Babcock Dairy Plant Renovation & Center for Dairy Research Addition
University of Wisconsin – Madison

Final Report May, 2012
DSF Project No. 11E4F
BWZ Project No. 2011-7

BWZ Architects

The College of Agriculture and Life Sciences (CALS) at the University of Wisconsin-Madison campus wants to improve and upgrade the Babcock Hall facility. The building was originally constructed in 1951 and has been the focus of several subsequent addition and remodeling projects.

The purpose of this study is to evaluate the Dairy Plant (DP) at the west end of the facility, currently shared by the Department of Food Science (DFS) and the Center for Dairy Research (CDR), and determine the future needs of the two user groups.

The Dairy Plant portion of the building, where raw dairy ingredients are processed into milk, cheese, and ice cream products, is a particular concern and a priority for improvement. ***The design team has suggested a comprehensive replacement of existing utility connections and infrastructure, including mechanical, electrical, plumbing and life safety systems.*** Aging process equipment needs to be replaced and supplemented, with new freezer/cooler spaces added for the Plant to function as a modern facility. A new intake/silo function is added to the south, and a new penthouse is added on the roof.

The Center for Dairy Research works with industry groups to develop new products for the marketplace, especially cultured products and specialty cheeses. There is a fundamental need for high quality space designed with "plug and play" flexibility. The priorities for CDR include adding modern research lab space, continuing their educational mission with short course application lab and auditoria spaces, and establishing a physical identity distinct from Babcock Hall. ***The design team has suggested an addition of new space located west of the Dairy Plant.***

The basement of the CDR addition would contain non-cheese lab space. The first floor of the addition would contain cheese lab space. The second floor of the addition would contain application labs and an auditorium space seating 99. All three primary floors would include circulation and support functions. The third floor of the addition contains a mechanical penthouse serving all levels.

Following a preliminary needs assessment, the design team developed a series of conceptual designs and refined two preferred options. Option A suggests a CDR addition of 23,002 gsf to the west retaining Science House, with $4.0M in new equipment. Option B suggests removing Science House, creating more buildable area for a CDR addition of 27,234 gsf, with $5.5M in new equipment. Both options include a comprehensive remodeling of the Dairy Plant.

Option A Estimate:	
Total Construction Cost	$22,942,612
Total Soft Cost	$5,637,000
Total Project Budget	$28,579,612
Option B Estimate:	
Total Construction Cost	$25,618,073
Total Soft Cost	$6,302,046
Total Project Budget	$31,920,119

Both cost estimates assume a construction start in fall 2015, and a total construction interval of 30 months. The addition construction interval would be 15 months, followed by a transition interval of 3 months, followed by a

remodeling construction interval of 12 months. Sequencing and transition strategies for both CDR and DP are outlined in the following text.

Overview

In 2010, the Department of Food Science and the Center for Dairy Research agreed to jointly fund a planning study to look at options for renovating the Dairy Plant. In 2011, the firm of BWZ Architects was hired to explore different options for updating the existing infrastructure and adding the new space required to meet the instructional, research and outreach mission of both programs.

Project Participants:

Division of State Facilities	Building Owner	Russ Van Gilder
University of Wisconsin	Institution FP&M	Stu LaRose
University of Wisconsin	Institution CALS	Doug Sabatke
Department of Food Science	Agency/User	Scott Rankin
Center for Dairy Research	Agency/User	John Lucey
BWZ Architects	Architecture & PM	Mark Engman
Arnold & O'Sheridan	Engineering	Tim Wendt
The Concord Group	Cost Estimating	Rich Bertovic
Anderson Illustration	Rendering	Scott Erstad

Needs Assessment

The Center for Dairy Research works with industry groups to develop new products for the marketplace, especially cultured products and specialty cheeses. The priorities for CDR include adding modern research lab space, short course application labs and lecture space. Installation of new equipment is necessary due to the obsolete nature of the existing equipment.

Current space limitations are a key issue for CDR, both in terms of class size and new equipment. Students may be turned away and donated equipment may be declined due to lack of space. Proper work area segregation is also essential. New lecture facilities and product development labs would appeal to a variety of potential users. Improved identity and wayfinding strategies would help raise awareness of the CDR mission within Babcock Hall.

The CDR conducts more than twenty applied or basic research projects per year in conjunction with CDR staff, UW faculty/graduate students or the dairy/food industry. A modern food processing facility would be hugely beneficial for educational purposes of Food Science students.

The Dairy Plant, where raw dairy ingredients are processed into milk, cheese, and ice cream products, is an immediate concern and a priority for improvement. While the Dairy Store is well known and beloved in the community, the obsolete infrastructure poses health, safety and environmental deficiencies. After sixty years of service, the mechanical, electrical and plumbing systems are in need of complete modernization. The undersized intake bay for milk deliveries should be demolished and replaced.

A modest increase in Plant space would allow for improved process flow and equipment layout. Inefficient cooler, freezer and dry storage areas should be redesigned. Utilities should be rerouted to eliminate the existing corroded floor curbs. A general modernization is required for the facility to pass muster with code compliance and the reviewing authorities.

Design Response & Recommendations

The design team was originally asked to study various options and develop a refined response appropriate to the needs of the users. Following a series of meetings and site visits, a conceptual-level design (labeled Option A) developed including drawings, cost estimates and schedule estimates.

After sharing Option A with industry partners and potential donors, CDR staff asked the design team to develop a second option (labeled Option B) that would reflect the comments and suggestions from industry. Both options are included in this study.

In both options, the design team has recommended a new three-story addition located west of the Dairy Plant to address the space needs of CDR. The major differences involve size and equipment assumptions.

In both options, the design team has also recommended a comprehensive replacement of existing utility connections and infrastructure in the Dairy Plant, including mechanical, electrical, plumbing and life safety systems. Aging process equipment needs to be replaced and supplemented, with new freezer/cooler spaces added for the Dairy Plant to function as a modern facility. A new intake/silo function is added to the south, and a new penthouse is added on the roof. Dairy Plant work scope is identical in Option A and Option B.

Architectural Systems

Drawing Archive

The following projects have construction drawing documentation on file with the State of Wisconsin:

1949	Babcock Hall Original Construction
1956	Drying Tower Addition
1987	CDR Office Infill
1989	North Addition & Remodeling
1992	Ventilation System Upgrade
1994	Tower & Still Repairs
1994	Room 205 Conversion
1998	Refrigeration System Addition
2000	Dairy Store Renovation
2004	Lab Vent Repairs
2010	CURB Renovation
2011	Utility Repair

Code Requirements

The International Building Code and the International Existing Building Code (current versions with WI amendments) should be applied to the development of this project. The U.S. Food and Drug Administration (FDA) and the Wisconsin Department of Agriculture, Trade and Consumer Protection (WDATCP) have applicable regulations and inspections related to processes and products for human consumption.

Site and Building Accessibility

All State of Wisconsin and UW-Madison facilities should be accessible to individuals with disabilities. New construction and remodeled work areas within existing buildings must comply with all accessibility requirements.

The current parking layout includes several accessible vehicle stalls. One stall is located curbside on Linden Drive, which is most convenient to the Dairy Store. One stall is immediately west of Science House. Two stalls are located off Babcock Drive in the south surface lot. An accessible route exists between these vehicle stalls and the accessible entries described below.

The existing building has eight distinct points of entry, two of which are accessible and compliant with the Americans with Disabilities Act (ADA). The primary building entrance at the northeast corner connects to a passenger elevator serving all three occupied levels (B/1/2). The secondary building entrance near the mid-block Dairy Store connects to a freight elevator serving all three occupied levels.

The existing toilets in Babcock Hall are generally accessible due to recent remodeling projects. The sole exception is the staff toilet and locker rooms located in the basement of the Dairy Plant. This study proposes to completely remodel this area with accessible features throughout.

Building Enclosure and Structure

The existing roof of the Dairy Plant exhibits no signs of roof leaks or failures at this time. A small section (1,100 sf) of rubber roof was replaced in 2007 with adhered EPDM material (60 mil. thick). Comprehensive roof replacement should be considered for a long-term capital maintenance project.

The existing windows are original to the building. Obscured glass is used to control undesirable sunlight penetration to the floor of the Dairy Plant.

The existing exterior wall construction is typically face brick on concrete block with limestone trim. Interior wall construction is typically facing tile on concrete block. Interior ceilings are typically painted plaster on metal lath.

The existing floors are structural concrete, finished with tile over a waterproof membrane. The original system of tile surfaces sloped to floor drains is failing and there is visible evidence of leaks through the first floor in the basement.

Asbestos-Containing Materials (ACM)
Babcock Hall was inspected for hazardous materials on June 4, 2008. The WALMS (Wisconsin Abatement and Lead Management System) report summarizes the building materials that contain, are assumed to contain, or do not contain hazardous substances, with estimates of quantity and removal cost. Existing materials of concern include floor tile and mastic, terrazzo, laboratory countertops and fume hoods, fire doors and pipe insulation. The WALMS report is attached in the appendix.

Safety Concerns
The Dairy Plant has an obsolete infrastructure that presents a number of serious safety issues for staff and students. The aging, corroding electrical system occupies a wet environment that produces numerous shorts and wire exposures. The inadequate ventilation system does not control excessive heat in the summertime. The plumbing system supplying potable and chilled water is corroded beyond repair. The cooling system is plumbed into the concrete floor and is unserviceable. High water quality necessary for consumer and research products is a continuing problem. Staff and student overcrowding is a concern.

A complete discussion of specific engineering systems with recommendations follows this section.

Environmental Concerns
The inadequate Dairy Plant ventilation system contributes to the potential of spoilage organisms and pathogenic bacteria growth. Raw milk storage tanks and processing equipment are not separated in restricted areas to minimize the risk of cross-contamination. Research projects and consumer products manufacturing are also not separated to minimize risk of cross-contamination.

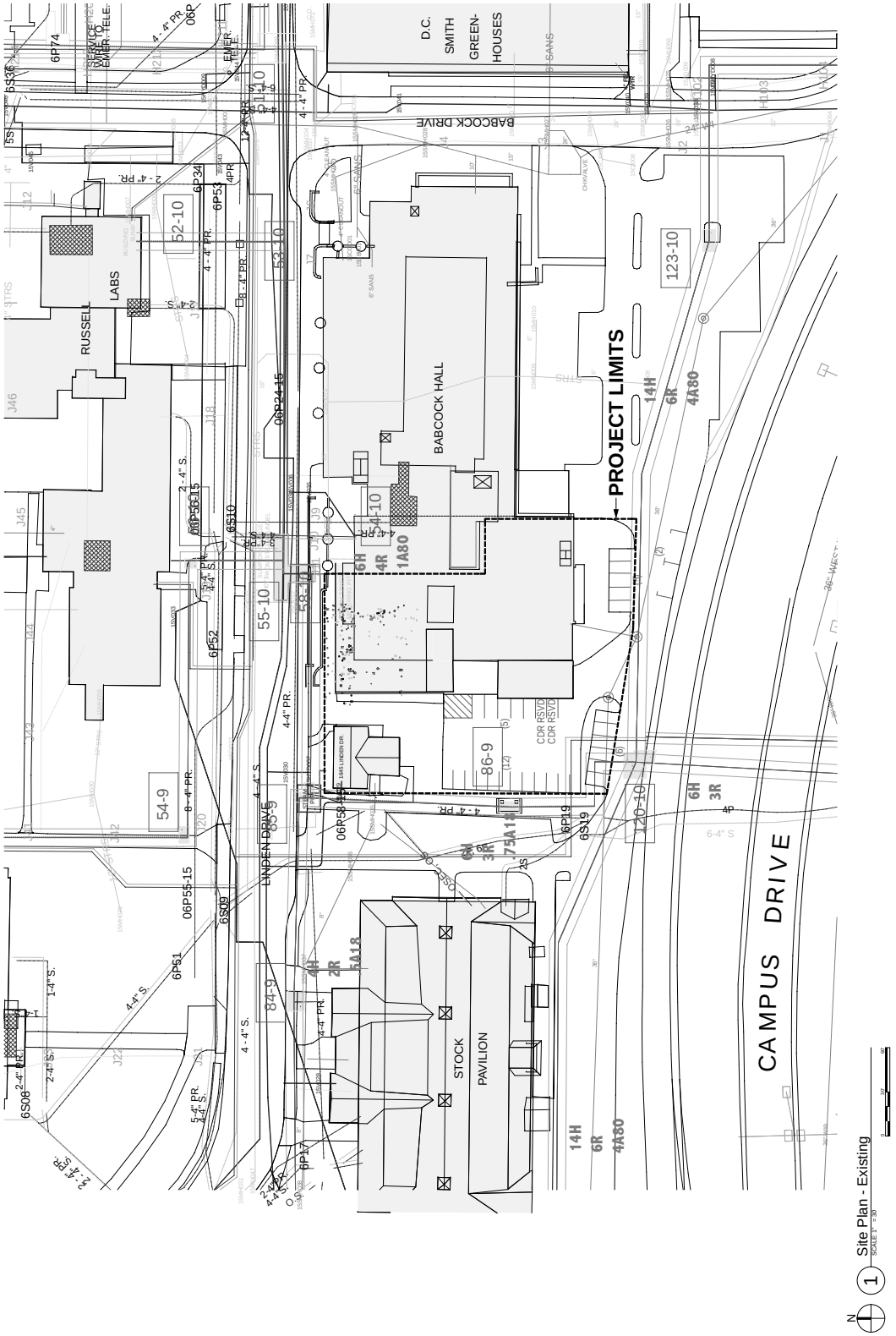
Security Concerns
The current Dairy Plant facility offers a number of unrestricted access points and includes failing exterior closures. Legitimate access should be electronically monitored per UW Campus standards. This study proposes to increase security and improve circulation throughout the facility.

Delivery & Service Access
The existing intake garage located on the west elevation is not long enough to accommodate modern milk trucks. The existing loading dock and receiving area located on the south elevation requires new flooring, handrails and dock plates. Consideration should be given to removing the existing roof and rebuilding a new roof at a higher elevation.

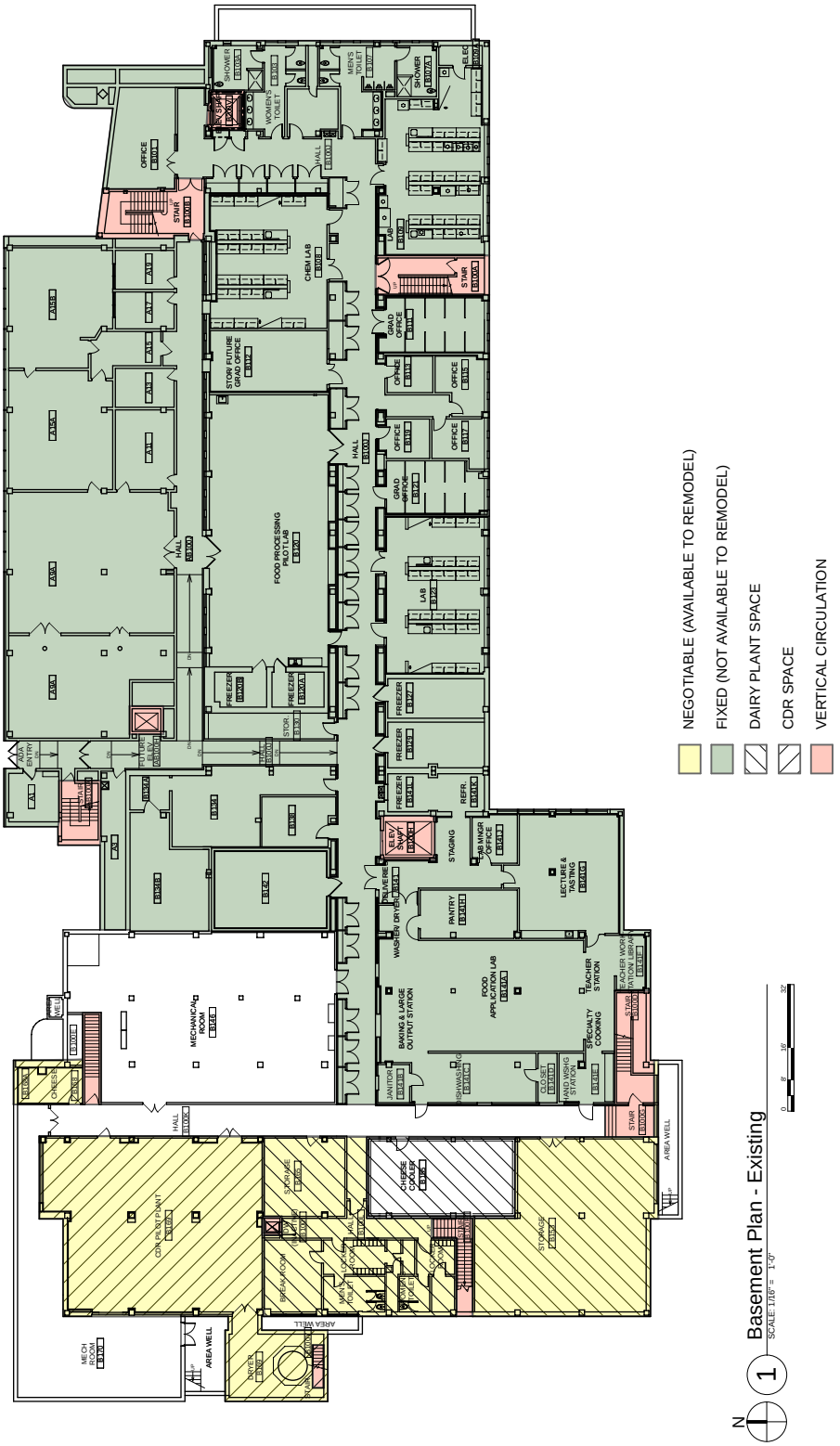
The existing freight elevator does not serve the third/penthouse level, which would make mechanical deliveries more convenient. Maintenance access is

restricted to stairs from the second floor. Consideration should be given to extending a new elevator to the penthouse level.

A special issue is the delivery and/or removal of large items, especially related to process equipment. The existing receiving area and freight elevator have certain space limitations, so that bulky equipment may need to be broken down and reassembled in place.

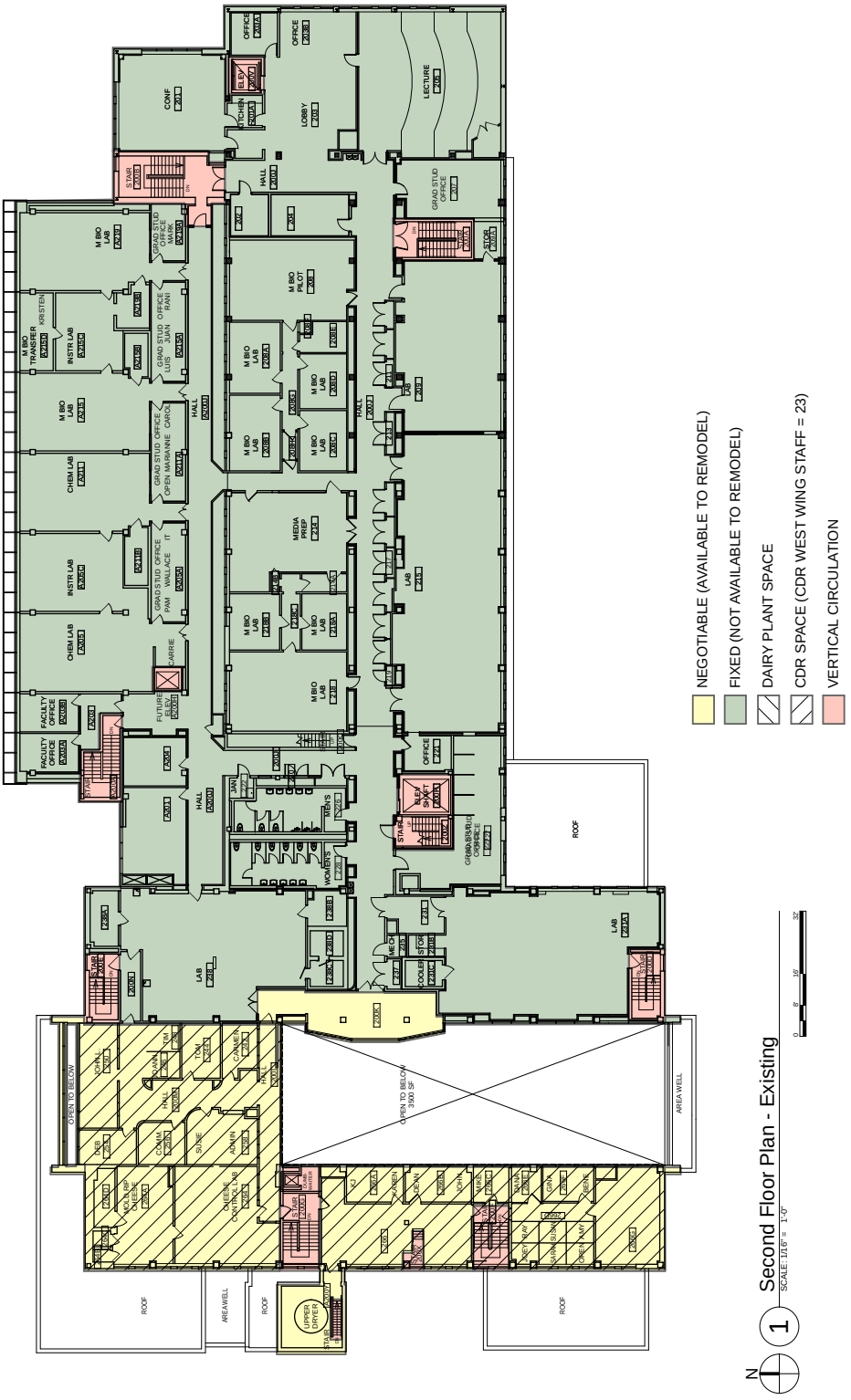


Site Plan - Existing

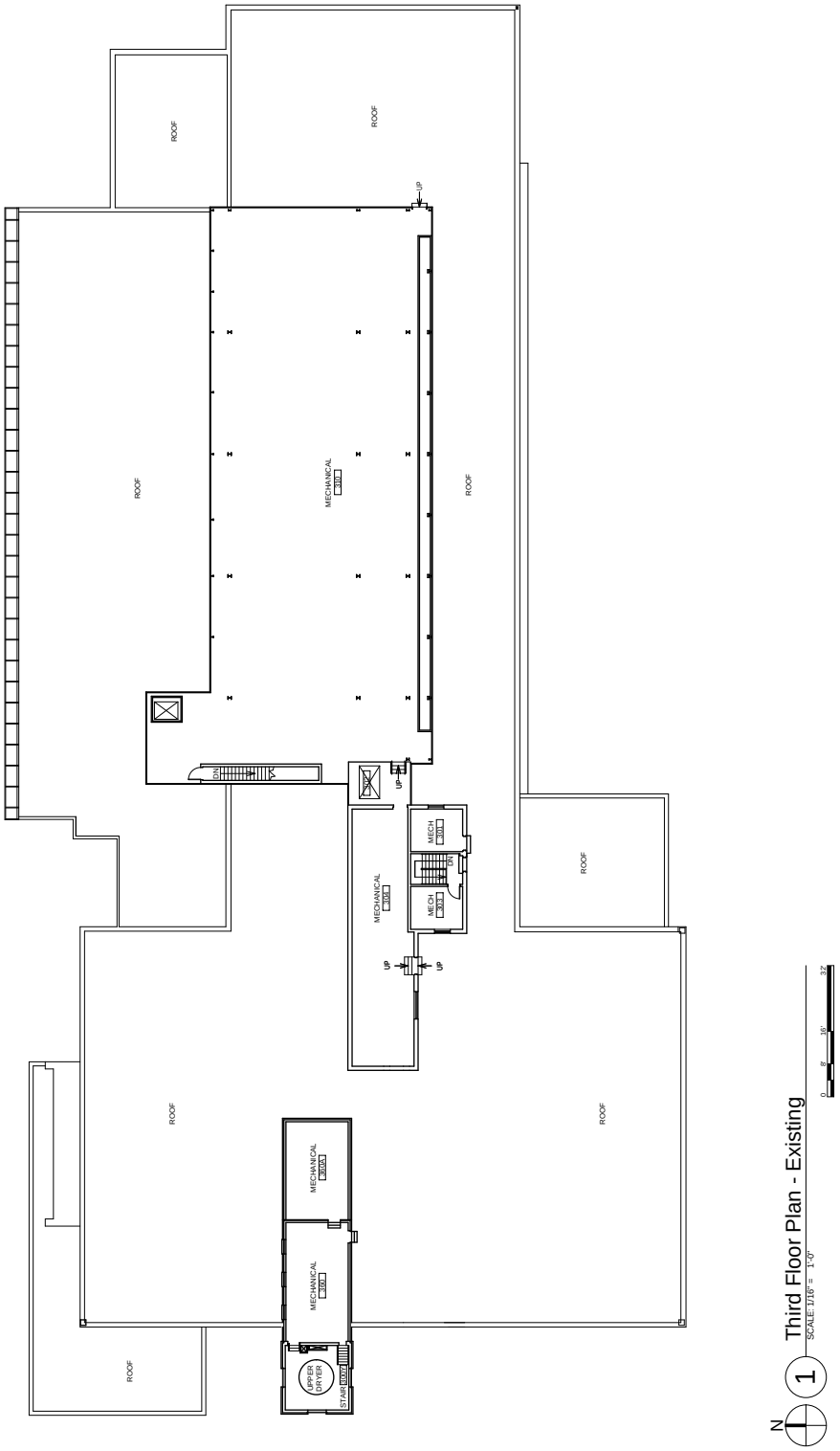


Basement Plan – Existing

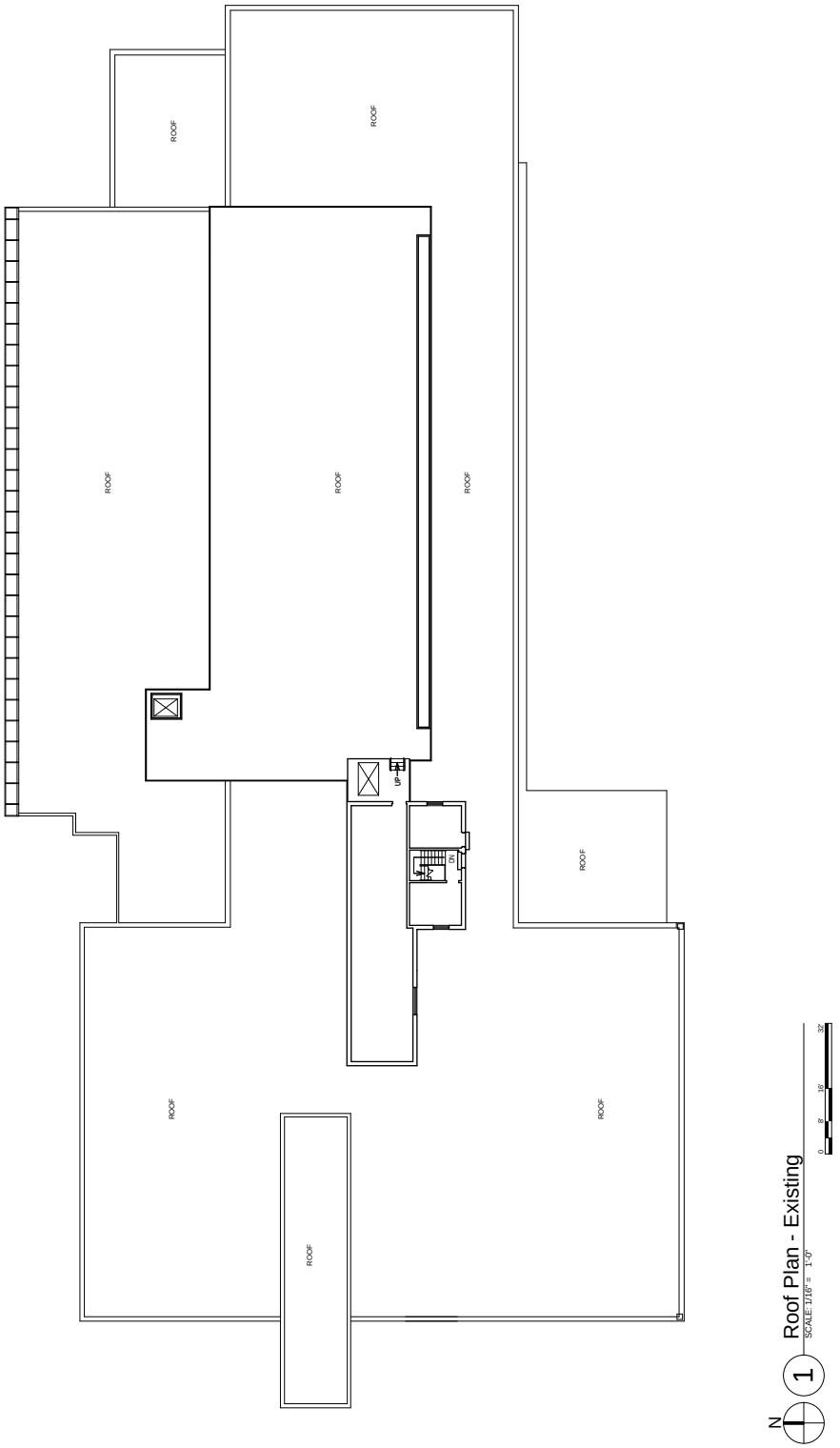
First Floor Plan - Existing



Second Floor Plan - Existing



Third Floor Plan – Existing



Roof Plan - Existing

North Elevation

Science House

Intake Garage

South Elevation

CDR Pilot Plant (Basement)

Staff Break Room (Basement)

Main Mechanical (Basement)

NW Mechanical (Basement)

Low Ceiling Plant (First Floor North)

High Ceiling Plant (First Floor South)

Dairy Plant Utility curb (First Floor)

Dairy Plant Floor Drain (First Floor)

Observation (Second Floor)

Applications Lab (Second Floor)

Storage & Offices (Second Floor)

Open Offices (Second Floor)

Option A Concept

The key site constraint for Option A was the retention of the existing Science House structure to the northwest. The CDR addition was developed to the south of Science House, which limited building visibility, footprint size and future expansion.

Option A suggests a 23,002 gross square foot (gsf) addition to the west, with a basement footprint of 6,649 gsf.

The basement of the CDR addition would contain non-cheese lab space. The first floor of the addition would contain cheese lab space. The second floor of the addition would contain application labs and a multipurpose flat-floor auditorium space seating 99. All three primary floors would include circulation and support functions in a lobby element. The third floor of the addition would contain a mechanical penthouse serving all levels.

Option A includes a comprehensive remodeling of the Dairy Plant.

Dairy Plant Demolition
The existing northwest mechanical room, dryer tower and intake will be completely demolished to make room for the new CDR addition. The remainder of the basement, from Hall (B100K) west, will be partially demolished to serve new functions. Two stairs and a dumbwaiter will be removed. Staff toilets, lockers and break spaces will be removed and rebuilt with ADA-compliant features. Only the Cheese Cooler (B155) and the Storage Room (B165) will remain untouched.

The first floor will be completely demolished and rebuilt with new finishes, equipment and engineering systems. Once the process equipment can be disconnected and removed from the space, the walls, floors and ceilings will be demolished to the underlying structure. The utility curbs, floor tile, waterproof membrane and metal floor drains will be removed, leaving only the concrete structural slab.

The second floor will be completely demolished and rebuilt with new finishes and engineering systems. The existing Observation area will be removed.

The mechanical penthouse east of the dryer tower will be demolished.

Dairy Plant Renovation
The basement renovation will include a completely remodeled lab space (former Room 36) that will continue to be shared by CDR and Food Science. Staff toilets, lockers and break spaces will be rebuilt to comply with modern code requirements. A secure hall will connect with the new CDR addition.

The first floor renovation will include 12,000 gsf dedicated to Dairy Plant functions. New floor drains, waterproofing and floor tile will be added to the existing structural concrete slab to assure proper drainage. Utility connections to all process equipment will be routed from above rather than from below. Fixed cooler and freezer spaces will supplement new and existing process equipment. A new intake addition with silos and connectors will be constructed to the south. The existing Dairy Store, freight elevator, receiving area and loading dock will remain in their current configuration.

The second floor renovation will include new CDR staff offices to the north and new cheese ripening rooms to the southwest. Selective new floor construction will provide continuity with existing halls and stairs. The majority of the current mezzanine floor opening will remain.

A new penthouse addition will be constructed and equipped to serve the Plant directly below. The Plant will be properly heated, cooled and ventilated.

Option A Cost Estimate

Project Scope 1: Remodel Basement & First Floor	3,671,072
Project Scope 2: West Addition	14,278,940
Project Scope 3: Remodel Second Floor	992,600
Project Scope 4: Equipment & Connections	4,000,000
Total Construction Cost	$22,942,612
Total Soft Cost	$5,637,000
Total Project Estimate	$28,579,612

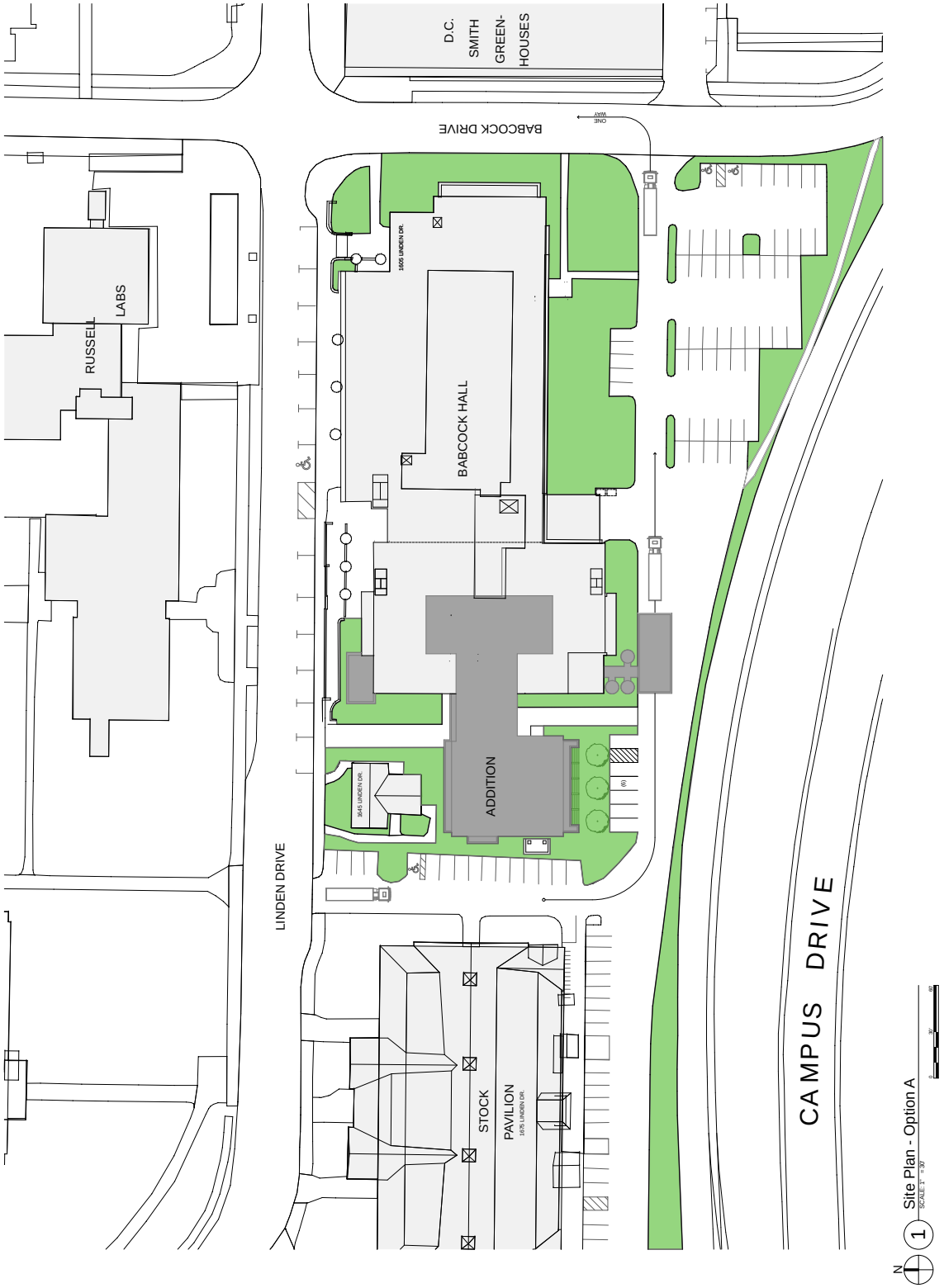
Option A Schedule Estimate

The cost estimate above assumes a construction start in fall 2015 and a total construction interval of 30 months. The addition construction would be 15 months, followed by a transition interval of 3 months, followed by a remodeling construction interval of 12 months.

In Option A, Science House would remain but selective demolition would begin to prepare the site for the addition. After the addition is complete, CDR would have a three-month interval to move ongoing research projects and staff workstations into the new space. The Dairy Plant would have the same three-month interval to shut down their operation and vacate the space.

When both CDR and the Dairy Plant have vacated the existing space, the remodeling work can proceed.

Construction Start (Scope 2, see above)	October 2015
Construction Complete (Scope 2)	January 2017
Transition Start	January 2017
Transition Complete	April 2017
Construction Start (Scope 1/3/4)	April 2017
Construction Complete (Scope 1/3/4)	April 2018

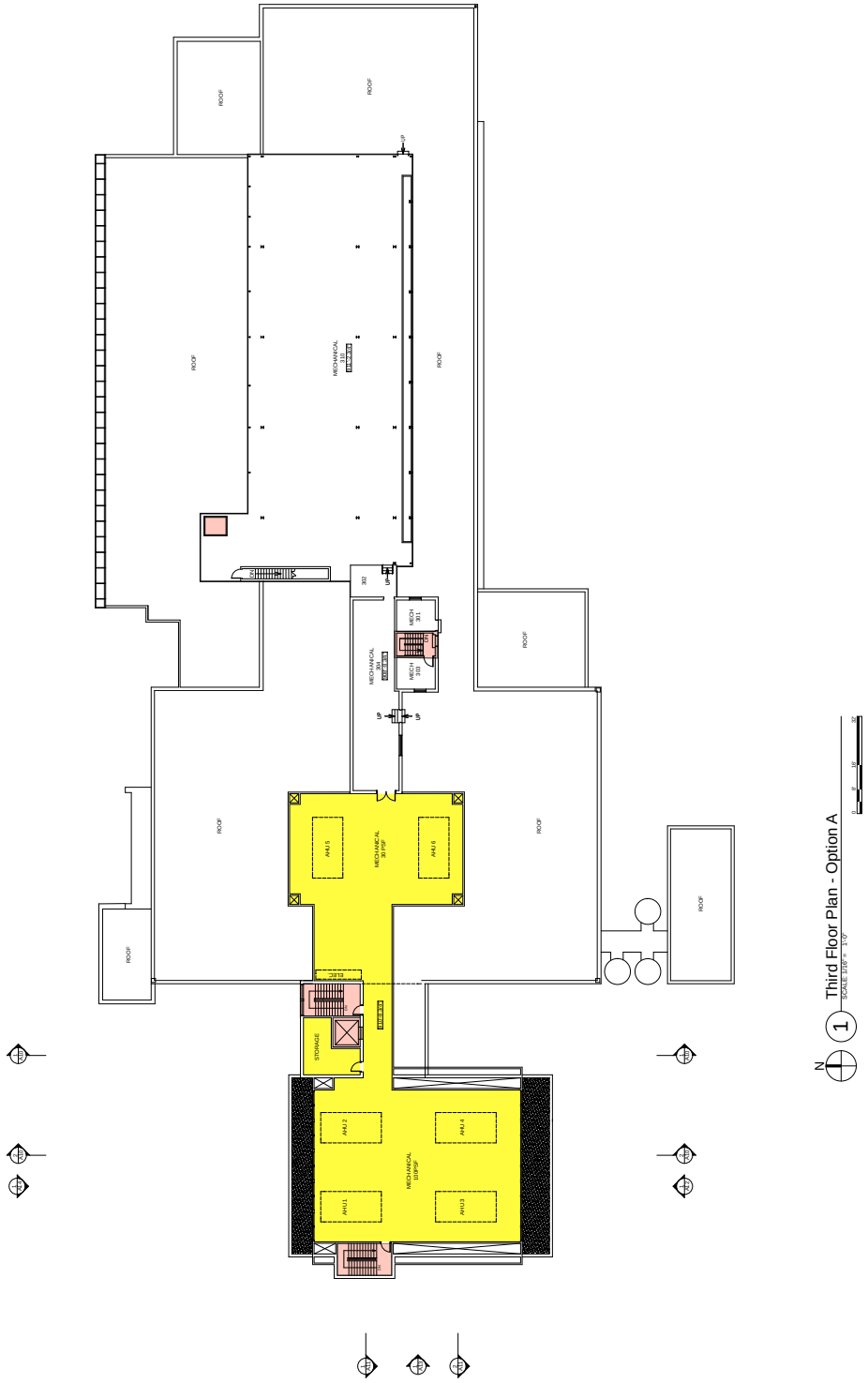


Site Plan – Option A

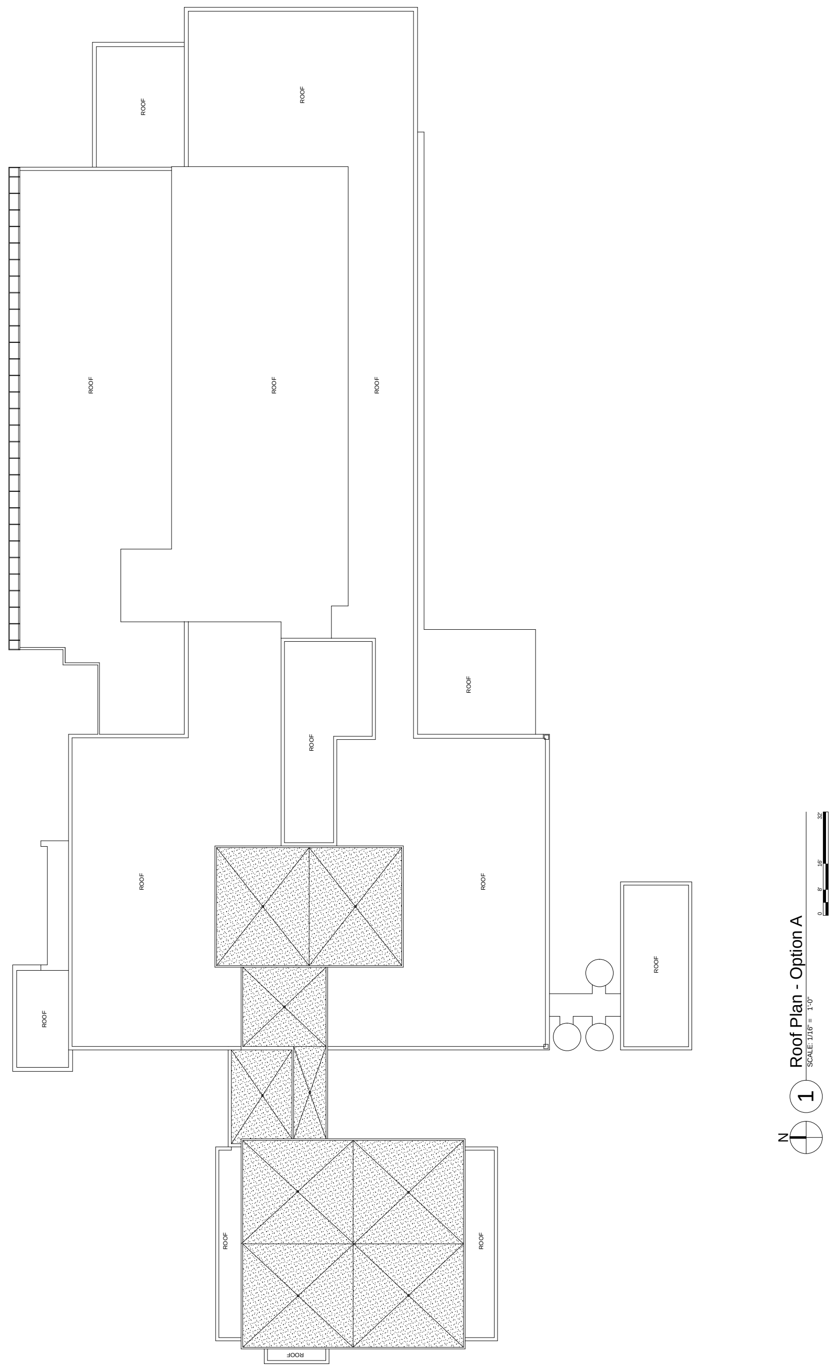
Basement Plan – Option A

First Floor Plan – Option A

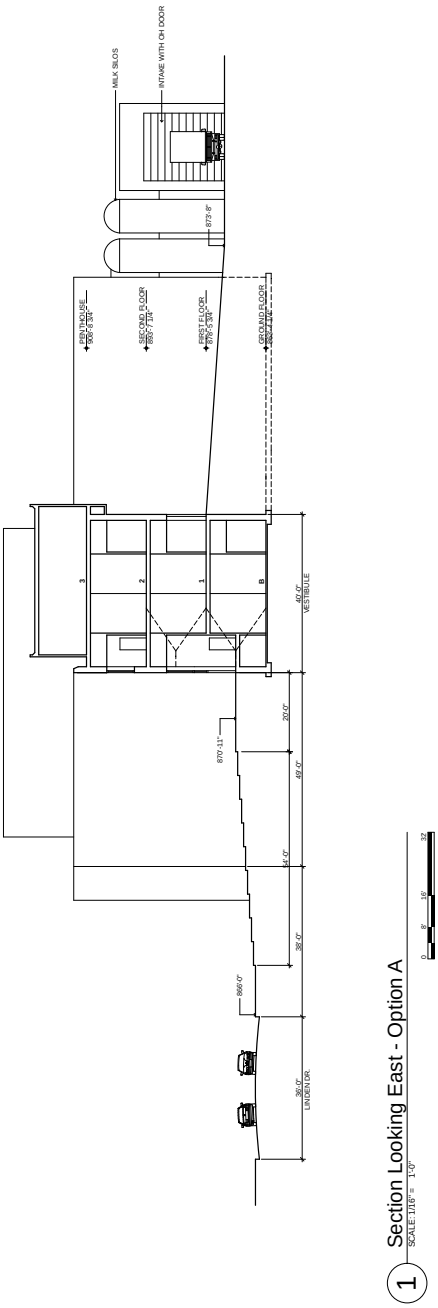
Second Floor Plan – Option A



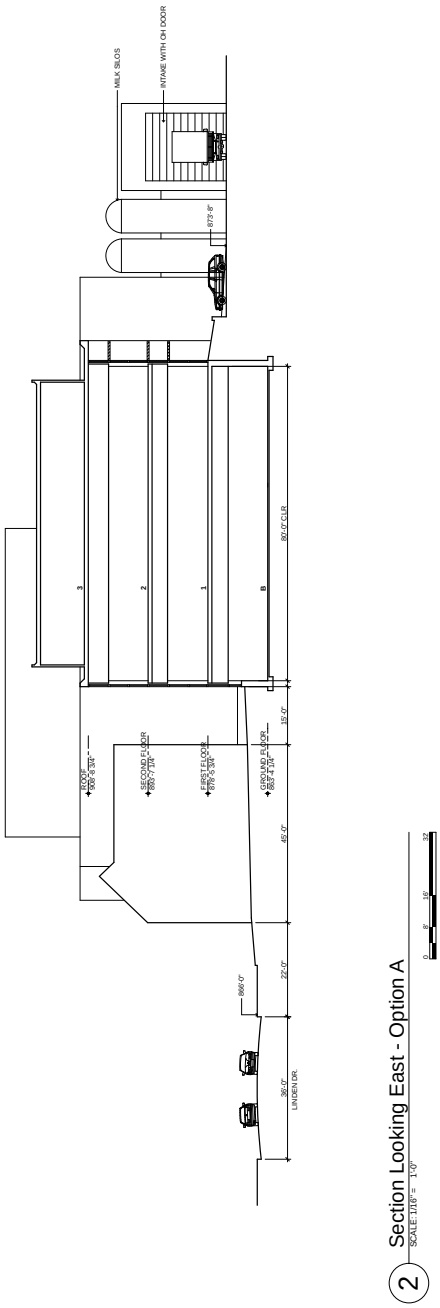
Third Floor Plan – Option A



Roof Plan – Option A

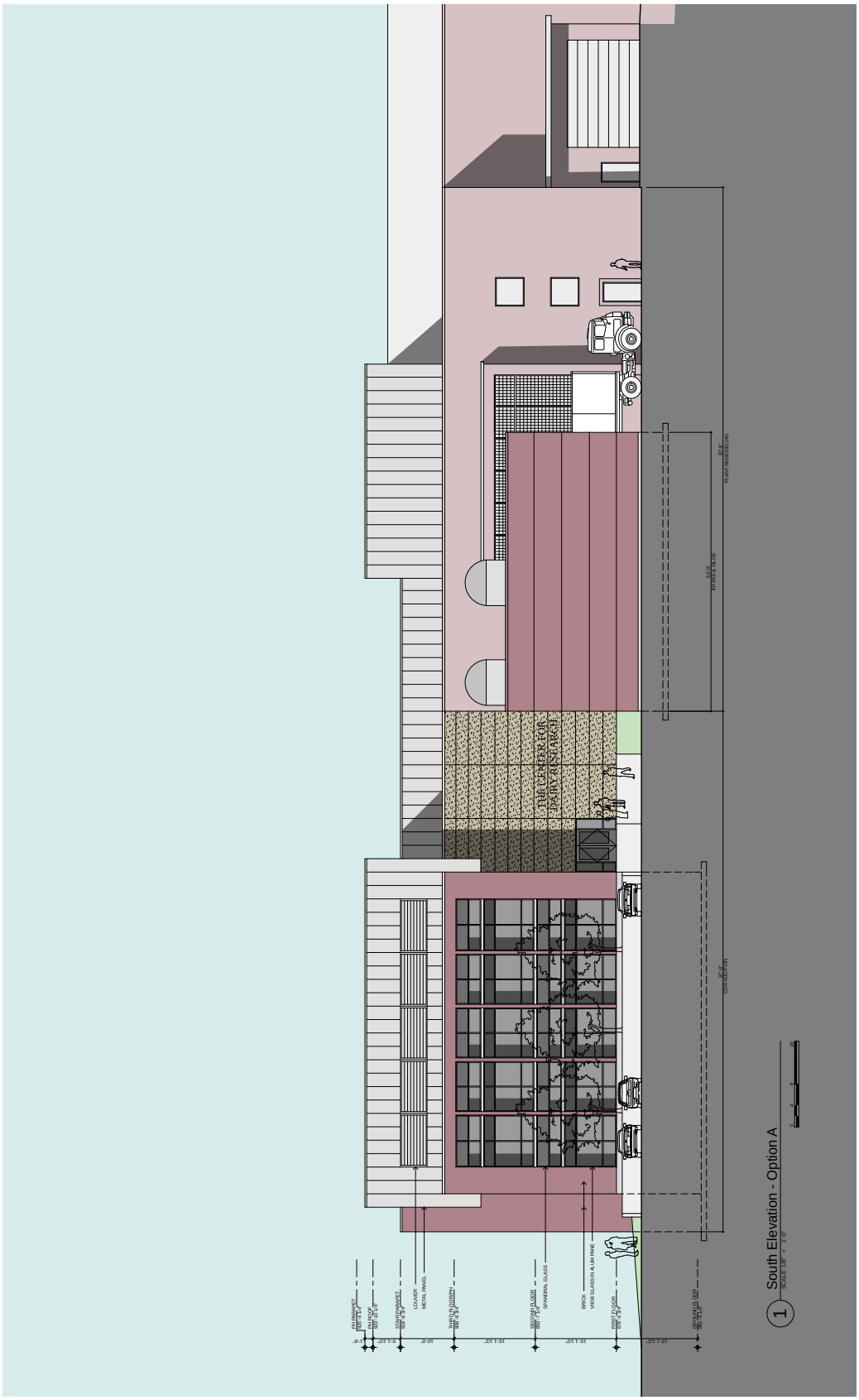


1 Section Looking East - Option A
SCALE: 1/16" = 1'-0"

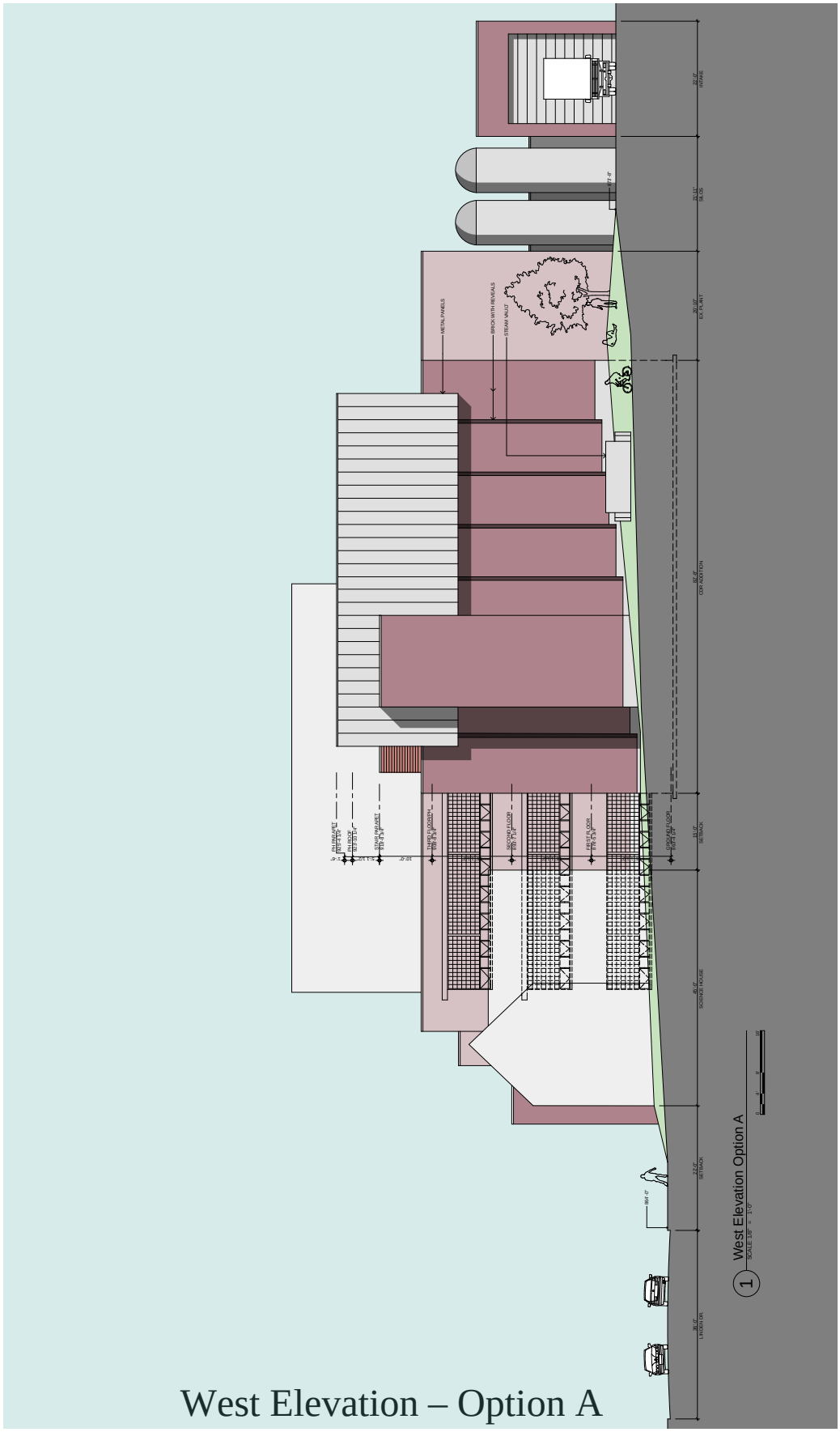


2 Section Looking East - Option A
SCALE: 1/16" = 1'-0"

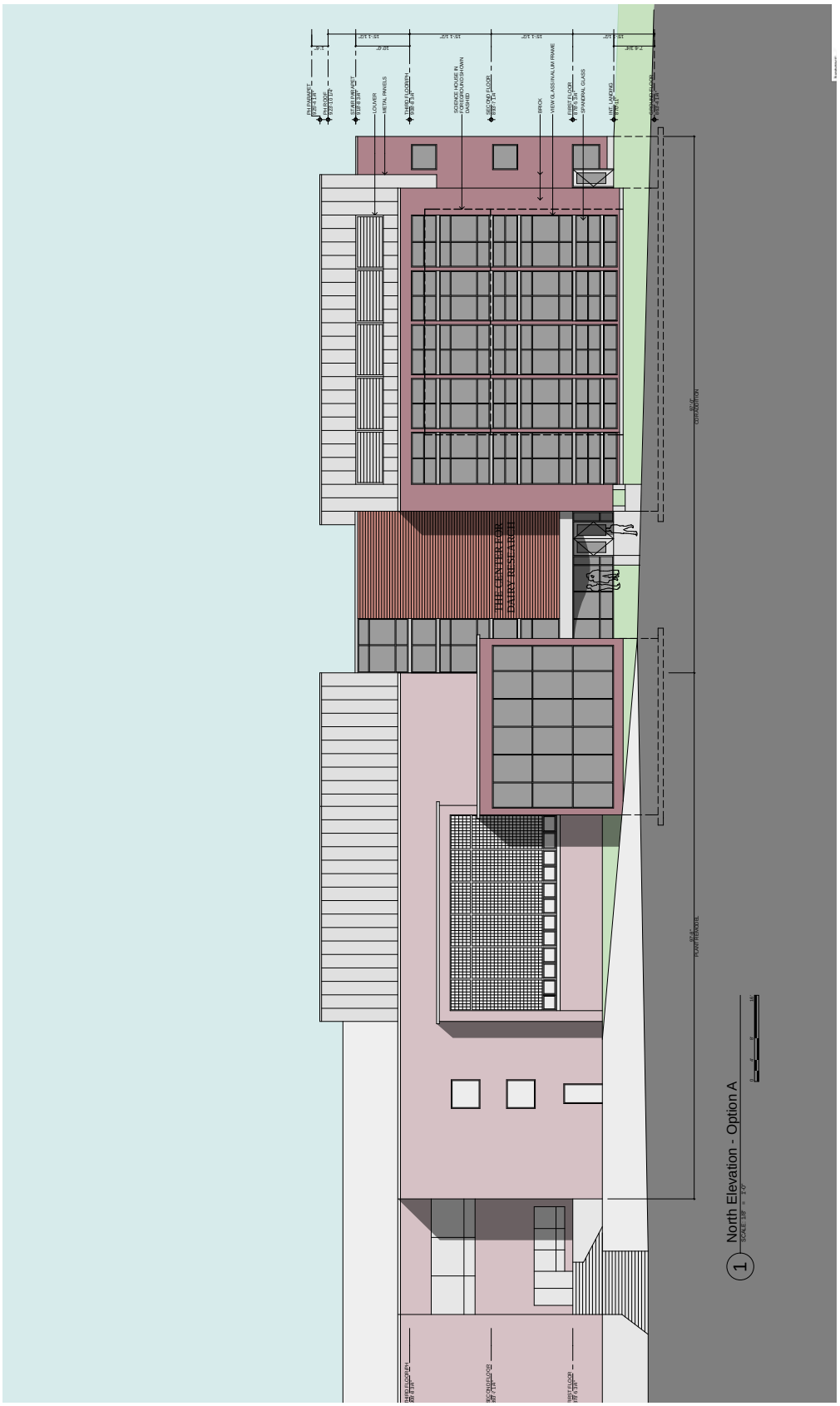
Building Sections – Option A



South Elevation – Option A



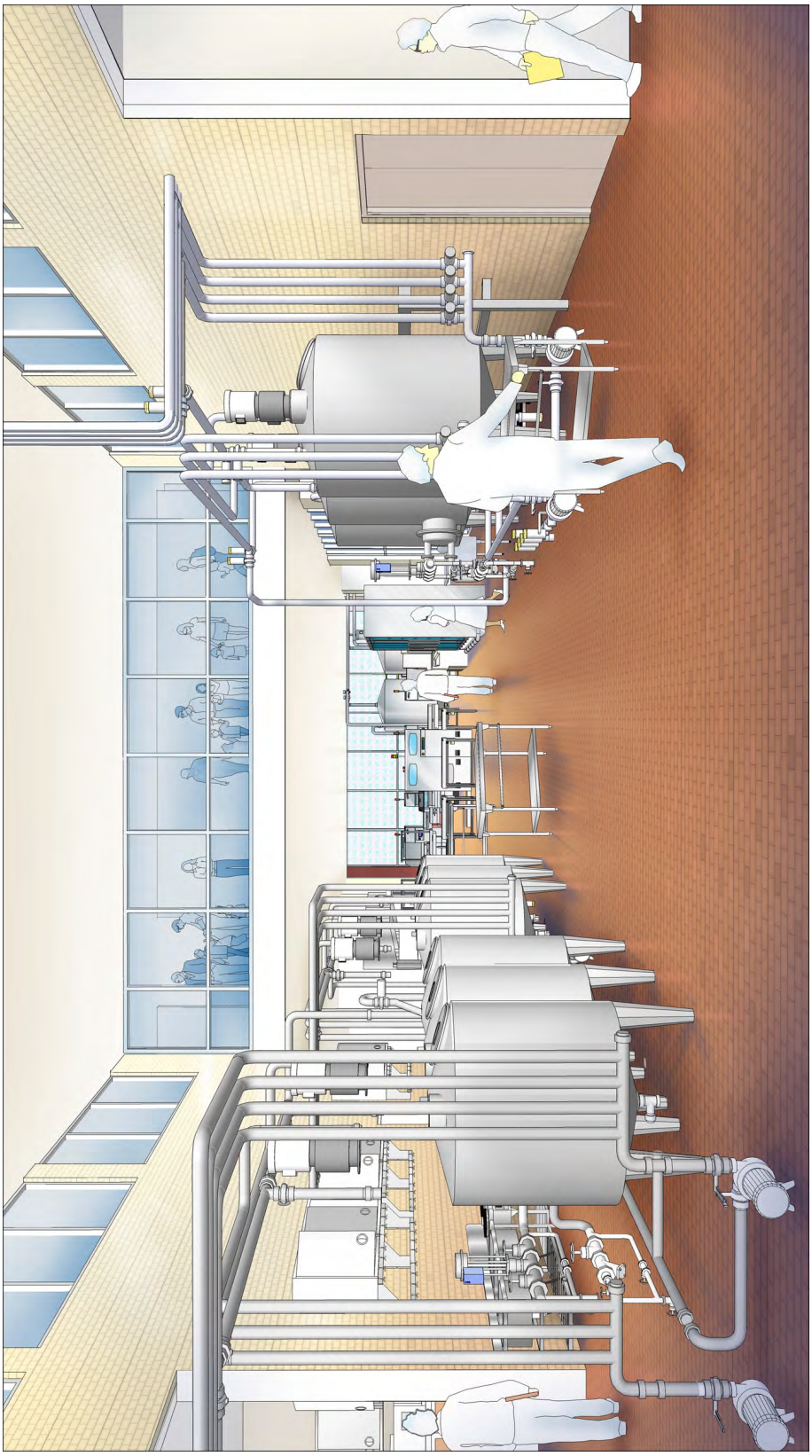
West Elevation – Option A



North Elevation – Option A

Aerial View – Option A

Aerial View – Option A



Plant Floor– Option A

Plant Floor – Option A

Training Floor – Option A

Training Floor – Option A

Option B Concept

The design team was asked to consider a second option that removed Science House and developed the site to its full potential. Option B suggests abating and demolishing the existing structure, relocating the current occupants to another site on Campus. This option would provide better visibility from Linden Drive, a larger potential building footprint, and room to expand in the future.

Option B suggests a 27,234 gross square foot (gsf) addition to the west, with a basement footprint of 8,670 gsf.

The basement of the CDR addition would contain non-cheese lab space, with a high-bay volume to the south for large equipment. The first floor of the addition would contain cheese lab space. The second floor of the addition would contain application labs and a dedicated sloped-floor auditorium space seating 99. All three primary floors would include circulation and support functions in an atrium element. The third floor of the addition would contain a mechanical penthouse serving all levels and a skylight above the atrium element.

Option B includes a comprehensive remodeling of the Dairy Plant. Refer to the discussion of Plant demolition and renovation in Option A above.

Option B Cost Estimate

Project Scope 1: Remodel Basement & First Floor	3,712,347
Project Scope 2: West Addition	14,666,608
Project Scope 2A: Science Hall Demolition & Staff Relocation	750,000
Project Scope 3: Remodel Second Floor	985,118
Project Scope 4: Equipment & Connections	5,504,000
Total Construction Cost	$25,618,073
Total Soft Cost	$6,302,046
Total Project Estimate	$31,920,119

Option B Equipment Breakdown

Dairy Plant Existing Items to be Transferred	600,000
Dairy Plant New Replacement Items	1,625,000
CDR New Non-Cheese Items	2,429,000
CDR New Cheese Items	600,000
Shared New Freezer & Cooler Allowance	250,000
Total Equipment	$5,504,000

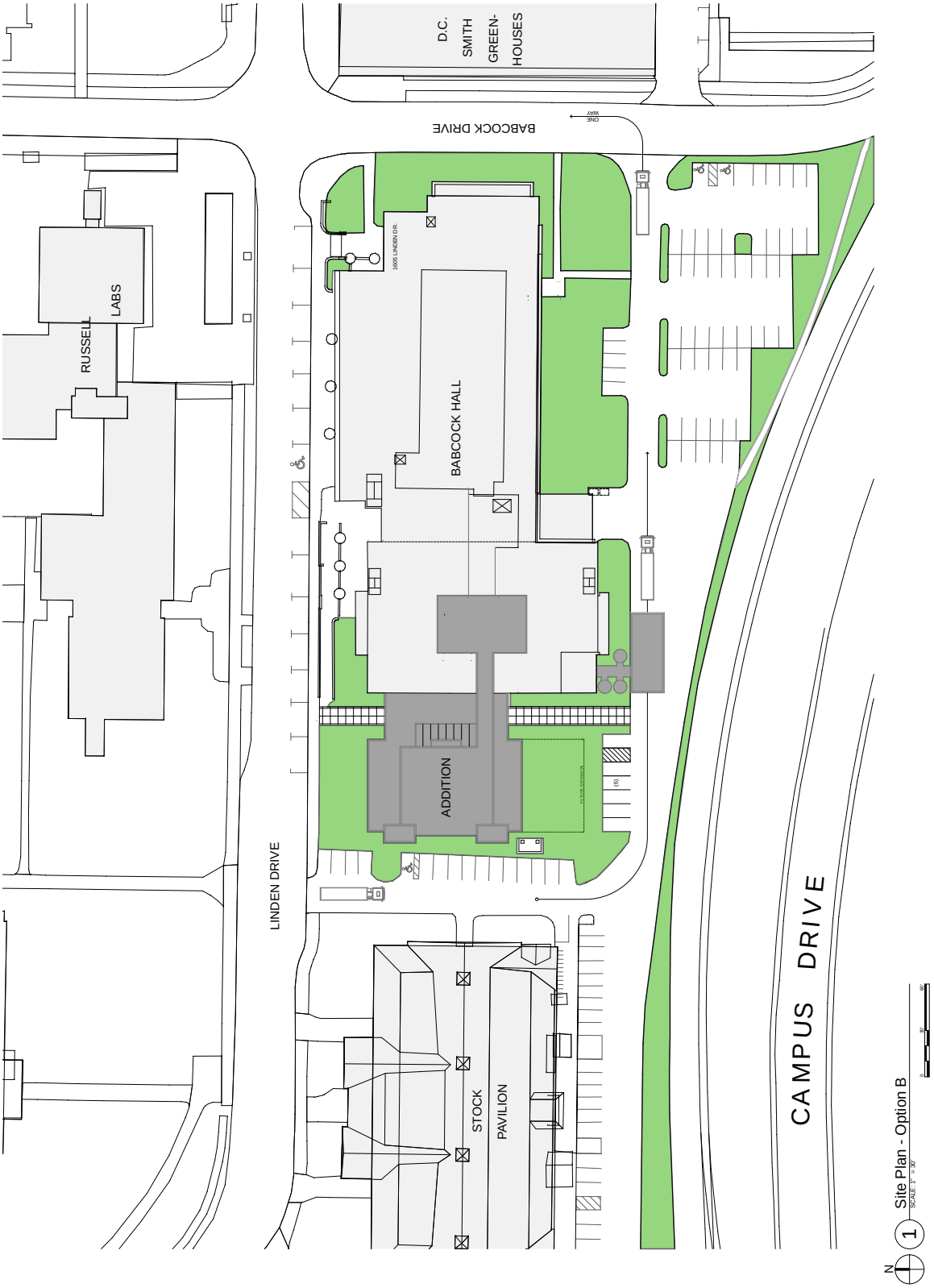
Option B Schedule Estimate

The cost estimate above assumes a construction start in fall 2015 and a total construction interval of 30 months. The addition construction would be 15 months, followed by a transition interval of 3 months, followed by a remodeling construction interval of 12 months.

In Option B, Science House and other structures would be demolished to prepare the site for the addition. After the addition is complete, CDR would have a three-month interval to move ongoing research projects and staff workstations into the new space. The Dairy Plant would have the same three-month interval to shut down their operation and vacate the space.

When both CDR and the Dairy Plant have vacated the existing space, the remodeling work can proceed.

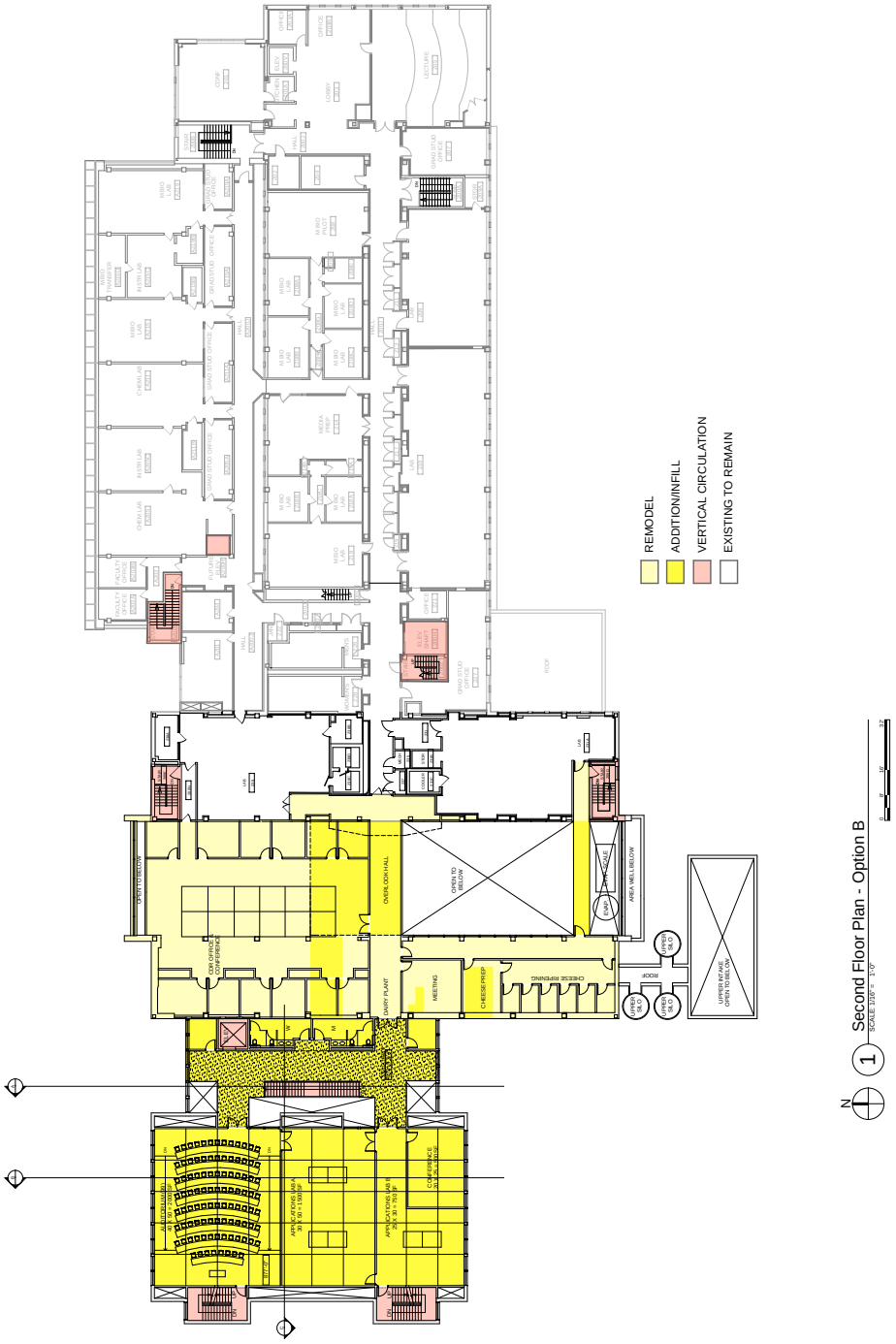
Construction Start (Scope 2/4, see above)	October 2015
Construction Complete (Scope 2/4)	January 2017
Transition Start	January 2017
Transition Complete	April 2017
Construction Start (Scope 1/3/4)	April 2017
Construction Complete (Scope 1/3/4)	April 2018



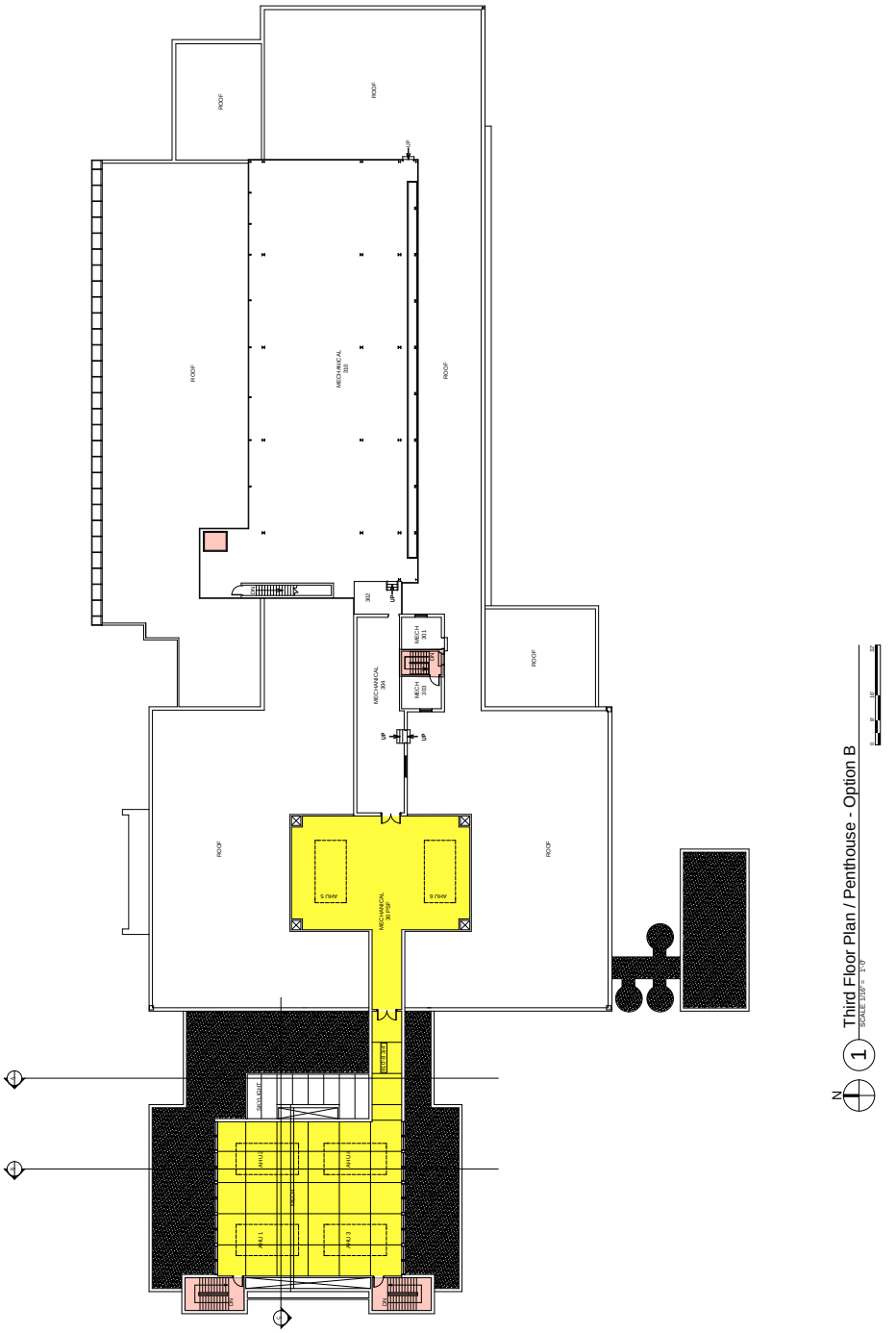
Site Plan – Option B

Basement Plan – Option B

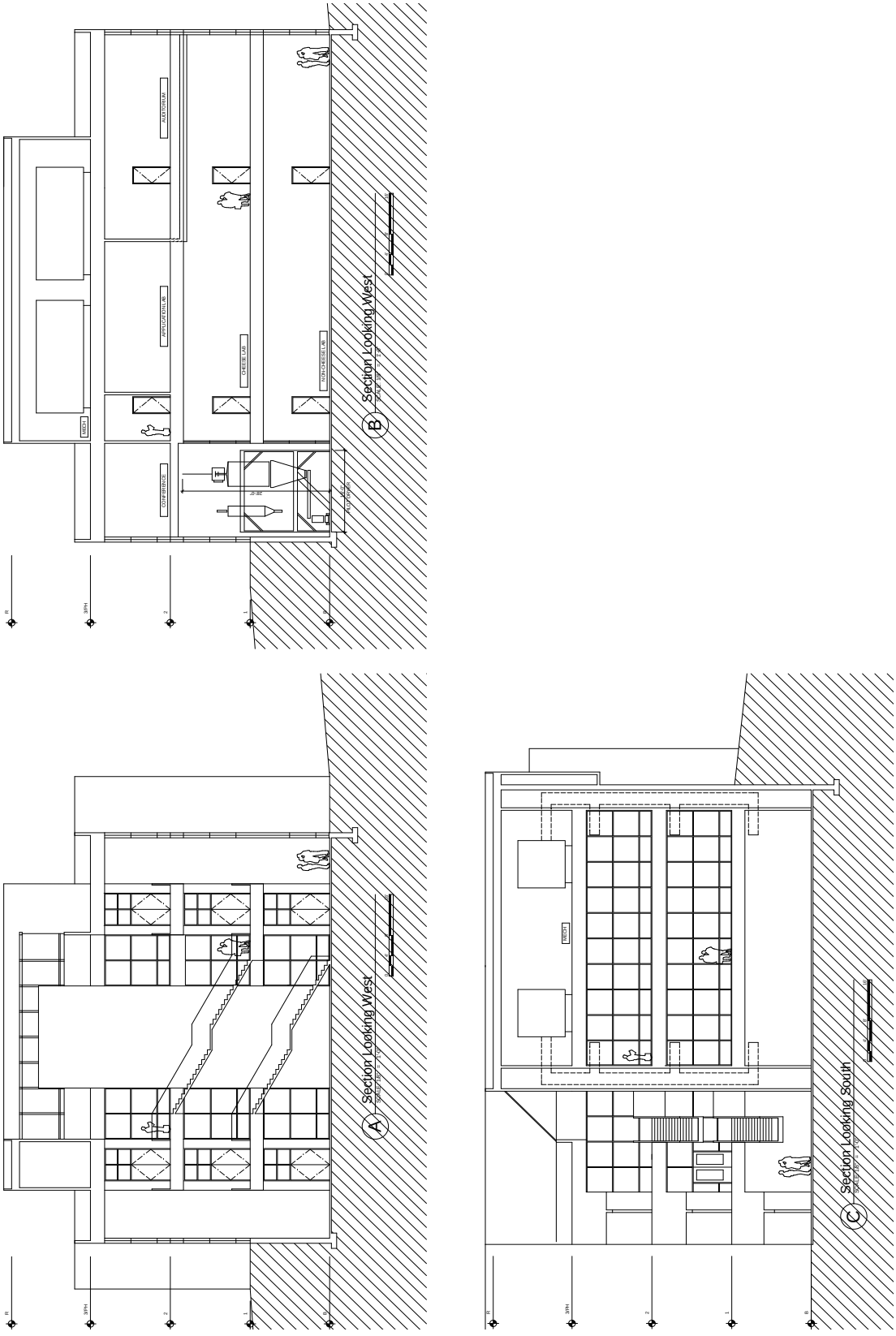
First Floor Plan – Option B



Second Floor Plan – Option B

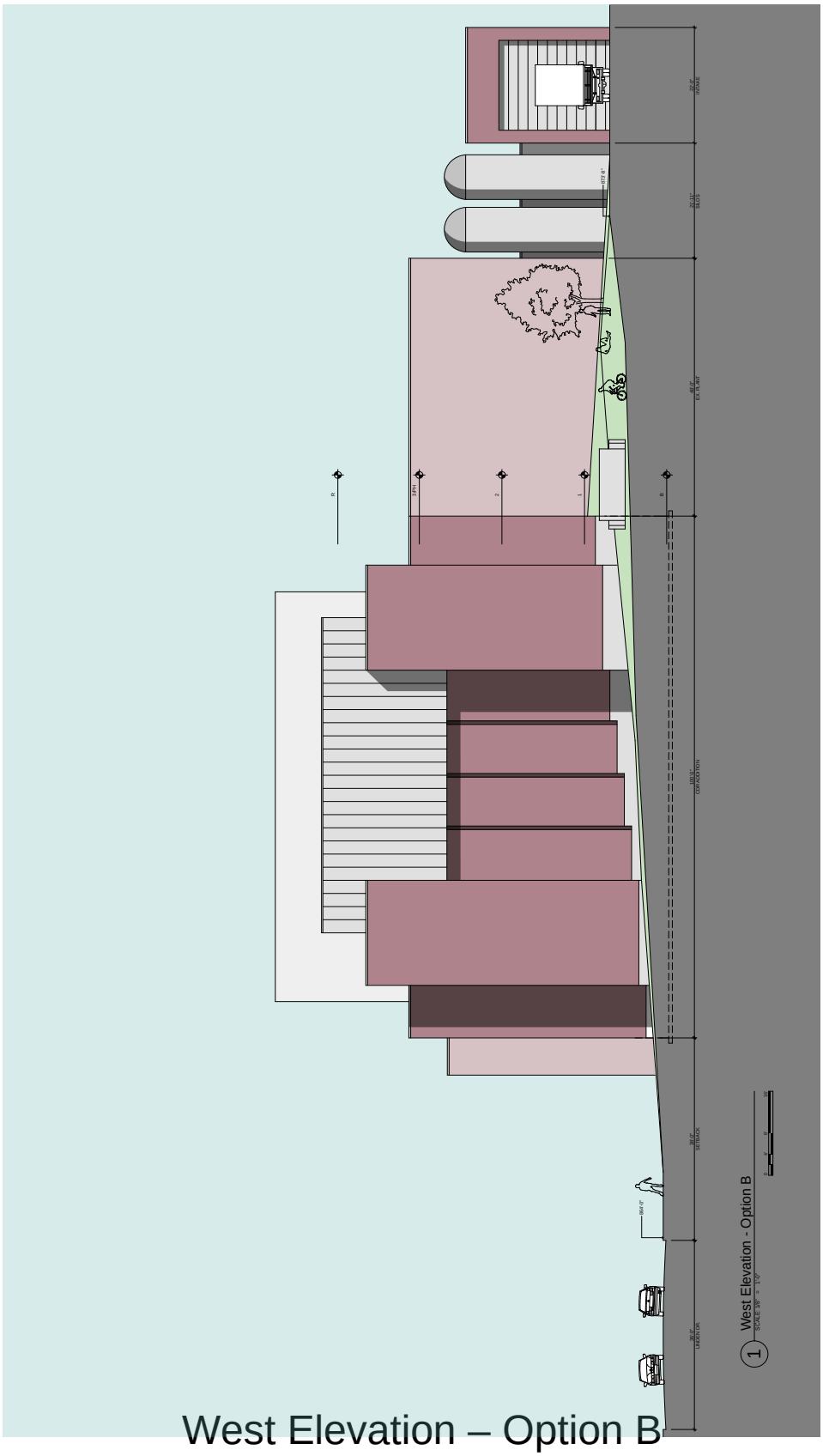


Third Floor Plan – Option B

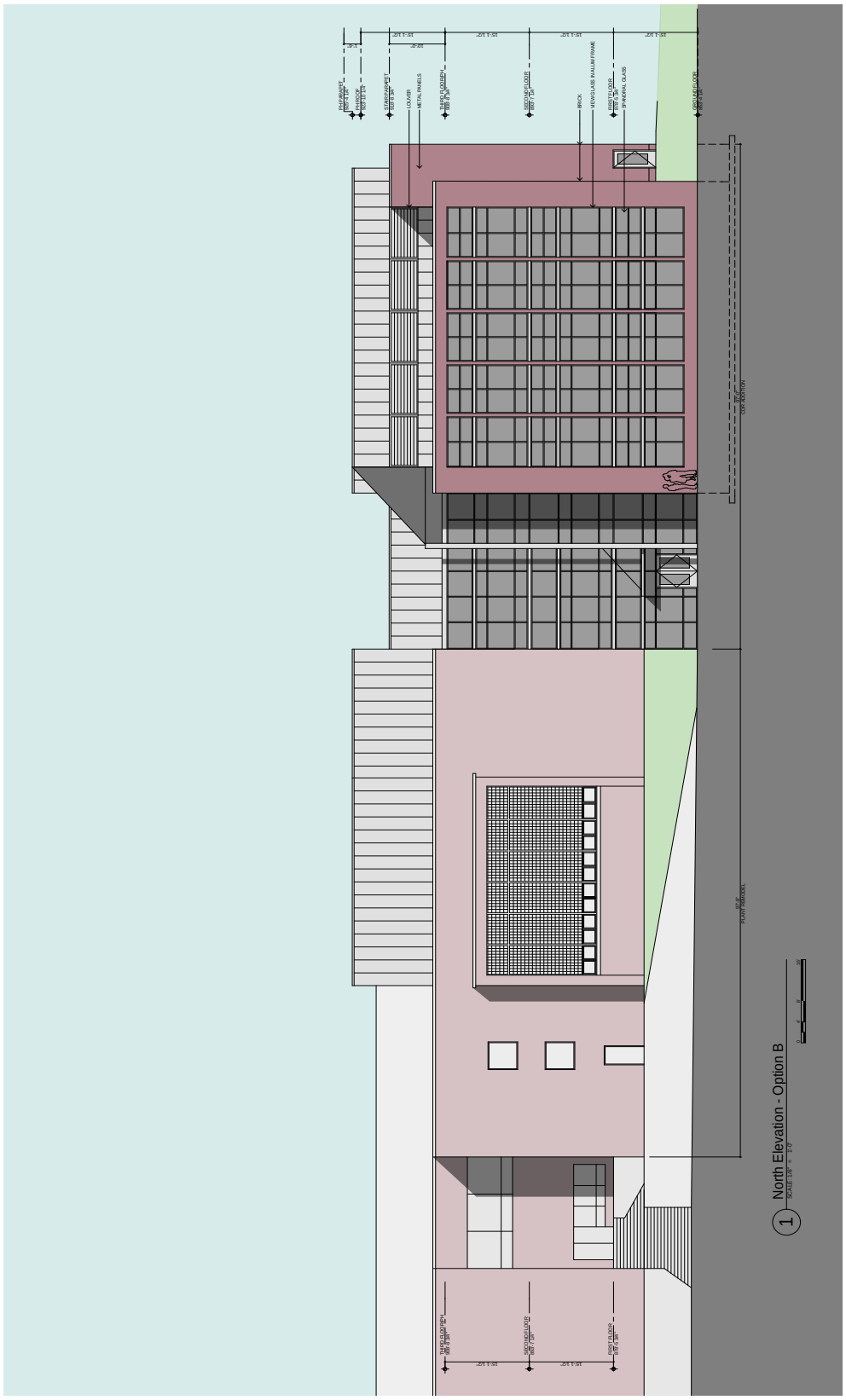


Building Sections – Option B

South Elevation – Option B



West Elevation – Option B



North Elevation – Option B

Approach – Option B

Atrium – Option B

Atrium – Option B

Lecture – Option B

Lecture – Option B

HVAC Systems: New Building/Addition

Heating/Cooling Systems
Steam and chilled water will be extended to the proposed new building addition by one of the following options:

Option #1: New services extended from the campus main systems located to the East and North of the new addition.

Note: The purpose of this option is to minimize the potential service outages, which could result from the extending the existing building systems.

Steam Systems: 4" HPS (175 psig steam) and 2" CR (condensate return) and 3" CA (compressed air) will be extended from the existing steam pit located just south of the existing Science House. This existing steam pit will be modified to integrate with the basement construction of the addition so that the new services can be extended directly into the building without box conduit.

A new pressure reducing station assembly located in a basement utility room will reduce the incoming steam pressure to multiple steam pressures as needed for the equipment in the new building. It is expected that there will be at least two (2) building working pressures – 60 psig and 15 psig. Currently the existing building reduces the incoming pressure to 125 psig, 80 psig, 40 psig, and 15 psig. Individual steam pressure valve assemblies will be required for each desired reduced pressure.

Steam meters will be installed in each steam pressure piping and a meter will be installed in the main condensate return pipe.

Steam system and CA piping will be extended to the process and heating equipment located throughout the new building addition and penthouse.

Chilled Water System: 8" CWS and 8" CWR piping will be extended from the campus mains located in the street North of the building. New mains will be direct buried and will be routed west of the existing Science House and into a basement utility room of the addition.

Chilled water piping will be extended to HVAC equipment located in the penthouse.

This chilled water system will not serve any process equipment. Any dairy process equipment requiring 35F chilled water ("sweet water") will be served by the existing "sweet water" system now located in the northwest corner of the basement (Room B170). Before Room B170 is demolished, the existing system will be upgraded and relocated to Room B146 by an independent project.

Heating system water will be heated by steam-to-water heat exchangers. Heating water piping will be extended to heating equipment throughout the building and circulated by (2) base-mounted pumps controlled by variable frequency drives.

Option #2: Services will be extended from the existing building systems to the basement mechanical room in the new addition.

Note: This option will be dependent on further evaluation of the existing systems and discussion with DSF regarding extending HPS through the building.

Steam Systems: HPS (175 psig steam) and CR (condensate return) and CA (compressed air) will be extended from the existing services located in the existing basement mechanical room (Room B146) to a basement mechanical room in the new addition.

A new pressure reducing station assembly located in a new basement mechanical room will reduce the 175 psig steam pressure to multiple steam pressures as needed for the equipment in the new building. It is expected that there will be at least (2) building working pressures – 60 psig and 15 psig. Currently the existing building reduces the incoming pressure to 125 psig, 80 psig, 40 psig, and 15 psig. Individual steam pressure valve assemblies will be required for each desired reduced pressure.

Steam meters will be installed in each steam pressure piping system and a meter will be installed in the main condensate return pipe back to the existing service entrance.

Steam system and CA piping will be extended to the process and heating equipment located throughout the new building addition and penthouse.

Chilled Water System: CWS and CWR piping will be extended from the existing services located in the existing basement mechanical room (B146) to a basement mechanical room in the new addition.

Chilled water piping will be extended to new HVAC equipment located in the new addition penthouse.

This chilled water system will not serve any process equipment. Any dairy process equipment requiring 35F chilled water ("sweet water") will be served by the existing "sweet water" system now located in the northwest corner of the basement (Room B170). Before Room B170 is demolished, the existing system will be upgraded and relocated to Room B146 by an independent project.

Heating system water will be heated by steam-to-water heat exchangers. Heating water piping will be extended to heating equipment throughout the building and circulated by (2) base-mounted pumps controlled by variable frequency drives.

Air Handling Systems
The new building addition with be heated, cooled, and ventilated by multiple air handling systems.

The air handling system serving the basement CDR Research area will be a variable air volume system with an AHU located in the new Penthouse. It is not expected that this system will be required to meet FDA standards for washdown and cleaning. The AHU will include an integral face and bypass (IFB) steam preheating coil, chilled water coil, 30% and 65% filter banks, supply and return/relief fans.

The air handling system serving the first floor CDR Research area will be a variable air volume system with an AHU located in the new Penthouse. It is not expected that this system will be required to meet FDA standards for washdown

and cleaning. The AHU will include an integral face and bypass (IFB) steam preheating coil, chilled water coil, 30% and 65% filter banks, supply and return/relief fans.

The second floor CDR Training & Conference areas will be served by (2) air handling units. One AHU will serve the Conference/meeting areas. This air handling unit will also serve the 2nd floor CDR Conference and Office spaces in the existing building. The other AHU will serve the Training areas on the 2nd floor of the new addition. Each AHU will include a steam preheating coil, chilled water coil, 30% and 65% filter banks, supply and return/relief fans.

Exhaust Systems:

General exhaust systems including roof-mounted exhaust fans will serve the toilet rooms, copy rooms, storage rooms and the penthouse areas.

Dedicated exhaust systems including roof-mounted exhaust fans will be installed to ventilate the elevator machine room, electric room and lower level mechanical room where the steam services are located.

Kitchen exhaust hoods with dedicated roof-mounted, upblast grease system exhaust fans will be installed in the 2nd floor CDR Training area. Each exhaust hood will include a self-contained wet-agent fire suppression system.

Auxiliary Heating Systems:

Vestibules, storage rooms, penthouse areas and similar spaces will be heated by hot water cabinet unit heaters, unit heaters, or baseboard radiation.

Temperature Controls:

The existing Direct Digital Control (DDC) system will be modified to accommodate the HVAC system modifications. When this project is complete, all elements of the expanded system will be digitally coordinated with one another.

Electrical Systems: New Building/Addition

Normal Power Distribution

Normal power in the new addition will be extended from the existing 208Y/120 volt main switchboard and 480Y/270 volt main distribution panel located in the basement main electrical room B134. New panelboards will be provided at locations on each floor to serve associated facility loads. Generally, lighting and receptacle load will be served from separate panelboards from those serving production area equipment loads. 20 volt receptacle panels shall be provided at a density of about one for every 5,000 square feet, unless otherwise shown on the plans.

The existing 240 volt Δ (delta), 3 phase, 3 wire distribution system serving existing production equipment isn't an industry standard distribution system. Since it is unknown at this time if new or relocated equipment will require a 240 V Δ source, this distribution system would not be extended to the new addition. If a 240V Δ distribution arrangement is required, it could be readily extended from an existing distribution panelboard.

The project electrical contractor shall provide motor starters not integral with

HVAC or plumbing equipment. Starters for 3 phase motors shall be combination magnetic type. Starters for single phase motors shall be manual type. Combination starters shall have hand-off-auto switches and indicating pilot lights.

Duplex receptacles shall be heavy-duty specification grade. All receptacles installed in dairy production areas, above counters that have sinks, restrooms and outdoor shall be Ground Fault Circuit Interrupter (GFCI) type. All receptacles shall be grounded type and rated at 20 amperes.

Individual dedicated circuits shall serve all duplex receptacles indicated for specific equipment. GFCI circuitry shall be provided for each piece of equipment in wash down areas.

General purpose receptacle circuits shall have an average of 6 and a maximum of 8 duplex outlets on a 20A, 1-pole circuit. Receptacles circuits serving electronic equipment (computers, small printer and etc) shall have no more than (4) outlets connected to a single circuit.

Emergency and Standby Power Distribution
Exit signs and egress illumination required by IBC Chapter 27 and NEC 700 would be powered by extending the existing emergency power panel “18” located in main electrical room B134.

However, “standby power” system(s) defined by IBC Chapter 27, NEC 701 and 702 would be available only with modifications to the existing emergency power supply system (EPSS). Such modifications would involve reconfiguring the feeder from the existing generator set, and addition of up to two (2) automatic transfer switches (ATSs). A new generator is not required for this project.

Lighting Systems
All areas will be provided with new lighting fixtures complete with lamps, high frequency electronic ballasts, lenses, and miscellaneous hangers/mounting components.

All lighting will be hung from the building structure independently of ceiling support system.

All lighting levels will conform to the State of Wisconsin Illumination Code, State of Wisconsin DSF guidelines, and the Illuminating Engineering Society's recommendations. Lighting levels indicated are average, maintained foot-candles. Expected light sources and controlling means have been considered, but actual fixture selections are not included at this time. Fixture selections are a function of ceiling heights, aesthetic desires, budget constraints, and other architectural and project parameters that are not fully identified at this preliminary stage.

Lighting design and controls will conform to the State of Wisconsin Illumination Code, State of Wisconsin DSF guidelines, and the Illuminating Engineering Society's recommendations.

Interior lighting will utilize long life T8 linear fluorescent lamps, 3000 lumens/lamp or better, 5000 degrees Kelvin, and LED sources circuited to respective 120 volt panels. Exterior lighting will be designed to campus

standards, including building mounted security fixtures controlled by photocell and time switch.

Fire Detection and Alarm System
This existing Simplex fire alarm system will be expanded to serve all areas within the new facility, including system components for detection, notification, and initiation. Additional power supplies will be provided to accommodate new devices.

Manual pull stations shall be provided at each floor egress and shall be spaced, such that the travel distance to any pull station is less than 200'-0".

Smoke detectors shall be located in corridors, electrical rooms, storage rooms and other locations as required by DSF standards. Corridor spacing will be approximately 30 feet on center.

Smoke detectors shall be photoelectric type. Beam detectors shall be located in open walls as well as large multi-story areas in lieu of photoelectric smoke detectors. Smoke detectors shall operate an alarm verification function via system software.

Duct smoke detectors shall be located at each air handling unit and shall be the ionization type. Duct type smoke detectors shall be located in all major return air distribution systems. Duct detectors will have remote mounted LED and test switches. Duct detectors will also be provided at smoke dampers to initiate damper operation and at each floor's main return air shaft, as required by code.

In compliance with applicable elevator codes for a hydraulic unit with machine room in basement, smoke detectors shall be provided in each elevator lobby and in the elevator machine room. A heat detector shall also be provided within 2' of each sprinkler head in the elevator machine room. The fire alarm system will be programmed to initiate elevator recall functions as required by applicable codes.

Heat detectors shall be provided as required by code and by DSF standards. Heat detectors will be located in mechanical rooms, elevator shafts and in elevator equipment rooms for shunting of elevator power when sprinkled are present.

In general, combination audible/visual (speaker/strobe) devices will be provided throughout the new facility. Visual strobe units shall meet the requirements of ADA, UL and NFPA. Audible units in public spaces shall be speakers with a peak output of 96 dB at 10'-0". Audible devices in mechanical areas or other areas with high ambient noise shall be re-entrant type suitable for such locations.

Building Clock System

Clocks shall be digital type with red numerals. Clocks will be controlled from a Primex GPS receiver system to meet UW Madison campus standards, and utilize FM broadcasting to provide control signals to the individual clocks for correction. Clock power shall be 120 volt AC. Clocks will be provided in all teaching spaces, open offices, corridors and other common areas.

Dedicated power outlet for master clock (transmitter/receiver) will be provided in the building.
Clock correction will be obtained via GPS signal. A GPS antenna will be mounted on the roof of the building.

Lightning Protection System
A lightning protection system would be included for the new facility in accordance with UW Madison campus design standards.

Plumbing & Fire Protection Systems: New Building/Addition

Plumbing Systems
Domestic Cold Water System:

Domestic cold water service to the addition will be extended from the existing 6" water service in the existing lower level mechanical room.

A new water filtration system will be installed to provide fine sediment filtration prior to serving any fixture or process in the both the existing building and the new addition. This system will be located in the existing lower level mechanical room.

Soft cold water will be extended from the existing soft water treatment system in the existing lower level mechanical room to the domestic hot water system serving the new addition.

Domestic Hot Water System:

Steam-to-water heat exchangers will be installed to produce 115F hot water for general use including plumbing fixtures and 140 F hot water for use in processes and food preparation functions in the 2nd Floor CDR Training areas.

A recirculation system will be installed to maintain constant water temperature throughout the systems.

Domestic hot water in the new addition will be supplied with soft water.

Sanitary Sewer System:

A new building sanitary sewer serving the new addition will be extended to the main piping adjacent to the building.

A grease interceptor will be installed to serve plumbing fixtures associated with food service and dish cleaning in the 2nd Floor CDR Training area.

A clear water waste system will be installed to serve floor drains and hub drains throughout the addition, which collect clear water waste such as cooling coil condensate.

Stainless steel floor sinks will be installed in the Lower Level and 1st Floor CDR Research areas to support FDA and GMP requirements associated with Dairy Processes and CIP operation.

Floor drains in mechanical rooms and non-Dairy process/research areas will be medium duty cast iron.

Storm Water System:

A new building storm water sewer serving the new addition will be extended to an adjacent main. This system will serve the new addition roof drainage systems.

Process Equipment and Plumbing Fixtures:

Plumbing (CW and HW) connections to process equipment and plumbing fixtures will be supplied from overhead. Floor boxes and "doghouses" to accommodate connections from below will not be allowed.

Fire Protection Systems
The existing fire protection sprinkler service located in the existing lower level mechanical room shall be modified to accommodate additional zones to accommodate the new building addition. New sprinkler piping will be extended to the new building addition.

The new addition will be fully sprinkled with sprinkler type and configuration as required to meet the hazard requirements and applicable NFPA and City of Madison Fire Department requirements.

Sprinklers in CDR Research/Process areas shall be concealed type and suitable for meeting FDA and GMP requirements.

Site & Civil Utility Systems: New Building/Addition

Water Supply System
The new building addition will use the existing water service in the existing building to service the new addition. A 6 inch lateral from the existing building will be stubbed into the new building addition.

Sanitary System
A new sanitary sewer lateral will need to be installed from the existing sanitary manhole on the northwest side of the site or to the existing sanitary south of the existing building. The new building addition will have a six (6) inch sewer lateral. Invert elevations and capacity needs to be field verified.

Storm Water
There will be no net change in impervious area. Some parking area is being removed and some building area is being added. Therefore storm water management will not be required for the new building addition. Downspouts from the building addition will be connected to the storm sewer on the southeast side of the building. Invert elevations and capacity needs to be field verified.

Site Lighting
Site and path lighting designed to campus standards will be provided along the pedestrian walkways. Voltage of site lighting shall be 120V, single phase, with on/off control by electronic time controls.

Site Grading, Paving, and Design
The site design will meet ADA requirements for access and parking. A city and state approved erosion control plan and NOI permit will be required prior to starting construction. The site area is approximately one acre.

All sidewalk areas will be constructed with concrete, and all parking/roadway areas will be constructed with asphalt. Typical concrete, asphalt and base coarse thicknesses will be determined by geotechnical report.

A new truck unloading area will be constructed on the south side of the building, with the concrete pavement cross-section to be determined by geotechnical report. Two new pedestrian access walkways will be constructed on the north and south side of the central access. The south walkway will be used to deliver and remove bulky process equipment, and be constructed with minimum width of 12 feet to accommodate heavy vehicles. The existing parking lot layout will be redesigned due to the building and intake additions, with a net loss of 22 parking spaces.

Structural Systems: New Building/Addition

The new building addition will be three levels and a mechanical penthouse, with the lower level partially exposed to the north. The basic structure of the new building addition will consist of concrete and steel framing, with concrete framing at the floors and steel framing at the mechanical penthouse. According to the Option A building layout, floors will have 25 foot exterior bays and one 30 foot interior bay. Structural spans for Option B are similar but reflect a larger floor plate as well as a column-free lecture hall. System and localized structural depths will be coordinated with MEP design, ceiling layouts, and other architectural features.

The first, second, and penthouse floors will be framed with two-way mild-reinforced concrete slabs supported by concrete columns. The two-way concrete slab system is flexible to future slab openings and provides a relatively thin overall structure. Based on the current column layout, concrete floor slabs will be 12” thick with about 9.5 psf of reinforcement. The 30-foot bay will need to be cambered in order to control deflection. The concrete columns will be 24”x24” with about 1.5% steel reinforcement. With this column size, stud rails or drop caps will be required at the columns for adequate punching shear strength. Floors will be designed for a live load of 175 psf at all areas except the new penthouse floor, which will be designed for 100 psf.

The penthouse roof will be framed with steel beams and girders with a steel roof deck. Steel columns will bear on and align with the concrete columns below. Wide-flange beams and girders will be used because of the large amount of equipment that is likely to be carried by the roof structure in the mechanical space. The overall structure depth will be about 24”. The roof will be designed for a snow load of 30 psf.

Concrete stair and elevator shafts will provide lateral resistance to external forces such as wind and seismic activity. The stair and elevator shafts will also resist unbalanced earth pressure due to the partial exposure of the lower level.

The foundation will consist of conventional spread and strip footings. Soil borings will be used to determine bearing capacity and lateral earth pressures. Basement walls will be reinforced cast-in-place concrete. Excavations will require soil retention, which will be specified to be performance-designed by the excavation contractor. The foundation walls will be damp-proofed and foundation drain tile will be provided around the basement spaces of the new building and directed to a sump, which will alleviate moisture issues in the below-grade spaces.

A new intake structure will be added at the south side of the existing building. The basic structure of the new intake building will consist of reinforced masonry walls and steel roof framing. Due to the unbraced height of the walls, 12”

reinforced masonry will be used. The roof will be framed with steel beams bearing on the masonry walls and a steel roof deck. The overall structure depth will be about 14". The roof will be designed for a snow load of 30 psf. The reinforced masonry walls will provide lateral resistance to external forces. Masonry walls will bear on reinforced concrete frost walls and conventional strip footings will be used.

Technology Systems: New Building/Addition

The technology requirements include structured cabling, IT spaces, security and audio/ visual (A/V) features. Structured cabling includes voice and data cabling from the workstation outlets to the equipment rooms (ER), cabling from the ER to service entrance, and cabling for IP cameras to the ER. IT spaces includes the telecommunication service entrance and equipment rooms (ER). Security includes access control and closed circuit television (CCTV).

Structured Cabling
Fixed wall offices shall have two workstation outlets (SIO) with conduit into accessible ceilings and two Cat 6 cables for each outlet. Open offices shall have one workstation outlet with two Cat 6 cables for each outlet. Conference rooms shall have four wall outlets and one floor outlet with each outlet containing two Cat 6 cables. The conference rooms shall also contain one cable TV outlet.

The building shall have wireless access points throughout and cellular wireless is not required.

The backbone cabling shall contain fiber, copper and coax. The fiber backbone shall be 12 SM, 12 MM 50 U connecting the TR switches to the core switch. The connectors shall be LC. The copper backbone shall be 1 50 pair from B134A to ER 238A. Coax shall connect CATV system.

The cable pathway from the workstation outlet to the TR shall be free air to the main corridor cable tray. The structured cablings shall meet the DSF standards. The data and voice cables shall be terminated on rack patch panels in the TR.

IT Spaces
The telecommunication service entrance and MDF 18A shall remain in B134A. The copper backbone shall be extended to the new equipment rooms. The fiber backbone shall be extended to the new equipment rooms. The telecommunication ground shall be extended to the new equipment rooms.

An equipment room shall be added in the renovated area. The equipment room shall contain two racks, one patch panel and switches (switches supplied by Owner). The new equipment room and existing MDF shall be connected via two 2" conduits. The equipment room shall be connected via two 4"conduits running in the equipment chase.

Security
Access shall be tied into the existing Campus Card Access Control System. The access control system shall be designed to restrict the public to the Dairy Store area, and shall meet compliance requirements for the food processing area.

The existing Babcock Hall facility currently has two doors on a network control system, with capacity for fourteen (14) additional doors. Rather than using this hub, it is suggested that this project establish a new controller location in the new addition and back feed the original two secure doors.

Access control shall be provided at each perimeter door containing a card reader, an electric strike, a door position switch and a request-to-exit device. Access shall be provided at selected interior spaces, with each selected interior door containing a card reader and an electric strike.

A Video Surveillance System (VSS) is proposed as two-camera system; one for security covering the perimeter of the building and one for process control teaching. The six VSS cameras shall be IP. The campus police shall be given access to the VSS Cameras. No VSS Monitors shall be provided. The CCTV server and storage shall be located in the MDF.

Audio Visual (A/V)
An intercom or paging system will be installed only as required by the fire alarm system. The conference rooms shall contain A/V cabling for overhead video projectors and flat screen TV. Cable TV shall be provided to select locations including the conference rooms. Sound masking is not required.

Wireless sound reinforcement shall be provided within the production area and application lab. Wireless sound reinforcement is to allow instructor to narrate production process thus limiting the number of individuals within the production area.

Kiosks shall be provided in the lobby with directory and wayfinding information and in the Dairy Store with industry information. The existing Short Course Room 205 was recently renovated and does not require modifications.

Closed Circuit Television (CCTV) cameras shall be used primarily for teaching enhancement, with nine cameras in the food production area. The cameras shall be IP. Monitors shall be located in Room 205, Lobby/Reception, and one portable monitor. The cameras shall be recorded for use in presentations and kiosk shows. The CCTV server and storage shall be located in ER on the Basement level.

Process Systems: New Building/Addition

The new building will house CDR with a new Pilot Plant in the basement and Cheese and Food Sciences on the first floor. In a transition interval expected to last three months, these departments will relocate when the new building is complete to minimize downtime.

The Pilot Plant will relocate a majority of existing equipment supplemented by new acquisitions. There is a need for a clean room to accommodate future sterile packaging for drinks, cream cheese, yogurt and Greek yogurt. Associated with the clean room is a need for a small (100 square foot) cooler with two doors.

The Cheese and Food Sciences group will purchase a portion of new equipment due to a need to separate saleable product from research. They will relocate six (6) 500 lb. cheese vats as the Dairy Plant works with larger batches. Further, they will need developed spaces for coolers with two different temperatures, a cheese brine room, a warm room and cut-and-wrap room.

When the new CDR addition is complete, a new CIP-capable separator would be purchased and temporarily placed in CDR to receive milk through a temporary hole in the west wall at grade. Raw milk would be transferred into a new 1500-gallon tank, homogenized, pasteurized and separated for use in CDR until the

Dairy Plant work is complete. The transfer process would use temporary hoses to be cleaned daily. When the Diary Plant remodeling is complete, the separator would be relocated and the 1500-gallon tank would be shifted to other functions.

HVAC Systems: Existing Building/Remodeling

Air Handling Systems:

The existing air handling systems serving the existing lower level CDR spaces will remain.

The existing air handling system serving the existing 1st floor Dairy Plant and the 2nd floor CDR offices and support spaces along the West side of the building will be replaced by new air handling systems installed in the new penthouse.

A new air handling system serving the similar spaces on the 2nd floor of the addition will serve the existing 2nd floor CDR office areas and remodeled areas. Ductwork will be routed from the new air-handling unit in the addition penthouse to the existing spaces within the new penthouse space.

The existing and remodeled Dairy Plant spaces will be heated, cooled, and ventilated by a new air handling system meeting current FDA and GMP requirements. This system will include an air handling unit located in the new penthouse space and will include an integral face and bypass (IFB) steam preheating coil, chilled water coil, 30% and 65% filter banks, supply and exhaust fans. This air handling unit will be suitable for washdown operation. Vertical exposed ductwork serving the Dairy Plant areas will be stainless steel to accommodate wash down duty.

The existing air handling system providing heated air for the process dryer will be removed along with the dryer and all associated ductwork. This unit is located in the existing penthouse above the existing Dairy Plant. The penthouse enclosure will also be removed.

Exhaust Systems:

Existing general exhaust systems serving Toilet Rooms, Storage Rooms, etc. will be modified to accommodate the remodeling efforts.

Auxiliary Heating Systems:

Existing auxiliary heating systems serving vestibules, storage rooms, penthouse areas and similar areas in the Dairy Plant are of the building will be replaced with new.

Temperature Controls:

The existing Direct Digital Control (DDC) system will be modified to accommodate the HVAC system modifications. When this project is complete, all elements of the expanded system will be digitally coordinated with one another.

Electrical Systems: Existing Building/Remodeling

Building Entrance and Normal Power Distribution
Primary voltage serves the building at 4160 volts from the existing campus utilities ductbank located on Linden Street. Medium voltage feeder numbers 5121 and 5122 enter the building in a vault located in B134B, which is directly below the north end of the Dairy Store. This vault houses a lineup of medium

voltage switches, a 500 kVA transformer that steps down 4160V primary voltage to 240V Δ, 3 phase, 3 wire secondary voltage, a 750 kVA transformer that steps down 4160V primary voltage to 208Y/120V, 3 phase, 4 wire secondary voltage, and a 750 kVA transformer that steps down 4160V primary voltage to 480Y/277V, 3 phase, 4 wire secondary voltage.

Three-phase power is distributed from the vault via busway routed overhead to the corresponding 208Y/120V and 240V Δ main switchboards located next to the vault in main electrical room B134. A feeder in conduit serves the 480Y/277V, 600-amp main distribution panel "MDP/PA" located in main electrical room B134.

The 208Y/120V and 240V Δ main switchboards appear to be a combination of original equipment from the 1950's, and equipment d additions from a 1989 project. Based on the age, consideration to replacing the 208Y/120V switchboard with new is recommended. Adding breakers to the original switchboard is not recommended.

Panelboards throughout the dairy plant are a mixture of original and updated panelboards configure for 208Y/120V serving lighting and 240V Δ serving diary equipment. All original panelboards would be replaced with new, including source feeders.

The existing 240 volt Δ distribution system is obsolete by today's standards. Since it is unknown at this time if new equipment will require a 240 V Δ source, this distribution system would not be extended to the new addition. If a 240V Δ distribution arrangement is required, it could be readily extended from an existing distribution panelboard.

The project electrical contractor shall provide motor starters not integral with HVAC or plumbing equipment. Starters for 3 phase motors shall be combination magnetic type. Starters for single-phase motors shall be manual type. Combination starters shall have hand-off-auto switches and indicating pilot lights.

Duplex receptacles shall be heavy-duty specification grade. All receptacles installed in dairy production areas, above counters that have sinks, restrooms and outdoor shall be GFCI type. All receptacles shall be grounded type and rated at 20 amperes.

Individual dedicated circuit shall serve all duplex receptacles indicated for specific equipment. GFCI circuitry shall be provided for each piece of equipment in wash down areas.

General-purpose receptacle circuits shall have an average of 6 and a maximum of 8 duplex outlets on a 20A, 1-pole circuit. Receptacles circuits serving electronic equipment (computers, small printer and etc) shall have no more than (4) outlets connected to a single circuit.

Emergency and Standby Power Distribution

A 20 kW/24 kVA 208Y/120 volt, 3 phase, 4 wire natural gas fueled generator set installed in a sound attenuated enclosure is located on the south side of the building, east of Lecture and Tasting B141G. This generator was recently relocated and reinstalled during a 2010 project. The capacity of the generator is sufficient for exit signs and emergency lighting required by applicable Codes. This emergency and standby generator system serves interior and exterior egress

lighting, generator battery charger, tunnel lighting and telecom rack receptacles in the existing facility.

An observation for this system is that there is no standby power system as defined under NEC 701 and 702. In order to meet current UW Madison campus standards, modifications to the existing emergency power supply system (EPSS) would be required to provide a minimum of two (2) automatic transfer switches. A new generator is not required for the proposed project.

Lighting Systems
All areas within remodeled areas will be provided with new lighting fixtures complete with lamps, high frequency electronic ballasts, lenses, and miscellaneous hangers/mounting components.

All lighting will be hung from the building structure independently of ceiling support system.

All lighting levels will conform to the State of Wisconsin Illumination Code, State of Wisconsin DSF guidelines, and the Illuminating Engineering Society's recommendations. Lighting levels indicated are average, maintained foot-candles. Expected light sources and controlling means have been considered, but actual fixture selections are not included at this time. Fixture selections are a function of ceiling heights, aesthetic desires, budget constraints, and other architectural and project parameters that are not fully identified at this preliminary stage.

Lighting design and controls throughout remodeled areas will conform to the State of Wisconsin Illumination Code, State of Wisconsin DSF guidelines, and the Illuminating Engineering Society's recommendations.

Interior lighting will utilize long life T8 linear fluorescent lamps, 3000 lumens/lamp or better, 5000 degrees Kelvin, and LED sources circuited to respective 120 volt panels. Exterior lighting will consist of building mounted security fixtures controlled by photocell and time switch.

Fire Detection and Alarm System
A recent project replaced the fire alarm control panel (FACP) with a fully addressable system that complies with current code requirements for the occupancy type and occupant quantities.

This Simplex system will be expanded to serve remodel areas, including all system components for detection, notification, and initiation. Additional power supplies and batteries will be provided to accommodate new devices.

Manual pull stations shall be provided at each floor egress and shall be spaced, such that the travel distance to any pull station is less than 200'-0".

Smoke detectors shall be located in corridors, electrical rooms, storage rooms and other locations as required by DSF standards. Corridor spacing will be approximately 30 feet on center.

Smoke detectors shall be photoelectric type. Beam detectors shall be located in open walls as well as large multi-story areas in lieu of photoelectric smoke detectors. Smoke detectors shall operate an alarm verification function via system software.

Duct smoke detectors shall be located at each air handling unit and shall be the ionization type. Duct type smoke detectors shall be located in all major return air distribution systems. Duct detectors will have remote mounted LED and test switches. Duct detectors will also be provided at smoke dampers to initiate damper operation and at each floor's main return air shaft, as required by code.

Heat detectors shall be provided as required by code and by DSF standards. Heat detectors will be located in mechanical rooms, elevator shafts and in elevator equipment rooms for shunting of elevator power when sprinkled are present.

In general, combination audible/visual (speaker/strobe) devices will be provided throughout the new facility. Visual strobe units shall meet the requirements of ADA, UL and NFPA. Audible units in public spaces shall be speakers with a peak output of 96 dB at 10'-0". Audible devices in mechanical areas or other areas with high ambient noise shall be re-entrant type suitable for such locations.

Lightning Protection System
A lightning protection system does not appear to exist, based on field observation.

Plumbing & Fire Protection Systems: Existing Building/Remodeling

Domestic Cold Water System:

Existing CW piping serving the Dairy Plant and CDR Research spaces will be removed and replaced with new.

A new water filtration system will be installed to provide fine sediment filtration prior to serving any fixture or process in the both the existing building and the new addition. This system will be located in the existing lower level mechanical room.

The existing soft water treatment system will remain to serve the existing building and the new addition.

Domestic Hot Water System:

Existing steam-to-water heat exchangers located in the existing basement mechanical room produce 115F hot water for general use including plumbing fixtures and 140 F hot water for use in processes and food preparation functions throughout the existing building. These systems will remain.

Existing HW and HWC (recirculating hot water) piping serving the Dairy Plant and existing CDR Research spaces will be removed and replaced with new.

Sanitary Sewer System:

The existing sanitary and clear water drainage systems inside of the building shall be modified as required to accommodate the remodeling within the existing building.

The existing VCT sanitary sewer piping from the building to the main in the street north of the building will be removed and replaced with new PVC piping.

Most existing stainless steel floor sinks in the existing Dairy Plant shall remain. In some cases the floor sinks will need to be relocated to accommodate relocated equipment. New floor sinks will be added as needed to accommodate additional equipment and/or process need to support FDA and GMP requirements associated with Dairy Processes and CIP operation.

Storm Water System:

The existing storm water drainage systems inside of the building shall be modified as required to accommodate the remodeling within the existing building.

The existing VCT sanitary sewer piping from the building to the main in the street north of the building will be removed and replaced with new PVC piping.

Process Equipment and Plumbing Fixtures:

Existing utility rough-in connections and associated floor boxes and "doghouses" serving process equipment and plumbing fixtures in the existing Dairy Plant will be removed. New rough-in connections will be provided overhead and installed in a manner that satisfies FDA and GMP requirements.

Fire Protection Systems
The existing building is currently fully protected by a wet-pipe fire protection sprinkler system.

The existing fire protection sprinkler system shall be modified as required to accommodate the remodeling and to meet the hazard requirements and applicable NFPA and City of Madison Fire Department requirements.

Site & Civil Utility Systems: Existing Building/Remodeling

Refer to previous text for "New Building/Addition".

Structural Systems: Existing Building/Remodeling

The existing structure consists of cast-in-place concrete panels supported by drop beams and concrete columns. According to the existing construction documents, the floors were designed for live loads varying from 75 psf to 300 psf. It is assumed that the roof was designed for a snow load of 30 psf. Conventional spread and strip footings were used for the foundation.

Structural work in the existing building will largely consist of adding a small addition to the northwest corner, infilling a portion of the second floor structure, increasing the capacity of a portion of the second floor, and adding a new mechanical penthouse above the Dairy Plant.

In Option A, a small two-story addition would be added to the northwest corner for a new two-stage dryer. The framing will consist of concrete blast walls and steel framing to support glazed windows. The roof will be framed with steel beams and steel roof deck. Mezzanines may be required for servicing the equipment and will be constructed of steel tubing and metal grating. In Option B, the new dryer would be located within south end of the new addition.

A portion of the existing second floor will be infilled, the existing stair shafts will be infilled, and a new exit bridge will be provided. Structural steel framing

and concrete slabs on metal deck will be used to frame these areas. The infill floors will be designed for a live load of 100 psf.

In the late ‘90s a portion of the existing second floor was infilled for office space. Steel joists and joist girders with steel deck and concrete topping were used to frame in this area. Analysis indicates the live load capacity of this area is approximately 50 psf, which is much less than the surrounding areas, and less than the 75 psf live load capacity required for the proposed layout. Joist modifications will be required to increase the live load capacity. Modifications may consist of adding material by welding angles or plates to the chords and webs of the existing joists.

The existing mechanical penthouse for the dry cooler will be removed and replaced with a new larger penthouse that will adjoin the mechanical penthouse on the new addition. The new penthouse will be framed as described in the new building section above. Analysis will be needed to determine the capacity of the existing roof for the mechanical equipment. New frames will be provided that will elevate the equipment off of the existing structure in order to alleviate heavy loading.

Technology Systems: Existing Building/Remodeling

Refer to previous text for "New Building/Addition".

Process Systems: Existing Building/Remodeling

The existing building will continue to house the Dairy Plant, slightly expanded and completely modernized. The Dairy Plant will use approximately 14,000 square feet, expanding cooler space by 25% and freezer space by 50%. Cheese brining, a warm room and cut-and-wrap functions will also be accommodated. The Dairy Store retail and seating areas will remain in place without change, as will existing cooler and freezer spaces to the west.

During a remodeling process expected to last one year, the Dairy Plant operation will be closed. Preceded by a transition period expected to last three months, all process components and piping will be removed from the first floor, with select equipment placed in storage. When remodeling work is complete, an improved configuration will include new equipment, reinstalled equipment, and all new process piping. Equipment not cleanable using Clean-In-Place (CIP) technology will be replaced or modernized.

A new raw milk intake building capable of accommodating a modern transport truck will be constructed south of the Dairy Plant. Raw milk will be received into two new 17,500 lb. silos with stainless steel process vestibules built into the new hallway between intake and the pasteurizer/separator room. In the future, a third 17,500 lb. silo will be constructed to support a multi-story evaporator on the south end of the Dairy Plant floor.

Option A includes a two-stage dryer on the north side of the building and would be housed in a newly constructed tower building with blow out panels. Option B includes this dryer within the south end of the new addition. In both options, an evaporator would be inserted into the south end of existing plant space.

Conclusion

After reviewing Option A and Option B, the Center for Dairy Research has decided to pursue fundraising toward Option B, with a total project budget of $32M.

The new process equipment list required for this project was developed during discussions between staff and Reister Engineering, a Rockford, IL firm with specialized experience in the dairy industry.

Each department was encouraged to consider both current and future needs, including training students on modern processes. The Dairy Plant list is identical for both Option A and Option B. The CDR list is specific only to expanded Option B.

Dairy Plant Equipment

Raw Milk Vat: 17,500 lbs	75,000
Raw Milk Vat: 17,500 lbs	75,000
Cold Milk Separator: 11,000 lbs/hr	250,000
Homogenizer	200,000
Case Conveyor (empty)	30,000
Milk Case Conveyor (filled)	30,000
Mix Flavor Vat 300 gallons	25,000
Mix Tank 600 gallons	30,000
Vat 600 gallons	30,000
Vat 600 gallons	30,000
Vat 300 gallons	25,000
Vat 300 gallons	25,000
Vat 300 gallons	25,000
(3) Pumps	60,000
(40) Control Valves	120,000
Horizontal Cheese Press	10,000
Process Piping	600,000
Subtotal New Equipment	$1,625,000
Move Out & Reinstall Existing	500,000
Off-Site Storage of Ice Cream	100,000
Total New & Relocated	$2,225,000

CDR Manufacturing Equipment

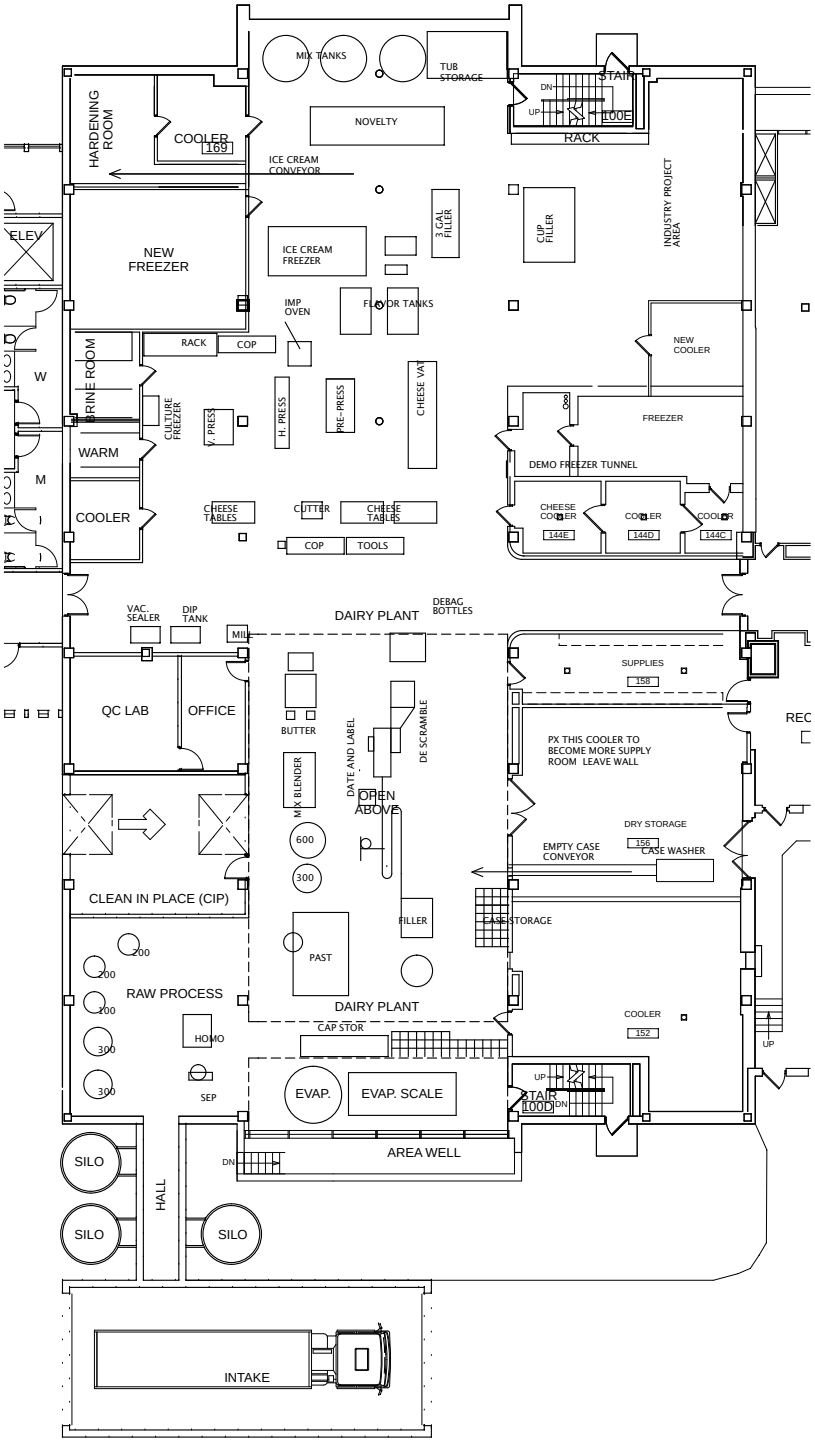
Spray Drier	1,000,000
UHT Pasteurizer (manual aseptic)	250,000
Plate Heat Exchanger	40,000
Quarg Separator (Greek yogurt etc.)	450,000
Yogurt & Cream Cheese Packaging	100,000
Fermentation Room	50,000
Positive Displacement Pumps (2)	30,000
Multi-Zone Processor: 1,500 gallons	44,000
Multi-Zone Processor: 1,000 gallons (2)	80,000
Multi-Zone Processor: 300 gallons (2)	65,000
Multi-Zone Processor: 80 gallons (4)	120,000
Small Batch Retort	100,000
Process Piping	100,000
Subtotal New Equipment	$2,429,000

CDR Cheese & Applications Equipment

Scherping Research HVC Horizontal Vat	60,000
Scherping Drain Table	40,000
Scherping Matting Conveyor	50,000
Alpma Continuous Coagulator	75,000
DR Tech Waterless Mozzarella Mixer	100,000
Seydelmann Cutter	30,000
Undesignated Allowance	245,000
Subtotal New Equipment	$600,000

Dairy Plant & CDR Combined Equipment

Dairy Plant Equipment	2,225,000
CDR Manufacturing Equipment	2,429,000
CDR Cheese & Applications Equipment	600,000
Freezer & Cooler Allowance (Shared DP/CDR)	250,000
Grand Total	$5,504,000


MIX TANKS
TUB STORAGE
STAIR
DN
UP
100E
RACK
HARDENING ROOM
COOLER
169
NOVELTY
ICE CREAM CONVEYOR
3 GAL FILLER
CUP FILLER
INDUSTRY PROJECT AREA
ELEV
NEW FREEZER
ICE CREAM FREEZER
IMP OVEN
FLAVOR TANKS
NEW COOLER
RACK
COP
BRINE ROOM
CULTURE FREEZER
V. PRESS
H. PRESS
PRE- PRESS
CHEESE VAT
FREEZER
WARM
DEMO FREEZER TUNNEL
COOLER
CHEESE TABLES
CUTTER
CHEESE TABLES
CHEESE COOLER
144E
COOLER
144D
COOLER
144C
COP
TOOLS
VAC. SEALER
DIP TANK
DAIRY PLANT
DEBAG BOTTLES
MILK
SUPPLIES
158
QC LAB
OFFICE
BUTTER
DATE AND LABEL
DE SCRAMBLE
PX THIS COOLER TO BECOME MORE SUPPLY ROOM LEAVE WALL
MIX BLENDER
OPEN ABOVE
DRY STORAGE
156
EMPTY CASE CONVEYOR
CASE WASHER
600
300
CLEAN IN PLACE (CIP)
FILLER
CASE STORAGE
PAST
200
200
200
RAW PROCESS
DAIRY PLANT
COOLER
152
CAP STOR
HOMO
300
300
SEP
EVAP.
EVAP. SCALE
UP
STAIR
100D
DN
AREA WELL
SILO
SILO
SILO
HALL
INTAKE
N
1
First Floor Plan - Equipment
SCALE: 1/8" = 1'-0"

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WALMS

Building Inspection Status List

Agency	UNIVERSITY OF WISCONSIN	Select Agency: UNIVERSITY OF WISCONSIN
Institution	MADISON CAMPUS	Select Institution: MADISON CAMPUS
Building	0106 - BABCOCK HALL	Select Building: BABCOCK HALL - 0106
	Inspection Date: 6/4/2008	**Data Entry Complete: 12/9/2008** **Last Revision: 8/5/2009**

Description

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- Analytical - Lead-Based Paint

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Building Information

DFD Project Number	06B2K	Initial Building Number	106
Addition Number	106A, 106B		

Building Address	1605 LINDEN DRIVE		
City	MADISON	County	DANE
State	WI	Zip Code	53706
Present Use	OFFICES, CLASSROOMS, LABS, DAIRY	Past Use	OFFICES, CLASSROMS, LABS, DAIRY
Contact Name	LEE JENSEN	Contact Phone	608-263-5144

Inspectors Name	JEREMY R. NOEGEL	Inspector Number	AII-105450
Company Name	EMC	Phone	920-648-6343
Address	W7748 COUNTY HIGHWAY V	City	LAKE MILLS
State	WI	Zip Code	53551
Inspection Date	6/4/2008	Data Entry Complete	12/9/2008

Approx. Construction Date	1948, 1990	Number of Floors	3
Gross Sq. Feet	137,642	Net Sq. Feet	
Exterior Finish	BRICK	Roof Type	FLAT ROOF

Building Summary

Export to Excel Home

Agency	UNIVERSITY OF WISCONSIN
Institution	MADISON CAMPUS
Building	0106 - BABCOCK HALL
Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009	

Building Summary - Asbestos

Building Log First Comment	(November 18, 2008) The non-destructive nature of this survey limited the identification and quantification of suspect ACM to readily accessible materials. Therefore, hidden materials suspect to contain asbestos may not be identified by this survey.

Click Here to See If Additional Comments Available

ACM Materials

HM Code	Description	ACM/Assumed ACM
MCMLK	CARPET MASTIC (YELLOW & BLACK)	ACM
MCTM	CERAMIC TILE MASTIC & GROUT (ASSUMED)	Assumed ACM
MF12TN	12" FLOOR TILE (TAN & BROWN) & MASTIC	ACM
MF9EK	9" FLOOR TILE (BEIGE & BLACK) & MASTIC	ACM
MF9TK	9" FLOOR TILE (TAN & BLACK) & MASTIC	ACM
MF9YC	9" FLOOR TILE (GRAY & CREAM) & MASTIC	ACM
MFD	FIRE DOOR (ASSUMED)	Assumed ACM
MPG2	INTERIOR WINDOW PANE GLAZING (GRAY)	ACM
MSMT	POURED FLOOR (TAN) (ASSUMED)	Assumed ACM
MSMWK	TERRAZZO (WHITE & BLACK)	ACM
A: UNIVERSITY OF WISCONSIN - I: MADISON CAMPUS - B: 0106 - BABCOCK HALL Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009		
HM Code	Description	ACM/Assumed ACM
MSMWN	TERRAZZO (BROWN) (ASSUMED)	Assumed ACM
MTL1	LABORATORY COUNTER TOP (BLACK) (ASSUMED)	Assumed ACM
MTL2	LABORATORY COUNTER TOP (BLACK, NEWER) (ASSUMED)	Assumed ACM
MTP1	CHALKBOARD (ASSUMED)	Assumed ACM
MTP2	LABORATORY FUME HOOD - NEWER (ASSUMED)	Assumed ACM
MTP3	TRANSITE BENEATH FUME HOODS (ASSUMED)	Assumed ACM
MTP4	LABORATORY FUME HOOD - OLD (ASSUMED)	Assumed ACM
MTP5	TRANSITE PANEL	ACM
MTS	LABORATORY SINK (ASSUMED)	Assumed ACM
MV6K	6" VINYL BASEBOARD (BLACK) & MASTIC	ACM
A: UNIVERSITY OF WISCONSIN - I: MADISON CAMPUS - B: 0106 - BABCOCK HALL Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009		

HM Code	Description	ACM/Assumed ACM
TA10	AIRCELL PIPE INSULATION (5-10")	ACM
TA5	AIRCELL PIPE INSUALTION (0-5")	ACM
TC10	CARDBOARD PIPE INSULATION (5-10")	ACM
TC10F	FITTINGS ON CARDBOARD PIPE INSULATION (5-10")	ACM
TC5	CARDBOARD PIPE INSULATION (0-5")	ACM
TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	ACM
TF5F	FITTINGS ON FIBERGLASS PIPE INSULATION (0-5")	ACM
TFC	FLEXIBLE DUCT CONNECTOR (ASSUMED)	Assumed ACM
TM10	MAGNESIA PIPE INSULATION (5-10")	ACM
TM5	MAGNESIA PIPE INSULATION (0-5")	ACM
A: UNIVERSITY OF WISCONSIN - I: MADISON CAMPUS - B: 0106 - BABCOCK HALL Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009		
HM Code	Description	ACM/Assumed ACM
TTW	TAPE PIPE WRAP	ACM

Non-ACM Materials		
HM Code	Description	Non-ACM
MCML	CARPET MASTIC (YELLOW)	Non-ACM
MCT2	1'X1' CEILING TILE & MASTIC - FISSURED	Non-ACM
MDW	DRYWALL & JOINT COMPOUND	Non-ACM
MF12TW	12" FLOOR TILE (TAN & WHITE) & MASTIC	Non-ACM
MF12WK	12" FLOOR TILE (WHITE & BLACK) & MASTIC	Non-ACM
MF12WY	12" FLOOR TILE (WHITE & GRAY) & MASTIC	Non-ACM
MFLRB	LINOLEUM (RED & BLUE) & MASTIC	Non-ACM
MPG	EXTERIOR WINDOW PANE GLAZING (WHITE)	Non-ACM
MPM1	FIBERBOARD WITH SUSPECT BLACK LAYER	Non-ACM
MSCT1	2'X2' SUSPENDED CEILING TILE-DIVITS & HOLES (REC)	Non-ACM
A: UNIVERSITY OF WISCONSIN - I: MADISON CAMPUS - B: 0106 - BABCOCK HALL Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009		
HM Code	Description	Non-ACM
MSCT10	1'X1' SUSPENDED CEILING TILE-LARGE HOLES	Non-ACM
MSCT2	2'X4' SUSPENDED CEILING TILE-DIVITS & HOLES	Non-ACM
MSCT3	2'X4' SUSPENDED CEILING TILE-FISSURED	Non-ACM
MSCT6	2'X4' SUSPENDED CEILING TILE-DRYWALL	Non-ACM
MSCT7	2'X2' SUSPENDED CEILING TILE-FISSURED	Non-ACM
MSCT8	2'X2' SUSPENDED CEILING TILE-TEXTURED (RECESSED)	Non-ACM
MSCT9	2'X4' SUSPENDED CEILING TILE-LIGHT TEXTURE	Non-ACM
MV4G	4" VINYL BASEBOAD (GREEN) & MASTIC	Non-ACM
MV4K	4" VINYL BASEBOARD (BLACK)	Non-ACM

MV4N	4" VINYL BASEBOARD (BROWN) & MASTIC	Non-ACM

A: UNIVERSITY OF WISCONSIN - I: MADISON CAMPUS - B: 0106 - BABCOCK HALL
Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision Date: 8/5/2009

HM Code	Description	Non-ACM
MV4Y	4" VINYL BASEBOARD (GRAY) & MASTIC	Non-ACM
MV6N	6" VINYL BASEBOARD (BROWN) & MASTIC	Non-ACM
SP1	PLASTER	Non-ACM
SP2	EXTERIOR PLASTER	Non-ACM
SSF	SPRAYED ON FIRE PROOFING	Non-ACM
SSF2	SPRAYED ON FIRE PROOFING - NEWER	Non-ACM
TDE1	DUCT CANVAS	Non-ACM
TDW	DUCT WRAP (WHITE)	Non-ACM
TW5	WOOL WRAP INSULATION (0-5")	Non-ACM

Floor Summary of ACM

Floor #	HM Code	Description	Quantity	Units
No Floor Entered	MFD	FIRE DOOR (ASSUMED)	27	EA
[	MSMWN	TERRAZZO (BROWN) (ASSUMED)	280	SF
[	MTP5	TRANSITE PANEL	240	SF
[	TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	20	EA
[	MSMWK	TERRAZZO (WHITE & BLACK)	1655	SF
[	TFC	FLEXIBLE DUCT CONNECTOR (ASSUMED)	4	EA
[	MF12TN	12" FLOOR TILE (TAN & BROWN) & MASTIC	100	SF
[	TA5	AIRCELL PIPE INSUALTION (0-5")	50	LF
[	TC5	CARDBOARD PIPE INSULATION (0-5")	150	LF
BSMT	TC5	CARDBOARD PIPE INSULATION (0-5")	64	LF
[	MSMWK	TERRAZZO (WHITE & BLACK)	50	SF
[	TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	10	EA
1	MCTM	CERAMIC TILE MASTIC & GROUT (ASSUMED)	860	SF
[	MF9EK	9" FLOOR TILE (BEIGE & BLACK) & MASTIC	260	SF
[	MF9TK	9" FLOOR TILE (TAN & BLACK) & MASTIC	3084	SF
[	MSMWK	TERRAZZO (WHITE & BLACK)	2772	SF
[	TC5	CARDBOARD PIPE INSULATION (0-5")	2151	LF
[	MTL1	LABORATORY COUNTER TOP (BLACK) (ASSUMED)	410	SF
[	MTP2	LABORATORY FUME HOOD - NEWER (ASSUMED)	530	SF
[	TA5	AIRCELL PIPE INSUALTION (0-5")	393	LF
[	TC10F	FITTINGS ON CARDBOARD PIPE INSULATION (5-10")	64	EA
[	TM5	MAGNESIA PIPE INSULATION (0-5")	284	LF
[	MF9YC	9" FLOOR TILE (GRAY & CREAM) & MASTIC	480	SF
[	MFD	FIRE DOOR (ASSUMED)	6	EA

	MSMWN	TERRAZZO (BROWN) (ASSUMED)	32	SF
	MTL2	LABORATORY COUNTER TOP (BLACK, NEWER) (ASSUMED)	1430	SF
	MTP3	TRANSITE BENEATH FUME HOODS (ASSUMED)	530	SF
	TA10	AIRCELL PIPE INSULATION (5-10")	41	LF
	TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	294	EA
	TF5F	FITTINGS ON FIBERGLASS PIPE INSULATION (0-5")	16	EA
	MCMLK	CARPET MASTIC (YELLOW & BLACK)	309	SF
	MTS	LABORATORY SINK (ASSUMED)	113	SF
	MV6K	6" VINYL BASEBOARD (BLACK) & MASTIC	750	LF
	TC10	CARDBOARD PIPE INSULATION (5-10")	242	LF
2	MFD	FIRE DOOR (ASSUMED)	2	EA
	MTS	LABORATORY SINK (ASSUMED)	289	SF
	MV6K	6" VINYL BASEBOARD (BLACK) & MASTIC	851	LF
	TC10	CARDBOARD PIPE INSULATION (5-10")	148	LF
	MCTM	CERAMIC TILE MASTIC & GROUT (ASSUMED)	315	SF
	MTL1	LABORATORY COUNTER TOP (BLACK) (ASSUMED)	675	SF
	MTP1	CHALKBOARD (ASSUMED)	100	SF
	MTP2	LABORATORY FUME HOOD - NEWER (ASSUMED)	440	SF
	MTP4	LABORATORY FUME HOOD - OLD (ASSUMED)	820	SF
	TA5	AIRCELL PIPE INSUALTION (0-5")	66	LF
	TC10F	FITTINGS ON CARDBOARD PIPE INSULATION (5-10")	22	EA
	TTW	TAPE PIPE WRAP	4	LF
	MSMT	POURED FLOOR (TAN) (ASSUMED)	1265	SF
	MTL2	LABORATORY COUNTER TOP (BLACK, NEWER) (ASSUMED)	1340	SF
	MTP3	TRANSITE BENEATH FUME HOODS (ASSUMED)	210	SF
	TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	35	EA
	TF5F	FITTINGS ON FIBERGLASS PIPE INSULATION (0-5")	11	EA
	MF9EK	9" FLOOR TILE (BEIGE & BLACK) & MASTIC	2562	SF
	MF9TK	9" FLOOR TILE (TAN & BLACK) & MASTIC	4320	SF
	MSMWK	TERRAZZO (WHITE & BLACK)	1940	SF
	TC5	CARDBOARD PIPE INSULATION (0-5")	221	LF
3	MFD	FIRE DOOR (ASSUMED)	3	EA
	TA10	AIRCELL PIPE INSULATION (5-10")	76	LF
	TC5	CARDBOARD PIPE INSULATION (0-5")	4	LF
	TF5F	FITTINGS ON FIBERGLASS PIPE INSULATION (0-5")	20	EA
	TFC	FLEXIBLE DUCT CONNECTOR (ASSUMED)	21	EA
BSMT	MPG2	INTERIOR WINDOW PANE GLAZING (GRAY)	12	LF
	MTL2	LABORATORY COUNTER TOP (BLACK, NEWER) (ASSUMED)	405	SF
	MTP3	TRANSITE BENEATH FUME HOODS (ASSUMED)	120	SF

	TC5F	FITTINGS ON CARDBOARD PIPE INSULATION (0-5")	741	EA
	MFD	FIRE DOOR (ASSUMED)	38	EA
	MTS	LABORATORY SINK (ASSUMED)	50	SF
	MV6K	6" VINYL BASEBOARD (BLACK) & MASTIC	8	LF
	TA10	AIRCELL PIPE INSULATION (5-10")	601	LF
	TA5	AIRCELL PIPE INSUALTION (0-5")	1410	LF
	TC10	CARDBOARD PIPE INSULATION (5-10")	411	LF
	TFC	FLEXIBLE DUCT CONNECTOR (ASSUMED)	4	EA
	TM10	MAGNESIA PIPE INSULATION (5-10")	74	LF
	MCTM	CERAMIC TILE MASTIC & GROUT (ASSUMED)	723	SF
	MTL1	LABORATORY COUNTER TOP (BLACK) (ASSUMED)	755	SF
	MTP2	LABORATORY FUME HOOD - NEWER (ASSUMED)	360	SF
	TC10F	FITTINGS ON CARDBOARD PIPE INSULATION (5-10")	95	EA
	MF9EK	9" FLOOR TILE (BEIGE & BLACK) & MASTIC	1514	SF
	MF9TK	9" FLOOR TILE (TAN & BLACK) & MASTIC	390	SF
	MSMWK	TERRAZZO (WHITE & BLACK)	8814	SF
	MTP1	CHALKBOARD (ASSUMED)	32	SF
	TC5	CARDBOARD PIPE INSULATION (0-5")	5490	LF
	TF5F	FITTINGS ON FIBERGLASS PIPE INSULATION (0-5")	77	EA
	TM5	MAGNESIA PIPE INSULATION (0-5")	100	LF

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WALMS

Building Inspection Status List

Agency	UNIVERSITY OF WISCONSIN	Select Agency: UNIVERSITY OF WISCONSIN
Institution	MADISON CAMPUS	Select Institution: MADISON CAMPUS
Building	0106 - BABCOCK HALL	Select Building: BABCOCK HALL - 0106
	Inspection Date: 6/4/2008 Data Entry Complete: 12/9/2008 Last Revision: 8/5/2009	

Description
- Building Information
- Rooms
- Homogeneous Materials
- Building Comment Logs
- Building Summary Home

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- Bulk Samples
- Analytical - Asbestos
- Analytical - Lead-Based Paint

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- Analytical Data
- Certifications
- Post Sampling Info
- Abatement Info

Standard Reports
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Additional Reports
- Rooms With No

Analytical Data - Lead Based Paint | Page #: 1 of 1

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Clear Selections and Return to Page 1

Room: ---

Date	Sample #	Room #	Building Component	Paint or Varnish Color	Condition	Substrate	XRF Result (mg/cm2)	Lab Chip Results (%)	LBP/Non-LBP	Actions
6/4/2008	04	B100J -	Walls	GRAY	Good	Concrete	.0	N/A	Non-LBP	View
6/4/2008	05	018 -	Door	GRAY	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	06	B100H ELEVATOR -	Door	RED	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	07	021 -	Ceilings	WHITE	Good	Concrete	.0	N/A	Non-LBP	View
6/4/2008	08	B100D STAIRS -	Ceilings	WHITE	Good	Plaster	.0	N/A	Non-LBP	View
6/4/2008	09	B100A STAIRS -	Walls	WHITE	Good	Plaster	.0	N/A	Non-LBP	View
6/4/2008	10	B100A STAIRS -	Door	VARNISH	Good	Wood	.0	N/A	Non-LBP	View
6/4/2008	11	108 -	Ceilings	TAN	Good	Plaster	.0	N/A	Non-LBP	View
6/4/2008	12	202 -	Walls	CREAM	Good	Concrete	.0	N/A	Non-LBP	View
6/4/2008	13	219 -	Door - Frame	GREEN	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	14	303 -	Door	GREEN	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	15	EXTERIOR -	Doors - Exterior	BROWN	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	16	EXTERIOR -	Doors - Exterior	BROWN	Good	Metal	.0	N/A	Non-LBP	View
6/4/2008	17	EXTERIOR -	Doors - Exterior	WHITE	Poor	Metal	>9.9	N/A	LBP	View
6/4/2008	18	EXTERIOR -	Walls	WHITE	Poor	Metal	>9.9	N/A	LBP	View
6/4/2008	19	EXTERIOR -	Walls	WHITE	Poor	Brick	>9.9	N/A	LBP	View
6/4/2008	20	EXTERIOR -	Walls	WHITE	Poor	Metal	>9.9	N/A	LBP	View

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