



**CITY OF MADISON
ZONING BOARD OF APPEALS
VARIANCE APPLICATION**

\$300 Filing Fee

Ensure all information is **typed** or legibly **printed** using blue or black ink.

Address of Subject Property: 437 North Frances Street

Name of Owner: Core Campus, LLC.

Address of Owner (if different than above): 2234 West North Avenue
Chicago, Illinois 60647

Daytime Phone: 773.227.2850 Evening Phone: _____

Email Address: Marc@CoreCamp.us

Name of Applicant (Owner's Representative): Brian Munson, Vandewalle & Associates

Address of Applicant: 120 East Lakeside Street
Madison, Wisconsin 53715

Daytime Phone: 608.255.3988 Evening Phone: 608.609.4410

Email Address: bmunson@vandewalle.com

Description of Requested Variance: _____

Request for variance from Section 28.071 (3)(h)2 for a mechanical screening wall closer than the required 1.5
times the height and an exception for the screening to be less than the height of the exhaust fan hood.

(See reverse side for more instructions)

FOR OFFICE USE ONLY	
Amount Paid: <u>300 -</u>	Hearing Date: <u>12-4-14</u>
Receipt: <u>160211</u>	Published Date: <u>11-27-14</u>
Filing Date: <u>11/13/14</u>	Appeal Number: <u>120414-02</u>
Received By: <u>[Signature]</u>	GQ: _____
Parcel Number: <u>0709-232-0222-3</u>	Code Section(s): <u>28.071 (3)(H) 2</u>
Zoning District: <u>DC</u>	_____
Alder District: <u>4 - VERVEER</u>	_____



Application Requirements

Please provide the following Information (Please note any boxes left unchecked below could result in a processing delay or the Board's denial of your application):

<input checked="" type="checkbox"/>	Pre-application meeting with staff: Prior to submittal of this application, the applicant is strongly encouraged to discuss the proposed project and submittal material with Zoning staff. Incomplete applications could result in referral or denial by the Zoning Board of Appeals.
<input checked="" type="checkbox"/>	Site plan , drawn to scale. A registered survey is recommended, but not required. Show the following on the site plan (Maximum size for all drawings is 11" x 17"): <ul style="list-style-type: none"> <input type="checkbox"/> Lot lines <input type="checkbox"/> Existing and proposed structures, with dimensions and setback distances to all property lines <input type="checkbox"/> Approximate location of structures on neighboring properties adjacent to variance <input type="checkbox"/> Major landscape elements, fencing, retaining walls or other relevant site features <input type="checkbox"/> Scale (1" = 20' or 1" = 30' preferred) <input type="checkbox"/> North arrow
<input checked="" type="checkbox"/>	Elevations from all relevant directions showing existing and proposed views, with notation showing the existing structure and proposed addition(s). (Maximum size for all drawings is 11" x 17")
<input checked="" type="checkbox"/>	Interior floor plan of existing and proposed structure , when relevant to the variance request and required by Zoning Staff (Most additions and expansions will require floor plans). (Maximum size for all drawings is 11" x 17")
<input type="checkbox"/>	Front yard variance requests only. Show the building location (front setback) of adjacent properties on each side of the subject property to determine front setback average.
<input type="checkbox"/>	Lakefront setback variance requests only. Provide a survey prepared by a registered land surveyor showing existing setbacks of buildings on adjacent lots, per MGO 28.138.
<input type="checkbox"/>	Variance requests specifically involving slope, grade, or trees. Approximate location and amount of slope, direction of drainage, location, species and size of trees.
<input checked="" type="checkbox"/>	CHECK HERE. I acknowledge any statements implied as fact require supporting evidence.
<input checked="" type="checkbox"/>	CHECK HERE. I have been given a copy of and have reviewed the standards that the Zoning Board of Appeals will use when reviewing applications for variances.

Owner's Signature: _____

Date: 11/13/14

(Do not write below this line/For Office Use Only)

DECISION

The Board, in accordance with its findings of fact, hereby determines that the requested variance for _____ **(is) (is not)** in compliance with all of the standards for a variance. Further findings of fact are stated in the minutes of this public hearing.

The Zoning Board of Appeals: **Approved** **Denied** **Conditionally Approved**

Zoning Board of Appeals Chair: _____

Date: _____

The Hub at State Street

Mechanical Screening Variance Request

November 13, 2014

Request:

- 1.) HVAC screening wall closer than 1.5 times the height.
- 2.) HVAC screening wall less than 1' taller than the mechanical unit being screened.

Standards for Variance

- 1.) **There are conditions unique to the property of the applicant that do not apply generally to other properties in the district.**

The Hub at State Street project is a complex multi-use project on an irregularly shaped lot with frontage onto three streets. The resulting design strives to maintain a balance between a complicated building layout designed to meet multiple zoning code required setbacks varied interests of aesthetic design and functionality, especially as it relates to the mechanical screening enclosure. This project was the first major development reviewed under the zoning code and the complexity of the review along with the new standards led to the screening setback and height to be missed during the initial review. The issues with the code were identified post construction during the sign off review of a minor amendment and brought forward to seek resolution of the issue prior to occupancy in August 2015.

The cooling tower screen walls were built in keeping with the intent to minimize the visual impact of the mechanical units while maintaining the minimum separation between the walls and unit per manufacturers requirements. Additional screening elements in the design include a 6'7" parapet with a 4'9" projection which further assists in reducing the view lines to the screening wall.

The screening wall is not placed 1' above the fan hoods due to physical limitation and unit efficiency. The wall could physically be extended, but would reduce the efficiency of the unit (see Exhibit G). Extending the wall higher works in cross purposes against the setback issue by potentially making the top of the screen wall visible from adjoining properties that would otherwise not have sightlines to the enclosure.

The following unique elements lead to the configuration of the cooling towers placement:

Stepbacks

The Hub at State Street was designed and found to meet the standards set forth in the form based code recommendations for the Downtown Core zoning standards per section 28.071 (2)(c) Downtown Stepback Map and section 28.074 Downtown Core District. These sections of the code



requires for a step back of no less than 15 feet for elements above the fourth floor at Gilman Street and France Street, and minimum two story height on State Street with two setbacks at the fourth and sixth floors. The Gilman Street tower configuration meets the step back requirements per the code, creating two primary facades facing Gilman Street, a 34' two story facade at the Gilman Street right of way and the upper floor facade setback 15'.

Rooftop Open Space

The roof structures at each level are designed to include useable open space amenities, including the 12th floor roof's pool area. This reduces the opportunities for rooftop mechanical placement limiting them to the Gilman tower and the connecting element. This mechanical system serves the entire building to minimize the visual presence of the units on the rooftop. The mechanical systems require that the cooling towers and mechanicals be placed in close proximity for efficiency. The cooling towers within the screening wall serve the entire building and are an example of higher quality mechanicals for the building type, in keeping with City recommendations.

Mechanical Placement

The Gilman Street back pushes the residential tower away from the right of way and shifts the elevator overrun/stairwell core to the north side of the corridor. The resulting mechanical placement cannot be slid back further from Gilman Street as it is designed to integrate the screening wall with the elevator overrun to reduce the visual presence of the HVAC screening wall.

The only configuration that could meet the setback requirement would have separated the mechanicals from the elevator overrun. This separation would have significantly increased the mass of screening on the roof and would have magnified the impact of the screening wall. This would also result in the screening being closer to the inside courtyard facade and making it readily visible from other view corridors.

Building Width

The final design element that influences the placement of the HVAC screening wall is the buildings response to windows. While the code does allow for windowless bedroom units the design seeks, as encouraged by staff, to incorporate windows into every bedroom as a functional and aesthetic enhancement to the interior spaces. The resulting design width reduces the overall width of the tower element to 54' in width, significantly narrower than a typical building configuration, further reducing the spacing options.

2.) The variance is not contrary to the spirit, purpose, and intent of the regulations in the zoning district and is not contrary to the public interest.

The placement of the units were approved as part of the original building approval on August 6, 2013 and were part of a Minor Amendment to the existing Conditional Use packet that was approved by the Urban Design Commission (UDC) on September 17, 2014. The further refinement of the design of the building HVAC systems identified the need for larger HVAC units which in turn extended the height of the screening wall 2' 6" to screen more of the proposed unit. During the review and approval of the



minor alteration packet, the UDC specifically discussed the screening wall and materials as part of their deliberations.

This larger screening wall is in keeping with section 28.071 (3)(h.) 1. which states that "All rooftop equipment, with the exception of solar and wind equipment, shall be screened from view from adjacent streets and public rights of way. Rooftop equipment shall be screened from view from adjacent buildings to the extent possible." The mechanical units are screened by a combination of a 6' 7" parapet wall and 20' screening wall (measured from roof deck) which is setback 16'8" from the edge of the parapet (see Exhibit D) If the measurement were extended to the Gilman Street facade, the units would be setback greater than the required setback.

The screening wall meets the spirit, purpose, and intent of the regulations in that the screening is designed in keeping with the architecture of the building, as approved by UDC, and is not visible from Gilman Street (see exhibit F).

3.) For an area variance, compliance with the strict letter of the ordinance would unreasonably prevent use of the property for a permitted purpose or would render compliance with the ordinance unnecessarily burdensome.

The cooling towers are the only units serving the entire building and compliance with the ordinance would require either placement of multiple units, thereby creating a larger visual impact, or placement of the units into positions that are more readily visible and separate from the elevator overrun. Both solutions would represent a significant burden due to the fact that they are already built, and the solutions would increase the visual impact of the cooling systems.

4.) The alleged difficulty or hardship is created by the terms of the ordinance rather than by a person who has a present interest in the property.

The complexity of the project coupled with it being one of the first reviews under the new code standards led to this issue being missed in the initial review of the project. Subsequent reviews have now identified this issue post construction leaving no practicable solution for reconfiguration of the units outside of seeking a variance.

The design impacts of the Zoning Code required setbacks coupled with the varied design interests of usable open space on the lower level roof decks, windows into every bedroom, and incorporating the screening/elevator over runs have created a placement that limits the ability to meet the setback as prescribed; however, the intent of the screening placement to eliminate views from adjoining public rights of way and integrate the screening into the building have been achieved.

5.) The proposed variance shall not create substantial detriment to adjacent property.

The screening walls are consistent with the design of the building and will not create any detriment to the adjacent properties or any future redevelopment of the surrounding . The proposed screen wall is



well under the Capital Dome Viewshed protection elevation and does not exceed the allowed height of the existing zoning if included as part of the overall building height and measured by linear feet.

6.) The proposed variance shall be compatible with the character of the immediate neighborhood.

The screening walls are consistent the intent of the code by completely screening the mechanical units from view by adjacent properties. This represents an improvement on the existing conditions of many of the adjoining properties which were built prior to the adoption of the screening standard. These properties utilize unit placements that are closer to the wall edge and visible at street level without any significant screening if the units are screened at all (see Exhibit F).



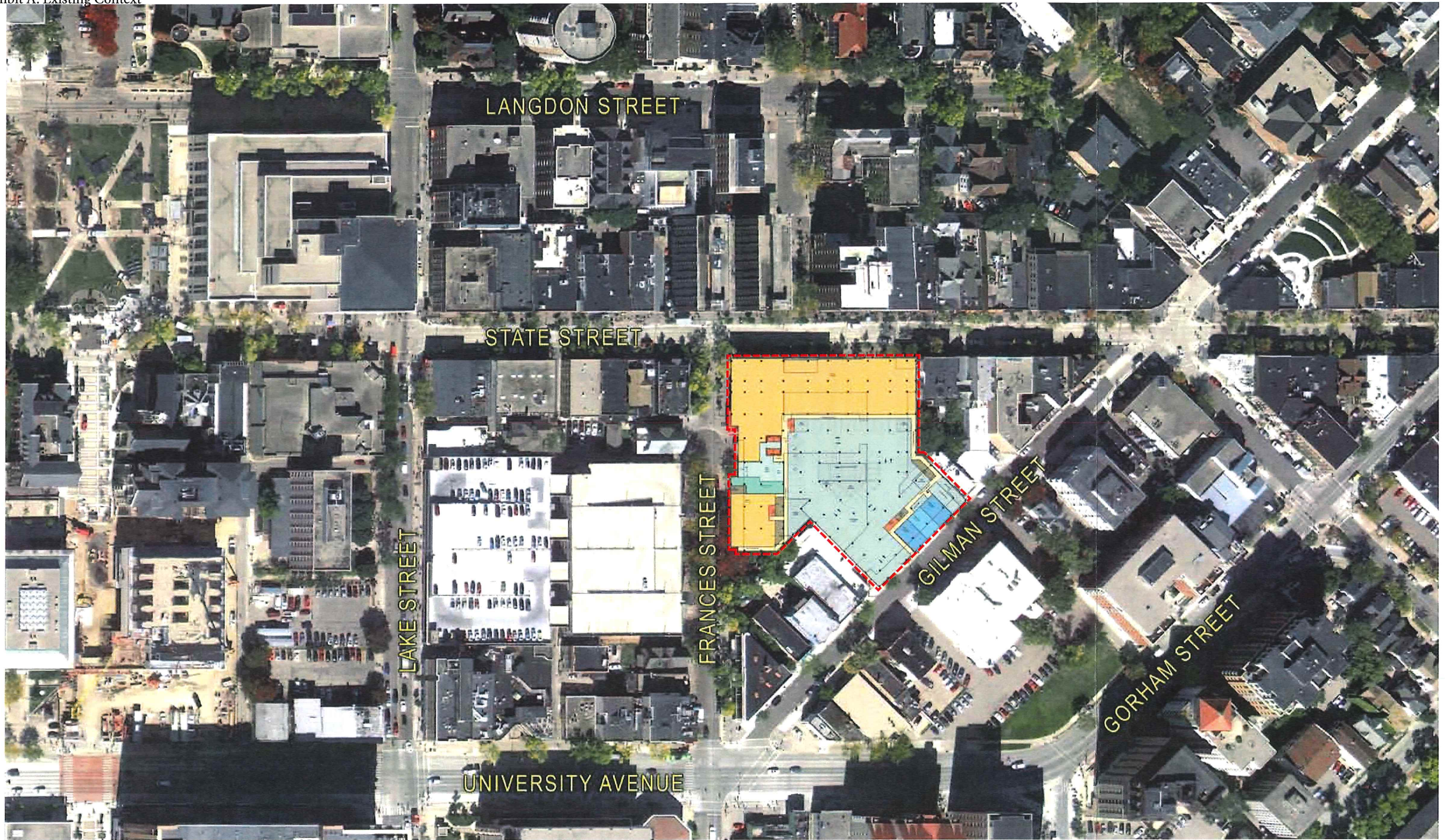
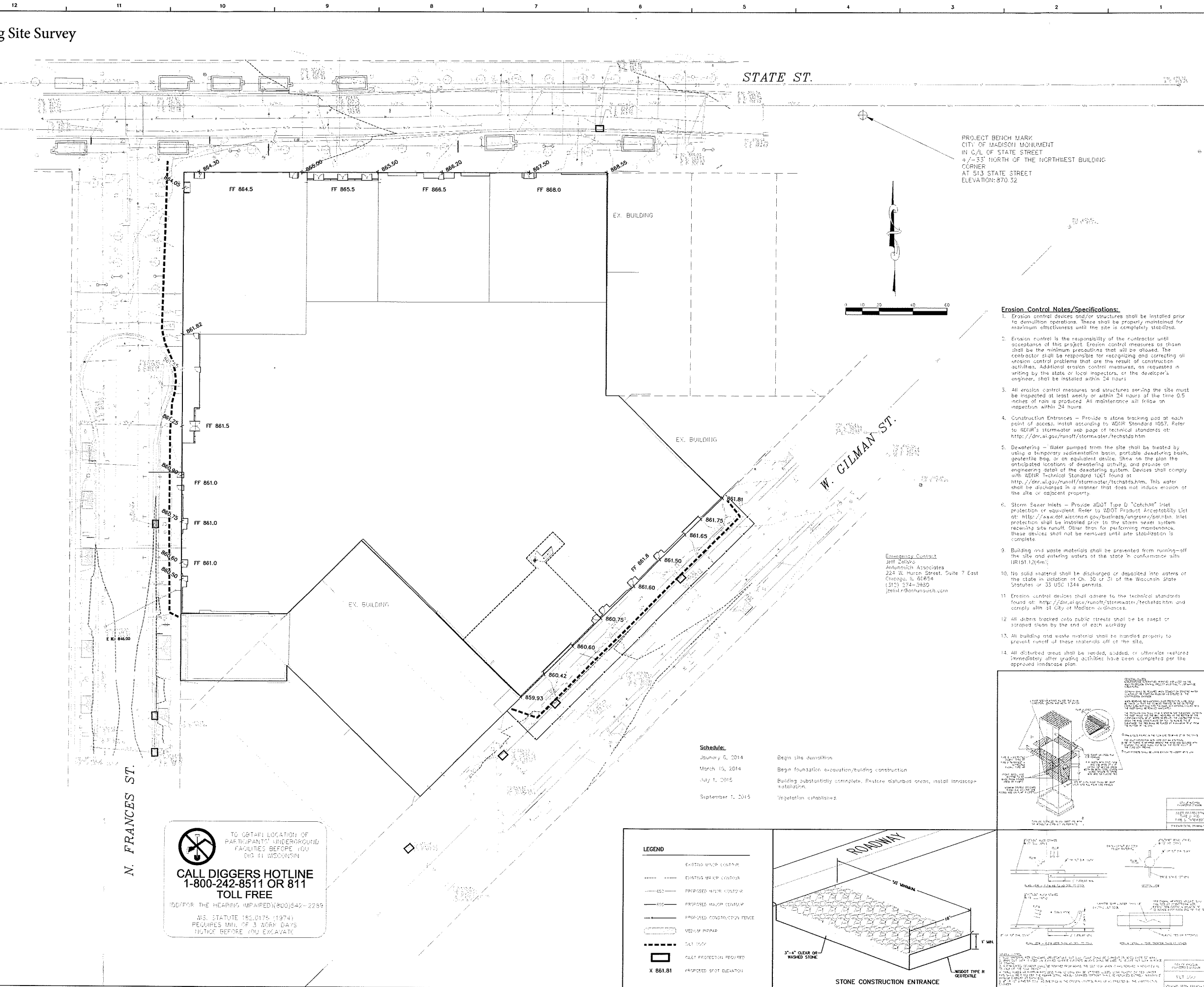


Exhibit B: Existing Site Survey



PROJECT BENCH MARK
CITY OF MADISON MONUMENT
+/- 33' NORTH OF THE NORTHWEST BUILDING
CORNER
AT 513 STATE STREET
ELEVATION: 870.32

- Erosion Control Notes/Specifications:**
- Erosion control devices and/or structures shall be installed prior to demolition operations. These shall be properly maintained for maximum effectiveness until the site is completely stabilized.
 - Erosion control is the responsibility of the contractor until acceptance of the project. Erosion control measures as shown shall be the minimum precautions that will be allowed. The contractor shall be responsible for recognizing and correcting all erosion control problems that are the result of construction activities. Additional erosion control measures, as requested in writing by the state or local inspectors, or the developer's engineer, shall be installed within 24 hours.
 - All erosion control measures and structures serving the site must be inspected at least weekly or within 24 hours of the time 0.5 inches of rain is predicted. All maintenance will follow an inspection within 24 hours.
 - Construction Entrances - Provide a stone tracking pad at each point of access. Install according to WDIR Standard 1057. Refer to WDIR's stormwater web page of technical standards at: <http://dnr.wi.gov/runoff/stormwater/techstds.htm>
 - Dewatering - Water pumped from the site shall be treated by using a temporary sedimentation basin, portable dewatering basin, geotextile bag, or an equivalent device, close to the plan the anticipated locations of dewatering activity, and provide an engineering detail of the dewatering system. Devices shall comply with WDIR Technical Standards listed found at <http://dnr.wi.gov/runoff/stormwater/techstds.htm>. This water shall be discharged in a manner that does not induce erosion of the site or adjacent property.
 - Storm Sewer Inlets - Provide MSDOT Type D "Catchall" inlet protection or equivalent. Refer to MSDOT Acceptability List at: <http://www.dot.wisconsin.gov/business/engserv/pal/inlet>. Inlet protection shall be installed prior to the storm sewer system receiving site runoff. Other than for performing maintenance, these devices shall not be removed until site stabilization is complete.
 - Building and waste materials shall be prevented from running off the site and entering waters of the state in conformance with IIR191.12(hm).
 - No solid material shall be discharged or deposited into waters of the state in violation of Ch. 30 or 31 of the Wisconsin State Statutes or 33 USC 1344 permits.
 - Erosion control devices shall adhere to the technical standards found at: <http://dnr.wi.gov/runoff/stormwater/techstds.htm> and comply with all City of Madison ordinances.
 - All debris tracked onto public streets shall be swept or scraped clean by the end of each workday.
 - All building and waste material shall be handled properly to prevent runoff of these materials off of the site.
 - All disturbed areas shall be seeded, sodded, or otherwise restored immediately after grading activities have been completed per the approved landscape plan.

Emergency Contact
JEFF ZARNO
Antonovich Associates
224 W. Huron Street, Suite 7 East
Chicago, IL 60654
(312) 574-2850
jeffz@antonovich.com

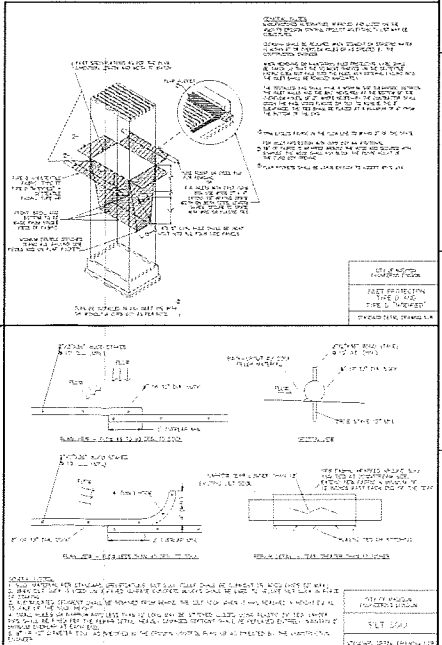
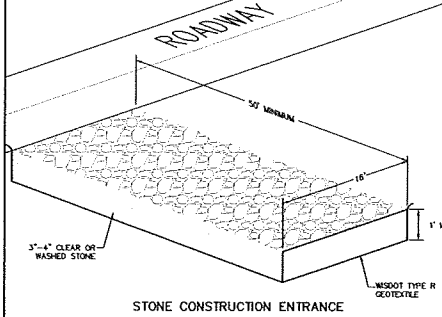
Schedule:

January 6, 2014	Begin site demolition
March 15, 2014	Begin foundation, excavation/building construction
July 1, 2015	Building substantially complete. Restore disturbed areas, install landscape installation.
September 1, 2015	Vegetation established.

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG CALL DIGGERS HOTLINE 1-800-242-8511 OR 811 TOLL FREE
WIS. STATUTE 185.0175 (1974) REQUIRES MIN. OF 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

LEGEND

---	EXISTING MHP CONTOUR
---	EXISTING MHP CONTOUR
---	PROPOSED MHP CONTOUR
---	PROPOSED MHP CONTOUR
---	PROPOSED CONSTRUCTION FENCE
---	VEGETATION
---	SET BACK
---	RAILY PROTECTION REQUIRED
X 861.81	PROPOSED SPOT ELEVATION



General Notes

No.	Date	Description
1	5.22.2013	Issued for UOC Review
2	8.23.2013	Record Set Submittal

Submissions & Revisions

Owner
CORE
Campus
Core Capital, LLC
224 W. Huron Street
Chicago, Illinois 60654
Phone: (312) 574-2850
Fax: (312) 574-2850

General Contractor
ANTUNOVICH ASSOCIATES
ARCHITECTS
PLANNERS
224 West Huron Street
Chicago, Illinois 60654
Phone: (312) 574-2850
Fax: (312) 574-2850

Landscape Architect

Structural Engineer

M.E.P. Engineers

Civil Engineer
Burse
Surveying and Engineering, Inc.
1400 E. Washington Ave, Suite 550
Madison, WI 53705
Phone: 608-250-0900
Fax: 608-250-0998
e-mail: info@burseinc.com
www.burseinc.com

Project Location
HUB AT MADISON
441 N. Francis Street
Madison, WI 53703

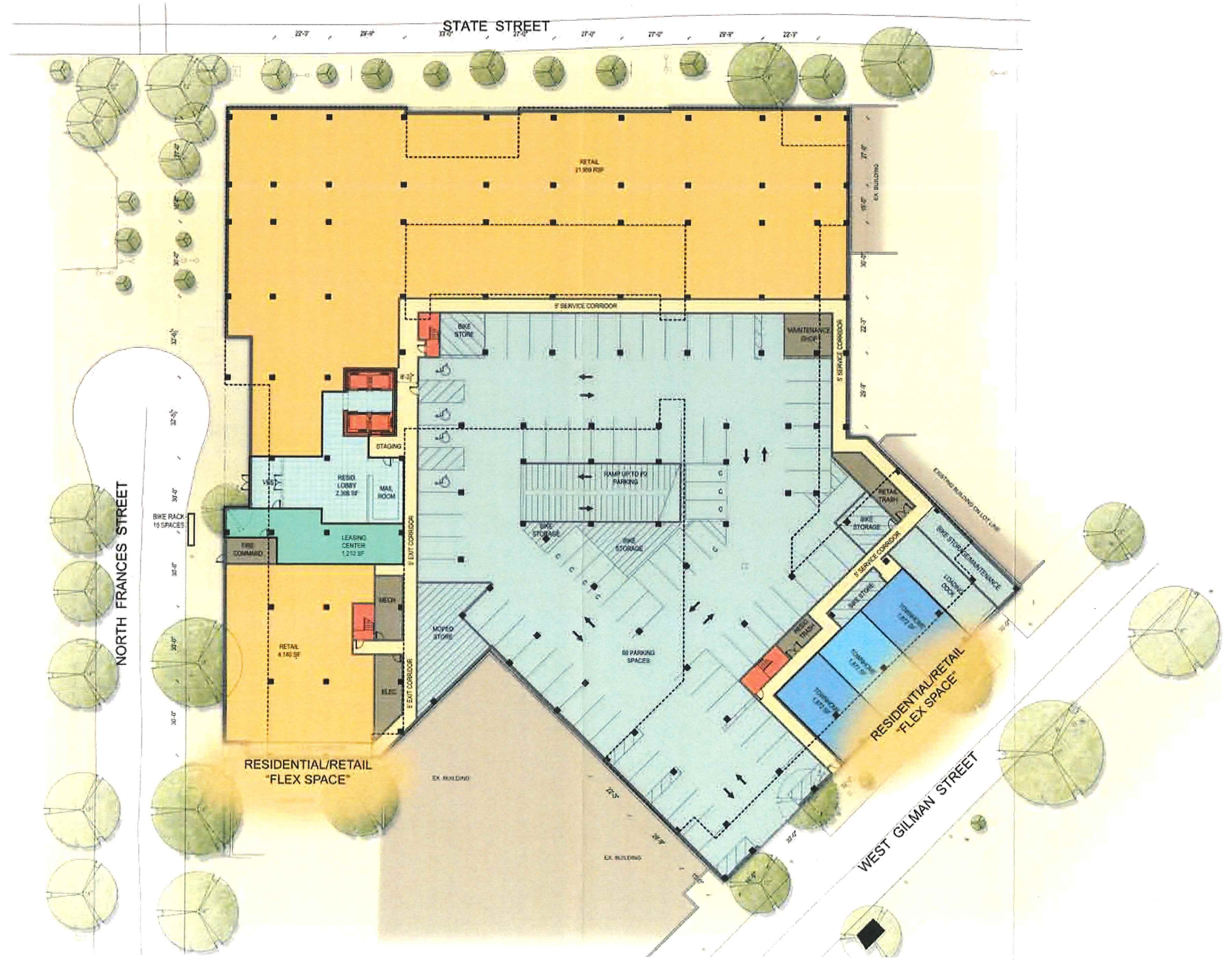
Drawing Title
GRADING AND EROSION CONTROL PLAN

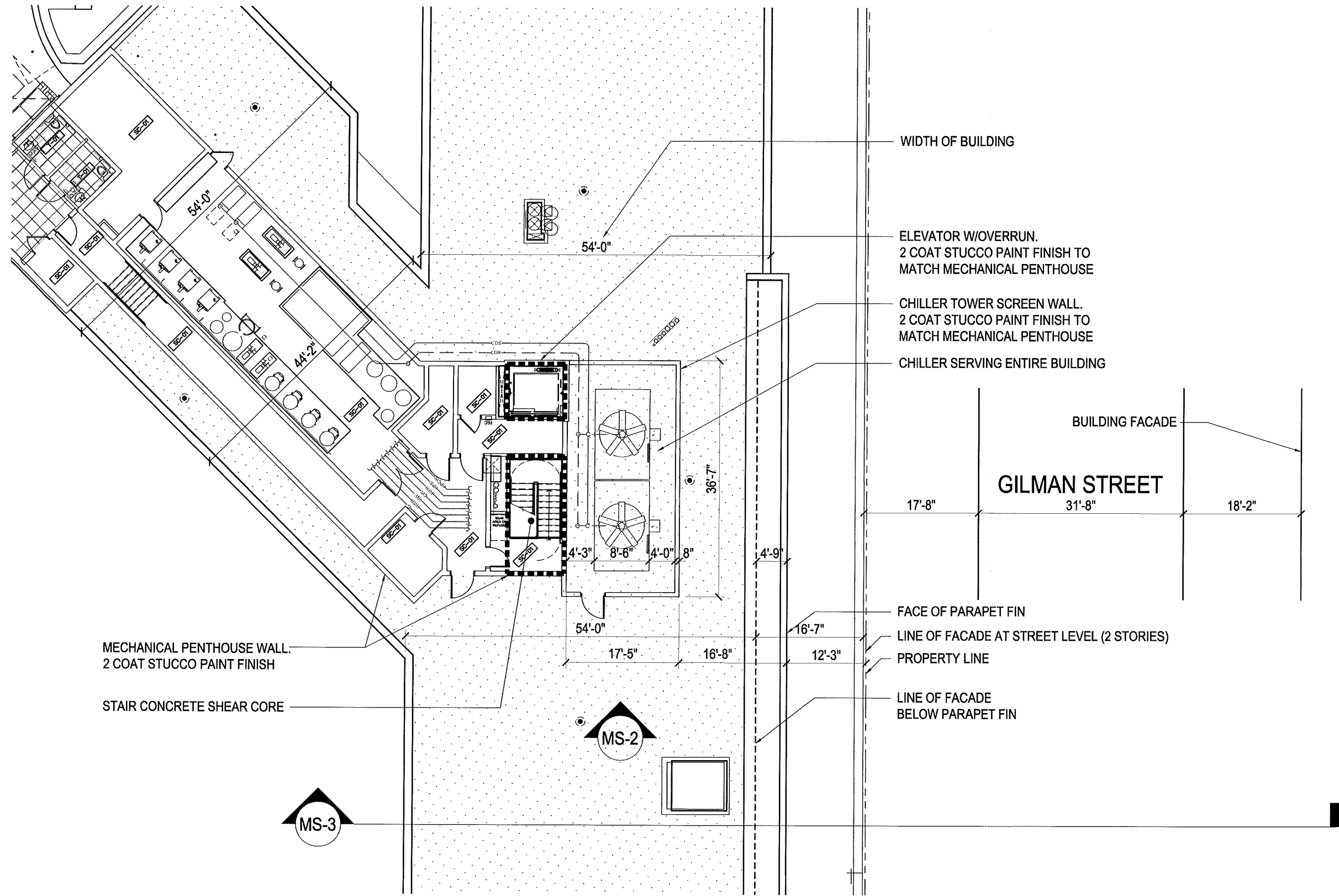
Scale

Date

Drawing No.
C-300

Copyright 2010





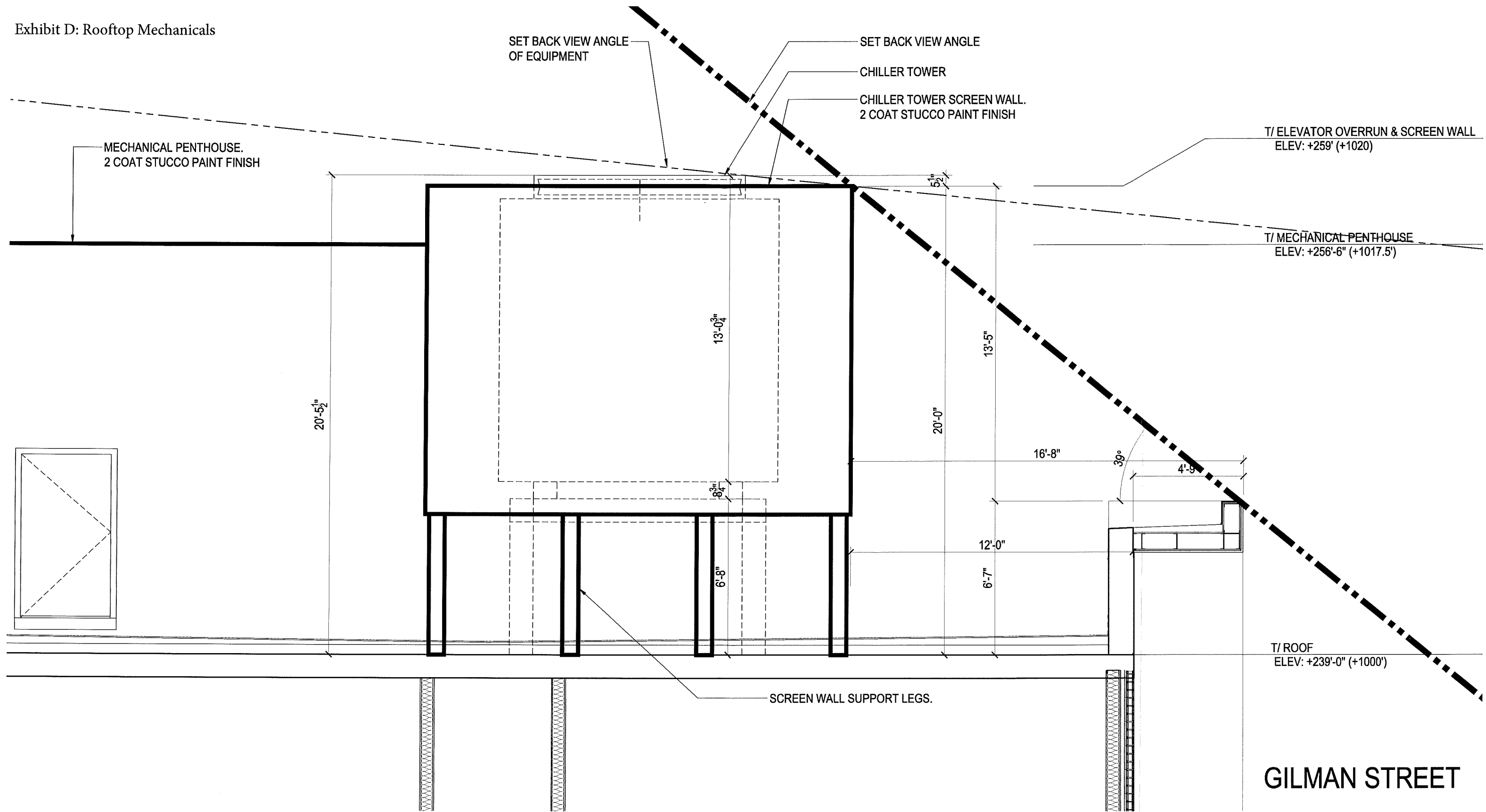
1 CHILLER TOWER SCREEN PLAN
 SCALE: 1/16"=1'-0"

ANTUNOVICH ASSOCIATES
 ARCHITECTURE PLANNING INTERIOR DESIGN
 224 WEST HURON STREET CHICAGO, ILLINOIS 60654
 312.266.1126 FAX: 312.266.7123

Title: CHILLER TOWER SCREEN WALL GILMAN STREET SIDE
 Project: HUB AT MADISON

MS-1
 Scale: 1/4" = 1'-0'
 November 6, 2014

Exhibit D: Rooftop Mechanicals



1
-
-

CHILLER TOWER SCREEN ELEVATION

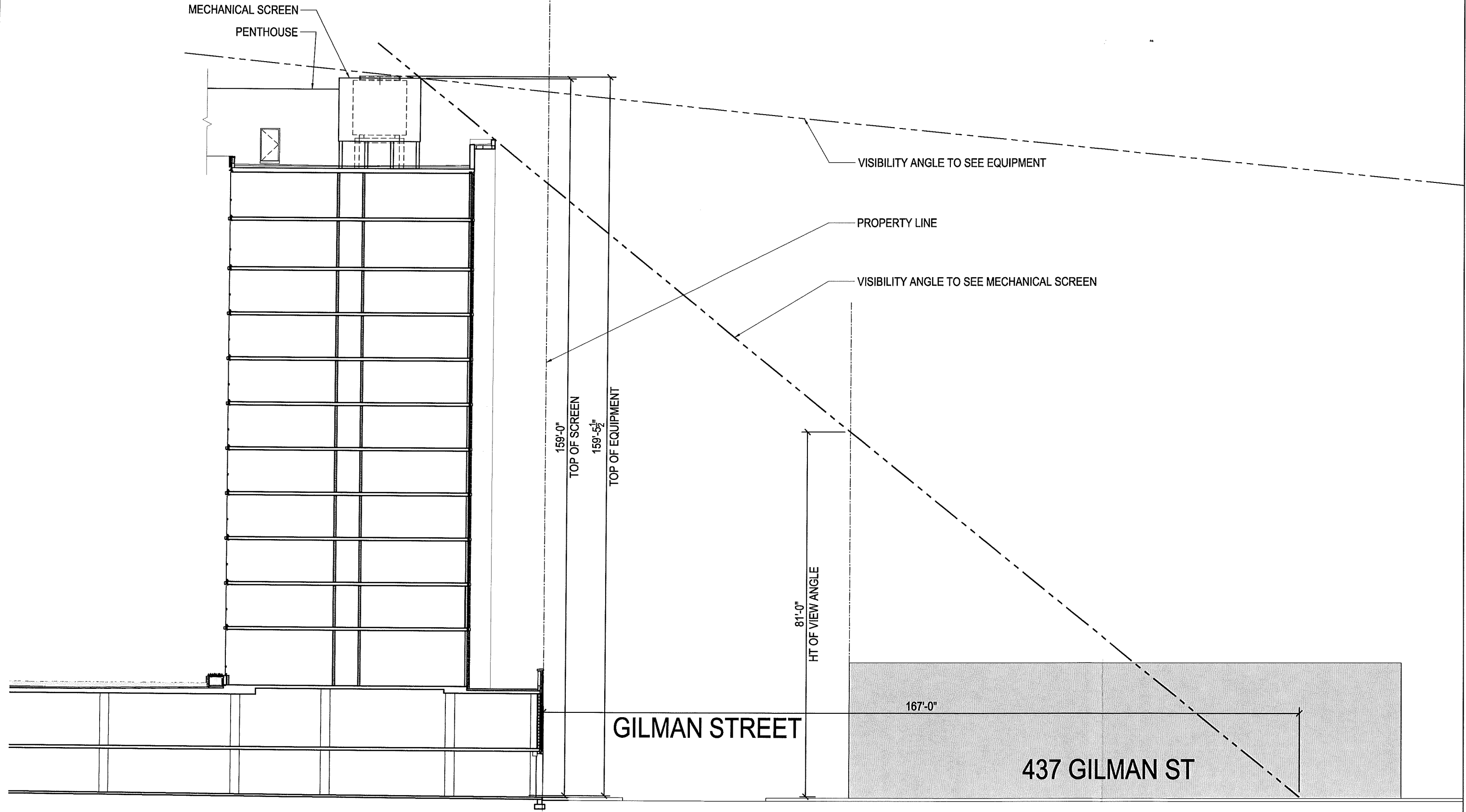
SCALE: 1/4"=1'-0"

ANTUNOVICH ASSOCIATES
 ARCHITECTURE PLANNING INTERIOR DESIGN
 224 W EST HURON STREET CHICAGO, ILLINOIS 60654
 312.266.1126 FAX: 312.266.7123

Title: CHILLER TOWER SCREEN WALL
 GILMAN STREET SIDE
 Project: HUB AT MADISON

MS-2
 Scale: 1/4" = 1'-0'
 November 6, 2014

Exhibit D: Rooftop Mechanicals



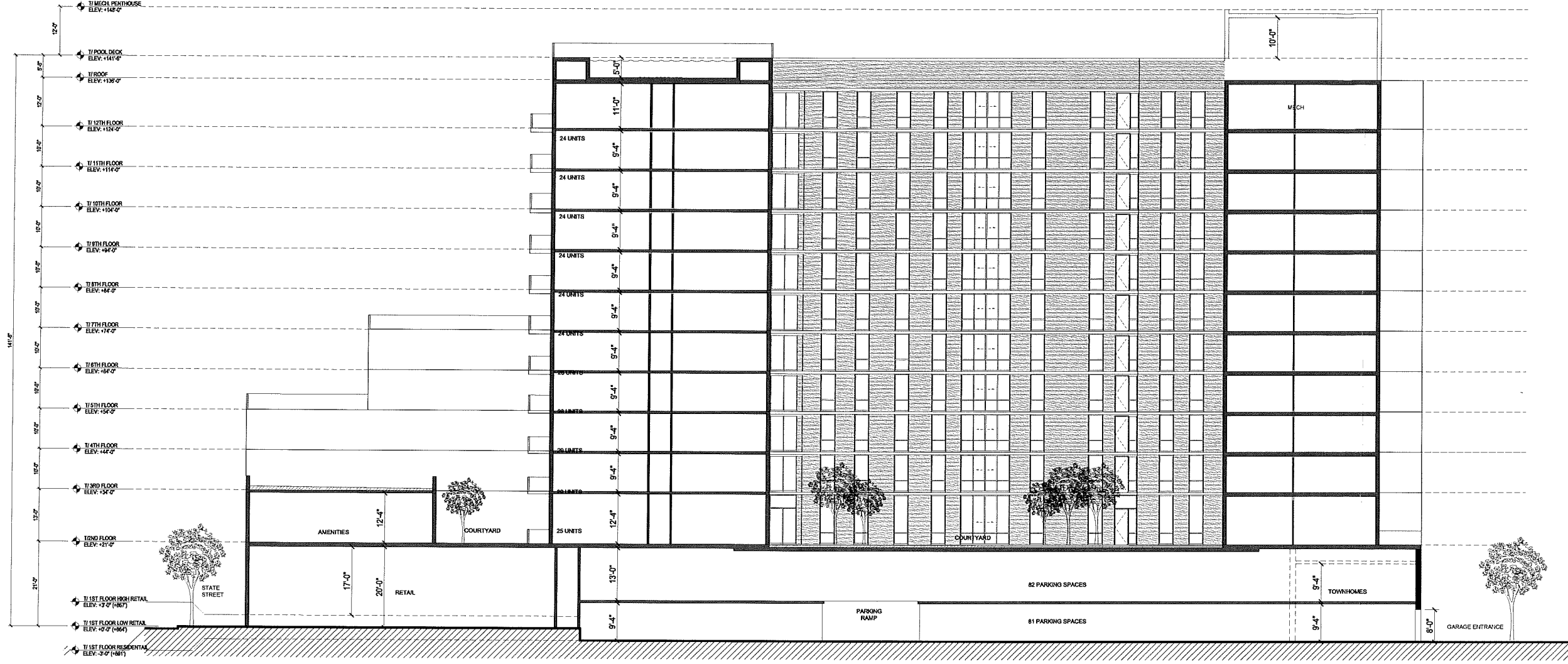
1	BUILDING SECTION AT GILMAN
-	-

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

ANTUNOVICH ASSOCIATES
 ARCHITECTURE PLANNING INTERIOR DESIGN
 224 W EST HURON STREET CHICAGO, ILLINOIS 60654
 312.266.1126 FAX: 312.266.7123

Title: CHILLER TOWER SCREEN WALL
 GILMAN STREET SIDE
 Project: HUB AT MADISON

MS-3
 Scale: 1" = 20'
 November 6, 2014



General Notes

No.	Date	Description
1	04.23.2015	RECORD SET SUBMITTAL

Submissions & Revisions

Owner
CORE CAMPUS
 Core Campus, LLC
 200 N. BRIDGE STREET
 MADISON, WI 53703
 PHONE: (608) 261-8501
 FAX: (608) 261-5270

General Contractor

Architect
ANTUNOVICH ASSOCIATES
 ARCHITECTS
 PLANNERS
 211 WEST STENO STREET
 SUITE 200
 MADISON, WISCONSIN 53703
 PHONE: (608) 261-1114
 FAX: (608) 261-1115

Landscape Architect

Structural Engineer
PIERCE ENGINEERS INC.
 CONSULTING STRUCTURAL ENGINEERS
 5750 MONROE, SUITE 200, MADISON, WI 53705
 PHONE: (608) 263-0100
 FAX: (608) 263-0107

M.E.P. Engineers

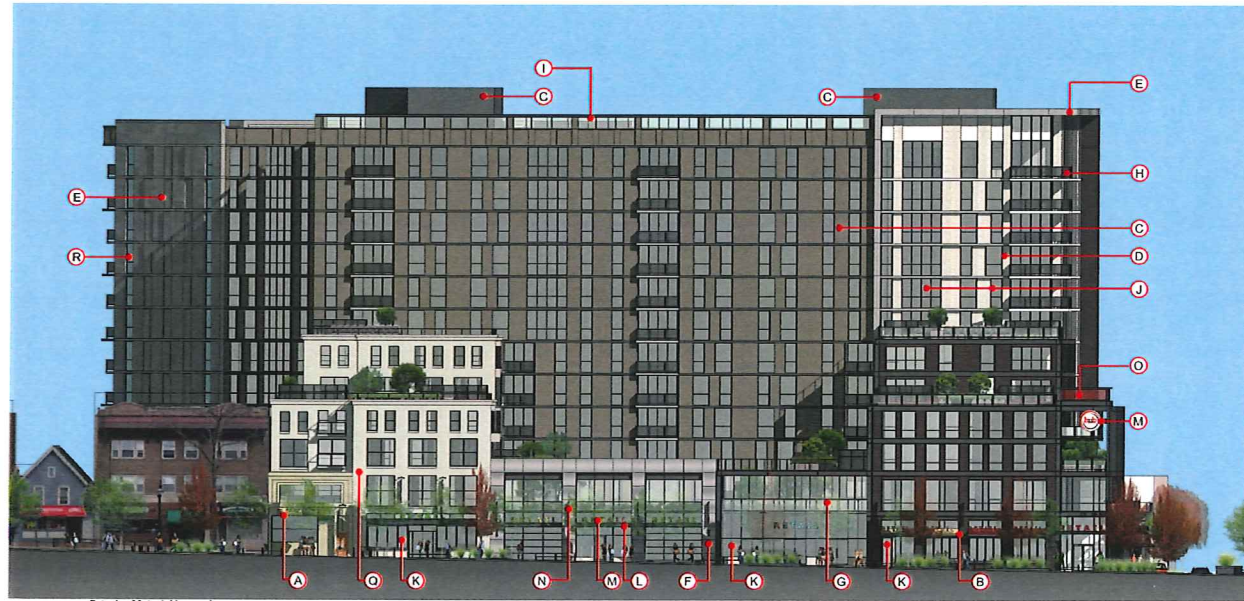
DM Engineer
Burse Surveying and Engineering
 100 E. Washington Avenue, Suite 110
 Madison, WI 53703
 PHONE: (608) 261-2111
 FAX: (608) 261-2112
 www.burseinc.com

Project Location
HUB AT MADISON
 441 N. Francis Street
 Madison, WI 53703

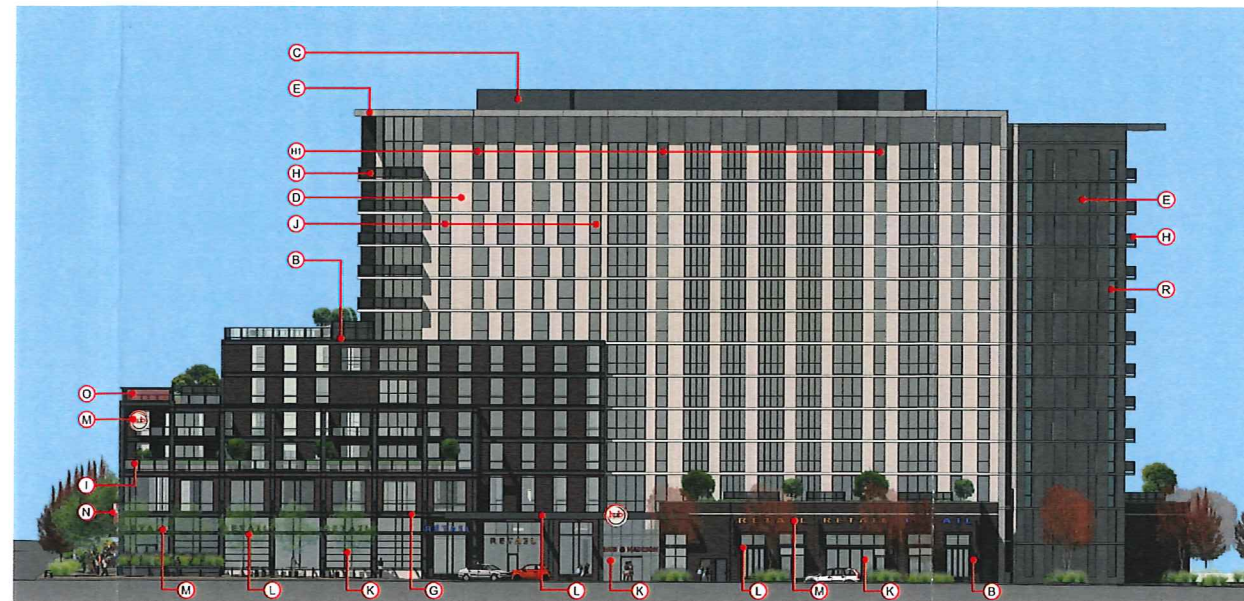
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 A3.10 SCALE: 3/32"=1'-0"

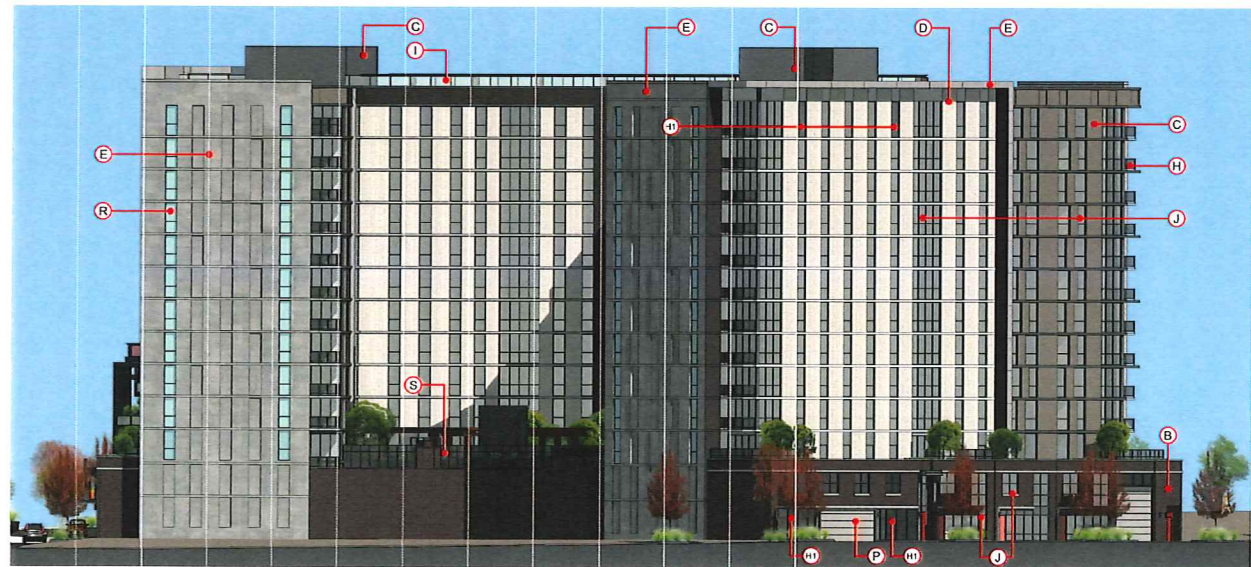
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A-3.10



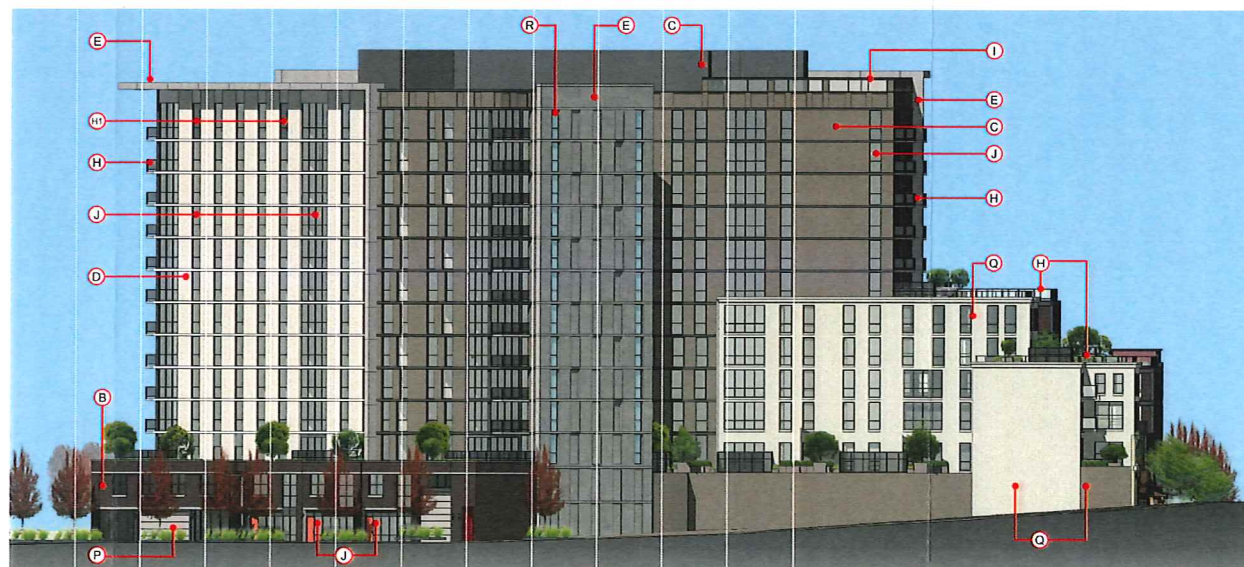
1 NORTH ELEVATION
SCALE: NTS



2 WEST ELEVATION
SCALE: NTS



3 SOUTH ELEVATION
SCALE: NTS



4 EAST ELEVATION
SCALE: NTS

MATERIAL SCHEDULE

A Repurposed Terra Cotta Facade	G Painted Metal Cladding System	L Steel Canopy	R Fire Protected Aluminum Glazing System
B Masonry-Color #1	H Painted Metal Balcony Railing System	M Illuminated Signage (By Tenant at Retail)	S 7' Tall Fence to Protect the Neighboring site
C Masonry-Color #2	H1 Perforated Metal Panel System	N Banners (By Tenant)	
D Cast Masonry	I Glass Railing System	O Illuminated Glass Beacon	
E Articulated Exposed Cast Concrete	J Aluminum Thermopane Operable Window System	P Metal Sectional Garage Door	
F Aluminum Cladding System	K Aluminum Thermopane Storefront Window System and Doors		

General Notes:

No.	Date	Description
1	08.23.2019	RECORD SET SUBMITTAL

Submissions & Revisions

Owner
CORE CAMPUS

General Contractor

Architect

ANTUNOVICH ASSOCIATES
ARCHITECTS
PLANNERS
224 West Wisconsin Street
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Madison, Wisconsin 53703
Phone: 608.266.1244
Fax: 608.266.7123

Landscaping Architect

Structural Engineer

PIERCE ENGINEERS INC.
2000 Park Street, Suite 200
Madison, WI 53705
Phone: 608.261.1144
PE Project: 13337

M.E.P. Engineers

Civil Engineer

Burse Surveying and Engineering
1408 E. Washington Avenue, Suite 108
Madison, WI 53704
Phone: 608.261.1144
Email: mshane@bse.com

Project Location
HUB AT MADISON
441 N. Francis Street
Madison, WI 53703

Drawing Title

RENDERED ELEVATIONS

Scale

Date

Drawing No.

GP.02



Hub at Madison
View from across street (Gilman)



Hub at Madison
View from across street
(Gilman and Johnson)



Hub at Madison
View from across street
(Gilman and Johnson)



Hub at Madison
View from across street
(Gilman near State



Hub at Madison
View from sidewalk
(Gilman)

Screen Wall

Mechanical
Penthouse

Hub at Madison
View on Roof
(looking north)



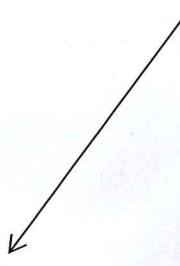
Screen Wall

Mechanical
Penthouse

Hub at Madison
View on Roof
(looking north)



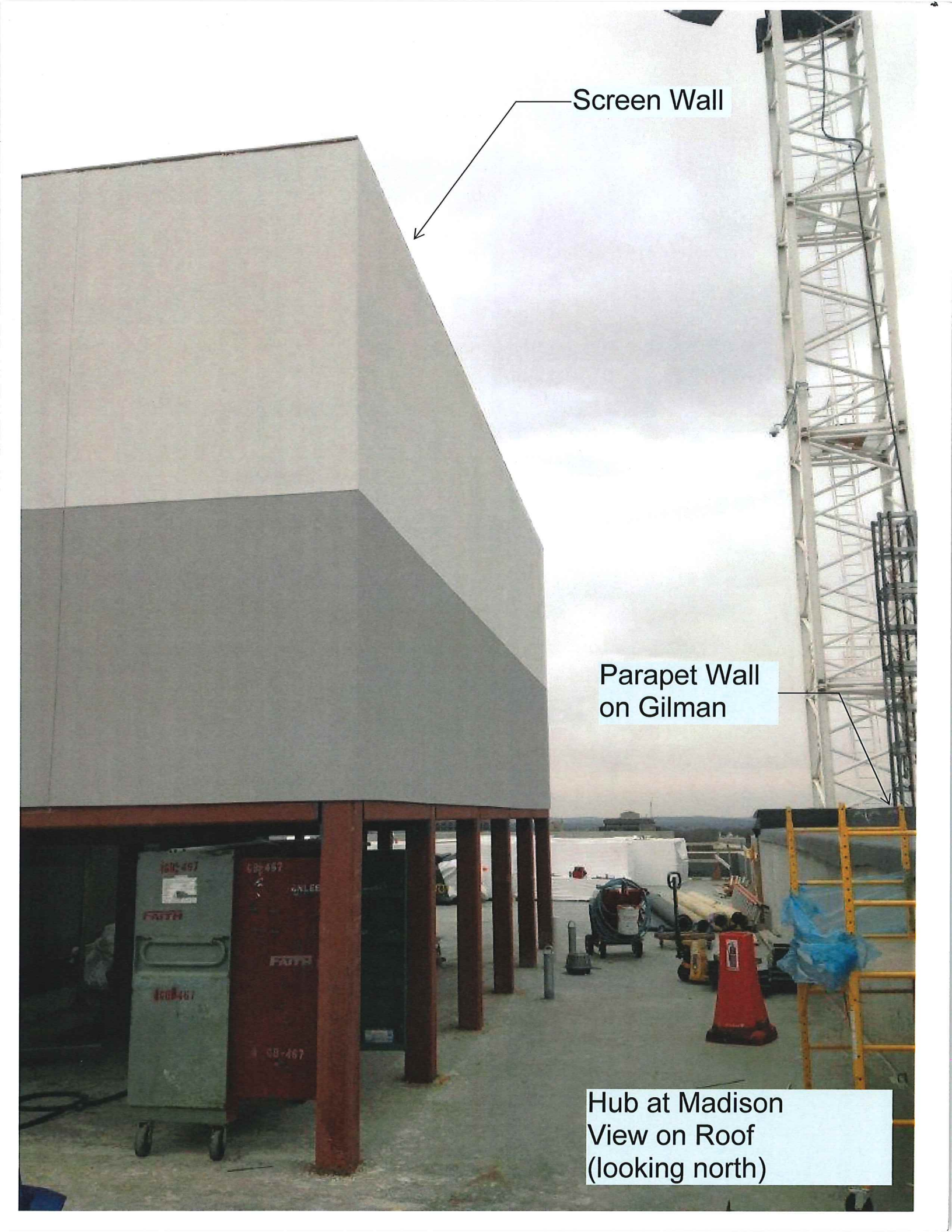
Screen Wall



Parapet Wall on Gilman



Hub at Madison
View on Roof
(looking north)



Screen Wall

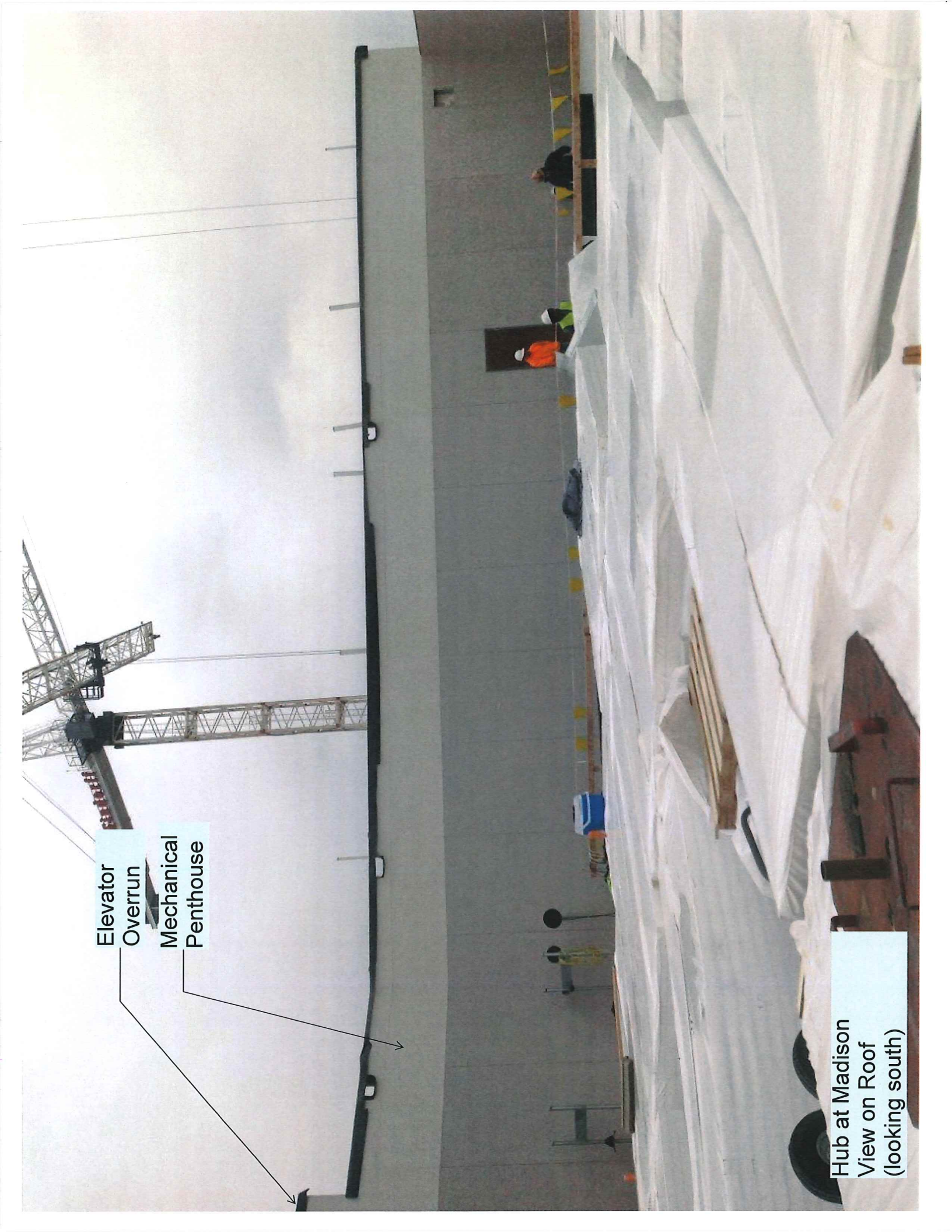
Elevator
Overrun



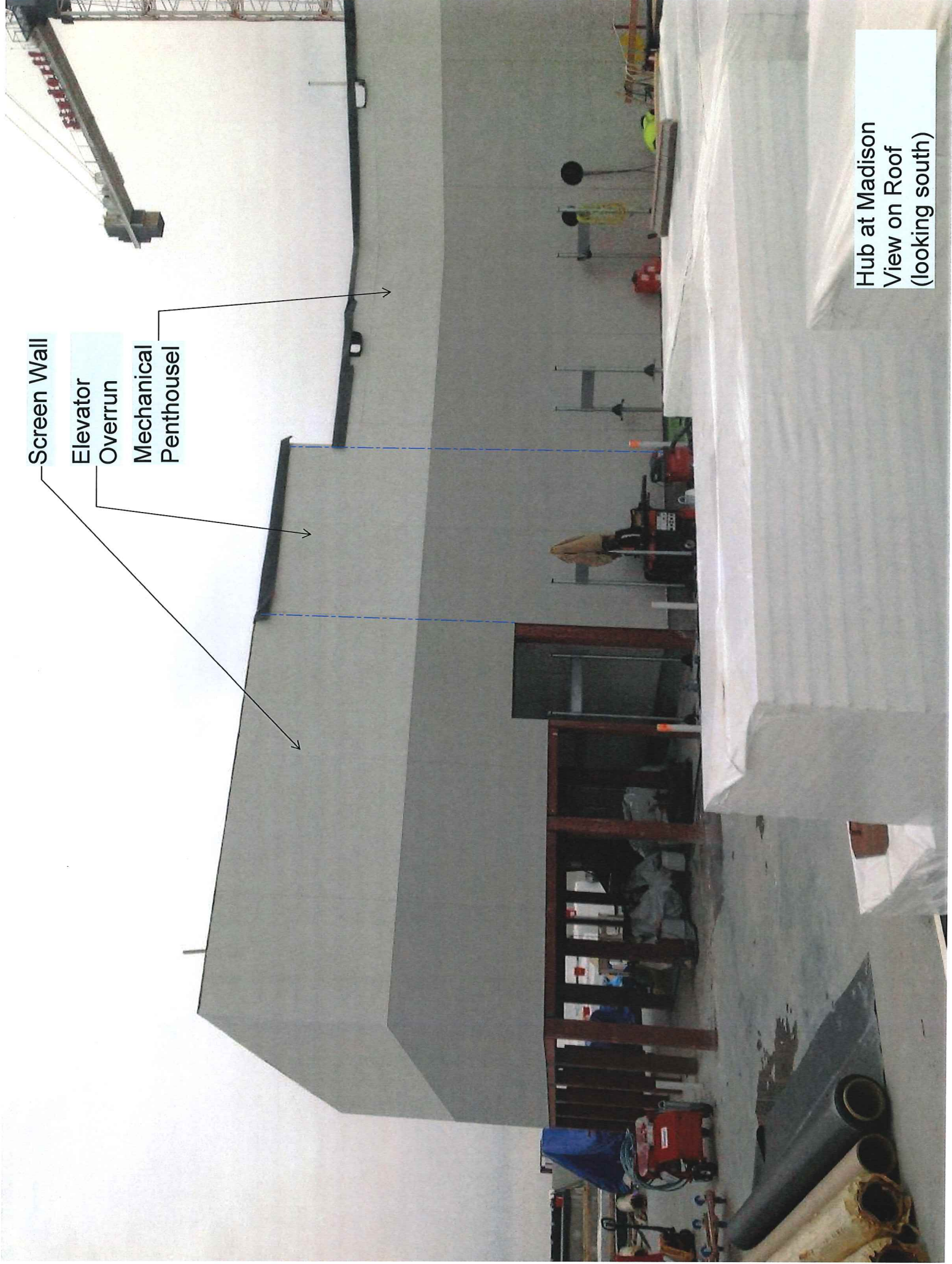
Hub at Madison
View on Roof
(looking north)

Elevator
Overrun
Mechanical
Penthouse

Hub at Madison
View on Roof
(looking south)



Screen Wall
Elevator
Overrun
Mechanical
Penthouse



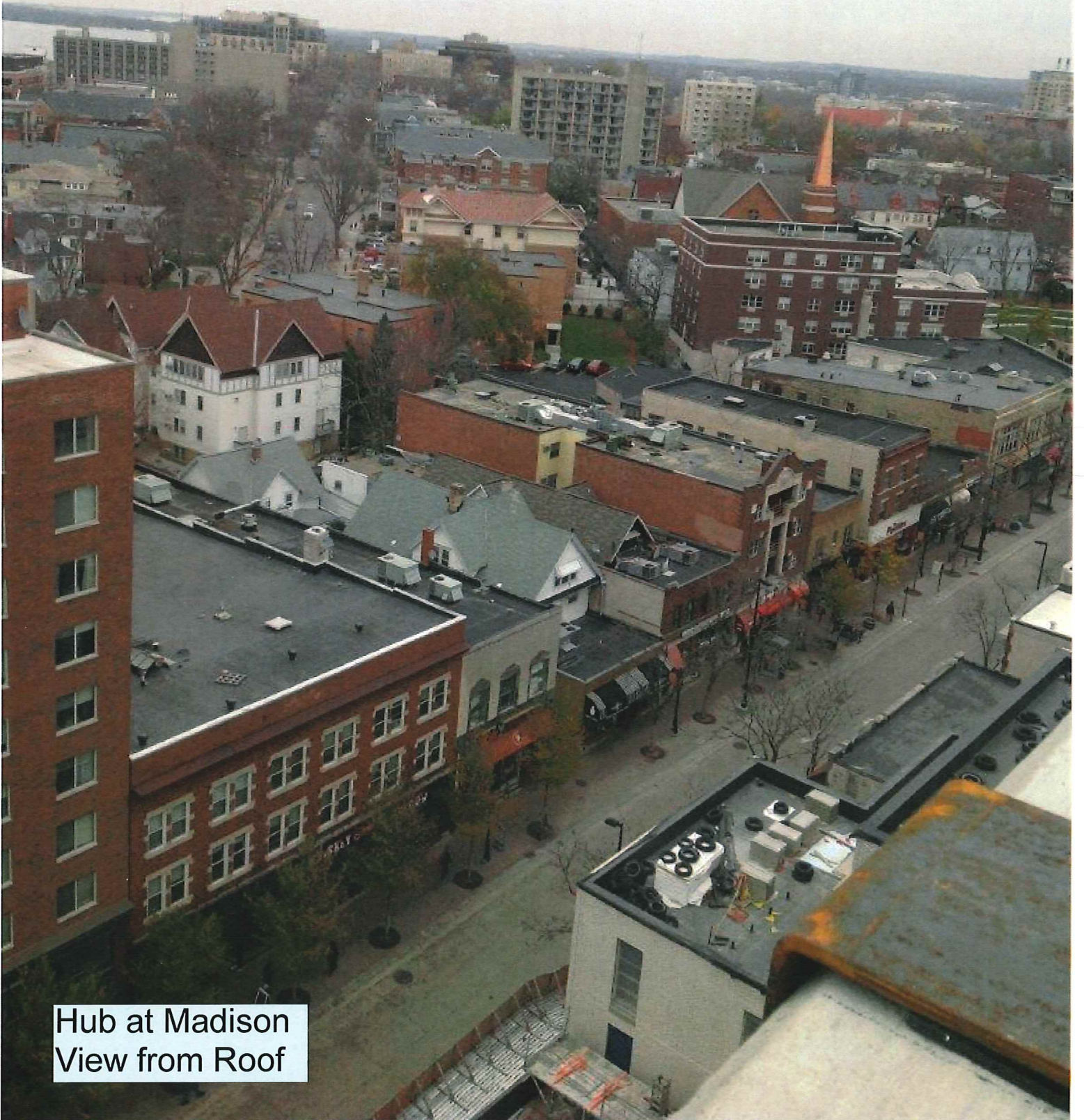
Hub at Madison
View on Roof
(looking south)



Hub at Madison
View from Roof



Hub at Madison
View from Roof



Hub at Madison
View from Roof



A COMFORT SYSTEMS USA Company.

November 10, 2014

Mr. Matthew Tucker, Zoning Administrator
CITY OF MADISON
215 Martin Luther King, Jr. Blvd.
Madison, WI 53701

RE: The HUB at Madison
Cooling Tower Installation

Dear Mr. Tucker:

I am writing at the request of Brian Munson of Vandewalle & Associates, concerning the installation of the roof-mounted cooling tower at The HUB at Madison Project in downtown Madison. I am employed by North American Mechanical, Inc. (NAMI), who is the HVAC Design/Build firm for this project. I am also a Licensed Mechanical Engineer in the State of Wisconsin, and I am the HVAC Engineer-of-Record for this Project.

It has been brought to my attention that the City of Madison has requested that the screen wall enclosure around this cooling tower be extended one foot above the top of the tower. As the Professional Engineer responsible for the proper design, performance and operation of the cooling tower system at The HUB, I would urge the City to reconsider this request. Such an extension of the screen wall would adversely affect the operation of the cooling tower and could potentially result in a shortage of air conditioning capacity at The HUB.

Cooling towers in general, and the cooling tower at the HUB in particular, must be located in such a way as to minimize the potential for recirculation of hot, moist discharge air. Manufacturers of cooling towers and designers



Page 2 of 2
The HUB at Madison
November 10, 2014

of cooling tower system utilize a number of techniques to minimize recirculation. One of the most important of these techniques is to locate the top of the cooling tower at an elevation that is equal to or higher than any adjacent walls, buildings or other structures.

For The HUB Project, NAMI has selected, purchased and installed an Evapco Model AT-29-524 Cooling Tower. For reference, I have enclosed an excerpt from the Evapco Equipment Layout Manual, in which I have highlighted key passages concerning recirculation in yellow.

Please feel free to contact me directly should you have any questions concerning this information.

Sincerely,
NORTH AMERICAN MECHANICAL, INC.



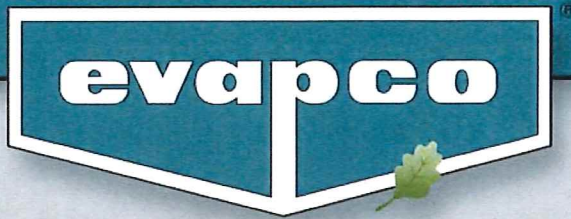
Mitchell A. Hagens, PE, LEAP AP
Executive Vice President



Enclosure

Cc: Brian Munson – Vandewalle & Associates
Jeremiah Diamond – Antunovich Associates
Eric Grimm – Core Campus
Luke Hutchins – J.H. Findorff & Son
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EQUIPMENT LAYOUT MANUAL

For Cooling Towers, Evaporative Condensers & Closed Circuit Coolers



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Introduction

The location of evaporative cooling equipment is an important consideration when reviewing system design. Since evaporative cooling equipment requires large quantities of air, adequate spacing around the unit must be provided for it to perform properly. An equally important consideration when laying out the equipment is to locate the unit so that recirculation is minimized.

This technical manual has been written by EVAPCO engineers to provide recommended layout criteria for EVAPCO induced draft and forced draft equipment installations. Although it deals primarily with the layout of cooling towers, the principles presented apply to EVAPCO evaporative condensers and closed circuit coolers as well.

Recirculation

Recirculation occurs when some of the hot, moist discharge air leaving the cooling tower flows back into the fresh air inlets of the unit. The heat-laden discharge air leaving the cooling tower is saturated and can be at a 10°-15°F higher wet bulb temperature than the ambient wet bulb. Therefore, any amount of recirculation will increase the wet bulb temperature of the air entering the unit. The available tonnage of the unit is decreased when the entering air wet bulb temperature is increased. For example, if the inlet wet bulb temperature is increased from 78°F to 80°F, capacity is reduced by approximately 16%, corresponding to an increase in leaving water temperature of approximately 1.5°F. As can be seen from this example, a small increase in the entering air wet bulb temperature has a dramatic affect on the unit's performance. In extreme cases where the entering wet bulb temperature is increased by 5° to 6°F, the available tonnage of the unit is reduced by more than 50%.

Equipment Layout Planning

Proper equipment layout is essential to ensure that the cooling tower will operate at its rated capacity. The objective is for the evaporative cooling equipment to be located so that fresh air is allowed to enter the unit freely, to ensure that recirculation is minimized. The first step in achieving this goal is to consider the many factors that may affect the cooling tower installation. During the design of the system, special attention needs to be given to space limitations, surrounding structures, existing units, proximity of neighbors, prevailing winds, piping, and any possible future expansion plans. Once this information is obtained, the guidelines contained in this bulletin can be used to determine the best layout for the equipment.

The layout criteria presented in the manual are based on years of successful experience with evaporative cooling installations. Following these guidelines will provide the best equipment layout which will ensure proper air flow to the unit, minimize recirculation, and allow adequate space for maintenance.

Minimizing Legionella

Proper positioning of the cooling tower, as well as a regular maintenance program are essential to minimize the potential for growth of Legionella bacteria in the cooling tower. The cooling tower should be located away from fresh air intakes, operable windows, kitchen exhaust, and prevailing winds directed toward public areas. The cooling tower should have a water treatment program, and must be thoroughly cleaned on a regular basis. If the cooling tower is to be idle for extended periods, it should be drained. If draining is not practical, a system shock with a biocide is required prior to running the fans.

Induced Draft Counterflow Unit Layout

Single Unit Installations

The best place to locate any cooling tower is on a roof by itself. When this is not possible, correct layout guidelines must be followed to provide a satisfactory installation. The first item to consider is the position of the unit with respect to other structures. **The top of the cooling tower must be equal to or higher than any adjacent walls, buildings or other structures.** When the top of the unit is lower than the surrounding structures (Figure 1 & 2), recirculation can be a major problem. If the unit is on the windward side, as shown in Figure 1, the discharge air will be forced against the building and then spread in all directions, including downward, toward the air inlets.

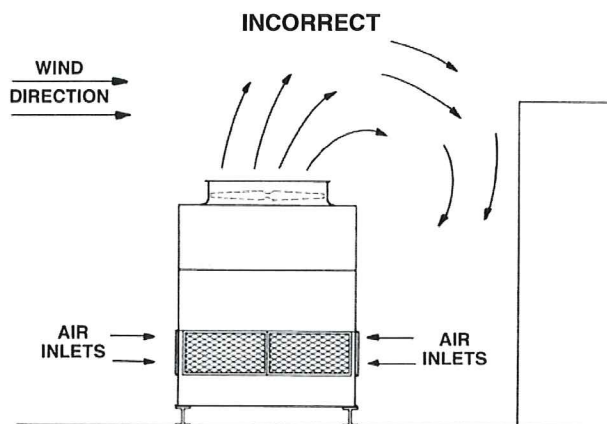


Figure 1 - Installation with Top of Unit Lower than Top of Wall

When the wind comes from the opposite direction, the resulting negative pressure area created by the wind passing over the building will cause the discharge air to be forced back into the inlets, as shown in Figure 2. Even if neither of these conditions occurs, the presence of much taller structures can potentially inhibit the dissipation of the hot moist discharge air.

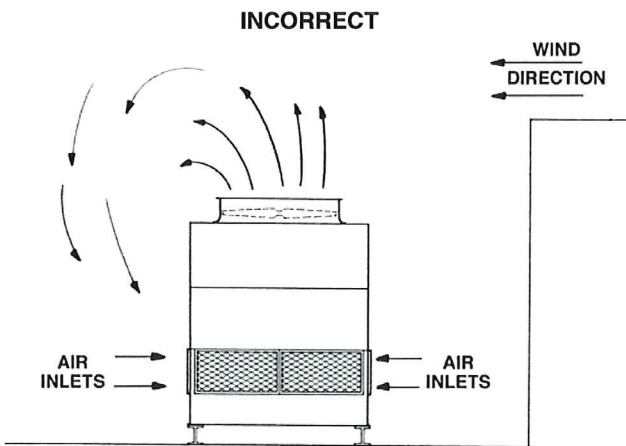


Figure 2 - Wind Effect with Top of Unit Lower than Top of Wall

The conditions shown in Figures 1 & 2 can be corrected by elevating the unit on structural steel so that the top of the fan cowl is equal to or higher than the adjacent structures, as shown in Figure 3. Fan cowl extensions can also be provided to elevate the fan discharge of the cooling tower to the proper height, as shown in Figure 4. **For installations where neither of these options are possible, an experienced engineering decision must be made regarding the potential of a performance impact.**

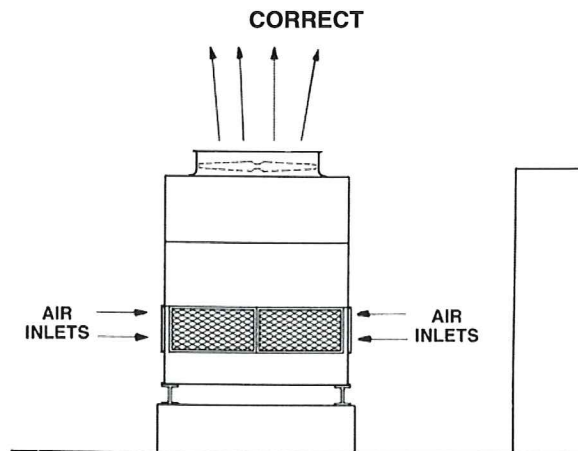


Figure 3 - Installation Elevated so Top of Unit Is Higher than Top of Wall

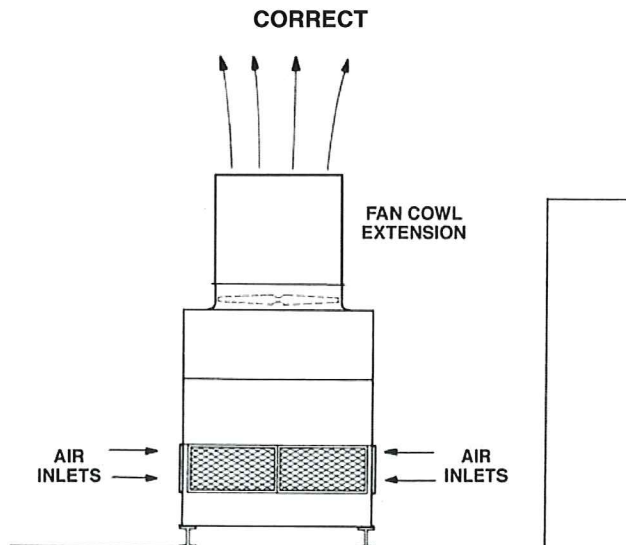


Figure 4 - Fan Discharge Elevated so Top of Unit Is Higher Than Top of Wall

NOTE: Fan cowl extensions over 3' in height require external support, supplied by others.

Sec. 28.071(3)(f)

ZONING CODE

(f) Building Materials.

1. Buildings shall be constructed of durable, high-quality materials. Table 28 E-1 below lists allowable building materials.
2. All building facades visible from a public street or public walkway shall use materials and design features similar to or complementary to those of the front facade.

Table 28E-1: Building Materials in Downtown and Urban Districts.

Building Materials	Trim / Accent Material	Top of Building	Middle of Building	Base / Bottom of Building	Standards (see footnotes)
Brick (Face/Veneer)	√	√	√	√	
Smooth-Face / Split-Face Block	√	√	√	√	A
Wood / Wood Composite	√	√	√	√	B
Fiber-Cement Siding / Panels	√	√	√	√	B
Concrete Panels (Tilt-up or Precast)	√	√	√	√	C
EIFS / Synthetic Stucco	√	√			D
Stone / Stone Veneer	√	√	√	√	
Metal Panels	√	√	√	√	E
Hand-Laid Stucco	√	√			D
Reflective Glass / Spandrel	√				F
Glass (Transparent)	√	√	√	√	

- A- Shall be used in conjunction with a palette of materials and shall not comprise more than thirty-three percent (33%) of any building.
- B- Wood and fiber cement panels shall not be used on the ground story except between the sidewalk and the bottom of storefront windows or as an accent material.
- C- Shall incorporate horizontal and vertical articulation and modulation, including but not limited to changes in color and texture, or as part of a palette of materials.
- D- Shall not be within three feet of the ground or used on building facades facing State Street, King Street, or the Capitol Square.
- E- Shall be used in conjunction with a palette of materials; shall be a heavy gauge, non-reflective metal
- F- Shall be used in limited quantities as an accent material.

(g) Equipment and Service Area Screening.

1. Outdoor loading areas or mechanical equipment are not permitted in the front yard. When visible from an abutting public street or walkway, they shall be screened by a decorative fence, wall, or screen of plant material.
2. No doors or openings providing access to parking or loading facilities shall abut the Capitol Square, State Street or King Street.
3. Fences and walls shall be architecturally compatible with the principal structure.

(h) Screening of Rooftop Equipment.

1. All rooftop equipment, with the exception of solar and wind equipment, shall be screened from view from adjacent streets and public rights-of-way. Rooftop equipment shall be screened from view from adjacent buildings to the extent possible.
2. The equipment shall be within an enclosure. This structure shall be set back a distance of one and one-half (1½) times its height from any primary facade fronting a public street. Screens shall be of durable, permanent materials (not including wood) that are compatible with the primary building materials, and shall be constructed to a height of at least one (1) foot above the height of the equipment.

Sec. 28.074

ZONING CODE

28.074 DOWNTOWN CORE DISTRICT.

- (1) Statement of Purpose.
The DC District is established to recognize the Capitol Square, the State Street corridor, and surrounding properties as the center of governmental, office, educational, cultural, specialty retail and recreational activities for the City and the region. Residential uses are appropriate in some locations or in combination with other uses. This district is intended to allow intensive development with high-quality architecture and urban design.
- (2) Permitted and Conditional Uses.
See Table 28E-2 for a complete list of allowed uses within the downtown and urban districts.
- (3) Dimensional Standards.
Standards represent minimums unless otherwise noted. Dimensions are in feet unless otherwise noted.

Downtown Core District	
Lot area (sq. ft.)	No minimum
Minimum front yard setback	0 See (a) below
Maximum front yard setback	Buildings facing State Street, King Street or Capitol Square: 5 See (a) below
Side yard setback	The first two (2) stories of one side of all buildings: 0 See (a) below
Rear yard setback	0
Minimum height	2 Stories
Maximum height	See Downtown Height Map
Stepback	See Downtown Stepback Map

- (a) Specific front and/or side yard setbacks may be designated on the zoning map and may be designated as a specific location (build to line), a minimum, or a range.
- (4) Design Review.
Design review for all buildings and structures shall be as follows:
 - (a) Minor exterior changes or additions may be approved by the Director of the Department of Planning, Community, and Economic Development if he/she determines that the changes or additions are compatible with the existing design or consistent with the Downtown Urban Design Guidelines.
 - (b) All new buildings and additions that are less than twenty-thousand (20,000) square feet and are not approved pursuant to (a) above, as well as all major exterior alterations to any building shall be approved by the Urban Design Commission based on the design standards in Sec. 28.071(3), if applicable, and the Downtown Urban Design Guidelines. The applicant or the Alderperson of the District in which the use is located may appeal the decision of the Urban Design Commission to the Plan Commission.
 - (c) All new buildings and additions greater than twenty thousand (20,000) square feet or that have more than four (4) stories shall obtain conditional use approval. In addition, the Urban Design Commission shall review such projects for conformity to the design standards in Sec. 28.071(3), if applicable, and the Downtown Urban Design Guidelines and shall report its findings to the Plan Commission.
 - (d) Class 2 Collocations and Radio Broadcast Service Facilities are permitted uses and are not subject to design review. They are subject to review as provided in Sections 28.143 and 28.148. See Wis. Stat. §§ 66.0404(3)(a)1 and (4)(gm) and 66.0406 (2013) (Cr. by ORD-13-00189, 11-26-13)

ZONING CODE

Sec. 28.074(5)

(5) Alterations to Approved Designs.

For buildings approved pursuant to (b) or (c) above, the Director of the Department of Planning, Community and Economic Development may approve minor alterations or additions if he/she determines that such alterations or additions are consistent with Sec. 28.071(3), if applicable, the Downtown Urban Design Guidelines, and the previously approved design.

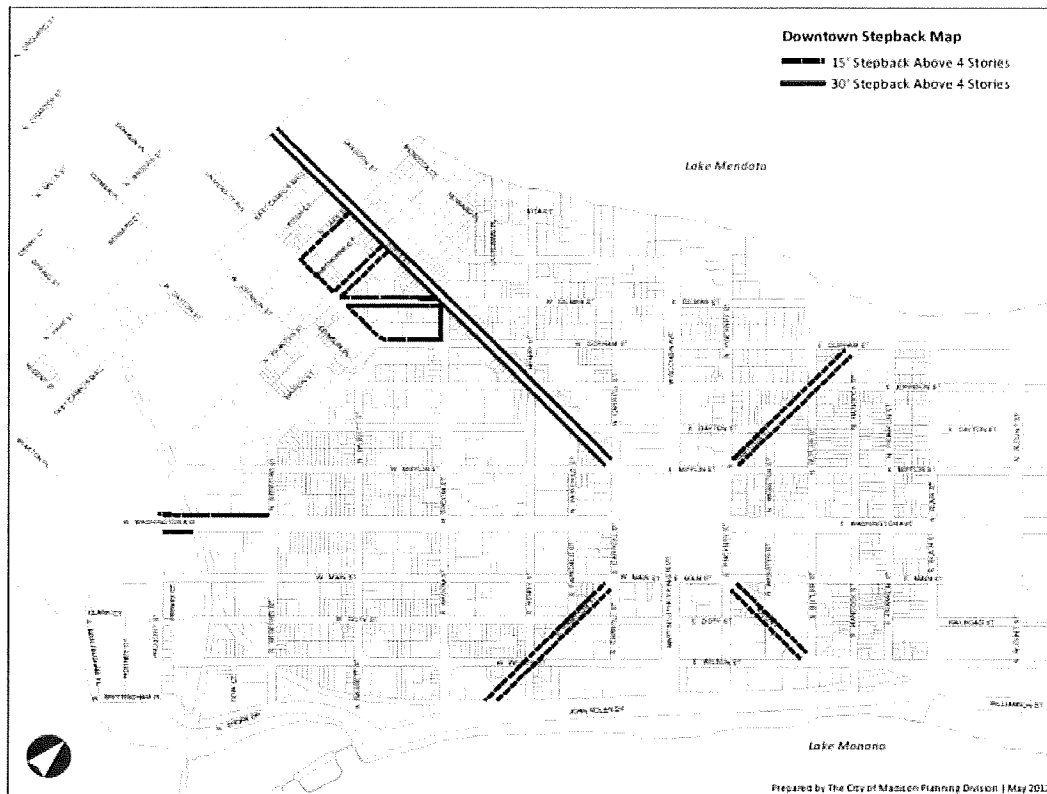
(6) Site Standards: New and Existing Development.

(a) All business activities shall be conducted within completely enclosed buildings except:

1. Off-street parking and off-street loading.
2. Outdoor display and outdoor storage.
3. Vending machines.
4. Outdoor eating, cooking, and service areas associated with food and beverage establishments. (Am. by ORD-13-00178, 10-23-13)
5. Bicycle-sharing facilities.
6. Auto service stations.
7. Agricultural activities.
8. Temporary outdoor events.
9. Solar energy systems and wind energy systems.
10. Walk-up service windows.
11. Yard sales.
12. Composting.
13. Keeping of chickens and keeping of honeybees.
14. Outdoor recreation.
15. Vehicle access sales and service windows.
16. Farmers market.

Sec. 28.071(2)(c)

ZONING CODE

(c) Downtown Stepback Map.(3) Design Standards.

The following standards are applicable to all new buildings and additions, within any ten- (10) year period, exceeding fifty percent (50%) of existing building's floor area for non-residential buildings, mixed-use buildings, lodging houses, and residential buildings with 8 or more dwelling units.

(a) Parking.

1. Parking shall be located in parking structures, underground, or in surface parking lots behind principal buildings. Parking structures shall be designed with liner buildings or with ground floor office or retail uses along all street-facing facades.
2. For corner lots or through lots, rear yard surface parking areas abutting any street frontage are limited to fifty percent (50%) of that frontage, and shall be located a minimum of ten (10) feet from the street property line.
3. Parking garage openings visible from the sidewalk shall have a clear maximum height of sixteen (16) feet and a maximum width of twenty-two (22) feet. Garage doors or gates shall be located a minimum of ten (10) feet from the front property line. Doors to freight loading bays are exempt from this requirement.
4. No doors or building openings providing motor vehicle access to structured parking or loading facilities shall face State Street, King Street, or the Capitol Square.

AGENDA # 10

City of Madison, Wisconsin

REPORT OF: URBAN DESIGN COMMISSION	PRESENTED: September 17, 2014
TITLE: 441 North Frances Street – Revisions to a Previously Approved Project – The Hub at Madison. 4 th Ald. Dist. (32683)	REFERRED: REREFERRED: REPORTED BACK:
AUTHOR: Alan J. Martin, Secretary	ADOPTED: POF:
DATED: September 17, 2014	ID NUMBER:

Members present were: Richard Wagner, Chair; Cliff Goodhart, Dawn O’Kroley, Richard Slayton, John Harrington* and Melissa Huggins.

Harrington abstained on this item.

SUMMARY:

At its meeting of September 17, 2014, the Urban Design Commission **GRANTED FINAL APPROVAL** to revisions to a previously approved project located at 441 North Frances Street. Registered and speaking in support were Brian Munson, representing Core Campus; and Jeff Zelisko. Registered in support but not wishing to speak was Brad Mullins. Registered in support and available to answer questions were Jeremiah Diamond, representing Core Campus; and Luke Hutchins. Zelisko presented alterations to previously approved plans as noted in their team’s memo.

Comments and questions from the Commission were as follows:

- Work with Matt Tucker on the location of the ATM that meets the ordinance.
- With the progress of this building we really need to see the signage and lighting package soon so we don’t have issues at the end.
- Why not just have the louvers go continuous and blank them off where somebody doesn’t need them, versus where it looks kind of spotty? It would be less conspicuous.
- I like the linear choice much better.
- The Frances Street elevation looked really weird.
- It would be nice if you didn’t have to have that many, if you could pick a couple areas of storefront that are meant to emulate buildings, if you can use the neighboring buildings’ louvers, that would be advantageous.
 - These are pretty large openings so I don’t know that we want to give up all that potential glass.
- Either they’d be a louver, spandrel or they’d be glass.
- Right, but the choppiness...if you do have one tenant then don’t make it all louvers.

- The large stucco penthouses, have you considered a metal panel? I know it's very high up there, but as I see this building go up you see it from just about everywhere. Have you considered something different than just stucco for a large 20-foot, it's two-stories.
 - We had so many major materials on the building we felt like bringing something else in was maybe just piling on.
 - Corrugated metal we have nowhere else on the building.
 - I think the stucco is quieter, visually.
 - We also went to great lengths to cover up the tower, we have a 20-foot screen wall around it and it lines up with the elevator overrun. It's going to look like part of the building with the intention of having it blend with the penthouse.
- Agreed, it'd be much lighter if it was metal.
- Just to break up the monotony of the stucco.

ACTION:

On a motion by Huggins, seconded by Goodhart, the Urban Design Commission **GRANTED FINAL APPROVAL**. The motion was passed on a vote of (4-0-1) with Harrington abstaining. The motion provided for address of the above comments, and the following to be approved by staff:

- Integrate color and texture of stucco tower with other adjacent building elements.
- Regarding ventilation openings for first floor commercial/retail storefronts on streetside elevations, all louvers shall be located within the same continuous horizontal band above storefront systems in specific window openings and be blacked out or be glass if not needed; attempt to use adjacent tenancies' installations if possible.