Attachment 1



VERMONT TECH

WILLISTON CENTER CAMPUS

FACILITIES CONDITIONS ASSESSMENT

FEBRUARY 15, 2023

SMITH | ALVAREZ | SIENKIEWYCZ ARCHITECTS


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VERMONT TECH WILLISTON CAMPUS
141


VERMONT TECH

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The following Facilities Conditions Assessment has been prepared by Smith-Alvarez-Sienkiewycz Architects; Krebs & Lansing, Civil Engineers; and L.N. Consulting, Mechanical-Electrical Engineers in conjunction with Vermont Technical College, Williston Campus.

The Assessment includes field observations of the site and all buildings on the Williston Campus over a period of two months, from November to December 2022. Conditions noted in the Assessment are consistent with observations at the time of inspection. No attempt has been made to update observations based on work completed during the same time period. No attempt has been made to determine the cause of potential underlying problems that may contribute to failing or failed finishes or materials. Further evaluation or analysis by a professional may be required and is noted in the report. Observations for Model Code and Accessibility compliance are general in nature and not intended to identify every deficiency.

The Assessment is divided into three categories:

- Architectural Assessment
- Site-Civil Assessment
- Mechanical, Electrical, Plumbing and Fire Protection Systems Assessment

Each category includes the assessment and an estimate of probable construction costs for deferred maintenance items. The cost estimates are intended for planning purposes. Additional professional evaluations and detailed plan development will be necessary before finalizing costs.

The following classifications are included in the Architectural Assessment to describe the condition of interior and exterior finishes and materials:

- Good - New, like new, well maintained.
- Fair - Worn or soiled, but serviceable.
- Poor - Nearing end of useful life.
- Very Poor - Reached end of useful life, should be replaced.

The above classifications when describing a painted material describe the condition of the finish paint. Assume the underlying base material to be sound unless noted or described otherwise.

Exterior surveys begin on the Main (Front) Entrance side of the building and move counterclockwise around the building; Front, Right Side, Back, Left Side. Windows are numbered by floor (1-3) on the Residence Hall and otherwise sequentially left to right.

Interior location/handing descriptors are in reference to the Main (Front) Entrance. Left Hall is left of the entrance.

Architectural Abbreviations

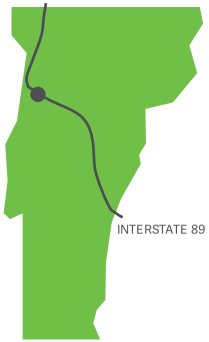
The following abbreviations have been used in the Architectural Assessment:

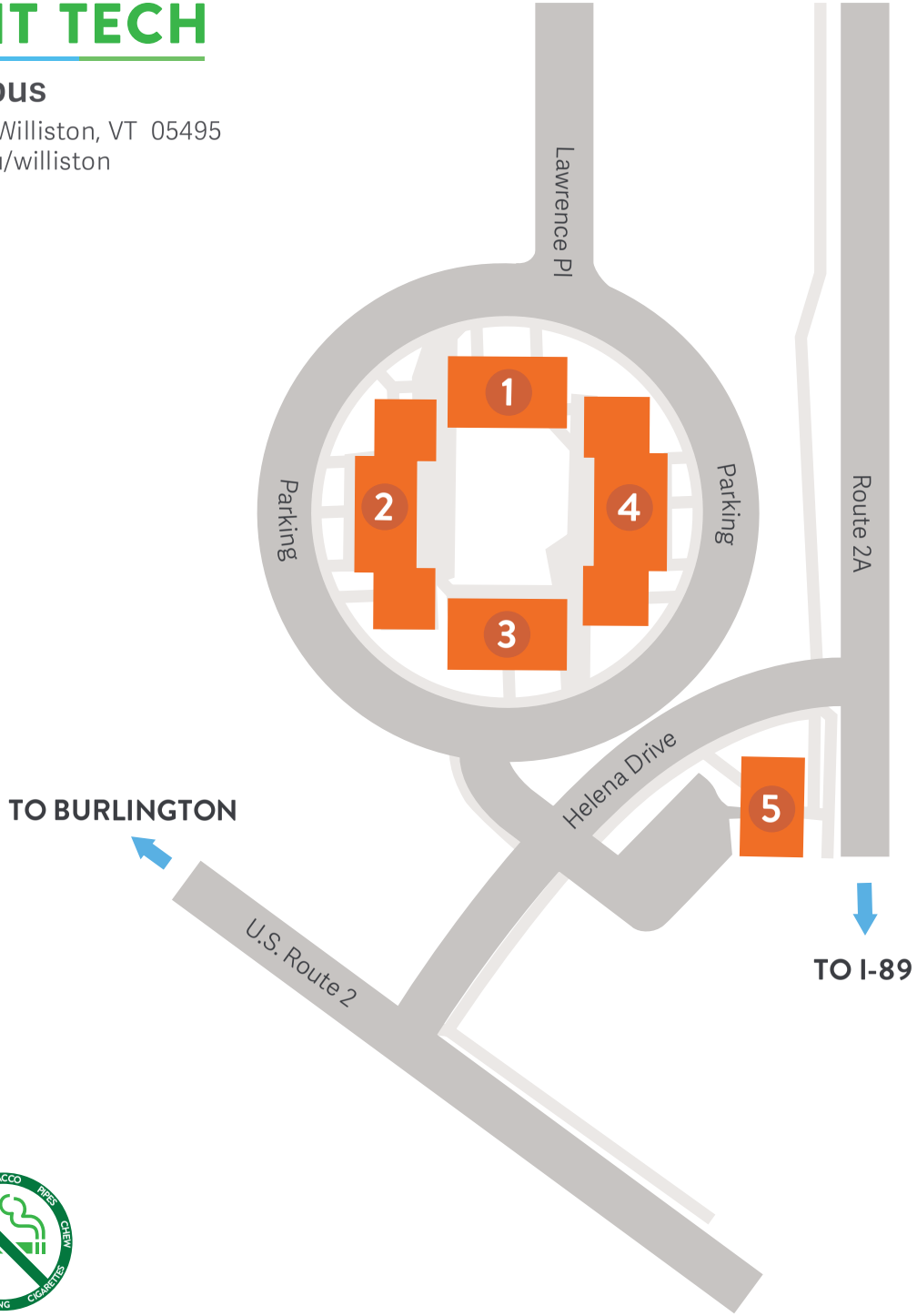
- ADA - Americans with Disabilities Act, 2010 ADA Standards for Accessible Design
- AFF - Above Finish Floor
- BR - Bathroom
- CIP - Cast-In-Place
- CMU - Concrete Masonry Unit
- CT - Ceramic Tile (All tile is called ceramic but some may be porcelain)
- EIFS - Exterior Insulation Finish System
- FRP - Fiberglass Reinforced Panels
- GWB - Gypsum Wall Board
- HDPE - High Density Polyethylene (Solid Plastic Toilet Partition)
- HM - Hollow Metal (Door Frames)
- PLAM - Plastic Laminate
- PT - Pressure Treated
- PWD - Plywood
- RD - Residential Director
- SAC - Suspended Acoustic Ceiling (2' x 2' or 2' x 4' tiles)
- SS - Stainless Steel
- VCT - Vinyl Composite Tile (Typically 12" x 12")

VERMONT TECH

Williston Campus

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TOBACCO PIPES CHEW CIGARETTES VAPING CIGARS E-CIGARETTES

1 Allied Health

- Nursing
- Respiratory Therapy
- Classrooms & Labs
- Student Lounge & Kitchen

2 Administration

- Admissions
- Administration
- Classrooms & Labs
- Student Lounge & Kitchen

3 Dental Hygiene

- Dental Clinic
- Dental Hygiene
- Classrooms & Labs
- Student Lounge & Kitchen

4 Library

- Library
- Center for Academic Success
- Machine Shop
- Science Lab
- Student Lounge & Kitchen
- Vermont Interative Technologies

5 Williston Hall

- Student Residence
- Fitness Center
- Student Lounge & Kitchen
- Continuing Education & Workforce Development

ARCHITECTURAL



List of Buildings

1. Building 100
2. Building 200
3. Building 300
4. Building 400
5. Building 700

BUILDING 100



CONSTRUCTED: 1985

LAST RENOVATED: 2004, 2011 (Sim Labs Etc.)

Stories: 1

Gross Area: 8,000 SF

Construction:

- Structure: Steel.
- Foundation: Cast-in-place concrete.
- Walls: Metal stud framing, GWB interior finish. Metal, or vinyl siding exterior finish.
- Roof: Flat: Ballasted EPDM membrane roofing. Replaced in 2009.

USE: The building houses Nursing, Respiratory Therapy, Classrooms, Labs, Student Lounges and Kitchen, and Bathrooms.

INTERIOR: During an inspection of the building interior, the following conditions were observed. Conditions requiring repair/ replacement are noted:

- General:
  - Interior flush wood doors and painted HM frames are in generally good condition. Flush wood doors and HM frames at the Hall openings are 20-minute UL fire rated. Door hardware is typically ADA compliant lever-style and in good condition.
  - Aluminum slider windows typically have painted GWB head, jamb and sill returns in fair condition unless noted.
  - Window shades and blinds are in good condition.
  - White boards are in good condition.
  - Mechanical, Electrical, Janitor's Closets and Miscellaneous Storage Rooms are typically unfinished. Concrete floors are in poor condition with stains. Walls are sometimes unfinished GWB, taped only with no base. Ceilings are open to structure and unfinished except steel structure is sometimes painted. If SAC, tiles are missing. These spaces are generally in poor condition and not maintained to the same standards as the public spaces. No improvements are suggested in these rooms.
- Typical Finishes Unless Noted:
  - Floors - Carpet is in good to fair condition with some stains.
  - Vinyl base is in good condition.
  - Walls - Painted GWB is in good to fair condition, some dings and scratches. Repair and touch up paint at damaged areas.
  - Ceilings - SAC is in good to fair condition.
- Lobby 100:
  - Floor - VCT is in fair to poor condition. Joints have begun to open up. The VCT is in very poor condition in front of the exterior doors, replace in kind.
  - The aluminum sliding window to the right of the entrance storefront has a failed seal at the right sash. Replace the approximately 2'-4" x 4'-8" pane of insulated glass at the right sash.

- Left Hall:
  - Floor - VCT is in fair to poor condition at the back exit door where it's rust stained and deteriorated. Replace the VCT and vinyl base in kind near the back exit door.
  - Walls - Repair and patch the water damaged/swollen GWB and bubbled paint at the jambs of the back exit door.
  - The back exit door and HM frame has begun to rust at the bottom. Sand/repair and paint.
- Storage 107:
  - Walls - Patch and paint the holes in the GWB.
  - Ceiling - Replace 2 damaged tiles. Investigate source of leak.
- Conference 108:
  - Walls - Patch and paint multiple dings in the GWB.
- Kitchen Next to 108:
  - Floor - VCT is in fair condition.
  - Walls - Repair, patch and paint the crack above the right jamb of the door to the bathroom lobby.
  - PLAM countertops at 2'-10" with drop-in SS sink and pipe guards below. Knee clearance at sink is 2'-7" h x 2'-6" w, which meets ADA.
  - Wood panel clear finished wall and base cabinets are in good condition.
- Copy Room:
  - Walls - Finish tape and paint the GWB door infill.
  - PLAM countertop is in good condition but mounted at 3'-0" which is not ADA compliant.
    Wood panel clear finished wall and base cabinets are in good condition.
- Center Left Hall:
  - Floor - VCT is in fair to poor condition at the back exit door where it's rust stained and deteriorated. Replace the VCT and vinyl base in kind near the back exit door.
  - Walls - Repair and patch the water damaged/swollen GWB and bubbled paint at the jambs of the back exit door.
  - The back exit door HM frame has begun to rust at the bottom. Sand/repair and paint.
  - The back exit door aluminum threshold is corroded, replace.
  - The back exit door has been replaced with half glass painted steel and is in good condition.
- Bathroom Lobby and Two All Gender Single User ADA Bathrooms off the Center Left Hall:
  - Floor - 1" x 1" mosaic CT is in fair to poor condition around the toilets and the corner below the sink on the left side bathroom.
  - Walls - CT wainscot is in fair condition with painted GWB above in good condition.
  - Repair the damaged CT in kind on the plumbing wall of the left bathroom.
  - Install SS access panel at wall clean out on the plumbing wall of the left bathroom.
  - Floor-mounted toilets are in fair condition.
  - SS grab bars in the left bathroom are not ADA compliant. Install 36"w grab bar behind the toilet in the left bathroom.
  - Wall hung porcelain sinks at 2'-10" are in good condition. The left bathroom sink has pipe guards, but the right does not. Install pipe guards at the right bathroom sink.
  - Both bathrooms have ADA signage.

- Mechanical Room off Left Bathroom:
  - Walls and Ceiling - Multiple holes in the GWB and some of the joints are not fire taped. If this room requires a rating, there are multiple gaps in the enclosure.
  - There is a sprinkler head in the ceiling of this room.
- Classroom 117:
  - Ceiling - Replace 5 damaged tiles.
- Classroom 118:
  - Floor - Patch frayed repaired slot of carpet where the wall was removed.
  - Walls - Patch and paint cracks above the storefront. Patch and paint multiple dings in the Hall wall.
- Center Hall:
  - Floor - VCT is in poor condition with open joints and uneven subfloor.
- Closet off Center Hall:
  - Floor - VCT is in poor condition.
  - No light.
- Computer Classroom 120:
  - Walls - Patch and paint cracks above the storefront.
  - Wood computer counter at 2'-6" is in good condition. Knee clearance is 2'-4". Counter is ADA compliant.
- Lab 123 and Storage Closet and Lab 131 and Storage Closet:
  - Floor - VCT is in fair to poor condition with open joints. VCT in Storage Closet 123 is in poor condition.
  - PLAM counters with wood cabinets above and below are in good condition. Counters are at 3'-0" as is the sink in 123. The sink in 123 is not open below. These counters and sink are not ADA compliant.
- Classroom 128:
  - Floor - VCT below X-Ray machine is in good condition.
  - Walls - Install a wall door stop. Patch and paint hole in GWB behind door.
- Observation 129 and Storage Closet:
  - Floor - VCT is in good condition.
  - Ceiling - Install 2 missing tiles in Storage Closet.
  - PLAM counter at 2'-4 1/2" is in good condition. Knee clearance is 2'-3". Counter is ADA compliant.
- Classroom 130:
  - Floor - VCT is in good condition.
  - PLAM counters with wood cabinets above and below are in good condition. Counters are dual height. Counter below the one-way glass window (to Observation 129) is at 2'-8". Counter with sink is at 3'-0" and the sink is not open below. The 3'-0" counter and sink are not ADA compliant.
  - The pair of half glass flush wood doors into this room are not ADA compliant. One leaf is typically inactive, and the active leaf is only 2'-5" clear width. Replace the doors with unequal leaf's so the active leaf is 2'-8" clear minimum.
- Right Hall:
  - Floor - VCT is in fair to poor condition at the back exit door where it's rust stained and deteriorated. Replace the VCT and vinyl base in kind near the back exit door.
  - Walls - Repair and patch the water damaged/swollen GWB and bubbled paint at the jambs of the back exit door.

- The back exit door and HM frame are in very poor condition and rusted at the bottom, replace.
- The back exit door aluminum threshold is corroded, replace.
- Install vinyl base below the sink.
- PLAM countertop at 2'-10" with drop-in SS sink. Knee clearance at sink is 2'-5" h x 3'-0" w, which meets ADA. Install pipe guard below sink.
- Wood panel clear finished wall and base cabinets are in good condition.
- The refrigerator extends into the Bathroom door clearances.

- Two All Gender Single User Bathrooms off the Right Hall:
  - Floor - VCT is in poor condition in the left bathroom to very poor condition in the right bathroom. Replace the VCT and vinyl base in the right bathroom.
  - Vinyl base behind the toilet in the left bathroom is in very poor condition, replace.
  - Counters with sinks and base cabinets below are not installed on a base. They're very low and not ADA compliant. Base cabinets are in very poor condition, replace and install on bases in both bathrooms.
  - SS grab bars in the left bathroom. The grab bar behind the toilet is not ADA compliant.

EXTERIOR: During an inspection of the building exterior, the following conditions were observed. Conditions requiring repair/replacement are noted:

- Prefinished concealed fastener vertical metal siding is in generally fair condition, except as noted.
- Vertical vinyl siding below sill of banks of windows is in generally fair condition, except as noted.
- Fabric covered aluminum framed awnings are in good condition.
- Front Side (Parking Lot):
  - Remove the small patches at the prefinished aluminum flat signage panel at the left end and the right end near the building corners and replace the whole panel.
  - Aluminum storefront is in good condition.
  - Stone piers at the porch are in good condition.
  - Signage is in good condition.
  - T-111 wood porch ceiling with stained finish is in good condition.
- Right and Left Sides:
  - The base wall drip trim at the bottom of vinyl siding is dented and damaged and the finish is peeling.
  - Paint the wood trim at both ends of the vertical vinyl siding panels below the window banks.
  - The concrete foundation is cracked in several locations.
  - Replace the screen fabric where missing or damaged.
- Back Side (Courtyard):
  - The gutters and downspouts are in good condition.
  - The PT wood site stair with steel handrails at the B-400 end of the building is in very poor condition and does not meet code. Replace with Code compliant stairs and handrails.
  - The two PT wood back porches are in fair condition except most of the fasteners are rusted and the wood is rust stained.
  - The porches are approximately 12" above grade so the landing railings at 2'-11" are adequate. The wood railings at 2'-8" at the steps are adequate but not Code compliant

for use as handrails. The top rail profile is not Code compliant and does not have extensions. Add a code compliant handrail to the inside of the railings at the steps, typical at both porches.
    - The door thresholds at the porches are approximately 1 ½" above the porch.

Windows:

- Prefinished aluminum fixed and slider windows, double glazed, are in generally good to fair condition. Some screens are missing, and some screen fabric is damaged. Inventory the screens. Replace all missing screens. Replace all damaged screen fabric.
- Front Entry Porch:
    - Aluminum storefront is in good condition.

Exterior Entrances:

- Aluminum storefront is in generally good condition.
- Painted steel door and HM framed egress doors to the back courtyard are in fair to poor condition. The doors at the back porches are in poor to very poor condition. Replace the door, HM frame, and hardware at left porch door.

Roof:

- Ballasted EPDM membrane roofing appears in fair condition. Ballast made observation of the membrane difficult. No active leaks were reported.
- Prefinished metal drip edges, parapet caps and parapet wall side/end trim are in generally good condition.

CODE CLASSIFICATION (2015 IBC INTERNATIONAL BUILDING CODE):

- Occupancy: Business (B)
- Construction Type: 2B, Unprotected, Non-Combustible.
- Fire Protection System: Not Sprinklered. Refer to MEPFP Assessment.
- Fire Alarm System: Yes. Refer to MEPFP Assessment.

LIFE SAFETY (2015 NFPA 101 LIFE SAFETY CODE):

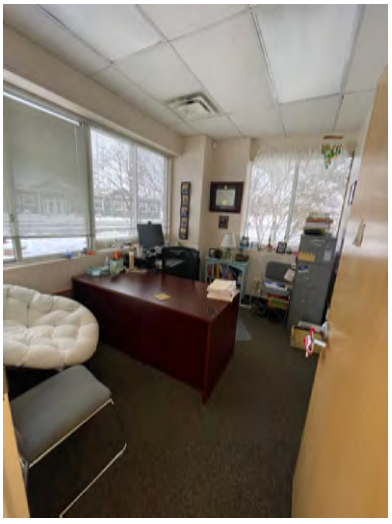
- Some of the corridor doors are 20-minute rated, some with closers and designed to resist the passage of smoke.
- Means of egress components appear compliant except as noted.

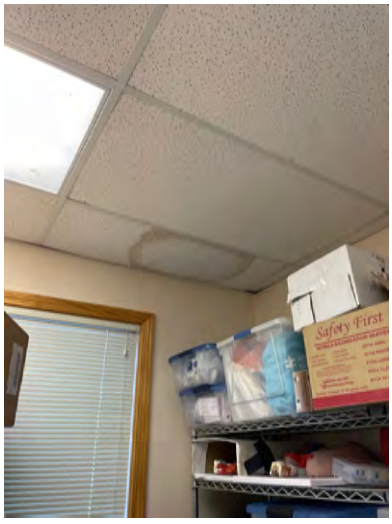
ACCESSIBILITY (2010 ADA STANDARDS):

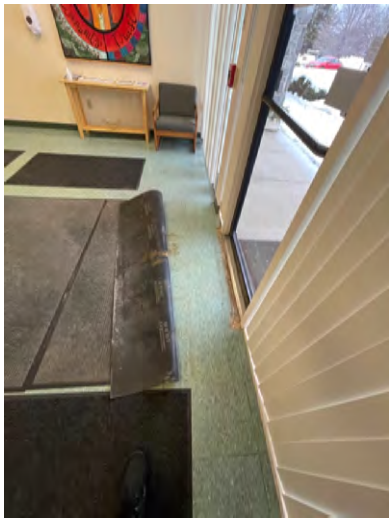
- The main entry doors on the front, parking lot, side of the building are ADA compliant. Asphalt paving from the parking lot is accessible. Main entry doors are not equipped with an ADA automatic door operator.
- There are 2 HC Accessible parking spots in front of the Main Entrance, labeled with signage.

- Two of the four All-Gender Single User Bathrooms are ADA compliant but require slight modifications to make them fully compliant. Modifications are noted above.
- The drinking fountain in the main hall is in good condition but is not ADA dual level.
- One kitchen sink is ADA compliant.
- Some built-in counters in the labs and classrooms are not ADA compliant.

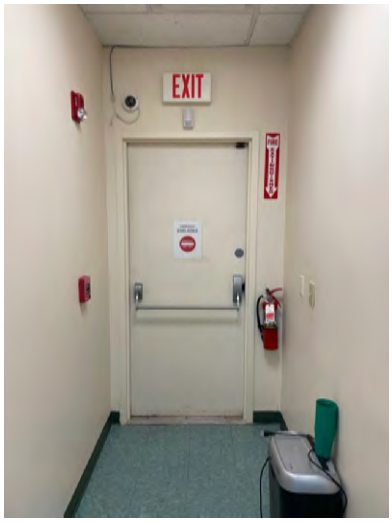
INTERIOR:

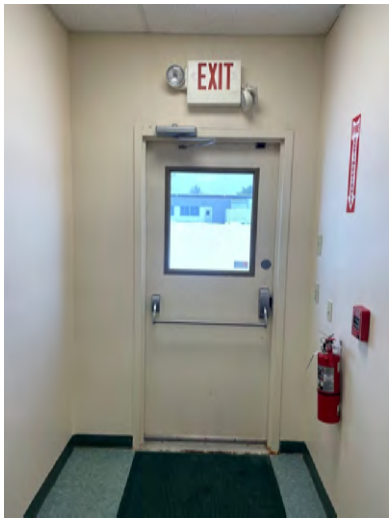




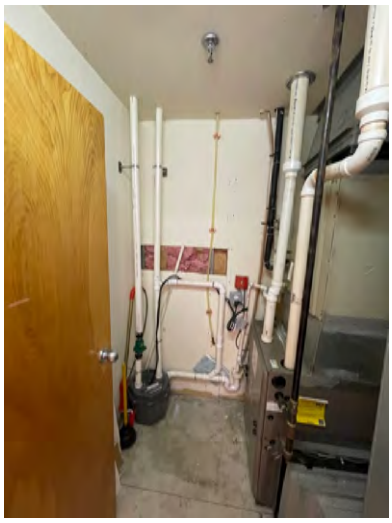


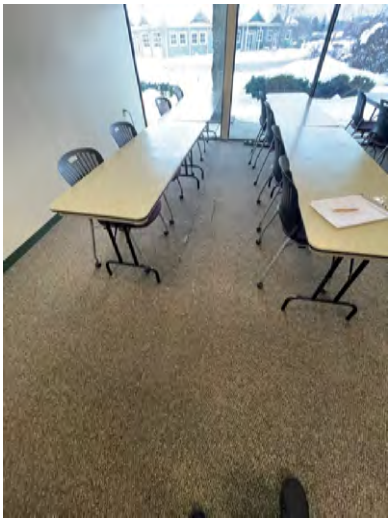
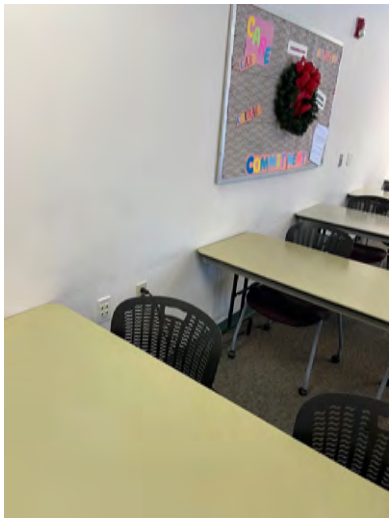












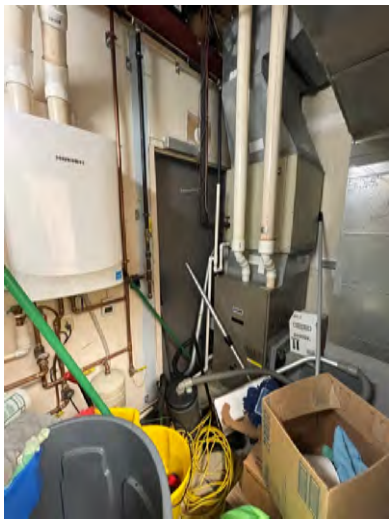






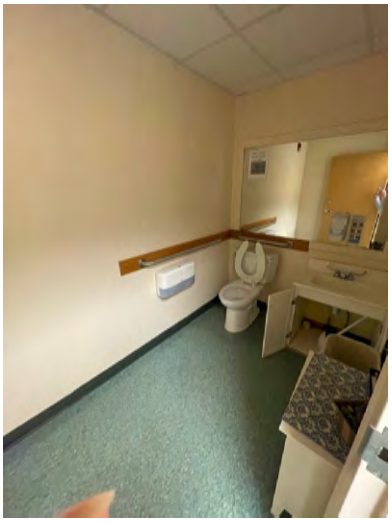


EXIT













EXTERIOR:









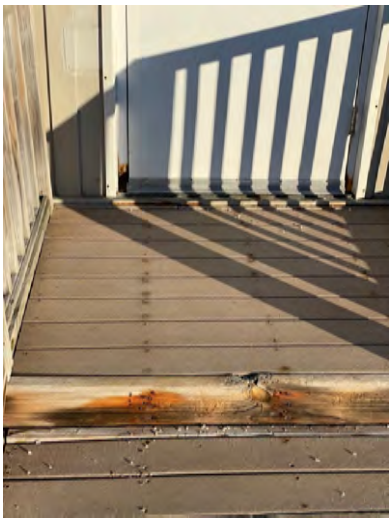








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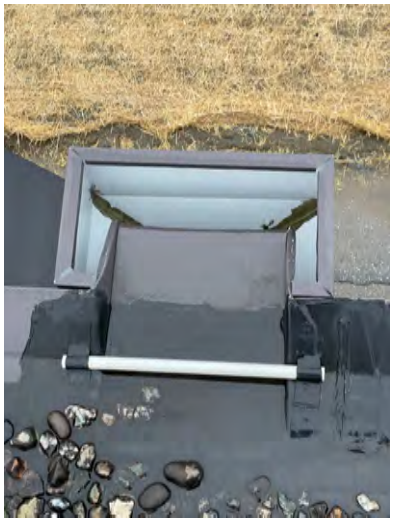




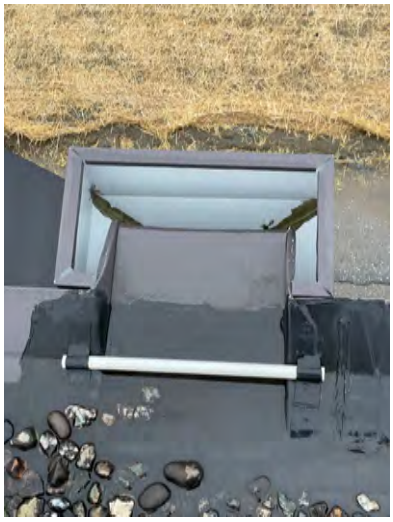




ROOF:




BUILDING 200



CONSTRUCTED: 1987

LAST RENOVATED: 2005

Stories: 1

Gross Area: 14,322 SF

Construction:

- Structure: Steel.
- Foundation: Cast-in-place concrete.
- Walls: Metal stud framing, GWB interior finish. Metal, or vinyl siding exterior finish.
- Roof: Flat: Fully adhered EPDM membrane roofing. Replaced in 2018.

USE: The building houses Administration, Admissions, Classrooms, Labs, Student Lounges and Kitchen, and Bathrooms.

INTERIOR: During an inspection of the building interior, the following conditions were observed. Conditions requiring repair/ replacement are noted:

- General:
  - Interior flush wood doors and painted HM frames are in generally good condition. Flush wood doors and HM frames at the Hall opening are 20-minute UL fire rated. The Hall doors typically have self-closing spring hinges. Door hardware is typically ADA compliant lever-style and in good condition.
  - Aluminum slider windows typically have painted GWB head and jamb returns in fair condition with clear finished wood sills in typically good to fair condition, unless noted.
  - Aluminum storefront exterior doors are in fair to poor condition and typically have paddle exit hardware, unless noted. Some have been replaced more recently and are in good condition.
  - Window shades are in good condition.
  - White boards are in good condition.
  - Mechanical, Electrical, Janitor's Closets and Miscellaneous Storage Rooms are typically unfinished. Concrete floors are in poor condition and stained. Walls are unfinished GWB, taped only with no base. Ceilings are open to structure and unfinished except steel structure is sometimes painted. Hall doors are typically missing transition strips at the carpet. These spaces are generally in poor condition and not maintained to the same standards as the public spaces. No improvements are suggested in these rooms.
- Typical Finishes Unless Noted:
  - Floors - Carpet is in good to fair condition with some stains.
  - Vinyl base is in good condition.
  - Walls - Painted GWB is in good to fair condition, some dings and scratches. Repair and touch up paint at damaged areas.
  - Ceilings - SAC is in good condition.

- Center Main Entrance Lobby and Hall:
  - Floor - The Entrance Lobby floor is rubber in good condition with a transition strip to carpet in the Hall. The rubber flooring is in poor condition in front of the exterior doors.
  - The exterior storefront door finish is in poor condition.
- Classroom 202:
  - Walls - There is a large gap at the end of the hall wall where it intersects the exterior storefront. Install metal or wood closure trim and paint.
  - Replace failed glazing gaskets at exterior storefront door.
- Classroom 207:
  - Walls - Patch and paint the vertical cracks next to the corners of the exterior window wall.
- IT Suite 208:
  - Floor - Patch missing carpet at door to hall.
  - Storage Room Walls - The wall behind the built-in wood shelving has a GWB patch that is not taped. Finish tape and paint the GWB wall.
  - Left Office Walls - Patch and paint the hole in the wall and the vertical crack next to the corner of the exterior window wall.
  - Ceiling - Replace 3 damaged tiles.
- Classroom 209:
  - Floor - The carpet has a large snag approximately midway in the room.
  - Ceiling - Replace 2 damaged tiles.
- Computer Classroom 210:
  - Ceiling - Replace 3 damaged tiles. One above the data rack and two above the perimeter cable tray.
- Kitchen next to Classroom 210:
  - Floor - VCT is in fair condition to very poor condition and is damaged near the vending machines. Replace VCT and base.
  - Ceiling - Replace 8 damaged tiles.
  - PLAM countertop at 2'-10" with drop-in SS sink and partial pipe guard below are in fair condition. Replace pipe guard below sink. Knee clearance at sink is 2'-8" h x 3'-0" w, which meets ADA.
  - Wood panel clear finished wall and base cabinets are in fair condition.
  - Replace the magnetic catches at the wood access doors of the electrical closet so doors close and stay latched.
- Back Halls to the Egress Doors to the Back Courtyard (Numbered 1-4 left to right):
  - Floor - Carpet in front of back egress doors has typically been replaced and is in good condition except the carper at Back Hall 2 is salt stained.
  - Walls: The walls and base adjacent to back egress doors are water damaged. The GWB is bubbled and the base has unglued. The GWB pier to the right of back egress door 2 is in very poor condition. Repair the GWB and replace the vinyl base.
  - Egress doors 1 and 2 to the back courtyard: Painted flush steel doors in painted HM frames are rusted at the bottom and in poor condition. Egress doors 3 and 4 to the back courtyard: Aluminum storefront in fair condition. The doors have exit signs, closers and panic hardware.
- Classroom 212:
  - Floor - Carpet in fair condition with stains.
  - Ceiling - Replace 1 damaged tiles.

- Classroom 216:
  - Walls - Patch and touch up paint at multiple holes.
- Data 220:
  - Floor - Partial carpet and partial VCT is in fair condition.
  - Walls - Old CT wainscot is in poor condition (this room was a bathroom previously). Some GWB is fire taped only. Finish tape and paint the GWB walls.
  - Install missing vinyl base.
  - Ceiling - Install 4 missing tiles.
  - Paint the inside of the flush wood door and frame.
- Left Hall:
  - Floor - A section of the carpet in front of the exterior door has been replaced with a perimeter transition strip and is in good condition.
  - Walls - Touch up paint low on the corner of the wall opposite the door to the IT Suite.
- Offices 225, 229 and Storage 227:
  - Floor - Carpet is older and in fair to poor condition (in 227).
- Offices 230, 233, 236 and Copy Room 231:
  - Walls - Patch and touch up paint at multiple dings and cracks.
  - Clear finished wood sills and casings are in poor to very poor condition. Sand and refinish.
- Mechanical Room off Office 236:
  - Walls - Multiple holes in GWB. Some pipes through the exterior wall are sealed with exposed foam insulation which is not allowed by Code. Cover exposed foam insulation with an approved 20-minute thermal barrier.
- Storage Room off the Main Hall to the right of Office 236:
  - Floor - CT in fair to poor condition at the door.
- Data 237:
  - Floor - Carpet is in poor condition.
  - Install missing vinyl base.
  - Ceiling - Replace 4 damaged tiles.
- Storage Room 238:
  - Floor - Carpet in poor condition.
- Typical All Gender Single User Bathrooms (Numbered 1-7 left to right and back to front):
  - Floors in BR 1&2, and 5-7 - Sheet vinyl flooring in fair condition typically to poor condition at perimeter of BR 1&2.
  - Floor in BR 3 - VCT with vinyl base in fair condition.
  - Floor is BR 4 - CT with vinyl base in fair condition.
  - Walls in BR 1&2 - CT wainscot with wallpaper above is in fair condition. Wallpaper in BR 1 is peeling.
  - Walls in BR 5-7 - CT wainscot with painted GWB above is in fair condition. Patch and paint holes in GWB at plumbing wall in BR-7. Replace sealant at the wall to CT joint.
  - Ceiling - Replace 2 damaged tiles in BR 1.
  - Floor-mounted toilets are in fair condition

- SS grab bars are in good condition but are not all ADA compliant.
  - BR 1 - Install 36”w back and 42”w side grab bars. Add ADA signage.
  - BR 2 - Has non-ADA compliant grabs bars.
  - BR 3 - This bathroom has ADA signage but is not ADA compliant. The room is only 4’-6” wide but a 60” wheelchair turning radius is required for ADA compliance. This room has a 24”w back grab bar. Remove ADA signage.
  - BR 4 - This bathroom has ADA signage but is not ADA compliant. Install 36”w back and 42”w side grab bars.
  - BR 5, 6 and 7 - Grab bars are ADA compliant. Add ADA signage.
- Wall hung porcelain sinks at 2’-8” to 2’-9 ½” are in good condition and ADA compliant. Add pipe guards below sinks in BR 1, 4, 5, 6 and 7.
- Urinal in BR6 is not mounted at ADA height.
- Flush wood doors have privacy lock/indicator in good condition.

- Kitchenette off Back Hall 4:
  - Floor - Sheet vinyl flooring is in fair condition.
  - Walls - CT wainscot with painted GWB above is in fair condition.
  - PLAM countertop at 3’-0” with drop-in SS sink is in fair condition. Sink is not open below and not ADA compliant.
  - Wood panel clear finished base cabinets are in poor condition.
  - Wood panel clear finished base cabinets are in good condition.
- Right Front Hall:
  - Floor - Carpet in fair to poor condition in front of the door.
  - Walls: The walls and base adjacent to the jambs of the exterior door are water damaged and in very poor condition. The GWB is bubbled and the base has unglued. Repair the GWB and replace the vinyl base.
  - Exterior door is aluminum storefront in fair condition. The door has an exit sign, closer and panic hardware.

EXTERIOR: During an inspection of the building exterior, the following conditions were observed. Conditions requiring repair/replacement are noted:

- Prefinished concealed fastener vertical metal siding is in generally fair condition, except as noted.
- Vinyl clapboard siding below sill of banks of windows is in generally fair condition, except as noted.
- Fabric covered aluminum framed awnings are in good condition.
- Front Side (Parking Lot):
  - Replace the top 6x6 PT timber at the retaining wall extending from the left corner.
  - Remove the small patch at the prefinished aluminum flat signage panel at the left end near the corner and the right end of the panel on the front of the porch and replace the whole panel.
  - Paint the wood trim at both ends of the vertical vinyl siding panels below the window banks and at inside corners at both ends of porch.
  - The vinyl letters on the signage panels near the left corner and at the porch are in fair condition.
  - The prefinished metal base trim at the bottom of the metal siding at the face of the porch soffit is rusted and the finish is peeling.

- The brick paving flanking the asphalt paving at the main entrance at the porch is in very poor condition. The bricks are heaved and very uneven. Replace the brick pavers in kind with appropriate base materials or replace with asphalt paving.
- T-111 wood porch ceiling with stained finish is in fair condition with some mold growth and worn areas.
- Stone piers at the porch are in good to fair condition with a few damaged stones and dislodged mortar.
- None of the door thresholds under the porch are flush or ADA compliant. Consider replacing the brick pavers and asphalt sidewalk in front of the doors, under the porch, with a flush concrete pad, pinned to the foundation wall.
- The asphalt paving up to the pair of aluminum doors to the right of the porch is in fair condition but is not flush. Consider installing a flush concrete pad, pinned to the foundation wall.
- The vinyl letters on the signage panels to the right of the porch over the doors are cracked and in poor condition. Replace.
- Paint the wood trim above the window heads at the far-right window bank.

- Back Side (Courtyard):
  - Paint the wood trim above the window heads.
  - Much of the prefinished metal base trim at the bottom of the metal and vinyl siding is rusted and the finish is peeling.
  - Many of the louvers and vent hoods are rusted and in poor condition.
  - Most of the surface run piping is rusted and in poor condition.
  - Add painted galvanized steel pipe handrails to both sides of the PT wood site steps.
  - The equipment bollards are rusted.
  - Paint the wood trim at the right end of the vinyl siding near the right corner of the back side.
- Left Side:
  - Paint the wood trim at both ends of the vertical vinyl siding panels below the window banks.
  - The asphalt paving up to the aluminum door is not flush. There is a 3” step at the door to the paving. Consider installing a flush concrete pad, pinned to the foundation wall.

Windows:

- Prefinished aluminum fixed and slider windows, double glazed, are in generally fair condition. Some screens are missing, and some screen fabric is damaged. Inventory the screens. Replace all missing screens. Replace all damaged screen fabric.
- Replace the perimeter sealant on the back side windows.
- Front Entry Porch:
  - Aluminum storefront is in fair to poor condition. The finish is faded and damaged.

Exterior Entrances:

- Aluminum storefront is in fair to poor condition. The finish is faded and damaged.
- The two aluminum doors to the right of the front porch are in fair condition.
- The two aluminum doors at the left end of the back side are in fair condition.
- The two painted flush steel doors in painted HM frames below the canopies numbered 200 are rusted at the bottom and in poor condition. The half glass window stops are very rusted. There are no thresholds. Replace the doors, frames and hardware.

- The painted flush steel door in painted HM frame at the exterior Mechanical Room at the right end of the back side is in very poor condition. Replace the door, frame and hardware.

Roof:

- Fully adhered EPDM membrane roofing is in fair condition.
- Prefinished metal drip edges, parapet caps and parapet wall side/end trim are in generally good condition.

CODE CLASSIFICATION (2015 IBC INTERNATIONAL BUILDING CODE):

- Occupancy: Business (B)
- Construction Type: 2B, Unprotected, Non-Combustible.
- Fire Protection System: Not Sprinklered. Refer to MEPFP Assessment.
- Fire Alarm System: Yes. Refer to MEPFP Assessment.

LIFE SAFETY (2015 NFPA 101 LIFE SAFETY CODE):

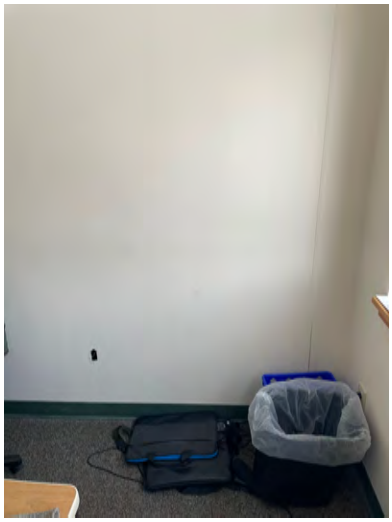
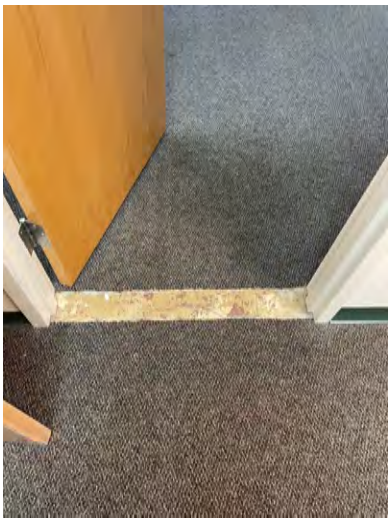
- Corridors doors are 20-minute rated, with spring hinges or closers and designed to resist the passage of smoke.
- Means of egress components appear compliant except as noted.

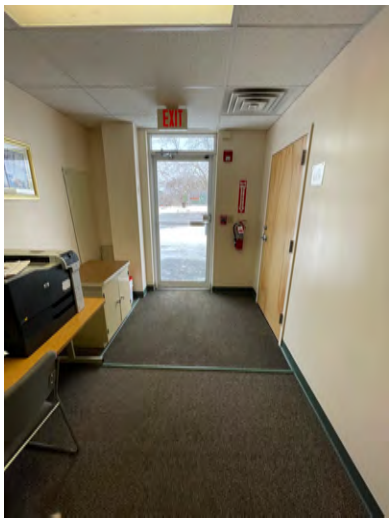
ACCESSIBILITY (2010 ADA STANDARDS):

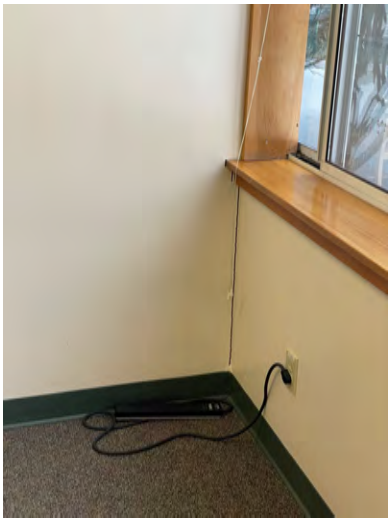
- The main entry doors on the front, parking lot, side of the building are ADA compliant. Asphalt paving from the parking lot is accessible. Main entry doors are not equipped with an ADA automatic door operator.
- There are 2 HC Accessible parking spots in front of the Main Entrance, labeled with signage.
- There is not currently a wheelchair accessible route through the back courtyard between buildings 100 and 200 which are at a lower elevation and 300 and 400 which are at a higher elevation. There are two sets of site stairs but no ramp connection between the two elevations. The entrances on the courtyard side of each building are not necessarily wheelchair accessible either. All 4 buildings are wheelchair accessible on the front or circular drive/parking side of the buildings. It is our understanding that a stormwater management plan is under design that will involve a large gravel wetland in the courtyard. Further evaluation would be required if the College would like to pursue the addition of a site ramp through the courtyard.
- Three of the seven All-Gender Single User Bathrooms are ADA compliant but require pipe guards and signage. The remainder have some accessible components and all, but one could be made ADA compliant. ADA requires that where multiple single user toilet rooms are clustered within a single location, half the toilet rooms in that location must be ADA compliant.
- The drinking fountain in the main hall is in good condition but is not ADA dual level.
- One kitchen sink is ADA compliant.

INTERIOR:



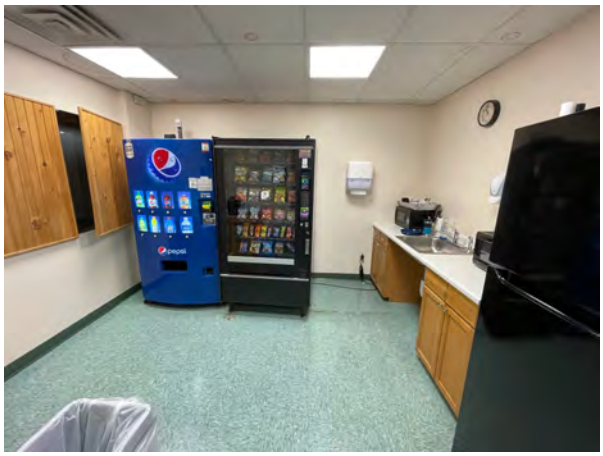









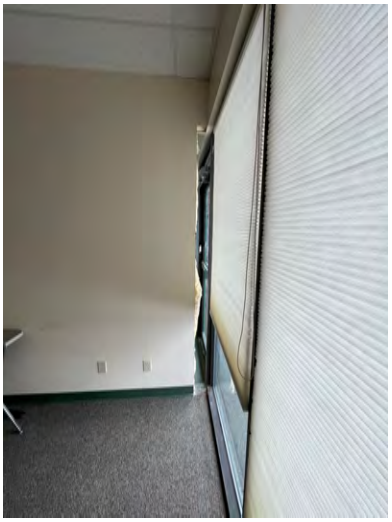


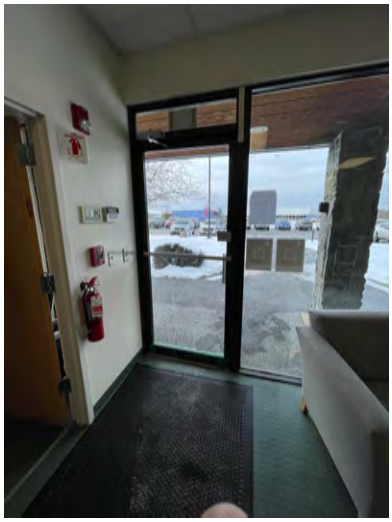




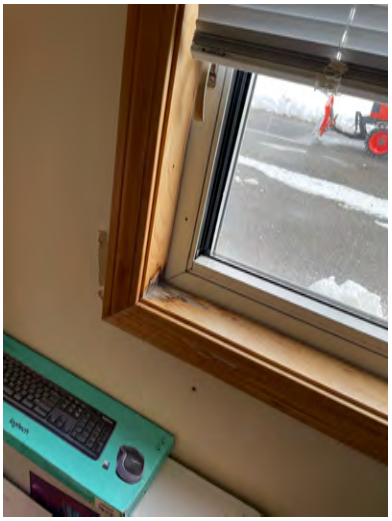


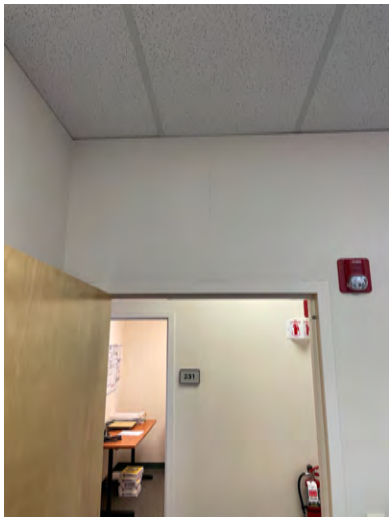


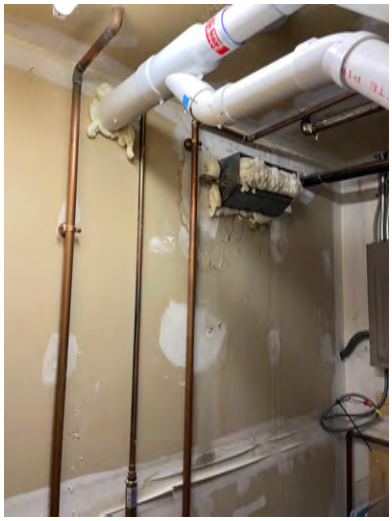










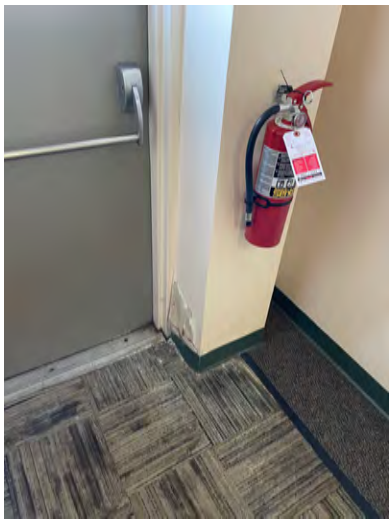


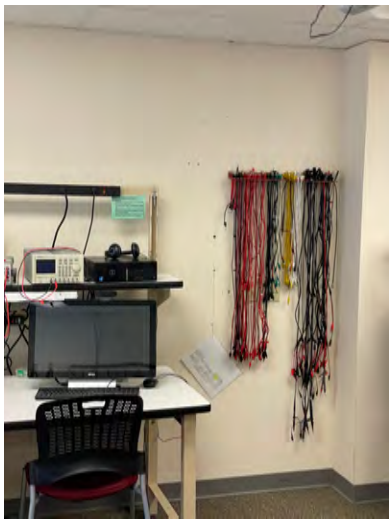



RESTROOM

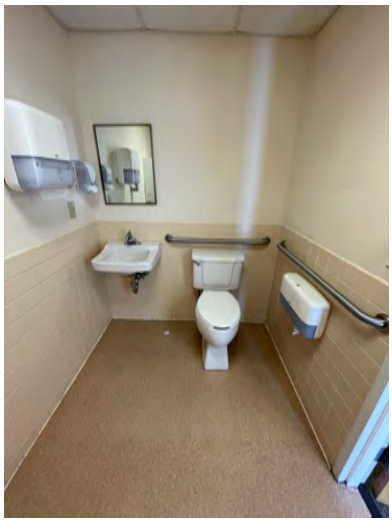
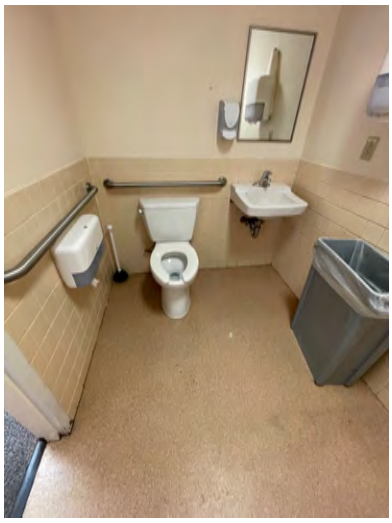
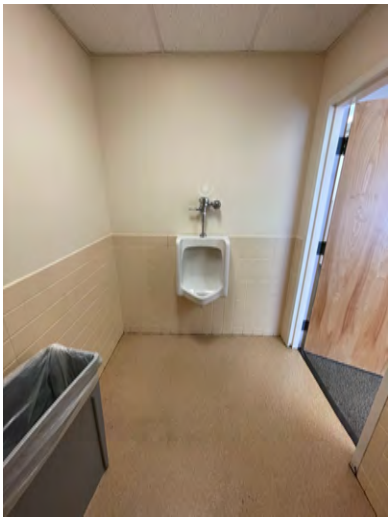
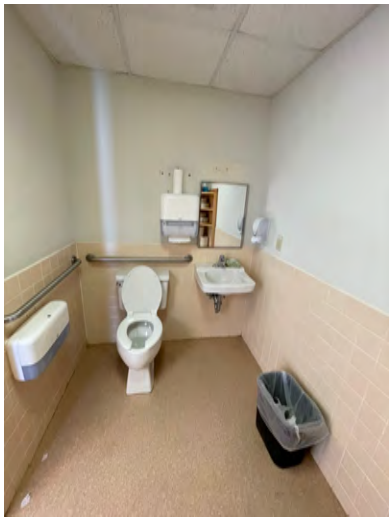










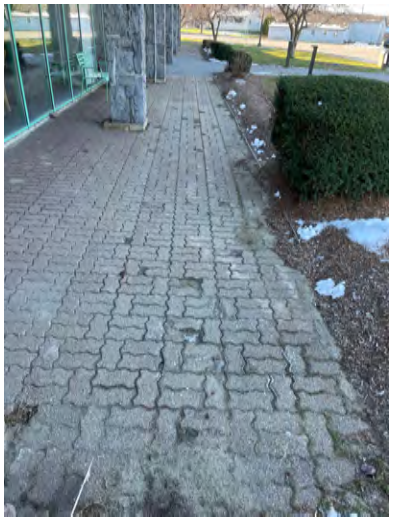






EXTERIOR:









VERMONT TECH







VERMONT TECH WILLISTON CAMPUS


NT TECH
















200






200

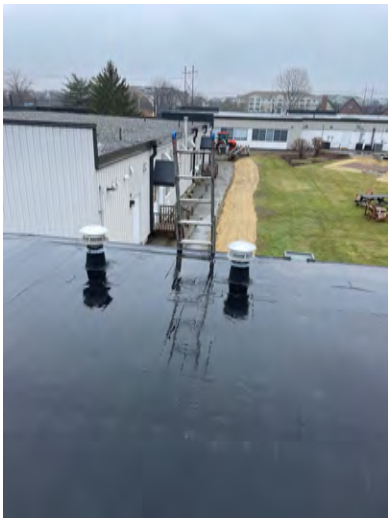








ROOF:















BUILDING 300



CONSTRUCTED: 1986

LAST RENOVATED: 2005 (DHY), 2022

Stories: 1

Gross Area: 8,500 SF

Construction:

- Structure: Steel.
- Foundation: Cast-in-place concrete.
- Walls: Metal stud framing, GWB interior finish. Metal, or vinyl siding exterior finish.
- Roof: Flat: Ballasted EPDM membrane roofing. Replaced in 2013.

USE: The building houses the Dental Clinic, Dental Hygiene, Classrooms, Labs, Student Lounges and Kitchen, and Bathrooms.

INTERIOR: During an inspection of the building interior, the following conditions were observed. Conditions requiring repair/ replacement are noted:

- General:
  - Interior flush wood doors and painted HM frames are in generally good condition. Flush wood doors and HM frames at the Hall opening are 20-minute UL fire rated. Door hardware is typically ADA compliant lever-style and in good condition.
  - Aluminum slider windows typically have painted GWB head and jamb returns in fair condition with clear finished wood sills in typically good to fair condition. Sand and refinish wood windowsills in poor to very poor condition, where noted.
  - Window shades are in good condition.
  - White boards are in good condition.
  - Mechanical, Electrical, Janitor's Closets and Miscellaneous Storage Rooms are typically unfinished. Concrete floors are in poor condition with stains. Walls are sometimes unfinished GWB, taped only with no base. Ceilings are open to structure and unfinished except steel structure is sometimes painted. If SAC, tiles are missing. These spaces are generally in poor condition and not maintained to the same standards as the public spaces. No improvements are suggested in these rooms.
- Typical Finishes Unless Noted:
  - Floors - VCT is in good condition.
  - Vinyl base is in good condition.
  - Walls - Painted GWB is in good condition.
  - Ceilings - SAC is in good condition.
- Front Entrance Vestibule:
  - Aluminum storefront is in good condition.
  - Walk off carpet is in good condition.

- Lobby, Waiting and Reception:
  - Floors - VCT is in fair condition with open joints.
  - The 20-minute UL rated flush wood doors off the Lobby have UL labelled laminated safety glass sidelights in good condition.
  - PLAM counter at 2'-6" with 3'-6" front shelf is in good condition. Knee clearance at 2'-4 ½" is ADA compliant.
  - Repair/patch and paint the GWB at the left end of the windowsill.
  - The wood windowsill is in very poor condition, sand and refinish.
- All Gender Single User ADA Bathroom off Lobby:
  - Floor - VCT is in fair to poor condition around the toilets. Some joints have opened.
  - Walls - Repair and touch up paint at damaged GWB and vinyl base in the corner behind the toilet.
  - Floor-mounted toilet is in good condition.
  - SS grab bars are ADA compliant.
  - Wall hung porcelain sink are @ 2'-10" with pipe guard below is ADA compliant.
  - Flush wood doors have privacy lock/indicator in good condition.
- Administration 105, Lab 106, Sanitary 107, Wet Lab 117, and Sim Lab 135:
  - Ceiling - in Wet Lab 117 is painted GWB in good condition.
  - Solid surface countertops at 2'-10" mounting height, some with drop-in SS sinks, are in good condition. Sinks are typically not open below which is not ADA compliant.
  - PLAM wall and base cabinets are in good condition.
  - Repair/patch and paint the water damaged GWB adjacent to the right back exit door in Lab 106 and replace base in kind.
- Back Hall:
  - The back exit door and HM frame are in very poor condition and rusted at the bottom. Replace the door and HM frame.
- Work Area 113:
  - Floor -VCT is damaged in one area. Replace approximately 7 VCT tiles.
  - Solid surface work countertop at 2'-6" is in good condition. Knee clearance is 2'-3 ½"-4" (uneven floor) which is ADA compliant.
- Kitchenette off Left Center Hall:
  - PLAM countertop at 3'-0" with drop-in SS sink is in good condition. Sink is not open below which is not ADA compliant.
  - Wood panel clear finish wall and base cabinets are in good condition.
- Two All Gender Single User ADA Bathrooms off Left Center Hall:
  - Floor - VCT is in fair to poor condition around the toilets.
  - Floor-mounted toilets are in fair condition.
  - SS grab bars are ADA compliant.
  - Wall hung porcelain sink at 2'-10" with pipe guard below is ADA compliant.
  - Flush wood doors have privacy lock/indicator in good condition.
- Locker Rooms off Left Center Hall:
  - PLAM countertop with sinks at 2'-10" and wood panel clear finished base cabinets below in Female Student Locker Room is in good condition. The sinks in this counter are not open below and are not ADA compliant.
  - Wall mounted sink at 2'-9" in Male Locker Room is in good condition. Knee clearance is 2'-7" with pipe guards and is ADA compliant.
  - Solid surface countertop with sink at 2'-10" in Faculty Locker Room is in good condition. Knee clearance is 2'-5" with pipe guards and is ADA compliant.
  - Prefinished metal lockers are in good condition.

- Storage Closet off Left Center Hall:
  - Floor - VCT is in very poor condition, replace VCT and vinyl base.
- Left Hall and Offices off Left Hall:
  - Floor - Carpet is in good condition.
  - Patch and paint the dinged GWB in Office 135.
  - Install missing vinyl base at both jambs of the back exit door.
- Kitchen 136 off Left Hall:
  - Solid surface countertops at 2'-10" mounting height, one with drop-in SS sink, are in good condition. Sink is not open below which is not ADA compliant.
  - PLAM wall and base cabinets are in good condition.

EXTERIOR: During an inspection of the building exterior, the following conditions were observed. Conditions requiring repair/replacement are noted:

- Prefinished concealed fastener vertical metal siding is in generally fair condition, except as noted.
- Vinyl clapboard siding below sill of banks of windows is in generally fair condition, except as noted.
- Fabric covered aluminum framed awnings are in good condition, except as noted.
- Front Side (Parking Lot):
  - Replace two whole prefinished aluminum flat signage panels at the far-left end. One is patched and one is damaged.
  - Remove the small patch at the prefinished aluminum flat signage panel at the far-right end near the building corner and replace the whole panel.
  - Aluminum storefront is in good condition.
  - Signage is in very poor condition, replace vinyl lettering.
- Right Side:
  - The vinyl siding is damaged.
  - The finish is peeling at the base wall drip trim at the bottom of vinyl siding. Paint.
- Back Side (Courtyard):
  - The gutters and downspouts are in good condition.
  - Repair the left awning. It's detached from the wall but otherwise in good condition.
  - Flush concrete pads at all three back doors are in good condition.
- Left Side
  - The vinyl siding is damaged.
  - Replace all the screen fabric.
  - Replace the caulk at the window heads.
  - Reattach vinyl trim at windowsills.

Windows:

- Prefinished aluminum fixed and slider windows, double glazed, are in generally good condition. Some screens are missing, and some screen fabric is damaged. Inventory the screens. Replace all missing screens. Replace all damaged screen fabric.
- Aluminum storefront is in good condition.

Exterior Entrances:

- Aluminum storefront is in good condition.
- The clad PWD filler panel between the two front entrances is in very poor condition. Replace the PWD sheathing and install a prefinished aluminum filler panel between the two front entrance door frames.
- Painted steel door and HM framed egress doors to the back courtyard are in fair condition except the right door. Replace the door and HM frame as noted above.

Roof:

- Ballasted EPDM membrane roofing appears in fair condition. Ballast made observation of the membrane difficult. No active leaks were reported.
- Prefinished metal drip edges, parapet caps and parapet wall side/end trim are in generally good condition.

CODE CLASSIFICATION (2015 IBC INTERNATIONAL BUILDING CODE):

- Occupancy: Business (B)
- Construction Type: 2B, Unprotected, Non-Combustible.
- Fire Protection System: Not Sprinklered. Refer to MEPFP Assessment.
- Fire Alarm System: Yes. Refer to MEPFP Assessment.

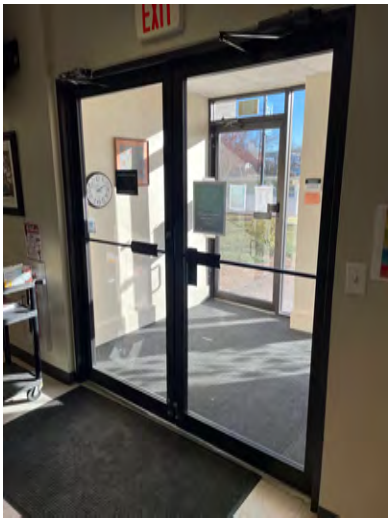
LIFE SAFETY (2015 NFPA 101 LIFE SAFETY CODE):

- Corridors doors are 20-minute rated and designed to resist the passage of smoke.
- Means of egress components appear compliant except as noted.

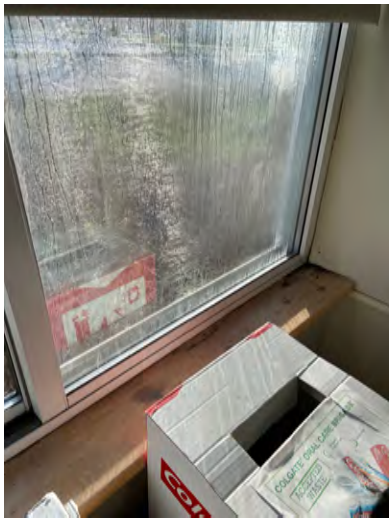
ACCESSIBILITY (2010 ADA STANDARDS):

- The main entry doors on the front, parking lot, side of the building are ADA compliant. Asphalt paving from the parking lot is accessible. Main entry doors are not equipped with an ADA automatic door operator.
- There are 2 HC Accessible parking spots in front of the Main Entrance, labeled with signage.
- Three All Gender ADA Accessible Single User Bathrooms are provided.
- The drinking fountain in the main hall is in good condition but is not ADA dual level.
- The kitchen sinks are not ADA compliant.
- Built-in work counters in the labs and classrooms are not all ADA compliant.

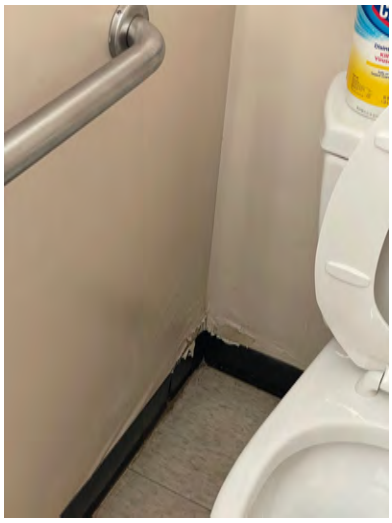
INTERIOR:











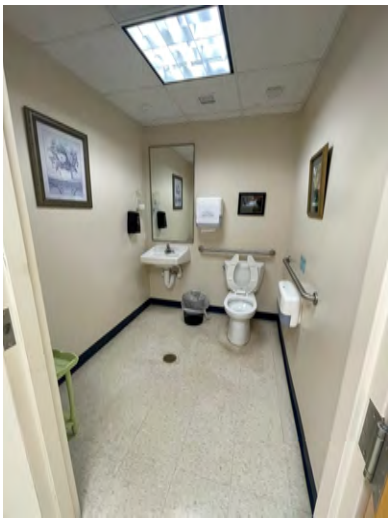
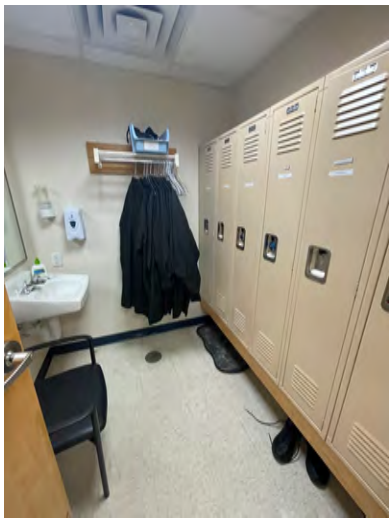
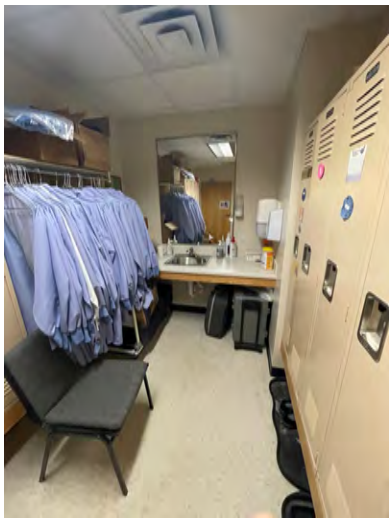


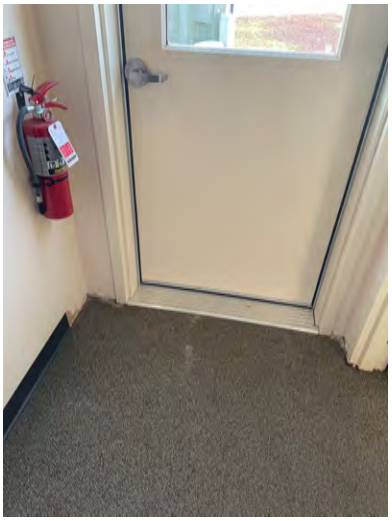


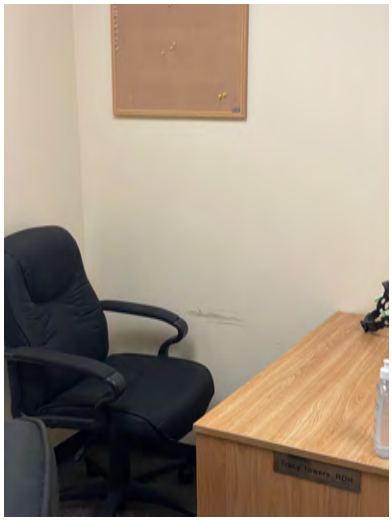










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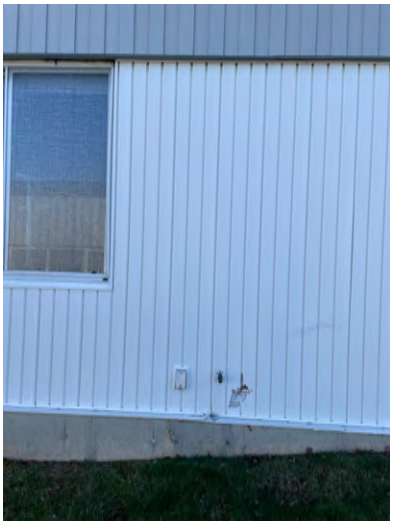
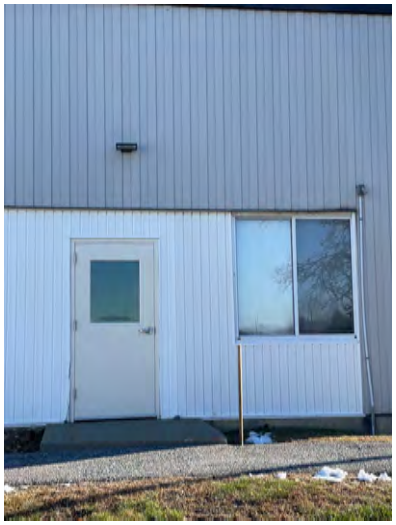








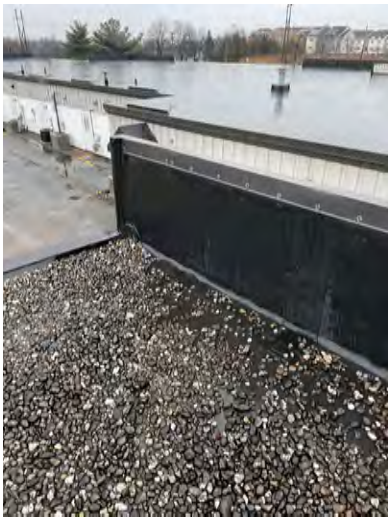
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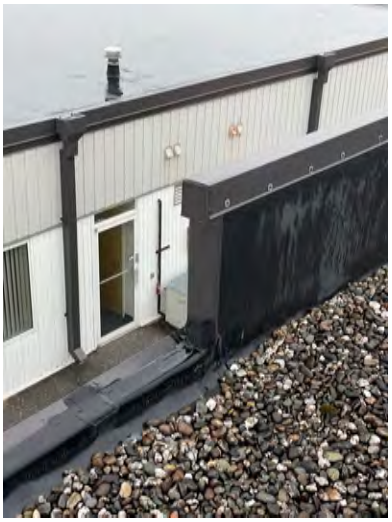




















BUILDING 400



CONSTRUCTED: 1984

LAST RENOVATED: 2007

Stories: 1

Gross Area: 15,716 SF

Construction:

- Structure: Steel.
- Foundation: Cast-in-place concrete.
- Walls: Metal stud framing, GWB interior finish. Metal, or vinyl siding exterior finish.
- Roof: Flat: Fully adhered EPDM membrane roofing. Replaced in 2011.

USE: The building houses the Library, Classrooms, Center for Academic Success, Machine Shop, Science Lab, VT Interactive Technologies, Student Lounges and Kitchen, and Bathrooms.

INTERIOR: During an inspection of the building interior, the following conditions were observed. Conditions requiring repair/ replacement are noted:

- General:
  - Interior flush wood doors and painted HM frames are in generally good condition. Flush wood doors and HM frames at the Hall opening are 20-minute UL fire rated. The Hall doors typically have self-closing spring hinges. Door hardware is typically ADA compliant lever-style and in good condition.
  - Aluminum slider windows typically have painted GWB head, jamb and sill returns in fair condition unless noted.
  - Aluminum storefront exterior doors are in fair condition and typically have paddle exit hardware, unless noted. Some have been replaced more recently and are in good condition.
  - Window shades are in good condition.
  - White boards are in good condition.
  - Mechanical, Electrical, Janitor's Closets and Miscellaneous Storage Rooms are typically unfinished. Concrete floors are in poor condition with previous VCT adhesive residue and stained. Walls are unfinished GWB, taped only with no base. Ceilings are open to structure and unfinished except steel structure is sometimes painted. Hall doors are typically missing transition strips at the carpet. These spaces are generally in poor condition and not maintained to the same standards as the public spaces. No improvements are suggested in these rooms.
- Typical Finishes Unless Noted:
  - Floors - Carpet is in generally good condition. Some carpets have stains.
  - Vinyl base is in good condition.
  - Walls - Painted GWB is in generally good condition. Some walls have dings and scratches. Repair and touch up paint at damaged areas.
  - Ceilings - SAC is in good condition.

- Classrooms 401A and 401B:
  - Acoustic Movable Partition is in good condition.
  - Clear finished wood trim at windows is in good condition.
  - The exterior aluminum door in Classroom 401A is labelled “Not an Exit” and all interior hardware has been removed. The finish at the bottom of the door is dinged and damaged.
- Classrooms 402:
  - The exterior aluminum door finish at the bottom of the door is dinged and damaged. The exterior glazing bead is detached, repair the door.
- Kitchen and Seating Area:
  - Floor - VCT is damaged near the exterior door. Replace damaged tiles, approximately 6 - 12x12 tiles.
  - The vinyl base at the left jamb of the exterior aluminum door has become unglued, glue vinyl base.
  - Ceiling - replace one water damaged 2x4 SAC tile. Investigate source of leak above and repair if required.
  - PLAM countertops are @ 2’-10” mounting height with drop-in SS sink and pipe guards below. Knee clearance at sink is 2’-5” h x 2’-6” w, which meets ADA.
  - Wood panel clear finished wall and base cabinets are in good condition.
- Computer Room 403 off Kitchen:
  - Floor - VCT in fair condition except for 4-6 rust-stained tiles.
  - Wood counter is mounted at 2’-4” AFF and in fair condition. Knee clearance is 23 ½” which is not ADA accessible. Minimum knee clearance required by ADA is 27”.
- Chem Lab 405:
  - Floor - VCT in fair condition but the subfloor is very uneven. Bumpy finish.
  - Black phenolic chemtop work counters with sinks at 36” AFF with 27” knee clearance are in good condition. Height is not ADA compliant.
  - Flush wood look PLAM cabinets are in good condition.
  - Eye wash and shower station.
  - Utility sink @ 2’-10” AFF is in fair condition. Metal cabinet above is in good condition.
  - PLAM counter @ 36” AFF and PLAM cabinets below is in fair condition but not ADA compliant.
- Physics Lab 407:
  - Floor - VCT in fair condition but the subfloor is very uneven. Bumpy finish. Missing 2 tiles near the exterior door. Install missing tiles.
  - Base adjacent to door is unglued, re-glue.
  - Black phenolic chemtop work counters with sinks at 36” AFF with 27” knee clearance and are in good condition. Height is not ADA compliant.
  - Flush wood look PLAM cabinets are in good condition.
  - Eye wash and shower station.
  - The exterior aluminum door has paddle exit hardware but no closer and is in fair condition.
- Machine Shop 411:
  - Floor - Resinous epoxy floor is in good to fair condition with a few stains and some cracking near exterior walls.
  - Ceiling - No finish ceiling, open to structure above. Painted steel structure with exposed laminate FG batt insulation with integral vapor barrier.

- Eye wash station.
- Aluminum storefront exterior doors are in good condition.

- Offices 416, 417 and Office adjacent to 417:
  - Painted GWB sills have some water damage, and the paint is peeling. Repair, patch and paint windowsills.
- Main Mechanical Room adjacent to the Kitchen:
  - Exterior painted flush steel pair of doors in painted HM frame are rusted and in very poor condition. Replace the doors, frame, and hardware.
- Janitor's Closet adjacent to the Main Mechanical Room:
  - Walls - Painted GWB around the mop sink is water damaged, peeling, and in poor condition.
  - Ceiling - SAC in poor condition. Missing tiles and some damaged.
  - 2 x 2 mop sink is in fair condition.
- Data Room off Main Hall:
  - No vinyl base. Install vinyl base.
  - Ceiling - SAC grid in good condition but no tiles. Install 2 x 4 SAC tiles.
- Two Storage Closets off Main Hall with pairs of doors:
  - Floors - Install VCT flooring.
  - Install carpet to VCT transition strips below doors.
  - No vinyl base. Install vinyl base.
  - Walls - GWB is taped only. Finish tape and paint all the walls.
- Unused Office or Storage adjacent to Data Room of Main Hall:
  - Floor - Patch the carpet below the Hall door.
  - Missing some vinyl base. Replace base in whole room.
  - Walls - GWB; One side wall has been patched and taped. The back wall has a large hole, patch and paint entire room.
- Data Room adjacent to the Classroom 410:
  - Patch the carpet below the door to the Library.
- Library, Study Rooms and Meeting Room:
  - Walls - Painted GWB is dinged up in multiple locations at approximately chair height. Patch and paint. Consider adding a chair rail.
- Left Hall:
  - Ceiling - Replace damaged 2 x 4 SAC tiles above the flagpole.
- Main Entrance Hall:
  - Floor - Carpet is in good condition except it has a large wrinkle.
- Two Back Halls to the Egress Doors
  - Walls and Base: The walls and base adjacent to the left back egress door are water damaged. The GWB is bubbled and the base has unglued. Repair the GWB and replace the vinyl base.
  - Two egress doors to the back courtyard: Painted flush steel doors in painted HM frames are rusted at the bottom and in poor condition. The left back door is in very poor condition. Both doors have exit signs but no panic hardware. The door hardware is a lever lockset with a thumb turn deadbolt and a closer. One door was locked. Replace both doors, frames, and hardware, and install panic hardware. Both closers appear in fair condition. Confirm operational and may be reused.
- Right Hall:
  - Ceiling - Replace damaged 2 x 4 SAC tile above door 114.

- Typical Public Bathrooms Unless Noted:
  - Floor - VCT is in fair to poor condition around the toilets. Some joints have opened.
  - Walls - CT is in good condition except as noted.
  - Floor-mounted toilets are in fair condition but not ADA height.
  - Prefinished steel toilet partitions are if fair condition.
  - SS grab bars in ambulatory stalls are not ADA compliant.
  - PLAM countertops are @ 2'-7" mounting height with drop-in porcelain sinks and pipe guards below. Knee clearance is typically 2'-5 ½" h x 2'-6" w, which meets ADA.
  - Flush wood doors have push/pull hardware with a closer and are in good condition.
- Left Men's Room:
  - The edge of slab at the exterior wall has a piece of rusted steel along the entire edge and is in poor condition. Remove rust and paint or install painted wood trim to cover the rusted steel.
  - Replace damaged 2x2 SAC tile (with diffuser) over the toilet stall.
  - The urinal is not at ADA compliant mounting height.
  - There's no plexiglass divider between the sinks as there is in the Women's Room. Consider adding one.
  - The window has a CT sill in good condition.
- Left Women's Room:
  - Same edge of slab condition at the exterior wall except there's painted wood trim to cover the steel, in good condition.
  - The sinks have a plexiglass divider between them in good condition.
  - The window has a clear finished wood sill in poor condition. The sill is cupped at the toilet end.
  - The CT has a couple popped tiles inside the stall adjacent to the pilaster, repair CT.
  - The right window sash interior glass pane (insulated glass) is cracked, replace the glass.
- Right Women's and Men's Room:
  - Floor - 1 x1 mosaic tile is in fair to poor condition along the exterior wall over the steel edge.
  - Walls - CT has some holed left by removed fasteners, fill holes. Replace the caulk at the floor to wall joint.
  - Women's' Room PLAM sink counter is cracked and in poor condition. There are no pipe guards.
- Typical All Gender Single User Bathrooms (2 are ADA accessible, 2 are not):
  - Floor - VCT is in fair to poor condition around the toilets. Some joints have opened.
  - Ceiling - SAC is in good condition.
  - Floor-mounted toilets are in fair condition but not ADA height. They have an 18" rim and 17" max. is required for ADA. Replace toilet in 2 accessible rooms with ADA compliant.
  - SS grab bars are ADA compliant.
  - Wall hung porcelain sinks are @ 2'-8" mounting height with pipe guards below. Knee clearance is typically 2'-4 ½" h x 2'-6" w, which meets ADA.
  - Flush wood doors have privacy lock/indicator in good condition.
- Left All Gender ADA Accessible Single User Bathroom (Right Side of Hall):
  - The spring hinges at the door are not operational, adjust or replace.

EXTERIOR: During an inspection of the building exterior, the following conditions were observed. Conditions requiring repair/replacement are noted:

- Prefinished concealed fastener vertical metal siding is in generally good condition, except as noted.
- Vinyl clapboard siding below sill of banks of windows is in generally good condition, except as noted.
- Fabric covered aluminum framed awnings are in good condition.
- Front Side (Parking Lot):
  - Remove the small patch at the prefinished aluminum flat signage panel at the left end near the corner and the right end of the panel on the front of the porch and replace the whole panel.
  - The vinyl letters on the signage panels are cracked and in poor condition left of the porch and right of the porch.
  - Vinyl siding left of porch is damaged at the bottom and both jambs of the door from Classroom 401.
  - The vinyl siding left of front porch is buried behind the mulch. Clean mulch away from wall finish.
  - The aluminum frame around the prefinished aluminum flat signage panels on the left porch fascia is missing. Replace the flat panels or remove the frame.
  - Metal siding at the front face of the left porch corner pier is dented and damaged.
  - The brick paving flanking the asphalt paving at the main entrance at the porch is in very poor condition. The bricks are heaved and very uneven. Replace the brick pavers in kind with appropriate base materials or replace with asphalt paving.
  - T-111 wood porch ceiling with stained finish is in fair condition.
  - Brick piers at the porch are in fair condition with a few damaged bricks.
  - The vinyl siding right of the porch is damaged in a couple areas.
  - The aluminum frame around the prefinished aluminum flat signage panels right of the porch is corroded and in poor condition.
- Right Side:
  - The vinyl siding is cracked and there's mold growth on either side of the exit door. Clean and remove the mold.
  - Clean and remove the mold at the metal siding at the bottom of the fascia.
- Back Side (Courtyard):
  - The roof slopes front to back and drains over the back drip edge. The underside of the roof deck is visible without closure trim. The roofing fasteners are visible.
  - Many of the louvers are rusted and in poor condition.
  - Most of the surface run piping is rusted and in poor condition.
  - The vinyl siding as the base of the wall outside of the Machine Shop is damaged and in poor condition.
  - The sill trim at the bottom of the vertical metal siding is rusted and in poor condition in multiple locations.
  - The metal siding is dented and damaged in multiple locations. Above the pair of doors from the Mechanical Room and to the right of these doors near the inside and outside corners.
- Left Side:
  - The vinyl siding is damaged along the bottom in multiple locations and is in poor condition.

Windows:

- Prefinished aluminum fixed and slider windows, double glazed, are in generally fair condition. Some screens are missing.
- Front Entry Porch:
  - Aluminum storefront is in generally poor condition. The finish is faded and damaged. Some of the vertical members are corroded at the bottom.
  - The aluminum storefront at the right end of the porch is missing a trim cap at the sill, replace.

Exterior Entrances:

- Aluminum storefront is in generally poor condition except as noted. The finish is faded and damaged. Some of the vertical members are corroded at the bottom.
- The aluminum door left of the front porch, from Classroom 401, finish is faded and damaged and the hinges are rusted.
- The pair of aluminum doors at the main entrance at the front porch, the single door adjacent to the pair of doors, and the single door from the right end of the porch have been replaced more recently and are in good condition.
- Two single egress doors from the Main Hall to the back courtyard, the single door from the Mechanical Room adjacent to the Machine Shop, the single half glass door adjacent to the pair of doors, and the pair of doors from the Main Mechanical Room to the back courtyard: Painted flush steel doors in painted HM frames are rusted at the bottom and in poor to very poor condition. Replace doors, frames, and hardware.
- The pair of aluminum doors from the Machine Shop to the back courtyard are in good condition.
- The aluminum door from the Main Hall left side and right side are in good condition.

Roof:

- Fully adhered EPDM membrane roofing is in fair condition.
- Prefinished metal drip edges, parapet caps and parapet wall side/end trim are in generally good condition.

CODE CLASSIFICATION (2015 IBC INTERNATIONAL BUILDING CODE):

- Occupancy: Business (B)
- Construction Type: 2B, Unprotected, Non-Combustible.
- Fire Protection System: Not Sprinklered. Refer to MEPFP Assessment.
- Fire Alarm System: Yes. Refer to MEPFP Assessment.

LIFE SAFETY (2015 NFPA 101 LIFE SAFETY CODE):

- Corridors doors are 20-minute rated, with spring hinges or closers and designed to resist the passage of smoke.
- Means of egress components appear compliant except as noted.

ACCESSIBILITY (2010 ADA STANDARDS):

- The main entry doors on the front, parking lot, side of the building are ADA compliant. Asphalt paving from the parking lot is accessible. Main entry doors are not equipped with an ADA automatic door operator.
- There are 2 HC Accessible parking spots in front of the Main Entrance, labeled with signage.
- The multi-users bathrooms are not ADA compliant but two of the four All Gender Single User Bathrooms are ADA compliant.
- The drinking fountain in the main hall is in good condition but is not ADA dual level.
- The kitchen sink is ADA compliant.
- Built-in work counters in the labs and classrooms are not ADA compliant.

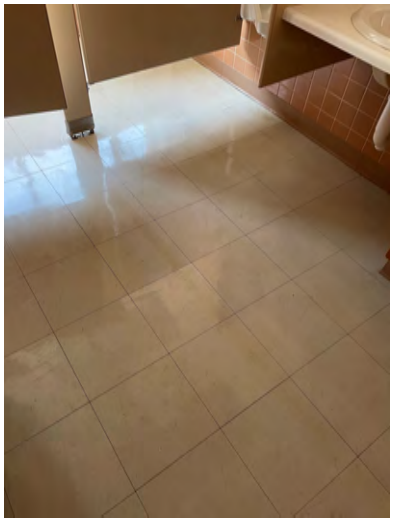
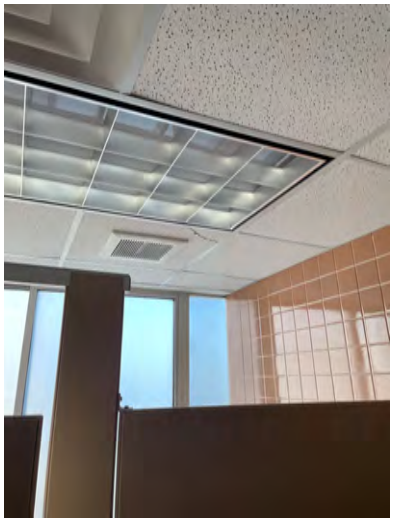
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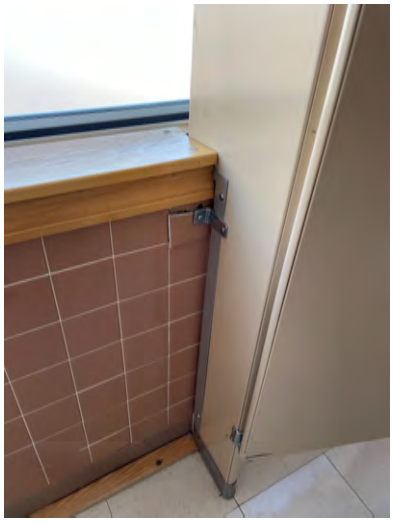
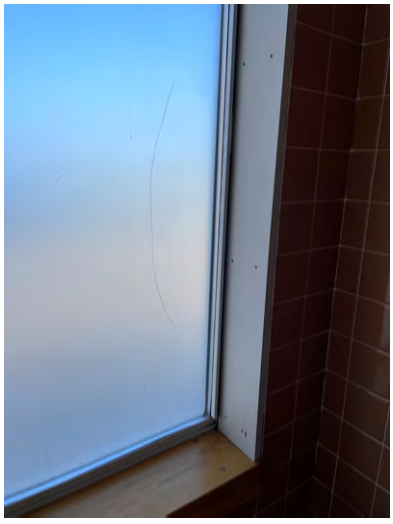


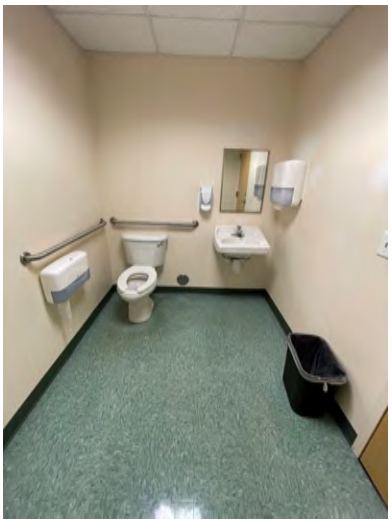


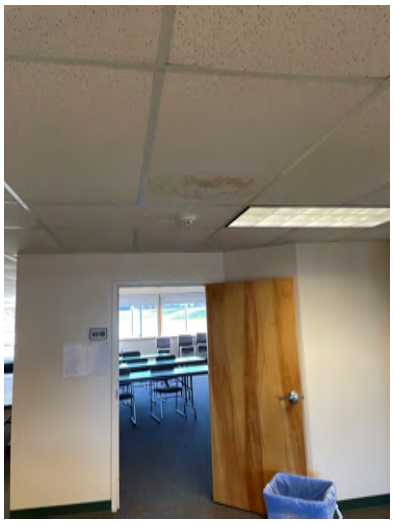


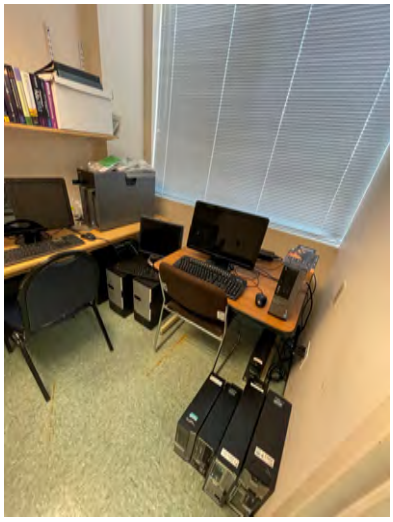
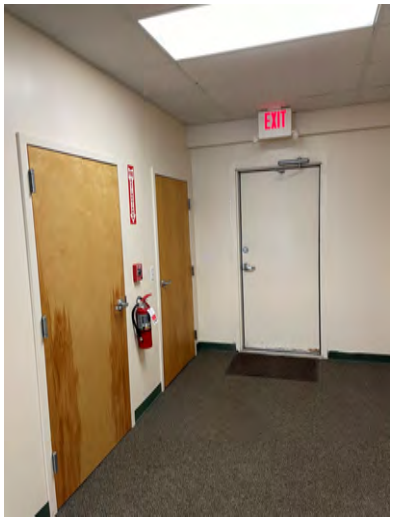


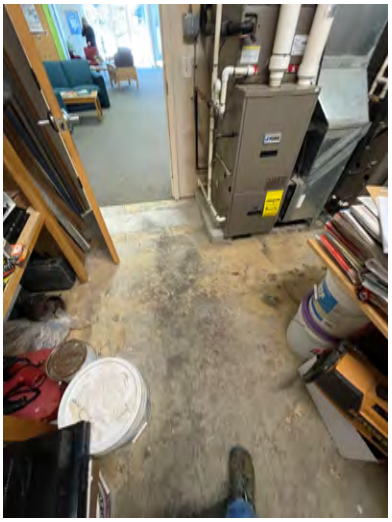



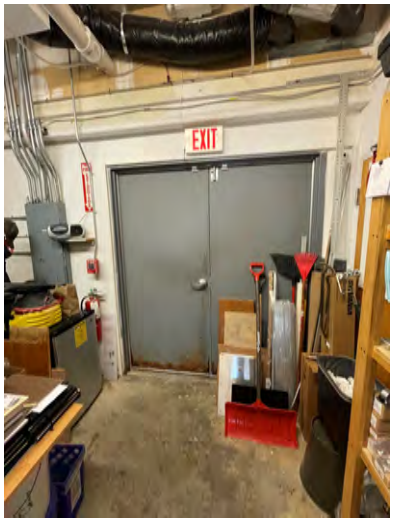


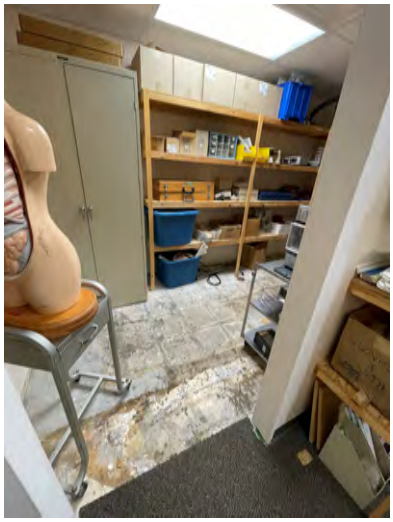


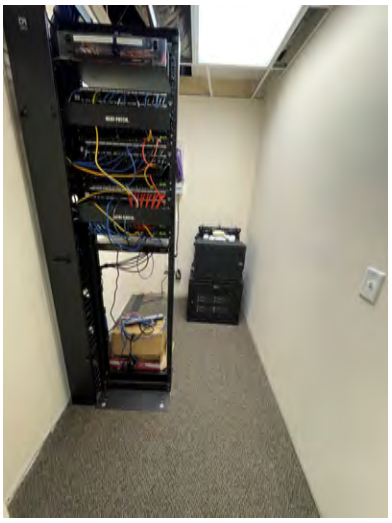


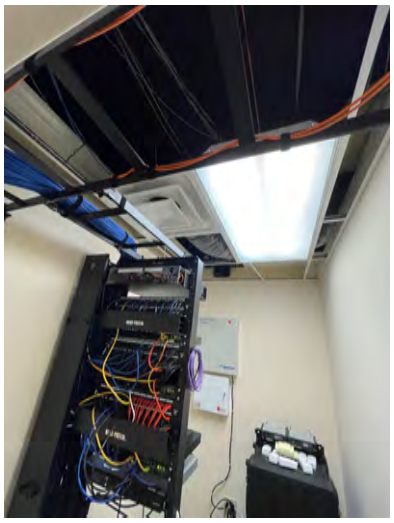

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EXIT




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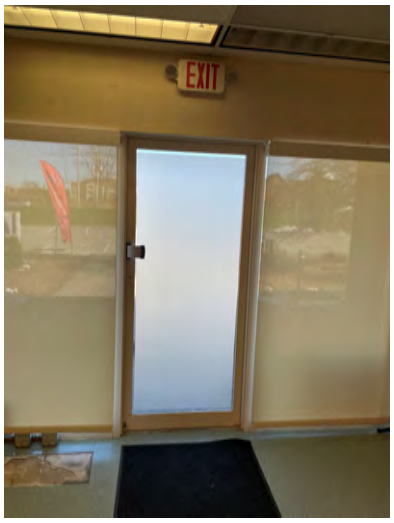











EXIT















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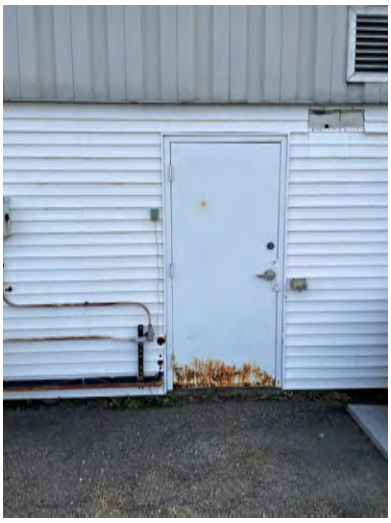








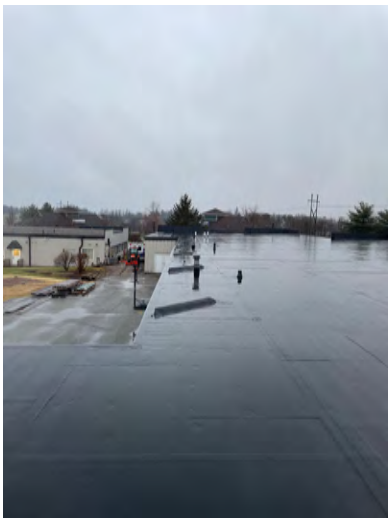
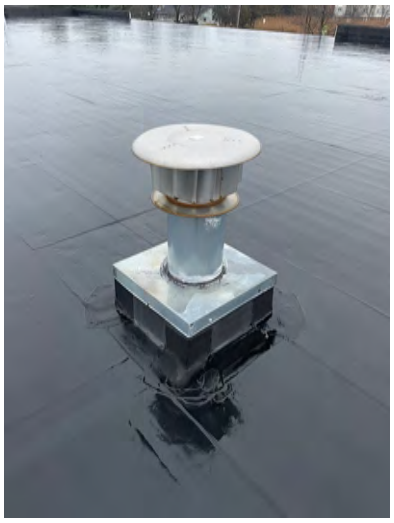
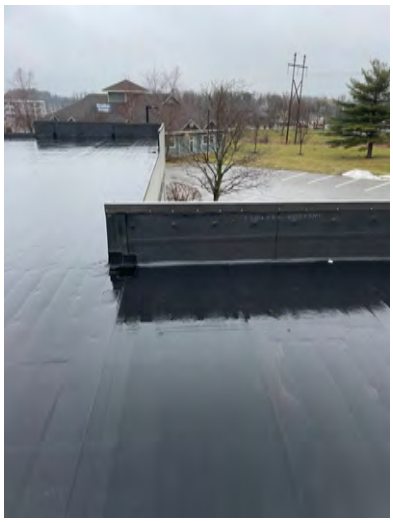
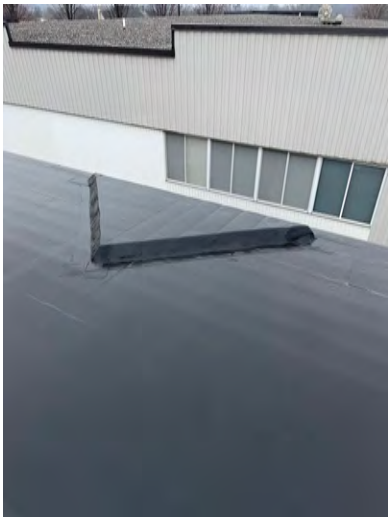






ROOF:





BUILDING 700



CONSTRUCTED: 1995

LAST RENOVATED: 2006 and 2007

Stories: 3, plus partial basement

Gross Area: 18,864 SF

Construction:

- Structure: Steel.
- Foundation: Cast-in-place concrete.
- Walls: Brick veneer with metal stud backup, GWB interior finish.
- Roof: Flat: Fully adhered EPDM membrane roofing. Replaced in 2011.

USE: The building is a residence hall with single and double occupancy residential rooms, student lounges with full kitchens, bathrooms and showers, and laundry on the second and third floors. The first-floor houses classrooms, bathrooms, a Fitness Center, and Offices. There is a partial basement with bulkhead access only which houses mechanical equipment and the sprinkler entrance.

INTERIOR: During an inspection of the building interior, the following conditions were observed. Conditions requiring repair/ replacement are noted:

- Front of the building is the Parking Lot side of the building for the purposes of this report.
- General:
  - Radiation, cabinet unit heaters and metal covers are in generally fair condition unless noted.
  - Interior flush wood doors and painted HM frames are in generally good condition. Flush wood doors and HM frames at the Hall opening are 20-minute UL fire rated with closers. Door hardware is typically ADA compliant lever-style and in good condition.
  - Aluminum windows typically have painted GWB returns with either painted or clear finish wood sills and are in fair condition unless noted.
  - Window shades are in good condition.
  - White boards are in good condition.
  - Mechanical, Electrical, Janitor's Closets and Miscellaneous Storage Rooms are typically unfinished. Concrete floors are in poor condition. Walls are sometimes unfinished GWB, taped only with no base. Ceilings are open to structure and unfinished except steel structure is sometimes painted. These spaces are generally in poor condition and not maintained to the same standards as the public spaces. No improvements are suggested in these rooms.
- Partial Basement (Mechanical Room):
  - Typical Finishes:
    - Floor - Unfinished concrete in fair to poor condition.
    - Walls - Unfinished concrete in fair condition.

        - Ceiling - Exposed primed steel structure and metal deck is in fair condition.
        - Painted steel door in an unfinished wood frame is in fair condition.
        - Access is by a painted steel access hatch on the right side of the building and down unfinished concrete stairs. The steel basement access hatch is very rusted and should be replaced.
        - The sprinkler entrance is adjacent to the door.
    - Typical Finishes Unless Noted:
        - Floors - Carpet is in generally good condition. Some carpets are stained.
        - Vinyl base is in good condition.
        - Walls - Painted GWB is in generally good condition. Some walls have dings and scratches. Repair and touch up paint at damaged areas.
        - Ceilings - SAC is in good condition.
    - Front and Back Entry Vestibules/Stairs:
        - Typical Finishes:
            - Floor - Walk-off carpet at first floor vestibules is in good condition.
            - Floor - VCT at landings with vinyl base is in fair condition.
            - Refinish wood base and floor trim at the landings in the front stair.
            - Rubber treads and risers are in fair condition. There are two damaged treads on the lower run of the front stair, replace.
            - Under stair ceilings are painted GWB in good condition.
            - Painted steel pipe wall handrails are in fair condition.
            - Flush wood doors with vision lite and HM frames are 1 ½ hour UL fire rated. Door hardware is ADA compliant lever-style with closers and in good condition.
            - The edge of the first-floor intermediate landing at both stairs is open in front of the window, without a curb, and unprotected. It's unknown if the glass is tempered. This condition does not appear to be Code compliant. Add a welded wire mesh closure panel or pipe balusters with less than 4" openings.
- First Floor:
    - Main Hall and Lobby:
        - Floor - VCT is in fair to poor condition. Joints have opened and there are damaged tiles.
        - Ceiling - Replace 1 damaged tile.
    - Electric Closet off Hall:
        - Floor - VCT is in poor condition.
        - Replace the bi-fold wood door hardware.
    - Two All Gender ADA Single Use Bathrooms Off Lobby Opposite Elevator:
        - Floor - VCT is in fair condition except around toilets where it's in poor condition.
        - Floor-mounted toilets are in fair condition.
        - SS grab bars are mounted too high at 3'-3" which is not ADA compliant. Lower the grab bars to 36" max. to the top.
        - Wall hung porcelain sinks are @ 2'-8" mounting height.
        - Install pipe guards below both sinks.
        - Flush wood doors have privacy lock/indicator. The right bathroom door is damaged at the edge. Replace the right bathroom door panel.
        - Add ADA signage to both bathrooms.

- Classroom 7121:
  - Floor - 12” x 12” ceramic tile is generally good condition. Grout is several areas is dirty and there are some stained tiles in the alcove next to the Break Room.
  - There is a section of missing base to the right of the main entrance to the suite. Install base to match.
- Break Room off Classroom 7121:
  - PLAM counter at 4’-0” AFF is in good condition but not at ADA compliant height.
  - Refrigerator is in good condition.
- Storage Room Opposite Break Room off Classroom 7121:
  - Floor - Patch the CT floor and base where the mop sink has been removed.
  - Wall - Repair the damaged GWB above where the mop sink has been removed. Patch and paint.
  - Remove and cap plumbing at the wall where the mop sink has been removed.
  - Wall - Install missing GWB, and tape and paint, at the plumbing wall behind the door.
  - Install CT base at this section of wall to match.
  - Ceiling - Install 3 missing tiles.
  - PLAM counter at 3’-0” is in good condition but not at ADA compliant height.
- Storage Room Next to Bathroom off Classroom 7121:
  - Ceiling - Install 2 missing tiles.
- Bathroom off Classroom 7121:
  - Walls - GWB is in poor condition. Patch and paint all 4 walls.
  - Install missing sink.
- Office Opposite Bathroom off Classroom 7121:
  - Ceiling - Install 3 damaged tiles. Investigate source of leak.
- Fitness Center:
  - Floor - Rubber is in good condition.
  - Ceiling - Painted exposed steel structure and metal deck with painted exposed ducts is in good condition.
- Two All Gender Single Use ADA Bathroom inside the Fitness Center:
  - Floor - Sheet Rubber is in good condition.
  - Floor-mounted toilets are in good condition.
  - SS grab bars are ADA compliant.
  - Wall hung porcelain sinks are @ 2’-9” mounting height with pipe guards.
  - Fiberglass ADA showers and surrounds have fold down seats and are in good condition.
  - Flush wood doors have privacy lock/indicator.
- Classroom 7130:
  - Floor - Carpet is in good condition except there is a large pull.
- Classroom 7181:
  - Patch the wall around the door to Classroom 7121, install a wood casing and paint.
  - Install a door threshold at the door to Classroom 7121.
  - There is a section of missing wood sill and head trim at the exterior window. Infill wood sill and head trim in kind. Patch and paint the window surround.

- Second and Third Floor Residential Halls:
  - Typical Finishes at Residential Halls Unless Noted:
    - Floors - Carpet is in fair condition with some stains.

- Typical Finishes at Residential Rooms Unless Noted:
  - Floors - VCT and vinyl base in good condition. Some rooms have scuffed tiles.
  - Clear finished wood windows sills are in good condition.
- Typical Finishes at Student Lounges with Full Kitchens:
  - Floors - Carpet in Lounges are in fair condition with some stains.
  - Floors - Vinyl wood look strip flooring in Kitchens is in good condition.
  - Wood base in Lounge is in good condition.
  - Ceilings - Replace 12 damaged tiles in second floor Lounge. Investigate source of leak(s).
  - Ceilings - Replace 2 damaged tiles in third floor Lounge.
  - Quartz counters at 2'-10" and backsplashes in Kitchen are in good condition except one large crack that has been repaired. High counter seating is at 3'-6".
  - PLAM upper and lower cabinets are in good condition.
  - Sink counter is ADA compliant at 2'-10" and open below with pipe guards.
  - Appliances are in good condition. Stove hoods have ANSUL fire suppression.
  - Windows to Hall in painted HM frames are in good condition.
- Typical Finishes in Men's and Women's Bathrooms Unless Noted:
  - Floors - Resinous epoxy flooring and 8" base are in fair condition.
  - Showers - Fiberglass showers and surrounds are in fair condition. Two standard stalls and one ADA with grab bars.
  - Install the missing grab bar behind the ADA toilet in the third floor Men's Room.
  - Install an access panel or infill the opening in the wall behind the Men's Room ADA toilet on the second floor. Patch and paint behind the toilet.
  - PLAM benches in shower stalls are in fair condition. Replace two PLAM bench tops in the third floor Women's Room that have missing PLAM edges.
  - HDPL toilet partitions and wall hung toilets with flush valves are in good condition. Two standard stalls and one ADA with grab bars.
  - Sinks - PLAM counters and backsplashes with porcelain sinks are in fair condition on the second floor and very poor condition on the third floor. The sink pipes have pipe guards. Counters are at 2'-10" and ADA compliant. Replace the third floor PLAM counters and sinks.
- Typical Laundry Rooms:
  - Floor - VCT is in fair condition.
  - Ceiling - Replace 6 stained tiles in the second floor Laundry Room. Investigate source of leak.
- Typical Recycling Rooms:
  - Floor - Unfinished concrete. Install VCT flooring and vinyl base with transition strip at Hall carpet.

EXTERIOR: During an inspection of the building exterior, the following conditions were observed. Conditions requiring repair/replacement are noted:

- Brick veneer is in generally fair condition except as noted. Some efflorescence and black mold growth is evident. Consider cleaning brick. Weeps appear to be functional.
- Control joints are in fair to poor condition but do not appear to have failed. Survey the control joints and replace all failed joints. Joint should all be replaced within the next two years.
- Foundation is concrete in generally fair condition but is deteriorated in some areas.

- Front Side (Parking Lot):
  - The bottom courses of brick at the mulched planting beds are buried so the weeps cannot perform properly. Clean away the mulch against the brick.
  - There are some patches where the grout color doesn't match.
  - The awning at the entrance is in good condition.
  - Repair the cracked concrete foundation at the right corner.
  - Repair damaged brick at the top of the left jamb on L1/W1.
  - Repair damaged brick at right end of the brick sill on L2/W4.
- Right Side:
  - Replace the rusted basement access hatch.
  - The Airstack mechanical equipment is very loud. Is it operating properly?
  - Repoint the joints in the brick sill at L1/W1.
- Back Side (Rt. 2A):
  - Fill/patch holes in brick above L1/W1 where signage has been removed.
  - Clean the brick below the windows sills on level 3.
  - The awning at the entrance is in good condition.
  - Repair damaged brick at the top of the left jamb on L1/W1 and at the top of the right jamb of L1/W2.
  - Repair damaged brick at the top of the right jamb on L1/W3&W4 and L2/W4.
- Left Side:
  - Clean the brick below the windows sills on level 3
  - There are some larger patches near the right corner where the grout color doesn't match.

Windows:

- Windows are fixed aluminum double glazed in fair to poor condition on the first floor. The finish is faded and, in some locations, very faded.
- Windows have brick sills in generally in good condition. The brick sills on the right side have some failed mortar joints. Repoint brick sills.
- The window perimeter sealant is in poor to very poor condition, dry, and cracked; replace.

Exterior Entrances:

- Aluminum storefront exterior doors are in fair condition to poor condition on the exterior. The exterior finish has begun to fade. The main front and back pair of doors have exit hardware. The jambs on the front doors have begun to corrode at the bottom and the hinges are rusted.

Roof:

- Fully adhered EPDM membrane roofing and prefinished metal drip edge are in fair condition. Some (frozen) ponding was observed.
- The curb mounted mechanical equipment and pipe penetrations appear in fair condition.
- The roof hatch cover is rusted.

CODE CLASSIFICATION (2015 IBC INTERNATIONAL BUILDING CODE):

- Occupancy: Residential (R-2)
- Construction Type: 2B, Unprotected, Non-Combustible.
- Fire Protection System: Fully-sprinklered. Refer to MEPFP Assessment.
- Fire Alarm System: Yes. Refer to MEPFP Assessment.

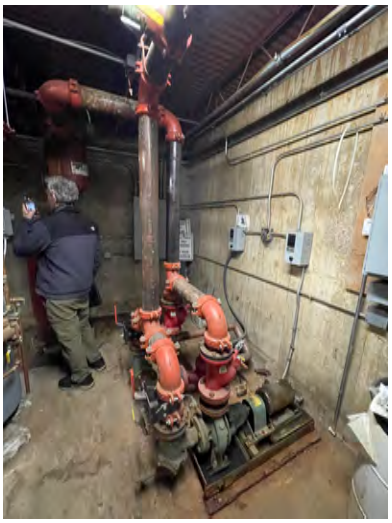
LIFE SAFETY (2015 NFPA 101 LIFE SAFETY CODE):

- The concrete stair nosing profile is Code compliant with a 7" riser and 11" tread.
- Existing handrails are mounted at 34" with Code compliant extensions.
- The edge of the first-floor intermediate landing at both stairs is open in front of the window, without a curb, and unprotected. It's unknown if the glass is tempered. This condition does not appear to be Code compliant. Add a welded wire mesh closure panel or pipe balusters with less than 4" openings as previously noted.
- Stairs have rated doors with panic device hardware and are Code compliant.
- Corridors in existing Dormitories are not required to have rated walls or doors if the building is sprinklered, but the walls and doors must resist the passage of smoke.

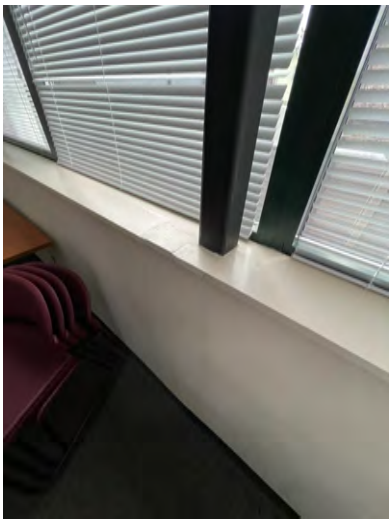
ACCESSIBILITY (2010 ADA STANDARDS):

- The front main entry doors on the front, parking lot, side of the building are ADA compliant. Asphalt paving from the parking lot is accessible. Main entry doors are not equipped with an ADA door operator.
- There are 2 HC Accessible parking spots in close proximity to the front Main Entrance, labeled with signage.
- The building has an elevator.
- Two All Gender ADA Accessible Single User Bathrooms are provided off the Main Lobby of the first level across from the Elevator, but the SS grab bars are mounted too high at 3'-3" which is not ADA compliant. Adjust the grab bars as noted previously.
- Two All Gender ADA Accessible Single User Bathrooms with ADA compliant showers are provided on the first level inside the Fitness Center.
- The second and third floor Residential Hall multi-users Men's and Women's bathrooms are ADA compliant.
- The drinking fountains in the halls are in good condition but are not ADA dual level.
- The kitchen sinks in the second and third floor Residential Hall Lounge Kitchens are ADA compliant.

INTERIOR:







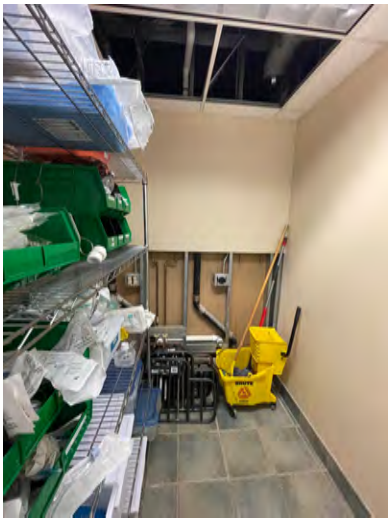


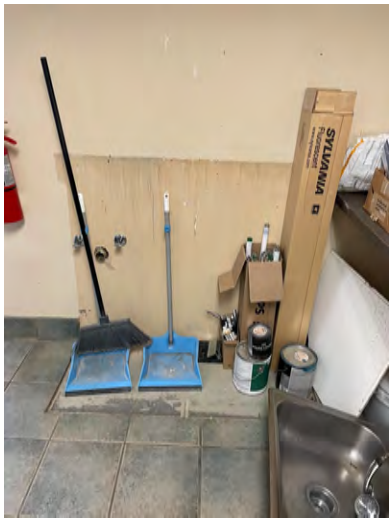








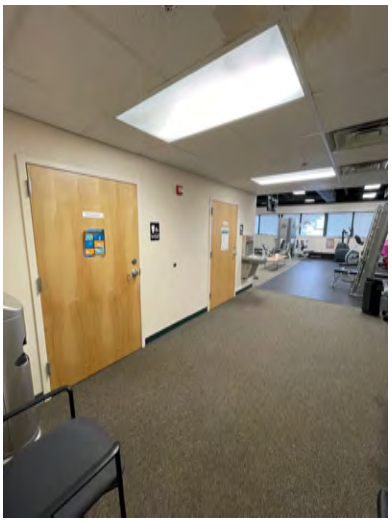
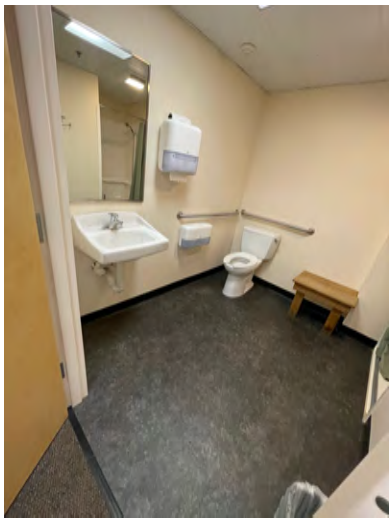
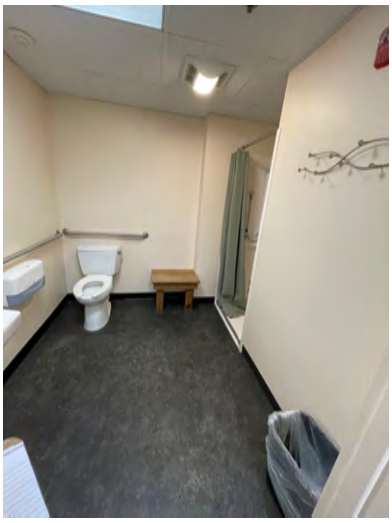


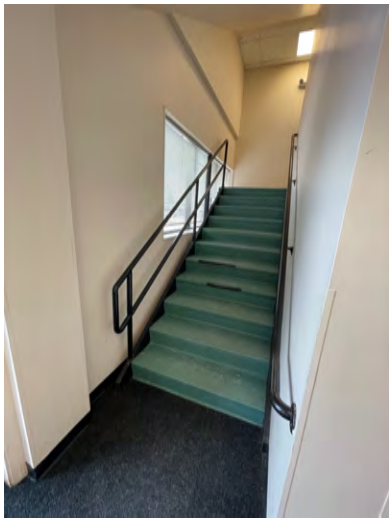
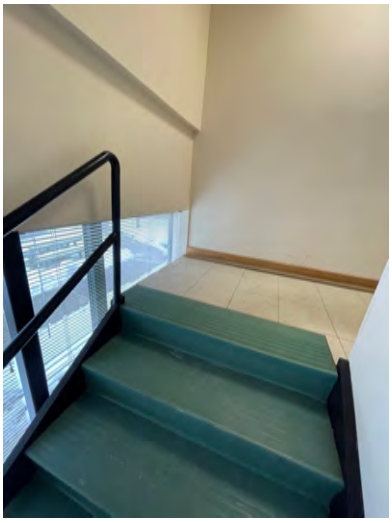
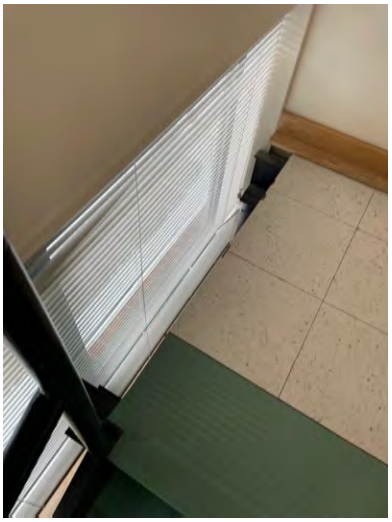
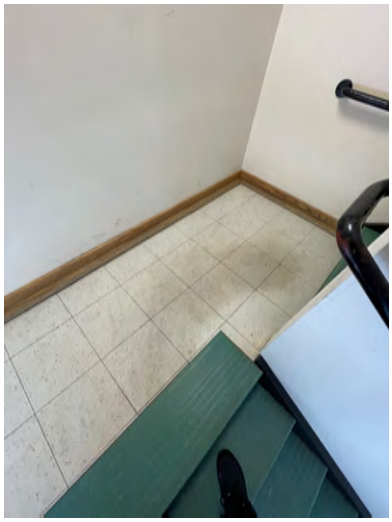

SYLVANIA



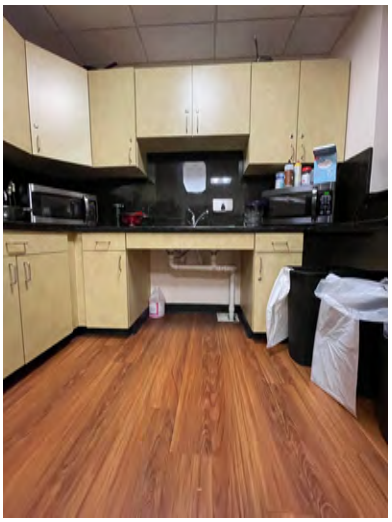
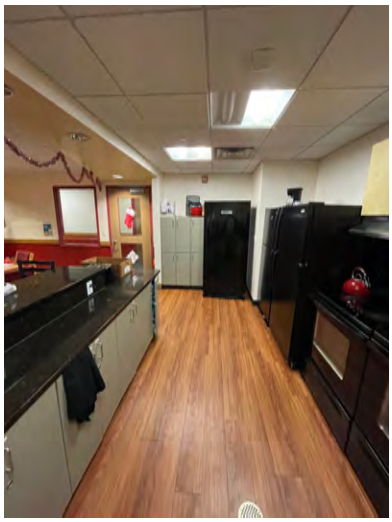


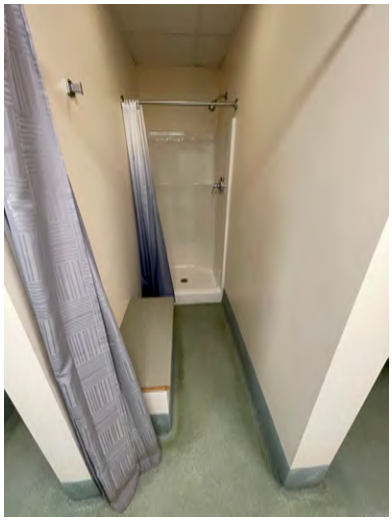


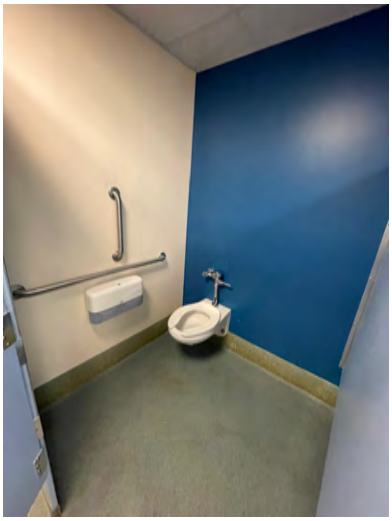
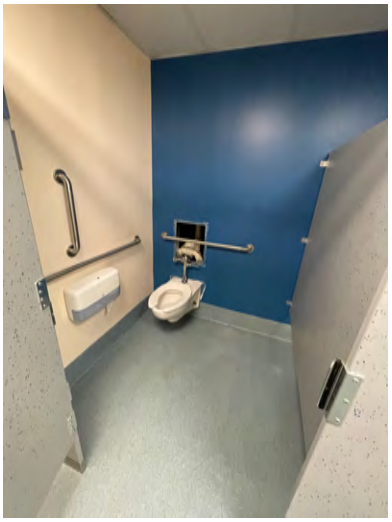
EXIT





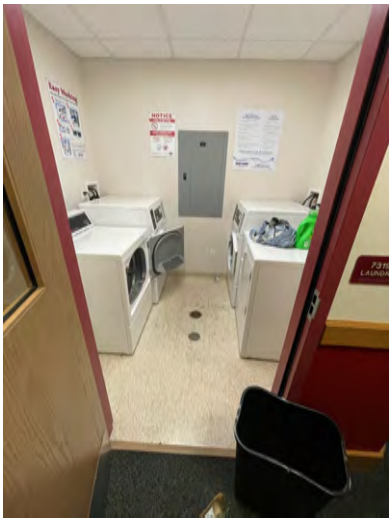


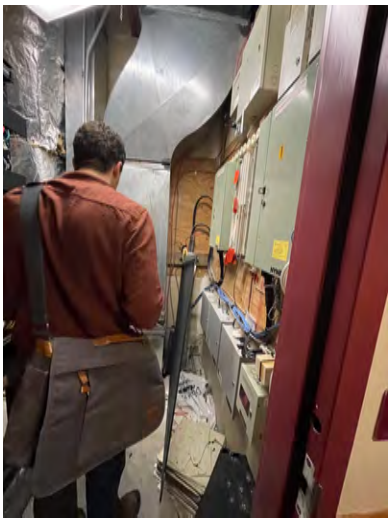
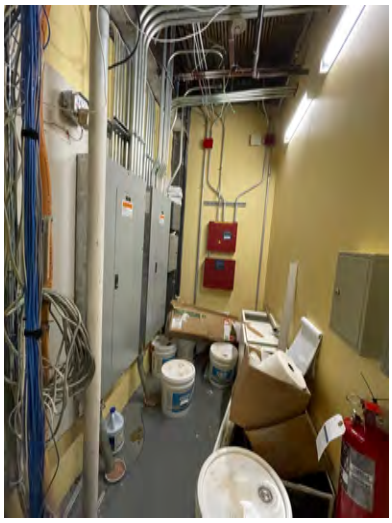
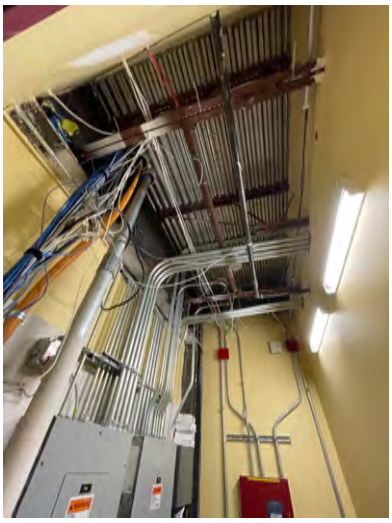









EXTERIOR:

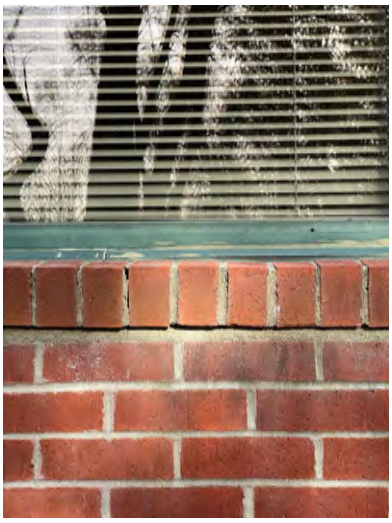




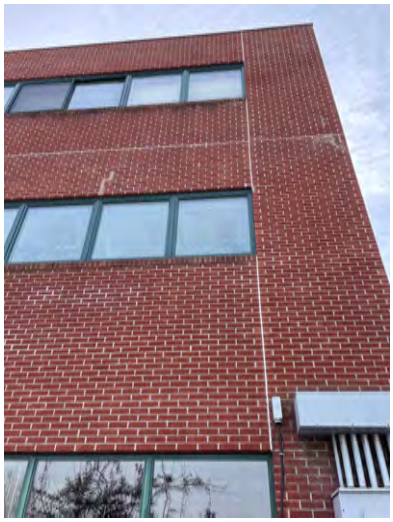









VERMONT TECH
WILLISTON HALL



ROOF:











PROBABLE COST OPINION

VTC - Williston Campus - 2023 Facility Assessment - Cost Summary											
	Arch	Civil	MPFP-1	E-1	E-2	MPFP-2A	MPFP-2B	**TOTAL**	E-3	MPFP-3A	MPFP-3B
			Note 2	*Note 2*	*Note 3*	*Note 4*	*Note 4*		*Note 5*	*Note 6*	*Note 6*
1. Building 100	$ 73,782		19,200	47,000	93,500	103,950	71,400	**$ 408,832**	87,000	775,200	765,000
2. Building 200	102,559		29,400	43,000	123,500	146,400	745,800	**$ 1,190,659**	136,000	669,600	1,395,000
3. Building 300	65,185		13,200	39,500	36,500	162,600	51,000	**$ 367,985**	87,000	-	765,000
4. Building 400	114,218		166,200	47,000	102,500	166,920	762,600	**$ 1,359,438**	136,000	679,800	1,395,000
5. Building 700	75,580		139,800	47,500	30,500	246,000	891,600	**$ 1,430,980**	142,500	264,000	1,080,000
6. Campus Roads, Parking Lots & Sidewalks:		289,488						**$ 289,488**			
31. Campus Sanitary Sewer System:		-						**$ -**			
32. Campus Water Lines:		-						**$ -**			
33. Campus Stormwater System:		4,340						**$ 4,340**			
SUBTOTAL:	$ 431,324	293,828	367,800	224,000	386,500	825,870	2,522,400	**$ 5,051,722**	588,500	2,388,600	5,400,000
Footnotes:											
1. MPFP and E columns are probable construction costs for mechanical, plumbing and fire protection with electrical and fire alarm separated out for clarity.											
2. Columns MPFP-1 and E-1 are probable mechanical and electrical construction costs associated with Priority 1 Life Safety and Code deficiencies.											
3. Column E-2 is probable electrical construction costs associated with Priority 2 deferred maintenance/excessive system wear or equipment wear and system upgrades.											
4. Column MPFP-2A and 2B are probable mechanical construction costs associated with Priority 2 deferred maintenance/excessive system wear or equipment wear on existing systems.											
5. Column E-3 are probable electrical construction costs associated with Priority 3 systems replacement to improve building performance and energy efficiency. Priority 3 costs are not included in building and campus totals but, if selected, would negate/offset some of the costs associates with Priority 1 and 2 items.											
6. Column MPFP-3A and 3B are probable mechanical construction costs associated with Priority 3 systems replacement to improve building performance and energy efficiency. Priority 3 costs are not included in building and campus totals but, if selected, would negate/offset some of the cost associated with Priority 1 and 2 items.											

Facilities Assement

100	$	73,782
200	$	102,559
300	$	65,185
400	$	114,218
700	$	75,580
	$	431,324

Facilities Assessment - VTC Williston Campus											
Building 100		8,000 sf, 1 story									
			Quantity	Unit	Unit Price	Extension	With 8% GCs	With 15% Cont.	With 10% MU	Item Total	Grand Total
1.1	INTERIOR: GENERAL: Typical Finishes:	Walls: Repair and touch up paint at damaged areas. ALLOWANCE	1	Allow.	$ 5,000	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
1.2	Lobby 100:	Floor: VTC in poor conditions in front of exterior doors. Replace damaged tiles in kind. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.3		Aluminum sliding windows to right of entrance storefront has failed seal at right sash. Replace the approximately 2'-4" x 4'-8" pane of insulated glass.	10.9	sf	$ 50.00	$ 545	$ 589	$ 677	$ 745	$ 745	
1.4	Left Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.4A	Left Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
1.5		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 20sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
1.5		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
1.7	Storage 107:	Walls: Patch/paint holes in GWB. 80sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
1.8		Ceiling: Replace 2 damaged tiles.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	
1.9	Conference 108:	Walls: Patch/paint multiple dings in GWB.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
1.10	Kitchen next to 108:	Walls: Repair, patch and paint crack above right jamb of door to bathroom lobby. 4lf	24	sf	$ 5.35	$ 128	$ 139	$ 159	$ 175	$ 175	
1.11	Copy Room:	Walls: Finish tape and paint GWB door infill. 35sf	35	sf	$ 1.85	$ 65	$ 70	$ 80	$ 88	$ 88	
1.12	Center Left Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.12A	Center Left Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
1.13		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 20sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
1.13A		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	

1.14		Back exit door and HM frame: Sand/repair and paint.	1	ea	$ 125.00	$ 125	$ 135	$ 155	$ 171	$ 171	
1.15		Replace corroded back exit door aluminum threshold.	1	ea	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.16	Bathroom Lobby and Two All Gender, Single Use ADA Bathrooms off Center left Hall:	Walls: Repair damaged CT in kind on plumbing wall of left bathroom. 20sf	20	sf	$ 30.00	$ 600	$ 648	$ 745	$ 820	$ 820	
1.17		Install SS access panel at wall clean out on plumbing wall of left bathroom. 12"x12"	1	ea	$ 110.00	$ 110	$ 119	$ 137	$ 150	$ 150	
1.18		Install 36"w ss grab bar behind the toilet in the left bathroom. Includes cutting in blocking in the wall tile	1	ea	$ 565.00	$ 565	$ 610	$ 702	$ 772	$ 772	
1.19		Install pipe guard below right bathroom sink.	1	ea	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
1.20	Classroom 117:	Ceiling: Replace 5 damaged tiles.	40	sf	$ 6.00	$ 240	$ 259	$ 298	$ 328	$ 328	
1.21	Classroom 118:	Floor: Patch frayed, repaired slot of carpet where wall was removed. 12"w x 30' - Includes disposal	360	sf	$ 6.60	$ 2,376	$ 2,566	$ 2,951	$ 3,246	$ 3,246	
1.22		Walls: Patch/paint cracks above storefront. Patch/paint multiple dings in Hall wall.100sf	100	sf	$ 5.35	$ 535	$ 578	$ 664	$ 731	$ 731	
1.23	Computer Classroom 120:	Walls: Patch/paint cracks above storefront. 4lf	16	sf	$ 1.85	$ 30	$ 32	$ 37	$ 40	$ 40	
1.24	Classroom 128:	Walls: Install wall door stop.	1	ea	$ 40.00	$ 40	$ 43	$ 50	$ 55	$ 55	
1.25		Patch/paint hole in GWB behind door.	1	sf	$ 25.00	$ 25	$ 27	$ 31	$ 34	$ 34	
1.26	Observation 129 and Storage Closet:	Ceiling: Install 2 missing tiles in Storage Closet.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	
1.27	Classroom 130:	Half-Glass, Pair Flush Wood Doors: Replace doors with unequal leaf's so the active leaf is 2'-8" clear, minimum. 3' leaf + 2' leaf	1	ls	$ 5,000.00	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
1.28	Right Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.28	Right Hall:	Floor: Replace VCT and vinyl base in kind near back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
1.29		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 20sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
1.29		Walls: Repair/patch water-damaged/swollen GWB and bubbled paint at jambs of back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	

1.30		Replace rusted back exit door and HM frame.	1	ea	$ 4,500.00	$ 4,500	$ 4,860	$ 5,589	$ 6,148	$ 6,148	
1.31		Replace corroded back exit door aluminum threshold.	1	ea	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
1.32		Install vinyl base below sink. 3 lf	3	lf	$ 5.00	$ 15	$ 16	$ 19	$ 20	$ 20	
1.33		Install pipe guard below sink.	1	ea	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
1.34	Two All Gender, Single-Use Bathrooms of Right Hall:	Floor: Replace VCT and vinyl base in right bathroom. 35sf	35	sf	$ 5.00	$ 175	$ 189	$ 217	$ 239	$ 239	
1.34	Two All Gender, Single-Use Bathrooms of Right Hall:	Floor: Replace VCT and vinyl base in right bathroom. 25lf	25	lf	$ 5.00	$ 125	$ 135	$ 155	$ 171	$ 171	
1.35		Replace vinyl base behind toilets left bathroom. 5lf	5	lf	$ 5.00	$ 25	$ 27	$ 31	$ 34	$ 34	
1.36		Replace cabinet bases install on 4"bases in both bathrooms. 2x 30"w Reuse countertop with sink or replace.	1	ls	$ 675.00	$ 675	$ 729	$ 838	$ 922	$ 922	
1.37	EXTERIOR: Front Side (Parking Lot):	Remove small patches at prefinished aluminum flat signage panel at left and right ends near building corners; replace whole panel. 2 @ 30"x10'	50	sf	$ 80.00	$ 4,000	$ 4,320	$ 4,968	$ 5,465	$ 5,465	
1.38	Right and Left Sides:	Paint wood trim at both ends of vertical vinyl siding panels below window banks.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
1.39		Replace screen fabric where missing or damaged. ALLOWANCE	1	sf	$ 500.00	$ 500	$ 540	$ 621	$ 683	$ 683	
1.40	Back Side (Courtyard):	Replace PT timber stair and handrails with Code compliant. 4'w x 6 Treads with 6x6 tiber retaining wall one side. Add Code compliant steel pipe handrails to both side of the stair.	1	ls	$ 5,000.00	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
1.41		Add Code-compliant handrail to inside of railings at steps. Typical both porches. 1 Tread - 36" x 4	12	lf	$ 200.00	$ 2,400	$ 2,592	$ 2,981	$ 3,279	$ 3,279	
1.42	WINDOWS:	Replace all missing screens. ALLOWANCE	1	ls	$ 10,000	$ 10,000	$ 10,800	$ 12,420	$ 13,662	$ 13,662	
1.43		Replace all damaged screen fabric. ALLOWANCE	1	ls	$ 5,000	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
1.44	EXTERIOR ENTRANCES:	Replace the painted steel door and HM frame at left egress porch door.	1	ls	$ 3,750.00	$ 3,750	$ 4,050	$ 4,658	$ 5,123	$ 5,123	

Facilities Assessment - VTC Williston Campus											
Building 200		14,322 sf, 1 story									
			Quantity	Unit	Unit Price	Extension	With 8% GCs	With 15% Cont.	With 10% MU	Item Total	Grand Total
2.1	INTERIOR: GENERAL: Typical Finishes:	Walls: Repair and touch up paint at damaged GWB areas. ALLOWANCE	1	ls	$8,000.00	$ 8,000	$ 8,640	$ 9,936	$ 10,930	$ 10,930	
2.2	Classroom 202:	Walls: Install metal or wood closure trim and paint at large gap at end of the hall wall intersection with exterior storefront.	1	ea	$ 151.80	$ 152	$ 164	$ 189	$ 207	$ 207	
2.3		Replace failed glazing gaskets at exterior storefront. 20 lf	20	lf	$ 10.00	$ 200	$ 216	$ 248	$ 273	$ 273	
2.4	Classroom 207:	Walls: Patch/paint vertical cracks next to corners of exterior window wall. 2 @ 10lf	20	lf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
2.5	IT Suite 208:	Floor: Patch missing carpet at door to hall. 8" x3'	24	sf	$ 5.00	$ 120	$ 130	$ 149	$ 164	$ 164	
2.6		Storage Room Walls: Finish tape and paint at GWB wall.100sf	100	sf	$ 1.85	$ 185	$ 200	$ 230	$ 253	$ 253	
2.7		Left Office Walls: Paint/paint hole in wall and vertical crack next to corner of exterior window wall. 10lf	40	sf	$ 5.35	$ 214	$ 231	$ 266	$ 292	$ 292	
2.8		Ceiling: Replace 3 damaged tiles.	24	sf	$ 4.00	$ 96	$ 104	$ 119	$ 131	$ 131	
2.9	Classroom 209:	Ceiling: Replace 2 damaged tiles.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	
2.10	Computer Classroom 210:	Ceiling: Replace 3 damaged tiles.	24	sf	$ 4.00	$ 96	$ 104	$ 119	$ 131	$ 131	
2.11	Kitchen next to Classroom 210:	Floor: Replace VCT and base. 135 sf	135	sf	$ 5.00	$ 675	$ 729	$ 838	$ 922	$ 922	
2.11	Kitchen next to Classroom 210:	Floor: Replace VCT and base. 50 lf	50	lf	$ 5.00	$ 250	$ 270	$ 311	$ 342	$ 342	
2.12		Ceiling: Replace 8 damaged tiles.	64	sf	$ 4.00	$ 256	$ 276	$ 318	$ 350	$ 350	
2.13		Replace pipe guard below sink.	1	ea	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
2.14		Replace magnetic catches at wood access doors of electrical closet.	1	ea	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
2.15	Back Halls to Egress Doors of Back Courtyard:	Walls: Repair GWB and replace vinyl base. 20sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
2.15	Back Halls to Egress Doors of Back Courtyard:	Walls: Repair GWB and replace vinyl base. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
2.16	Classroom 212:	Ceiling: Replace 1 damaged tile.	8	sf	$ 4.00	$ 32	$ 35	$ 40	$ 44	$ 44	
2.17	Classroom 216:	Walls: Patch/touch up paint - multiple holes.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
2.18	Data 220:	Finish tape and paint GWB walls. 800sf	800	sf	$ 1.85	$ 1,480	$ 1,598	$ 1,838	$ 2,022	$ 2,022	

2.19		Install missing vinyl base. 50lf	50	lf	$ 5.00	$ 250	$ 270	$ 311	$ 342	$ 342	
2.20		Ceiling: Install 4 missing tiles.	32	sf	$ 4.00	$ 128	$ 138	$ 159	$ 175	$ 175	
2.21		Paint inside of flush wood door and frame.	1	ls	$ 50.00	$ 50	$ 54	$ 62	$ 68	$ 68	
2.22	Left Hall:	Walls: Touch up paint corner of wall opposite door to IT Suite. 10sf	10	sf	$ 1.85	$ 19	$ 20	$ 23	$ 25	$ 25	
2.23	Office 230, 233, 236 and Copy Room 231:	Walls: Patch and touch up paint - multiple dings and cracks.	1	ea	$ 450.00	$ 450	$ 486	$ 559	$ 615	$ 615	
2.24		Sand and refinish clear finished wood sills and casings. 6 @ 30"x 4'-8"	70	ea	$ 5.35	$ 376	$ 406	$ 466	$ 513	$ 513	
2.25	Mechanical Room off Office 236:	Walls: Cover exposed foam insulation with approved 20-minute thermal barrier.	1	ls	$ 500.00	$ 500	$ 540	$ 621	$ 683	$ 683	
2.26	Data 237:	Floor: Install missing vinyl base. 52 lf	52	lf	$ 5.00	$ 260	$ 281	$ 323	$ 355	$ 355	
2.27		Ceiling: Replace 4 damaged tiles.	32	sf	$ 4.00	$ 128	$ 138	$ 159	$ 175	$ 175	
2.28	Typical All Gender, Single User Bathrooms 1-7:	Walls: Patch/paint holes in GWB at plumbing wall in BR 7. 30 sf	30	sf	$ 5.35	$ 161	$ 173	$ 199	$ 219	$ 219	
2.29		Replace sealant at wall to CT joint. 200 lf	200	lf	$ 3.00	$ 600	$ 648	$ 745	$ 820	$ 820	
2.30		Ceiling: Replace 2 damaged tiles in BR 1.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	
2.31		Add ADA signage in BR 1, 5, 6 &7.	4	ea	$ 60.00	$ 240	$ 259	$ 298	$ 328	$ 328	
2.32		Stainless Steel Grab Bars: Install 36"w back and 42"w side grab bars in BR 1 and BR 4	1	ls	$ 1,150.00	$ 1,150	$ 1,242	$ 1,428	$ 1,571	$ 1,571	
2.33		Add pipe guards below sinks in BRs 1, 4, 5 6, and 7.	5	ea	$ 250.00	$ 1,250	$ 1,350	$ 1,553	$ 1,708	$ 1,708	
2.34	Right Front Hall:	Walls: Repair GWB and replace vinyl base. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
2.34	Right Front Hall:	Walls: Repair GWB and replace vinyl base. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
2.35	EXTERIOR: Front Side (Parking Lot):	Replace top 6x6 PT timber at retaining wall extending from left corner. 12 lf	16	lf	$ 30.00	$ 480	$ 518	$ 596	$ 656	$ 656	
2.36		Remove small patch at prefinished aluminum flat signage panel to left end near corner and right end of panel on front of porch. Replace the whole panel. 30" x 10lf	25	sf	$ 80.00	$ 2,000	$ 2,160	$ 2,484	$ 2,732	$ 2,732	
2.37		Paint wood trim at both ends of vertical vinyl siding panels below window banks and inside corners at both ends of porch. 100sf	100	sf	$ 4.00	$ 400	$ 432	$ 497	$ 546	$ 546	

2.38		Replace the brick pavers in kind with appropriate subbase materials or replace with asphalt paving. 1,000 sf	1000	sf	$ 20.00	$ 20,000	$ 21,600	$ 24,840	$ 27,324	$ 27,324	
2.39		Replace vinyl letters on signage panels to right of porch over doors.	1	ls	$ 5,000.00	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
2.40		Paint wood trim above window heads of the far-right window bank. 15sf	15	sf	$ 5.00	$ 75	$ 81	$ 93	$ 102	$ 102	
2.41	Back Side (Courtyard):	Paint wood trim above window heads. 100sf	100	sf	$ 5.00	$ 500	$ 540	$ 621	$ 683	$ 683	
2.42		Add painted, galvanized steel pipe handrails to both sides of PT wood site steps.- 20lf total	20	lf	$ 200.00	$ 4,000	$ 4,320	$ 4,968	$ 5,465	$ 5,465	
2.43		Paint wood trim at right end of vinyl siding near right corner of back side. 10sf	10	sf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
2.44	Left Side:	Paint wood trim at both ends of vertical vinyl siding panels below window banks. 20sf	20	sf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
2.45	WINDOWS:	Replace all missing screens. ALLOWANCE	1	ls	$ 15,000	$ 15,000	$ 16,200	$ 18,630	$ 20,493	$ 20,493	
2.46		Replace all damaged screens. ALLOWANCE	1	ls	$ 8,000	$ 8,000	$ 8,640	$ 9,936	$ 10,930	$ 10,930	
2.47		Replace perimeter sealant on back side windows. 7 @ 30" x 4'-8"	101	lf	$ 10.00	$ 1,005	$ 1,086	$ 1,248	$ 1,373	$ 1,373	

Facilities Assessment - VTC Williston Campus											
Building 300		8,500 sf, 1 story									
			Quantity	Unit	Unit Price	Extension	With 8% GCs	With 15% Cont.	With 10% MU	Item Total	Grand Total
3.1	INTERIOR: GENERAL: Lobby, Waiting and Reception:	Repair/patch and paint GWB at left end of window sill. 10sf	10	sf	$ 5.35	$ 54	$ 58	$ 66	$ 73	$ 73	
3.2		Sand and refinish wood window sill. 10lf	10	lf	$ 4.00	$ 40	$ 43	$ 50	$ 55	$ 55	
3.3	All Gender, Single User ADA Bathroom Off Lobby:	Walls: Repair and touch up paint at damaged GWB and vinyl base in corner behind toilet. 20sf	20	sf	$ 2.10	$ 42	$ 45	$ 52	$ 57	$ 57	
3.3	All Gender, Single User ADA Bathroom Off Lobby:	Walls: Repair and touch up paint at damaged GWB and vinyl base in corner behind toilet. 20lf	20	lf	$ 5.00	$ 100	$ 108	$ 124	$ 137	$ 137	
3.4	Administration 105, Lab 106, Sanitary 107, Wet Lab 117 and Sim Lab 135:	Repair/patch and paint GWB adjacent to right back exit door in Lab 106. 20sf	20	sf	$ 5.35	$ 107	$ 116	$ 133	$ 146	$ 146	
3.5		Replace base in kind. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
3.6	Back Hall:	Replace back exit door and HM frame.	1	ea	$ 4,500	$ 4,500	$ 4,860	$ 5,589	$ 6,148	$ 6,148	
3.7	Work Area 113:	Floor: Replace approximately 7 VCT tiles.	7	sf	$ 5.00	$ 35	$ 38	$ 43	$ 48	$ 48	
3.8	Storage Closet off Left Center Hall:	Floor: Replace VCT and base. 35sf	35	sf	$ 5.00	$ 175	$ 189	$ 217	$ 239	$ 239	
3.8	Storage Closet off Left Center Hall:	Floor: Replace VCT and base. 25lf	25	lf	$ 5.00	$ 125	$ 135	$ 155	$ 171	$ 171	
3.9	Offices off Left Hall:	Patch/paint dinged GWB in Office 135. 100sf	100	sf	$ 5.35	$ 535	$ 578	$ 664	$ 731	$ 731	
3.10		Install missing vinyl base at both jambs of back exit door. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
3.11	EXTERIOR: Front Side (Parking Lot):	Replace two whole prefinished aluminum flat signage panels at far-left end. 2 @ 30" x10lf	50	sf	$ 80.00	$ 4,000	$ 4,320	$ 4,968	$ 5,465	$ 5,465	
3.12		Remove small patch at prefinished aluminum flat signage panel at far-right end near building corner; replace whole panel. 25 sf	25	sf	$ 80.00	$ 2,000	$ 2,160	$ 2,484	$ 2,732	$ 2,732	
3.13		Replace vinyl letters on signage panels to right of porch over doors.	1	ls	$ 5,000.00	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
3.14	Right Side:	Paint finish at base wall drip trim at bottom of vinyl siding. 70lf	70	lf	$ 5.00	$ 350	$ 378	$ 435	$ 478	$ 478	
3.15	Back Side (Courtyard):	Repair the left awning. Reattach to wall.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	

3.16	Left Side:	Replace all missing screens. ALLOWANCE	1	ls	$ 15,000	$ 15,000	$ 16,200	$ 18,630	$ 20,493	$ 20,493	
3.17		Replace caulk at window heads. 20lf	20	lf	$ 3.00	$ 60	$ 65	$ 75	$ 82	$ 82	
3.18		Reattach vinyl trim at window sills. 10lf	10	lf	$ 10.00	$ 100	$ 108	$ 124	$ 137	$ 137	
3.19	WINDOWS:	Replace all missing screens. ALLOWANCE	1	ea	$ 10,000	$ 10,000	$ 10,800	$ 12,420	$ 13,662	$ 13,662	
3.20		Replace all damaged screens. ALLOWANCE	1	ea	$ 5,000	$ 5,000	$ 5,400	$ 6,210	$ 6,831	$ 6,831	
3.21	EXTERIOR ENTRANCES:	Replace the PWD sheathing and install a prefinished aluminum filler panel between the two front entrance door frames. 12" x 7'	14	sf	$ 10.00	$ 140	$ 151	$ 174	$ 191	$ 191	

Facilities Assessment - VTC Williston Campus											
Building 400		15,716 sf, 1 story									
			Quantity	Unit	Unit Price	Extension	With 8% GCs	With 15% Cont.	With 10% MU	Item Total	Grand Total
4.1	INTERIOR: GENERAL: Typical Finishes:	Walls: Repair and touch up paint at damaged areas. ALLOWANCE	1	ea	$ 9,000.00	$ 9,000	$ 9,720	$ 11,178	$ 12,296	$ 12,296	
4.2	Kitchen & Seating Area:	Floor: VTC is damaged near exterior door. Replace damaged tiles. (6) 12x12 tiles.	6	sf	$ 5.00	$ 30	$ 32	$ 37	$ 41	$ 41	
4.3		Glue vinyl base at east jamb of exterior aluminum door.	1	ls	$ 10.00	$ 10	$ 11	$ 12	$ 14	$ 14	
4.4		Ceiling: Replace (1) water-damaged 2x4 SAC tile.	8	sf	$ 4.00	$ 32	$ 35	$ 40	$ 44	$ 44	
4.5		Investigate source of leak above damaged tile and repair, if required.	1	ea	$ 1,000.00	$ 1,000	$ 1,080	$ 1,242	$ 1,366	$ 1,366	
4.6	Physics Lab 407:	Floor: Install (2) missing VCT tiles near exterior door.	2	ea	$ 5.00	$ 10	$ 11	$ 12	$ 14	$ 14	
4.7		Reglue base adjacent to door.	1	ls	$ 10.00	$ 10	$ 11	$ 12	$ 14	$ 14	
4.8	Offices 416, 417 & Office Adjacent to 417:	Repair, patch and paint water-damaged sills. 36lf	144	sf	$ 5.35	$ 770	$ 832	$ 957	$ 1,053	$ 1,053	
4.9	(2) Storage Closets off main Hall with Pairs of Doors:	Floor: Install VCT flooring. 70 SF	70	sf	$ 5.00	$ 350	$ 378	$ 435	$ 478	$ 478	
4.10		Install carpet-to-VCT transition strips below doors. 12 LF	12	lf	$ 5.00	$ 60	$ 65	$ 75	$ 82	$ 82	
4.11		Install vinyl base. 50 LF	50	lf	$ 5.00	$ 250	$ 270	$ 311	$ 342	$ 342	
4.12		Walls: Finish tape and paint all GWB walls. 500 SF	500	sf	$ 1.85	$ 925	$ 999	$ 1,149	$ 1,264	$ 1,264	
4.13	Unused Office or Storage Adjacent to Data Room of Main Hall:	Patch carpet below hall door. 6" x 3ft	1	ea	$ 25.00	$ 25	$ 27	$ 31	$ 34	$ 34	
4.14		Replace vinyl base in whole room. 70 LF	70	lf	$ 5.00	$ 350	$ 378	$ 435	$ 478	$ 478	
4.15		Walls: Repair large hole in back wall; patch and paint entire room. 700 SF	700	sf	$ 5.35	$ 3,745	$ 4,045	$ 4,651	$ 5,116	$ 5,116	
4.16	Data Room Adjacent to Classroom 410:	Floor: Patch carpet below the Library door. 6" x 3ft	1	ea	$ 25.00	$ 25	$ 27	$ 31	$ 34	$ 34	
4.17	Library, Study Rooms and Meeting Room:	Walls: Patch and paint multiple dings at approximately chair height.	1	ea	$ 450.00	$ 450	$ 486	$ 559	$ 615	$ 615	
4.18	Left Hall:	Ceiling: Replace damaged 2x4 SAC tiles above flagpole. 2 tiles	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	

4.19	Left Men's Room:	Remove rust and paint or install painted wood trim to cover the rusted steel at edge of slab. 20lf	20	lf	$ 10.00	$ 200	$ 216	$ 248	$ 273	$ 273	
4.20		Replace damaged 2x2 SAC tile (with diffuser) over toilet stall.	1	ls	$ 50.00	$ 50	$ 54	$ 62	$ 68	$ 68	
4.21		Consider adding plexiglass divider between sinks as in Women's Room. 2x 2'x4'	16	sf	$ 45.00	$ 720	$ 778	$ 894	$ 984	$ 984	
4.22	Left Women's Room:	Repair CT popped tiles inside stall adjacent to pilaster. 6 @ 4x4 tiles	6	ea	$ 10.00	$ 60	$ 65	$ 75	$ 82	$ 82	
4.23		Replace cracked glass at interior right window sash (insulated glass). 2'-4"x 4'-8"	11	sf	$ 50.00	$ 545	$ 589	$ 677	$ 745	$ 745	
4.24	Right Women's and Men's Room:	Walls: Fill holes left by removed fasteners; replace caulk at floor-to-wall joint.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
4.25	Typical All General Single-User Bathroom:	Replace toilet in (2) accessible rooms with ADA complaint.	2	ea	$ 4,000.00	$ 8,000	$ 8,640	$ 9,936	$ 10,930	$ 10,930	
4.26	Left All Gender ADA Accessible, Single-User Bathroom (Right Side of Hall):	Adjust or replace spring hinges at door for proper operation.	3	ea	$ 60.00	$ 180	$ 194	$ 224	$ 246	$ 246	
4.27	EXTERIOR: Front Side (Parking Lot):	Replace prefinished aluminum flat signage panel. 2 @ 30"x10'	50	sf	$ 80.00	$ 4,000	$ 4,320	$ 4,968	$ 5,465	$ 5,465	
4.28		Replace the flat panels or remove the prefinished aluminum flat signage panel frame on left porch fascia. 30"x10'	25	sf	$ 80.00	$ 2,000	$ 2,160	$ 2,484	$ 2,732	$ 2,732	
4.29		Replace the brick pavers in kind with appropriate subbase materials or replace with asphalt paving. 1,000 sf	1000	sf	$ 20.00	$ 20,000	$ 21,600	$ 24,840	$ 27,324	$ 27,324	
4.30	Right Side:	Clean and remove the mold from vinyl siding on either side of exit door.	1	ls	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
4.31		Clean and remove the mold from metal siding at bottom of fascia.	1	ls	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
4.32	WINDOWS: Front Entry Porch:	Replace missing trim cap at right end of porch aluminum storefront. 4lf	4	lf	$ 30.00	$ 120	$ 130	$ 149	$ 164	$ 164	
4.33	ENTERIOR ENTRANCES: Mechanical Room Adjacent to Machine Shop:	Replace doors, painted HM frames and hardware at single door from Mechanical Room to Machine Shop, single half-glass door adjacent to courtyard and painted flush steel doors. 1 @ 3'x7' doors and frames	3	ea	$ 4,000.00	$ 12,000	$ 12,960	$ 14,904	$ 16,394	$ 16,394	
4.34	Classroom 402:	Repair exterior aluminum door.	1	ea	$ 4,500.00	$ 4,500	$ 4,860	$ 5,589	$ 6,148	$ 6,148	

4.35	Main Mechanical Room Adjacent to Kitchen:	Replace the exterior painted flush steel doors, HM frame and hardware. Pair 6' x7'	1	ea	$ 4,000.00	$ 4,000	$ 4,320	$ 4,968	$ 5,465	$ 5,465	
4.36	Two Back Halls to Egress Doors:	Repair bubbled GWB at left back egress door. 32 sf	32	sf	$ 5.35	$ 171	$ 185	$ 213	$ 234	$ 234	
4.37		Replace vinyl base. 10lf	10	lf	$ 5.00	$ 50	$ 54	$ 62	$ 68	$ 68	
4.38		Replace both egress doors to back courtyard and HM frames and install panic hardware. 2 @ 3'x7'	2	ea	$ 4,000.00	$ 8,000	$ 8,640	$ 9,936	$ 10,930	$ 10,930	
4.39		If closers are not operational, replace. 2	2	ea	$ 650.00	$ 1,300	$ 1,404	$ 1,615	$ 1,776	$ 1,776	

Facilities Assessment - VTC Williston Campus											
Building 700		18,864 sf, 3 stories plus partial basement			Unit		With	With	With	Item	Grand
			Quantity	Unit	Price	Extension	8% GCs	15% Cont.	10% MU	Total	Total
5.1	INTERIOR: GENERAL: Typical Finishes:	Walls: Repair/touch up paint at damaged areas. ALLOWANCE	1	ea	$ 10,000.00	$ 10,000	$ 10,800	$ 12,420	$ 13,662	$ 13,662	
5.2	Front and Back Entry Vestibules/Stairs:	Refinish wood base and floor trim at landings at front stair. 40 lf	40	lf	$ 4.00	$ 160	$ 173	$ 199	$ 219	$ 219	
5.3		Add a welded wire-mesh closure panel or pipe baluster with less than 4" openings at first floor intermediate landing at both stairs. - 50 sf	50	sf	$ 200.00	$ 10,000	$ 10,800	$ 12,420	$ 13,662	$ 13,662	
5.4	First Floor: Main Hall and Lobby:	Ceiling: Replace 1 damaged tile.	8	sf	$ 4.00	$ 32	$ 35	$ 40	$ 44	$ 44	
5.5	Electric Closet off Hall:	Replace bi-fold wood door hardware.	1	ea	$ 50.00	$ 50	$ 54	$ 62	$ 68	$ 68	
5.6	Two All Gender, ADA Single-Use Bathrooms off Lobby opposite Elevator:	Lower SS grab bars to 36" maximum to top. Typical at 4 grab bars at 2 bathrooms. -	4	ea	$ 550.00	$ 2,200	$ 2,376	$ 2,732	$ 3,006	$ 3,006	
5.7		Install pipe guards below both sinks. 2	2	ea	$ 250.00	$ 500	$ 540	$ 621	$ 683	$ 683	
5.8		Repair right bathroom door. Scope? - Wood door - Replace panel	1	ea	$ 650.00	$ 650	$ 702	$ 807	$ 888	$ 888	
5.9		Install ADA signage on both bathrooms. 2	2	ea	$ 50.00	$ 100	$ 108	$ 124	$ 137	$ 137	
5.10	Classroom 7121:	Install missing base to match. 6 lf	6	lf	$ 5.00	$ 30	$ 32	$ 37	$ 41	$ 41	
5.11	Storage Room opposite Break Room off Classroom 7121:	Floor: Patch CT floor and base where mop sink was removed. 20sf	20	sf	$ 30.00	$ 600	$ 648	$ 745	$ 820	$ 820	
5.12		Wall: Repair damaged GWB above removed mop sink, patch and paint. 32sf	32	sf	$ 5.35	$ 171	$ 185	$ 213	$ 234	$ 234	
5.13		Remove and cap plumbing at wall where mop sink was removed.	1	ls	$ 200.00	$ 200	$ 216	$ 248	$ 273	$ 273	
5.14		Install missing GWB, tape and paint at plumbing wall behind door. 30sf	30	sf	$ 7.35	$ 221	$ 238	$ 274	$ 301	$ 301	
5.15		Install CT base at this section to match. 8lf	8	lf	$ 25.00	$ 200	$ 216	$ 248	$ 273	$ 273	
5.16		Ceiling: Install 3 missing tiles.	24	sf	$ 4.00	$ 96	$ 104	$ 119	$ 131	$ 131	
5.17	Storage Room next to Bathroom off Classroom 7121:	Ceiling: Install 2 missing tiles.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	

5.18	Bathroom off Classroom 7121:	Walls: Patch and paint all 4 GWB walls. 200 sf	200	sf	$ 5.35	$ 1,070	$ 1,156	$ 1,329	$ 1,462	$ 1,462	
5.19		Install missing sink.	1	ea	$ 2,500.00	$ 2,500	$ 2,700	$ 3,105	$ 3,416	$ 3,416	
5.20	Office opposite Bathroom off Classroom 7121:	Ceiling: Install 3 damaged tiles.	24	sf	$ 4.00	$ 96	$ 104	$ 119	$ 131	$ 131	
5.21	Classroom 7181:	Patch and paint wall around door to Classroom 7121.	84	sf	$ 5.35	$ 449	$ 485	$ 558	$ 614	$ 614	
5.22		Install wood casing. @ 3'x7' door	13	lf	$ 8.00	$ 104	$ 112	$ 129	$ 142	$ 142	
5.23		Install door threshold at door to Classroom 7121. 3'	1	ea	$ 80.00	$ 80	$ 86	$ 99	$ 109	$ 109	
5.24		Section of missing wood sill and head trim at exterior window. 4lf, head and sill	1	ls	$ 172.00	$ 172	$ 186	$ 214	$ 235	$ 235	
5.25		Patch and paint window surround. 12"x 20lf	20	sf	$ 1.85	$ 37	$ 40	$ 46	$ 51	$ 51	
5.26	Second and Third Floor Residential Halls:	Ceilings: Replace 12 damaged tiles in Second Floor Lounge.	96	sf	$ 4.00	$ 384	$ 415	$ 477	$ 525	$ 525	
5.27		Replace 2 damaged tiles in Third Floor Lounge.	16	sf	$ 4.00	$ 64	$ 69	$ 79	$ 87	$ 87	
5.28	Typical Finishes in Men's and Women's Bathrooms:	Install missing 36" w grab bar behind ADA toilet in Third Floor Men's Room. -	1	ea	$ 285.00	$ 285	$ 308	$ 354	$ 389	$ 389	
5.29		Install access panel or infill in opening in wall behind Men's Room ADA toilet on second floor. Patch and paint behind the toilet. 12" x16"	1	ea	$ 300.00	$ 300	$ 324	$ 373	$ 410	$ 410	
5.30		Replace two PLAM bench tops in Third Floor Women's Room that have missing PLAM edges. 2 @ 18"x 3lf	6	lf	$ 115.00	$ 690	$ 745	$ 857	$ 943	$ 943	
5.31		Sinks: Replace the Third Floor PLAM counters (w/sinks). 2 @ 24" x 10lf,	20	lf	$ 110.00	$ 2,200	$ 2,376	$ 2,732	$ 3,006	$ 3,006	
5.31		Sinks: Replace the Third Floor PLAM counters (w/sinks). 3 sinks per counter.	3	ea	$ 2,500.00	$ 7,500	$ 8,100	$ 9,315	$ 10,247	$ 10,247	
5.32	Typical Laundry Rooms:	Ceiling: Replace 6 stained tiles at Second Floor Laundry room.	48	sf	$ 4.00	$ 192	$ 207	$ 238	$ 262	$ 262	
5.33	Typical Recycling Rooms:	Floor: Install VCT flooring and vinyl base with transition strip at Hall carpet. 30sf	30	sf	$ 5.00	$ 150	$ 162	$ 186	$ 205	$ 205	
5.33	Typical Recycling Rooms:	Floor: Install VCT flooring and vinyl base with transition strip at Hall carpet. 30lf,	30	lf	$ 5.00	$ 150	$ 162	$ 186	$ 205	$ 205	
5.33	Typical Recycling Rooms:	Floor: Install VCT flooring and vinyl base with transition strip at Hall carpet. 6 ft transition strip	6	lf	$ 4.00	$ 24	$ 26	$ 30	$ 33	$ 33	

5.34	EXTERIOR: Front Side (Parking Lot):	Clean away mulch against brick.	1	ea	$ 200.00	$ 200	$ 216	$ 248	$ 273	$ 273	
5.35		Repair cracked concrete foundation at right corner.	1	ea	$ 250.00	$ 250	$ 270	$ 311	$ 342	$ 342	
5.36		Repair damaged brick at top of left jamb on L1/W1.	1	ea	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
5.37		Repair damaged brick at right end of brick sill on L2/W4.	1	ea	$ 100.00	$ 100	$ 108	$ 124	$ 137	$ 137	
5.38	Right Side:	Replace rusted basement access hatch.	1	ea	$ 350.00	$ 350	$ 378	$ 435	$ 478	$ 478	
5.39		Repoint joints in brick still at L1/W1.	1	ea	$ 150.00	$ 150	$ 162	$ 186	$ 205	$ 205	
5.40	Back Side (RT 2A):	Clean brick below window sills at Level 3.	1	ea	$ 150.00	$ 150	$ 162	$ 186	$ 205	$ 205	
5.41		Repair damaged brick at top of left jamb on L1/W1 and top of right jamb of L1/W2.	1	ea	$ 350.00	$ 350	$ 378	$ 435	$ 478	$ 478	
5.42		Repair damaged brick at top of right jamb on L1/W3 & W4 and L2/W4.	1	ea	$ 450.00	$ 450	$ 486	$ 559	$ 615	$ 615	
5.43	Left Side:	Clean brick below window sills on Level 3.	1	ea	$ 500.00	$ 500	$ 540	$ 621	$ 683	$ 683	
5.44	WINDOWS:	Repoint brick sills. 300 lf scattered on 3 floors	300	lf	$ 10.00	$ 3,000	$ 3,240	$ 3,726	$ 4,099	$ 4,099	
5.45		Replace window perimeter sealant. ALLOWANCE - 2000 lf	2000	lf	$ 4.00	$ 8,000	$ 8,640	$ 9,936	$ 10,930	$ 10,930	

SITE / CIVIL



Notes:

1. Aspects of plan are approximate and derived from aerial photography. The underground utilities shown on this plan are based on visible utilities located by photography and previously compiled plans. Underground utilities are approximate and not warranted to be exact or complete. Dig Safe shall be contacted prior to any excavation.
2. Elevations are based on the NAVD 88 vertical datum.
3. Project Horizontal Coordinates derived from GPS observation using reference frame NAD83 (2011) 2010.00 epoch. Project vertical datum based on NAVD 88 (Geoid 12A).
4. This plan is not a boundary survey.
5. Ground contours are based on 2014 state of Vermont LIDAR from Vermont center for geographic information (VCGI).

Vermont State Plane
Grid North (NAD83)

Lawrence Place
Williston Road
Blair Park Road
Helena Drive
Route 2A
"SANDWICH SHOP"
Citizens Bank
VTC BUILDING #200
VTC BUILDING #300
Blair Park Lots 12 & 13
VTC BUILDING #100
VTC BUILDING #400
VTC BUILDING #700
Rack Warehouse
Creative Sound
150' VELCO Easement
10" D.I. water
8" D.I. water
6" D.I. water
12" D.I. water
gas
overhead
underground elec
landscaping area

0' 40' 80' 160' 240'
Bar Scale 1" = 40'

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www.krebsandlansing.com

Project:

Vermont Technical College

Lots 12 & 13 Blair Park
Williston, Vermont

Project No. 22321
Scale 1"=40'
Drawn by SWH
Checked by
Date 02/14/2023

Revisions

No.	Date
1	

Drawing Title

Overall Site Plan

Drawing No.

C 1.0

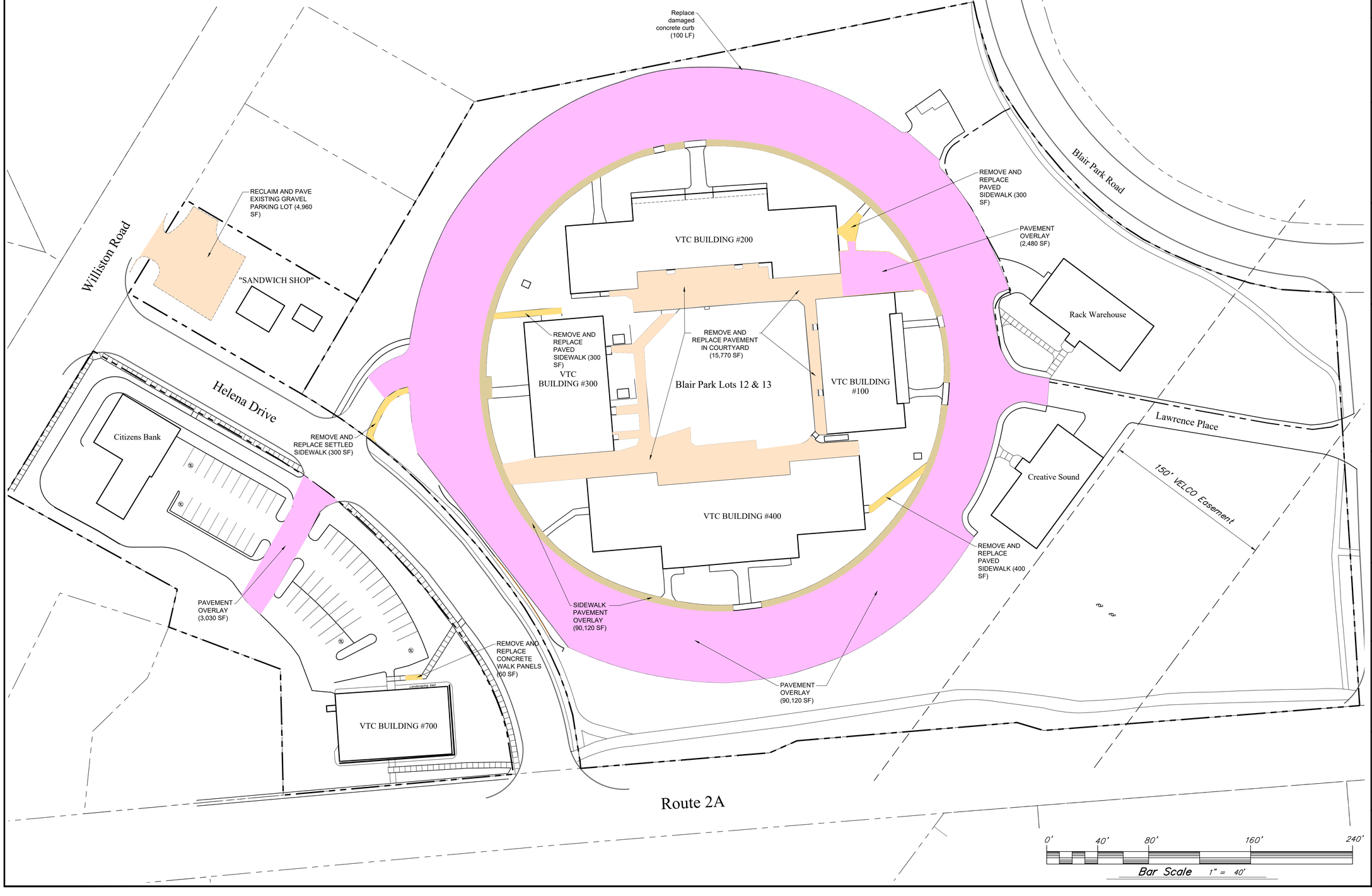
22321\DWGS\VTC Williston Facilities.dwg

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Legend

- Paved surface to receive Overlay
- Paved surface to be Reclaimed and Repaved
- Sidewalk surface to receive Overlay
- Sidewalk to be Rebuilt
- Existing property line/ right of way
- Existing Easement



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Revisions

No.	Date
1	

Drawing Title

Surface Conditions Plan

Drawing No.

C 2.0

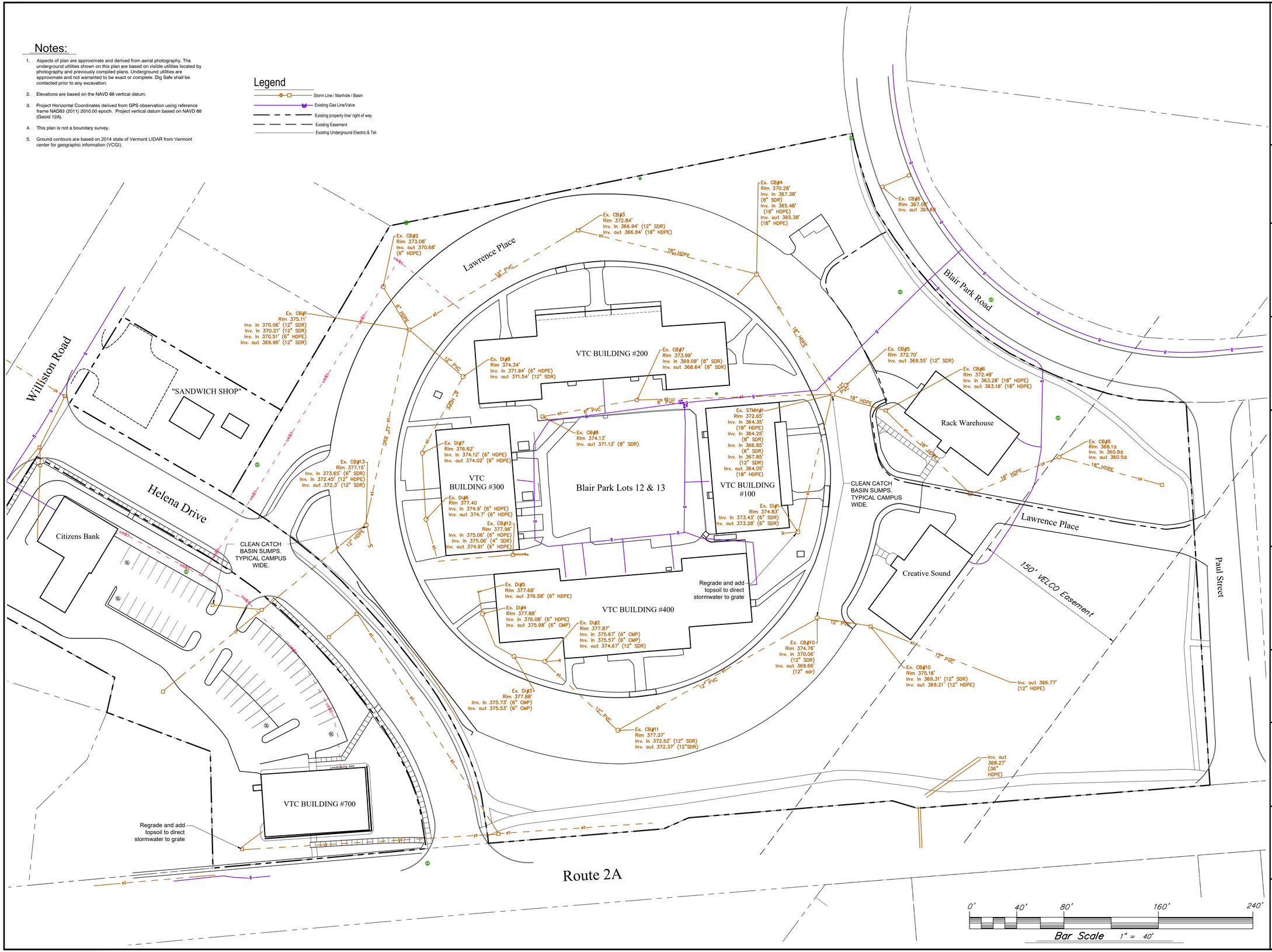
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Legend

- Storm Line / Manhole / Basin
- Existing Gas Line/Valve
- Existing property line/ right of way
- Existing Easement
- Existing Underground Electric & Tel



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Vermont Technical College

Lots 12 & 13 Blair Park
Williston, Vermont

Project No.	22321
Scale	1"=40'
Drawn by	SWH
Checked by	
Date	02/14/2023

Revisions

No.	Date
1	

Drawing Title

Utilities Plan
Stormwater & Gas

Drawing No.

C 3.0

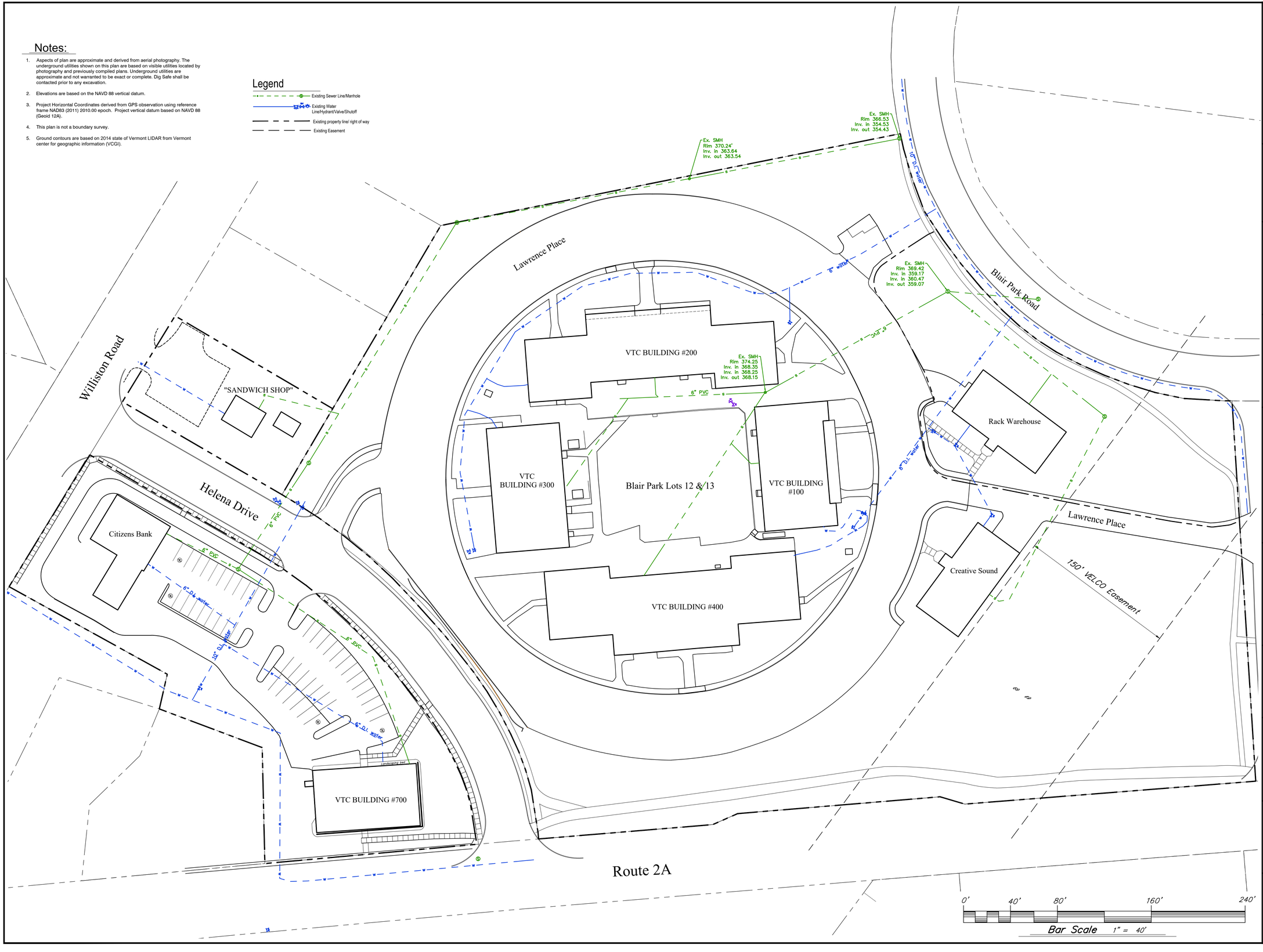
22321\DWGS\VTC Williston Facilities.dwg

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Legend

- Existing Sewer Line/Manhole
- Existing Water Line/Hydrant/Valve/Shutoff
- Existing property line/ right of way
- Existing Easement



Vermont State Plane
Grid North (NAD83)

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Checked by	
Date	02/14/2023

Revisions

No.	Date
1	

Drawing Title

Utilities Plan
Water &
Sanitary Sewer

Drawing No.

C 4.0

22321\DWGS\VTC Williston Facilities.dwg

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Vermont Technical College – Williston Campus
Facilities Assessment and Planning Budget
for Civil/Site Related Deferred Maintenance

Prepared by: Scott Homsted, P.E.
Krebs and Lansing Consulting Engineers, Inc.
February 14, 2023

Krebs & Lansing Consulting Engineers performed site visits to identify civil/site elements of the Vermont Technical College Williston Campus that have experienced deferred maintenance. We also met with campus facilities personnel to identify any ongoing problem areas that have been experienced on the campus.

We have prepared Sheets 1.0 through 4.0 to identify the locations of campus civil/site elements which in our opinion have experienced deferred maintenance.

The following is a brief description of the individual civil/site elements and a cost opinion to mitigate deferred maintenance.

Campus Roads, Parking Lots and Sidewalks

Most of the roads and parking lots on campus are serviceable, but there are areas where sidewalks need to be replaced, curbs need to be reset and pavements need to be reclaimed or pavements need to be overlaid to mitigate the effects of deferred maintenance. The photos below offer examples of the type of maintenance that is required.

Typical Areas in Need of Pavement Reclamation:


Drive between Buildings 300 & 400


Drive behind Building 200

Typical Areas in Need of Crack Sealing and Overlay



Center Circle Building 300



Center Circle Building 200

Typical Walkways in Need of Replacement



Paved Sidewalk in Circle settled below curb



Paved walk to Building 300 deteriorated

At the time of inspection there was a failing wooden retaining wall in the courtyard between Buildings 100-400. This wall has been removed, with the area regraded and covered with erosion control matting.

Table 1 offers a budget to mitigate deferred maintenance associated with roads, parking lots and sidewalks. Sheet 2.0 identifies the locations of the areas referenced in Table 1.

Table 1

Description	Estimated Quantity	Unit Cost	Location(s)	Cost Opinion for Deferred Maintenance
Concrete curb opposite B200 is disjointed and leaning.	100 LF	$40.00/LF	Building 200	$4,000.00
Sidewalk from Helena Drive to Building 300 has settled below the curb and should be removed and replaced.	300 SF	$10.00/SF	Helena Drive to B300	$3,000.00
Paved sidewalk to easterly B300 entrance is deteriorating and needs to be replaced including flush entry at slab.	300 SF	$10.00/SF	Building 300	$3,000.00
Portion of paved sidewalk should be removed and replaced to provide flush entry at slab.	300 SF	$10.00/SF	Building 200	$3,000.00
Paved sidewalk to northerly B400 entrance is deteriorating and needs to be replaced including flush entry at slab.	300 SF	$10.00/SF	Building 400	$3,000.00
Circle drive and parking has potholes/cracking and should be crack sealed and overlaid with 1½-inch of asphalt.	90,120 SF	$2.00/SF	Building 100-400	$180,240.00
Circle sidewalk has cracks and is below the curb in places. Sidewalk should be crack sealed and overlaid with 1½-inch of asphalt.	3,530 SF	$2.00/SF	Building 100-400	$7,060.00
Pave drive between buildings 100 and 200 has potholes/cracking and should be crack sealed and overlaid with 1½-inch of asphalt.	2,480 SF	$2.00/SF	Building 100-400	$4,960.00
All paving in the courtyard should be reclaimed and 3-inch overlay applied.	15,770 SF	$3.60/SF	Courtyard	$56,772.00
Pave drive between Building 700 and bank parking has potholes/cracking and should be crack sealed and overlaid with 1½-inch of asphalt.	3,030 SF	$2.00/SF	Building 700	$6,060.00

Description	Estimated Quantity	Unit Cost	Location(s)	Cost Opinion for Deferred Maintenance
Sidewalk panels in front of building 700 should be replaced to remove trip hazard	60 SF	$9.00/SF	Building 700	$540.00
Sandwich Shop parking lot should be reclaimed and 3-inch overlay applied.	4,960 SF	$3.60/SF	Courtyard	$17,856.00
Campus Roads, Parking, & Sidewalks Subtotal				**$289,488.00**

Campus Sanitary Sewer System

There are two distinct sewer collection systems on the campus. Buildings 100, 200, 300, and 400 are served by approximately 950 LF of sanitary sewer lines. Building sewer lines are six-inch diameter PVC. The service lines connect to a manhole between Buildings 100 and 200. A separate collection line featuring approximately 350 LF of 6-inch diameter PVC lines serve the Rack Warehouse and Creative Sound buildings. The collection lines appear to function adequately with gravity flow to the municipal sewer system located on Blair Park Road.

Building 700 is served by approximately 260 LF PVC sewer service that connects to a separate series of pipes and manholes with gravity flow to the municipal system located on Blair Park Road. The Sandwich Shop has an individual sewer service of unknown type/size that connects to the same system as Building 700.

It was beyond the scope of our evaluation to open and inspect individual sanitary manholes. However, we did not note any exterior deterioration of the manholes on campus.

No known deferred maintenance items were identified for the sanitary sewer system. Refer to Sheet 4.0.

Campus Water Lines

The VTC Williston water supply is sourced from the Town of Williston public water system. It is our understanding that the main lines and hydrants are maintained by the Town. VTC Williston is likely responsible for the water supply from the curb stops to the buildings. There is a 6” PVC water line that runs parallel to the circular parking around the buildings from a 10” ductile iron main on Blair Park Road to a hydrant in front of Building 300. Buildings 200 and 300 have services from this line.

A separate 8” ductile iron run feeds the hydrant in front of Building 100. Creative Sound and Rack Warehouse buildings have 6” D.I. services from this line. Buildings 100 and 400 have service lines extended from near the hydrant. We were unable to identify pipe size/type for the services to Buildings 100, 200, 300, and 400.

Building 700 is served by a 6" D.I. line extend from a 10 D.I. water main that runs between Route 2A and Helena Drive. Citizens Bank is also served from the 10" main.

The Sandwich Shop has an unidentified water service from a main on Route 2.

Hydrants should be on the Town of Williston Water Department schedule to be flushed regularly.

No known deferred maintenance items were identified for the water system. Refer to Sheet 4.0.

Campus Stormwater System

The VTC Williston campus is approximately 12 acres when adding the Lawrence Place, Helena Drive and Sandwich Shop properties together. The majority of ground slopes are less than 5%. The majority of soils on campus are mapped as Scantic silt loam and Munson-Raynham silt loams. These soils are generally poorly drained with a high degree of runoff.

The Lawrence Place stormwater collection and treatment system is permitted by the Vermont Department of Environmental Protection general permit 9050. Krebs and Lansing has completed annual reports indicating the system is being operated and maintained in conformance with the stormwater general permit. The design of stormwater improvements to bring the site into compliance with the State of Vermont "3-Acre" rule is ongoing.

Observations from our recent site visits indicate the stormwater collection system is being operated in general conformance with structural best management practices. We recommend cleaning catch basin sumps on a regular basis. These items should be completed in addition to any items noted in the annual inspection reports for the site.

Table 2 proposes the following deferred maintenance budget for the campus stormwater system. Refer to Sheet 3.0.

Table 2

Campus Stormwater System Maintenance, Repairs or Improvements				
Description	**Estimated Quantity**	**Location(s)**	**Cost Opinion for Deferred Maintenance**	
Catch basin sumps need to be cleaned	27 each	Campus Wide	27 @ $120/ea	$ 3,240.00
Regrade around structure to fix erosion	2	Between B100 and B400; Between B700 and Route 2A	2 @ $550/ea	$ 1,100.00
			Campus Stormwater System Subtotal:	**$ 4,340.00**

Vermont Technical College Williston Campus
Planning Budget for Site Deferred Maintenance Summary

Description	Cost Opinion for Deferred Maintenance
Roads, Parking & Sidewalks	$ 289,488.00
Stormwater System	$ 4,340.00
Total Planning Budget for Deferred Maintenance:	**$ 293,828.00**

Comments/Recommendations

A. We recommend the following priorities in budgeting for deferred maintenance costs:
   1) Recommended stormwater infrastructure repairs and maintenance.
   2) Maintenance overlays of parking lots, sidewalks and circulation drives in serviceable condition.
   3) Reclaim and overlay of deteriorated pavements
   4) Reconstruction of roads and parking lots with failed pavement.

B. The Planning Budget for Deferred Maintenance is based on scaled plans and walk-through evaluations and is intended only for planning purposes. Additional professional evaluations and plan development will be necessary before finalizing costs for site maintenance, repairs or improvements.

22321\Facilities Report\VTC Williston Site Facilities Assessment

MEP & FIRE PROTECTION


VERMONT TECH

LN CONSULTING

February 1, 2023

Sherry Libby
Marty Sienkiewycz
SAS Architects
117 St. Paul Street, Third Floor
Burlington, VT 05401

RE: VTC Williston Campus: Existing Building Mechanical/Plumbing/Fire Protection Infrastructure Report

L.N. Consulting was retained by SAS Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting Vermont Technical College's Williston Campus and to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The electrical portion of these observations is within a separate dedicated portion of the report. The goal of the campus building infrastructure report is to provide the master planning team with reliable information to assist in developing an appropriate Campus Master Plan.

The MEPFP systems infrastructure review includes the following buildings:

1. *Building 100*
2. *Building 200*
3. *Building 300*
4. *Building 400*
5. *Building 700*

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system, or equipment wear items. The third priority group is items related to building performance and energy efficiency. The report will provide general details about systems within each building and then offer a combined recommendations section for ease of reference.

Note that this report is based on site visits that, due to the amount of time available, involved general review of the buildings. Although LNC was able to perform a somewhat detailed analysis of each building at the campus, due to the amount of time available it was not possible to include every deficiency. The intent of this report is intended to provide an overview of the conditions of each building, and actual corrections required would involve specific design work.

The attached cost estimate document for all the recommendations is for budgeting purposes only. Actual costs will vary from these based on field conditions, final design,

economic factors and economies of scale if multiple recommendations are implemented at once. The probable construction costs (PCC) indicated are intended to reflect the estimated "order of magnitude" cost for each recommendation and include construction material and labor. This cost assumes only minimal architectural cutting and patching of existing walls as necessary to incorporate the installation of the stated electrical work. Any additional architectural or structural work beyond minor cutting and patching that would be required to facilitate the proposed revisions has not been incorporated into the costs indicated and will need to be added and accounted for separately/by others. The probable soft costs (PSC) include engineering and management. The probable project cost (PPC) is the sum of the PCC and PSC.

Mechanical/Plumbing/Fire Protection Overview

At each building, any code deficiencies noted are based on the latest adopted codes such as the National Fire Protection Association (NFPA) codes including the Standard for the Installation of Air Conditioning and Ventilating Systems (90A), Life Safety including NFPA 101, Vermont Fire and Building Safety Codes, International Plumbing Code, Vermont Plumbing Rules, International Building Code, Vermont Commercial Building Energy Standards or other similar codes. When these systems were installed, they were most likely code compliant at that time. Because most codes are "grand-fathered", the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for tempered water protection at public lavatories and handwashing facilities and mechanical ventilation throughout as natural ventilation utilizing operable windows was previously permitted but is no longer an approved ventilation method.

Existing Conditions

General

As indicated in the electrical report, Buildings 100, 200, 300 and 400 are nearly 40 years old built in approximately a 4-year time period. These buildings were initially constructed as "strip mall" type facilities with multiple tenants sectioned throughout the buildings. With the exception of Building 300 which has a newer HVAC system that serves the entire facility, the other buildings are quite segmented in how they are conditioned with many individual pieces of equipment to condition portions of the facility with individual gas meters. There were many gas meters observed throughout the campus. Buildings #100 and #300 are smaller and approximately the same size. Buildings #200 and #400 are larger and approximately the same size.

Building 100

General

This building is a single-story facility which is generally comprised of classroom spaces and offices. The classrooms here appear to primarily serve the school's nursing program. One of the classrooms contains an X-Ray machine.

Mechanical

The primary means of space conditioning for the facility is via an air-based system with natural gas fired heating appliances and Direct Expansion (DX) cooling equipment. There are multiple units that condition the facility. Many of the nameplates for the outdoor remote condensing units were worn off. Based on the age of the equipment and having seen some nameplates on similar era equipment at other buildings, it is likely that some or all of the split systems currently are currently filled with R-22 refrigerant. R-22 refrigerant has been in the process for phase out for well over a decade due to the refrigerant's ozone depleting properties. As of 2020, the refrigerant is no longer permitted to be produced or imported and the only available supply is via recovered, recycled or reclaimed supplies. The longer that the equipment remains in service, the more difficult refrigerant will be to procure for servicing if there is a leak. Compared to many of the other systems on the campus, the refrigerant piping is in okay condition. However, the elastomeric foam insulation does not contain any Ultra-Violet protection and is beginning to deteriorate. We recommend replacing any damaged insulation and protecting the insulation from further damage via aluminum shielding or wrapping the piping in a VentureClad type product.



Exterior Condensing Units. Some units are older and are likely charged with R-22 refrigerant.



Existing refrigerant piping insulation appears to be in decent condition. There is some weathering and deterioration occurring due to not having UV protection.

The eastern offices for the facility are conditioned by a larger condensing style (high efficiency) gas fired furnace located in the small mechanical room behind the interior bathroom in this area. The furnace has an older Carrier air conditioning DX coil which is connected to a split system outdoor remote condensing unit located at the southeastern

corner of the facility. The burner off switch is located within the mechanical room. The mechanical room was quite warm at the time of the site visit and doesn't appear to have any ventilation supply/return air.

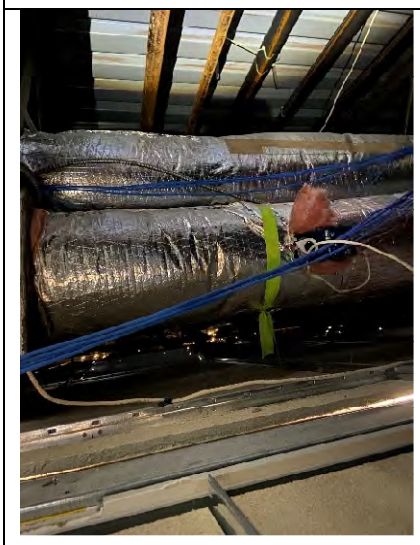
	
Office high efficiency furnace with older split system coil. Gas line has an isolation valve at the appliance connection.	*Emergency shutoff switch is located on the opposite of the mechanical room as the door. It would be safer to locate the switch near the restroom corridor door to enable shutoff from a remote, safe location.*

The eastern restrooms do not appear to have any functional exhaust. The exterior restroom exhaust fan appears to be broken. The interior restroom did not have any noticeable exhaust or supply air moving from the grille within the space.

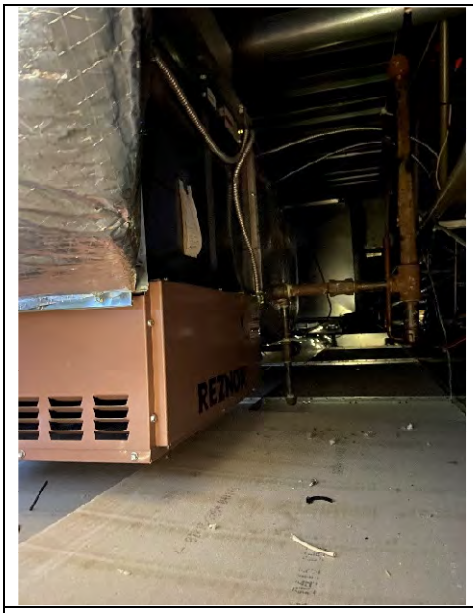
An exhaust fan is located in the kitchenette area above the microwave. However, this fan does not appear to be operating.

The eastern offices and conference rooms all contain both supply diffusers and return grilles. The system duct system appears to be fully ducted. It appears that outdoor air for this area is provided by an outdoor air duct from a common sidewall louver (that provide ventilation air to multiple furnaces). All outdoor air ducts appear to have motor operated control dampers. There is no exhaust located over the copy machine which is recommended to remove the buildup of contaminants such as ozone.

The southern central classroom and labs are served an above ceiling horizontally mounted condensing furnace located above the classroom. There are (2) above ceiling exhaust fans (1 serving the classroom and 1 serving the lab space) which exhaust these space with ventilation air drawn into the furnace return ductwork via the outdoor intake louver indicated above.

	
Above ceiling furnace split system coil. Coil condensate is gravity drained. Refrigerant piping insulation appears to be in good condition here.	*Above ceiling furnace. Shutoff for the furnace is above the ceiling which is not obvious from the room below. Having adequate signage to alert service personnel of this location or relocating the switch will increase safety.*
	
Although difficult to see from this photo, these are the outdoor air intakes that connect to the exterior louver. The motorized isolation control damper is depicted here.	

The northern central classrooms are conditioned by a large floor mounted air handling unit. The unit is a newer Bryant which contains a DX cooling coil. This unit was vibrating significantly at the time of the site visit and likely needs the fan serviced. This unit draws air from the mechanical room that it is located in through ceiling mounted filter return grilles that are ducted to the spaces served. The room appears too small for this equipment as there is very little service room. This configuration is not desirable since it is not likely to draw much air through the filtered return grilles so the majority of the air is draw from the open ceiling tiles (ceiling plenum) and the adjacent corridor through the mechanical room doors. It is not permissible to utilize the egress corridor as a return plenum. Removing the filters from the return grilles will improve airflow through the return ductwork but is still not as good as a fully ducted system. Ensuring that the mechanical room doors seal to the corridor will reduce the air from being returned through the corridor. Heating for this area is provided by an above ceiling gas fired, Reznor duct heater. This duct heater does not appear to be a high efficiency, condensing style unit. No duct smoke detector was observed for this system which is required per code. Exhaust is provided by above ceiling exhaust fans serving the classrooms with outdoor air drawn in from the outdoor air intake louver.



Above ceiling Reznor gas fired duct heater.



Large central cooling only air handling unit. There is very limited clearance for service around this unit. The fan appears to be in need of service as there is a significant vibration issue.

	
Typical above ceiling exhaust fan serving classrooms/lab space.	*Large AHU filter grilles. These do not appear to be effective since they offer a significant airflow resistance which causes the air to be drawn in from the open ceiling cavity and the corridor.*

The western side of the facility is conditioned by a York condensing furnace with an older Carrier DX cooling coil. An exhaust fan located over the classroom provides exhaust for that space. The (2) western restrooms have spot exhaust fans controlled by switches.

	
Western condensing gas fired furnace with older DX cooling coil.	*Refrigerant piping missing insulation here.*

There is a small data/telecom closet in the southeast portion of the facility. This space was locked at the time of the site visit so no information regarding cooling for this space could be obtained. No exterior condensing unit was observed so it is assumed this is passively cooled via conduction/convection to the adjacent spaced.

The southeastern storage room contains oxygen cylinder storage along with storage of other materials. This room was very full at the time of the site visit.

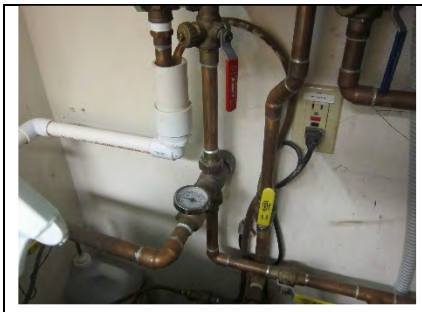
	
Oxygen cylinders are being storage in the southeastern storage room along with other items.	*Access to the oxygen cylinders is difficult. There appears to be less than 300 ft³ of cylinders stored here. The cylinders do not appear to be secured well.*

Plumbing

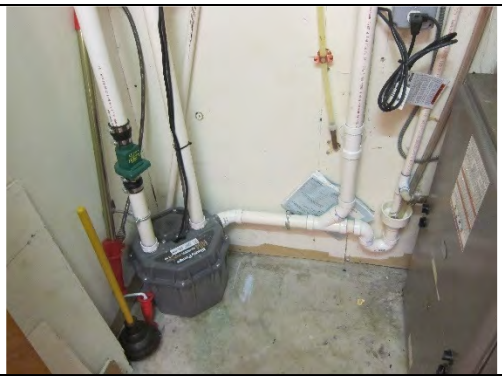
The building is served by a 1-1/2" domestic water service line. The water service contains a Watts LF007M2QT lead-free backflow preventer. There is no pressure reducing valve on this system. If the city supply water pressure ever exceeds 80 psig, then a pressure reducing valve is required. The water service entrance is located within a box in a storage room at the southeast corner of the facility. The water service entrance is difficult to access with the box in place and with all of the stored equipment in the way. The water service entrance piping is not insulated.

	
Water service entrance is located in the southeastern storage room. Entrance is within a fabricated wooden enclosure. Access appears difficult if service is required.	*The water service entrance piping and equipment is not insulated and is likely to sweat in this enclosure which could contribute to mold growth.*

Domestic hot water is produced by an instantaneous gas fired Navien water heater. The domestic hot water temperature is controlled by a mixing valve. A thermal expansion tank is installed on the system. There does not appear to be any domestic hot water recirculation system for the facility. It is likely to take a very long time for domestic hot water to reach the farthest plumbing fixtures without a recirculation system. Domestic hot water is required and the distance to these plumbing fixtures exceeds the limit permitted by code.

	
Mixing valve for domestic water temperature control.	*Navien instantaneous water heater.*

The condensate for the furnace serving the eastern offices, a Liberty 404 condensate pump has been installed to pump the condensate to the sanitary waste system. A check valve is installed in the vertical for this. The condensate for the large central air handler is via a smaller Little Giant or similar condensate pump. The condensate for the above the ceiling condensing furnace appears to be gravity drained above the ceiling. The condensate for the York furnace serving the western portion of the facility is drained to a small condensate pump which pumps into the service sink within the mechanical room. None of the gas fired appliance condensate lines are treated by condensate neutralizers which reduce the acidity of the condensate to protect the waste piping.

	
Condensate pump for large air handling unit cooling coil condensate.	*Office area furnace and cooling coil liberty pump.*
	
Condensate pump for Navien water heater and western furnace and cooling coil.	*Service sink for western condensate pump discharge.*

The restrooms all have floor mounted, tank type water closets. The lavatories in the eastern restrooms are wall hung with manual faucets and ADA insulation kits for the drain lines. The lavatories do not appear to have concealed arms carriers. The western lavatories are vanities with manual faucets. These do not appear to be ADA compliant. The domestic water piping is run behind the water closets here and appears to have evidence of corrosion. The wester water closets appear to be newer.

	
Western restroom domestic water piping run behind the water closet shows evidence of corrosion.	*Water closets appear to be newer. Western restrooms do not have ADA lavatories.*

The eastern kitchenette has a stainless-steel drop-in sink with an ADA insulation kit on the waste piping. The kitchen sink at the western end of the facility is also a drop-in stainless-steel sink but it does not contain an ADA insulation kit on the waste line.

The Nurses lab has a drop-in sink with a counter mounted wand style eyewash. A dedicated mixing valve for the eyewash was not observed.

	
Eyewash in nurses training area.	*Newer combination drinking fountain/bottle fill (see description below).*

There is a newer Elkay EZ-H2O combination drinking fountain/bottle filler at the eastern end of the facility.

Generally, the domestic water piping appears to be copper with Cross-linked Polyethylene (PEX) tubing serving the drinking fountain. Waste and vent piping appears to be constructed with PVC piping. Natural gas piping appears to be generally steel piping. The natural gas piping did not appear to have sufficient labels to clearly identify it.

Fire Protection
There is no fire protection system in this building.

<u>Building 200</u>

General
This building is a single-story facility which contains offices, conference rooms, classrooms, computer classrooms, tech classrooms and a kitchenette type space. There is also a game room.

Mechanical
The primary means of space conditioning for the facility is via an air-based system with natural gas fired heating appliances and Direct Expansion (DX) cooling equipment. There are multiple units that condition the facility. Many of the nameplates for the outdoor remote condensing units were worn off. Based on the age of the equipment and having seen some nameplates on similar era equipment at other buildings, it is likely that some or most of the split systems currently are currently filled with R-22 refrigerant. See additional information regarding R-22 refrigerant in the Building #100 description. Many of the condensing units appear older and are likely to require replacement sometime in the near future. The refrigerant piping insulation is generally degrading due to no UV protection on the piping. There are many gaps in the insulation which reduces the system capacity and efficiency. Only the split system condensing unit serving the furnace in the mechanical room off of Office 236 appears to operate on R-410A refrigerant which itself will be phased out within the next 2-3 years.

	
Older (assumed to be R-22 refrigerant) split system condensing units serving the (2) furnace cooling coils at the northern end of the facility.	*The refrigerant piping insulation is in poor condition for the norther split systems.*

	
Example of gaps in the refrigerant piping outdoor which was typical for the majority of the systems.	*Older (assumed to be R-22 refrigerant) split system condensing units serving the second, northernmost mechanical room/furnace cooling coils.*
	
The split system condensing units serving the (2) mechanical rooms just south of Office 236. The closer (northern) condensing unit appears to the be only newer condensing unit which operates using R-410A refrigerant.	*The (2) southern condensing units. These units are older and are assumed to be operating on R-22 refrigerant.*

The building appears to be broken up into (8) different heating/cooling zones. There are (6) different mechanical rooms along the eastern exterior wall of the facility. The southern (3) mechanical rooms contain (1) gas fired furnace with a split system Direct Expansion (DX) cooling coil. The (2) northern mechanical rooms are assumed to contain (2) units. Both of the northern mechanical rooms were locked at the time the site visit and were not able to be accessed. Each furnace/split system is controlled by a dedicated thermostat located within the zone the system serves. Each system appears to serve the entire east/west section of the facility with the facility separated into (7) sections from north to south. Generally, it appears that the return air is fully ducted back to the furnace from the spaces. The supply and return ductwork for each furnace

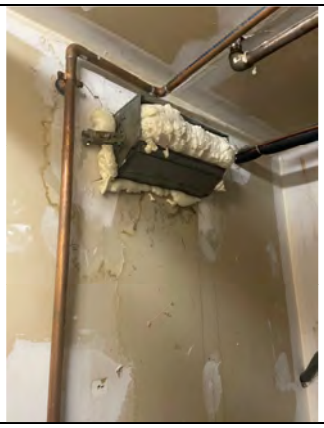
appears to contain a fire damper where the ductwork passes through the ceiling. However, it appears that many if not all of the mechanical room ceilings are not fully sealed with some having open holes in the ceiling which renders the fire dampers ineffective. The ductwork also generally appears to be lined for at least the first few feet from the furnaces. None of the furnaces observed appear to have any outdoor (ventilation) air ducted to the return ductwork so it appears that none of the zones contain any outdoor ventilation air.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Typical newer, sealed combustion, high efficiency furnace. The (2) white PVC pipes in the middle/upper portion of the photo is the combustion air intake and flue (exhaust) pipes.</td><td>The southernmost furnace. This furnace is the oldest and appears to be original to the facility. This furnace is approaching the end of its useful life.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Inside of the duct near the furnace. Ductwork is lined for sound attenuation and to provide insulation to reduce heat loss/gain. This also prevents condensation from forming on the ductwork during the cooling season. The fire damper is visible (metal object at the top) where the duct penetrates the ceiling.</td><td>The ceiling in this mechanical room and in many of the other mechanical rooms has had the ceiling compromised for fire separation. The fire dampers are not serving a purpose in these rooms.</td></tr>
</table>

Generally, it appears that only corridors and larger spaces like classrooms contain return grilles/diffusers. The smaller rooms such as the offices, kitchenette, and study rooms etc. appear to only have supply diffusers which limit the ability to balance airflow in each zone. The airflow into each space will vary depending on which corridor doors are open since rooms with open corridor doors with receiver more airflow than spaces with closed doors due to increased resistance for the air that needs to be returned under (passed under) the corridor door sweeps. This air distribution strategy is also not permitted per code due to the HVAC system utilizing the corridor which is an egress path as a return plenum.

All of the furnaces observed with the exception the most southern furnace appear to have had the original furnaces replaced with newer, high efficiency condensing style furnaces with sealed combustion systems. This means that both the exhaust flue and combustion air intake are ducted to the outdoors. All of the newer furnaces have had their outdoor air intake louvers insulated shut which appear to have served as the combustion air intakes. The southernmost furnace appears to be an older York furnace (older than the other units) and is not a sealed combustion type furnace. The outdoor air intake louver into this mechanical room is still operational. Sealed combustion, high efficiency furnaces are approximately 15% more efficient than an older style non-sealed combustion furnace. There is also a significant savings by not having an open hole in the envelope which is how the southernmost mechanical room is functioning. This can present a freezing concern in the winter time for water lines that pass through or are near this room. (See photo below for sealed up louver).

Generally, it appears that each restroom contains a ceiling mounted exhaust fan which discharges to an exterior wall cap along the eastern exterior wall. The fans appear to be operated via the light switch. These exhaust fans appear to be the only ventilation equipment for the facility which is not sufficient to meet code requirements. The bathroom adjacent to Office 232 was observed to be off and may not be operating properly. There is also an old exhaust fan in the storage room adjacent to Office 236 which does not appear to be working.

	
Typical exterior wall caps (above) for restroom exhaust fans. The larger louver louvers served as combustion air intakes for the furnaces prior to the newer sealed combustion units being installed. The left louver is still active (older furnace) while the right louver has been sealed up (newer furnace). The oval, protruding object is the concentric vent for the furnace with exhaust discharging straight out and the intake combustion air being drawn in from behind.	*Example of the inside of a sealed up exterior louver. The insulating/sealing work varies for all of the louvers.*

The computer room, Computer 210 contains a dedicated Daikin Variable Refrigerant Flow (VRF) split system with a ductless 4-way blow cassette style unit to provide cooling in the space. The indoor unit is connected to the Daikin outdoor condensing unit. The outdoor unit contains a wind baffle to provide low-ambient air temperature cooling capabilities. The refrigerant piping insulation appears to be deteriorating similar to the rest of the refrigerant piping due to UV degradation. The system has a dedicated thermostat within the computer room to control the system operation. It appears that the ducted furnace/air conditioning unit that serves this wing of the building is also ducted to this zone. It is not known if the ductwork has been blocked off or isolated from this system to the computer room supply and return grilles/diffusers. If the grilles and diffusers are not blocked off or isolated from the furnace, then this space could be getting heated when the thermostat that is located in the western classroom calls for heat. The Daikin split system air conditioning unit would then need to cool the space to counteract the heat provided by the furnace which would be a significant source of wasted energy. (See photos below)

The data room at the southern end of the facility (Data 237) is cooled by a dedicated, small Carrier split system. This is an older Carrier unit system.

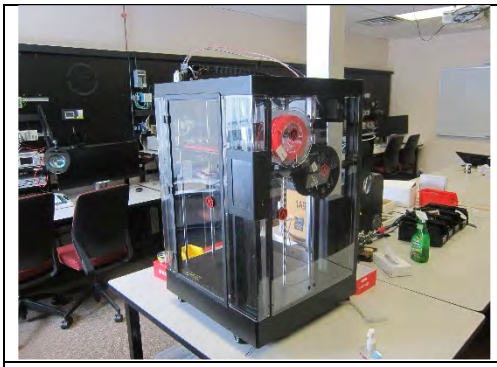
	
Small, older outdoor Carrier split system condensing unit serving Data 237. Insulation is partially torn/damaged and is deteriorating.	*Daikin outdoor condensing unit serving Computer 210 ductless cassette. Insulation is partially torn/damaged and is deteriorating.*
	
Dayton ducted in-room air conditioning unit serving Data 220. The ceiling is open in this space. See description below.	*The indoor Daikin cassette unit in Computer 210.*

There is a small data room at the northern exterior wall of the facility off of the corridor. This small room is cooled via a ducted, in-room Dayton air conditioning unit. It appears that this air conditioner rejects the heat to the outdoors via a wall cap.

There is a small kitchenette at the southern end of the facility which appears to primarily serve as a coffee/tea brewing room with (3) different brewing appliances. There is no exhaust or supply air into this room and there is a noticeably strong coffee smell even when no coffee is brewing.

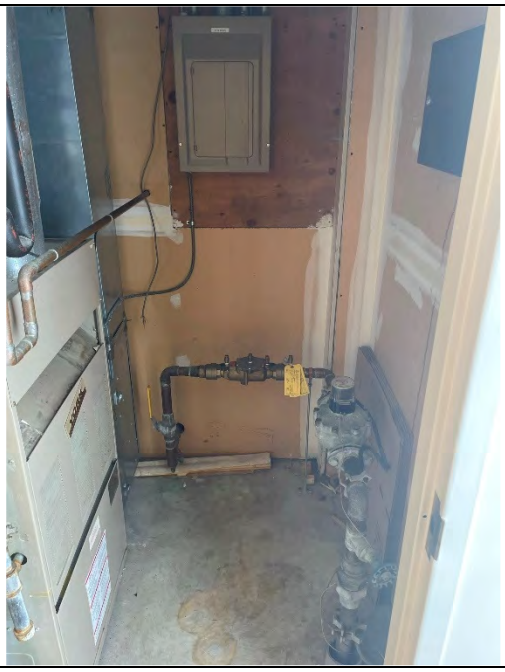
The electrical technical classroom Electrical 213 contains a 3D printer which uses PLA filament for operation. 3D printers generate harmful emissions such as fine particulate

matter and Volatile Organic Compounds (VOCs) which can be harmful to human health with prolonged exposure. This printer appears to have an integral HEPA filtration system does not have any integral containment to prevent the emissions from escaping into the room. The printer manufacturer also recommends that the printer be installed in a well-ventilated room. This space, like the rest of the building does not have any ventilation air supplied to it.

	
3D printer in room Electrical 213. The printer is open to the space without any containment or filtration. The room doesn't have any exhaust/ventilation air as well.	*Red PLA filament used by the 3D printer. There is also a Hatchbox 3D True Black PLA filament as well.*

Plumbing

The building is served by a 1-1/2" domestic water service line that enters the building rising up from the floor of the southern mechanical room. The water service contains a Watts LF007M2QT lead-free backflow preventer. There is no pressure reducing valve on this system. If the city supply water pressure ever exceeds 80 psig, then a pressure reducing valve is required. The water service entrance piping is not insulated which is likely leads to significant sweating during the summer months.

	
Water service entrance at the south end of the building. The piping is not insulated which is likely to lead to sweating.	*Water service entrance is also located under an electrical panel.*

Generally, it appears that there are isolation valves for the gas piping at each gas fired furnace. These isolation valves are a mixture of ball valves and plug style valves. It appears that the natural gas piping for the facility enters the facility near the middle (north/south) on the eastern side of the facility. There is a single gas meter which splits to (8) different branches. The steel piping is showing signs of corrosion.

	
Newer ball valve for the gas piping serving the furnace.	*Older style plug valve (on the right) on the gas line serving the furnace in this room. Piping does not have any labeling signifying it is a gas line.*

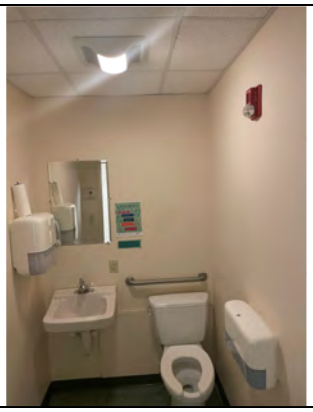
	
Exterior single gas meter location. It appears each furnace has a dedicated gas line back to this main. Piping is showing signs of corrosion.	*Older galvanized steel gas piping serving the old southernmost furnace. Minor corrosion is evident on this piping.*

In the more northern of the (2) back-to-back mechanical rooms at the southern end of the facility (4 total mechanical rooms) contain floor drains for condensate drainage. Both of the southern of the (2) back-to-back mechanical rooms discharges the condensate to the floor drain in the adjacent, northern mechanical room. The floor drain in the mechanical room adjacent to Office 236 contains an in floor trap primer to keep the floor drain trap from drying out. The furnace in this mechanical room also has a condensate neutralizer for the furnace condensate. None of the other furnaces appear to have a condensate neutralizer.

	
Example of furnace/cooling coil condensate being drained into a condensate pump which is then pumped to the adjacent rooms floor drain.	*Condensate drainage piping drains into the floor drain in this room. The condensate neutralizer is evident here.*
	
Condensate neutralizer receives the condensate from the furnace (same neutralizer as in previous photo).	*Another mechanical room floor drain. This one is partially blocked by stored objects.*

The northern mechanical room was locked at the time of the site visit. It is assumed that the building water heater is located in this space. The condition of the water heater was not observed.

The restrooms all appear to have floor mounted tank type water closets. The water closets appear to be in good condition. The lavatories are wall mounted with manual faucets. The lavatory drains (except for one) do not appear to have ADA insulation kits on the lavatory drains. The lavatories do not appear to be attached to concealed arms carriers.

	
Typical restroom with floor mounted tank type water closet and wall mounted lavatory. Lavatory does not have ADA insulation on drain.	*Typical smaller restroom with similar water closet. This lavatory has an ADA insulation kit on the drain line.*

There is an older urinal in the western most restroom at the far southern end of the facility. The urinal does not appear to be a newer low-flow type.

The kitchenette sink adjacent to the student lounge is a drop-in, counter mounted sink with an ADA insulation kit installed on the sink drain.

The small southern kitchen has a small drop-in stainless-steel sink.

There is a drinking fountain adjacent to the kitchen off of the Student Lounge.

Generally, the domestic water piping appears to be copper. The domestic water piping has some insulation but the insulation does not appear to be applied to the entire pipe system (many locations where insulation was missing was observed). Natural gas piping appears to be generally steel piping. The natural gas piping did not appear to have sufficient labels to clearly identify it.

Fire Protection

The building does not full fire protection system. There are limited area sprinkler systems connected to the facility domestic water system that protect the individual mechanical rooms.

	
Limited area sprinkler in a room where the ceiling is partially removed.	*Limited area sprinkler in a room where the ceiling appears to be generally intact.*

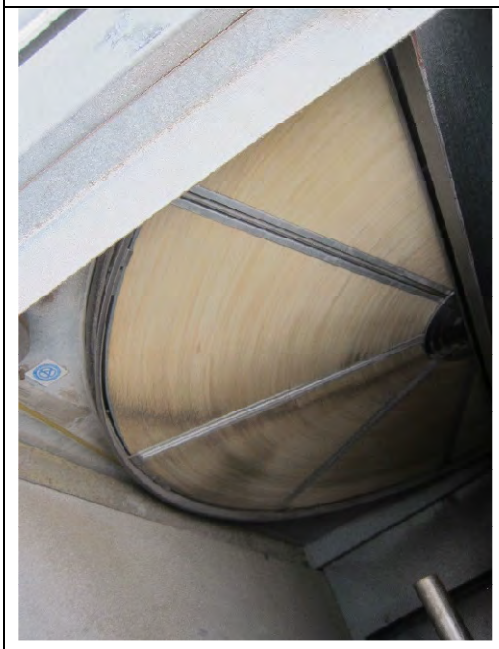
Building 300

General

This building is a single-story facility which serves as the Dental Hygiene Clinic for the College. The facility contains a larger open area for patient dental care, locker areas, reception, a teaching classroom, support spaces, a central mechanical room, a small room containing a vacuum pump and air compressor for the teaching kitchen, and office spaces.

Mechanical

The primary means of space conditioning for the facility is via an air-based system with natural gas fired heating appliances and Direct Expansion (DX) cooling equipment. There are (2) exterior Air Handling Units (AHUs) which are mounted approximately 42" off the ground on a steel stand located on a concrete pad. These air handling units are Aaon RM-008's with integral compressors and condenser section for cooling. There are (2) compressors in these units for modulation capabilities and they utilize R-22 refrigerant. As noted above in Building #100, R-22 refrigerant is in the process of being completely phased out and may be difficult to obtain in the future for servicing the equipment. It appears that the units are rated at 8 tons of cooling capacity. Heating is provided by integral natural gas fired burners rated for 180,000 Btu/hr. of input and 146,000 Btu/hr. of output capacity (80% efficient). Ventilation air is provided by an integral energy or heat recovery wheel with modulating dampers within the unit to vary the ventilation air percentage. There are 4" MERV 8 filters on the outdoor air intake and on the mixed air prior to the cooling coil. We understand that recently, UV lights were added downstream of the cooling coil which operate to prevent bacteria buildup on the coils and kill viruses and bacteria in the airstream. The AHUs generally appear to be in good condition. The inside of the units was observed to have some dirty/dust accumulation on the interior surfaces.

	
Compressor cabinet and controls enclosure for Aaon AHUs.	*The outdoor air intake section of the AHUs. Belts appear to be stored in here. This area appears to have an accumulation of dust/dirt and could use a cleaning.*
	
Heat or energy recovery wheel which reduces the energy required to condition the incoming outdoor ventilation air by preconditioning that air with the outgoing exhaust. This unit utilizes a power exhaust fan to draw the exhaust air through the wheel from the return air.	*This is the economizer damper section in the unit with the cooling coil pre-filters.*

	
View of the outdoor air intake plenum (top) and power exhaust section after the recovery wheel (bottom).	*UV light added to the DX cooling coil to keep the coil clean and kill viruses and bacteria. The supply fan (left) has some accumulation of dirt/debris on the motor.*

The ductwork that moves the supply and return air to/from the building is run outdoors. The duct connections on these units are on the bottom. The ductwork is insulated and wrapped in a VentureClad or equivalent insulation jacketing to protect the insulation. The jacketing generally appears to be in good condition. The ductwork penetrates the exterior wall within an enclosure and enters the north side of the building. There are duct smoke detectors installed in the ductwork where it enters the building. This is assumed to be wired to shut down the units in case of a fire event as required per code.

	
Ductwork is wrapped in VentureClad or equivalent protective jacket. This appears to be in decent condition. These can leak or get ripped so checking the integrity of the jacketing is recommended.	*Supply and return ductwork enter the bottom of the Aaon air handling units. Units are elevated above the concrete pad to permit the ductwork installation.*

Each air handling unit approximately serves half of the building, with the building divided west/east. Zone control for the facility is provided by Variable Air Volume (VAV) boxes which contain an integral damper and airflow sensor. When an individual zone calls for more cooling or heating, that zone VAV damper opens to provide additional capacity. The dampers close when less cooling or heating is required. This system type has limited temperature control capabilities due to all of the heating and cooling supplied with a single supply air temperature, especially if there are significantly varying loads such as full classrooms versus offices or spaces with different exposures.

All of the spaces in the facility are conditioned by the ducted HVAC system. The system is fully ducted with both supply and return ducts going to grilles and diffusers in each space. It appears that most, if not all of the corridor walls and some of the other walls are fire rated partitions. There are fire dampers for both ducts where they pass through the fire rated partitions.

The recently renovated Wet Lab (117) at the north side of the building has a dedicated exhaust fan which exhausts straight up through the roof.

The mechanical room off of the teaching classroom is conditioned off of the ducted HVAC system from the AHU. There is supplemental heat rejection in the room via an exhaust fan to an exterior louver with an insulated control damper and an intake louver opening with an insulated control damper. The main mechanical room is conditioned in a similar manned with an exhaust fan located on the exterior wall. This fan appears to

have a backdraft damper only rather than a motorized damper for closure when the fan is off.

	
Mechanical room through the wall exhaust fan.	*Teaching classroom mechanical room new intake and exhaust for heat rejection. These have insulated control dampers to minimize heat loss when there is no need for heat rejection.*

The dental clinic area of the facility contains multiple Medifyair MA-50 air cleaners. These units contain a recirculating HEPA filter unit and UV light. Units such as this are required to be listed and labeled in accordance with UL 867, the Standard for Electrostatic Air Cleaners and UL 2998, Environmental Claim Validation Procedure for Zero Ozone Emissions from Air Cleaner which is required by ASHRAE 62.1-2019, Section 5.7.1. Ozone emissions below 50 ppb is required by UL 867. A report by the Environmental Health Committee of ASHRAE suggests safe ozone levels be below 10 ppb. UL 2998 requires ozone levels below the quantifiable limit of detection of 5 ppb. Although this specific air cleaner model has not been listed by UL, Energy Star has tested a version of this unit which appears to indicate that the emissions fall within acceptable limits which we are not able to verify with the UL listing.

Restrooms are exhausted via exhaust fans. Exhaust fans are controlled by wall switches.

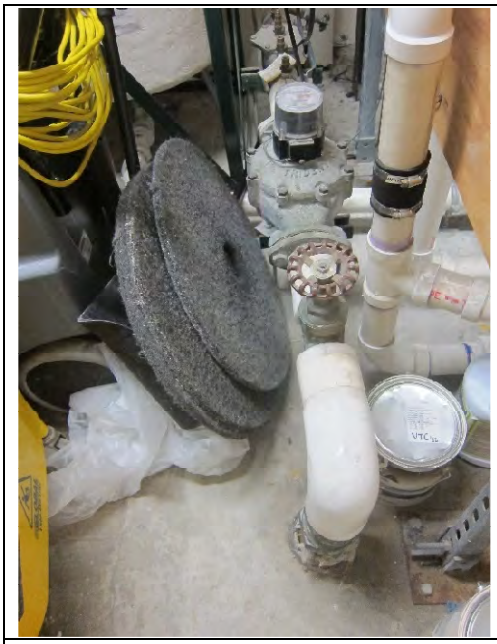
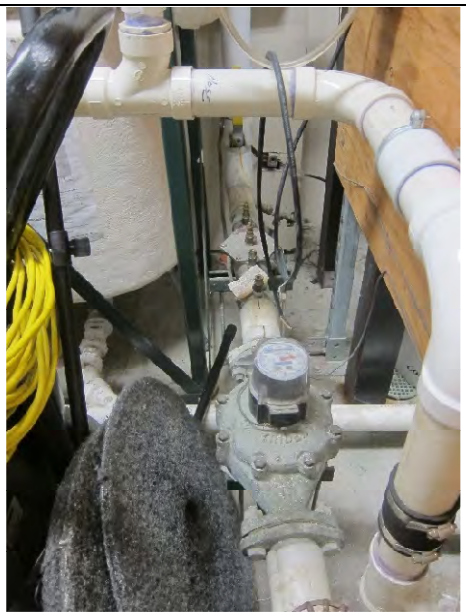
The copy area does not have any exhaust over the copier.

The building appears to have an older, simplified electronic controls to operate the AHUs and VAV boxes. This system does not appear to be a newer Direct Digital Controls system. It is assumed that the AHU has onboard internal controls for unit operation.

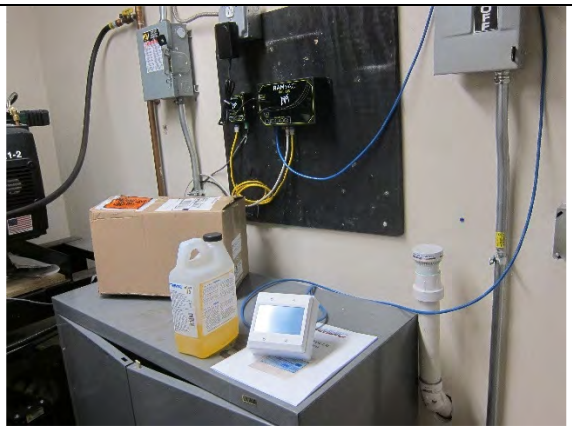
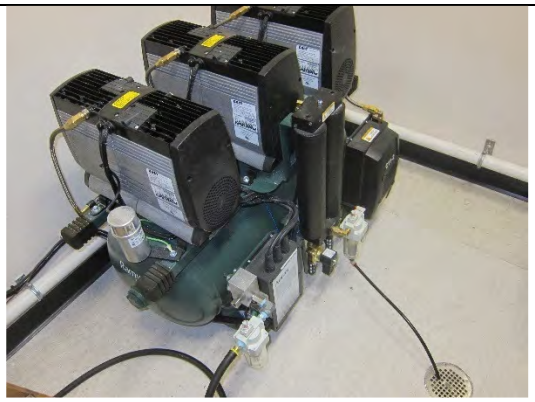
Plumbing

The building is served by a 1-1/2" domestic water service line that enters the building and rises up from the floor within the mechanical room. The pipe rises up through the floor through a sleeve in the floor (which is preferred). The water service contains a Watts 007M2QT backflow preventer. This backflow preventer is not lead free. There is no pressure reducing valve on this system. If the city supply water pressure ever

exceeds 80 psig, then a pressure reducing valve is required. The water service entrance piping has sections that are not insulated which is likely leads to significant sweating during the summer months.

	
Domestic water entrance piping rises up from the floor of the mechanical room. These valves are older gate style valve which should be tested to confirm it adequately closes off the water. These gate valves often leak if they aren't exercised and may not be able to shut off the water when needed.	*Portions of the domestic cold-water entrance is uninsulated which likely sweats during the summer months. The backflow preventer is not lead free.*

In the mechanical room there are (2) new Bison Ramvac vacuum pumps to serve the facility vacuum system. The vacuum system is an underfloor system that enters the room below grade (in a pit) and rises up and passes through an amalgam separator. The vacuum system piping is PVC. There are also (2) Aeras C11-2 air compressor units for the facility compressed air system. New Ramvac vacuum pump and Aeras air compressor were installed to serve the newly renovated teaching classroom.

	
Newer main mechanical room air compressor for the dental clinic.	*Newer main mechanical room vacuum pumps.*
	
Vacuum piping rises up out of the below grade pit. There is a mercury separator here.	*Vacuum system control system.*
	
New vacuum system for the teaching classroom.	*New air compressor for the teaching classroom.*

Restrooms contain floor mounted tank type water closets. The lavatories have concealed arms carriers and an ADA insulation kit on the lavatory drain piping.

A mop sink is located in the main mechanical room.

There is a sterilization area which contains multiple shallow stainless steel dropping sinks. There are also multiple autoclaves which drain to an indirect drain line into the wall.

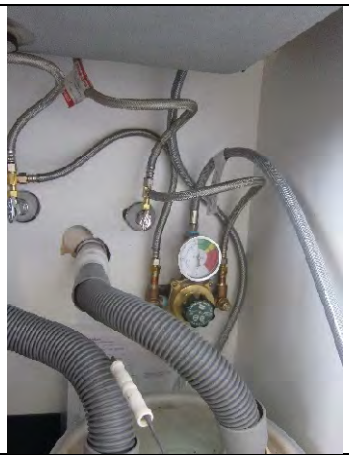
There are multiple small drop-in stainless steel sinks in the dental clinic area for hand washing etc.

In the back-of-house area, there are sensor faucets on the sinks. The sensor faucet outside of the wet lab appears to have a sensor that isn't operating correctly as it is not consistent with its operation.

The teaching lab has a drop-in stainless steel sink with a counter mounted emergency eyewash. The eyewash has a thermostatic mixing valve to maintain the discharge water temperature.



Teaching classroom emergency eyewash.



Emergency eyewash with code required thermostatic mixing valve.

Domestic hot water is produced in the mechanical room via a newer, condensing style State gas fired water heater. There are (2) 1" domestic hot water mixing valves serving (2) different domestic hot water systems. One system is labeled "tempered water" and one is labeled is general domestic hot water. There are (2) bronze Taco domestic hot water recirculation pumps; there is one pump for each domestic hot water system. Ball valves appear to be utilized to balance the flow in the system. There are check valves on the system to prevent backflow. The domestic hot water pumps discharge their recirculated water downstream of the check valves. This forces the recirculated water back through the water heater which could result in overheating of the domestic hot water piping. A thermal expansion tank is installed. There are many locations where

piping insulation is missing. There are also multiple locations where the past or present leaks are occurring. One of the check valves is actively leaking.



Gas fired condensing style water heater. This unit appears to be in good condition.



The dual domestic hot water thermostatic mixing valves. There is missing insulation throughout this portion of the domestic water system. There appears to be multiple current or past leaks in this section of piping at the check valves.



Taco domestic hot water recirculation pump.



Although difficult to see, the check valve in the top right of this photo is actively leaking.

There is a drinking fountain with a combination drinking fountain/bottle fill.

There are stainless steel drop-in sinks in the kitchenette and the female locker room and the staff locker room. The female locker room has (2) sinks. The staff locker room has

an ADA insulation kit on the piping below the sink. The men's locker room has a wall mounted lavatory with an ADA insulation kit on the drain line but no concealed arms carrier.



Female locker room drop-in sinks with manual faucets.



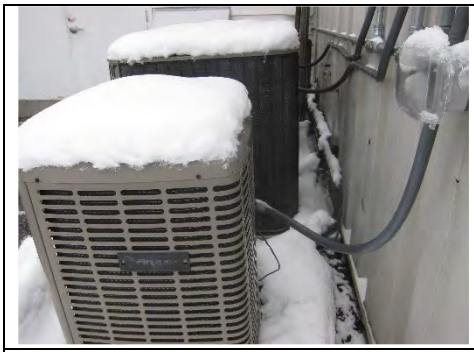
Staff locker room drop-in sink with ADA insulation kit on piping below the sink.

Fire Protection
There is no fire protection system in this building.

Building 400

General
This building is a single-story facility which contains classrooms, a student lounge, a chemistry lab, a physics lab, a library, offices, and a machine shop. There is insulation on the ceiling tiles here. It is not clear what the purposes of this insulation is as it appears that the exterior envelope insulation is at the roof.

Mechanical
The primary means of space conditioning for the facility is via an air-based system with natural gas fired heating appliances and Direct Expansion (DX) cooling equipment. There are multiple units that condition the facility. Many of the nameplates for the outdoor remote condensing units were worn off. Many of the condensing units where the nameplates could be read indicate R-22 refrigerant. See additional information regarding R-22 refrigerant in the Building #100 description. Only (1) of the condensing units were observed to be operating using R-410A refrigerant. Many of the condensing units appear older and are likely to require replacement sometime in the near future. The refrigerant piping insulation is generally degrading due to no UV protection on the piping. There are many gaps in the insulation which reduces the system capacity and efficiency.

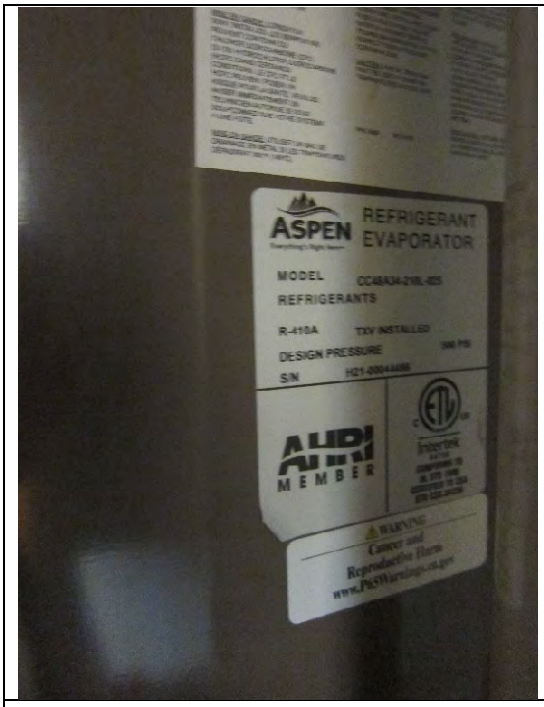
	
Older condensing units. All but (1) of the units serving this facility appear to operate on R-22 refrigerant.	*Typical sealed combustion concentric vents for sealed combustion furnaces on the right (white objects). The left gray objects are typical HRV exhaust wall caps. The intake wall caps are on another wall to provide sufficient separation.*
	
Additional, older condensing units.	*Generally, the refrigeration piping insulation is in fair condition. The insulation is deteriorating and there are many gaps or missing sections which is reducing efficiency and capacity.*

The building appears to be broken up into (10) different heating/cooling zones. Heating is provided by natural gas fired furnaces with cooling provided by a split system housed cooling coil with a remote condensing unit located outside. The southernmost mechanical room contains (3) newer York furnaces which are high efficiency, sealed combustion condensing style. The cooling coil casings were observed to be leaky here. The refrigerant systems for all (3) units appears to be R-22. These units appears to serve the southern quarter of the facility with one unit appearing to serve the southwestern portion, one unit serving the southeastern classrooms, and one unit serving the student lounge and portion of the facility. There are (2) Aldes Heat Recovery Ventilators (HRVs) suspended in the mechanical room which have ventilation air ducted to the furnace returns to provide ventilation air to the spaces served. It appears that the exhaust for the HRVs is drawn from the corridor which essentially uses the egress

corridor as a return plenum which is not permitted. The outdoor air and exhaust air ductwork is insulated but the insulation may not be sufficient to prevent sweating during the coldest days of the year. Exhaust is discharged through wall caps along the exterior wall and the intake is connected to a louver. The furnace ductwork appears to be uninsulated above the ceiling. Which is heating the ceiling space and may cause sweating above the ceiling during the summer. It does not appear that the (2) HRVs have sufficient capacity to provide code compliant ventilation rates.

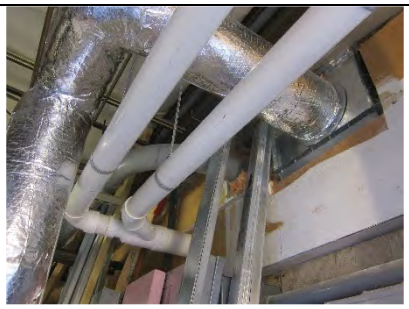
	
Typical sealed combustion furnace with discharge cooling coil.	*(2) Aldes HRVs suspended in this mechanical room providing some ventilation air to the spaces served. The airflow is likely not sufficient to meet code requirements. The HRVs also appear to exhaust from the corridor which uses the egress corridor as a return plenum which is not permitted.*

The mechanical room adjacent to the electrical room (next mechanical room north from the southernmost room) contains (2) newer York condensing furnaces (similar to the previous mechanical room) with cooling coils. It appears that (1) of these cooling systems operates on R-410A refrigerant. There doesn't appear to be any ventilation air supplied to the areas served by these units. One of the furnaces appears to return through the storage room located across the hall through a louver located in the door.

	
This cooling coil (cooling system) appears to be the only one operating on R-410A refrigerant.	*This furnace appears to be near the end of its useful service life. This unit appears to be original to the building.*

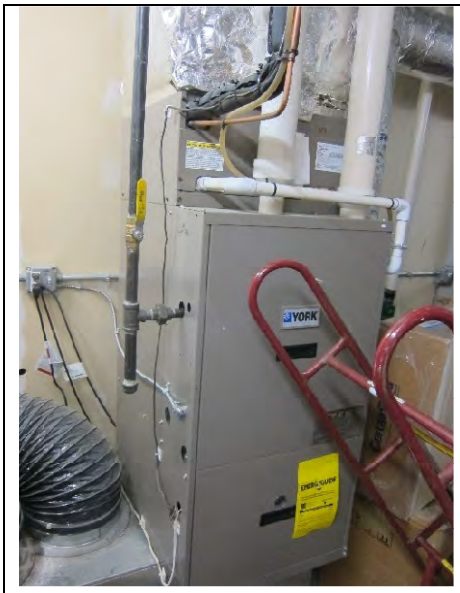
The mechanical room just south of Office 424 has contains an old (likely original) gas fired furnace. This unit is approaching the end of its useful service life and replacement should be considered in the future. The cooling coil on this system is connected to an older condensing unit that runs on R-22 refrigerant. There does not appear to be any ventilation air supplied to the areas served by this unit.

The mechanical room just south of the Women's Bathroom which is accessed from the exterior door contains a newer York condensing furnace (similar to the southern mechanical rooms). The cooling coil on this system is connected to an outdoor condensing unit. This system appears to operate using R-22 refrigerant. There is a smaller, older, Fantech HRV located in this room that provides ventilation air directly into the furnace return duct. The HRV is connected to louvers/grilles on the exterior wall. The ductwork is insulated. It does not appear that the HRV has sufficient capacity to provide code compliant ventilation rates.

	
Fantech HRV.	*Typical duct connection to exterior louver.*

The northernmost mechanical room contains (3) furnaces with cooling coils. These furnaces appear to serve the northern end of the building with (1) unit dedicated to serving the machine shop. There is a smaller, older, Fantech HRV located in this room which is connected to all (3) furnace return ducts. The cooling coils are connected to condensing units which appear to operate using R-22 refrigerant. It does not appear that the single HRV has sufficient capacity to provide code compliant ventilation rates.

	
Exposed, insulated supply ductwork serving the Machine Shop. There is no exhaust from this space and there is a noticeable machine oil odor.	*Return grille in the machine shop adjacent to the eyewash.*

	
Machine shop furnace.	*Additional furnace in this mechanical room. This room appears to also be used for storage.*

The chemistry lab contains a flammable chemical storage cabinet with a PVC vent to the outdoors. The cabinet does not appear to have a fire baffle on the vent connection. There is a Labconco Fume Hood in the lab. The fume hood exhaust is via an inline exhaust fan located above the ceiling above the Student Lounge with the exhaust ductwork being constructed of galvanized steel. A variable speed switch is located on the fume hood to vary the speed of the exhaust fan. Depending on what chemicals are used under the fume hood, the galvanized ductwork may be damaged. Having the exhaust fan located inside with ductwork downstream can pose a risk of having the exhaust air leak out from the duct downstream of the fan since this section of ductwork is pressurized. This ductwork needs to be thoroughly evaluated for its condition and to ensure there are no leaks. The chemistry lab also does not appear to have code compliant ventilation airflow. The lab should have 1 Cubic Feet per Minute (CFM) of exhaust and make-up air when the lab is fully occupied. The chemistry lab was quite warm at the time of the site visit which may indicate a malfunction of the thermostat or with the operation of the furnace. We recommend having those components investigated. It is possible that the system serving this space needs to be rebalanced (possibly seasonally) if the equipment is operating correctly.

	
Flammable storage cabinet for chemical storage. Fire baffle was not observed.	*Fume hood with variable speed fan controller. This appears to be the only exhaust for the chemistry lab which is likely not sufficient to comply with code.*
	
Chemicals are stored under the fume hood.	*Inline exhaust fan located above the ceiling in the Student Lounge. This exhaust system should be thoroughly checked for leaks and wear.*

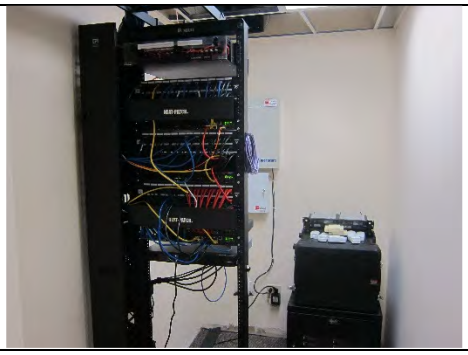
Restrooms are exhausted by exhaust fans operated by switches.

The electrical room has an old outdoor air inlet louver which has been stuffed with fiberglass insulation. It appears that this ventilation or combustion air opening is no longer used. This room may have served as a mechanical room at one time.

Generally, there are both supply diffusers and return grilles/diffusers in each space. It appears that there is a mix of fully ducted return systems and plenum return system. The physics lab for instance has a plenum return system. Plenum returns require plenum rated cabling along with other materials to be rated for plenum usage with flame and smoke spread ratings. The library study rooms only have supply diffusers which can make airflow balancing difficult if the doors are closed (airflow is likely reduced with closed doors).

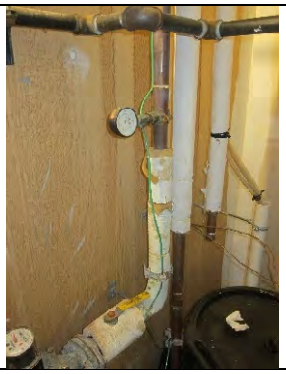
The IT data room does not have any cooling in it. The ceiling has been removed to allow the heat to escape to above the ceiling. This may cause cooling issues in the summer time if the space above the ceiling is also warm. (See photo below)

The machine shop, which is served by a dedicated furnace (which has a small amount of ventilation air supplied to it) has a return grille in the wall adjacent to the mechanical room door. There is no exhaust from this space and there is a noticeable machine oil odor in the room.

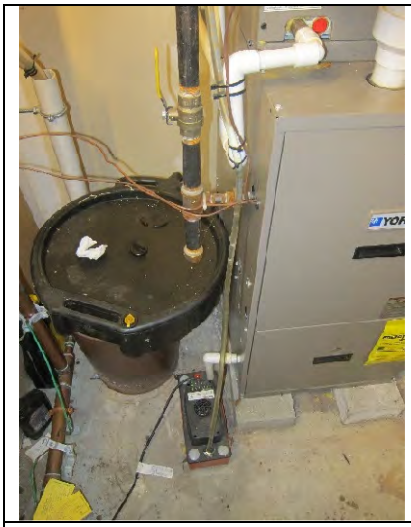
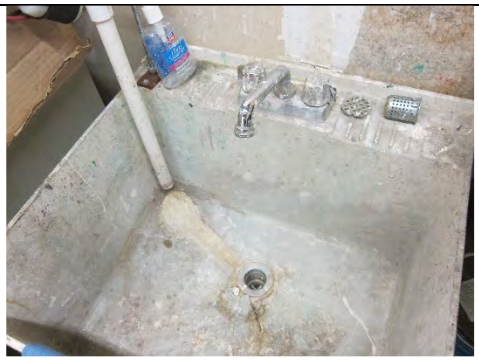
	
Machine shop return grille.	*IT data room does not have any dedicated cooling unit. The open ceiling is the only form of cooling.*

Plumbing

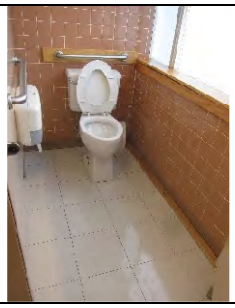
The building is served by a 1-1/2" domestic water service line that enters the building rising up from the floor within the second most northern mechanical room. The water service contains a Watts LF007M2QT backflow preventer. This backflow preventer is lead free. There is no pressure reducing valve on this system. If the city supply water pressure ever exceeds 80 psig (the pressure gauge was indicating 60 psig which is acceptable), then a pressure reducing valve is required. The water service entrance piping has sections that are not insulated which is likely leads to significant sweating during the summer months. The sections that are insulated appear to have gotten wet at some point as well.

	
Some missing insulation on the domestic water service entrance. This piping appears to have sweat and gotten the fiberglass insulation wet.	*Additional sections of missing insulation on the domestic water piping. Pressure was indicating 60 psig. If the supply pressure exceeds 80 psig, a reduced pressure zone pressure reducing valve will be required.*

None of the furnace condensate lines were observed having an acid neutralizer to neutralize the condensate generate. The condensate generated from condensing the flue gases is acidic and can damage the waste piping system. In the second most northern mechanical room, there is a service sink which receives the condensate discharge from the furnace and cooling coil and HRV drain via a condensate pump. The area where the condensate is discharged into the sink is discolored which could be from the condensate acidity. Generally, the furnace and air conditioning coil condensates are drained into a small Little Giant or equivalent condensate pump. The furnaces in the southernmost mechanical room discharges to a floor drain located under one of the furnaces.

	
Second most northern mechanical room condensate pump. This is a typical setup for most of the furnaces.	*Discoloration of the service sink receiving the waste from the furnace in the second most northern mechanical room.*

Restrooms have floor mounted tank type water closets. There are wall mounted lavatories with ADA insulation kits on the drains and manual faucets. The lavatories are not installed on concealed arms carriers. The multi-occupant restrooms have counter mounted lavatories with an ADA insulation kit on (1) of the (2) lavatory drains. The men's restroom has a flush valve urinal which does not appear to be a low flow version. The lavatory faucets are also not low flow.

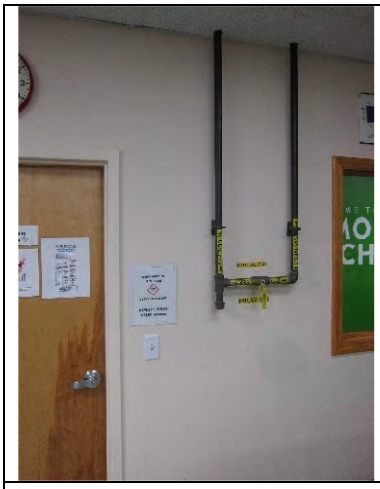
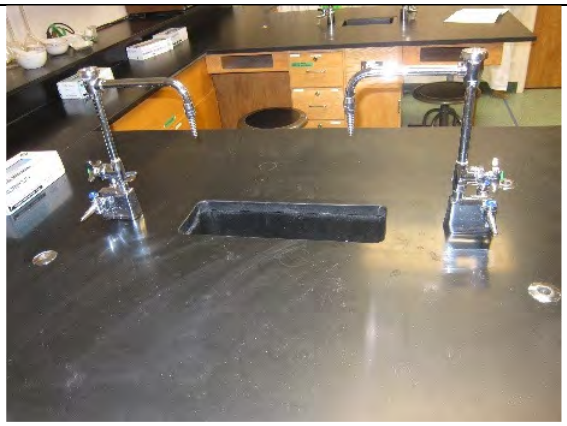
	
Example counter mounted lavatory with ADA insulation kit on the drain.	*Example tank type water closet.*

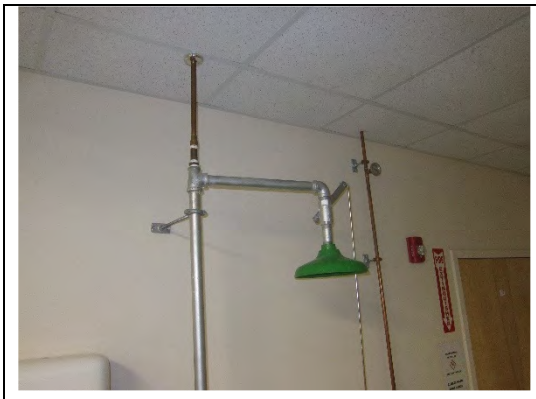
The natural gas is supplied to the facility via multiple gas meters. Some of the gas piping was observed to be experiencing corrosion such as the piping to the north end of the facility. The piping generally is not well labeled as well.

	
Example natural gas meter. Some of this piping (at the southern end of the facility) is experiencing corrosion.	*Gas piping at the northern end of the building is experiencing significant corrosion.*

The chemistry lab contains cup sinks built into the laboratory countertops. The cup sinks have laboratory style faucets with serrated tips discharging cold water. The faucets have vacuum breakers. There are also turret style natural gas dispensers on the counters as well. There is a natural gas shutoff valve at the entry to the lab which is clearly labeled. There is also a second shutoff across the hall in the storage room. The chemistry lab contains a service sink along with an emergency eyewash and a safety

shower. The eyewash contains a mixing valve above the ceiling, but the safety shower does not have a code required mixing valve.

	
Chemistry lab natural gas shutoff valve (well labeled). There is another shutoff valve in the storage room across the hall.	*Chemistry lab cub sink with dual manual faucets with vacuum breakers and dual natural gas turrets.*
	
Service sink located within the Chemistry Lab	*Eyewash in the Chemistry Lab with waste line run exposed along the wall. The mixing valve above the ceiling serves the eyewash only.*

	
Emergency Shower in the Chemistry Lab. There was no mixing valve observed to temper the water for this fixture as required per code	*Floor drain in storage room across from the Chemistry Lab. This drain is likely to have the trap dry out which will allow sewer gases to space into the space. A Sure-Seal trap seal device will prevent that.*

A storage room across the hall contains an old floor drain which appears that it will likely never see water. This drain could cause sewer odors to escape when the p-trap dries out. (See photo above)

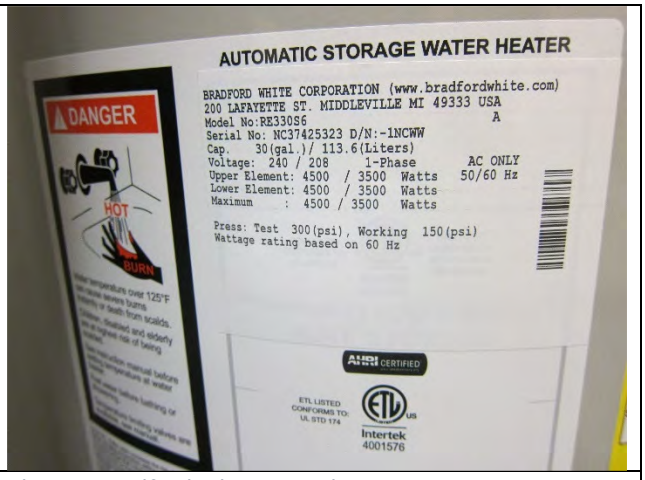
The physics lab also has a combination eyewash and shower unit. It was not evident that there is a mixing valve for this fixture. A mixing valve is required by code. The physic lab has sink that drain into a waste line that is run above the floor. The line is vented with Studor vents (air admittance valves) which is permitted by code. There are natural gas turrets in this lab with a natural gas shutoff valve in the room. However, the natural shutoff is on the opposite side of the room from the exit door. This could cause issues with shutting off the gas in case of an emergency when occupants are attempting to exit the room.

	
Gas line shutoff in the physics lab is not well labeled and is located on the opposite side of the room from the door.	*Combination eyewash and safety shower. It is not known if a mixing valve controls the supply water temperature to this fixture.*

Domestic hot water for the facility appears to be produced by 30-gallon Bradford White electric resistance water heater. There is a thermal expansion tank on the domestic hot water system. There are isolation valves on the domestic cold water and domestic hot water serving the water heater. There is a thermostatic mixing valve for the domestic hot water supply to the facility. There was no domestic hot water recirculation system observed serving this facility. It is likely that hot water takes a very long time to reach the furthest fixtures if it ever does.



Thermal expansion tank and isolation valves for domestic hot water system. There was no domestic hot water recirculation system observed on site.



Electric, Bradford White water heater.

The kitchen area has a drop-in stainless-steel sink with an ADA insulation kit on the drain. An Aquapure AP101T filter is installed under the sink to filter the domestic cold water supply to the sink and the adjacent refrigerator.



Kitchen drop-in sink.



Kitchen sink has ADA insulation kit on the was piping. On the right, the Aquapure water filter is visible.

The machine shop has an eyewash which does not appear to have a mixing valve on the water supply line. The eyewash waste discharges into a liberty pump which has a check valve on the waste discharge. There is a Campbell Hausfeld air compressor

providing compressed air to the machine shop and a refrigerated dryer. The air compressor serves (4) pieces of equipment with air via copper piping which has ball valves for tool isolation.



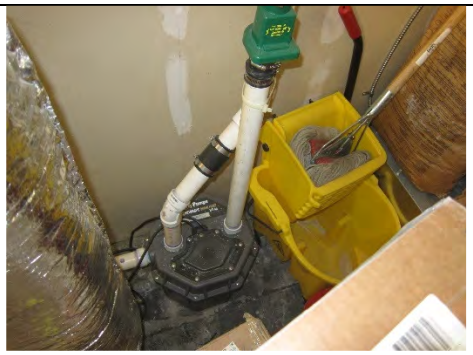
Air compressor located in the machine shop with copper piping serving (4) tools/equipment.



Refrigerated air dryer for the compressed air system.



Machine shop eyewash.



Liberty pump which receives condensate and the eyewash waste.

There is a newer, Elkay EZH20 combination bottle filler and drinking fountain located at the southern end of the facility.

Fire Protection

The building does not full fire protection system. There are limited area sprinkler systems connected to the facility domestic water system that protect the individual

mechanical rooms. Check valves are installed on the branch that serves each sprinkler head.

	
Limited area sprinkler. The check valve on the branch is visible in this photo.	*Another limited area sprinkler head. It appears a ceiling used to be installed in this room since the sprinkler head has a finished ceiling escutcheon.*

Building 700

General

Building #700 is a three-floor facility which includes classroom space, offices, several small bathrooms, storage rooms and meeting/conference rooms and a fitness area with shower rooms on the first floor. The upper floors are a dormitory with laundry rooms on each floor, a student lounge with a kitchen that includes dual electric ranges, refrigerators, kitchen sinks etc., large multi-occupant restrooms with showers and student dorm rooms. There is also a partial basement mechanical room which is accessed from an exterior bulkhead stairwell.

There appears to be some moisture and maybe potential ground water issues in the basement mechanical room. The space seemed relatively humid and there is significant evidence of surface corrosion on piping and objects. We recommend having this investigated further.

Mechanical

The space conditioning for this facility is provided by a combination of air based and water/radiator based equipment. The cooling for the facility is provided by either chilled water conditioned fan coil units (units with a chilled water coil and a fan to move cool air to condition spaces) and water-source heat pumps which utilize the refrigeration cycle to exchange heat energy between the incoming airstream and a common water loop. Heating is primarily provided by perimeter hot water radiators and possibly the water-source heat pumps. It is unclear how much heating the water-source heat pumps provide; however, they are capable of providing heating by using a 4-way valve in the refrigeration system to reverse the refrigeration process to extract heat from the common water loop and transfer the heat to the airstream.

Basement Mechanical Room: There are (2) natural gas fired Weil-McLain hot water boilers located in this space which are sealed combustion type that are estimated to be approximately 10 years old. The nameplates were not visible so accurate size and age of the equipment was not discernible. Each boiler has a dedicated Taco circulator pump for the boiler primary piping system. There is a secondary piping system that is circulated by (3) newer Grundfos Magna3 circulator pumps. One (1) Grundfos circulator pump is dedicated to heat a buffer tank within the room. The second Grundfos circulator pump appears to serve the majority of the rest of the facility perimeter baseboard radiation. A modulating 3-way control valve is utilized to adjust the supply water temperature of the heating hot water that is sent to the rest of the building. The heating hot water system piping has evidence of a number of past or present leaks. There is missing piping insulation observed throughout this system within the mechanical room (most of the insulation is missing or damaged). The more inboard boiler temperature/pressure relief valve appears to be leaking. There is an expansion tank on the primary heating hot water loop as well as on the secondary heating hot water loop. The larger expansion tank on the secondary system has rust forming at the base of the tank. The secondary heating hot water for the facility is piped up from the mechanical room into a chase at the southwest corner of the facility in Classroom 7130. There is no air separator on the heating hot water system. The only air separator is on the heat pump loop system which is likely to not be sufficient to properly remove all of the air in the hot water heating system. Air separators are also more effective at removing air from the system (which improves system operation and efficiency) when the water is warmer.



Typical Weil-McLain boiler. This is a sealed combustion boiler.



Heat pump loop heat injection control valves.

	
The temperature/pressure relief valve for the boiler is leaking.	*Newer Grundfos Magna3 circulator pumps for the secondary pumping system.*

There are (2) circulator pumps utilized to pump the heat pump loop system water throughout the facility to the water-source heat pumps. One of the circulators is a newer (likely over 10 years old) Grundfos Magna1 circulator and the other circulator is an older (likely from 1995) Taco base-mounted circulator. The Taco circulator is in poor condition and may not be operational. The motor shows evidence of corrosion and possibly oil leakage. The heat pump loop is circulated through an older Taco air separator which is has surface rust and shows evidence of past leaks to the air vent. This system is connected to a larger base mounted expansion tank which has significant rust/corrosion at the base. Heating for the heat pump system is provided by the boiler via an older simplex (single) Taco circulator pump which also serves a few other zones of heating. There are electronic control valves on (2) 1-1/2" heating hot water supply/return lines that inject heat into the heat pump loop from the heating hot water system.

	
Heat pump loop expansion tank base appears to be in poor condition. This tank is likely due for replacement before it potentially collapses.	*The older Taco heat pump loop circulator appears to be ready for replacement.*

Heating for the mechanical room is provided by an older Modine hot water unit heater. There doesn't appear to be any ventilation air supplied to this mechanical room which is potentially contributing to the damp/musty air.

Cooling for the heat pump loop is provided by an outdoor Ilmeco EFC-C 122-4 cooling tower which appears to be original to the facility (1995). The piping to the cooling tower is via CPVC piping that runs underground from the mechanical room to the cooling tower. An older base mounted Taco circulator pipes the circulated water from the cooling tower through an Alfa-Laval heat exchanger. All of the heat pump loop piping is run through the heat exchanger. A Pulsafeeder chemical injection system with a MicroVision sensor/controller is located here to treat the water within the cooling tower. There is a dedicated expansion tank on this system as well. The piping on this system and the Taco circulator are all in fair to poor condition with significant corrosion observed.



Heat pump system cooling tower. Unit appears to be in decent condition.



The Taco circulator for the cooling tower system has evidence of corrosion and may need service/replacement.

	
The Alfa-Laval heat exchanger for the heat pump cooling system. The expansion tank is also visible.	*Cooling tower system chemical injection.*

As indicated below for the second floor, there is a chilled water system to provide cooling for the second floor of the facility. The cooling for the chilled water system is provided by a newer Airstack ASP15X2A2A1-R410A modular chiller unit located outdoors adjacent to the original cooling tower. The chiller appears to have integral duplex (dual) chilled water pumps to circulate the chilled water throughout the facility. This unit appears to have been installed around 2011 when the renovation work was completed on the second floor of the building. The chilled water piping is insulated and PVC jacketed outdoors. The piping appears to have Victaulic couplings and isolation valves. Generally, the PVC jacketing and insulation appears to be in decent condition, however, there are locations where the jacketing is not fully sealed and a couple locations where it has split. This is likely to lead to a deterioration of the piping insulation over time unless it is repaired.

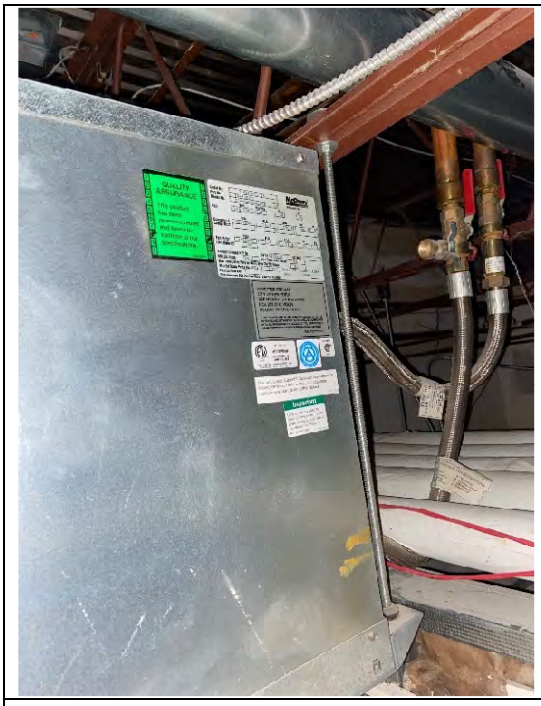
	
Modular chiller unit.	*Exterior chilled water piping is jacketed and appears to be generally in good condition. However, some of the jacketing is deteriorating and repairs are needed to maintain the integrity of the insulation.*

There is an old Johnson Controls Direct Digital Controls (DDC) system for this facility. There are individual electronic thermostats for the heat pumps (Honeywell thermostats were observed). These thermostats do not appear that they connect into the DDC system so it seems as though these are not viewable for individual space monitoring from the controls system front end.

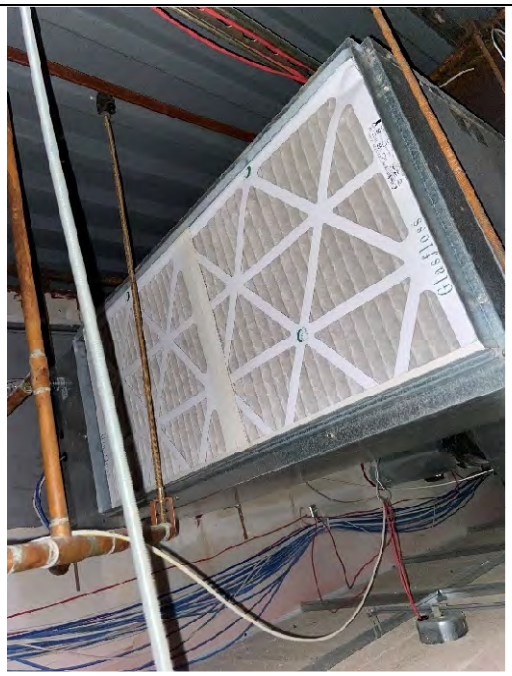
Generally, the piping within the mechanical room is copper for the 2" and smaller sizes with soldered joints and steel piping with Victaulic (grooved) fittings for the larger sizes. The steel piping has significant evidence of corrosion and likely past leaks throughout the hydronic systems.

	
Steel piping with Victaulic fittings has surface corrosion.	*Piping to the cooling tower also has surface corrosion present.*

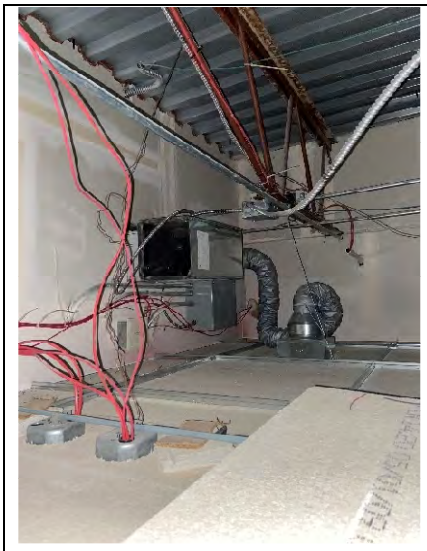
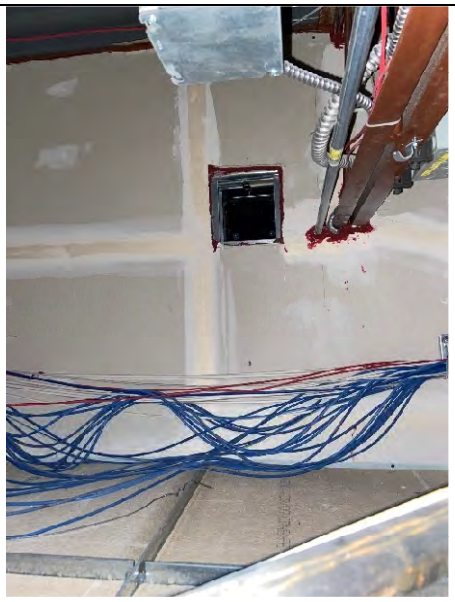
First Floor: The primary means of space conditioning is via water-source heat pumps for this floor. The heat pumps observed were McQuay's manufactured in 1995 and operating on R-22 refrigerant. As mentioned for the other facilities, R-22 refrigerant is being phased out and replacement refrigerant may become difficult and/or expensive to find. Our understanding is that these units have been reliable. The water source heat pumps are located above the ceilings with ducted supply and above ceiling plenum return. The heat pumps have return filters and no return ductwork. The return air appears to pass through fire dampers to get back to the heat pump returns if the unit serves multiple spaces with dividing walls between them. Control of the heat pumps appears to be via programmable Honeywell thermostats as previously mentioned. We understand that there are (5) water-source heat pumps conditioning this floor.



McQuay water-source heat pump with hose kit.



Heat pump return air filter.

	
Ventilation air duct with damper through the wall.	*Fire damper for plenum return air.*

Vestibules and stairwells are heated by cabinet unit heaters (the entry vestibule has as ceiling recessed cabinet unit heater) that heats from the heating hot water system.

Ventilation air for the first floor appears to be provided by an above ceiling mounted Energy Recovery Ventilator (ERV). The unit appears to be a Renewaire EV450 which has access doors that open down. This requires a portion of the ceiling to be removed in order for the filters to be changed and for the unit to be serviced. The single Renewaire ERV does not appear to be sized to provide current code required ventilation rates for the first floor. The ventilation supply (outdoor) air is generally distributed throughout the floor and discharged above the ceiling into the ceiling return plenum. The exhaust is ducted throughout and appears to be connected to grilles within the spaces. The ventilation air to the outdoors is connected to vertical ducts for outdoor air and exhaust air inboard of the western stairwell. This duct should be within a fire rated shaft. It appears that there are fire dampers on some of the floors for this ductwork, however, the shaft is not enclosed, and it doesn't appear that fire damper installation is consistent to provide code required protection. The discharge air appears to be conditioned by the heating hot water system via a duct mounted hot water coil.

The restrooms in the fitness center have ceiling mounted exhaust fans for local exhaust. These exhaust fans appear to discharge into the ERV exhaust ductwork.

The elevator machine room on the first floor does not have any ventilation (exhaust) and has a noticeable hydraulic fluid odor.

There is a roof mounted exhaust fan which appears to serve a space on the first floor via a vertical shaft from the roof to the first floor (adjacent to the ventilation ducts). It is not

clear what specific area this serves. The roof exhaust fan is located adjacent to the exhaust louvered penthouse for the ERVs. As with the ventilation ducts, the shaft is not properly enclosed and fire dampers do not appear to be installed to provide code required protection.

	
Louvered penthouses for ERV intake and exhaust along with roof mounted exhaust fan. This fan was not operating at the time of the site visit and it is not clear what it serves on the first floor.	*Outdoor air intake louvered penthouse.*

Second Floor: This floor was renovated in 2011. During that project, the configuration and type of HVAC system conditioning the facility was revised. The water-source heat pumps that previously conditioned this floor were removed and 2-pipe fan coil units were installed to provide cooling only. There are 3-way modulating control valves which modulate the chilled water flow through the chilled water coils to vary the cooling capacity of the units. The fan coil units are primarily located above the central core area with (2) fan coils located above the corridor ceilings to serve the northwestern and southeastern student rooms at those corners of the facility. There appears to be (8) total fan coils serving this floor. Based on the original design drawings, it appears that (1) fan coil serves the central corridor, (1) serves the northern middle exterior student rooms, (1) serves the (3) northeastern exterior student rooms, (1) serving the (3) southwestern corner student rooms, (1) serving the southern middle exterior student rooms, and (1) unit serving the student lounge. We understand that there is a single cooling thermostat to control all of the fan coils on the floor. We also understand that there have been comfort issues on this floor and having a single thermostat to control cooling for multiple exposures could be the cause of that. Additional investigation is required to determine if there is another reason for the comfort issues. The supply air is discharged through supply diffusers into the spaces and transfer ducts with elastomeric foam liners and combination fire/smoke dampers transfer the plenum return air from the served spaces to the corridor ceiling plenum. This system uses the egress corridor as a plenum return system which is not permitted per the current code.

Heating for this floor appears to be solely via the perimeter baseboard (and interior baseboard in the restrooms). The baseboard radiation is controlled by 2-way control valves with dedicated heating thermostats. Each student room has a heating only

thermostat so that heating can be controlled by each individual room (cooling appears to be controlled by a single thermostat as noted above).

Ventilation air for the second floor appears to be solely provided by an ERV located in the utility room at the northwestern interior corner of the floor. The unit is a Renewaire HE1XIN. The filters appear to be dirty and are ready to be changed but in general the unit appears to be in good condition. There appears to be control isolation dampers on the outdoor air inlet and exhaust air discharge to isolate the unit from the outdoors when the unit is disabled. The discharge air is conditioned by a duct mounted hot water reheat coil with a modulating 3-way control valve to control the discharge air temperature. This unit is located on the floor and connects to the vertical ducts for outdoor air and exhaust air inboard of the western stairwell shared with the ERVs located on floors 1 and 3. This duct should be within a fire rated shaft. It does not appear that there are fire dampers for the ductwork connecting into the vertical shaft. The shaft is not enclosed as noted above, and it doesn't appear that fire damper installation is consistent to provide code required protection.



Renewaire ERV serving the second floor.



Control damper to isolate the exhaust duct to the louvered penthouse.

Ventilation air is supplied to the individual student rooms via ductwork to ceiling grilles/diffusers. The ventilation air is then returned through the above ceiling transfer grille to the corridor. Exhaust is drawn from the restrooms; there is a small restroom in the RA's suite and air is exhaust from the men's and women's restrooms in the interior core. As with the fan coil units, this strategy uses the egress corridor as a return plenum which is not permitted by the current code.

The lounge space has (2) electric ranges with recirculating Broan exhaust hoods with Guardian 3 fire suppression systems. There does not appear to be any exhaust from this student lounge, nor does there appear to be a return grille for the fan coil unit which relies on the air being drawn through the ceiling grid to get back to the fan coil unit. Ventilation supply air is discharged into this space and must be return through the ceiling to the corridor and then the restrooms.

There is a small laundry facility on this floor with (2) dryers. The dryers are ducted up to gooseneck discharges on the roof. There does not appear to be any make-up air supply to this space.

There doesn't appear to be any cooling provided for the telecom closet.

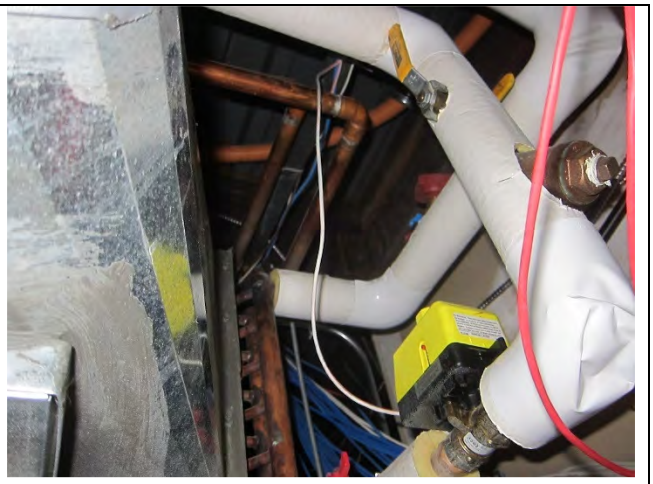
Third Floor: This floor is conditioned by both water-source heat pumps and perimeter baseboard radiation. There are (4) water-source heat pumps (units appear to be similar to the first floor units) that serve this floor. The heat pumps are located in the corridor and central core areas and supply to the student rooms and return via a ceiling plenum return system. The return air is flows through transfer ducts with elastomeric foam liners and combination fire/smoke dampers to the corridor ceiling plenum and back to the unit returns. This system uses the egress corridor as a plenum return system which is not permitted per the current code.

	
Typical transfer duct between the corridor ceiling and the student room ceiling space for the plenum return system. This transfer is lined for noise control and has a combination fire/smoke damper.	*Typical thermostat to control the heat pumps. We believe the heat pumps on the third floor are conditioning (cooling) the floor in quadrants. There are individual thermostats in each room for heating control.*

The primary source of heating for the student rooms appears to be via the perimeter baseboard (and interior baseboard in the restrooms). The baseboard radiation is controlled by 2-way control valves with dedicated heating thermostats. Each student room has a heating only thermostat so that heating can be controlled by each individual room (cooling is grouped as noted above). It is not clear if the water-source heat pumps are utilized for heating at all or if they are solely for space cooling. There are t.a.c. thermostats which appear to be connected to the facility controls system which may allow the heat pumps to provide some of the heating.

Ventilation air for the third floor appears to be solely provided by an ERV (Renewaire EV450) located above the ceiling; this appears to be similar configuration to the unit on the first floor with a duct mounted heating coil in the supply air discharge ductwork that uses heating hot water to condition the discharge ventilation air. As with the first floor ERV, the ceiling has to be partially removed to change the filters and service the unit. This unit connects to the vertical ducts for outdoor air and exhaust air inboard of the

western stairwell shared with the ERVs located on floors 1 and 2. There appears to be fire dampers where the duct penetrates the corridor wall into the telecom closet but the shaft does not appear to be fire rated. As noted above, this shaft does not appear to be constructed to provide code required protection. The vertical ventilation ductwork connects to roof mounted louvered penthouses for exhaust discharge and ventilation intake air. The single Renewaire ERV does not appear to be sized to provide current code required ventilation rates for the first floor.

<table>
<tr>
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<tr>
<td>Above ceiling ERV. This unit is difficult to service due to needing to remove a portion of the ceiling to open the access door.</td>
<td>ERV supply air hot water heating coil and control valve to temperature the ventilation air.</td>
</tr>
</table>

Ventilation air is supplied to the individual student rooms via ductwork to ceiling grilles/diffusers. The ventilation air is then returned through the above ceiling transfer grille to the corridor. There appears to be a small exhaust fan in the restroom that likely discharges into the ERV exhaust similar to the first floor restrooms. As with the heat pumps, this strategy uses the egress corridor as a return plenum which is not permitted by the current code.

The lounge space on this floor matches the lounge of the second floor. The “left” electric range recirculating Broan exhaust hood is noisy and likely needs servicing or replacement. It appears that this space may have exhaust air back to the floor ERV (this was not able to be confirmed during this site visit).

	
Broan kitchen hood with Guardian 3 fire suppression system. This unit was noisy.	*Ceiling tiles above the laundry are indicative of past or present leaks.*

There is a small laundry facility on this floor with (2) dryers. The dryers are ducted up to gooseneck discharges on the roof. There does not appear to be any make-up air supply to this space. There are stains on the ceiling tiles above the laundry. This is typically evidence of water leaks.

Plumbing

The domestic cold water service entrance is connected to the 4" fire protection entrance. The domestic cold water service is 2" and there is a Watts 007-M1 backflow preventer which is not lead free. The domestic cold water supply was noted as being 50 psig at the time of the site visit. There is no pressure reducing valve on the water supply, however, the 50 psig supply water pressure is acceptable and desirable. If the water supply does not exceed 80 psig, then a pressure reducing valve is not required. There is missing insulation on this system and lots of evidence of sweating which is causing corrosion on the pipe supports and damaging the fiberglass insulation.

	
Water meter. This shows signs of sweaty from due to not having any insulation.	*Domestic water check valve is not lead free. Insulation is missing in a number of locations.*

Domestic hot water for the facility is heated by an 80 gallon gas fired water heater. The water heater is a Rheem Triton GHE80SU-200 manufactured in 2021 rated for 199,900 Btu/hr. input. This unit is a sealed combustion type with a 95% thermal efficiency. The

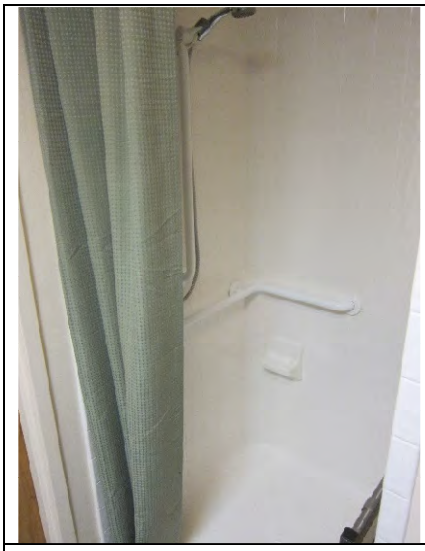
condensate drains into the adjacent old floor drain which appears to be missing the strainer and the drain body is in poor condition (it appears to have deteriorated). There is a domestic hot water recirculation system with a Taco 009-BF5 bronze circulator which is lead free. The domestic hot water temperature is controlled by a Watts N170L-M2 1-1/2" mixing valve. There is a check valve on the domestic cold water supply to the domestic hot water heating plant. The domestic hot water recirculation pump has a check valve on the discharge as well. The piping configuration appears to force all of the water from the recirculation system through the water heater rather than allowing some of it to go through the cold water side of the mixing valve which could overheat the domestic hot water supply water beyond code maximum temperatures.

The boilers condensate drains to an open hole in the floor that is fully of water and appears to be backed up. This needs to be investigated. The waste piping may have failed below the floor. There is a sump pump in the corner of the basement which is assumed to receive the waste from the floor drains within the basement floor drains.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>The domestic water recirculation pump and thermal expansion tank are in the foreground.</td><td>Rheem Water Heater with sealed combustion burner.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>The water heater condensate drains into this deteriorated floor drain with the strainer missing.</td><td>This floor drain appears to be mostly deteriorated and the water appears to be backed up and is not draining. This should be investigated.</td></tr>
</table>

The heating hot water system make-up water is fed with a pressure reducing valve and check valve from the domestic cold water system.

The fitness center restrooms have floor mounted tank-type water closets. There are ADA, standup showers with a hand shower, seat and grab bars. The lavatories are wall mounted with manual faucets and ADA insulation kits on the waste drains. The lavatories are not supported with concealed arms carriers.



Fitness center ADA shower.

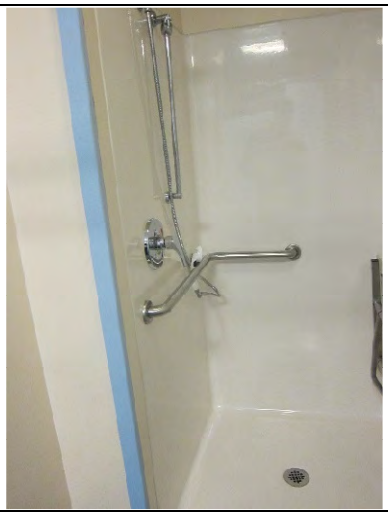
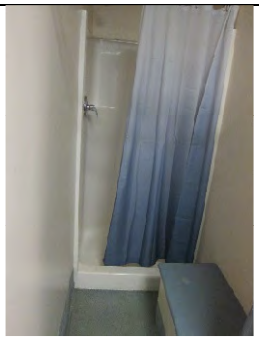


Fitness center tank type water closet.

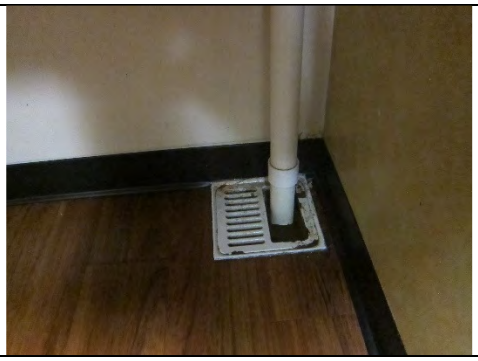
The tenant area has a restroom that is missing a lavatory and the water closet does not flush well. The water may be shutoff to this restroom.

There are combination drinking fountains and bottle filler units in the fitness center. The first floor also has a single level drinking fountain without a bottle fill.

The dormitory floor multi-occupant restrooms have wall mounted water closets with manual low-flow flush valves. In the Men's room, there was (1) ADA water closet stall. There are (3) showers with (1) shower being an ADA compliant unit with grab bars, a folding seat and a hand shower. The lavatories are drop-in counter mounted with ADA kits on the waste and manual faucets.

	
Counter mounted lavatories with ADA kits.	*ADA shower with seat, hand shower and grab bars.*
	
ADA wall mounted water closet.	*Standard standup shower.*

The kitchens have a single double-bowl drop-in stainless steel sink. There is a floor drain in the middle of the kitchen. The kitchen sink drains into a floor sink.

	
Kitchen sink.	*Kitchen sink drains to a floor sink.*

There is a janitors closet on each floor with a mop sink.

There are (2) washer machines in the small laundry room on each floor. The washer machines have service boxes with shutoffs and water hammer arrestors. There is also a floor drain in the middle of the laundry room.

There are (2) roof drains on the roof. We understand that the roof has been recently redone.

	
Roof drain.	*Roof appears new.*

Fire Protection

This facility appears to be fully protected by a fire protection system. A 4" water service entrance into the basement mechanical room provides water to the fire protection system. There is a single check valve for the fire protection system which is not code compliant; a double check valve is required for the system to be code compliant.

The fire protection system is listed as a single zone system sized for 0.15 gpm/sq.ft with 368.29 GPM and 41.6 psig design flow and pressure. There is a control valve (monitored) on the system with a tamper switch. The fire department connection has a check valve on it. A standpipe has been installed in the stairwells with hose connections.

	
Although difficult to see, this is the fire department connection with the single check valve rather than double check valve as required per code.	*Stairwell standpipe hose connection.*

Infrastructure Recommendations:

Life Safety and Code Compliance:

Mechanical/Plumbing Fire Protection:

The buildings are between thirty and forty years old and when installed may have been designed per relevant codes. Many items noted for each building below may only be code compliance issues since the building was built. However, many changes to the applicable codes are due to safety concerns that have become apparent over time.

It should be noted that the local authority having jurisdiction will ultimately be responsible for determining what conditions would need to be upgraded, and these may include more or less than the recommendations below. Similarly, there are OSHA regulations regarding safety that may need to be implemented that may not be listed below since many of these vary depending on the local authority having jurisdiction's interpretation of "safety". Generally, the items noted below are items that should be considered for immediate rectification, repair, etc. These items are generally items where health and safety are a concern or damage building systems may occur if corrective action is not taken.

Building 100

1. The oxygen gas cylinder storage does not appear to be sufficiently secured to prevent tipping and is not protected from accidental damage. Additional code study is required to determine if a dedicated storage room and continual exhaust is required; this is partially determined by how much oxygen is stored within this room. It appears that the requirements are reduced if less than 300 ft^3 of oxygen

is stored in the facility. However, we do recommend building a dedicated, non-combustible storage room to store the cylinders in so that the cylinders are separated from the other potentially combustible storage items and protected from accidental damage. The cylinders should be properly secured to prevent tipping as well. A small exhaust fan could also be installed to serve this dedicated room to prevent the potential buildup of oxygen as well.

2. There does not appear to be a duct smoke detector installed on the large air handler supply duct. A duct smoke detector is required on a system flowing more than 2,000 CFM which is to be wired to shut down the system in case of a fire event. This is especially important in a plenum return type system such as this.
3. If the eyewash does not have a dedicated thermostatic mixing valve (mixing valve was not observed), we recommend installing an ANSI/ASSE 1071 mixing valve for this fixture. This should be checked as soon as possible to ensure safe operation of this eyewash.
4. If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required.

Building 200

1. If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required.
2. As noted in the report, the 3D printer within Electrical 213 does not have any containment to prevent the emissions from escaping into the room (so that all emissions passes through the HEPA filter). It appears that there may be a cover that can be installed on the unit but that was not installed at the time of the site visit. This room also does not have any ventilation. We recommend installing a ventilation system for this room specifically due to the presence of the 3D printer. We recommend installing an Energy Recovery Ventilator (ERV) to provide code compliant ventilation in this room.

Building 300

1. We recommend replacing the domestic water backflow preventer with a lead free reduced pressure zone backflow preventer to comply with Vermont's Lead in Consumer Products Law, Act 193 which was enacted in 2008.
2. The check valve on the domestic hot water recirculation branch that is actively dripping/leaking should be replaced.
3. We recommend re-piping the domestic hot water recirculation discharge piping so that it is connected into the domestic cold water feed to the water heater and mixing valves so that the water can either pass through the water heater or the mixing valve depending on the temperature. If the water heater is maintained above 120 degrees and there is minimal domestic hot water draw by fixtures, it's possible that the domestic hot water discharge water temperature can increase to be approximately the temperature of the water within the water heater which could present burning issues with if occupants use the hot water.

Building 400

1. The chemistry lab fume hood exhaust system should be thoroughly inspected for equipment wear and most importantly leaks. Any leak in the ductwork

downstream of the exhaust fan will allow vented gases to escape back into the building which could present a significant safety hazard depending on what gases are being used in the hood. Typically, fume hood exhaust systems use roof mounted fans to keep the entire exhaust system under negative pressure to prevent the exhaust from escaping back into the building. If there are any deficiencies found, we recommend revising the system and installing a roof mounted fan.

2. The chemistry lab is lacking in code required ventilation. There are gas turrets in this space along with chemicals being stored in the room. We recommend installing an Energy Recovery Ventilator (ERV) to provide code required ventilation in this space.
3. The physics lab is lacking in code required ventilation. There are gas turrets in this space for experiments and carbon monoxide will be produced when the burners are operating. We recommend installing an Energy Recovery Ventilator (ERV) to provide code required ventilation in this space.
4. The machine shop does not have any exhaust and does not appear to have code required ventilation. There is some minimal outdoor air supplied to the space via the small HRV which serves the (3) furnaces within the shared mechanical room. However, this is insufficient for the machine shop and the exhaust is not extracted from the machine shop. We recommend installing a larger/dedicated ERV to serve the machine shop to provide code compliant ventilation.
5. The eyewash in the machine shop and the emergency shower in the chemistry lab both do not appear to have dedicated thermostatic mixing valves to control the discharge supply water temperature. These fixtures should have an ANSI/ASSE 1071 mixing valve installed to control the supply water temperature for the fixtures. If the combination eyewash/safety shower in the physics lab does not have a mixing valve serving the fixture supply, then a ANSI/ASSE 1071 mixing valve is required to be installed here as well. This should be checked as soon as possible to ensure safe operation of this fixture.
6. The physics lab natural gas shutoff valve is not located near the egress door. This shutoff valve should be relocated and have adequate signage installed.
7. If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required. The pressure at the time of the site visit was observed to be 60 psig.
8. The HRVs appear to exhaust from the corridor space which uses the egress corridor as a return plenum which is not permitted. We recommend connecting the exhaust duct connections into the return ducts upstream of the outdoor air duct connection.
9. If the ceiling mounted fiberglass insulation is no longer needed due to the envelope being upgraded at the roof, we recommend removing the insulation on the ceiling tiles to remove an airborne contaminant for the plenum return systems. The fiberglass insulation releases fibers and they get into the airstream and can be redistributed back through the supply ductwork. These fibers can cause respiratory issues. We also recommend installing ducted returns for all systems and removing all plenum return systems to keep the fiberglass airborne fibers from getting into the return air stream.
10. Acid waste neutralizers were not observed for the chemistry sinks. Depending on if chemicals are being discharged down the drains (we do not recommend

discharging chemicals down the drain), an under sink acid neutralizer may be required to prevent the chemicals from damaging the waste piping. This is not required if chemicals are properly disposed of. We recommend ensuring that adequate signage is installed to alert occupants that chemicals are not to be discharged into the sink waste drains.

Building 700

1. The plenum return system on the second and third floor is not code compliant due to using the egress corridor as a return plenum. This configuration is likely grandfathered in, however, any future work on these floors should remove the plenum return system and fully duct the heat pump or fan coil unit supply and return ductwork. This also includes the ERV ventilation ductwork. An exhaust should be ducted into each space with outdoor air supplied to the heat pump or fan coil unit return ducts.
2. The vertical ductwork and duct shaft for the ventilation ductwork is not properly fire protected. We recommend working with an architect to properly build the fire rated shaft and then have fire dampers installed where required.
3. The domestic water service backflow preventer is not lead free. We recommend replacing this with a lead free, reduced pressure zone backflow preventer.
4. The elevator machine room is required to have exhaust ducted directly to the outdoors. We recommend installing a small exhaust fan the discharges directly outdoors.
5. We recommend revising the domestic hot water recirculation piping connection or removing the check valve on the domestic cold water feed to the water heater to permit the domestic hot water recirculation water to flow through the cold water feed to the mixing valve. This will prevent the possibility of the domestic hot water overheating during low usage.

System Upgrades or Deferred Maintenance:

Mechanical/Plumbing/Fire Protection:

Buildings 100, 200 and 400 have infrastructures that are nearly 40 years old and building 700 has infrastructure approaching 30 years old. These systems should be prepared for replacement sometime within the next 5-15 years, whether there are significant deficiencies present or not. Many of the condensing units (outdoor air conditioning units) are also charged with R-22 refrigerant which is essentially banned and becoming increasingly difficult to get for servicing purposes. R-22 refrigerant is essentially 2-generations old now since R-410A refrigerant which was generally the replacement for R-22 will now also be banned for new installations within the next few years.

Building 100

1. Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption

could be partially offset by renewable energy sources such as Solar Photovoltaics.

2. Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.
3. We recommend relocating the eastern furnace burner off switch to adjacent to the door into the corridor from the bathroom to enable the occupants to disable the furnace without entering the mechanical room.
4. The eastern mechanical room is warm and does not have any ventilation or return/exhaust air component. We recommend installing a small exhaust fan in this room to provide some ventilation and heat rejection.
5. The eastern restroom exhaust fans do not appear to be operational. We recommend servicing these or replacing these with newer high efficiency exhaust fans such as Panasonic Whisper Green fans which have selectable airflow amounts and a built-in backdraft damper to reduce heat loss when the fan is off.
6. We recommend providing an exhaust fan or other exhaust branch to exhaust the copy machine area directly to the outdoors.
7. The large central air handling unit needs to be serviced. The unit appears to be vibrating significantly and is noticeable from the surrounding spaces. It may also be beneficial to provide vibration isolation for this unit.
8. We recommend removing the filters in the ceiling return grilles and providing sweeps under the mechanical room doors to prevent return air from being drawn in from the corridor/egress path which is not permitted.
9. It appears that the refrigerant piping for the western cooling coil is missing insulation. This insulation should be repaired/added to prevent condensation from dripping onto the ceiling and to increase the system performance.
10. We recommend insulating the domestic cold water service entrance to prevent sweating which will reduce corrosion.
11. The water service entrance is not very serviceable due to the box/surround that has been installed and the storage of other equipment. We recommend making the box easily removable if it is desirable to remain and relocating some of the storage equipment/items so that this service entrance is more accessible.
12. It does not appear that any of the domestic water supply piping is insulated. We recommend insulating all of the domestic water piping to reduce heat losses by the domestic hot water (which will reduce energy consumption) and insulate the cold water piping to reduce sweating and dripping onto ceiling tiles etc.
13. We recommend installing a domestic hot water recirculation system to reduce the time it takes for domestic hot water to reach the furthest fixtures to be code compliant.
14. We recommend installing condensate neutralizers for the furnace condensate to prevent the potential for the acidic condensate to damage the waste piping.
15. The western restroom domestic water run behind the water closet appears to have experienced corrosion. This piping may need to be replaced and we recommend insulating it with elastomeric foam insulation which is water resistant. It would be preferable to route above the toilet to prevent urine from getting on the piping/insulation.

16. We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.

Building 200

1. Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.
2. There is currently no ventilation air provided to any of the rooms in the facility. We recommend installing a complete facility ventilation system throughout the facility. We recommend installing ERVs throughout to provide the ventilation for all spaces. The ERVs would also serve to exhaust the restrooms (exhaust fans can be removed). ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%. The ventilation air can be discharged into the return ducts of the furnaces provided the furnace fans operate continuously during occupied hours and ERV operation.
3. If a larger project to add ventilation to the rest of the facility is not completed, we recommend adding a small exhaust fan in the southern kitchenette to ventilate that space.
4. Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.
5. The exhaust fan for the restroom adjacent to Office 232 may not be working. We recommend servicing this fan or replacing it with a newer high efficiency exhaust fan such as a Panasonic Whisper Green fan which has selectable airflow rates and a built-in backdraft damper to reduce heat loss when the fan is off.
6. We recommend installing concealed arms carriers for the ADA lavatories to provide additional strength for the fixtures so that they do not pull off the wall if too much weight is put on the fixtures.
7. We recommend installing condensate neutralizers for the furnaces that currently do not have neutralizers for the condensate to prevent the potential for the acidic condensate to damage the waste piping.
8. We recommend insulating the domestic cold water service entrance to prevent sweating which will reduce corrosion.
9. The southernmost furnace is approaching the end of its useful life. We recommend preparing to replace the furnace. If the HVAC system design is retained, we recommend replacing this with a new, high efficiency condensing style furnace with multi-stage or modulating burner for higher efficiency and better temperature control.
10. We recommend properly labeling the natural gas piping to ensure service and maintenance personnel do not mistake it for another piping system.
11. We recommend replacing the older style natural gas plug valves with newer ball valves to enable faster, easier isolation of appliances.

12. We recommend cleaning and painting the corroded exterior natural gas piping to prevent further corrosion.
13. We recommend adding ADA insulation kits to all ADA lavatory drains.
14. We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.

Building 300

1. Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for the air handling units serving this building. The equipment appears to be in good condition, and we understand that they have been reliable, however, they are approaching the end of their useful life and are likely to need replacement within the next 5-10 years. We recommend that any replacement units incorporate heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the heat pump. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.
2. We recommend having the Aaon AHUs thoroughly cleaned to prevent contaminants from getting into the airstream and being delivered back to the building spaces.
3. We recommend replacing the check valves on the domestic hot water system that show signs of past or present leakage.
4. We recommend insulating the portions of uninsulated domestic cold water and hot water piping which are missing insulation.
5. We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.

Building 400

1. Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.
2. Currently, it does not appear that the ventilation air provided to the facility is meeting code compliant ventilation rates. We recommend installing a complete facility ventilation system throughout the facility. We recommend installing ERVs throughout to provide the ventilation for all spaces. The ERVs would also serve to exhaust the restrooms (exhaust fans can be removed). ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%. The ventilation air can be discharged into the return ducts of the furnaces provided the furnace fans operate continuously during occupied hours and ERV operation. The existing HRVs could potentially be reused to save some costs.
3. We recommend insulating the portions of uninsulated domestic cold water and hot water piping which are missing insulation. This includes the domestic water service entrance. The insulation at the service entrance likely needs to be replaced.

4. The older furnace in the central mechanical room is approaching the end of its useful life. We recommend preparing to replace the furnace. If the HVAC system design is retained, we recommend replacing this with a new, high efficiency condensing style furnace with multi-stage or modulating burner for higher efficiency and better temperature control.
5. We recommend properly labeling the natural gas piping to ensure service and maintenance personnel do not mistake it for another piping system.
6. We recommend replacing the older style natural gas plug valves with newer ball valves to enable faster, easier isolation of appliances.
7. We recommend cleaning and painting the corroded exterior natural gas piping to prevent further corrosion. Some of the piping may need to be replaced if it cannot be properly cleaned and prepped to be painted.
8. We recommend installing condensate neutralizers for the furnaces to prevent the potential for the acidic condensate to damage the waste piping.
9. Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.
10. We recommend installing a domestic hot water recirculation system to reduce the time it takes for domestic hot water to reach the furthest fixtures to be code compliant.
11. We recommend installing a SureSeal trap seal in the floor drain within the storage room across from the chemistry lab. This will help prevent sewer gases from escaping past the trap when it dries out. Alternatively, having a schedule for pouring water down the drain will also work.
12. We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.

Building 700

1. Due to the age of the existing heat pumps and the R-22 refrigerant that they operate on, we recommend beginning the process of planning to replace these. The current heat pumps operate on R-410A which itself will be phased out in approximately 2-3 years. Changing out the heat pumps with new units with the latest, low Global Warming Potential (GWP) refrigerant would be preferable. Newer heat pumps also are higher efficiency than the older units with some have multi-stage or variable speed compressors to provide greater capacity control.
2. The fan coil units on the second floor are not the preferred strategy for conditioning the facility. Water-source heat pumps permit heating and cooling form a single circulating loop which allows energy sharing between spaces in heating mode and space in cooling mode which can save a significant amount of energy. We recommend replacing the fan coil units and the chiller with new water-source heat pumps connected to the building water-source heat pump loop. We recommend increasing zoning of the water-source heat pumps to eliminate the necessity to use the perimeter baseboard radiation.
3. We recommend installing a single roof mounted Energy Recovery Ventilator (ERV) to serve the entire facility. This will ease maintenance by not requiring ceiling removal to service the units on the first floor and third floor. The ERV

should be sized to adequately ventilate the entire facility (the other ERVs should be removed and could be reused elsewhere on campus). Variable Air Volume (VAV) boxes can be utilized to control the airflow the different zones. This will significantly reduce energy consumption by reducing airflow to unoccupied or lightly occupied spaces. Classroom spaces can have their airflow reduced based on Carbon Dioxide (CO2) levels.

4. We recommend adding cooling control for all of the fan coil units on the second floor rather than using a single thermostat to control all fan coil units. This is likely to improve occupant comfort by allowing the fan coils to modulate based on the load in the space the unit serves.
5. The floor drains and the basement waste piping in the basement appear to have failed or the sump pump has failed. We recommend having this investigated. The floor drains should be replaced, and it is likely a new waste system will need to be installed.
6. Much of the piping within the basement is likely to need replacement. We recommend having this piping inspected to ensure it is still in serviceable condition. We recommend fixing any leaks that are present in the basement.
7. The older Taco circulators are all at the end of their useful service lives. We recommend replacing these with new, high efficiency pumps with Electronically Commutated motors and installing variable speed controls.
8. The temperature/pressure relief valve for the inboard boiler is leaking and should be replaced.
9. We recommend installing an air separator on the heating hot water system. This will more effectively remove air from the hydronic system(s).
10. We recommend installing a chemical bypass feeder for the hydronic systems. There is no bypass feeder. The hydronic system water should be tested, and a water treatment program established to maintain the water within the system to prevent system deterioration and improve equipment performance.
11. We recommend replacing the heat pump loop expansion tank. This unit has significant base corrosion.
12. We recommend replacing all of the domestic cold water insulation in the mechanical room and fully insulate the domestic hot water and domestic cold water piping systems.
13. We recommend fully ducting the heat pump returns to all of the spaces served and removing the fire dampers throughout the first floor of the facility. Ducted returns allow better control and balancing of the air delivered and return to each space and the reduction of fire dampers reduces the maintenance requirements for testing and inspection of the dampers.
14. Investigate if there are any leaks above the third floor laundry ceiling.
15. Repair/replace the range hood in the third floor kitchen that is noisy.
16. We recommend adding ventilation air to the basement mechanical room. A small ERV that operates continuously will help to remove some moisture buildup in this space and improve indoor air quality.
17. When the domestic hot water mixing valve is in need of replacement, we recommend replacing it with an electronic version similar to a Watts Intellistation. Electronic mixing valves have greater control and allow remote monitoring and adjustment.

Energy Efficiency Measures:

Mechanical/Plumbing:

Generally, energy recovery is not provided for the ventilation air for a majority of the facilities with portions of Building 400 and also Building 700 being the loan exceptions. Most of the heating for the campus is primarily or solely provided by fossil fuel fired equipment. Generally, we recommend incorporating heat pump technology for both heating and cooling for the buildings on campus to reduce fossil fuel consumption and permit the ability for future net zero energy possibilities with the installation of renewable energy resources such as PhotoVoltaic (PV) solar panels.

Building 100

1. As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.
2. We recommend installing Energy Recovery Ventilators (ERVs) to provide the ventilation air for the spaces rather than the current system of exhaust fans that draw in outdoor air to be conditioned by the furnace/DX coil. ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%.
3. There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.
4. As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed.

Building 200

1. As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.
2. There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls

system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.

3. As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed.

Building 300

1. As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A heat pump system could also provide greater zoning control by installing multiple heat pumps throughout the facility. Heat pumps each have the ability to heat or cool independently and can share energy between spaces in heating mode with spaces in cooling mode.

Building 400

1. As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A heat pump system could also provide greater zoning control by installing multiple heat pumps throughout the facility. Heat pumps each have the ability to heat or cool independently and can share energy between spaces in heating mode with spaces in cooling mode.
2. We recommend installing a heat pump water heater in place of the existing electric resistance water heater when that water heater is due for replacement. These water heaters can reduce the energy consumption to heat the domestic water by approximately 50% over an electric resistance type unit.

3. We recommend replacing the plumbing fixtures (lavatories etc.) that are not low flow type with low flow units.
4. There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.
5. As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.

Building 700

1. As part of a larger renovation/upgrade project, we recommend investigating the feasibility of installing a geothermal system to provide heat pump loop conditioning. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A geothermal system will significantly improve the efficiency of the system and reduce fossil fuel consumption by the facility. The existing boilers could function as backup heating for the geothermal system which could also reduce the size of the system if it is sized based on the cooling load. The existing heat pump loop piping would need to be completely insulated to prevent condensation from forming.
2. We recommend looking into installing heat pump dryers in place of the existing electric, vented dryers. Heat pump dryers use significantly less energy than typical vented dryers and do not require make-up air. The existing laundry rooms currently do not have make-up air supplied to them and a heat pump dryer would eliminate that requirement (space cooling would be required). Heat pump dryers do require more regular filter cleaning for proper operation.
3. Replacing all of the 3-way control valves with 2-way control valves. Coupling this change with variable speed circulator pumps (as recommended above) will allow the pumping system to modulate based on a system differential pressure. This permits the pumps to vary speed based on the heating/cooling load of the facility which saves pumping energy consumption.

PROBABLE COST OPINION

	DESCRIPTION	PCC	PSC	PPC
	VTC Williston Campus Mech./Plumb./Fire Protection Infrastructure Recommendations Costs			
	Acronym Key			
	PCC - PROBABLE CONSTRUCTION COST			
	PSC - PROBABLE SOFT COSTS			
	PPC - PROBABLE PROJECT COST			
	Life Safety and Code Compliance:			
	Mechanical, Plumbing and Fire Protection:			
Item #	**Building 100**			
1.	The oxygen gas cylinder storage does not appear to be sufficiently secured to prevent tipping and is not protected from accidental damage. Additional code study is required to determine if a dedicated storage room and continual exhaust is required; this is partially determined by how much oxygen is stored within this room. It appears that the requirements are reduced if less than 300 ft³ of oxygen is stored in the facility. However, we do recommend building a dedicated, non-combustible storage room to store the cylinders in so that the cylinders are separated from the other potentially combustible storage items and protected from accidental damage. The cylinders should be properly secured to prevent tipping as well. A small exhaust fan could also be installed to serve this dedicated room to prevent the potential buildup of oxygen as well.	$7,500	$1,500	$9,000
2.	There does not appear to be a duct smoke detector installed on the large air handler supply duct. A duct smoke detector is required on a system flowing more than 2,000 CFM which is to be wired to shut down the system in case of a fire event. This is especially important in a plenum return type system such as this.	$4,000	$800	$4,800
3.	If the eyewash does not have a dedicated thermostatic mixing valve (mixing valve was not observed), we recommend installing an ANSI/ASSE 1071 mixing valve for this fixture. This should be checked as soon as possible to ensure safe operation of this eyewash.	$2,000	$400	$2,400
4.	If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required.	$2,500	$500	$3,000
	Building 200			
1.	If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required.	$2,500	$500	$3,000
2.	As noted in the report, the 3D printer within Electrical 213 does not have any containment to prevent the emissions from escaping into the room (so that all emissions passes through the HEPA filter). It appears that there may be a cover that can be installed on the unit but that was not installed at the time of the site visit. This room also does not have any ventilation. We recommend installing a ventilation system for this room specifically due to the presence of the 3D printer. We recommend installing an Energy Recovery Ventilator (ERV) to provide code compliant ventilation in this room.	$22,000	$4,400	$26,400
	Building 300			
1.	We recommend replacing the domestic water backflow preventer with a lead free reduced pressure zone backflow preventer to comply with Vermont's Lead in Consumer Products Law, Act 193 which was enacted in 2008.	$7,500	$1,500	$9,000
2.	The check valve on the domestic hot water recirculation branch that is actively dripping/leaking should be replaced.	$1,000	$200	$1,200
3.	We recommend re-piping the domestic hot water recirculation discharge piping so that it is connected into the domestic cold water feed to the water heater and mixing valves so that the water can either pass through the water heater or the mixing valve depending on the temperature. If the water heater is maintained above 120 degrees and there is minimal domestic hot water draw by fixtures, it's possible that the domestic hot water discharge water temperature can increase to be approximately the temperature of the water within the water heater which could present burning issues with if occupants use the hot water.	$2,500	$500	$3,000
	Building 400			
1.	The chemistry lab fume hood exhaust system should be thoroughly inspected for equipment wear and most importantly leaks. Any leak in the ductwork downstream of the exhaust fan will allow vented gases to escape back into the building which could present a significant safety hazard depending on what gases are being used in the hood. Typically, fume hood exhaust systems use roof mounted fans to keep the entire exhaust system under negative pressure to prevent the exhaust from escaping back into the building. If there are any deficiencies found, we recommend revising the system and installing a roof mounted fan.	$5,000	$1,000	$6,000
2.	The chemistry lab is lacking in code required ventilation. There are gas turrets in this space along with chemicals being stored in the room. We recommend installing an Energy Recovery Ventilator (ERV) to provide code required ventilation in this space.	$25,000	$5,000	$30,000
3.	The physics lab is lacking in code required ventilation. There are gas turrets in this space for experiments and carbon monoxide will be produced when the burners are operating. We recommend installing an Energy Recovery Ventilator (ERV) to provide code required ventilation in this space.	$22,000	$4,400	$26,400
4.	The machine shop does not have any exhaust and does not appear to have code required ventilation. There is some minimal outdoor air supplied to the space via the small HRV which serves the (3) furnaces within the shared mechanical room. However, this is insufficient for the machine shop and the exhaust is not extracted from the machine shop. We recommend installing a larger/dedicated ERV to serve the machine shop to provide code compliant ventilation.	$22,000	$4,400	$26,400
5.	The eyewash in the machine shop and the emergency shower in the chemistry lab both do not appear to have dedicated thermostatic mixing valves to control the discharge supply water temperature. These fixtures should have an ANSI/ASSE 1071 mixing valve installed to control the supply water temperature for the fixtures. If the combination eyewash/safety shower in the physics lab does not have a mixing valve serving the fixture supply, then a ANSI/ASSE 1071 mixing valve is required to be installed here as well. This should be checked as soon as possible to ensure safe operation of this fixture.	$2,000	$400	$2,400

	DESCRIPTION		PCC		PSC		PPC	
6.	The physics lab natural gas shutoff valve is not located near the egress door. This shutoff valve should be relocated and have adequate signage installed.		$3,500		$700		$4,200	
7.	If the domestic water supply pressure exceeds 80 psig, a pressure reducing valve will be required. The pressure at the time of the site visit was observed to be 60 psig.		$2,500		$500		$3,000	
8.	The HRVs appear to exhaust from the corridor space which uses the egress corridor as a return plenum which is not permitted. We recommend connecting the exhaust duct connections into the return ducts upstream of the outdoor air duct connection.		$5,000		$1,000		$6,000	
9.	If the ceiling mounted fiberglass insulation is no longer needed due to the envelope being upgraded at the roof, we recommend removing the insulation on the ceiling tiles to remove an airborne contaminant for the plenum return systems. The fiberglass insulation releases fibers and they get into the airstream and can be redistributed back through the supply ductwork. These fibers can cause respiratory issues. We also recommend installing ducted returns for all systems and removing all plenum return systems to keep the fiberglass airborne fibers from getting into the return air stream.		$46,500		$9,300		$55,800	
10.	Acid waste neutralizers were not observed for the chemistry sinks. Depending on if chemicals are being discharged down the drains (we do not recommend discharging chemicals down the drain), an under sink acid neutralizer may be required to prevent the chemicals from damaging the waste piping. This is not required if chemicals are properly disposed of. We recommend ensuring that adequate signage is installed to alert occupants that chemicals are not to be discharged into the sink waste drains.		$5,000		$1,000		$6,000	
	Building 700							
1.	The plenum return system on the second and third floor is not code compliant due to using the egress corridor as a return plenum. This configuration is likely grandfathered in, however, any future work on these floors should remove the plenum return system and fully duct the heat pump or fan coil unit supply and return ductwork. This also includes the ERV ventilation ductwork. An exhaust should be ducted into each space with outdoor air supplied to the heat pump or fan coil unit return ducts.		$60,000		$12,000		$72,000	
2.	The vertical ductwork and duct shaft for the ventilation ductwork is not properly fire protected. We recommend working with an architect to properly build the fire rated shaft and then have fire dampers installed where required.		$45,000		$9,000		$54,000	
3.	The domestic water service backflow preventer is not lead free. We recommend replacing this with a lead free, reduced pressure zone backflow preventer.		$7,500		$1,500		$9,000	
4.	The elevator machine room is required to have exhaust ducted directly to the outdoors. We recommend installing a small exhaust fan the discharges directly outdoors.		$3,000		$600		$3,600	
5.	We recommend revising the domestic hot water recirculation piping connection or removing the check valve on the domestic cold water feed to the water heater to permit the domestic hot water recirculation water to flow through the cold water feed to the mixing valve. This will prevent the possibility of the domestic hot water overheating during low usage.		$1,000		$200		$1,200	
	System Upgrades or Deferred Maintenance:							
	Mechanical, Plumbing and Fire Protection:							
Item #	**Building 100**							
1.	Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.		$60,000		$12,000		$72,000	
2.	Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.		$5,000		$1,000		$6,000	
3.	We recommend relocating the eastern furnace burner off switch to adjacent to the door into the corridor from the bathroom to enable the occupants to disable the furnace without entering the mechanical room.		$500		$100		$600	
4.	The eastern mechanical room is warm and does not have any ventilation or return/exhaust air component. We recommend installing a small exhaust fan in this room to provide some ventilation and heat rejection.		$1,000		$200		$1,200	
5.	The eastern restroom exhaust fans do not appear to be operational. We recommend servicing these or replacing these with newer high efficiency exhaust fans such as Panasonic Whisper Green fans which have selectable airflow amounts and a built-in backdraft damper to reduce heat loss when the fan is off.		$1,000		$200		$1,200	
6.	We recommend providing an exhaust fan or other exhaust branch to exhaust the copy machine area directly to the outdoors.		$1,000		$200		$1,200	
7.	The large central air handling unit needs to be serviced. The unit appears to be vibrating significantly and is noticeable from the surrounding spaces. It may also be beneficial to provide vibration isolation for this unit.		N/A		N/A		N/A	
8.	We recommend removing the filters in the ceiling return grilles and providing sweeps under the mechanical room doors to prevent return air from being drawn in from the corridor/egress path which is not permitted.		N/A		N/A		N/A	
9.	It appears that the refrigerant piping for the western cooling coil is missing insulation. This insulation should be repaired/added to prevent condensation from dripping onto the ceiling and to increase the system performance.		$2,500		$500		$3,000	
10.	We recommend insulating the domestic cold water service entrance to prevent sweating which will reduce corrosion.		$1,000		$200		$1,200	
11.	The water service entrance is not very serviceable due to the box/surround that has been installed and the storage of other equipment. We recommend making the box easily removable if it is desirable to remain and relocating some of the storage equipment/items so that this service entrance is more accessible.		N/A		N/A		N/A	

	DESCRIPTION	PCC	PSC	PPC
12.	It does not appear that any of the domestic water supply piping is insulated. We recommend insulating all of the domestic water piping to reduce heat losses by the domestic hot water (which will reduce energy consumption) and insulate the cold water piping to reduce sweating and dripping onto ceiling tiles etc.	$10,625	$2,125	$12,750
13.	We recommend installing a domestic hot water recirculation system to reduce the time it takes for domestic hot water to reach the furthest fixtures to be code compliant.	$17,000	$3,400	$20,400
14.	We recommend installing condensate neutralizers for the furnace condensate to prevent the potential for the acidic condensate to damage the waste piping.	$2,500	$500	$3,000
15.	The western restroom domestic water run behind the water closet appears to have experienced corrosion. This piping may need to be replaced and we recommend insulating it with elastomeric foam insulation which is water resistant. It would be preferable to route above the toilet to prevent urine from getting on the piping/insulation.	$1,500	$300	$1,800
16.	We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.	$42,500	$8,500	$51,000
	Building 200			
1.	Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.	$80,000	$16,000	$96,000
2.	There is currently no ventilation air provided to any of the rooms in the facility. We recommend installing a complete facility ventilation system throughout the facility. We recommend installing ERVs throughout to provide the ventilation for all spaces. The ERVs would also serve to exhaust the restrooms (exhaust fans can be removed). ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%. The ventilation air can be discharged into the return ducts of the furnaces provided the furnace fans operate continuously during occupied hours and ERV operation.	$542,500	$108,500	$651,000
3.	If a larger project to add ventilation to the rest of the facility is not completed, we recommend adding a small exhaust fan in the southern kitchenette to ventilate that space.	$1,000	$200	$1,200
4.	Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.	$6,000	$1,200	$7,200
5.	The exhaust fan for the restroom adjacent to Office 232 may not be working. We recommend servicing this fan or replacing it with a newer high efficiency exhaust fan such as a Panasonic Whisper Green fan which has selectable airflow rates and a built-in backdraft damper to reduce heat loss when the fan is off.	$1,000	$200	$1,200
6.	We recommend installing concealed arms carriers for the ADA lavatories to provide additional strength for the fixtures so that they do not pull off the wall if too much weight is put on the fixtures.	$10,000	$2,000	$12,000
7.	We recommend installing condensate neutralizers for the furnaces that currently do not have neutralizers for the condensate to prevent the potential for the acidic condensate to damage the waste piping.	$4,000	$800	$4,800
8.	We recommend insulating the domestic cold water service entrance to prevent sweating which will reduce corrosion.	$1,000	$200	$1,200
9.	The southernmost furnace is approaching the end of its useful life. We recommend preparing to replace the furnace. If the HVAC system design is retained, we recommend replacing this with a new, high efficiency condensing style furnace with multi-stage or modulating burner for higher efficiency and better temperature control.	$8,000	$1,600	$9,600
10.	We recommend properly labeling the natural gas piping to ensure service and maintenance personnel do not mistake it for another piping system.	$3,000	$600	$3,600
11.	We recommend replacing the older style natural gas plug valves with newer ball valves to enable faster, easier isolation of appliances.	$3,000	$600	$3,600
12.	We recommend cleaning and painting the corroded exterior natural gas piping to prevent further corrosion.	$5,000	$1,000	$6,000
13.	We recommend adding ADA insulation kits to all ADA lavatory drains.	$1,500	$300	$1,800
14.	We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.	$77,500	$15,500	$93,000
	Building 300			
1.	Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for the air handling units serving this building. The equipment appears to be in good condition, and we understand that they have been reliable, however, they are approaching the end of their useful life and are likely to need replacement within the next 5-10 years. We recommend that any replacement units incorporate heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the heat pump. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.	$130,000	$26,000	$156,000
2.	We recommend having the Aaon AHUs thoroughly cleaned to prevent contaminants from getting into the airstream and being delivered back to the building spaces.	N/A	N/A	N/A
3.	We recommend replacing the check valves on the domestic hot water system that show signs of past or present leakage.	$1,000	$200	$1,200
4.	We recommend insulating the portions of uninsulated domestic cold water and hot water piping which are missing insulation.	$4,500	$900	$5,400
5.	We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.	$42,500	$8,500	$51,000
	Building 400			
1.	Due to the expected usage of R-22 refrigerant for many of the air conditioning split systems, we recommend starting to develop a replacement plan for this equipment. We recommend that any replacement of split systems incorporates heat pump technology to provide the ability to reduce the consumption of fossil fuels by providing heating from the split system. This electrical consumption could be partially offset by renewable energy sources such as Solar Photovoltaics.	$100,000	$20,000	$120,000

	DESCRIPTION	PCC	PSC	PPC
2.	Currently, it does not appear that the ventilation air provided to the facility is meeting code compliant ventilation rates. We recommend installing a complete facility ventilation system throughout the facility. We recommend installing ERVs throughout to provide the ventilation for all spaces. The ERVs would also serve to exhaust the restrooms (exhaust fans can be removed). ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%. The ventilation air can be discharged into the return ducts of the furnaces provided the furnace fans operate continuously during occupied hours and ERV operation. The existing HRVs could potentially be reused to save some costs.	$542,500	$108,500	$651,000
3.	We recommend insulating the portions of uninsulated domestic cold water and hot water piping which are missing insulation. This includes the domestic water service entrance. The insulation at the service entrance likely needs to be replaced.	$10,000	$2,000	$12,000
4.	The older furnace in the central mechanical room is approaching the end of its useful life. We recommend preparing to replace the furnace. If the HVAC system design is retained, we recommend replacing this with a new, high efficiency condensing style furnace with multi-stage or modulating burner for higher efficiency and better temperature control.	$8,000	$1,600	$9,600
5.	We recommend properly labeling the natural gas piping to ensure service and maintenance personnel do not mistake it for another piping system.	$3,000	$600	$3,600
6.	We recommend replacing the older style natural gas plug valves with newer ball valves to enable faster, easier isolation of appliances.	$3,000	$600	$3,600
7.	We recommend cleaning and painting the corroded exterior natural gas piping to prevent further corrosion. Some of the piping may need to be replaced if it cannot be properly cleaned and prepped to be painted.	$6,000	$1,200	$7,200
8.	We recommend installing condensate neutralizers for the furnaces to prevent the potential for the acidic condensate to damage the waste piping.	$5,000	$1,000	$6,000
9.	Repair any refrigerant piping insulation damage and provide protection for insulation from UV and physical damage. A UV resistant paint can be applied to the insulation to protect from UV damage if it is not already deteriorating. Otherwise, an aluminum jacket or VentureClad type product can be wrapped around the piping.	$4,000	$800	$4,800
10.	We recommend installing a domestic hot water recirculation system to reduce the time it takes for domestic hot water to reach the furthest fixtures to be code compliant.	$15,500	$3,100	$18,600
11.	We recommend installing a SureSeal trap seal in the floor drain within the storage room across from the chemistry lab. This will help prevent sewer gases from escaping past the trap when it dries out. Alternatively, having a schedule for pouring water down the drain will also work.	$100	$20	$120
12.	We recommend installing a fire protection system for this facility to provide additional life safety for the occupants in case of a potential fire.	$77,500	$15,500	$93,000
	Building 700			
1.	Due to the age of the existing heat pumps and the R-22 refrigerant that they operate on, we recommend beginning the process of planning to replace these. The current heat pumps operate on R-410A which itself will be phased out in approximately 2-3 years. Changing out the heat pumps with new units with the latest, low Global Warming Potential (GWP) refrigerant would be preferable. Newer heat pumps also are higher efficiency than the older units with some have multi-stage or variable speed compressors to provide greater capacity control.	$100,000	$20,000	$120,000
2.	The fan coil units on the second floor are not the preferred strategy for conditioning the facility. Water-source heat pumps permit heating and cooling form a single circulating loop which allows energy sharing between spaces in heating mode and space in cooling mode which can save a significant amount of energy. We recommend replacing the fan coil units and the chiller with new water-source heat pumps connected to the building water-source heat pump loop. We recommend increasing zoning of the water-source heat pumps to eliminate the necessity to use the perimeter baseboard radiation.	$180,000	$36,000	$216,000
3.	We recommend installing a single roof mounted Energy Recovery Ventilator (ERV) to serve the entire facility. This will ease maintenance by not requiring ceiling removal to service the units on the first floor and third floor. The ERV should be sized to adequately ventilate the entire facility (the other ERVs should be removed and could be reused elsewhere on campus). Variable Air Volume (VAV) boxes can be utilized to control the airflow the different zones. This will significantly reduce energy consumption by reducing airflow to unoccupied or lightly occupied spaces. Classroom spaces can have their airflow reduced based on Carbon Dioxide (CO_2) levels.	$450,000	$90,000	$540,000
4.	We recommend adding cooling control for all of the fan coil units on the second floor rather than using a single thermostat to control all fan coil units. This is likely to improve occupant comfort by allowing the fan coils to modulate based on the load in the space the unit serves.	$21,000	$4,200	$25,200
5.	The floor drains and the basement waste piping in the basement appear to have failed or the sump pump has failed. We recommend having this investigated. The floor drains should be replaced, and it is likely a new waste system will need to be installed.	$15,000	$3,000	$18,000
6.	Much of the piping within the basement is likely to need replacement. We recommend having this piping inspected to ensure it is still in serviceable condition. We recommend fixing any leaks that are present in the basement.	$45,000	$9,000	$54,000
7.	The older Taco circulators are all at the end of their useful service lives. We recommend replacing these with new, high efficiency pumps with Electronically Commutated motors and installing variable speed controls.	$25,000	$5,000	$30,000
8.	The temperature/pressure relief valve for the inboard boiler is leaking and should be replaced.	$1,000	$200	$1,200
9.	We recommend installing an air separator on the heating hot water system. This will more effectively remove air from the hydronic system(s).	$6,000	$1,200	$7,200
10.	We recommend installing a chemical bypass feeder for the hydronic systems. There is no bypass feeder. The hydronic system water should be tested, and a water treatment program established to maintain the water within the system to prevent system deterioration and improve equipment performance.	$6,000	$1,200	$7,200
11.	We recommend replacing the heat pump loop expansion tank. This unit has significant base corrosion.	$9,000	$1,800	$10,800
12.	We recommend replacing all of the domestic cold water insulation in the mechanical room and fully insulate the domestic hot water and domestic cold water piping systems.	$2,500	$500	$3,000
13.	We recommend fully ducting the heat pump returns to all of the spaces served and removing the fire dampers throughout the first floor of the facility. Ducted returns allow better control and balancing of the air delivered and return to each space and the reduction of fire dampers reduces the maintenance requirements for testing and inspection of the dampers.	$72,000	$14,400	$86,400
14.	Investigate if there are any leaks above the third floor laundry ceiling.	N/A	N/A	N/A

	DESCRIPTION		PCC		PSC		PPC	
15.	Repair/replace the range hood in the third floor kitchen that is noisy.		$1,500		$300		$1,800	
16.	We recommend adding ventilation air to the basement mechanical room. A small ERV that operates continuously will help to remove some moisture buildup in this space and improve indoor air quality.		$4,500		$900		$5,400	
17.	When the domestic hot water mixing valve is in need of replacement, we recommend replacing it with an electronic version similar to a Watts Intellistation. Electronic mixing valves have greater control and allow remote monitoring and adjustment.		$9,500		$1,900		$11,400	
	Energy Efficiency Measures:							
	Mechanical, Plumbing & Fire Protection:							
Item #	**Building 100**							
1.	As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.		$297,500		$59,500		$357,000	
2.	We recommend installing Energy Recovery Ventilators (ERVs) to provide the ventilation air for the spaces rather than the current system of exhaust fans that draw in outdoor air to be conditioned by the furnace/DX coil. ERVs reduce the energy consumption to condition the ventilation air for the facility by 70-85%.		$297,500		$59,500		$357,000	
3.	There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.		$51,000		$10,200		$61,200	
4.	As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed.		$637,500		$127,500		$765,000	
	Building 200							
1.	As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.		$465,000		$93,000		$558,000	
2.	There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.		$93,000		$18,600		$111,600	
3.	As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed.		$1,162,500		$232,500		$1,395,000	
	Building 300							
1.	As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A heat pump system could also provide greater zoning control by installing multiple heat pumps throughout the facility. Heat pumps each have the ability to heat or cool independently and can share energy between spaces in heating mode with spaces in cooling mode.		$637,500		$127,500		$765,000	
	Building 400							
1.	As part of a larger renovation project, we recommend investigating the feasibility to install a full heat pump system to condition the facility. An air-source (Variable Refrigerant Flow (VRF)) system could be utilized or a water-source heat pump system connected to a ground-source (geothermal) heat exchanger can be investigated to reduce energy consumption. The possibility of combining the buildings into a single geothermal system could also be explored to provide a greater economy of scale and potentially reduce energy consumption by allowing energy sharing between all buildings. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A heat pump system could also provide greater zoning control by installing multiple heat pumps throughout the facility. Heat pumps each have the ability to heat or cool independently and can share energy between spaces in heating mode with spaces in cooling mode.		$1,162,500		$232,500		$1,395,000	

	DESCRIPTION		PCC		PSC		PPC	
2.	We recommend installing a heat pump water heater in place of the existing electric resistance water heater when that water heater is due for replacement. These water heaters can reduce the energy consumption to heat the domestic water by approximately 50% over an electric resistance type unit.		$3,500		$700		$4,200	
3.	We recommend replacing the plumbing fixtures (lavatories etc.) that are not low flow type with low flow units.		$5,000		$1,000		$6,000	
4.	There is no Direct Digital Controls (DDC) system or central controls system for this facility. Installing a DDC system or other remotely accessible controls system will allow for remote monitoring and control by maintenance personnel which can help reduce energy consumption (adjusting set points and schedules) and also aid in servicing by allowing for remote monitoring of equipment operation.		$93,000		$18,600		$111,600	
5.	As noted above, we recommend replacing the existing split system air conditioning units with heat pumps. This could be either air source heat pumps or water source heat pumps (if a larger project is completed for a geothermal heating/cooling system). This will reduce fossil fuel consumption and energy consumption. The electricity can be partially or fully offset with renewable energy with sources such as onsite Solar Photovoltaic systems.		$465,000		$93,000		$558,000	
	Building 700							
1.	As part of a larger renovation/upgrade project, we recommend investigating the feasibility of installing a geothermal system to provide heat pump loop conditioning. Geothermal systems qualify for a 30% tax credit which improves the economic feasibility for this system type to be installed. A geothermal system will significantly improve the efficiency of the system and reduce fossil fuel consumption by the facility. The existing boilers could function as backup heating for the geothermal system which could also reduce the size of the system if it is sized based on the cooling load. The existing heat pump loop piping would need to be completely insulated to prevent condensation from forming.		$900,000		$180,000		$1,080,000	
2.	We recommend looking into installing heat pump dryers in place of the existing electric, vented dryers. Heat pump dryers use significantly less energy than typical vented dryers and do not require make-up air. The existing laundry rooms currently do not have make-up air supplied to them and a heat pump dryer would eliminate that requirement (space cooling would be required). Heat pump dryers do require more regular filter cleaning for proper operation.		$40,000		$8,000		$48,000	
3.	Replacing all of the 3-way control valves with 2-way control valves. Coupling this change with variable speed circulator pumps (as recommended above) will allow the pumping system to modulate based on a system differential pressure. This permits the pumps to vary speed based on the heating/cooling load of the facility which saves pumping energy consumption.		$180,000		$36,000		$216,000	

	DESCRIPTION		PPC	
	VTC Williston Campus Mech./Plumb./Fire Protection Infrastructure Recommendations Cost Summary			
	Acronym Key			
	PCC - PROBABLE CONSTRUCTION COST			
	PSC - PROBABLE SOFT COSTS			
	PPC - PROBABLE PROJECT COST			
	Life Safety and Code Compliance:			
	Mechanical, Plumbing and Fire Protection:			
Item #	**Building 100**			
1.	Life Safety and Code Compliance Cost Summary		$19,200	
	Building 200			
1.	Life Safety and Code Compliance Cost Summary		$29,400	
	Building 300			
1.	Life Safety and Code Compliance Cost Summary		$13,200	
	Building 400			
1.	Life Safety and Code Compliance Cost Summary		$166,200	
	Building 700			
1.	Life Safety and Code Compliance Cost Summary		$139,800	
	VTC Williston Campus Life Safety and Code Compliance Cost Summary		**$367,800**	
	System Upgrades or Deferred Maintenance:			
	Mechanical, Plumbing and Fire Protection:			
Item #	**Building 100**			
2A	Deferred Maintenance Items Cost Summary		$103,950	
2B	System Upgrades which can include full HVAC, Plumbing and Fire Protection Renovation Cost Summary		$71,400	
	Building 200			
2A	Deferred Maintenance Items Cost Summary		$146,400	
2B	System Upgrades which can include full HVAC, Plumbing and Fire Protection Renovation Cost Summary		$745,800	
	Building 300			
2A	Deferred Maintenance Items Cost Summary		$162,600	
2B	System Upgrades which can include full HVAC, Plumbing and Fire Protection Renovation Cost Summary		$51,000	
	Building 400			
2A	Deferred Maintenance Items Cost Summary		$166,920	
2B	System Upgrades which can include full HVAC, Plumbing and Fire Protection Renovation Cost Summary		$762,600	

	DESCRIPTION		PPC	
	Building 700			
2A	Deferred Maintenance Items Cost Summary		$246,000	
2B	System Upgrades which can include full HVAC, Plumbing and Fire Protection Renovation Cost Summary		$891,600	
2A	**VTC Williston Campus Deferred Maintenance Items Cost Summary**		**$825,870**	
2B	**VTC Williston Campus Upgrades Cost Summary**		**$2,522,400**	
	Energy Efficiency Measures:			
	Mechanical, Plumbing & Fire Protection:			
Item #	**Building 100**			
3A	Individual Energy Efficiency Upgrades Cost Summary		$775,200	
3B	Full HVAC System Renovation Energy Efficiency Upgrade Cost Summary		$765,000	
	Building 200			
3A	Individual Energy Efficiency Upgrades Cost Summary		$669,600	
3B	Full HVAC System Renovation Energy Efficiency Upgrade Cost Summary		$1,395,000	
	Building 300			
3A	Individual Energy Efficiency Upgrades Cost Summary		$0	
3B	Full HVAC System Renovation Energy Efficiency Upgrade Cost Summary		$765,000	
	Building 400			
3A	Individual Energy Efficiency Upgrades Cost Summary		$679,800	
3B	Full HVAC System Renovation Energy Efficiency Upgrade Cost Summary		$1,395,000	
	Building 700			
3A	Individual Energy Efficiency Upgrades Cost Summary		$264,000	
3B	Full HVAC System Renovation Energy Efficiency Upgrade Cost Summary		$1,080,000	
3A	**VTC Williston Campus Individual Energy Efficiency Upgrades Cost Summary**		**$2,388,600**	
3B	**VTC Williston Campus HVAC System Renovation Energy Efficiency Cost Summary**		**$5,400,000**	

LN CONSULTING

February 1, 2023

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Burlington, VT 05401

RE: VTC Williston Campus: Existing Building Electrical Infrastructure Report

L.N. Consulting was retained by SAS Architects to review the existing mechanical, electrical, plumbing and fire protection infrastructure supporting Vermont Technical College's Williston Campus and to develop a report describing observations including the condition and age of the existing MEPFP (Mechanical, Electrical, Plumbing and Fire Protection) infrastructure. The mechanical, plumbing and fire protection portion of these observations is within a separate dedicated portion of the report. The goal of the campus building infrastructure report is to provide the master planning team with reliable information to assist in developing an appropriate Campus Master Plan.

The MEPFP systems infrastructure review includes the following buildings:

1. *Building 100*
2. *Building 200*
3. *Building 300*
4. *Building 400*
5. *Building 700*

The infrastructure report is organized in a methodology that provides prioritization of infrastructure recommendations. The highest priority group is life safety and building code compliance items. The second priority group is deferred maintenance and system or equipment wear items. The third priority group is items related to building performance and energy efficiency. The report will provide general details about systems within each building and then offer a combined recommendations section for ease of reference.

Note that this report is based on site visits that, due to the amount of time available, involved general review of the buildings. Although LNC was able to perform a somewhat detailed analysis of each building at the campus, it was not possible to find every deficiency. The intent of this report is to provide an overview of the conditions of each building, but any actual corrections required may involve specific additional design work.

The attached cost estimate document for all the recommendations is for budgeting purposes only. Actual costs will vary from these based on field conditions, final design, economic factors and economies of scale if multiple recommendations are implemented at once. The probable construction costs (PCC) indicated are intended to reflect the

estimated “order of magnitude” cost for each recommendation and include construction material and labor. This cost assumes only minimal architectural cutting and patching of existing walls as necessary to incorporate the installation of the stated electrical work. Any additional architectural or structural work beyond minor cutting and patching that would be required to facilitate the proposed revisions has not been incorporated into the costs indicated and will need to be added and accounted for separately/by others. The probable soft costs (PSC) include engineering and management. The probable project cost (PPC) is the sum of the PCC and PSC.

Electrical

At each building, any code deficiencies noted are based on the latest adopted codes such as National Electrical Code, fire safety including NFPA 72, life safety including NFPA 101, Vermont Fire and Safety and Electrical, or other similar codes. When these systems were installed they were most likely code compliant at that time. Because most codes are “grand-fathered”, the systems as they are installed now may comply with the relevant codes, however, any renovation work will typically precipitate making the recommended upgrades. Examples of these would be the requirement for arc fault circuit breakers in student dorm rooms, use of weather-resistant receptacles in wet and exterior locations, and Area of Rescue systems for buildings with elevators. Other deficiencies, such as the use of shared neutrals on circuits with separate breakers, could not be investigated due to safety concerns. However, for many older buildings this may be of concern. It should also be noted that because a specific issue may be “grand-fathered”, it does not mean it’s a safe condition. Many of the changes to the electrical codes are a result of injuries and deaths as a result of less stringent regulations and enforcement in the past.

Although not included in most building descriptions, any renovation work should consider the use of LED lighting technology. LED lighting provides more lumens (measure of light output) per watt compared to other technologies, has a longer life, is usually inherently dimmable, generates less Ultraviolet (UV) light than fluorescent bulbs, and is essentially mercury-free. For all practical purposes, fluorescent and incandescent lighting is no longer used and most commercial buildings have or are making the change to LED.

Existing Conditions

General

Building 100, 200, 300 and 400 are nearly 40 years old and it is understood they were all built within an approximate 4 year period. These buildings were initially “strip mall” type design with multiple meters for each tenant. When VTC took over these buildings, the metering was consolidated so that Building 100 and 400 share a single Green Mountain Power (GMP) utility meter and Buildings 200 and 300 share a single meter. There are two pad mounted GMP transformers and each meter is tied to a specific transformer. The original metering at each building was never removed and the meters have been “taken over” by the customer/VTC. As a result, there are a number of “metered” services, with meter sockets and meters, remaining within each of these buildings. However none of these is used for revenue billing. The consolidation into just two meters

is intended to reduce costs by eliminating multiple service fees and allowing for the use of a utility billing rate structure that is more advantageous to VTC.

	
Typical original metering (in this case Building 200) showing individual meters for multiple tenants.	*New consolidated meter (in this case for Buildings 200 and 300). Original metering remains but is not used by GMP.*

Building 700 was built approximately ten years after the other four buildings. It was originally built for retail and offices however around 2010 was converted to a combination classroom and dorm facility. Although there are no drawings it is understood it was also a building with multiple metering that was converted into a single metered building during the 2010 conversion.

It was also noticed that in many rooms with panelboards or meters, particularly the small electric or mechanical rooms, access to the equipment is blocked because the rooms are being used as storage rooms. This is a code violation. It was particularly prevalent in Building 400 where storage materials are actually leaning against the electrical gear.

	
Materials stored in front of meters and disconnects in Building 400.	*Also in Building 400, load center panelboard blocked. Note also the meter is in front of the panelboards required 36" deep clear space.*

Each building is provided with a security system with keypad or fob at the entrance and multiple occupancy sensors throughout. This report does not include a review of the security systems.

There is no standby backup power (i.e., generators) for the buildings investigated. Although not included in this report, it may be in the school's interest to investigate the possibility of providing backup power for when utility power is lost.

This report also does not include a review of the telecommunication system, other than to possibly make note of cables not being supported correctly, if there appear to be a number of abandoned cables or a space does not appear to have an adequate number of data outlets.

Building 100

General

This building is a single-story facility which is generally comprised of classroom spaces and offices. The classrooms here appear to primarily serve the school's nursing program. One of the classrooms contains an X-Ray machine.

Electrical

Building 100 is a single floor building made up essentially of classrooms and offices with several small bathrooms, closets and meeting rooms. The building is fed via a (4) meter rack on the southeast end of the building. It appears to be rated for 400 amps, 120/208

volt three phase. The meters each appear to be 200 amp, three phase type. As mentioned, the metering is no longer used for revenue metering from GMP. Each meter feeds a load center within the building. Most of the load centers within the building appear to be original to the building however there are some newer ones such as panel PP117 in the classroom. They also appear to be where they were originally installed, so in some cases the load centers are within classrooms.

Appears none of the load centers is lockable. Most are in locations accessible to the public.



Typical load center accessible to the public with no means to lock.



Existing meter rack with meters remaining.

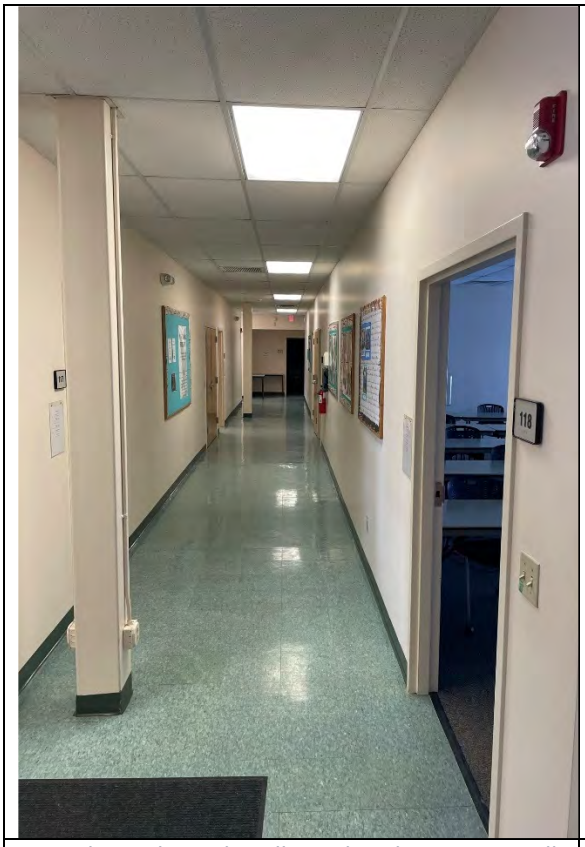
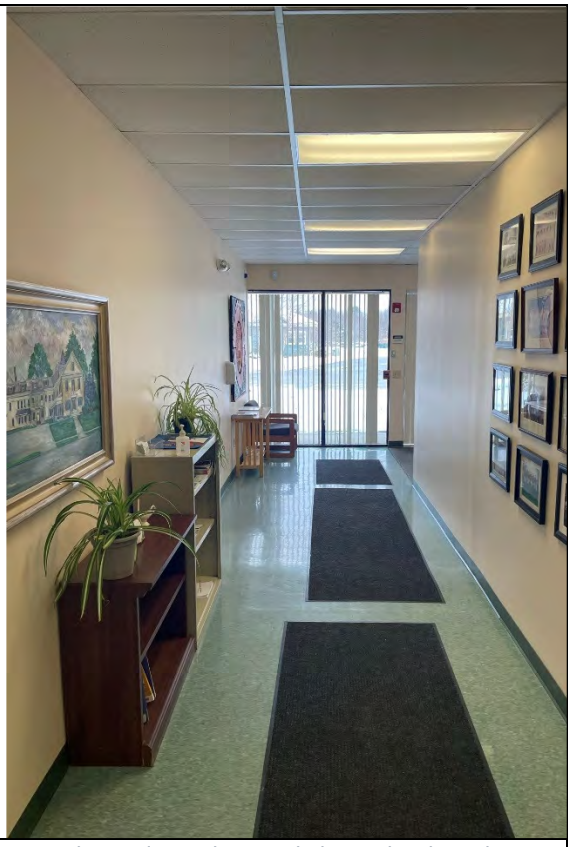
Circuiting is mostly in either conduit, MC cable or surface raceway and in decent condition.

The building lighting is essentially 32 watt T8 fluorescent tube lighting. There was one room with LED tube retrofit lamps. If the laser classroom #128 there are a few dimmable recessed can fixtures. In many fixtures the lamps are either failed or removed, and there are several instances where the color temperature of the fluorescent lamps do not match.



Typical T8 fluorescent lighting. Note the color differences of lamps in several fixtures, and at least one fixture with failed lamps.

Essentially all egress (i.e., corridors, etc.) lighting is controllable via accessible switches in the egress paths. Lighting in corridors is mostly T8 32 watt fluorescent tube type troffer fixtures. Many lamps were not operational most likely to failure and have not been replaced.

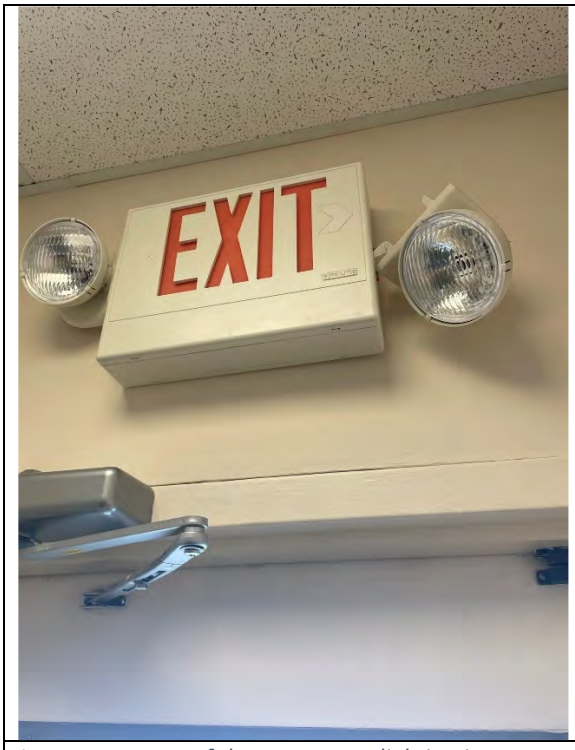
	
Typical corridor with wall switches that can turn all lighting off within the corridor.	*Typical corridor with some lighting that have lamps that need replacement.*

The exterior lighting is via RAB wall pack lighting in the back and recessed can fixtures in the front canopy. There are a number of older “jelly jar” and wall pack lights on the exterior that have been abandoned in place. It was unclear how the RAB lights were being controlled however it is assumed via an exterior photoeye. The exterior canopy lights and photoeye on the north side are understood to still work. It wasn’t determined if the bulbs were LED type or not, however they were full of cobwebs so it is assumed they have been installed for a while.

	
Newer LED fixture above the door and abandoned "jelly jar" fixture adjacent to the door. There are also some wall pack lights that have been abandoned.	*Front canopy lighting is old however is understood to still work. Controlled via a photocell. The bulbs appear to be incandescent type.*

The egress path has emergency lights and exit signs, however almost none of them worked when tested. At least one was broken. They appear to be well over 10 years old; batteries for emergency lighting usually have a life cycle of less than 10 years. There also did not appear to be enough emergency lights (if they worked) to provide the required lighting during a power outage. There is no exterior emergency lighting at exit doors.

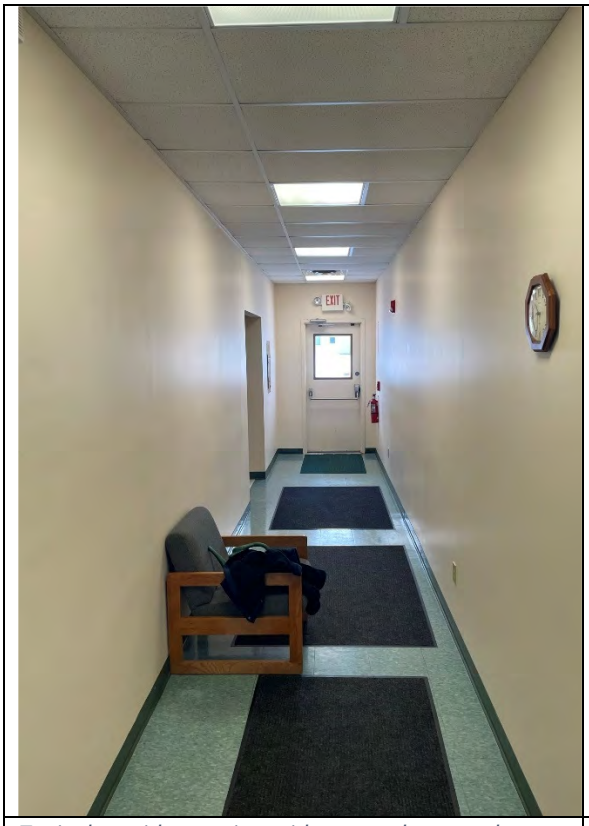
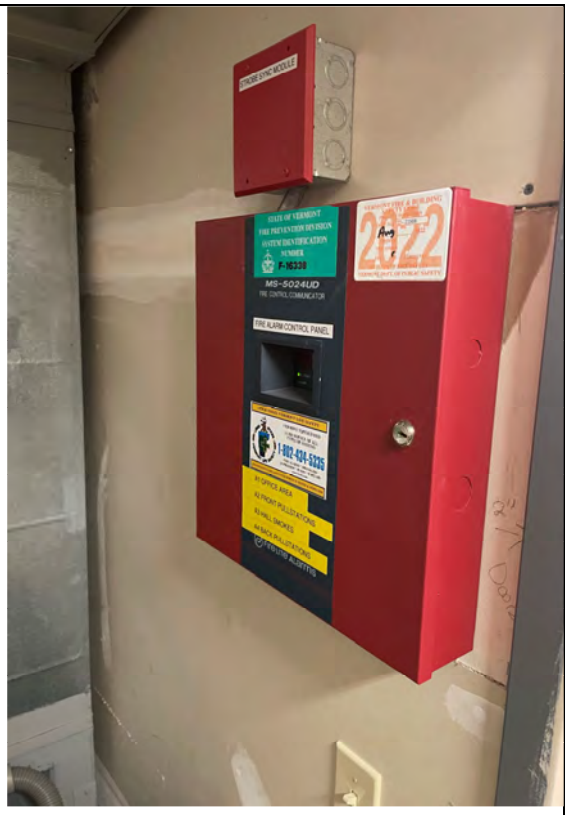
Some spaces that usually would be considered egress paths, such as Labs 123 and 130, do not have emergency or exit signs.

	
It appears none of the emergency lighting is operational. In this instance the fixture is actually broken.	*This nursing training room should be considered an egress path since it is a "path" from rooms to the exit. It does not have any emergency lighting or exit signs.*

There are essentially no light control occupancy sensors and there were no indoor daylighting sensors in the building.

Most areas appear to have sufficient receptacles. There did not appear to be an excessive use of extension cords.

The Fire Lite MS-5024UD Fire alarm system appears to be in good condition with no violations. It is a zoned type of system. It does have an older style remote annunciator at the main entrance. It appears there is partial sprinkler coverage for mechanical spaces. There are several locations where a door used to be located that have manual pull stations. Horn/strobe and strobe alarm lights are used throughout within classrooms, corridors and bathrooms. There was at least one multi-person room that did not have an alarm light. Smoke detectors are provided in some egress/corridors however none are provided in classrooms, offices or other non-egress spaces. It appears some runs of corridor also do not have adequate smoke detector coverage however the fire alarm inspection sticker indicates no violations. There did not appear to be any carbon monoxide (CO) detection near gas-fired equipment.

	
Typical corridor section with no smoke or carbon monoxide detection.	*Main fire alarm panel with no violations.*

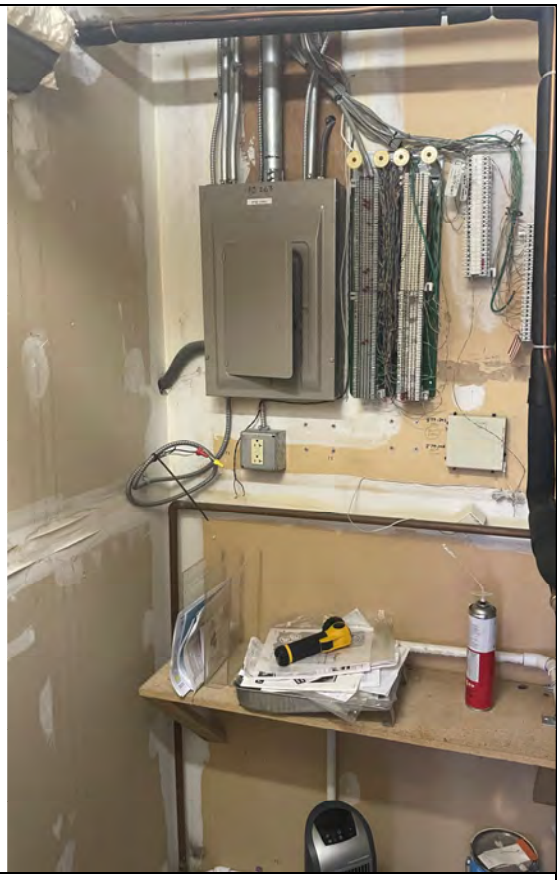
There did not appear to be much or any wi-fi devices.

<u>Building 200</u>

General
This building is a single-story facility which contains offices, conference rooms, classrooms, computer classrooms, tech classrooms and a kitchenette type space. There is also a game room.

Electrical
Building 200 is a single floor building made up essentially of classrooms and offices with several small bathrooms, closets and meeting rooms. The building is fed via a (9) meter rack on the northeast end of the building. It appears to be rated for 800 amps, 120/208 volt three phase and has a single main disconnect. The meters each appear to be 200 amp, three phase type. As mentioned, the metering is no longer used for revenue metering from GMP. Each meter feeds a load center within the building. The load centers within the building appear to be original to the building.

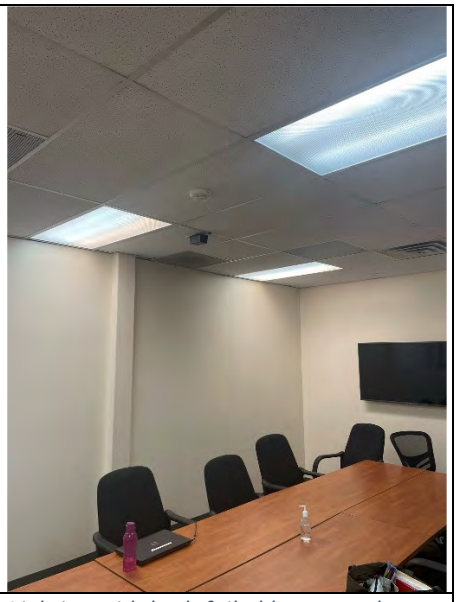
Appears none of the load centers is lockable however it appears these panels are in dedicated mechanical and electrical rooms.

	
Original metering at Building 200 that is no longer used by GMP. Also note the crooked light above the meters that is mentioned later in this section.	*Load center panelboard in small room. The shelf below is a code violation as it extends into the work space of the panelboard.*

Circuiting is mostly in either conduit, MC cable or surface raceway and in decent condition.

The building lighting is essentially 32 watt T8 fluorescent tube lighting.

Essentially all egress (i.e., corridors, etc.) lighting is controllable via accessible switches in the egress paths. Lighting in corridors is mostly T8 32 watt fluorescent tube type troffer fixtures. Many lamps were not operational and most likely have failed. In others, it appears different color temperature lamps (i.e., 3500K and 4100K) are being used within the same room.

	
Typical corridor lighting wall switches accessible to the public.	*Lighting with both failed lamps and lamps where color temperature does not match.*

The exterior lighting is via mostly wall packs originally installed with the building. It is unclear if the lighting still operates. There is minimal lighting in the back with one LED light at the door and one (crooked) LED at outdoor meter rack. The front lighting is via recessed can canopy lights, similar to Building 100, with a photoeye. It is understood they operate correctly although, like Building 100, are older.

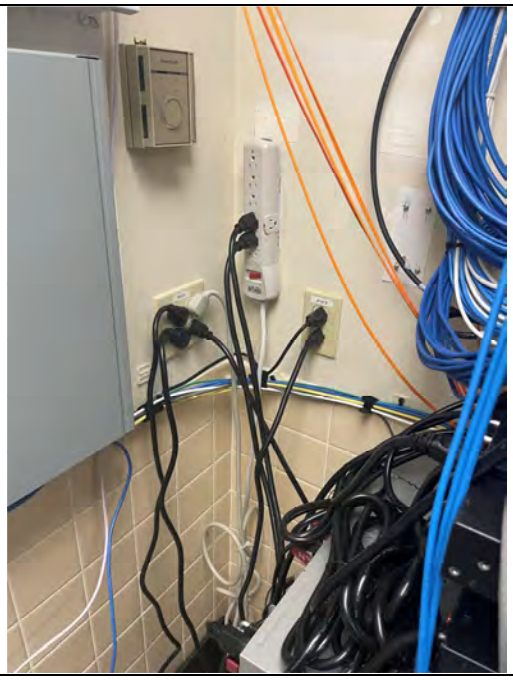
The egress path has emergency lights and exit signs, however almost none of them worked when tested. Some classrooms also have emergency lighting. They appear to be well over 10 years old; batteries for emergency lighting usually have a life cycle of less than 10 years. There also did not appear to be enough emergency lights (if they worked) to provide the required lighting during a power outage. There is no exterior emergency lighting at exit doors.

	
Backside of Building 200. There is a light at the door canopy however no emergency lighting.	*Typical emergency light and exit sign that did not operate when tested. Also note the smoke detector which is typical of the corridors.*

Other than a few select rooms with wall switch occupancy sensors, there are essentially no light control occupancy sensors and there were no indoor daylighting sensors in the building. At least one room with two light fixtures did not have either dimming or multiple switching controls: one standard on/off switch only.

Most areas appear to have sufficient indoor receptacles. In the staff kitchen it appears there are (2) microwaves, (1) toaster, (1) teapot and (1) coffer maker all plugged into the same receptable outlet. If all these or possibly even a combination of just some of them were in use, the breaker feeding this receptacle should trip on overload. If that's not the case, the breaker may not be working correctly. There did not appear to be an excessive use of extension cords. At the exterior HVAC equipment at the far southeast corner, there is no maintenance receptacle. For the exterior HVAC equipment on the east side, one receptacle is not "while in use" type. Some of the HVAC equipment on the north end of the east side do not have a maintenance receptacle within 25'.

In the data room at the end of the building, one rack has a number of plugs connected to two receptacles. They are both on separate circuits however it is not known if these may be overloaded.

	
A number of devices in the kitchenette on the same circuit. Also note the receptacle is not GFCI type even though within 6' of the sink.	*In the data room there are a number of devices plugged into two circuits. There may not be an issue however this should be reviewed to confirm circuits not being overloaded.*

There are some receptacles in the same backbox as GFCI receptacles. These may be GFCI protected however if they are a blue "GFCI Protected" sticker needs to be place.

	
There is the required GFCI receptacle (black rectangle) located outdoors next to the HVAC equipment however it is not provided with a "while in use" (maintains weather resistance while in use with cord) cover.	*The receptacle on the right has a GFCI receptacle with a standard receptacle located to the left of it. If the standard receptacle is protected by the GFCI on the right it should have a label indicating its GFCI protected.*

The Fire Lite MS-5210UD Fire alarm system appears to be in good condition with no violations. It is a zoned type of system. Horn/strobe and strobe alarm lights are used throughout within classrooms, corridors and bathrooms. It appears all rooms and corridors are provided with smoke detectors. There did not appear to be any carbon monoxide (CO) detectors for gas-fired equipment.



Fire alarm control panel with no violations.



Typical classroom with required fire alarm notification device and a ceiling mounted smoke detector.

Building 300

General

This building is a single-story facility which serves as the Dental Hygiene Clinic for the College. The facility contains a larger open area for patient dental care, locker areas, reception, a teaching classroom, support spaces, a central mechanical room, a small room containing a vacuum pump and air compressor for the teaching kitchen, and office spaces.

Electrical

Building 300 is a single floor building made up essentially of classrooms and offices with several small bathrooms, closets and meeting rooms. It is similar in shape to Building 100 however in much better electrical condition due to more recent renovation work. The electric service was revised over time and the original meter rack serving the building was replaced with a CT metered service that feeds a newer 400 amp, 120/208 volt, three phase panelboard labelled MDP. This panelboard feeds (3) smaller panelboards

within the building as well as a few other loads. This equipment (Square D) is in good condition.

Panelboard C is provided with surge protection.



Main service entrance to building. Replaced original outdoor meter rack.



Main panel MDP. Feeds two panelboards (A and B) adjacent to it in closet and Panel C elsewhere in the building.



Panel C serving training room. Feeds vacuum pumps as well as receptacles.

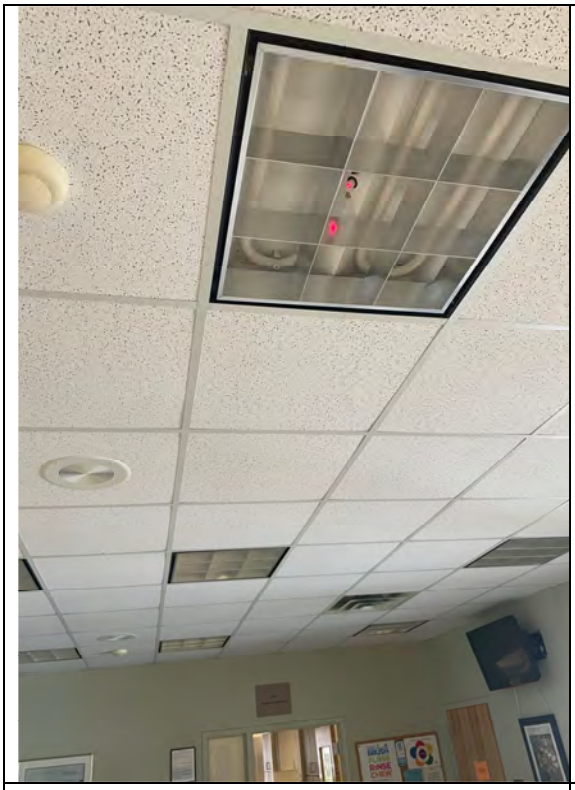


Surge protection device (SPD) at Panel C. This is the only SPD noted in any of the buildings visited.

Circuiting is mostly in either conduit, MC cable or surface raceway and in good condition. It appears most of this has been replaced over time as the building has been renovated.

The building lighting is essentially 32 watt T8 fluorescent tube lighting. Many fixtures are parabolic (“egg crate”) lens design. There was one room with LED tube retrofit lamps. If the laser classroom #128 there are a few dimmable recessed can fixtures.

Essentially all egress (i.e., corridors, etc.) lighting is controllable via accessible switches in the egress paths. Lighting in corridors is mostly T8 32 watt fluorescent tube type troffer fixtures. Many lamps were not operational and most likely have failed.

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<td>Typical parabolic lens T8 U-lamp fixtures. The red light and button indicate it has an integral emergency backup battery.</td>
<td>A number of lamps were not operational.</td>
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The front entrance has a RAB type wall pack light above the door**.** The backside of the building has two LED flood lights. It is understood all the exterior lighting works correctly via photo eyes.

The egress path has ceiling light fixtures with integral emergency lighting ballasts and exit signs. The ceiling light emergency test switches appear to be working, however almost none of the exit signs worked when tested. They appear to be well over 10 years old; batteries for emergency lighting usually have a life cycle of less than 10 years. There is no exterior emergency lighting at exit doors.

	
Light fixtures with "red lights" are provided with emergency lighting backup power ballasts. This is typical of much of the building. When tested they appeared to operate still, although based on the age of the fixtures it is assumed they are near the end of their life.	*Exterior flood lighting in back of building. There is no emergency lighting at exit doors.*

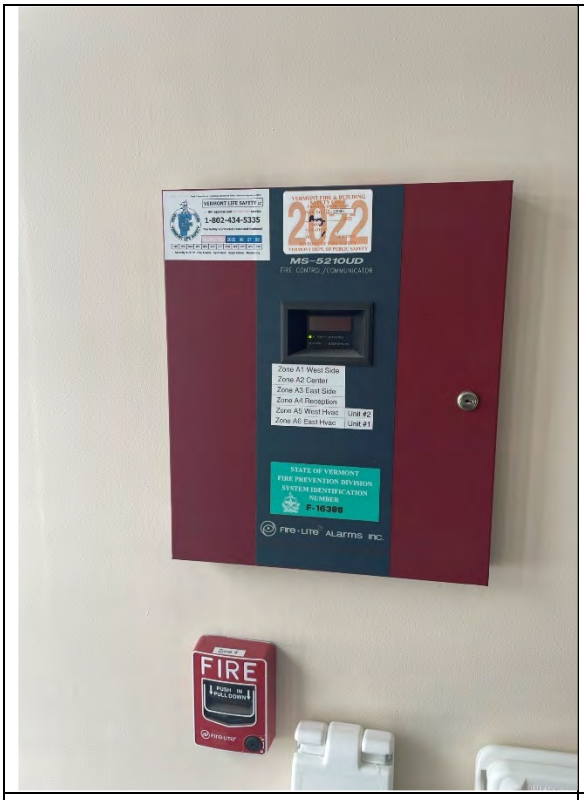
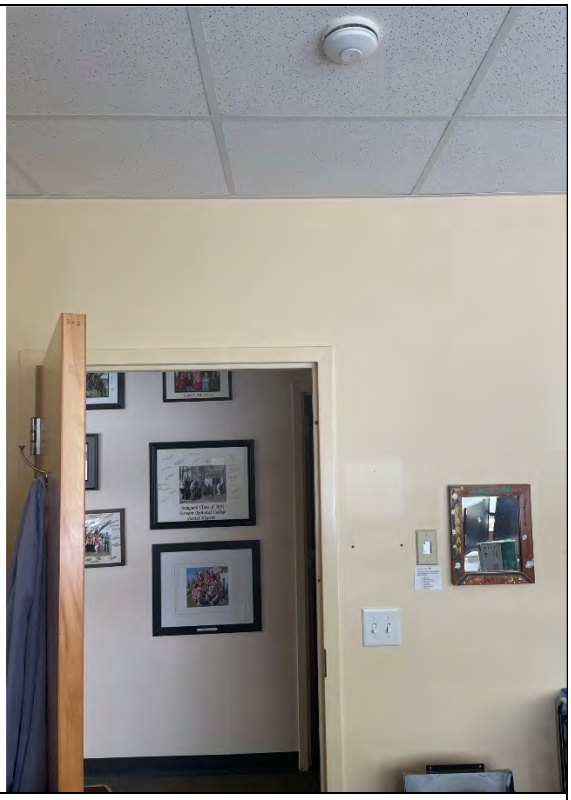
There are essentially no light control occupancy sensors and there were no indoor daylighting sensors in the building.

Most areas appear to have sufficient receptacles. In the kitchenette, if appears that (2) microwaves and possibly a coffer maker are plugged into the same circuit. This typically would result in tripping the circuit breaker on overload. There did not appear to be an excessive use of extension cords. The outdoor AAON HVAC units do not have a local maintenance receptacle. In the kitchenette and a training room, there appear to be several receptacles within 6 feet of the sink that are not GFCI type. This includes a number of receptacles in the countertop backsplash in the training room at the east end of the building. With all the renovation work within the building, most receptacles are newer than in Building 100.

For the most part, Building 100, 200 and 400 had many receptacles and switches labelled at to their source of power. Building 300 does not appear to be labelled as such.

	
Receptacles in the training room that are near a sink but not GFCI protected. Panel C did not have GFCI breakers. Note also these receptacles do not have labels on them indicating where fed from. Although not required, this is not typical of Building 100, 200 and 400 which are labelled.	*There did not appear to be a maintenance receptacle for the AAON units. There did not appear to be receptacles within either of the units themselves.*
	
Receptacle near sink that is required to be GFCI protected. There is one GFCI receptacle however the other is not. The non_GFCI receptacle may be protected however there is no sticker indicating this.	*Example of a receptacle where the non-GFCI receptacle is protected via a GFCI receptacle (this is from Building 100) and has a blue "GFCI Protected Outlet" sticker indicating it is protected.*

The Fire Lite MS-5210UD Fire alarm system appears to be in good condition with no violations. It is a zoned type of system. Horn/strobe and strobe alarm lights are used throughout within classrooms, corridors and bathrooms. There was at least one multi-person room that did not have an alarm light. It appears all rooms and corridors are provided with smoke detectors. There did not appear to be any carbon monoxide (CO) devices for gas-fired equipment.

	
Fire alarm panel with no violations.	*Smoke detector in office. Smoke detectors are installed in most rooms.*

Building 400

General

This building is a single-story facility which contains classrooms, a student lounge, a chemistry lab, a physics lab, a library, offices, and a machine shop.

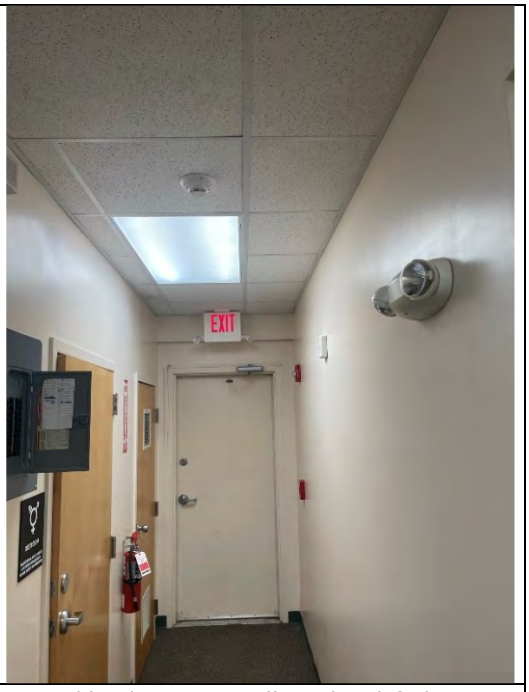
Electrical

Building 400 is a single floor building made up essentially of classrooms and offices with several small bathrooms, closets and meeting rooms. There are also multiple rooms with metering. It appears one has a (4) meter rack and is 400 amp, 120/208 volt three phase. This room has lots of storage in it and the small load center panelboard in this room would be essentially inaccessible during an emergency. The second room at the north end with access from the outdoors has a number of meters and disconnects tied together via a wireway and fed via a single main 400 amp, 120/208 volt, three phase disconnect switch. This room is also very crowded with storage materials. The meters each appear to be 200 amp, three phase type. Each meter feeds a load center within the building. The load centers within the building appear to be original to the building. There is a new 200 amp panelboard in the machine shop with a shunt trip main breaker. The actual shunt trip power is fed from a different panelboard P-7, so if power to that panel were ever lost there would be no way to trip this breaker.

Appears none of the load centers is lockable. Most are not in a location that is inaccessible from the public.



One of two rooms with multiple "unused" meters. Both rooms are being used as storage, blocking access to the disconnects and meters with is a violation of the NEC.



Typical load center panelboard on left that is not lockable and in an accessible location.



A load center with the locking mechanism on door removed and replaced with a plastic "tab".

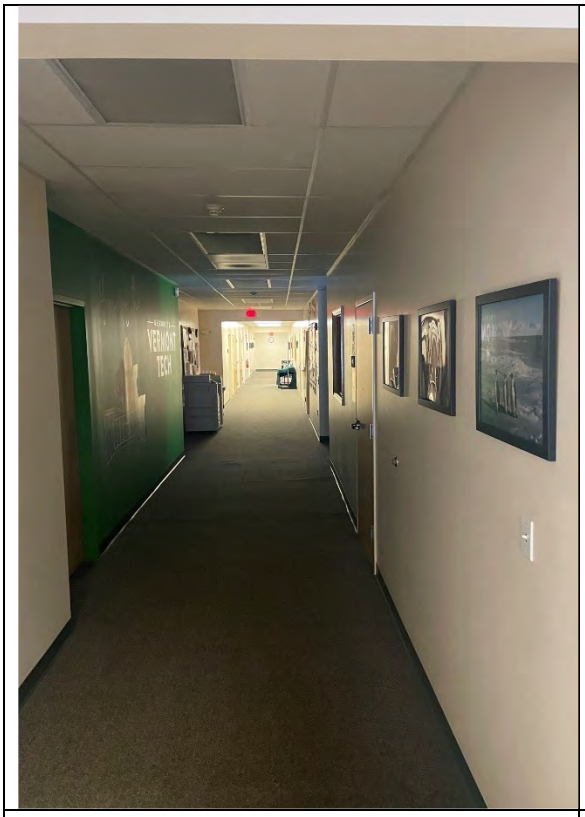
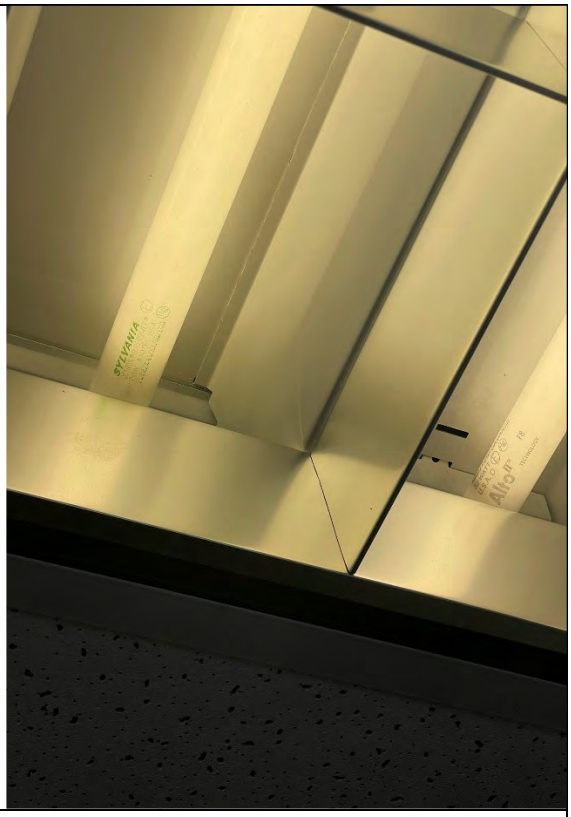


Crowded electric room with boxes and metal frame in front of panelboard.

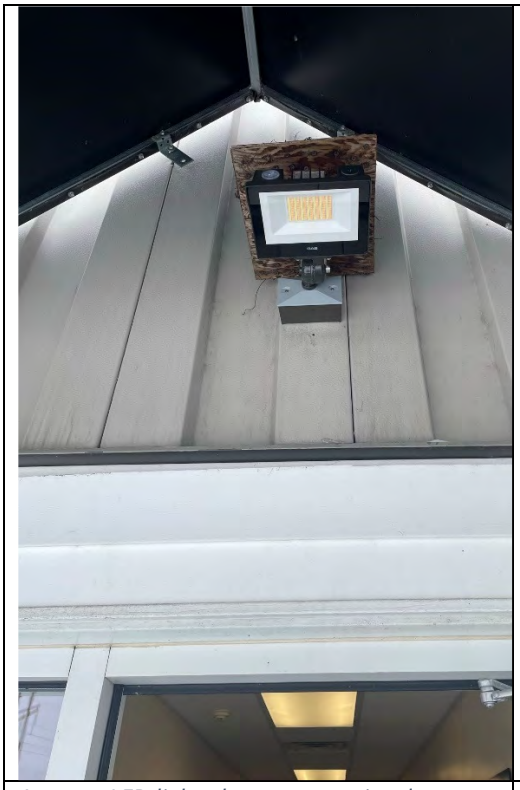
Circuiting is mostly in either conduit, MC cable or surface raceway and in decent condition.

The building lighting is essentially 32 watt T8 fluorescent tube lighting.

Essentially all egress (i.e., corridors, etc.) lighting is controllable via accessible switches in the egress paths. This also included the larger restrooms and rooms such as the library which is an egress path to the outdoors. Lighting in corridors is mostly T8 32 watt fluorescent tube type troffer fixtures. Many lamps were not operational and most likely have failed. In others, it appears different color temperature lamps (i.e., 3500K and 4100K) are being used within the same room.

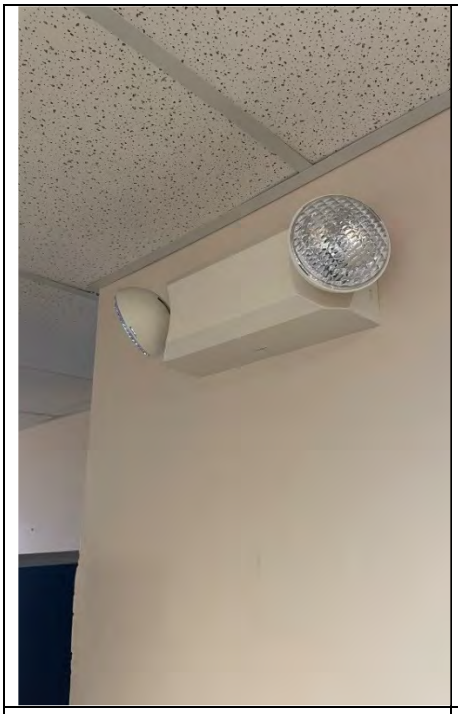
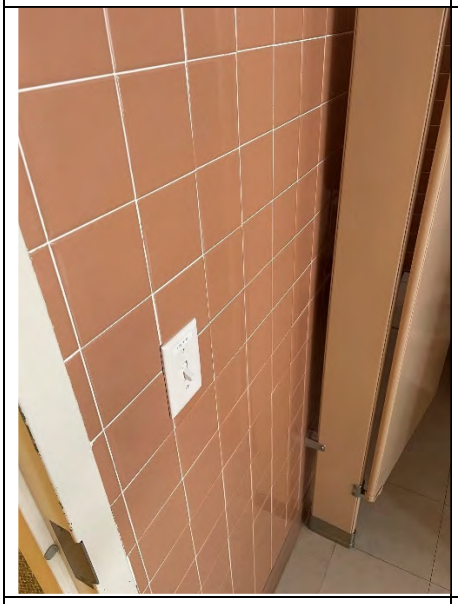
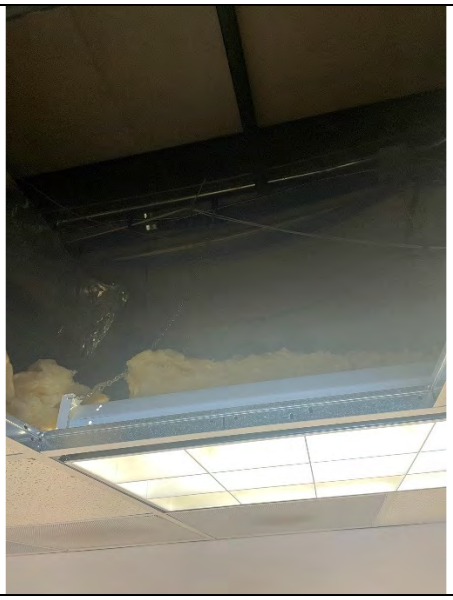
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<td>A corridor controlled by a wall switch. With the switch turned off, the corridor gets very dark.</td>
<td>Typical light fixture lamps. Note the one on the left is 28 watts and on the right 32 watts. In many other locations different color temperature lamps are used.</td>
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The exterior lighting is via mostly newer LED wall packs. The originally installed “jelly jar” lighting is understood to no longer be operational. There are recessed can fixtures in the canopy similar to Building’s 100 and 200. They are in the same condition.

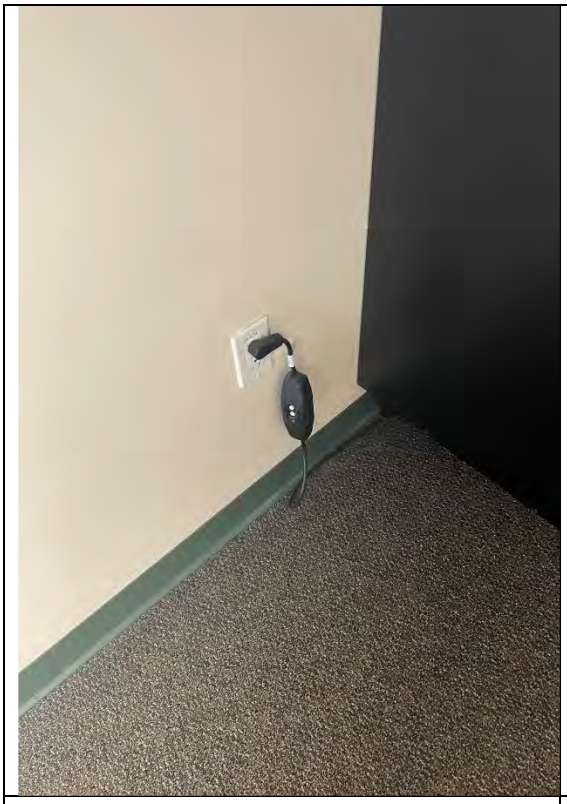
	
A newer LED light above an exterior door.	*Along the back side of the building, there are some LED wall packs. There are also a number of "jelly jar" fixtures adjacent to doors that are no longer in operation.*

The egress path has emergency lights and exit signs, however other than in the machine shop none of them worked when tested. They appear to be well over 10 years old; batteries for emergency lighting usually have a life cycle of less than 10 years. There also did not appear to be enough emergency lights (if they worked) to provide the required lighting during a power outage. There is no exterior emergency lighting at exit doors.

Other than a few select rooms with wall switch occupancy sensors, there are essentially no light control occupancy sensors and there were no indoor daylighting sensors in the building. At least one room with two light fixtures did not have either dimming or multiple switching controls: one standard on/off switch only.

	
Typical emergency light that no longer operates.	*In addition to corridors, large rooms such as the library that are also egress paths are also provided with light switches. Someone could turn the lights off while someone is still in here. There are also no exit signs and the emergency lighting does not work.*
	
Typical large restroom with light switch controlling lights. There is also no emergency lighting in these rooms.	*The troffer fixtures in the ceiling do not appear to be I/C rated and therefore insulation should not be on top of the fixtures as this could be a fire hazard.*

Most areas appear to have sufficient indoor receptacles At the exterior HVAC equipment at the far southeast corner, there is no maintenance receptacle. For the exterior HVAC equipment on the west side, there did not appear to be a maintenance receptacle within 25'. The vending machines are utilizing GFCI cords.



Typical GFCI cord for vending machine provided the required protection.



Outdoor location where HVAC equipment does not have a maintenance receptacle as required by NEC.

In Lab 405 there are gas hookups at the desks. There is a manual gas shutoff valve however no automatic ("EPO") buttons to shut power off. In the machine shop, there are EPO buttons in several locations that, when pushed, will shut off power to the machinery in the shop by tripping the main breaker in Panel MS-1. One item of concern however is the shunt trip power is fed from a separate panelboard (P-7). Therefore if the circuit in Panel P-7 that powers the shunt trop were to lose power, there would be no power to trip the breaker if someone pushed one of the EPO buttons in an emergency.

	
Another location where it is not clear if, in the outlet box to the right of the sink, the GFCI receptacle to the left side of the box is protecting the receptacle to the right side since there is no label.	*Lab 405 with manual means to shut off gas however there is no emergency method (such as an emergency off button (EPO) button) to shut off both gas or electricity in the room. Although not required, it could be a safety issue.*
	
The machine shop is provided with EPO buttons in several locations within the room to shut power off to the equipment in an emergency.	*The machine room panelboard MS-1 with the shunt trip. Note that it indicates the shunt trip power comes from Panel P-7. If P-7 were to lose power while Panel MS-1 power remained, there would be no way to trip the breaker if the EPOs were pushed.*

The Fire Lite MS-5210UD Fire alarm system appears to be in good condition with no violations. It is a zoned type of system. Horn/strobe and strobe alarm lights are used throughout within classrooms, corridors and bathrooms. It appears all rooms and corridors are provided with smoke detectors, although restrooms appear to be utilizing heat detectors instead of smoke detectors.



Fire alarm panel with no violations. Also shown is auto dialer to send alarm to remote location, and the power supply for horns and strobes.



Ceiling mounted fire alarm strobe light in bathroom. Most devices appear to be relatively new.

Building 700

General

Building #700 is a three-floor facility which includes classroom space, offices, several small bathrooms, storage rooms and meeting/conference rooms and a fitness area with shower rooms on the first floor. The upper floors are a dormitory with laundry rooms on each floor, a student lounge with a kitchen that includes dual electric ranges, refrigerators, kitchen sinks etc., large multi-occupant restrooms with showers and student dorm rooms. There is also a partial basement mechanical room which is accessed from an exterior bulkhead stairwell.

Electrical

Building 700 is a three floor building made up essentially of classrooms and offices with several small bathrooms, closets and meeting rooms on the bottom floor and dorm

rooms, laundry and large restrooms on the second and third floors. There is also a basement for mechanical equipment.

The service to the building is via an outdoor 1000 amp, 120/208 volt, three phase panelboard labelled MDP. This panelboard feeds all the smaller panelboards within the building as well as the chiller. It appears this panelboard replaced a meter rack that was used when the building had multiple tenants and meters. The manufacture date of the panelboard is 5/27/2011 so it has been in service for approximately ten years. It does show some signs of rust.



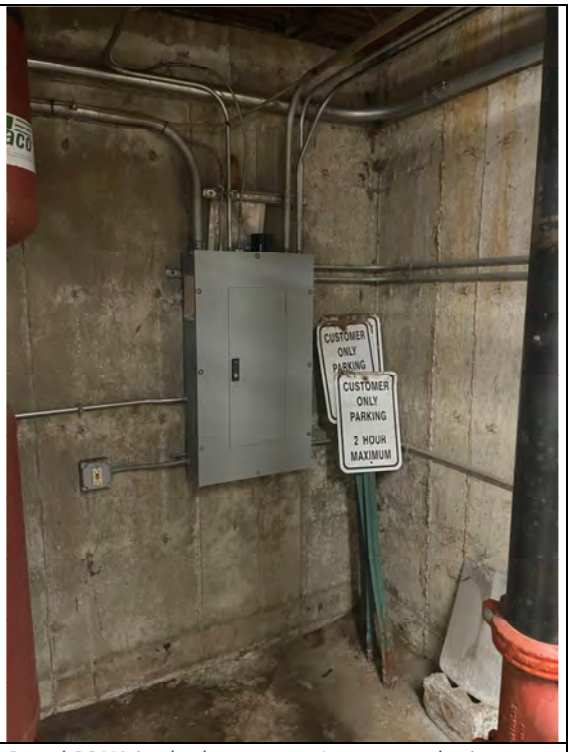
Main service entrance panelboard MDP for Building 700.



Inside Panel MDP. There is some rust at the bottom.

There are seven panelboards within the building; two per floor; PP1A, PP1B, PP2A, PP2B each fed via a 200 amp breaker; PP3A, PP3B both of which are tied to a single 225 amp breaker, and one additional 225 amp breaker serving a panelboard in the second floor mechanical room labelled PPM. There is also a panelboard PPHS in the basement that according to its panel schedule feeds several pumps and receptacles in the basement. It appears this is fed from Panel PP1B.

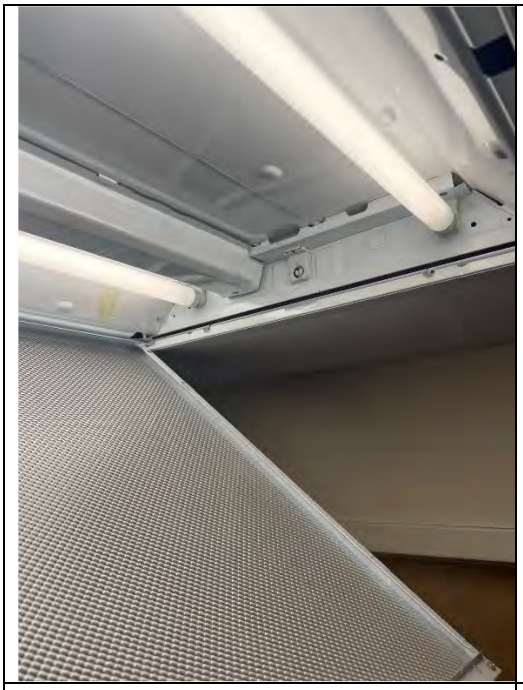
All of the above panelboards are in good condition. Based on their manufactured date they were installed around 1995, so it appears based on that they may be original to the building.

	
Typical indoor panelboards. Each floor arranged similarly although the second floor does have an additional panelboard in the mechanical room.	*Panel PPHS in the basement. Appears to be in decent condition considering the dampness of this space.*

Circuiting is mostly in either conduit, MC cable or surface raceway and in decent condition.

The building lighting is essentially 32 watt T8 fluorescent tube lighting.

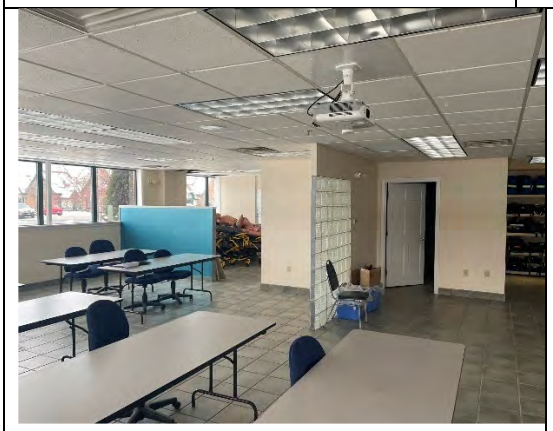
It appears the corridor and stairwell lighting is unswitched and remains on 24/7. This also included the larger restrooms. Lighting throughout is mostly T8 32 watt fluorescent tube type troffer fixtures. In the “salon” parabolic lens fixtures are used. On the upper levels recessed 2x2 indirect architectural light fixtures are used. Many lamps were not operational and most likely have failed. Some fixtures had lamps purposedly removed to reduce energy consumption.



To reduce power use, the middle lamp of a number of fluorescent fixtures were removed. Although acceptable, it does impact how the light is distributed within the room.



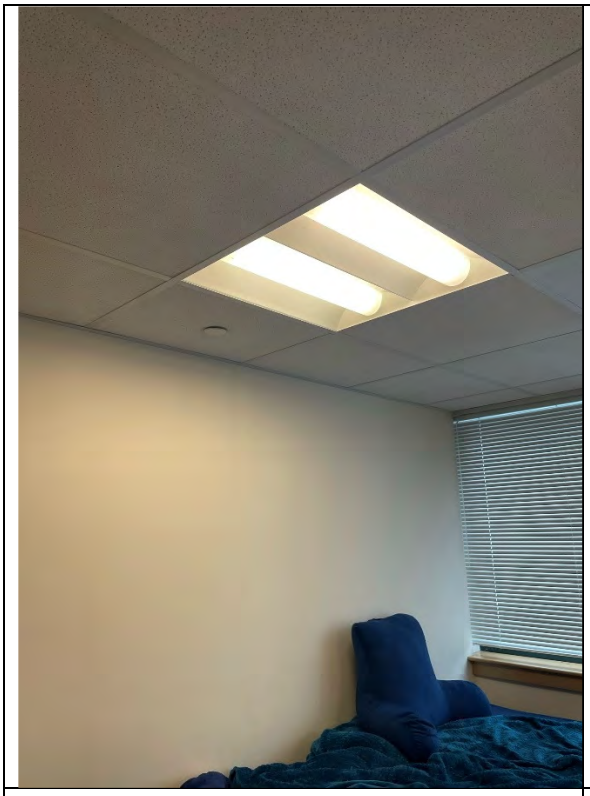
A number of light fixtures have missing lamps.



Parabolic lighting in the "salon". It does not appear that the lighting layout is based on any design but rather previous or proposed walls.

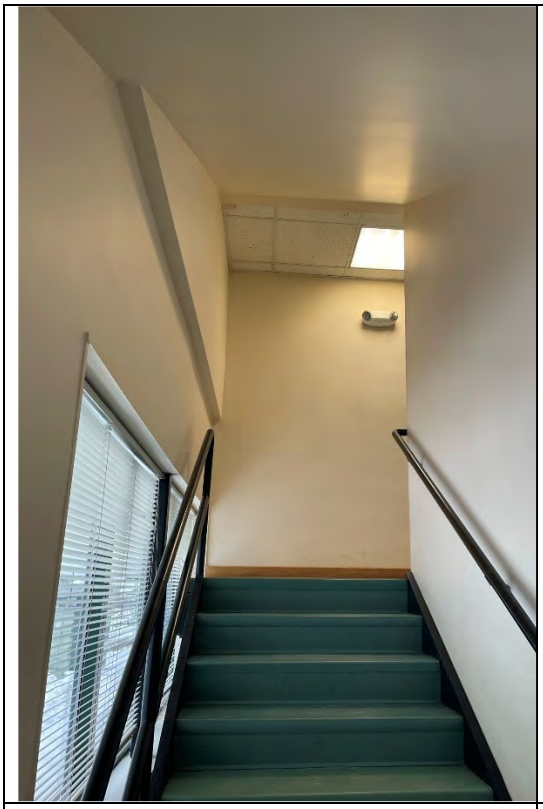


The fitness room where many lamps are out.

	
Typical lighting in dorm rooms. Also used in corridors. In corridors, some are provided with integral emergency lighting backup power ballasts.	*Although most locations are simple on/off lighting control, the laundry room does use a wall mounted occupancy sensor switch.*

The exterior lighting mounted on the building at the back entrance is two LED floor lights on either side of the door. A similar arrangement is on the front (Route 2A) entrance however the lights are wall packs instead of flood lights. It is understood all the lighting operates correctly and is controlled via photo eyes.

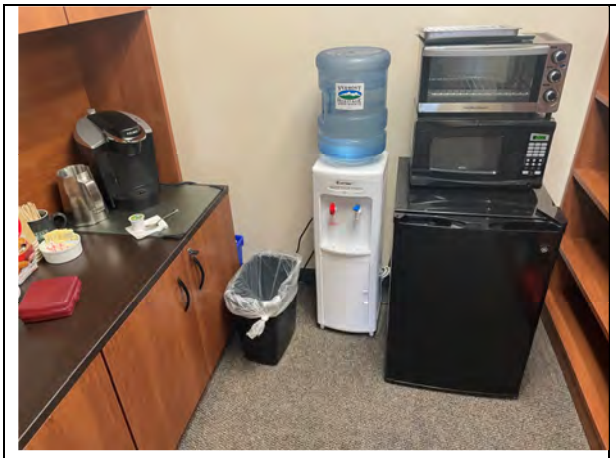
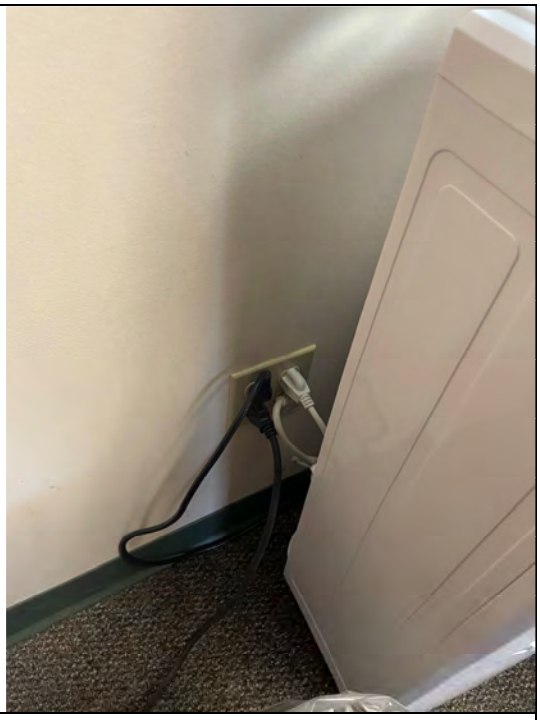
The main first floor corridor and stairwells have wall mount emergency lights and exit signs. There did not appear to be any emergency lighting in the basement. There also did not appear to be emergency lighting is some of the larger rooms on the first level, or portions of some corridors. The salon had some emergency lighting as well as the lounges. It appears however these emergency lights are old because they did not operate when tested. The emergency lighting on the second and third level is via emergency backup power ballasts within some ceiling mounted 2x2 lighting (similar to Building 300). It appears they test correctly however at least one test caused much of the corridor lighting on the floor to turn off.

	
Typical stairwell emergency light at landing. Similar lights used for first floor emergency lighting and in lounges. None tested correctly.	*Recessed can lights with CFL lamps in lounges. Emergency light in the background did not test correctly.*

There is no exterior emergency lighting at exit doors.

There are essentially no light control occupancy sensors and there were no indoor daylighting sensors in the building. At least one room with two light fixtures did not have either dimming or multiple switching controls: one standard on/off switch only.

Most areas appear to have sufficient indoor receptacles, although at one of the kitchenette locations it appears two microwaves and a coffer maker are on the same circuit. At the exterior HVAC equipment there is a maintenance receptacle as required by NEC. The basement has GFCI receptacles and from what could be determined where 120 volt, 20 amp receptacles are required to be GFCI type, they were. There is no receptacle at the main electric service entrance panelboard, and though having one would be beneficial because it is located outdoors it is not required.

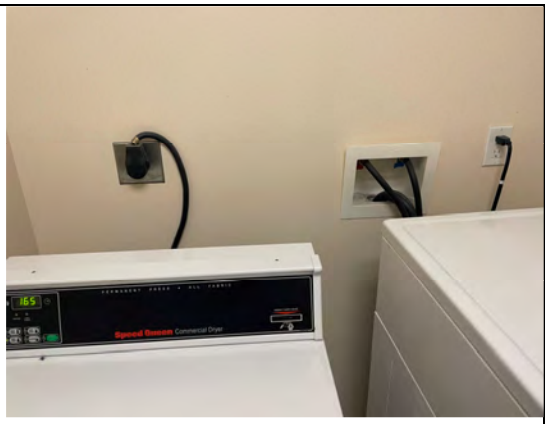
	
Water cooler, coffee maker, two microwaves and refrigerator all share a single circuit.	*Single receptacle that all the devices in photo to left are plugged into.*

The NEC has revised its requirements for GFCI protection to include larger voltage and amperage receptacles. For this building, that would include all the 250 volt oven and dryer receptacle circuits. None of these have GFCI protection. Any laundry room requires the receptacles for washers as well to be provided with GFCI protection.

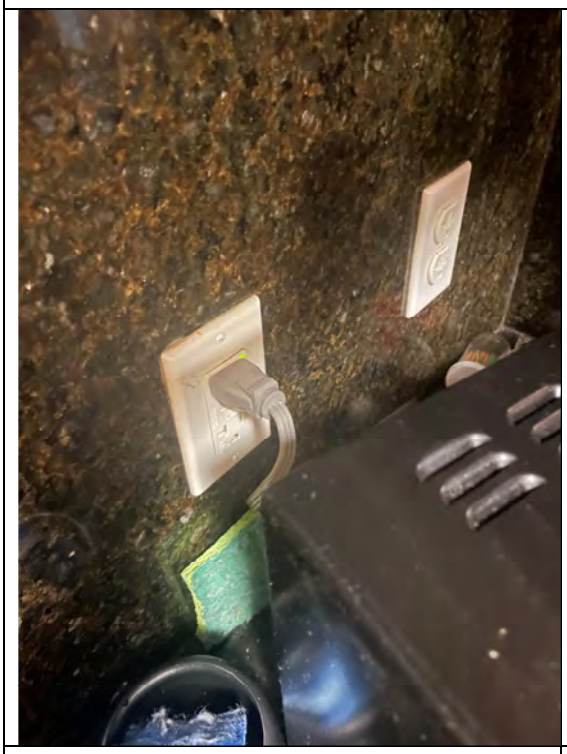
For the lounge kitchens, because they have a sink and stove, they should be treated like a dwelling or non-dwelling kitchen. It is expected the kitchen will be considered non-dwelling which means essentially all receptacles, including the stoves, need to be GFCI protected. Even if considered a dwelling kitchen, all the receptacles within 6' of the sink, all countertop receptacles and any of the stoves if within 6'.



Any receptacles within 6' of a sink must be GFCI type. This goes for 250 volt stove receptacles also. Since this is a "non-dwelling" kitchen all receptacles must be GFCI.



The laundry room has GFCI 120 volt receptacle however the 250 volt receptacle for the dryer is not GFCI protected.



In the lounge kitchen, one GFCI receptacle and one standard receptacle. Similar to other areas, if the standard receptacle is protected by the GFCI receptacle it must have a label.



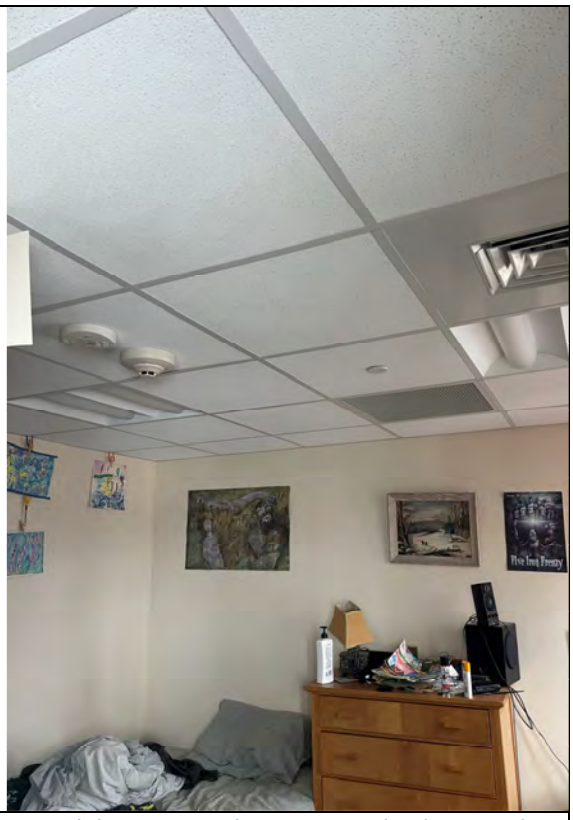
Countertop receptacles that are not GFCI protected.

It appears arc-fault (AFCI) circuit breakers are being used for 120 volt circuits within the dorm rooms as required by NEC. These include the receptacle and lighting circuits. The NEC also has requirements for the number of receptacles that must be provided

within a dorm room, based similarly to how receptacle counts are performed for a dwelling. Based on the few rooms visited, it appears there are enough receptacles. All the receptacles and other wiring devices such as light switches appear to be in good condition, even in the basement.



Panelboard on second floor that has arc fault circuit interrupting (AFCI) breakers (yellow handle) for dorm room receptacles and lighting.



Typical dorm room. There appeared to be enough receptacles as required by NEC.

The “RD”’s room is considered a dwelling because it has a sink and stove. The rules for GFCI and AFCI protection, as well as for the number of receptacles required, are a bit stricter however it appears the issues with this room are similar to what has been discussed previously.

It was notices that the projector in the “salon” has the cord run above this ceiling. This is an NEC violation. Another potential issue is the use of GFCI receptacles for equipment that makes the receptacle “not readily accessible”. An example of this would be a receptacle behind a refrigerator. Typically for these locations a GFCI breaker would be used, or the receptacle is located such that it can be reset without moving the refrigerator.

	
The cord for the project goes up into the ceiling and then back down again near the ceiling receptacle. Cords cannot be run in ceilings per NEC.	*Closer look at cord running to projector.*

Building 700 is the only building visited that includes an elevator. It appears to have been installed when the building was constructed (1995) based on the labelling. There are several NEC rules that may or may not have been in place after this elevator was installed. One is the lighting and receptacle power cannot be on the same circuit. Based on what was seen, it appears both are on the same circuit since the power runs through the same conduit. The other is both the receptacles in this room and the lighting in this room must be on dedicated circuits. Once again, it does not appear this is the case. The elevator cab lighting also appears to be on the same circuit and does not have a lockable switch.



Main elevator disconnect switch. Label indicates installation in 1995.



The light switch and receptacle are in the same conduit, which would most likely mean they are both on the same circuit.

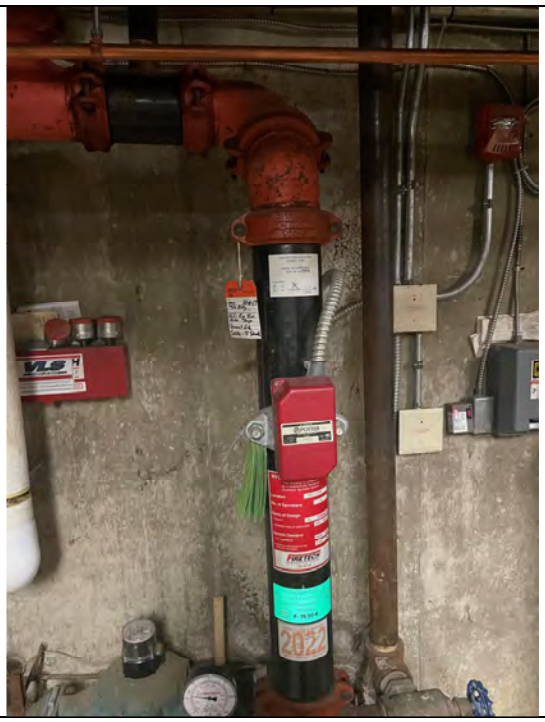


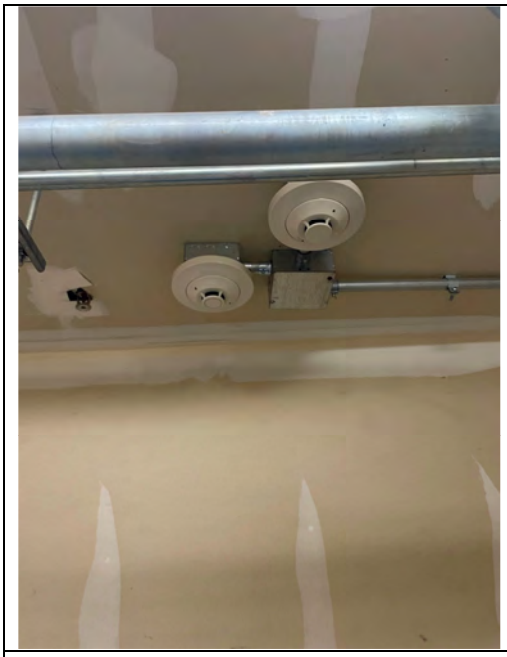
The elevator cab lights also appear to be on the same circuit as the receptacle. It also is not provided with lockable switch. To the left are the fire alarm addressable module ties to the elevator.



Although the elevator installation would not pass the latest elevator and NEC codes, it may be inspected based on an older version.

The Fire Lite MS-9600UDLS Fire alarm system appears to be in good condition with no violations. Unlike the fire alarm systems in the other buildings, this is an addressable fire alarm panel. Also unlike the other buildings Building 700 is sprinklered throughout. Horn/strobe and strobe alarm lights are used throughout within classrooms, corridors, lounges and bathrooms. It appears all the dorm rooms are provided with smoke detectors with sounder based and carbon monoxide detectors. It is not known if the smoke detectors are “low frequency” type as required for dorm rooms and dwellings. The addressable modules for sprinkler or elevator appear to be labelled.

	
Addressable fire alarm panel with no violations	*Fire suppression sprinkler system flow switch tied to fire alarm system via addressable module (white square devices) to the right. The other module ties to an alarm in upper right. Did not see a tamper switch or tamper switch alarm.*

	
It appears the elevator is provided with required smoke detection however the room is sprinklered.	*Smoke detector with sounder base and carbon monoxide detector in dorm rooms. There are also smoke and carbon monoxide detectors in the corridors.*

Infrastructure Recommendations:

Life Safety and Code Compliance:

Electrical:

The buildings are between thirty and forty years old and when installed may have been designed per relevant codes. Many items noted for each building below may only be code compliance issues since the building was built. However many changes to the electrical codes are due to safety concerns that have become apparent over time. One major change over the past 15 years or so is the use of arc-flash studies to determine the available fault energy at a specific panelboard, transformer, disconnect switch, control cabinet or similar device to develop a procedure for working safely around equipment. The requirement for arc-flash studies has been around for a while, however it appears none of the buildings visited have had one performed.

Colleges and Universities are considered a business occupancy, not an educational occupancy, unless there is a classroom that can accommodate over 50 students in which case that space will be considered an assembly space. It is understood there are no spaces or rooms where the number of occupants would exceed 50. With that in mind, based on LN Consulting's interpretation, since the buildings are single levels with less than 1000 people, from a technical standpoint a fire alarm system or emergency lighting is not required. However since all the buildings do have a fire alarm system and emergency lighting, it will be assumed an assessment was done that required these systems (i.e., NFPA 1 risk assessment, insurance, etc.) and they must be installed correctly.

College dormitories will be considered dorm rooms or dwellings based on the National Electrical code and NFPA 101. Because the classroom and office buildings (100, 200, 300, 400) were built as business occupancies prior to VTC taking over the spaces, they will be treated as existing business occupancies. Building 700 was originally a business occupancy and now is a combination of business and residential (IBC R-2) occupancies. The recommended code compliance improvements will be based on LN Consulting's interpretation of each of these occupancies' requirements.

Although there is no literal code requirement that panelboards have lockable covers, the fact that panelboards or load centers are in areas accessible to the public can be considered a safety issue. Non-authorized personnel could open breakers to lighting circuits for instance. Not to mention the chance of electrocution if any circuit breaker is tampered with. Therefore, LN Consulting considers the unlockable covers for panelboards to be a life safety issue.

The lighting within all the buildings does not meet the latest energy code requirements per the Vermont Commercial Building Energy Code. However this will be addressed as part of the Energy Efficiency measures.

It is understood the elevator is inspected based on an older standard and therefore any changes based on the latest codes will not be included in this section but rather System Upgraded and Deferred Maintenance section.

It should be noted that the local authority having jurisdiction will ultimately be responsible for determining what conditions would need to be upgraded, and these may include more or less than the recommendations below. Similarly, there are OSHA regulations regarding safety that may need to be implemented that may not be listed below since many of these vary depending on the local authority having jurisdiction's interpretation of "safety".

Building 100

1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.
2. Fire alarm system is relatively new however spacing of horn/strobes in some corridors appears inadequate. Provide additional horns and/or strobes in rooms such as electrical, mechanical, multiple person offices and meeting rooms.
3. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide additional emergency lighting in large rooms, such as Labs 123 and 130, that are egress paths to exits. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.
4. Provide carbon monoxide detection near gas-fired mechanical equipment.
5. Perform arc-flash study.
6. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.

Building 200

1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.
3. Provide exterior maintenance receptacle within 25 feet of outdoor HVAC equipment. Replace cover of existing receptacle with "while in use" cover.
4. Provide "GFCI Protected" labels on any standard receptacles protected via an upstream GFCI receptacle.
5. Provide carbon monoxide detection near gas-fired mechanical equipment.
6. Perform arc-flash study.
7. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.

Building 300

1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.
2. Fire alarm system is relatively new however spacing of horn/strobes in some corridors appears inadequate. Provide additional horns and/or strobes in rooms such as electrical, mechanical, multiple person offices and meeting rooms.

3. It appears the emergency lighting is working however every emergency light should be tested to confirm. Replace any that do not operate when tested.
4. Provide exterior maintenance receptacle within 25 feet of outdoor AAON units.
5. Replace receptacles within 6 feet of sinks, in locations such as training room however also throughout, with GFCI type.
6. Provide carbon monoxide detection near gas-fired mechanical equipment.
7. Perform arc-flash study.

Building 400

1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.
3. Provide exterior maintenance receptacles within 25 feet of outdoor HVAC equipment.
4. Provide “GFCI Protected” labels on any standard receptacles protected via an upstream GFCI receptacle.
5. Provide carbon monoxide detection near gas-fired mechanical equipment.
6. Perform arc-flash study.
7. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.

Building 700

1. Fire alarm system is relatively new and appears to provide coverage for all areas. Verify smoke detectors in dorm rooms are “low frequency” type.
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in the basement, the mechanical room with Panel PPM, and each electric room.
3. Perform arc-flash study.
4. Reroute cord for projector in Salon outside of ceiling space. Possible locate receptacle closer to projector.
5. If any renovation work is done, provide a two-way communication system at the second and third level elevator lobbies (“Area of Rescue” system).

System Upgrades or Deferred Maintenance:

Electrical:

In essentially every building, lighting is fluorescent type. In Building 300 the condition of the light fixtures is good, however elsewhere most of the fixtures are in either poor condition or have lamps removed or failed. As part of system upgrades or deferred maintenance, lighting should be included. However, all recommended lighting changes not associated with emergency egress lighting, which is included under the Life Safety portion of this report, or where the issue is strictly a maintenance issue, is included under the Energy Efficiency Measures portion of the Electrical Systems report. If a

building has significant issues with light fixtures not working, or lamps being out, it will be added under this deferred maintenance.

No comments are included regarding site lighting. It appears all site lighting has been converted to LED.

In addition, Buildings 100, 200 and 400 have electrical infrastructures that are nearly 40 years old. These should be prepared for replacement whether there are code violations or not.

Building 100

1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.
2. Replace failed or failing lamps. Lamps should all be the same color temperature.
3. Remove abandoned exterior lighting.
4. Investigate whether insurance wants more smoke detector coverage, particularly in rooms used for storage but also classrooms, bathrooms, etc.

Building 200

1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.
2. Replace failed or failing lamps. Lamps should all be the same color temperature.
3. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc. Also verify there are no issues with all the devices plugged into the receptacles in the data room.
4. Replace covers for outdoor receptacles with “while in use” type.

Building 300

1. Replace failed or failing lamps. Lamps should all be the same color temperature.
2. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc.

Building 400

1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.
2. Replace failed or failing lamps. Lamps should all be the same color temperature.
3. Remove abandoned exterior lighting.
4. Clean out the rooms with electrical equipment that are being used for storage (this could also be included in the life safety and code section since this is a violation). Make sure panelboards are not blocked.

5. Feed shunt trip for Panel M in machine room via a breaker within Panel M instead of the existing Panel P-7 circuit.

Building 700

1. Replace failed or failing lamps. Lamps should all be the same color temperature.
2. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc.
3. Look into cleaning up the exterior 1000 amp panelboard and possibly painting or rust-proofing the enclosure before more rust sets in.
4. Provide GFCI protection for dryer and stove circuits.
5. Upgrade elevator electrical as part of any elevator renovation work, or if required by local AHJ. Includes but may not be limited to dedicated circuits for receptacles and lighting as well as control for cab lighting.

Energy Efficiency Measures:

Electrical:

As mentioned under deferred maintenance, lighting upgrades will be included under energy efficiency measures. As part of any system upgrades, lighting should be added. However it is recommended that lighting calculations be performed to not only provide the most efficient lighting but also enough lighting. A simple fixture for fixture replacement may not be the best solution. In addition, providing occupancy and/or daylighting control sensing may involve updating lighting controls, including the use of low voltage digital devices versus line voltage.

Per C406.11 of the Vermont Commercial Building Energy Standards (VCBES), at least 50% of all 20 amp, 120 volt receptacles in offices, meeting rooms, break rooms, printer rooms, classrooms and workstations are required to be provided with controls that would operate based on occupancy. Nowhere on the campus did it appear this was provided for since it is a relatively new requirement. There is the potential for energy savings, although the use of these receptacles may require changes in operations. These receptacles could be tied to a lighting control system occupancy sensor for a room and can be controlled either via wired connections or wirelessly. The use of “split” duplex receptacles, where one plug is controlled wirelessly and the other is not controlled, is a popular option as it reduces the renovation of existing circuiting.

Any discussion regarding the use of variable speed drives for motors or HVAC equipment will be part of the mechanical systems investigation and not included here.

Also in the VCBES there are sections of requirements and recommendations for electric vehicle chargers and alternative energy sources. These are not part of this report and are just being made note of.

Building 100

1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.

2. Provide occupancy sensors and astrological clock control for all exterior lighting.
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.
4. Provide daylighting sensor control only where required by code.
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.

Building 200

1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.
2. Provide occupancy sensors and astrological clock control for all exterior lighting.
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.
4. Provide daylighting sensor control only where required by code.
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.

Building 300

1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.
2. Provide occupancy sensors and astrological clock control for all exterior lighting.
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.
4. Provide daylighting sensor control only where required by code.
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.

Building 400

1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.
2. Provide occupancy sensors and astrological clock control for all exterior lighting.
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.
4. Provide daylighting sensor control only where required by code.
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.

Building 700

1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.
2. Investigate whether occupancy sensors in dorm rooms should be implemented to save energy.
3. Provide occupancy sensors and astrological clock control for all exterior lighting.
4. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.
5. Provide daylighting sensor control only where required by code.
6. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.

PROBABLE COST OPINION

DESCRIPTION	PCC	PSC	PPC
VTC Williston Campus Electrical Infrastructure Items Recommendation Costs			
Acronym Key			
PCC - PROBABLE CONSTRUCTION COST			
PSC - PROBABLE SOFT COSTS			
PPC - PROBABLE PROJECT COST			
Life Safety and Code Compliance:			
Building 100			
1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.	$2,500	$0	$2,500
2. Fire alarm system is relatively new however spacing of horn/strobes in some corridors appears inadequate. Provide additional horns and/or strobes in rooms such as electrical, mechanical, multiple person offices and meeting rooms.	$15,000	$2,000	$17,000
3. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide additional emergency lighting in large rooms, such as Labs 123 and 130, that are egress paths to exits. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.	$15,000	$1,000	$16,000
4. Provide carbon monoxide detection near gas-fired mechanical equipment.	$1,000	$0	$1,000
5. Perform arc-flash study.	$0	$5,000	$5,000
6. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.	$5,000	$500	$5,500
Building 200			
1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.	$2,500	$0	$2,500
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.	$25,000	$1,000	$26,000
3. Provide exterior maintenance receptacle within 25 feet of outdoor HVAC equipment. Replace cover of existing receptacle with “while in use” cover.	$2,000	$0	$2,000
4. Provide “GFCI Protected” labels on any standard receptacles protected via an upstream GFCI receptacle.	$1,000	$0	$1,000
5. Provide carbon monoxide detection near gas-fired mechanical equipment.	$1,500	$0	$1,500
6. Perform arc-flash study.	$0	$5,000	$5,000
7. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.	$5,000	$0	$5,000
Building 300			
1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.	$2,500	$0	$2,500
2. Fire alarm system is relatively new however spacing of horn/strobes in some corridors appears inadequate. Provide additional horns and/or strobes in rooms such as electrical, mechanical, multiple person offices and meeting rooms.	$15,000	$2,000	$17,000
3. It appears the emergency lighting is working however every emergency light should be tested to confirm. Replace any that do not operate when tested.	$5,000	$2,000	$7,000
4. Provide exterior maintenance receptacle within 25 feet of outdoor AAON units.	$2,000	$0	$2,000
5. Replace receptacles within 6 feet of sinks, in locations such as training room however also throughout, with GFCI type.	$4,000	$500	$4,500
6. Provide carbon monoxide detection near gas-fired mechanical equipment.	$1,500	$0	$1,500
7. Perform arc-flash study.	$0	$5,000	$5,000
Building 400			
1. Switching of lighting in corridors should be replaced with keyed switches per NFPA 101 7.8.1.2.	$0	$5,000	$5,000
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in all electric rooms.	$25,000	$2,500	$27,500
3. Provide exterior maintenance receptacles within 25 feet of outdoor HVAC equipment.	$2,000	$0	$2,000
4. Provide “GFCI Protected” labels on any standard receptacles protected via an upstream GFCI receptacle.	$1,000	$0	$1,000
5. Provide carbon monoxide detection near gas-fired mechanical equipment.	$1,500	$0	$1,500
6. Perform arc-flash study.	$0	$5,000	$5,000
7. Provide lockable covers for panelboards or load centers accessible to non-authorized personnel.	$5,000	$0	$5,000
Building 700			
1. Fire alarm system is relatively new and appears to provide coverage for all areas. Verify smoke detectors in dorm rooms are “low frequency” type.	$0	$1,000	$1,000
2. Does not appear to have adequate or working emergency lighting. Replace all emergency lighting and exit signs with new. Provide emergency lighting at all exterior exits from building. Provide emergency lighting in the basement, the mechanical room with Panel PPM, and each electric room.	$30,000	$3,000	$33,000

3. Perform arc-flash study.		$0		$6,000		$6,000
4. Reroute cord for projector in Salon outside of ceiling space. Possible locate receptacle closer to projector.		$500		$0		$500
5. If any renovation work is done, provide a two-way communication system at the second and third level elevator lobbies (“Area of Rescue” system).		$6,000		$1,000		$7,000
System Upgrades or Deferred Maintenance:						
Building 100						
1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.		$65,000		$6,500		$71,500
2. Replace failed or failing lamps. Lamps should all be the same color temperature.		$3,000		$500		$3,500
3. Remove abandoned exterior lighting.		$10,000		$0		$10,000
4. Investigate whether insurance wants more smoke detector coverage, particularly in rooms used for storage but also classrooms, bathrooms, etc.		$7,500		$1,000		$8,500
Building 200						
1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.		$100,000		$10,000		$110,000
2. Replace failed or failing lamps. Lamps should all be the same color temperature.		$5,000		$500		$5,500
3. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc. Also verify there are no issues with all the devices plugged into the receptacles in the data room.		$5,000		$2,000		$7,000
4. Replace covers for outdoor receptacles with “while in use” type.		$1,000		$0		$1,000
Building 300						
1. Replace failed or failing lamps. Lamps should all be the same color temperature.		$3,000		$500		$3,500
2. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc.		$5,000		$2,000		$7,000
3. Emergency lighting is getting to end of life. Replace all batteries in fixtures with integral battery backup or provide wall mounted emergency lights.		$25,000		$1,000		$26,000
Building 400						
1. Start developing a plan for replacing the existing electrical distribution infrastructure with new. This includes providing a new service entrance, removal of all the unused metering, and replacement and consolidation of load centers and panelboards.		$65,000		$6,500		$71,500
2. Replace failed or failing lamps. Lamps should all be the same color temperature.		$5,000		$500		$5,500
3. Remove abandoned exterior lighting.		$10,000		$0		$10,000
4. Clean out the rooms with electrical equipment that are being used for storage (this could also be included in the life safety and code section since this is a violation). Make sure panelboards are not blocked.		$10,000		$1,500		$11,500
5. Feed shunt trip for Panel M in machine room via a breaker within Panel M instead of the existing Panel P-7 circuit.		$3,000		$1,000		$4,000
Building 700						
1. Replace failed or failing lamps. Lamps should all be the same color temperature.		$5,000		$500		$5,500
2. Provide additional circuits for spaces where multiple equipment is connected. In particular provide more receptacles with dedicated circuits for microwaves, coffee makers, etc.		$5,000		$1,000		$6,000
3. Look into cleaning up the exterior 1000 amp panelboard and possibly painting or rust-proofing the enclosure before more rust sets in.		$2,000		$500		$2,500
4. Provide GFCI protection for dryer and stove circuits.		$4,000		$1,000		$5,000
5. Upgrade elevator electrical as part of any elevator renovation work, or if required by local AHJ. Includes but may not be limited to dedicated circuits for receptacles and lighting as well as control for cab lighting.		$10,000		$1,500		$11,500
Energy Efficiency Measures:						
Building 100						
1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.		$20,000		$2,500		$22,500
2. Provide occupancy sensors and astrological clock control for all exterior lighting.		$3,000		$500		$3,500
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.		$45,000		$4,500		$49,500
4. Provide daylighting sensor control only where required by code (included with item 1 above).		$0		$0		$0
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.		$10,000		$1,500		$11,500

Building 200						
1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.		$35,000		$3,500		$38,500
2. Provide occupancy sensors and astrological clock control for all exterior lighting.		$3,000		$500		$3,500
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.		$75,000		$7,500		$82,500
4. Provide daylighting sensor control only where required by code (included with item 1 above).		$0		$0		$0
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.		$10,000		$1,500		$11,500
Building 300						
1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.		$20,000		$2,500		$22,500
2. Provide occupancy sensors and astrological clock control for all exterior lighting.		$3,000		$500		$3,500
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.		$45,000		$4,500		$49,500
4. Provide daylighting sensor control only where required by code (included with item 1 above).		$0		$0		$0
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.		$10,000		$1,500		$11,500
Building 400						
1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.		$35,000		$3,500		$38,500
2. Provide occupancy sensors and astrological clock control for all exterior lighting.		$3,000		$500		$3,500
3. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.		$75,000		$7,500		$82,500
4. Provide daylighting sensor control only where required by code (included with item 1 above) .		$0		$0		$0
5. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.		$10,000		$1,500		$11,500
Building 700						
1. Provide occupancy sensors in all corridors, restrooms, meeting rooms, classrooms, storage, mechanical and electrical rooms and other similar rooms.		$20,000		$2,500		$22,500
2. Investigate whether occupancy sensors in dorm rooms should be implemented to save energy.		$10,000		$1,500		$11,500
3. Provide occupancy sensors and astrological clock control for all exterior lighting.		$3,000		$500		$3,500
4. Replace all lighting with LED type. Recommend lighting photometric analysis be performed to verify light levels and efficacy (watts/sf) meet energy code.		$85,000		$8,500		$93,500
5. Provide daylighting sensor control only where required by code (included with item 1 above).		$0		$0		$0
6. Provide occupancy sensor control for 50% of receptacles in offices, meeting rooms, etc. as noted above.		$10,000		$1,500		$11,500

VTC Williston Campus Electrical Infrastructure Recommendations Cost Summary		PPC	
Acronym Key			
PCC - PROBABLE CONSTRUCTION COST			
PSC - PROBABLE SOFT COSTS			
PPC - PROBABLE PROJECT COST			
Life Safety and Code Compliance:			
Building 100			
Life Safety and Code Compliance Cost Summary		$47,000	
Building 200			
Life Safety and Code Compliance Cost Summary		$43,000	
Building 300			
Life Safety and Code Compliance Cost Summary		$39,500	
Building 400			
Life Safety and Code Compliance Cost Summary		$47,000	
Building 700			
Life Safety and Code Compliance Cost Summary		$47,500	
VTC Williston Campus Life Safety and Code Compliance Cost Summary		**$224,000**	
System Upgrades and Deferred Maintenance:			
Building 100			
Systems Upgrades and Deferred Maintenance Items Cost Summary		$93,500	
Building 200			
Systems Upgrades and Deferred Maintenance Items Cost Summary		$123,500	
Building 300			
Systems Upgrades and Deferred Maintenance Items Cost Summary		$36,500	
Building 400			
Systems Upgrades and Deferred Maintenance Items Cost Summary		$102,500	
Building 700			
Systems Upgrades and Deferred Maintenance Items Cost Summary		$30,500	
VTC Williston Campus Systems Upgrades and Deferred Maintenance Items Cost Summary		**$386,500**	

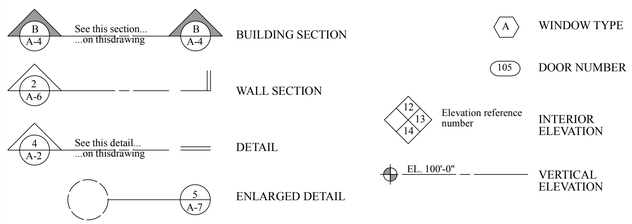
Energy Efficiency Measures:			
Building 100			
Energy Efficiency Measures Cost Summary		$87,000	
Building 200			
Energy Efficiency Measures Cost Summary		$136,000	
Building 300			
Energy Efficiency Measures Cost Summary		$87,000	
Building 400			
Energy Efficiency Measures Cost Summary		$136,000	
Building 700			
Energy Efficiency Measures Cost Summary		$142,500	
VTC Williston Campus Energy Efficiency Measures Items Cost Summary		**$588,500**	


VERMONT
TECH
WILLISTON CAMPUS

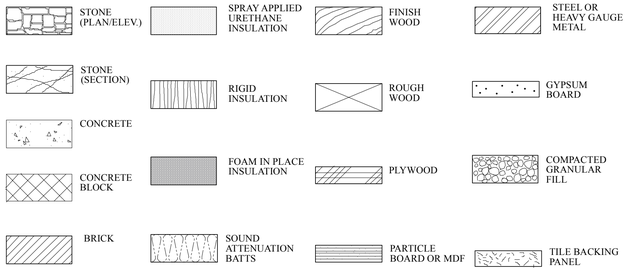


Attachment 2

DRAWING SYMBOLS



CONSTRUCTION MATERIALS



ABBREVIATIONS

ABI	additive bid item	FF	finish floor	PNT	paint(ed)
ACT	acoustic ceiling tile	FE	fire extinguisher	PR	pair
ADJ	adjustable	FLG	flashing	PL	plate
AFF	above finish floor	FD	floor drain	PT	pressure treated
ALUM	aluminum	FRT	fire retardant	PWD	plywood
ANC	anchor, anchorage	FTG	footing	REF	refrigerator
ARCH	architect(ural)	FND	foundation	R	riser
BSMT	basement	GA	gage, gauge	RM	room
BIT	bituminous	GALV	galvanized	RO	rough opening
BLKG	blocking	GC	general contract(or)	SAC	suspended acoustic ceiling
BD	board	GWB	gypsum wall board	SHTH	sheathing
BOT	bottom	GFE	Government furnished equipment	SIM	similar
BRK	brick	GFCI	Government furnished-contractor installed	SPEC	specification(s)
BLDG	building	HPDL	high pressure decorative laminate	SQ	square
BTWN	between	HWD	hardwood	SS	stainless steel
CB	catch basin	HVAC	heating, ventilating & air conditioning	STD	standard
CJ	control joint	HT	height	SD	storm drain
CLG	ceiling	HOR	horizontal	STRUC	structural
CT	ceramic tile	ID	inside diameter	SYS	system
CO	clean out	INSUL	insulation	TBP	tile backing panel
CL	closet	JAN	janitor	TDO	thermoset decorative overlay
CLR	clear(ance)	JT	joint	TEL	telephone
COL	column	LAV	lavatory	TG	tempered glass
CONC	concrete	MAX	maximum	THK	thick(ness)
CMU	concrete masonry unit	MECH	mechanical	TH	threshold
CONT	continuous or continue	MFR	manufacturer	T&G	tongue & groove
DP	dampproofing	MH	manhole	TOC	top of concrete
DEM	demolish, demolition	MO	masonry opening	TOM	top of masonry
DET	detail	MTL	metal	TOS	top of steel
DIA	diameter	MIN	minimum	TOW	top of wall
DWG	drawing	NIC	not in contract	T	tread
DF	drinking fountain	NTS	not to scale	TYP	typical
ELEC	electric(al)	OC	on center	UNO	unless noted otherwise
EL	elevation	OD	outside diameter	VERT	vertical
ELEV	elevator	OPNG	opening	VCT	vinyl composition tile
EQ	equal			VR	vapor retarder
EXG	existing			VT	vinyl tile
EXT	exterior			WG	wire glass
FG	fiberglass			W/O	with out
FIN	finish			WD	wood

CODE SUMMARY

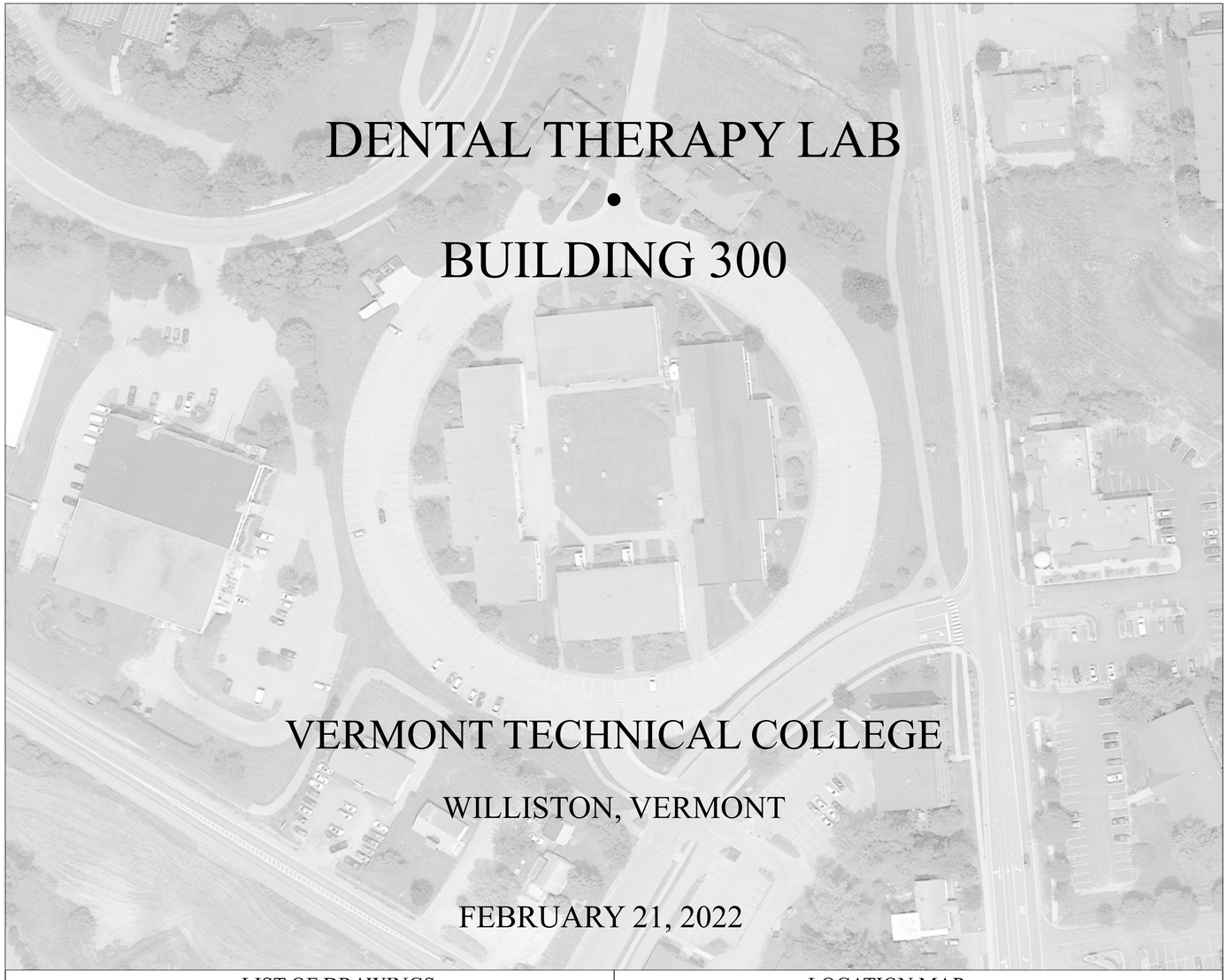
BUILDING CODE SUMMARY IS BASED ON 2015 VERMONT FIRE AND BUILDING SAFETY CODE INCLUDING THE FOLLOWING:

- 2015 NFPA 101, LIFE SAFETY CODE
- 2015 NFPA 1, FIRE CODE
- 2015 IBC, INTERNATIONAL BUILDING CODE

AREA TABULATION:

BUILDING 300:

- TOTAL AREA/BUILDING FOOTPRINT: 8,486 SF
- NUMBER OF STORIES: 1 STORIES
- BUILDING HEIGHT: +/- 18 FT
- USE GROUP CLASSIFICATION: B - BUSINESS
- CONSTRUCTION TYPE: 2B-UNPROTECTED, NON-COMBUSTIBLE
- FIRE PROTECTION SYSTEM: THE BUILDING IS NOT SPRINKLERED.



DENTAL THERAPY LAB
•
BUILDING 300

VERMONT TECHNICAL COLLEGE

WILLISTON, VERMONT

FEBRUARY 21, 2022

LIST OF DRAWINGS

ARCHITECTURAL DRAWINGS

A-1.0 OVERALL FLOOR PLAN AND WALL TYPES
A-1.1 DENTAL THERAPY LAB FLOOR PLAN, RCP & INTERIOR ELEVATIONS
A-1.2 ALTERNATE 1, 2 & 3 FLOOR PLANS, RCPS & INTERIOR ELEVATIONS
A-1.3 ALTERNATE 4, 5 & 6 FLOOR PLANS, RCPS, INTERIOR ELEVATIONS & DETAILS

MECHANICAL DRAWINGS

M-0.11 FIRST FLOOR MECHANICAL DEMO PLAN
M-1.11 FIRST FLOOR MECHANICAL NEW WORK PLAN
M-5.01 MECHANICAL SCHEDULES, LEGENDS & NOTES
M-5.02 MECHANICAL CONTROLS, PLUMBING SCHEDULES, LEGENDS AND NOTES
M-6.01 MECHANICAL & PLUMBING DETAILS
M-6.02 MECHANICAL AND PLUMBING DETAILS

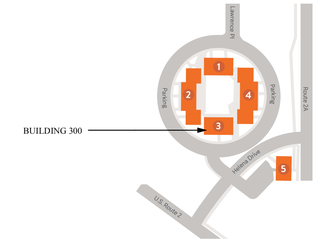
PLUMBING DRAWINGS

P-0.01 UNDERSLAB PLUMBING DEMO PLAN
P-0.11 FIRST FLOOR PLUMBING DEMO PLAN
P-1.01 UNDERSLAB PLUMBING NEW WORK PLAN
P-1.11 FIRST FLOOR PLUMBING SANITARY NEW WORK PLAN
P-2.11 FIRST FLOOR PLUMBING DOMESTIC NEW WORK

ELECTRICAL DRAWINGS

E-0.11 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
E-1.11 FIRST FLOOR ELECTRICAL POWER NEW WORK PLAN
E-2.11 FIRST FLOOR ELECTRICAL LIGHTING NEW WORK PLAN
E-5.01 ELECTRICAL SCHEDULES, LEGENDS & NOTES
E-5.02 ELECTRICAL SPECIFICATIONS

LOCATION MAP



ALTERNATES

1. ALTERNATE NO. 1: WET LAB 117.
2. ALTERNATE NO. 2: ADMIN 105.
3. ALTERNATE NO. 3: SANI AREA 107.
4. ALTERNATE NO. 4: KITCHEN 136 AND OFFICE 136.1.
5. ALTERNATE NO. 5: WORK AREA 113.
6. ALTERNATE NO. 7: RECEPTION 143.

SMITH
ALVAREZ
SIENKIEWYCZ

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ELECTRICAL

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DENTAL THERAY LAB
•
BUILDING 300

SAS PROJECT NO. 1242



FLOOR PLAN
3/16" = 1'-0"

TYPICAL DRAWING NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND WILL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES. IN THE CASE OF DISCREPANCIES THE OWNER WILL ISSUE REVISIONS IN WRITING WITHIN SEVEN CALENDAR DAYS.
2. ALL DIMENSIONS ARE FROM THE FACE OF EXISTING FINISHED WALL SURFACE OR METAL FRAMING UNLESS NOTED OTHERWISE.
3. PROVIDE SOUND ATTENUATION BATTS IN GWB PARTITIONS AS INDICATED IN THE WALL TYPES. EXTEND ALL GWB ACOUSTIC PARTITIONS TO THE UNDERSIDE OF STRUCTURE ABOVE. WHERE STRUCTURE DOES NOT FALL COMPLETELY WITHIN THE ACOUSTIC PARTITION, EXTEND THE ACOUSTIC CONSTRUCTION TO ENCLOSE THE STRUCTURE WITHIN. SEAL ACOUSTIC PARTITIONS AT TOP, BOTTOM, AND SIDES WITH ACOUSTIC SEALANT. THE GWB IS AN INTEGRAL PART OF THE ACOUSTIC ASSEMBLY AND ALL JOINTS, CONCEALED AND EXPOSED MUST BE TAPED.

DRAWING KEY

- EXISTING CONSTRUCTION TO BE REMOVED
- EXISTING CONSTRUCTION TO REMAIN
- NEW CONSTRUCTION
- NO WORK

ROOM FINISH KEY

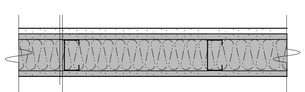
W2 / W1 / W2 — WALL FINISHES
W1 — INDICATES ALL WALLS
B1 — BASE FINISH
F1 — FLOOR FINISH

WALL TYPE KEY

1 / 6F — WALL TYPE / STUD SIZE IF OTHER THAN TYPICAL / SUBDESIGNATION

ROOM FINISH SCHEDULE

	FINISH	REMARKS
WALLS		
W1	EXISTING GWB	PATCH & PAINT
W2	GWB	TAPE & PAINT
BASE		
B1	EXISTING RUBBER	
B2	RUBBER	
FLOORS		
F1	EXISTING VCT	
F2	EXISTING CARPET	
F3	VCT	

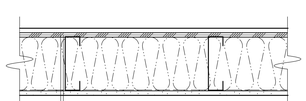


- 5/8" FC GWB, TAPE & PAINT
- EXISTING GWB
- EXISTING 3 5/8" METAL STUDS @ +/- 16" O.C.
- EXISTING SOUND ATTENUATION BATTS
- EXISTING GWB

1 EXG INT. PARTITION-IMPROVED ACOUSTICS
1 1/2"=1'-0"

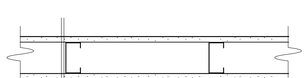
EXTEND ACOUSTIC WALL SYSTEMS TO UNDERSIDE OF CEILING / DECK ABOVE. SEAL TOP, BOTTOM AND SIDES WITH ACOUSTIC SEALANT.

ACOUSTIC WALLS REQUIRE ACOUSTICAL SEALING OF ANY PENETRATION INCLUDING ELECTRICAL BOXES. NO BACK TO BACK JUNCTION BOXES PERMITTED. BOXES TO BE OFFSET 12" MINIMUM.



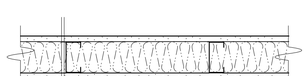
- VINYL SIDING, MATCH EXISTING
- BUILDING WRAP
- 1/2" PWD SHEATHING (ASSUMED) MATCH EXISTING DEPTH
- 6" METAL STUDS @ 16" OC.
- 6" MINERAL WOOL INSULATION
- VAPOR BARRIER
- 1/2" GWB (ASSUMED) MATCH EXISTING DEPTH

2 EXTERIOR WALL INFILL
1 1/2"=1'-0"



- 5/8" FC GWB, TAPE & PAINT
- 3 5/8" METAL STUDS @ +/- 16" O.C.
- 5/8" FC GWB, TAPE & PAINT (NONE @ SIM)

3 GWB PARTITION
1 1/2"=1'-0"



- 5/8" FC GWB, TAPE & PAINT
- 3 5/8" METAL STUDS @ +/- 16" O.C.
- SOUND ATTENUATION BATTS, FILL STUD DEPTH
- 5/8" FC GWB, TAPE & PAINT

4 ACOUSTIC GWB PARTITION
1 1/2"=1'-0"

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SAS PROJECT NUMBER: 1242

PROJECT

DENTAL THERAPY LAB

BUILDING 300

•

VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS

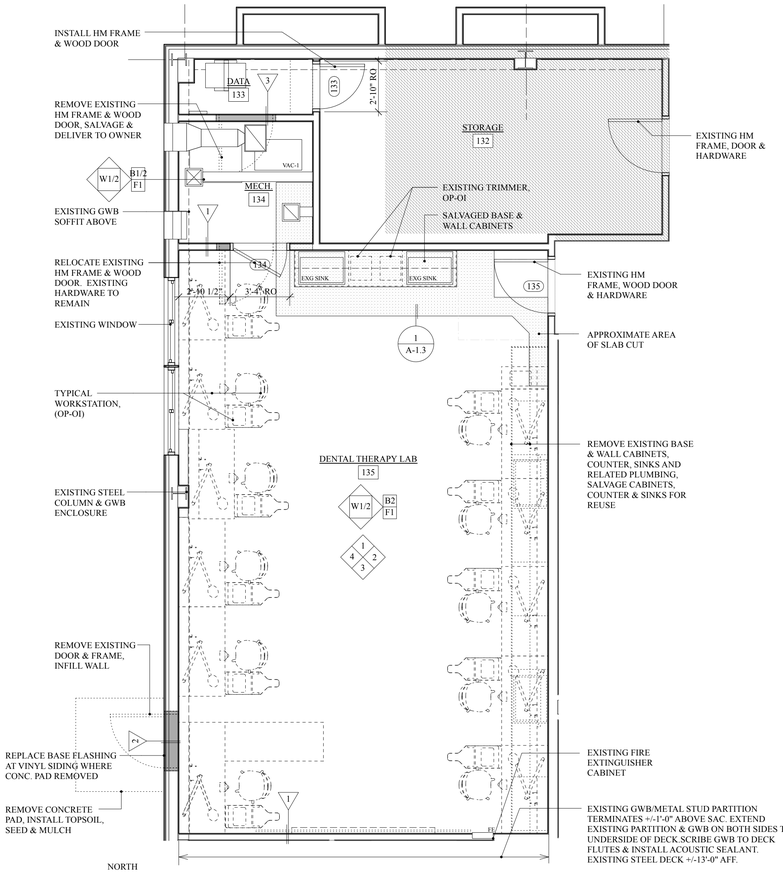
WILLISTON, VERMONT

DATE: FEBRUARY 21, 2022
SCALE: AS NOTED
CHECKED: MS
DRAWN BY: TR

REVISIONS

OVERALL FLOOR PLAN & WALL TYPES

A-1.0



ENLARGED FLOOR PLAN • LAB 135

1/4" = 1'-0"

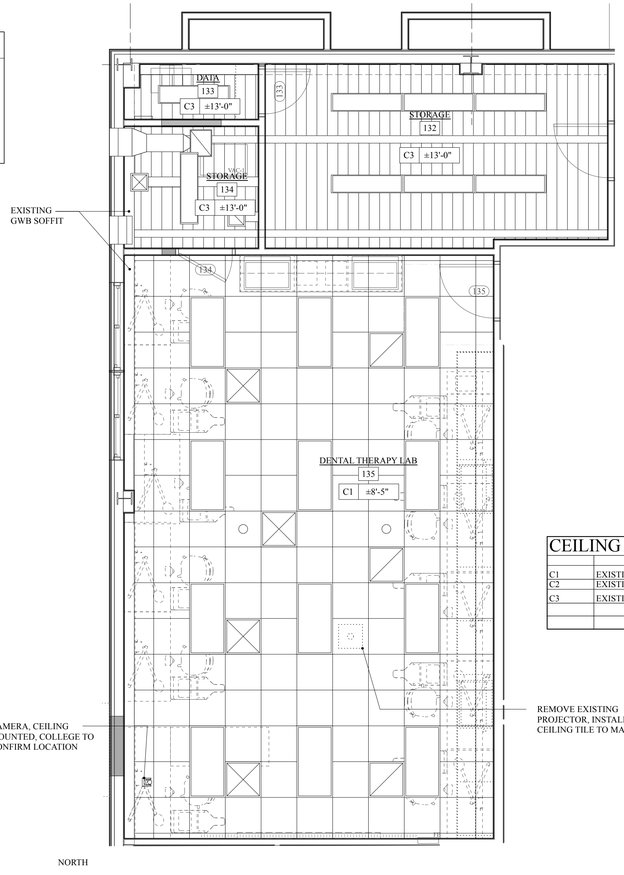
DRAWING NOTES:

1. DOOR 133: INSTALL 2'-6" x 6'-8" x 1 3/4" FLUSH SOLID CORE WOOD DOOR AND HOLLOW METAL FRAME. SEE SPECIFICATION SECTIONS-DIV. 08 FOR DOOR AND FRAME SPECIFICATION. REUSE EXISTING HARDWARE FROM DOOR REMOVED FROM SOUTH WALL OF DATA 133.

2. MECHANICAL DOOR 134, INSTALL THE FOLLOWING HARDWARE:
   - ZERO 429 GASKETING
   - ZERO 39 DOOR SWEEP, MILL FINISH ALUMINUM W/ NEOPRENE INSERT
   - ZERO 8655 ALUMINUM THRESHOLD

ROOM FINISH SCHEDULE

	FINISH	REMARKS
WALLS		
W1	EXISTING GWB	PATCH & PAINT
W2	GWB	TAPE & PAINT
BASE		
B1	EXISTING RUBBER	
B2	RUBBER	
FLOORS		
F1	EXISTING VCT	
F2	EXISTING CARPET	
F3	VCT	



REFLECTED CEILING PLAN • LAB 135

1/4" = 1'-0"

TYPICAL DRAWING NOTES

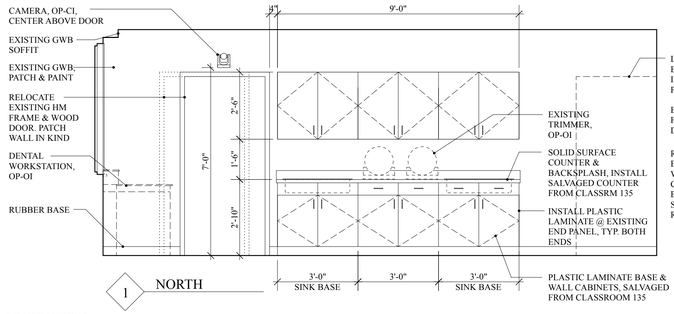
1. CEILING PLAN IS GENERAL IN NATURE AND DOES NOT INDICATE SPRINKLER, SMOKE DETECTORS, EXIT SIGNS AND SIMILAR DEVICES.

CEILING LEGEND

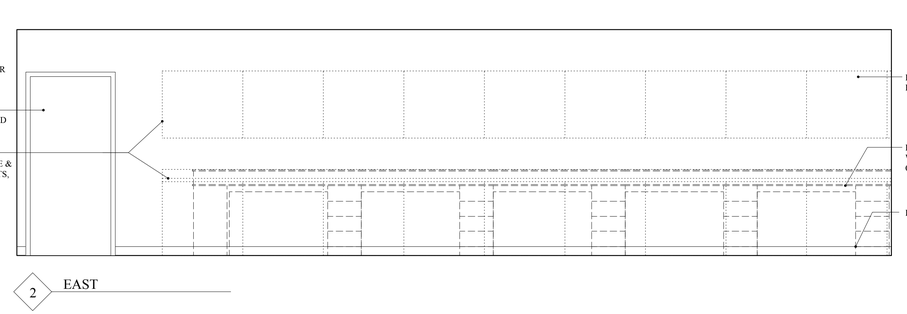
- CEILING FINISH
- C1 8'-0" — CEILING HEIGHT
- 2' x 4' SAC LIGHT FIXTURE
- SURFACE OR PENDANT MOUNTED LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- SUPPLY DIFFUSER
- RETURN GRILLE
- PARTITION WALL
- EXISTING SUSPENDED ACOUSTIC CEILING
- EXISTING EXPOSED STRUCTURE/METAL DECK

CEILING FINISH SCHEDULE

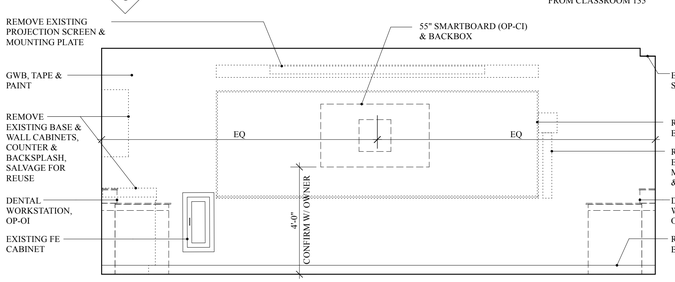
		REMARKS
C1	EXISTING 2x2 SUSPENDED ACOUSTIC CEILING	
C2	EXISTING GWB	PATCH & PAINT
C3	EXISTING EXPOSED STRUCTURE/METAL DECK	NO FINISH



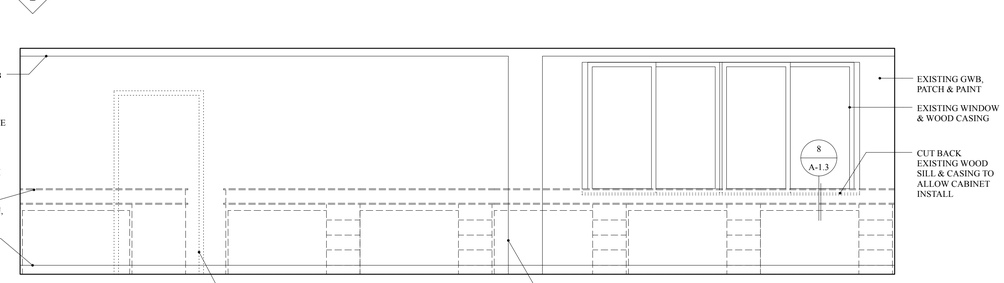
1 NORTH



2 EAST



3 SOUTH



4 WEST

DENTAL THERAPY LAB • 135

3/8" = 1'-0"

TYPICAL DRAWING NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD AND WILL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES. IN THE CASE OF DISCREPANCIES THE OWNER WILL ISSUE REVISIONS IN WRITING WITHIN SEVEN CALENDAR DAYS.
2. ALL DIMENSIONS ARE FROM THE FACE OF EXISTING FINISHED WALL SURFACE OR METAL FRAMING UNLESS NOTED OTHERWISE.
3. PROVIDE SOUND ATTENUATION BATTS IN GWB PARTITIONS AS INDICATED IN THE WALL TYPES. EXTEND ALL GWB ACOUSTIC PARTITIONS TO THE UNDERSIDE OF STRUCTURE ABOVE. WHERE STRUCTURE DOES NOT FALL COMPLETELY WITHIN THE ACOUSTIC PARTITION, EXTEND THE ACOUSTIC CONSTRUCTION TO ENCLOSE THE STRUCTURE WITHIN. SEAL ACOUSTIC PARTITIONS AT TOP, BOTTOM, AND SIDES WITH ACOUSTIC SEALANT. THE GWB IS AN INTEGRAL PART OF THE ACOUSTIC ASSEMBLY AND ALL JOINTS, CONCEALED AND EXPOSED MUST BE TAPED.

DRAWING KEY

- EXISTING CONSTRUCTION TO BE REMOVED
- EXISTING CONSTRUCTION TO REMAIN
- NEW CONSTRUCTION
- NO WORK

ROOM FINISH KEY

- W2 / W1 / W1 / W2 — WALL FINISHES
- W1 — INDICATES ALL WALLS
- B1 — BASE FINISH
- F1 — FLOOR FINISH

WALL TYPE KEY

- 1 / 6F — WALL TYPE
- STUD SIZE IF OTHER THAN TYPICAL
- SUBDESIGNATION

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SAS PROJECT NUMBER: 1242

PROJECT

DENTAL THERAPY LAB

BUILDING 300

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VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS

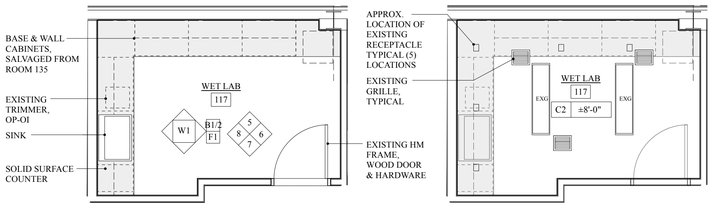
WILLISTON, VERMONT

DATE: FEBRUARY 21, 2022
SCALE: AS NOTED
CHECKED: MS
DRAWN BY: TR

REVISIONS

DENTAL THERAPY LAB
FLOOR PLAN, RCP & INTERIOR ELEVATIONS

A-1.1



NORTH

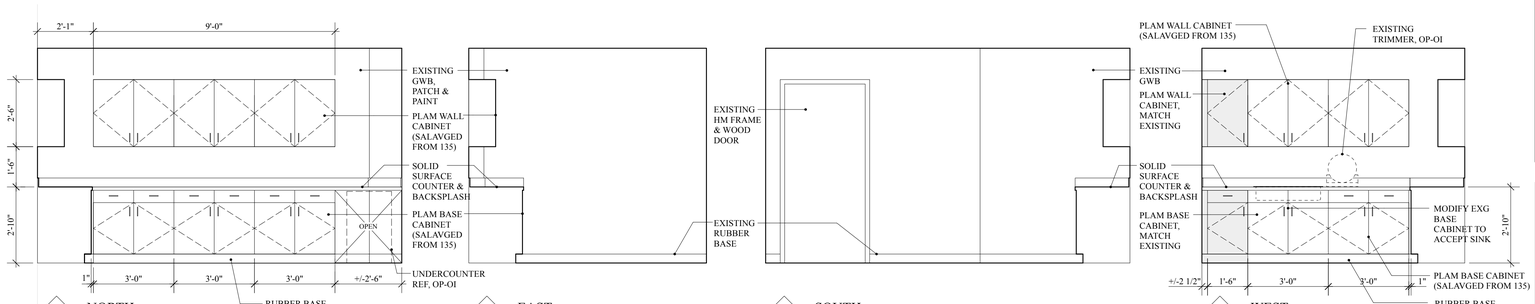
ENLARGED PLAN • WET LAB 117

1/4" = 1'-0"

NORTH

RCP • WET LAB 117

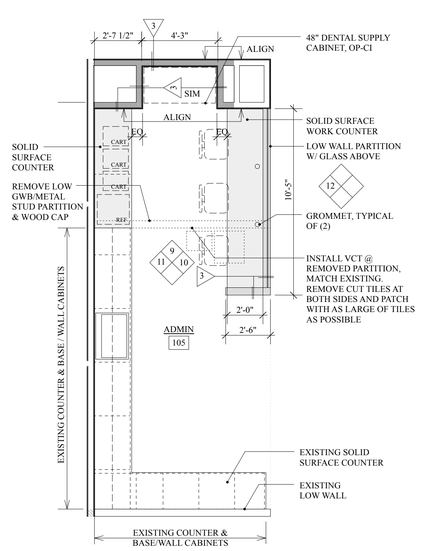
1/4" = 1'-0"



WET LAB • 117

3/8" = 1'-0"

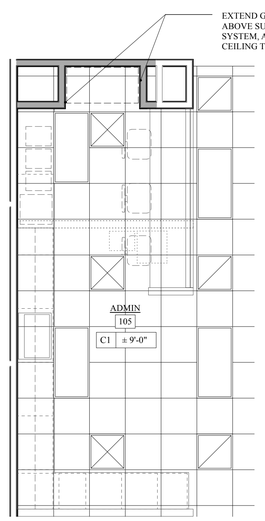
ALTERNATE 1



NORTH

ENLARGED PLAN • AMIN. 105

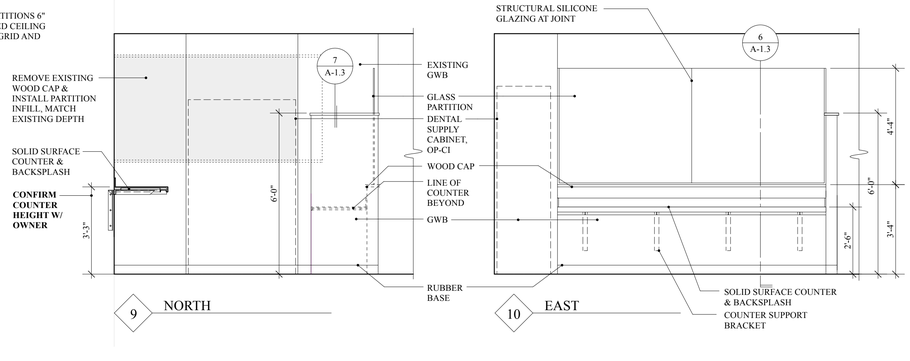
1/4" = 1'-0"

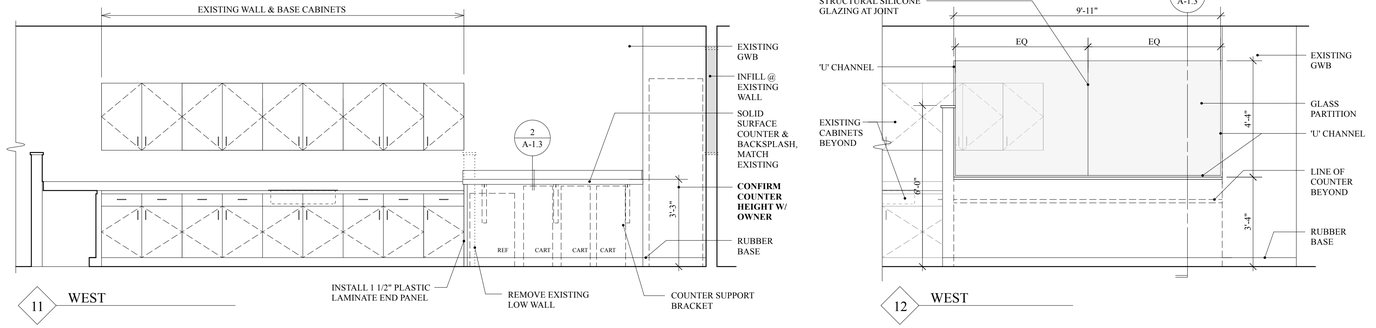


NORTH

RCP • AMIN. 105

1/4" = 1'-0"

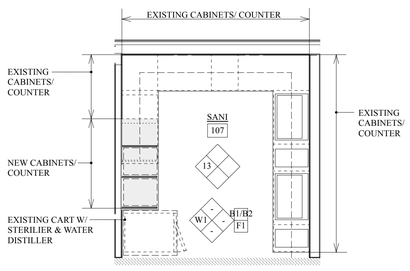




ADMIN. • 105

3/8" = 1'-0"

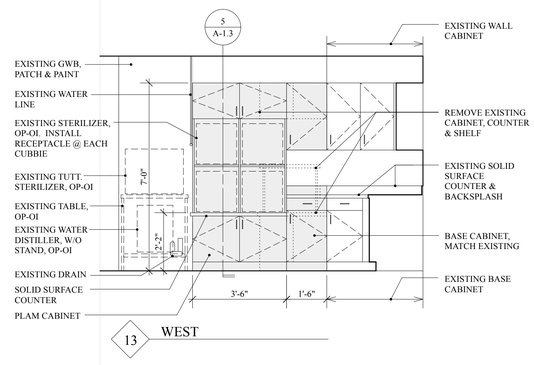
ALTERNATE 2



NORTH

ENLARGED PLAN • SANI AREA 107

1/4" = 1'-0"



SANI • 107

3/8" = 1'-0"

ALTERNATE 3

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SAS PROJECT NUMBER: 1242

PROJECT

DENTAL THERAPY LAB

BUILDING 300

•

VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS

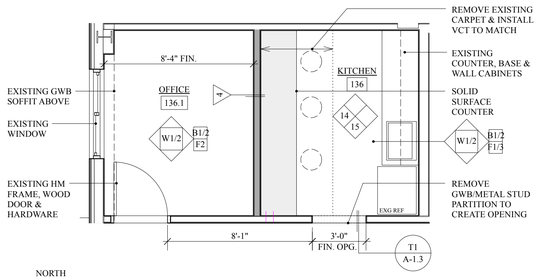
WILLISTON, VERMONT

DATE: FEBRUARY 21, 2022
SCALE: AS NOTED
CHECKED: MS
DRAWN BY: TR

REVISIONS

ALTERNATE 1, 2 & 3 FLOOR PLANS, RCPS & INTERIOR ELEVATIONS

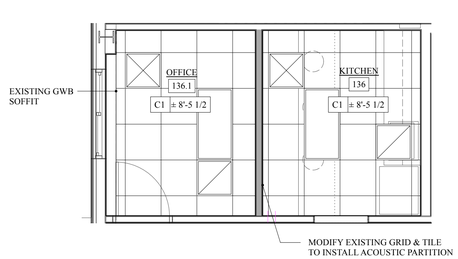
A-1.2



NORTH

ENLARGED PLAN • OFFICE 136.1 & KITCHEN 136

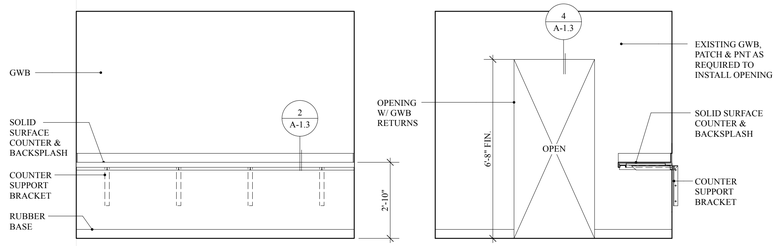
1/4" = 1'-0"



NORTH

RCP • OFFICE 136.1 & KITCHEN 136

1/4" = 1'-0"



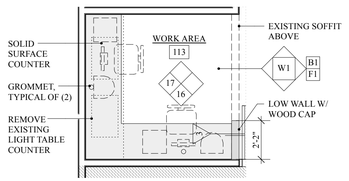
14 WEST

15 SOUTH

KITCHEN • 136

3/8" = 1'-0"

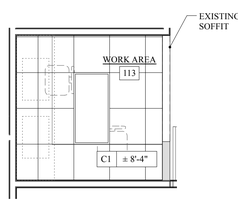
ALTERNATE 4



NORTH

ENLARGED PLAN • WORK AREA 113

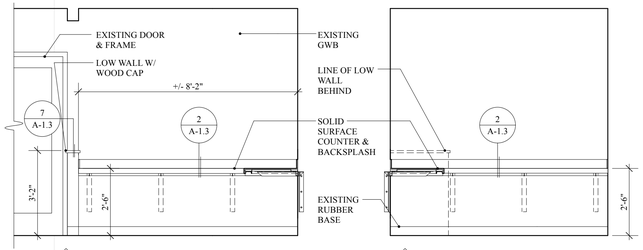
1/4" = 1'-0"



NORTH

RCP • WORK AREA 113

1/4" = 1'-0"



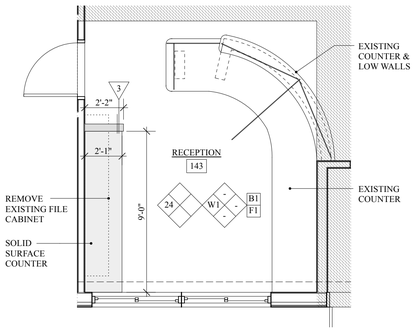
16 SOUTH

17 WEST

WORK AREA • 113

3/8" = 1'-0"

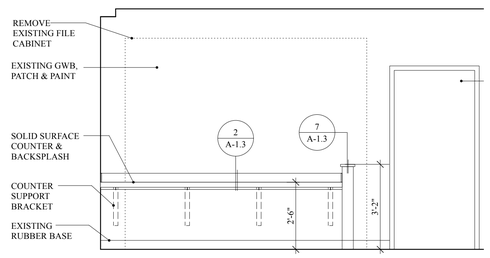
ALTERNATE 5



NORTH

ENLARGED PLAN • RECEPTION 143

1/4" = 1'-0"

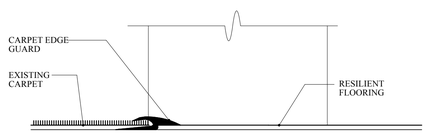


24 WEST

RECEPTION • 143

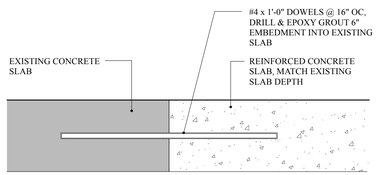
3/8" = 1'-0"

ALTERNATE 6



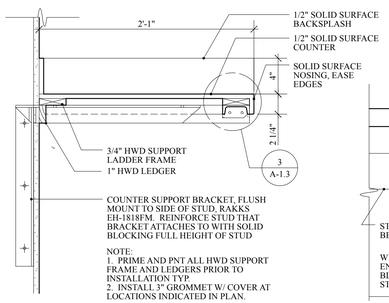
T1 CARPET TRANSITION TO RESILIENT FLOOR

Half Actual Size



1 TYPICAL SLAB PATCH DETAIL

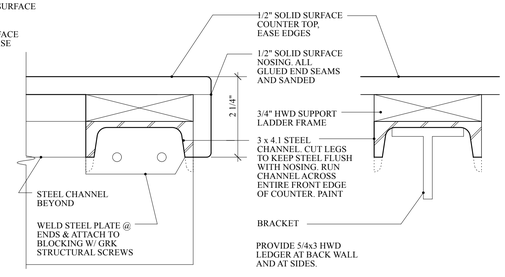
3" = 1'-0"



2 SOLID SURFACE COUNTER

1 1/2" = 1'-0"

NOTE: AT EXISTING WALL LOCATIONS, REMOVE GWB AS REQUIRED TO INSTALL BLOCKING/ AND OR REINFORCE EXISTING METAL STUDS TO INSTALL BRACKETS AND TO PROVIDE ADEQUATE SUPPORT FOR COUNTERS

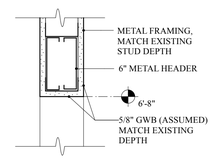


3 COUNTER NOSING

Half Actual Size

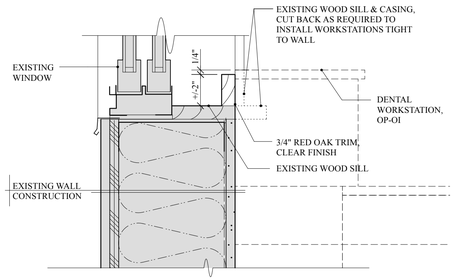
3.1 SECTION @ BRACKET

Half Actual Size



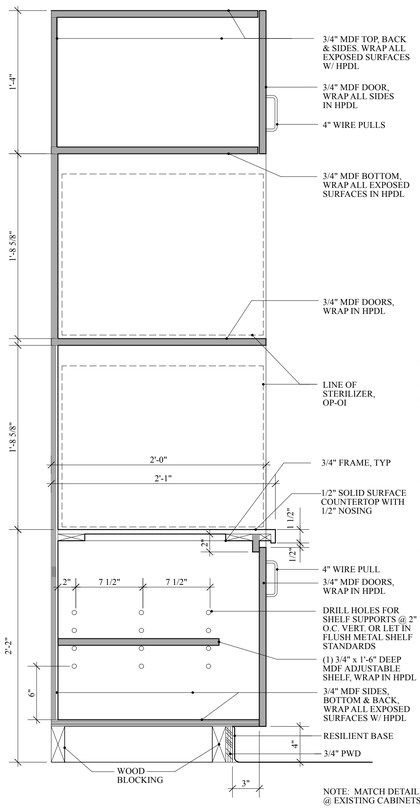
4 HEAD @ GWB OPENING

1 1/2" = 1'-0" (JAMB SIMILAR)



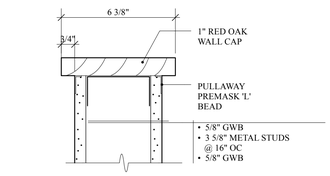
8 DETAIL @ EXG WINDOW/WORKSTATION

3" = 1'-0"



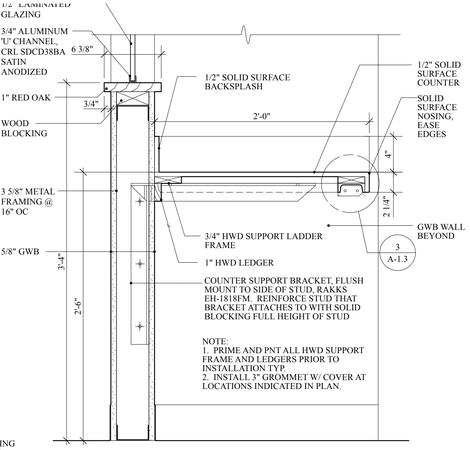
5 PLAM CABINET @ SANI. AREA

1 1/2" = 1'-0"



7 WALL CAP

Scale: 3" = 1'-0"



6 SOLID SURFACE COUNTER & LOW WALL

Scale: 1 1/2" = 1'-0"

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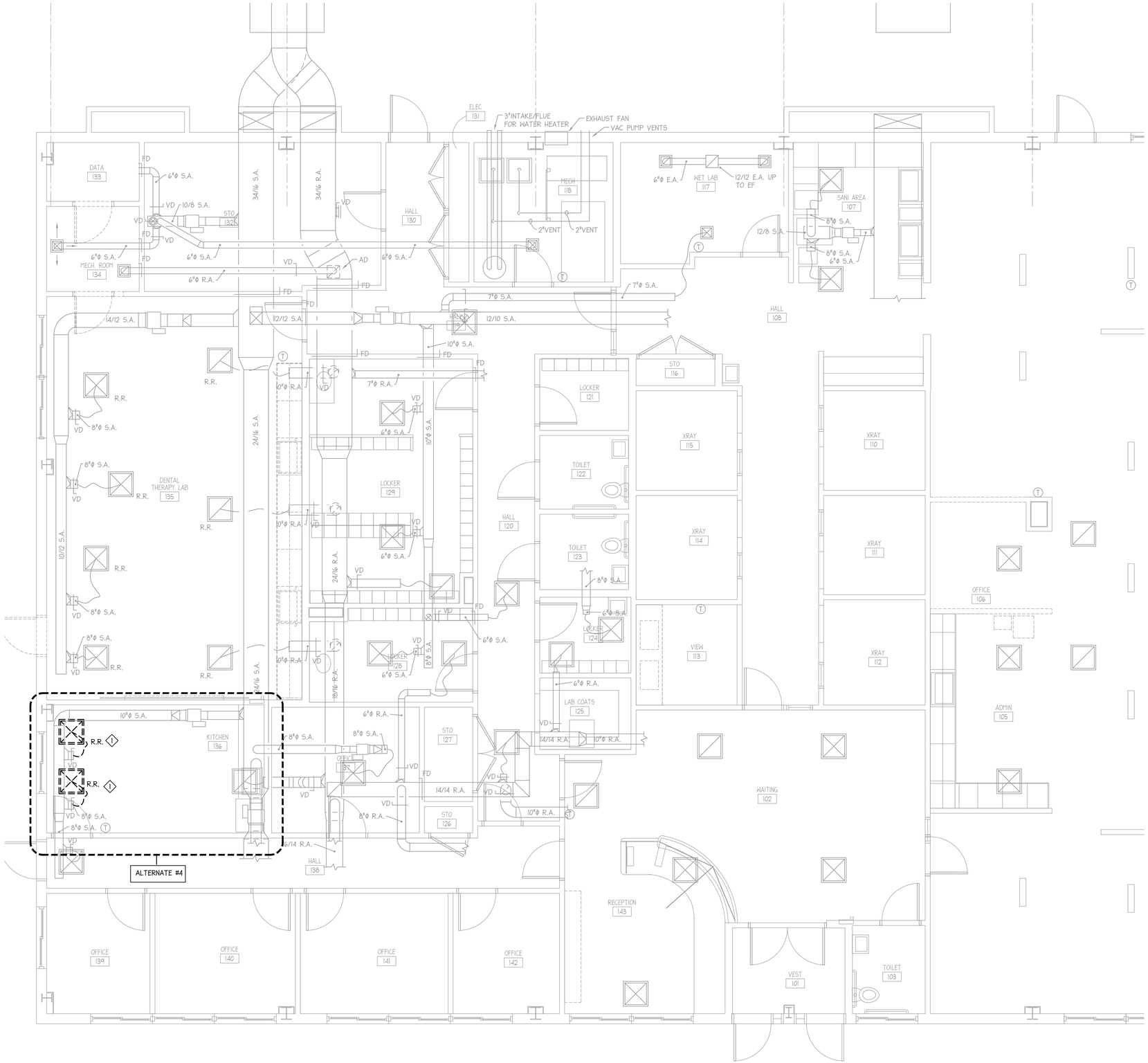
WILLISTON, VERMONT

DATE: FEBRUARY 21, 2022
SCALE: AS NOTED
CHECKED: MS
DRAWN BY: TR

REVISIONS

ALTERNATE 4, 5 & 6 FLOOR PLANS, RCPS, INTERIOR ELEVATIONS & DETAILS

A-1.3



MECHANICAL DEMOLITION LEGEND

EXISTING MECHANICAL TO REMAIN

EXISTING MECHANICAL TO BE DEMOLISHED

SPECIFIC MECHANICAL DEMOLITION NOTES

1. EXISTING DIFFUSERS IN OFFICE 136.1 ARE TO BE REMOVED AND RELOCATED. SEE NEW WORK DRAWINGS.

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SAS PROJECT NUMBER: 1242

PROJECT

DENTAL THERAPY LAB

BUILDING 300

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VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS

WILLISTON, VERMONT

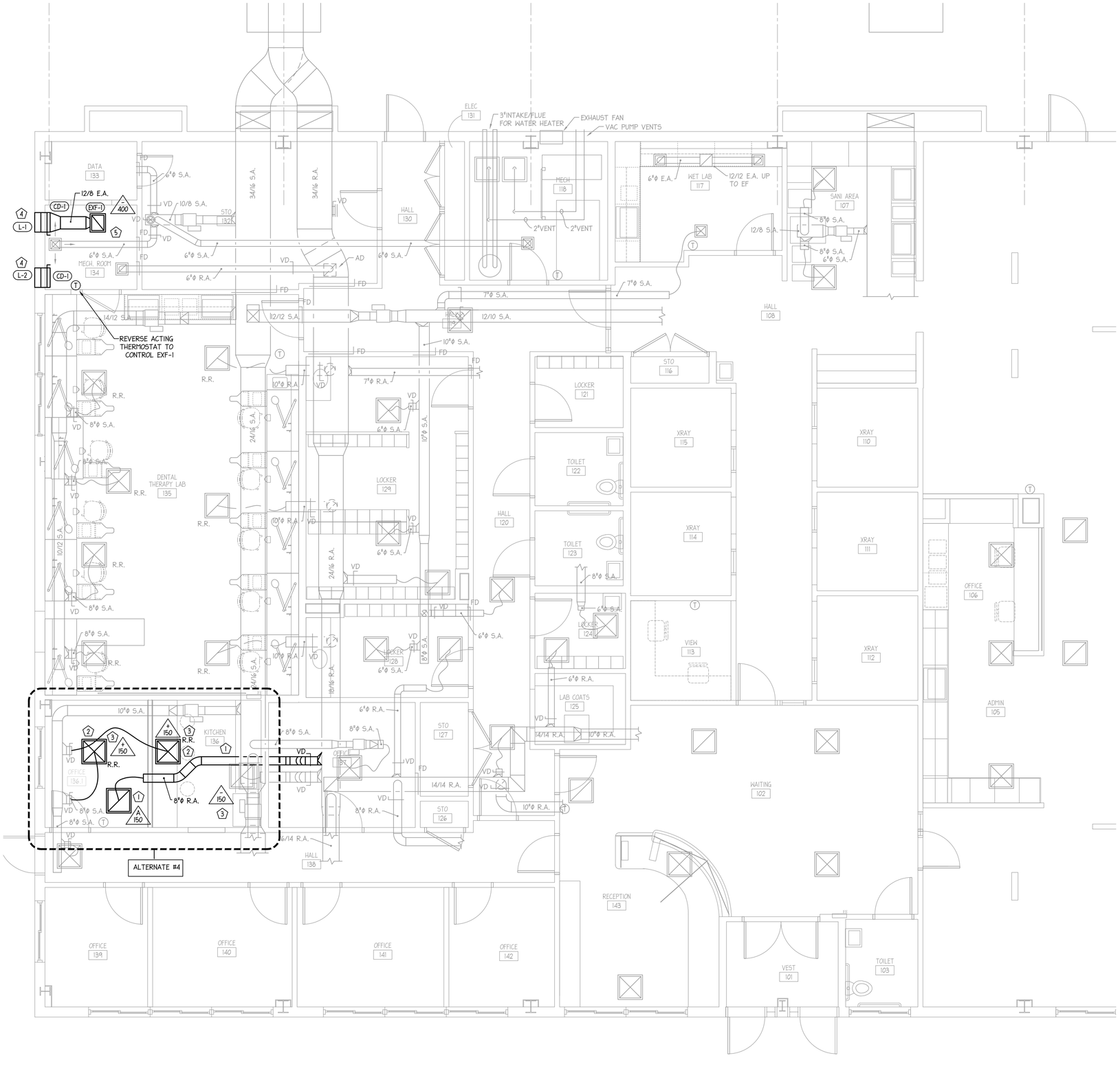
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REVISIONS

FIRST FLOOR MECH. DEMO PLAN

M0.11

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MECHANICAL NEW WORK LEGEND	
———	EXISTING MECHANICAL TO REMAIN
———	NEW MECHANICAL TO BE FURNISHED AND INSTALLED

① SPECIFIC NEW WORK NOTES:

1. INSTALL A NEW RETURN DUCT BRANCH TAKE-OFF FOR OFFICE 136.1. PROVIDE VOLUME DAMPER FOR RETURN DUCT. INSTALL NEW RETURN GRILLE IN OFFICE 136.1 AS INDICATED.
2. RELOCATE EXISTING DIFFUSERS FROM OFFICE 136.1 AS INDICATED. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS. INSTALL NEW FLEXIBLE DUCTWORK (INSTALL PER DETAILS) TO SERVE THE NEW DIFFUSERS.
3. REBALANCE GRILLES/DIFFUSERS TO THE AIRFLOWS INDICATED.
4. INSTALL NEW LOUVERS THROUGH THE EXTERIOR WALL. INSTALL LOUVERS AT APPROXIMATELY 10'-0" TO THE BOTTOM OF THE LOUVER, ALIGN BOTH LOUVERS TO BE AT THE SAME HEIGHT. COORDINATE REQUIREMENTS WITH ARCHITECTURAL DRAWINGS. SEE DETAILS FOR LOUVER INSTALLATION.
5. ENSURE NEW EXHAUST FAN IS PROPERLY SUPPORTED FROM THE STRUCTURE.

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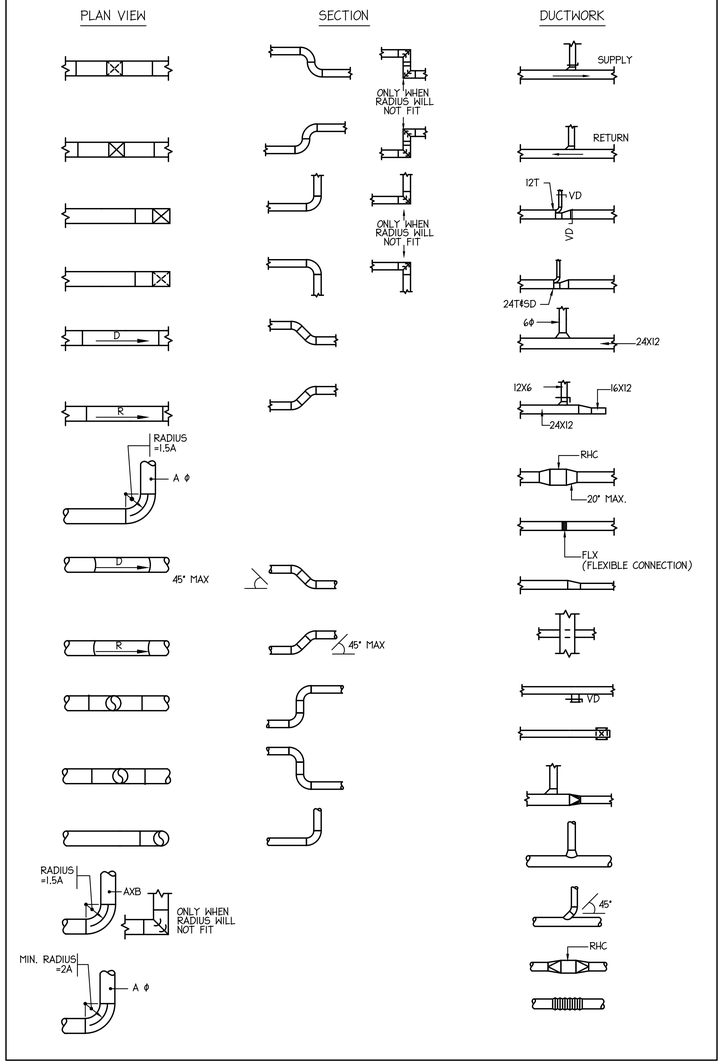
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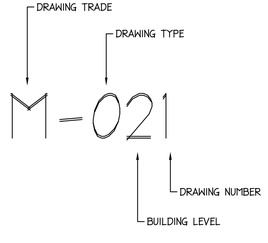
FIRST FLOOR MECH. NEW WORK PLAN

M1.11

HVAC LEGEND (DOUBLE-LINE DUCTWORK)



TITLE BLOCK LEGEND



DRAWING TRADE

SYMBOL	DESCRIPTION
E	ELECTRICAL
FP	FIRE PROTECTION
M	MECHANICAL HVAC
P	PLUMBING

HVAC TRADE DRAWING TYPES

SYMBOL	DESCRIPTION
0	DEMOLITION PLANS
1	NEW DUCTWORK PLANS
2	NEW PIPING PLANS
3	ONE-LINE DIAGRAMS
4	PIPING AND DUCTWORK SECTIONS
5	LEGENDS, NOTES AND SCHEDULES
6	DETAILS

MECHANICAL GENERAL NEW WORK NOTES:

1. ALL NEW AIR DUCTING SHALL BE RATED FOR AN AIR PRESSURE CLASS OF 2" WG PER SMACNA STANDARDS.
2. ALL INSULATION SHALL BE FURNISHED AND INSTALLED AS INDICATED BELOW.
3. PROVIDE SHEET METAL GAUGE AND HANGER SPACING PER THE CURRENT EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
4. ALL 90° ELBOWS SHALL BE PROVIDED WITH TURNING VANES. PROVIDE TWO (2) TURNING VANES FOR DUCT WORK UNDER 12" WIDE, AND PROVIDE THREE (3) TURNING VANES FOR DUCTS BETWEEN 12" & 18" WIDE. PROVIDE AN ADDITIONAL TURNING VANE FOR EVERY MULTIPLE OF 3" IN DUCT WIDTH. INSTALL TURNING VANES AS PER CURRENT EDITION OF SMACNA DUCT CONSTRUCTION STANDARDS.
5. ALL SYSTEMS SHALL BE COMPLETELY OPERATIONAL. THE DRAWINGS ARE SCHEMATIC IN NATURE, FIELD COORDINATION IS REQUIRED.
6. PROVIDE ALL EQUIPMENT AND MATERIALS NECESSARY FOR MOUNTING ALL MECHANICAL EQUIPMENT.
7. ALL VOLUME DAMPERS SHALL BE LOCKING QUADRANT TYPE AND CONSTRUCTED OF 18 GA. GALVANIZED STEEL.
8. ALL VOLUME DAMPERS SHALL BE ULTRA LOW-LEAK AND SHALL HAVE A ROUND SHAFT WITH SHAFT SEALS AT THE PENETRATIONS IN THE DUCTWORK. VOLUME DAMPER NOT CONFORMING TO THE ULTRA-LOW LEAK STANDARD SHALL BE REMOVED AND REPLACED AT THE MECHANICAL CONTRACTORS EXPENSE. VOLUME DAMPERS ARE TO BE INSTALLED WITH CABLE OPERATORS FOR REMOTE ADJUSTMENT THROUGH THE GRILLES/DIFFUSERS.
9. 3' MINIMUM, 6' MAXIMUM FLEXIBLE AIR DUCTS ON ALL TAKEOFFS.
10. A MAXIMUM OF (2) CHANGES IN DIRECTION SHALL BE ALLOWED IN ALL FLEXIBLE DUCT TAKE-OFFS. ANY FLEXIBLE DUCT TAKE-OFFS NOT SUPPORTED OR WITH GREATER THAN (2) CHANGES IN DIRECTION SHALL BE REMOVED AND REPLACED AT THE MECHANICAL CONTRACTORS EXPENSE.
11. ALL SUSPENDED DUCT WORK SHALL BE PROVIDED WITH SEISMIC BRACING AS REQUIRED. ALL EQUIPMENT SHALL BE PROVIDED WITH SEISMIC BRACING.
12. ALL DUCT WORK 144 SQ. IN. AND OVER IN CROSS SECTIONAL AREA SHALL BE FABRICATED USING DUCT-MATE FLANGES. NO SLIP AND DRIVE CONNECTIONS SHALL BE PERMITTED. TDF CONNECTIONS ARE ACCEPTABLE FOR DUCTS JOINTS OVER 30" AND 2" W.G. PRESSURE.
13. COORDINATE ALL DIFFUSER INSTALLATIONS WITH ARCHITECTURAL DRAWINGS AND ARCHITECTURAL REFLECTED CEILING PLAN.
14. COORDINATE THERMOSTAT LOCATIONS WITH ARCHITECTURAL AND INTERIOR PLANS.
15. ALL DUCTWORK SHALL BE G90/Z275 GALVANIZED STEEL DUCT. DUCTWORK GAUGE AND BRACING TO COMPLY WITH SMACNA REQUIREMENTS FOR PRESSURE CLASS INDICATED IN ITEM #1 ABOVE.
16. OUTDOOR AIR DUCTWORK FROM LOUVER TO UNIT, AND EXHAUST AIR DUCTWORK FROM LOUVER PENETRATION TO 6FT INSIDE THE BUILDING SHALL BE 1.5 LBS. FIBER GLASS WRAP INSULATION (WITH VAPOR BARRIER) 3" THICK.
17. COORDINATE DIFFUSER AND ACCESS PANEL LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS.
18. ALL SUPPLY DUCTWORK TO BE INSULATED WITH 1/2" OF FLEXIBLE CLOSED-CELL ELASTOMERIC THERMAL AND ACOUSTICAL DUCT INSULATION HAVING CONDUCTIVITY OF 0.24 BTU•IN./(HR•FT^2•°F). LINER TO BE GREENGUARD GOLD CERTIFIED AND MANUFACTURED WITHOUT CFCS, HFCS, HCFCS, PBDES, OR FORMALDEHYDE. LINER TO COMPLY WITH UL181, ASTM G21/C1338 AND ASTM G22 FOR MOLD, FUNGI AND BACTERIA RESISTANCE; ASTME E96 WATER PERMEABILITY, ASTM C 177 THERMAL CONDUCTIVITY, ASTM E 84 FLAME SPREAD AND NFPA 90A, 90B.
19. FOR SUPPLY, RETURN AND EXHAUST DUCTWORK INDICATED LINED ON PLAN DRAWINGS, PROVIDE THICKNESS OF DUCT LINER INDICATED ON PLANS (COMPLYING WITH THE SPECIFICATIONS) IN ADDITION TO EXTERNAL DUCTWORK INSULATION AS REQUIRED BY SPECIFICATIONS. DUCTWORK SIZES LISTED ARE TO BE NET CLEAR INSIDE DUCT SIZE ACCOUNTING FOR LINER; EX: FOR 16/8 DUCTWORK INDICATED TO CONTAIN 1/2" OF DUCT LINER, THE EXTERNAL DIMENSIONS SHALL BE: 17/9 TO PROVIDE 16/8 INTERNAL DIMENSIONS.
20. ALL DUCTWORK IS TO BE LABELED WITH PERMANENT PLASTIC NAMEPLATE LABELS. LABELS TO BE BLACK WITH WHITE LETTERS.

GENERAL ALTERNATE EQUIPMENT NOTES:

1. ALTERNATE EQUIPMENT: SUBMIT PRELIMINARY DATA TO ENGINEER FOR WRITTEN APPROVAL FOR ALTERNATE EQUIPMENT.
2. GENERAL ALTERNATE NOTE: THE MECHANICAL, PLUMBING AND ELECTRICAL DESIGNS ARE BASED ON THE SCHEDULED MECHANICAL EQUIPMENT. IF APPROVED ALTERNATE MECHANICAL EQUIPMENT IS PROVIDED BUT THE POWER REQUIREMENTS DIFFER FROM THE PROPOSED EQUIPMENT, THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR INCLUDING CIRCUIT BREAKER, CONDUCTOR, AND CONDUIT SIZES. ANY ALTERNATE EQUIPMENT FEEDS SHALL STILL COME FROM THE SAME PANEL AS CURRENTLY DESIGNED. IF THE EQUIPMENT PIPING OR DUCT CONNECTION LOCATIONS OR SIZES DIFFER FROM THE PROPOSED EQUIPMENT, THE MECHANICAL CONTRACTOR SHALL COORDINATE AND PROVIDE ALL REQUIRED MODIFICATIONS AS REQUIRED TO ACCOMMODATE ALTERNATE UNIT.

TESTING AND BALANCING GENERAL NOTES:

1. THE BALANCE CONTRACTOR SHALL SUBMIT A FORMAL BALANCE REPORT AT THE COMPLETION OF EACH PHASE OF WORK.
2. THE BALANCE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPERATURE CONTROL VERIFICATION, SEQUENCE OF OPERATIONS VERIFICATION, AND SYSTEM COMMISSIONING AT THE COMPLETION OF EACH PHASE OF WORK.

LOUVER SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	CFM	FREE AREA %	OPENING SIZE	DEPTH	NOTES
L-1	VAC/AC ROOM EXHAUST LOUVER	RUSKIN #ELF6350DMP	400	62%	18 X 18	6"	1 2 3 4 5
L-2	VAC/AC ROOM INTAKE LOUVER	RUSKIN #ELF6350DMP	400	62%	18 X 18	6"	1 2 3 4 5

ϕ NOTES:
1. PROVIDE LOUVERS WITH BIRD SCREEN.
2. COLOR SELECTION BY ARCHITECT. COORDINATE FINAL SIZES WITH ARCHITECTURAL PLANS.
3. PROVIDE CONNECTION FROM LOUVER TO PLENUM AS PER DETAIL DRAWINGS.
4. LOUVERS TO HAVE KYNAR FINISH.
5. COORDINATE QUANTITIES WITH PLANS.

FAN SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	CFM	S.P.	BHP	MOTOR HP	RPM	ELECTRICAL	NOTES:
EXF-1	VAC/AC ROOM EXHAUST FAN	GREENHECK SP-A390-VG	400	0.1"	-	-	1350	120V/1PH/60HZ/1.2A	1 2 3

ϕ NOTES:
1. PROVIDE STRUCTURAL SUPPORT FOR FAN. PROVIDE VIBRATION ISOLATORS AND SUPPORT FROM STRUCTURE.
2. FAN TO BE PROVIDED WITH EC MOTOR WITH VARIABLE SPEED CONTROL.
3. FAN TO BE PROVIDED WITH INLET AND OUTLET GUARDS.

DRY VACUUM SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	OUTPUT HP	ELECTRICAL		NOTES:
VAC-1	DENTAL DRY VACUUM SYSTEM	AERAS RAMVAC RV7-2T	3 HP	208V/1PH/60HZ/16.0A/20A MOP		1

ϕ NOTES:
1. INSTALL PER MANUFACTURER'S REQUIREMENTS.
2. PIPE EXHAUST TO THE OUTDOORS. 2" SCHED 80CPVC OR METAL W/ DWV FITTINGS OR EQUIVALENT. MINIMUM EXHAUST LENGTH IS 15 FEET, CONTACT MANUFACTURER FOR SHORTER RUNS.
3. INSTALL MANUFACTURER'S CONTROL PANEL AND REMOTE SWITCH PER INSTALLATION MANUAL.
4. COORDINATE ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

AIR COMPRESSOR SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	TANK SIZE	TOTAL HP	ELECTRICAL	NOTES:
AC-1	DENTAL AIR COMPRESSOR SYSTEM	AERAS RAMVAC C7-2	20 GALLON	4 HP	208V/1PH/60HZ/21.0A/30A MOP	1

ϕ NOTES:
1. INSTALL PER MANUFACTURER'S REQUIREMENTS.
2. PROVIDE WITH 8543-023 SOUND COVER.
3. INSTALL MANUFACTURER'S CONTROL PANEL AND REMOTE SWITCH PER INSTALLATION MANUAL.
4. COORDINATE ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

CONTROL DAMPER SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	OPENING SIZE	FRAME	BLADES	OPTIONS
CD-1	VAC/AC ROOM EXHAUST INSULATED CONTROL DAMPER	RUSKIN TED50-XT	18" X 18"	5"x1" .125 ALUM.	6063-T5 EXT. ALUMINUM	WITH FACTORY INSTALLED ACTUATOR.
CD-2	VAC/AC ROOM INTAKE INSULATED CONTROL DAMPER	RUSKIN TED50-XT	18" X 18"	5"x1" .125 ALUM.	6063-T5 EXT. ALUMINUM	WITH FACTORY INSTALLED ACTUATOR.

NOTES:
1. SEE CONTROLS FOR OPERATION OF DAMPER.
2. PROVIDE 24V ACTUATOR. NORMALLY CLOSED, FAIL OPEN.
3. COORDINATE QUANTITY WITH PLANS.
4. ALL DAMPERS TO HAVE FLANGED FRAMES BOTH SIDES.
5. ALL DAMPERS TO HAVE AIRFOIL BLADES.
6. SUBSTITUTE DAMPERS MUST MATCH SPECIFIED DAMPERS IN INSULATING PROPERTIES AND PRESSURE DROP.

DIFFUSER & REGISTER SCHEDULE

TAG	MAKE & MODEL	PANEL	NECK	TYPE	MAX. CFM	NOTES:
A CFM	NAILOR #4330R-RND-08-24x24-L	-	8"ϕ	RETURN GRILLE	150 CFM	-
+ CFM	REMOVE AND REINSTALL EXISTING DIFFUSER	-	-	SUPPLY DIFFUSER	-	REMOVE AND REINSTALL EXISTING DIFFUSER. REBALANCE TO LISTED CFM.
CFM	REMOVE AND REINSTALL EXISTING GRILLE	-	-	RETURN GRILLE	-	REMOVE AND REINSTALL EXISTING GRILLE. REBALANCE TO LISTED CFM.

REMARKS:
1. PROVIDE BRANCH CABLE OPERATED VOLUME DAMPER FOR EACH DIFFUSER AND GRILLE (EXCEPT Z-BEND TRANSFER).
2. ALL ROUND VOLUME DAMPERS SHALL BE EQUAL TO "RUSKIN" CDRS-25 WITH QUADRANT OPERATOR AND STAND-OFF BRACKET FOR INSULATED DUCT.
3. ALL RECTANGULAR VOLUME DAMPERS SHALL BE EQUAL TO "RUSKIN" CD-36 WITH JAMB SEALS, QUADRANT OPERATOR AND STAND-OFF BRACKET FOR INSULATED DUCT.
4. PROVIDE CODE COMPLIANT FLEXIBLE CONNECTIONS TO ROUND DUCT CONNECTION GRILLES AND DIFFUSERS (INCLUDING WITH PRESSURIZED PLENUMS WITH ROUND CONNECTION). FLEXIBLE AIR DUCT LENGTH TO BE 5-6'.
5. CONNECT FLEXIBLE AIR DUCT TO DIFF./REG. NECK WITH S.S. DRAW CLAMP.
6. PROVIDE BRANCH DUCT TAKE-OFF AS PER DETAIL DRAWINGS AND AS INDICATED ON PLANS.
7. PAINT ALL GRILLE BOOTS FLAT BLACK (UNLESS LINED WITH BLACK DUCT LINER). PAINT ANY SECTIONS OF DUCTWORK VISIBLE THROUGH GRILLES FLAT BLACK.
8. COLOR/FINISH BY ARCHITECT.

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MECHANICAL SCHEDULES, LEGENDS & NOTES

M5.01

PLUMBING LEGEND

SYMBOL	DESCRIPTION
	BRASS BODY, STAINLESS STEEL BALL, BALL VALVE
	BUTTERFLY VALVE
	GATE VALVE
	SWING CHECK VALVE
	PIPE DROP/DN.
	PIPE RISE/UP
	PIPE CAP
	PIPE CONTINUATION
	PIPE CLEANOUT
	CONNECT TO EXISTING
	BALANCE VALVE
	FLOOR CLEANOUT
	THREE WAY REGULATING VALVE
	REGULATING VALVE OR SOLENOID VALVE
	RELIEF VALVE
	HOSE BIB
	AIR VENT
	FLOOR DRAIN
	P-TRAP WASTE
	PIPE PITCH
D	PIPE REDUCER
	PIPE STRAINER
	PIPE TEE DOWN
	PIPE TEE
	PIPE UNION
	TEMPERATURE GAUGE
	PRESSURE GAUGE
	PUMP
#	PLUMBING EQUIPMENT TAG
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DN.	DOWN
IW	INDIRECT WASTE
LPG	LIQUIFIED PROPANE GAS
RL	RAIN LEADER
SS	STAINLESS STEEL
V	SANITARY VENT
VTR	VENT THROUGH ROOF
W	SANITARY WASTE
TP	TRAP PRIMER
OD	OVERFLOW DRAIN
FCO	FLOOR CLEAN OUT
WCO	WALL CLEAN OUT
CO	CLEAN OUT ABOVE CEILING

PLUMBING FIXTURE SCHEDULE

TAG	DESCRIPTION	MAKE & MODEL	C.W.	H.W.	WASTE	VENT	REMARKS
S5-1	KITCHEN SINK	ELKAY HDSB3322PW	1/2"	1/2"	1 1/2"	1 1/2"	INSTALL WITH ELKAY MODEL #LK1500 FAUCET. PROVIDE GARVIN STRAINER/DRAIN MODEL 1120, P-TRAP W/ CLEAN OUT. INSTALL PER MANUFACTURER'S REQUIREMENTS.

GENERAL NOTES:

1. INSTALL IN COMPLIANCE WITH ADA STANDARDS.
2. ALL PLUMBING FIXTURES AND SPECIALTIES ARE TO BE LEAD FREE TO COMPLY WITH ANTI-LEAD LAWS.

PLUMBING SPECIFICATIONS AND GENERAL NEW WORK NOTES:

1. PLUMBING GENERAL PROVISIONS
   a. COMPLY WITH ADOPTED CODES, TO INCLUDE THE STATE PLUMBING CODE.
   b. FURNISH SLEEVES WHEN PASSING THROUGH WALLS, PARTITIONS, AND FLOORS. ALSO FURNISH MECHANICAL SLEEVE SEALS WHEN PASSING THROUGH EXTERIOR WALLS.
   c. PROVIDE UL LISTED FIRESTOPPING MEETING ASTM E 814 OR ULC CAN-S115.

2. IDENTIFICATION TO MEET ASME A13.1. INSTALL PREFORMED PLASTIC PIPE MARKERS AROUND PIPE OR ADHERE PLASTIC TAPE PIPE MARKERS TO PIPE.

3. PLUMBING PIPE INSULATION
   a. FIBERGLASS INSULATION TO COMPLY WITH ASTM C 547, TYPE I, GRADE A, 850°F OR ASTM C 547, TYPE IV, 1,000°F. FACTORY FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585. FACTORY APPLIED ASJ AND MAXIMUM 25/50 FLAME-SPREAD/SMOKE PER ASTM E84. THERMAL CONDUCTIVITY: 0.23 BTU-IN/HR-SQ.FT.-°F AT 75 DEG F.
   b. PVC FITTING COVERS 20 MIL WITH FIBERGLASS INSERTS, SAME THICKNESS AS PIPE INSULATION.
   c. INSULATION THICKNESS: DCW 3/4" AND SMALLER USE 1/2" THICK. DHW 1-1/4" AND SMALLER USE 1" THICK.

4. DOMESTIC WATER PIPING SYSTEM
   a. ASTM B88, TYPE L, WATER TUBE, DRAWN TEMPER.
   b. ASME B16.18 CAST COPPER ALLOY OR ASME B16.22 WROUGHT COPPER SOLDER-JOINT FITTINGS. TWO PIECE FULL PORT 600 PSIG WOG BRONZE BALL VALVES AND SPECIALTIES TO BE THREADED OR SOLDERED. NO OTHER COPPER JOINT METHODS SHALL BE PERMITTED.
   c. SOLDERED JOINTS: USE ASTM B 813, WATER-FLUSHABLE, LEAD-FREE FLUX; ASTM B32, LEAD-FREE-ALLOY SOLDER; AND ASTM B 828 PROCEDURE.
   d. DOMESTIC WATER PIPING AND COMPONENTS TO COMPLY WITH NSF 61 FOR HEALTH EFFECTS AND CERTIFIED TO ANSI/NSF 372 FOR LOW LEAD CONTENT.

5. SANITARY WASTE AND VENT PIPING SYSTEM, NPS 4 AND SMALLER, ABOVE GRADE AND BELOW GRADE
   a. SOLID-WALL PVC PIPE: ASTM D 2665, SCHEDULE 40, DRAIN, WASTE, AND VENT
   b. PVC JOINTS: SOLVENT WELDED, WITH ASTM D 2564 SOLVENT CEMENT, ASTM D 2665, SOCKET TYPE, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS.
   c. SLOPE AT 1/4" PER 1'-0" TO THE EXTENT POSSIBLE; OTHERWISE, CONFIRM WITH ENGINEER. INSTALL UNDERGROUND PIPING ACCORDING TO ASTM D 2321. INSTALL HANGERS FOR HORIZONTAL PVC PIPING WITH MAXIMUM SPACING OF 4 FEET.

6. DENTAL COMPRESSED AIR PIPING SYSTEM (FOR EDUCATIONAL TRAINING PURPOSES ONLY, NOT NFPA 99 COMPLIANT)
   a. ASTM B88, TYPE K, WATER TUBE, DRAWN TEMPER.
   b. ASME B16.22 WROUGHT COPPER SOLDER-JOINT FITTINGS. ONE PIECE FULL PORT 600 PSIG WOG BRASS BALL VALVES AND SPECIALTIES TO BE THREADED OR SOLDERED. NO OTHER COPPER JOINT METHODS SHALL BE PERMITTED.
   c. SOLDERED JOINTS: USE ASTM B 813, WATER-FLUSHABLE, LEAD-FREE FLUX; ASTM B32, LEAD-FREE-ALLOY SOLDER; AND ASTM B 828 PROCEDURE.

7. DENTAL VACUUM PIPING SYSTEM (FOR EDUCATIONAL TRAINING PURPOSES ONLY, NOT NFPA 99 COMPLIANT) NPS 4 AND SMALLER, ABOVE GRADE AND BELOW GRADE
   a. PVC PLASTIC PIPE, SCHEDULE 40, ASTM D 1785
   b. PVC PLASTIC FITTINGS, SCHEDULE 40, ASTM D 2466
   c. PVC JOINTS TO BE SOLVENT-CEMENTED, ASTM D 2672
   d. SLOPE AT 1/4" PER 1'-0" REQUIRED TOWARD VACUUM SOURCE EQUIPMENT. INSTALL UNDERGROUND PIPING ACCORDING TO ASTM D 2321. INSTALL HANGERS FOR HORIZONTAL PVC PIPING WITH MAXIMUM SPACING OF 4 FEET.

LEGEND	
SYMBOL	DESCRIPTION
DM	DAMPER MOTOR ACTUATOR
FS	FREEZE STAT
T	TEMPERATURE SENSOR
CC	COOLING COIL
EA	EXHAUST AIR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTDOOR AIR
RA	RETURN AIR
SA	SUPPLY AIR

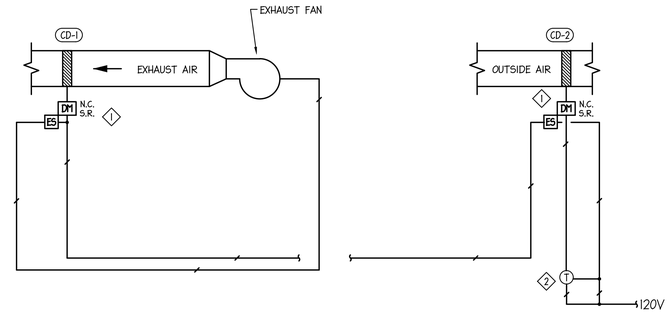
DIRECT DIGITAL CONTROLS GENERAL NOTES

1. THE CONTROLS CONTRACTOR SHALL PROVIDE ALL THE NECESSARY MATERIALS, LABOR AND ACCESSORIES IN ORDER TO PROVIDE A COMPLETE WORKING CONTROLS SYSTEM.

2. PROVIDE A COMPLETE AND OPERATIONAL CONTROLS SYSTEM INCLUDING ALL REQUIRED WIRING, PROGRAMMING, DEVICES, AND OPERATIONS MANUALS. THE CONTROLS/MECHANICAL CONTRACTOR'S WORK SHALL INCLUDE BUT NOT BE LIMITED TO: PROVIDING SENSORS FOR THE CONTROLS SYSTEM, , CONTROL MODULE(S), CONDUCTORS, PROGRAMMING, THERMOSTATS ETC.

3. THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROLS CONDUIT. ALL CONTROLS CONDUCTORS SHALL BE INSTALLED WITHIN E.M.T. OR FLEXIBLE METAL CONDUIT WITHIN THE MECHANICAL ROOM. THE CONTROLS CONDUIT SHALL BE A MINIMUM OF 1/2" EMT. ALL CONTROL WIRING TO EXTERIOR EQUIPMENT SHALL BE IN CONDUIT.

4. A MAXIMUM DISTANCE OF 6'-0" SHALL BE PERMITTED FOR UTILIZING FLEXIBLE METAL CONDUIT OR SEAL TIGHT CONDUIT.



1 EXHAUST FAN CONTROLS SCHEMATIC
N.T.S.

SEQUENCE OF OPERATIONS

SYSTEM OPERATION

WHEN SPACE TEMPERATURE RISES ABOVE SETPOINT (90°F ADJ.), OUTDOOR AIR AND EXHAUST AIR DAMPERS SHALL BE OPENED AND EXHAUST FAN SHALL BE ENABLED. OPERATE EXHAUST FAN UNTIL SPACE TEMPERATURE DROPS BELOW SET POINT (PROVIDED DEADBAND TO LIMIT CYCLING). ONCE SENSOR IS SATISFIED, THE EXHAUST FAN SHALL BE STOPPED AND THE DAMPERS CLOSED.

NOTES:

1. PROVIDE DAMPER ACTUATORS WITH END SWITCHES.
2. REVERSE ACTING THERMOSTAT.

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CONSULTANTS

SAS PROJECT NUMBER: 1242

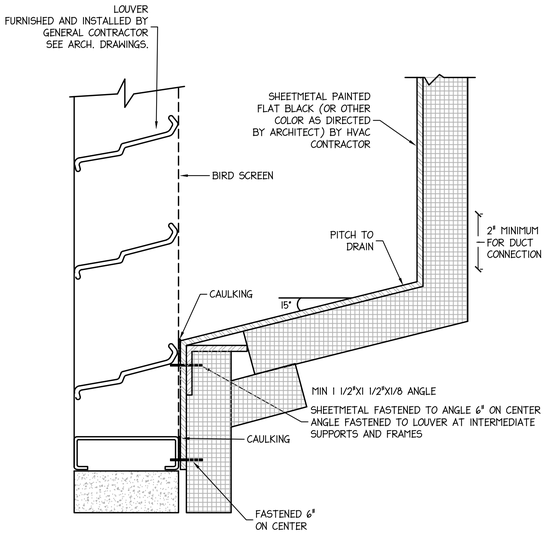
PROJECT
DENTAL THERAPY LAB
BUILDING 300
•
VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS
WILLISTON, VERMONT

DATE: FEBRUARY 21, 2021
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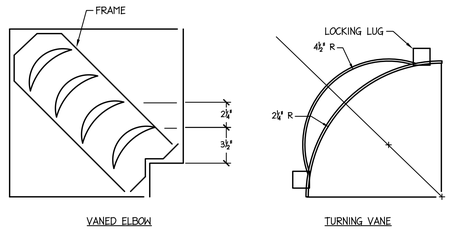
MECHANICAL CONTROLS, PLUMBING SCHEDULES LEGENDS & NOTES

M5.02



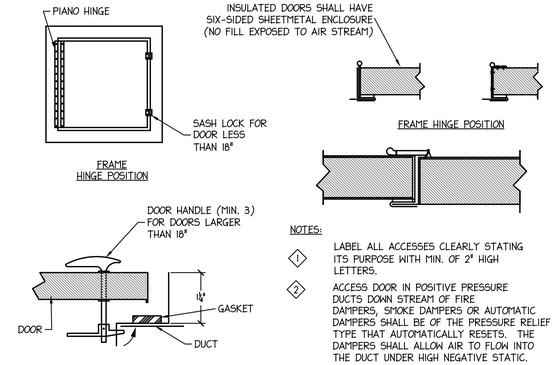
NOTES:
1. SUPPORT PLENUM FROM FLOOR OR STRUCTURE ABOVE W/ GALVANIZED STEEL ANGLES AND CHANNELS.

1 PLENUM LOUVER CONNECTION
NTS



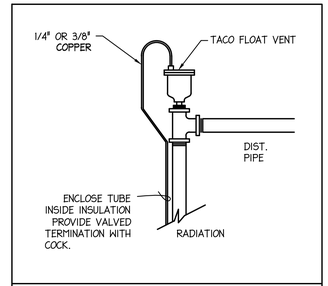
NOTES:
1. LOCKING LUGS INTEGRAL WITH VANE
2. MAXIMUM UNSUPPORTED VANE LENGTH 48"
3. FRAMES - BOLTED OR RIVETED TO ELBOW
4. VANES AND FRAMES - SAME GAUGE AS ELBOW

2 DOUBLE THICKNESS TURNING VANES FOR SQUARE ELBOW
N.T.S.



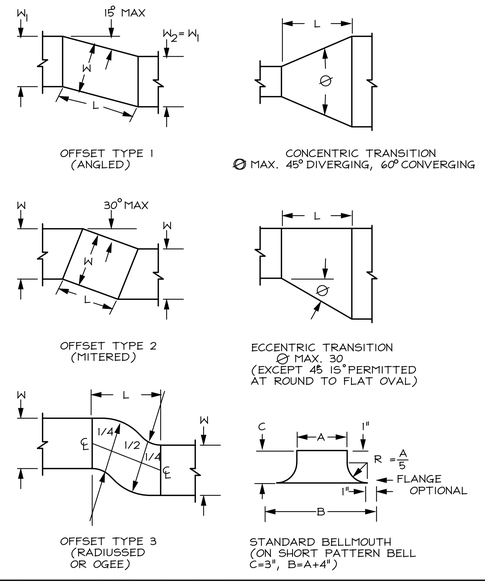
NOTES:
1. LABEL ALL ACCESSES CLEARLY STATING ITS PURPOSE WITH MIN. OF 2" HIGH LETTERS.
2. ACCESS DOOR IN POSITIVE PRESSURE DUCTS DOWN STREAM OF FIRE DAMPERS, SMOKE DAMPERS OR AUTOMATIC DAMPERS SHALL BE OF THE PRESSURE RELIEF TYPE THAT AUTOMATICALLY RESETS. THE DAMPERS SHALL ALLOW AIR TO FLOW INTO THE DUCT UNDER HIGH NEGATIVE STATIC.

3 DUCT ACCESS DOORS
N.T.S.

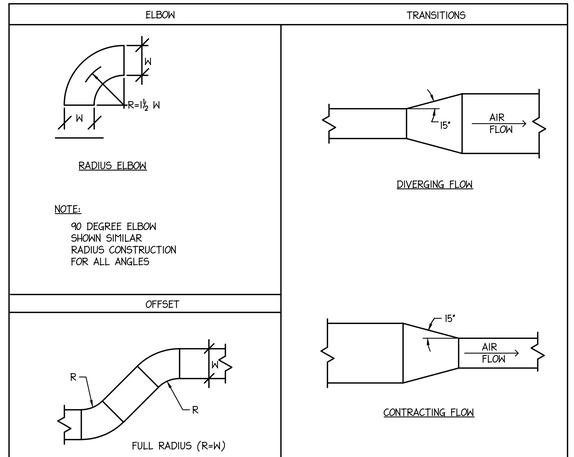


4 HIGH POINT AIR VENT
NTS

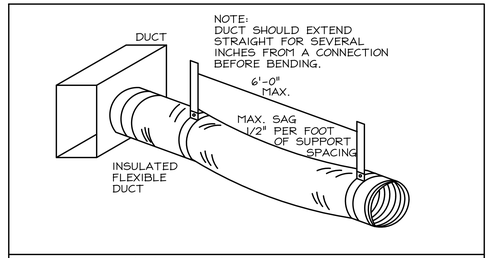
OFFSETS 2 AND 3 AND TRANSITIONS MAY HAVE EQUAL OR UNEQUAL INLET AND OUTLET AREAS. TRANSITIONS MAY CONVERT DUCT PROFILES TO ANY COMBINATION FOR RECTANGULAR, ROUND OR FLAT OVAL SHAPES.



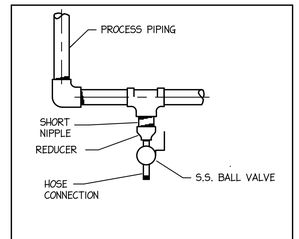
5 DUCTWORK TRANSITION SCHEMATIC
NTS



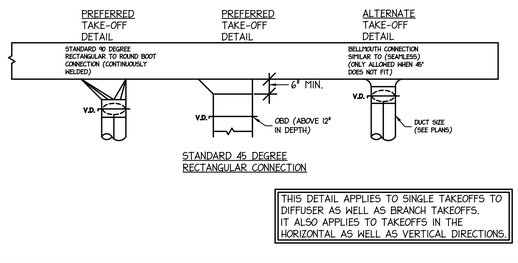
6 RECTANGULAR TRANSITION, OFFSETS, AND ELBOWS
N.T.S.



7 FLEXIBLE HANGER SCHEMATIC
NTS



8 TYPICAL LOW POINT DRAIN
NTS



9 DUCT TAKEOFFS
N.T.S.

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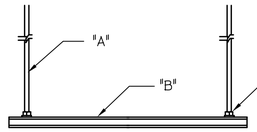
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PROJECT
DENTAL THERAPY LAB
BUILDING 300
VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS
WILLISTON, VERMONT

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MECHANICAL AND PLUMBING DETAILS

M6.01

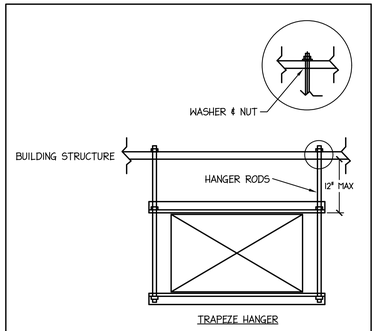


TRAPEZE HANGER FOR RECTANGULAR DUCTWORK

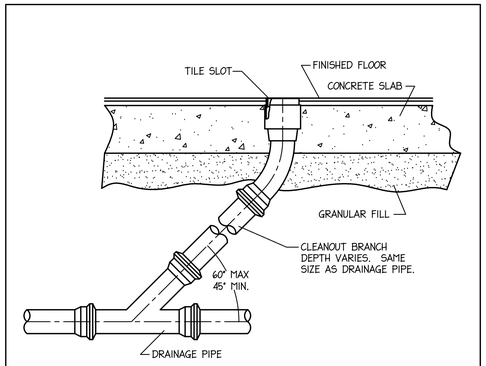
NOT TO SCALE

SYMBOL	DESCRIPTION
"A"	3/8" THREADED ROD
"B"	B-LINE B-52-1 7/8"H 12Ga.
"C"	3/8" NUT AND WASHER

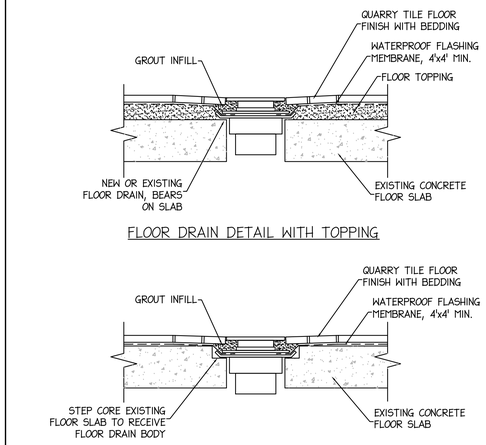
1 TRAPEEZE SCHEMATIC
NTS



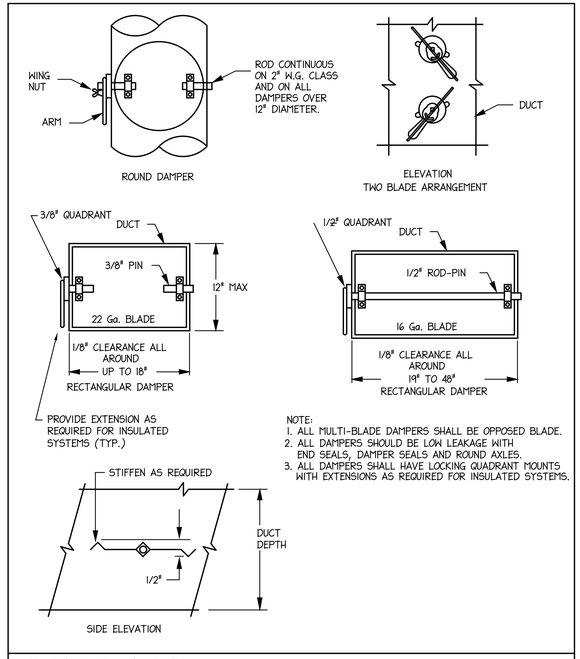
2 SEISMIC DUCT HANGER
N.T.S.



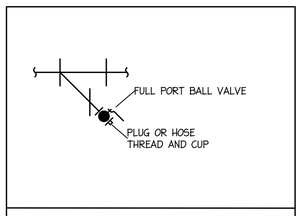
3 CLEAN-OUT DETAIL
N.T.S.



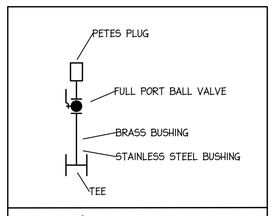
4 FLOOR DRAIN INSTALLATION DETAILS
NOT TO SCALE



7 DAMPER LAYOUTS
N.T.S.



5 STRAINER PIPING SCHEMATIC
NTS



6 PETE'S PLUG SCHEMATIC
NTS

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PROJECT

DENTAL
THERAPY LAB

BUILDING 300

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VERMONT TECHNICAL
COLLEGE
WILLISTON CAMPUS

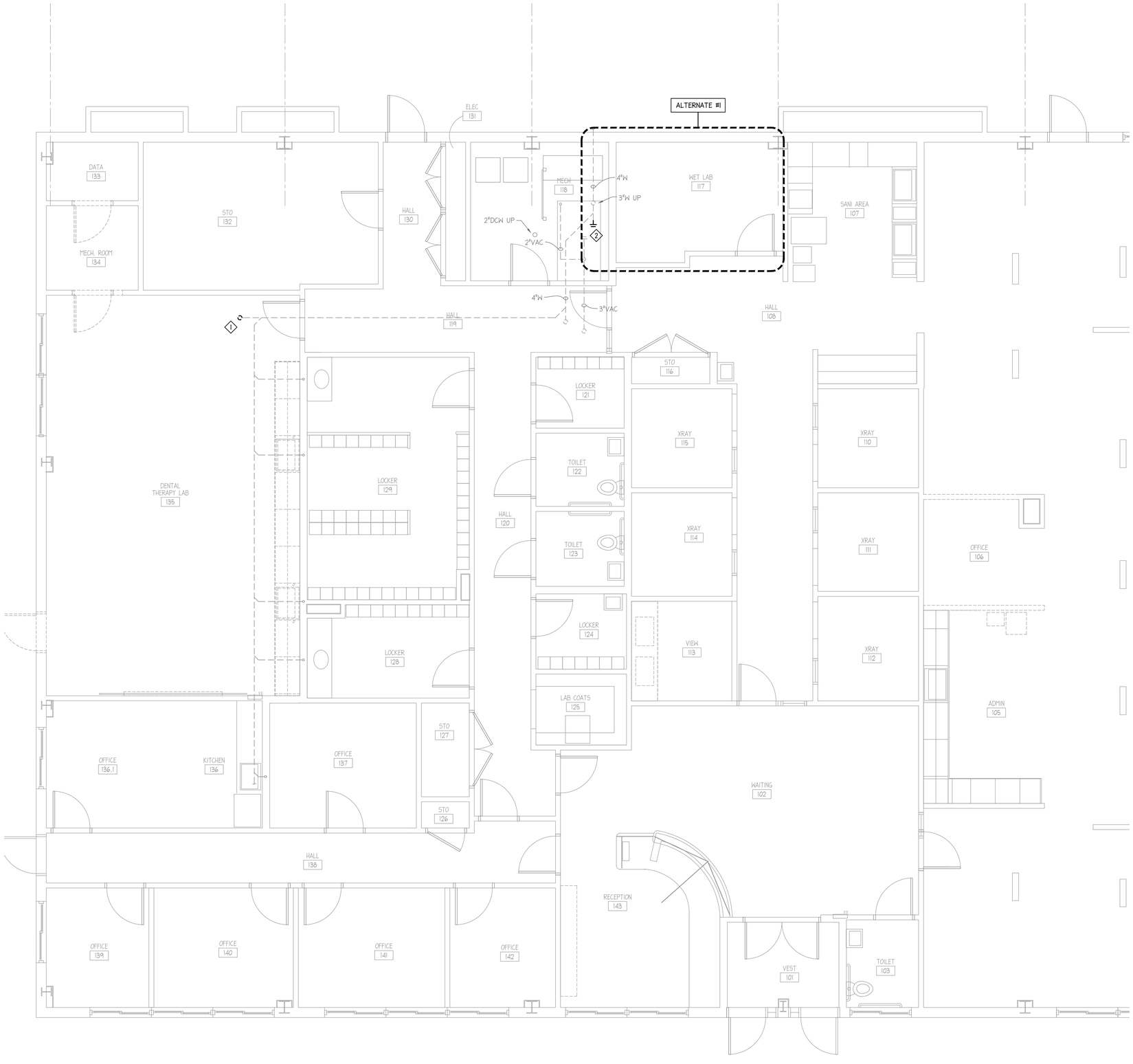
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REVISIONS

MECHANICAL
AND PLUMBING
DETAILS

M6.02



PLUMBING DEMOLITION LEGEND

- EXISTING PLUMBING TO REMAIN
- EXISTING PLUMBING TO BE DEMOLISHED

SPECIFIC PLUMBING DEMOLITION NOTES

1. THE EXISTING PLUMBING CLEANOUT IS TO BE REMOVED. UNDERSLAB PLUMBING LINE WILL BE EXTENDED AS PART OF THE NEW WORK.
2. THE EXISTING WASTE CLEANOUT IS TO BE REMOVED. THIS LINE WILL BE EXTENDED AS PART OF THE NEW WORK.

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BUILDING 300

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WILLISTON CAMPUS

WILLISTON, VERMONT

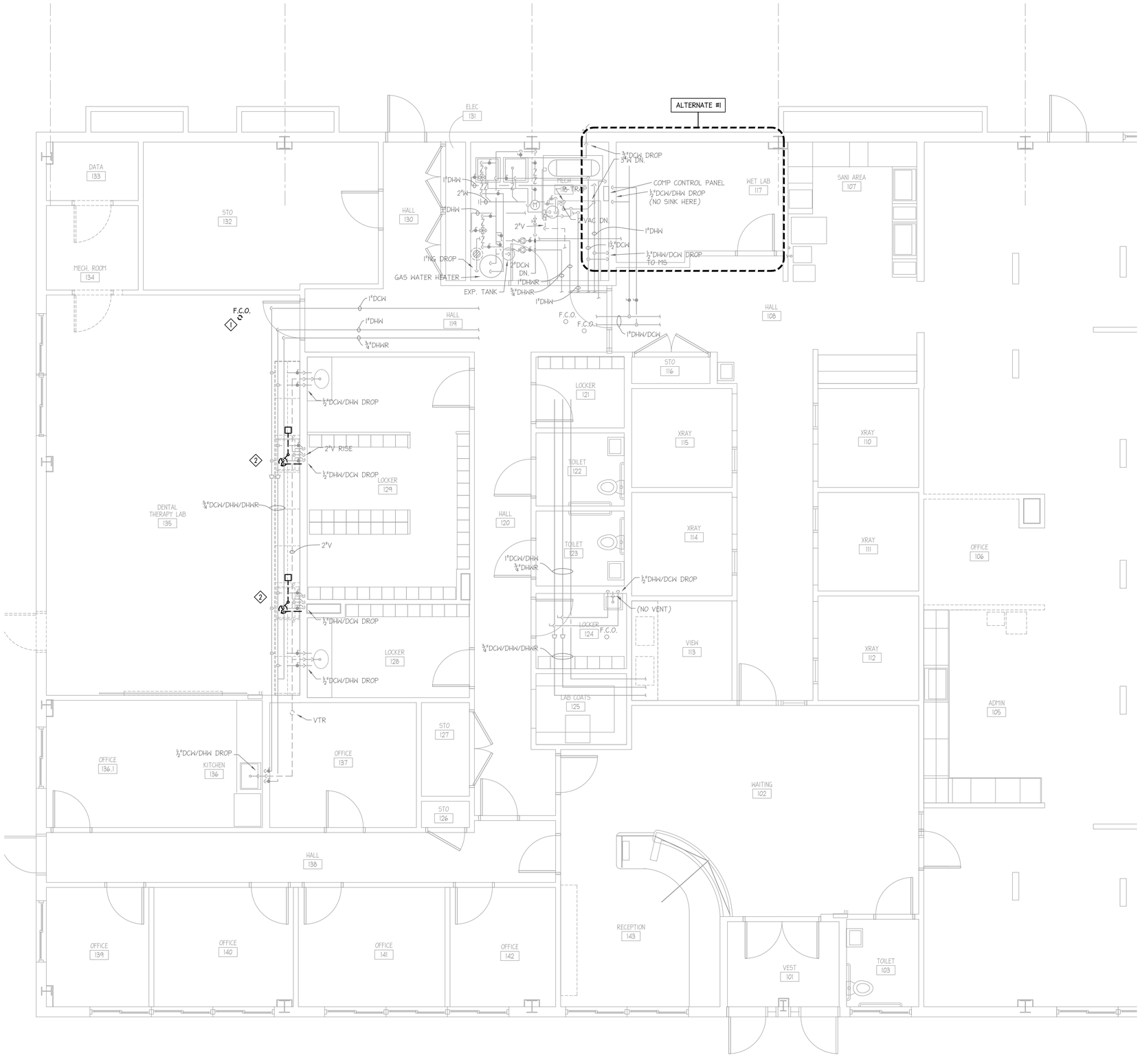
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REVISIONS

UNDERSLAB PLUMBING DEMO PLAN

P0.01

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PLUMBING DEMOLITION LEGEND	
———	EXISTING PLUMBING TO REMAIN
- - - - - -	EXISTING PLUMBING TO BE DEMOLISHED

⑧ SPECIFIC PLUMBING DEMOLITION NOTES

1. THE EXISTING PLUMBING CLEANOUT IS TO BE REMOVED. UNDERSLAB PLUMBING LINE WILL BE EXTENDED AS PART OF THE NEW WORK.
2. EXISTING SINKS IN DENTAL THERAPY LAB 135 ARE TO BE REMOVED AND RELOCATED TO THE NEW LOCATION WITHIN DENTAL THERAPY LAB 135. SEE NEW WORK DRAWINGS. EXISTING TRIMMERS ARE TO BE REMOVED AND RELOCATED ADJACENT TO THE SINKS.

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PROJECT

DENTAL
THERAPY LAB

BUILDING 300

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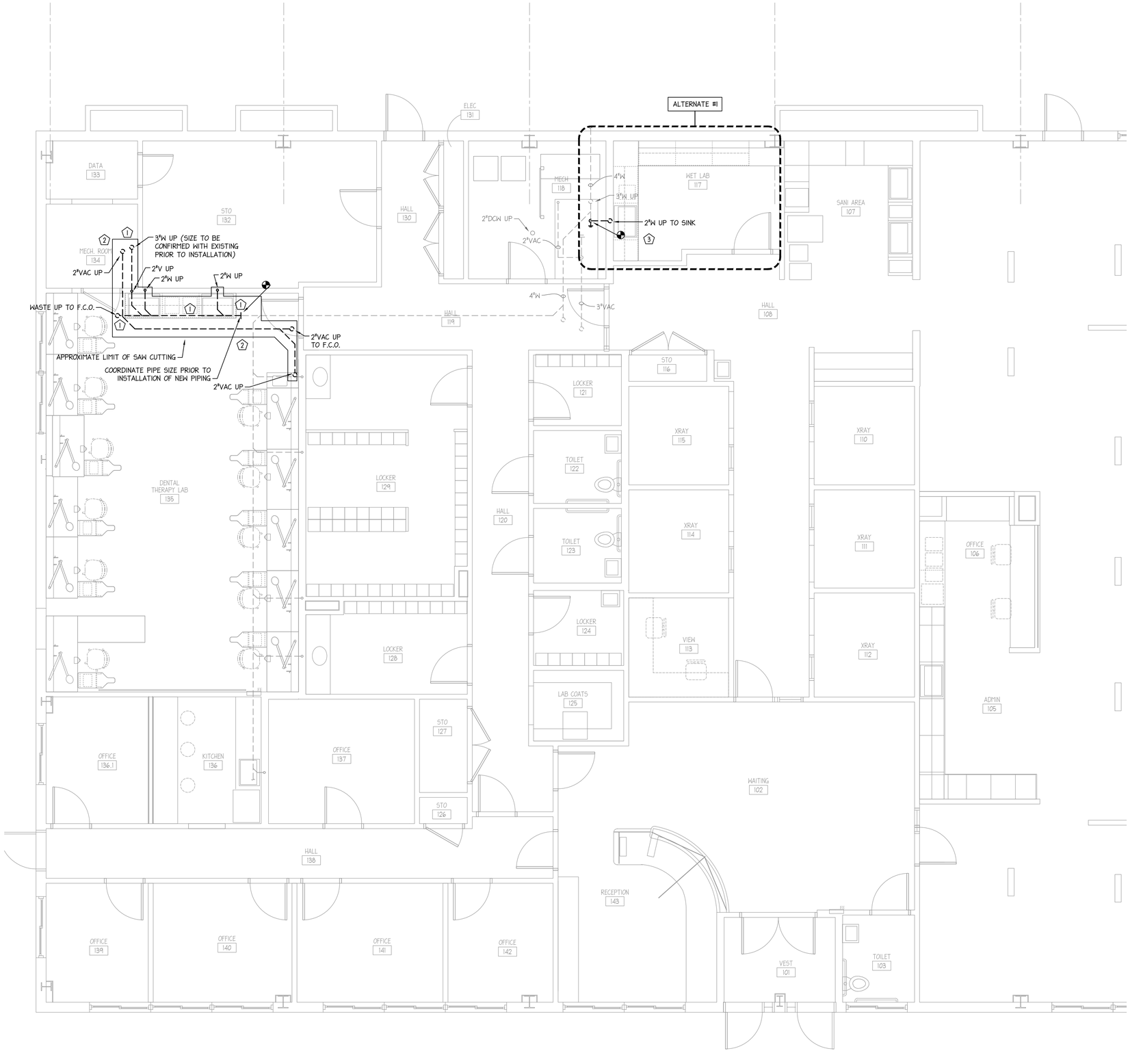
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FIRST FLOOR
PLUMB.
DEMO PLAN

P0.11

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PLUMBING NEW WORK LEGEND

———————	EXISTING PLUMBING TO REMAIN
———————	NEW PLUMBING TO BE FURNISHED AND INSTALLED

⑧ SPECIFIC PLUMBING NEW WORK NOTES:

1. INSTALL NEW UNDERSLAB WASTE PIPING SERVING THE FLOOR DRAIN IN STO 134. INSTALL NEW CLEANOUT IN LOCATION INDICATED. COORDINATE EXACT LOCATIONS OF FIXTURE TIE-INS AND THE CLEANOUT WITH FIELD INSTALLED FIXTURES AND CASEWORK. TIE NEW WASTE PIPING INTO THE EXISTING WASTE LINE.
2. INSTALL NEW UNDERSLAB VACUUM LINE AS INIDICATED. ENSURE VACUUM LINE IS PITCHED AT MINIMUM 1/4" PER 10 FEET BACK TO THE VACUUM PUMP. PROVIDE CLEANOUTS AS INDICATED. ENSURE THERE ARE NO SAGS IN THE LINE.
3. NEW SINK IN WET LAB 117 TO TIE INTO WASTE LINE WITHIN THE PIT IN MECH. 118. EXTEND EXISTING LINE AS NECESSARY TO ACCOMMODATE NEW TIE-IN. PROVIDE CLEANOUT AT THE END OF THE LINE.

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DENTAL THERAPY LAB

BUILDING 300

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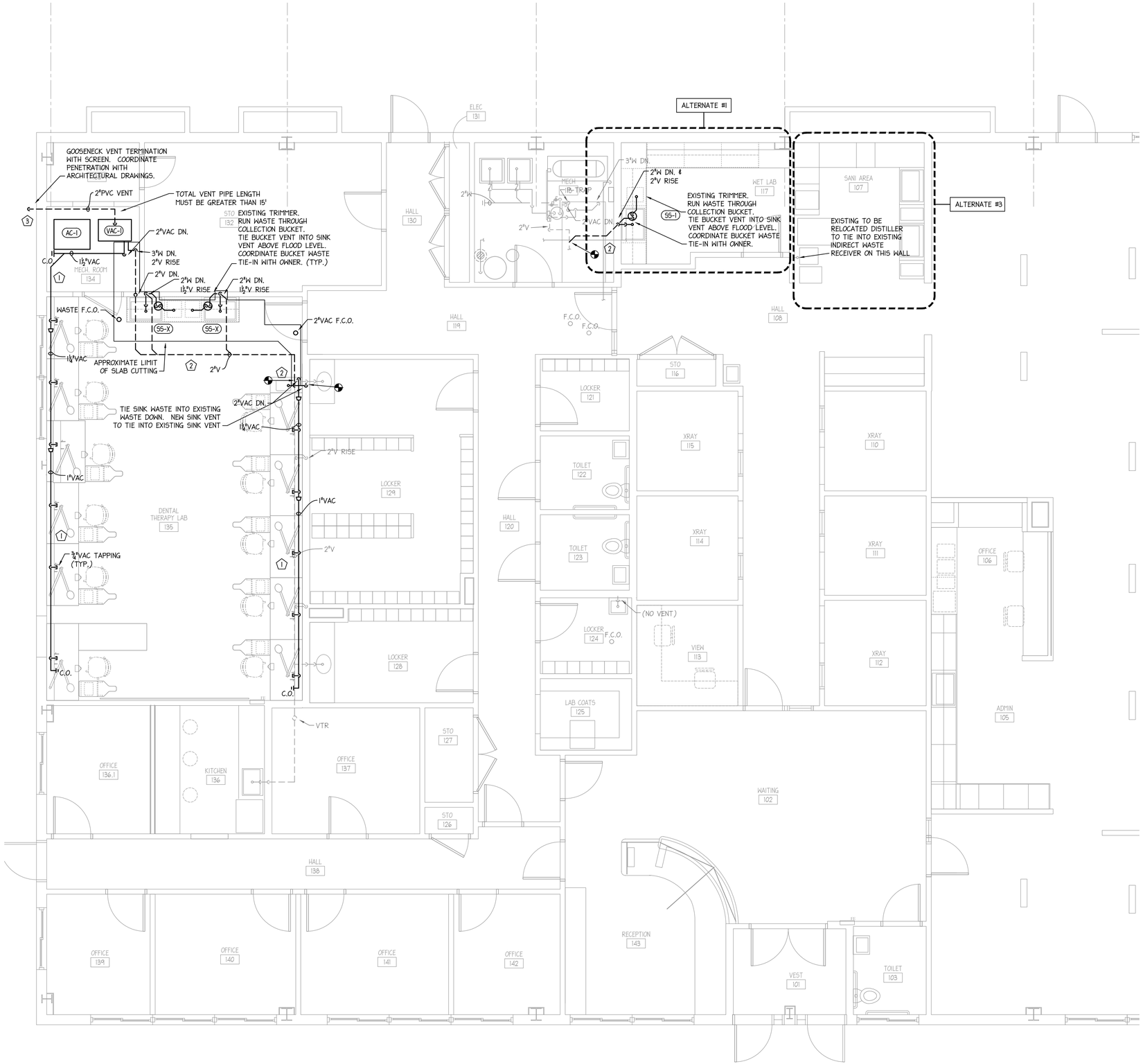
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REVISIONS

UNDERSLAB PLUMBING NEW WORK PLAN

P1.01



PLUMBING NEW WORK LEGEND

———	EXISTING PLUMBING TO REMAIN
———	NEW PLUMBING TO BE FURNISHED AND INSTALLED

⑧ SPECIFIC PLUMBING NEW WORK NOTES:

1. INSTALL NEW VACUUM LINE WITHIN CASEWORK SYSTEM. COORDINATE ELEVATION WITH CASEWORK PLANS AND DETAILS. VACUUM LINES ARE TO BE RUN AT MINIMUM 1/4" PER 10 FEET SLOPE BACK TO THE VACUUM PUMP. SEE SPECIFICATIONS FOR MATERIALS.
2. INSTALL NEW VENT PIPING FOR FIXTURES INDICATED. TIE INTO EXISTING PLUMBING VENT SYSTEM.
3. INSTALL VENT PENETRATION THROUGH THE EXTERIOR WALL. INSTALL AT A HEIGHT OF APPROXIMATELY 10'-9". ALIGN WITH THE CENTER OF LOUVERS ON THIS WALL. COORDINATE WITH MECHANICAL CONTRACTOR. COORDINATE REQUIREMENTS WITH ARCHITECTURAL DRAWINGS.

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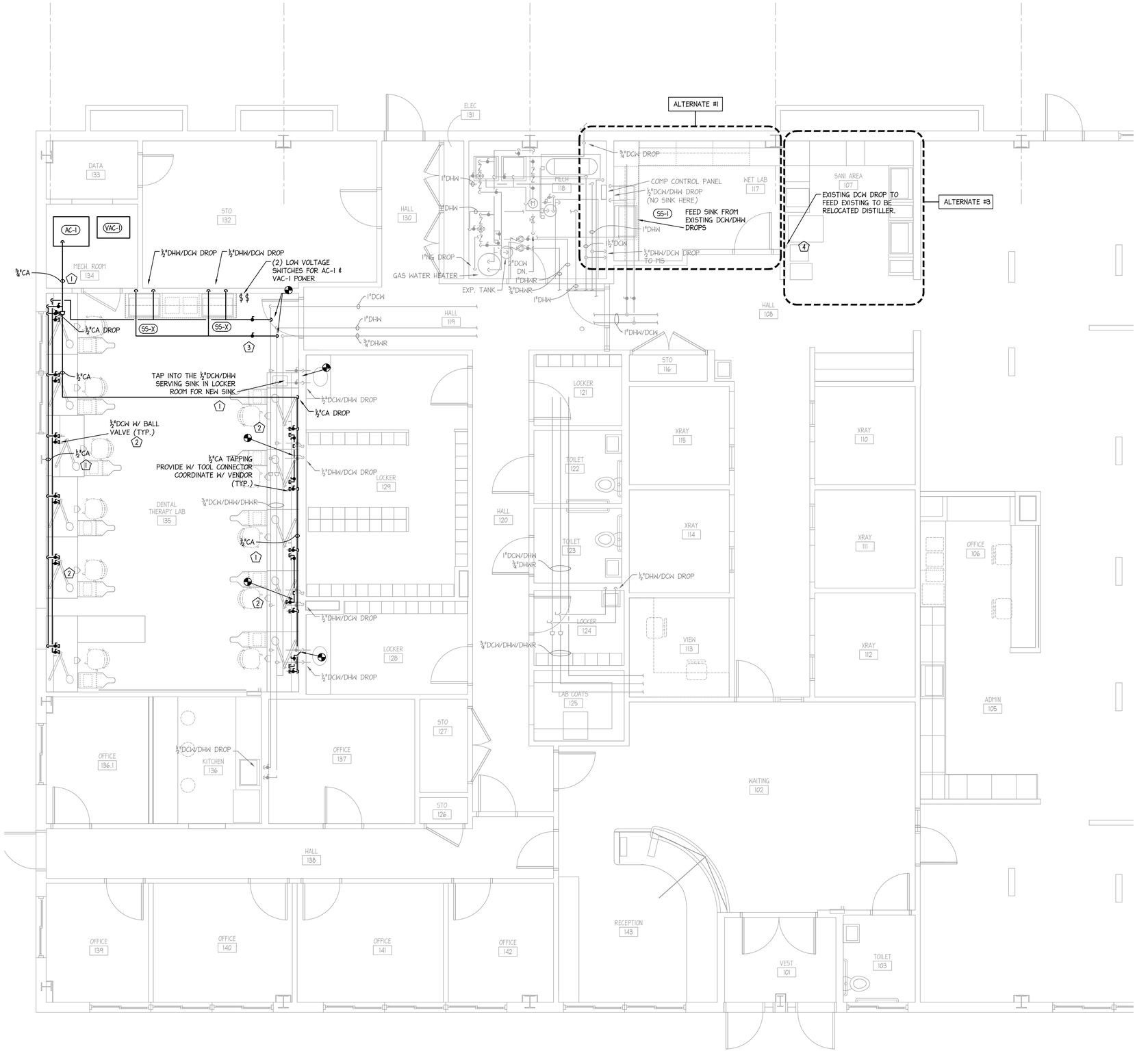
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REVISIONS

FIRST FLOOR PLUMB. SANITARY NEW WORK PLAN

P1.11



PLUMBING NEW WORK LEGEND

———————	EXISTING PLUMBING TO REMAIN
———————	NEW PLUMBING TO BE FURNISHED AND INSTALLED

SPECIFIC PLUMBING NEW WORK NOTES:

1. INSTALL NEW COMPRESSED AIR LINES WITHIN CASEWORK SYSTEM. COORDINATE ELEVATION WITH CASEWORK PLANS AND DETAILS. COORDINATE REQUIREMENTS WITH CASEWORK PLANS AND DETAILS. SEE SPECIFICATIONS FOR MATERIALS.
2. INSTALL NEW DOMESTIC COLD WATER PIPING WITHIN THE CASEWORK TO THE NEW EQUIPMENT. COORDINATE REQUIREMENTS WITH CASEWORK SYSTEM PLANS AND DETAILS. DCW TO TIE INTO EXISTING DOMESTIC COLD WATER LINES SERVING THE PREVIOUSLY INSTALLED SINKS AND THE SINKS ON THE OPPOSITE SIDE OF THE WALL.
3. TIE INTO THE EXISTING DCW AND DHW LINES AS INDICATED. PROVIDE ISOLATION BALL VALVE (FULL PORT) AT BRANCH TAKEOFF.
4. RECONNECT RELOCATED WATER DISTILLER INTO EXISTING DOMESTIC COLD WATER LINE ON THE WALL.

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DENTAL THERAPY LAB

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WILLISTON CAMPUS

WILLISTON, VERMONT

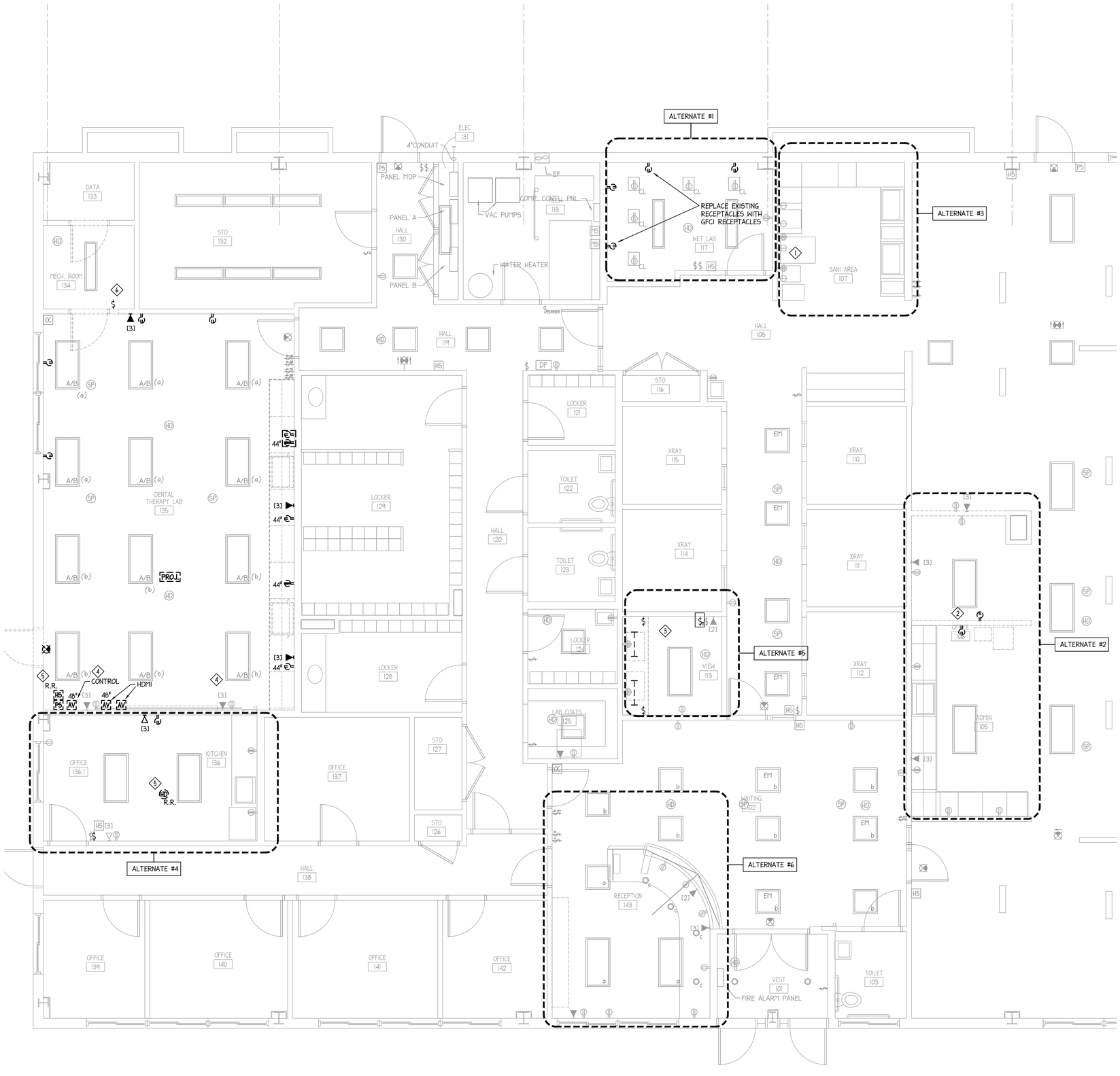
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FIRST FLOOR PLUMB. DOMESTIC NEW WORK

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ELECTRICAL DEMOLITION LEGEND

———	EXISTING ELECTRICAL TO REMAIN
- - - - - -	EXISTING ELECTRICAL TO BE DEMOLISHED

◇ SPECIFIC ELECTRICAL DEMOLITION NOTES

1. COORDINATE EXISTING OUTLET LOCATIONS WITH NEW CASEWORK. FOR BIDDING PURPOSES, ASSUME THAT (3) OUTLETS WILL NEED TO BE RELOCATED TO ACCOMMODATE THE NEW CASEWORK.
2. EXISTING RECEPTACLES ARE TO BE REMOVED. DEMOLISH WIRING BACK TO LAST ACTIVE BRANCH OR EXTEND TO NEW RECEPTACLES AS INDICATED ON THE NEW WORK PLANS.
3. EXISTING TABLE LIGHT FIXTURES ARE TO BE REMOVED. DEMOLISH POWER AND SWITCHING FOR EXISTING TABLE FIXTURES.
4. ALL ELECTRICAL DEVICES ON SOUTHERN DENTAL THERAPY LAB 135 WALL THAT ARE SHOWN TO BE EXISTING ARE TO HAVE THEIR COVER PLATES REMOVED TO ACCOMMODATE THE ADDITIONAL LAYER OF SHEETROCK THAT WILL BE INSTALLED ON THE NEW WALL. REINSTALL OUTLET COVERS WITH CODE COMPLIANT EXTENDERS AS NECESSARY.
5. REMOVE AND RELOCATE EXISTING FIRE ALARM DEVICE. EXTEND EXISTING FIRE ALARM CIRCUIT OR TIE INTO A DIFFERENT FIRE ALARM CIRCUIT AS IS NECESSARY TO CONNECT THE DEVICE IN THE NEW LOCATION.
6. EXISTING LIGHT SWITCH IN MECH. ROOM 134 IS TO BE REMOVED AND RELOCATED.

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PROJECT

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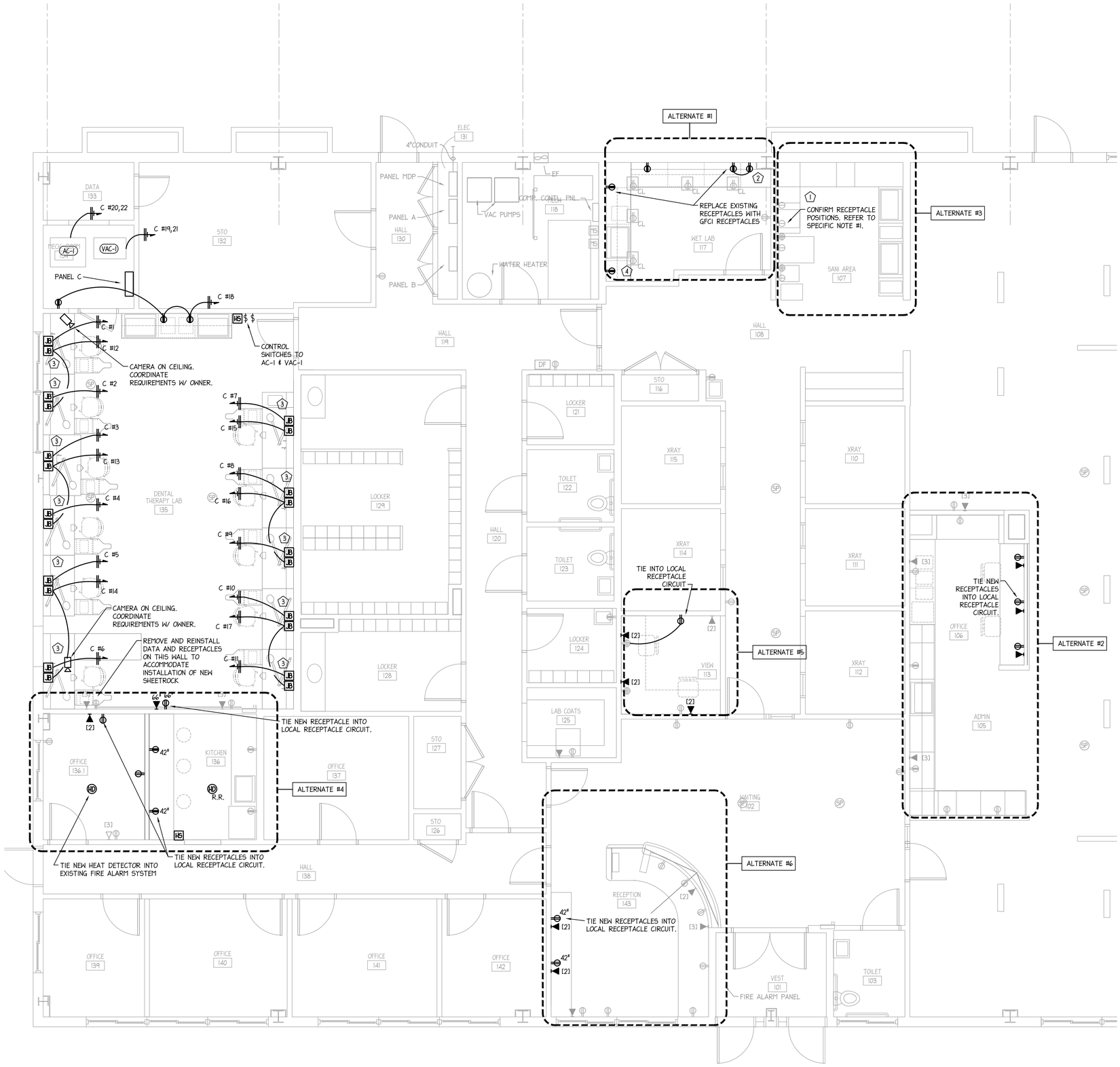
WILLISTON, VERMONT

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REVISIONS

FIRST FLOOR
ELEC.
DEMOLITION
PLAN

E0.11



ELECTRICAL NEW WORK LEGEND

- EXISTING ELECTRICAL TO REMAIN
- NEW ELECTRICAL TO BE FURNISHED AND INSTALLED

⑧ SPECIFIC ELECTRICAL NEW WORK NOTES:

1. AS INDICATED ON THE DEMO PLANS, COORDINATE EXISTING OUTLET LOCATIONS WITH NEW CASEWORK. FOR BIDDING PURPOSES, ASSUME THAT (3) OUTLETS WILL NEED TO BE RELOCATED TO ACCOMMODATE THE NEW CASEWORK.
2. INSTALL NEW OUTLET FOR UNDERCOUNTER REFRIGERATOR. TIE INTO LOCAL RECEPTACLE CIRCUIT. (RECEPTACLE TO BE LOCATED UNDER THE COUNTER.
3. COORDINATE POWER REQUIREMENTS WITH CASEWORK VENDORS DRAWINGS, DETAILS AND SPECIFICATIONS. THERE ARE TO BE (2) JUNCTION BOXES FOR EACH WORKSTATION.
4. INSTALL NEW ABOVE COUNTER OUTLET IN A NEW LOCATION NEXT TO THE NEW SINK. EXTEND THE POWER FEED FROM THE EXISTING OUTLET LOCATION OVER THE NEW SINK.

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WILLISTON CAMPUS

WILLISTON, VERMONT

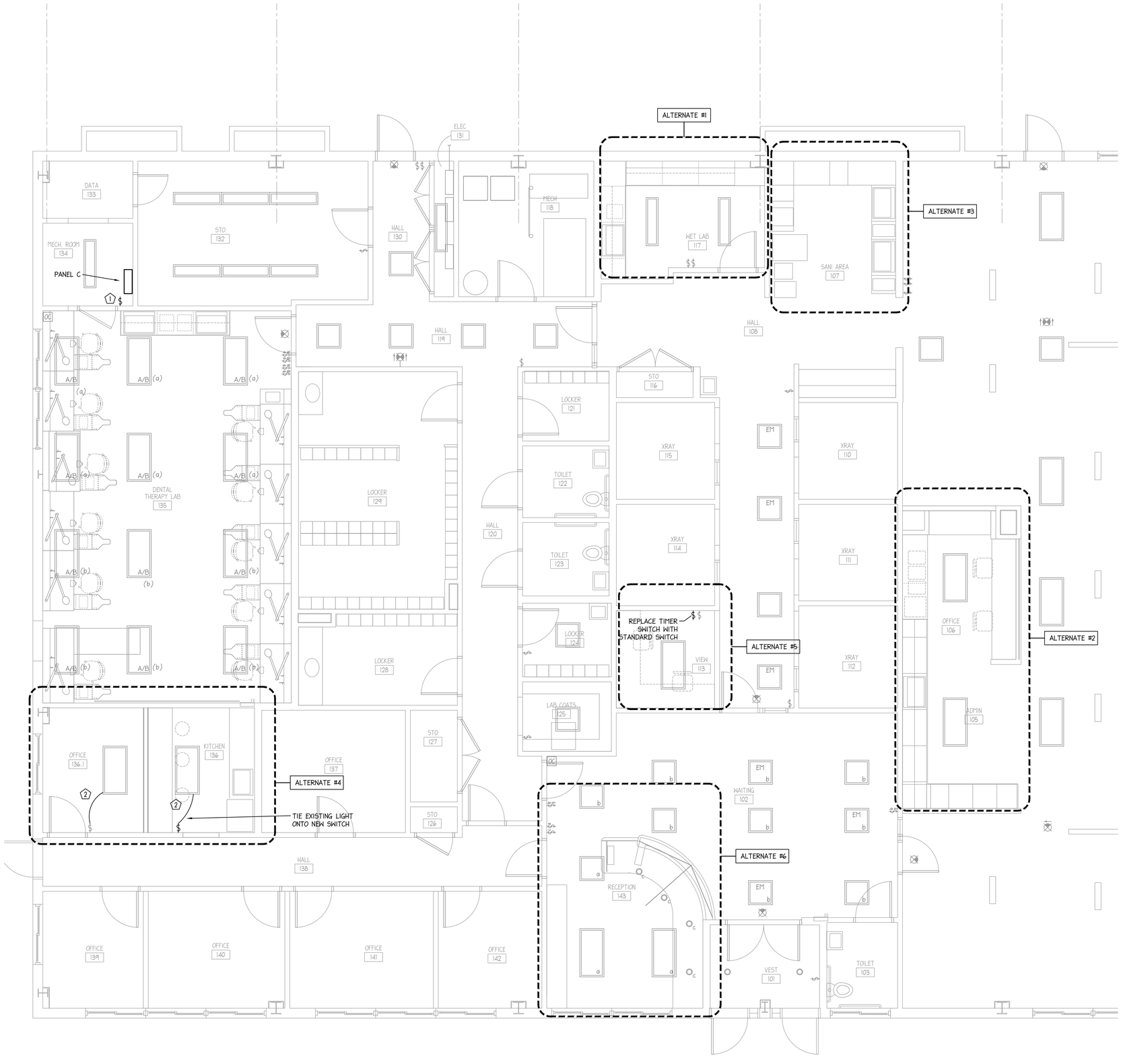
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REVISIONS

FIRST FLOOR ELEC. POWER NEW WORK PLAN

E1.11

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LIGHTING NEW WORK LEGEND

EXISTING LIGHTING TO REMAIN

NEW LIGHTING TO BE FURNISHED AND INSTALLED

SPECIFIC LIGHTING NEW WORK NOTES:

1. EXISTING LIGHT SWITCH IN STORAGE 134 TO BE RELOCATED.
2. EXISTING SWITCH IN OFFICE 136.1 SHALL NOW ONLY CONTROL THE LIGHT FIXTURE IN THE OFFICE. INSTALL A NEW SWITCH TO CONTROL THE LIGHT FIXTURE WITHIN THE KITCHEN.

STATE OF VERMONT
GEORGE D. MARTIN
NO. 134211
ELECTRICAL
LICENSED
PROFESSIONAL ENGINEER

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CONSULTANTS

SAS PROJECT NUMBER: 1242

PROJECT

DENTAL
THERAPY LAB

BUILDING 300

•

VERMONT TECHNICAL COLLEGE
WILLISTON CAMPUS

WILLISTON, VERMONT

DATE: FEBRUARY 21, 2021
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REVISIONS

FIRST FLOOR
ELEC. LIGHTING
NEW WORK
PLAN

E2.11

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LEGEND

SYMBOL	DESCRIPTION
	FUSED DISCONNECT SWITCH
$	WALL SWITCH
	SIMPLEX RECEPTACLE
	DUPLEX RECEPTACLE
	QUADPLEX RECEPTACLE
CL	CEILING MOUNTED RECEPTACLE
	GFCI RECEPTACLE
JB	JUNCTION BOX
	DATA OUTLET. 2 JACKS PER OUTLET, 1 CABLE PER JACK. "CL" = CEILING MOUNT FOR WI-FI.
	HOME RUN
PS	PULL STATION
HS	HORN STROBE

ABBREVIATIONS

ABBREV.	DESCRIPTION
AD	AUTOMATIC DOOR OPENER
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AT	AMPERE TRIP
BC	BARE COPPER
CB, C/B	CIRCUIT BREAKER
DB	DIRECT BURIAL
EC	EMPTY CONDUIT
EG	EQUIPMENT GROUND
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FSS	FUSED SAFETY SWITCH
GTB	GROUND TERMINAL BOX
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
LTCP	LOCAL TEMPERATURE CONTROL PANEL
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
MTC	MEDIUM VOLTAGE MODULAR TERMINATION CABINET
NFSS	NON-FUSED SAFETY SWITCH
RR	REMOVE AND RELOCATE
R	RELOCATED
SS	SAFETY SWITCH
W	WIRE
EM	EMERGENCY POWER

ELECTRICAL GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRIC CODE (NEC.)
2. ALL ELECTRICAL EQUIPMENT, TRANSFORMER, AND LUMINARIES SHALL BE GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NEC.
3. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIALS NECESSARY TO PROVIDE A COMPLETE, CODE COMPLIANT ELECTRICAL SYSTEM. THE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE GENERAL ARRANGEMENT AND ROUTING OF CONDUIT. THE ELECTRICAL CONTRACTOR SHALL NOT INSTALL EQUIPMENT, DEVICES, OR CONDUIT IN A NON-CODE COMPLIANT FASHION DUE TO DRAWINGS INTERPRETATION. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MODIFICATIONS OF ILLUSTRATED WORK IN ORDER TO ACCOMMODATE JOB CONDITIONS AT NO EXTRA COST TO THE OWNER.
4. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING POWER AND THE FINAL ELECTRICAL CONNECTIONS TO ALL EQUIPMENT REQUIRING POWER INDICATED ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE ARCHITECTURAL AND MECHANICAL DRAWINGS PRIOR TO BIDDING, AND FOR INDICATING CONFLICTS. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS DURING CONSTRUCTION.
5. COORDINATE ALL WORK WITH OTHER TRADES. PROVIDE A COORDINATION DRAWING TO THE ENGINEER, CONSTRUCTION MANAGER, AND ALL OTHER TRADES SHOWING THE LOCATION OF ALL DEVICES AND EQUIPMENT.
6. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY POWER AND LIGHTING DURING ALL PHASES OF THE WORK.
7. COORDINATE ALL UTILITY SHUT DOWNS WITH THE CONSTRUCTION MANAGER AND OWNER.
8. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL LABOR REQUIRED TO COMPLETE THE JOB AND ACCOMMODATE THE PROJECT SCHEDULE.
9. ARCHITECTURAL DRAWINGS TAKE PRECEDENCE FOR DEVICE AND EQUIPMENT LOCATIONS. COORDINATE ALL WORK WITH THE GENERAL CONTRACTOR.
10. PROVIDE LABELING FOR ALL JUNCTION BOX COVERS PER SPECIFICATIONS.
11. COORDINATE THE LOCATION OF ALL RECEPTACLES AND DATA/TELEPHONE OUTLETS WITH THE ARCHITECTURAL PLAN AND THE FURNITURE LAYOUT.
12. ALL ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH SEISMIC BRACING PER LOCAL AND NATIONAL BUILDING CODES.
13. LABEL ALL DEVICES WITH CIRCUIT # AND PANEL NAME.
14. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, SERVICES AND RELATED ACCESSORIES NEEDED FOR THE COMPLETE INSTALLATION OF ALL WORK SHOWN ON THE DRAWINGS AND REQUIRED BY CODE.
15. COORDINATE ALL WORK WITH OTHER TRADES. PROVIDE A COORDINATION DRAWING TO THE ENGINEER, CONSTRUCTION MANAGER, AND ALL OTHER TRADES SHOWING THE LOCATION OF ALL DEVICES AND EQUIPMENT.
16. WALL PENETRATIONS SUCH AS LIGHT FIXTURES, SPEAKERS, AND ELECTRICAL OUTLETS SHALL AT MINIMUM BE SEALED WITH NON-HARDENING SEALANT. ELECTRICAL CABLES SERVING LIGHT FIXTURES SHOULD ALSO BE KEPT SLIGHTLY SLACK TO PREVENT VIBRATIONS.
17. COORDINATE ALL DATA, SECURITY AND AV REQUIREMENTS WITH OWNER'S IT PERSONNEL TO TERMINATIONS AND DEVICE SPECIFICATIONS ETC.

ELECTRICAL PANEL SCHEDULE: PANEL C

VOLTAGE: 208/120V | NEUTRAL: COPPER | LOCATION: SEE DRAWINGS | FED FROM: PANEL MDP
AMPERAGE: 100A | NEUTRAL RATING: 100% | MAKE: -
INTERRUPTANCE: 10 KAIC | MAIN TYPE: M.L.O. | MODEL NUMBER: -
PHASE: 3PH | MAIN RATING: 100A | MOUNTING: RECESSED
WIRE: 4W | TRIM STYLE: HINGED DOOR IN DOOR

LOAD DESCRIPTION	CKT. BKR.	A	B	C	CKT. NO.		A	B	C	CKT. BKR.	LOAD DESCRIPTION
TRAINING BENCH JUNCTION BOX	1P-20A				1	2				1P-20A	TRAINING BENCH JUNCTION BOX
TRAINING BENCH JUNCTION BOX	1P-20A				3	4				1P-20A	TRAINING BENCH JUNCTION BOX
TRAINING BENCH JUNCTION BOX	1P-20A				5	6				1P-20A	TRAINING BENCH JUNCTION BOX
TRAINING BENCH JUNCTION BOX	1P-20A				7	8				1P-20A	TRAINING BENCH JUNCTION BOX
TRAINING BENCH JUNCTION BOX	1P-20A				9	10				1P-20A	TRAINING BENCH JUNCTION BOX
TRAINING BENCH JUNCTION BOX	1P-20A				11	12				1P-20A	TRAINING BENCH JUNCTION BOX SHARED
TRAINING BENCH JUNCTION BOX SHARED	1P-20A				13	14				1P-20A	TRAINING BENCH JUNCTION BOX SHARED
TRAINING BENCH JUNCTION BOX	1P-20A				15	16				1P-20A	TRAINING BENCH JUNCTION BOX SHARED
TRAINING BENCH JUNCTION BOX SHARED	1P-20A				17	18				1P-20A	CLASSROOM & MECH ROOM GFCI RCPTS
VACUUM PUMP (VAC-1)	2P-20A				19	20				2P-30A	AIR COMPRESSOR (AC-1)
-	-				21	22				-	-
EXF-1/EQUIP. RM RECEPT. (EXF-1)	1P-20A				23	24				1P-20A	SPARE
SPARE	1P-20A				25	26				1P-20A	SPARE
SPARE	1P-20A				27	28				1P-20A	SPARE
SPARE	1P-20A				29	30				1P-20A	SPARE
NOTES:	TOTAL	0.0	0.0	0.0			0.0	0.0	0.0	TOTAL	

1. NEUTRAL SHARING IS NOT PERMITTED. PROVIDE ONE NEUTRAL PER CIRCUIT.
2. FEED PANEL FROM 3P-100A BREAKER ON PANEL MDP #33,35,37. FEED PANEL C WITH (4) #3, (1) #8G, 1-1/2"C WITH COPPER WIRE.
3. PROVIDE SURGE ARRESTER FOR PANEL.

EQUIPMENT SCHEDULE

TAG	DESCRIPTION	LOCATION	HP	W	MCA	V	PH	CONDUCTORS	GROUND	CONDUIT	BREAKER SIZE	PANEL
(VAC-1)	DENTAL DRY VACUUM SYSTEM	SEE PLANS	3	-	16.0	208	1	(2) #12	(1) #12	½"	20A-2P	PANEL C
(AC-1)	DENTAL AIR COMPRESSOR SYSTEM	SEE PLANS	4	-	21.0	208	1	(2) #10	(1) #10	½"	30A-2P	PANEL C
(EXF-1)	EQUIPMENT ROOM EXHAUST FAN	SEE PLANS	-	-	1.2	120	1	(2) #12	(1) #12	½"	20A-1P	PANEL C

NOTES:
1. COORDINATE DISCONNECT OR BREAKER SIZE WITH APPROVED SHOP DRAWINGS PRIOR TO PURCHASE. PROVIDE OVERLOAD PROTECTION FOR ALL EQUIPMENT; SIZE PER NAME PLATE RATING. PROVIDE LOCAL DISCONNECT AT EACH PIECE OF EQUIPMENT.
2. COORDINATE EQUIPMENT WITH PLUMBING CONTRACTOR.

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PROJECT
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BUILDING 300
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REVISIONS

ELECTRICAL SCHEDULES, LEGENDS & NOTES

E5.01

BASIC ELECTRICAL MATERIALS AND METHODS

GENERAL
A. ALL WORK SHALL BE PER STATE OF VERMONT CODES.

SUBMITTALS
A. SHOP DRAWINGS: DIMENSIONED PLANS AND SECTIONS OR ELEVATION LAYOUTS OF ELECTRICAL EQUIPMENT AND DEVICES. ALL CLEARANCE REQUIREMENTS FOR ELECTRICAL EQUIPMENT SHALL BE INCLUDED.
B. FIELD TEST REPORTS: INDICATE AND INTERPRET TEST RESULTS FOR COMPLIANCE WITH PERFORMANCE REQUIREMENTS. PROVIDE FACTORY REPRESENTATION FOR SUPERVISION OF EQUIPMENT INSTALLATION AND COMMISSIONING (START-UP) WHERE REQUESTED BY DRAWINGS AND/OR SPECIFICATIONS. THE FACTORY REPRESENTATIVE SHALL PROVIDE APPROVAL OF ADEQUATE INSTALLATION COMPLETION.

QUALITY ASSURANCE
A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
B. COMPLY WITH NFPA 70.

"AS-BUILT" RECORD DRAWINGS
A. RECORD DAILY PROGRESS ON ONE SET OF CONSTRUCTION DOCUMENTS. UTILIZE A PERMANENT BLACK OR BLUE MARKING MEDIA. ALL PROGRESS OF RECORD DRAWING SHALL BE PROVIDED IN A NEAT AND ACCURATE FASHION.

COORDINATION
A. COORDINATE CHASES, SLOTS, INSERTS, SLEEVES, AND OPENINGS WITH GENERAL CONSTRUCTION WORK AND ARRANGE IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION TO FACILITATE THE ELECTRICAL INSTALLATIONS THAT FOLLOW.
   A.1. SET INSERTS AND SLEEVES IN POURED-IN-PLACE CONCRETE, MASONRY WORK, AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.
B. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF WORK.
C. COORDINATE INSTALLATION AND CONNECTION OF EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES.
D. COORDINATE ALL ELECTRICAL WORK WITH ALL OTHER REQUIRED WORK.
E. COORDINATE SUPPORTING ELECTRICAL EQUIPMENT AND DEVICES WITH ALL OTHER DIVISIONS.
F. COORDINATE MOUNTING HEIGHTS OF ALL DEVICES WITH ARCHITECTURAL DETAILS AND SHOP DRAWINGS.

DRAWING INTERPRETATIONS
A. THE PROJECTS DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT. IT IS NOT THE INTENT OF THE DRAWINGS TO SUBSTITUTE FOR SHOP DRAWINGS. IN MANY INSTANCES, EQUIPMENT AND DEVICES ARE SIZED ON ONE MANUFACTURERS PRODUCT. IN THE EVENT OF A FIELD VERIFICATION OR COORDINATION ISSUE, REPORT ISSUE TO OWNERS CONSTRUCTION SUPERVISOR
B. DO NOT INSTALL EQUIPMENT, DEVICES OR CONDUIT IN A NON CODE COMPLIANT FASHION DUE TO DRAWING INTERPRETATION. PROVIDE MODIFICATION OF ILLUSTRATED WORK IN ORDER TO ACCOMMODATE JOB CONDITIONS AT NOT COST TO OWNER.

GUARANTEE
A. PROVIDE WRITTEN GUARANTEE OF ALL COMPLETED/INSTALLED WORK. MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM PERIOD OF ONE YEAR AFTER OWNERS ACCEPTANCE OF WORK. ANY FAILURE DUE TO DEFECTIVE MATERIAL, EQUIPMENT OR WORKMANSHIP SHALL BE CORRECTED AT NO ADDITIONAL COST TO OWNER. THIS SHALL INCLUDE DAMAGE COMPLETED TO OTHER AREAS OF CONSTRUCTION OR FACILITY RESULTING FROM THIS FAILURE. PROVIDE CORRECTION OF ANY FAILURE WITHIN AN ACCEPTABLE/REASONABLE TIME PERIOD.
B. PROVIDE ALL EQUIPMENT AND MATERIALS MANUFACTURERS GUARANTEES AND/OR WARRANTIES TO OWNER AFTER ACCEPTANCE OF INSTALLATION.

OPERATING AND MAINTENANCE MANUALS
A. PROVIDE OPERATING AND MAINTENANCE INFORMATION FOR ALL EQUIPMENT, DEVICES, SYSTEMS, AND MATERIALS. THIS SHALL INCLUDE ALL MAINTENANCE AND OPERATIONS PROCEDURES, RECOMMENDATIONS, AND SERVICE REQUIREMENTS. ALL SUBMITTED DATA MUST INCLUDE MINIMUM EQUIPMENT/DEVICE OPERATIONS AND MAINTENANCE REQUIREMENTS TO FULFILL MANUFACTURERS WARRANTEES.
B. SUBMIT ALL DATA MEDIA IN A DETAILED, ORGANIZED, AND COMPLETE MANNER. PROVIDE A MINIMUM OF THREE COPIES TO OWNERS CONSTRUCTION SUPERVISOR FOR ENGINEER/ARCHITECT REVIEW. SUBMIT IN 3 RING BINDED ENCLOSURE.

SUPPORTING DEVICES
A. MATERIAL: COLD-FORMED STEEL, WITH CORROSION-RESISTANT COATING ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
B. RACEWAY AND CABLE SUPPORTS: MANUFACTURED CLEVIS HANGERS, RISER CLAMPS, STRAPS, THREADED C-CLAMP WITH RETAINERS, CEILING TRAPEZE HANGERS, WALL BRACKETS, AND SPRING-STEEL CLAMPS OR CLICK-TYPE HANGERS.
C. PIPE SLEEVES: ASTM A 53, TYPE E, GRADE A, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS.

ELECTRICAL IDENTIFICATION
A. IDENTIFICATION DEVICES: A SINGLE TYPE OF IDENTIFICATION PRODUCT FOR EACH APPLICATION CATEGORY. USE COLORS PRESCRIBED BY ANSI A13.1, NFPA 70, AND THESE SPECIFICATIONS.
B. RACEWAY AND CABLE LABELS: COMPLY WITH ANSI A13.1, TABLE 3, FOR MINIMUM SIZE OF LETTERS FOR LEGEND AND MINIMUM LENGTH OF COLOR FIELD FOR EACH RACEWAY AND CABLE SIZE.
   B.1. TYPE: PRE-TENSIONED, WRAPAROUND PLASTIC SLEEVES. FLEXIBLE, PREPRINTED, COLOR-CODED, ACRYLIC BAND SIZED TO SUIT THE DIAMETER OF THE ITEM IT IDENTIFIES.
   B.2.TYPE: PREPRINTED, FLEXIBLE, SELF-ADHESIVE, VINYL. LEGEND IS OVER-LAMINATED WITH A CLEAR, WEATHER-AND CHEMICAL-RESISTANT COATING.
   B.3.COLOR: BLACK LETTERS ON ORANGE BACKGROUND.
   B.4.LEGEND: INDICATES VOLTAGE.

ELECTRICAL EQUIPMENT INSTALLATION
A. HEADROOM MAINTENANCE: IF MOUNTING HEIGHTS OR OTHER LOCATION CRITERIA ARE NOT INDICATED, ARRANGE AND INSTALL COMPONENTS AND EQUIPMENT TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM.
B. MATERIALS AND COMPONENTS: INSTALL LEVEL, PLUMB, AND PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
C. EQUIPMENT: INSTALL TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE WITH OTHER INSTALLATIONS.
D. RIGHT OF WAY: GIVE TO RACEWAYS AND PIPING SYSTEMS INSTALLED AT A REQUIRED SLOPE.
E. PROVIDE 3/4" EXTERIOR GRADE, GROUP 3, FIRE RESISTIVE PLYWOOD FOR SURFACE MOUNTED EQUIPMENT INSTALLATION. PAINT PLYWOOD WITH BATTLESHIP GREY FINISH WHICH MEETS FIRE RESISTIVE BUILDING REQUIREMENTS. PROVIDE WHERE INDICATED ON DRAWINGS OR WHERE EQUIPMENT IS TO BE MOUNTED ON MASONRY OR CONCRETE WALLS
F. MOUNTING HEIGHTS INDICATED ON DRAWINGS ARE TO BE MEASURED FROM THE CENTER OF THE DEVICE TO THE FINISHED FLOOR ELEVATION. SUBMIT A REQUEST FOR UNIDENTIFIED MOUNTING HEIGHTS OF EQUIPMENT TO OWNERS CONSTRUCTION SUPERVISOR.
G. THE MOUNTING HEIGHTS INDICATED ON ARCHITECTURAL DETAILS AND SHOP DRAWINGS TAKE PRECEDENCE OVER MOUNTING HEIGHTS INDICATED ON DRAWINGS. IN THE EVENT OF A MOUNTING ISSUE, CONSULT OWNERS CONSTRUCTION SUPERVISOR.

RACEWAY APPLICATIONS
A. USE THE FOLLOWING RACEWAY FOR OUTDOOR INSTALLATIONS (3/4" MINIMUM):
   A.1. UNDERGROUND, SINGLE RUN: SCHEDULE 40 PVC RNC.
   A.2.UNDERGROUND, GROUPED: SCHEDULE 40 PVC RNC.
   A.3.CONNECTION TO VIBRATING EQUIPMENT: AS INDICATED ON DRAWINGS.
   A.4.BOXES AND ENCLOSURES: NEMA 250, TYPE 3R OR TYPE 4X.
B. USE THE FOLLOWING RACEWAYS FOR INDOOR INSTALLATIONS (3/4" MINIMUM):
   B.1. EXPOSED: EMT
   B.2.CONCEALED: METAL CLAD CABLE
   B.3.CONNECTION TO VIBRATING EQUIPMENT: FMC, EXCEPT IN WET OR DAMP LOCATIONS, USE LFMC.
   B.4.DAMP OR WET LOCATIONS: IMC.
   B.5.BOXES AND ENCLOSURES: NEMA 250, TYPE 1, UNLESS OTHERWISE INDICATED.
C. TEMPORARY CIRCUITS MAY USE ALTERNATE WIRING METHODS AS ALLOWED BY CODE. SEE DRAWINGS.

RACEWAY CABLE INSTALLATION
A. CONCEAL RACEWAYS AND CABLES, UNLESS OTHERWISE INDICATED, WITHIN FINISHED WALLS, CEILINGS, AND FLOORS.
B. INSTALL EXPOSED, FREE SUPPORTED (NOT WALL) ELECTRICAL EQUIPMENT AND RACEWAY A MINIMUM OF 6'8" ABOVE FINISHED FLOOR, UNLESS INDICATED OTHERWISE.
C. USE TEMPORARY RACEWAY CAPS TO PREVENT FOREIGN MATTER FROM ENTERING.
D. MAKE CONDUIT BENDS AND OFFSETS SO I.D. IS NOT REDUCED. KEEP LEGS OF BENDS IN THE SAME PLANE AND STRAIGHT LEGS OF OFFSETS PARALLEL, UNLESS OTHERWISE INDICATED.
E. USE RACEWAY AND CABLE FITTINGS COMPATIBLE WITH RACEWAYS AND CABLES AND SUITABLE FOR USE AND LOCATION.
F. MAKE BENDS IN EXPOSED PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL. USE FACTORY ELBOWS ONLY WHERE ELBOWS CAN BE INSTALLED PARALLEL; OTHERWISE, PROVIDE FIELD BENDS FOR EXPOSED PARALLEL RACEWAYS.
G. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE NO. 14 AWG ZINC-COATED STEEL OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB (90 KG.) TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES (300 MM) OF SLACK AT EACH END OF PULL WIRE.
H. CONNECT MOTORS AND EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT WITH A MAXIMUM OF 72-INCH (1830-MM) FLEXIBLE CONDUIT. INSTALL LFMC IN WET OR DAMP LOCATION. INSTALL SEPARATE GROUND CONDUCTOR ACROSS FLEXIBLE CONNECTION.

WIRING INSTALLATION
A. INSTALL SPLICES AND TAPS THAT ARE COMPATIBLE WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UN-SPLICED CONDUCTORS.
B. INSTALL WIRING AT OUTLETS AT LEAST 12 INCHES (300 MM) OF SLACK CONDUCTOR AT EACH OUTLET.
C. CONNECT OUTLET AND COMPONENT CONNECTIONS TO WIRING SYSTEMS AND TO GROUND. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A.

ELECTRICAL SUPPORTING DEVICE APPLICATION
A. DAMP LOCATIONS AND OUTDOORS: HOT-DIP GALVANIZED MATERIALS OR NONMETALLIC, U-CHANNEL SYSTEM COMPONENTS.
B. DRY LOCATIONS: GALVANIZED STEEL MATERIALS.
C. SUPPORT CLAMPS FOR PVC RACEWAYS: CLICK-TYPE CLAMP SYSTEM.
D. SELECTION OF SUPPORTS: COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
E. STRENGTH OF SUPPORTS: ADEQUATE TO CARRY PRESENT AND FUTURE LOADS, TIMES A SAFETY FACTOR OF AT LEAST FOUR; MINIMUM OF 200-LB (90KG) DESIGN LOAD.

IDENTIFICATION MATERIALS AND DEVICES
A. COLOR-CODE 120/208V SYSTEM SECONDARY SERVICE, FEEDER, AND BRANCH-CURCUIT CONDUCTORS THROUGHOUT THE SECONDARY ELECTRICAL SYSTEM AS FOLLOWS:
   A.A. PHASE A: BLACK
   A.B. PHASE B: RED
   A.C. PHASE C: BLUE
   A.D. NEUTRAL: WHITE
   A.E. GROUND: GREEN
B. LABEL ALL CIRCUITS AT THE PANEL BOARD AND DEVICE ENDS.

CONDUCTORS
A. CONDUCTORS SHALL BE COPPER, INSULATED FOR 600V, TYPE XHHN/XHWN-2 OUTDOORS AND THWN-2 INDOORS, UNLESS NOTED OTHERWISE. #12 AWG MINIMUM.

DEVICES
A. SWITCHES 20 AMP SPEC. GRADE
B. RECEPTACLES 20 AMP SPEC. GRADE.
C. ALL DEVICES SHALL BE WEATHERPROOF UNLESS NOTED OTHERWISE.

DISCONNECTS
A. FUSED SWITCHES SHALL BE HEAVY DUTY TYPE, HORSEPOWER RATED WITH INTERLOCKING COVER. NEMA 1 TYPICAL, EXCEPT FOR WET OR DUSTY LOCATIONS, WHICH SHALL BE NEMA 4X. ALL SWITCHES SHALL BE LOCKABLE. FUSES SHALL BE RATED AT 600V AND SHALL BE CLASS RK-1 DUAL ELEMENT, TIME DELAY, CURRENT LIMITING.

PANELBOARDS

A. PANELBOARDS SHALL BE SQUARE D NQOD OR EQUAL. PANELBOARDS SHALL BE MINIMUM 10KA.
B. CIRCUIT BREAKERS PROVIDED FOR NEW CIRCUITS IN EXISTING PANELBOARDS SHALL MATCH PANELBOARD AND ASSOCIATED EXISTING BREAKER RATINGS.

GROUNDING
A. ALL MAJOR PARTS NOT CARRYING CURRENT INCLUDING BUT NOT LIMITED TO, SECONDARY FEEDER CIRCUITS, EQUIPMENT AND PANEL BOARD ENCLOSURES, PULL AND JUNCTION BOXES, SHALL BE GROUNDED PER THE APPLICABLE EDITION OF THE NATIONAL ELECTRIC CODE. ALL METAL RACEWAYS SHALL RECEIVE PROPER FITTINGS TO ENSURE CONTINUITY OF GROUND PATH.
B. BOND SERVICE ENTRANCE GROUND TO WATER LINE PER VERMONT ELECTRICAL CODE.

END OF SECTION

STATE OF VERMONT
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NO. 134211
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REVISIONS

ELECTRICAL SPECIFICATIONS

E5.02



1 BUILDING 100
Scale: 1/4" = 1'-0"

SCALE: 1/4"=1'-0"
DRAWN BY: CPB

VERMONT TECHNICAL COLLEGE

BADGER DESIGNS

BUILDING 100

VTC



1 BUILDING 200
SCALE: 1/8" = 1'-0"

VTC

BUILDING 200

BADGER DESIGNS

VERMONT TECHNICAL COLLEGE

SCALE:
1/4"=1'-0"
DRAWN BY:
CPB



1 BUILDING 400 FLOOR PLAN
Scale: 1/8" = 1'-0"

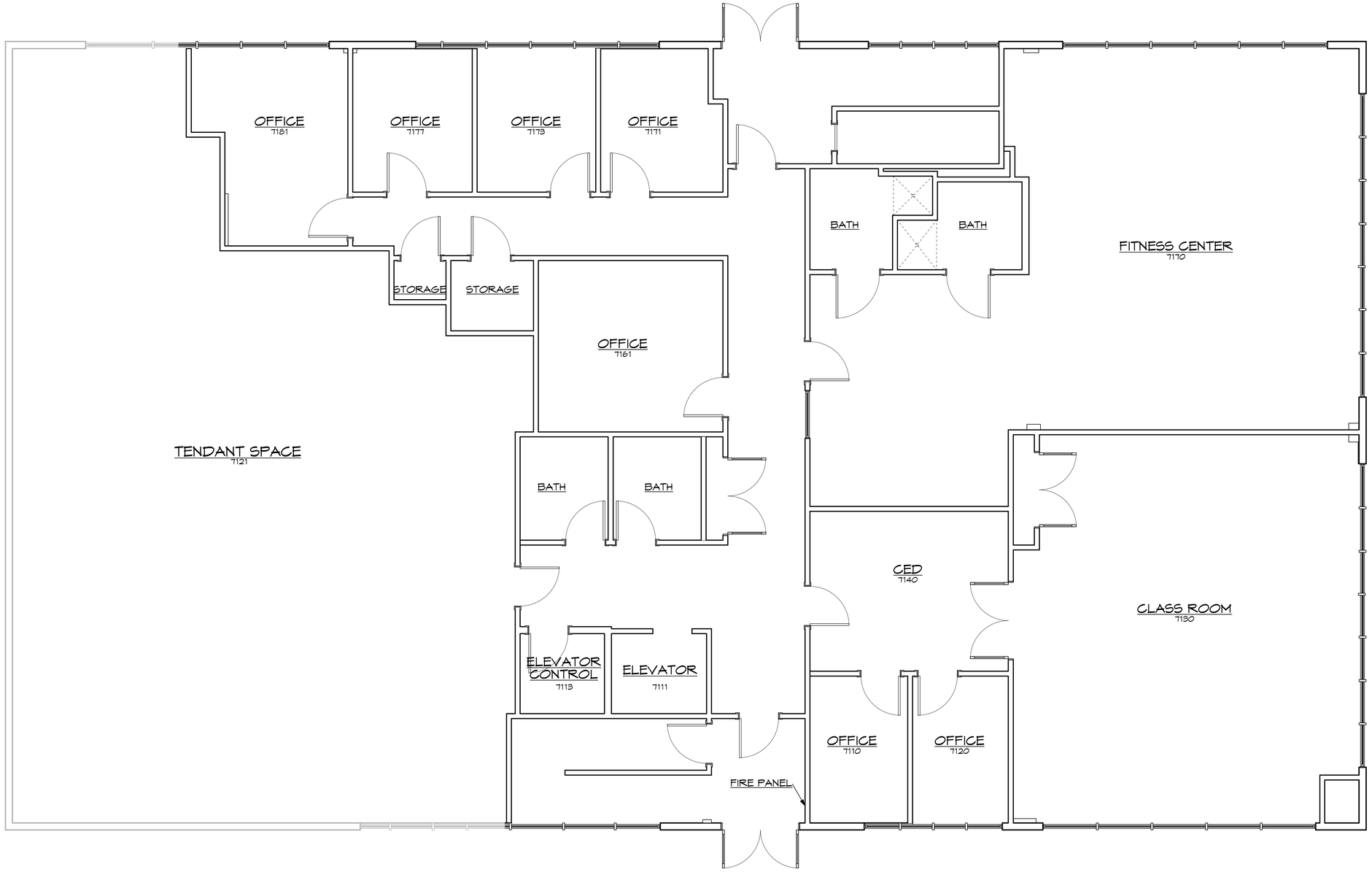
VERMONT TECHNICAL COLLEGE

SCALE: 1/4"=1'-0"
DRAWN BY: CPB

BADGER DESIGNS

BUILDING 400

VTC



1 BUILDING 700 MAIN FLOOR
Scale: 1/4" = 1'-0"

SCALE: AS NOTED
DRAWN BY: CPB

BADGER DESIGNS

A-2.1

VTC

DRAWING SYMBOLS

B / A3.1 — See this building section... ...on this drawing — BUILDING SECTION

3 / A4.1 — See this wall section... ...on this drawing — WALL SECTION

5 / A7.4 — See this detail ...on this drawing — DETAIL

5 / A7.4 — See this detail ...on this drawing — ENLARGED DETAIL

3 2 4 1 — Elevation Reference Number

A — WINDOW TYPE

Room where door is located / Door number — 100A — DOOR NUMBER

2 — INTERIOR WALL TYPE

EL. 1345'-9" / FINISH FLOOR — VERTICAL ELEVATION

STORAGE 201

CONSTRUCTION MATERIALS

- BATT INSULATION
- RIGID INSULATION
- STONE VENEER
- COMPACTED GRANULAR FILL
- FINISHED WOOD
- ROUGH FRAMING
- GYPSUM WALLBOARD
- PLYWOOD
- CEMENT BOARD
- CONCRETE
- CONCRETE BLOCK
- BRICK
- STEEL OR HEAVY GAUGE METAL

ABBREVIATIONS

ACT	acoustical tile	FOC	face of concrete	R	riser
ADJ	adjustable	FOF	face of foundation	RAD	radius
AFF	above finished floor	FOS	face of stud	RD	roof drain
ALUM	aluminum	FTG	footing	REF	refrigerator
ARCH	architect(ural)	GA	gauge/gage	REQD	required
BD	board	GALV	galvanized	RM	room
BIT	bituminous	GB	grab bar	RO	rough opening
BLDG	building	GC	general contractor	SC	solid core
BLKG	blocking	GVL	gravel	SCH	schedule
BOT	bottom	GWB	gypsum wallboard	SD	storm drain
BSMT	basement	HB	hose bibb	SF	square foot (feet)
CAB	cabinet(ry)	HC	hollow core	SGL	single
CB	catch basin	HDW	hardware	SHTH	sheathing
CJ	control joint	HM	hollow metal	SIM	similar
CL	closet	HORIZ	horizontal	SQ	square
CLG	ceiling	HT	height	SPEC	specification(s)
CLR	clear(ance)	HVAC	heating ventilating air conditioning	SS	stainless steel
CMU	concrete masonry unit			STD	standard
CO	cleanout	HWD	hard wood	STL	steel
COL	column	ID	inside diameter	STR	structural
COMM	communication(s)	INS	insulate(d), (ion)	SUS	suspended
CONC	concrete	INT	interior	SV	sheet vinyl
CONST	construction	INV	invert	SWD	soft wood
CONT	continuous	JT	joint	SYS	system
CPT	carpet	LAV	lavatory	T	tread
CT	ceramic tile	LVR	louver	T&G	tongue & groove
DEMO	demolish/demolition	MAX	maximum	TEL	telephone
DET	detail	MECH	mechanical	THK	thick
DIAM	diameter	MFR	manufacture(r)	THR	threshold
DF	drinking fountain	MH	man hole	T.O.	throughout
DR	door	MIN	minimum	TOC	top of concrete
DWG	drawing(s)	MO	masonry opening	TOPL	top of plate
EA	each	MTL	metal	TOS	top of slab
ELEC	electric(al)	NET	network (ing)	TOST	top of steel
ELEV	elevation	NIC	not in contract	TOW	top of wall
EQ	equal	NOM	nominal	TYP	typical
EQUIP	equipment	NTS	not to scale	UNO	unless noted otherwise
EXG	existing	OC	on center (s)	VCT	vinyl composition tile
EXT	exterior	OD	outside diameter	VERT	vertical
FC	fire code	O.H.	opposite hand	VIF	verify in field
FD	floor drain	OPG	opening	VR	vapor retarder
FE	fire extinguisher	OPP	opposite	VTR	vent thru roof
FF	finished floor	PLAM	plastic laminate	W/	with
FG	fiberglass	PL	plate	WC	water closet
FIN	finish(ed)	PNT	paint(ed)	WD	wood
FLG	flashing	PR	pair	WO	without
FND	foundation	PWD	plywood	WWF	welded wire fabric

DENTAL HYGIENE CLINIC
AT
VERMONT TECHNICAL COLLEGE

WILLISTON VERMONT

February 18, 2005
Project #2302A

DRAWING LIST

ARCHITECTURAL

SP1 SITE PLAN
SP2 ENLARGED SITE PLAN
D1 DEMOLITION & CONCRETE PLANS
A1 FLOOR PLAN
A2 REFLECTED CEILING PLAN
A3 BUILDING ELEVATIONS
A4 BUILDING ELEVATIONS
A5 BUILDING SECTIONS
A6 BUILDING SECTIONS
A7 DOOR AND WINDOW DETAILS
A8 INTERIOR ELEVATIONS
A9 CABINETS

MECHANCAL

M1 HVAC PLAN

PLUMBING

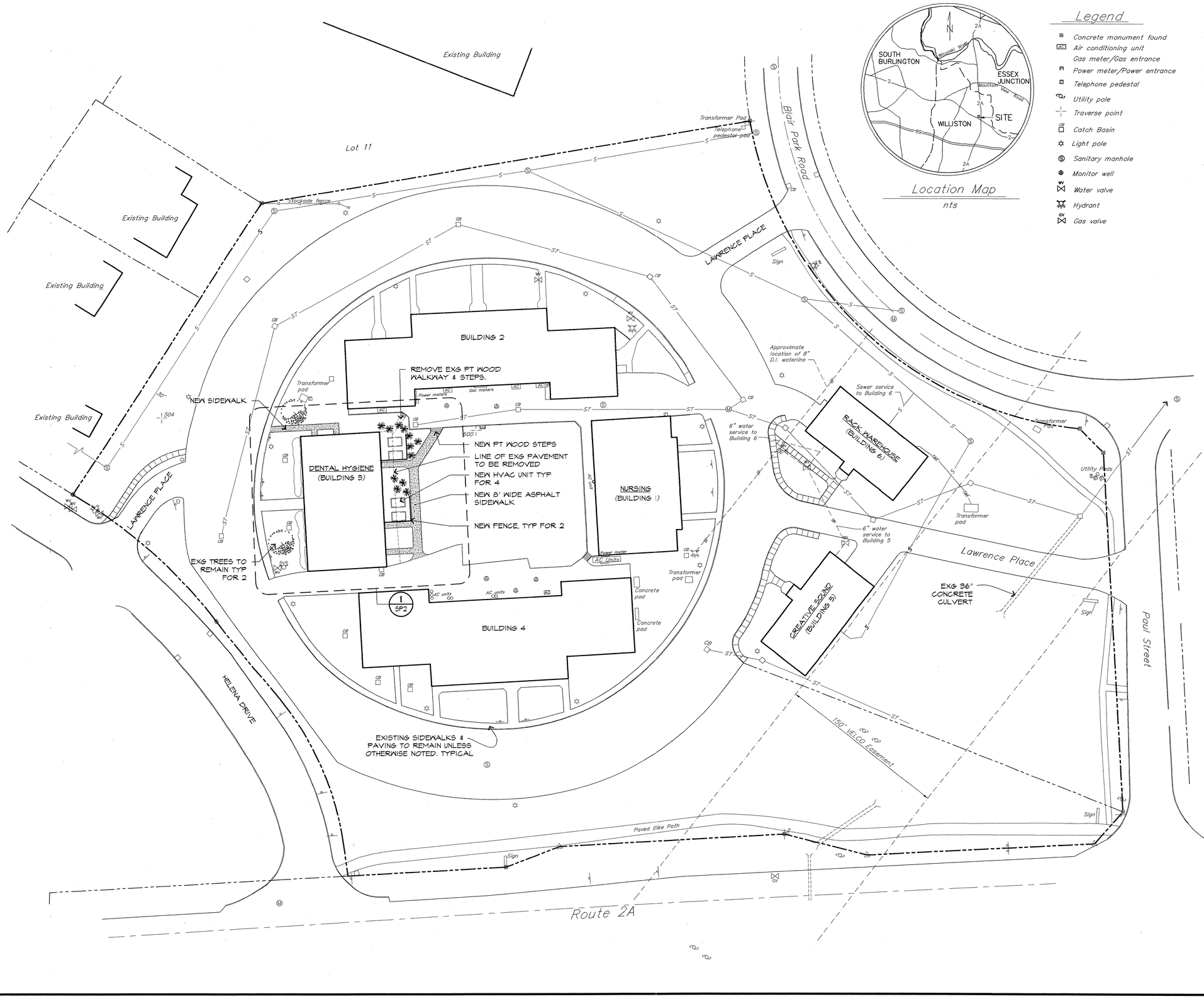
P1 PLUMBING PLAN

ELECTRICAL

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953



NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
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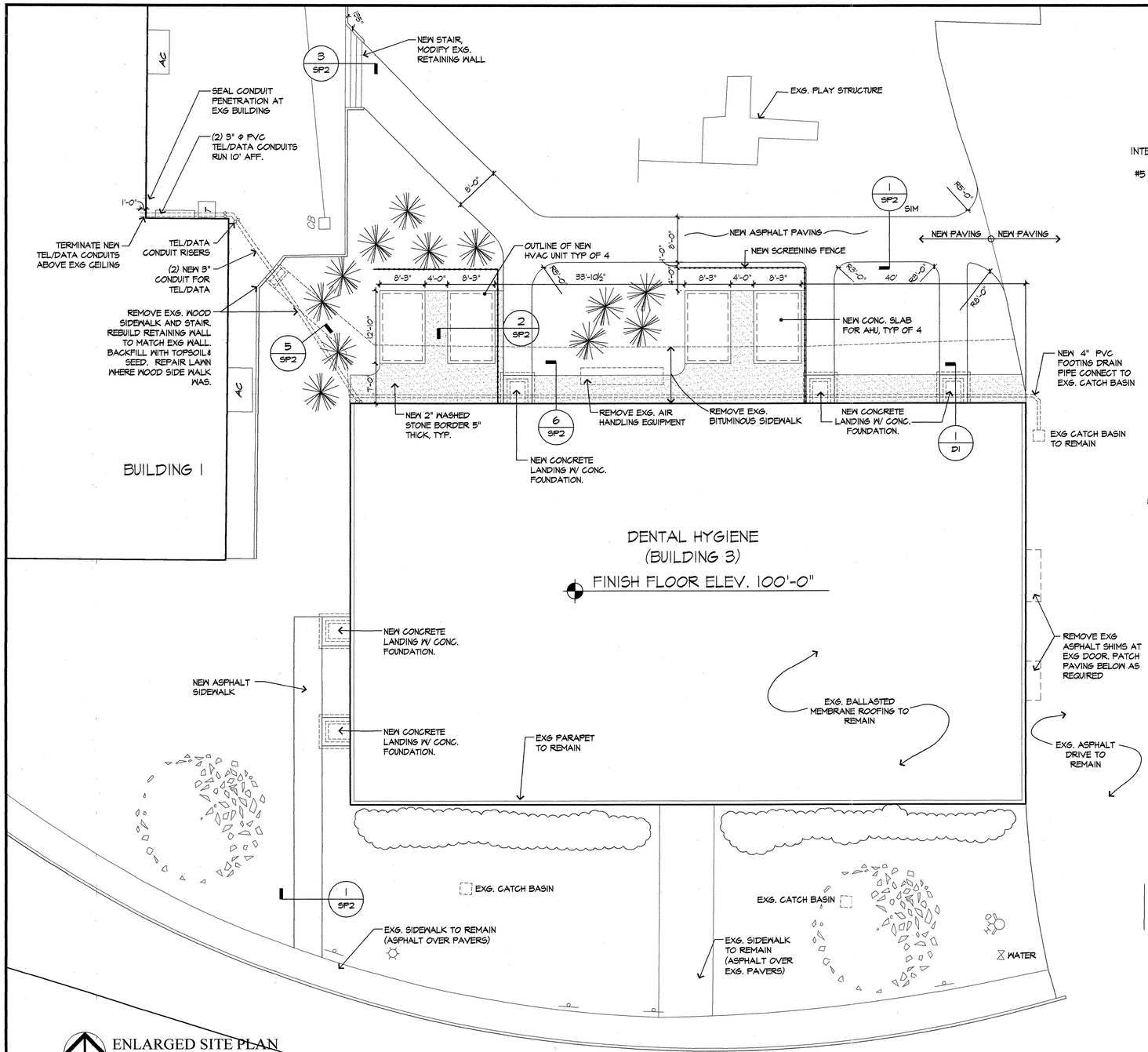
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

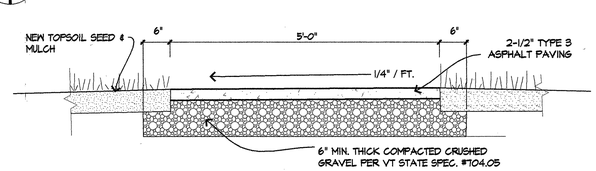
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SCALE:	1" = 40'
CHECKED:	TOB
PROJECT NO:	2802A

SITE PLAN

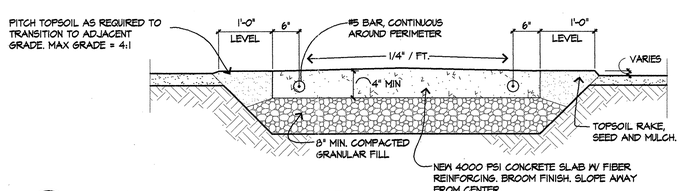
SP1



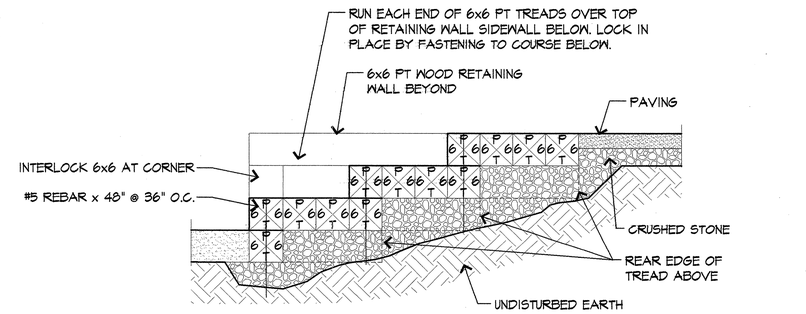
ENLARGED SITE PLAN
SCALE: 1"= 10'



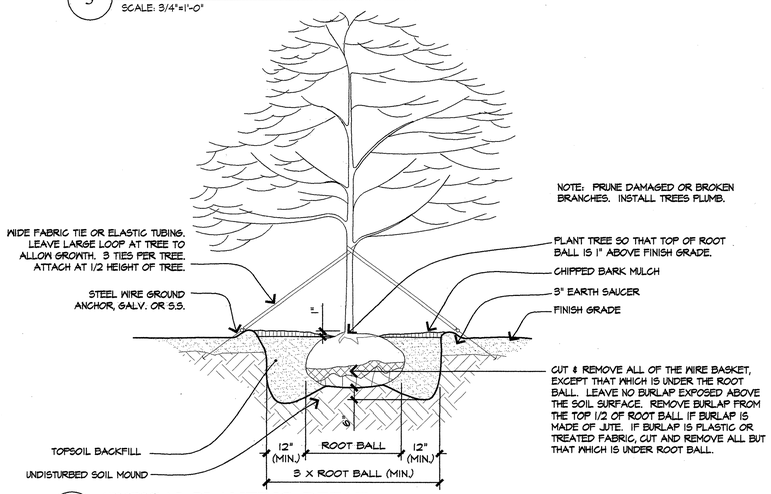
1 SIDEWALK DETAIL
SCALE: 3/4"=1'-0"



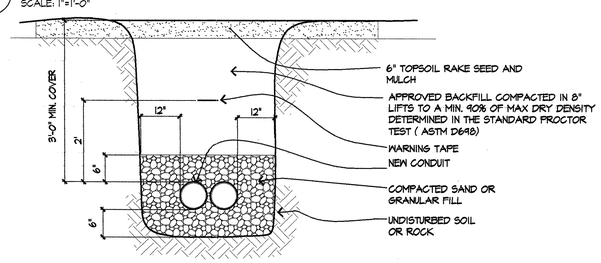
2 CONCRETE EQUIPMENT PAD
SCALE: 3/4"=1'-0"



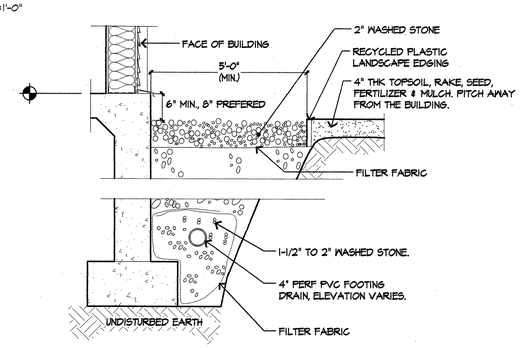
3 LANSCAPE STAIR
SCALE: 3/4"=1'-0"



4 TYPICAL PLANTING DETAIL
SCALE: 1"=1'-0"



5 TYPICAL ELECTRICAL TRENCH
SCALE: 3/4"=1'-0"



6 STONE BOARDER DRIP EDGE
SCALE: 3/4"=1'-0"

NORTHERN ARCHITECTS
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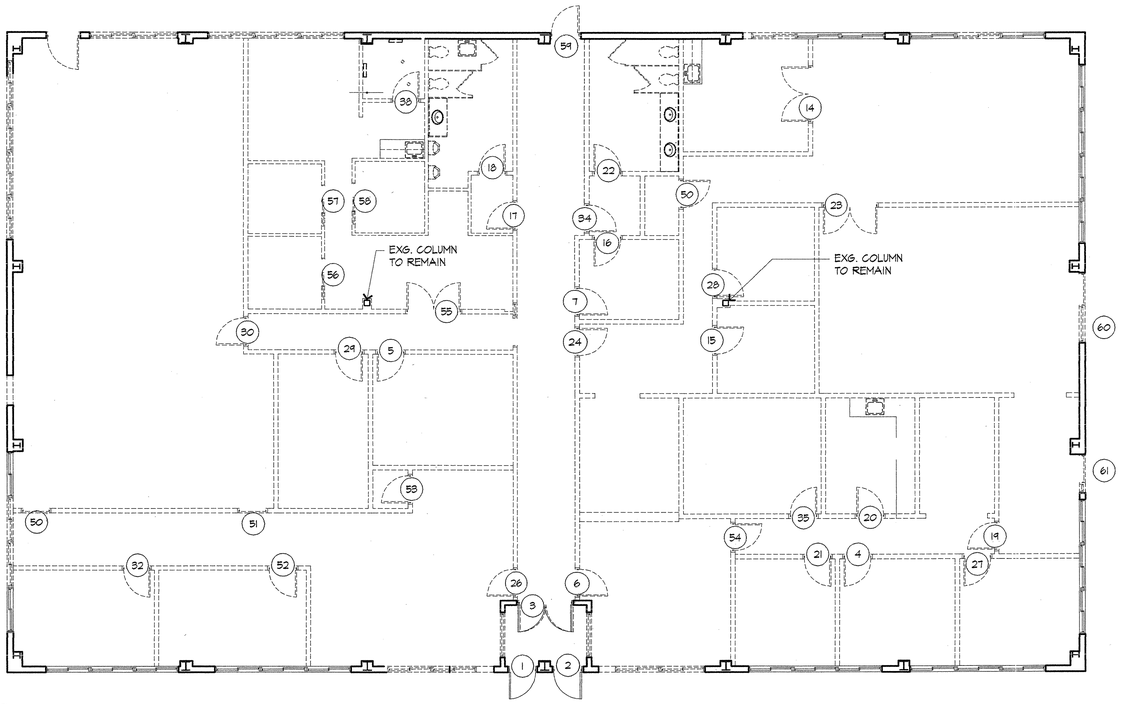
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

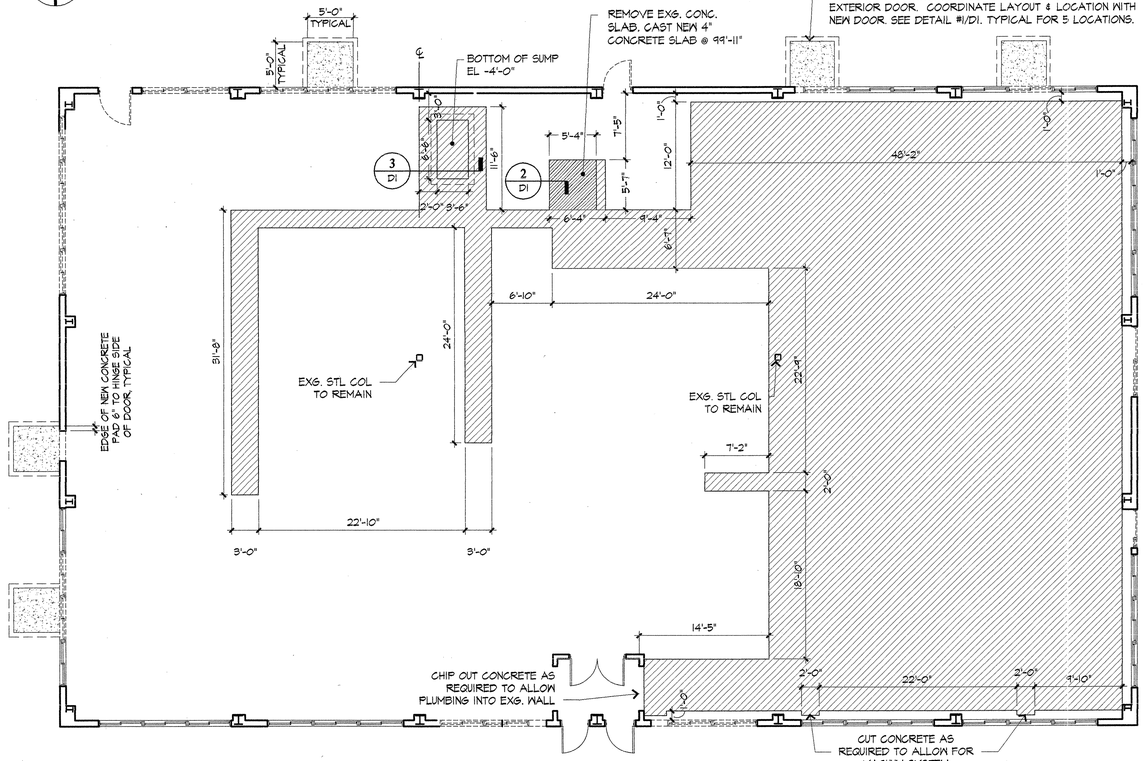
ENLARGED SITE PLAN

SP2



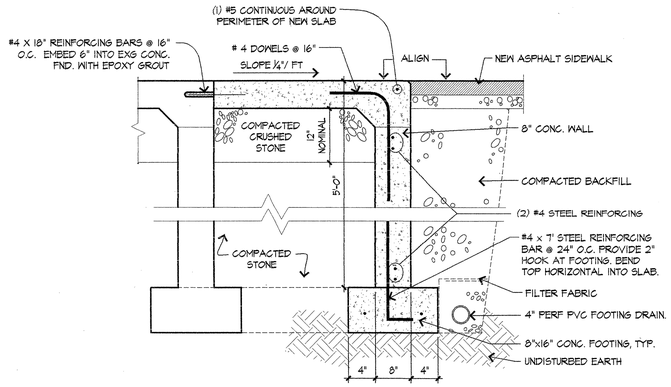
GROUND FLOOR PLAN - DEMOLITION

SCALE: 1/8"= 1'- 0" 2302A-Plan_Demo



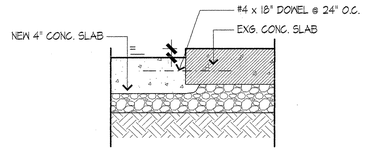
GROUND FLOOR PLAN - CONCRETE DEMOLITION

SCALE: 1/8"= 1'- 0" 2302A-Plan_Demo



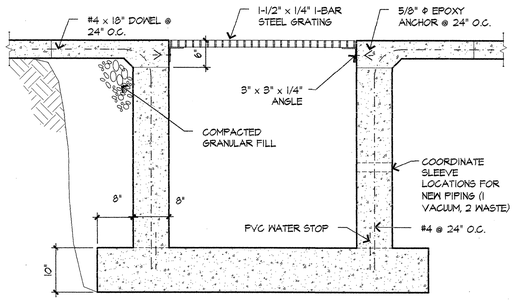
1 CONCRETE SLAB AT EXIT DOOR

SCALE: 3/4"-1'-0" 2302A-Plan_Demo



2 RECESSED SLAB AT DARKROOM

SCALE: 3/4"-1'-0" 2302A-Plan_Demo



3 SUMP AT MECHANICAL ROOM

SCALE: 3/4"-1'-0" 2302A-Plan_Demo

GENERAL DEMOLITION NOTES

1. ALL DOORS & FRAMES TO BE REMOVED EXCEPT DOORS #1 AND #2. SOME DOORS/FRAMES TO BE SALVAGED FOR REUSE-SEE DRAWING #A1 FOR IDENTITY & PROPOSED LOCATION OF THESE DOORS. DOOR NUMBERS SHOWN ON THIS DRAWING ARE CONSISTENT WITH THOSE SHOWN ON DRAWING #A1
2. REMOVE EXISTING SUSPENDED ACOUSTIC PANEL CEILING SYSTEM FROM ENTIRE BUILDING.
3. REMOVE EXISTING MECHANICAL DUCT SYSTEM FROM ENTIRE BUILDING.
4. REMOVE EXISTING ELECTRICAL SYSTEM FROM ENTIRE BUILDING.
5. REMOVE EXISTING FLOOR FINISHES FROM ENTIRE BUILDING.
6. REMOVE EXISTING LOOSE BATT INSULATION ON THE INTERIOR SIDE OF THE EXTERIOR WALL THAT IS ABOVE THE EXISTING SUSPENDED ACOUSTIC PANEL CEILING SYSTEM. SEE SECTIONS ON DRAWINGS #A5, & #A6 FOR WALL INSULATION/INSULATION RETROFIT AT THIS LOCATION.

KEY

- EXISTING WALL TO REMAIN
- EXISTING WALL TO BE REMOVED
- EXISTING SLAB TO BE REMOVED
- EXISTING WINDOW TO BE REMOVED
- EXISTING DOOR TO BE REMOVED

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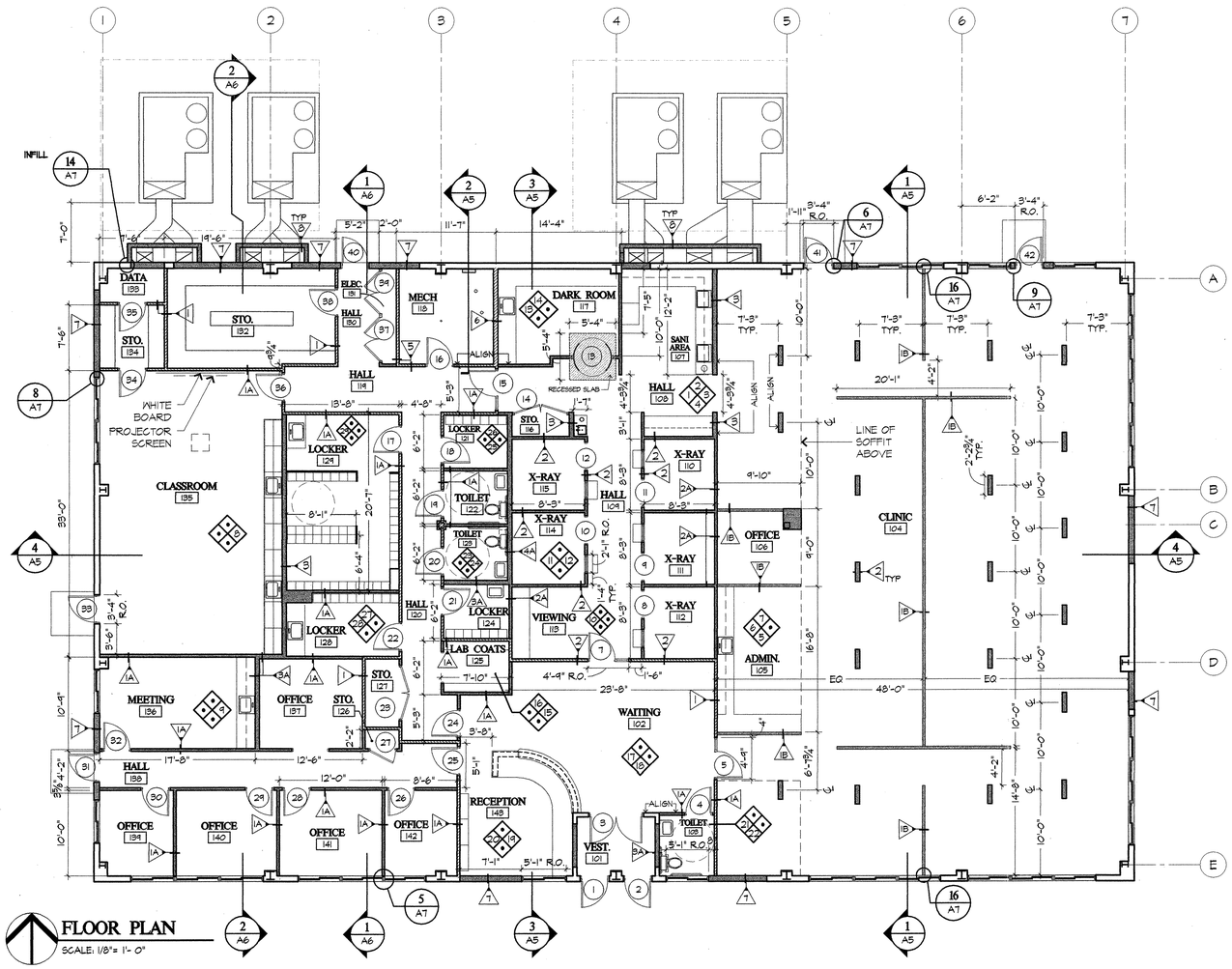
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

DEMOLITION & CONCRETE PLANS

D1



FLOOR PLAN

SCALE: 1/8"= 1'- 0"

KEY

- EXISTING WALL
- NEW WALL
- FIRE RATED WALL
- (12) DOOR NUMBER (SEE DRAWING A7 FOR DOOR SCHEDULE)

GENERAL NOTES

1. ALL DIMENSIONS ARE ROUGH FRAMING DIMENSIONS (FACE OF STUD) UNLESS OTHER WISE NOTED.
2. IF THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND/OR THE SPECIFICATIONS THE CONTRACTOR IS REQUIRED TO NOTIFY THE ARCHITECT PROMPTLY BEFORE PROCEEDING FURTHER WITH THE WORK.
3. IF THE CONTRACTOR ENCOUNTERS CONDITIONS DURING THE CONSTRUCTION THAT ARE DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS; NOTIFY THE ARCHITECT PROMPTLY BEFORE PROCEEDING FURTHER WITH THE WORK.
4. THE DRAWINGS AND SPECIFICATIONS GENERALLY ILLUSTRATE THE DESIGN INTENDED OF THE PROJECT. THEY DO NOT SHOW ALL ASPECTS OF THE WORK NECESSARY TO COMPLETE THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL LABOR AND MATERIALS REQUIRED FOR COMPLETING THE PROJECT IN A MANNER CONSISTENT WITH THE DESIGN INTENT AS ILLUSTRATED BY THE DRAWINGS AND SPECIFICATIONS.
5. ALL WORK IS TO BE DONE IN COMPLIANCE WITH THE 1999 VERMONT FIRE PREVENTION AND BUILDING CODE.
6. THE CONSTRACTOR SHALL ORGANIZE AND PERFORM THE WORK TO MINIMIZE DAMAGE TO THE EXISTING FINISHES AND EQUIPMENT, PROTECTING THEM FROM DUST, IMPACT, ABRASION, HEAT, COLD, MOISTURE AND OTHER SIMILAR STRESSES THROUGHOUT THE WORK. EXISTING FINISHES OR EQUIPMENT THAT IS SCHEDULED TO REMAIN THAT IS DAMAGED SHALL BE REPAIRED OR REPLACED, AS DETERMINED BY THE ARCHITECT TO MATCH THE ORIGINAL MATERIAL OR EQUIPMENT.
7. NEW WALLS THAT ARE EXTENSIONS OF EXISTING WALLS, MUST BE PLACED SO THEY ALIGN WITH THE EXISTING WALLS AND ALLOW A SMOOTH, CONTINUOUS FINISHED SURFACE.
8. ALL DIMENSIONS AND ELEVATIONS ASSOCIATED WITH THE EXISTING CONSTRUCTION ARE APPROXIMATE. GENERAL CONTRACTOR TO VERIFY ALL RELEVANT EXISTING DIMENSIONS AND ELEVATIONS PRIOR TO ANY DEMOLITION OR NEW CONSTRUCTION.

BUILDING CODE REVIEW NOTES

1) Applicable Code: Vermont Fire Prevention and Building Code - 1999 .

2) Major Standards: NFPA 101 "Life Safety Code", 1997 Edition
The BOCA National Building Code, 1996 Edition

3) Existing Conditions:
a. Building Height 1 Story
b. Building Area (gross) 8546 sf
c. Building is not equipped with an automatic fire suppression system.

4) Use Group Classification: Group "B" (Business) [BOCA 304.0]
"Business" [NFPA 101: 4-1.8]

5) Type of Construction: Type 2C "UNPROTECTED NON-COMBUSTIBLE" [BOCA Table 503]

6) Building Area Limit: 14,400 SF [BOCA Table 503] > 8,546 SF "OK"

7) Building Height Limit: 3 Story 40' [BOCA Table 503] > 1 STORY "OK"

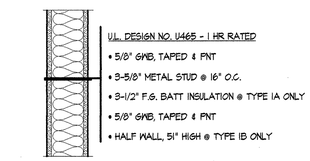
8) Fire Resistance Ratings [BOCA Table 602]:

	REQUIREMENT	THIS PROJECT
Exterior Walls - Loadbearing, > 15' to 30' separation [BOCA 705.2]	0 hr.	0 hr.
Exterior Walls - Non-Load Bearing, > 15' to 30'separation [BOCA 705.2]	0 hr.	0 hr.
Fire Walls and Party Walls	2 hr.	NOT APPLICABLE
Fire Separation Assemblies	2 hr.	NOT APPLICABLE
Smoke Barriers - not required	1 hr.	NONE REQUIRED
Fire Enclosure of Exits	2 hr.	
Shafts - not applicable	2 hr.	
Exit Access Corridors - [BOCA 1011.4, NFPA 26-3.6.1]	1 hr.	1 hr.
Interior bearing walls, columns, girders and framing	0 hr.	0 hr.
Floor Construction	0 hr.	NOT APPLICABLE
Roof Construction 15' or less in height to lowest member	0 hr.	0 hr. ok

9) Doors Opening to an Exit Access Corridor: [BOCA 1011.4.2, NFPA 6-2.3.2.3] 20 MIN. OK

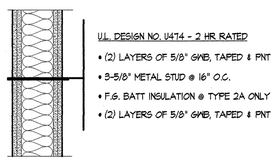
10) Maximum Occupant Load:

Classroom:	30 PERSONS
Clinic:	70 PERSONS
Other General Use Areas:	20 PERSONS
Total Occupant Load:	100 PERSONS



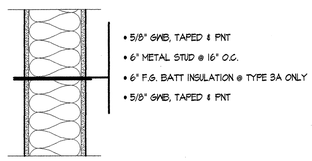
U.L. DESIGN NO. U465 - 1 HR RATED
- 5/8" GWB, TAPED & FNT
- 3-5/8" METAL STUD @ 16" O.C.
- 3-1/2" F.G. BATT INSULATION @ TYPE 1A ONLY
- 5/8" GWB, TAPED & FNT
- HALF WALL, 51" HIGH @ TYPE 1B ONLY

1 1A 1B INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



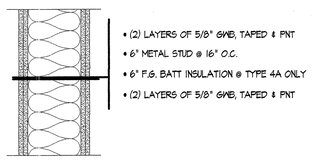
U.L. DESIGN NO. U474 - 2 HR RATED
- (2) LAYERS OF 5/8" GWB, TAPED & FNT
- 3-5/8" METAL STUD @ 16" O.C.
- F.G. BATT INSULATION @ TYPE 2A ONLY
- (2) LAYERS OF 5/8" GWB, TAPED & FNT

2 2A INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



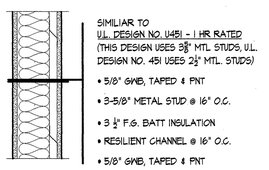
- 5/8" GWB, TAPED & FNT
- 6" METAL STUD @ 16" O.C.
- 6" F.G. BATT INSULATION @ TYPE 3A ONLY
- 5/8" GWB, TAPED & FNT

3 3A INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



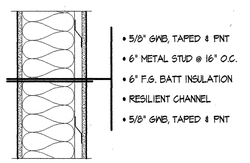
- (2) LAYERS OF 5/8" GWB, TAPED & FNT
- 6" METAL STUD @ 16" O.C.
- 6" F.G. BATT INSULATION @ TYPE 4A ONLY
- (2) LAYERS OF 5/8" GWB, TAPED & FNT

4 4A INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



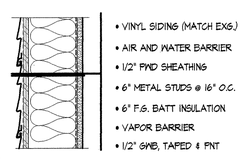
SIMILIAR TO
U.L. DESIGN NO. U451 - 1 HR RATED
(THIS DESIGN USES 3⅝" MTL STUDS, U.L. DESIGN NO. 451 USES 2½" MTL. STUDS)
- 5/8" GWB, TAPED & FNT
- 3-5/8" METAL STUD @ 16" O.C.
- 3 ½" F.G. BATT INSULATION
- RESILIENT CHANNEL @ 16" O.C.
- 5/8" GWB, TAPED & FNT

5 INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



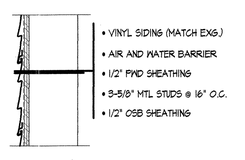
- 5/8" GWB, TAPED & FNT
- 6" METAL STUD @ 16" O.C.
- 6" F.G. BATT INSULATION
- RESILIENT CHANNEL
- 5/8" GWB, TAPED & FNT

6 INTERIOR PARTITION
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



- VINYL SIDING (MATCH EXG.)
- AIR AND WATER BARRIER
- 1/2" FND SHEATHING
- 6" METAL STUDS @ 16" O.C.
- 6" F.G. BATT INSULATION
- VAPOR BARRIER
- 1/2" GWB, TAPED & FNT

7 EXTERIOR INFILL WALL
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes



- VINYL SIDING (MATCH EXG.)
- AIR AND WATER BARRIER
- 1/2" FND SHEATHING
- 3-5/8" MTL STUDS @ 16" O.C.
- 1/2" OSB SHEATHING

8 EXTERIOR DUCT ENCLOSURE
SCALE: 1 1/2" = 1'-0" 2302A-Walltypes

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PROJECT

DENTAL HYGIENE PROGRAM

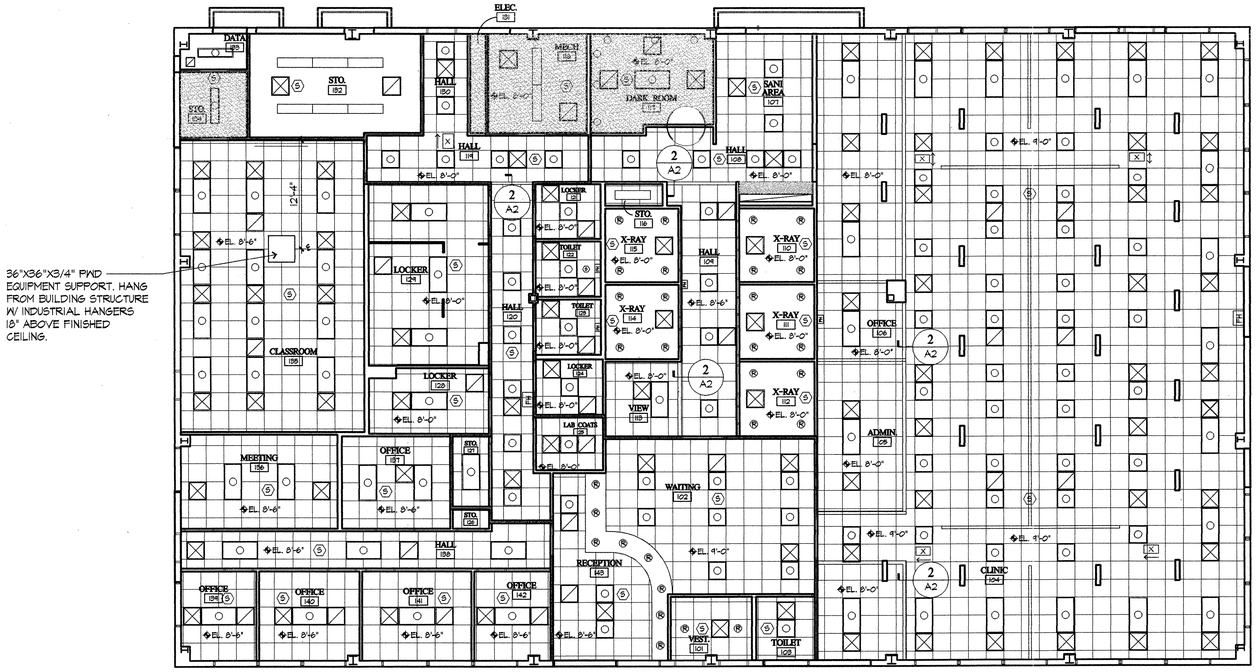
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

FLOOR PLAN

A1



GROUND FLOOR REFLECTED CEILING PLAN

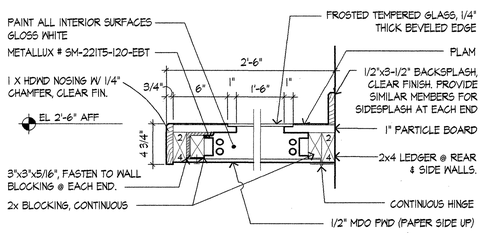
SCALE: 1/8"= 1'- 0"

KEY

- 2x4 FLUORESCENT LIGHT
- 2x2 FLUORESCENT LIGHT
- RECESSED LIGHT
- SUPPLY AIR GRILL
- RETURN AIR GRILL
- EXIT SIGN (CEILING MOUNTED)
- EXIT SIGN (WALL MOUNTED)
- SMOKE/HEAT DETECTOR

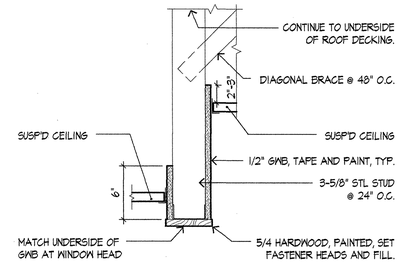
ROOM FINISH SCHEDULE - DENTAL HYGIENE CLINIC

ROOM No.	ROOM NAME	FLOORS FINISH: Concrete w/sealer	FLOORS FINISH: Carpet	FLOORS FINISH: VCT	FLOORS FINISH: Vinyl	FLOORS BASE	WALLS NORTH: GWB, Tape & Paint	WALLS SOUTH: GWB, Tape & Paint	WALLS EAST: GWB, Tape & Paint	WALLS WEST: GWB, Tape & Paint	CEILINGS FINISH	CEILINGS HT	REMARKS
FIRST FLOOR													
101	VESTIBULE			●	●		●	●	●	●	●	8'-0"	
102	WAITING			●	●		●	●	●	●	●	9'-0"	
103	TOILET			●	●		●	●	●	●	●	8'-0"	
104	CLINIC			●	●		●	●	●	●	●	9'-0"	
105	ADMINISTRATION AREA			●	●		●	●	●	●	●	8'-0"	
106	OFFICE			●	●		●	●	●	●	●	8'-0"	
107	SANITATION AREA			●	●		●	●	●	●	●	8'-0"	
108	HALL			●	●		●	●	●	●	●	8'-0"	
109	HALL			●	●		●	●	●	●	●	8'-6"	
110	X-RAY	●			●		●	●	●	●	●	8'-0"	
111	X-RAY	●			●		●	●	●	●	●	8'-0"	
112	X-RAY	●			●		●	●	●	●	●	8'-0"	
113	VIEWING			●	●		●	●	●	●	●	8'-0"	
114	X-RAY	●			●		●	●	●	●	●	8'-0"	
115	X-RAY	●			●		●	●	●	●	●	8'-0"	
116	STORAGE			●	●		●	●	●	●	●	8'-0"	
117	DARK ROOM			●	●		●	●	●	●	●	8'-0"	
118	MECHANICAL	●			●		●	●	●	●	●	8'-0"	
119	HALL			●	●		●	●	●	●	●	8'-0"	
120	HALL			●	●		●	●	●	●	●	8'-0"	
121	LOCKER			●	●		●	●	●	●	●	8'-0"	
122	TOILET			●	●		●	●	●	●	●	8'-0"	
123	TOILET			●	●		●	●	●	●	●	8'-0"	
124	LOCKER			●	●		●	●	●	●	●	8'-0"	
125	LAB COATS			●	●		●	●	●	●	●	8'-0"	
126	STORAGE			●	●		●	●	●	●	●	8'-0"	
127	STORAGE			●	●		●	●	●	●	●	8'-0"	
128	LOCKER			●	●		●	●	●	●	●	8'-0"	
129	LOCKER			●	●		●	●	●	●	●	8'-0"	
130	HALL			●	●		●	●	●	●	●	8'-0"	
131	ELECTRICAL			●	●		●	●	●	●		8'-0"	
132	STORAGE			●	●		●	●	●	●		8'-0"	NO CEILING
133	PHONE / DATA ROOM			●	●		●	●	●	●		8'-0"	NO CEILING
134	STORAGE			●	●		●	●	●	●	●	8'-0"	
135	CLASSROOM			●	●		●	●	●	●	●	8'-6"	
136	MEETING	●			●		●	●	●	●	●	8'-6"	
137	OFFICE	●			●		●	●	●	●	●	8'-6"	
138	HALL	●			●		●	●	●	●	●	8'-6"	
139	OFFICE	●			●		●	●	●	●	●	8'-6"	
140	OFFICE	●			●		●	●	●	●	●	8'-6"	
141	OFFICE	●			●		●	●	●	●	●	8'-6"	
142	OFFICE	●			●		●	●	●	●	●	8'-6"	
143	RECEPTION	●			●		●	●	●	●	●	8'-6"	



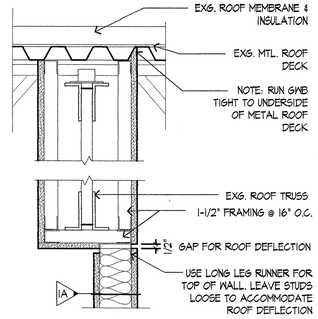
1 XRAY VIEWING DESK

1-1/2" = 1'-0" 2302A_Dtls-Interior



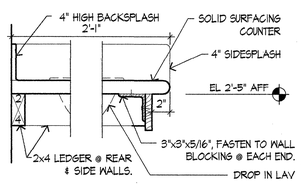
2 SOFFIT DETAIL

1-1/2" = 1'-0" 2302A_Dtls-Interior



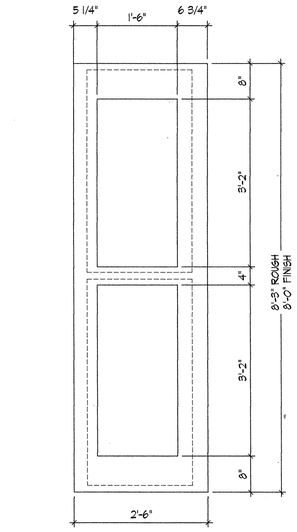
3 OPEN WEB JOIST ENCLOSURE - 1 HOUR RATED

1-1/2" = 1'-0" 2302A_Dtls-Interior



4 BATHROOM SINK COUNTER

1-1/2" = 1'-0" 2302A_Dtls-Interior



5 PLAN AT XRAY VIEWING DESK

3/4" = 1'-0" 2302A_Dtls-Interior

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

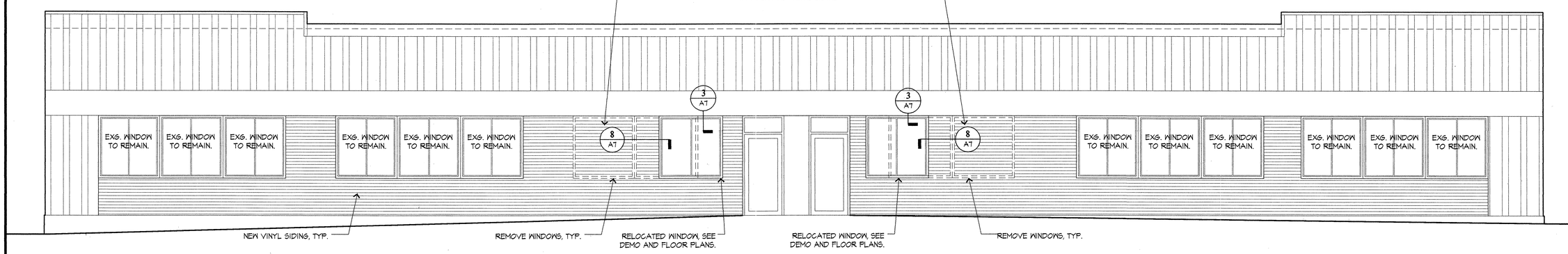
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
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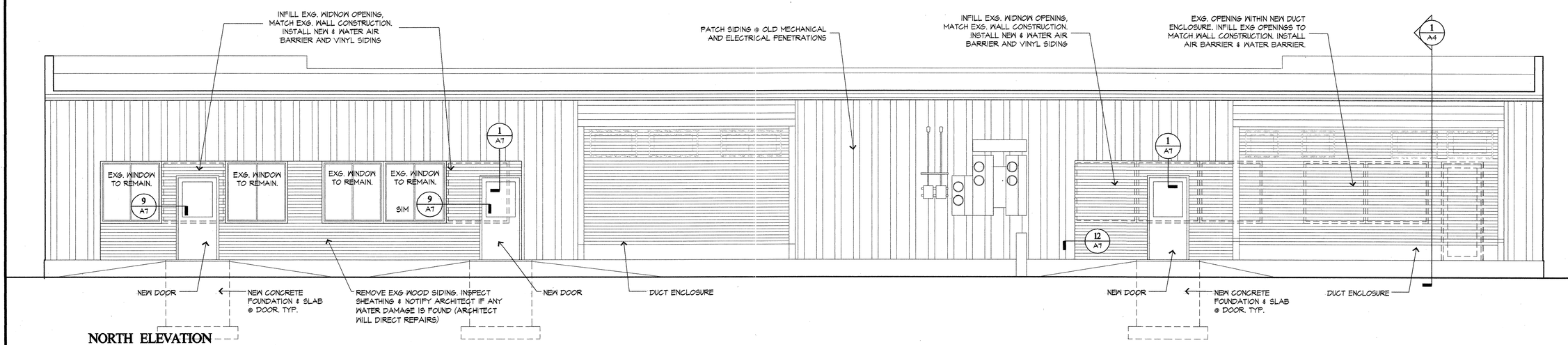
REFLECTED CEILING PLAN

A2



SOUTH ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



NORTH ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations

NORTHERN ARCHITECTS

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05401-4502

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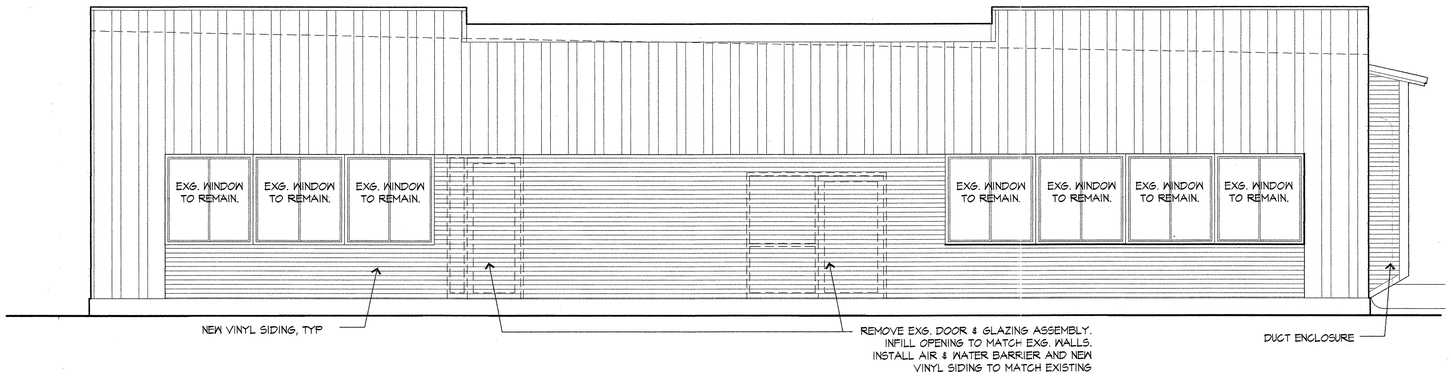
VERMONT TECHNICAL COLLEGE

WILLISTON
VERMONT

DATE:	2/18/05
SCALE:	1/4"=1'-0"
CHECKED:	TDB
PROJECT NO:	2302A

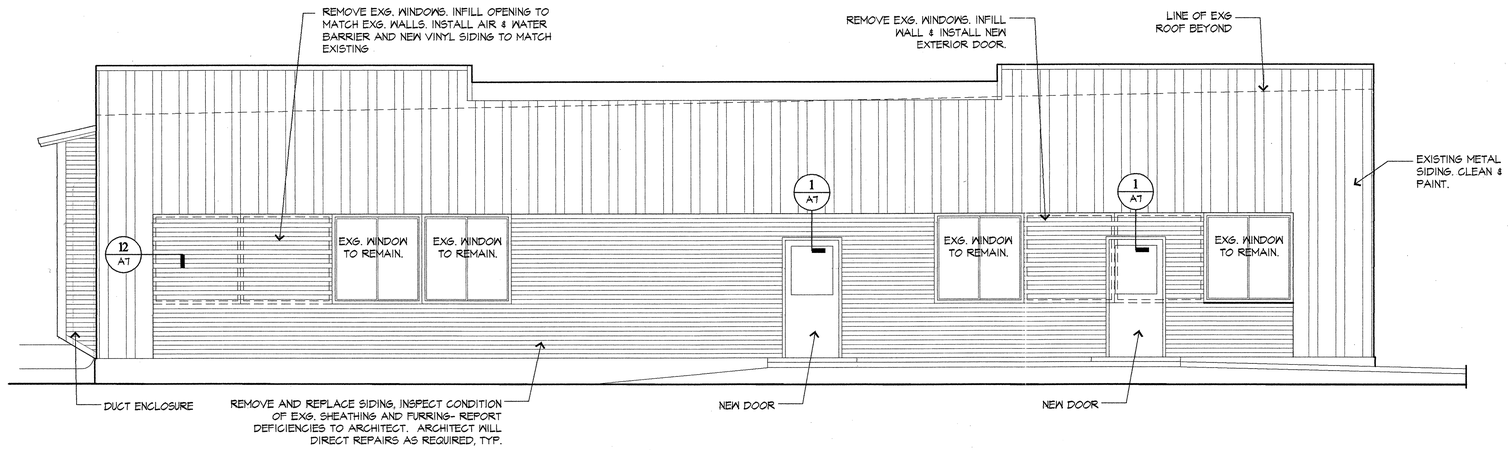
BUILDING ELEVATIONS

A3



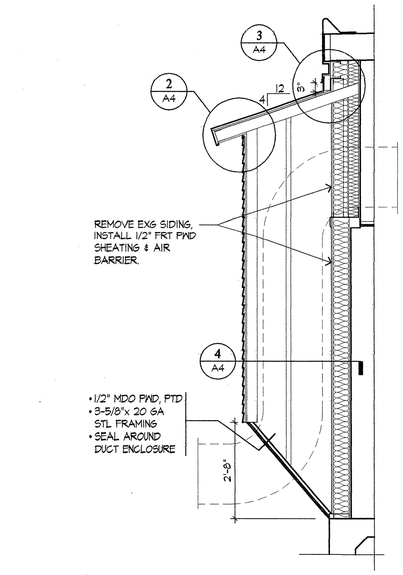
EAST ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



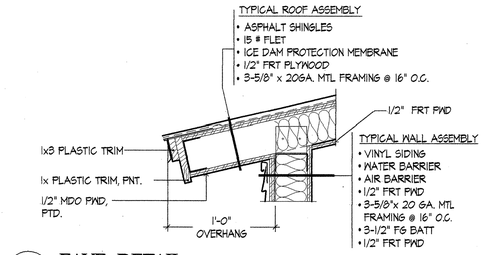
WEST ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



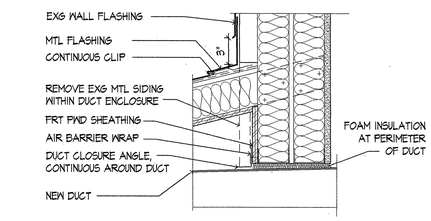
1 SECTION AT DUCT ENCLOSURE

SCALE: 1/2"=1'-0" 2302A-Section-DuctEnclosure



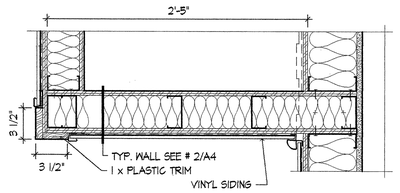
2 EAVE DETAIL

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure



3 SIDEWALL DETAIL

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure



4 SECTION AT DUCT ENCLOSURE

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure

NORTHERN ARCHITECTS

207 KING STREET
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BURLINGTON, VERMONT
05401-4502

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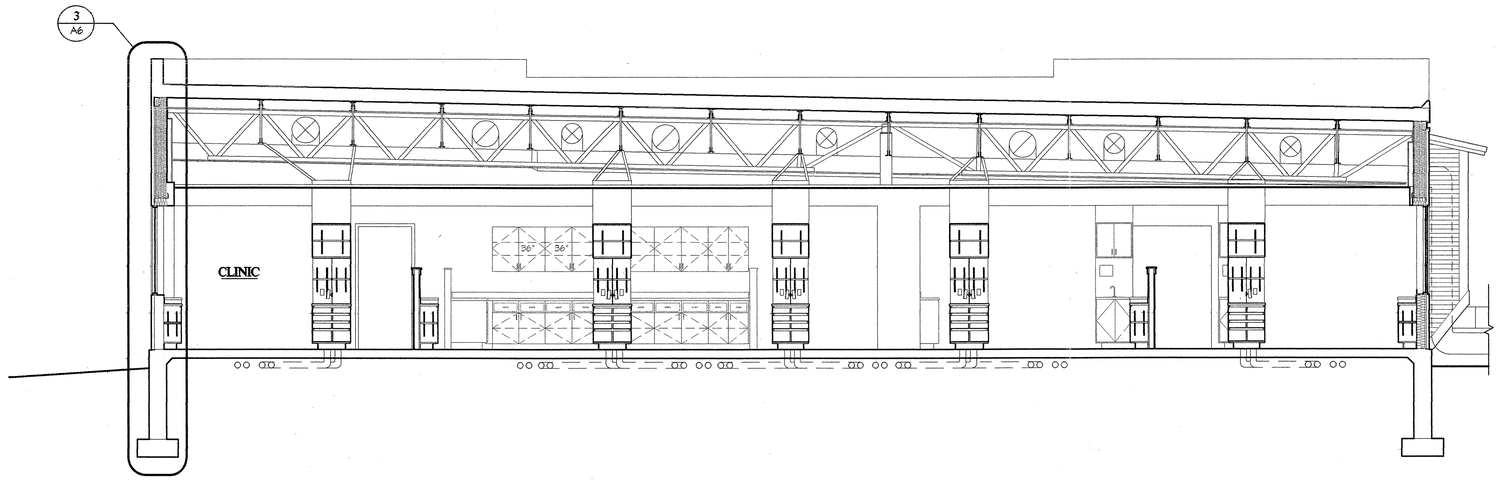
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
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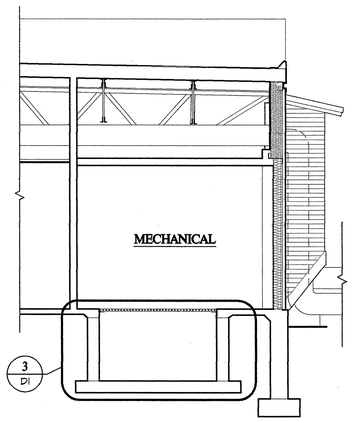
BUILDING ELEVATIONS

A4



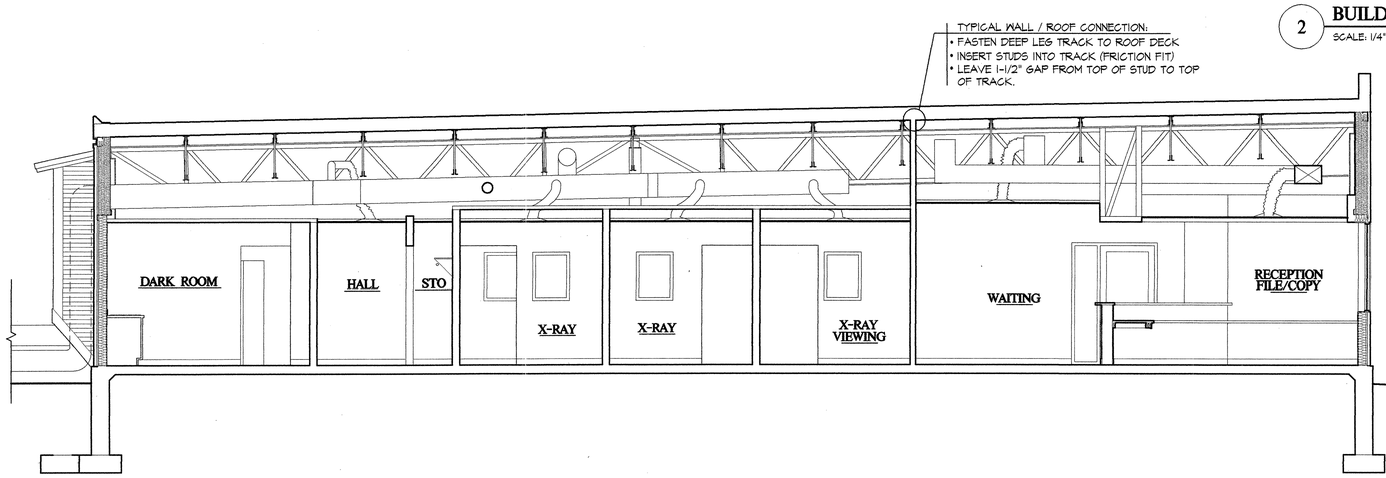
1 BUILDING SECTION

SCALE: 1/4"-1'-0" 2302A-Section_Building



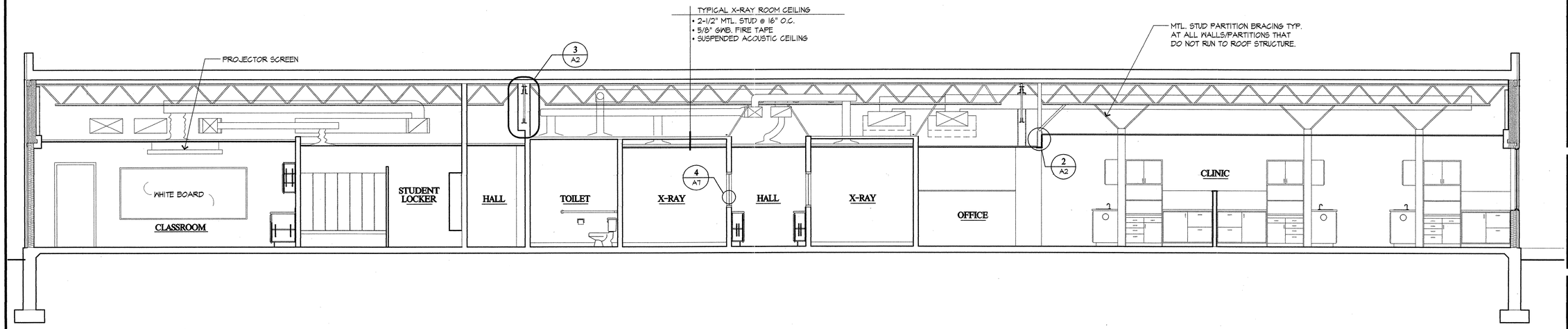
2 BUILDING SECTION

SCALE: 1/4"-1'-0" 2302A-Section_Building



3 BUILDING SECTION

SCALE: 1/4"-1'-0" 2302A-Section_Building



4 BUILDING SECTION

SCALE: 1/4"-1'-0" 2302A-Section_Building

NORTHERN ARCHITECTS

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DENTAL HYGIENE PROGRAM

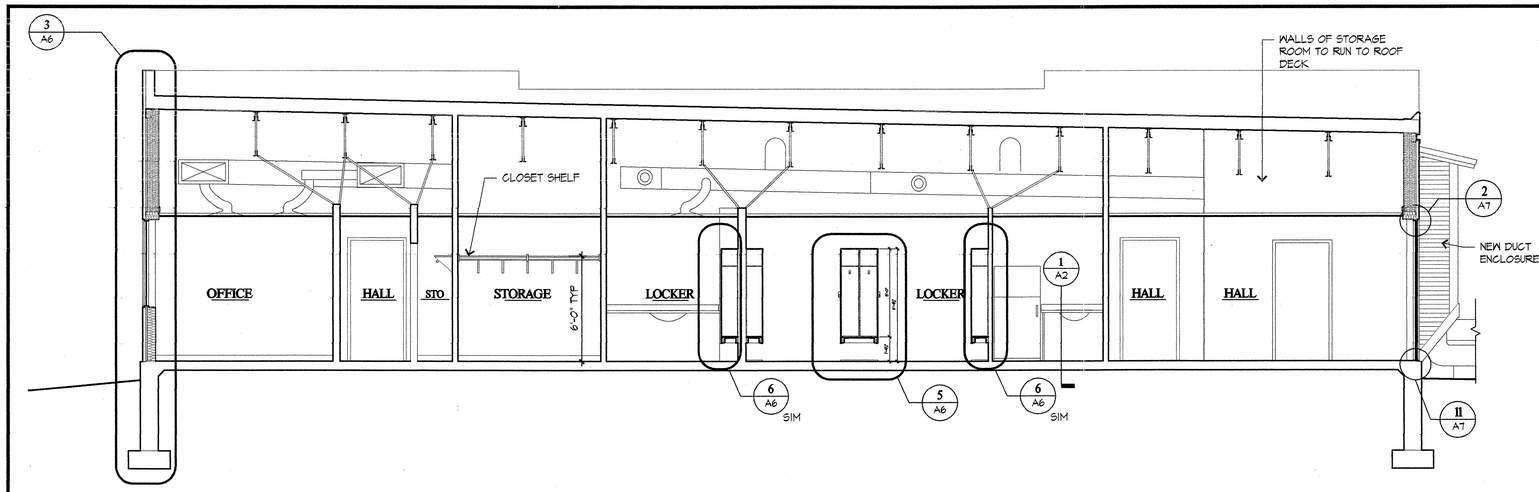
VERMONT TECHNICAL COLLEGE

WILLISTON
VERMONT

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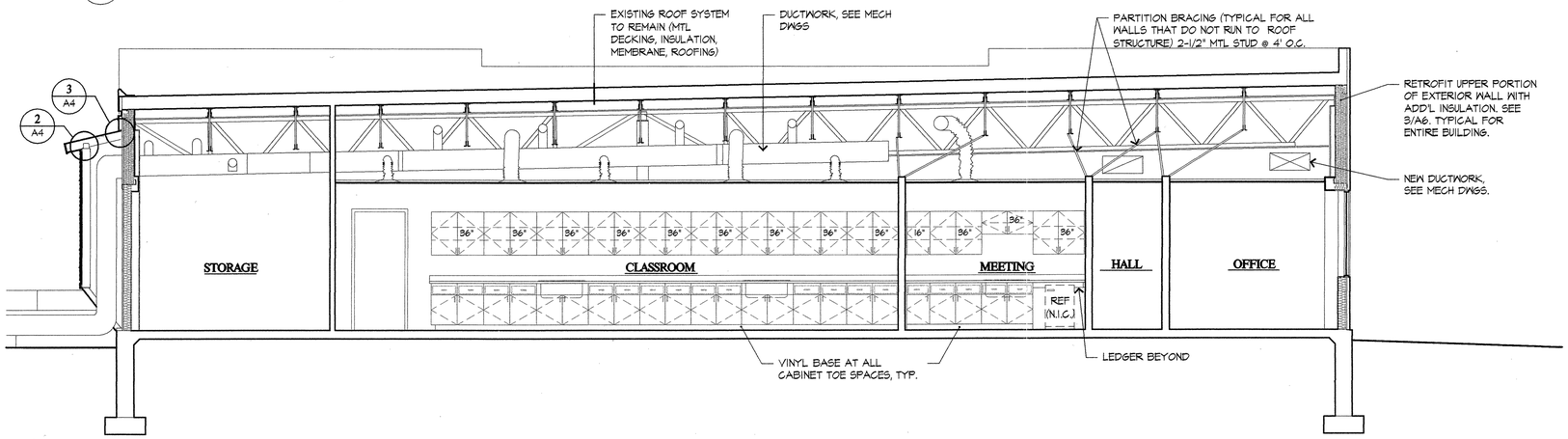
BUILDING SECTIONS

A5



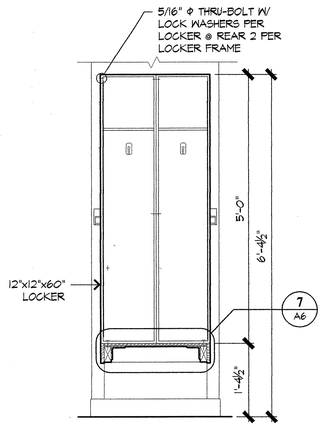
1 BUILDING SECTION

SCALE: 1/4"=1'-0" 2302A-Section_Building



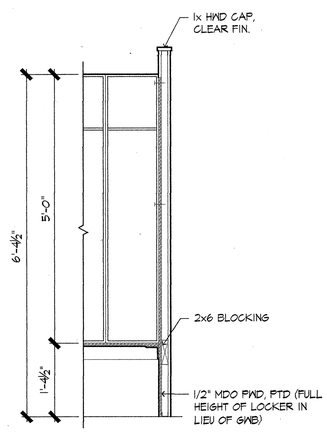
2 BUILDING SECTION

SCALE: 1/4"=1'-0" 2302A-Section_Building



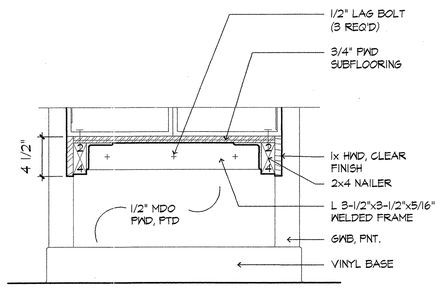
5 SECTION AT LOCKER

SCALE: 3/4"=1'-0" 2302A-Section_Building



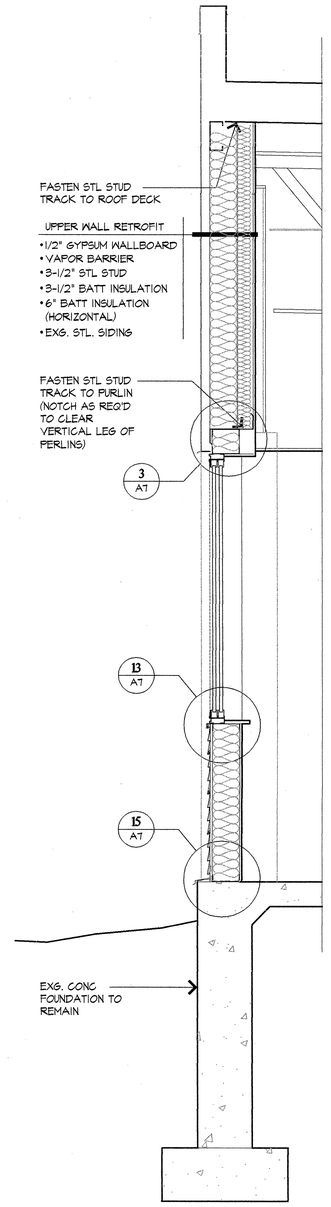
6 SECTION AT LOCKER

SCALE: 3/4"=1'-0" 2302A-Section_Building



7 SECTION AT LOCKER

SCALE: 1-1/2"=1'-0" 2302A-Section_Building



3 TYPICAL EXTERIOR WALL AT WINDOW

SCALE: 3/4"=1'-0" 2302A-Section_Wall

NORTHERN ARCHITECTS

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05401-4502

802-658-1953

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DENTAL HYGIENE PROGRAM

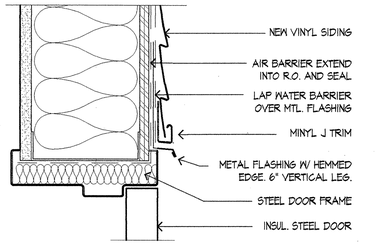
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
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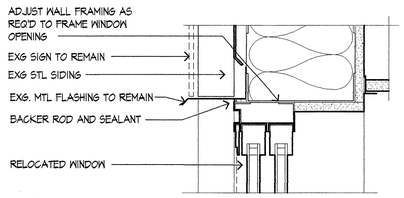
BUILDING SECTIONS

A6



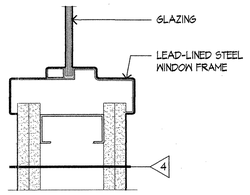
1 EXTERIOR DOOR HEAD

3" = 1'-0" 2302A_Dtls-DOOR



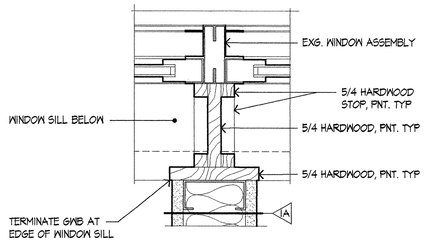
3 HEAD DETAIL AT RELOCATED WINDOW

3" = 1'-0" 2302A_Dtls-DOOR



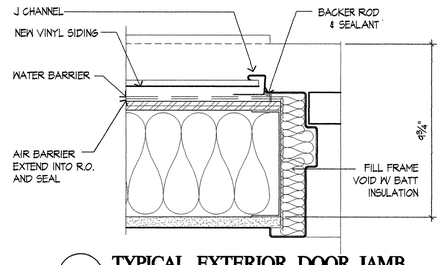
4 VIEWING WINDOW SILL

3" = 1'-0" 2302A_Dtls-DOOR



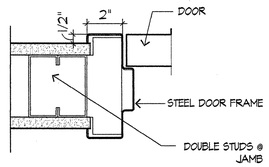
5 TYP WALL/WINDOW INTERSECTION DETAIL

3" = 1'-0" 2302A_Dtls-DOOR



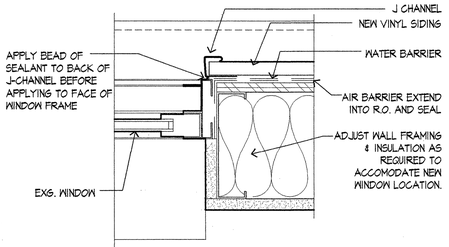
6 TYPICAL EXTERIOR DOOR JAMB

3" = 1'-0" 2302A_Dtls-DOOR



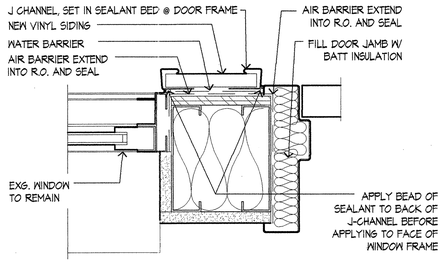
7 TYP. DOOR JAMB - INTERIOR

3" = 1'-0" 2302A_Dtls-DOOR



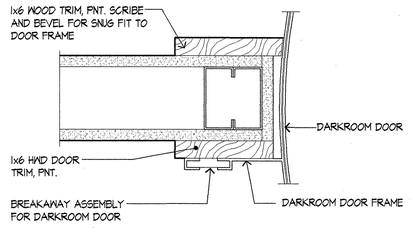
8 JAMB DETAIL AT RELOCATED WINDOW

3" = 1'-0" 2302A_Dtls-DOOR



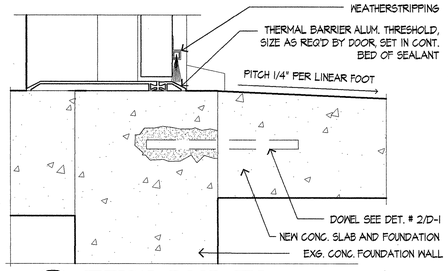
9 WINDOW/ DOOR JAMB DETAIL

3" = 1'-0" 2302A_Dtls-DOOR



10 DOOR JAMB AT DARKROOM

3" = 1'-0" 2302A_Dtls-DOOR



11 TYPICAL DOOR SILL

3" = 1'-0" 2302A_Dtls-DOOR

12 SIDING TRANSITION DETAIL

3" = 1'-0" 2302A_Dtls-DOOR

13 SILL DETAIL AT RELOCATED WINDOW

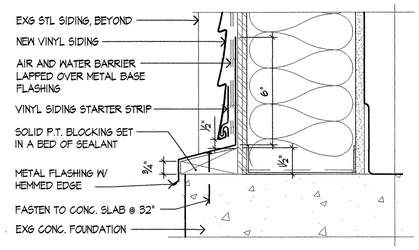
3" = 1'-0" 2302A_Dtls-DOOR

16 TYP HALF WALL/WINDOW INTERSECTION PLAN DETAIL

3" = 1'-0" 2302A_Dtls-DOOR

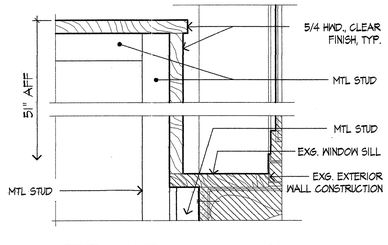
2 NOT USED

3" = 1'-0" 2302A_Dtls-DOOR



15 WALL BASE FLASHING

3" = 1'-0" 2302A_Dtls-DOOR

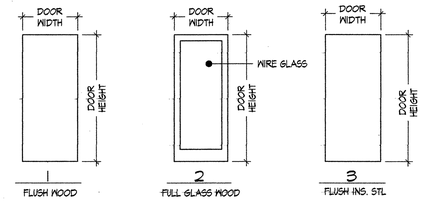


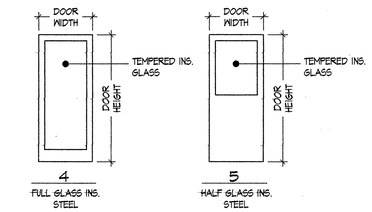
17 TYP HALF WALL/WINDOW INTERSECTION SECTION DETAIL

3" = 1'-0" 2302A_Dtls-DOOR

14 NOT USED

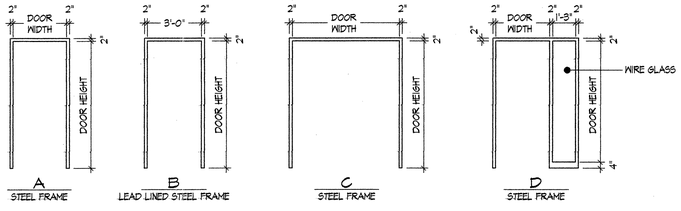
3" = 1'-0" 2302A_Dtls-DOOR





18 DOOR ELEVATIONS

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



19 FRAME ELEVATIONS

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

DOOR SCHEDULE

DOOR No.	SIZE WIDTH	SIZE HEIGHT	SIZE THICK	DOOR ELEV	DOOR MAT	FRAME TYPE	FRAME MAT	DETAILS JAMB	DETAILS HEAD	DETAILS THRESH	HDW SET	STOP	UL	NEW	EXG	REMARKS
1	3'-0"	6'-8"		EXG	AL	EXG	AL								X	Existing to remain
2	3'-0"	6'-8"		EXG	AL	EXG	AL								X	Existing to remain
3	6'-0"	6'-8"		EXG	AL	EXG	AL								X	
4	3'-0"	6'-8"		EX -1	SCW	EX -A	STL								X	
5	3'-0"	6'-8"		2	SCW	D	STL						20 Min	X		
6	3'-0"	6'-8"		2	SCW	A	STL						20 Min	X		
7	3'-0"	6'-8"		2	SCW	D	STL						20 Min	X		
8	3'-0"	6'-8"		-	-											Note 1
9	3'-0"	6'-8"		-	-											Note 1
10	3'-0"	6'-8"		-	-											Note 1
11	3'-0"	6'-8"		-	-											Note 1
12	3'-0"	6'-8"		-	-											Note 1
13	5'4"	6'-9"		-	STL	-	STL							X		Dark Room Door
14	6'-0"	6'-8"		EX -1	SCW	EX -C	STL							X		
15	3'-0"	6'-8"		2	SCW	D	STL						20 Min	X		
16	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
17	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
18	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
19	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
20	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
21	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
22	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
23	6'-0"	6'-8"		EX -1	SCW	EX -C	STL							X		
24	3'-0"	6'-8"		2	SCW	A	STL						20 Min	X		
25	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
26	3'-0"	6'-8"		EX -1	SCW	EX -A	STL								X	
27	3'-0"	6'-8"		EX -1	SCW	EX -A	STL								X	
28	3'-0"	6'-8"		EX -1	SCW	EX -A	STL								X	
29	3'-0"	6'-8"		EX -1	SCW	EX -A	STL								X	
30	3'-0"	6'-8"		EX -1	STL	EX -A	STL								X	
31	3'-0"	6'-8"		1	SCW	A	STL							X		
32	3'-0"	6'-8"		3	STL	A	STL								X	
33	3'-0"	6'-8"		1	SCW	A	STL							X		
34	3'-0"	6'-8"		1	SCW	A	STL						20 Min	X		
35	3'-0"	6'-8"		2	SCW	A	STL						20 Min	X		
36	5'-0"	6'-8"		1	SCW	C	STL						20 Min	X		
37	3'-0"	6'-8"		1	SCW	A	STL							X		
38	5'-0"	6'-8"		1	SCW	C	STL						20 Min	X		
39	3'-0"	6'-8"		3	STL	A	STL							X		
40	3'-0"	6'-8"		3	STL	A	STL							X		
41	3'-0"	6'-8"		5	STL	A	STL							X		
42	3'-0"	6'-8"		5	STL	A	STL							X		
50 +	Not used			-	-	-	-	-	-	-	-	-	-	-	X	

EX - : Existing door to be salvage and reused
Note 1: Rough frame for future. DK frame.

NORTHERN ARCHITECTS
207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502
802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

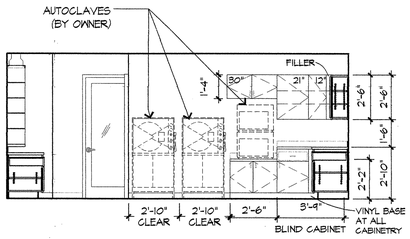
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

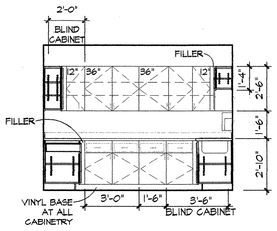
DATE: 2/18/05
SCALE: AS NOTED
CHECKED: TOB
PROJECT NO: 2302A

DOOR AND WINDOW DETAILS

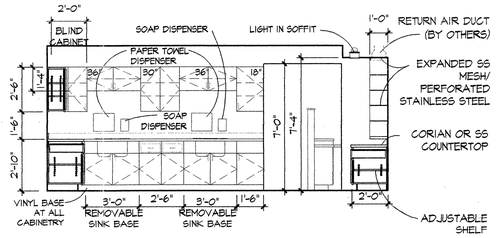
A7



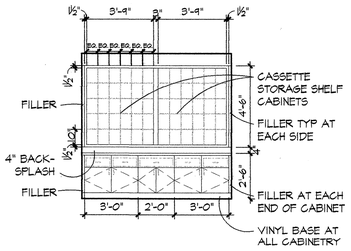
1 SANI AREA
SCALE: 1/4"=1'-0"



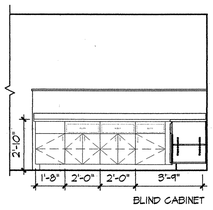
2 SANI AREA
SCALE: 1/4"=1'-0"



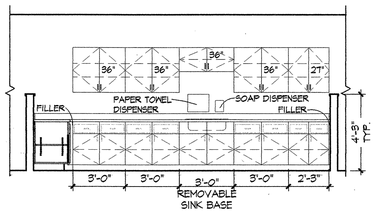
3 SANI AREA
SCALE: 1/4"=1'-0"



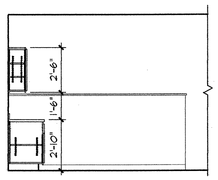
4 SANI AREA
SCALE: 1/4"=1'-0"



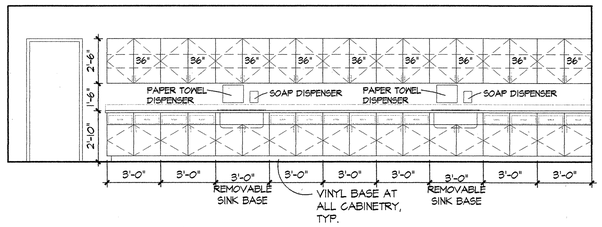
5 ADMINISTRATION AREA
SCALE: 1/4"=1'-0"



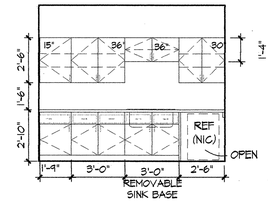
6 ADMINISTRATION AREA
SCALE: 1/4"=1'-0"



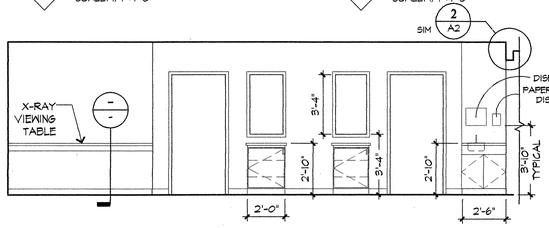
7 ADMINISTRATION AREA
SCALE: 1/4"=1'-0"



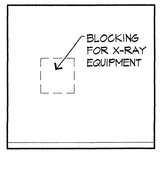
8 CLASSROOM
SCALE: 1/4"=1'-0"



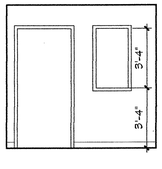
9 KITCHENETTE
SCALE: 1/4"=1'-0"



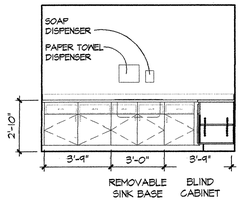
10 HALL 109
SCALE: 1/4"=1'-0"



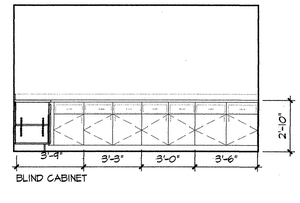
11 X-RAY ROOM
SCALE: 1/4"=1'-0"



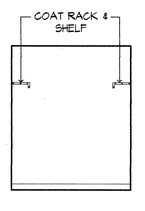
12 X-RAY ROOM
SCALE: 1/4"=1'-0"



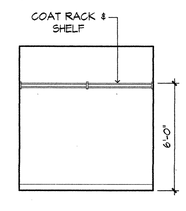
13 DARKROOM
SCALE: 1/4"=1'-0"



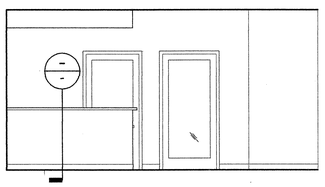
14 DARKROOM
SCALE: 1/4"=1'-0"



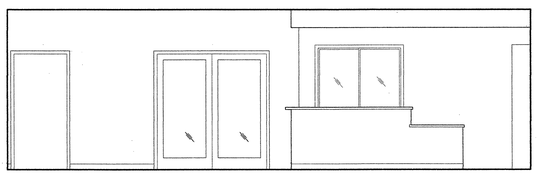
15 LAB COAT STORAGE
SCALE: 1/4"=1'-0"



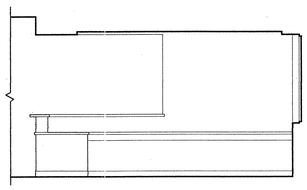
16 LAB COAT STORAGE
SCALE: 1/4"=1'-0"



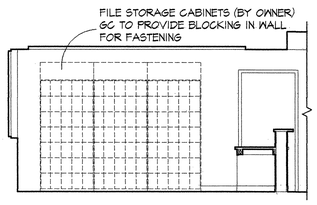
17 WAITING
SCALE: 1/4"=1'-0"



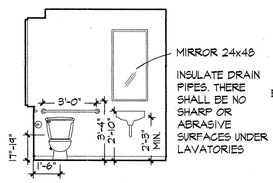
18 WAITING
SCALE: 1/4"=1'-0"



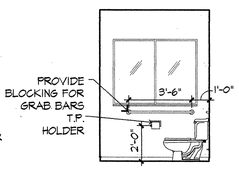
19 RECEPTION
SCALE: 1/4"=1'-0"



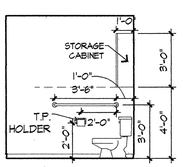
20 RECEPTION
SCALE: 1/4"=1'-0"



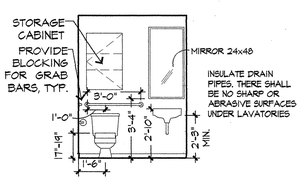
21 TOILET 103
SCALE: 1/4"=1'-0"



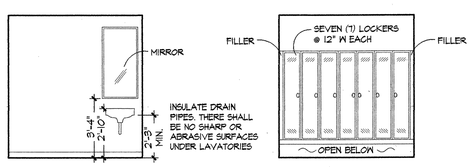
22 TOILET 103
SCALE: 1/4"=1'-0"



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

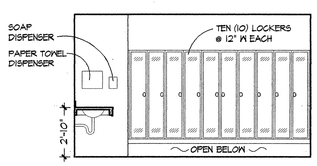


24 TOILET
SCALE: 1/4"=1'-0"

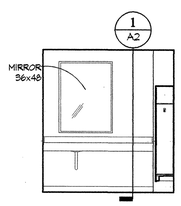


25 LOCKER
SCALE: 1/4"=1'-0"

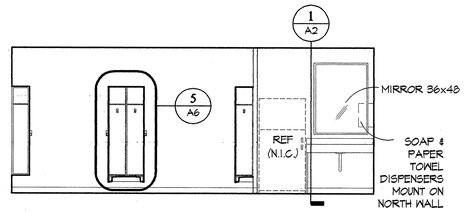
26 LOCKER
SCALE: 1/4"=1'-0"



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



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



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

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

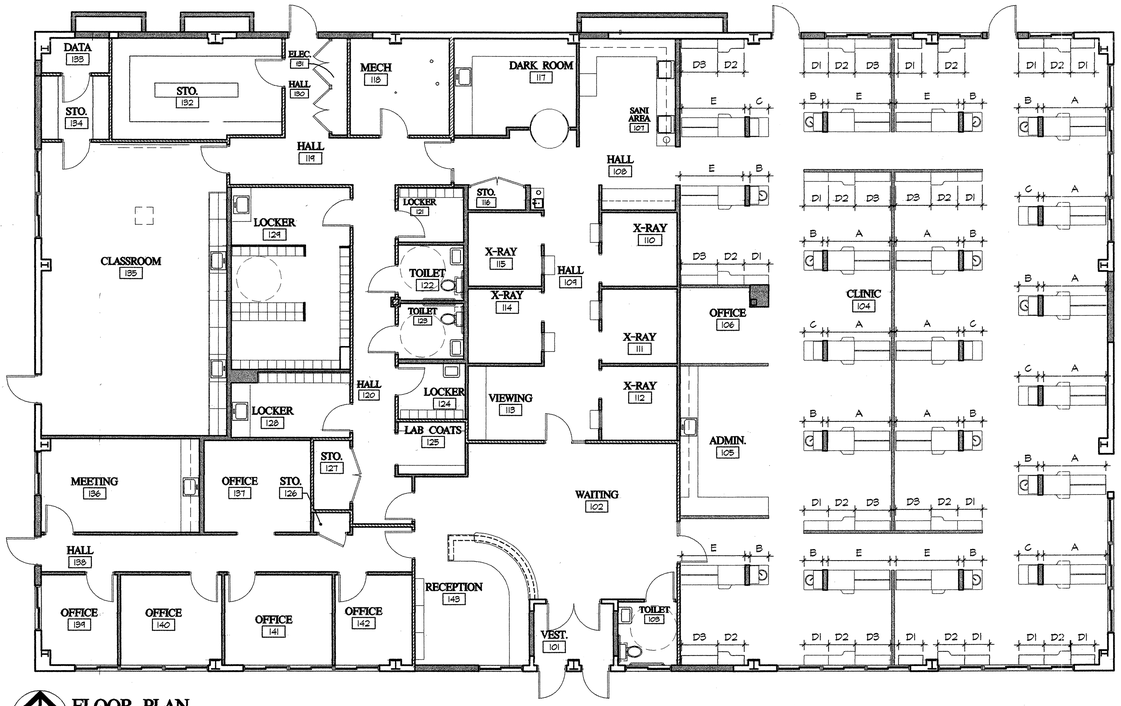
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

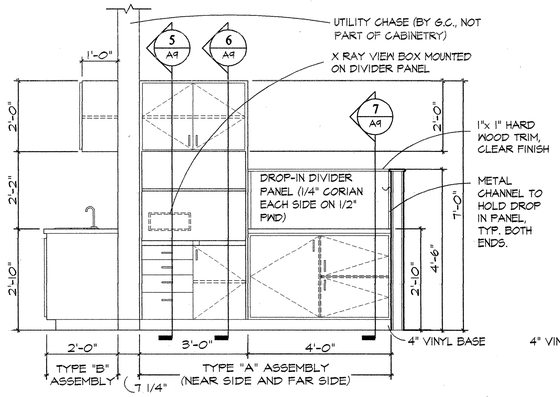
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SCALE:	1/4"=1'-0"
CHECKED:	TDB
PROJECT NO:	2302A

INTERIOR ELEVATIONS

A8

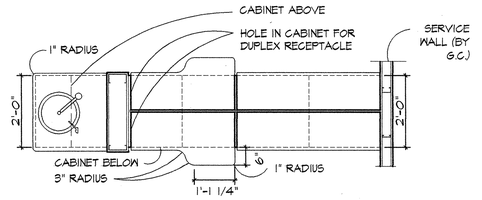


FLOOR PLAN
SCALE: 1/8"= 1'- 0"



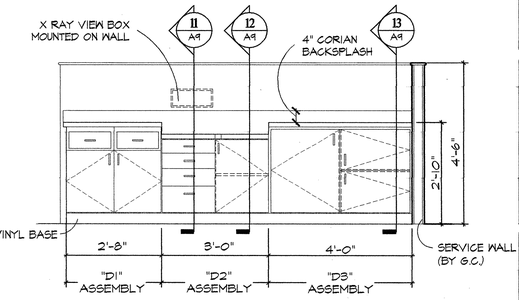
1 ELEVATION AT TYPE "A"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"

(RIGHT SIDE, LEFT SIDE OPPOSITE HAND)
(SEE PLAN FOR "A"/"C" ASSEMBLIES)

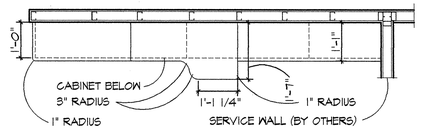


2 PLAN AT TYPE "A"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"

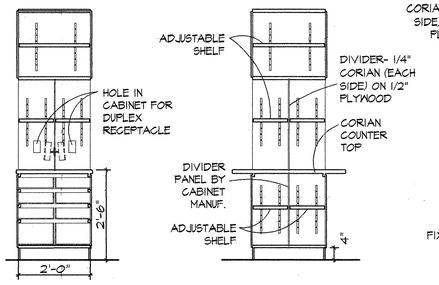
(TYPE "A" / "C" SIMILAR)



3 ELEVATION AT "D1"/"D2"/"D3" ASSEMBLY
SCALE: 1/2"=1'-0"

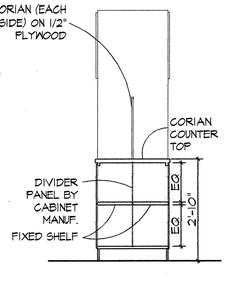


4 PLAN AT "D1"/"D2"/"D3" ASSEMBLY
SCALE: 1/2"=1'-0"

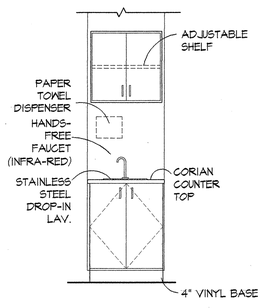


5 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"

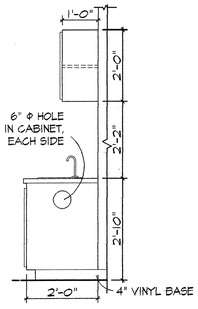
6 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"



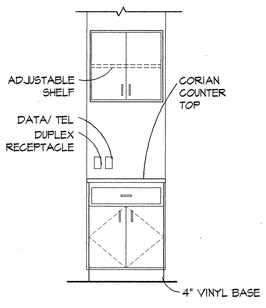
7 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"



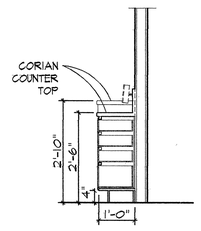
8 ELEVATION AT TYPE "B" ASSEMBLY
SCALE: 1/2"=1'-0"



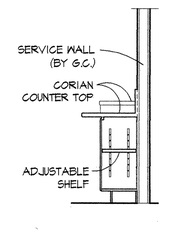
9 ELEVATION AT TYPE "C" ASSEMBLY
SCALE: 1/2"=1'-0"



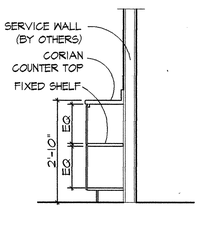
10 ELEVATION AT TYPE "B" ASSEMBLY
SCALE: 1/2"=1'-0"



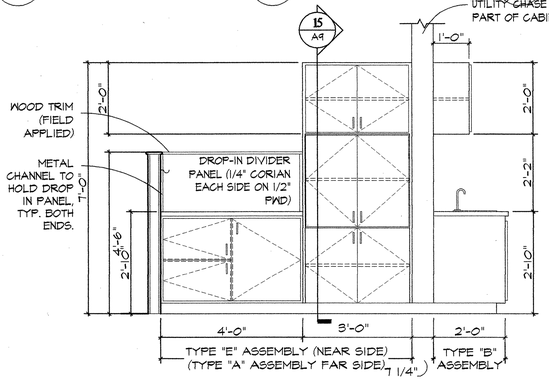
11 SECTION AT TYPE "D2"
SCALE: 1/2"=1'-0"



12 SECTION AT TYPE "D2"
SCALE: 1/2"=1'-0"

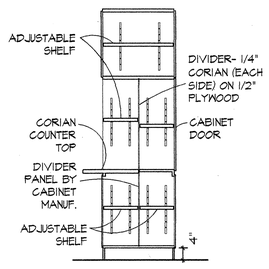


13 SECTION AT TYPE "D3"
SCALE: 1/2"=1'-0"



14 ELEVATION AT TYPE "E"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"

(SEE PLAN FOR "E"/"C" ASSEMBLIES)



15 SECTION AT TYPE "E" CLINIC SERVICE ASSEMBLY
SCALE: 1/2"=1'-0"

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

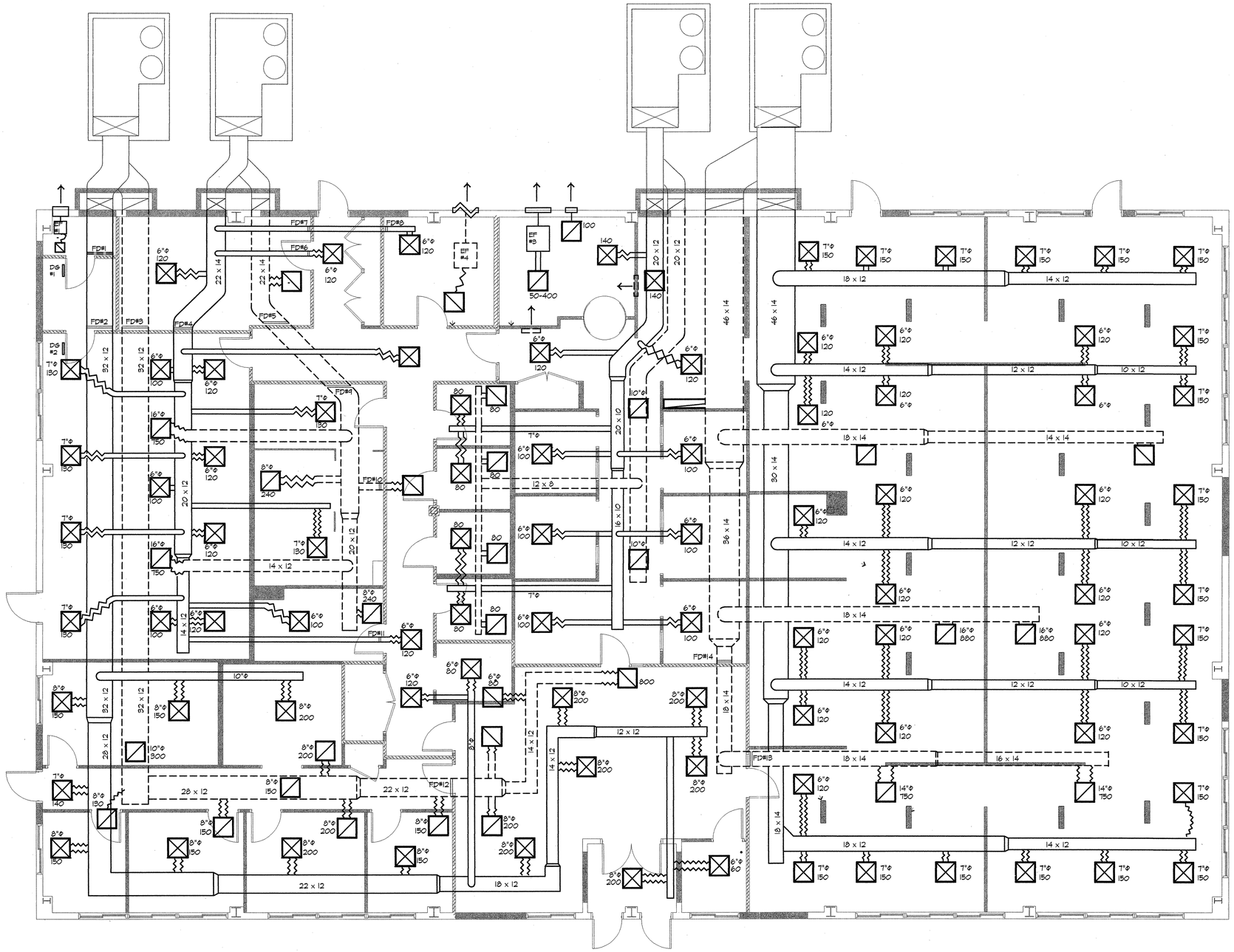
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

CABINETS

A9



MECHANICAL PLAN

SCALE: 1/8"= 1'- 0"

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

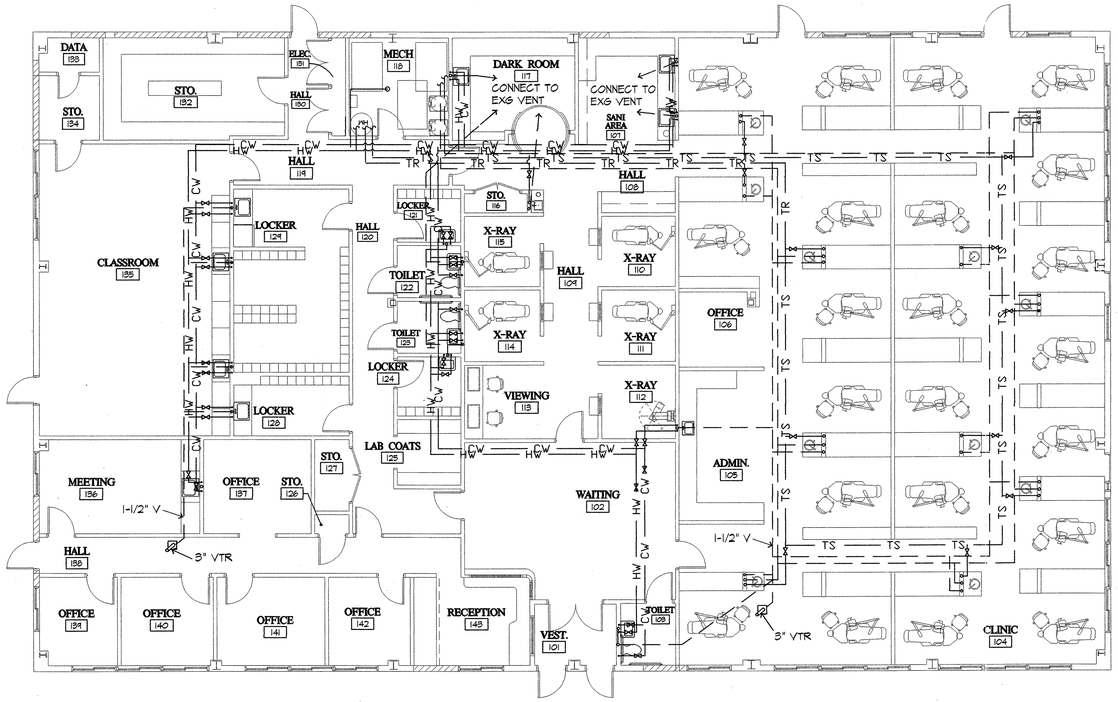
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	3/16"=1'-0"
CHECKED:	TOB
PROJECT NO:	2302A

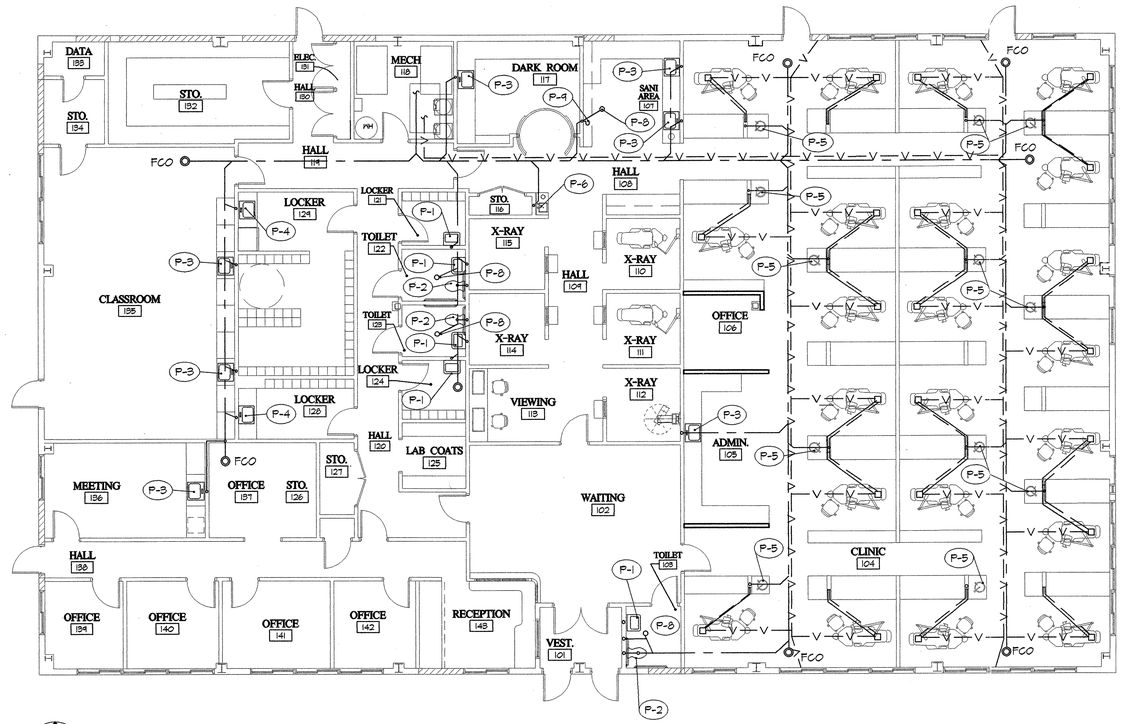
HVAC PLAN

M1



PLUMBING PLAN - ABOVE CEILING

SCALE: 1/8"= 1'- 0" 2302A- Plumbing Plan



PLUMBING PLAN - BELOW SLAB

SCALE: 1/8"= 1'- 0" 2302A- Plumbing Plan

FIXTURE SCHEDULE

ITEM	FIXTURE	MANUFACTURER	MODEL	CONNECTIONS HW	CW	W	V	NOTES
P-1	ADA WALL HUNG LAVATORY	AMERICAN STANDARD	0355.012	1/2	1/2	2	1-1/2	21" X 18" W/ 4" CENTERS, VITREOUS CHINA, ZURN CHAIR CARRIER #Z 1231 (CONCEALED ARM), NO ESCUTCHEONS, FAUCET: MOEN #8475 (WV1225 CARTRIDGE). INSTALL TRUEBRO "HANDI-LAV GUARD" INSULATION KIT. MODEL #102 OR EQUAL ON UNDER LAV PIPING.
P-2	ADA FLOOR MOUNT WATER CLOSET	AMERICAN STANDARD	2168.100	---	1/2	4	2	HANDICAPPED, WHITE, ELONGATED BOWL, 1.6 GPF; INSULATED TANK W/ ANGLE SUPPLY STOP VALVE AND 3/8" BRAIDED CONNECTOR. PROVIDE AMERICAN STANDARD #5324.014 SEAT AND COVER. SITE CONFIRM RIGHT HAND OR LEFT HAND TRIP LEVER PER ADA REQUIREMENTS
P-3	UTILITY SINK	ELKAY	LRAD3122	1/2	1/2	2	1-1/2	STAINLESS STEEL UTILITY SINK .FAUCET TO BE MOEN #8710 SINGLE LEVER SWING SPOUT FAUCET (2.2 GPM FLOW RESTRICTOR)
P-4	LOCKER ROOM SINK	ELKAY	PSLVR1916CS	1/2	1/2	2	1-1/2	19" X 17" W/ 2" STAINLESS STEEL SINK .FAUCET TO BE MOEN #8710 SINGLE LEVER SWING SPOUT FAUCET (2.2 GPM FLOW RESTRICTOR)
P-5	CLINIC SINK	ELKAY	LUSTERSTONE LLVR191	1/2	1/2	2	1-1/2	STAINLESS STEEL SINK .FAUCET TO BE SLOAN- OPTIMA SYSTEMS # ETF-660.
P-6	SINK	ELKAY	BLR-150-C	1/2	1/2	2	1-1/2	STAINLESS STEEL SINK .FAUCET TO BE SLOAN- OPTIMA SYSTEMS # ETF-660.
P-7	NOT USED							
P-8	FLOOR DRAIN	ZURN	Z-415	---	---	2	1-1/2	PROVIDE DEEP SEAL TRAP IN LIEU OF TRAP PRIMERS AT ALL LOCATIONS.
P-9	DRAIN					2	1-1/2	PROVIDE ROUGH IN AT 12" ABOVE FINISH FLOOR LEVEL FOR FUTURE CONDENSATE DRAIN.

KEY

- TS — TEMPERED WATER-SUPPLY
- TR — TEMPERED WATER-RETURN
- HW — HOT WATER-SUPPLY
- CW — COLD WATER-RETURN
- — — — VENTING
- — — — COMPRESSED AIR
- —V—V— VACUUM
- ——— WASTE

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

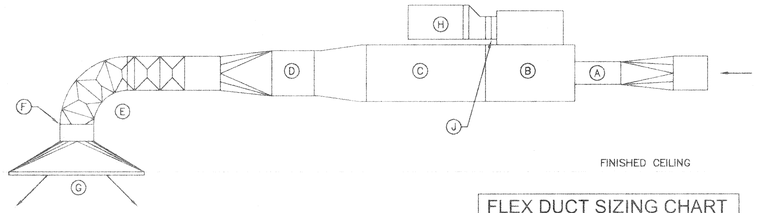
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

PLUMBING PLANS

P1



(A) INLET AIR DUCTWORK. MINIMUM OF 4 DIAMETERS OF STRAIGHT DUCT AT INLET. MATCHING INLET COLLAR DUCT SIZE.

(B) VARIABLE AIR VOLUME BOX.

(C) DISCHARGE SOUND ATTENUATOR.

(D) DISCHARGE DUCTWORK. MINIMUM 2 ELBOWS TOTAL ON DISCHARGE DUCT OR FLEX FOR SOUND ATTENUATION.

(E) FLEXIBLE DUCTWORK (MINIMUM 3 FEET, MAXIMUM 6 FEET). SEE SIZING CHART, THERMAFLEX MODEL M-KC OR APPROVED EQUIVALENT.

(F) ROUND TO RECTANGULAR TRANSITION BY DIFFUSER MANUFACTURER OR FIELD FABRICATED.

(G) SUPPLY DIFFUSER

(H) BYPASS DUCT, SEE PLANS FOR DUCT SIZES.

(J) FLEXIBLE CONNECTION

FLEX DUCT SIZING CHART

DUCT DIA.	CFM (MAX)	DUCT DIA.	CFM (MAX)
6"	80	16"	1000
8"	160	18"	1400
10"	300	20"	1900
12"	500	22"	2400
14"	700	24"	3000

DIFFUSER SCHEDULE

MARK ABB.	MARK NO.	MANUFACTURER	MODEL NO	DIMENSIONS WIDTH	DIMENSIONS HEIGHT	DIMENSIONS NECK	CFM	REMARKS
S	1	METALAIRE	5700-6	24"	24"	6"ø	0-100	SEE NOTES
S	2	METALAIRE	5700-6	24"	24"	8"ø	101-200	SEE NOTES
S	3	METALAIRE	5700-6	24"	24"	10"ø	201-300	SEE NOTES
R	1	METALAIRE	5700-6	24"	24"	6"ø	0-100	SEE NOTES
R	2	METALAIRE	5700-6	24"	24"	8"ø	101-200	SEE NOTES
R	3	METALAIRE	5700-6	24"	24"	10"ø	201-300	SEE NOTES
R	4	METALAIRE	5700-6	24"	24"	12"ø	300-400	SEE NOTES
E	1	METALAIRE	HD-RH	12"	6"	12"x6"	0-300	SEE NOTES

NOTES:

1. FURNISH ALL GRILLES/DIFFUSERS WITH WHITE BAKED FINISH.

INSULATION SCHEDULE

SERVICE	SIZE	TYPE	THICKNESS	REMARKS
SUPPLY DUCTWORK	ALL	H21	2"	SEE NOTES
SUPPLY & RETURN DUCT ABOVE CEILING	ALL	H21	1"	

NOTES:

1. PROVIDE FOIL FACED INSULATION ON ALL UNEXPOSED DUCTWORK. PROVIDE VINYL FACED INSULATION ON ALL EXPOSED DUCTWORK.
2. FOR CIRCULAR DUCTS 12" AND SMALLER 1 1/2" THICK TYPE H51 BLANKET INSULATION MAYBE USED.

VAV BOX SCHEDULE

MARK ABB.	MARK NO.	MANUFACTURER	MODEL	CFM	ELECTRICAL DATA VOLTS	ELECTRICAL DATA PHASE	ELECTRICAL DATA HERTZ	REMARKS
VAV	101	METALAIRE	412 BP	1380	120	1	60	SEE NOTES
VAV	102	METALAIRE	412 BP	1560	120	1	60	SEE NOTES
VAV	103	METALAIRE	406 BP	300	120	1	60	SEE NOTES
VAV	104	METALAIRE	406 BP	300	120	1	60	SEE NOTES
VAV	201	METALAIRE	410 BP	700	120	1	60	SEE NOTES
VAV	202	METALAIRE	412 BP	1345	120	1	60	SEE NOTES
VAV	203	METALAIRE	406 BP	350	120	1	60	SEE NOTES
VAV	204	METALAIRE	406 BP	150	120	1	60	SEE NOTES
VAV	205	METALAIRE	410 BP	800	120	1	60	SEE NOTES
VAV	206	METALAIRE	410 BP	700	120	1	60	SEE NOTES
VAV	207	METALAIRE	406 BP	350	120	1	60	SEE NOTES

NOTES:

1. MINIMUM CFM SHALL BE SET FOR 30% OF THE SCHEDULED AMOUNT.
2. CONTRACTOR MAY SUBSTITUTE METALAIRE SERIS 500TH SINGLE DUCT TERMINALS IF THE AIR HANDLING UNITS ARE PROVIDED WITH A VARIABLE SPEED FAN CONTROLLED BY A PRESSURE SWITCH.

HVAC LEGEND

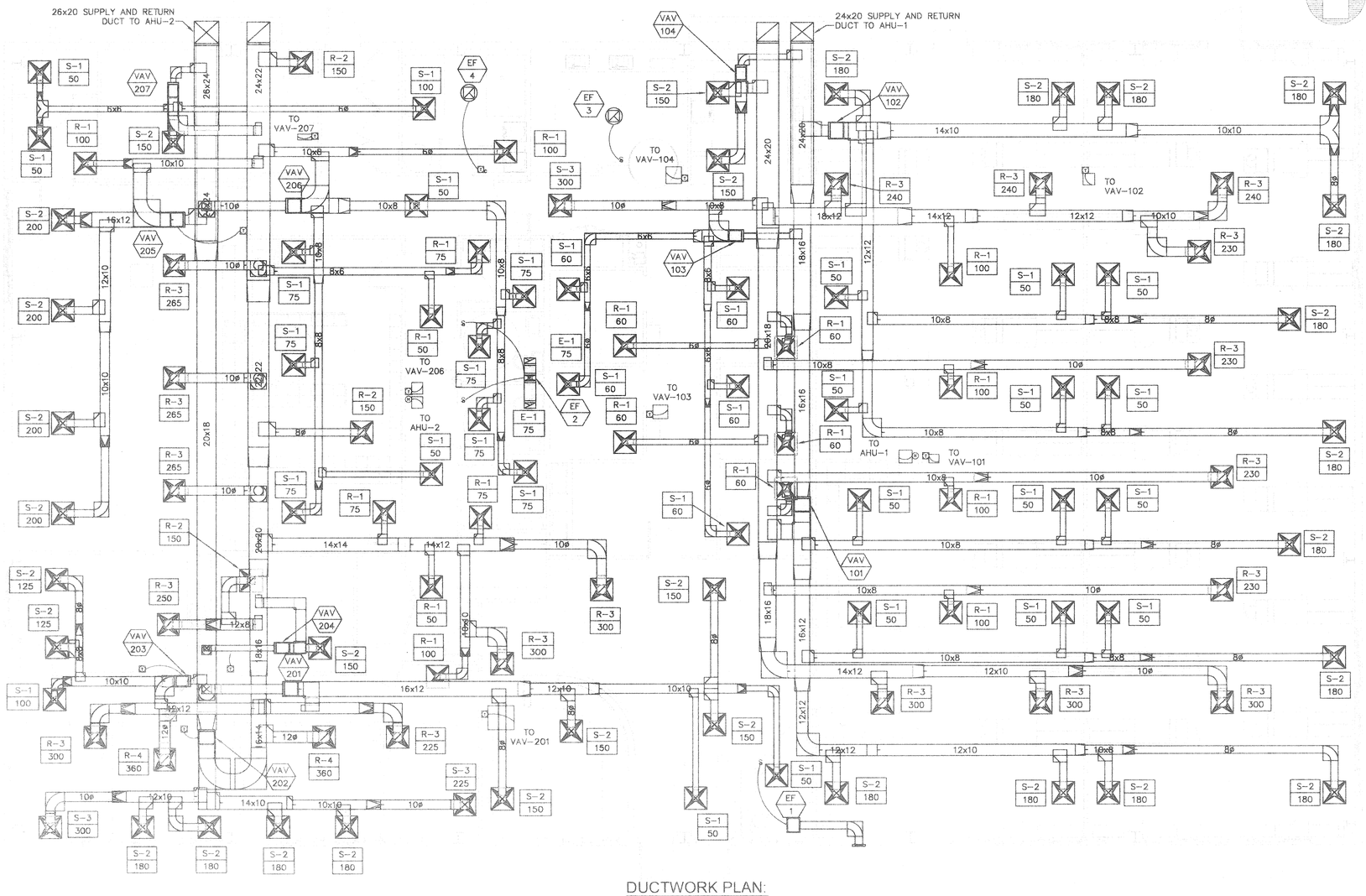
(T)	THERMOSTAT
(S)	SMOKE DETECTOR
⊠	SUPPLY DUCT SECTION
⊠	EXHAUST DUCT SECTION
⊠	SUPPLY DUCT DIFFUSER
—	SUPPLY DUCT GRILLE
—	EXHAUST DUCT GRILLE
FCU 1-3	EQUIPMENT TAG
S-6 200	DIFFUSER OR GRILLE DESIGNATION CFM

ABBREVIATIONS

ALL ABBREVIATIONS MAY NOT APPLY	
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
BOD	BACKDRAFT DAMPER
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
FD	FIRE DAMPER
GPM	GALLONS PER MINUTE
HRU	HEAT RECOVERY UNIT
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LF	LINEAR FEET
MBH	THOUSAND BTU/HOUR
MOD	MOTOR OPERATED DAMPER
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
P	PRESSURE DROP
R	RETURN
RA	RETURN AIR
S	SUPPLY
SA	SUPPLY AIR
SCFM	STANDARD CFM
SF	SUPPLY FAN
T	TEMPERATURE DIFFERENCE
TG	TRANSFER GRILLE
VD	VOLUME DAMPER
WB	WET BULB

VAV BOX WITH BYPASS DETAIL

NOT TO SCALE



DUCTWORK PLAN:

SCALE: 1/8" = 1'-0"

EQUIPMENT SCHEDULE:

EF-1 EXHAUST FAN: BROAN MODEL 680 COMBINATION FAN AND LIGHT EXHAUST FAN. PROVIDE WALL CAP AND BACKDRAFT DAMPER. ELECTRICAL DATA: 200W, 120V/1Ø/60 HZ.

EF-2 EXHAUST FAN: GREENHECK MODEL G-070 ROOF MOUNTED EXHAUST FAN WITH A CAPACITY OF 1710 CFM AT 0.25" W.C. PROVIDE ALUMINUM ROOF CURB AND MOTOR OPERATED DAMPER. ELECTRICAL DATA: 1/50 HP, 120V/1Ø/60 HZ.

EF-3 EXHAUST FAN: GREENHECK MODEL G70 ROOF MOUNTED EXHAUST FAN WITH A CAPACITY OF 274 CFM AT 0.25" W.C. PROVIDE ALUMINUM ROOF CURB AND MOTOR OPERATED DAMPER. ELECTRICAL DATA: 120V/1Ø/60 HZ.

NOTES:

1. CONTRACTOR SHALL PROVIDE VOLUME DAMPERS FOR ALL DIFFUSER BRANCHES FOR SYSTEM TO BE BALANCED.
2. DUCTWORK SIZED FOR 0.07" WC/100' FOR SOUND ATTENUATION.
3. PROVIDE SOUND ATTENUATION LINING FOR FIRST 20 LF OF DUCTWORK FROM THE AIR HANDLING UNITS.
4. AIR HANDLING UNITS SHALL BE PROVIDED WITH DUCT MOUNTED SMOKE DETECTORS IN THE RETURN DUCTS.

NORTHERN ARCHITECTS
207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502
802-658-1953

CONSULTANTS
MECHANICAL ENGINEER
DETRENE & ASSOCIATES, PC
PO BOX 8
WINDSOR, VT 05089
802-674-2304

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

VERMONT TECHNICAL COLLEGE

RUTLAND CAMPUS
WILLISTON, VERMONT

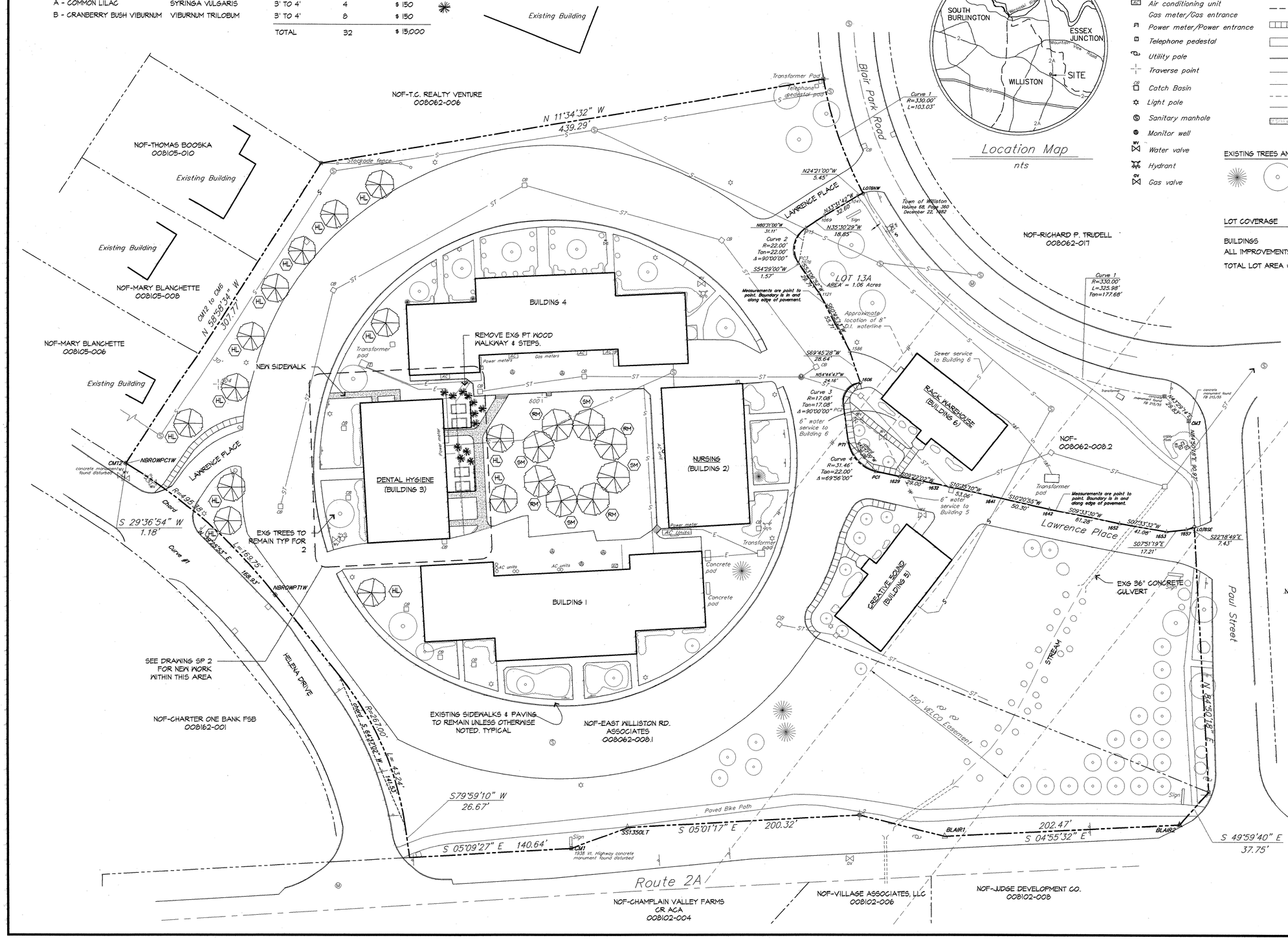
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SCALE: AS NOTED
CHECKED: JSF
PROJECT NO: 214

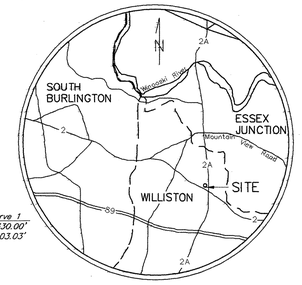
MECHANICAL LEGEND, SCHEDULE, DETAILS AND PLAN

M1

DECIDUOUS TREES	BOTANICAL NAME	SIZE/SPACING	QUANTITY	COST	SYMBOL
HL - HONEY LOCUST	GLEDITISA TRIACANTHOS	2" TO 2.5" CAL.	12	$ 600	
RM - RED MAPLE	ACER RUBRUM	2" TO 2.5" CAL.	4	$ 750	
SM - SUGAR MAPLE	ACER SACCHARUM	2" TO 2.5" CAL.	4	$ 750	

DECIDUOUS TREES	BOTANICAL NAME	SIZE/SPACING	QUANTITY	COST	SYMBOL
A - COMMON LILAC	SYRINGA VULGARIS	3' TO 4'	4	$ 150	
B - CRANBERRY BUSH VIBURNUM	VIBURNUM TRILOBUM	3' TO 4'	8	$ 150	
		TOTAL	32	$ 15,000	





Legend

- Concrete monument found
- AC — Air conditioning unit
- Gas meter/Gas entrance
- Power meter/Power entrance
- Telephone pedestal
- Utility pole
- Traverse point
- Catch Basin
- Light pole
- Sanitary manhole
- Monitor well
- WV — Water valve
- Hydrant
- GV — Gas valve
- Property line / right of way
- Easement line
- Concrete sidewalk
- Exg. Paved sidewalk bike path
- Curb
- ST — Storm line
- S — Sewer line
- W — Water line
- T&E — Telephone & electric conduit
- New Sidewalk

EXISTING TREES AND SHRUBS TO REMAIN

LOT COVERAGE	EXISTING	PROPOSED
BUILDINGS	13.5%	13.5%
ALL IMPROVEMENTS	47%	47.19%

TOTAL LOT AREA = 388,070 (8.9 ACRES)

REGISTERED ARCHITECT THOMAS B. NORTHERN 1982 STATE OF VERMONT

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM & BUILDING 4

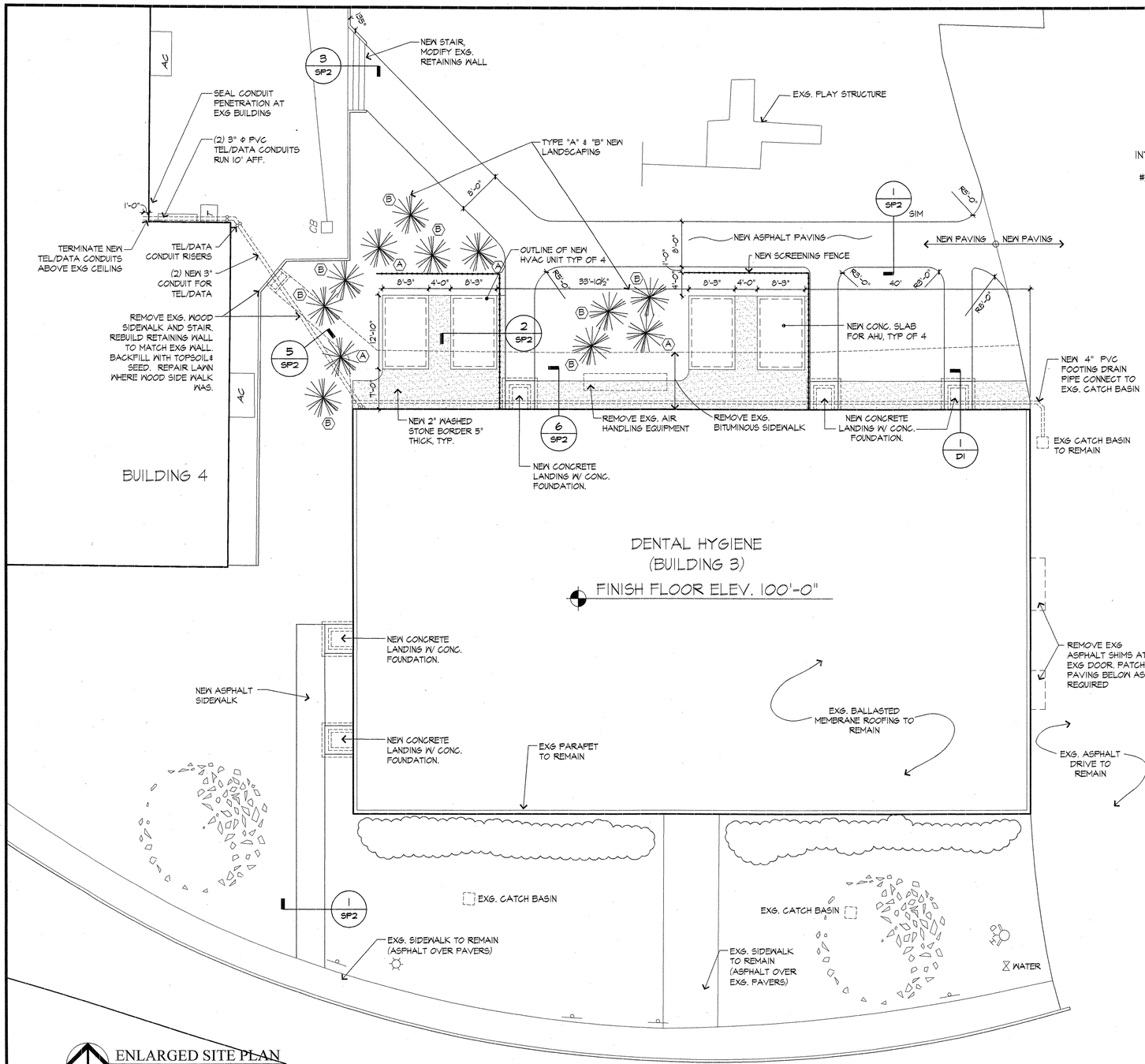
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

DATE:	3/16/05
SCALE:	1" = 40'
CHECKED:	TOB
PROJECT NO:	2302A

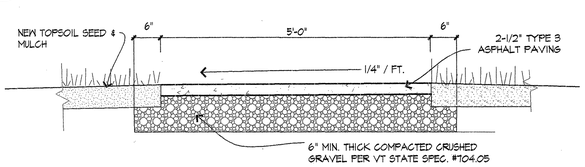
SITE PLAN

SP3



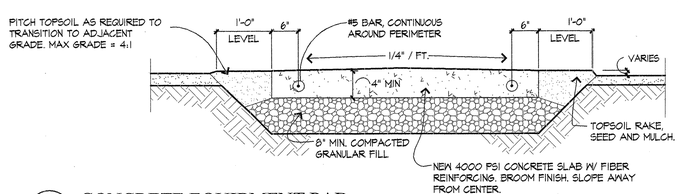
ENLARGED SITE PLAN

SCALE: 1"= 10'



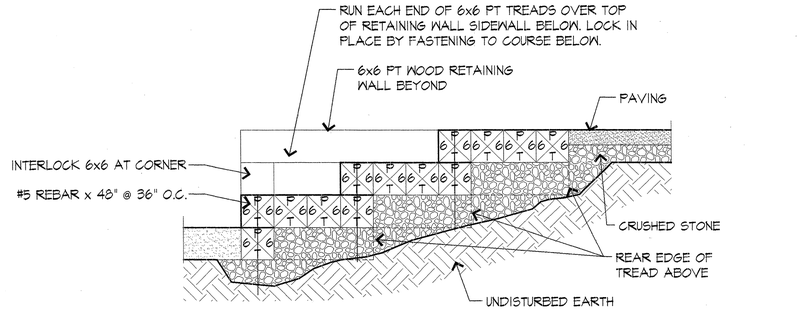
1 SIDEWALK DETAIL

SCALE: 3/4"=1'-0"



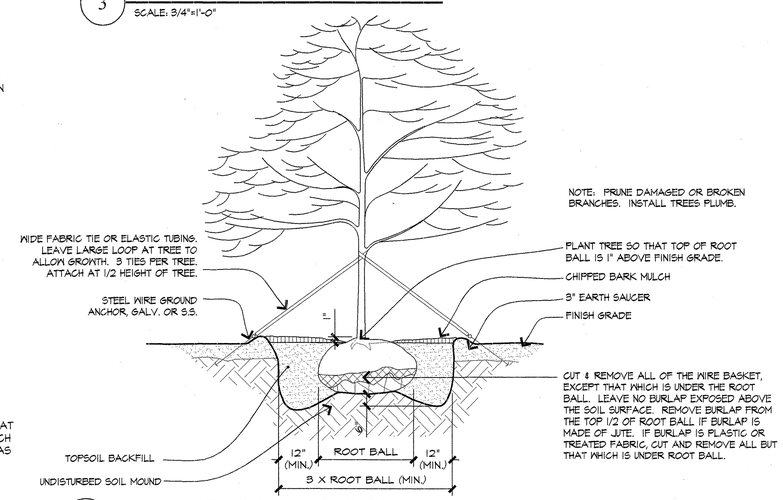
2 CONCRETE EQUIPMENT PAD

SCALE: 3/4"=1'-0"



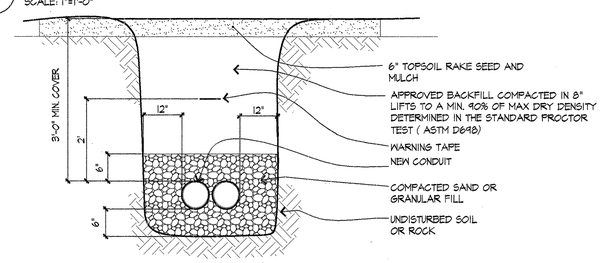
3 LANDSCAPE STAIR

SCALE: 3/4"=1'-0"



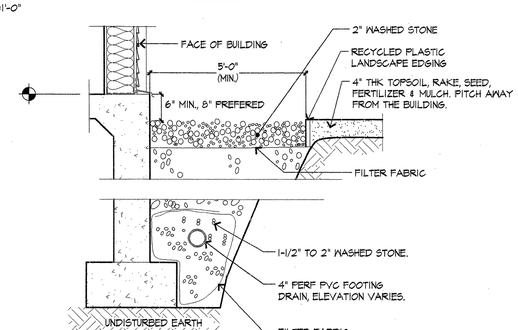
4 TYPICAL PLANTING DETAIL

SCALE: 1"=1'-0"



5 TYPICAL ELECTRICAL TRENCH

SCALE: 3/4"=1'-0"



6 STONE BOARDER DRIP EDGE

SCALE: 3/4"=1'-0"

REGISTERED ARCHITECTS
THOMAS B. NORTHERN
No. 1282
STATE OF VERMONT

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

802-658-1953

CONSULTANTS

REVISIONS

REV#1 3.16.05

PROJECT

DENTAL HYGIENE PROGRAM

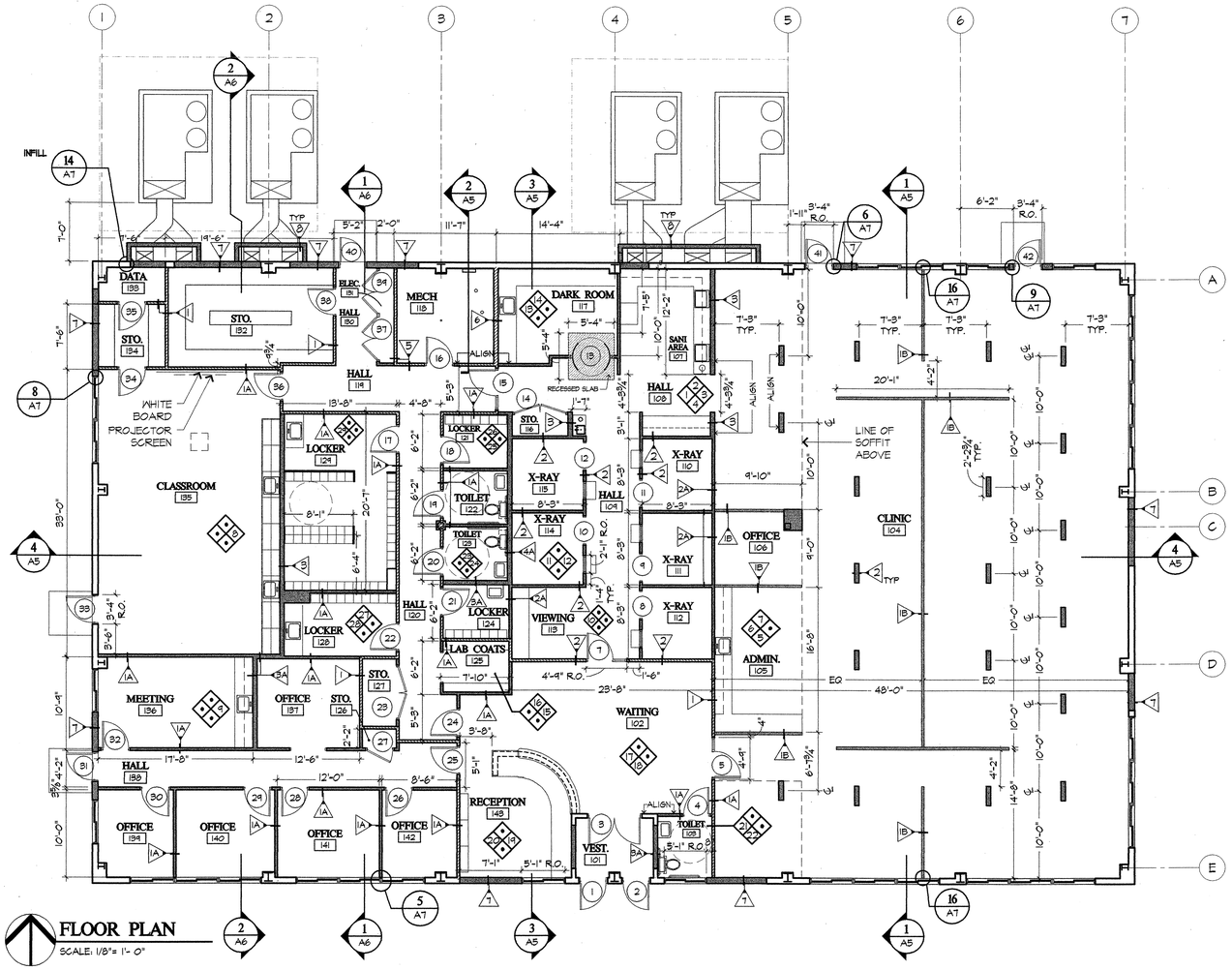
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

DATE:	2/18/05
SCALE:	AS NOTED
CHECKED:	TOB
PROJECT NO:	2302A

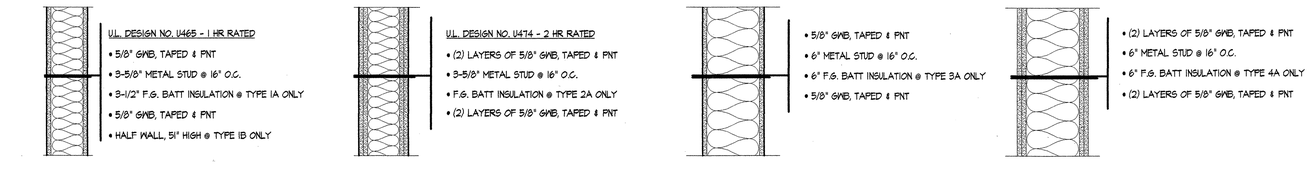
ENLARGED SITE PLAN

SP2



KEY

- EXISTING WALL
- NEW WALL
- FIRE RATED WALL
- (12) DOOR NUMBER (SEE DRAWING A7 FOR DOOR SCHEDULE)



GENERAL NOTES

1. ALL DIMENSIONS ARE ROUGH FRAMING DIMENSIONS (FACE OF STUD) UNLESS OTHER WISE NOTED.
2. IF THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND/OR THE SPECIFICATIONS THE CONTRACTOR IS REQUIRED TO NOTIFY THE ARCHITECT PROMPTLY BEFORE PROCEEDING FURTHER WITH THE WORK.
3. IF THE CONTRACTOR ENCOUNTERS CONDITIONS DURING THE CONSTRUCTION THAT ARE DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS; NOTIFY THE ARCHITECT PROMPTLY BEFORE PROCEEDING FURTHER WITH THE WORK.
4. THE DRAWINGS AND SPECIFICATIONS GENERALLY ILLUSTRATE THE DESIGN INTENDED OF THE PROJECT. THEY DO NOT SHOW ALL ASPECTS OF THE WORK NECESSARY TO COMPLETE THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL LABOR AND MATERIALS REQUIRED FOR COMPLETING THE PROJECT IN A MANNER CONSISTENT WITH THE DESIGN INTENT AS ILLUSTRATED BY THE DRAWINGS AND SPECIFICATIONS.
5. ALL WORK IS TO BE DONE IN COMPLIANCE WITH THE 1999 VERMONT FIRE PREVENTION AND BUILDING CODE.
6. THE CONSTRACTOR SHALL ORGANIZE AND PERFORM THE WORK TO MINIMIZE DAMAGE TO THE EXISTING FINISHES AND EQUIPMENT, PROTECTING THEM FROM DUST, IMPACT, ABRASION, HEAT, COLD, MOISTURE AND OTHER SIMILAR STRESSES THROUGHOUT THE WORK. EXISTING FINISHES OR EQUIPMENT THAT IS SCHEDULED TO REMAIN THAT IS DAMAGED SHALL BE REPAIRED OR REPLACED, AS DETERMINED BY THE ARCHITECT TO MATCH THE ORIGINAL MATERIAL OR EQUIPMENT.
7. NEW WALLS THAT ARE EXTENSIONS OF EXISTING WALLS, MUST BE PLACED SO THEY ALIGN WITH THE EXISTING WALLS AND ALLOW A SMOOTH, CONTINUOUS FINISHED SURFACE.
8. ALL DIMENSIONS AND ELEVATIONS ASSOCIATED WITH THE EXISTING CONSTRUCTION ARE APPROXIMATE. GENERAL CONTRACTOR TO VERIFY ALL RELEVANT EXISTING DIMENSIONS AND ELEVATIONS PRIOR TO ANY DEMOLITION OR NEW CONSTRUCTION.

BUILDING CODE REVIEW NOTES

1) Applicable Code: Vermont Fire Prevention and Building Code - 1999 .

2) Major Standards: NFPA 101 "Life Safety Code", 1997 Edition
The BOCA National Building Code, 1996 Edition

3) Existing Conditions:
a. Building Height 1 Story
b. Building Area (gross) 8,546 sf
c. Building is not equipped with an automatic fire suppression system.

4) Use Group Classification: Group "B" (Business) [BOCA 304.0]
"Business" [NFPA 101: 4-1.2]

5) Type of Construction: Type 2C "UNPROTECTED NON-COMBUSTIBLE" [BOCA Table 503]

6) Building Area Limit: 14,400 SF [BOCA Table 503] > 8,546 SF "OK"

7) Building Height Limit: 3 Story 40' [BOCA Table 503] > 1 STORY "OK"

8) Fire Resistance Ratings [BOCA Table 602]:

	REQUIREMENT	THIS PROJECT
Exterior Walls - Loadbearing, > 15' to 30' separation [BOCA 705.2]	0 hr.	0 hr.
Exterior Walls - Non-Load Bearing, > 15' to 30'separation [BOCA 705.2]	0 hr.	0 hr.
Fire Walls and Party Walls	2 hr.	NOT APPLICABLE
Fire Separation Assemblies	2 hr.	NOT APPLICABLE
Smoke Barriers - not required	1 hr.	NONE REQUIRED
Fire Enclosure of Exits	2 hr.	
Shafts - not applicable	2 hr.	
Exit Access Corridors - [BOCA 1011.4, NFPA 26-3.6.1]	1 hr.	1 hr.
Interior bearing walls, columns, girders and framing	0 hr.	0 hr.
Floor Construction	0 hr.	NOT APPLICABLE
Roof Construction 15' or less in height to lowest member	0 hr.	0 hr. ok

9) Doors Opening to an Exit Access Corridor: [BOCA 1011.4.2, NFPA 6-2.3.2.3] 20 MIN. OK

10) Maximum Occupant Load:

Classroom:	30 PERSONS
Clinic:	70 PERSONS
Other General Use Areas:	20 PERSONS
Total Occupant Load:	100 PERSONS

NORTHERN ARCHITECTS
207 KING STREET
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REVISIONS

PROJECT

DENTAL HYGIENE PROGRAM

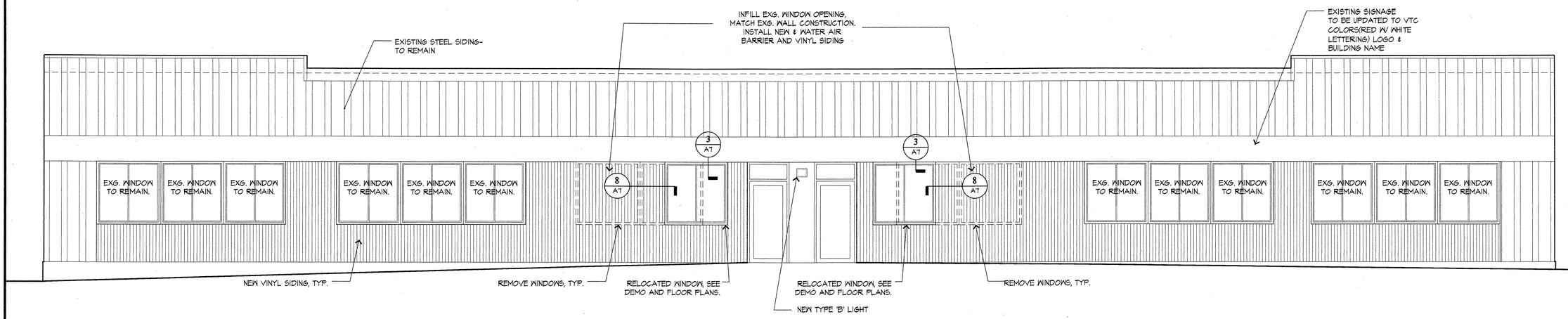
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

DATE:	2/18/05
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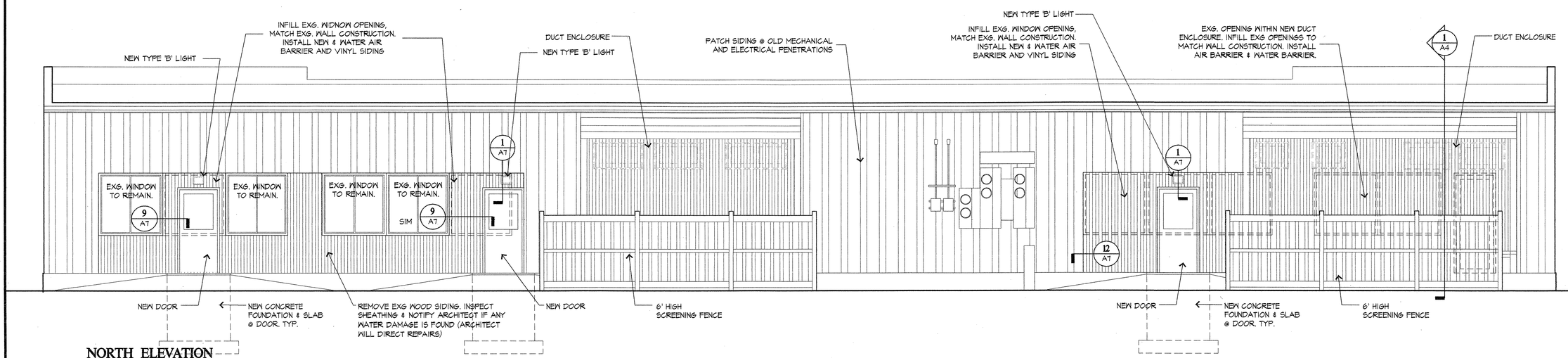
FLOOR PLAN

A1



SOUTH ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



NORTH ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations

REGISTERED ARCHITECT
THOMAS B. NORTHERN
NO. 1282
STATE OF VERMONT

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

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REV #1 3.16.05

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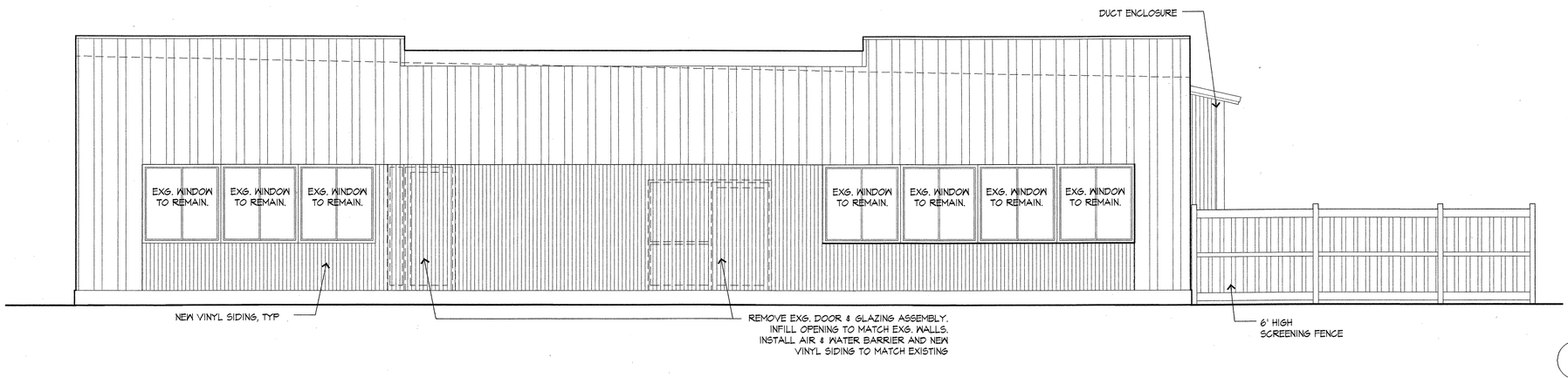
VERMONT TECHNICAL COLLEGE

WILLISTON
VERMONT

DATE:	2/18/05
SCALE:	1/4"=1'-0"
CHECKED:	TOB
PROJECT NO:	2302A

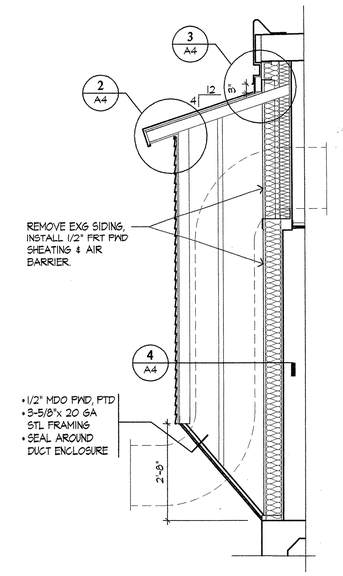
BUILDING ELEVATIONS

A3



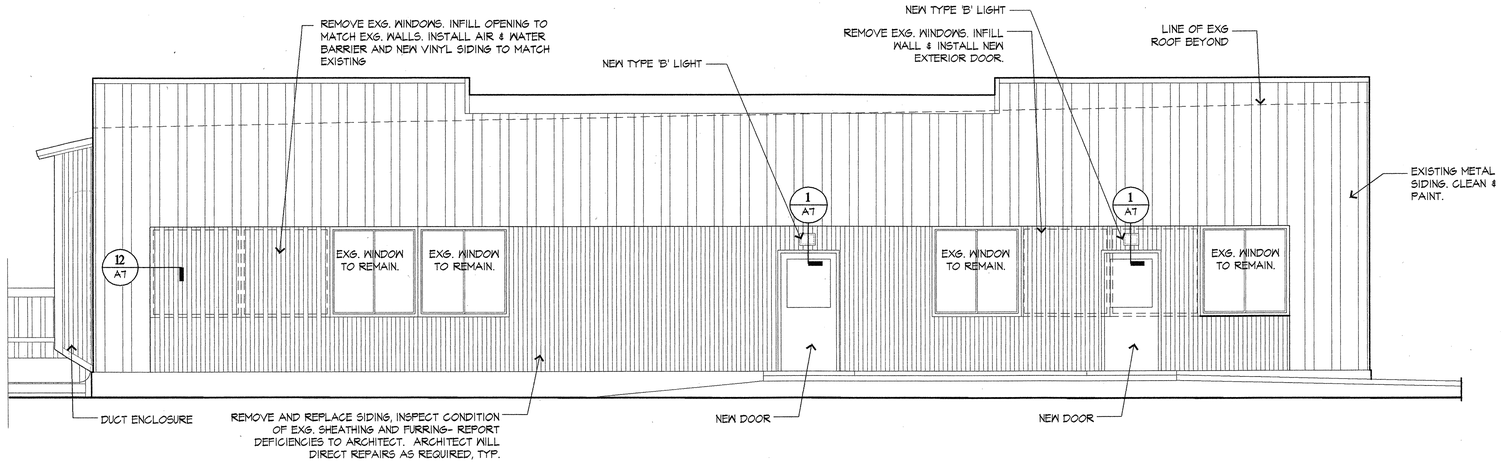
EAST ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



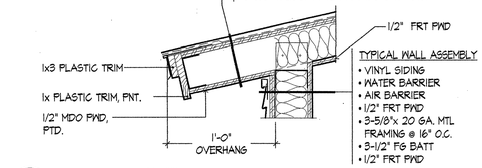
1 SECTION AT DUCT ENCLOSURE

SCALE: 1/2"=1'-0" 2302A-Section-DuctEnclosure



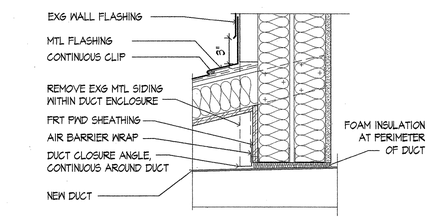
WEST ELEVATION

SCALE: 1/4"=1'-0" 2302A-VIT Dental Hygiene Program_Elevations



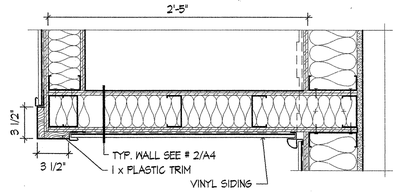
2 EAVE DETAIL

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure



3 SIDEWALL DETAIL

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure



4 SECTION AT DUCT ENCLOSURE

SCALE: 1-1/2"=1'-0" 2302A-Dtls-DuctEnclosure

REGISTERED ARCHITECT
THOMAS B. OLSEN
NO. 1282
STATE OF VERMONT

NORTHERN ARCHITECTS
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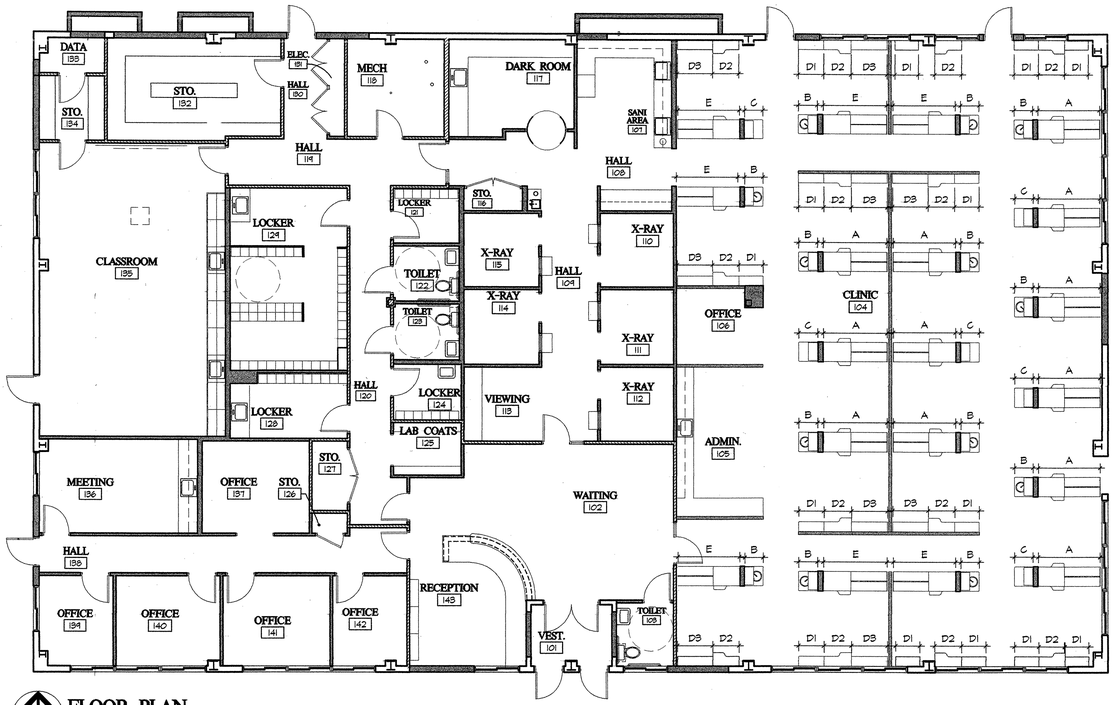
VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMUPS
WILLISTON, VERMONT

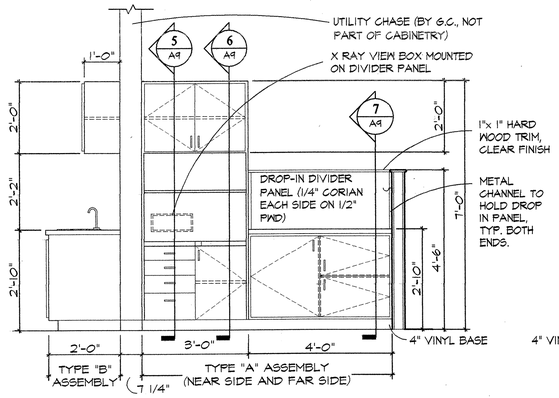
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BUILDING ELEVATIONS

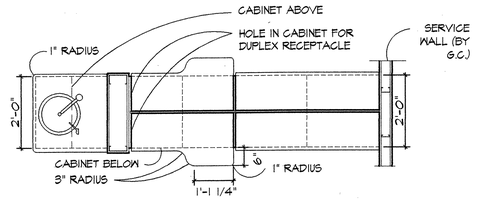
A4



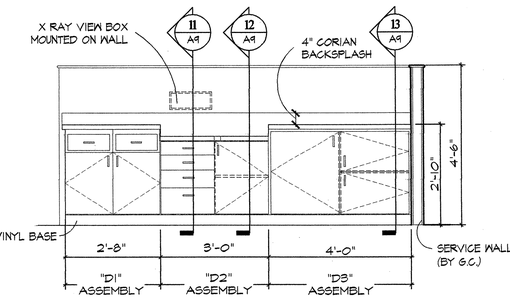
FLOOR PLAN
SCALE: 1/8"= 1'- 0"



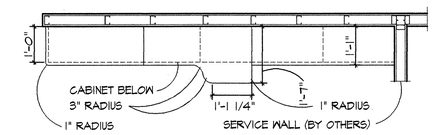
1 ELEVATION AT TYPE "A"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"
(RIGHT SIDE, LEFT SIDE OPPOSITE HAND)
(SEE PLAN FOR "A"/"C" ASSEMBLIES)



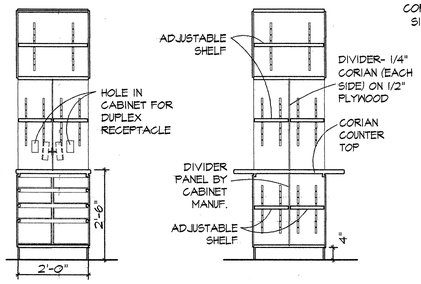
2 PLAN AT TYPE "A"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"
(TYPE "A" / "C" SIMILAR)



3 ELEVATION AT "D1"/"D2"/"D3" ASSEMBLY
SCALE: 1/2"=1'-0"

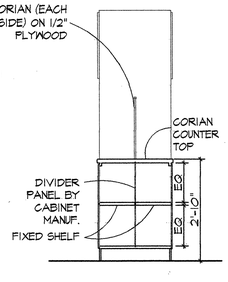


4 PLAN AT "D1"/"D2"/"D3" ASSEMBLY
SCALE: 1/2"=1'-0"

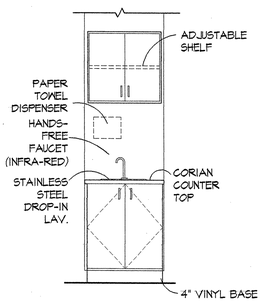


5 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"

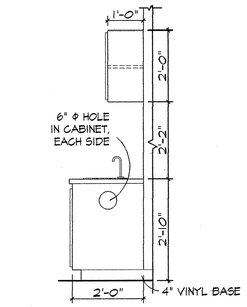
6 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"



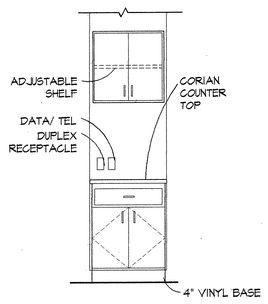
7 SECTION AT TYPE "A" ASSEMBLY
SCALE: 1/2"=1'-0"



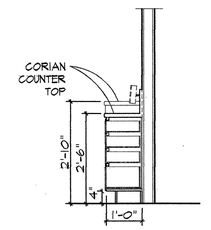
8 ELEVATION AT TYPE "B" ASSEMBLY
SCALE: 1/2"=1'-0"



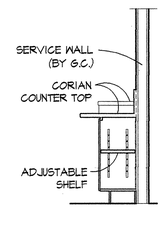
9 ELEVATION AT TYPE "C" ASSEMBLY
SCALE: 1/2"=1'-0"



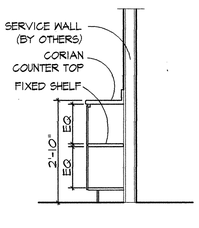
10 ELEVATION AT TYPE "B" ASSEMBLY
SCALE: 1/2"=1'-0"



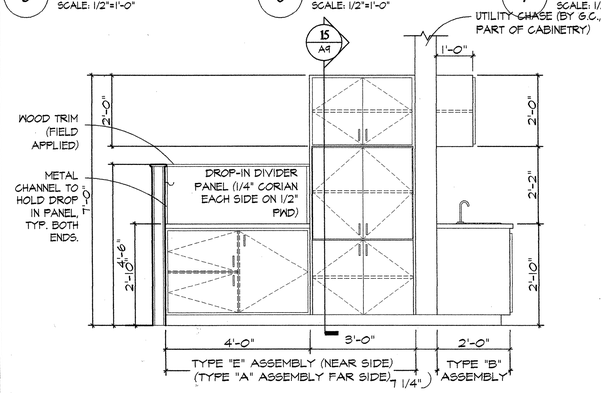
11 SECTION AT TYPE "D2"
SCALE: 1/2"=1'-0"



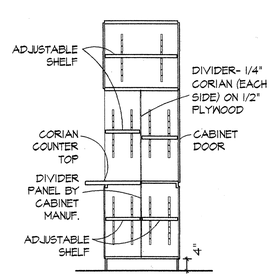
12 SECTION AT TYPE "D2"
SCALE: 1/2"=1'-0"



13 SECTION AT TYPE "D3"
SCALE: 1/2"=1'-0"



14 ELEVATION AT TYPE "E"/"B" CLINIC SERVICE PENISULA
SCALE: 1/2"=1'-0"
(SEE PLAN FOR "E"/"C" ASSEMBLIES)



15 SECTION AT TYPE "E" CLINIC SERVICE ASSEMBLY
SCALE: 1/2"=1'-0"

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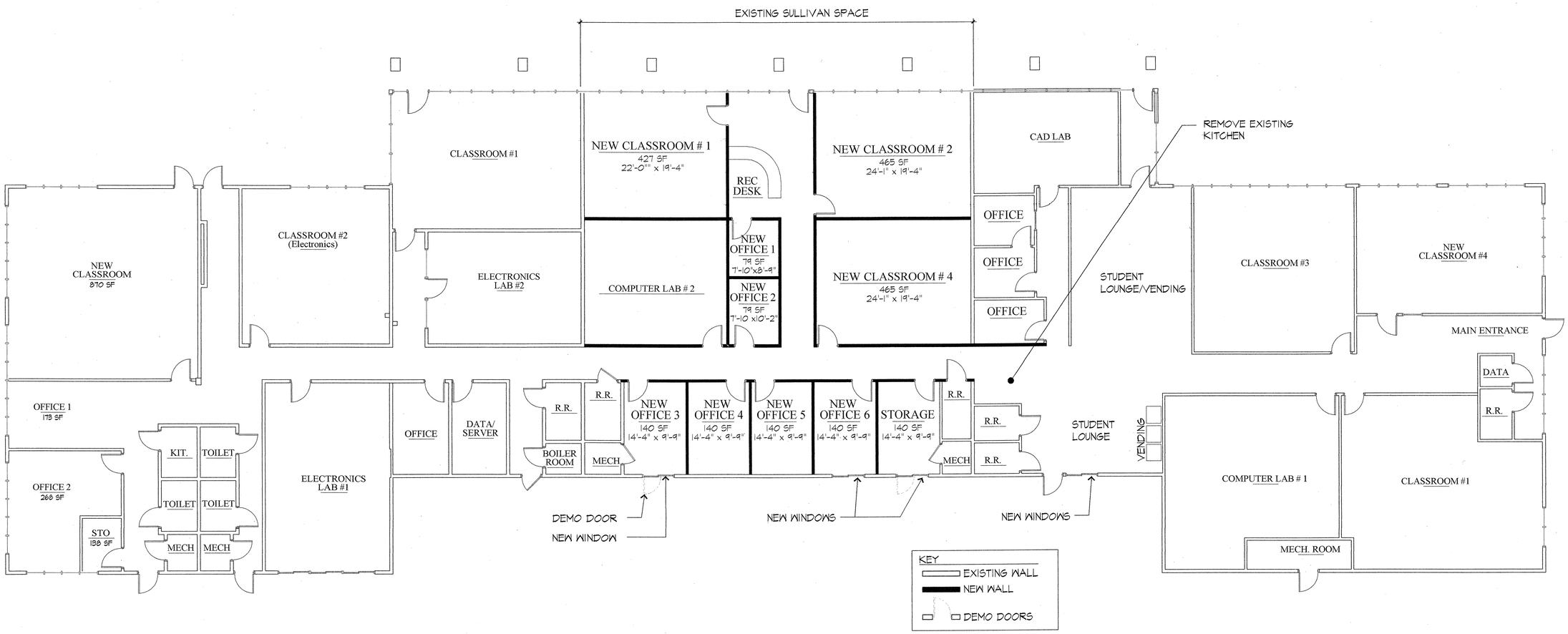
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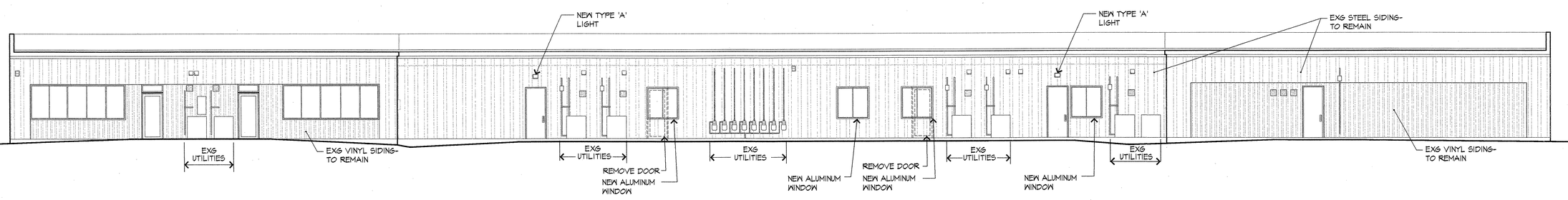
CABINETS

A9



BUILDING 4 PLAN

SCALE: 1/8"=1'-0" 2302D-VTC BLAIR PARK_PLANS SK1-SK6



EAST ELEVATION

SCALE: 1/8"=1'-0" 2302D-VTC BLAIR PARK_REAR ELEVATION

REGISTERED ARCHITECT
THOMAS B. OLIVER
NO. 1282
STATE OF VERMONT

NORTHERN ARCHITECTS

207 KING STREET
SUITE 3
BURLINGTON, VERMONT
05401-4502

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ALTERATION TO BUILDING 4

VERMONT TECHNICAL COLLEGE

BLAIR PARK CAMPUS
WILLISTON, VERMONT

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PLAN & EAST ELEVATION

A1