

Frontiers Building

Colorado School of Mines

Project Update

February 19, 2020

Perkins&Will



Agenda.

- 01 Introduction**
- 02 Project Overview**
- 03 Laboratory Development Summary**
- 04 Workplace Strategy**
- 05 Building Design**
- 06 Discussion**

Section 01.

Introduction

Contents

Colorado School of Mines

USGS

Presentation Team

Kirsten Volpi	Mines – Executive Vice President FAO
Peter Griffiths	USGS – Deputy Regional Director
Rick Holz	Mines – Provost
Julie Gauthier	Perkins and Will – Workplace Strategist
Christopher Kleingartner	Perkins and Will – Principal Architect

Section 02.

Project Overview

Contents

Project Goals

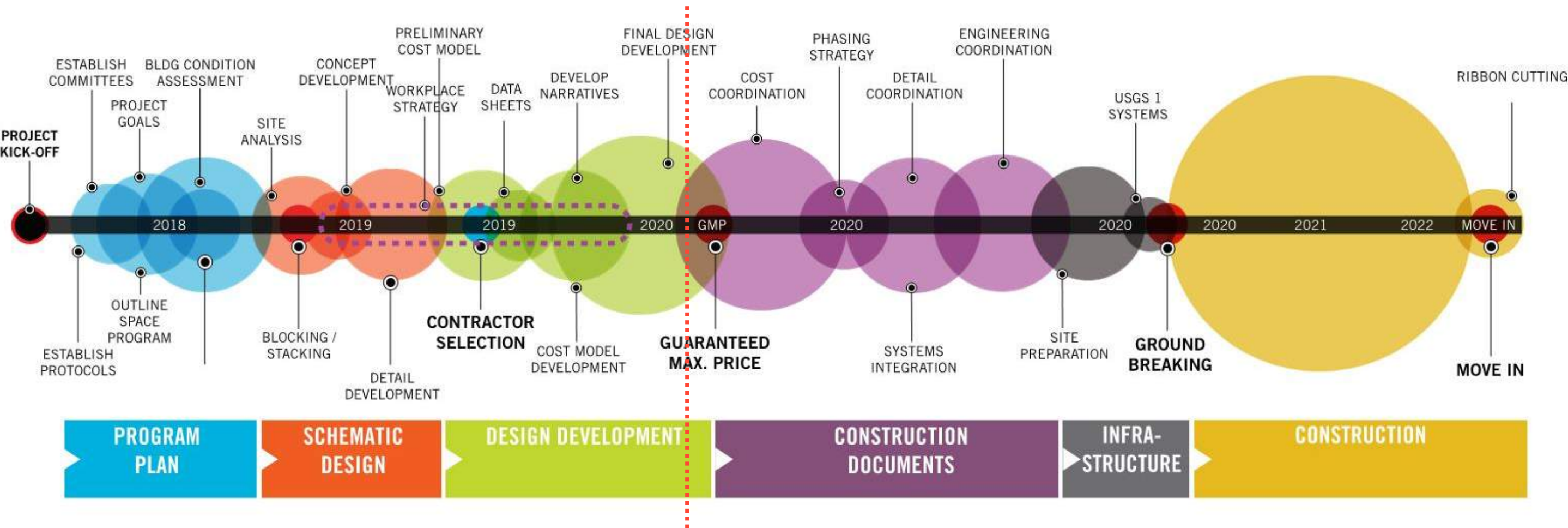
Accomplished to Date

Stakeholder Engagement

Project Goals

- Revolutionize the way earth science is done
- Collaborate between institutions and leverage expertise
- Provide immersive research opportunities for students
- Increase annual research funding
- Improve workforce pipeline
- Lead in big data, computational earth science
- Map the subsurface—“Google Earth for the Underground”
- Connect partners, become research network hub for geosciences
- Educate the public about earth science

Design and Construction Schedule Update

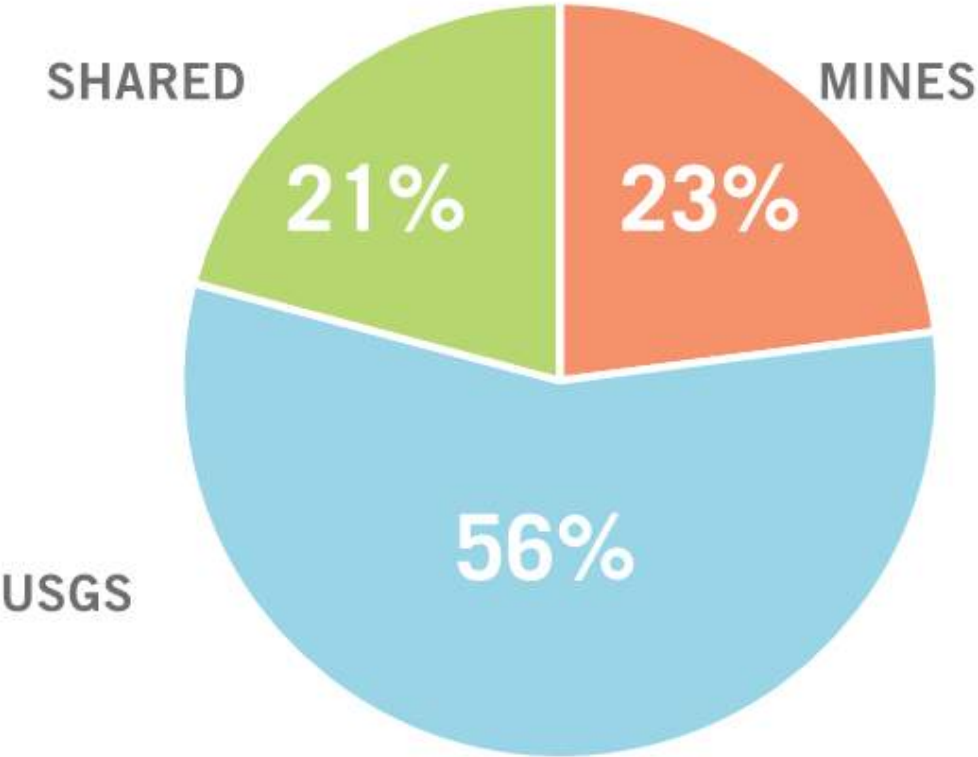


Stakeholder Engagement Teams

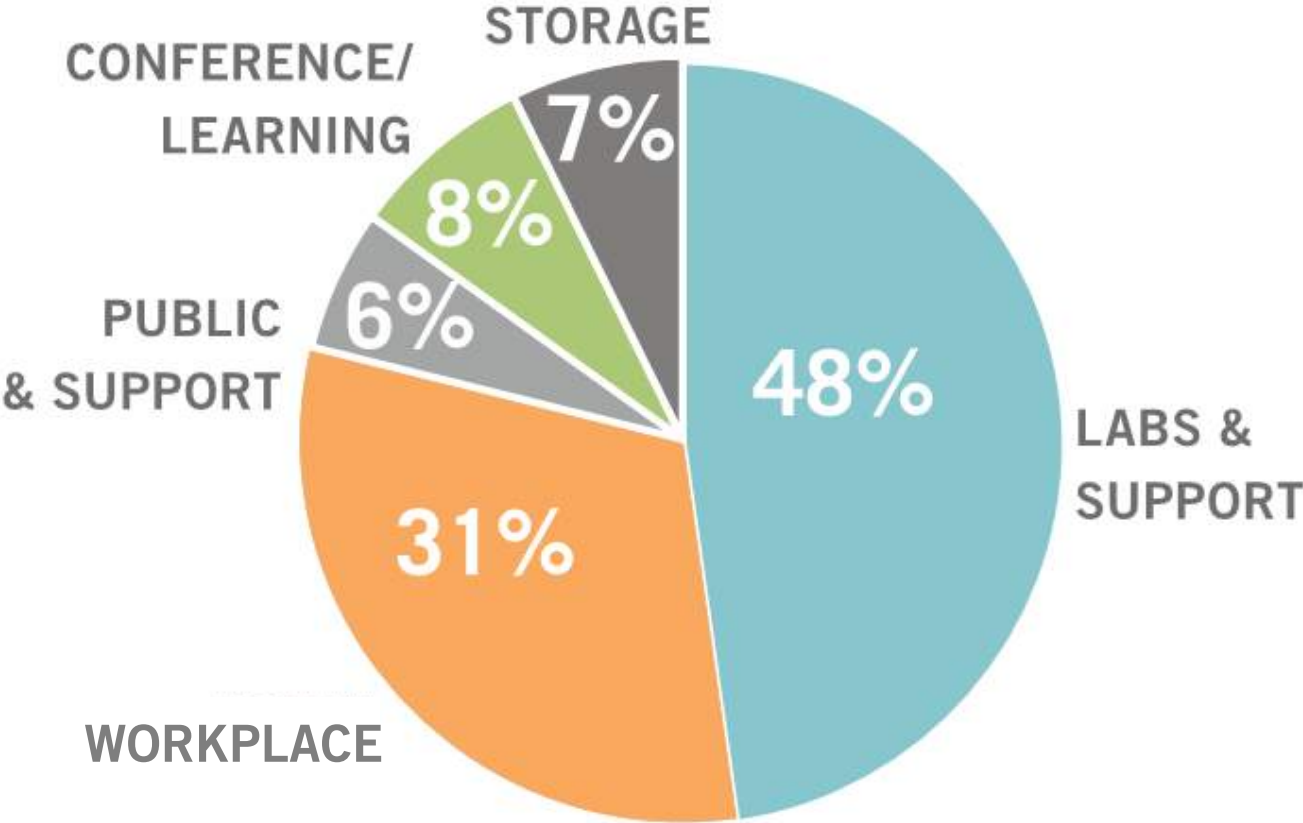
- Program Planning Team
- BAC (Building Advisory Committee)
- EBAC (Executive Building Advisory Committee)
- Lab User Groups
- Design Committee
- Workplace Strategy Teams
- Facilities Management
- Branding & Storytelling

Space Program

PROGRAM BY ORGANIZATION



PROGRAM BY SPACE TYPE



Section 03.

Laboratory Development Summary

Contents

Program Plan

User Group 1

Adjacency Diagrams

User Group 2

PROGRAM PLAN SUBSURFACE FRONTIERS BUILDING COLORADO SCHOOL OF MINES

GOLDEN, COLORADO



Laboratory User Workshop 1

4.1 ROOM DATA SHEETS

21'-0"

30'-0"

THIN SECTION
LAPPING AND
LAPPIDARY
3.03

0' 2' 4' 8' 16'

SCALE: 1/4" = 1'-0"

THIN SECTION - LAPPING
AND LAPPIDARY

ROOM NUMBER: 3.03 OCC:

PROGRAM ASFT: 100.00 ACTUAL ASFT: 100.00 SF

REQUIRED ADJACENCIES

FINISHES

DOORS

MECHANICAL

LAB EXHAUST / QTY

ACQUSTICAL & VIBRATION REQUIREMENT

GENERAL NOTES

UTILIZATION

PLUMBING

CYLINDER GASES

CHEMICALS / QTY

FIRE PROTECTION

ELECTRICAL

SPECIAL ELECTRICAL REQUIREMENTS

DATA / TECHNOLOGY

LIGHTING REQUIREMENTS

PERKINS
+ WILL

MINES

USGS

ROOM DATA SHEET
COLORADO SCHOOL OF MINES
SUBSURFACE FRONTIERS BUILDING

MICR-MINES-3.03

Laboratory Adjacency Diagramming

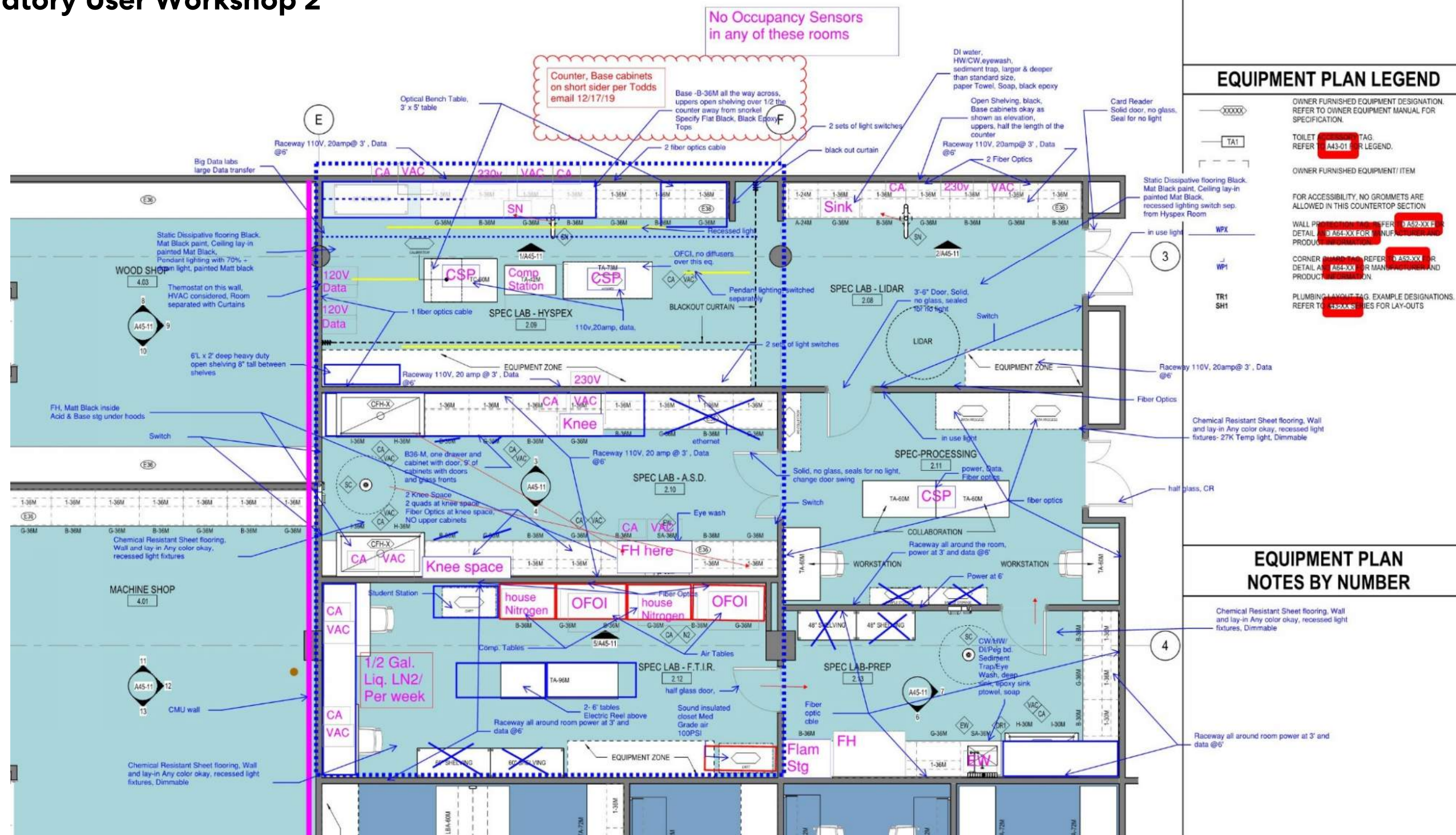


SUBSURFACE FRONTIER BUILDING
COLORADO SCHOOL OF MINES

FLOOR PLAN - LEVEL 03

Perkins&Will

Laboratory User Workshop 2



50% DD Laboratory Review Set

[illegible]

Section 04.

Workplace Strategy: The Human Experience Program

Workplace Strategy: The Human Experience Program / Design for Experience

Design for Experience aims to create a dynamic and responsive environments that engage the physical, emotional, intellectual, and aspirational elements of work, research, learning & teaching by:



Inspiring a Greater Purpose

Sparking New Connections

Creating Opportunities

Promoting Well-being

Connecting Human Experience & Workplace

People focused solutions that consider the individual, the team and the organizational community.



ME



WE



US

Stakeholder Engagement

SITE TOURS.

Tours of existing spaces occupied by the user groups are critical in understanding the current space conditions and baseline information.

WORKPLACE STAKEHOLDER SURVEY.

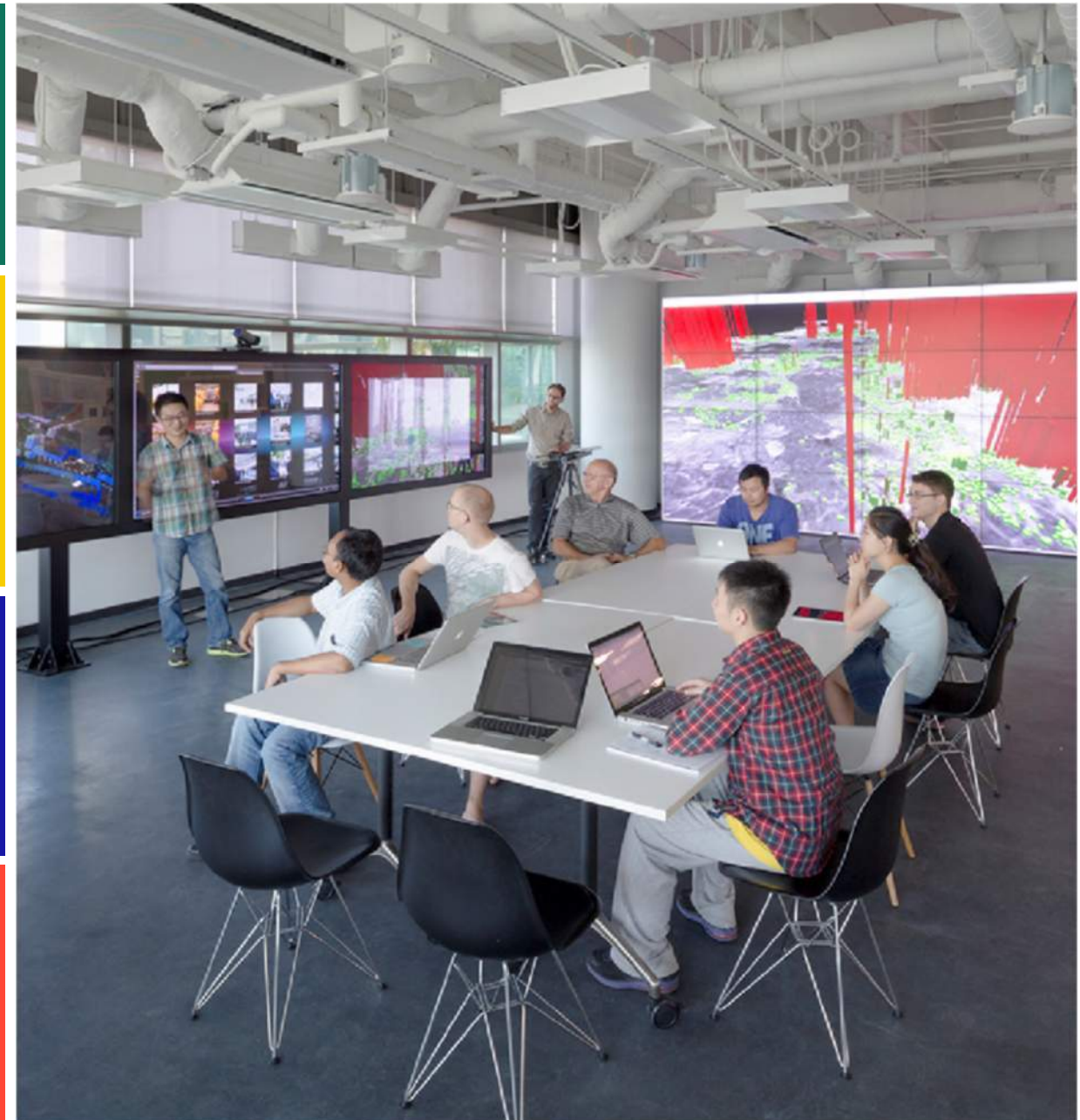
Gathering data directly from Stakeholders that will help inform design decisions required to create highly utilized, effective, and productive work environments for employees today and in the future.

VISIONING SESSION.

Brainstorming session with select group of Stakeholders that confirms the goals, objectives, and expectations not only for the project, but for the future of the organization.

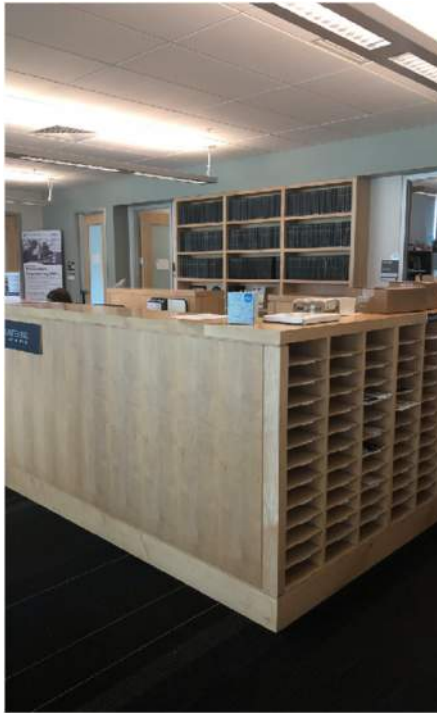
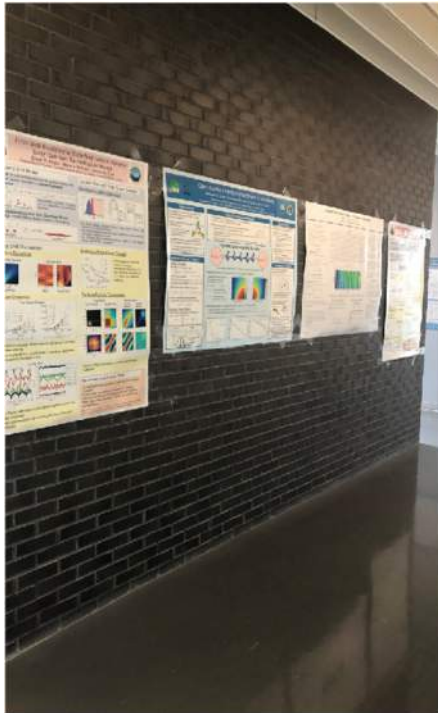
WORKPLACE OBSERVATION & SPACE UTILIZATION.

Focused study documenting and evaluating current space conditions, function, and utilization of space, and general work patterns and practices.



Stakeholder Engagement

SITE TOURS
MINES



Stakeholder Engagement

SITE TOURS
USGS



Stakeholder Engagement

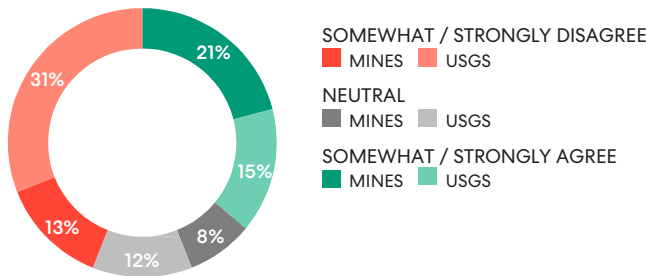
STAKEHOLDER SURVEY

Current Work Environment - Satisfaction

Q8 When asked if...

“The work environment has a sense of energy/buzz?”

45% of Mines, and 54% of USGS respondents do not feel their current work environment has a sense of energy/buzz, only 26% agreed with this statement.



OVERALL TOTAL

45% Somewhat / Strongly Disagree

20% Neutral

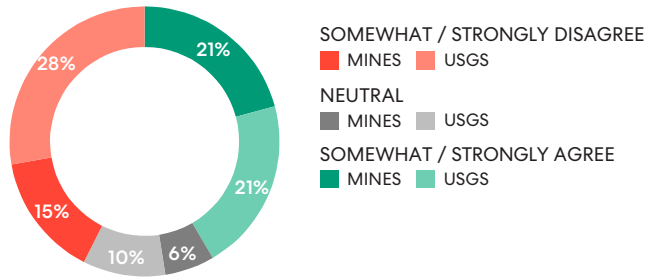
35% Somewhat / Strongly Agree

MINES ONLY	USGS ONLY
31% Somewhat / Strongly Disagree	54% Somewhat / Strongly Disagree
19% Neutral	21% Neutral
50% Somewhat / Strongly Agree	26% Somewhat / Strongly Agree

Q8 When asked if...

“The current work environment supports my overall health and well-being?”

Respondents reported that they equally agree and disagree with this statement. USGS respondents disagreed that their current work environment supports personal health and well-being more than Mines respondents.



OVERALL TOTAL

42% Somewhat / Strongly Disagree

16% Neutral

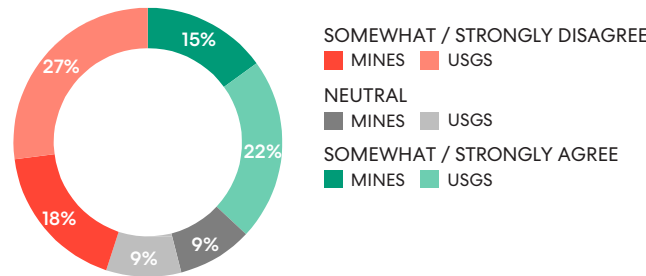
42% Somewhat / Strongly Agree

MINES ONLY	USGS ONLY
36% Somewhat / Strongly Disagree	48% Somewhat / Strongly Disagree
15% Neutral	16% Neutral
50% Somewhat / Strongly Agree	36% Somewhat / Strongly Agree

Q10 When asked about...

“satisfaction with their current work environment.”

Respondents reported that 56% are dissatisfied with their current work environment.



OVERALL TOTAL

56% Somewhat / Strongly Disagree

18% Neutral

36% Somewhat / Strongly Agree

MINES ONLY	USGS ONLY
44% Somewhat / Strongly Disagree	47% Somewhat / Strongly Disagree
21% Neutral	15% Neutral
35% Somewhat / Strongly Agree	38% Somewhat / Strongly Agree

Stakeholder Engagement

STAKEHOLDER SURVEY

Current Work Environment - Satisfaction

Q11 "describe your organization"

POSITIVE word associations and most popular words:

COLLABORATIVE

FOCUSED

INNOVATIVE

DEDICATED | INDEPENDENT | RESEARCH

NEGATIVE word associations and most popular words:

DISCONNECTED

DISORGANIZED

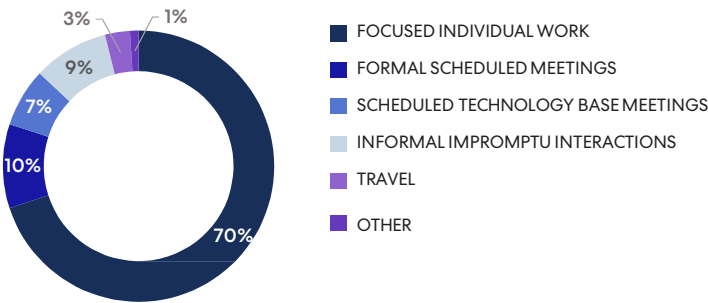
DISJOINTED & FRAGMENTED

Q16 When asked...

“to outline activities on an average work day.”

Individual "heads down" work, requiring concentration: most respondents reported between **50%-90% of time is spent on the average day on focused individual work.**

Scheduled meetings, requiring meeting space or technology: most respondents reported between **10%-30% of time is spent on the average day on formal scheduled collaboration.**



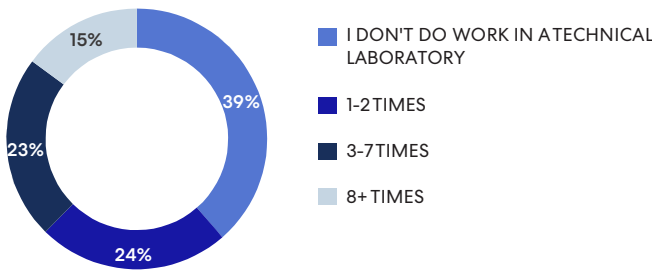
OVERALL TOTAL

70%	Focused Individual Work
10%	Formal Scheduled Meetings
7%	Scheduled Technology Base Meetings
9%	Informal Impromptu Interactions
3%	Travel
1%	Other

Q15 When asked...

“During an average DAY, how many times you travel back and forth from your assigned office or workstation to your laboratory?”

Respondents reported that **60% are visiting their labs 1-2 times a day or do not work in a Technical Laboratory**



OVERALL TOTAL

39%	Don't work in Technical Laboratory
24%	1-2 Times
23%	3-7 Times
15%	8+ Times

Stakeholder Engagement

STAKEHOLDER SURVEY

COLLABORATION

Q27 Identify the **most utilized communication/collaboration** types:

41%+ reported weekly/monthly use of a **RESERVABLE CONFERENCE ROOMS**

Also ranking high with stakeholders were:

- Spaces that support brainstorming and creative work (display & white boards)
- Training Rooms
- Places you can meet with outside visitors/clients



FUTURE WORK ENVIRONMENT

Q22 When asked about TEAM & COMMUNITY... **“top three most important considerations”**:

1. **Accessibility of colleagues with whom I work**
2. **Ability to have confidential conversations with colleges**
3. **Awareness of what others in my group are doing**

Q22 When asked about WORKPLACE ENVIRONMENT & DESIGN... **“top four most important considerations”**:

1. **Ergonomics and comfort of the workspace**
2. **Acoustics/Noise & Thermal Comfort (tied)**
3. **Air quality/ventilation**
4. **Access to natural light**

Q23 When asked about MOST IMPORTANT CRITERIA FOR FUTURE WORKPLACE... **“top three most important considerations”**:

- 50%** Access to the right technology and tools for my group/team work
- 45%** I have access to quiet, private spots for confidential conversations
- 43%** A variety of spaces available that meet the needs of my different activities

Other notable answer: quiet focus individual space

FORWARD THINKING

Q28 Identify the **most important criteria in your work environment**.

70% My work environment enables me to be productive in my job.

All other responses received less than 10% of overall selection as a response.

Q29 Rate the importance of statements regarding your **individual workplace**:

96% "An environment that enables me to be productive in my job" was reported as **VERY IMPORTANT**

77% "An environment that facilitates creation of new ideas" was reported as **IMPORTANT / VERY IMPORTANT**

NOT IMPORTANT

23% a workplace that emphasizes the culture of the company

27% a workplace that has access to casual spaces when I need to re-energize

Stakeholder Engagement

STAKEHOLDER SURVEY

Q31/32 List 3 best/worst aspects of your current work environments

BEST ASPECTS

- Efficient & productive working group
- Access to natural light
- Quiet
- Collaborative
- Adjacencies & proximity between office | lab support | meeting spaces
- Flexible work connectivity and options
- Ease of parking & building access

WORST ASPECTS

- Lack Of Natural Light
- Noise Levels
- Air Quality & Temperature Control
- Facilitating Collaboration
- Dedicated Spaces For Meetings At Various Sizes
- Ineffective Lab Spaces
- Antiquated Furniture Poor Ergonomics
- Lack Of Sample Layout/Storage
- Wifi Connectivity / Internet Network Speed njPhysically Dispersed Teams / Isolation
- Desire To Be Closer To Working Group/Team Members)

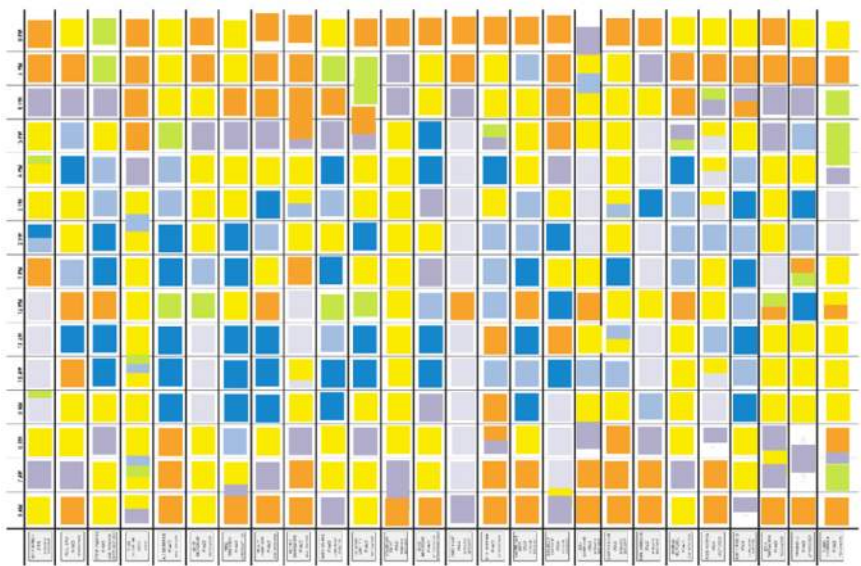
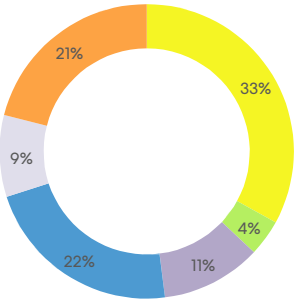
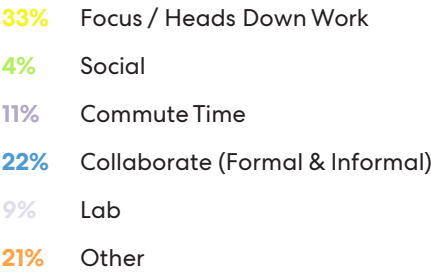


Stakeholder Engagement

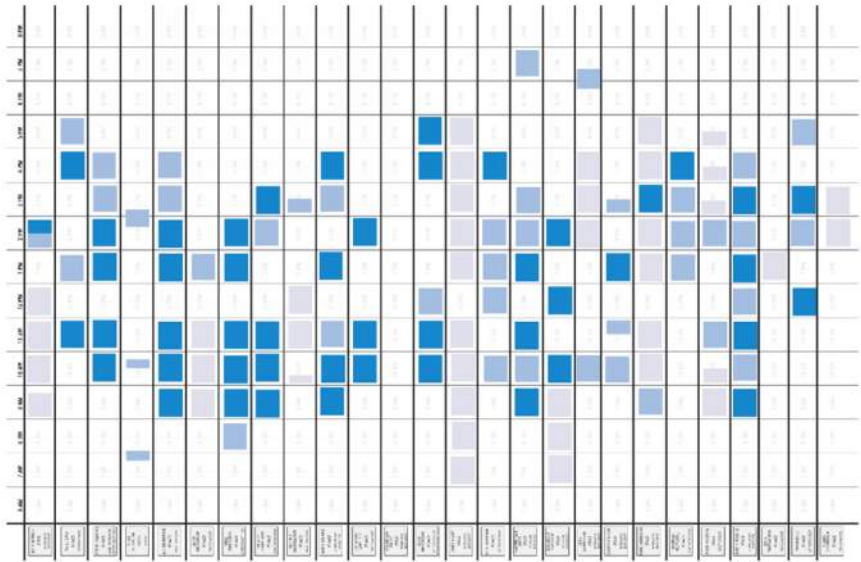
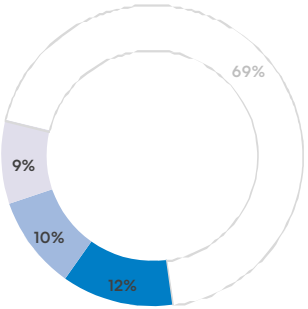
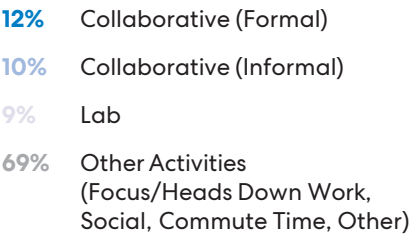
VISIONING SESSION DAY IN THE LIFE. Activity Charting



Overall Activity Results



Collaboration Activity Results



Stakeholder Engagement

VISIONING SESSION WORD CONCEPT MATRIX. Word Association

ACTION / VERB	DESCRIPTORS / ADJECTIVES	SPACE CONCEPT
Encourage	<div>Collaborative</div>	Individual Spaces
Communicate	Focused / Dedicated	Purpose, Planned Lab Spaces
<div>Agile</div>	<div>Friendly / Inviting</div>	<div>Positive Atmosphere</div>
Mentor / Teach	Productive / Effective	Bright & Open Social Zones
<div>Enhance</div>	Innovative	Outdoor Shaded Space
Experiment	Safe	<div>Organizational Blending of Various Disciplines in a Shared Setting</div>
Interact	Comfortable	Access to Natural Light & Views
Blending	Transparent	Intellectual Stimulation

Stakeholder Engagement

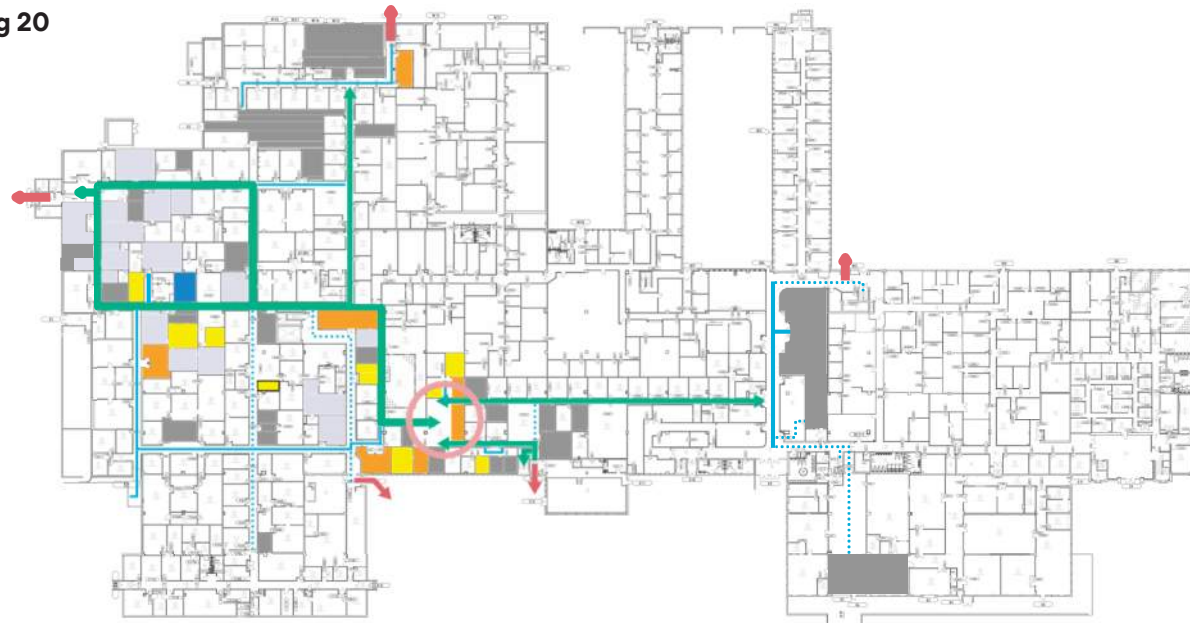
VISIONING SESSION WORK FLOW ANALYSIS.

Connection Mapping

USGS Federal Center | Building 20

First Floor

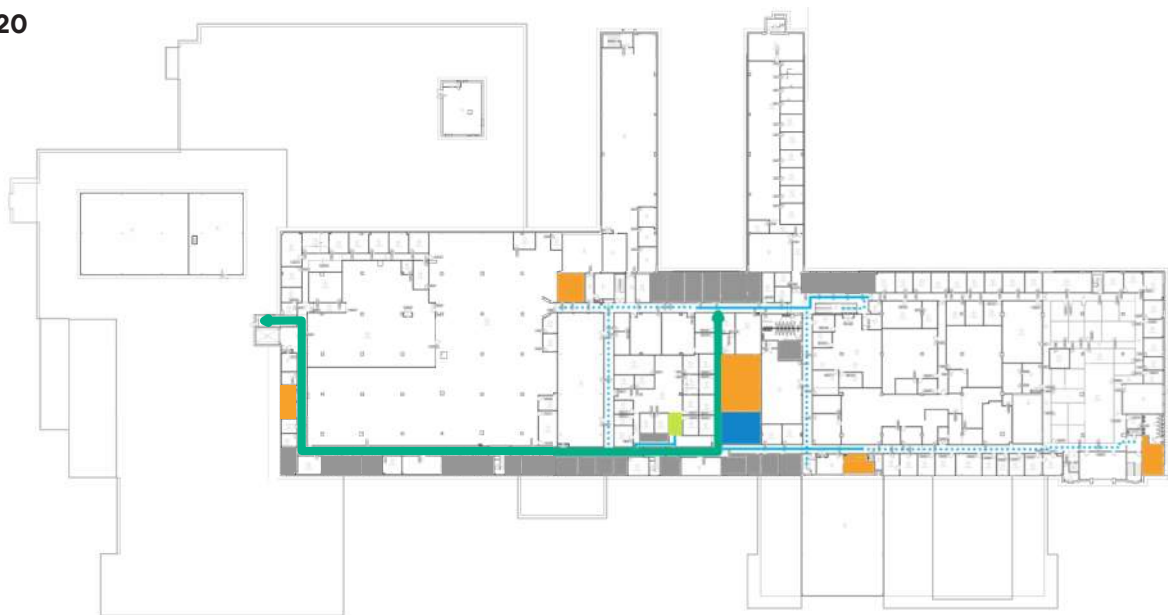
- Exits / Egress
- Main Circulation
- Secondary Circulation
- Offices
- Labs
- Support
- Collaboration Spaces
- Social Spaces
- Other



USGS Federal Center | Building 20

Second Floor

- Main Circulation
- Secondary Circulation
- Offices
- Labs
- Support
- Collaboration Spaces
- Social Spaces
- Other



Mines Campus Map

- Exits / Egress
- Main Circulation
- Secondary Circulation
- Campus Buildings
- Other

Stakeholder Engagement

VISIONING SESSION
IMAGERY
Top selections



Stakeholder Engagement

WORKPLACE OBSERVATION & SPACE UTILIZATION

Colorado School of Mines |Professors

Participant/Volunteer: PaulSava

Role: Professor

Location: Green Center, 273

Overall Square Footage: 138 SF
Storage

Linear Inches of Shelving:
280"

Linear Inches of Filing: 60"

Other Storage: Tall Storage
Cabinet

Furniture

Primary Worksurface: 10 SF

Secondary Worksurface: 14 SF

Task Seating: 1 Standard Office Chair
on Casters Guest Seating: 2 Standard
Office Guest Chairs on Casters

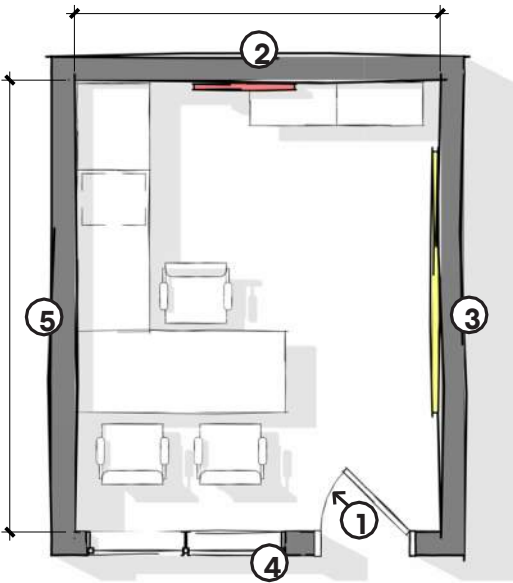
Meeting Furniture: N/A

Other Considerations

Display Space (Y/N): No Designated Space,
Poster on Wall, Large Writable Surface

Entry Door Finish & Sidelight: Wood Door,
Adjacent Interior Windows w/ film

Windows (Y/N): Yes (to interior space)



Artwork, Maps, Posters, etc. Hung-up /
Displayed / Applied to Wall Designated

Display Space

Writable Surface



Stakeholder Engagement

WORKPLACE OBSERVATION & SPACE UTILIZATION

USGS | Researcher

Participant/Volunteer: Andy Hunt

Role: Research Geologist

Location: Building 95,-

Overall Square Footage: 131 SF

Storage

Linear Inches of Shelving: 102"

Linear Inches of Filing: 140"

Other Storage: Coat Rack, Storage Cabinet

Furniture

Primary

Worksurface : 17

SF **Secondary**

Worksurface: 20

SF **Lab**

Worksurface: 11

SF

Task Seating: 2 Standard Office Chair on Casters

Guest Seating: N/A

Meeting Furniture: N/A

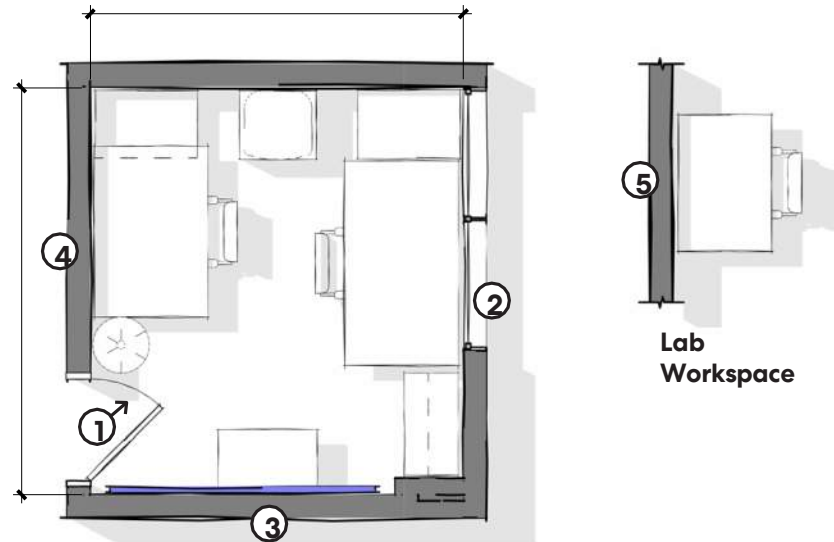
Other Furniture: Mobile Computer Workstation

Other Considerations

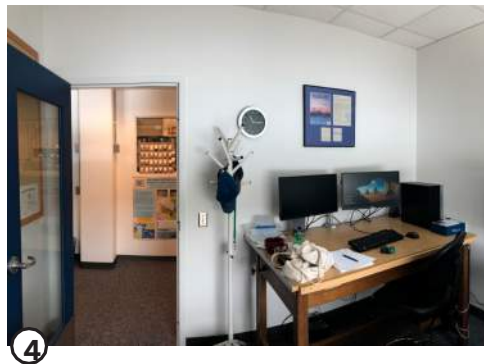
Display Space (Y/N): Yes Designated Space

Entry Door Finish & Sidelight: Glass Door w/ Painted Wood Trim

Windows(Y/N): Yes



- Artwork, Maps, Posters, etc. Hung-up / Displayed / Applied to Wall Designated
- Display Space
- Writable Surface



KEY FINDINGS.



Supporting the Individual.

Focused space that supports concentration and promotes individual performance



Supporting Working Groups.

Collaboration space that supports group interactions and team communication.



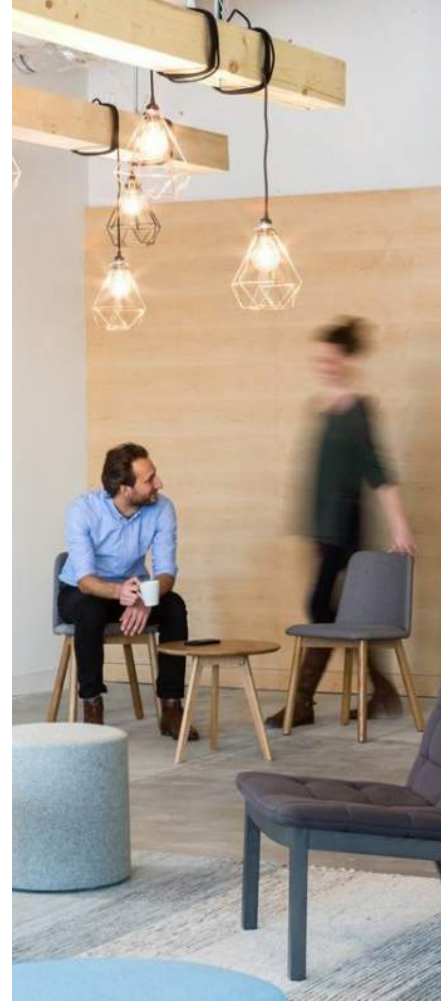
Building Social Engagement.

Community space that fosters relationships and interactions and building a community amongst users.

Planning Principals & Strategies

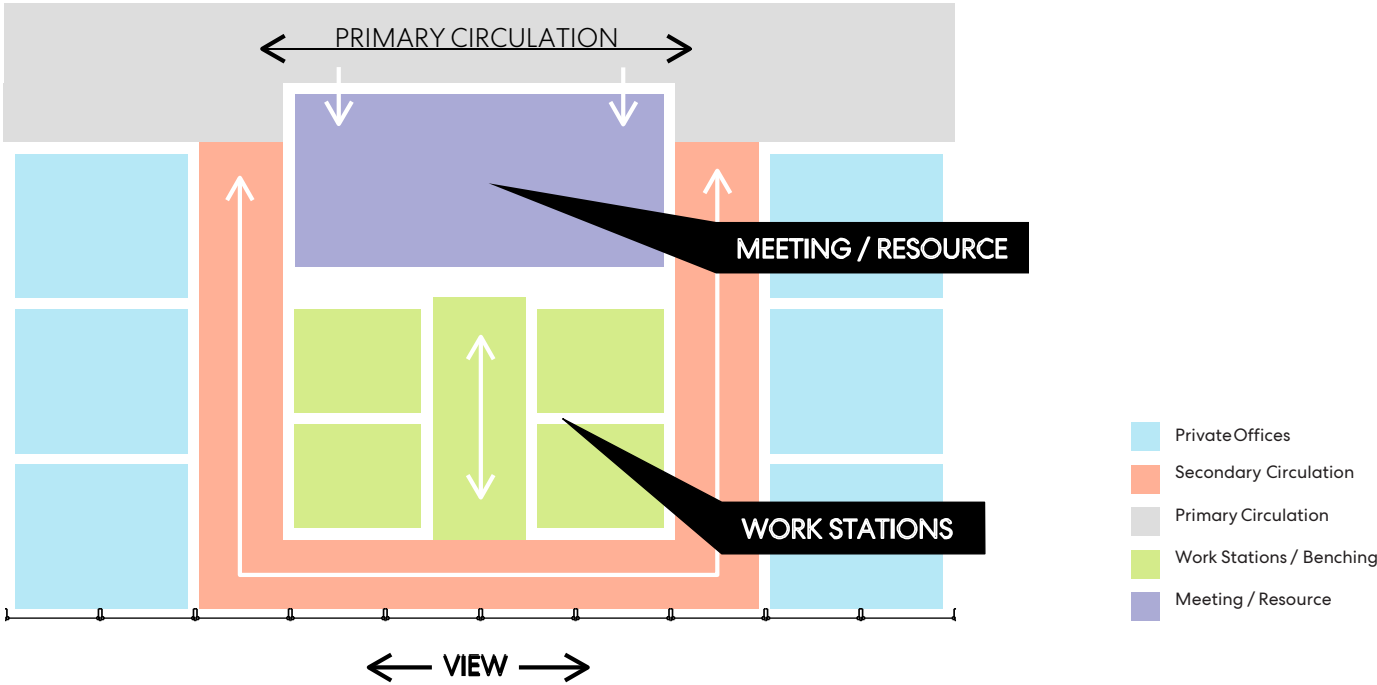
PLACEMAKING.

Space planning models to respond to data collected and new concept development to meet user needs while maintaining overall space requirements goals.



Office Enclaves

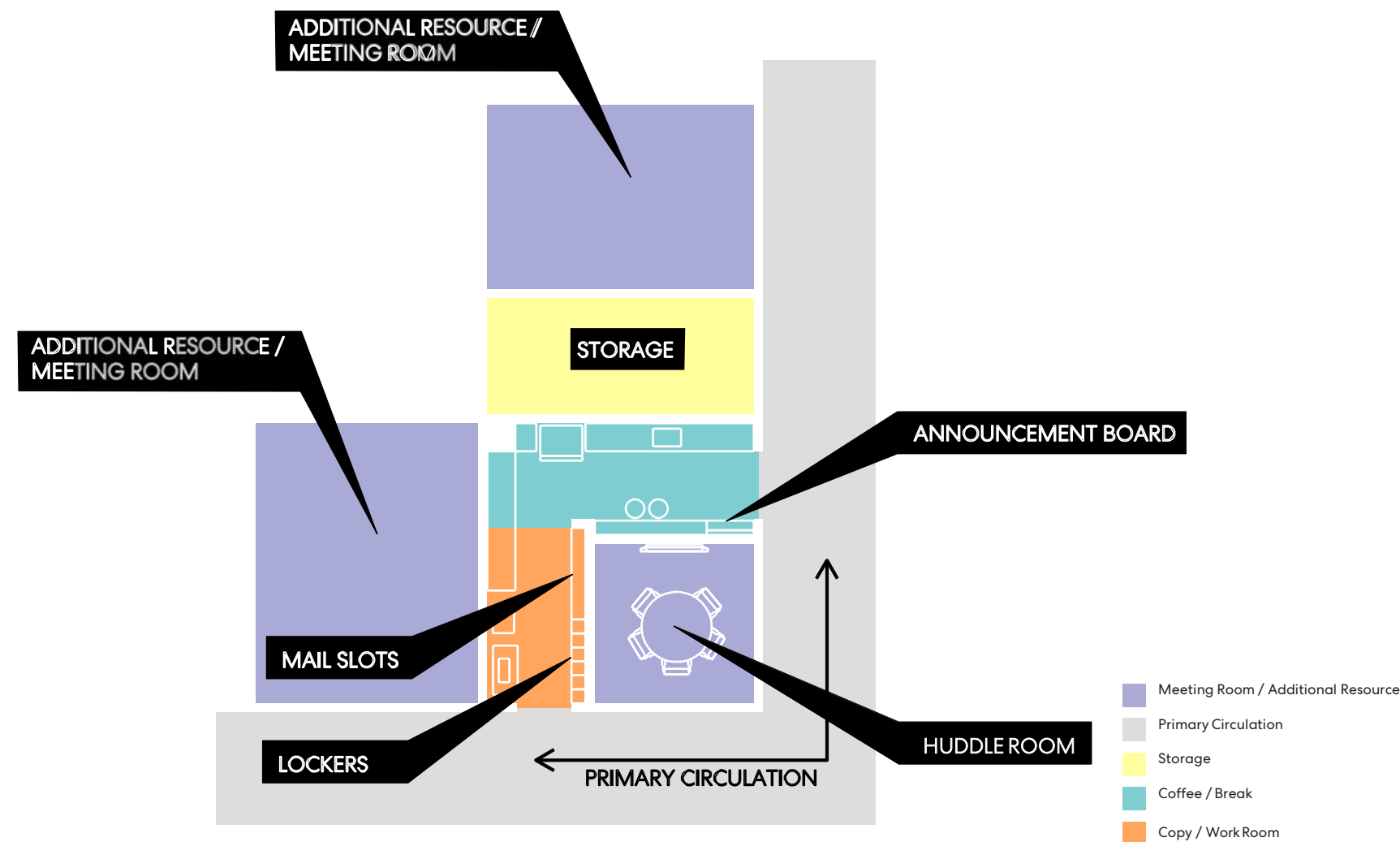
- Supporting Individual Activities & Functions / Strategically Locate Departments & Groups.
- Acoustical & Visual Zoning / Individual User Comfort..
- Create Natural Collision Zones / Flexible and Accommodating Collaboration Space.
- Maximize Natural Light.



Planning Principals & Strategies

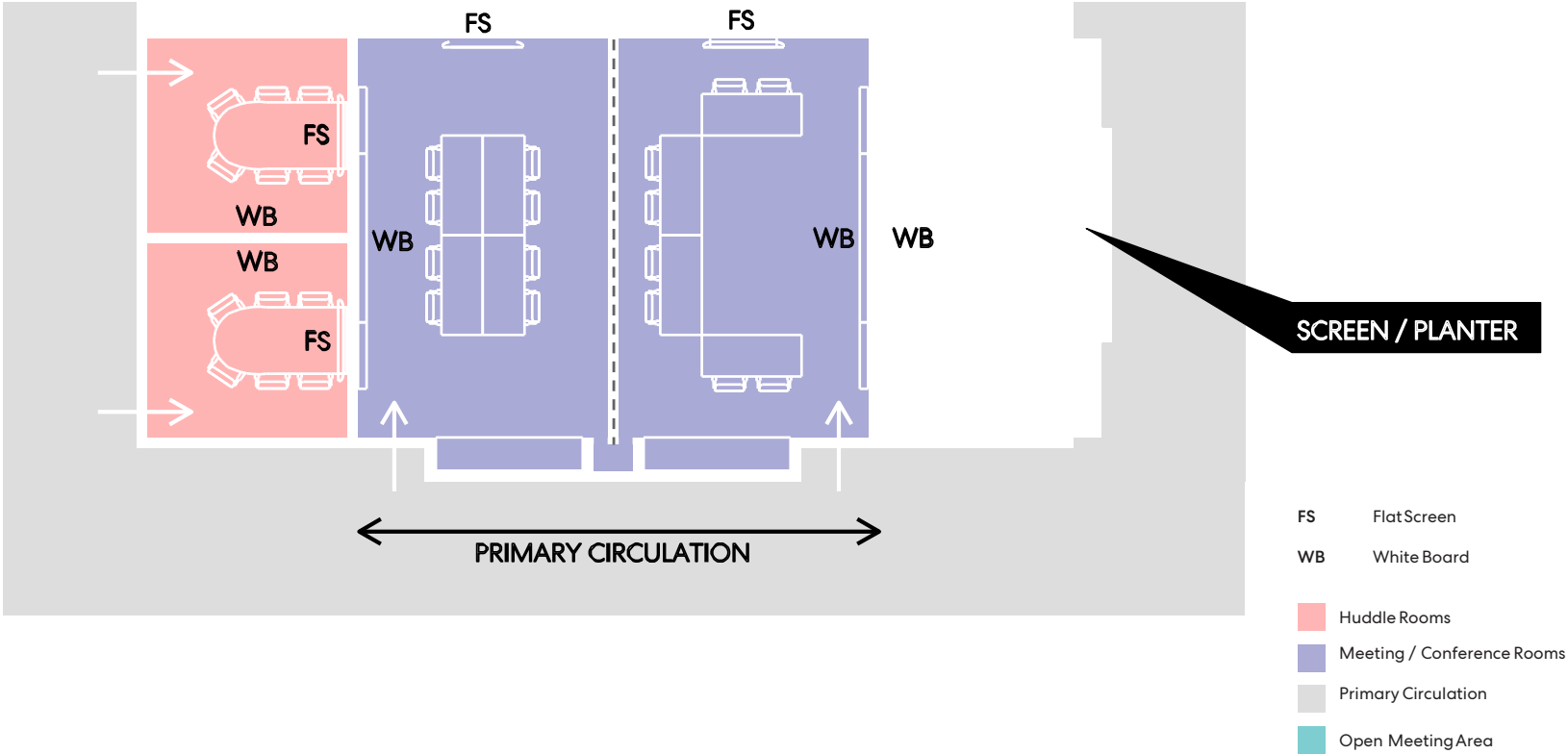
Resource Nodes

- Provide shared resources
- Create Natural Collision Zone / Centralize and Collocate Collaboration and Support Spaces.
- Create Public & Social Destinations.
- Maximize Natural Light.
- Flexible and Accommodating Collaboration Space.



Collaboration Hubs

- Unassigned meeting spaces of various
- Flexible and Accommodating Collaboration Space.
- Create Natural Collision Zones / Centralize and Collocate Collaboration and Support Spaces
- Acoustical & Visual Zoning / Maximize Natural Light.
- Create Public & Social Destinations



Planning Principals & Strategies

Social Spaces

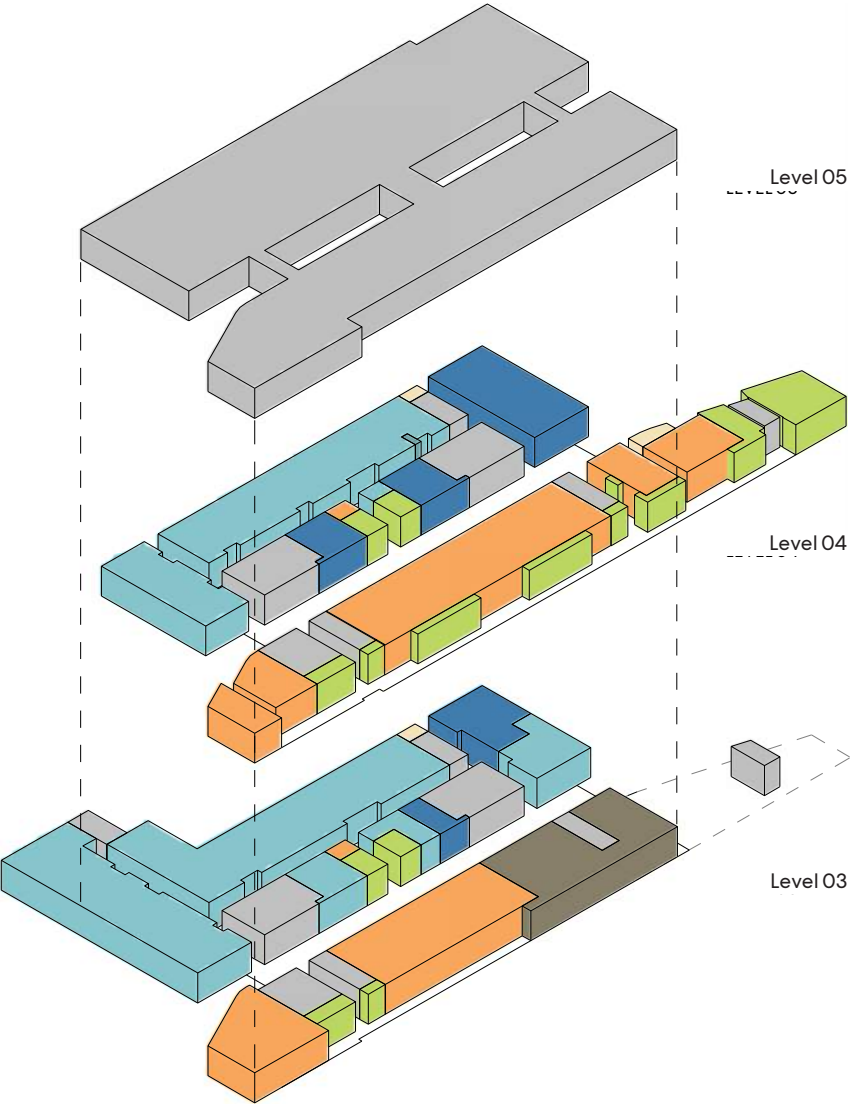
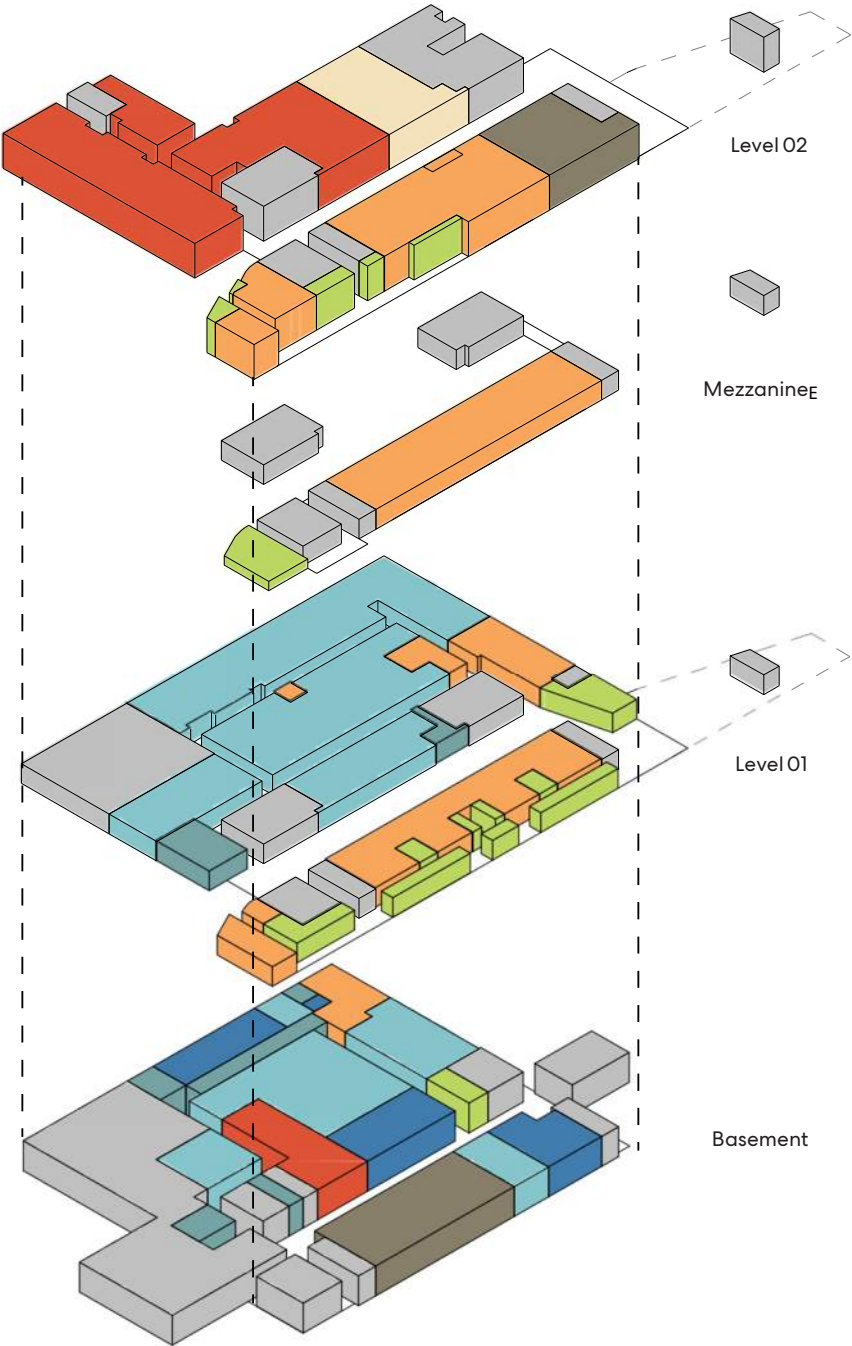
- Create Public & Social Destinations.
- Acoustical & Visual Zoning/ Create Natural Collision Zones.
- Flexible and Accommodating Collaboration Space.



Planning Diagrams

Program Stacking Diagram
**DIAGRAM FROM SCHEMATIC DESIGN ISSUANCE 08.28.2019*

USGS Laboratory	Open Offices
Mines Laboratory	Public Spaces
Laboratory Support	Collaboration
Formal Learning	Support
Offices	Shell



Planning Diagrams

Strategy Implementation

Planning Strategies

Separate Workplace from Labs / Maximize Natural Light

a. Office Enclaves

Supporting Individual
Activities & Functions

Strategically Locate
Departments & Groups

Acoustical & Visual Zoning

Individual User Comfort

Modularity

b. Resource Node

Create Natural Collision Zone

Centralize and Collocate Collaboration
and Support Spaces

c. Collaboration Hub

Flexible and Accommodating
Collaboration Space

Create Natural Collision Zones

Create Public & Social Destinations

Centralize and Collocate Collaboration
and Support Spaces

Acoustical & Visual Zoning

d. Social Spaces

Create Public & Social Destinations

Acoustical & Visual Zoning

Create Natural Collision Zones

Flexible and Accommodating
Collaboration Space

Maximize Natural Light

1. Create Collision Zones / Flexible and Accommodating Collaboration Space

2. Create Public & Social Destinations / Flexible and Accommodating Collaboration Space



MINES
GEOPHYSICS

Floor Plan | Level 1.5 - Mezzanine

1" = 30'-0"

*FLOOR PLANS FROM SCHEMATIC DESIGN
ISSUANCE 08.28.2019

Planning Diagrams

Strategy Implementation

Planning Strategies

Separate Workplace from Labs /
Maximize Natural Light

a. Office Enclaves

- Supporting Individual Activities & Functions
- Strategically Locate Departments & Groups
- Acoustical & Visual Zoning
- Individual User Comfort
- Modularity

b. Resource Node

- Create Natural Collision Zone
- Centralize and Collocate Collaboration and Support Spaces

c. Collaboration Hub

- Flexible and Accommodating Collaboration Space
- Create Natural Collision Zones
- Create Public & Social Destinations
- Centralize and Collocate Collaboration and Support Spaces
- Acoustical & Visual Zoning

d. Social Spaces

- Create Public & Social Destinations
- Acoustical & Visual Zoning
- Create Natural Collision Zones
- Flexible and Accommodating Collaboration Space
- Maximize Natural Light

1. Create Collision Zones / Flexible and Accommodating Collaboration Space
2. Create Public & Social Destinations / Flexible and Accommodating Collaboration Space



Floor Plan | Level 04

1" = 30'-0"

*FLOOR PLANS FROM SCHEMATIC DESIGN
ISSUANCE 08.28.2019

Section 05.

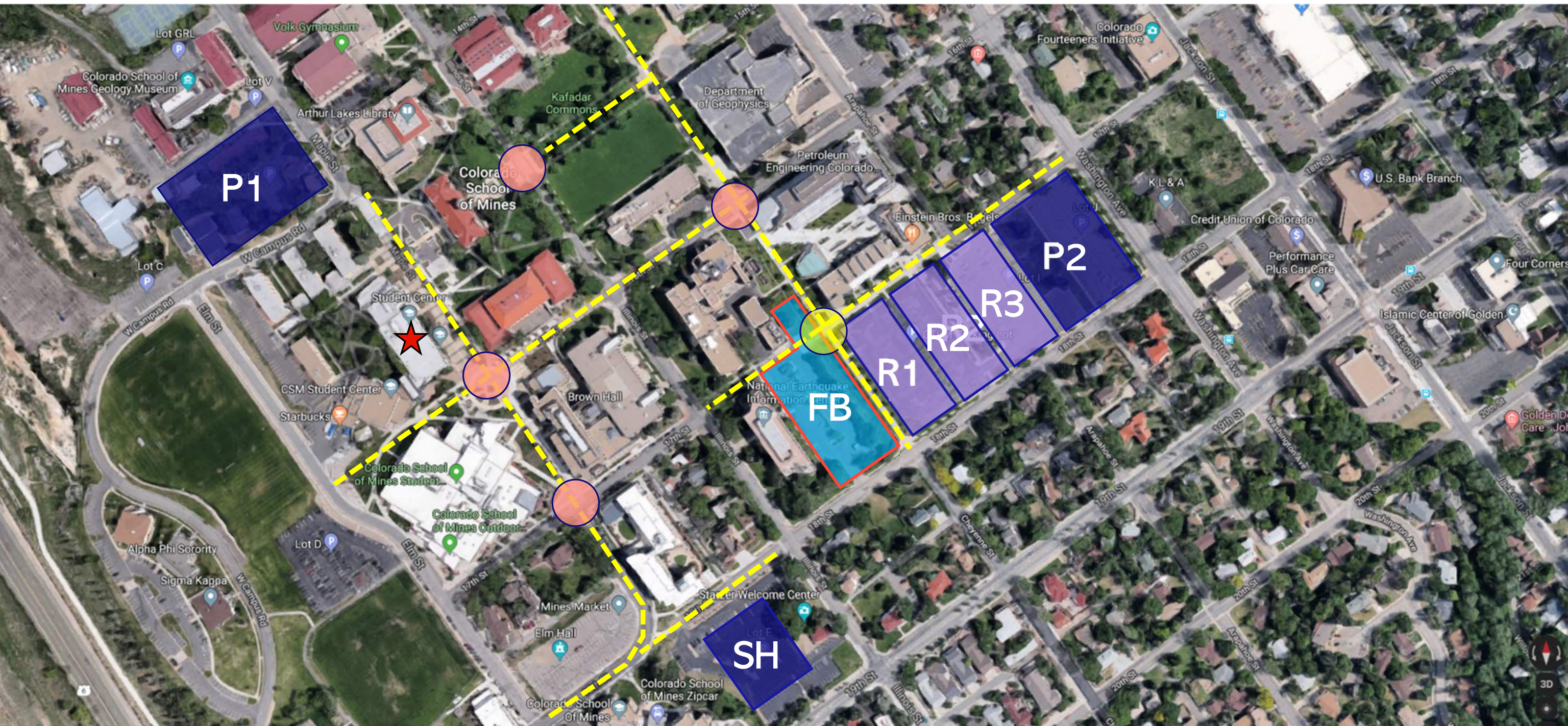
Building Design

Contents

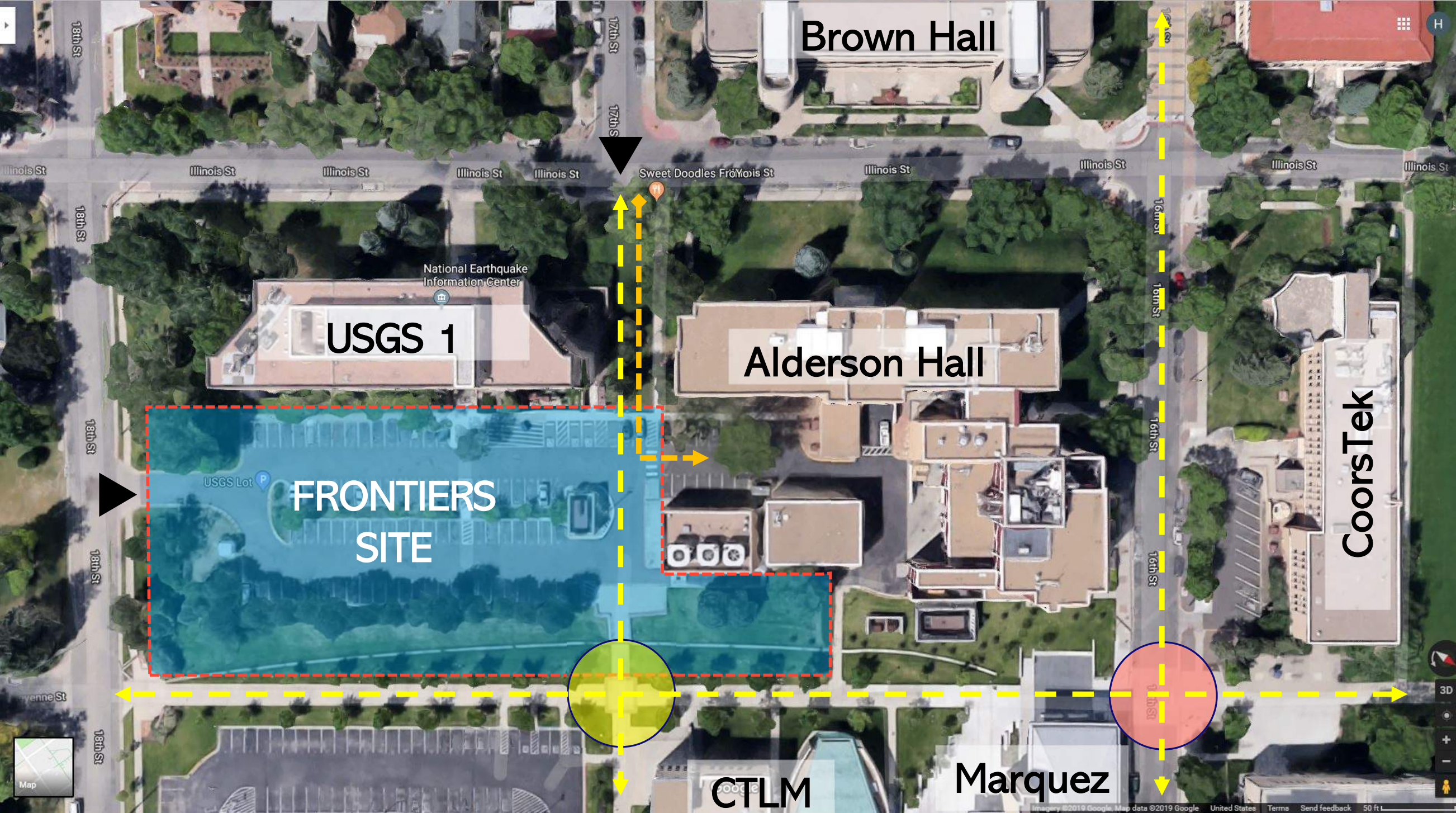
Site Plan and Massing

Architecture Strategy Implementation

Campus Development Plan

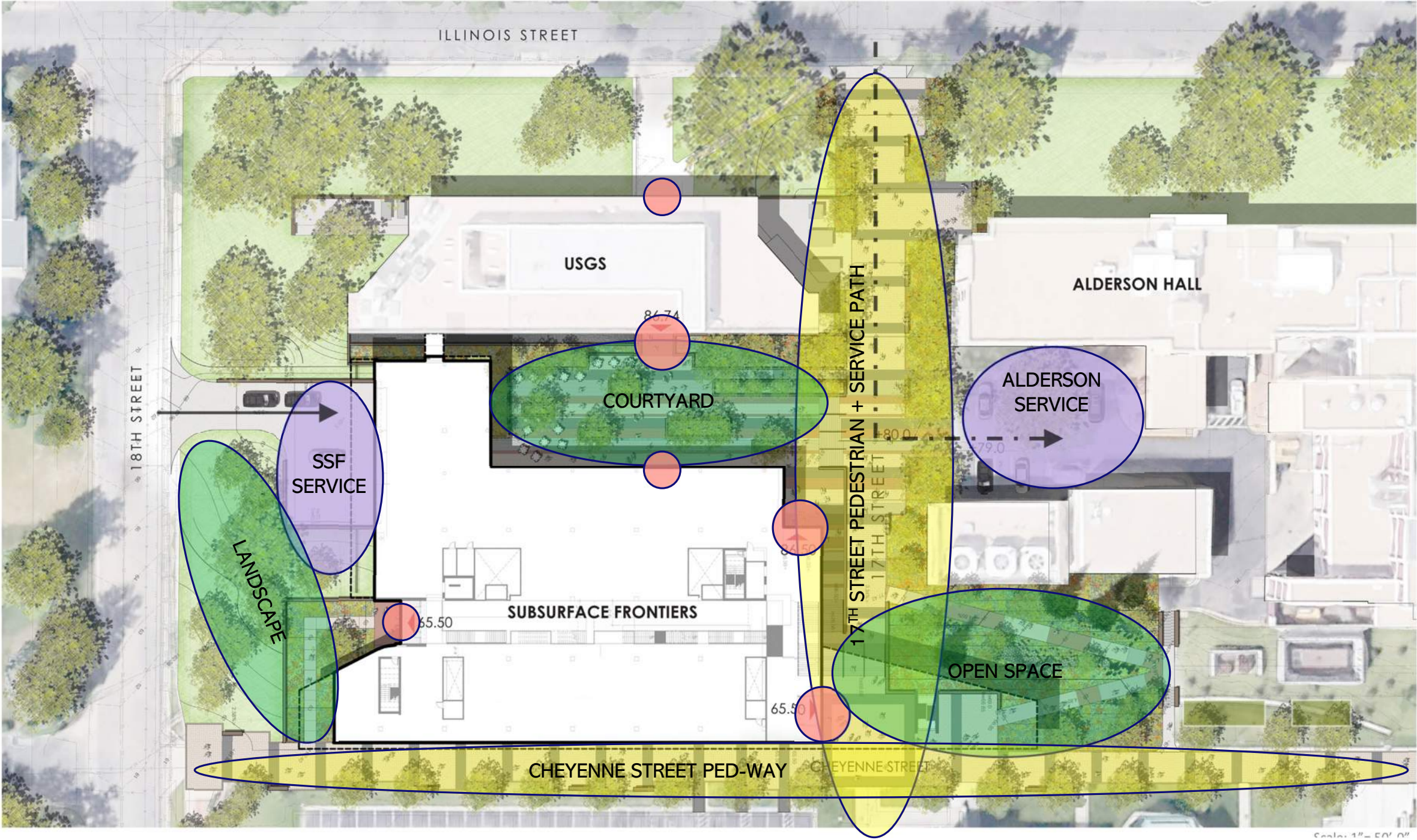


Site Analysis



OVERALL SITE PLAN

Landscape Plan | C 1

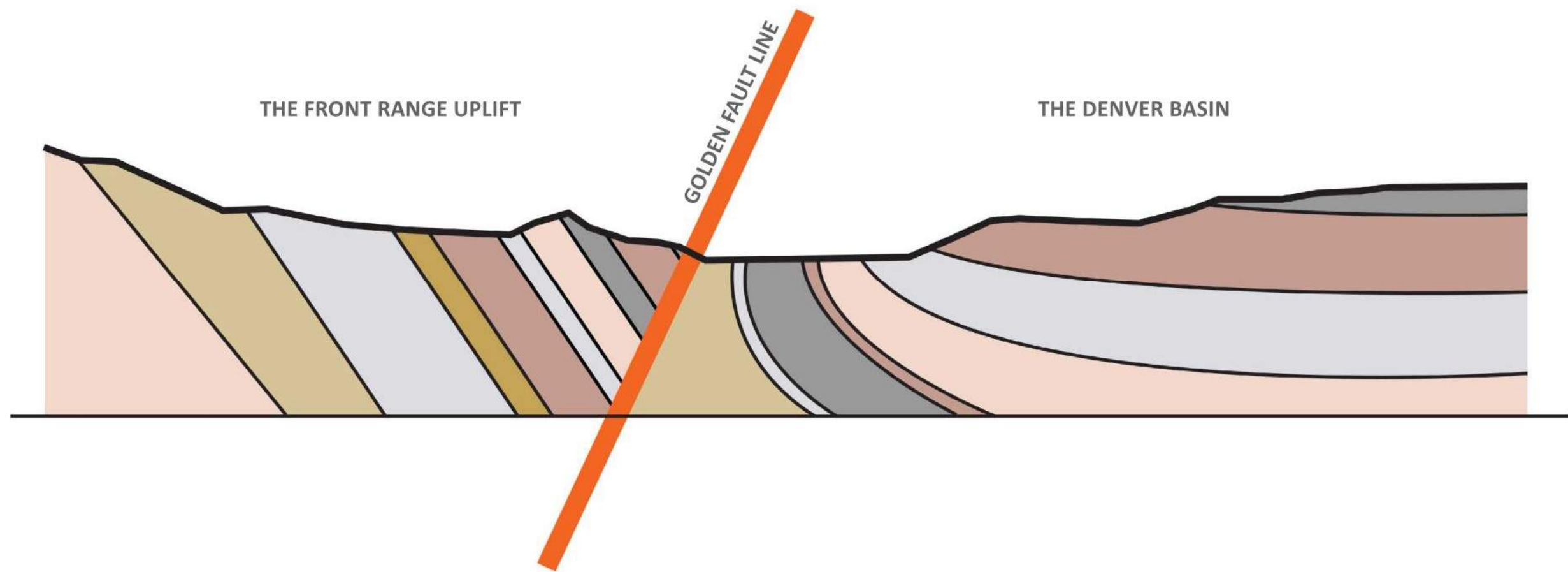


Concept Inspiration

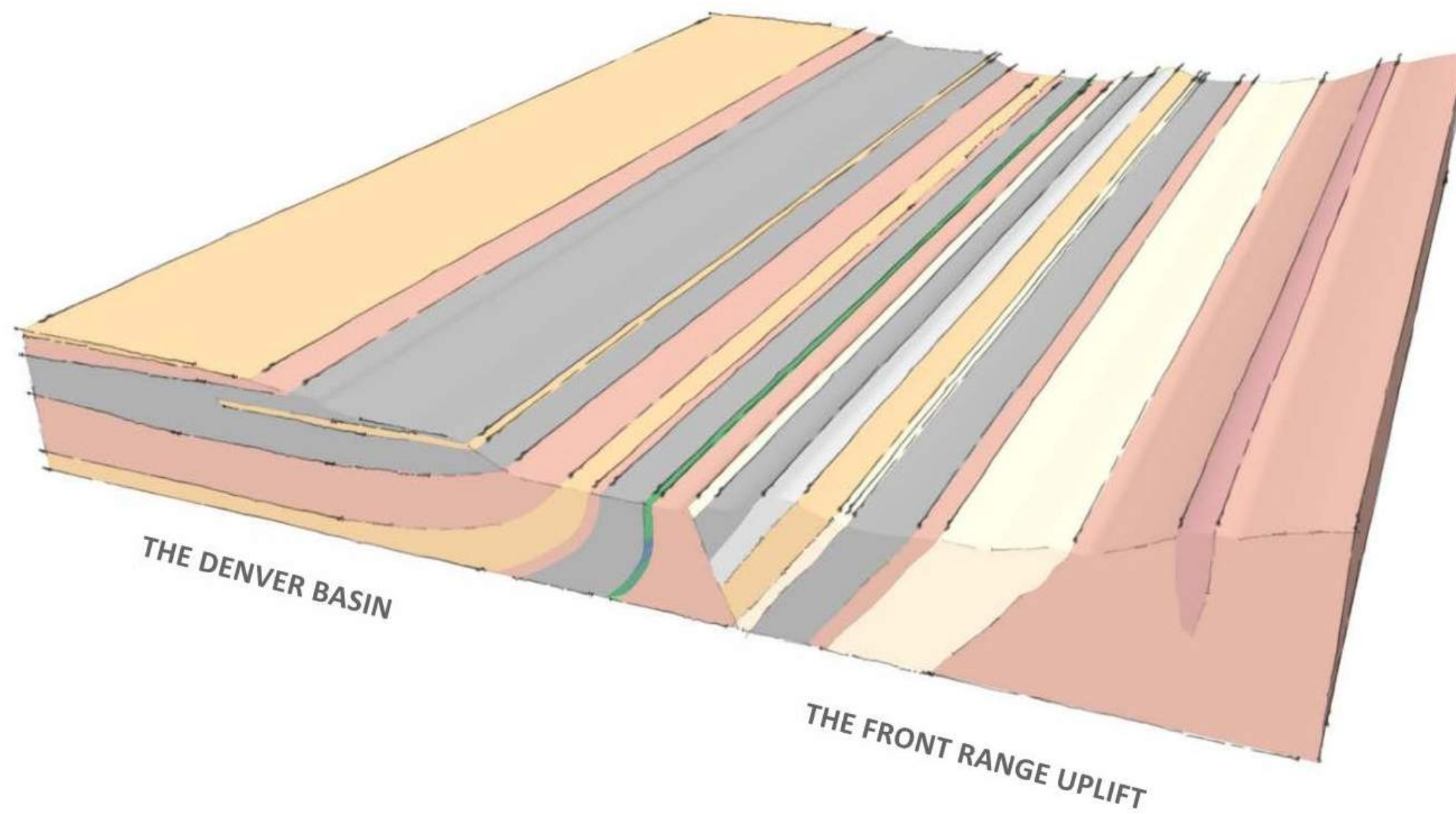


GEOLOGIC CROSS SECTION OF GOLDEN

Design Abstraction

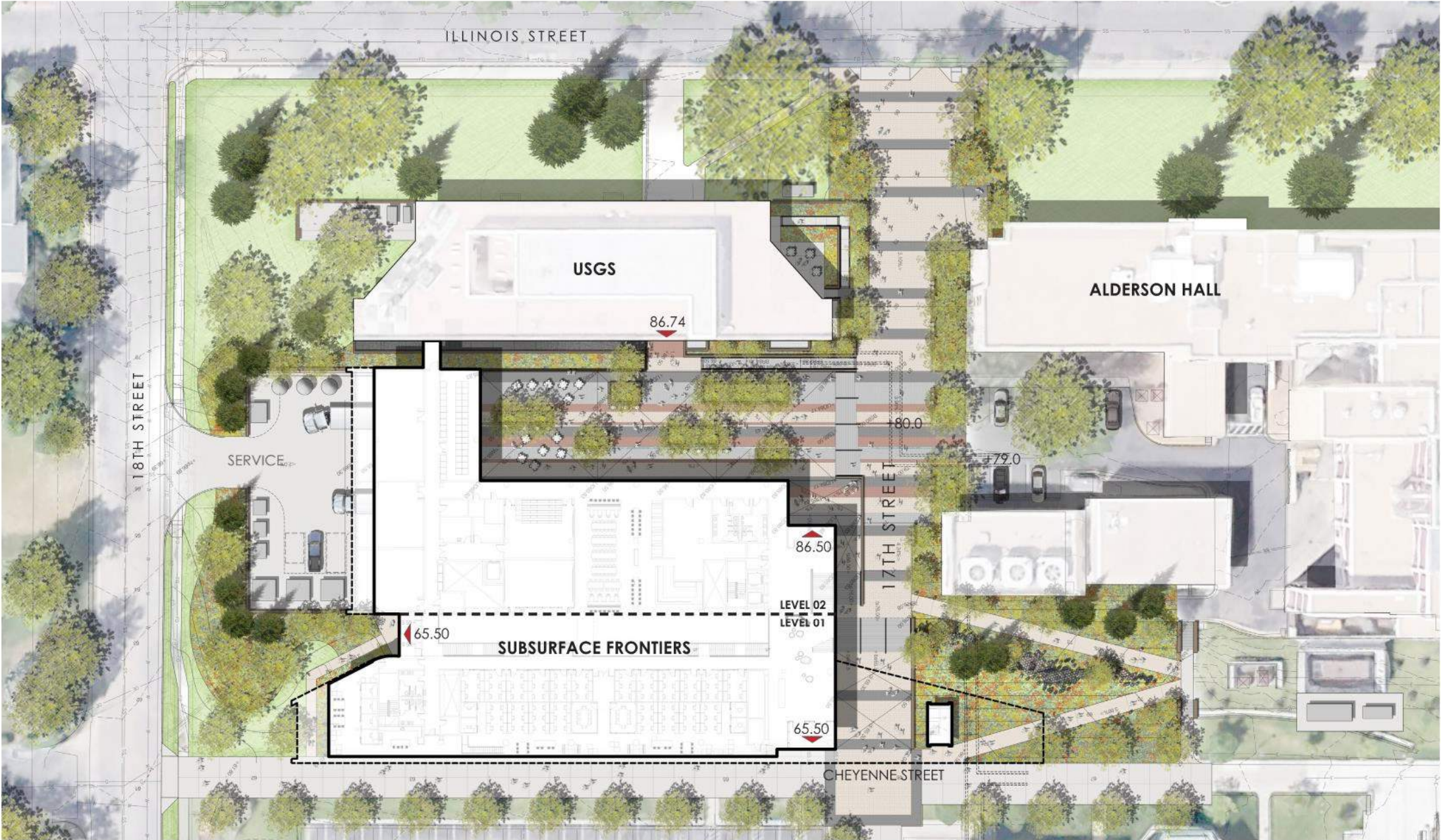


Golden Fault Overlay



OVERALL SITE PLAN

Landscape Plan

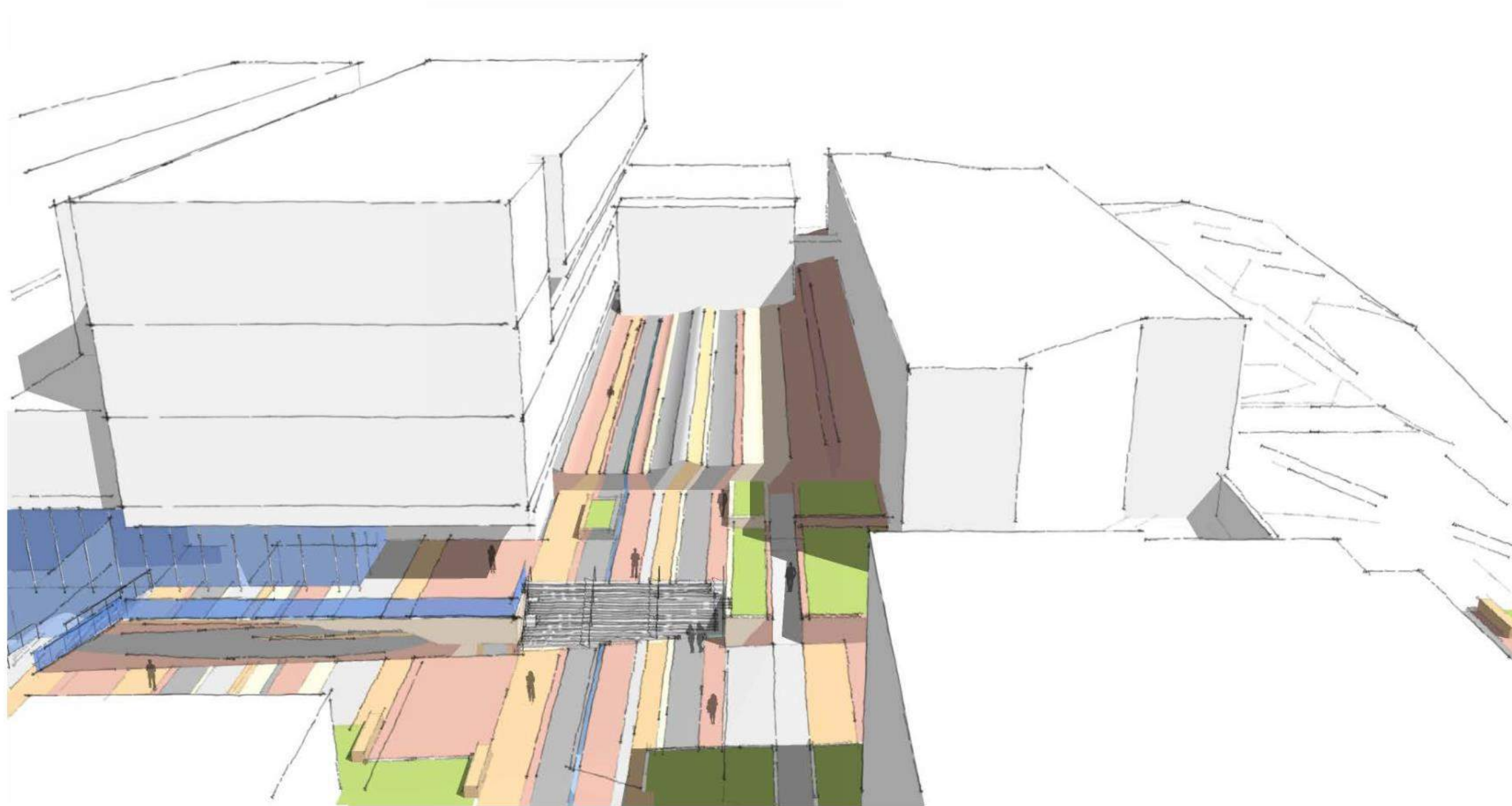


Scale: 1" = 50'-0"

SUBSURFACE FRONTIERS



Morphology



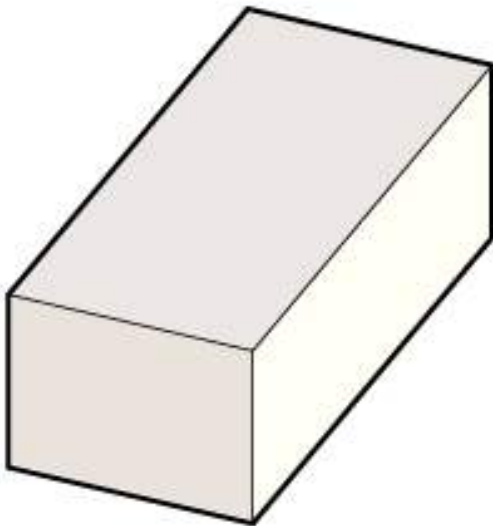
Morphology



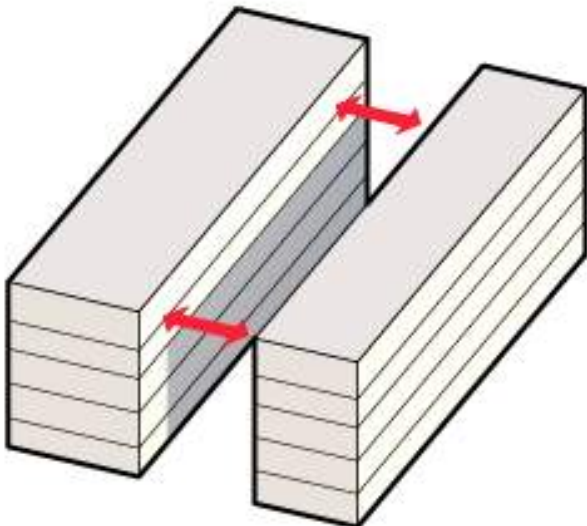
Concept Inspiration



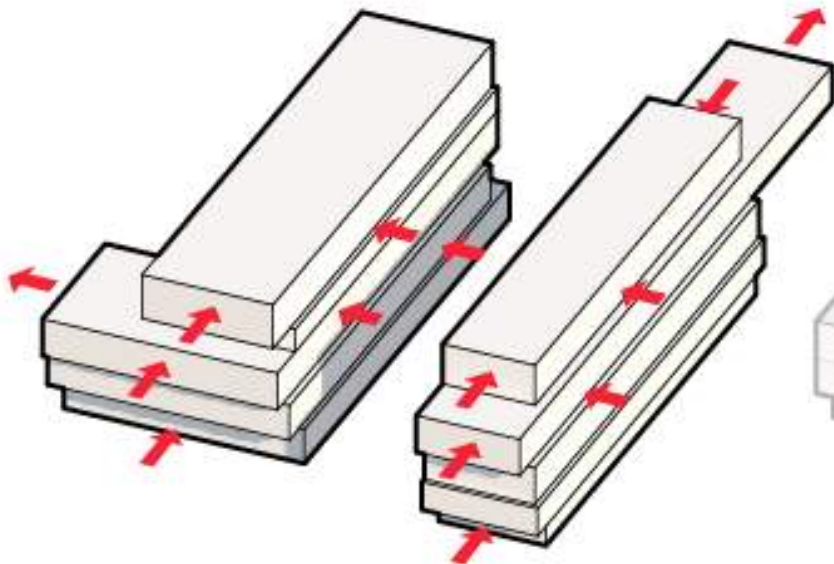
Morphology



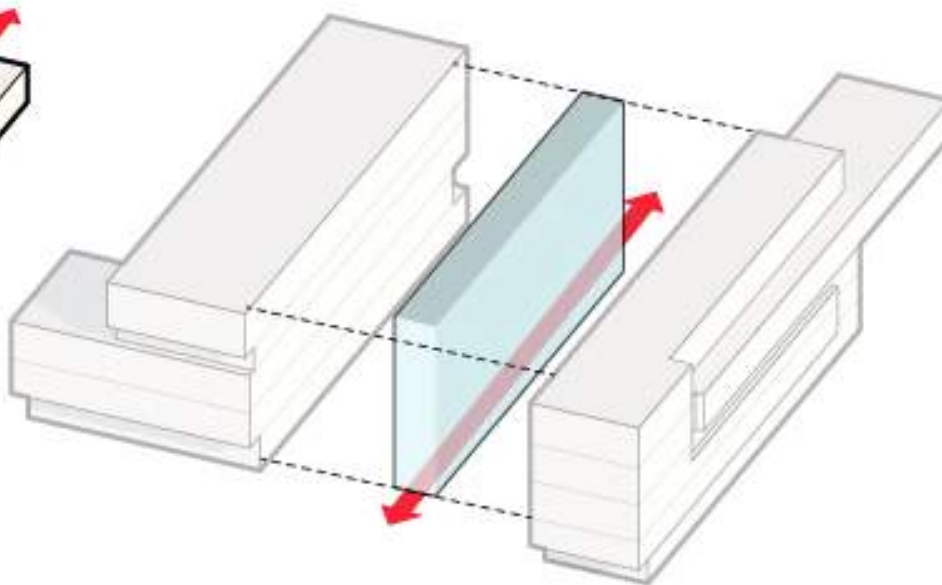
SINGULAR BLOCK



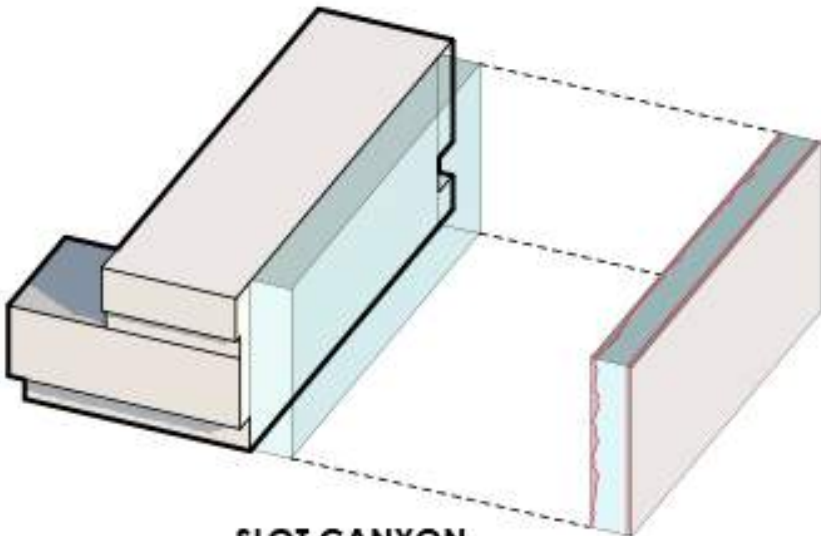
SPLIT INTO 2 BARS



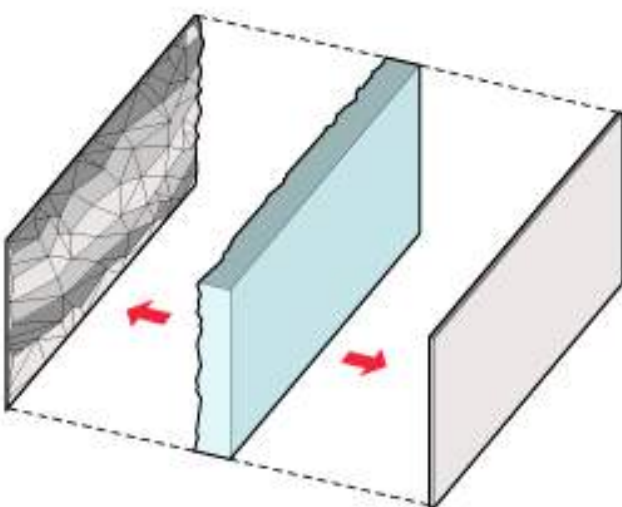
TECHTONIC SHIFING
PLATES



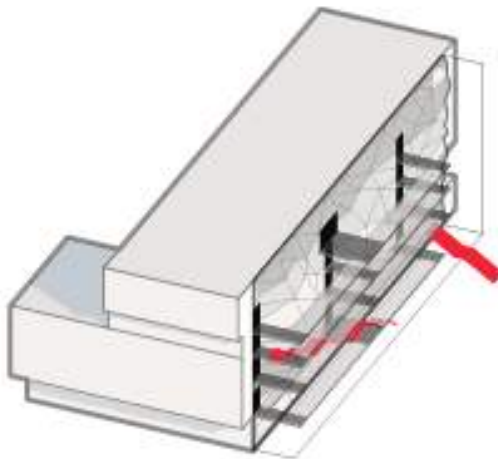
SLOT CANYON
ATRIUM



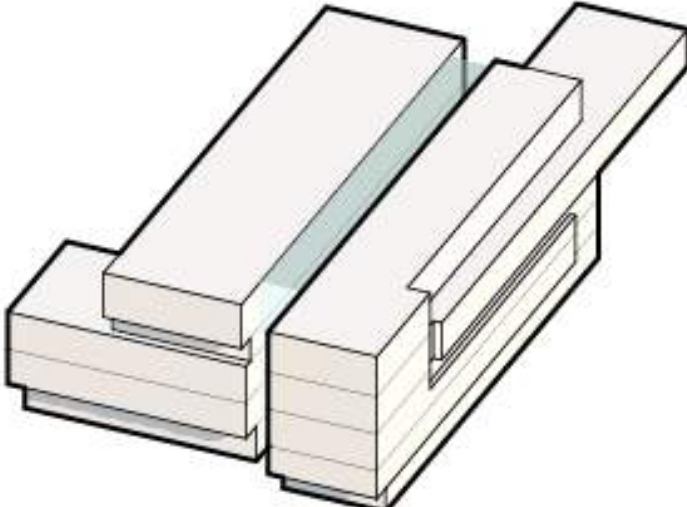
SLOT CANYON
ARTICULATION



NATURAL
ROCK FACE VOID MAN MADE



CANYON TRAIL
W. OVERLOOKS



FINALIZE MASSING

South Perspective



East Perspective



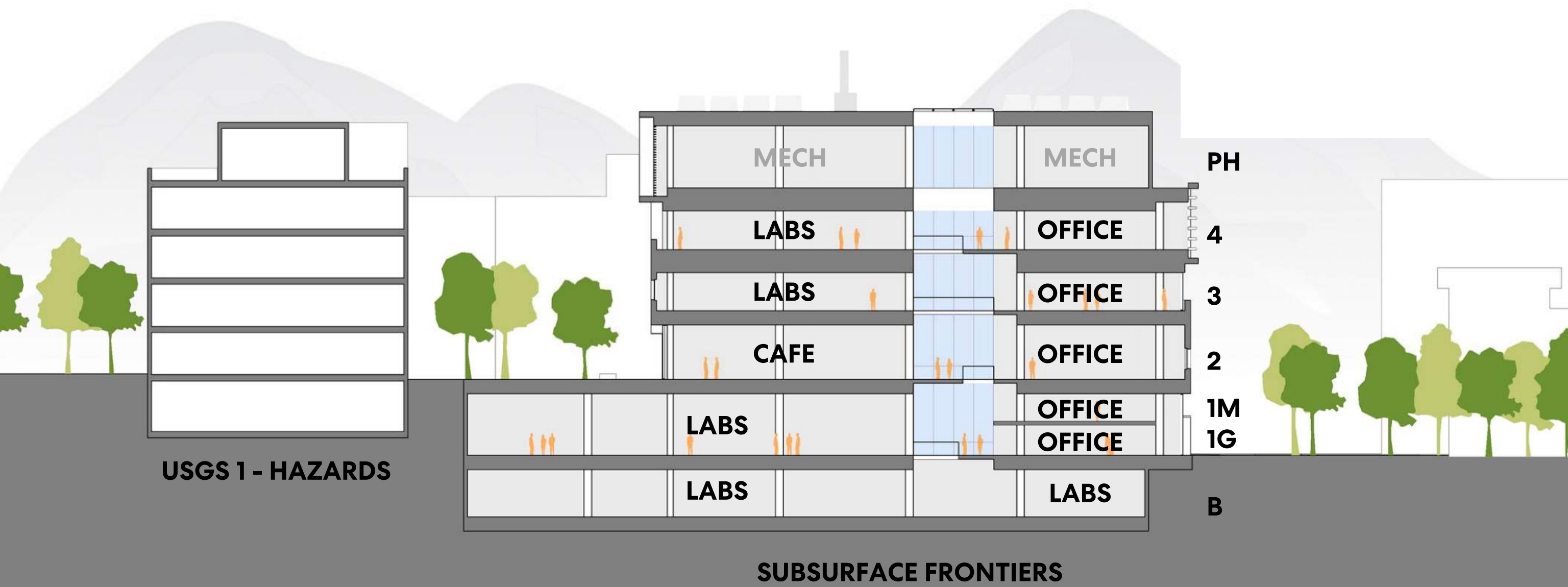
North Perspective



Northwest Perspective



Building Section

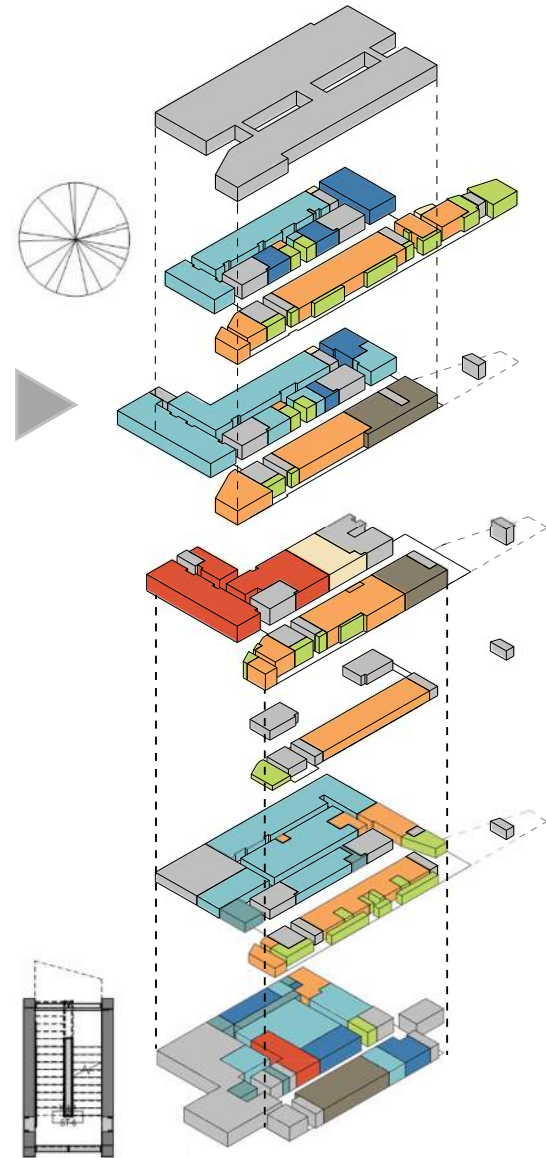


Level 4

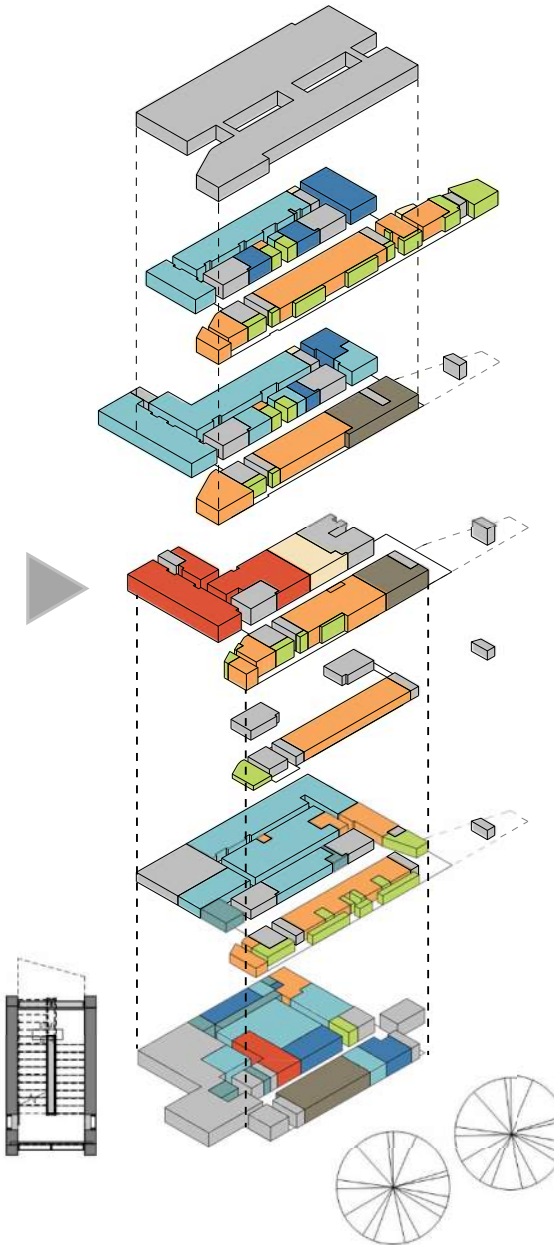


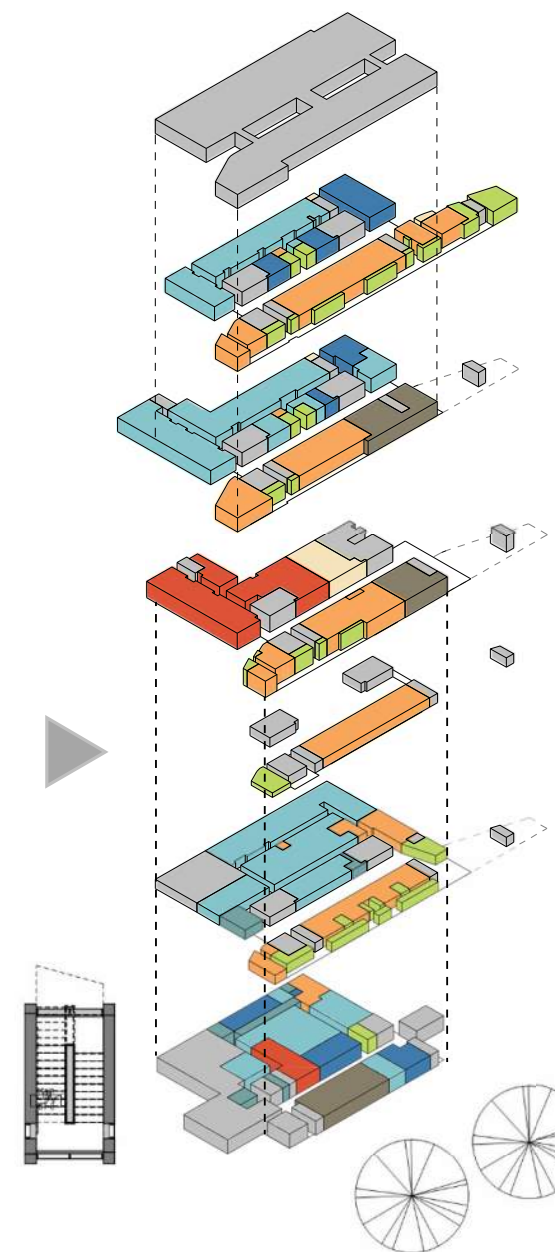


Level 3

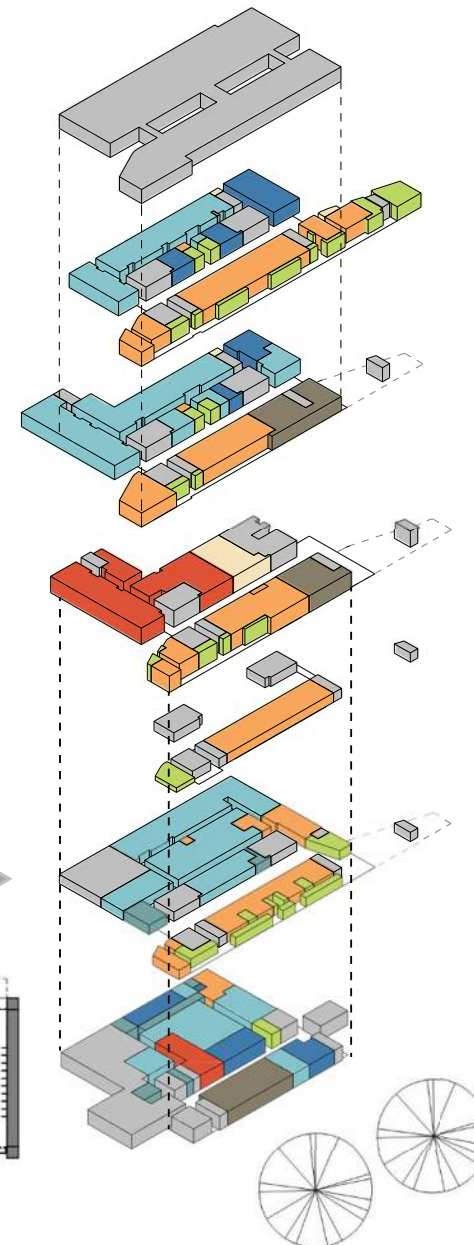


Level 2 - Courtyard

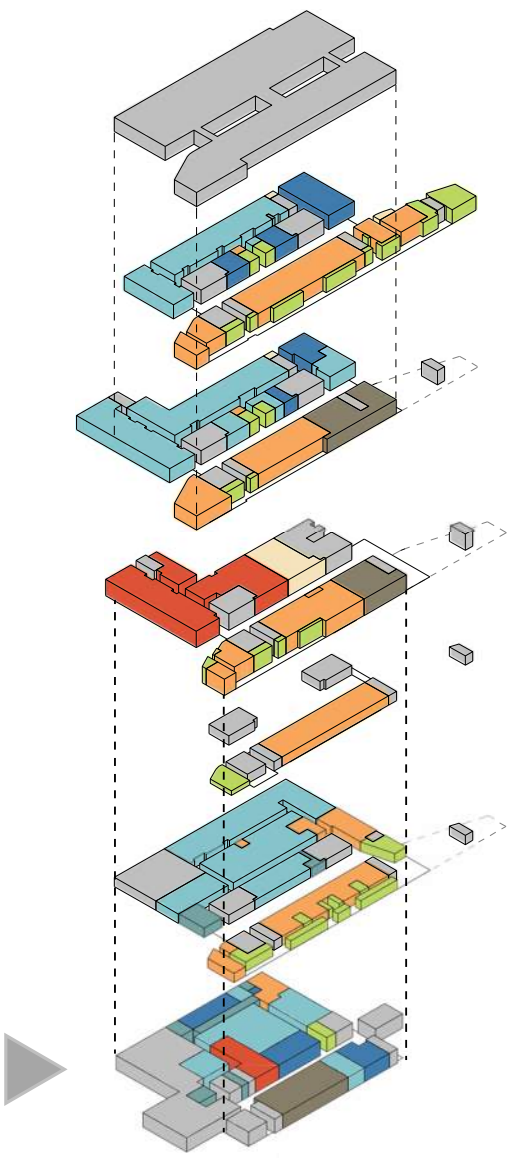
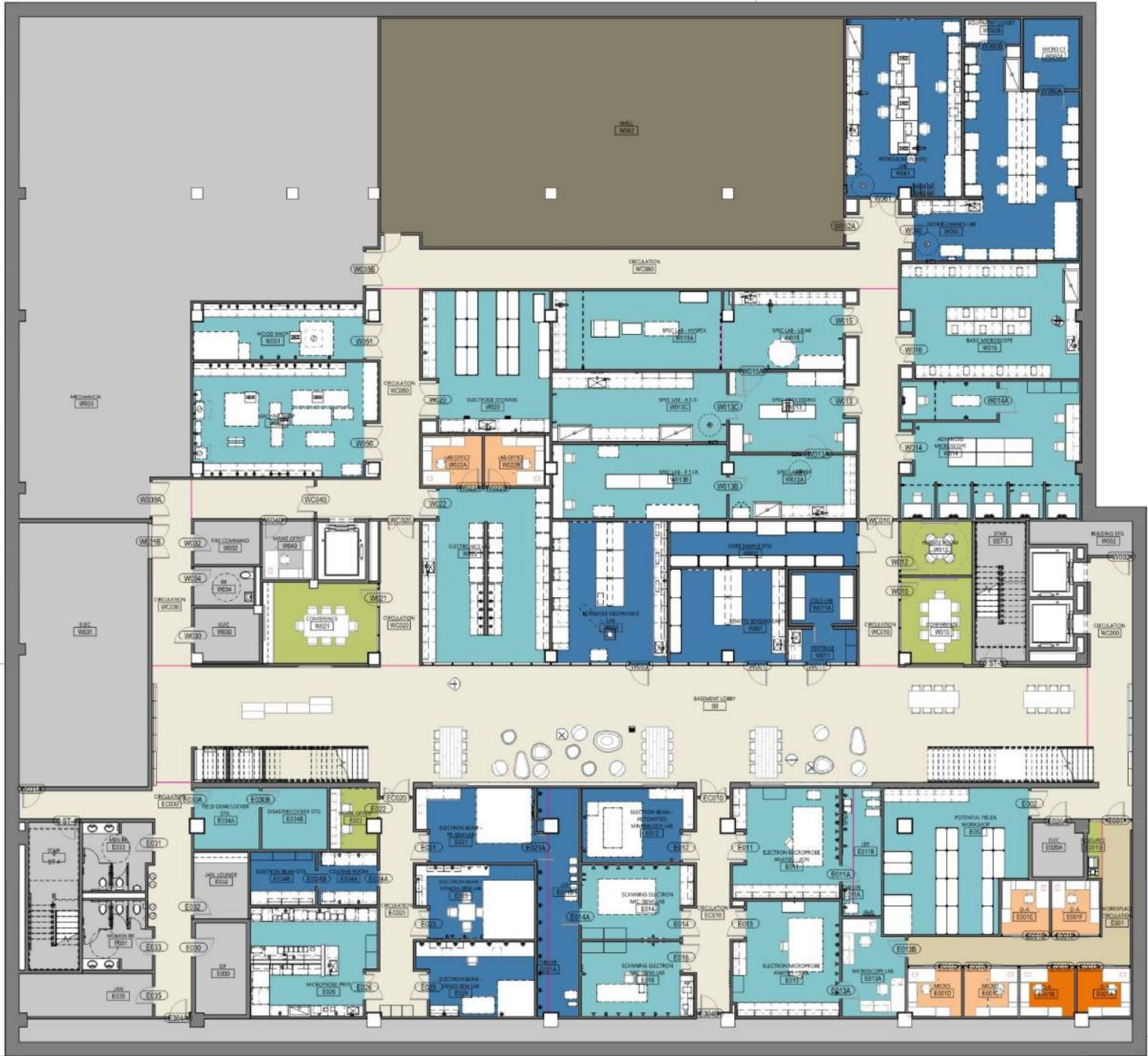




17th Street Pedestrian Way



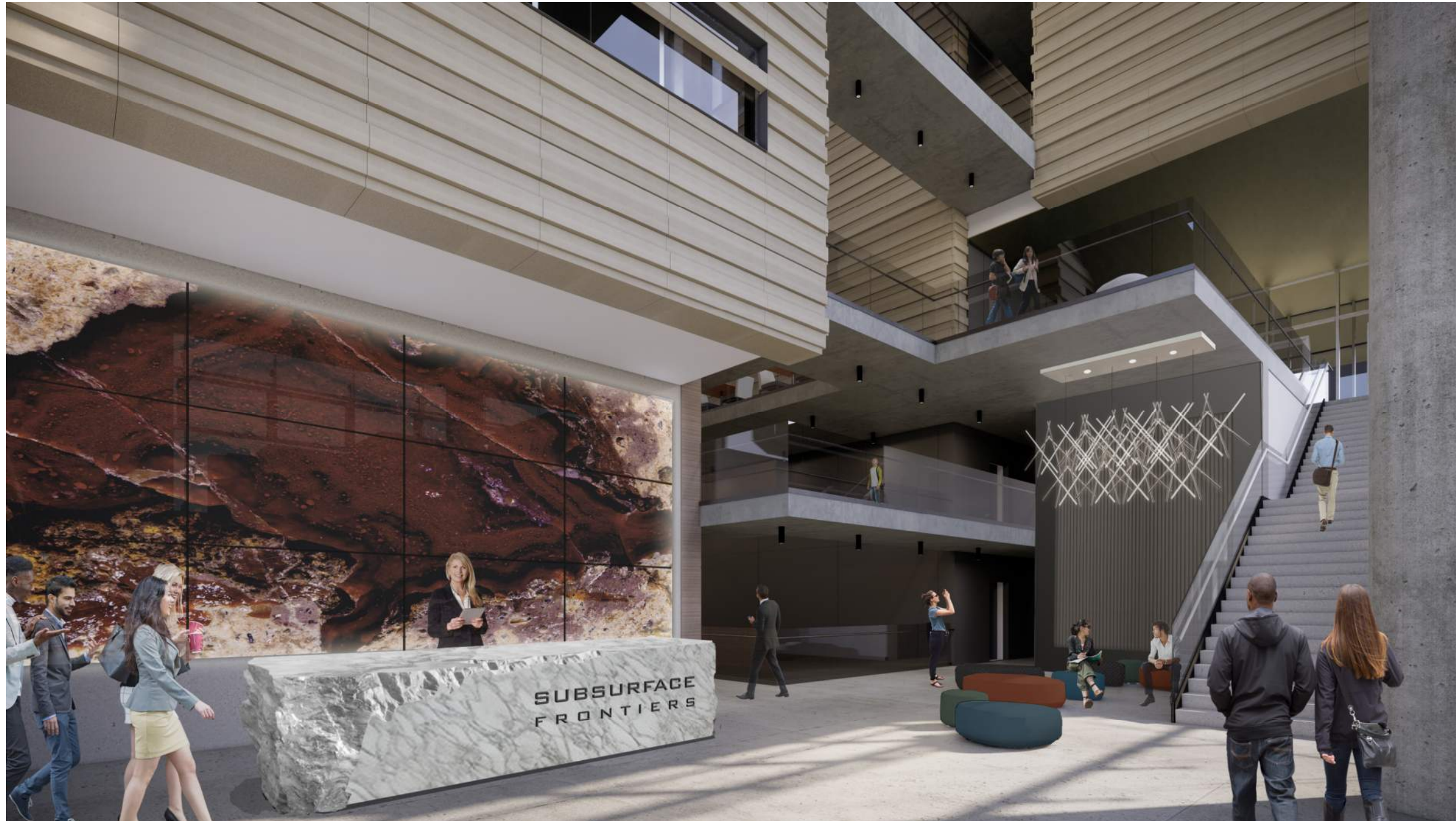
Basement



Northeast Perspective



Cheyenne Lobby



Courtyard Lobby



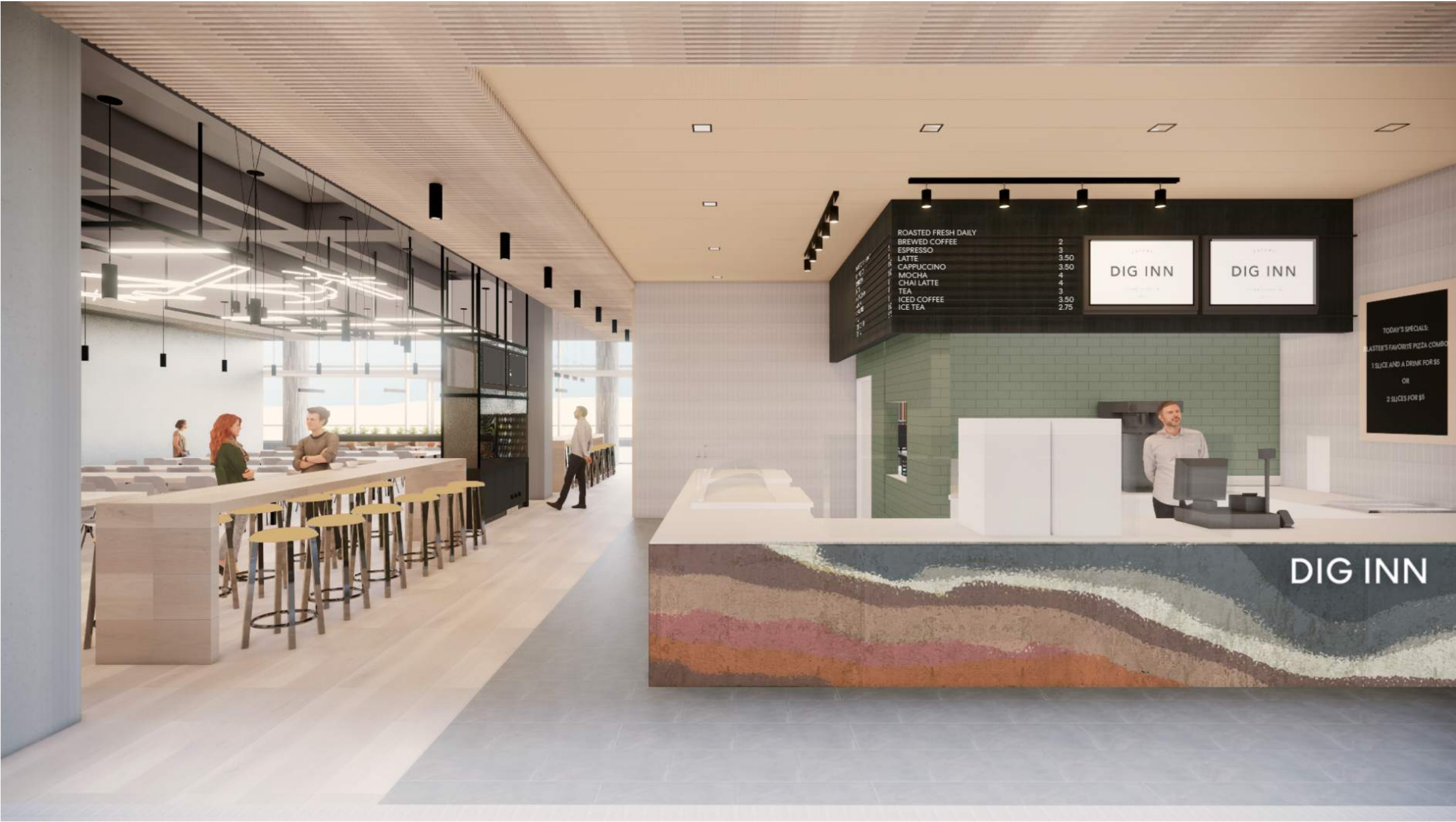
Atrium



Atrium / Cafe



Cafe



Cafe



Auditorium / Cafe



Auditorium / Banquet



Subsurface Atrium



Subsurface Atrium



Gateway Summit



Project Fly-Thru



Northeast Perspective



Section 06.

Discussion

Design and Construction Schedule Update

