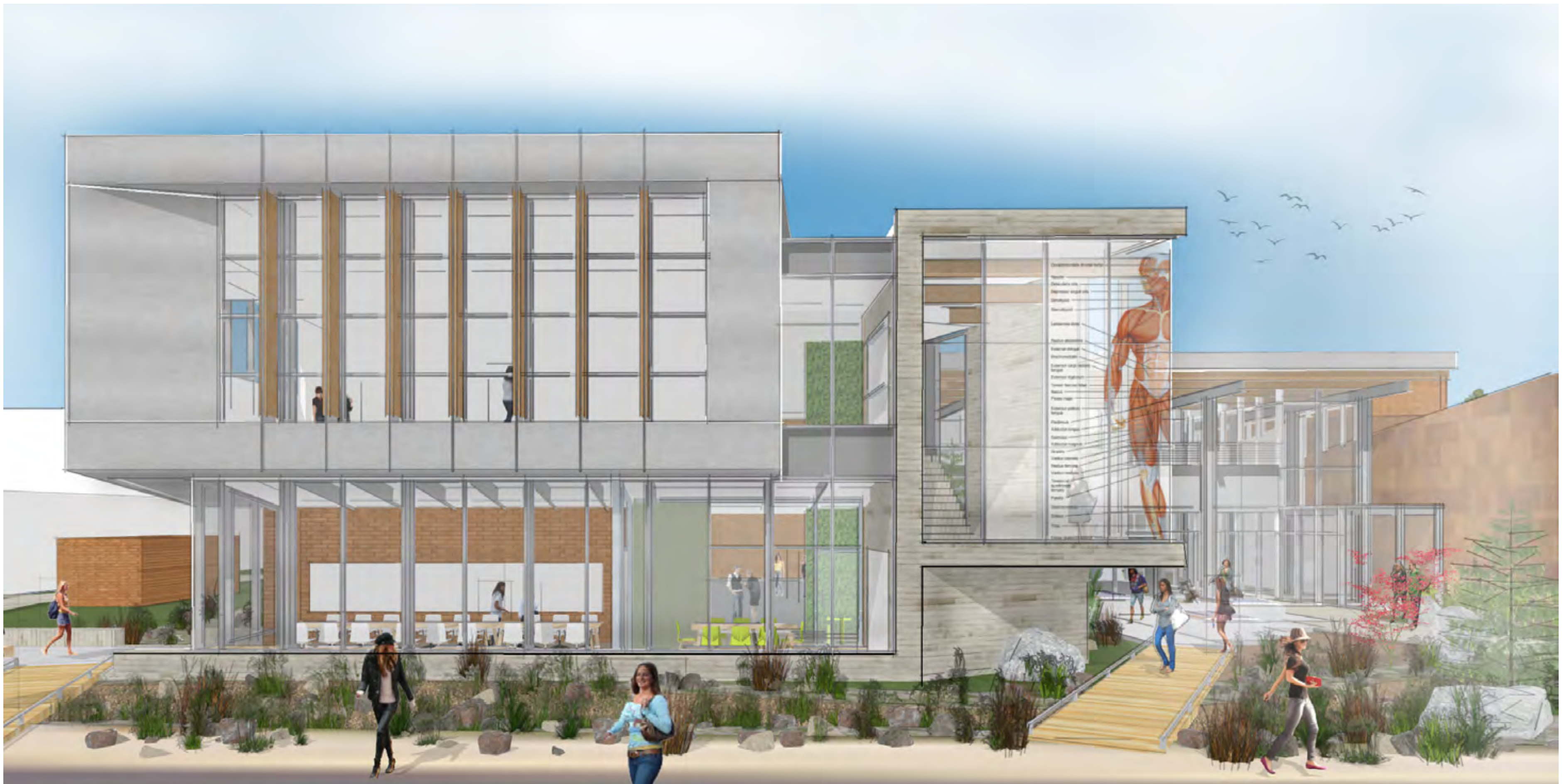
NORTH IDAHO COLLEGE
MEYER HEALTH & SCIENCES BUILDING EXPANSION



SCHEMATIC DESIGN REPORT

AUGUST 15, 2019

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NEW STUDENT SERVICES ZONE

CURRENT ENTRANCE PLAZA

MEYER HEALTH & SCIENCES BUILDING

The current Meyer Health and Sciences Building has seen exponential growth in the STEM programs since opening its doors in 2005. The science programs continue to grow each year. With that growth, there is an expanded need for additional labs, classrooms, faculty and student spaces to continue to provide North Idaho College's excellence in education. The Meyer Health and Sciences expansion will include the addition of 4-5 labs, lab prep space, 4 classrooms, faculty offices, student study areas, a large conference room and support spaces. The expansion presents the opportunity to change the character of the Meyer Health and Sciences Building to reflect a state-of-the-art, student focused STEM building.

MEYER HEALTH & SCINCES BUILDING CONTEXT

Site Location

On the shores of Lake Coeur d'Alene.

History of Site

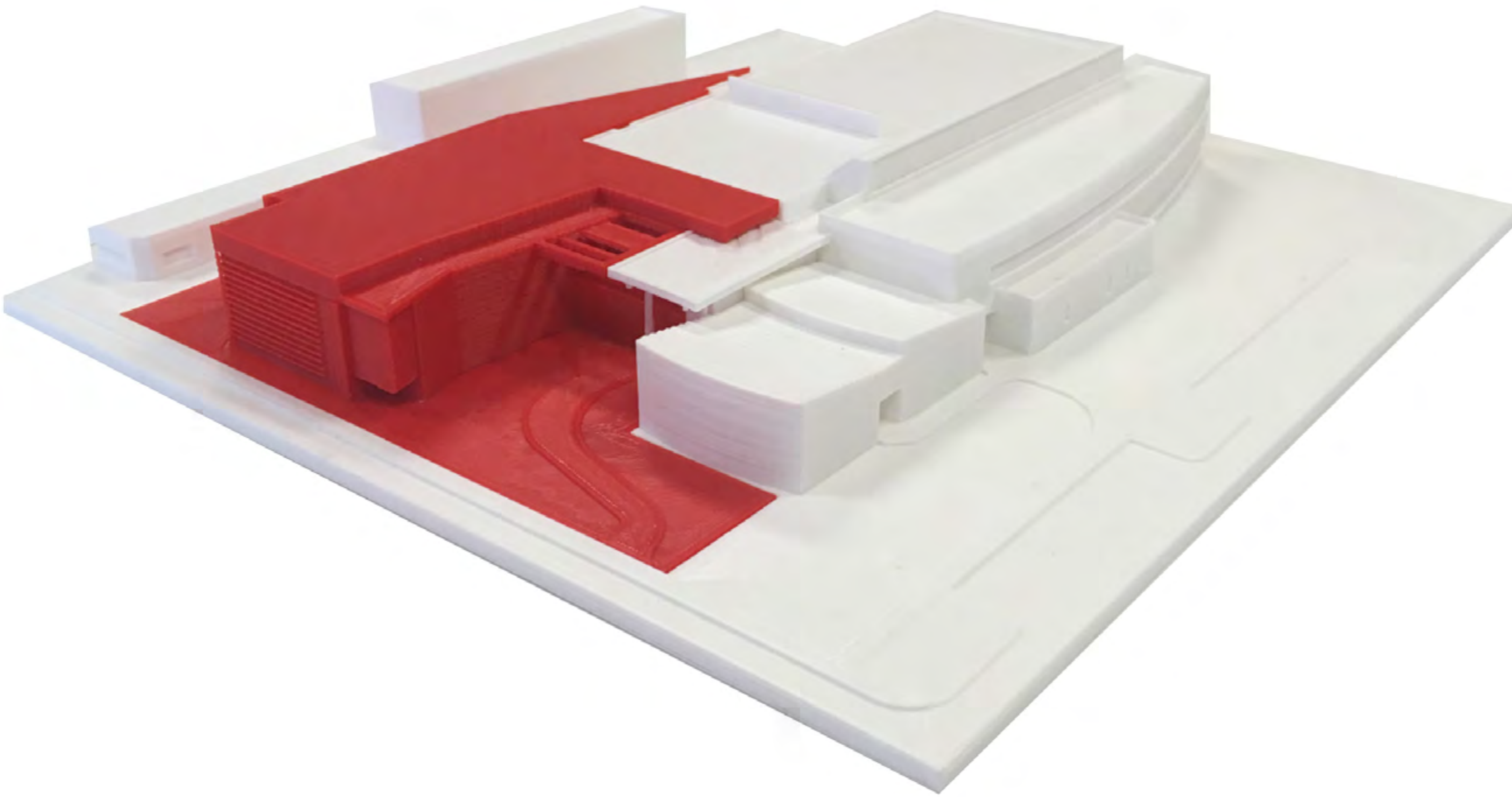
The land that North Idaho College (NIC) sits on used to be where the Coeur d'Alene Tribe gathered to hunt, fish, play, dance, feast and swim. Then the site was used by the U.S. Army for Fort Sherman. Fort Sherman forced the Native Americans to move their gathering near the southern tip of Lake Coeur d'Alene. The town of Coeur d'Alene grew along with the fort. In 1900 Fort Sherman was abandoned. In 1997 NIC and the Coeur d'Alenes Tribe joined hands to formulate the Nine Points Agreement which honors the tribes and identifies ways to support Native American students and cultural programming on campus.

Culture

Take pride in the outdoor facilities; the lake front.

Ecology

Summers are short, warm and dry - mostly clear. Winters are very cold - mostly cloudy. Temperature average over the year is 24 – 86 degrees. The hottest season is between June 21 through September 12. The coldest seasons are between November 13 – February 26 with only 8.5 hours of daylight in January. Wet season is from Oct 18 – June 14. The wind comes from the West from April to May and July to September. The wind comes from the South May to July and September to April.



STUDY MODEL FOR EXPANSION

DESIGN STATEMENT

The Need

The Meyer Health and Sciences Building opened in 2005 and has greatly enhanced NIC's delivery of nursing, science, and overall instruction. Building highlights include the latest in classroom technology with eight leading-edge science labs, 10 general classrooms, two theater-style auditoriums, two video broadcast classrooms, and a cadaver lab.

Spaces within the original building contain:

> Health Professions and Nursing Division
> Natural Sciences Division
> DeArmond Auditorium
> Rolphe Auditorium
> Classrooms
> Labs

The current Meyer Health and Sciences Building has seen exponential growth in the STEM programs since opening its doors in 2005.

The science programs continue to grow each year and with that growth, there is an expanded need for additional lab, classroom, faculty and student space with which to continue to provide NIC's excellence in education. The Meyer Health and Sciences expansion will include the addition of 4-5 labs, lab prep space, 4 classrooms, faculty offices, student study areas, a large conference room and support spaces. The expansion presents the opportunity to change the character of the Meyer Health and Sciences Building to reflect a state-of-the-art, student focused STEM building.

Attributes of this 21st century learning facility

> Student centric environments
> Staff accessibility to students
> Attractive, comfortable and informal learning environments
> Variations of science on display - building wide, program specific and student display opportunities
> Overt experimentation throughout the building-lab is everywhere
> Building receptionist encouraging program exposure
> INBRE (Idea Network of Biomedical Research Excellence) opportunities through seminars and events
> Outdoor seminar spaces

Concepts

The NIC Master Plan designates the north-south College Drive as a future pedestrian mall and service/emergency vehicle access through the heart of campus. The expansion design should open-up the Meyer Health and Science facility to this planned amenity for students by fronting "College Mall" with transparent glass walls, patio spaces and well designed landscape features. To overtly put 'science on display' the building addition needs to become a billboard both externally and internally in planning and finishes.

The design should weave health and natural sciences into the project. Interpretation of this could be the integration and expression of healing, science, technology, engineering and math (STEM).

Showcase healing practices of the Coeur d'Alene Tribe, the original inhabitants of the site.

Design the landscape to include specially selected stone boulders that support introductory geology courses, consistent with what has been done at other sites on campus.

A future goal of the science departments at NIC is to house all science faculty in this facility. Another goal is to have a greenhouse on site to support biology.

CONNECTION TO NATURE

The Earth Sciences combined with the special location of North Idaho College create an opportunity to have the curriculum exceed the walls of the classroom and project out to the greater campus.

The landscape design is an opportunity to teach before entering the Meyer Science building. Water filtration has the opportunity to be a bio-swale along College Drive. In the swale plantings, rocks and descriptive plaques can show where stormwater is treated on site prior to re-entering the aquifer.

Specimen boulders for the geology program will set up strategic pathways to inform students of the surrounding context of the Kootenai Trench and the Selkirk and Cabinet Mountain Ranges. Internally a 2 story green wall will anchor the student services lounge softening the first impression of the building.

A second story roof terrace reconnects the visitor with the surrounding context as they can step outside and look down at landscape teaching seminar space directly out of the 'think tank' classroom below.

GUIDING PRINCIPLES

1. Science on display
2. Learning happens everywhere
3. Maximize the current asset
4. Campus connection or creation
5. Eye on the future
6. Partner with the Coeur d'Alene Tribe

CARING, CURING, TREATING

GUIDING PRINCIPLES

1 **SCIENCE ON DISPLAY**

Celebrate the multi-faceted science programs housed within Meyer Health and Sciences from the street view and within the building to assist with recruitment of future students. Create a sense of pride for current students enrolled in the program.

Create a layered dynamic environment by enhancing visibility into labs from the corridor system and through spaces to create a straight forward understanding of the spaces and functions. Strategic use of wayfinding and space layout throughout the building to promote logical procession from the point of entry.

Design to embrace 21st Century trends in design of science buildings.

Provide strong connection to the natural environment with views, daylight and natural elements/patterns integrated into the design of the interiors.

2 **LEARNING ON DISPLAY**

Provide a variety of student-focused study and collaboration zones. Spaces will vary in size, technological capabilities and acoustical separation to promote both impromptu and formal student interactions.

Utilize and enhance the design of new courtyard space to provide sheltered outdoor student space.

The strategic location of student spaces and amenities adjacent to each other will promote interaction between students from varying programs.

3 **MAXIMIZE THE CURRENT ASSET**

Embrace and enhance the existing architecture of Meyer Health and Sciences Building.

Create an expansion that is efficient in planning.

4 **CAMPUS CONNECTION OR CREATION**

The Meyer Health and Sciences expansion will be integrated into the context of the surrounding buildings, site, pedestrian and street traffic. It will utilize as much of the existing infrastructure as possible and will provide an efficient footprint to maximize the project budget.

5 **EYE ON THE FUTURE**

Consider future growth with placement of the expansion.

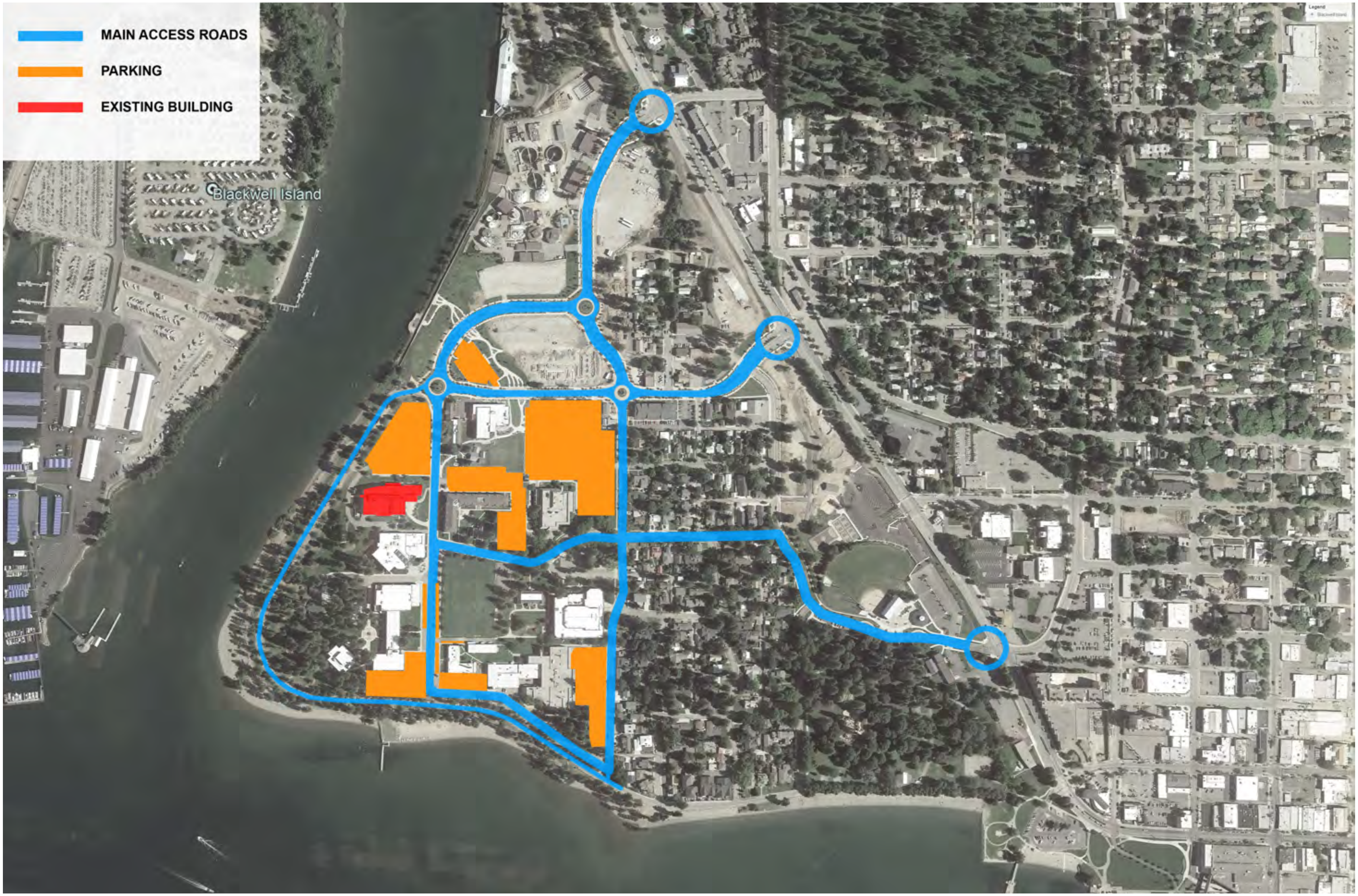
Plan for change and adaptability of technology as relates to best-known trends and advancements in STEM programs.

Consider interior flexibility to accommodate future program evolution and the ebbs and flows of student enrollment that NIC experiences.

6 **PARTNER WITH THE COEUR D'ALENE TRIBE**

On previous projects at NIC this has been interpreted as influencing the use of native natural materials, interior and exterior, and in landscaping. The Tribes name for the facility means "Place for Health Science".

ANALYSIS DIAGRAMS



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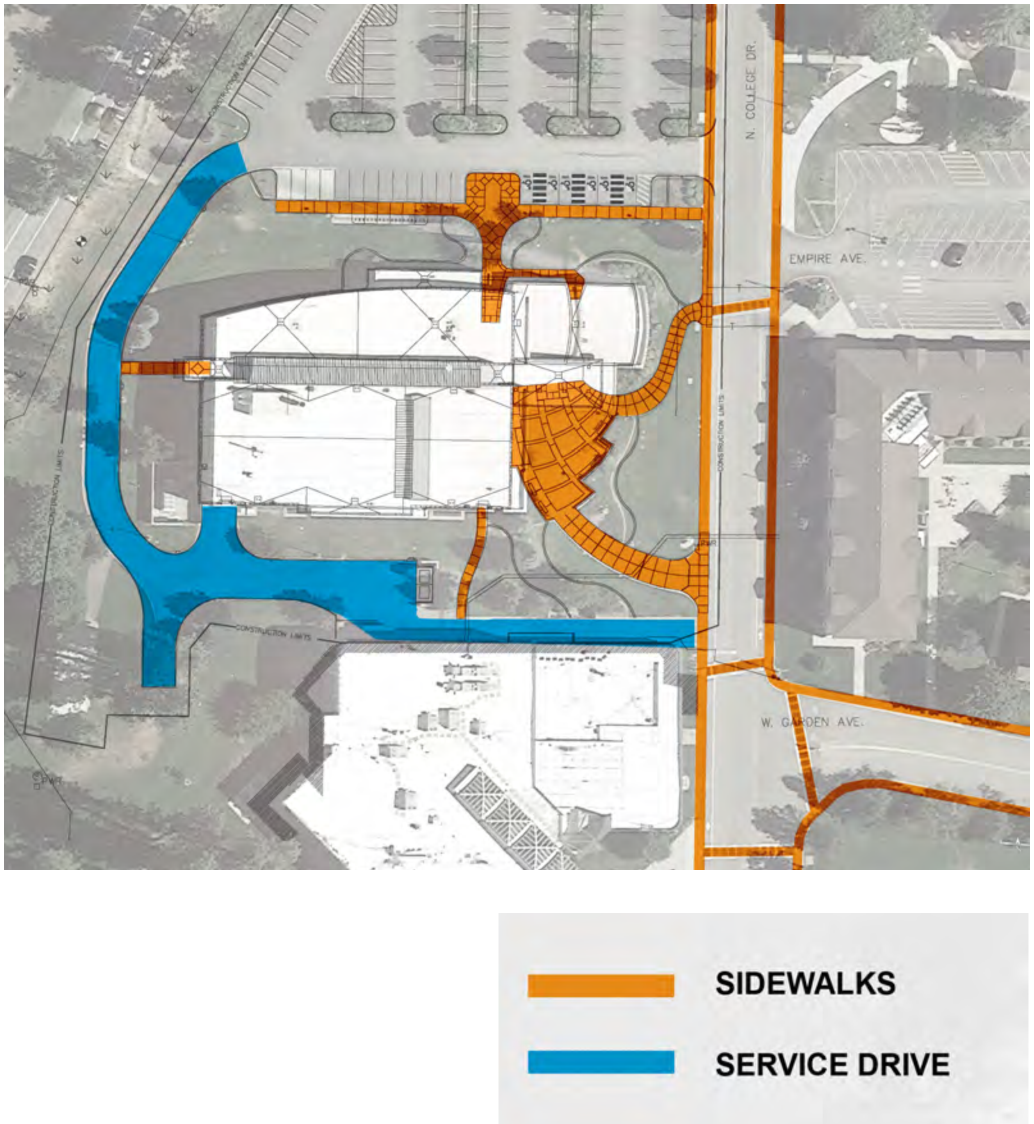

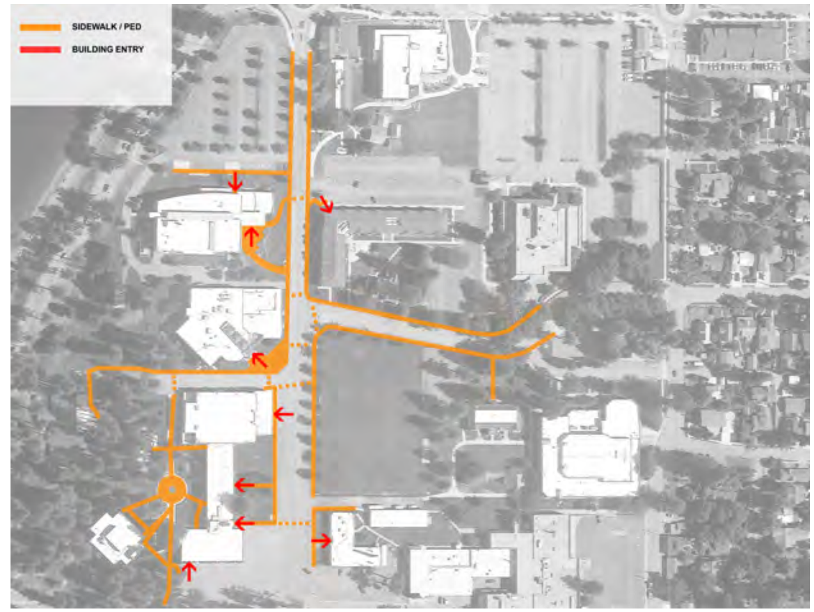

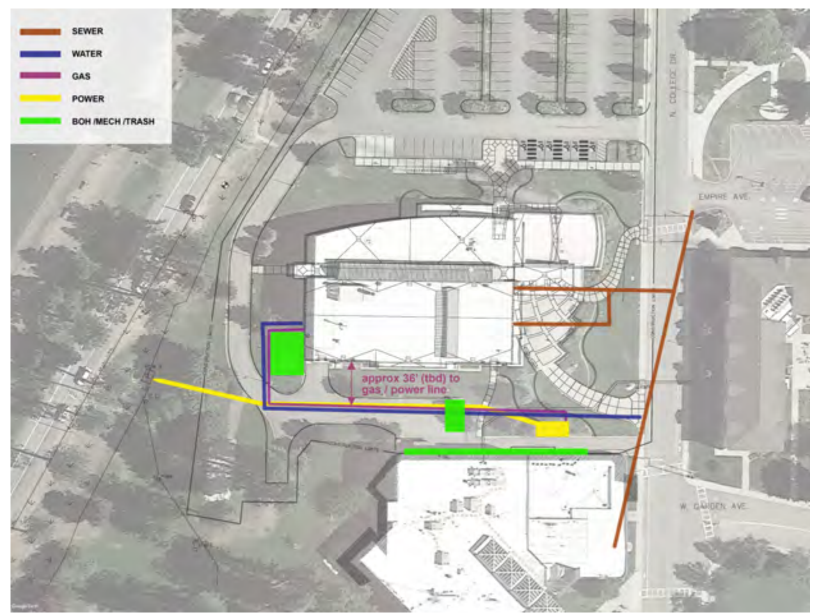

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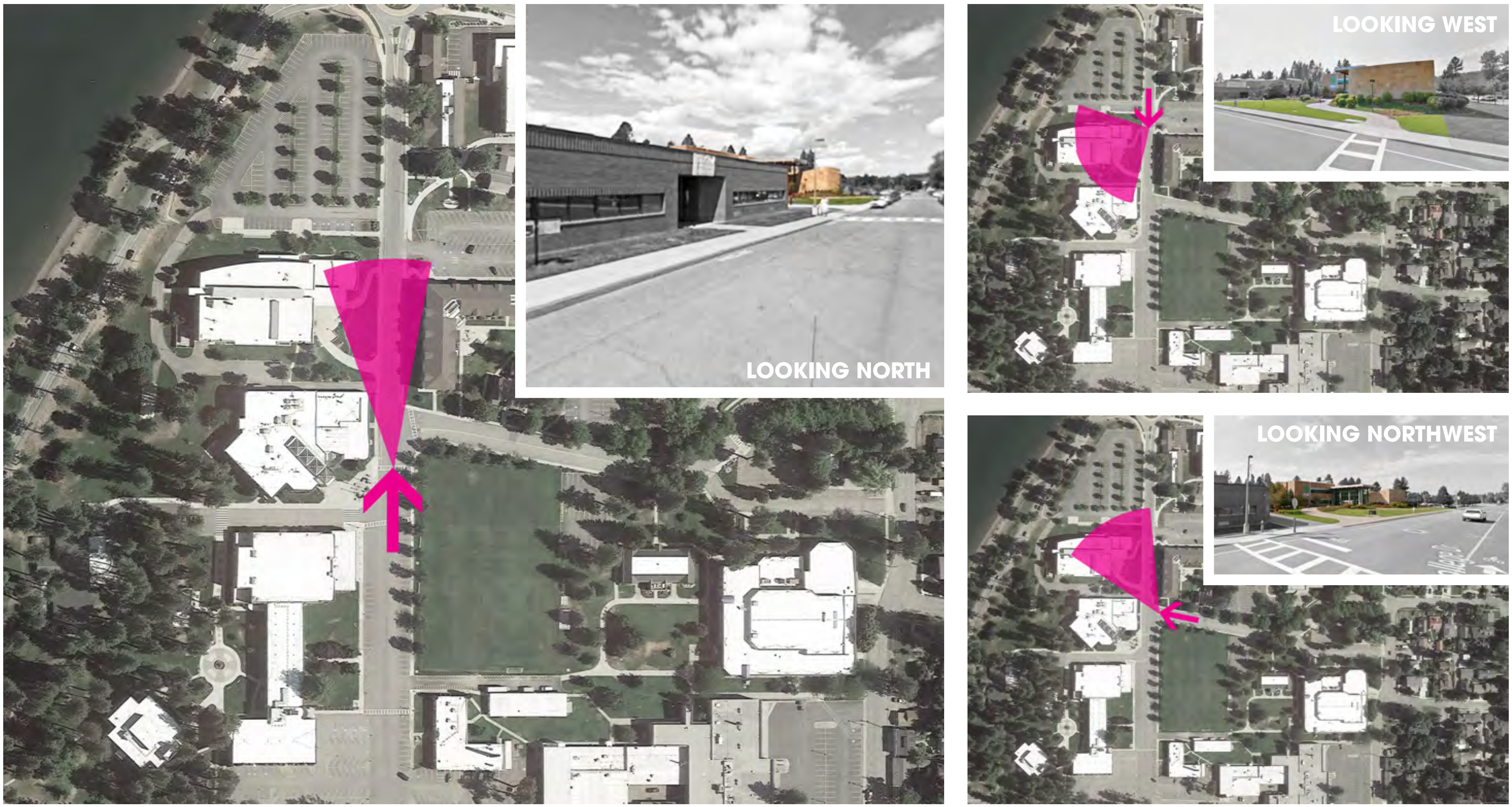
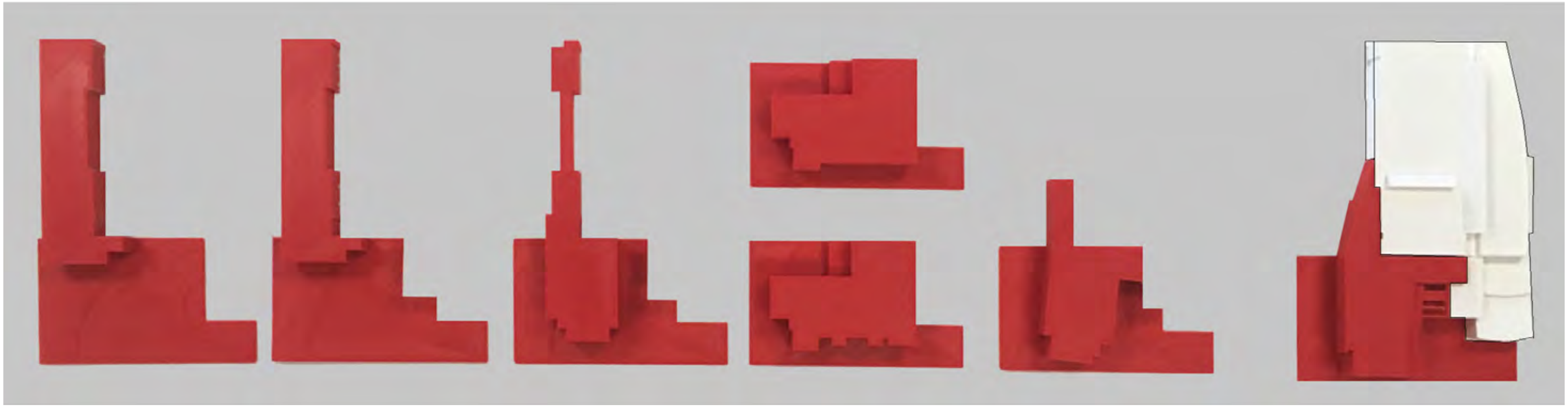


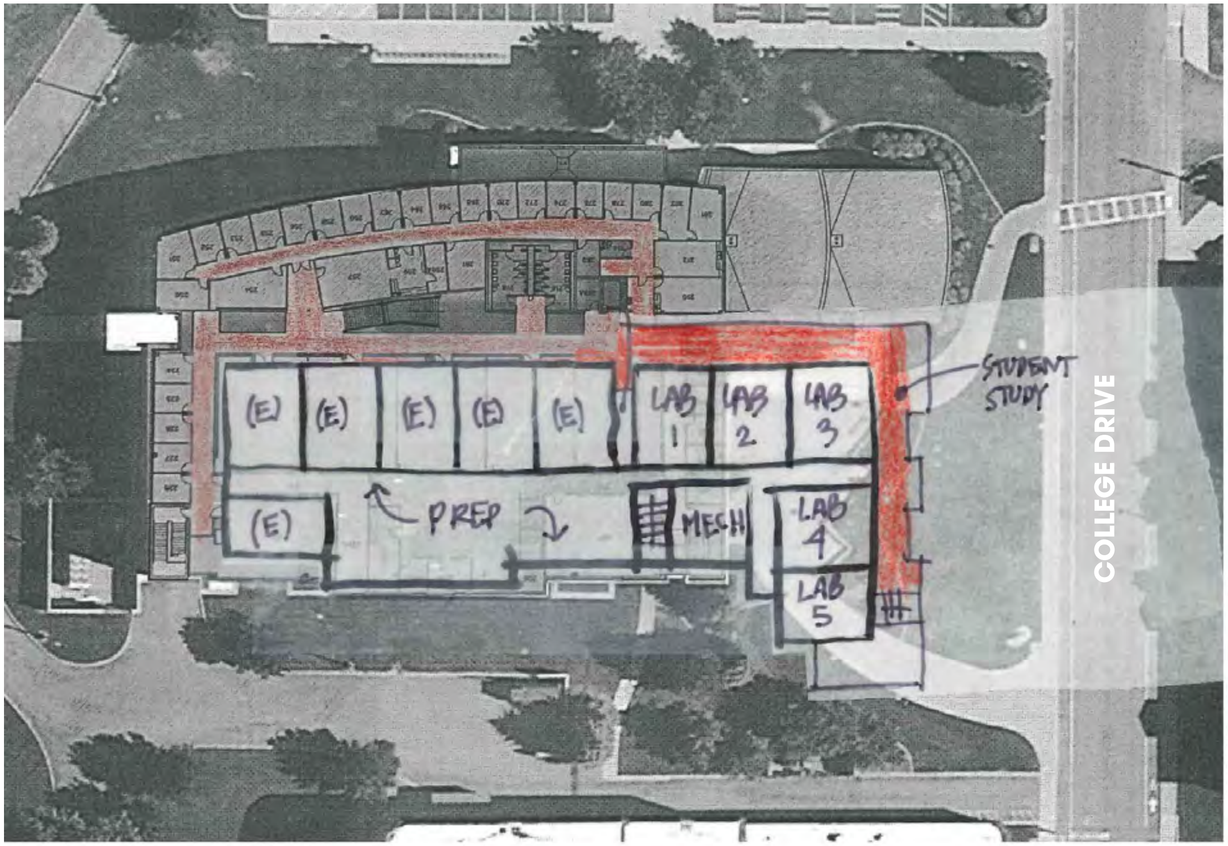
VIEW CORRIDORS TO BUILDING

EXPLORATIONS



Once identified the expansion would reside either to the South or East; seven iterations were tested. Two emerged as potential configurations, both expanding towards College Drive, improving science connections to the greater campus.

EXPLORATIONS CAMPUS CONNECTION



Campus Connection drives the addition to College Drive projecting the sciences outward to North Idaho College. This direction has the least interface with the existing building.

EXPLORATIONS CAMPUS CONNECTION

NEW = 19,605 SF

(E) BLDG REMODEL = 640 SF

TOTAL = 20,455 SF

LEVEL 01

STATS

OFFICES:

(11) NEW OFFICES

(3) STUDENT SERVICE OFFICES

(1) EXISTING ADJUNCT OFFICE TO REMAIN

(3) EXISTING OFFICES TO REMAIN

TEACHING:

(3) CLASSROOMS

(1) LARGE CLASSROOM

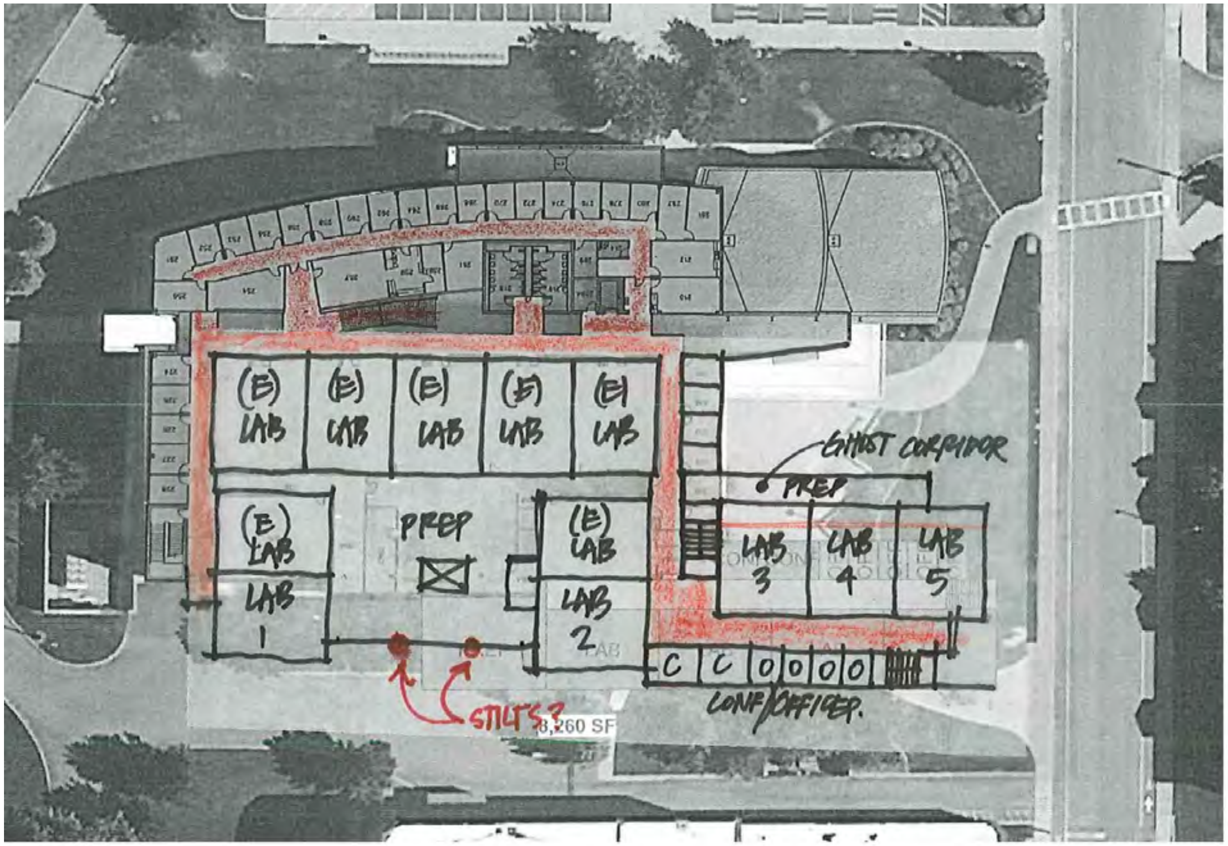
(5) NEW LABS

EXPLORATIONS CAMPUS CONNECTION

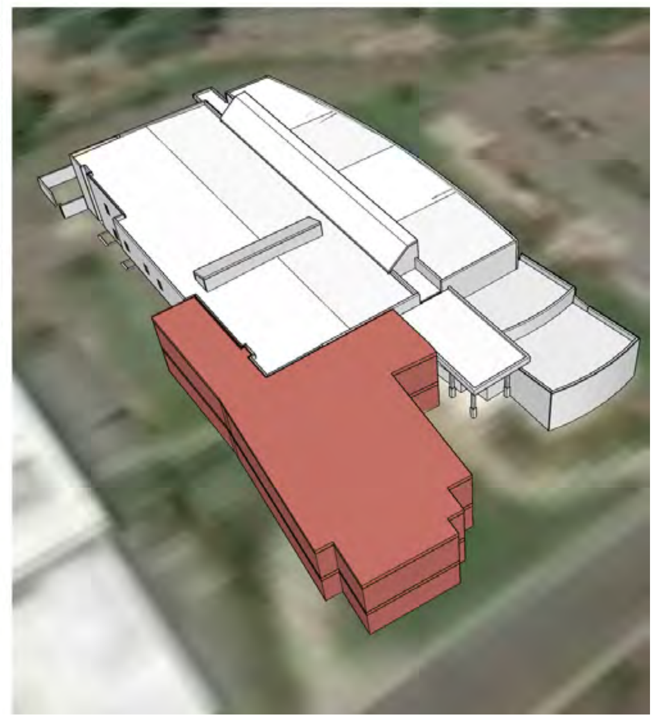
Lobby, social spaces, and informal learning invites students in and encourages exploration in the sciences.

EXPLORATIONS CAMPUS CONNECTION

EXPLORATIONS THINK TANK



Think Tank creates a Southeast wing which flanks a large classroom which will house the largest seminars throughout all programs. This direction maintains a large green-space forecourt which provides outdoor teaching.

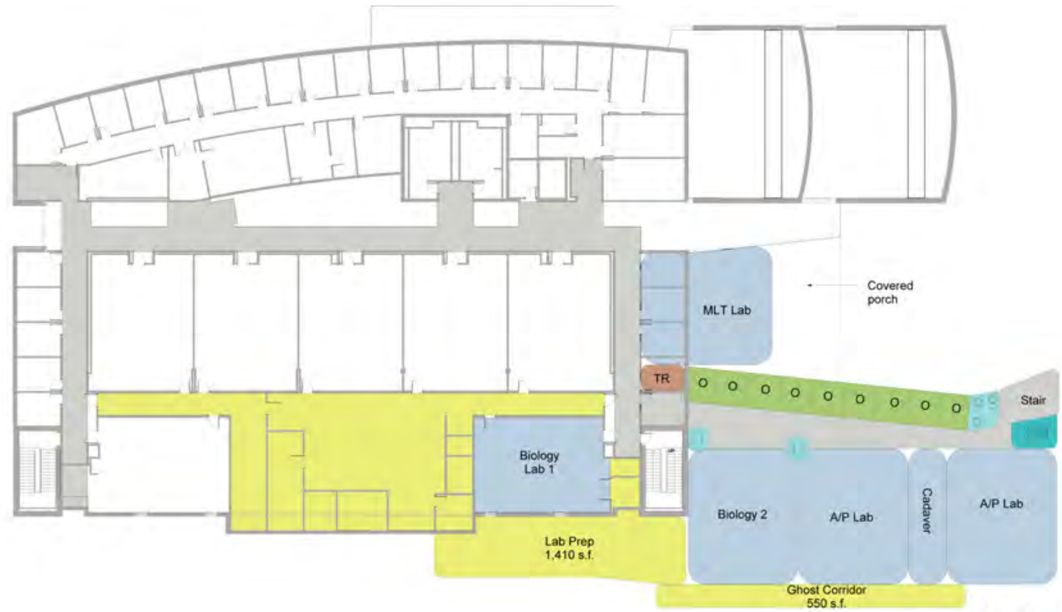


EXPLORATIONS THINK TANK

NEW = 17,530 SF

(E) BLDG REMODEL = 2000 SF

TOTAL = 19,530 SF



LEVEL 02

STATS

OFFICES:

(14) NEW OFFICES

(3) STUDENT SERVICE OFFICES

(1) ADJUNCT OFFICE

TEACHING:

(3) CLASSROOMS

(1) LARGE CLASSROOM

(4) NEW LABS

(1) REMODELED LAB

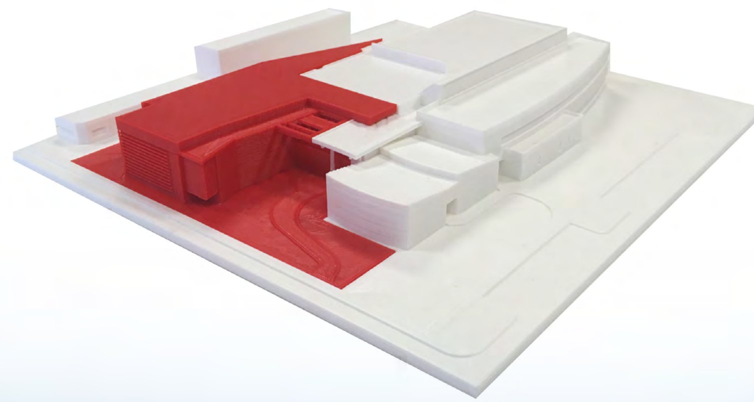
LEVEL 01

EXPLORATIONS THINK TANK

The Think Tank forecourt draws visitors in, experience science in the landscape before entering the front door.

EXPLORATIONS THINK TANK

FINAL DESIGN DIRECTION - "THE THINK TANK"



PLANS & RENDERINGS THINK TANK LEVEL 1

Approx new construction
9,335 s.f.

Remodel existing office
985 s.f

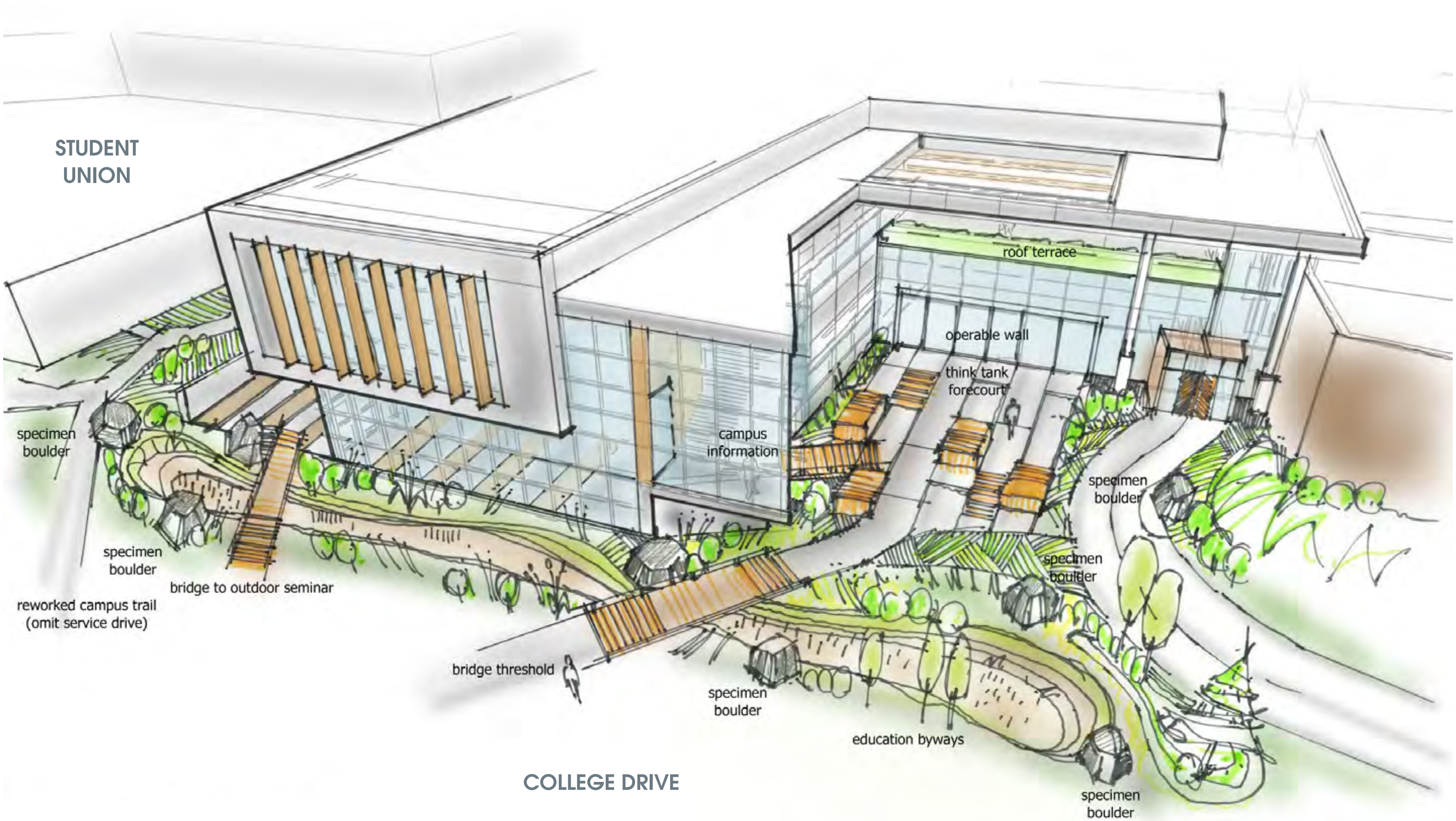
PLANS & RENDERINGS THINK TANK LEVEL 2

Approx new construction
10,075 s.f.

Remodel existing office
915 s.f

PLANS & RENDERINGS THINK TANK SITE

LANDSCAPE AS TEACHING TOOL

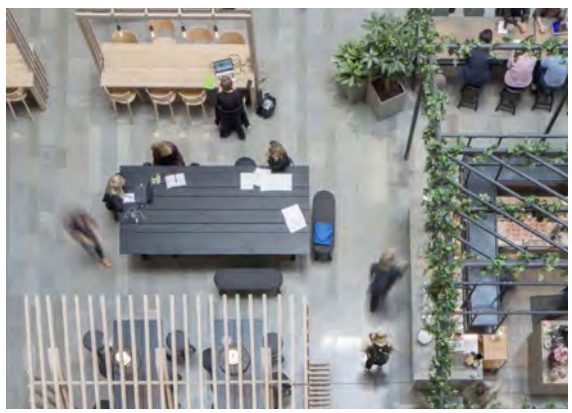


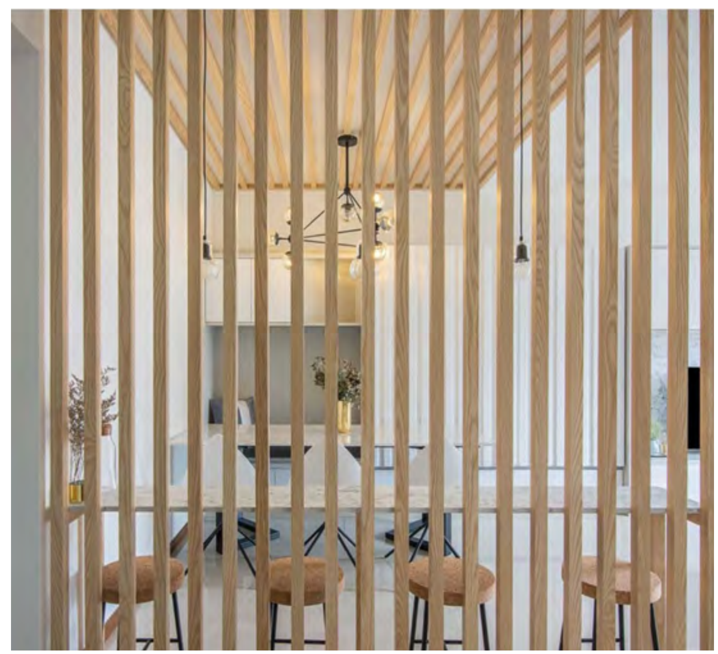
PLANS & RENDERINGS LEARNING COURTYARD AT ENTRANCE

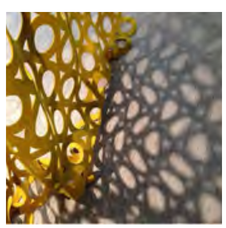
PLANS & RENDERINGS PROMINENT FACE TO COLLEGE DRIVE

PLANS & RENDERINGS OLD SERVICE DRIVE BECOMES PEDESTRIAN WAY

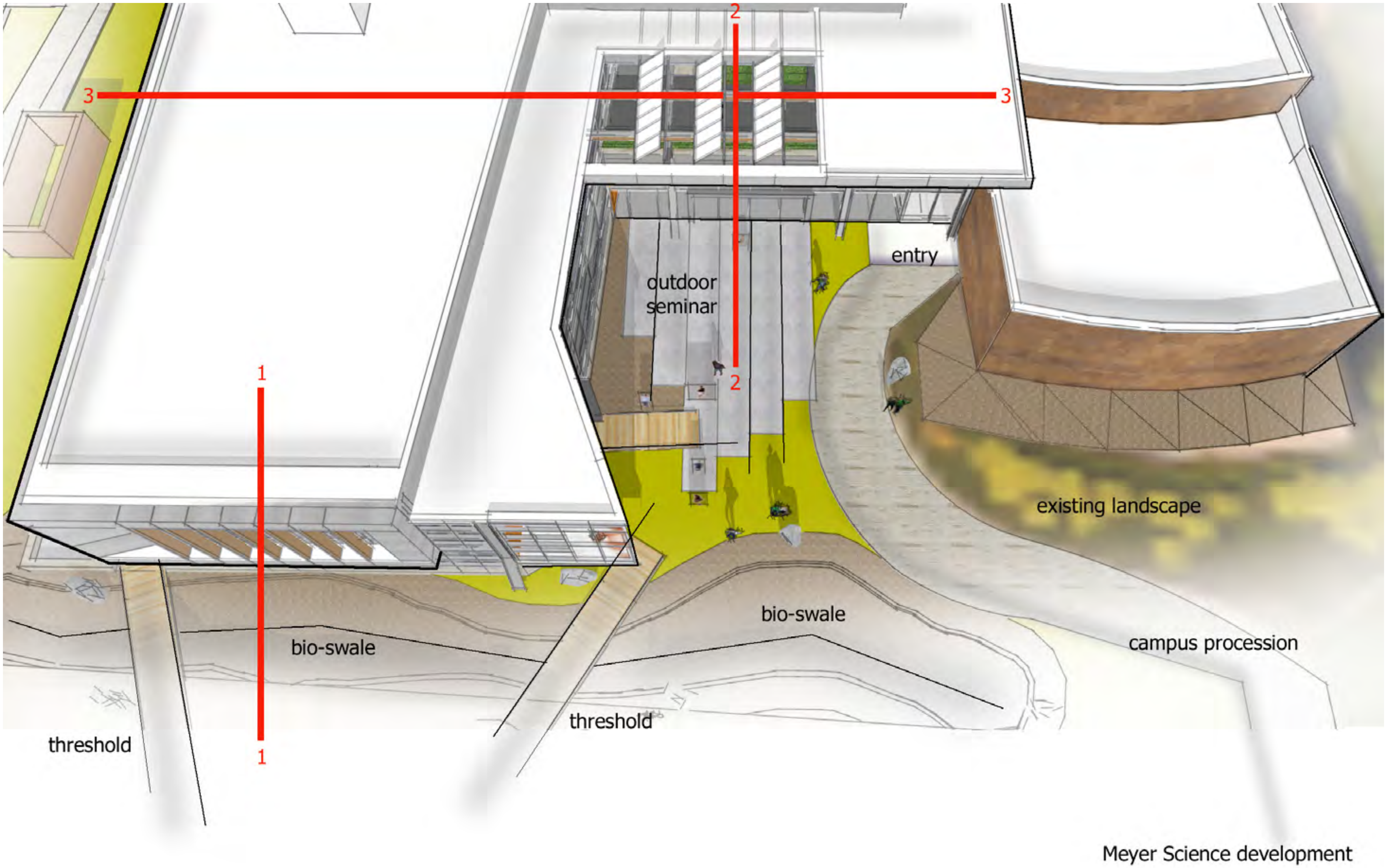
VISUAL POSITION FOR EXPANSION







SECTIONS UNDERSTANDING EXPANSIONS RELATIONSHIP TO CAMPUS



SECTION 1 LAB OVERTLY FACES CAMPUS "SCIENCE ON DISPLAY"

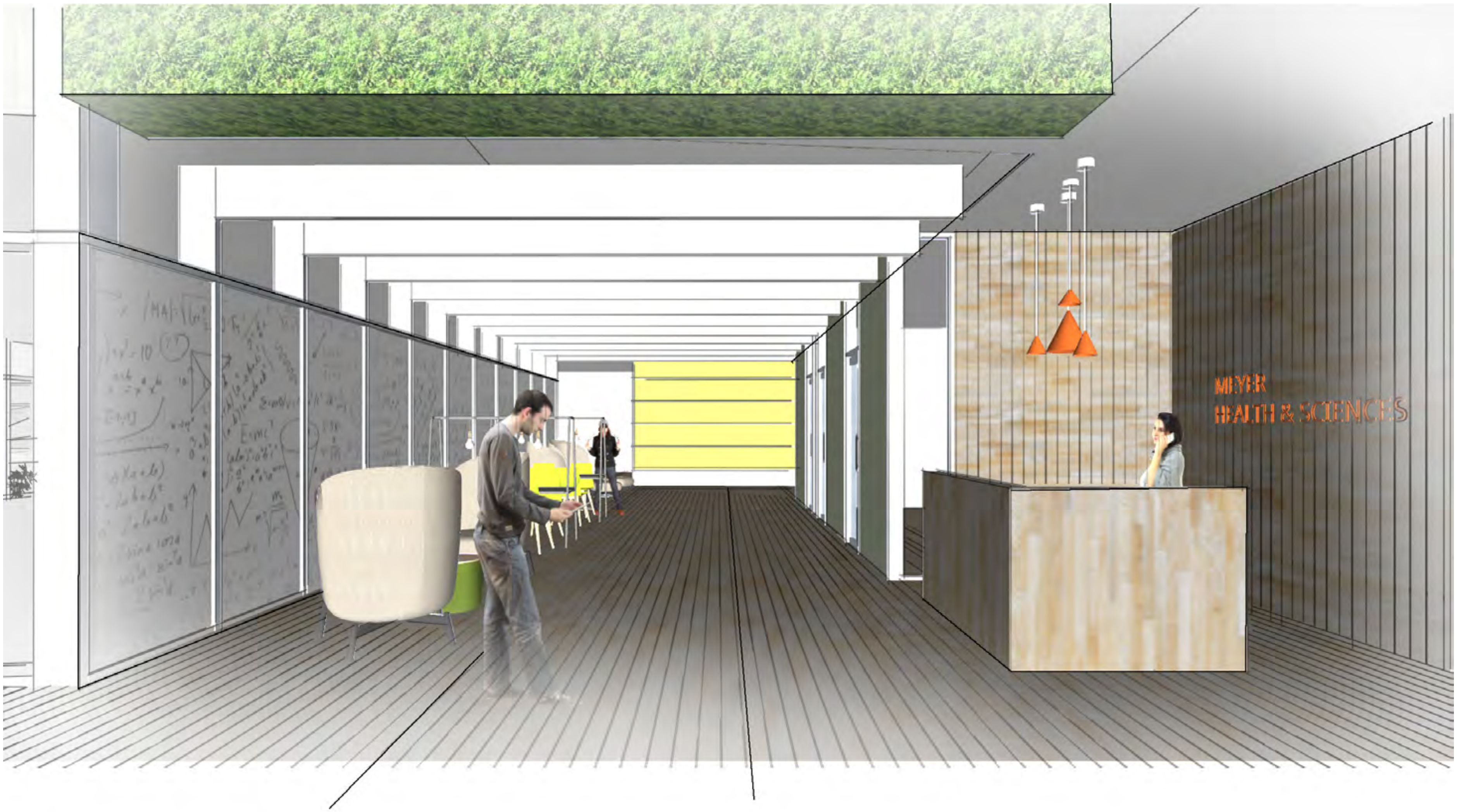
SECTION 2 THINK TANK CLASSROOM

OPENS UP TO OUTDOOR SEMINAR EXPLORING ALTERNATIVE ENERGY

SECTION 3 PASSIVE DAYLIGHT STUDY

DAYLIGHT STUDY THROUGH GHOST CORRIDOR INTO LABS

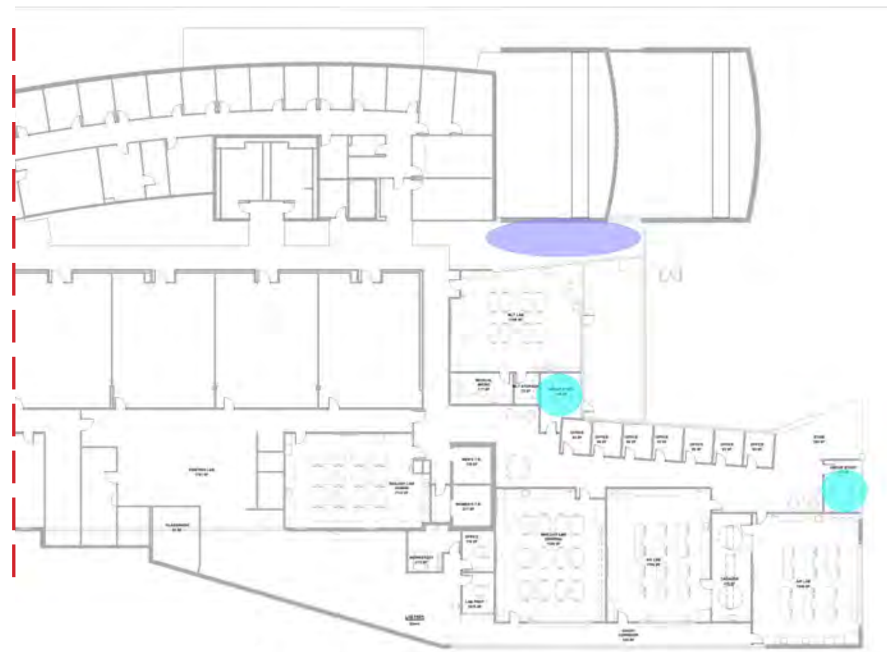
INTERIOR DESIGN



The current Meyer has a formality to its overall interior feel. The expansion aims at drawing out learning to circulation and informal learning environments putting "science on display".

INTERIOR DIAGRAMS PATH, PORTAL, PLACE DIAGRAM

1ST FLOOR



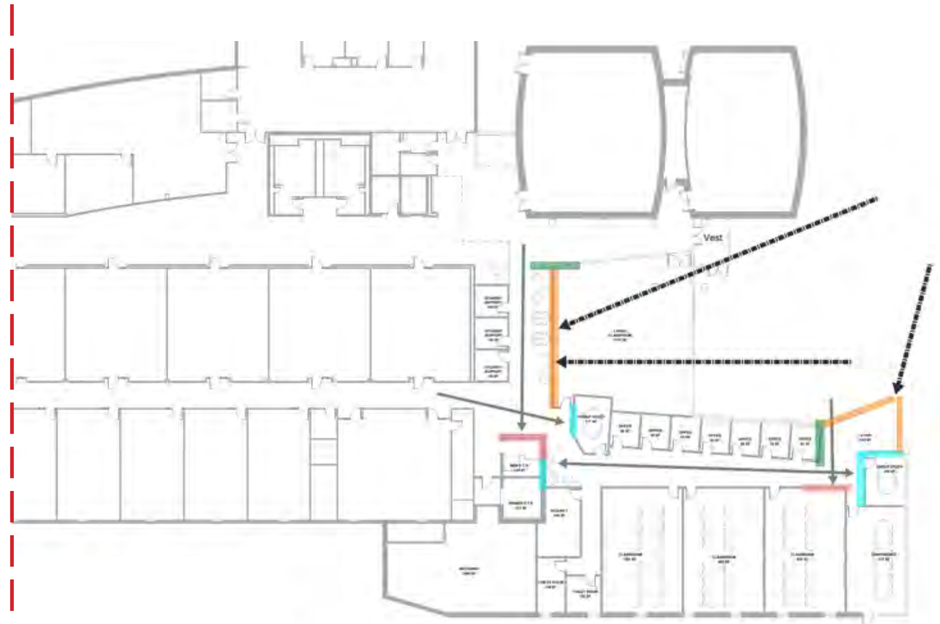
2ND FLOOR

Initial point of contact for information, help, etc...

Group study

Acoustic isolation or enhancement

INTERIOR DIAGRAMS PATH, PORTAL, PLACE DIAGRAM



1ST FLOOR

2ND FLOOR

Campus wide - visual, able to register from the street.
Displays science concept at a large scale

First impression - visual and tactile - 2 story connection.
Serves as a wayfinding tool. Earth sciences in architecture

Research and student work on display - evolving.
Sense of ownership

Informal learning

INTERIOR EXPRESSION FIRST IMPRESSION

INFORMATION IMMEDIATELY GREETS VISITORS FLANKED BY STUDENT LOUNGE

INTERIOR EXPRESSION STUDENT LOUNGE

OFFERS SOCIAL SPACE WITH THE BENEFIT OF ADVISORS AVAILABLE

INTERIOR EXPRESSION INFORMAL LEARNING

DISPLAY, INFORMAL LEARNING SPACES, AND VIEWS OUTSIDE ANCHOR IMPORTANT CORRIDOR INTERSECTIONS

INTERIOR EXPRESSION CHARGING & COFFEE STATIONS

PROMOTE COLLABORATION AND VARIATIONS OF SPACE FOR STAFF AND STUDENTS TO ENJOY

INTERIOR EXPRESSION OUTDOOR ENVIRONMENT

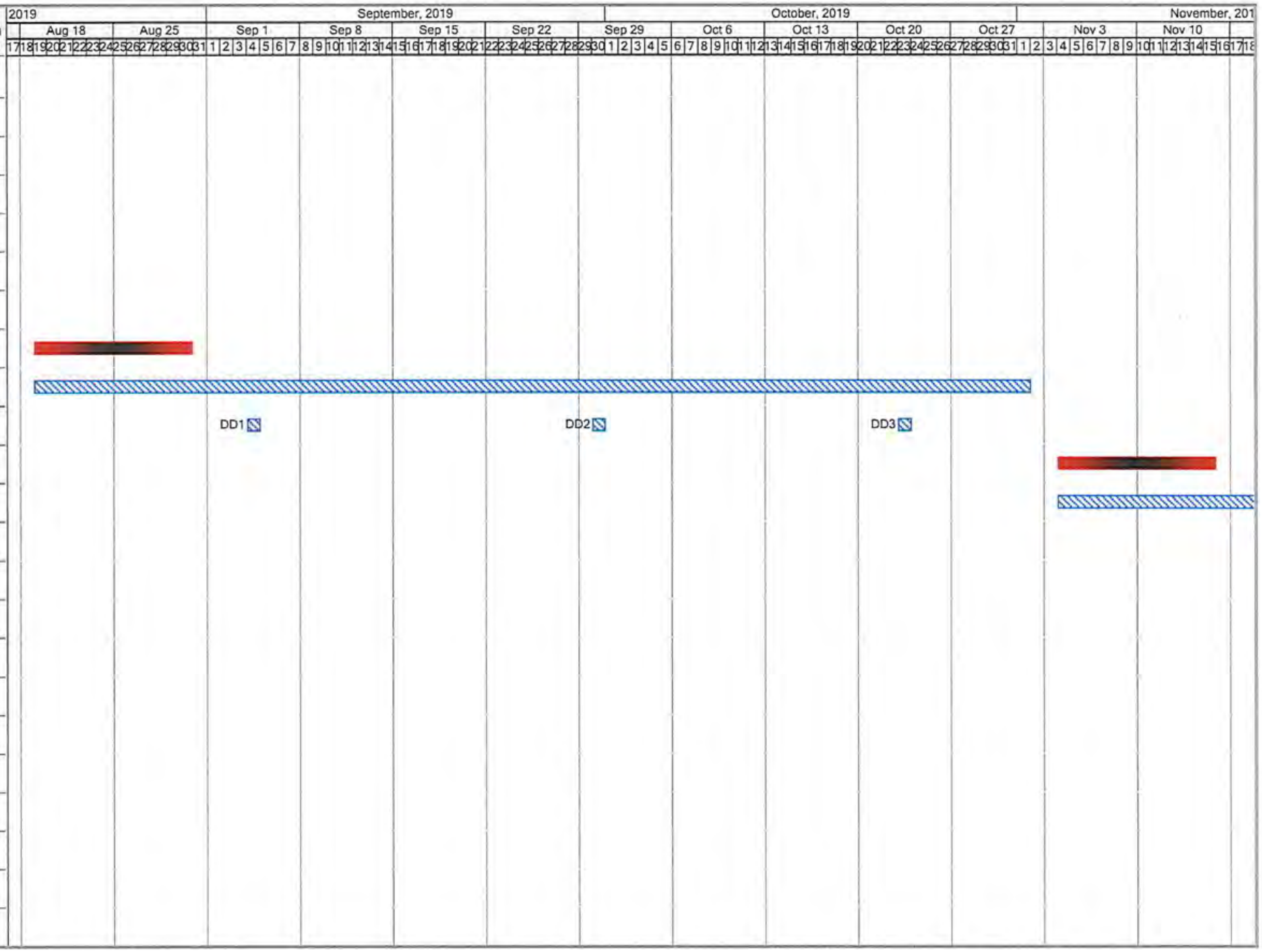
OUTDOOR CAMPUS ENVIRONMENT FLANKS MEYER CONFERENCE CENTER

CONSTRUCTION BUDGET

Maximum Allowable Construction Cost (MACC):	**$6,912,000.00**
Beginning Spring/Summer of 2020	
> Building and Remodel Portion of MACC:	$6,400,000.00
> On-Site improvements MACC:	$512,000.00

SCHEDULE

#	Task name	Start date	Duration
1	Programming Questionnaire	4/24/2019	1
2	Programming Meeting #1	4/29/2019	1
3	Programming Meeting #2	5/13/2019	1
4	Program Report Prep	5/14/2019	14
5	NIC Review	6/3/2019	10
6	Schematic Design	6/10/2019	50
7	S.D. Meetings	6/13/2019	1
8	NIC Review	8/19/2019	10
9	Design Development	8/19/2019	55
10	D.D. Meetings	9/4/2019	1
11	NIC Review	11/4/2019	10
12	Construction Documents	11/4/2019	35
13	Permit Review	1/27/2020	30
14	NIC Review	1/27/2020	15
15	C.D. Meetings	1/10/2020	1
16	Advertise & Bidding	2/17/2020	27
17	Bids Due	3/25/2020	1
18	Contract & Board	3/26/2020	21
19	N.T.P.	4/24/2020	1
20	Construction Phase	4/27/2020	309
21	Final Completion	7/5/2021	20
22	NIC FF&E	7/5/2021	30
23			



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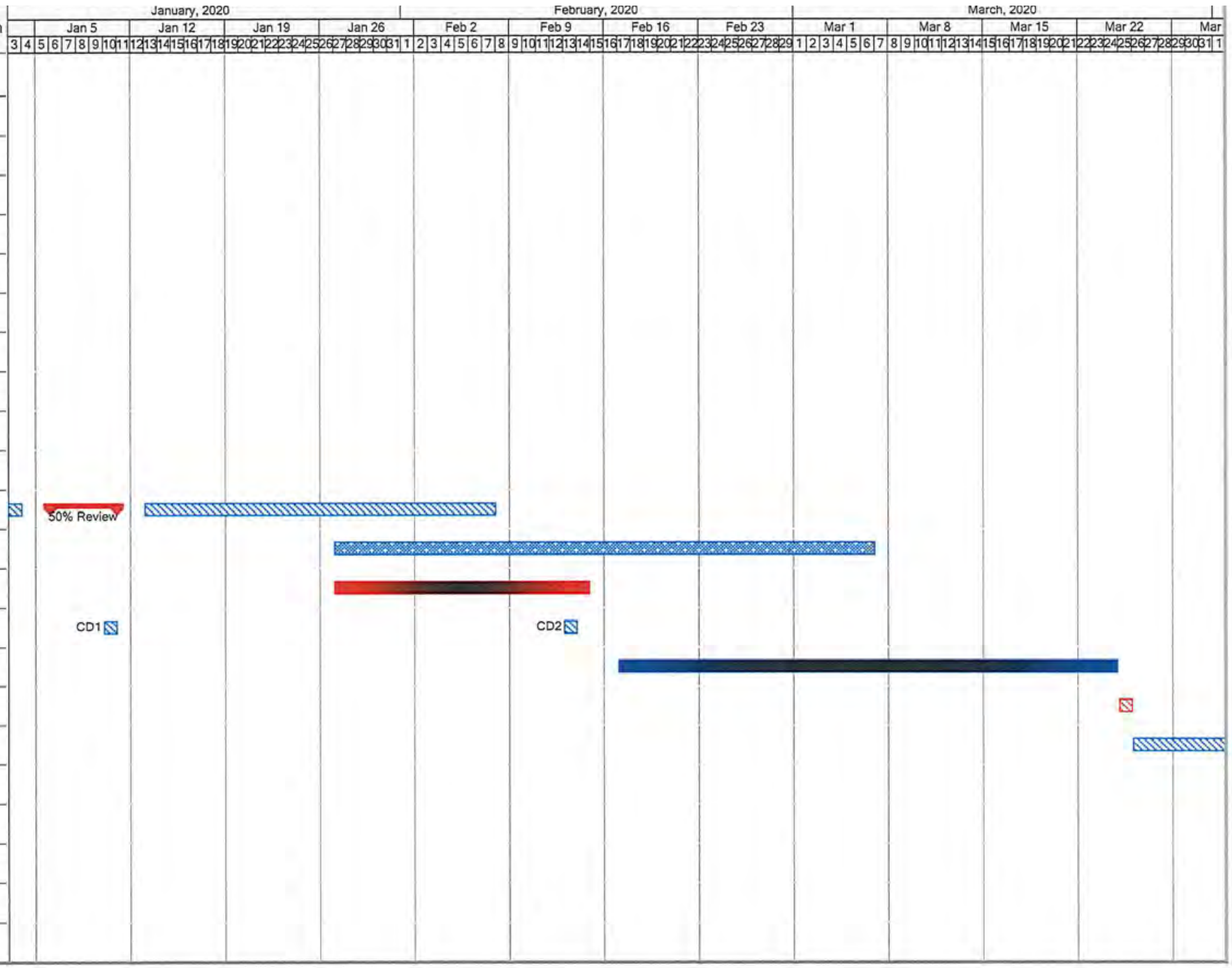

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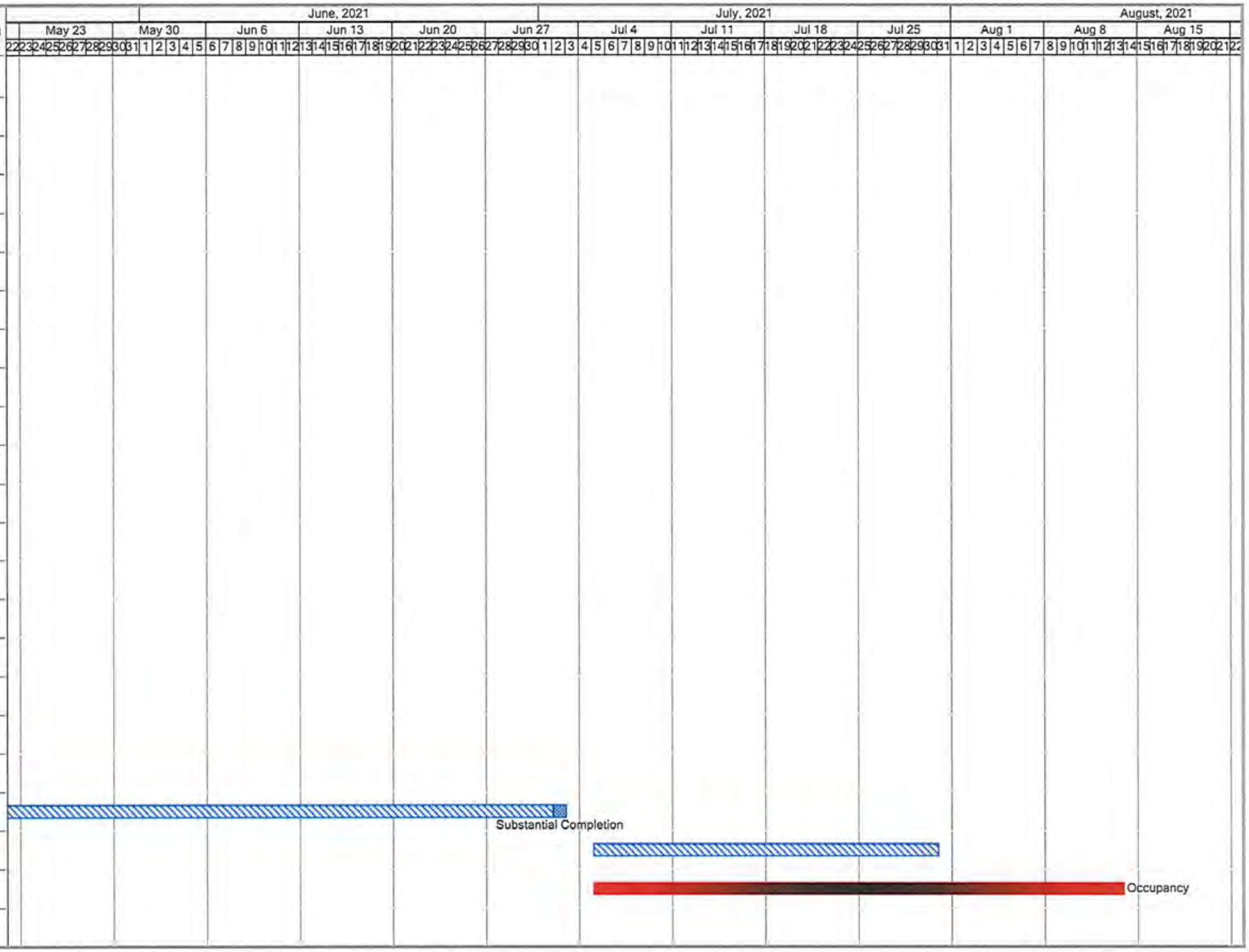


NARRATIVES

NARRATIVES TEACHING LABORATORIES

Concepts

The main teaching laboratory spaces for NIC Meyer Hall are four module spaces equaling approximately 1200 gross square feet (Human Biology being something less as it is a remodeled, existing lab). Student entrances are off main corridors with a secondary entrance, for the preparatory personnel, directly from the Prep Lab via an internal "ghost" corridor. This concept was expressly requested to maximize the flow from Prep to Teaching Lab. Split (Dutch) doors at these locations allow for a "separated" interaction between students and the prep space.

The casework system is standard wood (presumed) casework fixed in place both for the student benches in the center of the lab and for the perimeter casework at the walls. This follows the existing lab spaces and, given the program types, is the best selection for these spaces. Some of the student benches utilize "back draft" ventilation for the removal of fumes and this alone fixes them in place.

Of the five teaching labs, the Medical Lab Technician (MLT) space is the most complex in terms of space allocation. Many functions must be accommodated, in different programs, from the Medical Micro space to the Phlebotomy station.

Adaptability to Changing Uses

The NIC Meyer Hall Laboratory must respond to current needs in terms of space, environmental control, support services, functions and energy conservation within accepted laboratory health and safety guidelines. In addition, the building should respond to those undetermined, yet inevitably different, programmatic needs that will occur in the future. The building inherently must have adaptability to keep pace with changes in teaching, new laboratory apparatus, changes to the building or the addition of power or gases. The ability to readily convert and renovate laboratories, with minimal disruption, is desired and often mandatory. Laboratories are modular for this reason and to a certain extent so is the casework, although fixed casework inherently has less flexibility built in. We will examine needs carefully and make suggestions as to where the cost – benefit of adaptability works for current and future programs.

Building adaptability usually carries an initial construction cost premium. The prep area and teaching labs are specific to their use at this time which minimizes their adaptability however, attention to vertical and horizontal pathways for services and HVAC will cover future needs in these areas.

Modularity

The fundamental element of an adaptable building is modularity. Modular space planning provides regularity and repetition in the size, shape and arrangement of the programmed spaces. It is the fundamental design characteristic of all modern "adaptable" science buildings, and it is important as a basic concept for this project. Teaching lab spaces have been organized using a basic space planning "laboratory module" of 10'-6" with slight differences in the depth. This will allow for future build-outs of different casework or services in these spaces as needs change.

Each instructor or staff member has a unique set of practical design requirements for his or her laboratory, derived from teaching, learning and individual needs. The teaching laboratory and support spaces provided in this building must be endowed with a general capacity to satisfy a broad range of such individualized demands while advancing certain closely related, common objectives.

A basic space planning module establishes the dimensional discipline by which fixed elements of the structural frame, utility systems, walls and partitions can be located. The design objective is to find a common space denominator that efficiently accommodates as many of these different functional requirements as possible, rather than force the function to comply to the constraints of an arbitrary space layout.

As modifications in laboratory usage are called for by changes in instructional direction or organizational structure, partitions can be relocated, doors moved, and rooms expanded into larger spaces or contracted into several smaller spaces without requiring reconstruction of structural framing or building utility systems.

NARRATIVES TEACHING LABORATORIES

Modularity offers greater predictability and reliability in the organization and location of horizontal utility distribution systems. Modular design strives to integrate building systems (primarily structural, HVAC, piping and power) into consistent, recurring patterns which can be adapted to changing functional needs without requiring drastic changes to the system itself. Thus, as needs for this facility change, spaces can be easily adapted to new special requirements with a minimum of time, effort and cost.

Laboratory Furniture Systems

It is generally accepted that some form of adaptability is needed for a modern laboratory casework system. Often there are cost considerations and needs balanced with performance and durability. The casework system reviewed for the NIC Meyer Hall are standard fixed, wood cabinets for all benches located in the labs. Although fixed, casework mounted to the wall or at the peninsula benches can be removed and relocated without major renovation work. Over the past few years we have experimented with a new mounting systems which will allow fixed casework to be removed without damage. We utilize a bolt-down method of fixing to the floor coupled with "knock down" furniture fasteners for casework adjacent to each other. Consistent fastening locations for wall and floor attachments with utilities being mounted and run in a consistent pattern aid in future changes.

Wall studs with backing plates, and lateral bracing sufficient to withstand heavy loads will be required for mounting upper cabinets or shelves, and equipment anchorage.

Laboratory Systems

As noted above, all laboratories are serviced with a modular distribution system of the basic building services including natural gas, laboratory hot and cold water and recirculated pure water (RO, purified water system) at all perimeter benches in the teaching labs and in Prep. Sinks will only be provided at the perimeter and will be of a variety of sizes. At a minimum, two sinks will be provided.

Electrical power to the lab area is a 120v, single phase with 208v for selected apparatus, where identified in future meeting.

All lab spaces will have a recessed emergency shower / eyewash plumbed with tempered, potable water. Options for the shower / eyewash include horns and strobes and their inclusion will be discussed.

Other services will be identified in Design Development.

Teaching Laboratory Spaces

General

Each teaching lab is an individual space without direct access to adjacent teaching spaces. There is direct access to the prep area. The MLT lab is more of a stand alone space with access to an outdoor area. This lab could easily be converted into other uses in the future as requirements change.

Various layouts to support teaching and learning have been requested for the teaching laboratories. The most complex are the backdraft vented stations to capture the fumes from preserved specimens. Each space has six student benches in a variety of configurations. The specifics of each bench design will be discussed in future meetings during Design Development. Each bench will, at a minimum, have power and data.

Perimeter benches will be a variety of sizes and types with shelves above. In many locations, tall cabinets are included for specific storage needs. In the Anatomy and Physiology (A&P) labs, tall, deep, vented cabinets will be sized for specific specimen boxes. Storage of other specimens will be located in the Prep lab.

Cadaver Lab

Between the two A&P labs is located a new cadaver lab sized for two cadaver tables and the existing Anatomage table. It has not been decided if the cadaver tables are the vented "clam shell" type (requiring exhaust) or standard tables with exhaust at the base of the surrounding walls. The later would be more flexible in the space allow for repositioning of the tables to suit. Windows into these spaces will allow observation from either A&P lab.

NARRATIVES TEACHING LABORATORIES

Unfettered access to the cadaver lab is made possible with 6 foot, sliding doors in the A&P labs.

Glasswash

Glass washing/drying and Autoclave functions are currently being provided as a separate space within the existing Prep lab. With the additional teaching labs this area will require some new upgrades. A new, upright laboratory washer is planned to be adjacent to the existing machine. The current cost estimate shows a very tight budget although the existing washer is fifteen years old with an expected twenty-five year life cycle. It would be advantageous to replace the existing washer at the time of construction. At the very least, plans for a replacement at a future date will be included. A single new stainless steel canopy hood is planned to be installed above all three machines.

The existing Glasswash will grow in size to accommodate the new labs and will include a longer stainless steel bench and a new double bowl scullery sink.

Walls and ceilings will receive a new coat of a single part epoxy paint for ease of cleaning and durability.

Prep Lab

Some two thousand square feet will be added as the new Prep lab. This space will mostly accommodate new, full height, adjustable shelving similar to the type of open, tall cabinets currently in the Prep lab or as a more modular shelving system. Long benches and sinks will increase the capacity to prepare and support the teaching labs. A new office and a student work study area are planned. The Prep lab is currently in flux with the final design and shape yet to be determined.

Laboratory Hoods

There is a single 10 foot fume hood in the design, located in the Prep lab directly adjacent to Glasswash. The single 4 foot existing hood was found to be insufficient for current program and an additional, larger hood was requested. The new 10 foot hood will have a split (2 each, side-by-side), vertical sashes and an operating mode of 18” open at 80 fpm face velocity. The determination of Constant Volume vs. Variable Air Volume has not been made. The need for flammable or corrosive base cabinets under the hood has yet to be determined although we are currently showing them on the drawings. There will also be a 4 foot fume hood in General Biology Lab.

A 4 foot Biosafety Cabinet has been requested for the MLT lab. Live biological specimens are not expected to be used rather the hood is more for training purposes and the teaching of proper protocols and methods.

Laboratory Treatments & Finishes

The recommended architectural treatments and material finishes are to be defined for individual rooms during the Design Development phase. For Schematic Design, in general, the following guidelines should apply:

Floor Finishes

The existing spaces utilize sealed concrete for the floor finish. We recommend using the same for the new spaces as well. Additives to the concrete will help to minimize the floor cracking but will not eliminate it completely.

Wall Finishes

The wall finishes for the teaching lab spaces should be eggshell or semi-gloss, latex paint.

Ceiling Finishes

Finished ceilings in the laboratory areas will be a suspended acoustical tile ceiling system. This follows the existing laboratory spaces. A GWB hard ceiling is recommended for Glasswash and is the existing construction.

Doors and Hardware

Laboratory doors shall be of the width adequate to facilitate easy movement of equipment and carts, generally 36” wide and 84” high. A combination door (active/inactive leaf) is shown at a few locations where large elements (cadaver tables and other items) need the occasional width such a door offers. Typically this is a 36” door with an 18” side leaf. Doors from the teaching areas into the ghost corridor will replicate the existing split (Dutch) doors. These doors will not have vision panels.

Doors are veneer, solid core wood with a vision panel at most other locations as the entrance into the lab space hollow metal frames are used at all locations.

Hardware provided will be per ADA requirements and will provide various levels of access control as necessary. Doors will be operable by a single effort in accordance with all applicable code requirements. Vision panels will be sufficiently large to provide a means of easy, quick safety inspection of the laboratory spaces.

Vibration, Noise and Acoustics

Laboratories can be noisy and prone to vibration from large pieces of equipment within the lab space. Teaching labs have their own set of difficulties with classrooms being directly adjacent to each other.

The source of vibrations and noise are varied and can include mechanical equipment and large air compressors as well as external sources such as ambient site vibrations, including those produced by vehicular traffic, and wind.

Buildings also experience intermittent vibration from pedestrian footfalls, door slams, movement of service carts and equipment, and loading/unloading impacts. Laboratory equipment (vacuum pumps, centrifuges, shakers, etc.) can also add to vibration and acoustic problems.

Of the above, control of intermittent vibration produced by human activities depends almost entirely upon the characteristics of the building structural design. The adequate control of vibration from mechanical equipment and systems is much more straight forward and relatively simple to accomplish through judicious choice of appropriate vibration isolation hardware.

Vibration Sensitive Equipment
All laboratory equipment has a threshold above which it will be disturbed by vibration, as do people. The threshold for any one piece of instrumentation is determined by its purpose, the mechanisms involved and, to some extent, the person using it.

General bench top equipment, such as analyzers and balances, have a reasonable tolerance to vibration. At this time we have not fully discussed all of the equipment expected to be part of the lab or of the lab some 10 years from now. This discussion will occur in the Design Development phase, when we will have a better understanding of the acoustical and vibration bases and thresholds.

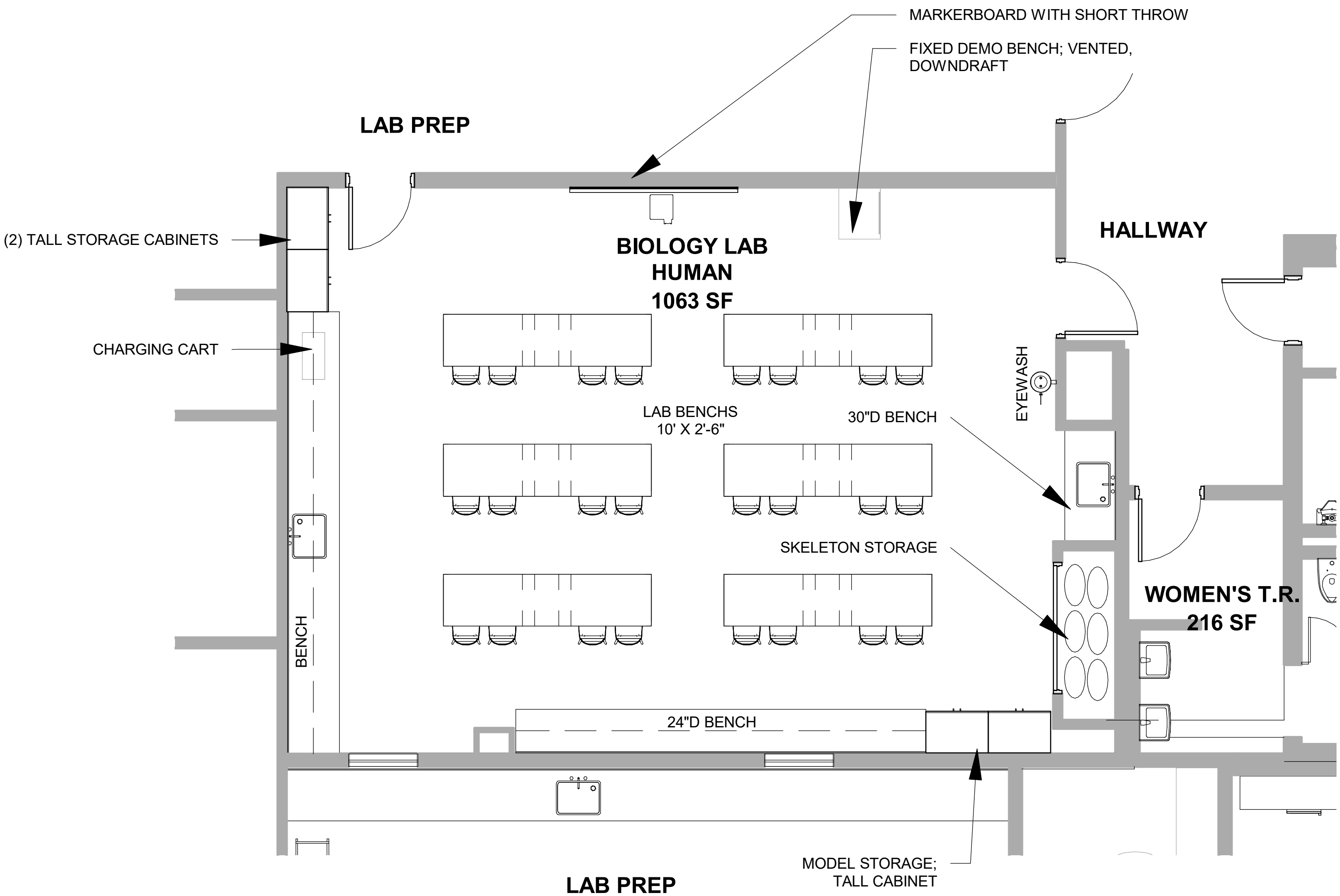
Transmission Paths
Vibration is transmitted through, and is attenuated or amplified by elements of the structure and the internal fittings of the building. Common transmission paths are the structural walls and columns. In addition, vibration is transmitted efficiently via ducted and piped services. The amplification occurs in floor slabs and often in the laboratory furniture.

Vibration Design Criteria
Suggested vibration limits are presented for vibration sensitive equipment, considering three orders of sensitivity. The criteria are described in the table below with the Type 1 criterion being the least stringent and Type 3 being the most stringent. For the North Idaho College project we would, for the most part, expect the structure to support Type 1. We will discuss in future meeting the prospect of instruments listed in the Type 2 category.

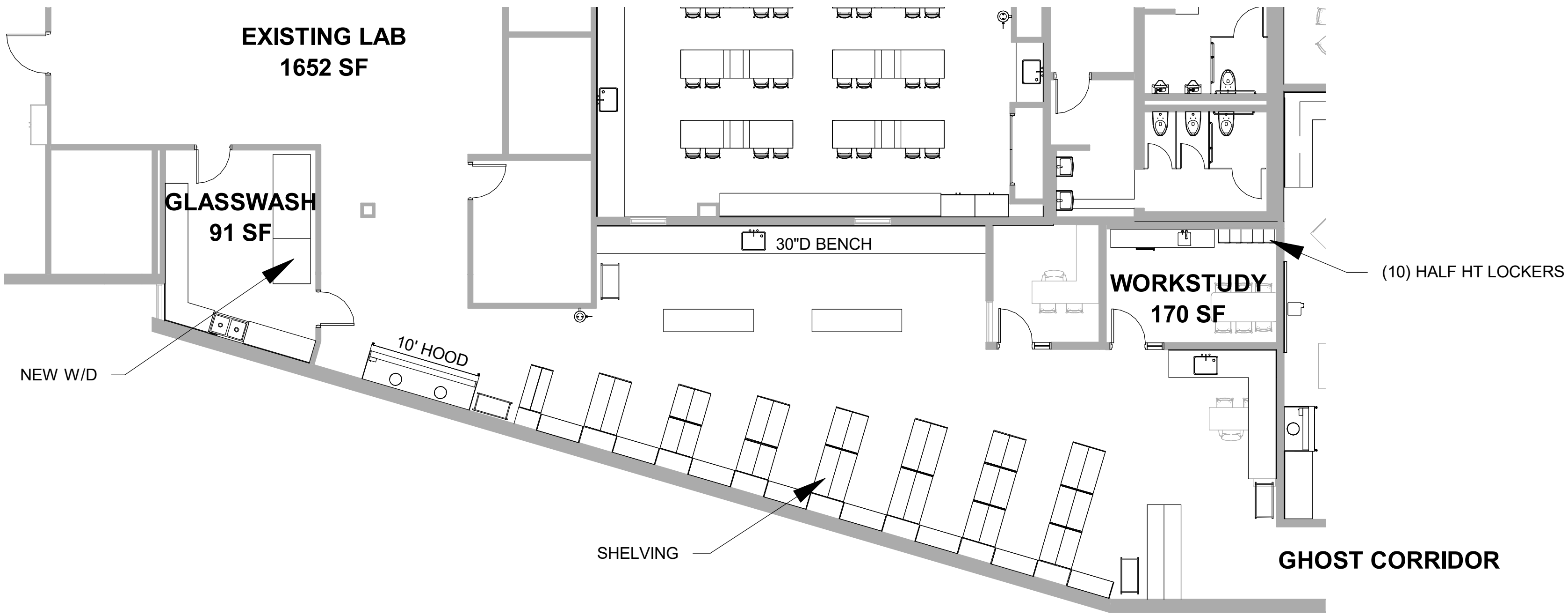
For certain specialized instruments, guidelines on vibration sensitivity may be available from the manufacturer. These are useful in setting initial criteria, but should be used with caution to avoid over specification. In some cases, manufacturers set vibration limits considerably lower than those measured in similar satisfactory installations.

Vibration requirements for each of the instruments noted below should be considered individually, in their placement in the building, and with appropriate criteria applied in the structural design. At this stage, recommended Type 1 criterion should be applied to determine the overall structural design.

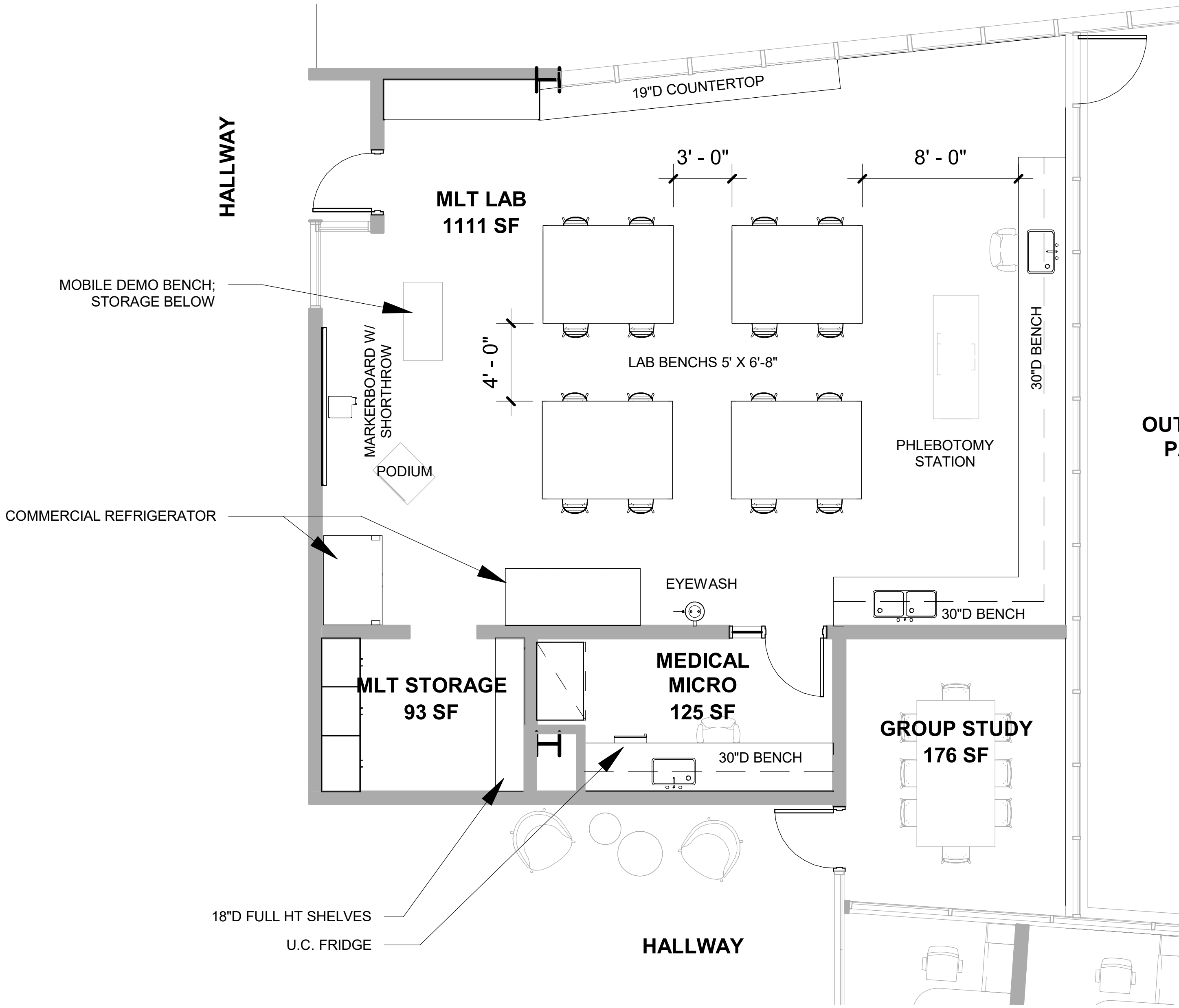
Instrument Type	Examples of Instruments	Vibration Limit μ-inches/s rms
1	Bench top optical microscopes (100 to 400X) and balances	2000
2	X-ray diffraction X-ray spectroscopy long exposure photography laser optics mass spectrometry NMR spectrometers (frequency less than 50 MHz)	1000
3	Scanning electron microscope scanning acoustic microscope (< 50,000 X) NMR spectrometer	500



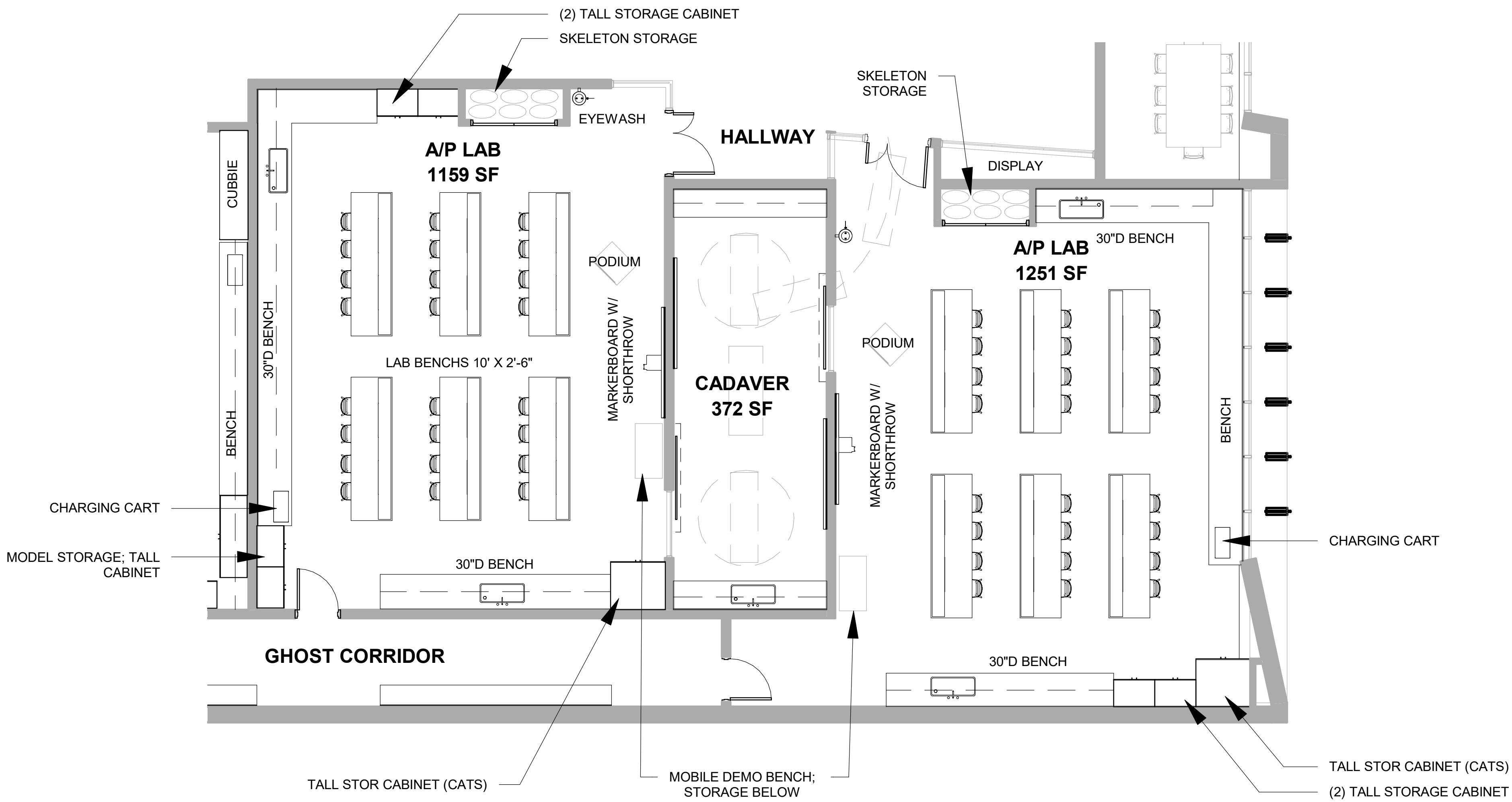
LAB LAYOUT HUMAN BIOLOGY



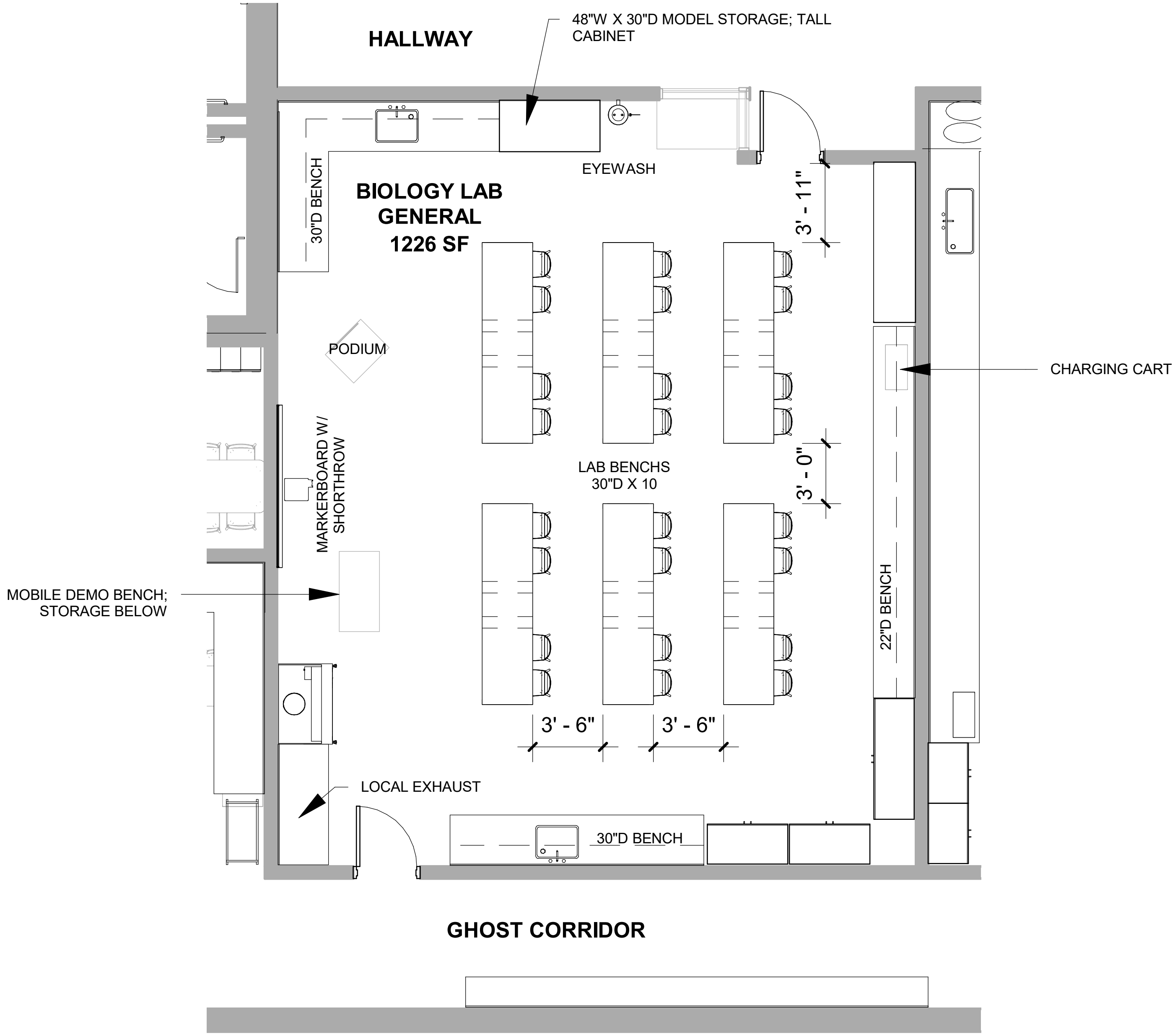
LAB LAYOUT PREP



LAB LAYOUT MLT



LAB LAYOUT A-P



LAB LAYOUT GENERAL BIOLOGY

NARRATIVES ARCHITECTURAL

Site

The Meyer Health and Science building is located between Rosenberry Drive on the west and North College Drive on the east, north of the Edminster Student Union. Yards surrounding the existing Meyer are available for the expansion and were considered initially, but since Laboratory Prep is on the south side, and it is programmed to be expanded, that side was selected.

The position of the "Think Tank" expansion responds to our Guiding Principles of campus connection and learning on display by extending out to College Drive with transparent walls. A large classroom on Ground Level open onto a new courtyard plaza. The roof line in the courtyard ties into the existing Entry Pavilion roof with an open roof structure aligning with the existing roof beams covering a Second Level roof terrace. The current asset of this entry roof is preserved.

The expansion wraps the south wall as needed to tie into the current Basement and Laboratory Prep on the Second Level. The south wall will be built where it will minimize disruption of existing water, natural gas and electrical utilities and maintain code - driven separation from Edmisnster Student Union.

Building Planning

The current building locates most of its central mechanical and electrical equipment in a partial basement level on the south side. Taking advantage of some of that current infrastructure, we have enough program space on the level for the air handler on the ground level without the need to build any more basement.

Both levels use a significant amount of existing building area to satisfy the program, a total of approximately 4,000 s.f. The largest component is the conversion of the current A/P Lab and Cadaver Lab into a Human Biology Lab. This is brought about by the requirement for a larger Cadaver Lab that has to serve two adjacent A/P Labs, as there was no practical way to place the new Cadaver Lab adjacent to the existing A/P Labs. Two new A/P Labs are included on either side of the Cadaver Lab, necessitating the backfilling of the current A/P Lab with a Biology Lab, providing five new Labs total (four programmed).

The Grand Level expansion is primarily classrooms consistent with the current building function. Other significant spaces include Faculty Offices, Student Support Offices, Adjunct Faculty Office, Large Conference Room, Student Group Study spaces, Student Break-Out / Lounge, and Restrooms. The large classroom opens onto a new courtyard plaza so that it can function for special events in conjunction with the two existing Auditoriums. The Student Services Offices, Lounge and Reception Desk are unique to the expansion and function together for the benefit of prospective, and new health and science students. Acoustical improvements in the existing building adjacent to this area will be studied to reduce noise locally and deeper into the expansion. A new exit access stairway and exit will open up the corner with natural light and will replace an existing exit stair now buried in the expansion. The stairs walls are an essential structure element, but the stair and landings can be removed so that Restrooms can be built inside, saving new building area. A large Mechanical Room will be built on grade to house the air handler that serves the Ground Level, eliminating the need for duct shafts through the Second Floor.

The Second Floor expansion is primarily Laboratories, consistent with the existing buildings function. Four new labs in addition to a Cadaver Lab are provided in the Expansion, one new lab is built in the existing building, inside the space of what was previously the A/P Lab and Cadaver Lab. Lab Prep is expanded extensively, included in this expansion are two new offices and a Work-study room. The Glasswash Room is expanded so that a second glasswash machine can be added. The Ghost Corridor serves the new labs, with the exception of the MLT Lab. Other spaces included in the Second Floor expansion are Faculty Offices, Group Study rooms, Student Breakout areas, the open Stair and Restrooms. A unique feature of the Second Floor is a Roof Terrace that can be accessed directly from the Corridor, which will enhance the Student Breakout / Group Study functions.

NARRATIVES ARCHITECTURAL

Architectural Building Systems

Roof: The roof system consists of white single ply TPO membrane over rigid roof insulation on a corrugated steel roof deck, sloped to an internal roof and overflow drains. This system matches the roof on most of the existing building.

Roof Terrace: Precast pavers on adjustable plastic pedestals on rigid drainage board insulation over waterproof membrane system sloped to drain. Planter areas would have planting soil on a geotextile fabric over the rigid drainage board insulation in lieu of pavers.

Exterior Walls: The building structure will be steel frame with five proofing of primary structure at the exterior as required for Type IIIB Construction Type. Exterior walls will be non-structural steel stud framing with blanket insulation, gypsum sheathing and air/water resistant barriers. Continuous rigid insulation will cover the barrier as required by the International Energy Conservation Code. Exterior finishes will match existing as close as possible. Metal Panel will be painted aluminum and clay brick will be 4" x 12" x 4" to match the existing size, buff-smooth.

Exposed cast-in place concrete at the stair enclosure and base plinth will be as-cast bound-form look concrete with anti-graffiti sealer. Vertical sun-shade fins over the east side Lab window wall to be covered in a wood or wood-look material, possibly a phenolic-wood exterior panel over a metal frame.

Window Systems

Window-wall areas to be aluminum storefront with size and finish to match the existing building. Window openings in brick or metal panel areas to be the same storefront system. The existing Entry aluminum curtain wall (large dimension) to be retained where possible with changes in the glass where appropriate. New exterior glass to be clear insulating units. New entrance system doors to be extra heavy duty aluminum to match the storefront and existing exterior doors. The large Classroom east exterior wall to be designed with a wide bi-folding aluminum door that allows undestructed movement between inside and outside.

Interior Narrative

The finishes and character for the addition to Meyer's will respond to the quality and tone of the existing material palette while extending the palette further into a more subdued, modern approach that promotes the use of color solely to designate wayfinding, social zones and display areas.

Biophilic design elements will permeate through the addition with the use of living walls, an interesting variety of shadow and light cast into the interior throughout the day, and the use of nature-inspired materials.

The materials used will be durable and easy to maintain. The hallways will use resilient flooring that will withstand pressure from rolling loads, scratching and soften the sound of foot traffic (vs. tile flooring). The walls will vary between acoustical, tackable and painted depending on the function of the space.

IBC ANALYSIS FOR ALLOWABLE AREA PER FLOOR

Summary: The original 2004 building only has 3,400 s.f. of expansion potential per floor when approximately 10,000 s.f. per floor is needed for the expansion.

The 2004 building was calculated as a NON-SEPARATED OCCUPANCY building. The two auditoriums are classified A3 and are the most restrictive type; B and S1 are the other occupancy classifications and have much greater allowable areas.

The 2004 building Auditoriums are isolated in the N.E. corner of the plan and should be essentially separated from the majority 'B' balance of the building already. If openings are changed to 60 minute rated, some floor structures sprayed with fireproofing, and ducts are dampered, the building can become a SEPARATED OCCUPANCY building. The proposed addition will easily be contained in the allowable area without any need for an Area Separation Wall (3 hour).

This proposed change in the allowable area method used, will need to be confirmed in discussions with the State of Idaho Department of Building Safety and Idaho State Fire Marshall when adequate drawings are available.

NARRATIVES ARCHITECTURAL

Code Review Agency Contracts:

Idaho State Fire Marshal's Office: On 7/17/19 Javier Cervantes noted via email that, "I don't see a problem with this (method)".

Idaho Department of Building Safety: On 7/17/19 Adam Kampenhout noted via email that, "It appears to me also that you are on track".

NARRATIVES ELECTRICAL

General Project Overview

Project Scope

The purpose of this electrical narrative is to provide a general overview of the intended electrical work associated with this project.

Applicable Codes & Standards

All electrical work shall be in complete accordance with the latest revised edition of the following:

National Electrical Code
International Building Code
International Fire Code
Regulations of the State Fire Marshal
Americans with Disabilities Act (ADA)
Illuminating Engineers Society of North America (IESNA)
North Idaho College Construction Standards
International Energy Conservation Code
The National Fire Protection Association (NFPA)
Applicable state and local ordinances

Description of Work

Site Electrical Utilities

The existing building is currently provided with electrical service from Avista Utilities from a 480/277V 3-phase pad mounted oil filled service transformer. It is anticipated that the existing service transformer will be reused by Avista. Within this scope of work, all necessary electrical working clearances around and above the service transformer will need to be maintained in accordance Avista Utilities requirements.

On the south side of the existing building, there is an existing underground site utility duct bank which contains Avista medium voltage primary feeder as well as Avista natural gas distribution lines. The location of these existing site utilities will be closely coordinated with the design of the building expansion to ensure that these existing site utilities are adequately protected and maintained during construction.

On the east side of the existing building, there is an existing underground telecom duct bank which serves the existing Meyers Health Science building. It is currently anticipated that the existing outside plant telecommunications service will be adequate to serve the existing building as well as the addition and will be existing to remain. The location of the existing telecom duct bank will be closely coordinated with the design of the building expansion to ensure that the existing telecom service is adequately protected and maintained during construction.

Normal Power Electrical Distribution System

The existing building electrical distribution originates from the existing main electrical room which is located in the southwest corner of the basement of the building. The building currently contains an existing 480/277V 1600A main switchboard which contains a solid state electrical demand meter and integral surge suppression. Based upon the existing electrical peak demand readings for the existing building, it is anticipated that the existing electrical main switchboard will have sufficient spare to support the building expansion. Multi- stage surge suppression shall be provided by installing transient voltage surge suppressors at new panelboard locations.

A new dry type step-down transformer and 120/208V Distribution Panelboard will be installed within the building expansion, which will subfeed all of the new 120/208V panels located within the building expansion. Circuit breaker panelboards shall be provided throughout the building expansion as required to adequately serve the associated building loads within the new areas. 120/208V electrical panels for Level 1 and Level 2 of the building expansion will be located within the hallways, similar to the locations of the existing panelboards within the existing building. A new 480V electrical panel will be located within the new Level 1 mechanical room to supply power to new mechanical equipment loads.

Branch circuit distribution within each lab space will be closely coordinated with the specific function of each lab. Each lab space will typically be provided with a dedicated panelboard. Additional spare electrical capacity will be designed into each lab space in order to accommodate future potential changes to lab equipment and lab function.

NARRATIVES ELECTRICAL

Emergency Electrical Distribution System
The existing building contains a natural gas fueled NEC 700 emergency generator system which feeds the existing emergency egress and exit lighting within the building. The existing NEC 700 emergency generator is sized at 15kW. It is anticipated that all new emergency egress and exit lighting located within the building expansion will be fed from the existing NEC 700 emergency generator system. It should also be noted that non-emergency (non life-safety) loads cannot be fed from the existing NEC 700 emergency generator system.

Interior Lighting and Interior Lighting Controls
Lighting throughout the interior building spaces will respond to the primary use of each space while maintaining a level of flexibility to react to future use of each space. Lighting system design foot candle levels will be in accordance with IESNA standards. In general, areas within the building will be illuminated to the following light levels:

Building Area	Target Foot-Candles
Lab / Lab Support	75
Lab Storage	10-20
General Classrooms	30-50
Study / Seating	20-30
Offices	30-50
Conference Rooms	30-50
Restrooms	10-15
Hall / Stairs	10-15
Storage Rooms	10-15
Mech/Elec Rooms	10-20

Uniform ambient lighting will establish a basic minimum lighting level throughout each individual space with task, display and accent lighting used to establish contrast and interest. Specific attention will be given to the lighting for areas with computer workstations and projectors in order to minimize glare and conflict. Lighting within the building will be LED. Lighting within the building expansion will be fed from the existing 480/277V lighting panelboards which are located within the existing Level 1 and Level 2 electrical rooms.

Fully enclosed and gasketed lighting will be utilized within specific dirty areas where air born dust from Lab procedures is anticipated. Lighting with impact resistant lenses will also be considered for higher abuse areas.

Exit lighting will be LED type. Emergency egress and exit lighting will be provided throughout the path of egress, and will be supplied from the existing emergency generator system.

A distributed programmable low voltage lighting control system shall be used to control lighting within interior areas. This will allow the building lighting to be automatically turned on and off at pre-programmed times. Occupancy sensors will be utilized to automatically shut off the lighting within offices, conference rooms, restrooms and classrooms when these spaces are unoccupied. Occupancy sensors will be capable of vacancy mode. Either ceiling mounted or wall mounted sensors will be utilized depending on the physical size and specific geometry of the room being controlled. Within normally occupied spaces, dimmable lighting controls will be provided in conjunction with occupancy sensors. Automatic dimmable lighting controls shall be installed to provide daylight harvesting within areas where adequate natural daylight is present within the building, as required by the International Energy Conservation Code.

Exterior Lighting and Exterior Lighting Controls
It is currently anticipated that a significant amount of the exterior site lighting will be remain in place for this project. Some new exterior site lighting will be required in order to accommodate the building expansion. New exterior lighting will be selected to complement the existing site lighting, as well as the architectural building exterior and NIC campus standards. Exterior lighting will utilize full cut-off light fixtures in order to avoid light trespass. In general, exterior areas will be illuminated to the following light levels:

Exterior Area	Foot-Candles
Exterior Entry	5
Exterior Walkways	2
Parking Areas	1

Exterior entry lighting which illuminates the path of egress will be fed from the existing emergency generator system. The existing low voltage lighting control system shall be used to control the new exterior lighting. This will allow the new exterior lighting to be automatically turned on and off at pre-programmed times, or be automatically controlled via outdoor photocell, in conjunction with the existing exterior lighting.

Fire Alarm System

The existing building contains an addressable fire alarm and control panel, which is located within the existing main electrical room. The existing fire alarm system also contains a fire alarm sub-panel, which is located within the Level 2 electrical room. It is anticipated that the existing fire alarm system will be suitable for reuse during this project. A complete fire alarm system with manual pull stations, automatic detection and ADA compliant horn/strobes will be provided throughout the building expansion. Smoke detector and heat detectors will be installed as required by the governing codes, and in accordance with campus standards. The building fire sprinkler system will be monitored by the fire alarm system for system flow and shutoff valve tampering. All new fire alarm devices shall be compatible with the existing fire alarm system.

Telecommunications System

The existing telecommunications service for the building is located within Level 1 MDF Room 114. It is currently anticipated that the existing telecommunications service will remain in it's current location. A new Telecom IDF Room will be constructed on the basement level in the general vicinity where existing Stair B2 is being demolished. This new Telecom IDR Room will be utilized to serve Level 1 and Level 2 of the building expansion.

A complete telecommunications distribution system will be provided for all areas of the building expansion in accordance with the NIC telecommunications construction standards. Work station outlets will be provided for telecommunications equipment as required by the program. Horizontal station cabling will be provided with cabling routed to the new Telecom IDF room. Horizontal cabling shall be CAT 6 UTP configured in a "universal" cabling topology where workstation cables are not differentiated between voice and data. Most areas will also be equipped with provisions for wireless local area networking.

Telecommunications cabling will be distributed throughout the building using wire basket tray as the core cabling distribution means.

AV Systems

It is anticipated that some areas of the building renovation, such as the conference rooms, group study rooms, classrooms and laboratory areas will be provide with AV systems. AV system design will be provided and installed by NIC. Conduit pathways and electrical provisions necessary to support the AV systems will be provided by the contractor. Required locations and provisions for AV system will be closely coordinated with NIC during the design.

Security / Access Control System

The existing building is provided with security access control and video surveillance systems. It is anticipated that the existing security systems will be suitable for reuse and expansion during this project. Required locations for security access control devices and security cameras will be closely coordinated with NIC during the design.

Clock System

A complete system of wireless clocks will be provided within the building expansion. Required locations for clocks will be closely coordinated with NIC. Clocks will typically be provided within the labs, classrooms, lobbies and circulation areas. All clocks which are provided within the building expansion will be provided in accordance with the current NIC campus standard for clock systems.

Sustainable Design

Many opportunities are currently available to construct a building which incorporates sustainable design. The following is a brief list of items related to the building electrical systems which are being considered for this project.

> Energy efficient LED lighting will be utilized as the primary light source.

> Occupancy sensors will be utilized to automatically shut off the lighting when rooms are unoccupied.

> Within normally occupied spaces dimmable lighting controls will be provided

to allow the user to manually reduce the light levels within their spaces if desired.

- Automatic dimmable lighting controls will provide daylight harvesting within areas where adequate natural daylight is present within the building.
- High efficiency electrical distribution transformers will be utilized.
- Conduit infrastructure will be provided within the design in order to ensure that the building expansion is “PV ready” for the installation of a future roof-mounted PV array.

NARRATIVES MECHANICAL

General Project Overview

Project Scope

The purpose of this mechanical narrative is to provide a general overview of the intended mechanical and plumbing work associated with this project.

Applicable Codes and Standards

The mechanical systems will be designed to conform, as a minimum, to the following codes and standards:

International Building Code
International Mechanical Code
International Fire Code
Idaho Plumbing Code
Idaho Energy Code
American Water Works Association (AWWA)
The National Fire Protection Association (NFPA)
Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
Applicable state and local ordinances

Climate and Indoor Design Conditions

The HVAC systems design will be based on the following climatic factors and ASHRAE Standard 55: Thermal Environmental Conditions for Human Occupancy.

<u>Outdoor Design Temperatures</u>

> Summer: 91.3 ˚F DB, 63.1 ˚F WB (0.4% ASHRAE design condition for Coeur D'Alene Airport)
> Winter: -2.0 ˚F (ASHRAE mean of extreme winter conditions for Coeur D'Alene Airport)

<u>Occupied Spaces</u>

> Summer: 74˚F to 76˚F, Winter 68˚F to 70˚F

<u>Un-Occupied Spaces – electrical / mechanical rooms:</u>

> Summer: 85 to 90˚F, Winter: 55˚F

<u>Un-Occupied Spaces - telecommunication rooms:</u>

> Summer: 70-75 ˚F, Winter: 68-70˚F

<u>Humidity Controls</u>: Presently no programmatic needs have been identified that would require active humidification or dehumidification systems.

Acoustics

Systems will be designed and installed to meet the maximum noise criteria (NC) established for each space use. Acoustical considerations will include limitation of duct velocities through ductwork, terminal units and air inlets/outlets to achieve space NC, use of sound attenuators in the duct systems, and vibration isolation of mechanical equipment with spring isolators and flexible connections.

Indoor air quality

Fresh air will be introduced into each space to meet the requirements of ASHRAE Standard 62-Ventilation for Acceptable Indoor Air Quality or the required make up air for exhaust (whichever is greater). Fresh air intakes will be located away from exhaust vents, plumbing vents, outdoor smoking areas and building loading areas.

Air for all labs, storage rooms, prep areas or anywhere chemicals will be used will be fully exhausted and not recirculated.

Central air handling units will be provided with 30% (Merv 8) pre-filters and 85% (Merv 13) final filters

Mechanical Design Narrative

Site Utilities

The existing building is already provided with natural gas, domestic water, fire water, storm drainage and sanitary drainage service. The existing acid monitoring tank will be demolished. A new acid monitoring tank will be provided to serve both the existing and new lab waste systems. Active neutralization is not expected, as it is the College's policy to neutralize all chemicals prior to disposal. pH monitoring will be provided.

Building Heating

The boilers in the existing building have been recently replaced with high efficiency, condensing gas-fired boilers. The College reports that nearly all of the time, only one of the three boilers is required to operate to meet the building heating load. Therefore, no new boilers will be provided. New heating water piping will be extended to the building addition.

NARRATIVES MECHANICAL

Building Cooling
The current building is served by an air-cooled chiller that is nearing the end of its anticipated service life and that uses a refrigerant that has been phased out. The current schematic design estimate assumes that the existing chiller will remain and that a new air-cooled chiller will be provided to serve only the addition. It may be advantageous for the College to replace the existing chiller with a new chiller that would serve the entire existing building and addition, but the current project funding likely doesn't support this approach unless funds are added to the project or the chiller replacement was performed under a separate project.

Chemical Water Treatment
Closed hydronic systems shall be treated for corrosion and freeze protection (30% propylene glycol). Chemicals shall match what is used in the existing systems.

HVAC Distribution
Conditioned air will be delivered to the building via overhead ductwork. Return air and exhaust air will generally also be at the ceiling level with the exception of source capture systems such as biosafety cabinets, chemical fume hoods and lab benches with integral backdraft exhaust.

A standard recirculating variable air volume (VAV) air handling unit (AHU) will be provided to serve the non-lab areas. The VAV AHU will contain a return fan, a mixing box, filters, a heating water coil, a chilled water cooling coil and a supply fan. Fans will be direct drive plenum type, controlled by variable frequency drive. The unit will be capable of 100% outside air economizer. The AHU casing will be double wall, insulated construction. Local space temperature control for the multiple zone VAV unit will be provided by variable air volume terminal units with hot water re-heat coils.

An energy recovery unit (ERU) will be provided to serve the lab areas. This unit will provide 100% outside air to the labs, as well as fully exhaust the labs, without recirculating the air. The energy recovery unit will contain an exhaust fan, a flat-plate heat recovery heat exchanger, filters, a heating water coil, a chilled water cooling coil and a supply fan. Fans will be direct drive plenum type, when available. The heat recovery heat exchanger will capture waste heat from the exhaust air stream to pre-heat the outside air serving the labs. The heat recovery wheel will also pre-cool the outside air whenever the exhaust air temperature is lower than the outside air temperature. The labs will be provided with VAV exhaust boxes, which will track the supply air, to maintain negative pressurization with respect to the Hallway.

Air handling units will be provided with fan-inlet guards. At the time power is connected and the unit is capable of operation, the motor will be locked out or hasps and locks will be installed on the air-handler case.
Telecom rooms and other spaces with 24 hour cooling needs will be provided with standalone direct expansion (DX) ductless split systems. A DX system will also be provided for supplemental cooling of the Cadaver lab.

Energy Management Control System
The building controls shall be Automatic Logic, installed by SPHControls. Systems shall be direct digital control with electronic actuators. Graphical interfaces shall be developed for the new building systems and fully integrated into the existing building controls.

All mechanical equipment and all modes of control shall be fully commissioned.

Test and Balance
Air, hydronic and domestic hot water distribution systems shall be balanced to conditions specified and indicated on the drawings by an AABC or NEBB Certified balancing agency.

Basic Plumbing
The existing domestic cold water distribution system will be extended to the building addition.

Water closets will be wall mounted. Lavatories will be wall mounted or self-rimming countertop. Hands-free faucet controls and sensor operated flushometers will be hard-wired to building power. Water coolers shall be dual height, ADA compliant, with bottle filling station. Isolation valves will be provided for all groups of fixtures and remote fixtures.

NARRATIVES MECHANICAL

A new 120°F domestic hot water distribution system will be provided for the addition, with recirculation pump. New water heaters will be natural gas fired.

A gravity sanitary drainage system will be provided to serve all new plumbing fixtures and equipment. Sanitary waste lines will be routed to new connection points provided by the civil engineer within five feet of the building exterior. Lab waste will be separately routed to a new acid monitoring tank.

Gravity primary and overflow storm drainage systems will be provided to serve the new roof levels with each system piped separately outside of the building. Whenever possible, rain leaders will be located within the heated portion of the building to prevent freezing of the pipe and will be insulated to prevent condensation from developing on the pipe. Overflow drains will terminate at grade level in splash blocks and primary drains will terminate within five feet of the building exterior for final termination by the Civil Engineer in the site scope of work.

Natural gas piping inside the building will be Schedule 40 Black steel. If any pressure regulators are located inside the building, they shall be vented to the outside.

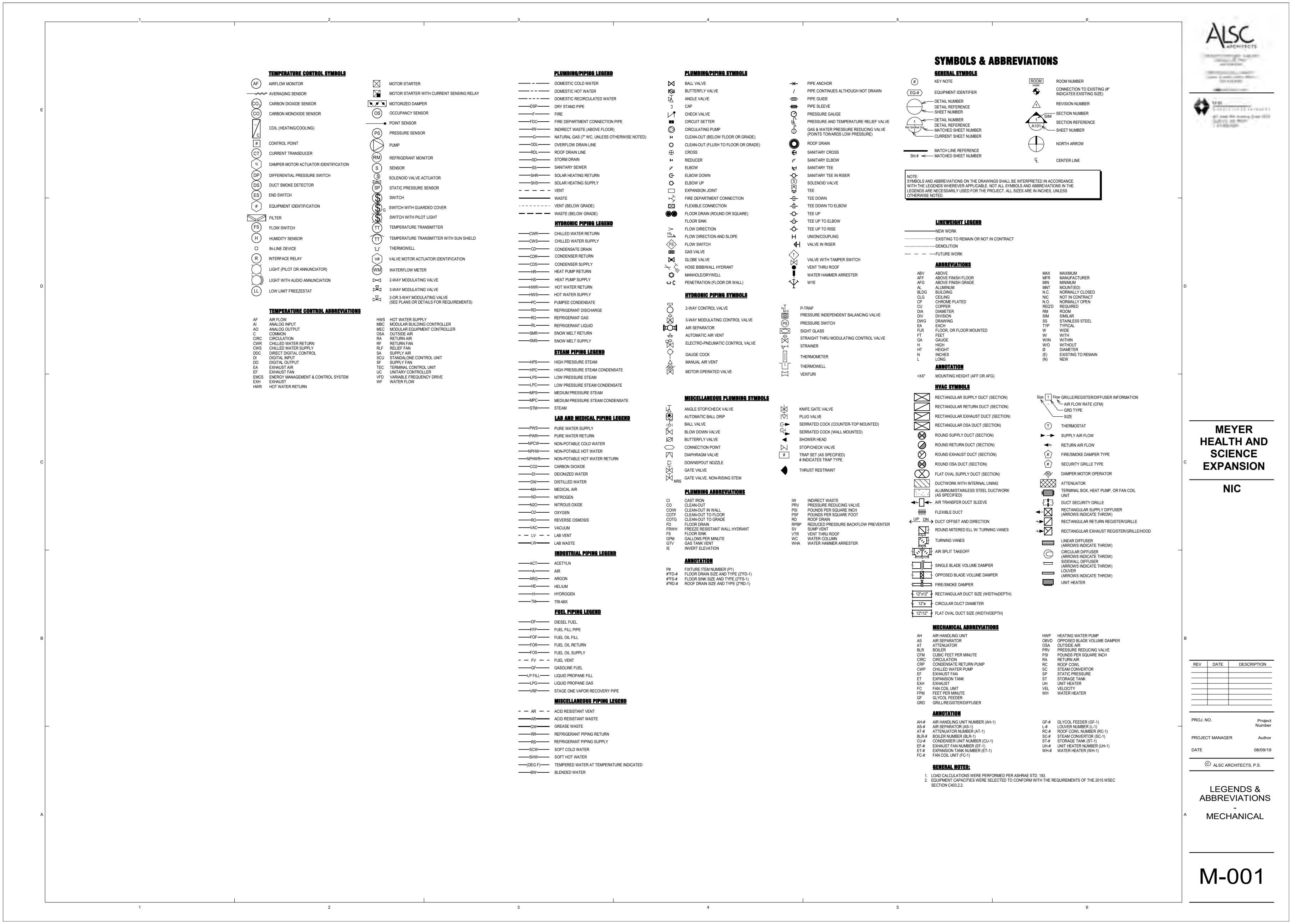
It is anticipated that new compressed air outlets can be served by the existing compressed air system.

The anatomy and biology labs require RO water. The capacity of the existing system is being investigated to see if it can be extended to serve the addition.

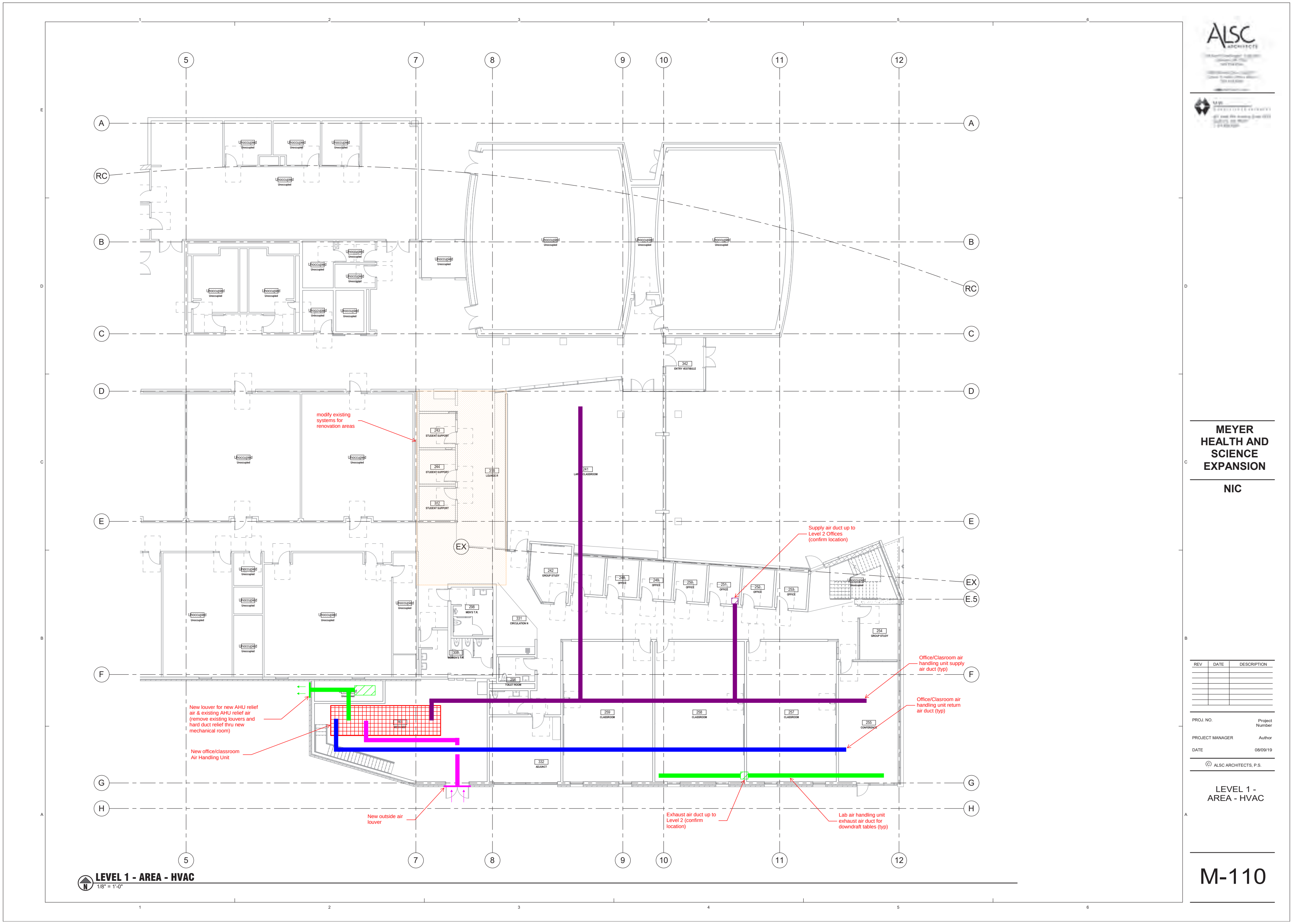
Fire Protection System

The building interior will be fully protected with an extension of the existing wet pipe sprinkler system. Exterior areas subject to freezing such as loading areas or overhangs will be serviced from a dry system or dry sprinkler heads.

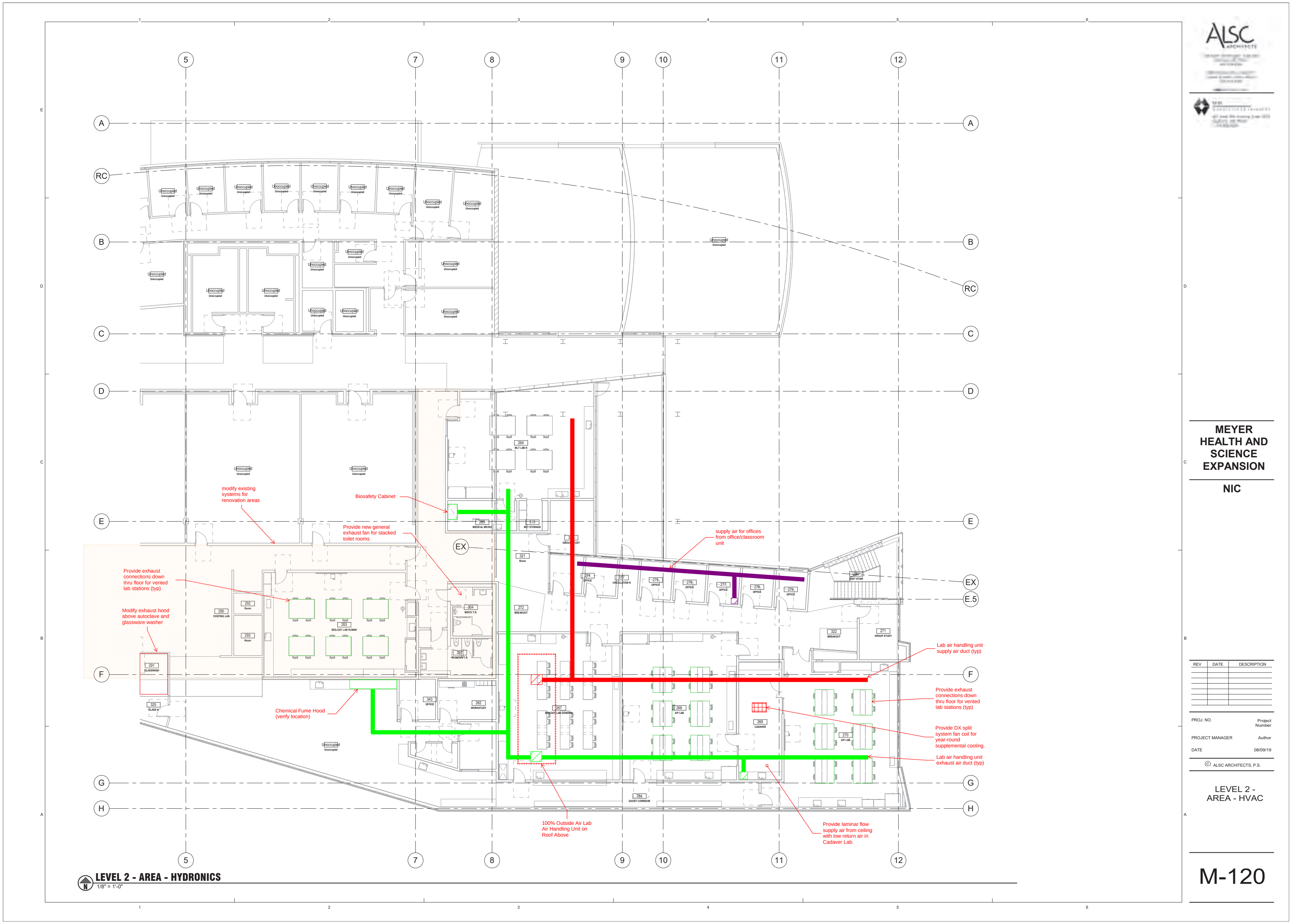
The building light hazard areas (offices, classrooms, circulation spaces) will be sprinkled to light hazard requirements. Electrical and mechanical areas will be sprinkled to ordinary hazard group 1 requirements.

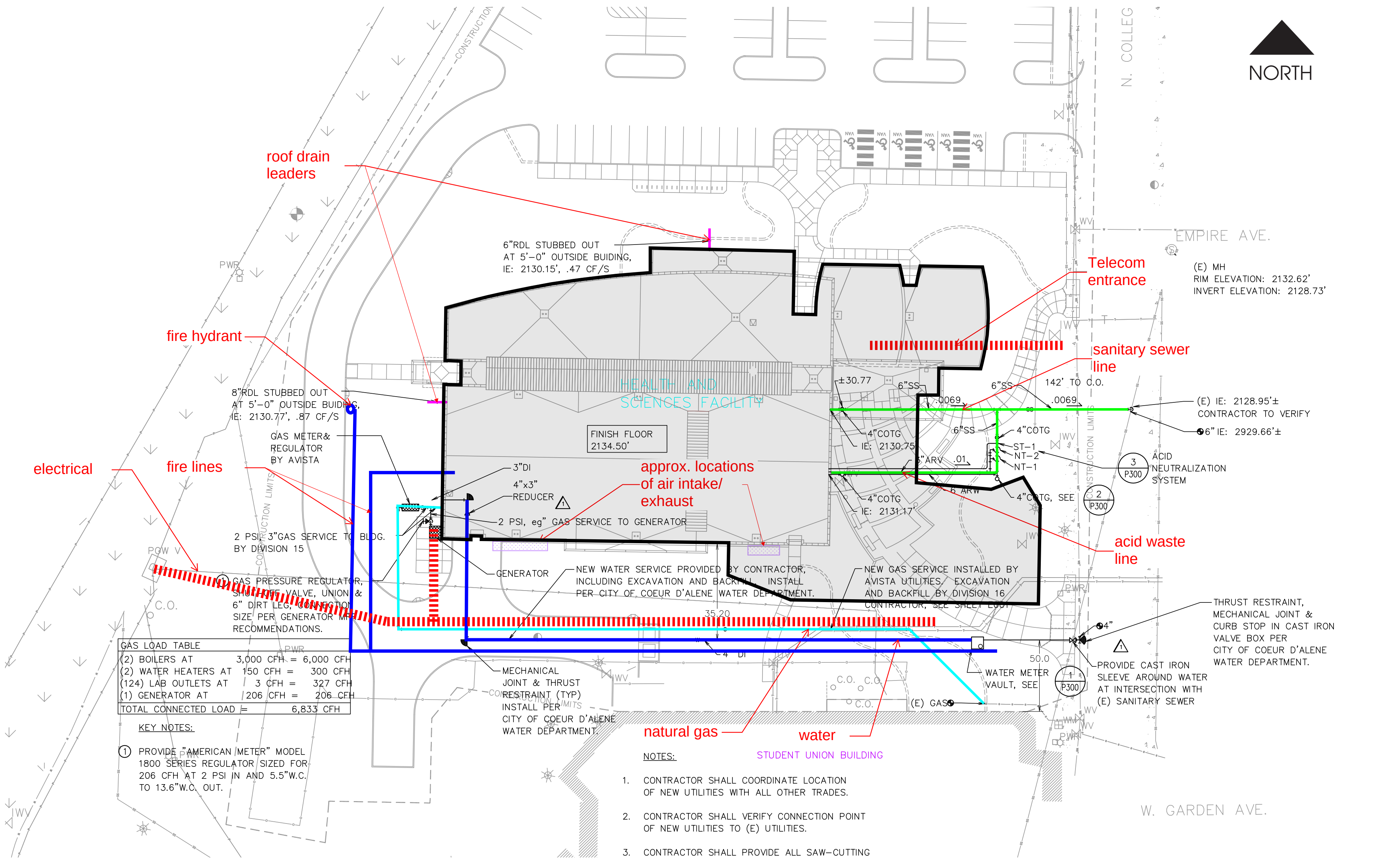

SYMBOLS & ABBREVIATIONS
GENERAL SYMBOLS
TEMPERATURE CONTROL SYMBOLS
TEMPERATURE CONTROL ABBREVIATIONS
PLUMBING/PIPING LEGEND
HYDRONIC PIPING LEGEND
STEAM PIPING LEGEND
LAB AND MEDICAL PIPING LEGEND
INDUSTRIAL PIPING LEGEND
FUEL PIPING LEGEND
MISCELLANEOUS PIPING LEGEND
PLUMBING/PIPING SYMBOLS
HYDRONIC PIPING SYMBOLS
MISCELLANEOUS PLUMBING SYMBOLS
PLUMBING ABBREVIATIONS
ANNOTATION
LINEWEIGHT LEGEND
ABBREVIATIONS
ANNOTATION
HVAC SYMBOLS
MECHANICAL ABBREVIATIONS
ANNOTATION
GENERAL NOTES:
ALSC
MEYER HEALTH AND SCIENCE EXPANSION
NIC
LEGENDS & ABBREVIATIONS - MECHANICAL
M-001

NARRATIVES MECHANICAL



NARRATIVES MECHANICAL





NORTH
roof drain leaders
fire hydrant
electrical
fire lines
Telecom entrance
sanitary sewer line
approx. locations of air intake/ exhaust
acid waste line
natural gas
water
HEALTH AND SCIENCES FACILITY
STUDENT UNION BUILDING
EMPIRE AVE.
W. GARDEN AVE.
N. COLLEGE
6"RDL STUBBED OUT AT 5'-0" OUTSIDE BUIDING, IE: 2130.15', .47 CF/S
8"RDL STUBBED OUT AT 5'-0" OUTSIDE BUIDING, IE: 2130.77', .87 CF/S
GAS METER& REGULATOR BY AVISTA
FINISH FLOOR 2134.50'
3"DI
4"x3" REDUCER
2 PSI, eg" GAS SERVICE TO GENERATOR
2 PSI, 3"GAS SERVICE TO BLDG. BY DIVISION 15
GAS PRESSURE REGULATOR, SHUT-OFF VALVE, UNION & 6" DIRT LEG, CONNECTION SIZE PER GENERATOR MFR RECOMMENDATIONS.
GENERATOR
NEW WATER SERVICE PROVIDED BY CONTRACTOR, INCLUDING EXCAVATION AND BACKFILL. INSTALL PER CITY OF COEUR D'ALENE WATER DEPARTMENT.
NEW GAS SERVICE INSTALLED BY AVISTA UTILITIES. EXCAVATION AND BACKFILL BY DIVISION 16 CONTRACTOR, SEE SHEET E001
(E) MH RIM ELEVATION: 2132.62' INVERT ELEVATION: 2128.73'
(E) IE: 2128.95'± CONTRACTOR TO VERIFY
6" IE: 2929.66'±
142' TO C.O.
ACID NEUTRALIZATION SYSTEM
4"COTG IE: 2130.75
4"COTG IE: 2131.17'
THRUST RESTRAINT, MECHANICAL JOINT & CURB STOP IN CAST IRON VALVE BOX PER CITY OF COEUR D'ALENE WATER DEPARTMENT.
PROVIDE CAST IRON SLEEVE AROUND WATER AT INTERSECTION WITH (E) SANITARY SEWER
WATER METER VAULT, SEE
MECHANICAL JOINT & THRUST RESTRAINT (TYP) INSTALL PER CITY OF COEUR D'ALENE WATER DEPARTMENT.
(E) GAS
GAS LOAD TABLE
(2) BOILERS AT 3,000 CFH = 6,000 CFH
(2) WATER HEATERS AT 150 CFH = 300 CFH
(124) LAB OUTLETS AT 3 CFH = 327 CFH
(1) GENERATOR AT 206 CFH = 206 CFH
TOTAL CONNECTED LOAD = 6,833 CFH
KEY NOTES:
1 PROVIDE "AMERICAN METER" MODEL 1800 SERIES REGULATOR SIZED FOR 206 CFH AT 2 PSI IN AND 5.5"W.C. TO 13.6"W.C. OUT.
NOTES:
1. CONTRACTOR SHALL COORDINATE LOCATION OF NEW UTILITIES WITH ALL OTHER TRADES.
2. CONTRACTOR SHALL VERIFY CONNECTION POINT OF NEW UTILITIES TO (E) UTILITIES.
3. CONTRACTOR SHALL PROVIDE ALL SAW-CUTTING

NARRATIVES STRUCTURAL

The following design narrative provides a general overview of the structural design including design criteria, material specifications, and structural framing descriptions.

Design Criteria

2015 International Building Code and Referenced Code Standards Therein

Roof (Snow) 30 PSF

> Designed for drifting snow in accordance with ASCE 7.

> Importance Factor 1.1

Floor Live Load

> Offices and Classrooms	50 PSF + 15 PSF Partition
> Restrooms	50 PSF
> Corridors	100 PSF
> Corridors above the First Floor	80 PSF
> Commons Space	100 PSF
> Stairs and Landings	100 PSF
> Mechanical/Electrical Rooms	125 PSF
> Light Storage	125 PSF
> Roof Live Load	20 PSF
Roof Total Load Deflection Limit	**L/240**
Roof Live Load Deflection Limit	**L/360**
Floor Total Load Deflection Limit	**L/240**
Floor Live Load Deflection Limit	**L/360**

Wind Design

> Basic Wind Speed (3-second gust)	120 MPH
> Exposure	B
> Occupancy Category	III

Seismic Design

> Occupancy Category	III
> Importance Factor	1.25
> Site Class	C
> Seismic Design Category	C

Material Specifications

> Concrete Strengths (at 28 days)

Foundations and Footings	3,000 PSI
Slab on Grade	3,000 PSI
Elevated Slab on Metal Deck	4,000 PSI
Walls	4,000 PSI

> Concrete Reinforcement (Rebar) ASTM A615, Gr. 60

> Tube Steel

Glazing Support	ASTM A500, Gr. B
Perimeter Beams	ASTM A500, Gr. B

> Wide Flange

Beams	ASTM A992, Gr. 50
Columns	ASTM A992, Gr. 50

> Miscellaneous Shapes & Plates ASTM A36

> Metal Decking

Metal Roof/Floor Decking ASTM A653, Gr. 33

> Cold-Formed Steel

54 mil. and heavier	ASTM A1011, Gr. 50
43 mil. and lighter	ASTM A1011, Gr. 33

Roof Framing System

The classroom addition will consist of wide flange beams and girders supporting 20 gauge, 1½ inch deep type B metal roof deck. The approximate weight of the framing system, including columns, is 11 pounds per square foot (psf). The new roof addition will be tied into the existing roof framing to minimize any differential movement. The columns supporting the roof will utilize transfer beams in the second floor so they can be hidden within the interior walls of the building.

The existing roof canopy will be partially removed along with two interior supporting columns. The remaining beam will likely be replaced or strengthened to accommodate the longer span.

Floor Framing System

The second floor of the addition will be composite wide flange beams supporting 3 inches of concrete on 3-inch composite metal decking. The approximate weight of the framing, including columns, is 12 psf. The new second floor will be tied into the existing building to minimize any differential movement.

NARRATIVES STRUCTURAL

The first floor will be a 4-inch thick concrete slab on grade and will be reinforced to minimize shrinkage cracking.

Cast-in-Place Concrete Stairs
The concrete stairs at the eastside of the addition will be exposed cast-in-place concrete and cantilevered over the exposed concrete wall supporting the landing.

Lateral Force Resisting Systems
The lateral force resisting system will utilize the exposed concrete walls at the eastside stairway as well as new braced frames along the south wall and an interior north-south wall.

Exterior Walls
At the classroom addition, exterior non-bearing walls will be 6" metal studs at 24 inches on center with a thickness of 43 mils.

Foundations
All sub-grades will be prepared in accordance with the geotechnical report. Conventionally reinforced spread and continuous footings will support the building. Exterior footings will be set at least 24 inches below finish grade to provide frost protection while interior footings will be set a minimum of 18 inches below finished floor elevations.