

NIST Boulder Facilities Update

Boulder Facilities Overview

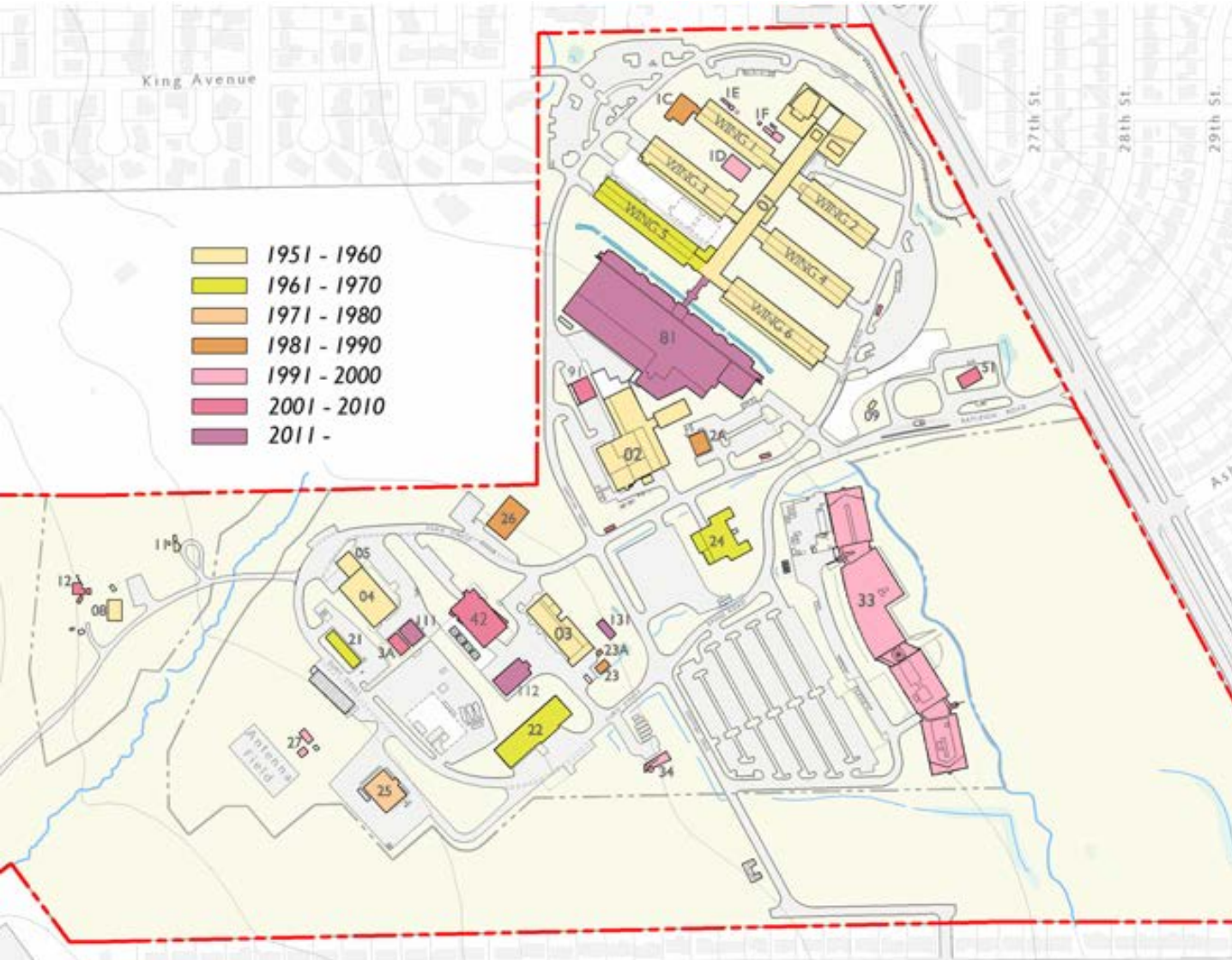
NIST



- Total Site: 206 Acres
- Development Zone: 83 acres

- 34 buildings and structures
- 1,254,000 gross square feet
- Approximately 1,760 personnel

Boulder Facilities History



- Campus established in 1950
 - Mission for Advancing Science & Technology
 - Also on the campus:
 - National Telecommunications and Information Administration (NTIA)
 - National Oceanographic and Atmospheric Administration (NOAA)
- Building 1 eligible for listing on Historic Register
- 8 buildings built in the 1950's
- 42% of space is outdated or obsolete
- Mission requires:
 - Flexible, integrative, collaborative space
 - Highly controlled research environments

Boulder Facilities Conditions



Building	Asset Name	Size	FCI
1	Radio Building	314,803	82.2
1C	Radio Building - Annex C	4,300	85.9
1D	Radio Building - Annex D	3,456	90.8
2	Cryogenic	72,348	51.5
3A	Emss Annex	2,160	89.0
21	Maintenance Garage	3,999	76.7
22	Warehouse	17,530	77.5
24	Plasma Physics	31,718	41.4
25	Maintenance Shops	8,306	7.0
26	Day Care Facility	7,776	89.2
51	Security Center	1,483	47.9
8888A	Roads, Parking Lots, Walkways, Fencing		85.1
8888B	Site Utilities		84.1

- 54% of facilities area is in poor to critical condition per DOC standards.
- \$204 M Backlog (w/o B1R)
- Primary Component: \$153 M Major Utility Infrastructure
- Older laboratories unable to support controlled environments required for advanced research

Boulder Master Plan



- 20-year vision and framework for future development
- Maintains protected areas and trails

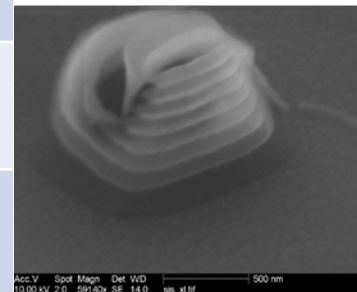
- Cohesive campus
- Modest growth
- Advanced Research Facilities
- Campus Center
- Connected Laboratories
- Flexible, Incremental Change

Boulder Building 1 Lab Comparison

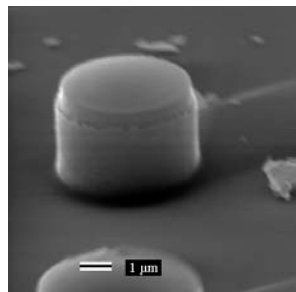
	Building 1 – Not Ren.	Wings 3 & 6	Gebbie Bldg.
Temperature Control	NO/L1	L2 – Capable of L3	L4/L5
Humidity Control	NO	L4	L5
Air Filtration	NO	L2 – Capable of L3	L4/L5
Vibration Control	NO	NA	L5
Energy Conservation	NO	LEED – Platinum	LEED - Gold
Seismic to Code	NO	YES	YES
Mech, Elec, Plumb Systems – Within Life Expectancy	NO	YES	YES
Engineered Lab Safety	NO	YES	YES
Hazardous Material	YES	NO	NO

• Current Labs Do Not Support Critical Technical Needs

“Quantum dot” – controlled source of single photons for quantum communications, telecommunications, laser measurements, etc.



Good fabrication result.



Non-functioning quantum dot due to poor lab conditions.

- 82 % of labs in Bldg 1 do not meet L2 minimum
- (°C) +/- 2 Temperature Control
- No Relative Humidity Control
- Class 100,000 Air Filtration

Construction of Research Facilities Funding

Boulder FY 2018 Funding

- **B1R – Wing 5 renovation**
 - Programming & 30% design (Bridging Documents) for Wings 4, 5 and a portion of Center Spine
 - Abatement and Interior Demolition Contract
- **High Speed Switch - Replacement**
 - Manufacturer stops supporting at end of 2019.
 - Maintenance contract is through FY2020
 - Procure contract to replace switch Oct. 2018 – Aug. 2019
 - Construction completion April 2020
- **Roof Replacement Projects**
 - Buildings 1 (above Library), 4, 5, 21, 24 & 25
- **Building 1 – Sanitary Sewer Pipe Replacement**

Construction of Research Facilities Funding

Boulder Funding

- FY2018: Boulder spending \$76.3 M of total \$319.0 M
- FY2019: Boulder \$65.0 M to \$67.0 M based upon House & Senate Marks
 - Funds balance needed to complete B1R Wing 5 renovation
- FY2020 – FY2030:
 - B1R Wing 4 & Spine: approx. \$ 90 M*
 - Building 2 replacement & garage: approx. \$ 127 M*
 - IT Infrastructure Upgrades: \$30 M*
 - Remaining portion of Building 1 renovation: \$ 198 M*

* FY2018 dollars

Boulder – B1R Overview



ID	T	Task Name	Start	Finish	2018		2019				2020				2021				2022					
					1st Half		2nd Half		1st Half		2nd Half		1st Half		2nd Half		1st Half		2nd Half		1st Half		2nd Half	
					Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	★	B1R Project Start	Tue 12/5/17	Tue 12/5/17	12/5/17																			
2	✓	▸ B1R - Wing 3 Construction	Tue 6/7/16	Wed 7/5/17																				
9	✓	▸ B1R - Wing 6 Construction	Tue 6/7/16	Fri 4/7/17																				
14	✓	▸ B3R - Design Build	Tue 6/7/16	Fri 2/16/18																				
33		▸ BCC Relocation	Tue 6/7/16	Thu 12/12/19																				
52		▸ Badging Relocation/PBA	Mon 12/5/16	Mon 4/22/19																				
71		▸ OSY Build-Out & Police Relocation - BLDG 22	Mon 12/5/16	Mon 4/22/19																				
90		▸ Wing 1 and Wing 2 Project	Fri 1/27/17	Mon 9/30/19																				
124		▸ Relocate Fitness Center (FC)	Fri 3/9/18	Thu 7/18/19																				
133		▸ Move OISM form Wing 5 to Bldg. 91 & 5/Setup Bldg. 131	Wed 5/16/18	Mon 4/22/19																				
159		▸ Dedicated CM support for B1R	Mon 6/4/18	Tue 12/26/23																				
164		▸ Wing 5 Renovation	Tue 6/7/16	Thu 9/2/21																				
205		▸ Wing 4 & Spine Renovation (FY21 Funding)	Fri 10/4/19	Thu 11/23/23																				

B1R Wing 5 Overview



- Bridging Documents for Wings 4, 5 & Spine Jan. 2018 - July 2018
- New Boulder Computer Facility Compete Dec. 2018
- Lab Programs vacate Wing 5 Nov. 2018
- Computer Facility Migration from Wing 5 Dec. 2018 - Dec. 2019
- Award Wing 5 Abatement & Demo Mar. 2019
- Procure Wing 5 Design-Build Contract Aug. 2018 – Aug. 2019
- Wing 5 Abatement & Demo Complete Jan. 2020
- Wing 5 Design-Build Contract Awarded Sept. 2019
- Wing 5 Construction Completion July 2021
- Wing 5 Move-in July 2021 – Sept. 2021

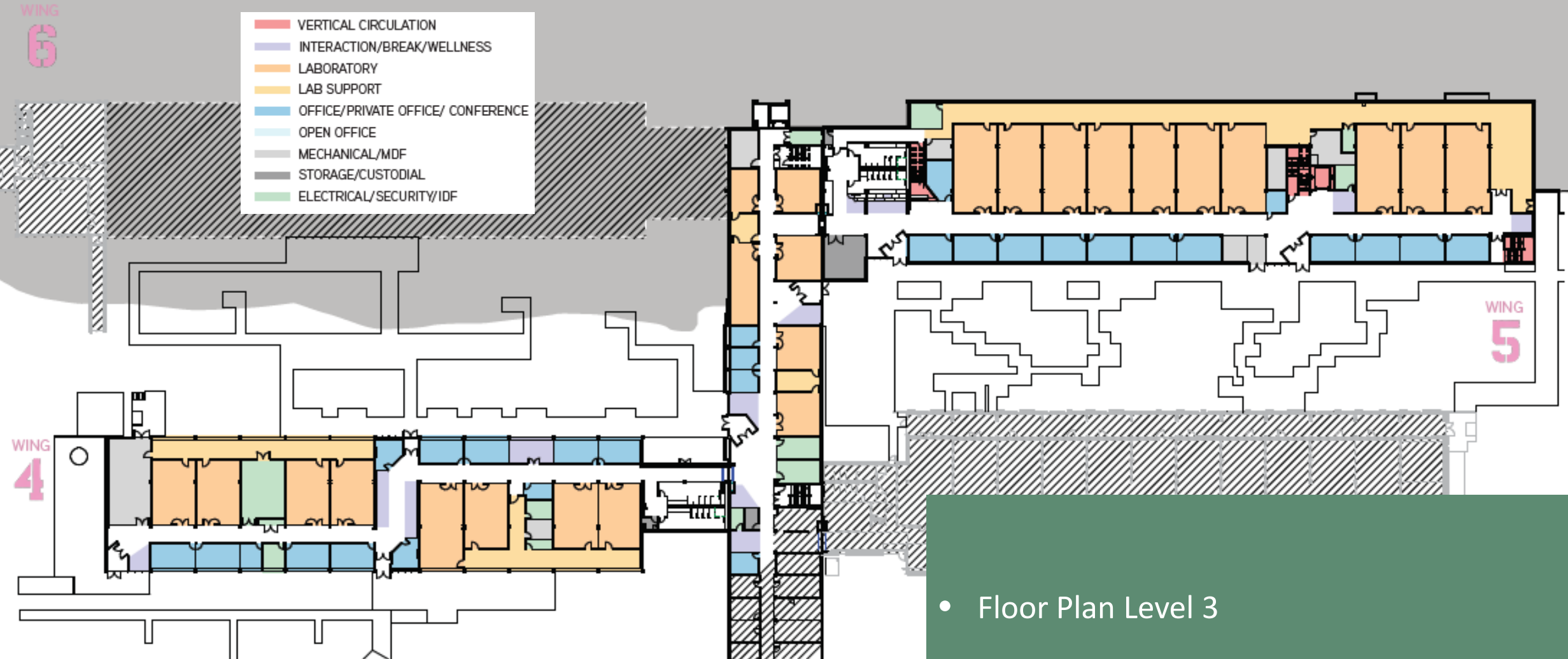
B1R Wings 4, 5 & Spine Design

NLST



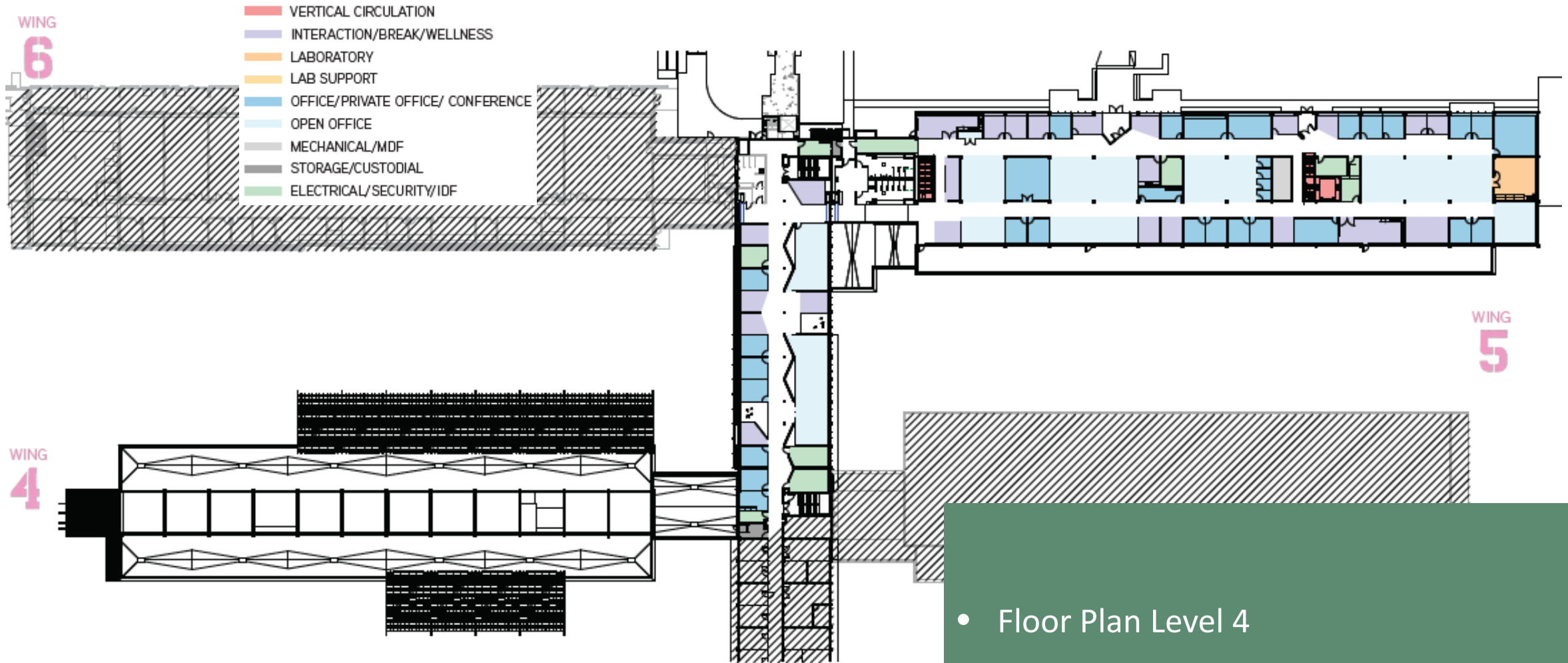
- Aerial View from Northwest

B1R Wings 4, 5 & Spine Design



- Floor Plan Level 3

B1R Wings 4, 5 & Spine Design



- Floor Plan Level 4

B1R Wings 4, 5 & Spine Design

NLST



- Courtyard View of Wing 5

B1R Wings 4, 5 & Spine Design

NLST



- Courtyard between Wings 4 and 6

Boulder – What's Next?

- Develop a 5 year plan to address competing interests.
- Develop a 20 year implementation plan, coordinated between campuses, per the Master Plans
- Finishing B1R (Wing 4 & associated spine), or
- Renovating the rest of Building 1 (Wings 1, 2, headhouse & associated spine), or
- Building 2 replacement