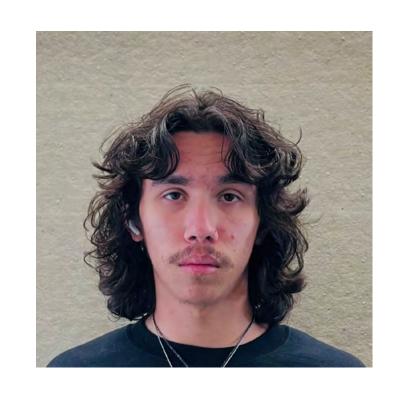
DIEGO HERNANDEZ ALI ALBAQSHI, JEREMIAH BELTRAN,

# **OUR TEAM**











ALI ALBAQSHI KUWAIT, IRAQ JEREMIAH BELTRAN
TUCSON, AZ

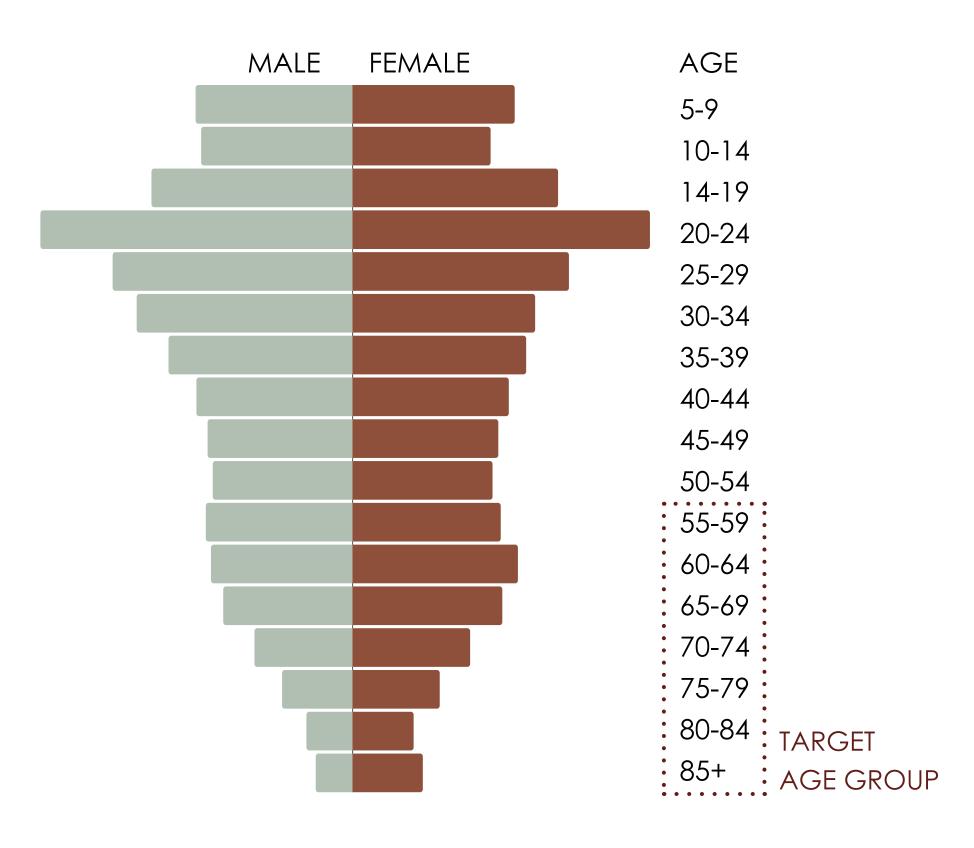
PRESTON BEGODY

CARLSBAD, CA

AVERY BERGER
AURORA, CO

**DIEGO HERNANDEZ**LOS ANGELES, CA

#### **OUR PROJECT**





**POPULATION PYRAMID** 

UNIVERSITY OF ARIZONA, IN THE COLLEGE TOWN TUCSON

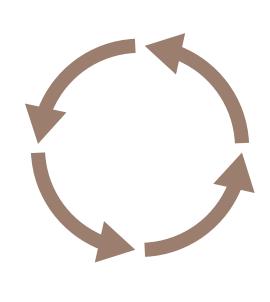
#### UNIVERSITY BASED RETIREMENT COMMUNITIES











**MENTORSHIP BETWEEN RETIREES AND** YOUNGER STUDENTS IS SYMBIOTIC

**CONNECTION TO** STATE OF THE ART MEDICAL CARE

**MORE INTERNSHIP AND OTHER STUDENT POSITIONS** 

LIFELONG **LEARNING IS** BENEFICIAL FOR **SENIORS** 

YEARLONG USE **OF UNIVERSITY** RESOURCES

ROSEMARY COMMONS **ARCHITECTURE ENGINEERING ENVELOPE GRID-INTERACTIVITY** LIFE-CYCLE HEALTH **EFFICIENCY** 

#### THE SONORAN DESERT

WINTER

**SPRING** 

SUMMER

**FALL** 

FINE TO GLORIOUS

GLORIOUS TO HOT AND DRY

HOT AND DRY TO **BLISTERINGLY HOT** AND DRY

HOT AND DRY TO **GLORIOUS** 

**AVG MIN** 

**AVG MAX** 

**AVG MIN** 

**AVG MAX** 

**AVG MIN** 

**AVG MAX** 

**AVG MIN** 

**AVG MAX** 

70°F

62°F 89°F 76°F

98°F

76°F

5



USUALLY BREEZY SOMETIMES CALM, RARELY STRONG WINDS



MAINLY BREEZY SOMETIMES CALM, RARELY STRONG WINDS



USUALLY BREEZY SOMETIMES CALM, RARELY STRONG WINDS



USUALLY BREEZY SOMETIMES CALM, RARELY STRONG WINDS



LOW PERCIPITATION (2" OVER 9 DAYS)



**NEGLIGIBLE PRECIPITATION** 



VERY LOW PERCIPITATION (1" OVER 12 DAYS)



VERY LOW PERCIPITATION (2" OVER 9 DAYS)

ROSEMARY COMMONS **ENVELOPE** 

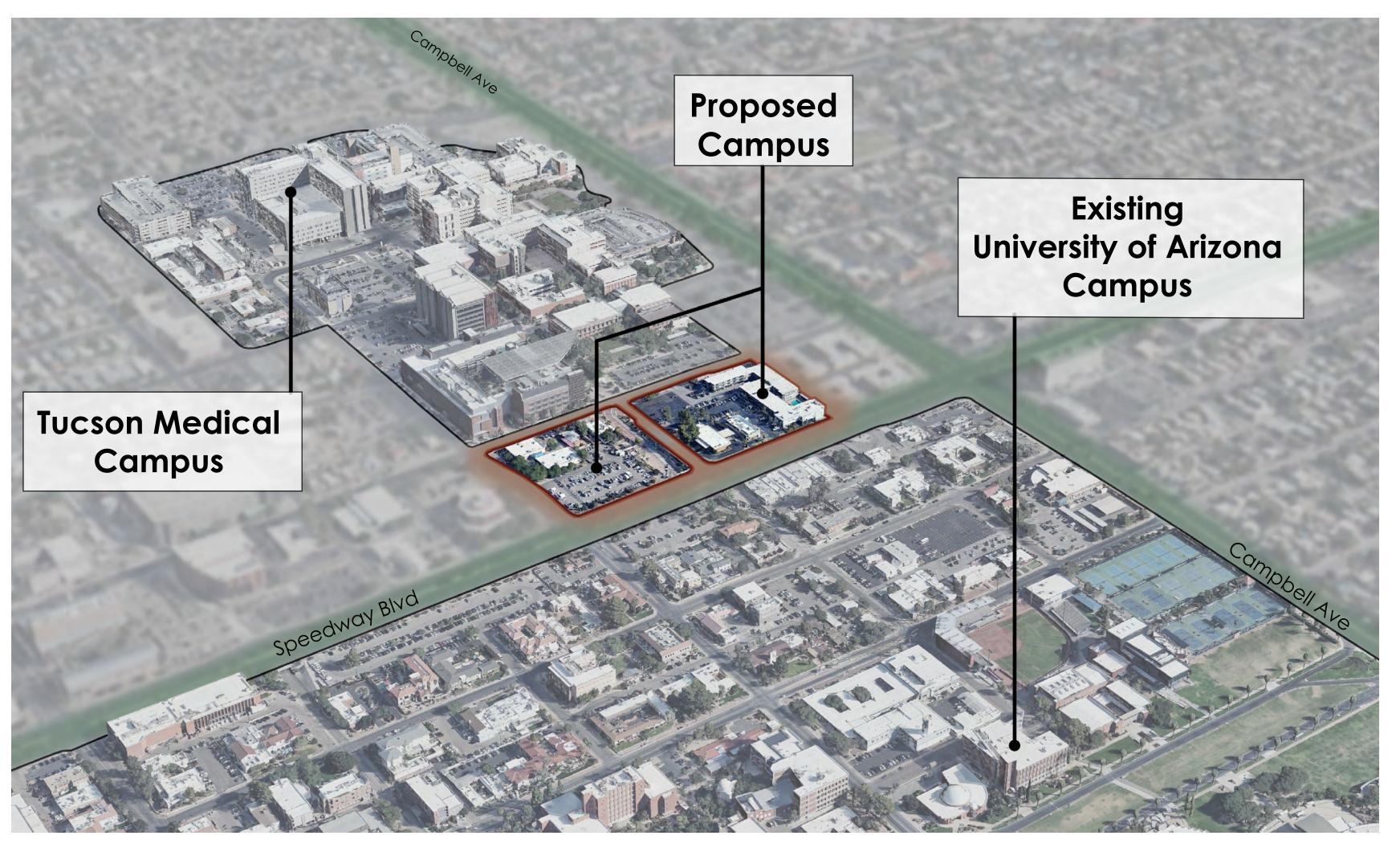
#### DESERT RESILIENCE DISTRICT

PROPOSED MICROCAMPUS: DESERT RESILIENCE DISTRICT

NEAREST MAIN ROADS: CAMBELL AVE SPEEDWAY BLVD

BANNER HEALTH TO THE NORTH OF MICROCAMPUS

UNIVERSITY OF ARIZONA
CAMPUS TO THE SOUTH OF
SPEEDWAY



**GRID-INTERACTIVITY** 

COMMUNITY

HEALTH

LIFE-CYCLE

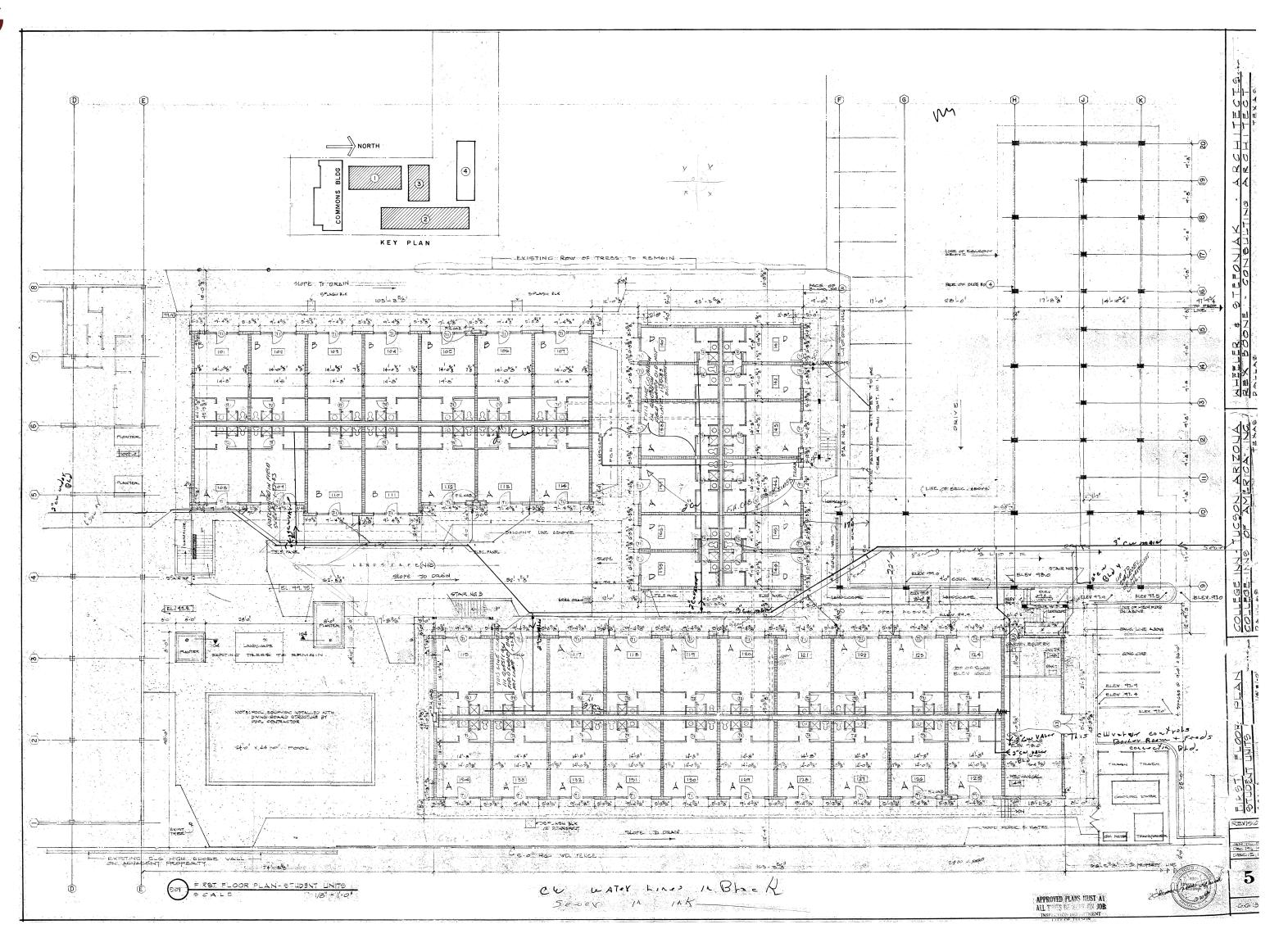
MARKET

## **EXISTING BUILDING**

ORIGINALLY BUILT AS A MOTEL IN THE 1960S

CONVERTED
TO BABCOCK DORMS

DORM ROOMS RANGE FROM 200-350 SF



## **RENOVATION**

#### **PROS**

CLOSE TO TRANSIT LINE

SALVAGEABLE INFRASTRUCTURE

LOWER EMBODIED CARBON

EXTENDING LIFE CYCLE

MORE COST EFFICIENT

#### CONS

ASBESTOS REMOVAL

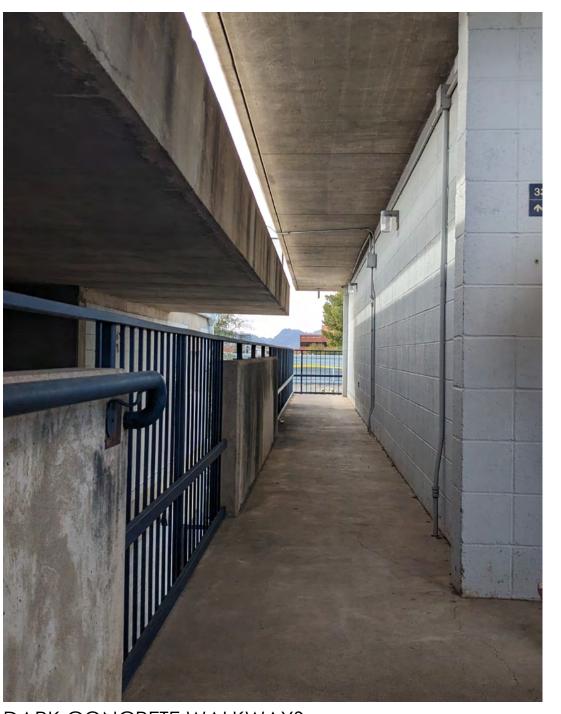
DARK WALKWAYS

8.5' FLOOR TO FLOOR

OLD MECHANICAL SYSTEMS

SMALL ROOMS

NO INSULATION



DARK CONCRETE WALKWAYS



DETERIORATED CONCRETE, SINGLE PAIN WINDOWS



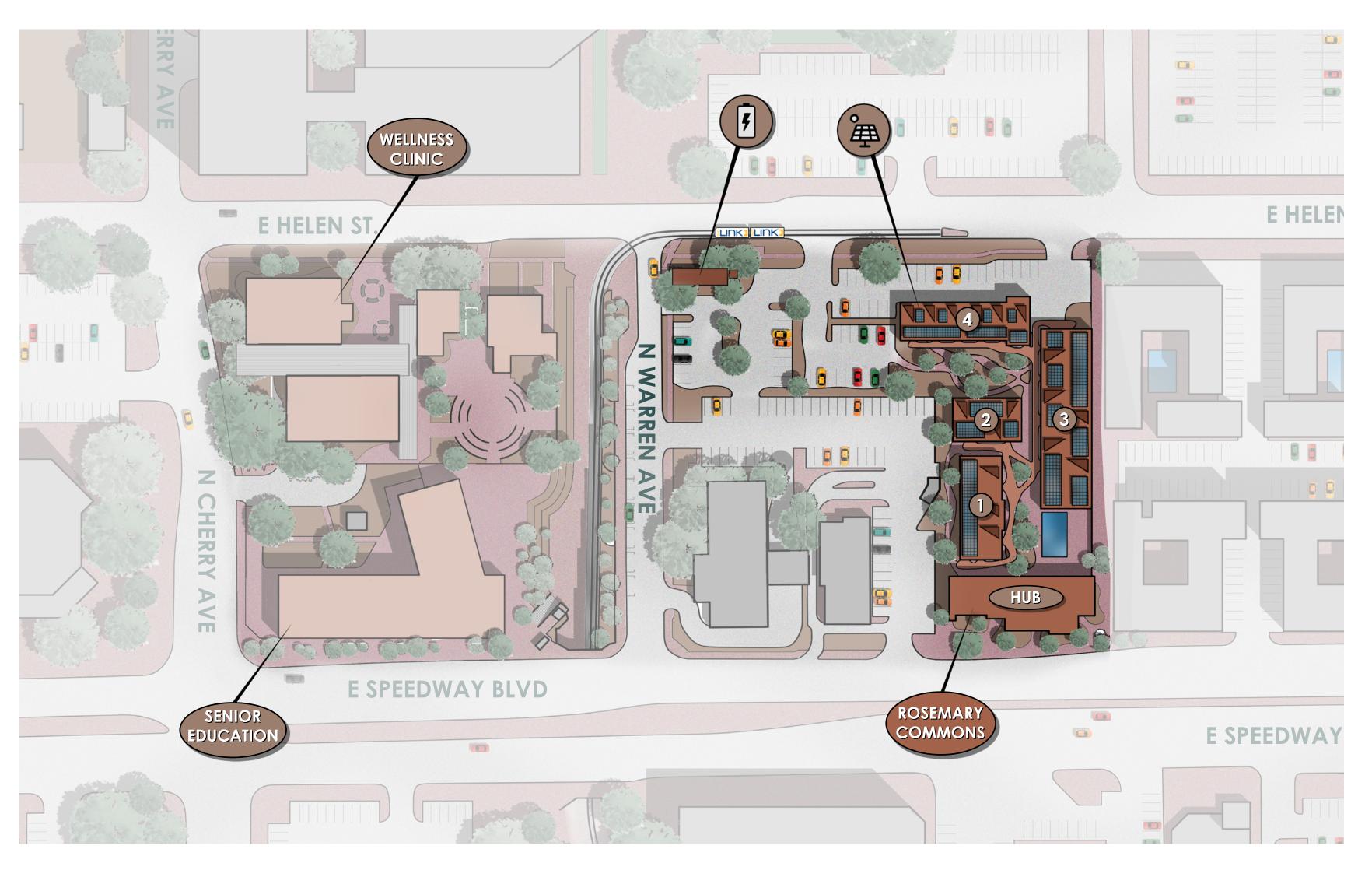
UNINVITING, CONCRETE LOOKS RUN DOWN

#### PROPOSED SITE PLAN

EXISTING BUILDING,
BABCOCK DORMS WITH THE
RED ROOF.

SUNLINK STOP ON THE NORTH SIDE OF THE CAMPUS.

UNIVERSITY OF ARIZONA
CAMPUS TO THE SOUTH OF
SPEEDWAY

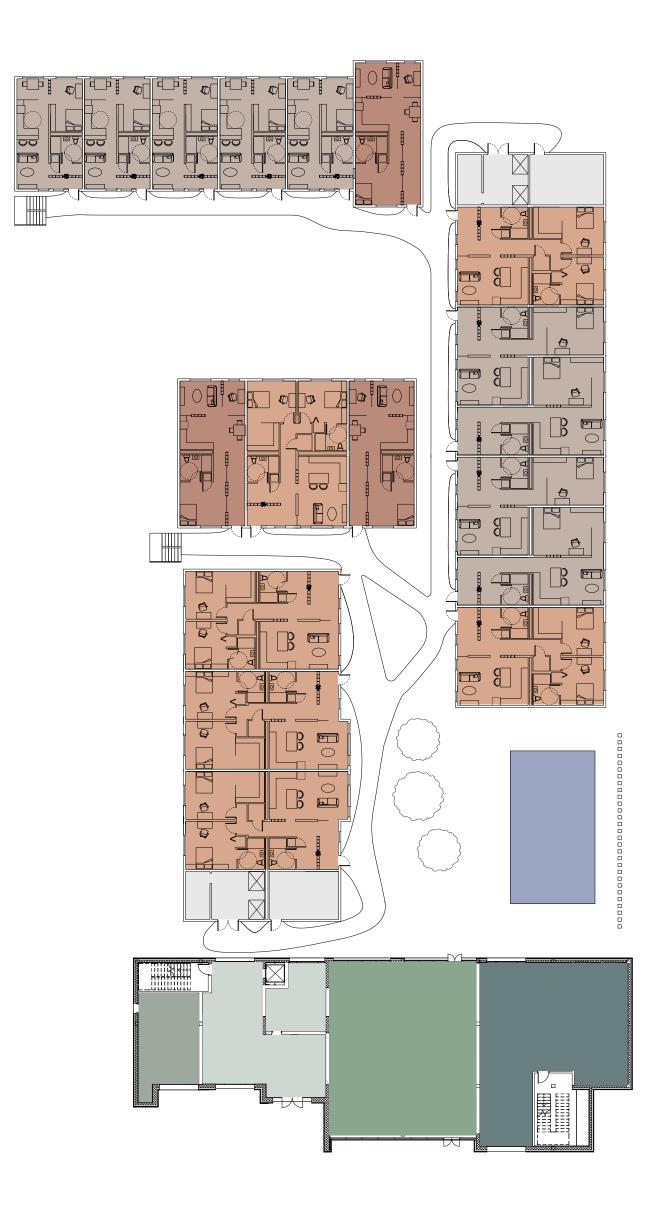


## SITE PROGRAM

SPACES ADAPTED TO BETTER
SUIT RETIREES

MINIMAL LOSS TO RENTABLE SPACES IN RENOVATION

INTERIOR STAIRS AND ELEVATORS ADDED



Area Type	Quantity	Area (sq. ft.)	Subtotal (sq. ft.)
Cafe	1	455	455
Lobby	1	1115	1115
Kitchen/Market	1	2092	2092
Gym	1	1548	1548
Locker/Restrooms	1	562	562
Unit 1 - Studio	8	788	6304
Unit 2 - 2 Bedroom	18	1206-1301	18696
Unit 3 - 1 Bedroom	22	608-888	16736
Rooftop Garden	1	6155	6155
Computer Room	1	455	455
Restrooms	3	156	468
Library/Study Space	1	4860	4860
Pool	1	1090	1090
Service	8	167-312	2110

10

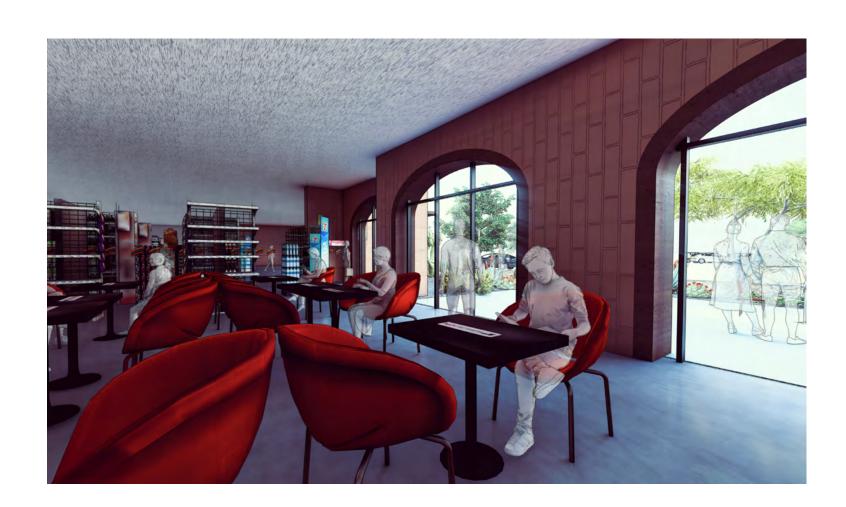
Space Category	Percentage	Square Footage	
Residential	68.85%	42826	
Commercial	31.15%	19556	

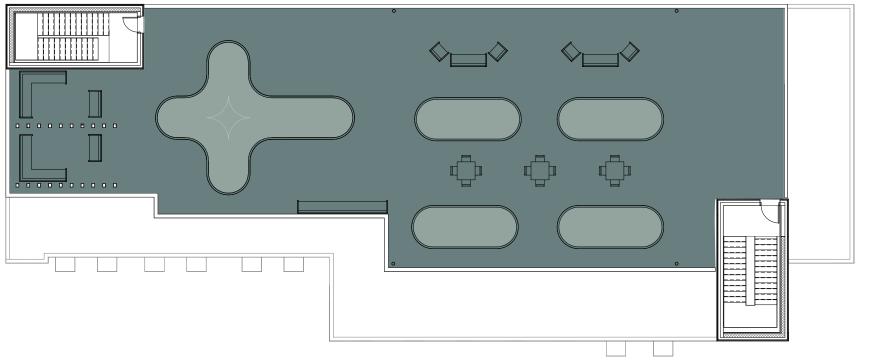


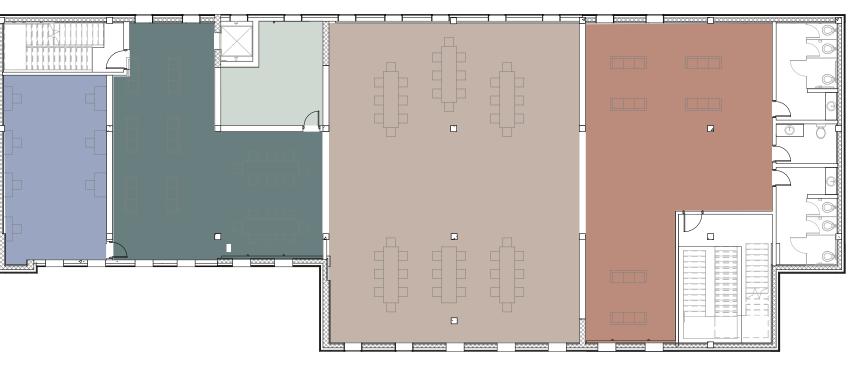
ROSEMARY COMMONS MARKET COMMUNITY LIFE-CYCLE ARCHITECTURE ENGINEERING ENVELOPE **EFFICIENCY** HEALTH GRID-INTERACTIVITY

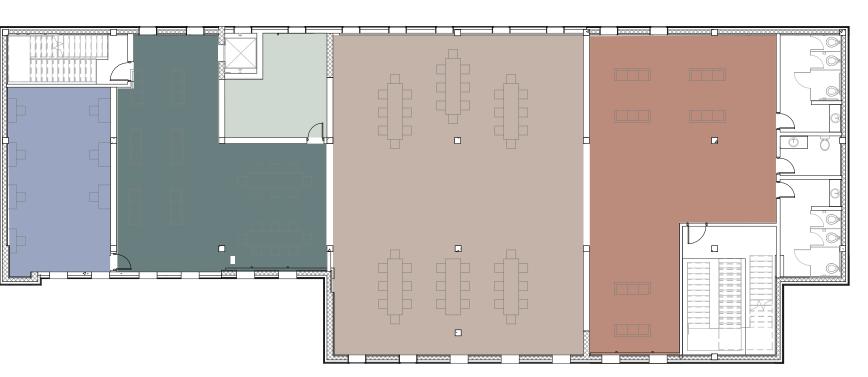
## **COMMUNAL HUB**

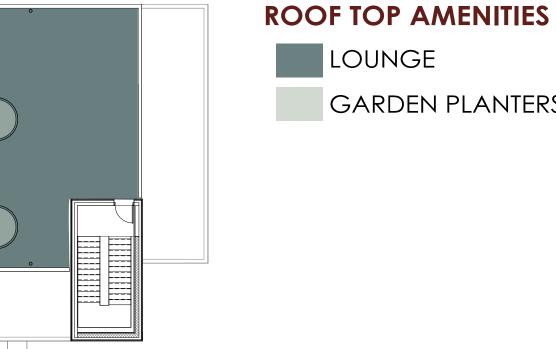














**2ND FLOOR AMENITIES** 

STUDY ROOM

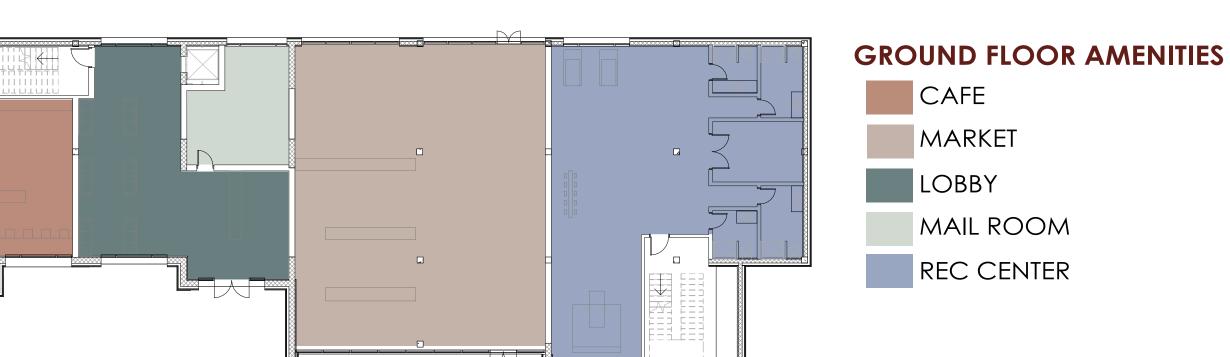
COMPUTER LAB

OPEN STUDY SPACE

12

LOUNGE

REC HALL



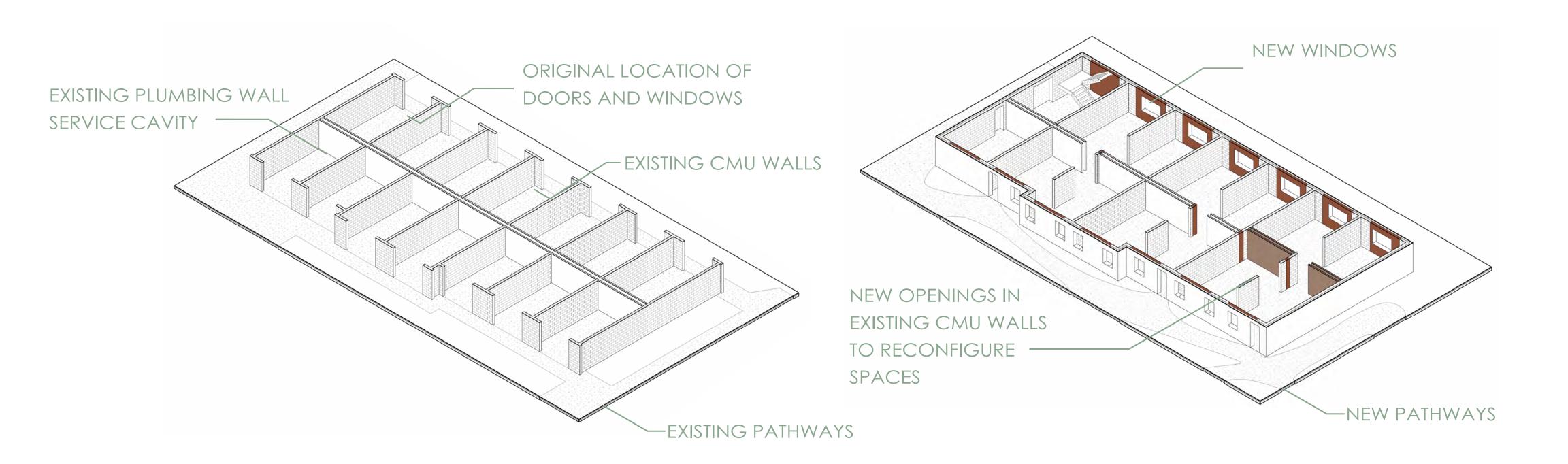
## VIEW OF NEW WALKWAYS





13

### STRUCTURE MODIFICATIONS



**BLDG 1 EXISTING STRUCTURE** 

**BLDG 1 RENOVATED STRUCTURE** 

14

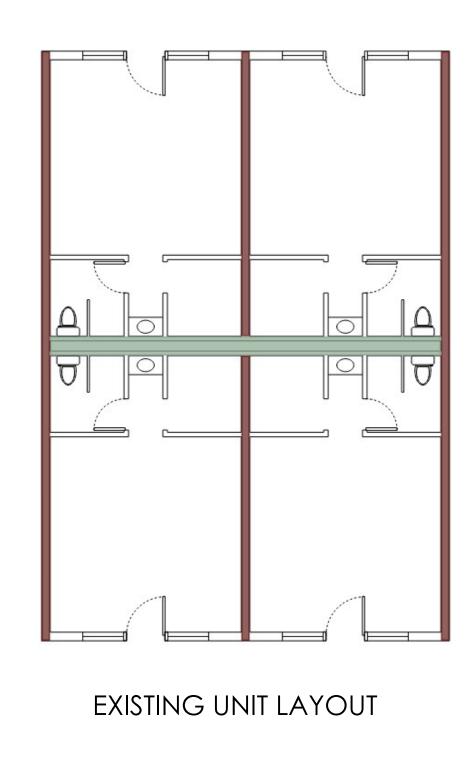
## **UNIT RENOVATION**

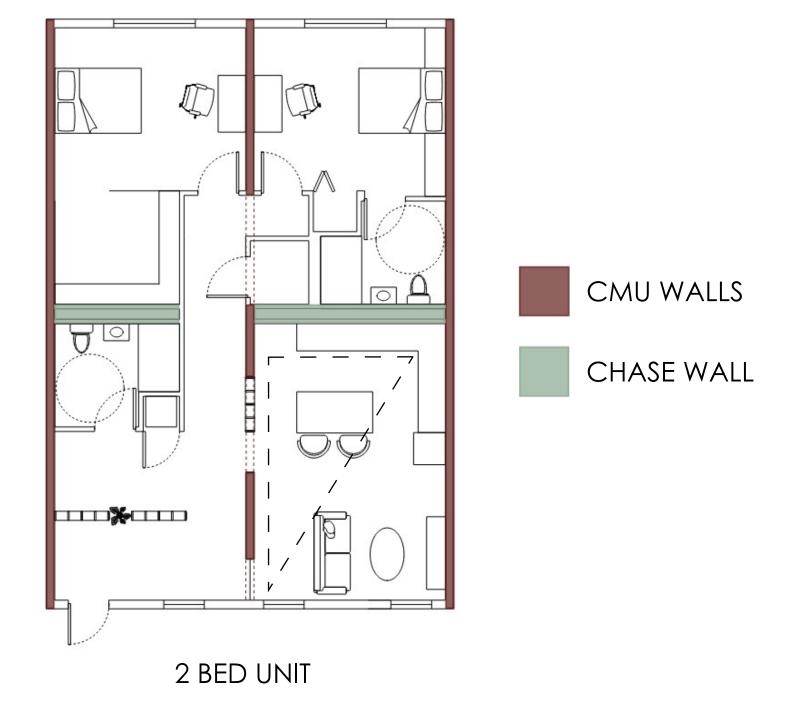
#### **EXISTING DORMS:**

- SMALL UNITS
- WINDOWS ON 1 WALL
- NOT ACCESSIBLE

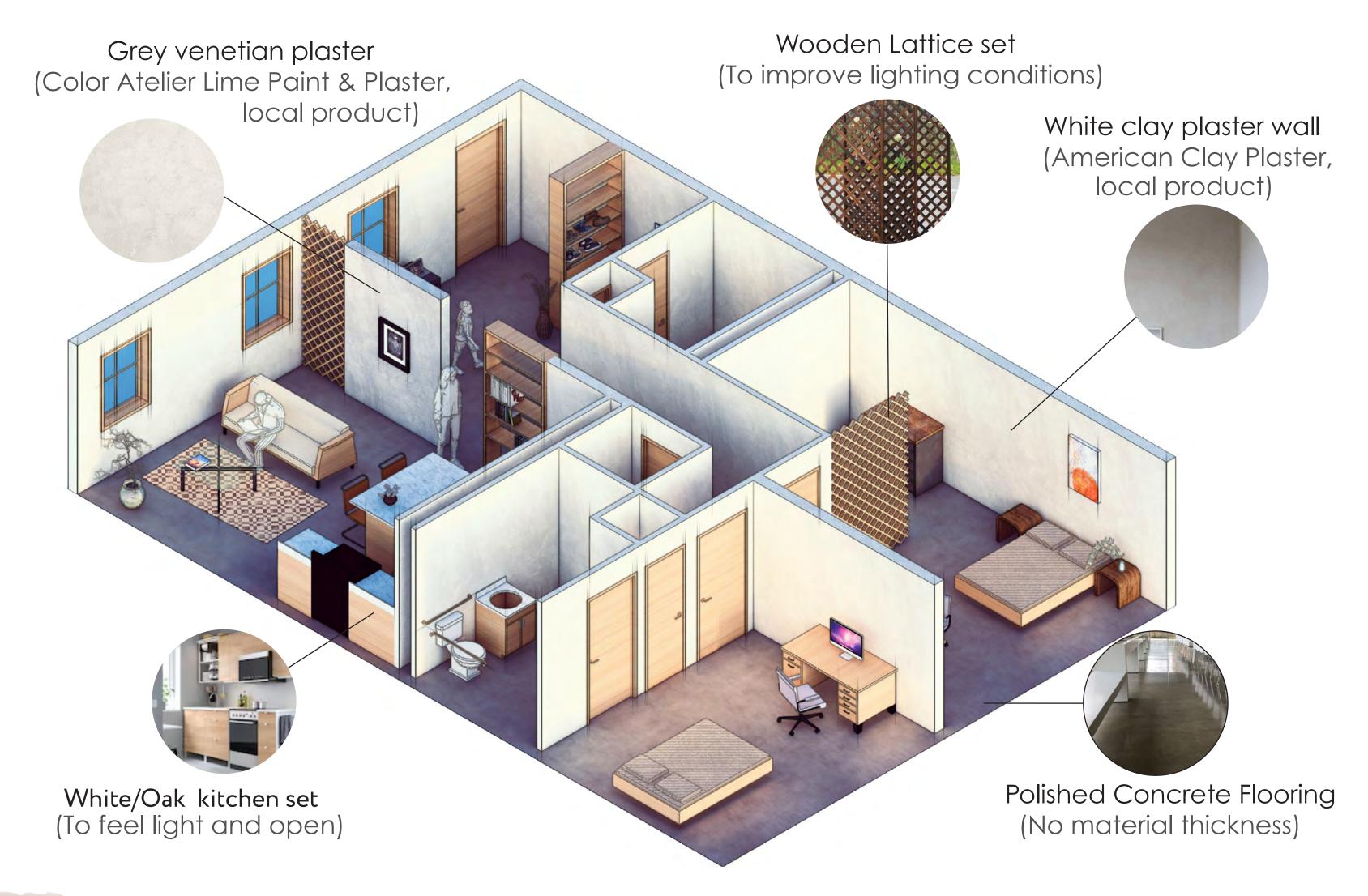
#### CHASE WALL BREAK ALLOWS:

- LIGHT FROM BOTH SIDES
- -SPACIOUS UNITS
- ACCESSIBILITY





## INTERIOR FINISHES



ROSEMARY COMMONS ARCHITECTURE ENGINEERING ENVELOPE EFFICIENCY GRID-INTERACTIVITY LIFE-CYCLE HEALTH MARKET COMMUNITY

16

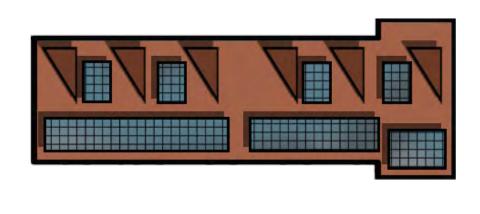
# **INTERIOR VIEWS**



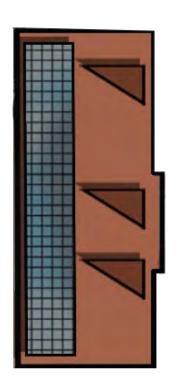


17

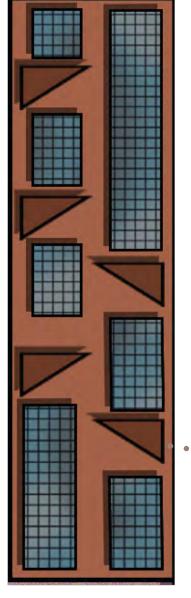
## **CLERESTORIES**

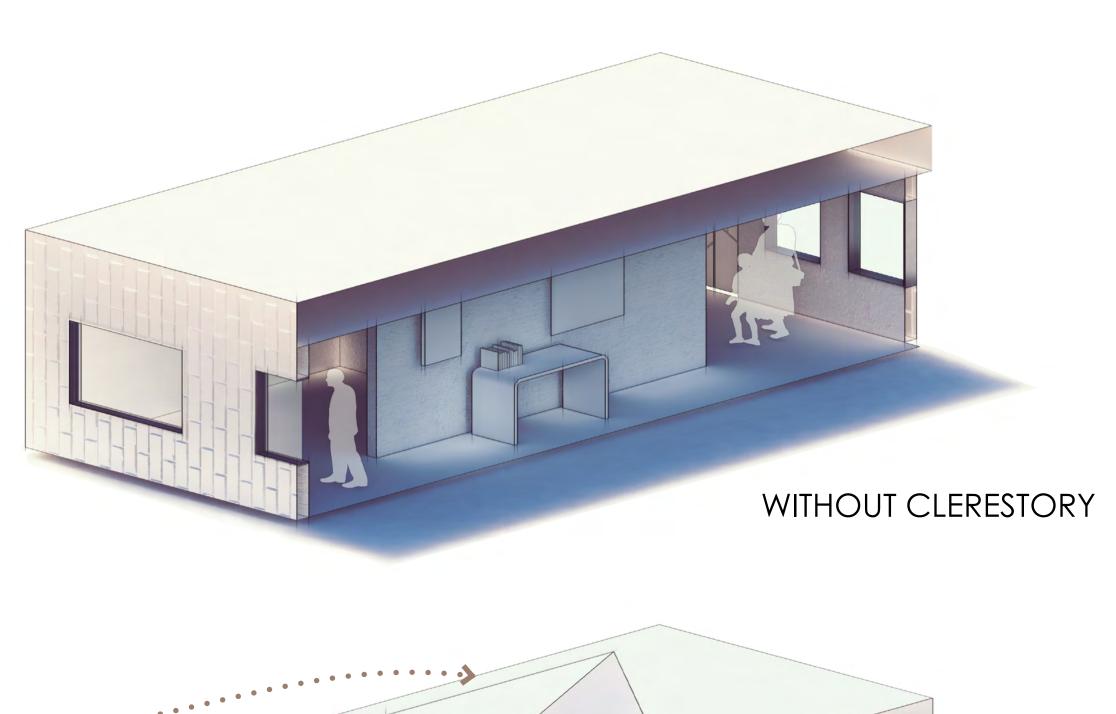


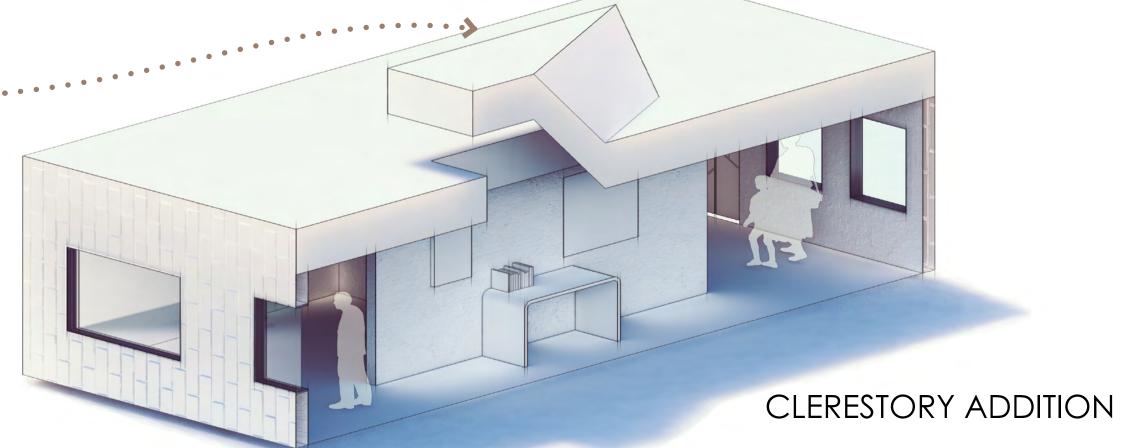




ROSEMARY COMMONS

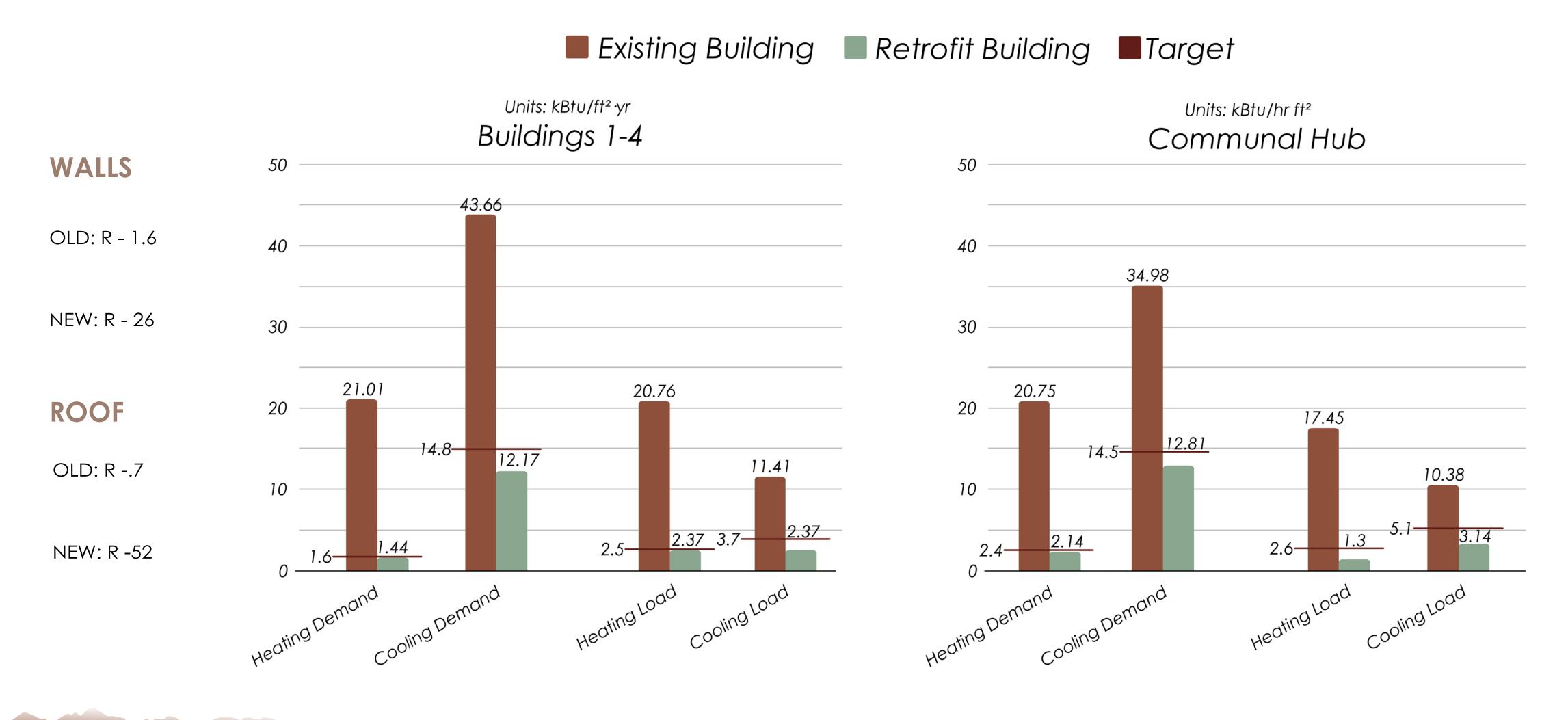






18

#### REDUCING HEATING AND COOLING LOADS

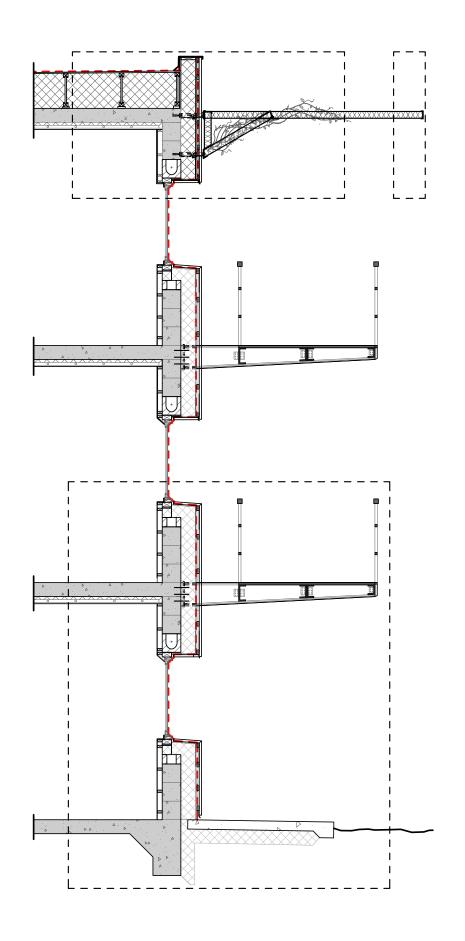


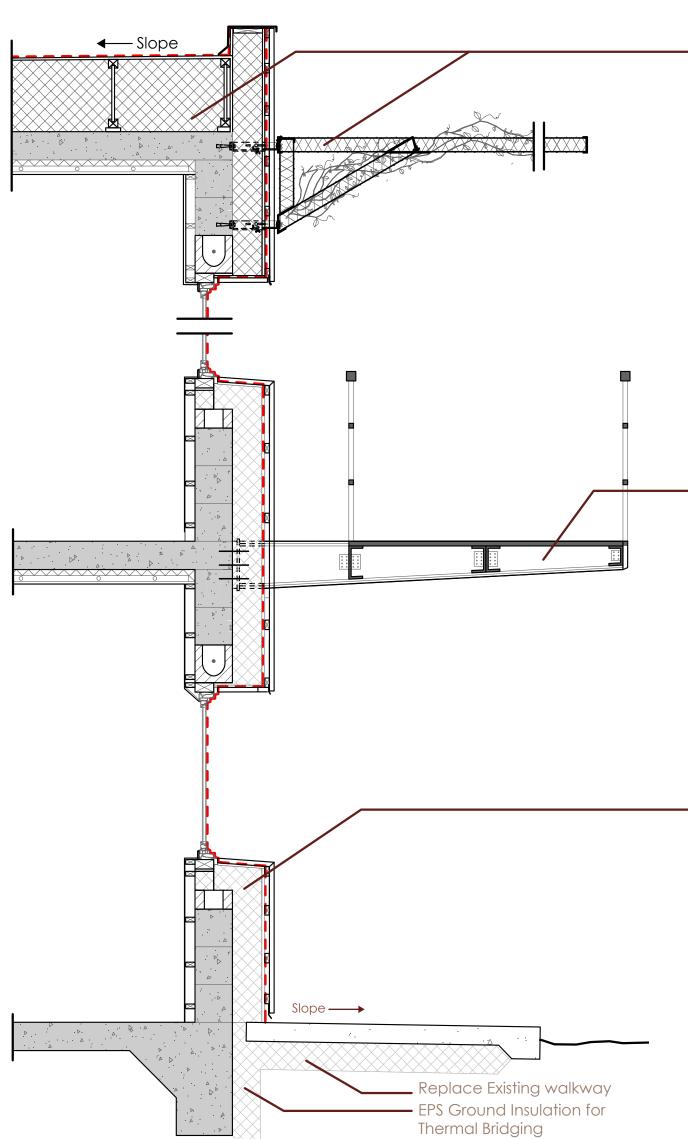
GRID-INTERACTIVITY

ROSEMARY COMMONS **ARCHITECTURE ENGINEERING EFFICIENCY ENVELOPE** 

19

#### **ENVELOPE**





#### **ROOF SYSTEM**

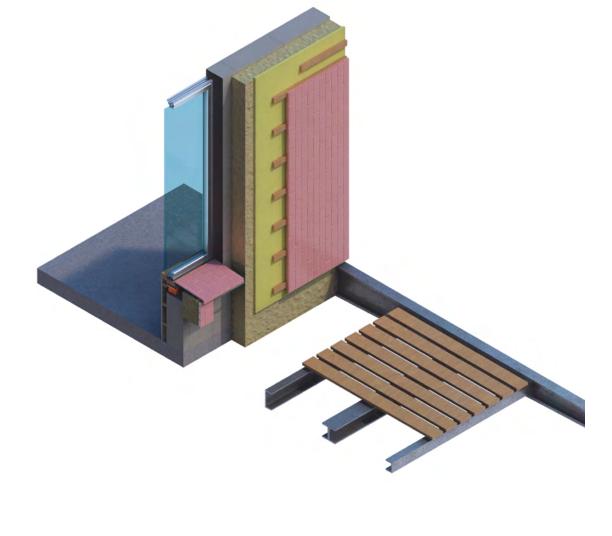
New Wall Insulation on Exterior White EPDM Layer OSB Sheathing 14" TJI Joists Mineral Wool Insulation Existing 6" Conc. Roof Adjustable Metal Trellis brackets **ARAMTHERM** thermal Bridge Breaks Bougainvillea Vining Plant New **Tournesol** Greenwall Trellis System

#### **NEW WALKWAY**

TREX Decking Steel Beams Wall Insulation Wraps Steel Struct. Steel Beam Anchors ARMATHERM Thermal Bridge Breaks

#### WALL INSULATION

Terrocotta Facade Tiles 1"x2" Vertical Furring 1" Air Pocket Tyvek WRB Layer Dens Glass Sheathing Fiber Glass Gyp. Board Mineral Wool insulation Cascadia Clips Fluid Applied Water Barrier (WRB) Existing CMU Wall

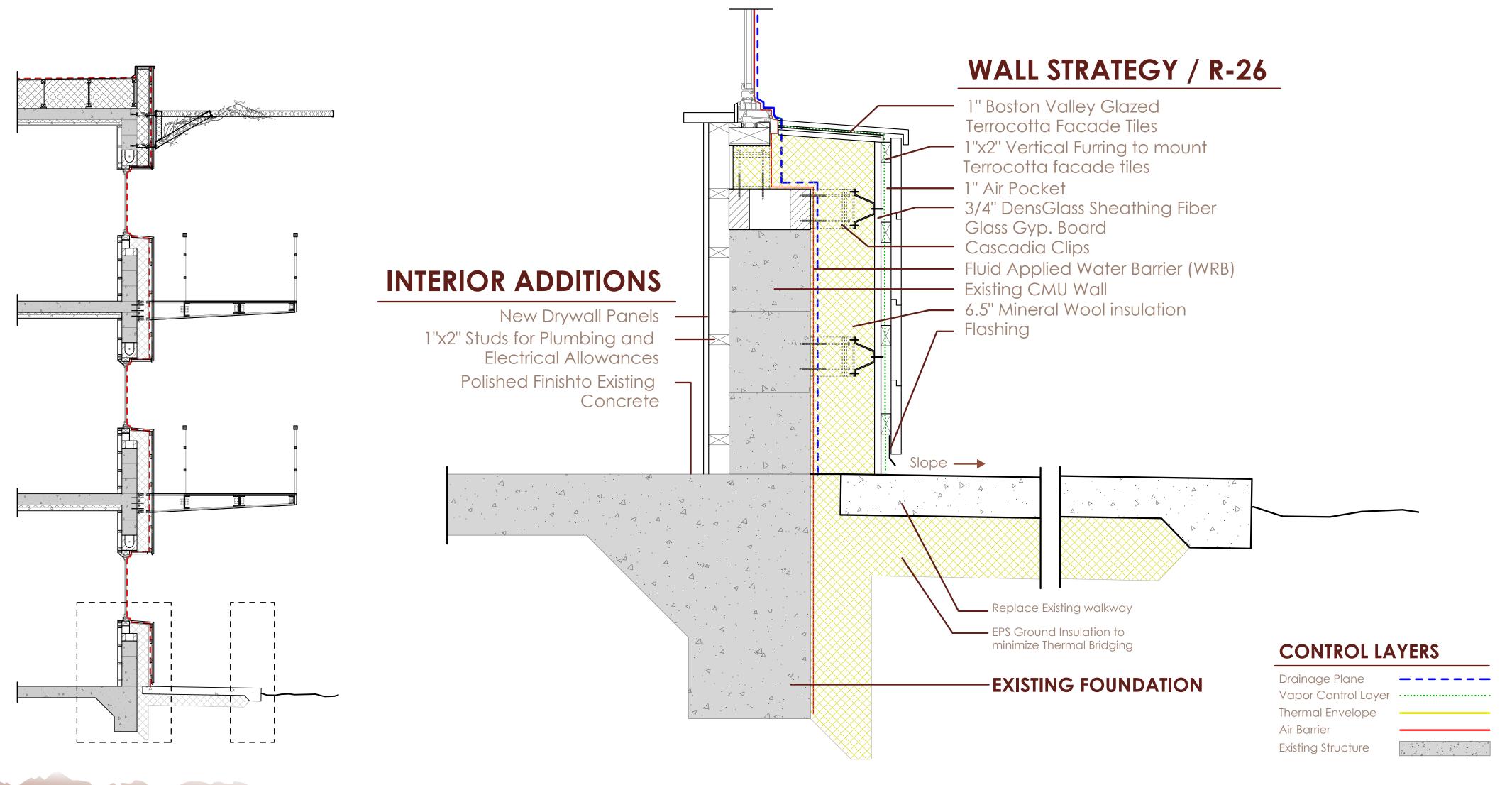




**ARCHITECTURE** 

LIFE-CYCLE

#### **INSULATION SYSTEM**



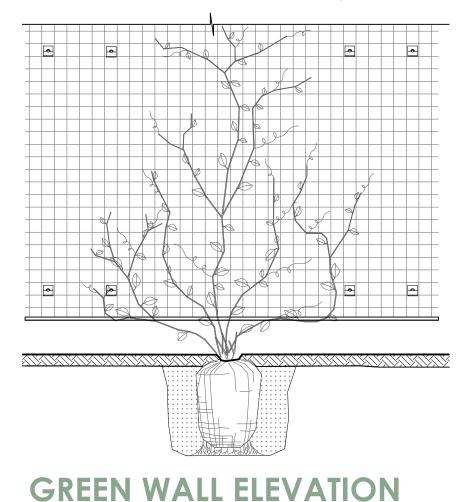
ROSEMARY COMMONS ARCHITECTURE ENGINEERING **ENVELOPE** EFFICIENCY GRID-INTERACTIVITY LIFE-CYCLE HEALTH MARKET COMMUNITY

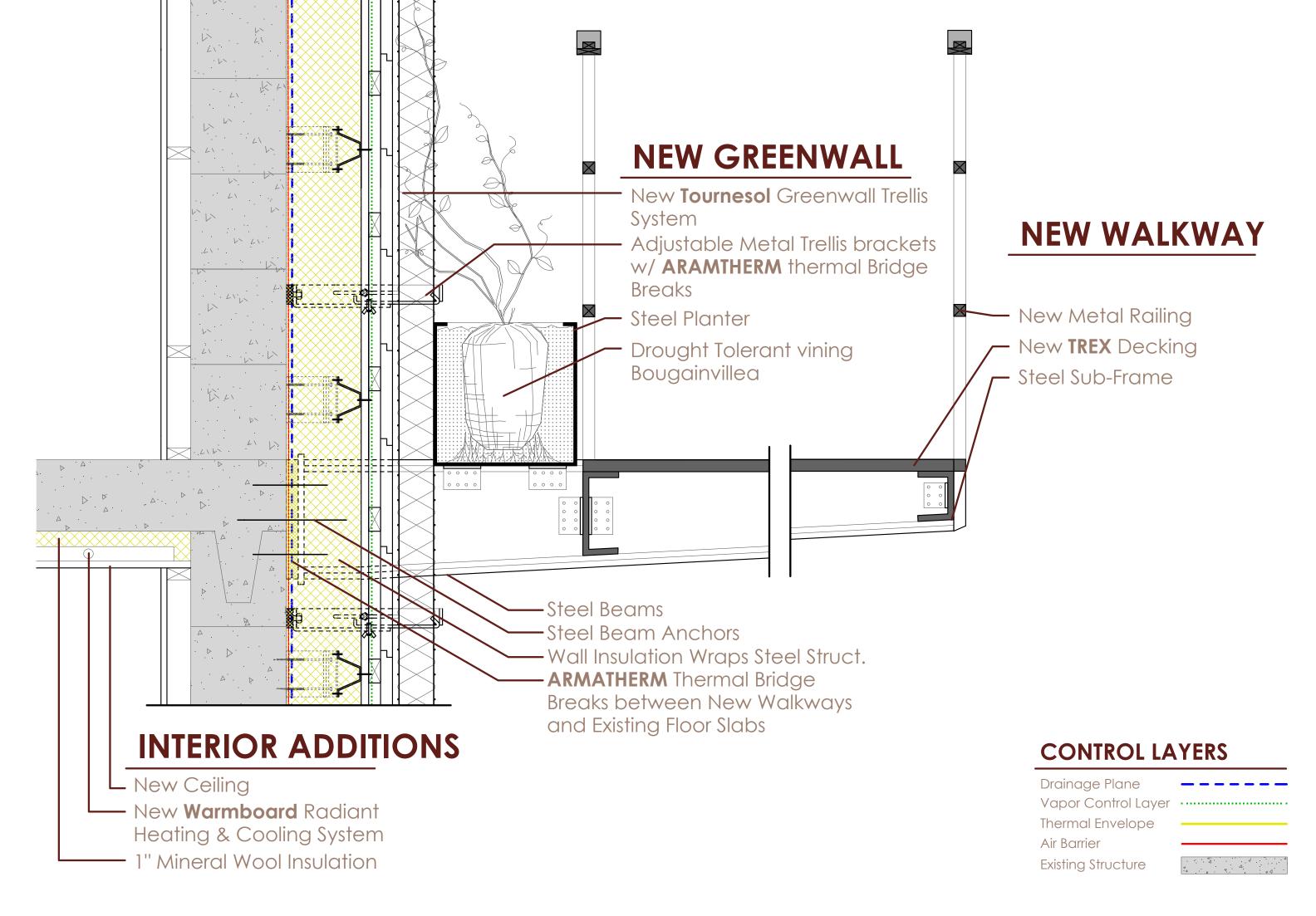
21

#### **WALKWAY SYSTEM**

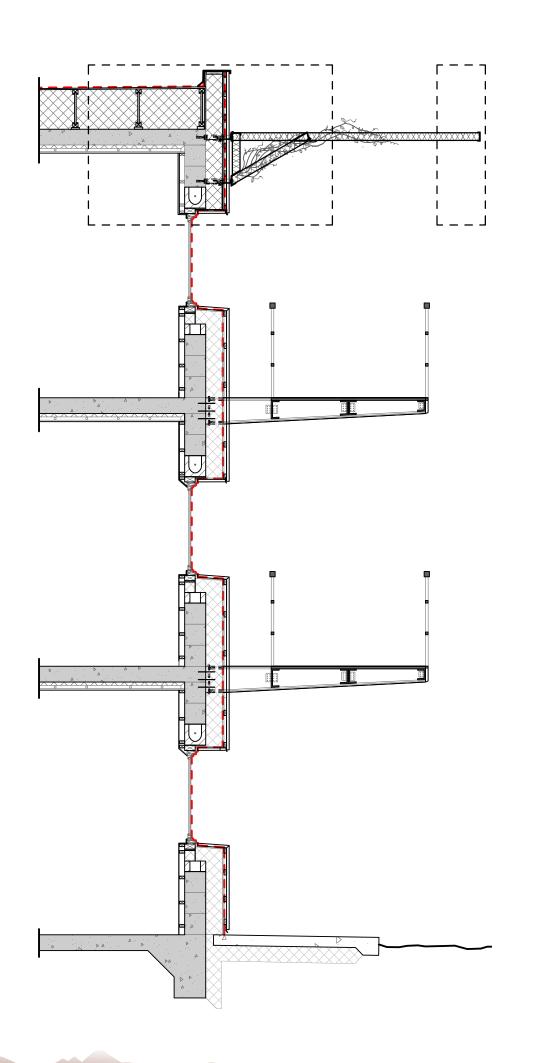


PRECEDENT USE CASE: TEMPE, AZ

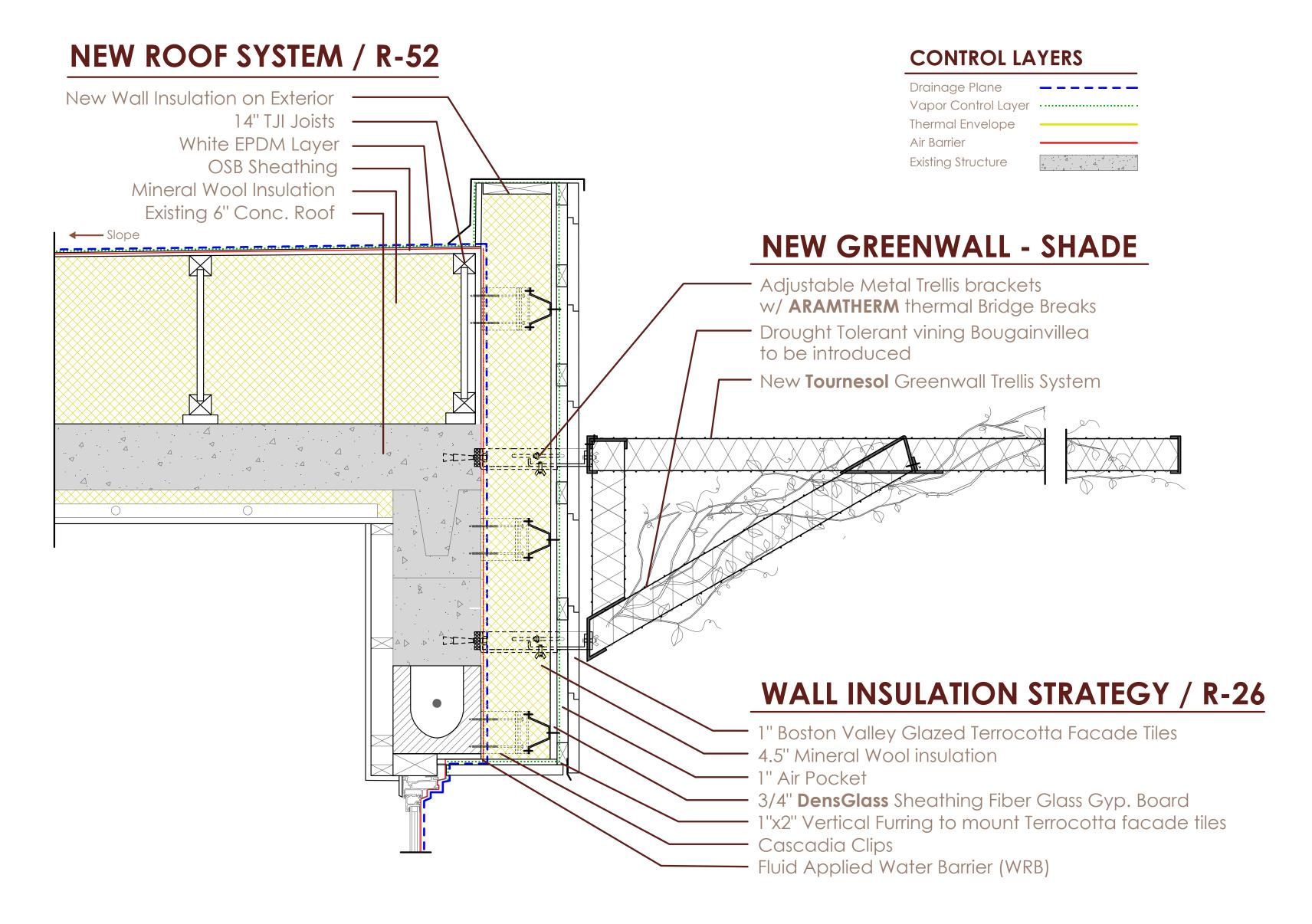




## **ROOF**



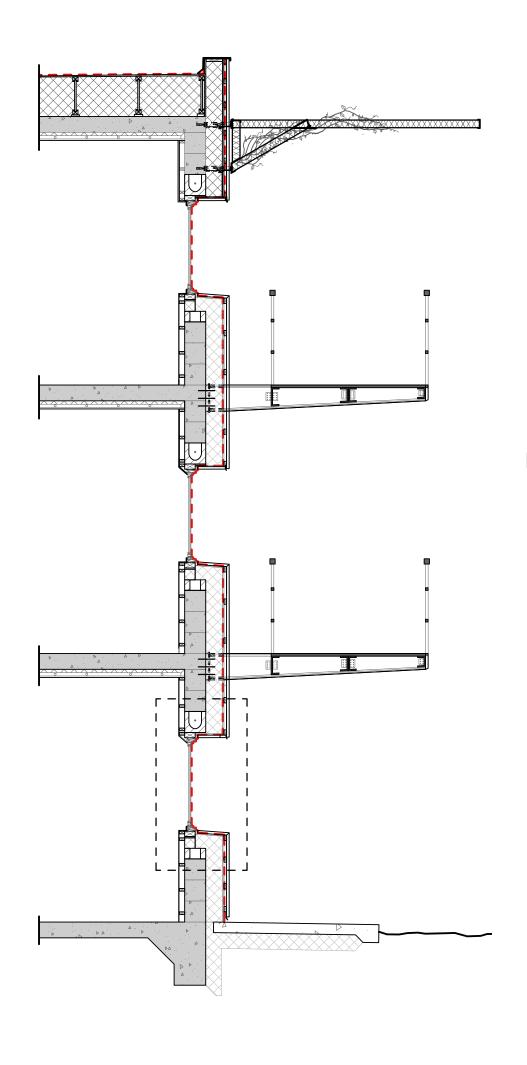
ROSEMARY COMMONS



ARCHITECTURE ENGINEERING ENVELOPE EFFICIENCY GRID-INTERACTIVITY LIFE-CYCLE HEALTH MARKET COMMUNITY

23

### **WINDOWS**





#### **ZENITH WINDOWS**

TRIPLE PANED

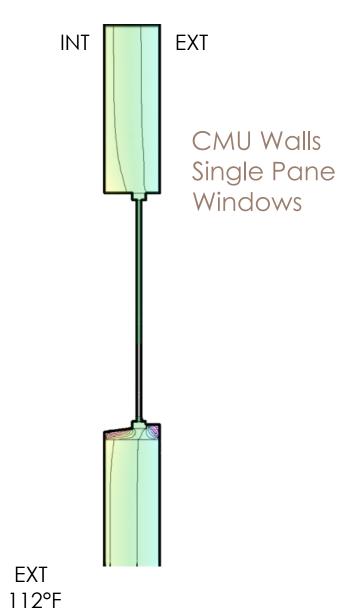
R-13

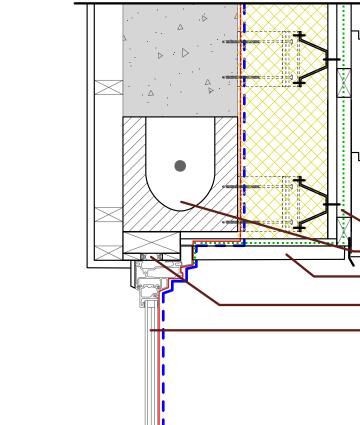
SHGC 0.266

#### **30% WWR**









#### **CONTROL LAYERS**

Drainage Plane Thermal Envelope Air Barrier Existing Structure . 4

#### **NEW WINDOWS**

Continuous Air Barrier New Lintel External Header w/ Weep Screed - 2"x4" Wood Studs **Alpen Windows** 

Zenith Triple Pane Window

- Alpen Window Glazing - Fiberglass **Alpen Window** Frame -Shims/Spray Floam w/ Backer Rod and Sealant -Terracotta External Sill above Metal Flashing Tapered Insulation To Wrap CMU New Wood Blocking to Mount

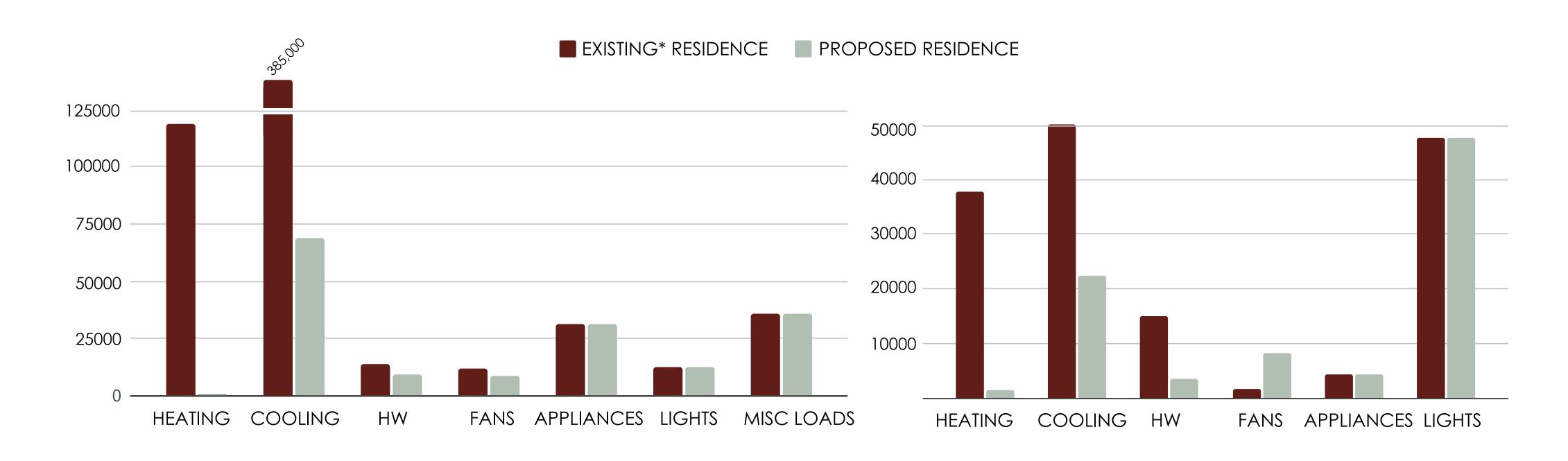
New Alpen Window Cascadia Clips Over Half Height CMU Block to Mount New Window



### WHERE ENERGY IS USED

#### RESIDENCE ENERGY DISTRIBUTION KWH/YR

#### COMMUNAL HUB DISTRIBUTION KWH/YR



ROSEMARY COMMONS **ARCHITECTURE** 

### MECHANICAL SYSTEMS



**OVEN ENERGY STAR** RATED ELECTRIC STOVE AND RANGE SYSTEM 48 (1 PER UNIT)



FRIDGE **ENERGY STAR** RATED FRIDGE AND FREEZER 48 (1 PER UNIT)



CX50 AIR TO



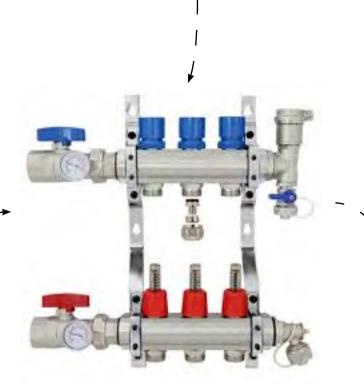
**WATER HEAT** PUMP



**DISHWASHER ENERGY** STAR RATED **DISHWASHER** 



**BUFFER TANK** Chiltrix









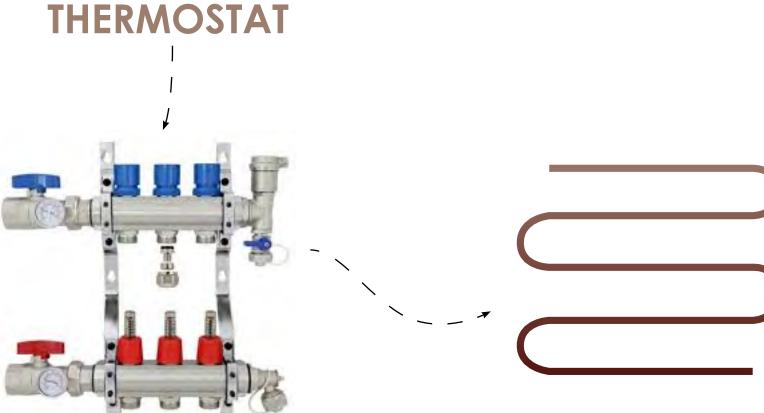


COMFOAIR 160

DEDICATED OUTDOOR AIR SYSTEM WITH HIGH EFFICIENCY **ENERGY RECOVERY AND DEHUMIDIFIER** 



IN WALL UNIT





27

ROSEMARY COMMONS **ENVELOPE ARCHITECTURE EFFICIENCY** GRID-INTERACTIVITY LIFE-CYCLE **HEALTH** MARKET COMMUNITY **ENGINEERING** 

Chiltrix

#### IMPROVEMENTS TO EUI

# RESIDENTIAL BUILDINGS

# COMMUNAL HUB

28

#### **SOLAR PV SIZING**

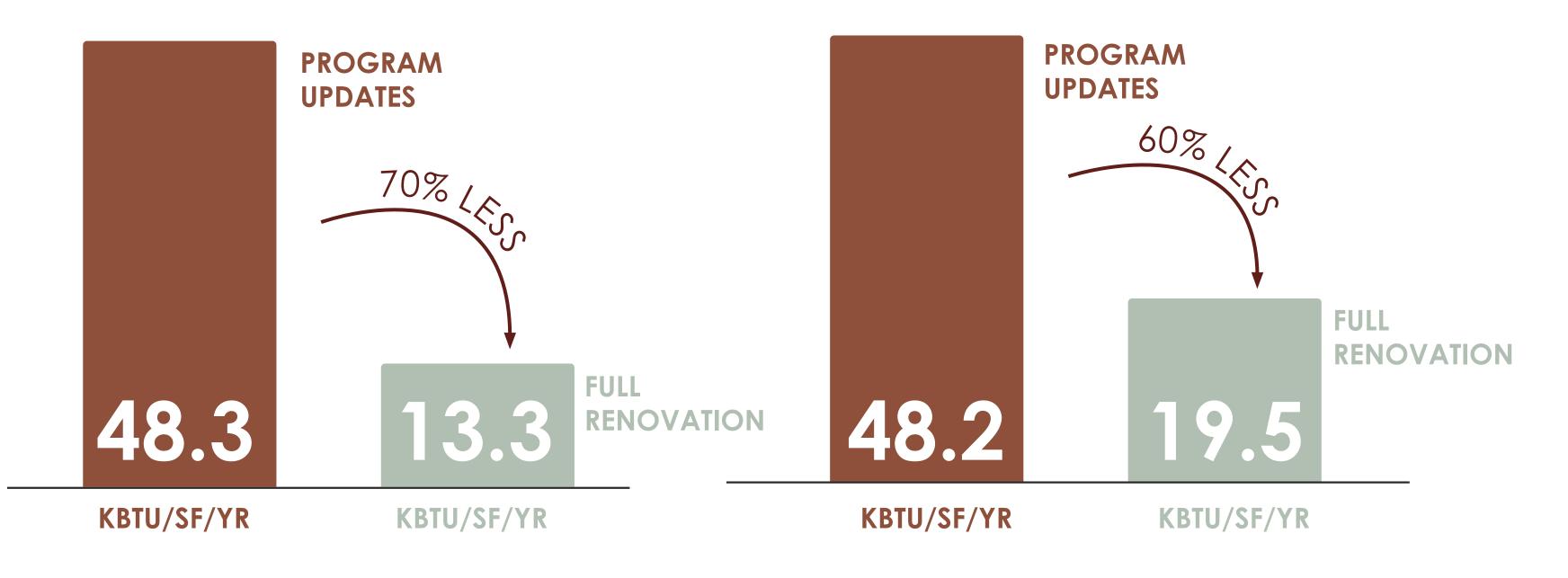
256,488 KWH @ 125% 320,610 KWH SYSTEM

PRODUCTION OF 1 PANEL 400W x 6.57 PSH 2,628 WH (2.628 KWH) DAILY

2.628 KWH/ DAY \*365 DAYS/YR 959.22 KWH/YR

NUMBER OF PANELS

320,610 KWH/YR /959.22 KWH/YR 334 SOLAR PANELS



### DESERT RESILIENCE DISTRICT POWER LOOP

NOT CONNECTED TO

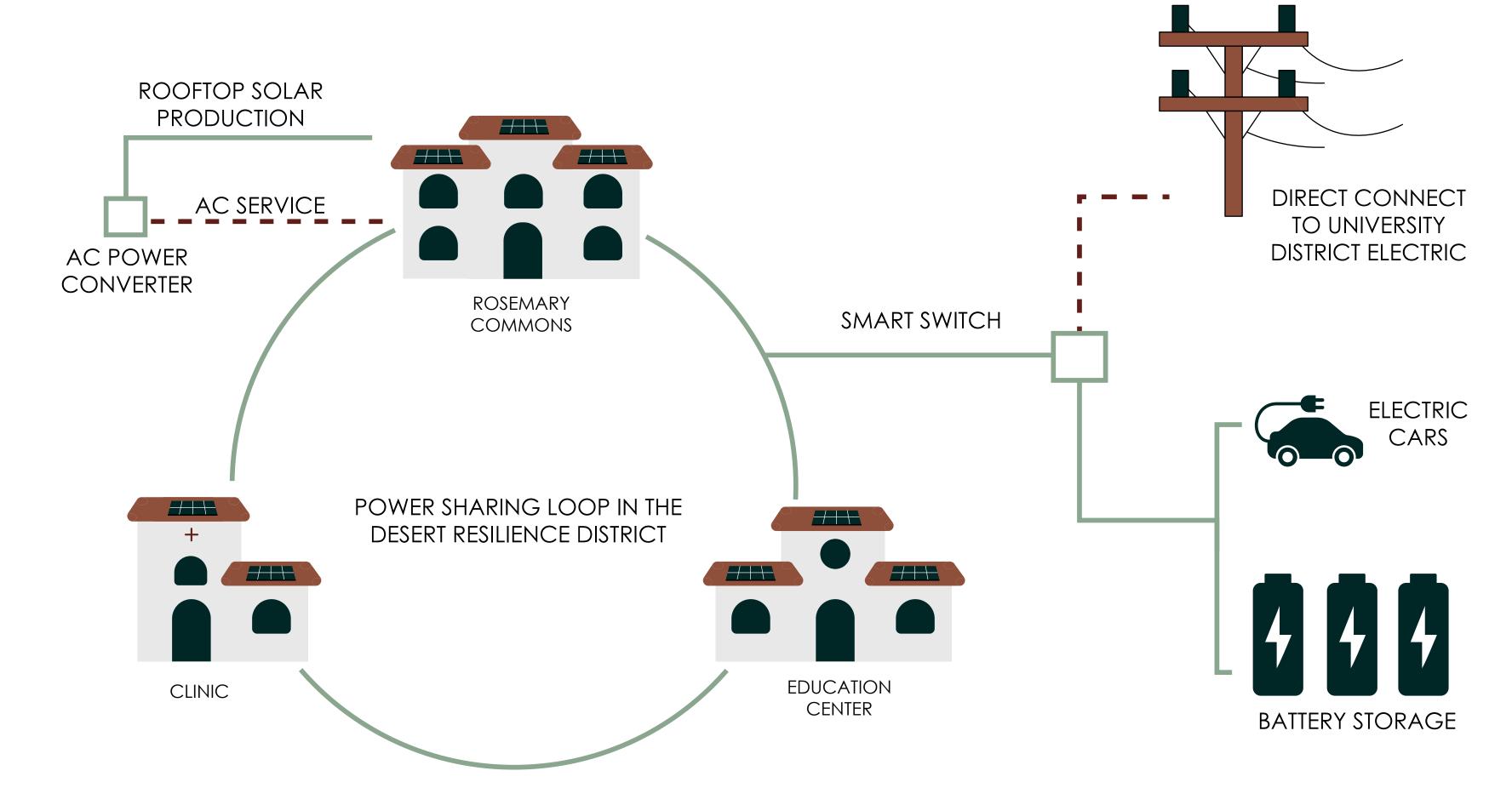
UNIVERSITY DISTRICT ENERGY

(CW, STEAM, ELECTRICITY)

BATTERY STORAGE:

7 AVERAGE DAYS OF ENERGY

USE: 20,905 KBTUS



29

DIRECT CURRENT- - - - ALTERNATING CURRENT

## WATER COLLECTION & REUSE

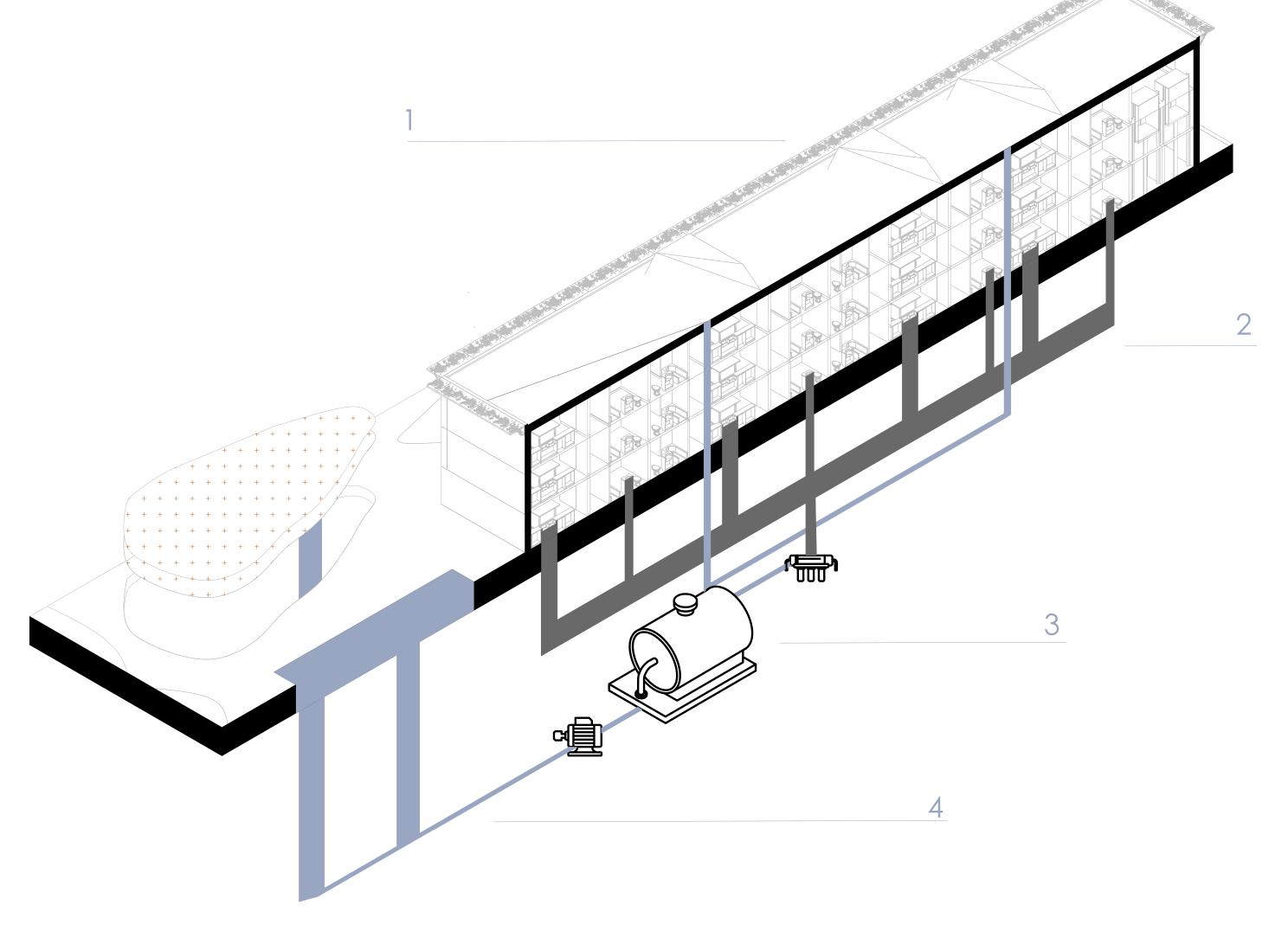
#### **TUCSON RAINFALL STATISTICS:**

9.3" ANNUALLY

= 158,000 GALLONS ANNUALLY

MONSOON SEASON IN JULY & AUGUST

- 1. EPDM + GRAVEL ROOF STRUCTURE
- 2. GREYWATER TO XEROSCAPING
- 3. 40,000 GALLON CISTERN
- 4. SITE WATER COLLECTION



#### **EMBODIED CARBON**





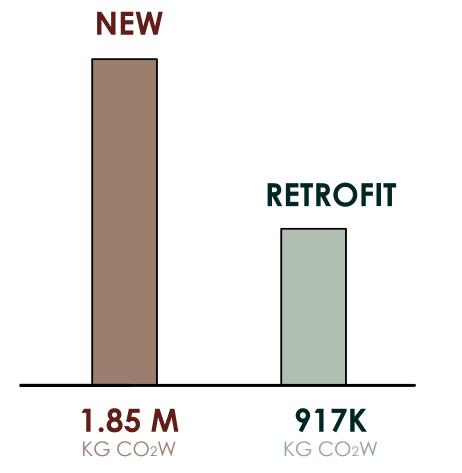
CHOOSING TO RETROFIT INSTEAD OF NEW CONSTRUCTION WOULD ALLOW A NET:

BOSTON VALLEY®
TERRACOTTA ORCHARD PARK, NY

**52%** LESS CARBON



TUCSON, AZ

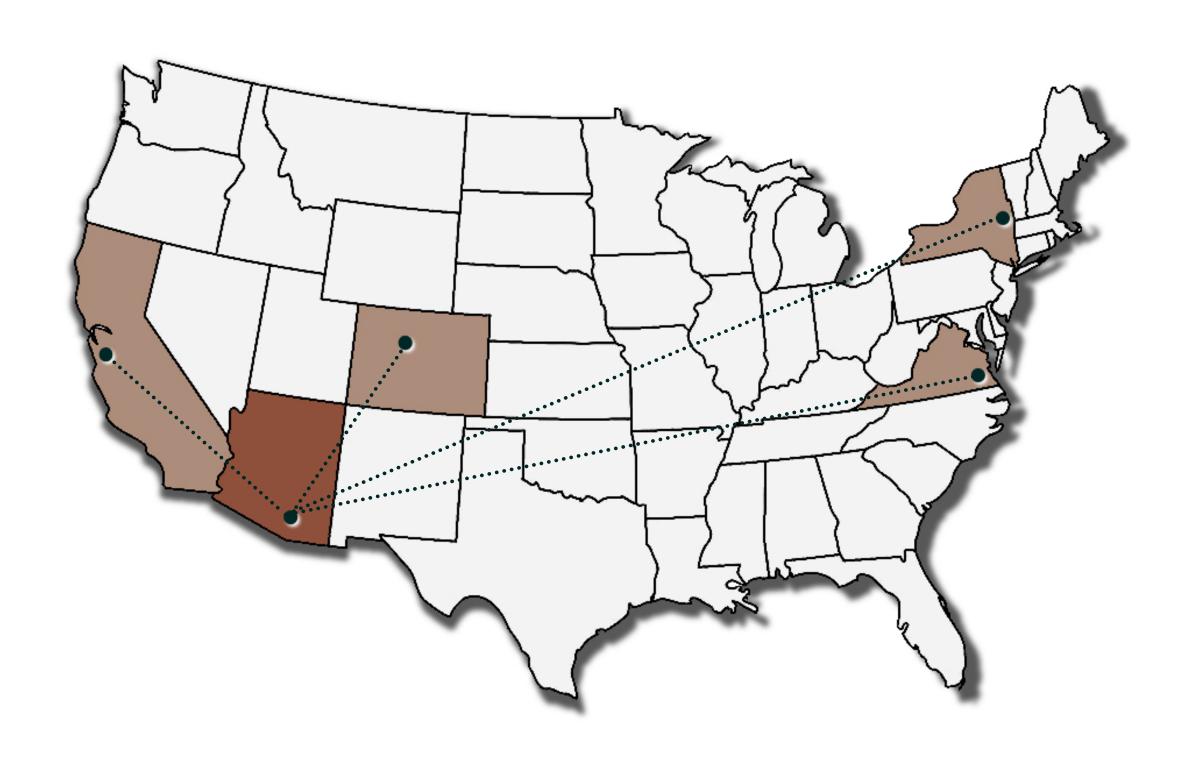




CHESAPEAKE, VA



TUCSON, AZ



**NEW CONSTRUCTION** GROSS CARBON EMISSIONS

1,857,550 KG CO2W

**RETROFIT** CARBON EMISSION

**915,500** KG CO<sub>2</sub>W

31

**BUDGET** 

**ITEMS** 

\*DOES NOT INCLUDE ALL ITEMS\*

GRAVEL

**EPDM** 

**CATEGORY** 

\*ESTIMATES BELOW INCLUDING LABOR\*

NEW ROOF SYSTEM

**OSB SHEATHING** \$1,405,087 TJI JOISTS

MINERAL WOOL

**GRAVEL STOP** 

INSULATION GYP. BOARD **NEW WALL SYSTEM** C-CLIPS

TERRACOTTA TILES \$2,132,839 WRB

FURRING DOORS/WINDOWS

RADIANT HEATING/COOLING NEW INTERIOR WALL NEW SYSTEMS/APPLIANCES

POLISH CONC. KITCH. APPLIANCES \$6,248,949 AIR DIST. SYSTEM

SOLAR PANELS

TREX DECKING STEEL BEAMS **NEW WALKWAY** 

**ANCHORS** THERMAL BREAKS \$433,040 RAILING

DEMO OF EXIST. WALLS DEMO OF EXIST. WALKWAYS DEMOLITION/SERVICING EPS GROUND INSULATION ASBESTOS REMOVAL \$6,737,726 FURNISHING OF NEW APT.

**TOTALS ESTIMATES DO NOT INCLUDE:** 

TESLA MEGA PACK SYSTEM

TOTAL LABOR COST

\$9,377,682

TOTAL MATERIAL COST

\$7,579,959

TOTAL COST

\$16,957,641

COST PER SQ.FT.

\$271.84

\$350 \$160 \$271.84

AVERAGE CONSTRUCTION IN TUCSON FOR SENIOR HOUSING

**ARCHITECTURE ENGINEERING**  **ENVELOPE** 

**EFFICIENCY** 

GRID-INTERACTIVITY

LIFE-CYCLE

HEALTH

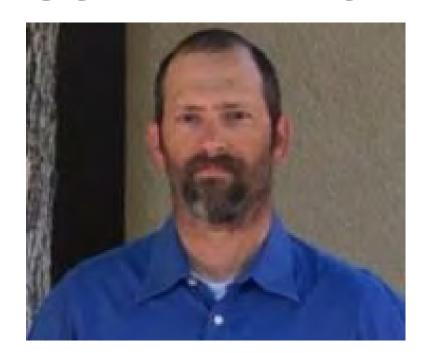
**MARKET** 

COMMUNITY

NEW LANDSCAPING + PARKING

## **THANK YOU!**

#### **OUR PARTNERS**



MICHEAL HOFFMAN
UNIVERSITY OF ARIZONA
FACILITY MANAGEMENT'S
ENERGY MANAGER







33