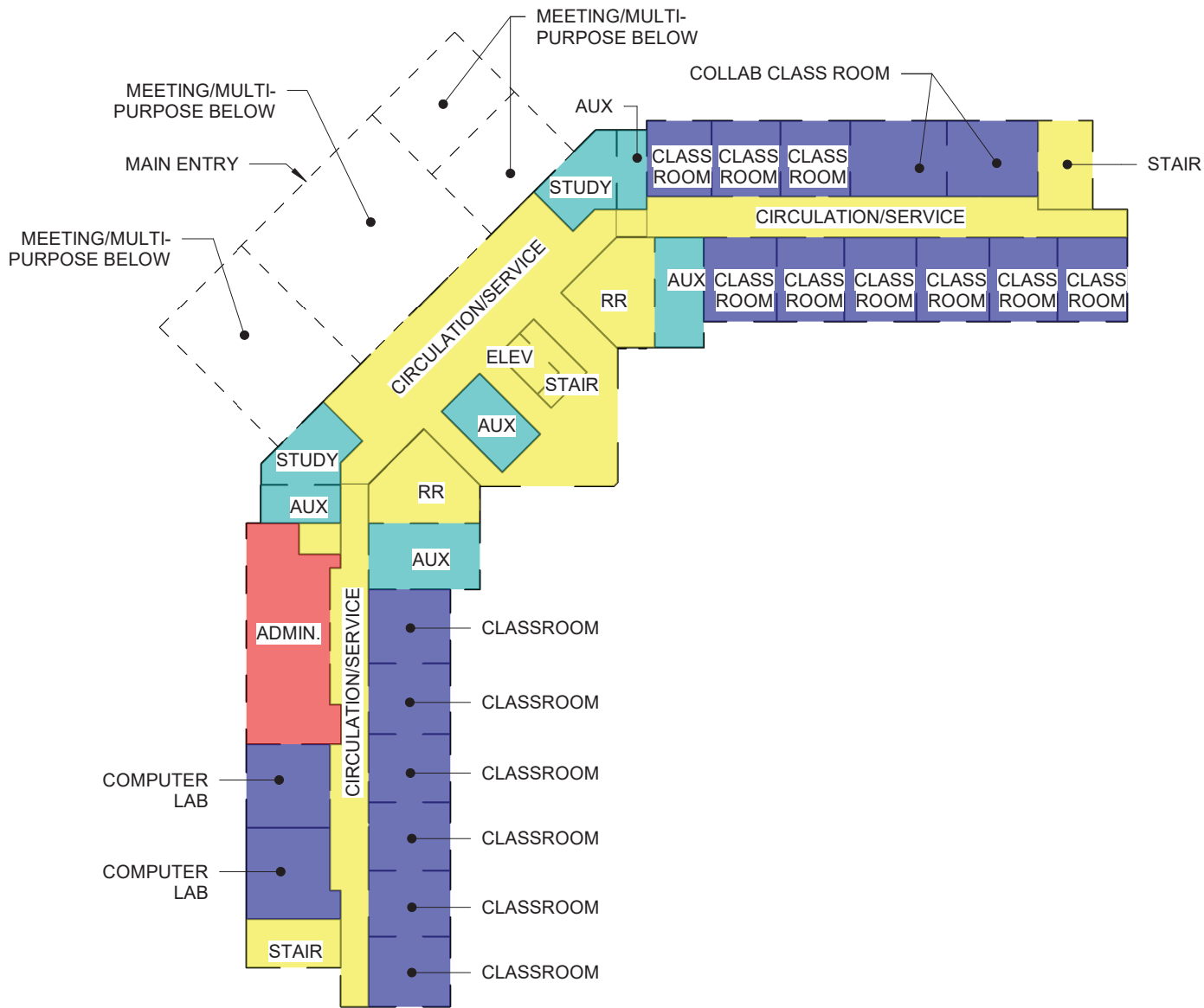
31 specialized labs: that create a real-life representation of chemical, physical and other technical processes in unit operations;
20 classrooms
Control room: to operate the glycol distillation unit
Faculty suites
Large multi-purpose event center: that groups can use for academic, community and industrial functions.





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PROGRAMMING - CASE STUDY 03 - San Jacinto L1



1 PROGRAMMING - CASE STUDY 03 - San Jacinto L2
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Objectives



Construction Trades



Oil and Gas Drilling



Welding

Programming from Case Studies

1. Construction Trades
2. Construction Supervision
3. Energy & Manufacturing Technology
4. Heating, Ventilation, Air Conditioning (HVAC) & Refrigeration
5. Oil and Gas Drilling
6. Welding

Career Opportunities:

Engineering: Electrical, Instrumentation
Manufacturing
Oil, Energy, and Petrochemical

Design Features

1. Double height space
2. Acoustic Panels
3. Curtain Walls/storefront (issues with glass)
4. Epoxy sand finish flooring
5. Natural Lighting
6. Exposed conduit and structure
7. Heated concrete drive
8. Movable furniture
9. Large bay labs
10. Overhead doors
11. Interior lighting

Program Approach

1. The Industry has a heavy input in each program and what should be taught.
2. The agreement between the local industries and school: In order for a company to sponsor a lab they had to pay 20% Cost of construction and space, including equipment.
 - a. Each lab is sponsored by a company

Teaching Delivery Method

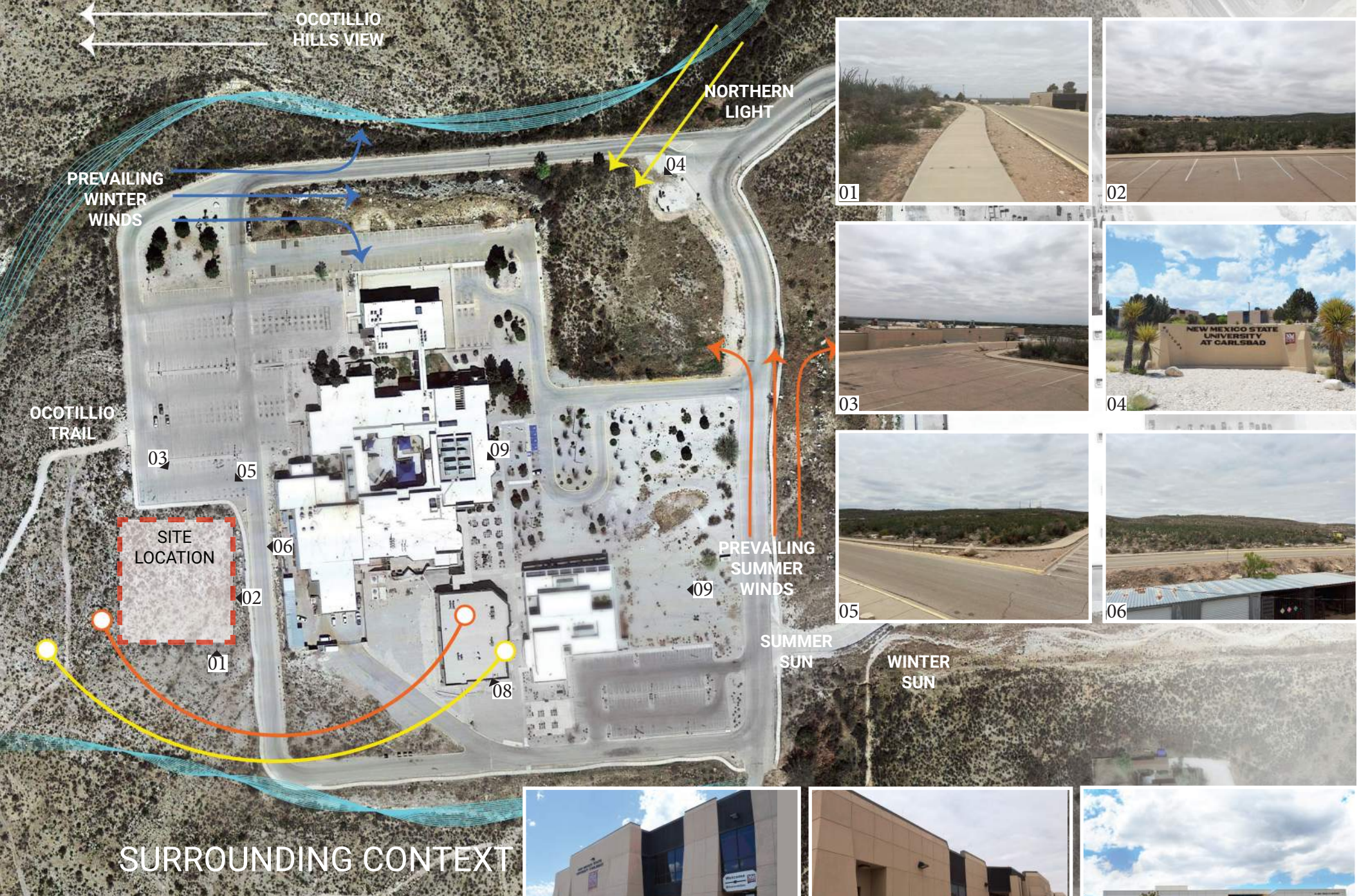
1. Hybrid Delivery, Face to face, lecture & demonstration

Planning Concepts

This project is being undertaken to develop a state-of-the-art facility to house the Energy Technology and Vocational Center at New Mexico State University Carlsbad Campus in New Mexico. Aesthetic design, material selection, and other planning methods should be considered to achieve both the facility's functional requirements and meet the institution's high aesthetic standards.

While this Program suggests certain functional solutions, the Project A/E will analyze the spatial relationships, evaluate alternative solutions, and develop these with recommendations as to those solutions that provide advantageous operational features. It is expected that the Project A/E will meet with the User Coordinators and representatives of each department in conferences to formulate these relationships. This project shall be designed to qualify for as many Leadership in Engineering and Environmental Design (LEED) points as is feasible for an energy and technology building.





SITE/DESIGN CHALLENGES

ADA/Pedestrian access

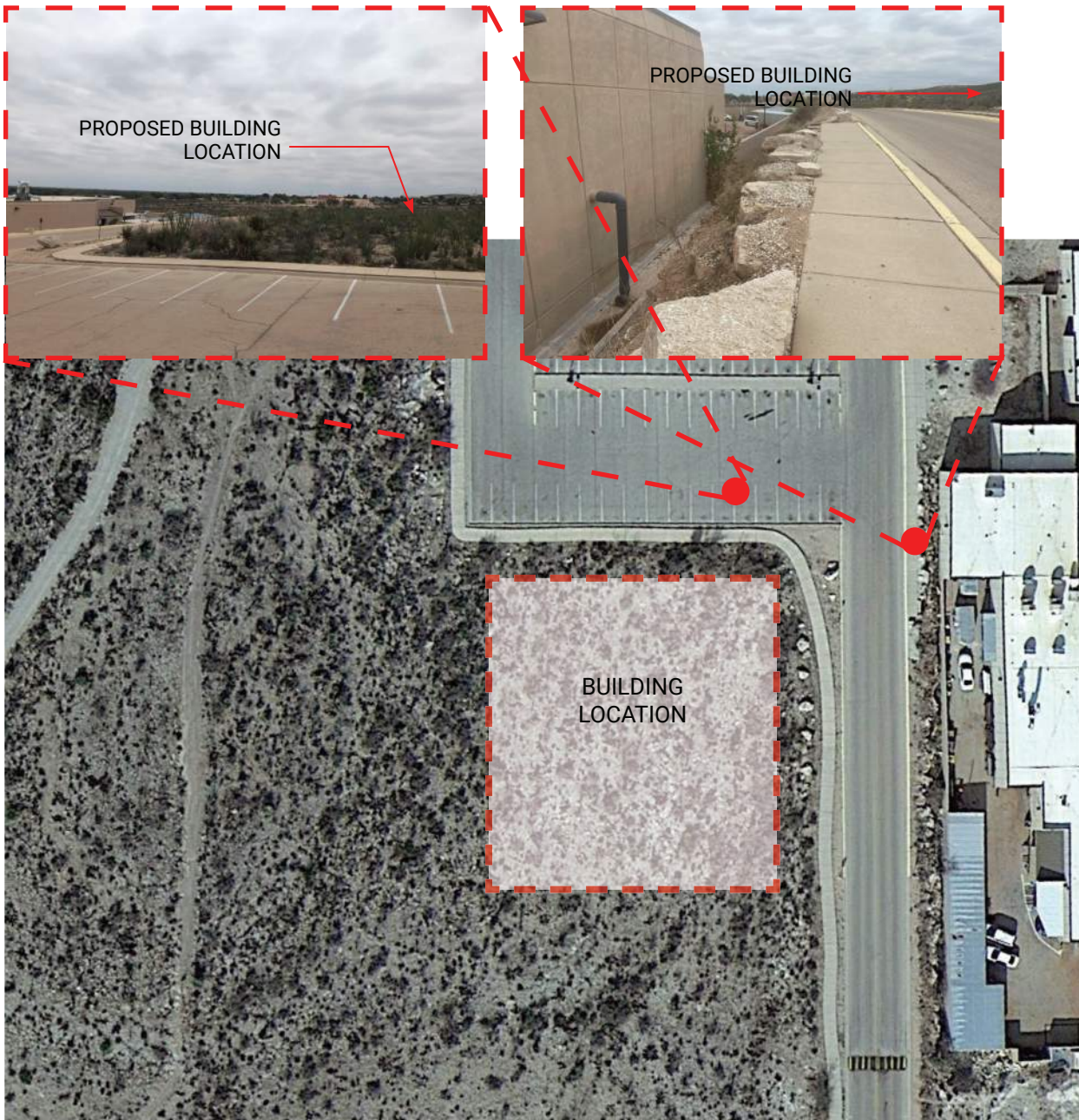
- Providing pedestrian access from proposed building location to existing circulation paths for students.
- Pedestrian access is limited at the west side of the Main Building entrance in the garage area.
- Providing an accessible route from new designated handicap Spaces at the proposed building to building entrances.

Parking & Traffic Flow

- Parking in all of the existing parking lots is unrestricted Campus-wide.

Grading/Drainage

- The current topography of site is significantly higher than the existing buildings and drive along the east of the proposed site.
- The overall drainage pattern for the entire site runs west to east. Due to the grade, there is some recurring erosion along the slope leading from the northeast corner of the north parking lot down to the drainage swale.



EXISTING NATURAL LANDSCAPES



WAYS TO IMPLEMENT INTO LANDSCAPE



DESIGN CONCEPT

- ARROYO
- GEOLOGICAL FEATURES
- GEOGRAPHY
- DISCOVERY
- TEXTURES OF ARROYO
- COLORS OF ARROYO

QUALITY LANDSCAPE TO CONSERVE WATER AND PROTECT



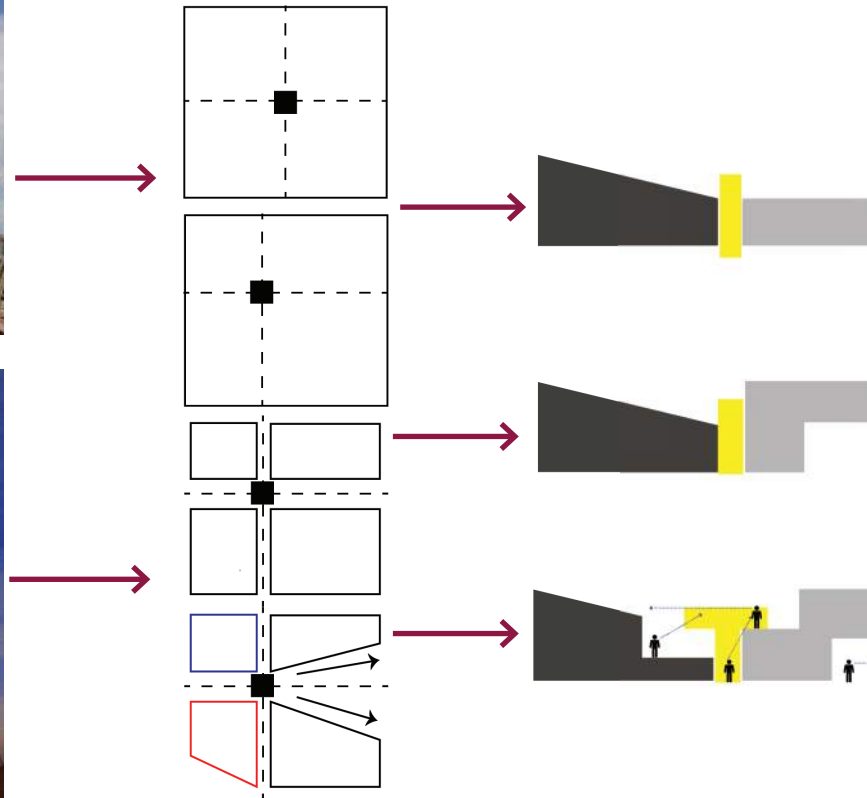
CONCEPTS

WAYS TO IMPLEMENT CONCEPT IN DESIGN

DESIGN OPPORTUNITIES



a



(a) Diagram is indicating simple Spatial planning imitating movements and geometry of drilling equipment.

(b) Diagram expresses the unique landscapes of the area and overlapping textures within the landscape that may influence the volumes with a proposed design

TEXTURE & VOLUMES



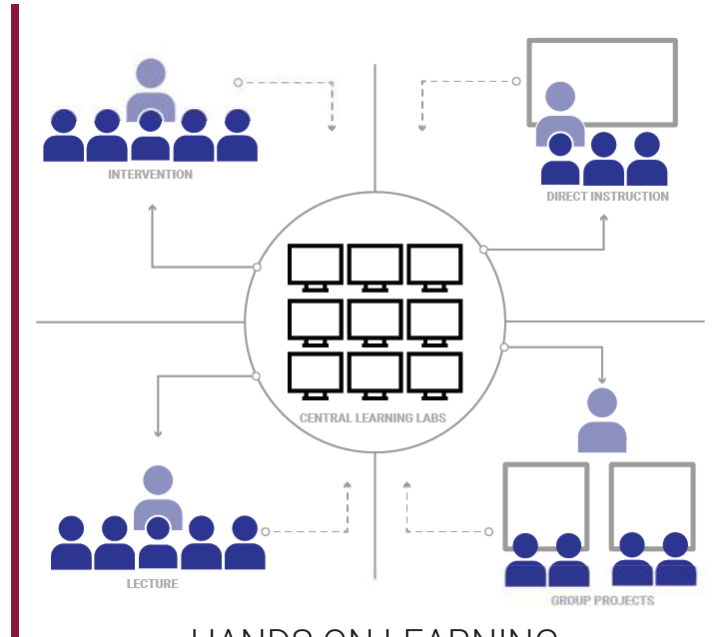
b

The NMSU Vocational Building is a place of learning through training and experience in learning labs taught by educators and professionals from the industry, ensuring students achieve their career goals. This inspiration comes from the surrounding industries.

DESIGN CONCEPT



SURROUNDING
INDUSTRIES



HANDS ON LEARNING
SPACES



SURROUNDING
LANDSCAPE



Existing Program/Curriculum

Associate Programs of Study

Arts, Education, & Social Sciences

Associate in Criminal Justice
Associate in Digital Media Technology
Associate in Drafting and Graphics Technology
Associate in Education
Associate in Early Childhood Education
Associate of Arts in Heritage Interpretation
Associate in Hospitality and Tourism
Associate in Social Work

Health Sciences

Associate in Nursing
Associate in Surgical Technology

Online Programs

Associate of General Studies
Associate of Arts
Associate in Health Information Technology
Associate in Pre-Business

Science and Engineering

Associate of Science
Associate in Engineering

Skilled Trades

Associate in Automotive Body Collision Repair
Associate in Automotive Technology
Associate in Building Technology
Industrial Maintenance
Electrical
Mechanical
Natural Gas Compression Technology
Associate in Welding Technology

Business

Associate in Business Office Technology
Admin Assistant
Accounting
Associate in Business Management
Associate in Computer & Information Technology

Certificates

Arts, Education, & Social Sciences

Digital Media Animation Certificate
Digital Graphics Certificate
Digital Video Certificate
Digital Video Game Animation Certificate
Drafting and Graphics Technology Certificate
Heritage Interpretation Certificate

Health Sciences

Licensed Practical Nursing Certificate

Workforce Ready Courses

Phlebotomy Technician (16-Week Course)
Certified Nursing Assistant (3-week course)

Online Programs

Health Information Technology Certificate

Science and Engineering

Geographical Information Systems Certificate

Skilled Trades

Automotive Body Collision Repair Certificate
Automotive Technology Certificate
Building Trades Certificate
Industrial Maintenance Technician Certificate
Natural Gas Compression Technology
Welding Certificate

Business

Accounting Certificate
Banking Certificate
Business Office Technology Certificate
Microcomputer Applications Certificate

Program/Curriculum Opportunities

HVAC& Certification

The HVAC&R certificate program prepares the individual for basic, entry-level employment in the residential and/or light commercial heating, air-conditioning and refrigeration service industry. The essentials of the mechanical and electrical systems of contemporary air-conditioning, heating and refrigeration systems are addressed throughout the program.

1. HVAC & Refrigeration AAS (Associate Of Applied Science) Degree

- Credits earned in the HVAC Occupational Entry Certificate Level I, HVAC Residential Servicing Certificate Level I and HVAC Commercial Servicing Certificate Level I may be applied to this degree.

2. HVAC & Refrigeration Commercial Servicing Certificate Level I

3. HVAC & Refrigeration Residential Servicing Certificate Level I

- This certificate can be stacked and earned credits can be applied towards HVAC & Refrigeration Commercial Servicing Certificate Level I and HVAC & Refrigeration AAS Degree.

4. HVAC Occupational Entry Certificate

5. HVAC I NCCER Residential Certificate



Oil & Gas Drilling Services

Work as field service and petroleum field service technicians complete highly technical tasks that require advanced training and knowledge. Due to the advancements in electro-mechanical systems, interdisciplinary fields are rapidly developing to address the design, operation and maintenance of products, and systems that require a working knowledge of both mechanical and electronic component

1. Field Service Technician Certificate Level I.

- One year program, Enter the workforce quickly

2. Petroleum Service Technician AAS Degree

- Two year program, Enter the workforce quickly

3. Petroleum Service Technician Certificate Level II

- Two year program, Enter the workforce quickly

4. Floor-hand / Roustabout Certificate

- Non-Credit Fast Track program

Industry training, without the need for admissions testing.

- Industry Accreditation



Construction Trades

The National Center for Construction Education and Research (NCCER) is the training, assessment, certification and career development standard for the construction and maintenance craft professional.

1. Carpentry II NCCER Workforce Residential Certificate

2. Carpentry I NCCER Workforce Residential Certificate

3. Electrical II NCCER Workforce Residential Certificate

4. Electrical I NCCER Workforce Residential Certificate

5. HVAC NCCER Workforce Residential Certificate

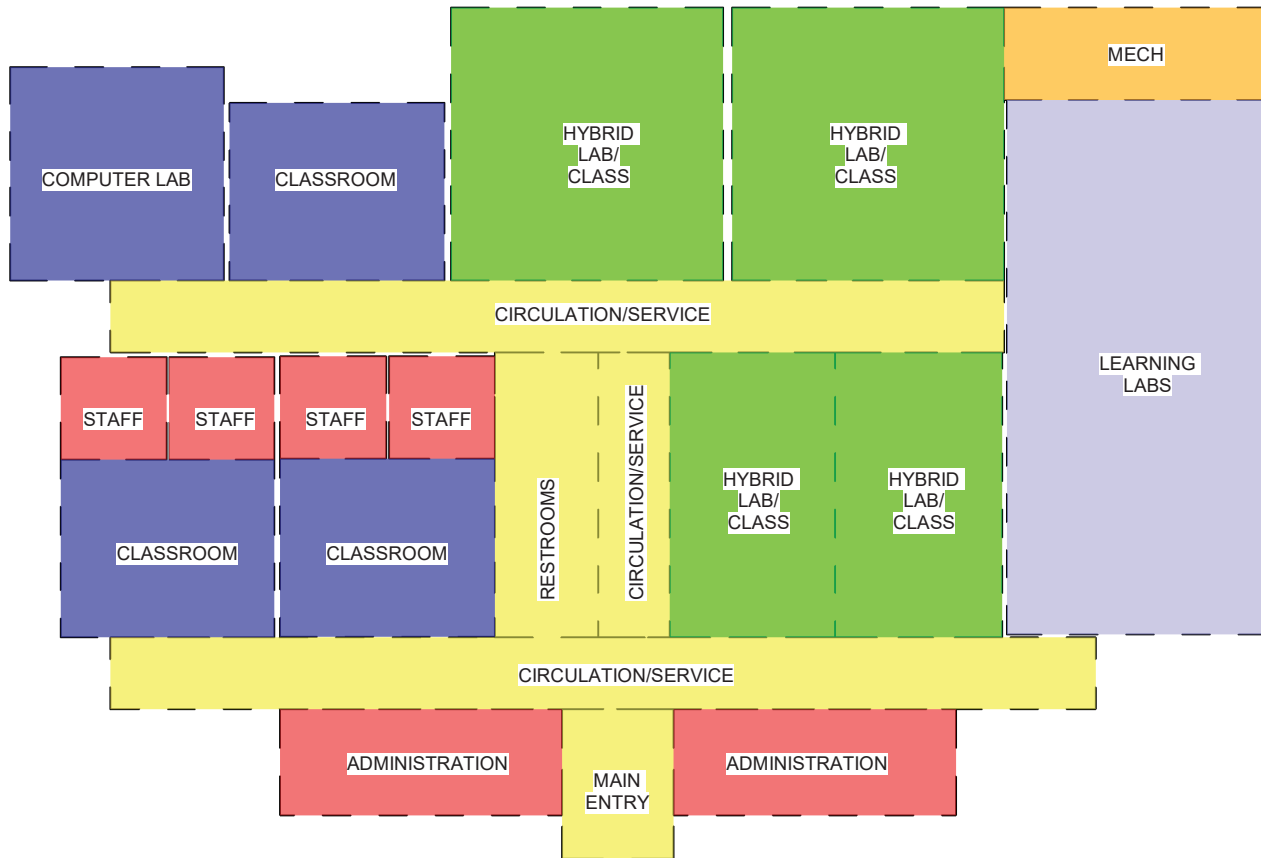
6. Scaffolding NCCER Workforce Certificate

7. Solar Installer

-Non-Credit Fast Track program / Average completion 4 months, Industry training, without the need for admissions testing, OSHA 10, Industry Accreditation



Option 1 Program Layout



SPACES

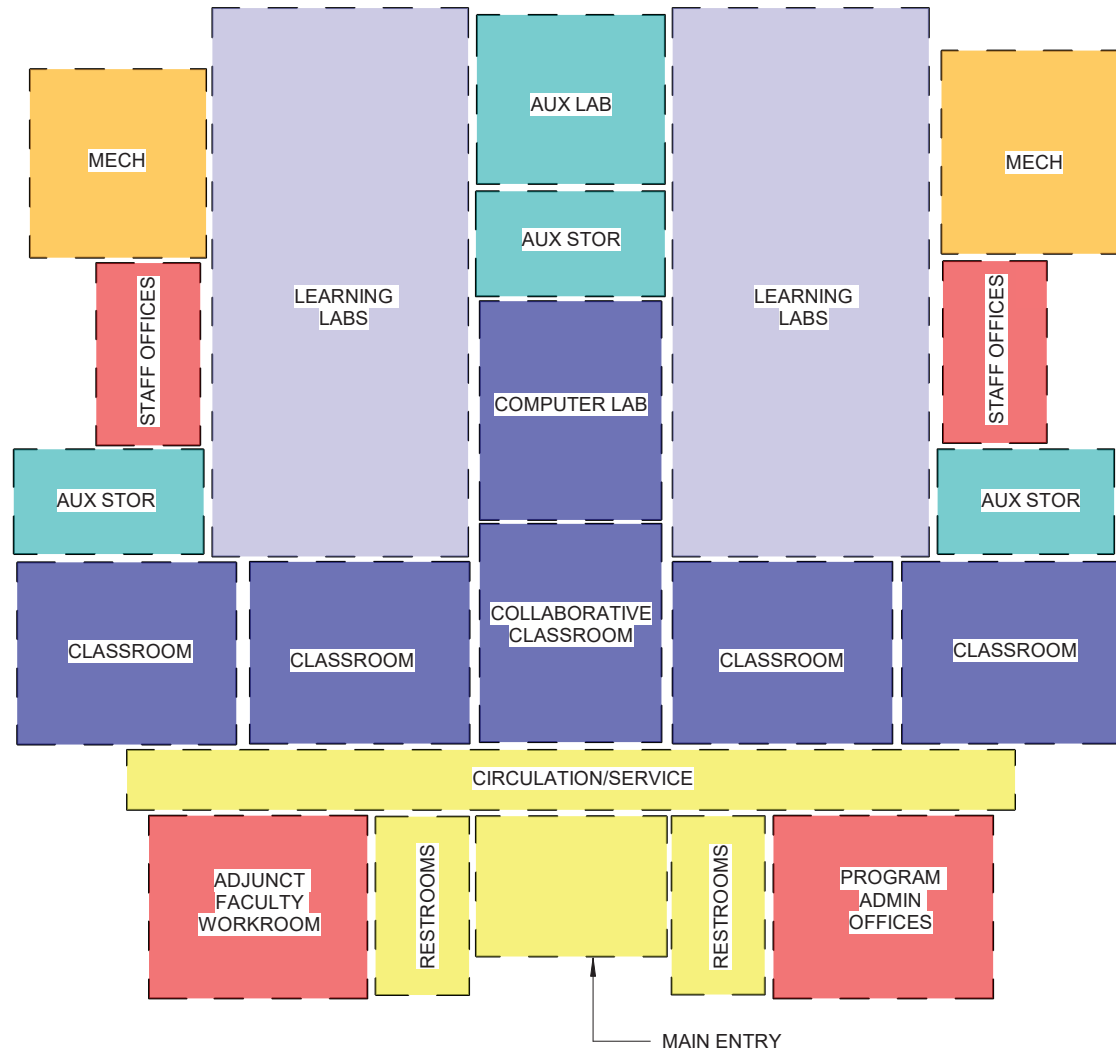
LEVEL 1:

- 4X STAFF OFFICES (212 SF EA)
- 2X ADMINISTRATION (585 SF EA)
- 1X LEARNING LABS (2,800 SF EA)
- 2X HYBRID CLASSROOM/LABS (925 SF EA)
- 2X HYBRID CLASSROOM/LABS (1,450 SF EA)
- 1X COMPUTER LAB (900 SF)
- 3X ACADEMIC CLASSROOM (30 X 25 = 800 SF EA)
- CIRCULATION/SERVICE/CORE (INCL RESTROOMS) = 3,945 SF

TOTAL AREA: 17,189

1 PROGRAMMING - SPATIAL CONFIG 1
P-01

Option 2 Program Layout



SPACES

SINGLE LEVEL:

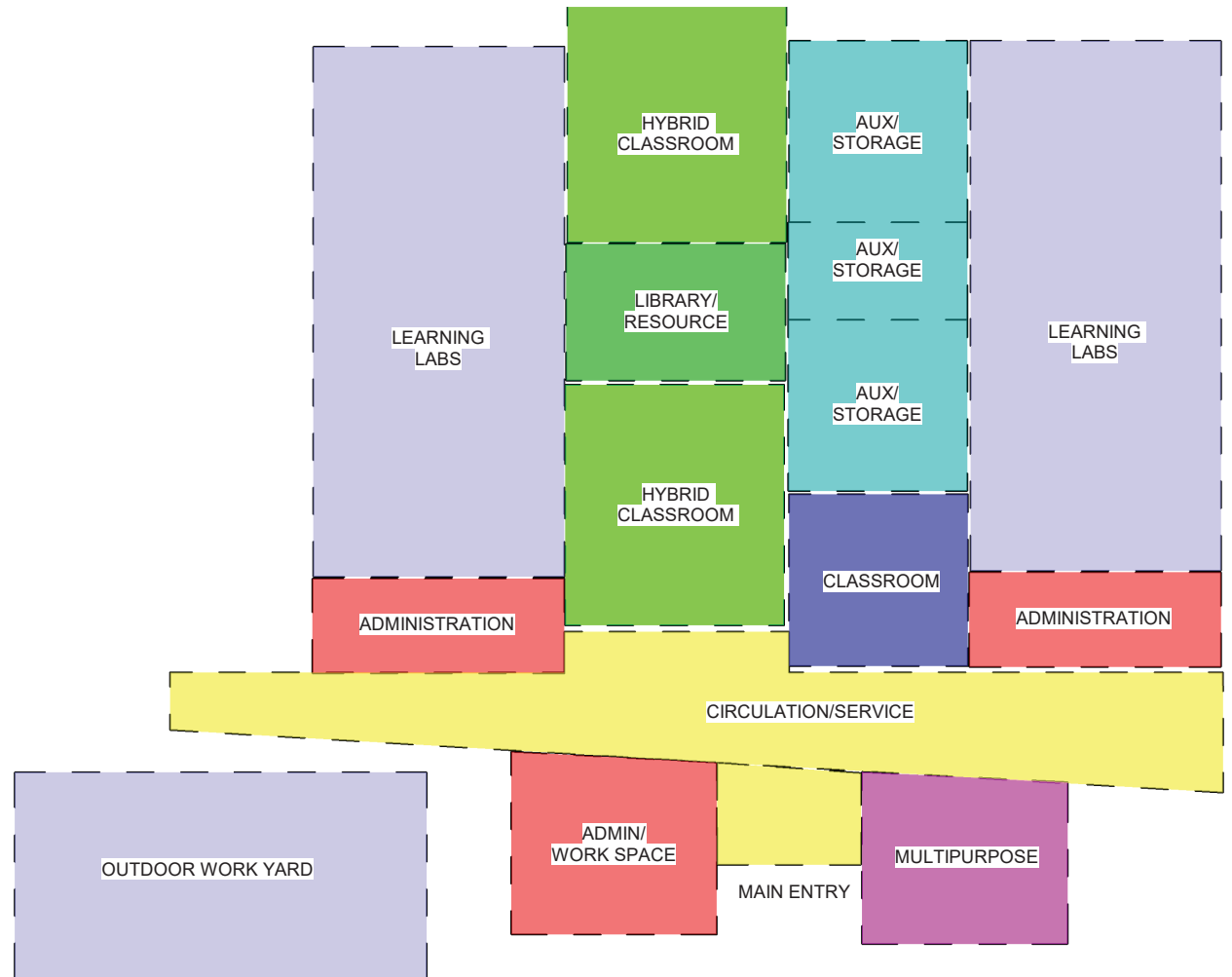
- 2X LEARNING LABS (35 X 75 = 2,625 SF EA)
- 1X COMPUTER LAB (30 X 25 = 750 SF)
- 1X COLLABORATIVE CLASSROOM (30 X 25 = 750 SF)
- 4X ACADEMIC CLASSROOM (30 X 25 = 750 SF EA)
- 1X ADJUNCT FACULTY WORKROOM (30 X 25 = 750 SF)
- 1X PROGRAM ADMINISTRATION (30 X 25 = 750 SF)
- 4X FULL TIME STAFF OFFICES (12 X 12 = 144 SF EA)
- 2X CENTRALIZED RESTROOMS (325 SF EA)
- 3X AUXILLARY STORAGE SPACES (345 SF EA)
- 1X AUXILIARY LAB SPACE (600 SF)
- 2X MECHANICAL ROOMS (ALL NECESSARY SERVICES (650 SF EA)
- CIRCULATION/SERVICE/CORE (NOT INCL RESTROOMS) = 1,500 SF

TOTAL AREA - 16,911 SF

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PROGRAMMING - SPATIAL CONFIG 2

Option 3 Program Layout



SPACES

LEVEL 1: 13,295 sf

- 1X LIBRARY RESOURCE CENTER = 640 SF
- 2X ADMINISTRATION = 1,000 SF
- 2X LEARNING LABS = 5,600 SF
- 2X HYBRID CLASSROOM = 2,260 SF
- 1X ACADEMIC CLASSROOM = 650 SF
- AUXILIARY = 1,650 SF
- CIRCULATION/SERVICE/CORE (INCL RESTROOMS) = 2,495 SF

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PROGRAMMING - SPATIAL CONFIG 3

Design of exterior and interior walls using functional, energy efficient economical and durable materials. Glazed areas are to be protected from direct sun exposure during the cooling season and direct wind and rain damage due to severe storms. Frames shall be a thermal break with durable finish. Natural lighting, daylighting, and exterior views are desired in public spaces and offices. The design of the main lobby should include the use of natural light where possible. The design should allow for movable furnishings and space to accommodate persons waiting outside meeting areas. Code compliance regarding the placement of movable furnishings and egress requirements is an important consideration for this space. Provide corridor space of adequate width for free traffic flow at peak periods, lending access to all functional areas of the building. Include corner guards on all exterior corners and elsewhere as needed. Provide barrier-free access to functional spaces from corridors. Natural lighting, daylighting, and exterior views are desired in nearly all spaces. The areas where computers are used will require special attention to eliminate glare from sunlight and overhead fluorescent lighting. Provide adjustable blinds for sun control on all glazed areas.

PROPOSED SCHEME 1





34 ADDITIONAL
PARKING
SPACES

EXISTING
BUILDING

SITE





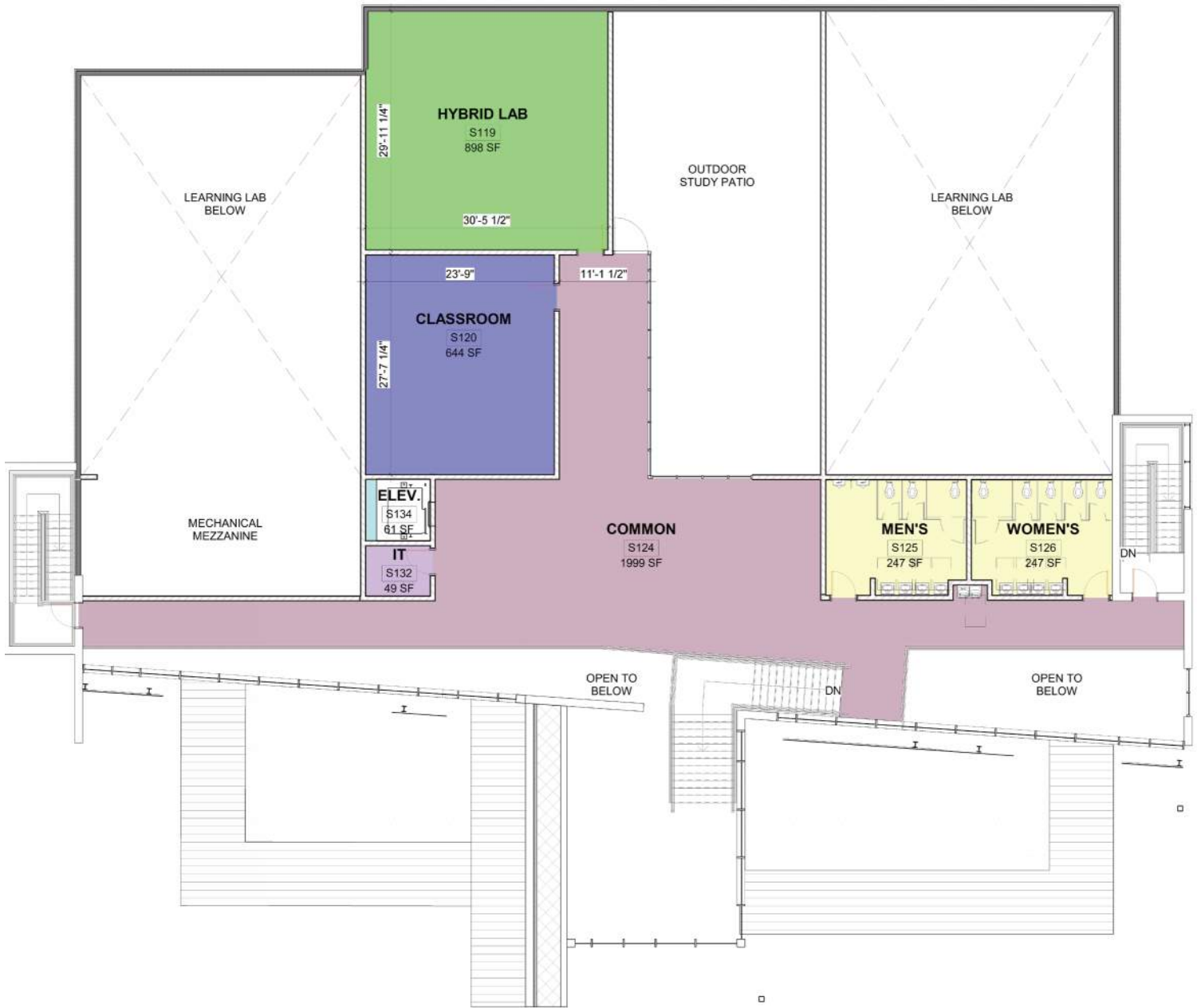
Room Legend

- ADMIN WORK SPACE
- AUXILIARY
- ELEV.
- ENTRY/LOBBY/CIRCULATION
- HYBRID LAB
- IT
- LEARNING LAB
- MECH
- MEN'S
- MULTIPURPOSE
- OFFICE SPACE
- WET LAB
- WOMEN'S
- WORK YARD

LEVEL 1 SF = 14,162
 LEVEL 2 SF = 4,839
 OVERALL = 19,000 SF

LEVEL 1





Room Legend

- CLASSROOM
- COMMON
- ELEV.
- HYBRID LAB
- IT
- MEN'S
- STORAGE
- WOMEN'S

LEVEL 2





CARLSBAD COLLEGE
SCHOOL OF ENERGY







PROPOSED SCHEME 2





SITE



Room Legend

- ADMINISTRATION
- CLASSROOM
- CONFERENCE
- ENTRY
- HALLWAY
- HYBRID LAB
- IT
- LEARNING LAB
- MECH.
- MEN'S
- MULTIPURPOSE
- OFFICE
- TOTAL WOMEN'S

ADAPTABLE PLAN

This scheme presents an adaptable floor plan that can expand as required. Nine-Degrees is considering to propose the area outlined in green in order to be conservative with square footage. The area in red illustrates program that can be added as an additive alternative in this project or in a later phase. The larger area outlined in green will include:

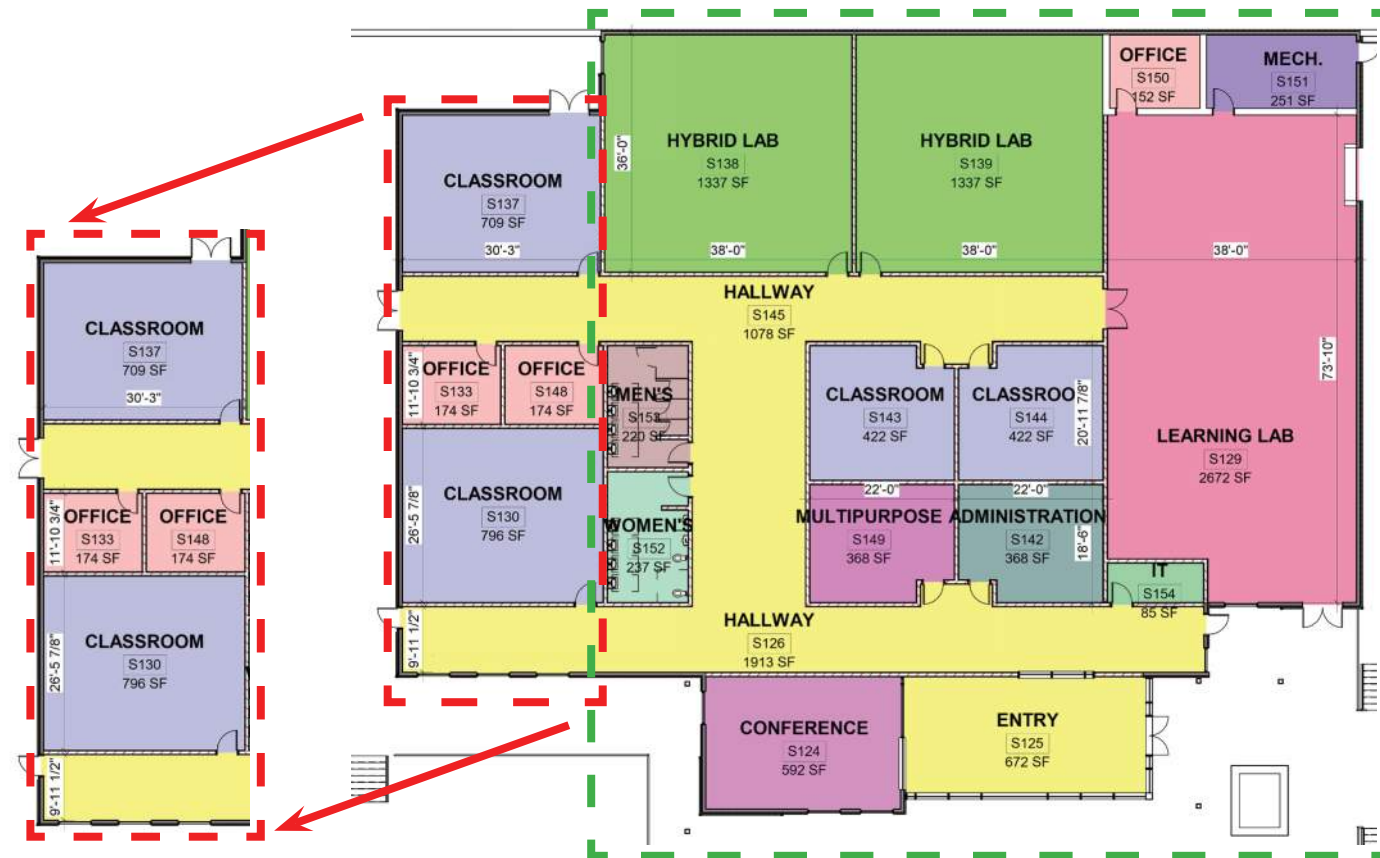
- Hybrid Labs (2)
- Classrooms (2)
- Learning Lab with an office space
- Administration
- Multi-purpose
- Conference
- Restrooms

The area outlined in red will include:

- Classrooms (2)
- Offices (2)

OR may include:

- Hybrid Lab (1)
- Classroom (1)



REMOVAL OF 2,700 SF.

LEAVES 12,263 SF





