College of Lake County

CAPITAL Development BOARD
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LEGATARCHITECTS
SUSTAINABILITY | PERFORMANCE | DESIGN

CDB PROJECT # 810-056-024

WAUKEGAN CAMPUS SCHEMATIC DESIGN

100% SCHEMATIC DESIGN FEBRUARY 15, 2015

PROJECT TEAM

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LAKESHORE

1 PROJECT SCOPE

Project Scope Statement
Program Space Summary
Program Space List
Property Negotiations

PROJECT SCOPE STATEMENT

The scope of work for this project provides for construction of approximately 72,794 gross square feet Student Services and Adult Education Learning Center at the College of Lake County's Lakeshore Campus in Waukegan, Illinois. The project creates an opportunity for an extensive campus expansion and renovation, including 53,090 gross square feet of new construction and 19,704 gross square feet of existing building renovation.

The goal of the new College of Lake County Lakeshore expansion is to address a number of aesthetic and functional design challenges of the existing campus and the downtown Waukegan environment. Functionally, the project provides needed new classrooms and space for One-Stop Enrollment Services, Life Sciences, Library Adult Education, Administration, and Child Care. Additionally the existing buildings will be upgraded with new finishes and upgraded infrastructure. Additional space for student interaction including the availability of food options will be provided.

The overall plan for the campus creates a sense of place by developing a consistent image for the new and existing buildings and physically connecting them to all the program elements. The plan calls for developing an aesthetic for the new building and the existing 111 North Genesee building that complements the historic Globe Building (33 North Genesee). The facades on the 111 North Genesee building will be upgraded and the new building design has been sympathetically designed to consider the scale, massing, color, and materials of the existing Globe Building. The new building will also form a physical link between the existing City garage and the Globe building to insure security and comfort for the students attending the college. This project also includes partial and full demolition of existing structures located at 31 N. Genesee Street, 122 W. Madison Street, 126 W. Madison Street and 128 W. Madison Street.

The funds allocated by the Capital Development Board for the cost of the project total $47,902,961 which includes new building construction, remodeling, fixed and moveable equipment, utilities, site improvements and A/E fees.

The chart below follows the guidelines for the multiplier factors to show the gross square footage and the effective ratio of NASF to GSF for the new construction:

Total NASF	29,543
Total and Actual GSF	53,090
Effective Ratio NASF : GSF	0.56

The attached program summary provides a breakdown of all the space requirements for the project.

The project will be designed in accordance with US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) certification requirements, targeting LEED-NC (LEED for New Construction) Platinum certification. This would include new energy efficient and environmentally-friendly building systems, recycled, regional and low-emission building materials and components that will meet required sustainable building design and construction standards. Utilities and site improvements are necessary for the construction of the new building. Site work will incorporate improvements along the Madison Street between Genesee Street and Sheridan road, improvements of adjacent alleys include the development of new sidewalks, pedestrian friendly hardscape, landscaping, and installation of new light fixtures, bike stalls and expansion of the existing campus "Quad". These improvements are intended to provide convenient and safe access to the new building. Landscaping will improve an aesthetic value to the surroundings.

Design components for utilities and site improvements may include the use of materials, equipment, and systems that are in compliance with the sustainability and energy efficiency standards and requirements for LEED certification.

PROGRAM SPACE SUMMARY

The following Building Space Program identifies the departmental areas that are included in the project estimate for both new construction and renovated areas.

The New Construction Area line items include the following:

- Net departmental program area.
- Departmental wall thicknesses and “inter” departmental circulation area.
- Departmental area subtotal.
- Core space areas (toilet rooms, mechanical room, etc.), “intra” departmental circulation and exterior wall thicknesses.
- Gross building area.

The Renovated Areas comprise, for the most part, the modernization and re-purposing of existing spaces with minimal new walls, inter/intra-departmental circulation, and core spaces. Consequently, these line items include gross area values only.

The gross areas for Alternates 1 and 2 renovations are also identified.

PROGRAM SPACE LIST

PROGRAM SUMMARY	Dept. Program Area NSF	Inter-Dept. Walls & Circulation	Dept. Program Area GSF	Intra-Dept. Area Bldg. Core, Circulation, Exterior Walls	Floor GSF
NEW CONSTRUCTION AREA					
ABE/GED/ESL	2,550	664	3,214	3,245	6,459
Library and Tutoring	6,986	1816	8,802	2619	11,421
Children's Learning Center	2,455	245	2,700	0	2,700
Student Services - One Stop with Testing	8,102	2107	10,209	3056	13,265
Phlebotomy, CNA and MOA Labs	6,193	619	6,812	3308	10,120
Community Room / New Classrooms	3,257	326	3,583	3442	7,025
Mechanical Room			0	2,100	2,100
New Construction Subtotal	29,543	5,777	35,320	17,770	**53,090**
RENOVATED AREA					
33 N Genesee					
Police					1,363
Snack Bar					2,185
1st Floor Corridor, Stairs, Restrooms					2,774
New Building Connection					270
3rd Floor Biology, Micro Bio, Chemistry Lab					2,107
33 N Genesee Total Renovated Area					**8,699**

RENOVATED AREA CONTINUED	Floor Area
111 N Genesee	
Re-purposed Labs (Dental Lab & Reception)	1,709
111 N. Student Lounge	1,450
Dean's Office Suite	1,825
Re-purposed Faculty Offices/Fac. Resource Center	1,214
Re-purposed Classrooms (5)	3,202
Existing Interior Finishes Stairs, Corridors, Toilet Rooms (1st Floor only)	1,605
111 N. Genesee Total Renovated Area	**11,005**
Total Renovated Area Construction 33 N + 111N Genesee	**19,704**

Alternate 1 33 N. Genesee Building - Roof Replacement:

Building Renovations: Bookstore, Gallery, Storage 2nd FL Phlebotomy and 3rd Floor Classrooms	5,788
Building Renovations: 2nd & 3rd Floor Corridors, Stairs, Restrooms	4,902
Alternate 1 Total SF =	**10,690**

Alternate 2 111 N. Genesee Building Renovations of 2nd & Mezzanine Corridors, Stairs, Restrooms **4,139 SF**

Alternate 3 Site Improvements: Permeable pavers throughout all site hardscaping, site furnishings and landscaping.

PROPERTY NEGOTIATIONS
CITY OF WAUKEGAN PROPERTIES TO BE ACQUIRED

The Using Agency is in the process of acquiring two properties currently owned by the City of Waukegan:

- **Vacant Parcel**. Just east of the Using Agency's existing 33 N. Genesee property, is an adjacent surface parking lot identified as "Parcel 6 PT Lot 1" on the following site plan; this property is currently owned by the City of Waukegan. This surface parking lot is located roughly 100 feet west of Sheridan Road, comprises approximately 6,111 square feet, and includes approximately 102 feet of frontage along the south side of Madison Street. The surface parking lot includes an alley easement which also has some frontage along the south side of Madison Street.

This vacant parcel is necessary to construct the new 6-story building.

- **Existing Parking Structure**. The property at 30 N. Sheridan Road, identified as "Lots 2, 3 and 4" on the following site plan, is currently owned by the City of Waukegan; this property is just south and contiguous to the vacant parcel described above. Situated on this property is a concrete, four-level, parking garage which was constructed in 1995. The building contains a total gross floor area of approximately 130,640 square feet and is situated on a commercially zoned lot containing a total of 38,516 square feet. The garage contains 372 parking spaces of which the Using Agency currently leases 190 spaces for its students, staff and visitors.

The Using Agency intends to maximize the parking spaces in the existing parking structure for its students, staff and visitors, both current and future. So, in addition to the Property Condition Report, the parking structure consultant is also providing an estimate of the cost for upgrades, maintenance, access control and security.

With the advice of Ed Smith from the Illinois Community College Board (ICCB), the Using Agency, from its local funds, has engaged two consultants to complete a Property Condition Report and a Phase 1 Environmental Site Assessment for the existing parking structure and the vacant parcel. These studies are intended to comply with the "Administrative Rules" of the Illinois Community College Board (dated October 2008), Section 1501.604 g) 3) that require the following prior to a property acquisition:

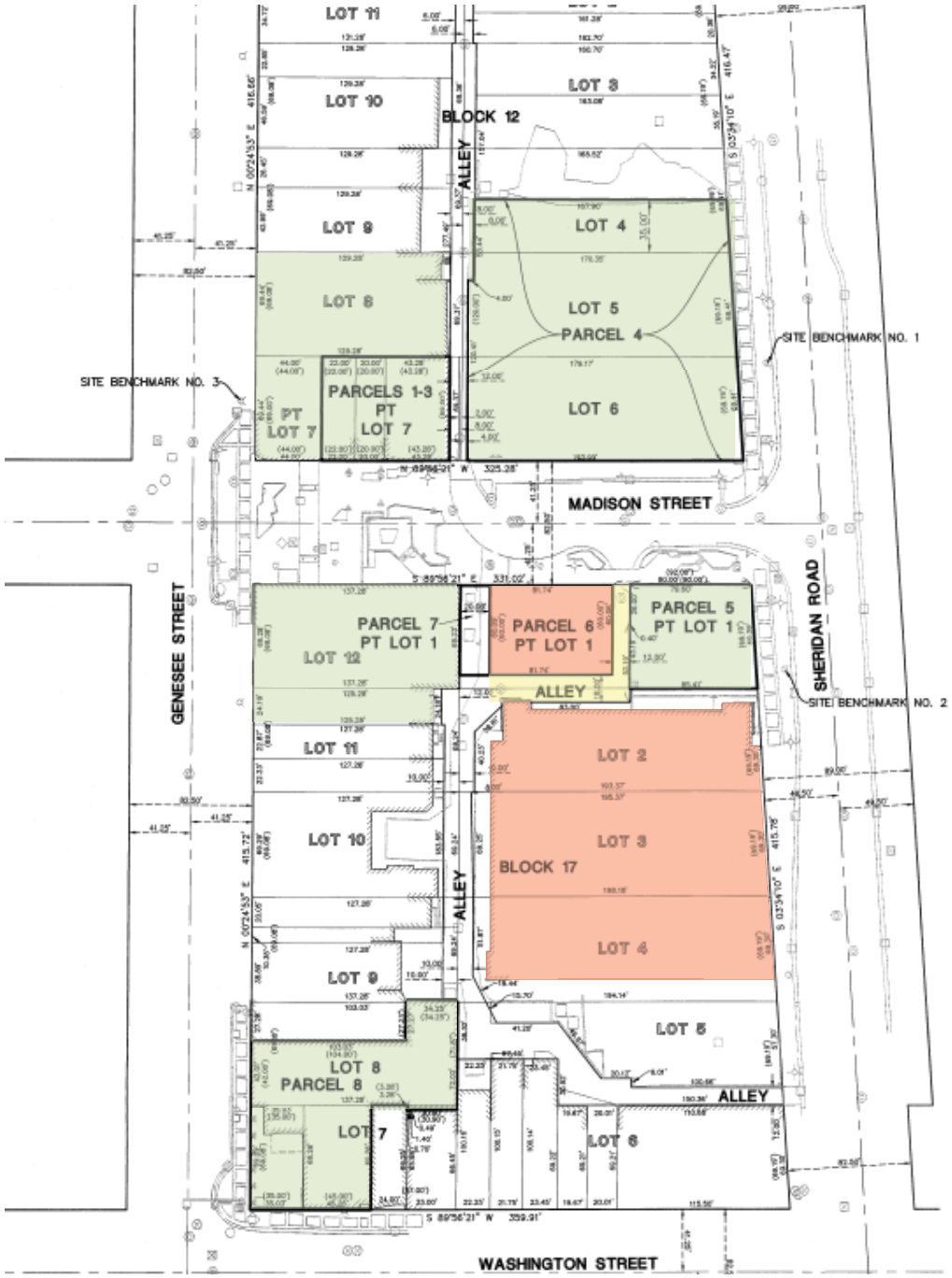
Verification that the condition of the facility is not a threat to public safety. This shall include tests of structural integrity, asbestos, toxic materials, underground storage tanks, and other hazardous conditions. (Findings regarding the existence of these hazards shall not preclude the procurement of the site/structure but the knowledge of the hazardous condition and any cost incurred in correcting the condition shall be incorporated into the total cost of procuring the facility.)

The Using Agency expects to complete these acquisitions from the City by the end of March or early April 2015.

PROPERTY NEGOTIATIONS PARCEL MAP

PROPERTIES CURRENTLY OWNED BY THE COLLEGE OF LAKE COUNTY

PROPERTIES CURRENTLY IN NEGOTIATION WITH THE CITY OF WAUKEGAN TO BE ACQUIRED BY THE COLLEGE OF LAKE COUNTY



LAKESHORE

2 PROJECT COST ANALYSIS

PPCB Form & PPCB Worksheet
Parametric Cost Model

PPCB FORM

State of Illinois
CAPITAL DEVELOPMENT BOARD

PROPOSED PROJECT
COST BUDGET

FOR CDB USE ONLY	
Name:	
Project No:	
Contract No:	
C.F. Locale	Design Phase

CDB PROJECT NUMBER:	810-056-024	DATE PREPARED:	2/4/2015
BLDG. INVENTORY NO:		PROJECT STATUS:	Schematic Design
PROJECT:	CLC Lakeshore Expansion	GSF: 72,794 NSF:	NASF/GSF:
LOCATION:	Waukegan, IL	SITE ACREAGE:	
A/E:	Legat Architects	PREPARED BY:	Burcin Moehring
CDB PROJECT MANAGER:	Bruce Locke		

1.	LAND ACQUISITION COST	$2,200,000.00	
2.	MOVABLE EQUIPMENT	$3,328,700.00	
3.	ART-IN ARCHITECTURE	$171,264.44	
4.	OTHER	$225,000.00	
5.	A/E Basic Service Fee	$2,086,304.00	
6.	Additional Services	$531,161.00	
7.	Construction Admin. Fee	$78,600.00	
8.	On-Site Representative	$242,450.00	
9.	**Subtotal (1 thru 8)**	$8,863,479.44	
10.	A/E REIMBURSABLES		
a.	Subsoil Investigation	$21,500.00	
b.	Design Ph. Material Testing	$25,000.00	
c.	Construction Ph Material Test		
d.	Printing	$3,133.96	
e.	GeoThermal	$28,000.00	
f.	Water Line Testing	$4,164.00	
g.	Topographic Survey	$675.00	
h.			
i.			
11.	**Subtotal (10a thru 10i)**	$82,472.96	
12.	**TOTAL (9 plus 11)**	$8,945,952.40	

RECAP OF CONSTRUCTION COSTS (Base Bid)
(From Page 2 Worksheet)

TRADE ESTIMATES (Column H)	
General	$23,070,808.00
Plumbing	$1,128,412.00
Heating	$2,593,348.00
Ventilating	$2,787,842.00
Electrical	$5,453,818.00
Asbestos	$52,778.00
Sprinkler	$304,481.00
	$0.00
	$0.00
	$0.00
Contingency (Column D Total)	$3,425,288.70
13. TOTAL BASE BID BUDGET	
(Trade estimates plus contengency)	$38,816,775.70

14.	**TOTAL BUDGET (12 plus 13)**	$47,762,728.10
15.	**Total Project Funds**	$47,902,691.00
	(From Project Scope VARIANCE	**($139,962.91)**
16.	**Available Funds for Construction (15 minus 12)**	$38,956,738.61
17.	**Alternates (Total from Page 2)**	$3,691,811.00
18.	**Base Bid plus Alternates (13 plus 17)**	$42,508,586.70

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Worksheets

TRADE	A Building (Base Bid Estimate)	B Site Work (Base Bid Estimate)	C Subtotal (A + B)	D Contingency (Cx10%)	E Alternates	F Subtotal (C+E)	G CAF (Fx3%) Round up to next $100	H Subtotal (C+G)	I Total (D+ F +G)	J I/GSF
General	$20,444,052.00	$1,847,256.00	$22,291,308.00	2,229,130.80	$3,691,811.00	$25,983,119.00	$779,500.00	$23,070,808.00	$28,991,749.80	$398.27
Plumbing	$1,095,512.00		$1,095,512.00	109,551.20	$0.00	$1,095,512.00	$32,900.00	$1,128,412.00	$1,237,963.20	$17.01
Heating	$2,517,748.00		$2,517,748.00	251,774.80	$0.00	$2,517,748.00	$75,600.00	$2,593,348.00	$2,845,122.80	$39.08
Ventilating	$2,706,642.00		$2,706,642.00	270,664.20	$0.00	$2,706,642.00	$81,200.00	$2,787,842.00	$3,058,506.20	$42.02
Electrical	$4,982,492.00	$312,426.00	$5,294,918.00	529,491.80	$0.00	$5,294,918.00	$158,900.00	$5,453,818.00	$5,983,309.80	$82.20
Asbestos	$51,178.00		$51,178.00	5,117.80	$0.00	$51,178.00	$1,600.00	$52,778.00	$57,895.80	$0.80
Sprinkler	$295,581.00		$295,581.00	29,558.10	$0.00	$295,581.00	$8,900.00	$304,481.00	$334,039.10	$4.59
			$0.00	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	
			$0.00	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	
			$0.00	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	
Column Totals	$32,093,205.00	$2,159,682.00	$34,252,887.00	$3,425,288.70	$3,691,811.00	$37,944,698.00	$1,138,600.00	$35,391,487.00	$42,508,586.70	$583.96

TRADE	Alternate #1	Alternate #2	Alternate #3	Alternate #4	Alternate #5	Alternate #6	Alternate #7	Alternate #8	Totals
General	$1,988,162.00	$703,649.00	$1,000,000.00						$3,691,811.00
Plumbing									$0.00
Heating									$0.00
Ventilating									$0.00
Electrical									$0.00
Asbestos									$0.00
Sprinkler									$0.00
									$0.00
									$0.00
									$0.00
Column Totals	$1,988,162.00	$703,649.00	$1,000,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,691,811.00

E-MAIL THIS FORM

This form may be submitted to CDB electronically. Attach a completed form to an e-mail addressed to the CDB Project Manager. All CDB e-mail addresses are available on our website: www.cdb.state.il.

RLB | Rider Levett Bucknall

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Summary - Margins and Adjustments Distributed

GFA: Gross Floor Area
Rates Current At February 2015

Location		GFA SF	Cost/SF	Total Cost
N	NEW BUILDING	50,390.0	482.89	24,332,619
L	CHILDREN'S LEARNING CENTER	2,700.0	337.35	910,834
1	111 N. GENESEE	11,005.0	373.51	4,110,464
3	33 N. GENESEE	8,699.0	283.97	2,470,237
P	PARKING GARAGE			255,888
B	BRIDGE			273,316
S	SITE IMPROVEMENTS			1,899,529
	ESTIMATED NET COST	72,794	$470.55	$34,252,887

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College of Lake County - Student Services & Adult Education Center

Alternates - SD Level

Alternates - Margins and Adjustments Distributed

GFAA: Gross Floor Area Alternates
Rates Current At January 2015

	Location	GFAA SF	Cost/SF	Total Cost
A1	ALT 1: 33N GENESEE BUILDING - ROOF REPLACEMENT AND BUILDING RENOVATIONS OF: BOOKSTORE, GALLERY, STORAGE 2ND FL PHLEBOTOMY AND 3RD FLOOR CLASSROOMS 2ND & 3RD FLOOR CORRIDORS, STAIRS, REST ROOMS	10,690	185.98	1,988,162
A2	ALT 2: 111N GENESEE BUILDING RENOVATIONS OF 2ND FLOOR & CORRIDORS, STAIRS, REST ROOMS AT MEZZANINE LEVEL	4,139	170.00	703,649
A3	ALT 3: SITE IMPROVEMENTS: PERMEABLE PAVERS AT SITE HARDSCAPING, SITE FURNISHINGS AND LANDSCAPING			1,000,000
O1	OPT 1: PV SYSTEM - OPTION 1			445,071
O2	OPT 2: PV SYSTEM - OPTION 2			828,603
	ESTIMATED NET COST	14,829	$334.85	$4,965,485

NOTE: The costs for the photovoltaic (PV) system options listed above are not included in the base bid or the alternates. These were priced out for the Using Agency's consideration in Design Development.

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College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Summary

GFA: Gross Floor Area
Rates Current At February 2015

Location		GFA SF	Cost/SF	Total Cost
N NEW BUILDING		**50,390.0**	**364.66**	**18,375,118**
L CHILDREN'S LEARNING CENTER		**2,700.0**	**254.75**	**687,829**
1 111 N. GENESEE		**11,005.0**	**291.93**	**3,212,701**
3 33 N. GENESEE		**8,699.0**	**221.95**	**1,930,715**
P PARKING GARAGE				**200,000**
B BRIDGE				**213,622**
S SITE IMPROVEMENTS				**1,459,124**
ESTIMATED NET COST		**72,794**	**$358.26**	**$26,079,109**
MARGINS & ADJUSTMENTS				
General Conditions incl. General & Temporary Requirements	6.5 %			$1,695,142
Payment & Performance Bonds	1.0 %			$277,743
General Liability Insurance	0.9 %			$238,442
Builder's Risk Insurance	0.4 %			$99,017
Design Contingency @ Schematic Design	5.0 %			$1,419,473
USGBC LEED Initiatives & Certification Cost Premium (4% on N and L)	2.6 %			$762,518
USGBC LEED Initiatives & Certification Cost Premium (2% on S)	0.1 %			$29,182
General Contractor's Overhead & Profit (Fee)	3.5 %			$1,071,022
Construction Cost Escalation (Mid point construction 1Q-'18)	8.1 %			$2,581,239
ESTIMATED TOTAL COST		**72,794**	**$470.55**	**$34,252,887**

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College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

GFA: 50,390.0 SF Cost/SF: $364.66

N NEW BUILDING

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
A1010	Standard Foundations	0.3 %	$1.95/SF	$98,243
A1020	Special Foundations	0.6 %	$4.11/SF	$207,000
A1030	Slab on Grade	0.6 %	$4.15/SF	$209,250
A2010	Basement Excavation	0.4 %	$2.50/SF	$125,801
A2020	Basement Walls	0.1 %	$0.88/SF	$44,200
B1010	Floor Construction	6.5 %	$44.26/SF	$2,230,064
B1020	Roof Construction	1.7 %	$11.75/SF	$592,245
B2010	Exterior Walls	4.4 %	$30.24/SF	$1,523,900
B2020	Exterior Windows	3.8 %	$25.63/SF	$1,291,264
B2030	Exterior Doors	0.1 %	$0.74/SF	$37,200
B3010	Roof Coverings	1.1 %	$7.62/SF	$383,966
B3020	Roof Openings	0.1 %	$0.88/SF	$44,500
C1010	Partitions	1.6 %	$11.00/SF	$554,290
C1020	Interior Doors	1.1 %	$7.21/SF	$363,500
C1030	Fittings	1.6 %	$11.15/SF	$561,687
C2010	Stair Construction	1.1 %	$7.64/SF	$385,000
C3010	Wall Finishes	0.7 %	$5.00/SF	$252,160
C3020	Floor Finishes	1.5 %	$10.03/SF	$505,290
C3030	Ceiling Finishes	0.8 %	$5.12/SF	$257,870
D1010	Elevators & Lifts	2.1 %	$14.29/SF	$720,000
D2010	Plumbing Fixtures	0.3 %	$1.75/SF	$88,183
D2020	Domestic Water Distribution	0.9 %	$5.95/SF	$299,915
D2030	Sanitary Waste	0.5 %	$3.27/SF	$164,610
D2040	Rain Water Drainage	0.2 %	$1.35/SF	$68,027
D3010	Energy Supply	0.1 %	$0.60/SF	$30,234
D3020	Heat Generating Systems	0.3 %	$2.37/SF	$119,250
D3030	Cooling Generating Systems	1.9 %	$13.11/SF	$660,500
D3040	Distribution Systems	4.1 %	$28.15/SF	$1,418,615
D3050	Terminal & Package Units	0.8 %	$5.51/SF	$277,500
D3060	Controls & Instrumentations	1.0 %	$6.50/SF	$327,535
D3070	Systems Testing & Balancing	0.1 %	$1.00/SF	$50,390
D4010	Sprinklers	0.4 %	$3.00/SF	$151,170
D4020	Standpipes	0.1 %	$0.40/SF	$20,156
D5010	Electrical Service & Distribution	3.5 %	$23.65/SF	$1,191,490
D5020	Lighting and Branch Wiring	2.3 %	$15.75/SF	$793,643
D5030	Communications & Security	2.0 %	$13.50/SF	$680,265
D5090	Other Electrical Systems	0.4 %	$2.68/SF	$135,000

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

GFA: 50,390.0 SF Cost/SF: $364.66
Rates Current At February 2015

N NEW BUILDING (continued)

Description		Percentage	Cost/SF	Total Cost
E1090	Other Equipment	1.8 %	$12.40/SF	$625,000
E2010	Fixed Furnishings -Millwork	1.8 %	$12.00/SF	$604,680
E2020	Window Treatments	0.8 %	$5.59/SF	$281,525
LC	LEED Initiatives			$0
	NEW BUILDING	*53.6 %*	*$364.66/SF*	*$18,375,118*

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College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

GFA: 2,700.0 SF Cost/SF: $254.75

Rates Current At February 2015

L CHILDREN'S LEARNING CENTER

Description		Percentage	Cost/SF	Total Cost
A1010	Standard Foundations	0.1 %	$9.09/SF	$24,555
A1030	Slab on Grade	0.1 %	$6.56/SF	$17,700
A2010	Basement Excavation	0.0 %	$5.48/SF	$14,784
B1020	Roof Construction	0.2 %	$20.67/SF	$55,803
B2010	Exterior Walls	0.2 %	$25.39/SF	$68,562
B2020	Exterior Windows	0.1 %	$6.67/SF	$18,000
B3010	Roof Coverings	0.1 %	$11.11/SF	$30,000
B3020	Roof Openings	0.0 %	$2.25/SF	$6,080
C1010	Partitions	0.1 %	$14.00/SF	$37,800
C3010	Wall Finishes	0.0 %	$4.00/SF	$10,800
C3020	Floor Finishes	0.1 %	$8.00/SF	$21,600
C3030	Ceiling Finishes	0.0 %	$4.00/SF	$10,800
D2010	Plumbing Fixtures	0.0 %	$1.75/SF	$4,725
D2020	Domestic Water Distribution	0.1 %	$9.77/SF	$26,382
D2030	Sanitary Waste	0.0 %	$2.00/SF	$5,400
D2040	Rain Water Drainage	0.0 %	$1.35/SF	$3,645
D3010	Energy Supply	0.0 %	$0.60/SF	$1,620
D3040	Distribution Systems	0.2 %	$24.71/SF	$66,708
D3050	Terminal & Package Units	0.1 %	$16.67/SF	$45,000
D3060	Controls & Instrumentations	0.1 %	$6.50/SF	$17,550
D3070	Systems Testing & Balancing	0.0 %	$1.00/SF	$2,700
D4010	Sprinklers	0.0 %	$3.00/SF	$8,100
D5010	Electrical Service & Distribution	0.0 %	$5.80/SF	$15,660
D5020	Lighting and Branch Wiring	0.1 %	$7.85/SF	$21,195
D5030	Communications & Security	0.0 %	$6.00/SF	$16,200
E2010	Fixed Furnishings -Millwork	0.1 %	$12.00/SF	$32,400
G2050	Landscaping	0.2 %	$26.13/SF	$70,560
G3010	Water Supply	0.0 %	$1.30/SF	$3,500
G3020	Sanitary Water	0.1 %	$11.11/SF	$30,000
LC	LEED Initiatives			$0
	CHILDREN'S LEARNING CENTER	*2.0 %*	*$254.75/SF*	*$687,829*

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

GFA: 11,005.0 SF Cost/SF: $291.93

1 111 N. GENESEE

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
B2010	Exterior Walls	1.5 %	$48.15/SF	$529,836
B2020	Exterior Windows	1.3 %	$41.51/SF	$456,780
B3010	Roof Coverings	0.5 %	$14.75/SF	$162,330
C1010	Partitions	0.4 %	$11.00/SF	$121,055
C1020	Interior Doors	0.4 %	$12.04/SF	$132,500
C1030	Fittings	0.5 %	$14.42/SF	$158,706
C3010	Wall Finishes	0.2 %	$5.15/SF	$56,693
C3020	Floor Finishes	0.2 %	$7.71/SF	$84,827
C3030	Ceiling Finishes	0.2 %	$5.16/SF	$56,734
D2010	Plumbing Fixtures	0.1 %	$1.75/SF	$19,259
D2020	Domestic Water Distribution	0.1 %	$3.48/SF	$38,285
D2030	Sanitary Waste	0.1 %	$3.41/SF	$37,482
D3010	Energy Supply	0.0 %	$0.60/SF	$6,603
D3030	Cooling Generating Systems	0.8 %	$23.81/SF	$262,000
D3040	Distribution Systems	0.8 %	$24.50/SF	$269,673
D3050	Terminal & Package Units	0.1 %	$3.18/SF	$35,000
D3060	Controls & Instrumentations	0.2 %	$6.50/SF	$71,532
D3070	Systems Testing & Balancing	0.0 %	$1.00/SF	$11,005
D4010	Sprinklers	0.1 %	$2.30/SF	$25,311
D5010	Electrical Service & Distribution	0.2 %	$5.80/SF	$63,829
D5020	Lighting and Branch Wiring	0.3 %	$7.85/SF	$86,388
D5030	Communications & Security	0.2 %	$6.00/SF	$66,029
E2010	Fixed Furnishings -Millwork	0.4 %	$12.00/SF	$132,060
E2020	Window Treatments	0.2 %	$5.69/SF	$62,640
F2010	Building Elements Demolition	0.7 %	$22.37/SF	$246,144
F2020	Hazardous Components Abatement	0.1 %	$1.82/SF	$20,000
	111 N. GENESEE	***9.4 %***	***$291.93/SF***	***$3,212,701***

RLB | Rider Levett Bucknall

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

GFA: 8,699.0 SF Cost/SF: $221.95

3 33 N. GENESEE

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
B1020	Roof Construction	0.1 %	$3.22/SF	$27,976
B2010	Exterior Walls	0.7 %	$25.67/SF	$223,313
B2020	Exterior Windows	0.6 %	$22.13/SF	$192,511
B3010	Roof Coverings	0.1 %	$3.89/SF	$33,838
C1010	Partitions	0.3 %	$11.00/SF	$95,689
C1020	Interior Doors	0.4 %	$16.23/SF	$141,200
C1030	Fittings	0.4 %	$17.13/SF	$148,994
C3010	Wall Finishes	0.2 %	$8.13/SF	$70,736
C3020	Floor Finishes	0.2 %	$9.57/SF	$83,262
C3030	Ceiling Finishes	0.1 %	$5.24/SF	$45,602
D2010	Plumbing Fixtures	0.0 %	$1.75/SF	$15,223
D2020	Domestic Water Distribution	0.1 %	$3.85/SF	$33,515
D2030	Sanitary Waste	0.1 %	$3.27/SF	$28,460
D3010	Energy Supply	0.0 %	$0.60/SF	$5,219
D3040	Distribution Systems	0.7 %	$26.06/SF	$226,661
D3060	Controls & Instrumentations	0.2 %	$6.50/SF	$56,544
D3070	Systems Testing & Balancing	0.0 %	$1.00/SF	$8,699
D4010	Sprinklers	0.1 %	$2.30/SF	$20,008
D5010	Electrical Service & Distribution	0.1 %	$5.80/SF	$50,454
D5020	Lighting and Branch Wiring	0.2 %	$7.85/SF	$68,288
D5030	Communications & Security	0.2 %	$6.00/SF	$52,195
E2010	Fixed Furnishings -Millwork	0.3 %	$12.00/SF	$104,388
E2020	Window Treatments	0.1 %	$3.03/SF	$26,400
F2010	Building Elements Demolition	0.4 %	$17.42/SF	$151,540
F2020	Hazardous Components Abatement	0.1 %	$2.30/SF	$20,000
	33 N. GENESEE	***5.6 %***	***$221.95/SF***	***$1,930,715***

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

P PARKING GARAGE

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
G2020	**Parking**	**0.6 %**		**$200,000**
	PARKING GARAGE	***0.6 %***		***$200,000***

RLB | Rider Levett Bucknall

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

B BRIDGE

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
B2010	Exterior Walls	0.2 %		$69,158
B2020	Exterior Windows	0.3 %		$96,600
B3010	Roof Coverings	0.0 %		$8,470
C1030	Fittings	0.0 %		$3,388
C3010	Wall Finishes	0.0 %		$1,271
C3020	Floor Finishes	0.0 %		$5,082
C3030	Ceiling Finishes	0.0 %		$3,812
D3040	Distribution Systems	0.0 %		$7,200
D5010	Electrical Service & Distribution	0.0 %		$2,541
F2010	Building Elements Demolition	0.0 %		$16,100
	BRIDGE	*0.6 %*		*$213,622*

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

S SITE IMPROVEMENTS

Rates Current At February 2015

Description		Percentage	Cost/SF	Total Cost
G1020	Site Demolition and Relocations	1.6 %		$564,600
G2040	Site Development	1.0 %		$337,663
G2050	Landscaping	0.6 %		$213,871
G3010	Water Supply	0.1 %		$40,890
G3020	Sanitary Water	0.1 %		$33,540
G3030	Storm Sewer	0.4 %		$122,560
G4020	Site Lighting	0.4 %		$146,000
LC	LEED Initiatives			$0
	SITE IMPROVEMENTS	*4.3 %*		*$1,459,124*

College of Lake County - Student Services & Adult Education Center

Schematic Design Construction Cost Estimate

Location Elements Summary

Description	Percentage	Cost/SF	Total Cost
MARGINS & ADJUSTMENTS			
General Conditions incl. General & Temporary Requirements	6.5 %		$1,695,142
Payment & Performance Bonds	1.0 %		$277,743
General Liability Insurance	0.9 %		$238,442
Builder's Risk Insurance	0.4 %		$99,017
Design Contingency @ Schematic Design	5.0 %		$1,419,473
USGBC LEED Initiatives & Certification Cost Premium (4% on N and L)	2.6 %		$762,518
USGBC LEED Initiatives & Certification Cost Premium (2% on S)	0.1 %		$29,182
General Contractor's Overhead & Profit (Fee)	3.5 %		$1,071,022
Construction Cost Escalation (Mid point construction 1Q-'18)	8.1 %		$2,581,239
ESTIMATED TOTAL COST		**$470.55**	**$34,252,887**

LAKESHORE

3 EXISTING CONDITIONS

Existing Site Conditions Narrative
Lakeshore Campus History Diagram
Existing Site Analysis Diagram
Existing Site Conditions Topographic Survey
Flood Plain Compliance Documentation
Asbestos Abatement Report/Executive Summary
Phase I Environmental Report/Executive Summary
Soil Boring Report
Existing Parking Conditions & Parking Analysis
Existing MEP Conditions Narrative

EXISTING CONDITIONS
EXISTING SITE CONDITIONS NARRATIVE

The College of Lake County, Lakeshore Campus is situated on a 2.29 acres parcel located in downtown Waukegan, Lake County, Illinois since 1981. The parcel is located northwest of the intersection of North Sheridan Road and East Washington Street, and is intersected by a pedestrian-only section of West Madison Street between N. Genesee St. and Sheridan Road. The Parcels described below make up the properties that are part of the proposed new construction. The new academic spaces will be housed in a six story addition on Parcels 5 and 6 along with the vacated alley between the parcels. The overhead connection to 33 North Genesee from this addition will occur over parcel 7. The new Child Learning Center addition along with an outdoor play area will be located on Parcels 1, 2, and 3. A portion of the site improvements will encompass the Madison St. Right of Way and the southern portion of Parcel 4. No construction or improvements are planned for Parcel 8.

Parcel 1
The East 22 feet of the West 66 feet of the South 69 feet of Lot 7 in block 12 in the original town of Little Fort (now Waukegan) according to the plat thereof, recorded May 26, 1841, in book “A” of deeds, page 89, in Lake County, Illinois.

Parcel 2
That part of Lot 7 in block 12 in original town of Little Fort (Now city of Waukegan) in the Southeast 1/4 of section 21, Township 45 North, range 12 East of the third principal meridian, described as follows: commencing on the south line of Lot 7 at a point 66 feet East of the southwest corner of said Lot; running thence east 20 feet; thence north 69 feet; thence West 20 feet; and thence south 69 feet to the point of beginning, in Lake County Illinois.

Parcel 3
That part of Lot 7 in block 12 in the original town of Little Fort, (Now the City of Waukegan), described as follows, to-wit: commencing at a point on the south line of Lot 7 in block 12, which point is 2 feet west of the Southeast corner of said Lot, as originally platted; thence West on said South line of said Lot, 49-28/100 feet, more or less, to a point 86 feet East of the Southwest corner of said Lot; Thence North Parallel to the West line of said lot to the north line thereof; thence East on said North line of said Lot to a point 2 feet West of the Northeast corner of said Lot, as originally platted, and thence South parallel to the East line of said lot to the place of Beginning, (except all rights which the City of Waukegan may have acquired by condemnation proceedings or otherwise in the East 6 feet of the property for alley purposes), situated in Lake County, Illinois.

Parcel 4
The South 35 feet of Lot 4 (except the West 8 feet thereof taken for Alley; Lot 5 (except a strip therefrom described as follows: commencing 8 feet East of the Northwest Corner of Said Lot 5; Thence South parallel to the West line to a point 120 feet North of the South line of Lot 6; thence West 4 feet; thence South parallel to the West line of said Lot 5 to the South line thereof; thence West 4 feet to the Southwest cornered of said Lot 5; thence North to the Northwest corner of said Lot 5; thence East to the point of beginning; and Lot 6 (except the West 4 feet thereof; all in block 12 in the original town of Little Fort (now City of Waukegan), in Lake County, Illinois.

Parcel 5
The East 80 feet of Lot 1 (as measured on the North line) in block 17 in original town of Little Fort (Now City of Waukegan) in the Southeast 1/4 of section 21, Township 45 North, range 12 East of the Third principal meridian, according to the plat thereof recorded May 26, 1841 in book “A” of deeds, page 89, in Lake Country, Illinois.

Parcel 6
That part of Lot 1 in block 17 in the original town of Little Fort (now City of Waukegan) in the Southeast quarter of section 21, Township 45 North, Range 12 East of the Third Principal meridian, described

as follows: beginning at a point in the North line of said Lot, said point being 20 feet easterly of the Northwest corner of said Lot; thence easterly along the North line of said Lot to a point which is 92 feet West of the Northeast corner of said Lot; thence Southerly parallel with the West line of said lot a distance of 60 feet; thence Westerly parallel to the North line of said Lot to a point 20 feet East of the West line of said Lot; thence Northerly parallel to the West line of said Lot a distance of 60 feet to the point of beginning, in Lake County, Illinois.

Parcel 7
The West 20 feet of the North 60 feet of Lot 1 in Block 17 in the original town of Little Fort (now City of Waukegan) in the Southeast quarter of Section 21, Township 45 North, range 12 East of the third principal meridian, in Lake County, Illinois.

Parcel 8
Those parts of Lots 7 and 8 in clock 17 in the original town of Little Fort (now City of Waukegan) in the Southeast quarter of section 21, township 45 North, range 12, East of the 3 P.M., described as follows, to-wit; beginning at the Northeast corner of said Lot 8; thence West along the North line of said Lot 8, 34 feet and 3 inches to the East line of premises conveyed by Fanny Searls Gradle to Robert M. Ingalls, et al, by deed recorded August 1, 1913 as document 148622; thence South along said East line, 27.23 feet to the Southeast corner thereof; thence West 104 feet to the West line of said Lot 8; thence South along the West line of said Lot 8, 42 feet to the Southwest corner of said Lot 8; thence East along South line of said Lot 8, 35 feet; Thence South parallel with West line of said Lot 7 to the South line of said lot 7; thence East along the South line of said Lot 7 45 feet, more or less to a point 57 feet West of the Southeast Corner of said Lot 7; thence North parallel with the East line of said Lot 7 to the North line of said Lot 7; thence East along the North line of said Lot 7 to a point being on a line parallel with and 33 feet West of the East line of said Lot 7; thence South along the last described line from the last described point, 3.28 feet; thence East 0.70 feet to the Southwest corner of an existing three story brick wall; thence continuing East along the South face of said wall, 1.4 feet; thence North along the East face of said wall, 0.49 feet; thence East along the South face of said wall; 30.90 feet to the East Line of said Lot 7; thence North along the East line of said Lots 7 and 8, 71.87 feet to the place of beginning; in Lake County, Illinois.

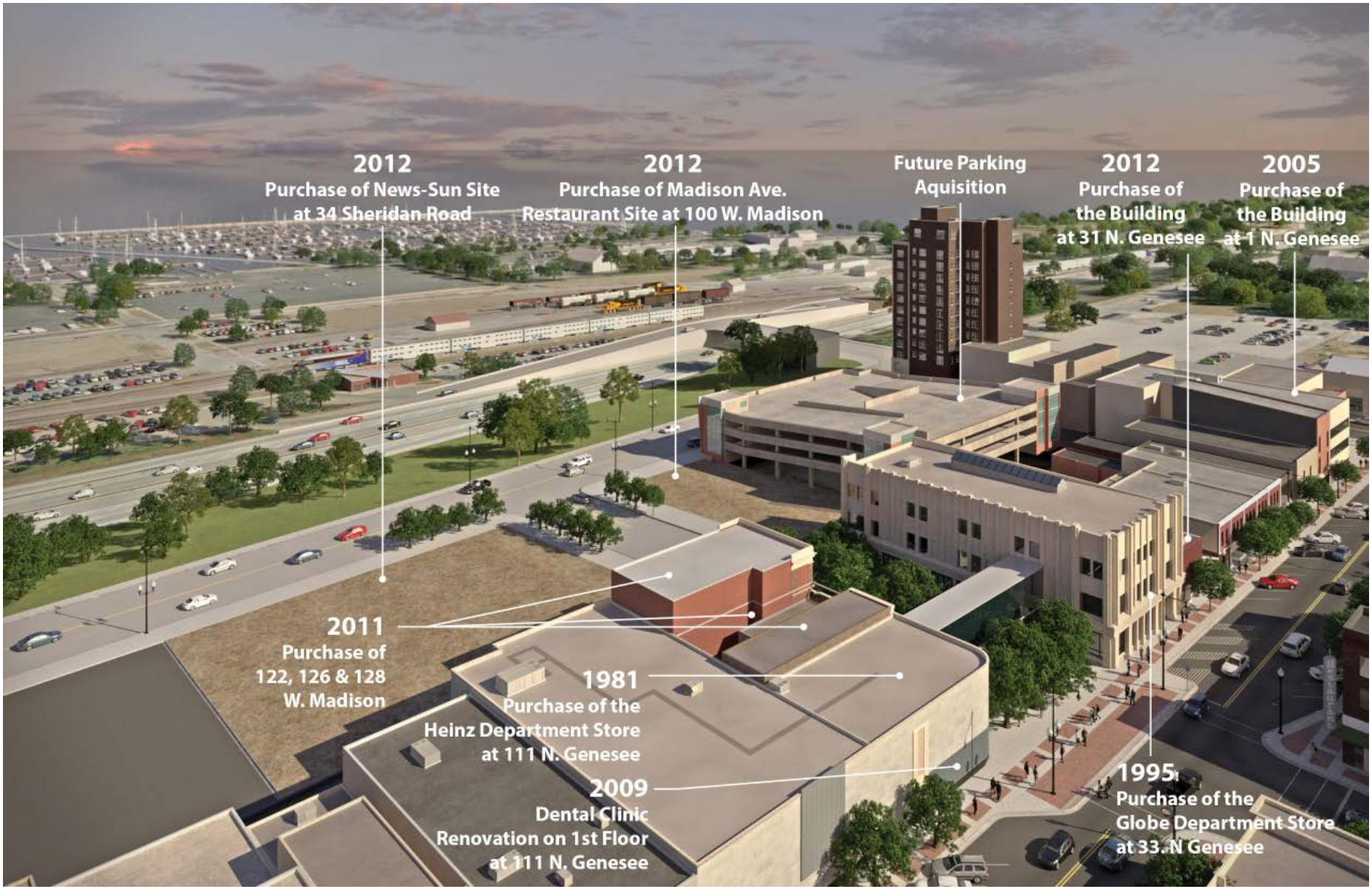
The West thirty-five (35) feet of Lot seven (7) in block seventeen (17) in the original town of Little Fort (now City of Waukegan), being a subdivision of part of the Southeast Quarter of Section 21, Township 45 North, range 12, East of the third principal meridian, in Lake County, Illinois.

The Campus is currently comprised of three separate buildings, 1 N. Genesee St., 33 N. Genesee Street and 111 N Genesee Street, a small bituminous asphalt parking lot, children center's playground, sidewalks, roadways, trees, shrubs and lawn spaces located sporadically throughout. Cast in place concrete walkways cover the sidewalks at the perimeter of the buildings and provide pedestrian access between the building, to the parking lots and to the parking garage located outside of the campus boundary.

There is an existing three-story parking garage (Lots 2, 3, and 4) located outside of the project boundary that is artificially lit by pole and wall mounted luminaries. The garage is currently leased by the College of Lake County to provide sufficient student, staff and visitor parking. This parking garage contains approximately 200 painted parking stalls, 18 of which are designated as ADA spaces. The small, open parking lot is situated immediately north of the parking garage and east of the 111 N. Genesee St. and 33 N. Genesee buildings (Parcel 6). This parking lot contains approximately 12 painted parking stalls, three of which are designated as ADA spaces. Both parking garage and the parking lot are accessible from the Sheridan Road.

Stormwater runoff from the area within the project boundary is currently being collected with an underground storm sewer system and is being diverted off-site into the municipal storm water system. The storm lines vary in size and consist of either reinforced concrete piping, PVC or ductile iron piping.

EXISTING CONDITIONS
LAKESHORE CAMPUS HISTORY DIAGRAM



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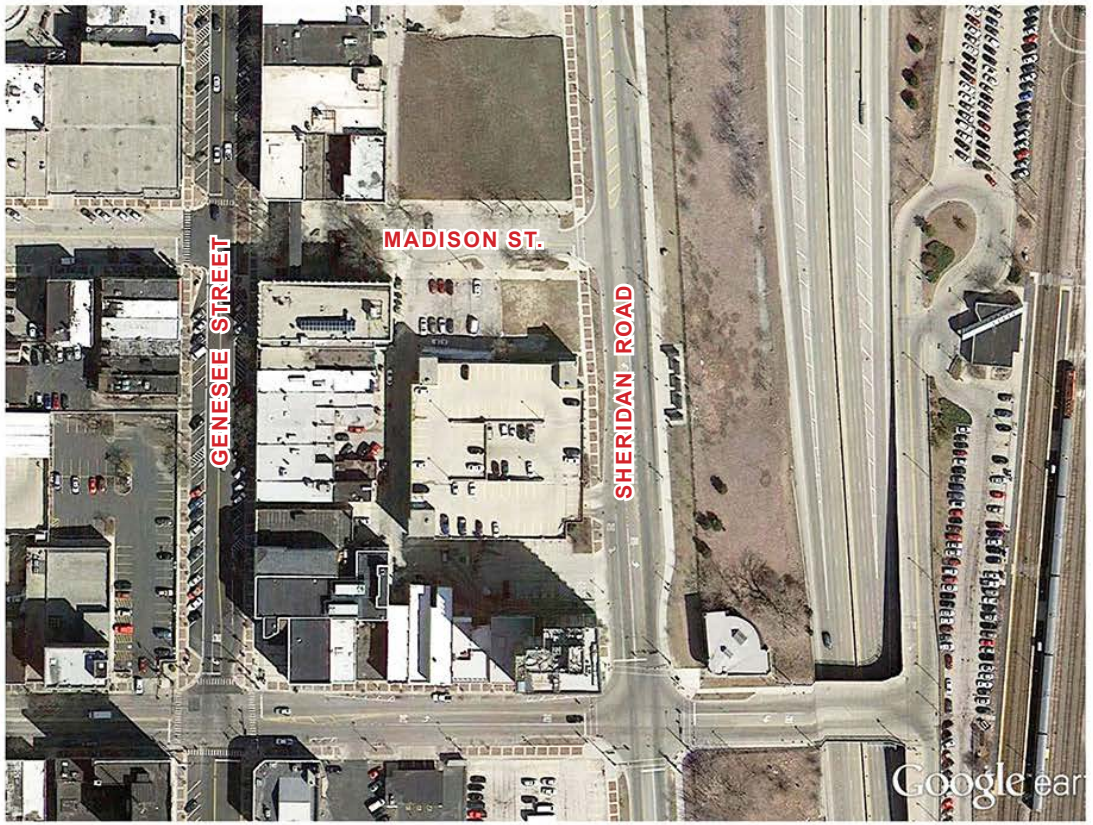
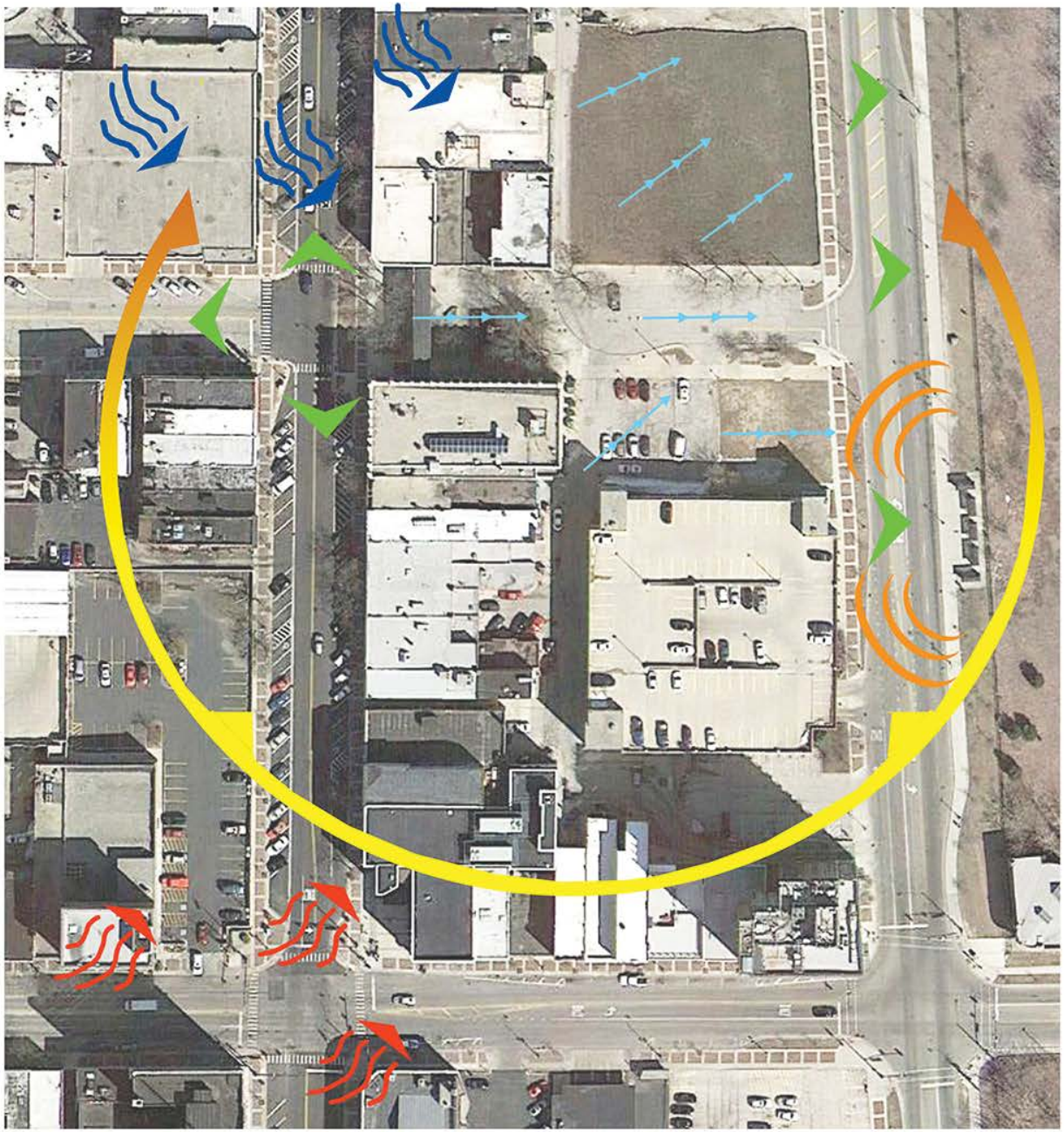
EXISTING SITE ANALYSIS DIAGRAMS
SITE CONTEXT



SITE CONTEXT & VERNACULAR

EXISTING SITE ANALYSIS DIAGRAMS
REGION & CLIMATE ANALYSIS



REGION & CLIMATE ANALYSIS

- SOLAR PATH
- PREVAILING WINDS
- NOISE
- WATERSHED
- VIEWS FROM SITE

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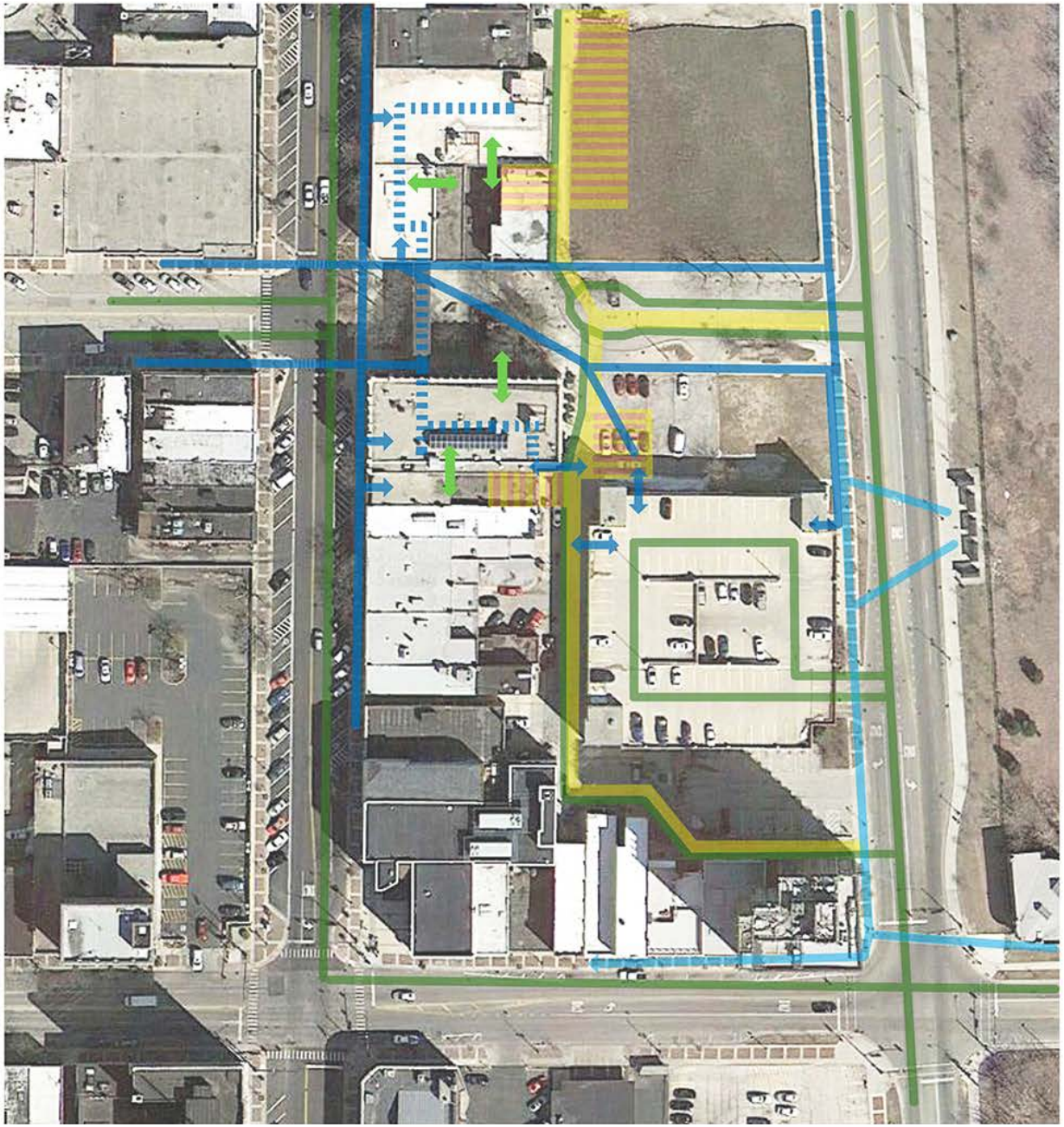
EXISTING SITE ANALYSIS DIAGRAMS
SITE ACCESS & CIRCULATION



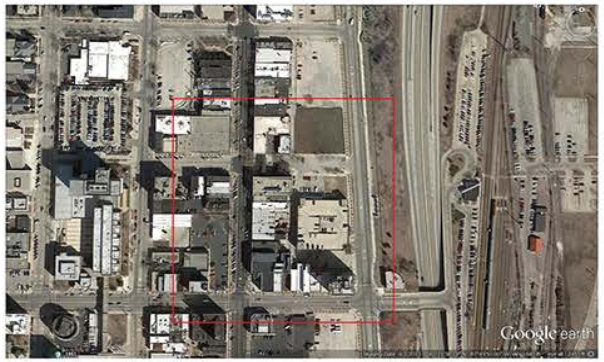
SITE ACCESS & CONNECTIVITY

- PEDESTRIAN MOVEMENT
- POSSIBLE INTERIOR CONNECTIONS OF EXISTING BUILDINGS
- PEDESTRIAN FROM TRANSIT
- SERVICE DRIVES & ACCESS
- NEW SERVICE ZONES
- VEHICULAR CIRCULATION

EXISTING SITE ANALYSIS DIAGRAMS
SITE COMPARISON & GENESEE ST. ACTIVATION

GENESEE & MADISON STREET ACTIVATION

- PRIME PROGRAM LOCATION TO ACTIVATE GENESEE ST AND MADISON ST (URBAN QUAD)
- EXISTING EXTERIOR FACADE RENOVATION
- POSSIBLE EXISTING FACADE PRESERVATION
- URBAN QUAD / PUBLIC PLAZA (MADISON ST.)
  - CONNECTION TO CITY, TRANSIT AND LAKE
- NORTH TOWER OPTION
  - LARGER LAKE SIDE PLAZA
  - PLAZA RETAINS MAXIMUM SOLAR EXPOSURE
  - ALLOWS FOR A FLEXIBLE FLOOR PLATE SIZE
  - ALLOWS FOR MAXIMUM PASSIVE SOLAR STRATEGY
- SOUTH TOWER OPTION
  - RETAINS CONTIGUOUS NORTH PROPERTY
  - CLOSER CONNECTION TO PARKING GARAGE



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EXISTING SITE ANALYSIS DIAGRAMS
SITE SHADOW STUDY COMPARISON

SPRING / FALL EQUINOX
MARCH 21, SEPTEMBER 21

SUMMER SOLSTICE
JUNE 21

WINTER SOLSTICE
DECEMBER 21

NORTH TOWER

9 AM

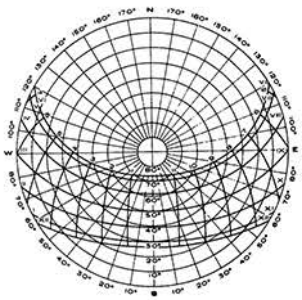
12 PM

SOUTH TOWER

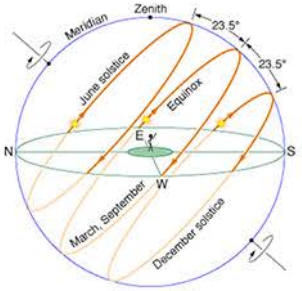
9 AM

12 PM

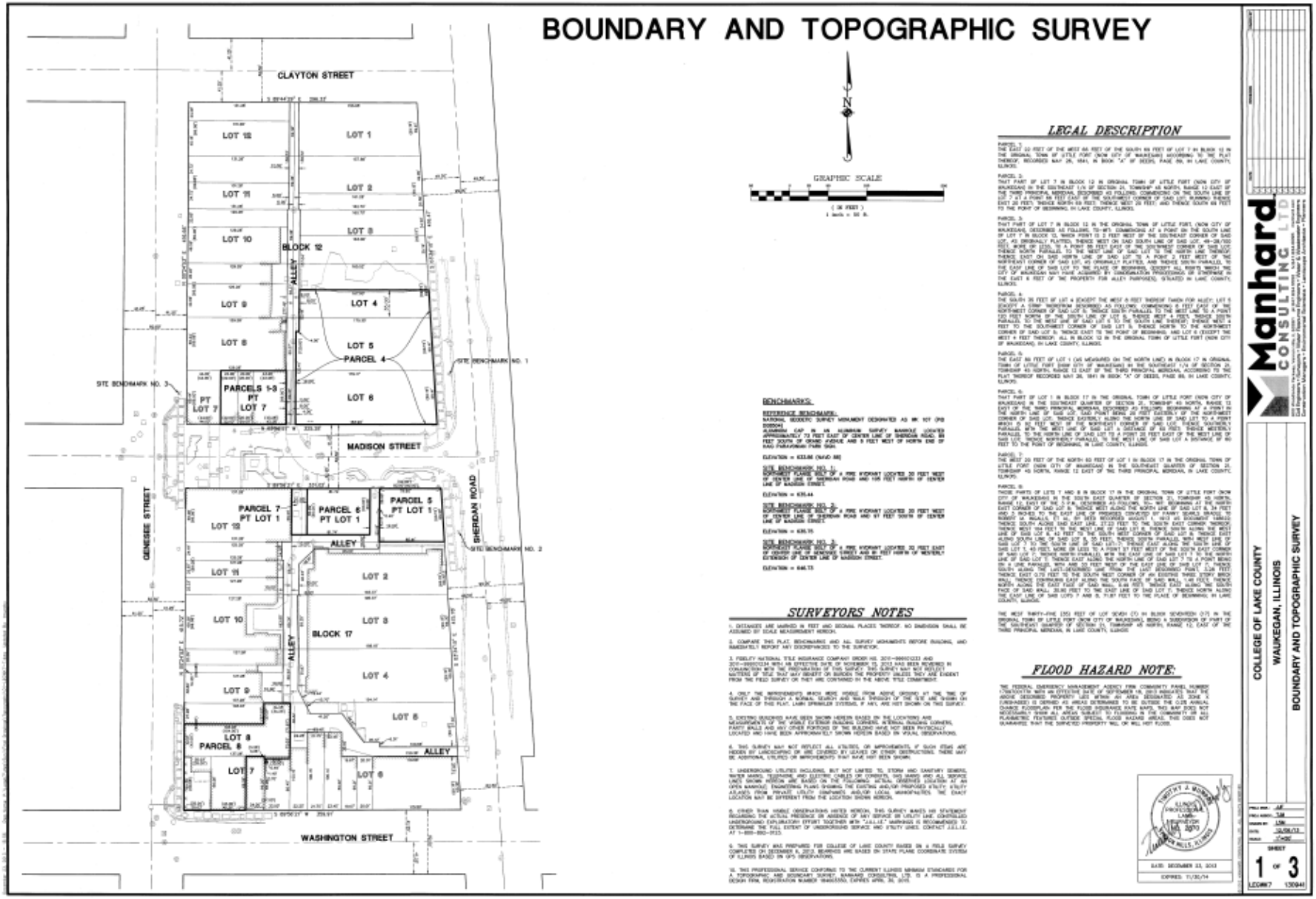
TOWER SHADOW STUDY



42 DEGREES N, LATITUDE



EXISTING CONDITIONS
EXISTING SITE CONDITIONS TOPOGRAPHIC SURVEY



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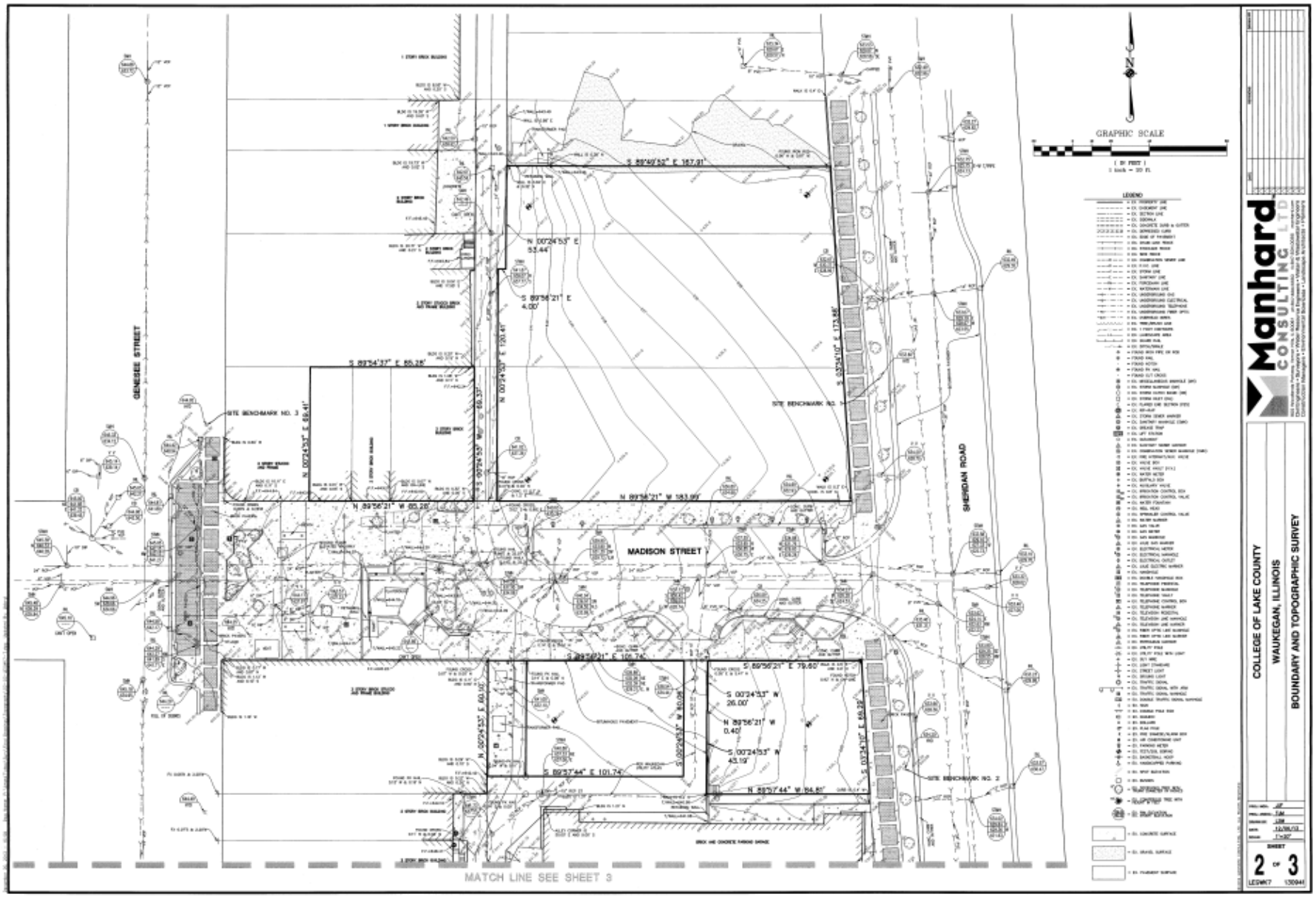
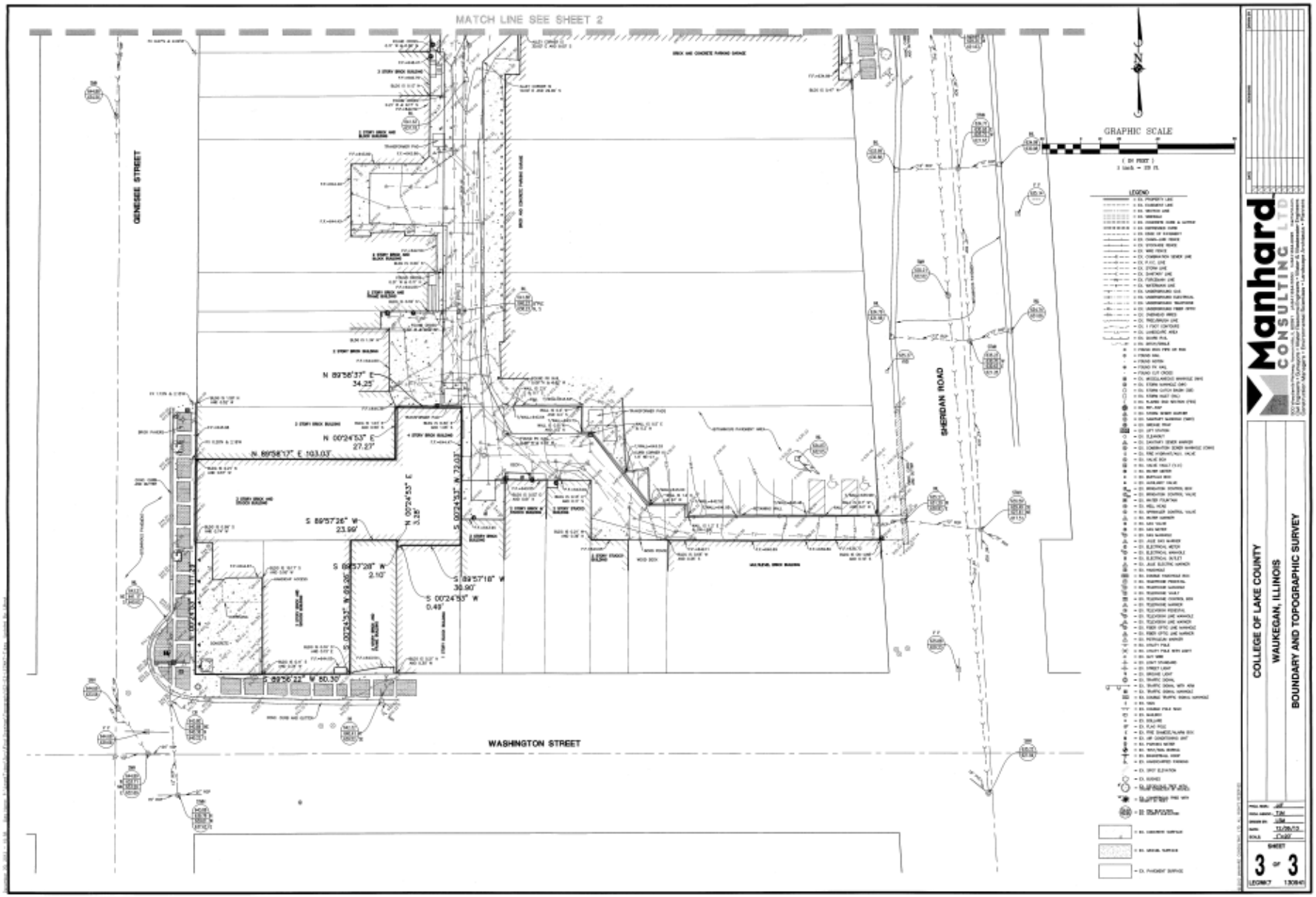

GENESEE STREET
MADISON STREET
SHERIDAN ROAD
GRAPHIC SCALE
LEGEND
MATCH LINE SEE SHEET 3
Manhard CONSULTING LTD
COLLEGE OF LAKE COUNTY
WAUKEGAN, ILLINOIS
BOUNDARY AND TOPOGRAPHIC SURVEY
SHEET 2 OF 3

EXISTING CONDITIONS
EXISTING SITE CONDITIONS TOPOGRAPHIC SURVEY



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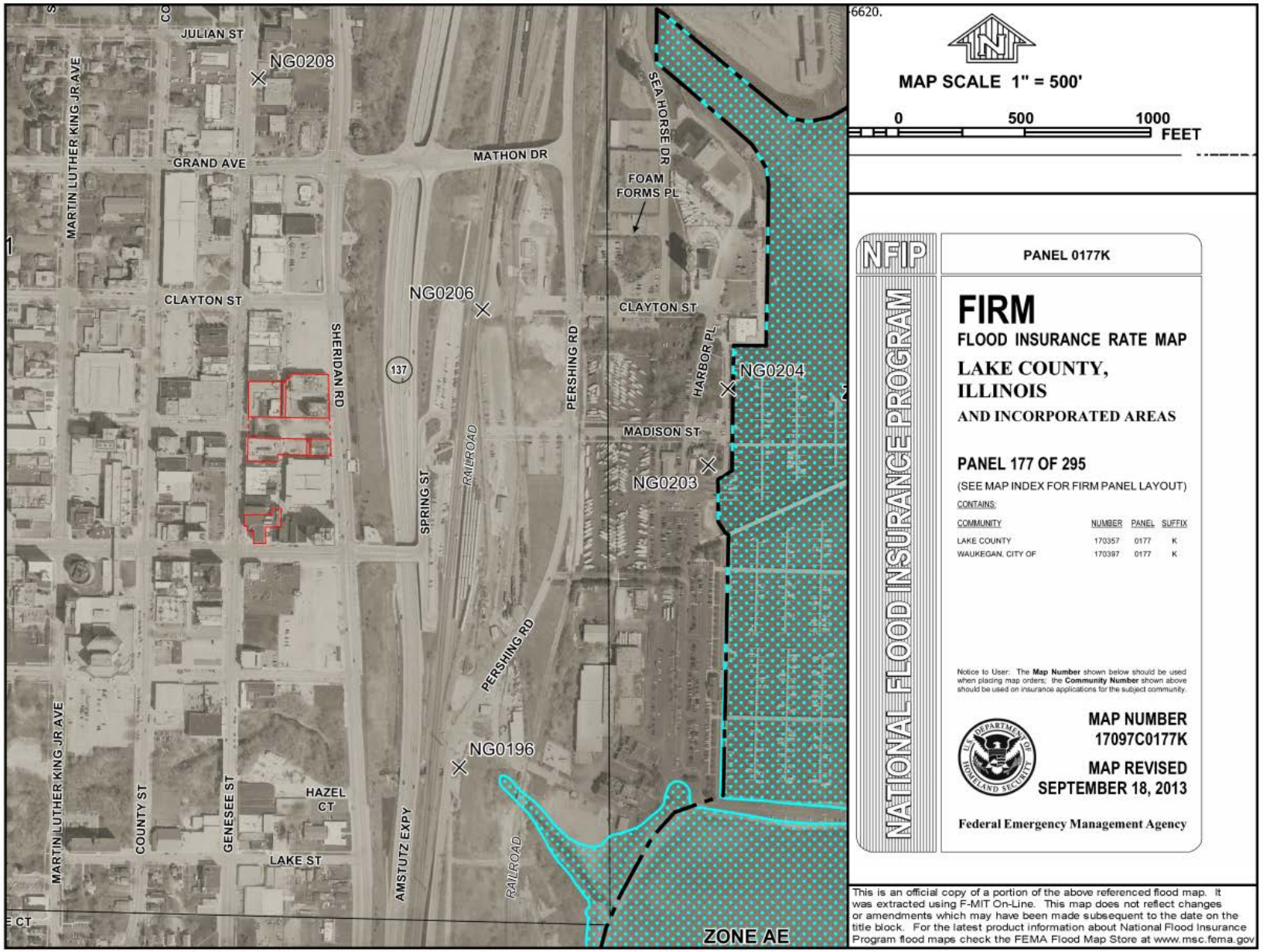
FLOOD PLAIN COMPLIANCE DOCUMENTATION



INTRODUCTION

College of Lake County Facilities Department has on file an extensive record of historical sampling data, inspection reports and abatement management plans prepared for all existing buildings at their Lakeshore Campus located in downtown Waukegan, Illinois. The buildings currently in use were inspected and abated prior to earlier renovation and use. The records were collected, scanned and are available for review electronically.

111 N. GENESEE STREET

Building	Date	Document	Consultants
111 N. Genesee Street	1989	Inspection Report	ARC, Inc.
	1989	Management Plan	ARC, Inc.
	2008	Asbestos PM Report	TEM, Inc.

SUMMARY

In 1989, ARC, Inc. completed an extensive inspection of 111 N. Genesee Street property. 21 samples were collected and tested for asbestos, which was found contained in electric panels and fire doors. The report indicates all fire doors and electrical panels should be assumed to be asbestos containing building material (ACBM). Response action was classified as Operations and Maintenance (O&M) only. In all other areas, bulk samples indicated that the materials contained less than 1% asbestos content and as such further hazard assessment was not necessary. In 2008, TEM, Inc. managed asbestos abatement project completed by Holian Asbestos Removal and Encapsulation Corp. They completed abatement in the building at which time 225 sq.ft. of non-friable floor tile and mastic were removed in rooms N109 and N112A. The following suspect asbestos materials will need sampled and if found to be positive will need to be abated prior to renovation activities:

- -12” x 12” Floor Tile and Mastic
- -Vinyl Baseboard and Mastic
- -2’ x 4’ Lay-In Ceiling Tile
- -Carpet Mastic
- -Expansion Joint Insulation
- -Drywall
- -Drywall Joint Compound
- -Spray-on Fireproofing

A visual inspection is recommended prior to any renovation to confirm if any asbestos remains in the building at previously identified locations. We recommend collecting three additional samples of the above suspect materials to determine if the material contains asbestos.

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33 N. GENESEE STREET

Building	Date	Document	Consultants
33 N. Genesee Street	N/A	N/A	N/A

SUMMARY

No historical sampling data was provided. The following suspect asbestos materials will need sampled and if found to be positive will need to be abated prior to renovation activities.

- -12” x 12” Floor Tile and Mastic
- -Vinyl Baseboard and Mastic
- -2’ x 4’ Lay-In Ceiling Tile
- -Carpet Mastic
- -Expansion Joint Insulation
- -Drywall
- -Drywall Joint Compound
- -Spray-on Fireproofing

A visual inspection is recommended prior to any renovation to confirm if any asbestos remains in the building at previously identified locations. We recommend collecting three additional samples of the above suspect materials to determine if the material contains asbestos.

31 N. GENESEE STREET

Building	Date	Document	Consultants
31 N. Genesee Street	2012	Asbestos Bulk Sampling Report	EGLS

SUMMARY

In 2010 EGLS performed asbestos inspection and bulk sampling of 31 N. Genesee Street property. The historical sampling data is on file. The building is currently planned for demolition. The following suspect asbestos materials were found to be positive and will need to be abated prior to renovation activities:

- -Floor Tile and Mastic
- -Vinyl Baseboard and Mastic
- -Lay-In Ceiling Tile
- -Expansion Joint Insulation
- -Drywall
- -Drywall Joint Compound
- -Spray-on Fireproofing

EXISTING CONDITIONS
ASBESTOS ABATEMENT REPORT/EXECUTIVE SUMMARY

1 N. GENESEE STREET

Building	Date	Document	Consultants
1 N. Genesee Street	2002	Inspection Report	TEM, Inc.

SUMMARY

In 2002 TEM, Inc. performed an extensive asbestos inspection of 1 N. Genesee Street property. 250 samples were collected and tested for asbestos. In late 2002, Holian Asbestos Removal and Encapsulation Corp. completed abatement in the building at what time all of the asbestos identified in the original inspection were removed.

It is reasonable to conclude that there would not be much asbestos (if any) left at 1 N. Genesee St. property. A visual inspection will be required prior to any renovation to confirm if any asbestos remains in the building. At this point in time, no renovation work is anticipated at 1 N. Genesee Street building.

128 W MADISON STREET

Building	Date	Document	Consultants
128 W Madison Street	2010	Asbestos Bulk Sampling Report	EGLS

SUMMARY

In 2010 EGLS performed asbestos inspection and bulk sampling of 128 W Madison Street property. The historical sampling data is on file. The building is currently planned for demolition. The following suspect asbestos materials were sampled and found to be positive and will need to be abated prior to demolition activities.

- 9” x 9” Vinyl Floor Tile and Mastic

126 W MADISON STREET

Building	Date	Document	Consultants
126 W Madison Street	2010	Asbestos Bulk Sampling Report	EGLS

SUMMARY

In 2010 EGLS performed asbestos inspection and bulk sampling of 126 W Madison Street property. The historical sampling data is on file. The building is currently planned for demolition. The following suspect asbestos materials were sampled and found to be positive and will need to be abated prior to demolition activities.

-9” x 9” Vinyl Floor Tile and Mastic

122 W MADISON STREET

Building	Date	Document	Consultants
122 W Madison Street	2010	Asbestos Bulk Sampling Report	EGLS

SUMMARY

In 2010 EGLS performed asbestos inspection and bulk sampling of 122 W Madison Street property. The historical sampling data is on file. The building is currently planned for demolition. The following suspect asbestos materials were sampled and found to be positive and will need to be abated prior to demolition activities.

-9” x 9” Vinyl Floor Tile and Mastic

EXISTING CONDITIONS
PHASE I ENVIRONMENTAL REPORT/EXECUTIVE SUMMARY

INTRODUCTION

College of Lake County Facilities Department has on file an extensive record of historical use data, including Phase I Environmental and Phase II Environmental reports prepared for all existing buildings comprising the Lakeshore Campus located in downtown Waukegan, Illinois. The buildings which are currently in use were inspected prior to purchase and initial remodeling. The available records were collected, scanned and are available for review electronically. For reasons of brevity, we are providing limited executive summary for newly acquired properties.

111 N. GENESEE STREET

Building	Document
111 N. Genesee Street	Phase I Environmental Report

SUMMARY

Building was purchased by the College of Lake County in 1981, at which time Phase I and/or Phase II Environmental investigation was completed. Based on the available data, there was no indication that any chemicals of concern were detected.

33 N. GENESEE STREET

Building	Document
33 N. Genesee Street	Phase I Environmental Report

SUMMARY

Building was purchased by the College of Lake County in 1995, at which time Phase I and/or Phase II Environmental investigation was completed. Based on the available data, there was no indication that any chemicals of concern were detected.

31 N. GENESEE STREET

Building	Document
31 N. Genesee Street	Phase I Environmental Report Phase II Environmental Report

SUMMARY

Environmental Group Services, Limited (EGSL) of Chicago, Illinois was contracted by College of Lake County to perform a Phase I Environmental Assessment of the Property located at 31 North Genesee Street, Waukegan, Illinois (herein referred to as the Subject Property or the Site).

The Subject Property investigation consisted of reviewing environmental regulatory databases of the Illinois Environmental Protection Agency (IEPA), the United States Environmental Protection Agency (USEPAP), the Office of the State Fire Marshal (OSFM), and the Illinois Emergency Management Agency and local government agencies, reviewing historical information, and conducting a site assessment. The purpose of this investigation was to identify areas of environmental concern associated with the Site.

The Subject Property consists of a rectangular shaped parcel which is approximately 3,000 square feet in size and currently contains a two-story rectangular shaped building with basement (Subject Building) that is approximately 7,488 square feet in size. The western portion was constructed prior to 1885, and an eastern addition in 1959. The Subject Building has been vacant for approximately 3-5 years. According to historical Sanborn Maps, the Subject Property was utilized as a grocer and as a dentist office from 1885-1917.

EGSL recognized the following environmental concerns in connection with the Subject Property, as defined by the American

Society of Testing and Materials Standard E 1527-05, “Standard Practice for Environmental Site Assessments”:

> Based on the age of the Subject Building, suspect lead based paint and suspect asbestos containing building materials are considered environmental concerns; as such, EGSL performed asbestos and lead based paint survey throughout the Subject Building. According to the analytical results, multiple sampled surfaces such as floor tiles, joint compound, and ceiling surfacing materials contained asbestos content greater than 1%. Additionally, multiple painted surfaces contained paint with lead content above 1.0 mg/cm2, which is the current regulatory level for confirmation of lead based paint.
> The 1906-1924 historical Sanborn Maps indicates printing operations took place at the south adjacent property.

On December 4, 2012, EGSL advanced three soil borings at the Subject Property in order to address the historical adjacent printing operations. Three soil samples were submitted to First Environmental Laboratories Inc. for analysis. According to laboratory results, no chemicals of concern were detected above IEPA Tier 1 Remediation Objectives; therefore, there are no further recommendations at this time in regards to the surface soil.

Based on the asbestos and lead based paint analytical results, EGSL recommends that any disturbance to the asbestos containing building materials and/or lead based paint must be done by licensed abatement contractors in accordance with all federal, state and local regulations. Refer to Section 2.6 Sample Collections for asbestos containing materials and lead based paint locations.

1 N. GENESEE STREET

Building	Document
1 N. Genesee Street	Phase I Environmental Report

SUMMARY

Building was purchased by the College of Lake County in 2005, at which time Phase I and/or Phase II Environmental investigation was completed. Based on the available data, there was no indication that any chemicals of concern were detected.

128 W MADISON STREET

Building	Document
128 W Madison Street	Phase I Environmental Report Phase II Environmental Report

SUMMARY

Environmental Group Services, Ltd. (EGSL) completed a Phase II Subsurface Soil Investigation and Ground Penetrating Radar (GPR) Survey at the property located at 128 W. Madison St., Waukegan, Illinois, hereinafter referred to as the “Subject Property”. This investigation was performed in accordance with the regulations set forth in 35 IAC 740 (Site Remediation Program, (SRP)) and 35 IAC 742 (Tiered Approach to Corrective Action Objectives (TACO)), Tier 1, for Industrial/Commercial and Residential properties.

EGSL conducted a Phase I Environmental Site Assessment for the Subject Property on February 23, 2010. According to the report, the following environmental concerns were identified:

> Two, 538 gallon heating oil underground storage tanks, (USTs) were associated with 122 W. Madison St. The two USTs were located in a vault beneath the sidewalk directly south of the 122 W. Madison Building and were removed in 2005. EGSL visited the City of Waukegan Fire

Department and obtained photographs of the tank removal activities. According to Fire Department personnel, the presence of similar vaulted tank areas associated with 128 W. Madison St. was possible due to the ages of the buildings and the Fire Department's experience with the USTs in that area. It should be noted that EGSL personnel observed capped and exposed piping protruding from the southern interior basement wall of the Subject Building.

110-116 W. Madison Street, located east of the Subject Building, was historically utilized for newspaper printing operations dating back to 1929, and automobile repairs in 1924.

Based on the above-referenced environmental concerns, EGSL conducted a GPR Survey and Phase II Subsurface Soil Investigation at the Subject Property.

On June 11, 2010, EGSL preformed a GPR Survey along with the public sidewalk area south of the Subject Property. Results of the GPR Survey did not identify any anomalies representative of a possible vaulted area and/or UST systems.

On June 11, 2010, EGSL advanced one soil boring along the southern interior of the basement of the Subject Property. One sample was submitted to STAT Analysis Corporation (STAT) for analysis of Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), and Polynuclear Aromatic Hydrocarbons (PNAs).

According to the laboratory results, no chemicals of concern were detected above the IEPA Tier 1 Remediation Objectives; as such, there are no further recommendations in regards to the subsurface soil at this time.

126 W MADISON STREET

Building	Document
126 W Madison Street	Phase I Environmental Report Phase II Environmental Report

SUMMARY

Environmental Group Services, Ltd. (EGSL) completed a Phase II Subsurface Soil Invention and Ground Penetrating Radar (GPR) Survey at the property located 126 W. Madison St., Waukegan, Illinois, hereinafter referred to as the "Subject Property". This Investigation was performed in accordance with regulations set forth in 35 IAC 740 (Site Remediation Program, (SRP)) and 35 IAC 742 (Tiered Approach to Corrective Action Objectives (TACO)), Tier 1 for Industrial/Commercial and Residential properties.

EGSL conducted a Phase I Environmental Site Assessment for the Subject Property on February 23, 2010. According to the report, the following environmental concerns were identified:

Two, 538 Gallon heating oil underground storage tanks (USTs) were associated with 122 W. Madison St. The two USTs were located in a vault beneath the sidewalk directly south of the 122 W. Madison Building and were removed in 2005. EGSL visited the City of Waukegan Fire Department and obtained photographs of the tank removal activities. According to Fire Department personnel, the presence of similar vaulted tank areas associated with 126 W. Madison St. was possible due to the ages of the buildings and the Fire Department's experience with USTs in that area. It should be noted that EGSL personnel observed capped and exposed piping protruding from the southern interior basement wall of the Subject Building.

110-116 W. Madison Street, located east of the Subject Building, was historically utilized for newspaper printing operations dating back to 1929, and automobile repairs in 1924.

Based on the above-referenced environmental concerns, EGSL conducted a GPR Survey and Phase II Subsurface Soil Investigation at the Subject Property.

On June 8, 2010, EGSL performed a GPR Survey along the public sidewalk area south of the Subject Property. Results of the GPR Survey indicated anomalies representatives of the possible vaulted or trenched area and three possible utility pipes. The piping anomalies coincided with paint markings that were resultant of a public utility locate request. No anomalies representative of a UST system were identified.

On June 8, 2010, EGSL advanced one soil boring along the southern interior of the Subject Building. One Sample was submitted to STAT Analysis Corporation (STAT) for analysis of Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), and Polynuclear Aromatic Hydrocarbons (PNAs).

According to the laboratory results, no chemicals of concern were detected above IEPA Tier I Remediation Objectives; as such, there are no further recommendations in regards to the subsurface soil at this time.

122 W MADISON STREET

Building	Document
122 W Madison Street	Phase I Environmental Report Phase II Environmental Report

SUMMARY

Environmental Group Services, Ltd. (EGSL) completed a Phase II Subsurface Soil Investigation at the property located 122 W. Madison St., Waukegan, Illinois, hereinafter referred to as the “Subject Property”. This investigation was performed in accordance with the regulations set forth in 35 IAC 740 (Site Remediation Program, (SRP)) and 35 IAC 742 (Tiered Approach to Corrective Action Objectives (TACA)), Tier 1, for Industrial/ Commercial and Residential properties.

EGSL conducted a Phase I Environmental Site Assessment for the Subject Property on February 23, 2010. According to the report, the following environmental concerns were identified:

> Two, 538 gallon heating oil underground storage tanks (USTs) were associated with 122 W. Madison St. The two USTs were located in a vault beneath the sidewalk directly south of the Subject Building and were removed in 2005. Office of the State Fire Marshal (OSFM) personnel on-site at the time of the UST removal indicated that no LUST incident was required to be reported.
>
> 110-116 W. Madison Street, located east of the Subject Building, was historically utilized for newspaper printing operations dating back to 1929 and automobile repairs in 1924.

Based on the above-referenced environmental concerns, EGSL conducted a Limited Phase II Subsurface Soil Investigation at the Subject Property.

On October 1, 2010, EGSL advanced two soil borings within the basement of the Subject Building. Two samples were submitted to STAT Analysis Corporation (STAT) for analysis of Volatile Organic Compounds (VOCs), Semi Volatile Organic Compounds (SVOCs), and Resource Conservation & Recovery Act (RCRA Metals (+pH)).
According to the laboratory results, no chemicals of concern were detected above IEPA Tier 1 Remediation Objectives; as such, there are no further recommendations in regards to the subsurface soil at this time.

EXISTING CONDITIONS
SOIL BORING REPORT

PRELIMINARY REPORT OF

SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING ANALYSIS

COLLEGE OF LAKE COUNTY LAKESHORE CAMPUS EXPANSION
WEST MADISON STREET AND NORTH SHERIDAN ROAD
WAUKEGAN, ILLINOIS

ECS PROJECT NO. 16:9829

FOR

LEGAT ARCHITECTS
CHICAGO, ILLINOIS

DECEMBER 19, 2013

ECS MIDWEST, LLC
Geotechnical • Construction Materials • Environmental • Facilities
"Setting the Standard for Service"

December 19, 2013

Mr. Vuk Vujovic
Legat Architects
651 West Washington Boulevard
Suite One
Chicago, Illinois 60661
Email: vvujovic@legat.com

ECS Project No. 16:9829

Reference: Preliminary Report of Subsurface Exploration and Geotechnical Engineering Services, College of Lake County Lakeshore Campus Expansion, West Madison Street and North Sheridan Road, Waukegan, Illinois

Dear Mr. Vujovic:

As authorized by your acceptance of our Proposal Nos. 16:11944 (dated November 27, 2013) and 16:11986 (dated December 12, 2013), ECS Midwest, LLC (ECS) has completed the subsurface exploration and geotechnical engineering analyses for the proposed expansion to the College of Lake County (CLC) Lakeshore campus located at the intersection of West Madison Street and North Sheridan Road in Waukegan, Illinois.

A report, including the results of our subsurface exploration, boring data, laboratory testing, recommendations regarding the geotechnical engineering and construction aspects for the project and a Boring Location Plan are enclosed herein. The recommendations presented herein are intended for use by your office and for use by other professionals involved in the design and construction stages of the project.

We appreciate the opportunity to be of service to Legat Architects on this project. If you have questions with regard to the information and recommendations contained in this report, or if we may be of further service to you during the planning and/or construction phase of this project, please do not hesitate to contact the undersigned.

Respectfully,

ECS MIDWEST, LLC

ROBERT B. CONDON
062-065105
LICENSED
PROFESSIONAL
ENGINEER
STATE OF ILLINOIS

Robert B. Condon, P.E.
Senior Project Engineer
Renews 11/13/2015

Brett Olsson, P.E.
Senior Principal Engineer

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PRELIMINARY REPORT

PROJECT

Subsurface Exploration and
Geotechnical Engineering Analysis
College of Lake County Lakeshore Campus Expansion
West Madison Street and North Sheridan Road
Waukegan, Illinois

CLIENT

Legat Architects
651 West Washington Boulevard
Suite One
Chicago, Illinois 60661

SUBMITTED BY

ECS Midwest, LLC
1575 Barclay Boulevard
Buffalo Grove, Illinois 60089

Illinois Professional Design Firm
No. 184-004247

PROJECT #16:9829

DATE December 19, 2013

EXISTING CONDITIONS
SOIL BORING REPORT - EXECUTIVE SUMMARY

The subsurface conditions encountered during our exploration and ECS' conclusions and preliminary recommendations are summarized below. This summary should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned herein. Details of our conclusions and recommendations are discussed in the following sections and in the Appendix of this report.

The project site is located northwest and southwest of the intersection of West Madison Street and North Sheridan Road. The parcel northwest of the intersection (north parcel) is presently undeveloped (grassed); however, the site was previously developed by a multi-story structure (News-Sun building). The parcel southwest of the intersection (south parcel) is developed by a parking lot in the west and a grassed area in the west (former bank). The proposed construction at the project site will consist of new construction and renovations to existing CLC buildings, including two one- to three-story structures which may include a partial below-grade level (TBD). To determine the subsurface conditions at the project site, eight (8) exploratory borings were performed at the project site. The soil conditions encountered at the boring locations are summarized as follows:

The near surface soils at the project site were observed to consist of about 6 to 18 inches of topsoil (B-1 through B-4 and B-3B) or 8 inches of bituminous pavement (B-5). Surficial materials were not identified at boring location B-6 and B-6B. The surficial materials (B-1 through B-5 and B-3B) or the materials at the ground surface (B-6 and B6-B) were observed to consist of FILL soils extending to depths in the range of 3 feet to 12½ feet (or more) below existing site grades. The existing fill soils were observed to typically consist of Fine to Medium Sand with varying amounts of gravel and debris (concrete, bituminous and brick fragments); however, Clayey Silt FILL was observed at boring location B-6. The existing FILL soils were observed to be underlain by natural soils consisting of Fine to Medium SAND, SILT, Sandy SILT and Lean CLAY. The Lean CLAY was typically observed at depths greater than about 32 to 42 feet below existing site grades.

Several borings (B-2, B-4 and B-5) were terminated before the proposed termination depth of the soil borings (i.e., 20 feet) due to auger refusal on an unknown obstruction. Determination of the type and vertical/lateral extents of the encountered obstructions was beyond the scope of work of this exploration.

The existing fill soils were observed to exhibit SPT N-Values in the range of 2 blows per foot (bpf) to 51 bpf, which is indicative of very loose to very dense relative density for granular soils. The elevated blow counts observed in the existing fill soils are likely due to the presence of debris and are not likely indicative of the in-situ relative density of the fill soils. The natural granular soils (sands and silts) were observed to exhibit SPT N-Values in the range of 8 bpf to 46 bpf,
which is indicative of loose to medium dense relative densities for granular soils (typically medium dense). The natural Lean CLAY soils were observed to exhibit unconfined compressive strength values in the range of 3¼ tsf to greater than 4½ tsf (very stiff to hard) and moisture contents in the range of 14 to 16 percent.

Based on the results of the subsurface exploration, we are providing several options for support of the proposed addition: (1) a shallow foundation system after complete removal and replacement of the existing fill soils, (2) a shallow foundation system bearing on soils improved with rammed aggregate, (3) a

shallow foundation system bearing on soils improved with rapid impact compaction or (4) a deep foundation system. Note that ECS' final recommendations will be contingent on the final design (i.e., number of above and below-grade levels and structural loads). ECS should be notified once the design is further along so we can re-evaluate our recommendations and develop final recommendations.

We are providing five different alternatives for support of the floor slab based on subsurface conditions at the project site and the level of risk the project team is willing to accept with respect to the long term performance of the slab. The five options include: (1) complete removal and replacement of existing fill soils (low risk), (2) slab supported on ground improved with aggregate piers (low risk), (3) partial removal of the existing fill soils (i.e., 2 feet) and replacement with granular fill with/without geogrid (moderate risk), (4) partial removal of the existing fill soils (based on a proofroll) and replacement with engineered fill (moderate/high risk) or (5) design of the ground floor slab as a structural slab bearing on grade beams and pile caps.

As this project moves forward, we recommend ECS be retained to review the project drawings and specifications prior to the start of construction to verify that the recommendations detailed herein are followed. We also recommend that ECS be retained during construction of the proposed facility to monitor all earthwork / subgrade preparation and to verify that the exposed subgrade materials will be suitable for support of the proposed addition.

Report Prepared By:

Robert B. Condon, P.E.
Senior Project Engineer

Report Reviewed By:

Brett Gitskin, P.E.
Senior Principal Engineer

EXISTING CONDITIONS
SOIL BORING REPORT - PROJECT OVERVIEW

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering analysis performed for the proposed renovations and additions to the College of Lake County (CLC) Lakeshore Campus located northwest and southwest of the intersection of West Madison Street and North Sheridan Road in Waukegan, Illinois. A General Location Plan, included in the Appendix of this report, shows the approximate location of the project site.

This study was conducted in general accordance with ECS Proposal Nos. 16:11944 (dated November 27, 2013) and 16:11986 (dated December 12, 2013) authorized by your office. In preparing this report, we have utilized information from our current subsurface exploration as well as information from nearby sites.

SITE LOCATION AND EXISTING SITE CONDITIONS

The project sites consist of the parcels located northwest and southwest of the intersection of West Madison Street and North Sheridan Road in Waukegan, Illinois. The two parcels are discussed in more detail below.

NORTH PARCEL

The north parcel is located northwest of the intersection of West Madison Street and North Sheridan Road. The parcel is bound to the north by a bituminous pavement parking lot, to the south by West Madison Street, to the east by North Sheridan Road and to the west by existing multi-story structures and North Genesee Street beyond. The project site is currently undeveloped and is grassed. The site was previously developed by a multi-story structure (News-Sun building) that was demolished at some time after November, 2011. ECS is not aware if the former structure had a below-grade level; however, based on our observations at the borings locations, the former structure likely had one below-grade level. A drawing showing existing site grades was not available at the time this report was written. Based on our review of available on-line resources (i.e., Google Earth®), existing site grades at the north parcel site are anticipated to be in the range of EL. +634 feet to EL. +641 feet.

SOUTH PARCEL

The south parcel is located southwest of the intersection of West Madison Street and North Sheridan Road. The parcel is bound to the north by West Madison Street, to the south by a multi-story parking garage, to the east by North Sheridan Road and to the west by existing multi-story structures and North Genesee Street beyond. The western portion of the project site is currently developed by a bituminous pavement parking lot. Based on our observations at boring location B-5, the western portion of the site may have been developed by a structure having a below-grade level. The eastern portion of the parcel is undeveloped and is grassed; however, the site was previously developed by a one-story structure (bank) that was demolished at some time after November, 2011. A drawing showing existing site grades was not available at the time this proposal was written. Based on our review of available on-line resources (i.e., Google Earth®), existing site grades at the south parcel site are anticipated to be in the range of EL. +635 feet to EL. +641 feet.

PROPOSED CONSTRUCTION

Based on our review of the RFP documents, the proposed construction at the project site will consist of new construction and renovations to existing CLC buildings to accommodate new offices, classrooms and laboratory spaces to support the Student Services, Adult Education and Nursing programs.

The new construction will consist of two one- to three-story structures and may include a partial below-grade level (TBD). The

structures may or may not be integrated with the existing CLC buildings. The finished floor elevation of the proposed structures will approximately match existing site grades and the finished floor elevations of the existing CLC structures. Information regarding the structural loads were not available at the time this proposal was written. Based on our previous experience on similar projects, we anticipate typical column and wall loads will be in the range of 100 to 300 kips and 3 to 6 klf, respectively.

ECS understands the proposed construction is still in the preliminary design phase. Once the design is finalized, it is critical that the design team contact ECS immediately so that we can review the proposed construction and evaluate if the recommendations detailed herein are appropriate for the proposed construction.

PURPOSE OF EXPLORATION AND SCOPE OF WORK

The purpose of this exploration was to explore the subsurface conditions at the project site and to develop preliminary engineering recommendations to guide the geotechnical design and construction aspects of the project. We accomplished these purposes by performing the following scope of services:

1. Reviewing the geotechnical reports prepared for nearby project sites by ECS;

2. Drilling eight (8) soil borings to depths ranging between 7½ and 50 feet below existing site grades using an auger drill rig;

3. Performing laboratory tests on selected representative soil samples from the borings to evaluate pertinent engineering properties;

4. Analyzing the field and laboratory data from this and previous explorations to develop appropriate engineering recommendations;

5. Preparing this geotechnical report of our findings and recommendations.

The conclusions and recommendations contained in this report are based on eight (8) soil borings (designated as Borings B-1 through B-6, B-3B and B-6B) conducted at the project site under ECS' direction. Borings B-1 through B-4 and B-3B were drilled within the north parcel to depths in the range of 12½ to 50 feet below existing site grades. Borings B-5, B-6 and B-6B were drilled within the south parcel to depths in the range of 7½ to 50 feet below existing site grades.

The base scope of work was proposed to consist of six (6) borings drilled to a depth of 20 feet below existing site grades. During performance of the initial six (6) borings, several borings were terminated at a shallower depth due to auger refusal on unknown obstructions. As such, ECS and you (Legat) agreed to perform two (2) additional soil borings at the project site to a depth of 50 feet below existing site grades.

The borings were drilled at accessible locations located within the limits of the proposed additions. The subsurface exploration included split-spoon soil sampling, standard penetration tests (SPT) and groundwater level observations in the boreholes. The results of the completed soil borings along with a Boring Location Plan are included in the Appendix of this report.

The Boring Location Plan was developed utilizing an image from Google Earth®. The borings were located in the field by ECS personnel and the locations are shown on the Boring Location Plan. The elevations shown on the boring logs are based on our interpretation of elevations provided on Google Earth®.

CCDD TESTING

Two CCDD samples have been collected and sent to our subcontracted laboratory for testing. The results of the CCDD testing will be issued under separate cover at a later date.

SUBSURFACE EXPLORATION PROCEDURES

The soil borings were located in the field by ECS at locations selected by the project team. Prior to mobilizing to the project site, ECS' subcontracted driller contacted the State of Illinois Utility One-Call Center, JULIE, to clear and mark underground utilities in the vicinity of the boring locations.

The soil borings were performed with a truck-mounted rotary-type auger drill rig, which utilized hollow-stem augers to advance the boreholes. Representative soil samples were typically obtained at 2½-foot intervals to a depth of 10 feet and at 5-foot intervals thereafter to the termination depth of the borings by means of conventional split-barrel sampling procedures. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through a 12-inch interval, after an initial setting of 6 inches, is termed the Standard Penetration Test (SPT) or N-value and is indicated for each sample on the boring logs. The SPT value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils.

The drill rig utilized an automatic trip hammer to drive the sampler. Consideration of the effect of the automatic hammer's efficiency was included in the interpretation of subsurface information for the analyses prepared for this report.

The drill crew maintained a field log of the soils encountered in the borings. After recovery, each geotechnical soil sample was removed from the sampler and visually classified. Representative portions of each soil sample were then sealed in jars and delivered to our laboratory in Buffalo Grove, Illinois for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with auger cuttings to the existing ground surface.

LABORATORY TESTING PROGRAM

Representative soil samples were selected and tested in our laboratory to check field classifications and to determine pertinent engineering properties. The laboratory testing program included visual classifications, unconfined compressive strength testing of cohesive soil samples utilizing a calibrated pocket penetrometer and moisture content determinations of cohesive soil samples.

Each soil sample was classified on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report. The various soil types were grouped into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; in-situ, the transitions may be gradual.

Unconfined compressive strength tests were performed on cohesive soil samples with the use of a calibrated hand penetrometer. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 4½ tons per square foot (tsf), by measuring the resistance of a soil sample to penetration of a small, calibrated spring-loaded cylinder.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

EXPLORATION RESULTS

SOIL CONDITIONS

A total of eight (8) soil borings (designated as Borings B-1 through B-6, B-3B and B-6B) were conducted at the project site under ECS' direction. Borings B-1 through B-4 and B-3B were drilled within the north parcel to depths in the range of 12½ to 50 feet below existing site grades. Borings B-5, B-6 and B-6B were drilled within the south parcel to depths in the range of 7½ to 50 feet below existing site grades. The subsurface conditions encountered at the boring locations performed at the site can be summarized as follows.

The near surface soils at the project site were observed to consist of about 6 to 18 inches of topsoil (B-1 through B-4 and B-3B) or 8 inches of bituminous pavement (B-5). Surficial materials were not identified at boring locations B-6 and B-6B. The surficial materials (B-1 through B-5 and B-3B) or the materials at the ground surface (B-6 and B6-B) were observed to consist of FILL soils extending to depths in the range of 3 feet to 12½ feet (or deeper) below existing site grades. The existing fill soils were observed to typically consist of Fine to Medium Sand with varying amounts of gravel and debris (concrete, bituminous and brick fragments); however, Clayey Silt FILL was observed at boring location B-6. The existing FILL soils were observed to be underlain by natural soils consisting of Fine to Medium SAND, SILT, Sandy SILT and Lean CLAY. The Lean CLAY was typically observed at depths greater than about 32 to 42 feet below existing site grades.

Several borings (B-2, B-4 and B-5) were terminated before the proposed termination depth of the soil borings (i.e., 20 feet) due to auger refusal on an unknown obstruction. Determination of the type and vertical/lateral extents of the encountered obstructions was beyond the scope of work of this exploration. In addition, a few samples were not obtained during drilling due to "blowback" of granular soils in the auger during drilling. Blowback occurs when hydrostatic pressure causes granular soils to rise in the augers during drilling.

The existing fill soils were observed to exhibit SPT N-Values in the range of 2 blows per foot (bpf) to 51 bpf, which is indicative of very loose to very dense relative density for granular soils. The elevated blow counts observed in the existing fill soils are likely due to the presence of debris and are not likely indicative of the in-situ relative density of the fill soils. The natural granular soils (sands and silts) were observed to exhibit SPT N-Values in the range of 8 bpf to 46 bpf, which is indicative of loose to medium dense relative densities for granular soils (typically medium dense). The natural Lean CLAY soils were observed to exhibit unconfined compressive strength values in the range of 3¼ tsf to greater than 4½ tsf (very stiff to hard) and moisture contents in the range of 14 to 16 percent.

It should be noted that bid quantity estimation by "averaging" depths and strata changes from boring logs is not permitted. Too many variations exist for such "averaging" to be valid, particularly in the surficial material thicknesses, soil types and condition, depth and groundwater conditions. A different scope of professional services would be required to obtain subsurface information needed for land purchase considerations. This scope could include additional borings and possibly test pits. Even with this additional information, contingencies should always be carried in construction budgets or land purchase agreements to cover variations in subsurface conditions. Soil borings cannot present the same full-scale view that is obtained during complete site grading, excavation or other aspects of earthwork construction.

SOIL BORING REPORT - EXPLORATION RESULTS

GROUNDWATER OBSERVATIONS

Observations for groundwater were made during sampling and upon completion of the drilling operations at the boring locations. In auger drilling operations, water is not introduced into the boreholes, and the groundwater position can often be obtained by observing water flowing into or out of the boreholes. Furthermore, visual observation of the soil samples retrieved during the auger drilling exploration can often be used in evaluating the groundwater conditions.

Groundwater was typically observed during drilling at depths ranging between 6 feet and 13½ feet below existing site grades. Glacial till soils in the Midwest frequently oxidize from gray to brown above the level at which the soil remains saturated. The long-term groundwater level is often interpreted to be near this zone of color change. Based on the results of this exploration, the long-term groundwater level may be located at a depth of approximately 8 to 22 feet below existing site grades. The observed depths correspond to elevations of about EL. +619 to EL. +628 feet.

The highest groundwater observations are normally encountered in late winter and early spring and our current groundwater observations are not expected to be at the seasonal maximum water table. It should be noted that the groundwater level can vary based on precipitation, evaporation, surface run-off and other factors not immediately apparent at the time of this exploration. Surface water runoff will be a factor during general construction, and steps should be taken during construction to control surface water runoff and to remove water that may accumulate in the proposed excavations as well as floor slab areas.

ANALYSIS AND RECOMMENDATIONS

OVERVIEW

The conclusions and recommendations presented in this report should be incorporated in the design and construction of the project to reduce possible soil and/or foundation related problems.

The following sections present specific recommendations with regard to the geotechnical design and construction aspects of the proposed construction. These include recommendations with regard to subgrade preparation and earthwork, fill placement, building foundations, floor slab design, below-grade walls and pavement design. Discussion of the factors affecting the building foundations for the proposed construction, as well as additional recommendations regarding geotechnical engineering design and construction aspects at the project site, are included below. We recommend that ECS review the final design and specifications to check that the earthwork and foundation recommendations presented in this report have been properly interpreted and implemented in the design and specifications.

SUBGRADE PREPARATION AND EARTHWORK OPERATIONS

We recommend the complete removal of the existing topsoil and bituminous pavement and other deleterious material. We also recommend all remnant foundations, slabs and below grade walls associated with the former construction be completely removed. Note that several borings were terminated at a shallow depth due to auger refusal on an obstruction. The obstructions could be remnant slabs and/or foundations. Existing utilities should be removed/decommissioned and/or integrated into the proposed structures. Once the surficial materials have been removed, the limits of the proposed structures should be excavated to the design subgrade elevation. ECS does not recommend the slab/pavement subgrade remain exposed to the elements or

construction traffic for a prolonged period of time as the subgrade may be disturbed and/or softened. If the slab/pavement is not planned to be constructed within a few days after exposing the final design subgrade, consideration should be given to leaving the subgrade approximately 1 foot above the final design subgrade to help prevent softening of the subgrade soils (if feasible).

For an at-grade structure, we anticipate the soils at the slab subgrade will consist of undocumented fill materials. If the structures have a below-grade level, we anticipate the soils at the slab subgrade will consist of either undocumented fill materials and/or natural granular soils. We typically do not recommend slabs and pavements be supported on or above undocumented FILL materials as the fill materials exhibit variable composition and in-situ relative densities, which could result in unfavorable total and differential settlements and premature cracking of the floor slab/pavement. We are also aware that complete removal and replacement of the FILL materials may not be feasible from a cost perspective. As such, we are providing five options for support of the slabs and pavements based on anticipated cost and the level of risk the owner/project team are willing to accept.

1. Structural Slab - The ground floor slab could be designed as a structural slab bearing on the foundation and grade beam system. This option would only be utilized if deep foundations (drilled shafts) are utilized for support of the column loads. The structural slab should be designed by the structural engineer (low risk).

2. Complete Removal and Replacement - The existing FILL materials should be completely removed from slab areas and replaced with engineered fill. Note that as much as 12½ feet of fill (or deeper) was identified at the boring locations. This option carries a small amount of risk for poor slab and pavement performance, but carries significant construction costs (low risk). Note that if removal and replacement is selected for shallow foundations, site conditions are such that additional over excavation for slab and pavement support would be minimal. In addition, the removed fill could likely be reutilized as engineered fill.

3. Aggregate Piers (Slab Only) - The project team could utilize interstitial aggregate piers extended into the suitable natural soils to improve the existing FILL soils and support the slab-on-grade. Design and installation of the aggregate pier system would be performed by a design-build contractor that specializes in the proprietary aggregate pier technology. This option will also provide minimal risk to future settlement and cracking of the slab; however, will likely carry significant costs (low risk). Note that if aggregate piers are utilized for foundation support, the additional cost for interstitial piers for slab support is anticipated to be minimal.

4. Partial Removal and Replacement (Slabs and Pavements) - To minimize the depth of undercuts, but also with some risk of slab/pavement movement and long term maintenance issues, the project team could consider stabilizing the upper 2 feet of the slab and/or pavement subgrades by removing the existing undocumented FILL material to a depth of 2 feet below the final subgrade elevations and replacing it with engineered fill. The undercut subgrade should be densified to the extent practical prior to placing engineered fill. Further stabilization could be achieved by utilizing geogrid within the replaced section. The geogrid should be installed in accordance with the manufacturer's recommendations. Preliminarily, we recommend the geogrid be placed at the bottom of the reinforced section and between two 12-inch lifts of granular engineered fill (CA-6 or CA-7). The granular engineered fill should be densified with a smooth drum roller.

This option would reduce the volume of required undercuts, but would result in moderate risk of premature deterioration/ cracking of the slab (moderate risk). The exposed subgrade should be proofrolled and densified to the extent practical prior to placing the engineered fill and/or geogrid.

5. Proofroll/Replace - Once the subgrade has been exposed, the subgrade could be proofrolled using a loaded dump truck having an axle weight of at least 10 tons. The intent of the proofroll is to aid in identifying localized soft or unsuitable material which may be required to be removed. If soft or yielding soils are observed during the proofroll of the subgrade, the soft soils should be undercut up to a maximum of 2 feet and replace with compacted engineered fill to the design subgrade. This option will only identify near surface soils that are unsuitable for slab support and deeper pockets of unsuitable fill could lead to premature deterioration/cracking of the slab (moderate/high risk).

ADJACENT CONSTRUCTION

Note that Option 2 will likely require undercuts as deep as 12½ feet below existing site grades (or deeper). Undercuts to 12½ feet would potentially undermine adjacent structures. As such, Option 2 will require proper shoring/underpinning of adjacent structures to lessen the risk of unfavorable settlements and structural distress.

SILT SOILS

If the proposed construction has a basement or if the existing fill soils are completely removed, the soils at the bottom of the excavation may consist of silt soils. Silt soils can be difficult to operate equipment on and can become easily disturbed, particularly when wet. As such, consideration should be given to placing one to two feet of CA-7 over the silt subgrade to create a stable working platform for construction.

In addition, clayey silt fill soils were observed at boring location B-6 near the ground surface. Clayey silt is frost susceptible and could result in premature deterioration of pavements (due to frost heave/frost action) if allowed to remain within 3½ feet of final site grades.

GENERAL

Exposure to the environment may weaken the subgrade soils if the excavations remain open for too long a period. If the subgrade soils are softened by surface water intrusion or exposure, the softened soils must be removed from the subgrade excavation bottom immediately prior to placement of concrete and/or engineered fill.

All unsuitable soils removed from the site should be disposed of in accordance with applicable Federal, State and local regulations. We recommend all backfilling operations should be observed on a full-time basis by an ECS field representative or ECS soil technician to determine that the specified compaction requirements are being met.

Excavations should comply with the requirements of OSHA 29CFR, Part 1926, Subpart P, “Excavations” and its appendices, as well as other applicable codes. This document states that the contractor is solely responsible for the design and construction of stable, temporary excavations. The excavations should not only be in accordance with current OSHA excavation and trench safety standards but also with applicable local, state, and federal regulations. The contractor should shore, slope or bench the

excavation sides when appropriate. If problems are encountered during the earthwork operations, or if site conditions deviate from those encountered during our subsurface exploration, ECS should be notified immediately. We recommend that the project geotechnical engineer or his representative should be on site to monitor stripping and site preparation operations and observe that unsuitable soils have been satisfactorily removed and observe the proofrolling of the subgrades.

FILL PLACEMENT

All fills should consist of an approved material, free of organic matter and debris, particles greater than 3-inches and have a Liquid Limit and Plasticity Index less than 40 and 15, respectively. Unacceptable fill materials include topsoil and organic materials (OH, OL), high plasticity silts and clays (CH, MH), and low-plasticity silts (ML). Under no circumstances should high plasticity soils be used as fill material in proposed structural areas or close to site slopes. The existing Fine to Medium Sand FILL soils could be reutilized as engineered fill after removal of deleterious materials and debris greater than 3 inches in diameter. The natural Fine to Medium SAND and Lean CLAY soils could also be utilized as engineered fill.

We do not recommend utilizing pea gravel as engineered fill as these materials result in large voids between particles and the have the potential for long-term settlement. We do not recommend utilizing the on-site SILT and Sandy SILT soils as engineered fill as these materials are difficult to place and compact. We also do not recommend utilizing the surficial topsoil as engineered fill.

The on-site soils will require moisture content adjustments in addition to screening, such as the application of discing or other drying techniques or spraying of water to the soils prior to their use as compacted fill (termed manipulation). The planning of earthwork perations should recognize and account for increased costs associated with manipulation of the on-site materials considered for reuse as compacted fill. Fill materials should be placed in lifts not exceeding 8-inches in loose thickness and moisture conditioned to within ±2 percentage points of the optimum moisture content. Soil bridging lifts should not be used, since excessive settlement of overlying structures will likely occur. Controlled fill soils should be compacted to a minimum of 95 percent of the maximum dry density obtained in accordance with ASTM Specification D-1557, Modified Proctor Method.

The expanded footprint of the proposed building and fill areas should be well defined, including the limits of the fill zones at the time of fill placement. Grade control should be maintained throughout the fill placement operations. All fill operations should be observed on a full-time basis by a qualified soil technician to determine that the specified compaction requirements are being met. A minimum of one compaction test per 2,500 square foot area or 50 linear feet of trench should be tested in each lift placed. The elevation and location of the tests should be clearly identified at the time of fill placement.

Compaction equipment suitable to the soil type used as fill should be used to compact the fill material. Theoretically, any equipment type can be used as long as the required density is achieved; however, the standard of practice typically dictates that a vibratory roller be utilized for compaction of granular soils and a sheepsfoot roller be utilized for compaction of cohesive soils. In addition, a steel drum roller is typically most efficient for compacting and sealing the surface soils. All areas receiving fill should be graded to facilitate positive drainage from building pad areas of free water associated with precipitation and surface runoff.

It should be noted that prior to the commencement of fill operations and/or utilization of off-site borrow materials, the Geotechnical Engineer of Record should be provided with representative samples to determine the material's suitability for use in a controlled compacted...

fill and to develop moisture-density relationships. To expedite the earthwork operations, if off-site borrow materials are required, it is recommended they consist of suitable fill materials in accordance with the recommendations previously outlined in this section. If frost susceptible soils are imported to the project site, the frost susceptible soils should not be placed within 3½ of final site grades.

Fill materials should not be placed on frozen soils or frost-heaved soils and/or soils that have been recently subjected to precipitation. All frozen soils should be removed prior to continuation of fill operations. Borrow fill materials, if required, should not contain frozen materials at the time of placement. All frost-heaved soils should be removed prior to placement of controlled, compacted fill, granular subbase materials, and foundation or slab concrete. Open-Graded Fill Materials

ECS understands site conditions or project constraints occur where the use of crushed 3-inch rock (CA-1 or crushed CA-18/ IDOT PGE) is recommended by the Contractor as substitution for engineered fill. **Upon approval by ECS**, CA-1 or CA-18/IDOT PGE may only be used if properly documented and witnessed by an experienced ECS Geotechnical engineer or qualified ECS representative. The contractor shall provide ECS with their means and methods for placement and densification of the open-graded fill materials to obtain ECS' approval. The installation must be observed by an ECS representative full-time during placement operations. ECS encourages the placement of a minimum 8 ounce, non-woven geotextile fabric as a separator between the open-graded material and the native subgrade. This geotextile material reduces the potential for intermixing of the subgrade soils with the open-graded aggregate and potential settlement. **CA-1 and CA-18 should not be utilized in areas that require more than 3 feet of fill.** Pea gravel should not be used as engineered fill. If 3-inch rock (open graded granular fill, CA-1 or IDOT PGE) is to be considered for use as backfill, the 3-inch rock should be placed in accordance with the guidelines described herein. Due to the large diameter and absence of fines, 3-inch rock exhibits large voids. Fill materials containing large voids are more susceptible to future movement and may become unstable, resulting in excessive, unpredictable and variable total and differential settlement. These open-graded aggregates can not be tested using conventional density testing methods and therefore do not meet the definition of engineered fill as described elsewhere in this report.

Proper placement of the open-graded material is typically achieved by using a smooth drum vibratory roller, "hoe pac" or backhoe bucket techniques wherein the operator applies energy to the open-graded aggregate until the stone "closes up" and interlock is observed. Due to the inability to utilize conventional compaction testing methods; an ECS engineer or qualified ECS representative should observe the material placed in lifts less than 12 inches in loose thickness, that the material is "closed up" (interlocked and stable), and under significant load no further densification or shifting occurs. Oversized fragments (greater than 3 inches in diameter) should be rejected and pulled from the fill. We recommend applying a sufficient number of passes with heavy vibratory steel wheel roller (minimum weight of 10,000 pounds), "hoe pac" or a sufficient number of impacts with a backhoe bucket to achieve interlock and a stable material. If deemed necessary by ECS, more energy may need to be applied after the contractor's selected method of compaction. A "choking layer" at least 8 inches in thickness of CA-6 or similar materials (including a geotextile separator fabric as described above) should be placed on top of the 3inch rock, at the final subgrade elevation.

DEEP FILLS

For extensive new fill placement (i.e., fill depths greater than 8 feet), self-weight compression of the new fill soils should be considered. Even properly placed and compacted fill or new engineered fill soils, placed and compacted as discussed in the **Fill Placement** section of this report, will experience self-weight compression. In most cases, the amount of self-weight compression is negligible. However, when fill heights exceed about 8 feet, the magnitude of self-weight compression can adversely affect the performance of the building. If the amount of fill to be placed beneath building foundations and slabs will be greater than 8 feet, we recommend consideration be given to use granular engineered fill to help minimize the effects of self-weight compression.

PRELIMINARY FOUNDATION RECOMMENDATIONS

The project is in the conceptual design stage and information regarding the proposed construction and associated loads is very limited. As such, the foundation recommendations detailed herein should be considered preliminary. Once the design is further along, ECS should be notified so that we can reevaluate the recommendations outlined herein and modify as appropriate.

Based on the results of the subsurface exploration, we are providing four options for support of the proposed addition: (1) a shallow foundation system with a net allowable bearing pressure of 3,000 to 4,000 psf after complete removal and replacement of the existing FILL soils, (2) a shallow foundation system bearing on soils improved with rammed aggregate piers with a net allowable bearing pressure in the range of 4,000 to 6,000 psf (to be designed by a specialty design subcontractor), (3) a shallow foundation system bearing on soils improved utilizing Rapid Impact Compaction (RIC) or (4) a deep foundation system (i.e., straight-sided drilled shafts) bearing in the medium dense to dense granular soils observed beneath the existing fill soils at a depth of approximately 15 feet below grade. Note that the deep foundation option will likely not be economical if the structures have a basement level.

Consideration could also be given to utilizing a driven pile foundation or augered cast-in-place (ACIP) piles. Driven pile and ACIP oundation recommendations can be provided upon request, once the design is further along. Preliminarily, driven and ACIP piles would have to extend into the denser granular soils and very stiff clays observed below a depth of about 25 feet. If driven or ACIP piles are utilized, additional deep soil borings will be required.

OPTION 1 - SHALLOW FOUNDATIONS BEARING ON ENGINEERED FILL

Based on our observations at the boring locations, we anticipate the soils at the bearing elevation for a shallow foundation system would typically consist of undocumented FILL. We do not recommend the foundations bear on or above the undocumented FILL. As such, the proposed structure can be supported on a shallow foundation system (i.e., wall and spread footings) bearing on granular engineered fill overlying competent natural soils after complete removal and replacement of the existing FILL soils. A shallow foundation system on granular engineered fill overlying the competent “Stiff Clay Crust” soils can be designed for a maximum net allowable soil bearing pressure of 3,000 to 4,000 psf (depending on the material utilized for engineered fill). The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure.

Based on the subsurface conditions observed within the footprint of the proposed addition, Option 1 will require undercuts to as deep as approximately 12½ feet below existing site grades (or deeper). The undercut materials should be backfilled with granular engineered fill (i.e., CA6 or approved alternate) to the design bearing elevation...

The granular engineered fill should be compacted to a minimum of 95 percent of the maximum dry density in accordance with Modified Proctor Method, ASTM Specification D 1557. The zone of the granular engineered fill placed below the foundations should extend 1 foot beyond the outside edges of the footings and from that point, outward laterally 1 foot for every 2 feet of fill thickness below the footing. We recommend that the excavation/backfill of foundations be monitored full-time by an ECS Geotechnical Engineer or his representative to verify that the soil bearing pressure is consistent with the boring log information obtained during the geotechnical exploration.

To help reduce the potential for foundation bearing failure and excessive settlement due to local shear or "punching" action, we recommend that continuous footings have a minimum width of 18 inches and that isolated column footings have a minimum lateral dimension of 30 inches. In addition, footings should be placed at a depth to provide adequate frost cover protection. For this region, we recommend the exterior footings and footings beneath unheated areas be placed at a minimum depth of 3½ feet below finished grade. Interior footings in heated areas can be placed at a minimum of 2 feet below grade provided that suitable soils are encountered and that the foundations will not be subjected to freezing weather either during or after construction.

Settlement of individual footings, designed in accordance with our recommendations presented in this report, is expected to be small and within tolerable limits for the proposed building. For footings placed on suitable natural soils or properly compacted engineered fill, maximum total settlement is expected to be in the range of 1 inch or less. Maximum differential settlement between adjacent columns is expected to be ½ to ¾ the total settlement. These settlement values are based on our engineering experience with the soil and the anticipated structural loading, and are to guide the structural engineer with his design.

Note that Option 1 will likely require undercuts as deep as 12½ feet below existing site grades (or deeper). Undercuts to 12½ feet would potentially undermine adjacent structures. As such, Option 1 will require proper shoring/underpinning of adjacent structures to lessen the risk of unfavorable settlements and structural distress.

OPTION 2 - RAMMED AGGREGATE PIER FOUNDATIONS

Due to the potential for significant undercuts and the resulting removal and off-site disposal of deleterious material from the project site, ECS recommends an intermediate foundation system consisting of aggregate piers be considered for the proposed addition. Note that the same rammed aggregate pier system could also be utilized for support of the slab.

Drilled aggregate piers (densified aggregate piers) are a ground improvement technique in which a column of soil is replaced with crushed stone that is densified with vibratory or ramming techniques. The footings are then designed for a bearing pressure appropriate for the densified aggregate pier and remaining soil surrounding the pier. The aggregate piers are typically extended through existing fill bearing into natural soils and generally consist of 24-inch to 30inch minimum diameter drilled excavations. The soil reinforcement occurs as a result of the excavation of soft unsuitable soils and replacement by vibrated or compacted dense granular aggregate. The advantages of this option are: (1) foundation subgrades can stay at a relatively uniform subgrade level without the need for undercutting, as the presence of the piers provides adequate support to the shallow foundation, and (2) the volume of undercut material will be reduced, which will reduce the costs associated with disposing of materials off-site.

The aggregate piers can be utilized under the building footprint to support walls and columns. Our analysis indicates that for the anticipated structural loads and subsurface conditions, an allowable bearing pressure (after aggregate pier installation) in the range of 4,000 to 6,000 psf should be feasible. In addition, the aggregate piers can be utilized under floor slabs to reduce undesirable settlement and future maintenance.

The drilled aggregate pier system should be designed by a design-build contractor and the proposed soil improvement plan should be reviewed by the Geotechnical Engineer of Record (GER) before construction begins. While design of this system would be performed by others, the design could be such that total and differential settlements would be limited to 1 inch and ½ inch, respectively. The design-build contractor should be made aware of the presence of deleterious materials (including potentially large obstructions and/or remnant slabs and foundations) at the site and the groundwater depth and should price his/her design and bid accordingly. The design-build contractor should also be made aware of changes in site grades required to achieve final site grades and should plan construction sequencing accordingly. The design-build contractor will provide final design and quality assurance, but based on soils at the project site and our experience, the maximum allowable bearing capacity is likely to be in the range of 4,000 to 6,000 psf with piers bearing at a depth of about 10 below existing grades.

OPTION 3 - RAPID IMPACT COMPACTION (RIC)

RIC consists of densifying in-situ soils by striking a circular plate (resting on the ground) with a hydraulic pile-driving hammer. The falling weight of the hammer imparts energy into the circular plate and the underlying soils from the ground surface, causing the soils to densify due to dynamic loading from stress waves. RIC also typically has the greatest success in granular soils, with typical depth of ground improvement ranging between 5 and 10 feet below site grades (depending on hammer weight, stroke height and soil type). The RIC program should be designed by a specialty contractor with prior relevant experience performing RIC in similar soil conditions. The proposed soil improvement plan should be reviewed by the Geotechnical Engineer of Record (GER) before construction begins.

The project team should be aware that due to the vibratory nature of the RIC procedure, performing RIC carries some risk of causing both aesthetic and/or structural distress in nearby structures. If RIC is performed, we recommend that an extensive pre-construction survey be performed prior to construction and a comprehensive vibration monitoring program be implemented during performance of RIC.

OPTION 4 - STRAIGHT-SIDED DRILLED SHAFTS

The structures could be supported on a deep foundation system (i.e., straight-sided drilled shafts) bearing in the competent natural granular soils using a net allowable end bearing pressure of 6,000 psf. The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. For this option, we would recommend the drilled shafts be installed to a depth of approximately 15 to 20 feet below existing site grades so that the shafts bear within the competent natural sand materials.

The shafts should not bear on or above existing fill soils. As an alternative, the drilled shafts could extend into the deeper lean clay soils observed at depths in the range of about 32 to 45 feet. Shafts bearing in the deeper lean clay soils could be designed utilizing a maximum net allowable bearing pressure of 8,000 psf. If the project team elects to utilize the deeper shafts, additional deep borings will likely be required.

Note that belled drilled shafts are not appropriate for this project site due to the granular nature of the soils. In addition, we do not recommend utilizing drilled shafts if the proposed structure has a below-grade level as the other foundation options will likely be more economical.

Foundation elements, such as caps and grade-beams, should extend at least 3½ feet below grade for frost protection. A minimum shaft diameter of at least 30 inches is recommended to facilitate clean out and dewatering of the shaft excavations, as necessary, and for observation and testing of the shaft bottoms. The reinforcing steel and concrete strength for the shafts should be determined by the Structural Engineer of Record for the project. For caisson projects, we typically recommend drilling to the target depth to confirm the soils are consistent with the geotechnical report. Our technicians would perform visual classification of the spoils and perform unconfined compressive strength testing with a pocket penetrometer to verify the bearing material is suitable for support of the proposed structure. Once the bearing elevation has been verified, we recommend the contractor provide means to clean the bottom of the drilled shaft and confirm no loose spoils persist at the bottom of the shaft. The contractor can propose various alternatives subject to the project team's approval. Down-hole cameras or a clean out bucket are typical methods. If bottom inspection by camera is not deemed feasible, then the bells should be oversized by 6 inches or 15 percent, whichever is smaller. Due to shallow depth, a clean out bucket should be sufficient with proper observation from the ground surface.

Total settlements of drilled shafts designed and constructed as discussed herein should be about 1 inch or less. Differential settlements within the structure are not anticipated to exceed ½ the total settlement. Full-length temporary casing will likely be required during installation of the caissons due to the presence of granular soils and the potential for water seepage. In addition, we recommend the temporary steel casing should be extended a minimum of 3½ feet above the ground surface for safety and to reduce the potential risk of accidental fall-in of foreign materials and/or personnel into the excavation hole.

Provided the water seepage is minimal, our experience and research in the field indicates that the drilled shafts can be constructed by "free fall" placement of concrete without affecting the strength and quality of concrete. The concrete should "free fall" without hitting the sides of the casing or reinforcing. The use of a hopper or other suitable device is recommended to control concrete placement and direct it towards the center of the shaft. If water seepage becomes excessive, concrete may be required to be placed utilizing a tremie.

One of the most critical aspects of installation of drilled shafts is removal of the casing. The temporary steel casing can be extracted as the concreting operation progresses. Specifically, concrete will have a tendency to "arch" within the casing lining, creating the possibility of voids or discontinuities within the shaft of the caisson. During concreting operations, we recommend that special attention be paid to the pour and pull operations, to help ascertain that discontinuities are not created within the shaft of the caisson. The drilled shaft concrete should be placed in intimate contact with undisturbed natural soil. A positive head of concrete should be maintained prior to pulling out the temporary steel casing to prevent water and soil outside the steel casing from contaminating the concrete. To reduce the potential for arching, we recommend the drilled shaft concrete mix be designed for a slump of 5 to 7 inches. If tremie placement of concrete becomes necessary, we recommend a concrete slump of 7 to 9 inches.

Obstructions were observed during performance of the soil borings.. The foundation contractor should be prepared to remove and/or break up obstructions from existing uncontrolled fill, buried slab and remnant foundations, if any. It may be desirable to "pothole" or pre-excavate the shaft locations to a depth of about 10 to 12½ feet and remove old slabs, concrete rubble and other obstructions, if any, prior to drilled shaft excavations, to reduce the potential for costly excavation delays due to obstruction removal. Potholing has become more common on downtown project sites, and we recommend potholing be incorporated into the contract documents, to help provide a lower cost, than dealing with obstructions and delays.

Prior to start of drilled shaft construction, we recommend the drilled shaft foundation contractor submit shaft excavation procedures for review by the design team. The procedures should include the management of water seepage and placement of reinforcing steel and concrete.

FLOOR SLAB DESIGN

We are providing five different alternatives for support of the ground floor slab based on the subsurface conditions at the project site and the level of risk the project team is willing to accept with respect to the long term performance of the slab. The five options include: (1) structural slab, (2) complete removal and replacement of existing fill soils (low risk), (3) slab supported on ground improved with aggregate piers (low risk), (4) partial removal of the existing fill soils (i.e., 2 feet) and replacement with granular fill reinforced with geogrid (moderate risk) or (5) partial removal of the existing fill soils (based on a proofroll) and replacement with engineered fill (moderate/high risk). Slabs bearing on soils prepared in accordance with the **Subgrade Preparation and Earthwork Operations** section of this report should be designed utilizing an assumed modulus of subgrade reaction of 150 pounds per cubic inch (pci) for Options 2 and 3 and 75 pci for Options 4 and 5, but should not be thinner than 5 inches.

If a slab-on-grade is utilized, we recommend the slab-on-grade be underlain by a minimum of 6 inches of granular material having a maximum aggregate size of 1½ inches and no more than 2 percent of fines (i.e., IDOT CA-6 or similar). The 6-inch layer of granular material will serve as a capillary break, which if properly designed and installed, can often eliminate the need for a moisture retarder and can assist in more uniform curing of concrete. Prior to placing the granular material, the floor subgrade soil should be properly compacted, roofrolled, and free of standing water, mud, and frozen soil. If a vapor retarder is considered to provide additional moisture protection, special attention should be given to the surface curing of the slabs to minimize uneven drying of the slabs and associated cracking and/or slab curling. The use of a blotter or cushion layer above the vapor retarder can also be considered for project specific reasons. Please refer to ACI 302.1R04 Guide for Concrete Floor and Slab Construction and ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs for additional guidance on this issue.

We recommend that the floor slab be isolated from the foundation footings so differential settlement of the structure will not induce shear stresses on the floor slab. For maximum effectiveness, temperature and shrinkage reinforcements in slabs on ground should be positioned in the upper third of the slab thickness. The Wire Reinforcement Institute recommends the mesh reinforcement be placed 2 inches below the slab surface or upper one-third of slab thickness, whichever is closer to the surface. Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage. Please refer to ACI 302.1R04 Guide for Concrete Floor and Slab Construction for additional information regarding concrete slab joint design.

UNDERSLAB SUB-DRAINAGE DESIGN

NO BELOW-GRADE LEVELS

Based on the long term groundwater levels observed during the subsurface exploration (i.e. as shallow as 8 feet), we do not anticipate a significant volume of water will persist at the slab subgrade elevation. It should be noted however that surface runoff and limited groundwater seepage may accumulate at the slab subgrade. As such, we recommend that positive drainage be implemented around the perimeter of the proposed structure to help reduce the potential for water accumulation under the slab and foundation elements, which could potentially weaken the bearing soils.

ONE BELOW-GRADE LEVEL

We recommend below-grade walls be provided with a perimeter drainage system to reduce the potential for excess hydrostatic pressures to be exerted on the walls. This system may consist of perforated or porous wall, closed joint drain tiles located around the perimeter of the walls, at the slab level. These drain lines should be surrounded by a minimum of 8 inches of free draining granular filter material having a gradation compatible with the size of the openings utilized in the drain lines and surrounding soils to be retained. The drainage tiles should be connected to a permanent sump with utomatic and stand-by pump arrangement, or to a storm sewer, to remove water which may accumulate. Occupied below-grade space should include waterproofing and waterstops, as required by local building code requirements and appropriate practice. If basement walls are placed against sheeting, a perimeter drainage system will not be feasible. As such, other waterproofing measures will be required on the interior.

The below-grade slab will likely be located near or below the long-term groundwater level. We recommend an underslab drainage system to reduce the risk of development of uplift pressures on the below-grade slab. For design and construction of the below-grade slab, an underslab drainage blanket with some drain tiles leading to a sump should be provided. The drainage blanket should be a minimum of 8 inches in thickness and consist of free-draining crushed aggregate (less than 3 percent passing the No. 200 sieve). Drain tiles can consist of porous of perforated wall pipe and should be surrounded by at least 8 inches of free draining material. The gradation of the drainage material should be compatible with the subgrade soils and the opening size of the drain tiles. Drains should be at least 6 inches in diameter and placed with a maximum spacing of 30 feet. The drain tiles should be provided with an outlet to a sump pump system. The sump system should include duplex pumps and a generator backup. If the belowgradeslab is undrained, the below-grade slab should be designed as a structural slab/mat foundation to resist hydrostatic uplift pressures.

We recommend that the perimeter and underslab drain system for the proposed structure be designed to flow to a permanent sump. We recommend that the permanent sump be designed with a full duplex capability (i.e., two pumps per pit), with each individual pump rated at no less than 50 gpm. With this configuration, under emergency conditions, these individual sumps would have the capacity to pump 100 gpm. The contractor should monitor the pumping rate of the construction dewatering system to verify that the permanent sump pump has been adequately sized. Smaller or conversely larger pumps may ultimately be needed, based on actual water volumes pumped during construction. Once the plans are further developed, please contact ECS so that we can refine our pumping estimates.

BELOW-GRADE WALLS LATERAL EARTH PRESSURES

Permanent below-grade walls should be designed to withstand lateral earth pressures and surcharge loads. The lateral earth pressures exerted on the walls will be a function of the stiffness and the rotation of the walls. The rotation of the wall controls the degree to which the internal strength of the soil is mobilized. If rotation or deflection of the walls will be less than that required to mobilize the active earth pressure condition due to stiffness, bracing or other mechanism (as is typical with basement walls), the "at-rest" earth pressure condition should be evaluated. For the at-rest earth pressure condition, below grade walls can be designed for a linearly increasing lateral earth pressure of 65 psf per vertical foot of wall. The at-rest earth pressure of 65 psf per vertical foot of wall assumes that the below-grade walls will be in a drained condition (i.e., no hydrostatic forces on the back of the wall). In the event that the walls remain undrained, a linearly increasing lateral earth pressure of 65 psf per vertical foot of wall should be utilized above the long-term groundwater level and 100 psf per vertical foot of wall should be utilized below the long-term groundwater level. Long-term ground water level of approximately 8 feet below grade should be considered in the design.

The wall design should also account for surcharge loads within a 45 degree slope from the base of the wall. For the at-rest earth pressure condition, a lateral earth pressure coefficient of 0.45 should be applied to surcharge loads.

The "active" earth pressure condition, which results in the minimum applied earth pressure, results when the rotation of the wall about its base and away from the retained soil is approximately 0.001 times the height of the wall or greater. This is typically the case with cantilever-type walls. If the active earth pressure condition develops, we recommend belowgrade walls be designed for a linearly increasing lateral earth pressure of 40 psf per vertical foot of wall above the long-term groundwater level and 85 psf/ft below the long-term groundwater level. These active lateral earth pressures assume that granular materials are used for wall backfill. The wall design should also account for surcharge loads within a 45 degree slope from the base of the wall. For the active earth pressure condition, a lateral earth pressure coefficient of 0.33 should be applied to surcharge loads.

BELOW-GRADE WALL BACKFILL

The space between the outside of the walls and the excavation should be backfilled with a granular fill extending to a level of approximately 2 feet below the final outside grade. The remaining 2 feet should consist of a clayey material to minimize the amount of surface water infiltration into the granular material, and thus, reduce the excess water to be handled by the drainage system. Asphaltic concrete or Portland cement concrete can also be used to cover the ground surface and minimize the surface water infiltration. The ground surface adjacent to the below-grade walls should be kept properly graded to prevent ponding of water adjacent to the below-grade walls.

Special attention should be employed during placement of new fill against below-grade walls. Based on our experience, fill soils placed against below-grade walls and immediate areas along Below-grade walls are not compacted/densified adequately due to space constraints and lack of compaction effort. Inadequate placement and compaction of new fill will result on at-grade slab/pavement subgrade settlement and distress. A jumping jack, walk-behind vibratory plate or similar equipment should be used in manhole areas or other limited areas that are not feasible with a heavy-duty pneumatic tire or smooth drum roller. To achieve a desirable balance between minimizing excessive pressures against the below grade walls and reducing the settlement of the wall backfill, we recommend that the wall granular backfill be compacted to at least 90 percent of the maximum dry density obtained

in accordance with ASTM Specification D 1557, Modified Proctor Method. Where the fill materials will be supporting sidewalks or pavements, the upper 2 feet should be compacted to 95% of the Maximum dry density referenced above.

Backfill materials should consist of inorganic materials, free of debris, be free draining, and containing no frost susceptible soil. The fill placed adjacent to the below grade walls should not be overcompacted. Heavy earthwork equipment should maintain a minimum horizontal distance away from the below-grade walls of 1 foot per foot of vertical wall height. Lighter compaction equipment should be used close to the below grade walls. Where light (e.g., hand) compaction equipment is employed, the maximum lift thickness should be reduced to 6 inches.

Suitable man-made drainage materials may be used in lieu of the granular backfill, adjacent to the below-grade walls. Examples of suitable materials include Enka Mat, Mira Drain, or geotec Drains. If the excavation support system is used as a back form for wall construction, the geosynthetic drainage media can be placed directly against the support system prior to placing reinforcing steel. These materials should be covered with a filter fabric having an apparent opening size (AOS) consistent with the size of the soil to be retained (or with cast-in-place concrete). The material should be placed in accordance with the manufacturer's recommendations and connected to a perimeter drainage system, which in turn should be properly drained.

EXCAVATION DESIGN RECOMMENDATIONS

If the proposed structures are designed with a basement, the below-grade level will likely extend to a depth of about 10 feet below existing site grades. Due to the granular soils encountered and proximity to the existing buildings, streets and other structures, conventional excavation techniques and excavation support measures such as open-cut and sloped excavation methods may not be feasible. If open-cut excavation is not feasible, sheet piling, slurry wall, soldier piles and lagging, including braced or tied-back excavation methods should be considered. Design of the excavation support system should provide support to surrounding buildings/structures, utilities, pavements, etc., accommodate permanent and transient surcharges and control ground movements to within tolerable values.

Design of structural elements for the ground support system should be based on conventional geotechnical and structural engineering practice. The distribution of earth pressures on the retaining structure will depend on the flexibility of the structural elements and the positions of internal bracing, if used. The modified Clough approach is a suitable technique for evaluating system stiffness and off-site movements. To provide suitable protection to adjacent structures, utilities and streets, we recommend the excavation support systems be designed to keep ground movement at the crest of the excavation to 2 inches or less. The stability of the excavation base must also be evaluated. The temporary ground support system is the responsibility of the excavation contractor and must be designed by a licensed structural engineer who is experienced in the design and construction of earth retaining systems. We recommend appropriate instrumentation be included in the design and construction of earth retention systems to validate the performance of the system. Appropriate ground movement monitoring including survey monuments and inclinometers should be implemented. Adjacent structures should be well documented and photographed before excavation begins. Obstructions from uncontrolled fill deposits can be encountered during installation of

the earth retention system. The contractor should be prepared to deal with obstructions and remove concrete rubble if encountered during retention system installation/construction. The Contractor is solely responsible for the design and construction of stable, temporary excavations in accordance with current OSHA excavation and trench safety requirements, and should shore, slope or bench the excavation sides. All excavations should comply with applicable local, state and federal regulations. In no case should excavations extend below the level of adjacent foundations, utilities or pavements, unless underpinning or other adequate support is provided. Construction site safety is generally the sole responsibility of the Contractor, who shall also be responsible for the means, methods and sequencing of construction operations.

PAVEMENT DESIGN

We recommend that the pavement subgrade be prepared in accordance with the **Subgrade Preparation and Earthwork Operations** section of this report. Once the subgrade has been properly prepared, we recommend the following minimum pavement sections for the proposed development. The minimum pavement sections were developed based on assumed traffic loads and a CBR of 3 for the subgrade soils.

Table 1: Pavement Section Recommendations

Pavement Material	Compacted Material Thicknesses (Inches)		
	Flexible Pavement (Light Duty)	Flexible Pavement (Heavy Duty)	Rigid Pavement
Portland Cement Concrete	--	--	6
Bituminous Surface Course	1½	2	--
Bituminous Base Course	2	2½	--
Crushed Granular Subbase (IDOT CA-6)	8*	12*	6
Total Pavement Section Thickness	11½	16½	12

* If Option 5 (proofroll/replace) is selected for the subgrade preparation, we recommend an additional 4 inches of CA-6 be added to the pavement section.

All pavement materials and construction should be in accordance with the Guidelines for AASHTO Pavement Design and IDOT Standard Specifications for Road and Bridge Construction.

The pavement sections specified in the table above are general pavement recommendations based on the anticipated usage at the project site and were not developed based on specific traffic patterns / loading and resiliency factors, as those parameters were not provided by the design team. We recommend the project team provide ECS with design traffic loads so that we can verify the recommendations detailed herein are appropriate for the anticipated traffic loads.

The table above provides “Light Duty” and “Heavy Duty” flexible and rigid pavement recommendations. The light duty pavement section assumes that typical traffic loading will be limited to standard automobiles and the occasional service/delivery truck and does not account for more heavily loaded vehicles (i.e., multiple axle trucks). The heavy duty pavement section was developed for areas anticipated to more heavily trafficked such as points of ingress/egress or pavements anticipated to be trafficked by heavy maintenance equipment. The rigid pavement section was developed for potential loading dock and dumpster pad areas and could also be utilized for pavements expected to be trafficked by heavy maintenance equipment.

It should be noted that the pavement sections recommended above were developed for the anticipated in-service traffic conditions only and do not provide an allowance for construction traffic conditions. Therefore, if pavements will be constructed early during site development to accommodate construction traffic, consideration should be given to the construction of designated haul roads, where thickened pavement sections can be provided to accommodate the construction traffic as well as the future in-service traffic. ECS can provide additional design assistance with pavement sections for haul roads upon request.

An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the possibility of the subgrade materials becoming saturated over a long period of time.

Infiltration water is the primary source of water that should be considered in the pavement design for the project. Infiltration is surface water that enters the pavement through the joints, pores, cracks in the pavement and through shoulders and adjacent areas pavements as a result of precipitation. The long term groundwater level on the site is estimated to be located 13 feet below existing site grades or deeper. Therefore, for the proposed at grade pavements for the project, infiltration is the most important source of water to be considered.

We recommend pavement subgrades should be crowned, or sloped, a minimum of 1 percent to promote subsurface water flow the subgrades and to prevent ponding. Crowning or sloping the subgrade should minimize the potential for water to accumulate and the aggregate base course and subgrade soils to become saturated. Proper profile grading is essential to avoid the creation of “bathtubs” beneath the pavements, trapping water. The trapped water or standing water in the “bathtubs” can result in saturation of the aggregate base course and clayey subgrade soils leading to softening of the subgrade and pavement cracking and settlement.

PAVEMENT MAINTENANCE

Regular maintenance and occasional repairs should be implemented to keep pavements in a serviceable condition. In addition, to help minimize water infiltration to the pavement section and within the base course layer resulting in softening of the subgrade and deterioration of the pavement, we recommend the timely sealing of joints and cracks using elastomeric caulk in existing pavement. We recommend exterior pavements should be reviewed for distress/cracks twice a year, once in the spring and once in the fall.

OTHER CONSIDERATIONS

ADJACENT CONSTRUCTION

Extreme care must be taken during excavation for new footings adjacent to existing buildings to prevent undermining of existing structure foundations, slabs and pavements, and underground utilities. Any excavation below the existing foundations, slabs, pavement and underground utilities should consider appropriate preventative measures, such as underpinning, to avoid undermining or loss of materials from beneath foundations, structures and pavements. **Excavations should not extend below adjacent foundations unless underpinning or other forms of support are provided.**

BELOW-GRADE OBSTRUCTIONS

Based on our observations at the boring locations, ECS anticipates large obstructions may be encountered within the existing fill soils. Further, remnant slabs, foundations and below-grade walls may also be present. The below-grade obstructions may make installation of aggregate piers and drilled shafts difficult. The prospective contractor should be aware of the potential for obstructions and should be prepared to install the piers or shafts without delay. Consideration should be given to performing exploratory test pits at the project site to obtain a better understanding of the size and frequency of the obstructions and to identify if the slabs, belowgradewalls and foundations were left in place at the time of demolition.

BELOW-GRADE EXCAVATIONS

If the proposed structures are designed with a basement, or if the existing fill is completely removed and replaced, relatively deep excavations will be required. The excavations will likely extend below the groundwater table. The excavation contractor should be prepared to dewater the excavation as necessary such that engineered fill and concrete is placed in the dry. In addition, the contractor should consider placing 12 to 24 inches of CA-7 to create a stable working subgrade.

PROJECT CONSTRUCTION RECOMMENDATIONS

GENERAL CONSTRUCTION CONSIDERATIONS

We recommend that the subgrade preparation, installation of the foundations and construction of slabs and pavements be monitored by an ECS geotechnical engineer or his representative. Methods of verification and identification such as proofrolling, DCP testing, vane shear tests, and hand auger probe holes will be necessary to further evaluate the subgrade soils and identify unsuitable soils. The contractor should be prepared to over-excavate footing and slabon-gradeexcavations at isolated locations (as necessary). We recommend that excavations of new foundations be monitored on a full-time basis by an ECS geotechnical engineer or his representative to verify that the soil bearing pressure and the exposed subgrade materials will be suitable for the proposed structure and are consistent with the boring log information obtained during this geotechnical exploration. We would be pleased to provide these services.

CONSTRUCTION DEWATERING

If the final design does not include a basement, we do not anticipate that significant dewatering efforts will be required during construction. However, it should be noted that minor groundwater seepage and / or surface runoff may introduce water into the project site and the general contractor should be prepared to remove accumulated water prior to the placement of fill and concrete. We anticipate that the removal of accumulated water can be achieved utilizing drainage trenches and a sump and pump system.

If the final design does include a basement level, a more aggressive dewatering system will likely be required. We recommend the project team consider utilizing a well-point system to draw down the water to at least 2 feet below the deepest excavation at the site. Note that sump pump systems may also be required to dewater localized areas.

Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a period. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete.

CLOSING

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the design of this project. The scope is limited to the specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to soil and foundation characteristics. In the event that any change in the nature or location of the proposed construction outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the geotechnical engineer. It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information on which to base a decision as to whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings and tests performed at the locations as indicated on the Boring Location Plan and other information referenced in this report. This report does not reflect any variations, which may occur between the borings. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, after performing on-site observations during the construction period and noting characteristics and variations, a reevaluation of the recommendations for this report will be necessary.

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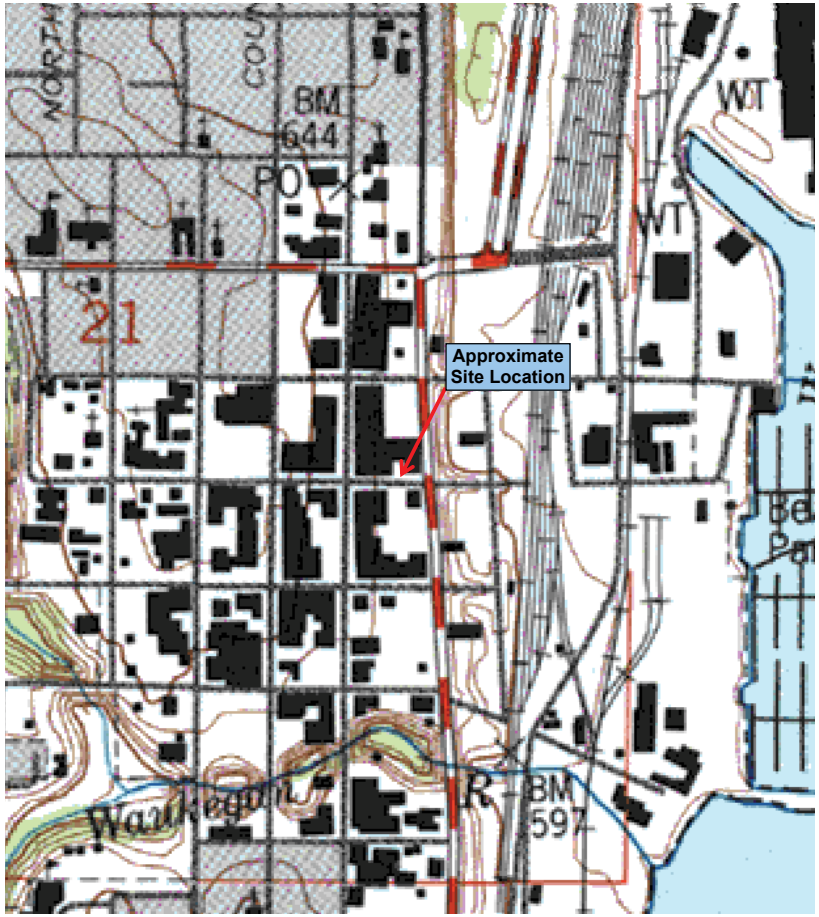
EXISTING CONDITIONS
SOIL BORING REPORT



ECS	GENERAL LOCATION PLAN	N	ECS PROJECT NO. 16:9829 CLC LAKESHORE CAMPUS EXPANSION WEST MADISON STREET AND NORTH SHERIDAN ROAD WAUKEGAN, ILLINOIS

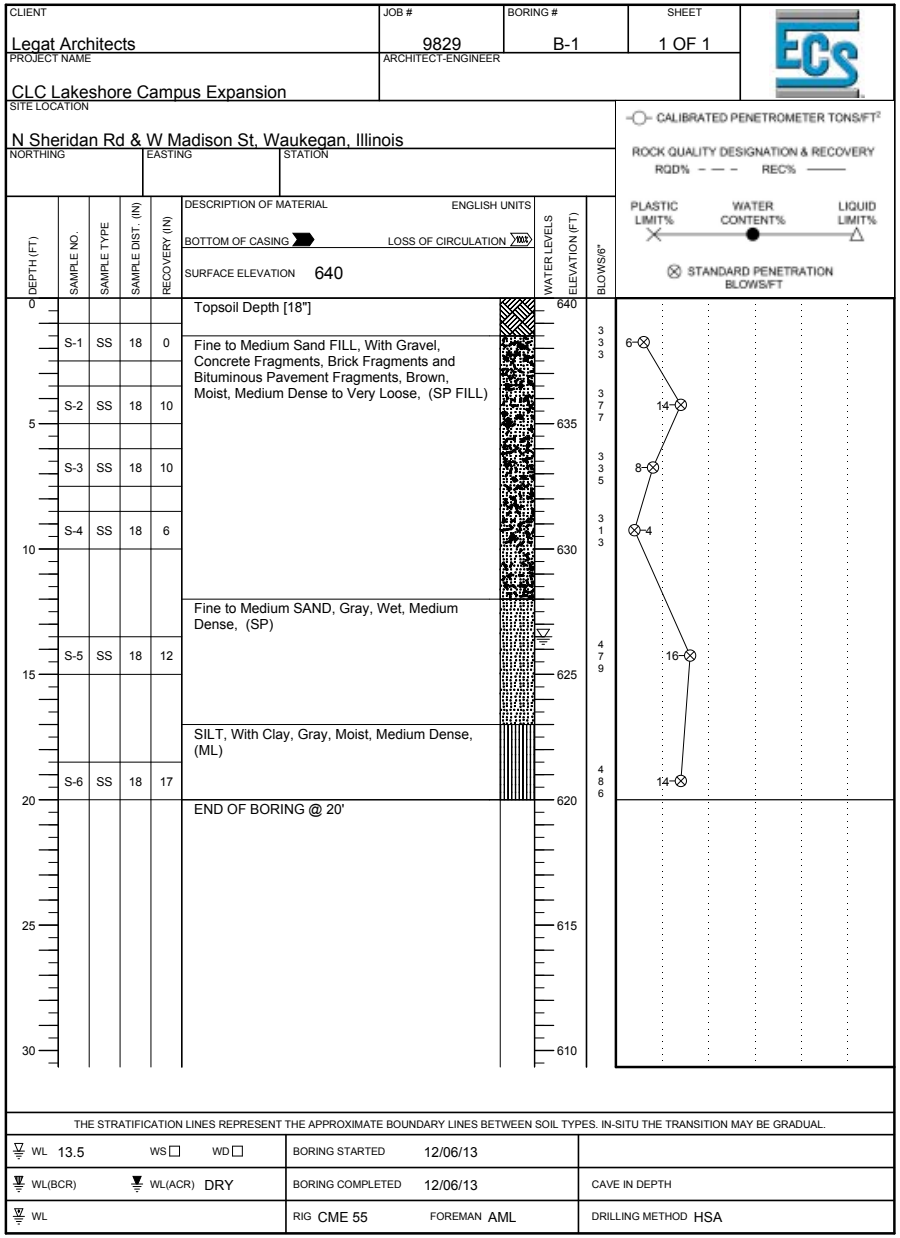
BORING LOCATION PLAN

⌖ APPROXIMATE SOIL BORING LOCATION

ECS	**BORING LOCATION PLAN** CLC Lakeshore Campus Expansion Legat Architects	ENGINEER RBC DRAFTING LGM REVISIONS	SCALE NTS PROJECT NO. 9829 SHEET FIGURE 2 DATE 12/18/13

CAPITAL Development BOARD
Building a Better Illinois
College of Lake County
LEGAT ARCHITECTS
SUSTAINABILITY | PERFORMANCE | DESIGN

BORING LOGS



CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-1	1 OF 1

PROJECT NAME: CLC Lakeshore Campus Expansion
ARCHITECT-ENGINEER:
SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois
NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²
ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS
BOTTOM OF CASING | LOSS OF CIRCULATION
SURFACE ELEVATION 640

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0						640	
							3 3 3
	S-1	SS	18	0			
							3 7 7
5	S-2	SS	18	10		635	
	S-3	SS	18	10			3 3 5
	S-4	SS	18	6			3 1 3
10						630	
							4 7 9
15	S-5	SS	18	12		625	
	S-6	SS	18	17			4 8 6
20						620	
25						615	
30						610	

Topsoil Depth [18"]

Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist, Medium Dense to Very Loose, (SP FILL)

Fine to Medium SAND, Gray, Wet, Medium Dense, (SP)

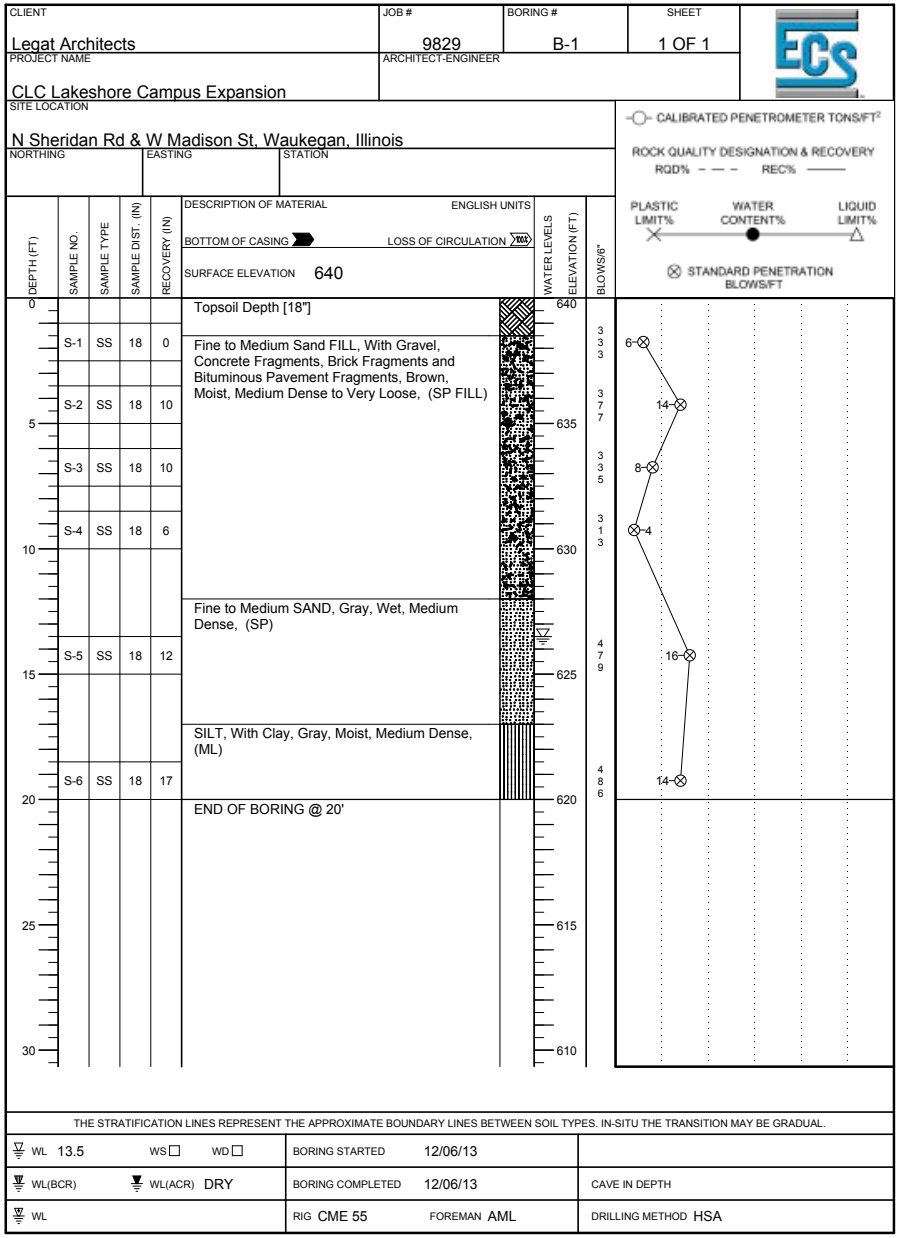
SILT, With Clay, Gray, Moist, Medium Dense, (ML)

END OF BORING @ 20'

STANDARD PENETRATION BLOWS/FT: 6, 14, 8, 4, 16, 14

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 13.5 WS☐ WD☐	BORING STARTED 12/06/13	
WL(BCR) WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA



CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-1	1 OF 1

PROJECT NAME: CLC Lakeshore Campus Expansion
ARCHITECT-ENGINEER:
SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois
NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²
ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS
BOTTOM OF CASING | LOSS OF CIRCULATION
SURFACE ELEVATION 640

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0						640	
							3 3 3
	S-1	SS	18	0			
							3 7 7
5	S-2	SS	18	10		635	
	S-3	SS	18	10			3 3 5
	S-4	SS	18	6			3 1 3
10						630	
							4 7 9
15	S-5	SS	18	12		625	
	S-6	SS	18	17			4 8 6
20						620	
25						615	
30						610	

Topsoil Depth [18"]

Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist, Medium Dense to Very Loose, (SP FILL)

Fine to Medium SAND, Gray, Wet, Medium Dense, (SP)

SILT, With Clay, Gray, Moist, Medium Dense, (ML)

END OF BORING @ 20'

STANDARD PENETRATION BLOWS/FT: 6, 14, 8, 4, 16, 14

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 13.5 WS☐ WD☐	BORING STARTED 12/06/13	
WL(BCR) WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

EXISTING CONDITIONS
SOIL BORING REPORT - BORING LOGS

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-2	1 OF 1
PROJECT NAME	**ARCHITECT-ENGINEER**		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

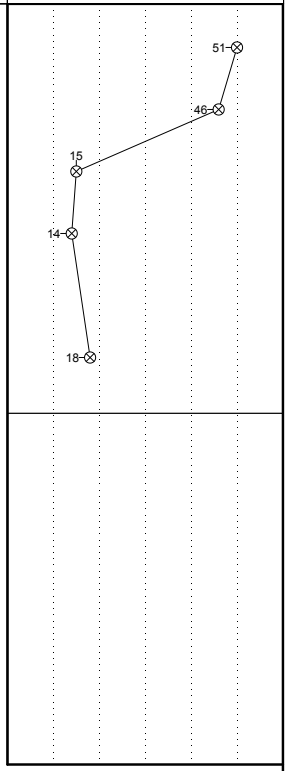
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 634

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Depth [12"]			
	S-1	SS	18	14	Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist to Wet at 6 feet, Very Dense to Medium Dense, (SP FILL)			19 20 31
	S-2	SS	18	14			630	17 26 20
5								
	S-3	SS	18	12				6 7 8
	S-4	SS	18	12			625	4 8 6
10					Sandy SILT, Trace Clay, Gray, Moist, Medium Dense, (ML/SM)			
	S-5	SS	18	18			620	7 9 9
15					AUGER REFUSAL ON UNKNOWN OBSTRUCTION @ 16.5'			
							615	
20								
							610	
25								
							605	
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 6 WS ☐ WD ☐	BORING STARTED 12/06/13	
WL(BCR) WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-3	1 OF 1
PROJECT NAME	**ARCHITECT-ENGINEER**		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

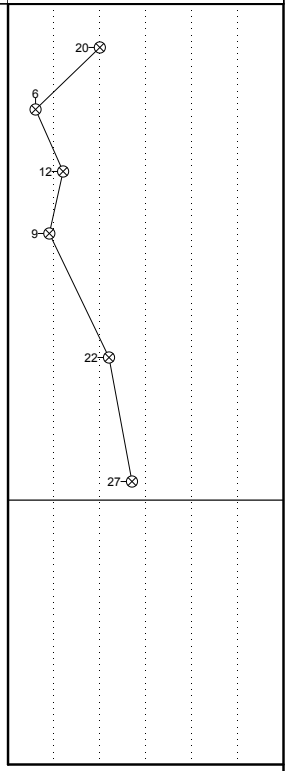
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 641

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Depth [12"]			
	S-1	SS	18	18	Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist, Medium Dense to Loose, (SP FILL)		640	8 12 8
	S-2	SS	18	6				5 3 3
5							635	
	S-3	SS	18	6				3 5 7
	S-4	SS	18	6				9 6 3
10							630	
					Fine to Medium SAND, Brown, Moist to Wet, Medium Dense, (SP)			
	S-5	SS	18	18			625	4 10 12
15								
	S-6	SS	18	18				8 12 15
20					END OF BORING @ 20'		620	
25							615	
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 13 WS ☐ WD ☐	BORING STARTED 12/06/13	
WL(BCR) WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CAPITAL Development BOARD Building a Better Illinois
College of Lake County
LEGAT ARCHITECTS SUSTAINABILITY | PERFORMANCE | DESIGN

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-3B	1 OF 2
PROJECT NAME	ARCHITECT-ENGINEER		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

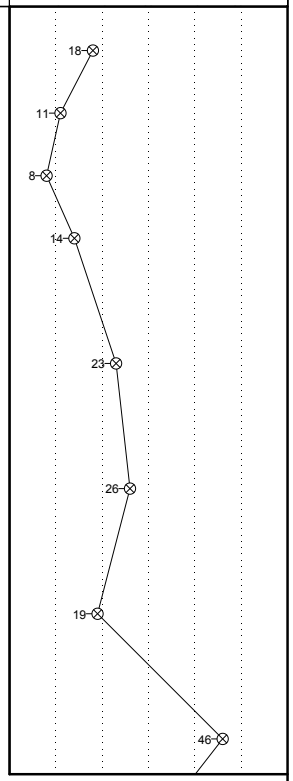
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 641

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Depth [8"]			
	S-1	SS	18	18	Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist, Medium Dense to Loose, (SP FILL)		640	14 10 8
	S-2	SS	18	12				4 5 6
5							635	
	S-3	SS	18	6				3 4 4
	S-4	SS	18	12				8 8 6
10							630	
					Fine to Medium SAND, Brown, Moist, Medium Dense, (SP)	▽		
	S-5	SS	18	18				6 11 12
15							625	
	S-6	SS	18	18				8 12 14
20							620	
					SILT, Gray, Moist to Wet, Medium Dense, (ML)			
	S-7	SS	18	18				9 10 9
25							615	
	S-8	SS	18	18				13 23 23
30								



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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL 13 WS☐ WD☐	BORING STARTED 12/13/13	
▽ WL(BCR) ▼ WL(ACR)	BORING COMPLETED 12/13/13	CAVE IN DEPTH
▽ WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-3B	2 OF 2
PROJECT NAME	ARCHITECT-ENGINEER		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

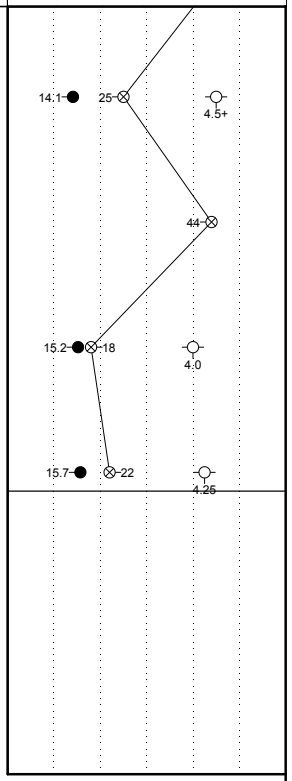
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 641

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					SILT, Gray, Moist to Wet, Medium Dense, (ML)		610	
					Lean CLAY, With Silt, Trace Sand and Gravel, Gray, Hard, (CL)			8 10 15
35	S-9	SS	18	18			605	
					SILT, Gray, Moist, Dense, (ML)			14 14 30
	S-10	SS	18	18				
40							600	
					Lean CLAY, With Silt, Trace Sand and Gravel, Gray, Hard, (CL)			
	S-11	SS	18	18				10 8 10
45							595	
	S-12	SS	18	18				8 9 13
50					END OF BORING @ 50'		590	
55							585	
60							580	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL 13 WS☐ WD☐	BORING STARTED 12/13/13	
▽ WL(BCR) ▼ WL(ACR)	BORING COMPLETED 12/13/13	CAVE IN DEPTH
▽ WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

EXISTING CONDITIONS
SOIL BORING REPORT - BORING LOGS

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-4	1 OF 1
PROJECT NAME	ARCHITECT-ENGINEER		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²
ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%
STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING ➤ LOSS OF CIRCULATION ➤			
					SURFACE ELEVATION 636			
0					Topsoil Depth [6"]		635	4 9 12
	S-1	SS	18	18	Fine to Medium Sand FILL, With Gravel, Concrete Fragments, Brick Fragments and Bituminous Pavement Fragments, Brown, Moist, Medium Dense to Loose, (SP FILL)			3 4 5
5	S-2	SS	18	5			630	7 8 9
	S-3	SS	18	10				5 8 9
	S-4	SS	18	10		▽		
10							625	
					AUGER REFUSAL @ 12.5'			
15							620	
20							615	
25							610	
30								

BLOWS/FT: 21, 9, 17, 17

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL 8.5 WS ☐ WD ☐	BORING STARTED 12/06/13	
▽ WL(BCR) ▼ WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
▽ WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-5	1 OF 1
PROJECT NAME	ARCHITECT-ENGINEER		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²
ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%
STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING ➤ LOSS OF CIRCULATION ➤			
					SURFACE ELEVATION 641			
0					Bituminous Pavement Depth [8"]		640	3 3 4
	S-1	SS	18	14	Fine to Medium Sand FILL, With Silt, Trace Gravel, Dark Brown to Black, Moist, Loose to Very Loose, (SP FILL)			1 1 1
5	S-2	SS	18	18			635	7 2 4
	S-3	SS	18	3				
10					AUGER REFUSAL @ 7.5'		630	
15							625	
20							620	
25							615	
30								

BLOWS/FT: 7, 2, 6

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL DRY WS ☐ WD ☐	BORING STARTED 12/06/13	
▽ WL(BCR) ▼ WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
▽ WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CAPITAL Development BOARD Building a Better Illinois
College of Lake County
LEGAT ARCHITECTS SUSTAINABILITY | PERFORMANCE | DESIGN

CLIENT: Legat Architects | JOB #: 9829 | BORING #: B-6 | SHEET: 1 OF 1

PROJECT NAME: CLC Lakeshore Campus Expansion | ARCHITECT-ENGINEER:

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 636

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT
0					Clayey Silt FILL, Brown to Dark Brown, Medium Dense, Moist, (ML FILL)		635	3 5 7	12
	S-1	SS	18	6					
	S-2	SS	18	10	Fine to Medium SAND, With Gravel, Brown, Moist, Loose to Medium Dense, (SP)			2 4 6	10
5	S-3	SS	18	12			630	3 6 6	12
	S-4	SS	18	18	SILT, With Clay, Trace Sand, Gray, Moist, Loose to Medium Dense, (ML)			2 3 5	8
10							625		
	S-5	SS	18	12				3 5 7	12
15							620		
	S-6	SS	18	18				3 4 7	11
20					END OF BORING @ 20'		615		
							610		
25									
30									

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL DRY WS ☐ WD ☐	BORING STARTED 12/06/13	
WL(BCR) WL(ACR) DRY	BORING COMPLETED 12/06/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

CLIENT: Legat Architects | JOB #: 9829 | BORING #: B-6B | SHEET: 1 OF 2

PROJECT NAME: CLC Lakeshore Campus Expansion | ARCHITECT-ENGINEER:

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 636

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT
0					Fine to Medium Sand FILL, With Gravel, Brick Fragments and Clay Inclusions, Brown, Moist, Loose, (SP FILL)		635	2 2 8	10
	S-1	SS	18	12					
	S-2	SS	18	12	Fine to Medium SAND, With Gravel, Brown, Moist, Loose, (SP)			3 4 6	10
5	S-3	SS	18	10	** No samples collected at 18½ to 20 foot interval and 23½ to 25 foot interval due to blowback into the augers. Soil assumed to be granular based on blowback and driller's notes.		630	3 3 5	8
	S-4	SS	18	18				3 4 4	8
10							625		
	S-5	SS	18	18				3 4 7	11
15							620		
							615		
20									
							610		
25					SILT, Trace Clay, Gray, Moist, Medium Dense to Dense, (ML)				
	S-6	SS	18	18				8 12 15	27
30									

CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 9 WS ☐ WD ☐	BORING STARTED 12/13/13	
WL(BCR) WL(ACR)	BORING COMPLETED 12/13/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

EXISTING CONDITIONS
SOIL BORING REPORT - BORING LOGS

CLIENT	JOB #	BORING #	SHEET
Legat Architects	9829	B-6B	2 OF 2
PROJECT NAME	ARCHITECT-ENGINEER		
CLC Lakeshore Campus Expansion			

SITE LOCATION: N Sheridan Rd & W Madison St, Waukegan, Illinois

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL | ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION 636

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					SILT, Trace Clay, Gray, Moist, Medium Dense to Dense, (ML)		605	4 10 16
35	S-7	SS	18	16			600	10 16 15
40	S-8	SS	18	12			595	3 8 10
					Lean CLAY, With Silt, Trace Sand and Gravel, Gray, Very Stiff (CL)			
45	S-9	SS	18	18			590	3 6 10
50	S-10	SS	18	18			585	
					END OF BORING @ 50'			
55							580	
60							575	

Penetrometer values: 26, 31, 15.9, 18, 3.25, 16, 15.4, 3.5

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

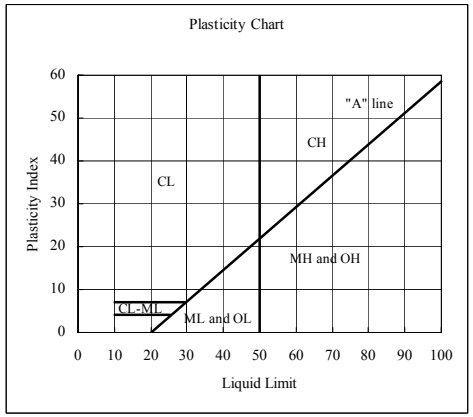
WL 9 WS☐ WD☐	BORING STARTED 12/13/13	
WL(BCR) WL(ACR)	BORING COMPLETED 12/13/13	CAVE IN DEPTH
WL	RIG CME 55 FOREMAN AML	DRILLING METHOD HSA

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria	
Coarse-grained soils (More than half of material is larger than No. 200 Sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = D_{60}/D_{10}$ greater than 4 $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW	
		Gravels with fines (Appreciable amount of fines)	GM[a] d	Silty gravels, gravel-sand mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GM[a] u			
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line or P.I. less than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = D_{60}/D_{10}$ greater than 6 $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM[a] d	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4	Limits plotting in CL-ML zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SM[a] u			
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
Fine-grained soils (More than half material is smaller than No. 200 Sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			OL	Organic silts and organic silty clays of low plasticity		
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity, organic silts		
	Highly Organic soils		Pt	Peat and other highly organic soils		

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent GW, GP, SW, SP; More than 12 percent GM, GC, SM, SC; 5 to 12 percent Borderline cases requiring dual symbols [b]



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC,well-graded gravel-sand mixture with clay binder. (From Table 2.16 - Winterkorn and Fang, 1975)

CAPITAL Development BOARD Building a Better Illinois
College of Lake County
LEGATARCHITECTS SUSTAINABILITY | PERFORMANCE | DESIGN

REFERENCE NOTES FOR BORING LOGS

REFERENCE NOTES FOR BORING LOGS

I. Drilling Sampling Symbols

SS	Split Spoon Sampler	ST	Shelby Tube Sampler
RC	Rock Core, NX, BX, AX	PM	Pressuremeter
DC	Dutch Cone Penetrometer	RD	Rock Bit Drilling
BS	Bulk Sample of Cuttings	PA	Power Auger (no sample)
HSA	Hollow Stem Auger	WS	Wash sample
REC	Rock Sample Recovery %	RQD	Rock Quality Designation %

II. Correlation of Penetration Resistances to Soil Properties

Standard Penetration (blows/ft) refers to the blows per foot of a 140 lb. hammer falling 30 inches on a 2-inch OD split-spoon sampler, as specified in ASTM D 1586. The blow count is commonly referred to as the N-value.

A. Non-Cohesive Soils (Silt, Sand, Gravel and Combinations)

Density		*Relative Properties*	
Under 4 blows/ft	Very Loose	Adjective Form	12% to 49%
5 to 10 blows/ft	Loose	With	5% to 12%
11 to 30 blows/ft	Medium Dense		
31 to 50 blows/ft	Dense		
Over 51 blows/ft	Very Dense		

Particle Size Identification		
Boulders		8 inches or larger
Cobbles		3 to 8 inches
Gravel	Coarse	1 to 3 inches
	Medium	½ to 1 inch
	Fine	¼ to ½ inch
Sand	Coarse	2.00 mm to ¼ inch (dia. of lead pencil)
	Medium	0.42 to 2.00 mm (dia. of broom straw)
	Fine	0.074 to 0.42 mm (dia. of human hair)
Silt and Clay		0.0 to 0.074 mm (particles cannot be seen)

B. Cohesive Soils (Clay, Silt, and Combinations)

Blows/ft	*Consistency*	*Unconfined Comp. Strength Q_p (tsf)*	*Degree of Plasticity*	*Plasticity Index*
Under 2	Very Soft	Under 0.25	None to slight	0 – 4
3 to 4	Soft	0.25-0.49	Slight	5 – 7
5 to 8	Medium Stiff	0.50-0.99	Medium	8 – 22
9 to 15	Stiff	1.00-1.99	High to Very High	Over 22
16 to 30	Very Stiff	2.00-3.00		
31 to 50	Hard	4.00–8.00		
Over 51	Very Hard	Over 8.00		

III. Water Level Measurement Symbols

WL	Water Level	BCR	Before Casing Removal	DCI	Dry Cave-In
WS	While Sampling	ACR	After Casing Removal	WCI	Wet Cave-In
WD	While Drilling	▽	Est. Groundwater Level	▽	Est. Seasonal High GWT

The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In clay and plastic silts, the accurate determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally applied.

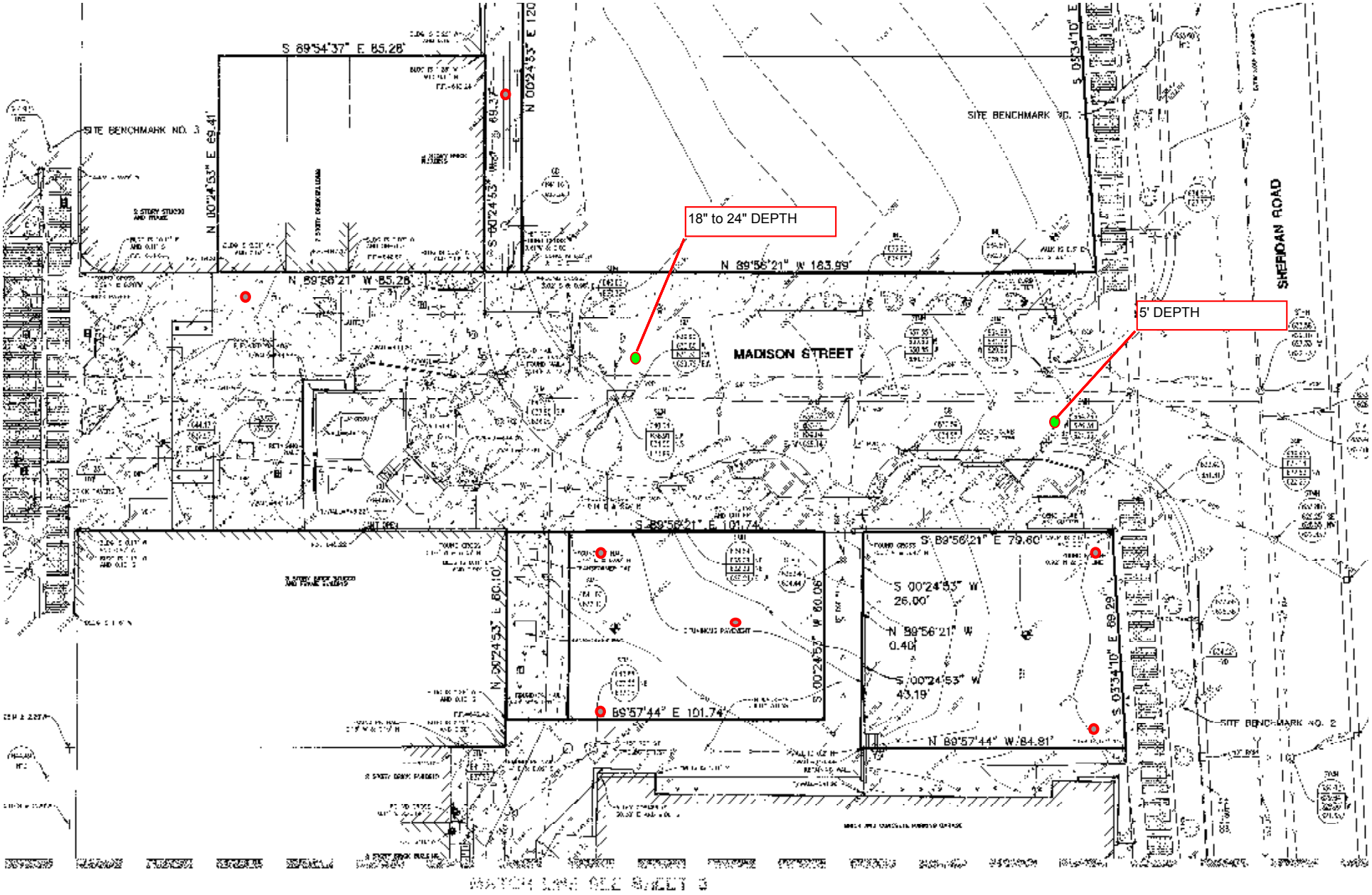
EXISTING CONDITIONS
ADDITIONAL SOIL BORINGS TO BE PROVIDED

The Schematic Design process has identified the location of the New 6 Story Building (South Site) and the New 1 Story Children's Learning Center (Infill Site). Per selection of the proposed sites the design team is currently in the process of conducting 9 new soil borings.

The new soil boring request is intended to provide specific information to each unique site condition and the proposed structure to be placed on the site. The Children's Learning Center on the infill site will need soil borings located adjacent to the site due to the 3 existing buildings that are to be demolished. The 2 soil borings in the Madison St. development will request water infiltration tests to assist with LEED credits. The new 6 story building will require 6 new soil borings each to a minimum depth of 50'

Refer to the diagram on the facing page for the 9 additional soil borings currently in progress.

EXISTING CONDITIONS
ADDITIONAL SOIL BORINGS TO BE PROVIDED



EXISTING CONDITIONS
PARKING ANALYSIS

EXISTING PARKING NARRATIVE

The Using Agency (College of Lake County) is currently under negotiations with the City of Waukegan to purchase the under utilized existing four-story parking structure. The structure is accessible from Sheridan Road. The Using Agency will also provide 10 new surface parking spaces along Madison St. The 10 surface parking spaces will serve the temporary parking requirement adjacent to the New 1-Story Children's Learning Center for parents to drop off their children. The parking calculations below are the City of Waukegan's requirements based on projected enrollment and office space in square footage of the completed Lakeshore Campus. The proposed design will accommodate the City of Waukegan's parking requirements.

Parking Requirements			Area (sq ft)	Parking Requirement
Class No. 9: Nursery School, Child Care Center	2.0/1,000 sq. ft. of gross floor area		3,000	6
Class No. 29: College, Junior College	1.0/4 students based on total enrollment capacity, plus 4.0/1,000 gross sq. ft. of office space			
		Office Area	16,000 s.f.	64
		enrollment	1200	300
	Total Parking Required			370
Parking Capacity	City Sheridan Road Parking Structure Capacity			372
	On Grade Parking Adjacent to Children's Learning Center			10
	Total Parking Capacity			382

County Street
Genesee Street
Sheridan Street
Illinois 137
Madison Street
Washington Street
111 N GENESEE
New 1 Story
10 Surface Spaces
33 N GENESEE
New 6 Story Tower
372 Space Parking Structure
1 N GENESEE

I. Summary

A. Three buildings were visited to assess the condition on the existing MEPF infrastructure. All buildings were built more than 70 years ago and originally utilized as department stores. The following is a summary of renovations since the college has occupied the buildings:

1. 111 N. Genesee was completely renovated in 1981. The 1st floors and basement were renovated again in 2010
2. 33 N. Genesee was completely renovated in 1996.

B. Recommendations:

1. HEATING AND VENTILATION

a) 33 N GENESEE:

(1) Boilers – 1995, replace
(2) Chiller – 1995, replace
(3) Cooling Tower - replace
(4) AHUs- OLD, refurbish

b) 111 N GENESEE:

(1) Boilers – 2007
(2) Chiller – OLD, replace
(3) Cooling Tower - replace
(4) AHUs – OLD, refurbish and replace DX cooling coils
(5) RTU - 2000

c) Replace chilled water, hotwater and condenser water pumps and piping associated with equipment replacement.

d) Re-use existing hot water supply piping and radiators in un-renovated areas. Re-insulate piping as required.

e) Provide fresh air to unventilated spaces (most of these spaces are in renovation areas)

f) Replace/integrate plant and AHU controls with existing BAS System (JCI Metasys retro fit of Robershaw pneumatic sensors)

2. PLUMBING

a) Provide Thermostatic Mixing Valves at all lavatories

b) Provide RPZ on water mains for both buildings

c) Replace fixtures on second floor of 111, fixtures are past useful life.

d) Renovate main electric room of 111 N. Genesee – currently plumbing piping runs through the space. Either removed the piping or provide protection with a drain pan and soffit.

3. FIRE PROTECTION

a) 33 N Genesee – no issues.

b) 111 N. Genesee:

(1) The sprinkler system would need to be extended to any remodeled portion of the building not already sprinkled

(2) Some previously remodeled 2nd floor spaces are connected to the 1st floor system and should be converted over to a second floor control assembly.

4. ELECTRICAL - No issues – only modifications associated with renovated areas.

II. Heating/Ventilation

A. Summary of Observations

1. The boiler penthouse in 33N Genesee smelled strongly of gas suggesting a leak. This issue should be addressed immediately.
2. All cooling towers are beyond their useful life.
3. Ventilation is not provided in some locations in 33 N. and 111. N. Genesee (for example, offices on the first floor of 111 N. Genesee). This is a code violation and should be addressed.
4. AHU shells in 33 N. and 111 N. Genesee are in fair condition and may need refurbishment or replacement.
5. Condenser water piping in 33 N. and 111. N. Genesee should be insulated. This is required per the new Illinois Energy Code. Historical data from the building control system or building utility bills should be analyzed for the actual load profiles

and system performance of each building (see the following comments g and h). This information will inform accurate plant sizing and energy targets for future work.

6. Building cooling plant over-sizing and poor efficiencies may negatively impact energy code compliance and performance per the following observations:
   a) 33 N. Genesee – The installed cooling capacity is estimated at 359 sf/ton suggesting over-sizing and poor part-load performance. The pant full-load efficiency is 0.905 kW/ton and exceeds the current energy code minimum (0.70 – 0.64 kW/ton). The equipment and controls are old and should be replaced.
   b) 111 N. Genesee - The existing cooling system capacity and efficiency was not available; however, the system appears old and is likely over-sized with poor efficiency. The equipment did not have automated controls which optimize operation and scheduling substantially improving performance and ease of maintenance.
   c) The working refrigerants identified (R-22) do not comply with current code.
7. Building heating plant over-sizing and/or poor efficiencies or fuel source may negatively impact energy code compliance and performance per the following observations
   a) 33 N. Genesee – The installed heating capacity is 64 Btu/h/sf. Designs compliant with the current energy code should be less than this capacity (30-50 Btu/h/sf depending on the ventilation requirements). Improvements to the existing envelope or the addition of heat recovery would exacerbate any existing over-sizing. The boiler full-load efficiency is 85%. Current condensing boiler technology has significantly higher performance (90-95%).
   b) 111 N. Genesee - The installed heating capacity is 51 Btu/h/sf.

B. 1N Genesee
1. Equipment
   a) Space cooling and ventilation is provided by (2) 75 ton Trane packaged RTUs with 130 kW of electric heat and an air-side economizer with power exhaust. Working refrigerant is R-22. Mild corrosion is present along the bottom of the north unit cooling coil compartment suggesting issues with coil drainage. The general condition of the equipment is good.
   b) Trane series fan power boxes with electric reheat provide zone level control. A typical box has a 7 kW, 3-phase heater.
2. Distribution - The previously existing 2-1/2” gas service is capped.

3. Controls - Packaged Trane controllers for the RTUs and FPB boxes are connected to the Johnson Metasys BAS.

C. 33N Genesee

1. Equipment

a) Air distribution is provided by (3) Central air-handling units in the basement. The unit fans have ABB VFD drives, chilled water coils, and hot water coils with coil pumps.

b) Heating is provided by (2) Bryan Boilers located in the pent-house. The boilers are 1500 MBH max input, 1275 MBH output, and 750 MBH minimum input with direct venting.

c) Cooling is provided by a central, water-cooled TRANE chiller located in the basement. The chiller is 110 tons at 99.6 kW with two compressor circuits. Working refrigerant is R-22.

d) Cooling only VAV boxes serve the space. Hot-water perimeter radiator heating is provided.

e) An open cell BCA cooling tower located on the roof serves the chiller. The heat exchange surface is severely scaled and corroded. Heat trace is provided on the make-up water line but the line is not insulated.

f) Chilled water pumps are Magnetek pumps with mild ware.

g) Atrium smoke evacuation is provided via (2) exhaust outlets at the top of the atrium and a large relief air inlet at the first floor lobby.

2. Distribution

a) The steel condenser water piping has mild corrosion and is un-insulated.

b) Chilled water and hot water piping has insulation in fair condition.

3. Controls - BAS is Johnson Controls Metasys. Boilers and chiller have packaged controls with analog interface capabilities.

D. 111N Genesee

1. Equipment

a) Air distribution for the majority of the building is provided by (2) Central air-handling units in the basement with belt-drive fans. The units have dx coils and hot water coils with coil pumps.

b) Cooling is provided by a central, single circuit compressor with direct expansion coils located in the basement. The compressor is water cooled via a roof mounted cooling tower. Total cooling capacity and performance was unavailable.

c) Heating is provided by (2) Gasmaster Boilers located in the basement. The boilers are 1000 MBH max input, 980 MBH output, and 340 MBH minimum with forced draft venting.

d) An open cell BCA cooling tower located on the roof serves the compressor. The heat exchange surface is severely scaled and corroded. The make-up water line has no heat, poorly installed Armaflex insulation, and is not secured.

e) Space cooling and ventilation for a part of the building is provided by a 30 ton Trane packaged RTU with no heat and an air-side economizer with power exhaust.

f) Cooling only VAV boxes serve the space. Hot-water perimeter radiator heating is provided.

2. The BAS is Johnson Metasys retrofit on top of existing Robertshaw pneumatic sensors and actuators.

3. Distribution

a) The steel condenser water piping has mild corrosion and is un-insulated.

b) Chilled water and hot water piping has insulation in fair condition.

c) Visible ductwork in fair condition.

III. Plumbing

A. Summary of Observations

1. The building utilities should be adequate for any standard office and education infill.
2. Lavatories do not have thermostatic mixing valves for the hot water.
3. Water main should have an RPZ type backflow preventer in 33 N. and 111 N. Genesee.
4. The chemical dispensing systems in the janitor closets are supplied through the service sink faucet and should have a dedicated RPZ at each.
5. 111 N. Genesee main electric room has plumbing piping in it that should be removed from above or the space should be removed from the electrical room with a drain pan and soffit.
6. Condition of fixtures and distribution

a) 1 N. Genesee - Fixtures are generally newer and normal replacement due to attrition is expected. Any original galvanized supply pipe would likely need to be replaced within the next 20 years.

b) 33 N. Genesee - Fixtures are generally newer and normal replacement due to attrition is expected.

c) 111 N. Genesee - Fixtures are generally and in need of replacement except on the first floor which was remodeled recently.

B. 1N Genesee

1. Equipment - The building is served by city utilities sanitary, storm, and potable water. The 4'' potable water main enters the basement water service room with approximately 68 psi and an RPZ backflow preventer. The underground waste and storm main sizing were not identified or checked against plans but given the remodel within the last ten years it is assumed they are code compliant. Domestic hot water is by local electric water heaters in janitor closets adjacent to toilet rooms without return piping. Fixtures are standard commercial grade consisting of vitreous china water closets, lavatories, and urinals with manual faucets and flush valves; enameled cast iron service sinks with non-elevated vacuum breaker faucets; stainless steel electric water coolers, and stainless steel drop in sinks with manual faucets.
2. Distribution
   a) Potable water piping is primarily copper but the main and possibly some building distribution piping or risers could be original/older galvanized piping
   b) Waste piping is a combination of original cast iron hub and spigot and primarily PVC from the renovation work

C. 33 N Genesee

1. Equipment - The building is served by city utilities sanitary, storm, and potable water. The 3" potable water main enters the basement mechanical room with a double detector check backflow preventer. The underground waste and storm main sizing were not identified or checked against plans but given the remodel within the last ten years it is assumed they are code compliant. Domestic hot water is by central gas water heater in the third floor mechanical room with return piping. Fixtures are standard commercial grade consisting of vitreous china water closets and urinals with manual flush valves; vitreous china lavatories with sensor or metered faucets; terrazzo mop basins with non-elevated vacuum breaker faucets; and stainless steel electric water coolers.
2. Distribution
   a) Potable water piping appears to be all copper.
   b) Waste piping appears to be all no hub cast iron

D. 111 N Genesee

1. Equipment - The building is served by city utilities sanitary, storm, and potable water. The 3" potable water main enters the basement water service room with no backflow preventer. The underground waste and storm main sizing were not identified or checked against. Domestic hot water is by various gas and electric water heaters throughout the building without any recirculation piping. Fixtures are standard commercial grade consisting of vitreous china water closets, lavatories, and urinals with manual faucets and flush valves; large terrazzo mop basins with non-elevated vacuum breaker faucets; electric water coolers, and stainless steel drop in sinks with manual faucets.
2. Distribution
   a) Potable water piping is predominantly copper. Some of the older wet walls are likely original galvanized supply piping
   b) Waste piping is predominantly no hub cast iron with some older/original galvanized steel and hub and spigot cast iron

IV. Fire Protection

A. Summary of Observations - The systems are within life expectancy and no code deficiencies were observed in 1 N. Genesee and 33 N. Genesee. The following code issues were observed in 111 N. Genesee:
   1. The sprinkler system would need to be extended to any remodeled portion of the building not already sprinkled
   2. Some previously remodeled 2nd floor spaces are connected to the 1st floor system and should be converted over to a second floor control assembly.

B. 1 N. Genesee
   1. Equipment - The building is served by city water main supplying a 4" fire main with approximately 68 psi and a double detector check backflow preventer.
   2. Distribution - The building is fully sprinkled with wet pipe system, floor control assemblies and class 1 stand pipes in the stairwells. The third floor janitor closet has a dry valve serving the attic space.

C. 33 N. Genesee
   1. Equipment: The building is served by city water main supplying a 6" fire main with approximately 60 psi and a double detector check backflow preventer.
   2. Distribution: The building is fully sprinkled with wet pipe system, floor control assemblies in the stairwell.

D. 111 N. Genesee

1. Equipment: The building is served by city water main supplying a 4” fire main with approximately 60 psi and a double detector check backflow preventer.
2. Distribution: The building is partially sprinkled with wet pipe system.

V. Electrical

A. 1N Genesee

1. Existing Electrical Service and Distribution
   a) One 2000A, 277/480V, 3-phase, 4-wire service main disconnect with ground fault protection (GFP) for six Com-Ed services located in the Southwest corner of the Basement.
      (1) One service for the Basement and First Floor
      (2) One service for the Second Floor
      (3) One service for the Third Floor
      (4) One service for the two rooftop air-conditioners
      (5) One service for rooftop electric heating
      (6) One service for rooftop electric heating
   b) Each floor has electrical closet space for 277/480V lighting and receptacle panelboards fed from transformers.
   c) Most transformers observed were floor mounted (not on housekeeping pad), 150° F temperature rise and aluminum winding.
2. Existing Lighting and Lighting Controls
   a) Mostly fluorescent using T-8 lamps, energy saving ballast and 277V, locally switched except key switches in public areas i.e. corridors, toilets, etc.
   b) Emergency lighting consists of 90 minute battery backup lights with two heads and exit lights with red letters, edge lit LED with 90 minute battery backup.
3. Existing Fire Alarm System
   a) Addressable fire alarm system by Notifier, with alarm initiating and notification peripheral devices throughout the space. Also, building is equipped with elevator recall system.

b) Two-way communication type “Rescue Assistance System” as manufactured by Housing Devices Inc. Main unit located in the main entrance lobby adjacent to the Fire Alarm Control Panel (FACP) with “rescue areas” equipped with communication stations in stairwell loading spaces.

B. 33N Genesee

1. Existing Electrical Service and Distribution
   a) One 1600A, 120/208V, 3-phase, 4-wire Com-Ed service with 1600A main disconnect and attached 1600A switch and fuse type distribution board located in the Basement on West wall.
   b) Each floor’s power distribution is accomplished via a recessed panelboard serving half the floor.
2. Existing Lighting and Lighting Controls
   a) Mostly fluorescent using T-8 lamps, energy saving ballast, and locally switched except key switches in public areas i.e. corridors, toilets, etc.
   b) Emergency lighting consists of 90 minute battery backup lights with two heads and exit lights with red letters, edge lit LED with 90 minute battery backup.
3. Existing Fire Alarm System
   a) Addressable fire alarm system by Notifier, with alarm initiating and notification peripheral devices throughout the space. Also, building is equipped with elevator recall system.

C. 111N Genesee

1. Existing Electrical Service and Distribution
   a) One 800A, 120/208V, 3-phase, 4-wire Com-Ed service with 800A main disconnect and attached 800A switch and fuse type distribution board located in the Basement on West wall.
   b) Each floor’s power distribution is accomplished via a recessed panelboard serving half the floor.
2. Existing Lighting and Lighting Controls
   a) Mostly fluorescent using T-8 lamps, energy saving ballast, and locally switched except key switches in public areas i.e. corridors, toilets, etc.
   b) Emergency lighting consists of 90 minute battery backup lights with two heads and exit lights with red letters, edge lit LED with 90 minute battery backup.
3. Existing Fire Alarm System

a) Addressable fire alarm system by GE/EST, with alarm initiating and notification peripheral devices throughout the space. Also, building is equipped with elevator recall system.

VI. Information Technology

A. 1N Genesee - The main fiber cable enters an open MDF Room in the basement adjacent to main electrical service room in the basement. A fiber cable is run to the IT Closet on each floor where it terminates on a rack-mounted patch panel and CAT-6 cable (voice and phone) extends to individual Tele/Data outlets at user locations per floor.

B. 33N Genesee - The main fiber cable enters an MDF Room in the basement adjacent to main mechanical room in the basement. A fiber cable is run to the IT Closet on each floor where it terminates on a rack-mounted patch panel and CAT-6 cable (voice and phone) extends to individual Tele/Data outlets at user locations per floor.

C. 111N Genesee - The main fiber cable enters an MDF Room in the basement adjacent to main mechanical room in the basement. A fiber cable is run to the IT Closet on each floor where it terminates on a rack-mounted patch panel and CAT-6 cable (voice and phone) extends to individual Tele/Data outlets at user locations per floor.

LAKESHORE

4 CODES & PERMITS

Applicable Codes and Standards
Conditional Use and Text Amendment - City of Waukegan

CODES AND PERMITS
APPLICABLE BUILDING CODES

CODE		GOVERNMENTAL AGENCY REQUIRING
2012	International Building Code	Capital Development Board and ICCB
2012	International Mechanical Code	Capital Development Board and ICCB
2005	National Electrical Code	ICCB
2012	International Fire Code	Capital Development Board and ICCB
2010	ASHRAE Standard 90.1-2010,	Capital Development Board and ICCB
2012	International Fuel Gas Code	ICCB
2004	Illinois Plumbing Code (77 Ill. Adm. Code 890)	Capital Development Board and ICCB
1997	Illinois Accessibility Code (71 Ill. Adm. Code 400)	Capital Development Board and ICCB
2003	Fire Prevention and Safety (41 Ill. Adm. Code 100)	Capital Development Board and ICCB
2000	Unified Development Ordinance (UDO)	Lake County
2008	Watershed Development Ordinance (WDO)	Lake County
2011	Steel Products Procurement Act (30 Ill CS 565)	Office of the Attorney General
	Life Cycle Cost Analysis	Capital Development Board
	Farmland Preservation Act	Capital Development Board
	Endangered Species Act	Capital Development Board
	Wetlands Policy Act of 1989	Capital Development Board
	Historical Preservation Act	Capital Development Board
	Archeological and Paleontological Resources Preservation Act	Capital Development Board
	Clean Water Act	Capital Development Board
	Federal Energy Policy Act	
1999	Asbestos Abatement Authority Act (77 III. Adm. Code 855)	Capital Development Board
2000	Lead Poisoning Prevention Act (77 III. Adm. Code 845)	Illinois Department of Public Health
2008	Smoke-Free Illinois Act	Illinois Department of Public Health
2006	Health and Safety Act (820 Ill CS 225)	Department of Labor
2002	Boiler and Pressure Vessel Safety Act (41 III. Adm. Code 120)	Office of the State Fire Marshall
2012	Illinois Energy Conservation Code for Commercial Buildings	Capital Development Board

APPLICABLE BUILDING STANDARDS

2009 Capital Development Board
- Design and Construction Manual

2012 Illinois Department of Transportation
- Standard Specifications for Road and Bridge Construction

2010 Americans with Disabilities Act (ADA) Accessibility Guidelines

2012 Illinois Society of Professional Engineers
- Standard Specifications for Water and Sewer Construction in Illinois, Latest Edition

2000 LEED (Leadership in Energy and Environmental Design) Version 3.0

2010 Licensing Standards for Day Care Centers

2010 NFPA 13 - Installation of Sprinkler Systems

2010 NFPA 14 - Installation of Standpipe Hose Systems

2010 NFPA 20 - Installation of Stationary Pumps for Fire Protection

2010 NFPA 24 - Installation of Private Fire Service Mains

2012 NFPA 30 - Flammable and Combustible Liquids Code

2011 NFPA 45 - Fire Protection for Laboratories Using Chemicals

2012 NFPA 54 - National Fuel Gas Code

2011 NFPA 70 – National Electrical Code

2010 NFPA 72 - National Fire Alarm and Signaling Code

2012 NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems, Current Edition

2009 NFPA 92B - Guide for Smoke Management in Malls, Atria, and Large Areas, Current Edition

2012 NFPA 101 - Life Safety Code

2010 NFPA 110 - Standard for Emergency and Standby Power Systems, Current Edition

2006 NFPA 730 - Guide for Premises Security 2006 Edition

2011 NFPA 731 – Standard for the Installation of Electronic Premises Security Systems

2011 NFPA 780 – Installation of Lighting Protection Systems

2009 Biosafety in Micro-biological and Biomedical Laboratories, Fifth Edition

2004 ANSI Z358.1 Emergency Eyewash and Shower Equipment

2012 American Society of Plumbing Engineers (ASPE) Databooks

2011 I.E.S. Lighting Handbook

2010 ACGIH Industrial Ventilation – A Manual of Recommended Practice, Latest Edition

2003 ANSI/AIHA Z9.5-2003 – Laboratory Ventilation Standard

Occupational Safety and Health Administration (OSHA)

2011 OSHA 29 CFR Part 1910 – Occupational Exposures to Hazardous Chemicals in Laboratories

2011 ASHRAE Standard 110-1995 – Method of Testing Performance of Laboratory Fume Hoods

2007 ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality

CODES AND PERMITS
APPLICABLE BUILDING STANDARDS

2010	ASHRAE 90.1-2010 Energy Standard for Buildings	
1998	ANSI 2136.1 – Standard for Safe Use of Lasers	
2008	ANSI/TIA/EIA-568-C.0 – C.3 – Commercial Building Telecommunications Cabling Standard	
2011	ANSI/TIA/EIA-569-B – Commercial Building Standards for Telecommunications Pathways and Spaces	
2012	ANSI/TIA/EIA-606-A – Administration Standard for Commercial Telecommunications Infrastructure	
2011	ANSI/TIA/EIA-607-A – Commercial Building Grounding and Bonding Requirements for Telecommunications	
2009	BICSI – Electronic Safety and Security Design Reference Manual	
2010	BICSI TDMM – BICSO Telecommunications Distribution Methods Manual	
2005	American Concrete Institute (ACI)	Capital Development Board
2010	American Institute of Steel Construction (AISC)	Capital Development Board
2005	American Welding Society (AWS)	Capital Development Board
2008	American Iron and Steel Institute (AISI)	Capital Development Board
2007	Steel Deck Institute (SDI)	Capital Development Board
2010	Steel Joist Institute (SJI)	Capital Development Board
	Brick Industry Association (BIA)	
	CDB's Roofing Program Handbook	
	FCC – Rules and Regulations	
2008	IEEE-802.3 - Standards	
	Insurance carrier recommendations	
	ISO/IEC – MPEG Standards	
	National Electrical Manufacturers Association (NEMA)	
	Underwriters Laboratories (UL) Fire Protection Equipment Directory	

REQUIRED PERMITS

REQUIRED PERMITS
- Lake County Stormwater Management Commission
  - -Watershed Development Permit
  - -NPDES Stormwater Discharge Permit
- City of Waukegan
  - -Building Permit

REGULATORY AGENCIES
- State of Illinois Capital Development Board
- Lake County Stormwater Management Commission

REQUIRED SUBMITTALS/ REVIEW PER REGULATORY AGENCY
- Lake County Stormwater Management Commission
  - -Watershed Development Permit Application
  - -Stormwater Runoff Calculations
  - -Set of Construction Drawings

CONDITIONAL USE AND TEXT AMENDMENT - CITY OF WAUKEGAN
NARRATIVE: CURRENT STATUS OF CITY OF WAUKEGAN APPROVAL

The Capitol Development Board, College of Lake County and the Legat Architects have been working very closely with the City of Waukegan to gain approval for the proposed addition and improvements to the College's Lakeshore Campus. The project design that is presented in this Schematic Design Book has been developed and reviewed with the City through the entire design process. The resulting site masterplan and building addition was directly impacted by the City of Waukegan's suggestions and recommendations to insure that the design was in keeping with the City's downtown masterplan goals and ordinance requirements. Through this process, the major City concerns (building height, location) were resolved. The project, due to the projects use, did require a Text Amendment and a Conditional Use Permit.

The Lakeshore Campus comprises multiple sites bisected by the Madison Street right of way. All of these sites are currently zoned "B4". This designation does not specifically designate Colleges and Universities as a conditional use within this zoning district. The Text Amendment will alter the current ordinance to allow for this use as a conditional use within the B4 zoning district. The Conditional Use application then requests approval for the proposed addition as a Conditional Use within the district. The applications and required supporting documentation were submitted to the City for approval by the Planning and Zoning Commission (applications attached).

The Lakeshore Campus Project with the Text Amendment and Conditional Use Permit applications were presented to the Planning and Zoning Commission on Thursday, January 8th. The project and the related applications were approved unanimously by the Commission and the required ordinances for both the Text Amendment and the Conditional Use Permit were crafted by the City (ordinances attached). The College and Legat Architects presented the project to the Waukegan Economic Development Committee on Wednesday January 28th and the Mayor and attending committee members strongly recommended the project for approval by the City Council. On February 2nd the project and the ordinances for both the Text Amendment and the Conditional Use Permit were presented to first the City's Judiciary Committee and then to the City Council. Both the Judiciary Committee and the full City Council unanimously approved the project with ordinances and were very complimentary of both the project and the process.

Additional meetings with the various City Departmental heads (Fire, Public Works, and Engineering) will continue to occur through the course of the project to insure coordination of all aspects of the project with the City.

ATTACHMENTS Conditional Use Permit Application, Text Amendment Application, Conditional Use Permit Ordinance, Text Amendment Ordinance

City of Waukegan
Department of Planning & Zoning
(847) 625-6878

TEXT AMENDMENT APPLICATION

Application is hereby made by:

Full Name of Petitioner: College of Lake County
Attn: Mr. David Agazzi

Street Address: 19351 W Washington St,

City, State and Zip: Grayslake, IL 60030

Phone Number with Area Code: (847) 543-2000 General
(847) 543-2631 Mr. Agazzi

E-mail Address: DAgazzi@CLCILLINOIS.EDU

Text Amendment Request

Please describe the proposed or requested text amendment, including the article and section to be amended, along with any new text that is proposed:

Article 8.5 - B4 Central Business District, Section 8.5 - 4 - Conditional Uses,

Proposed New Text - Add item to read as follows:

Educational Institutions.
a. Schools - private, primary and secondary, private or public colleges and universities for profit or not for profit, boarding and non - boarding

Would the proposed text amendment create any nonconformities in regard to existing structures, uses, or lot/yard/bulk area requirements anywhere within the City of Waukegan?

○ Yes ● No

If yes, how so?

TEXT AMENDMENT APPLICATION

Signatures and Notary Seal

I (We) certify that all of the above statements and statements on any documents or drawings submitted herewith are true to the best of my (our) knowledge and belief.

Name of Applicant

Signature of Applicant and Date

SIGNATURE BY THE APPLICANT INDICATES THAT HE/SHE HAS READ AND UNDERSTANDS THE REQUIREMENTS OF THE TEXT AMENDMENT PROCESS AND THE PLANNING AND ZONING COMMISSION HEARING PROCESS.

NOTARY

STATE OF Illinois)
) SS.
COUNTY OF Lake)

I, the undersigned, a Notary Public, in and for said County, in the State aforesaid, DO HEREBY CERTIFY THAT David Agazzi

is/are personally known to me, that said person(s) appeared before me this day in person and severally acknowledged that he/she/they signed and delivered the forgoing owners authorization above as his/her/their free and voluntary act for the uses and purposes herein set forth.

Given under my hand and Notary Seal, this 11th day of December, 20 14.

"OFFICIAL SEAL"
CYNTHIA L. BONADORE
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 06/06/2016

NOTARY SEAL

Cynthia L. Bonadore
Signature of Notary Public

TEXT AMENDMENT APPLICATION

PROCEDURE

1. Applications are due by the 15th of the month in order to be placed on the Planning and Zoning Commission agenda for the following month. This allows for the required publication of notices. Applications will not be accepted if there is anything missing from the Attachment Checklist below.
2. The applicant or his agent is **REQUIRED** to attend the Planning and Zoning Commission's public hearing whenever the proposed text amendment is scheduled to be heard [the second Thursday of the month after the application is received (if received prior to the 15th of the month)]. Meetings are held in the City Council Chambers, 100 N. Martin Luther King, Jr. Avenue, Waukegan, Illinois, at 7:00 PM.

ATTACHMENT CHECKLIST

- [X] Eleven (11) hard copies of this application
- [X] One (1) electronic copy of this application saved on a CD.
- [X] Application fee of $500.00 (make checks payable to City of Waukegan).

TEXT AMENDMENT APPROVAL

15 - O - _____

AN ORDINANCE AMENDING SECTION 8.5-4 OF THE WAUKEGAN ZONING ORDINANCE REGARDING EDUCATIONAL INSTITUTIONS

WHEREAS, the College of Lake County is seeking to expand its Lakeshore Campus in downtown Waukegan; and

WHEREAS, colleges and universities are not recognized as a permitted or conditional use within the B4 Central Business District; and

WHEREAS, pursuant to Article 3 of the Zoning Ordinance of the City of Waukegan, a text amendment may be and has been requested by the College of Lake County; and

WHEREAS, the College of Lake County has requested an amendment of Section 8.5, B4 Central Business District, Section 8.5-4, Conditional Uses, in Zoning Calendar #2441 to assign Educational Institutions, specifically colleges and universities, as a conditional use; and

WHEREAS, pursuant to Article 3 of the City's Zoning Ordinance, the Planning and Zoning Commission of the City of Waukegan held a public hearing on the above-referenced matter on January 8, 2015; and

WHEREAS, the Planning and Zoning Commission made the following findings of fact which have been accepted by the City Council:

1. The proposed text amendment is consistent with the intent and general regulations of the Zoning Ordinance; and
2. The proposed text amendment will not create any nonconformities; and
3. The proposed text amendment will eliminate the nonconformity of the existing college campus.

WHEREAS, the Planning and Zoning Commission and the City Council of the City of Waukegan have determined that the proposed text amendment to Article 8 of the Waukegan Zoning Ordinance will serve a useful and beneficial purpose; and

WHEREAS, the City Council of the City of Waukegan has determined that it is in the public interest and will tend to promote the public health, safety, comfort, convenience, and general welfare of the citizens of the City of Waukegan, Illinois, to grant the proposed text amendment to the Waukegan Zoning Ordinance.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Waukegan, as follows:

Section 1: That Section 8.5-4, "Conditional Uses", of the Waukegan Zoning Ordinance is amended by adding the following use:

1. "Educational Institutions
   a. Schools – private, primary and secondary, private or public colleges and universities for-profit or not-for-profit, boarding and non-boarding."

Section 2: All ordinances or parts of ordinances in conflict with the terms of this ordinance are, to the extent of such conflict, hereby repealed.

Section 3: This ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form as provided by law.

_____
MAYOR WAYNE MOTLEY

ATTEST:

_____
MARIA LaCOUR, City Clerk

Presented and Read at a regular meeting of the Waukegan City Council on the _____ day of _____, 2015.

Passed and Approved at a regular meeting of the Waukegan City Council on the _____ day of _____, 2015.

ROLL CALL:

AYES:

NAYS:

ABSENT:

ABSTAIN:

SWS:SS:ss

CONDITIONAL USE AND TEXT AMENDMENT - CITY OF WAUKEGAN
CONDITIONAL USE DOCUMENT AND FORMS

City of Waukegan
Department of Planning & Zoning
(847) 625-6878

CONDITIONAL USE PERMIT APPLICATION

Application is hereby made by:

Full Name of Petitioner:	College of Lake County Attn: Mr. David Agazzi	Full Name of Property Owner:	College of Lake County Attn: Mr. David Agazzi
Street Address:	19351 W Washington St,	Street Address:	19351 W Washington St,
City, State and Zip:	Grayslake, IL 60030	City, State and Zip:	Grayslake, IL 60030
Phone Number with Area Code:	(847) 543-2000 General (847) 543-2631 Mr. Agazzi	Phone Number with Area Code:	(847) 543-2000 General (847) 543-2631 Mr. Agazzi
E-mail Address:	DAgazzi@CLCILLINOIS.EDU	E-mail Address:	DAgazzi@CLCILLINOIS.EDU

Property Information

Street Address: 128 W. Madison St., 126 W. Madison St., 122 W Madison St., and 111 W. Madison St., and 34 N. Sheridan Rd.

FULL legal description of property **(MUST BE TYPED HERE. CANNOT BE ATTACHED):**

See parcel description for Parcel 1 through Parcel 8 in the attached document and Boundary and Topographic Survey. Not provided here because of lack of space.

Lake County Parcel Identification Number(s) (PIN)(List all):

0821419035, 0821419012, 0821412019, 0821412018, and 0821412017

Zoning and Use Information

Zoning of the property: B-4

Is the property a designated landmark or located in a Historic District? Yes ○ No ●

Current use of the property: Vacant

CONDITIONAL USE PERMIT APPLICATION

Please identify the proposed use of the property that warrants this application for a Conditional Use. Provide, **IN NARRATIVE DETAIL (do not list your answers)**, the type of operation that you are proposing including, but not limited to, all of the following that apply: years of experience related to this conditional use, hours of operation, total number of parking spaces, square footage of building occupied, total seating capacity of building (such as a restaurant, banquet facility, or auditorium), zoning of adjacent properties, fencing or landscape buffering proposed (if a business next to a residential district), landscaping proposed, dumpster location and screening of, hours and/or days when you expect the operation to be at its peak capacity, such as high traffic volume (whether vehicular or pedestrian in nature), what you consider to be peak capacity and at what time(s) and on what day(s), and any other information you feel is beneficial to know.

The proposed 56,000 s.f. building will house the expansion of the College of Lake County's existing Lakeshore Campus. The adjacent properties house the college's existing campus buildings (also zoned B-4). All parking needs for the campus will be provided through the adjacent 372 space parking structure to be purchased by the college. The addition will allow a total campus enrollment of approximately 1,200 students. The project includes the redevelopment of the Madison St. right of way into a landscaped pedestrian zone and drop off / short term parking area. The hours of operation of the campus are normal business hours and during the evening on weekdays with limited use during the weekends. Peak hours of operation will occur in the evenings. The project will require approval from the City to allow a building overpass (14'-0" clear height) over the existing alley connecting the new building and the existing 33 North Genesee (Globe Building) building.

Findings of Fact

The City of Waukegan Zoning Ordinance, under Section 3.11-7, requires that the Planning and Zoning Commission take into consideration the factors listed below in making its recommendation to the City Council. As the applicant, you must demonstrate why the proposed conditional use is appropriate. The burden of proof for a conditional use rests with the applicant. Each of the questions below must be addressed as part of the application. If you believe a particular factor does not apply to the proposed use or property in question, indicate "Not applicable" and explain why it does not apply.

1. **Describe how the conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor diminish and impair property values within the neighborhood.** *Please explain in detail how the surrounding neighborhood will benefit from the proposed conditional use, whether that is by redeveloping a blighted parcel or by using measures to improve the compatibility of the use with surrounding uses. A blighted parcel can include, but are not limited to, abandoned buildings, severely neglected buildings, vacant lots collecting rubble or garbage or buildings housing dangerous or illegal uses.* The proposed development will positively impact the surrounding neighborhood by:
   1 - The development will replace an existing vacant lot north of the Sheridan Road parking structure with a high density urban development which will further activate the downtown area.
   2 - The project will create a consistent overall campus image through the renovation of the existing building facades (31 and 111 North Genesee) and the development of the new building.
   3 - The site design creates a safe pedestrian zone that compliments the existing downtown area by utilizing similar hardscape and landscaping along Genesee St. and Sheridan Road.
   4 - Three abandoned and unsafe buildings will be demolished and replaced with a new Children's Learning Center.
   5 - The development of a Community Room on the top floor of the new building.
2. **Describe how the establishment, maintenance, or operation of the conditional use will not be detrimental to, or endanger the public health, safety, morals, comfort, or general welfare.** *For example, what measures will you take to minimize any harmful or negative aspects that result from the proposed conditional use that may impact neighbors? Please note that "neighbors" can mean adjacent landowners, land uses, and the larger neighborhood area.*

   The proposed College of Lake County Building will transform an underutilized, underdeveloped portion of both Sheridan Road and Madison St. into a dense active development. Aesthetically, the new development will create a well designed, well maintained building and site. Functionally, the project will help activate the downtown area by bringing additional people downtown throughout the day and as a result will create a higher level of security (eyes on the street) and economic activity to local businesses. The program for the improvements also includes a campus security area that is strategically placed to monitor activity in the campus buildings and also the redeveloped site in the Madison St. right of way.

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College of Lake County

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SUSTAINABILITY | PERFORMANCE | DESIGN

CONDITIONAL USE PERMIT APPLICATION

3. **Describe how adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.** *Please explain how you will minimize increases in traffic congestion and circulation problems. Also explain ways that access issues will be improved due to the design, locations, or special proposal of the conditional use. Please be as specific and detailed as possible in this explanation.*

   The College of Lake County is currently in negotiations with the City of Waukegan to purchase and upgrade the Sheridan Road City parking structure to provide all the parking needs for the entire campus (see attached parking analysis study). This will alleviate diminishing downtown street parking for others frequenting local downtown businesses. A new drop off drive with short term parking will be developed off of Sheridan Road to avoid congestion on other City streets for this activity and to provide for parents a place to park while dropping off and picking up their children at the new Children's Learning Center .

4. **Describe how the establishment of the conditional use will not impede the normal and orderly development and improvement of the surrounding properties for uses permitted in the district. How does the proposed conditional use preserve the essential character of the area in which it shall be located?** *Please describe how*

   The College has taken care to meet the City's Masterplan goals for the aesthetic and functional character for development in this downtown location. Aesthetically, the new development will continue the streetscape (hardscape and landscape treatment) aesthetic of the downtown Waukegan area. The proposed buildings will respect the scale, rhythm, and materials of the existing historic Globe building and create a consistent campus image. The development follows the rules of good urban design by building to the property line, and maximizing the amount of window area at street level areas. As part of the development, facade improvements will be made to the existing campus buildings and also the east elevation of the parking garage to further the sense of a unified campus image.Functionally, the project will bring a higher level of density to the downtown area that will further help the development of local businesses downtown. The building design also takes care to position student activity areas at street level with adjacent outdoor street seating and meeting areas to further bring activity to the downtown streets.

5. **Describe how the proposed conditional use, in all other respects, will conform to the applicable regulations (i.e., parking, landscaping, setbacks, lot coverage, lot area) of the district in which it is proposed to be located.** *Please elaborate on how you will comply with as many sections of the Zoning Ordinance as possible. In order to answer this question, you will need to read the requirements of both the zoning district in which this conditional use will be located and any other additional regulations and standards.*

   As noted in this application, a site plan is required. You may use this site plan as part of your response to this question. A site plan is helpful because it allows you to demonstrate visually how you will conform to the regulations. Not all requirements can be shown on a site plan, however. In addition to the site plan, a written explanation of how you will conform to these regulations and standards is necessary.

   The proposed development conforms to the City ordinance zoning requirements for the B-4 zoning district and the development Masterplan goals for this area. The development meets the desired setback (0' setback from property line) and building massing (6 story height along Sheridan Road). The parking count provided in the adjacent Sheridan Road parking structure will provide the required number of spaces for the entire campus as outlined in the zoning ordinance for the B-4 zoning district. The landscaping and hardscape in the newly developed Madison St. right of way will continue the standards of the downtown streetscape.

CONDITIONAL USE PERMIT APPLICATION

Signatures and Notary Seal

I (We) certify that all of the above statements and statements on any documents or drawings submitted herewith are true to the best of my (our) knowledge and belief.

David Aggazzi
Name of Applicant — Signature of Applicant and Date

David Aggazzi
Name of Property Owner — Signature of Property Owner and Date

SIGNATURE BY THE APPLICANT INDICATES THAT HE/SHE HAS READ AND UNDERSTANDS THE REQUIREMENTS OF THE CONDITIONAL USE PERMIT PROCESS AND THE PLANNING AND ZONING COMMISSION HEARING PROCESS.

NOTARY

STATE OF Illinois)
) SS.
COUNTY OF Lake)

I, the undersigned, a Notary Public, in and for said County, in the State aforesaid, DO HEREBY CERTIFY THAT David Aggazzi

is/are personally known to me, that said person(s) appeared before me this day in person and severally acknowledged that he/she/they signed and delivered the forgoing owners authorization above as his/her/their free and voluntary act for the uses and purposes herein set forth.

Given under my hand and Notary Seal, this 11th day of December, 20 14.

"OFFICIAL SEAL"
CYNTHIA L. BONADORE
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 06/06/2016

NOTARY SEAL

Cynthia L. Bonadore
Signature of Notary Public

CONDITIONAL USE PERMIT APPLICATION

PROCEDURE

1. Applications are due by the 15th of the month in order to be placed on the Planning and Zoning Commission agenda for the following month. This allows for the required publication of notices and the mailing of notices to surrounding property owners. Applications will not be accepted if there is anything missing from the Attachment Checklist below.
2. The applicant is responsible for and is **REQUIRED** by the Zoning Ordinance to post notification of the Planning and Zoning Commission's public hearing in a conspicuous place on the subject property facing the nearest improved street, not less than 15 days before the public hearing. This notification shall be posted on forms provided by the City of Waukegan Planning and Zoning Department.
3. The applicant or his agent is **REQUIRED** to attend the Planning and Zoning Commission's public hearing whenever the proposed conditional use is scheduled to be heard (the second Thursday of the month after the application is received, if received prior to the 15th of the previous month). Meetings are held in the City Council Chambers, 100 N. Martin Luther King, Jr. Avenue, Waukegan, Illinois, at 7:00 PM.

ATTACHMENT CHECKLIST

- [X] Eleven (11) hard copies of this application, Plat of Survey (prepared by an Illinois Registered Land Surveyor), and proposed site plan.
- [X] One (1) electronic copy of this application, Plat of Survey, and proposed site plan on a CD.
- [X] A copy of deed or title insurance policy to provide proof of parcel ownership.
- [X] A Lake County tax map showing all properties within 250 feet of subject property. Copies of the map can be obtained at the Lake County Map Services Department, 18 N. County Street, Waukegan, Illinois.
- [X] A typed listing of all property addresses, which includes the full names of current property owners, the property owners' mailing addresses, and Parcel Identification Numbers (PINs), which are partially or entirely within 250 feet from the edge of the subject property
- [X] Application fee of (choose from the pull-down menu): Office or Business PUD - $600
(make checks payable to City of Waukegan).

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College of Lake County
LEGAT ARCHITECTS SUSTAINABILITY | PERFORMANCE | DESIGN

15 - O - _____

AN ORDINANCE GRANTING A CONDITIONAL USE PERMIT TO THE COLLEGE OF LAKE COUNTY FOR THE EXPANSION OF ITS LAKESHORE CAMPUS IN THE B4 CENTRAL BUSINESS DISTRICT

WHEREAS, the Planning and Zoning Commission of the City of Waukegan pursuant to Article 3, Section 3-11 and the subsections thereunder of the Waukegan Zoning Ordinance held a public hearing on the following matter:

Zoning Calendar No.:	2441
Petitioners:	College of Lake County
Hearing Date:	January 8, 2015
Property Location:	111 W. Madison Street, 122 W. Madison Street, 126 W. Madison Street, 128 W. Madison Street, and 34 N. Sheridan Road
Classification Requested:	B4 Central Business District with a Conditional Use Permit for a Public College

WHEREAS, the Planning and Zoning Commission has filed its report following said hearing and thereon makes the following findings of fact:

1. The College of Lake County, the Petitioner herein, has made application for the CUP in order to come into compliance with the City's ordinance regarding colleges in the B4 Central Business District.
2. The Petitioner, The College of Lake County, has agreed to abide by the conditions set forth below as recommended by the Waukegan Planning and Zoning Commission and the City Council, in conjunction with the granting of a Conditional Use Permit.
3. The College of Lake County at this location is an acceptable one for the area and will not cause any negative impact to this property or surrounding properties.
4. The factors of Section 3.11-7 of the Waukegan Zoning Ordinance have been satisfied and it is appropriate to grant the requested conditional use permit.

WHEREAS, the Planning and Zoning Commission recommends that a Conditional Use Permit for the operation of a public college be granted to the Petitioner on the real property described herein by the City Council of the City of Waukegan; and

WHEREAS, the City Council of the City of Waukegan has determined that it is in the public interest and will tend to promote the public health, safety, morals, comfort, convenience, and general welfare of the residents of the City of Waukegan, Illinois, to grant the proposed Conditional Use Permit.

NOW, THEREFORE, BE IT ORDAINED BY THE City Council of the City of Waukegan, as follows:

SECTION 1: That pursuant to Article 3 of the City of Waukegan Zoning Ordinance and further conditioned upon the terms of this ordinance, the zoning classification of the property described herein is changed from B4 Central Business District to B4 Central Business District with a Conditional Use Permit for the operation of a public college upon the property legally described as follows:

PARCEL 1:
THE EAST 22 FEET OF THE WEST 66 FEET OF THE SOUTH 69 FEET OF LOT 7 IN BLOCK 12 IN THE ORIGINAL TOWN OF LITTLE FORT (NOW CITY OF WAUKEGAN) ACCORDING TO THE PLAT THEREOF, RECORDED MAY 26, 1841, IN BOOK "A" OF DEEDS, PAGE 89, IN LAKE COUNTY, ILLINOIS.

PARCEL 2:
THAT PART OF LOT 7 IN BLOCK 12 IN ORIGINAL TOWN OF LITTLE FORT (NOW CITY OF WAUKEGAN) IN THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 45 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING ON THE SOUTH LINE OF LOT 7 AT A POINT 66 FEET EAST OF THE SOUTHWEST CORNER OF SAID LOT; RUNNING THENCE EAST 20 FEET; THENCE NORTH 69 FEET; THENCE WEST 20 FEET; AND THENCE SOUTH 69 FEET TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS.

PARCEL 3:
THAT PART OF LOT 7 IN BLOCK 12 IN THE ORIGINAL TOWN OF LITTLE FORT, (NOW CITY OF WAUKEGAN), DESCRIBED AS FOLLOWS, TO-WIT: COMMENCING AT A POINT ON THE SOUTH LINE OF LOT 7 IN BLOCK 12, WHICH POINT IS 2 FEET WEST OF THE SOUTHEAST CORNER OF SAID LOT, AS ORIGINALLY PLATTED; THENCE WEST ON SAID SOUTH LINE OF SAID LOT, 49-28/100 FEET, MORE OR LESS, TO A POINT 86 FEET EAST OF THE SOUTHWEST CORNER OF SAID LOT; THENCE NORTH PARALLEL TO THE WEST LINE OF SAID LOT TO THE NORTH LINE THEREOF; THENCE EAST ON SAID NORTH LINE OF SAID LOT TO A POINT 2 FEET WEST OF THE NORTHEAST CORNER OF SAID LOT, AS ORIGINALLY PLATTED, AND THENCE SOUTH PARALLEL TO THE EAST LINE OF SAID LOT TO THE PLACE OF BEGINNING, (EXCEPT ALL RIGHTS WHICH THE CITY OF WAUKEGAN MAY HAVE ACQUIRED BY CONDEMNATION PROCEEDINGS OR OTHERWISE IN THE EAST 6 FEET OF THE PROPERTY FOR ALLEY PURPOSES), SITUATED IN LAKE COUNTY, ILLINOIS.

PARCEL 4:
THE EAST 80 FEET OF LOT 1 (AS MEASURED ON THE NORTH LINE) IN BLOCK 17 IN ORIGINAL TOWN OF LITTLE FORT (NOW CITY OF WAUKEGAN) IN THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 45 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED MAY 26, 1841 IN BOOK "A" OF DEEDS, PAGE 89, IN LAKE COUNTY,
ILLINOIS.

PARCEL 5:
THAT PART OF LOT 1 IN BLOCK 17 IN THE ORIGINAL TOWN OF LITTLE FORT (NOW CITY OF WAUKEGAN) IN THE SOUTHEAST QUARTER OF SECTION 21, TOWNSHIP 45 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT IN THE NORTH LINE OF SAID LOT, SAID POINT BEING 20 FEET EASTERLY OF THE NORTHWEST CORNER OF SAID LOT; THENCE EASTERLY ALONG THE NORTH LINE OF SAID LOT TO A POINT WHICH IS 92 FEET WEST OF THE NORTHEAST CORNER OF SAID LOT; THENCE SOUTHERLY PARALLEL WITH THE WEST LINE OF SAID LOT A DISTANCE OF 60 FEET; THENCE WESTERLY PARALLEL TO THE NORTH LINE OF SAID LOT TO A POINT 20 FEET EAST OF THE WEST LINE OF SAID LOT; THENCE NORTHERLY PARALLEL TO THE WEST LINE OF SAID LOT A DISTANCE OF 60 FEET TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS.

SECTION 2: That the Conditional Use Permit herein granted is subject to and conditioned upon strict compliance by the Petitioner with the following conditions:

1. All building code and life safety requirements of the establishment will have to be satisfied by the Building and Fire Departments.
2. All conditions must be satisfied by the Engineering Department.
3. The property must meet all of the zoning requirements of the B4 Central Business District.

4. Access to the former News-Sun site from Madison Street must be maintained when the former News-Sun site is redeveloped. The Downtown/Lakefront Master Plan prohibits direct vehicular access from Sheridan Road.
5. No EIFS (Exterior Insulation Finishing System) material shall be utilized in the design of the new building.
6. No windows shall be tinted, mirrored, or opaque.
7. Provide elevations of the buildings in their true colors. And if that is not possible, please provide a color palette of what is proposed.
8. The east façade along Sheridan Road must be revised to be more inviting along the pedestrian level with the incorporation of an entrance, rather than a façade with no accessibility.
9. Provide a landscape plan with all landscaping proposed, along with the species.
10. Provide a site plan which will include all site amenities and their locations including (but not limited to) sculptures, benches, chairs, tables, trash receptacles, bollards, planters, and clocks.
11. All roof-mounted HVAC and other mechanical equipment shall be screened from view with architectural screening, such as a parapet wall.
12. All parking for College of Lake County students shall be provided on-site and not utilize the on-street parking spaces within the downtown area.
13. No drop-off or pick-up of students shall take place along Genesee Street or Sheridan Road, but shall utilize the proposed cul-de-sac on Madison Street, in addition to the sixteen (16) short-term parking spaces on Madison Street.
14. A comprehensive sign plan should be submitted for review for all signage (wall, monument, directional, wayfinding) proposed on the exterior of the campus buildings.
15. The City has existing storm, sanitary, and water mains under the Madison Street right-of-way between Genesee Street and Sheridan Road that will need to be reconstructed prior to any improvements to any roadway/courtyard/streetscape elements. These utility reconstructions need to be included with the site plan for this project.
16. There should be an agreement in place where the College of Lake County agrees to maintain the streetscape and landscaping improvements within the Madison Street right-of-way between Genesee Street and Sheridan Road.
17. The structure to be constructed at 34 N. Sheridan will be located in part on an alley owned by the City. This alley will need to be vacated and ownership transferred to College of Lake County.
18. The alley to be vacated contains a City owned storm sewer. This storm sewer will need to be relocated and in doing so shall not lose any of its storm water carrying capacity. Once this storm sewer is relocated it will run under the connecting bridge connecting the structures at 34 N. Sheridan and 33 N. Genesee. Since maintenance of this storm sewer will be more difficult underneath this bridge either the College of Lake County shall agree to take over maintenance responsibility of this storm sewer or the portion of the storm sewer under the bridge shall be constructed inside a steel casing pipe.
19. As part of the watershed development permit application the applicant will need to submit storm water calculations along with a detailed site plan. The storm water calculations will need to show that if the proposed storm water runoff from the site exceeds the existing conditions runoff from the site that the existing storm sewer system can accommodate the additional flow. If the existing storm sewer system cannot handle the additional flow then either flow will have to be restricted or the storm sewer system will need to be modified to accommodate the additional flow.
20. The layout in the architectural renderings indicates that cars will have to cross a pedestrian access route in order to park along the north side of Madison Street. This is an unsafe layout and should be revised.
21. The architectural renderings do not show enough detail to be able to comment on the layout of the drop off area and access to the alley. This will be commented on once a detailed site plan is submitted.

SECTION 3: The failure of Petitioner, or its successors or assigns to comply with one or more of the conditions listed in Section 2 above shall be grounds for the giving of a Notice for Rule to Show Cause for the revocation of the Conditional Use Permit by the Waukegan City Council. That notice shall give Petitioner fourteen (14) days in which to respond and answer the Notice for Rule to Show Cause. A hearing on the Notice and Answer shall be held no sooner than thirty (30) days after the service of the original notice.

SECTION 4: The City Clerk and Zoning Administrator are hereby directed to have the maps, indices, and records or the City of Waukegan clearly marked to indicate this Conditional Use Permit.

SECTION 5: All ordinances or parts of ordinances in conflict herewith are hereby repealed, to the extent of such conflict.

SECTION 6: This ordinance shall be in full force and effect from and after its passage, approval, and publication in pamphlet form as provided by law.

_____
MAYOR WAYNE MOTLEY

ATTEST:

_____
MARIA LaCOUR, City Clerk

Presented and Read at a regular meeting of the Waukegan City Council on the _____ day

of _____, 2015.

Presented and Approved at a regular meeting of the Waukegan City Council on the _____ day

of _____, 2015.

ROLL CALL:

AYES:

NAYS:

ABSENT:

ABSTAIN:

SWS:SS:ss

PAGE NOT USED

LAKESHORE

5 LEED CERTIFICATION

LEED Checklist

LEED CERTIFICATION

Sustainable CLC - Green Initiatives at CLC

The College of Lake County Lakeshore Campus is dedicated to sustainable practices through campus operations and the design of new or renovation projects. CLC seeks to be a leader in using best practices for green building and development, not only to conserve resources, but also to create a living laboratory for student and community learning. CLC is committed to teaching its students sustainability-related job skills for a changing world.

The Lakeshore Campus will be seeking **LEED Certification for the new 6 Story Tower** on the south site. Site planning and design of the adjacent Madison Street will also be designed to LEED standards. The LEED boundary will be further defined as the project progresses. See proposed LEED Checklist on the adjacent page for an itemized list of possible LEED credits that the project will be seeking to acquire.

The renovation projects and the new 1 Story Children's Learning Center will follow similar sustainable campus guidelines and standards but will not be seeking LEED Certification.

LEED 2009 for New Construction and Major Renovation

Project Checklist

CDB Project No.: 810-056-024 / Construct Student Services / Adult Education Center

December 4, 2013

Sustainable Sites — Possible Points: 26

25 Y | 1 N | ? | Sustainable Sites | Possible Points: 26

Y	N	?			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
	1		Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

7 | | 3 | Water Efficiency | Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3		1	Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

24 | | 11 | Energy and Atmosphere | Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
11		8	Credit 1	Optimize Energy Performance	1 to 19
4		3	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
2			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

8 | | 6 | Materials and Resources | Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	N	?			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
1			Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

15 | | | Indoor Environmental Quality | Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
1			Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

6 | | | Innovation and Design Process | Possible Points: 6

1			Credit 1.1	Innovation in Design: Regional Content 40%	1
1			Credit 1.2	Innovation in Design: Recycled Content 30%	1
1			Credit 1.3	Innovation in Design: Green Cleaning	1
1			Credit 1.4	Innovation in Design: Sustainability In Education	1
1			Credit 1.5	Innovation in Design: Maximize Open Space	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

4 | | | Regional Priority Credits | Possible Points: 4

1			Credit 1.1	Regional Priority:Site Selection	1
1			Credit 1.2	Regional Priority: Development Density & Community	1
1			Credit 1.3	Regional Priority: Public Transportation Access	1
1			Credit 1.4	Regional Priority: Low Emitting and Fuel Efficient Vehicles	1

Total — Possible Points: 110

89 | 1 | 20 | Total | Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

LAKESHORE

6 NEW BUILDING & RENOVATIONS CONCEPT

Project Narrative
Concept Development
Floor Plan
Sections
Renderings
Elevations and New Material Designations
Landscape/ Site Plan

NEW CAMPUS EXPANSION CONCEPT
PROJECT NARRATIVE

The goal of the new College of Lake County Lakeshore expansion is to address a number of aesthetic and functional design challenges of the existing campus and the downtown Waukegan environment. Functionally, the project provides needed new classrooms and space for One-Stop Enrollment Services, Life Sciences, Library Adult Education, Administration, and Child Care. Additionally the existing buildings will be upgraded with new finishes and upgraded infrastructure. Additional space for student interaction including the availability of food options will be provided.

The overall plan for the campus creates a sense of place by developing a consistent image for the new and existing buildings and physically connecting them to all the program elements. The plan calls for developing an aesthetic for the new building and the existing 111 North Genesee building that complements the historic Globe Building (33 North Genesee). The facades on the 111 North Genesee building will be upgraded and the new building design has been sympathetically designed to consider the scale, massing, color, and materials of the existing Globe Building. The new building will also form a physical link between the existing City garage and the Globe building to insure security and comfort for the students attending the college.

The new and existing campus buildings will be centered on a redeveloped pedestrian "Quad" planned in the current Madison St. right of way. The Quad will feature outdoor student seating areas, newly developed green space, a student drop off circle drive, and short term parking spaces. The design also integrates and complements the existing downtown Waukegan streetscape design through the use of similar hardscape and plant material. A new campus gateway (renovated existing pedestrian overpass) defines the entry to this redeveloped public zone from Genesee St. and gracefully expresses the fresh new contemporary image of the campus.

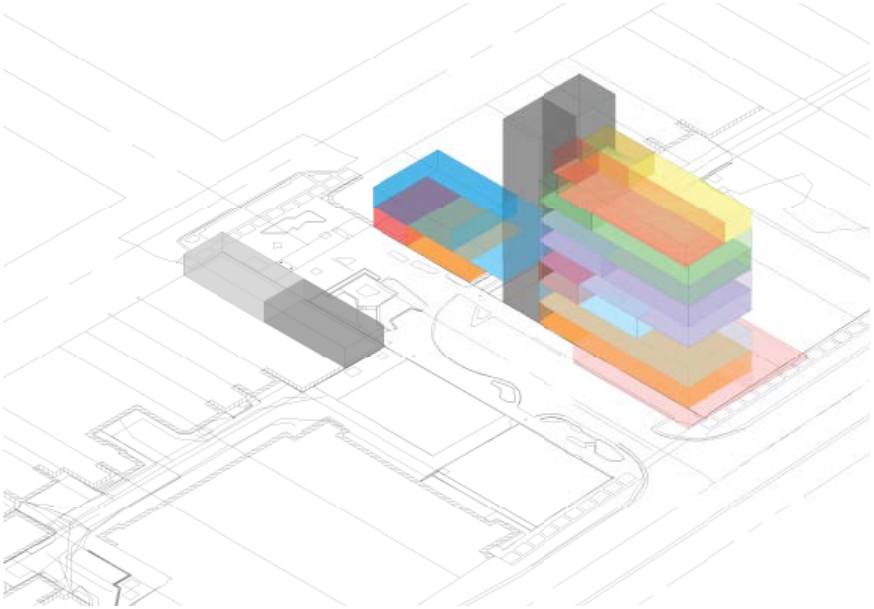
The project carefully and successfully responds to the multiple needs and goals of the College of Lake County and the City of the Waukegan through a sympathetic, comprehensive development that will enhance the existing campus and downtown environment.

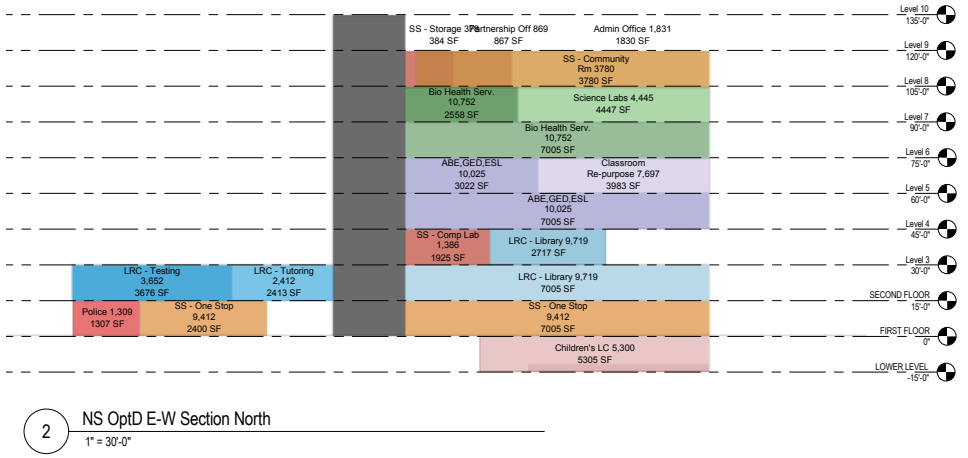
NEW WORK ITEM LIST

1. New 6 Story Tower
2. New 1 Story Children's Learning Center with Play area
3. 31 N. Genesee Existing West Facade Renovations
4. 33 N. Genesee Existing Building Renovations
5. 111 N. Genesee Existing Building Renovations
6. Existing Parking Structure Upgrades
7. Madison St. (Quad) Streetscape Development

NEW BUILDING CONCEPT SKETCH

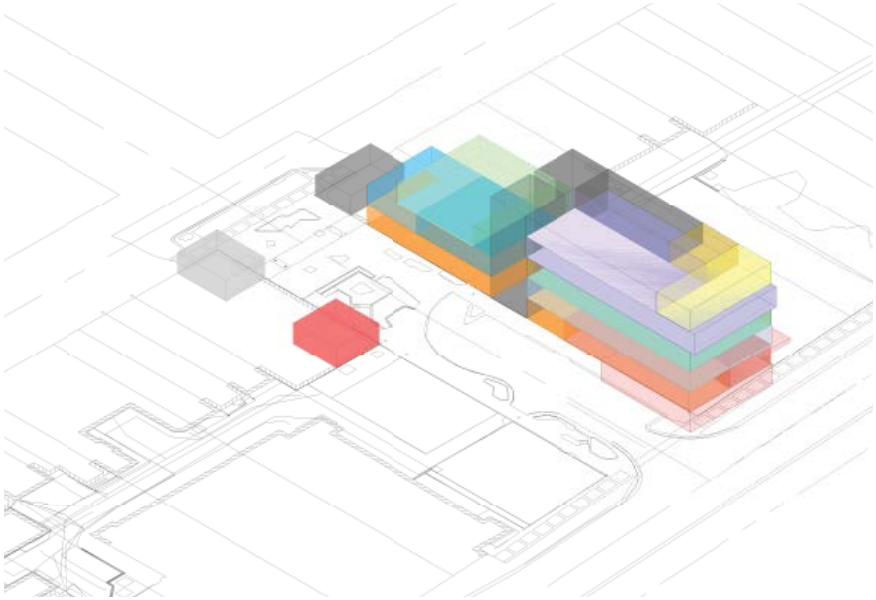
NEW BUILDING CONCEPT OPTIONS AND PROCESS

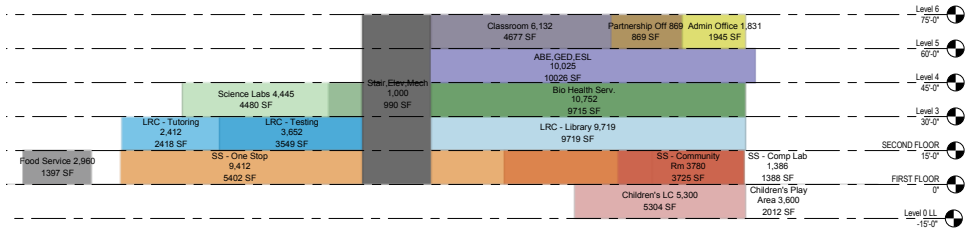




2 NS OptD E-W Section North
1" = 30'-0"

NORTH SITE OPTION - A (9 Story Tower)





2 NS OptC2 E-W Section North
1" = 30'-0"

NORTH SITE OPTION - B (6 Story Tower)

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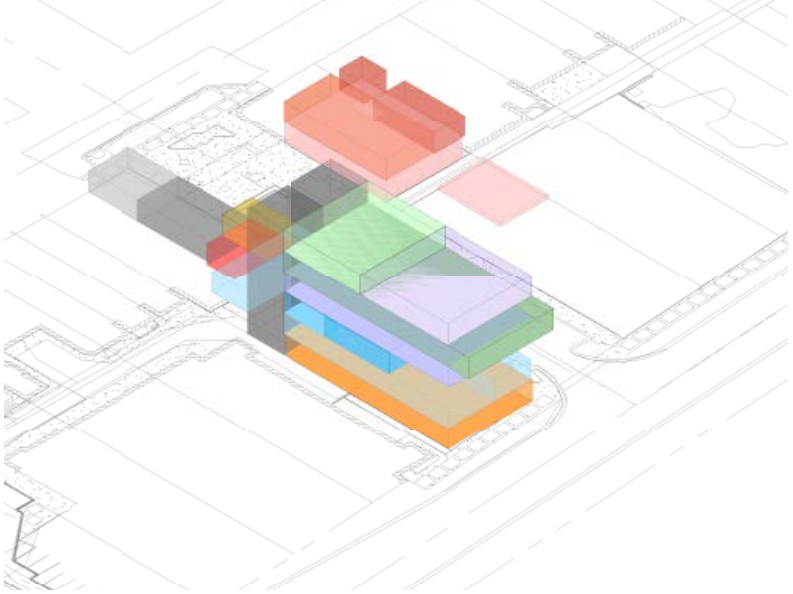
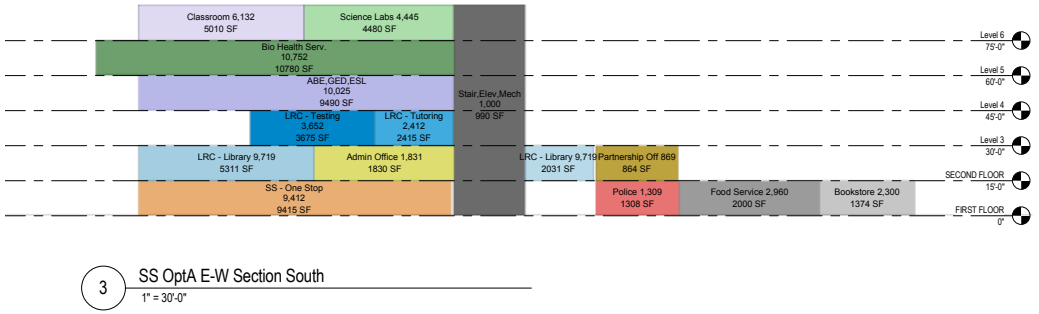
LEGAT ARCHITECTS
SUSTAINABILITY | PERFORMANCE | DESIGN

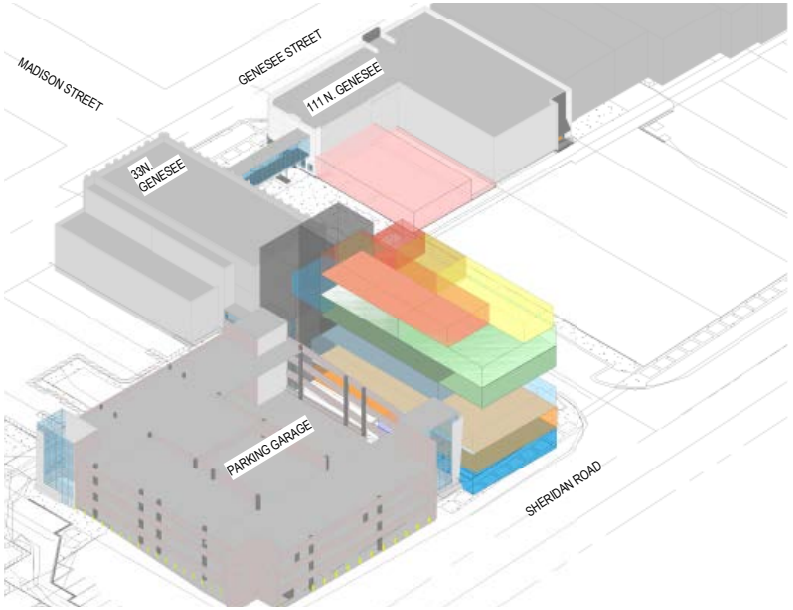
NEW BUILDING CONCEPT OPTIONS AND PROCESS

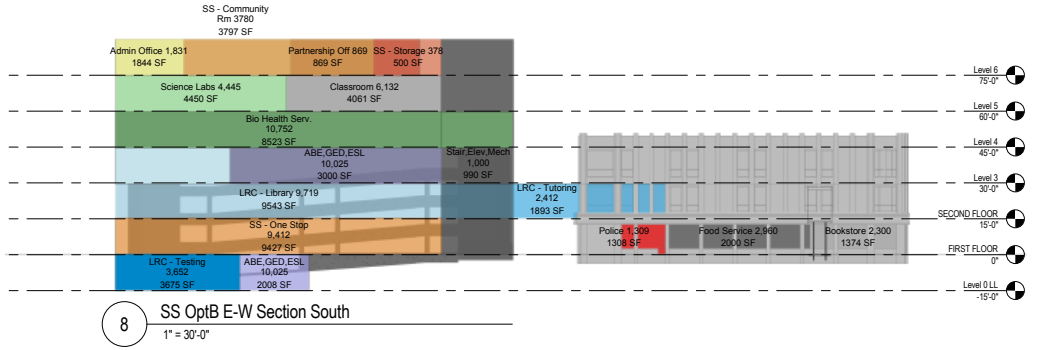




3 SS OptA E-W Section South
1" = 30'-0"

SOUTH SITE OPTION - C (6 Story Tower w/ 2 Story Community Building)

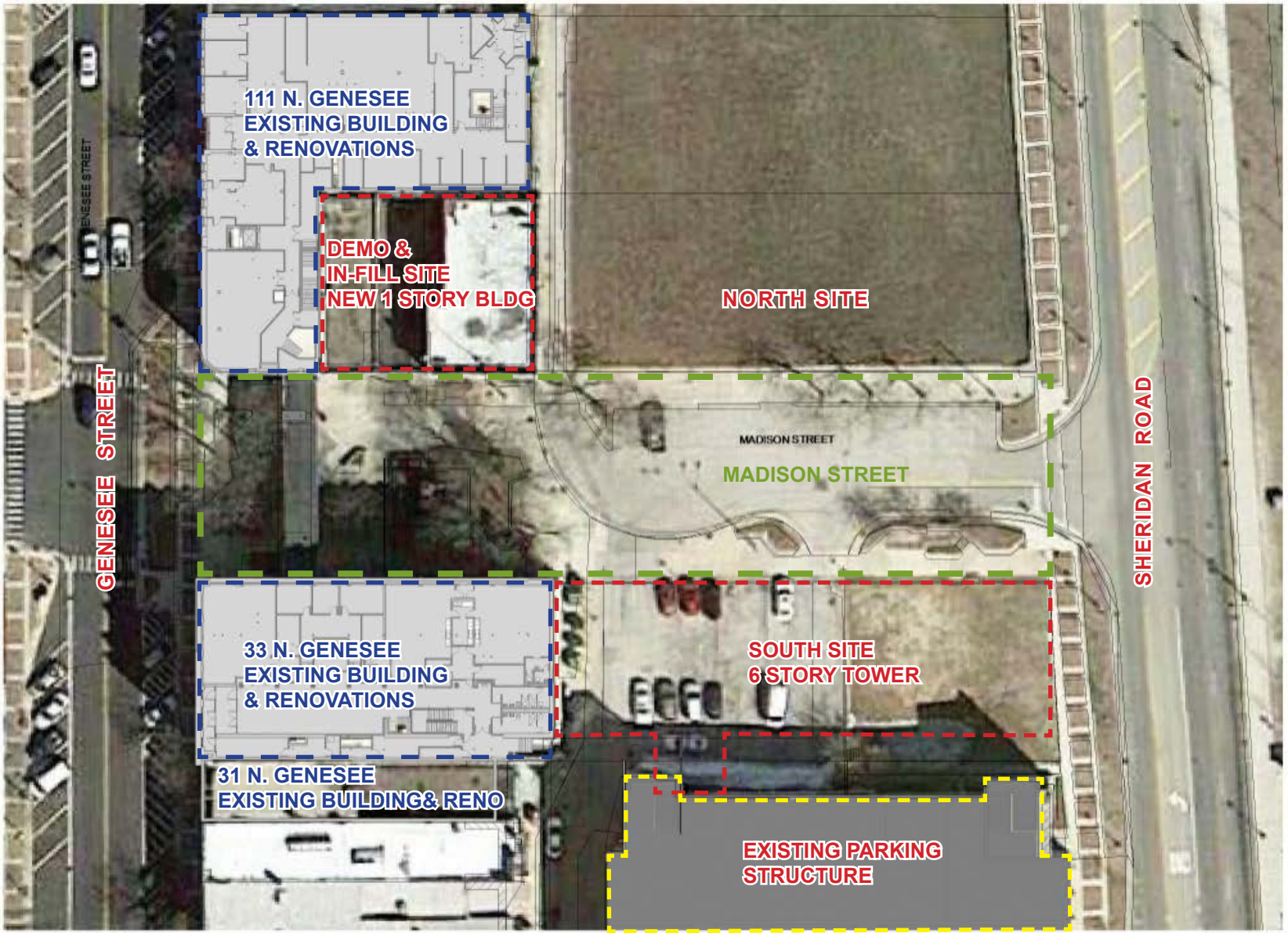




8 SS OptB E-W Section South
1" = 30'-0"

SOUTH SITE OPTION - D **SELECTED (6 Story Tower w/ 1 Story Children's Learning Center)**

NEW BUILDING CONCEPT
EXISTING SITE PLAN WITH AERIAL



Existing Site Plan Scale: 1" = 50'-0" 12/08/2014

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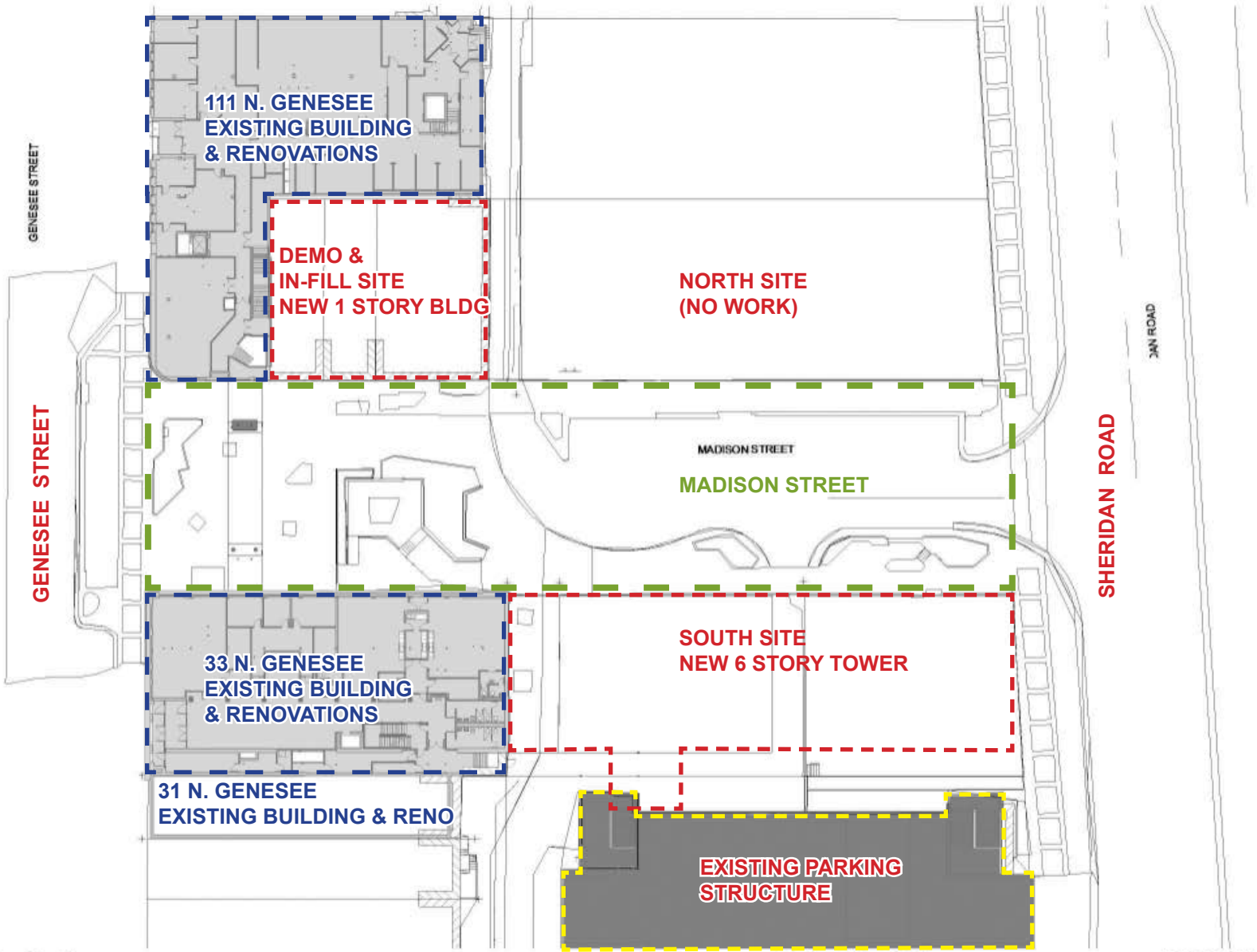
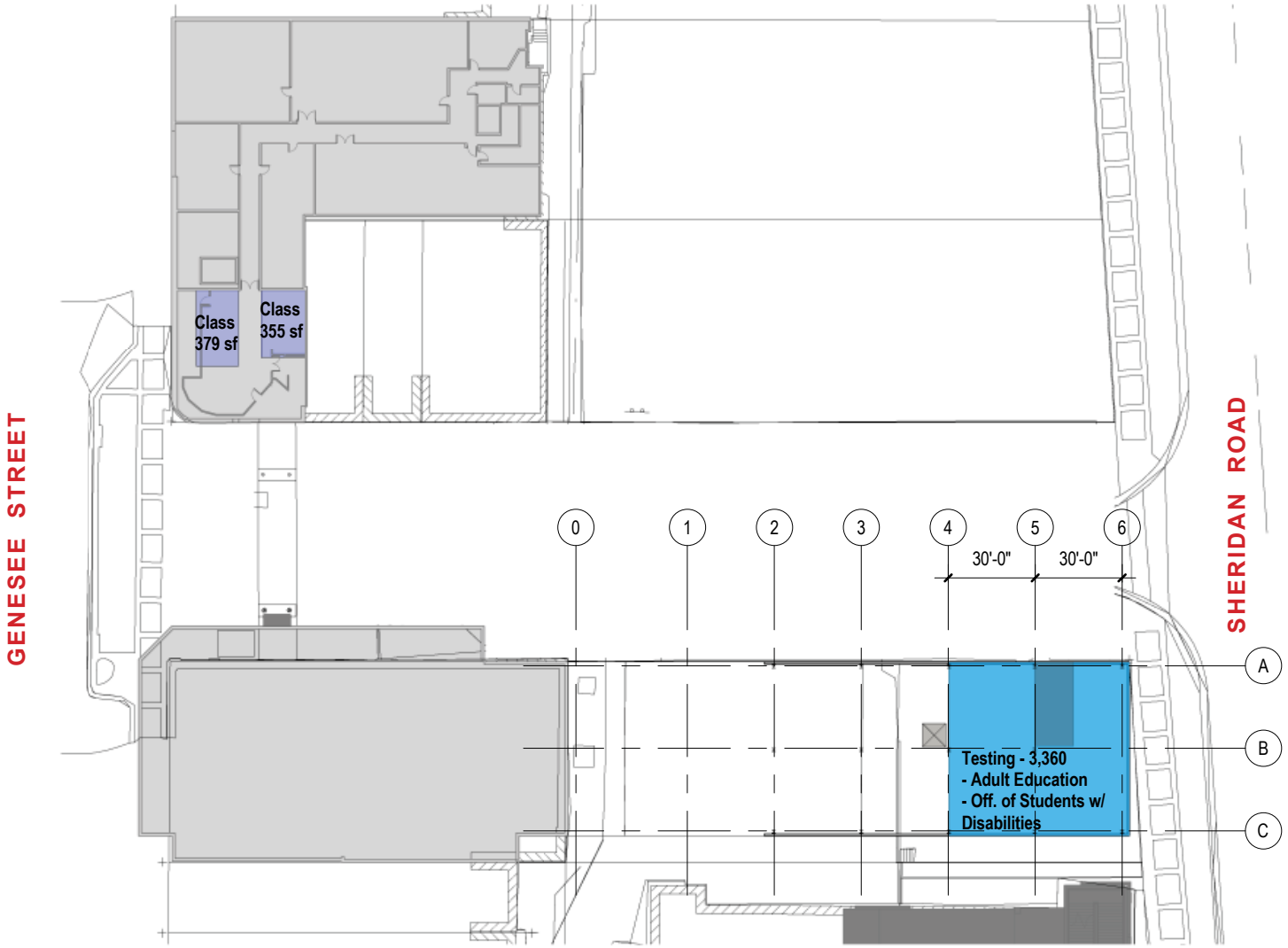
SUSTAINABILITY | PERFORMANCE | DESIGN

EXISTING SITE PLAN



NEW BUILDING CONCEPT
FLOOR PLANS



New Building Level 0

Scale: 1" = 50'-0"

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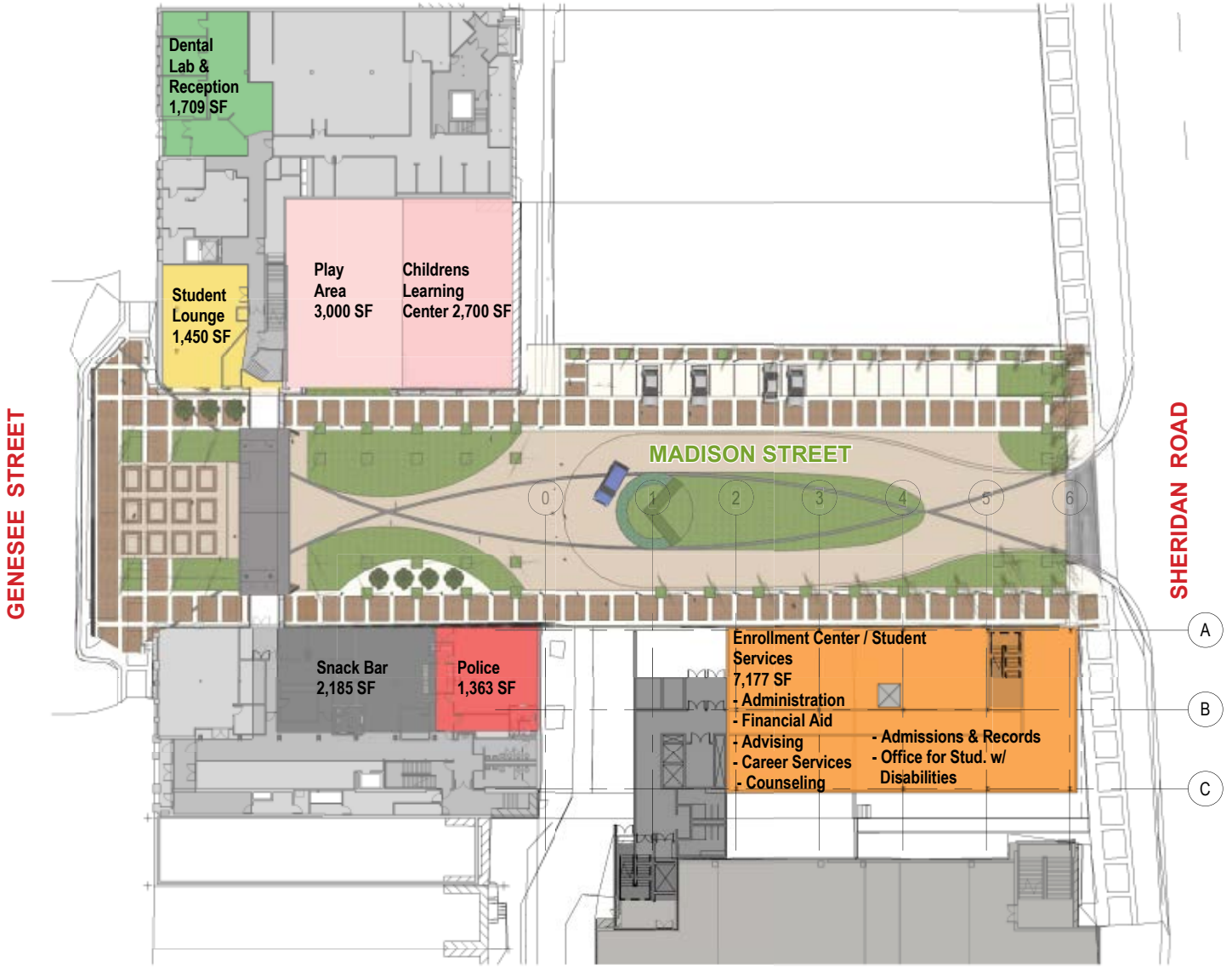

New Building - Level 1

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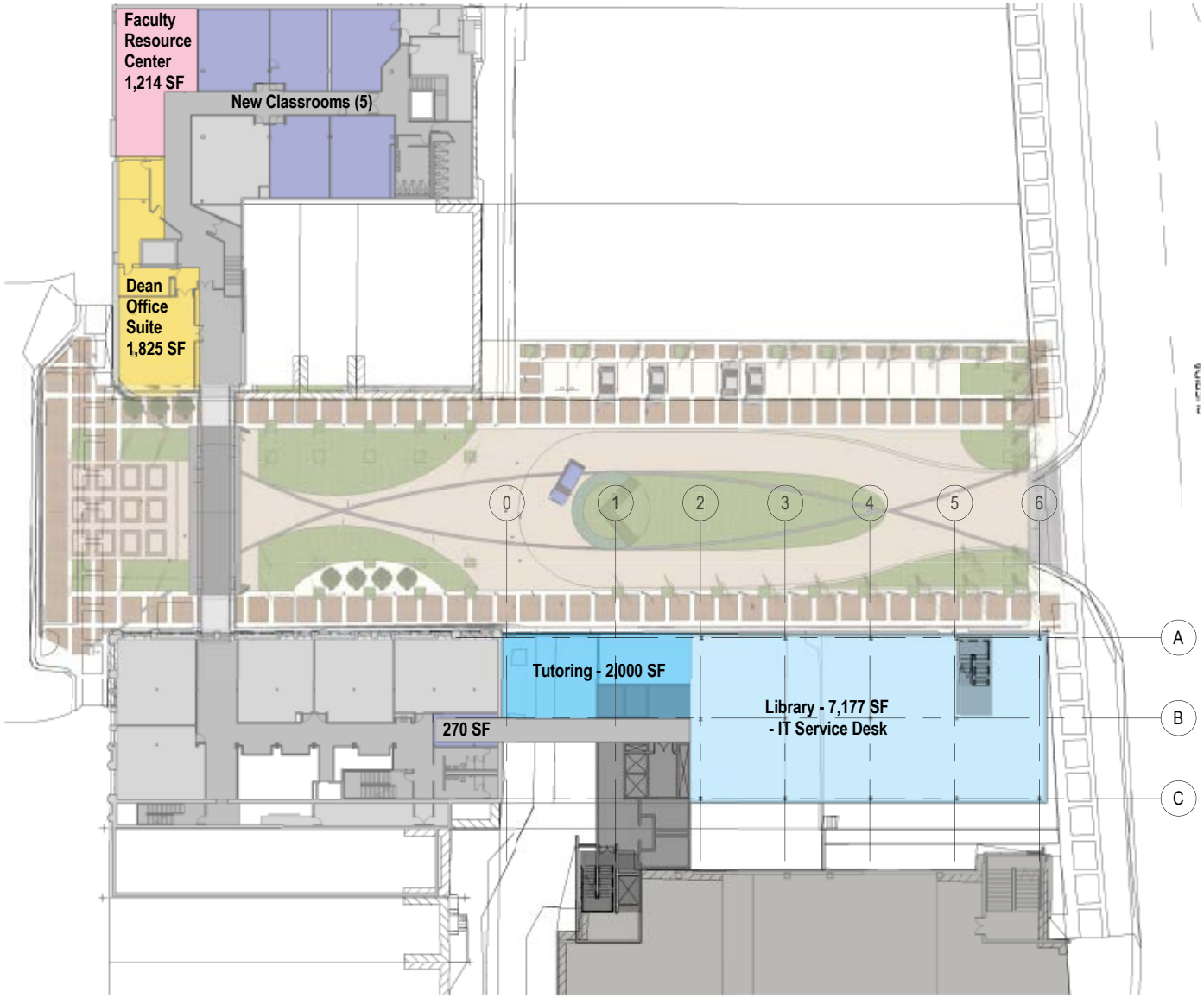
NEW BUILDING CONCEPT
FLOOR PLANS



New Building - Level 2

Scale: 1" = 50'-0"

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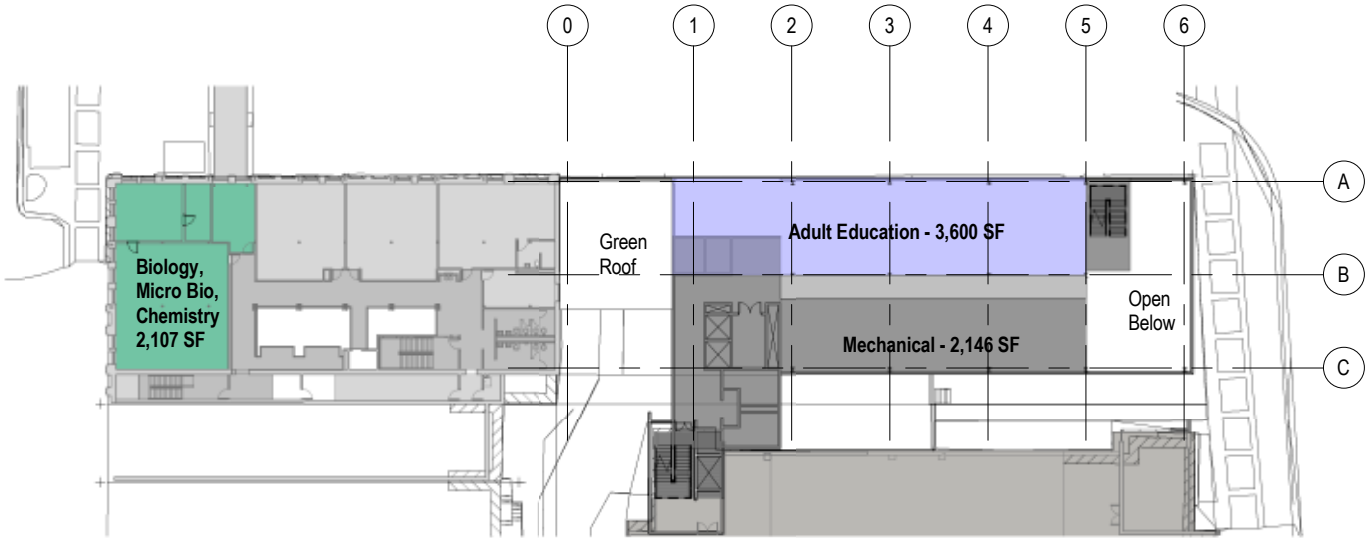

New Building - Level 3

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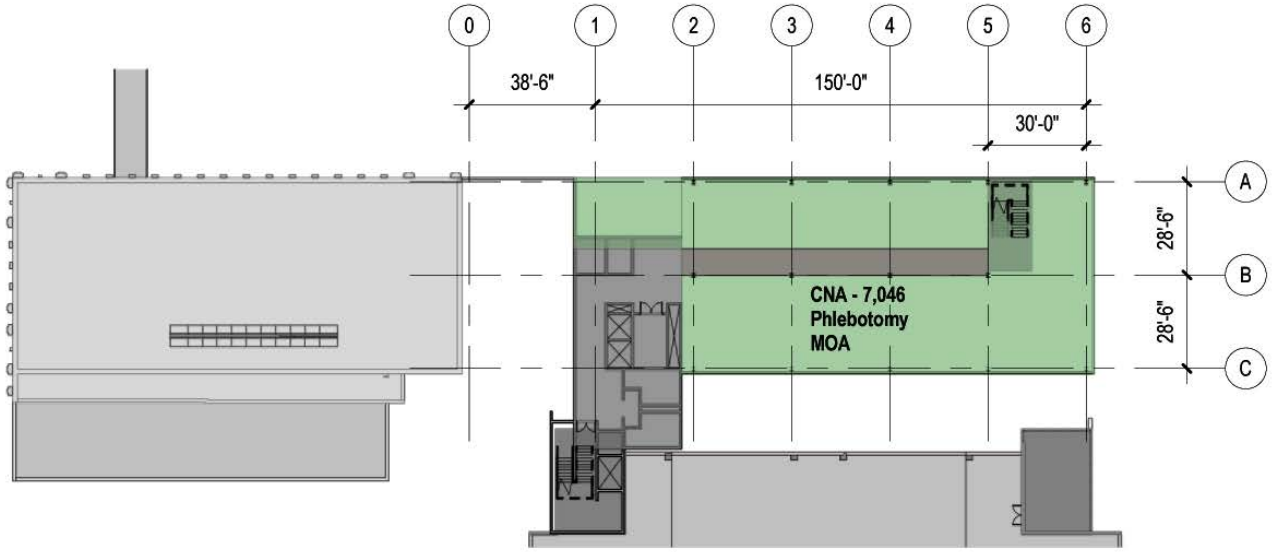
NEW BUILDING CONCEPT
FLOOR PLANS



New Building - Level 4

Scale: 1" = 50'-0"

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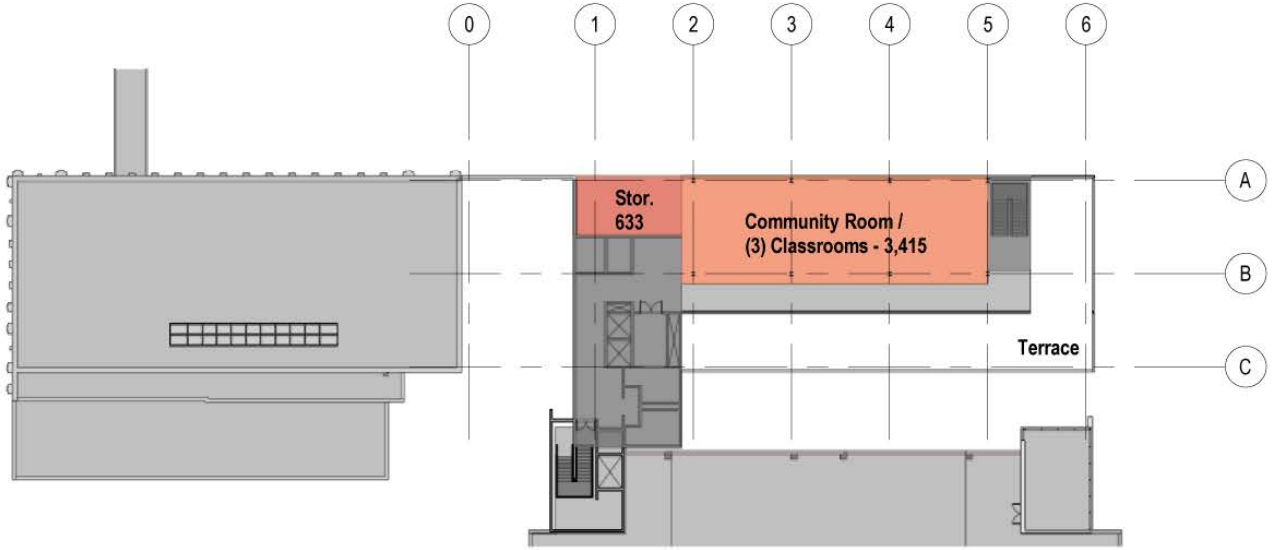
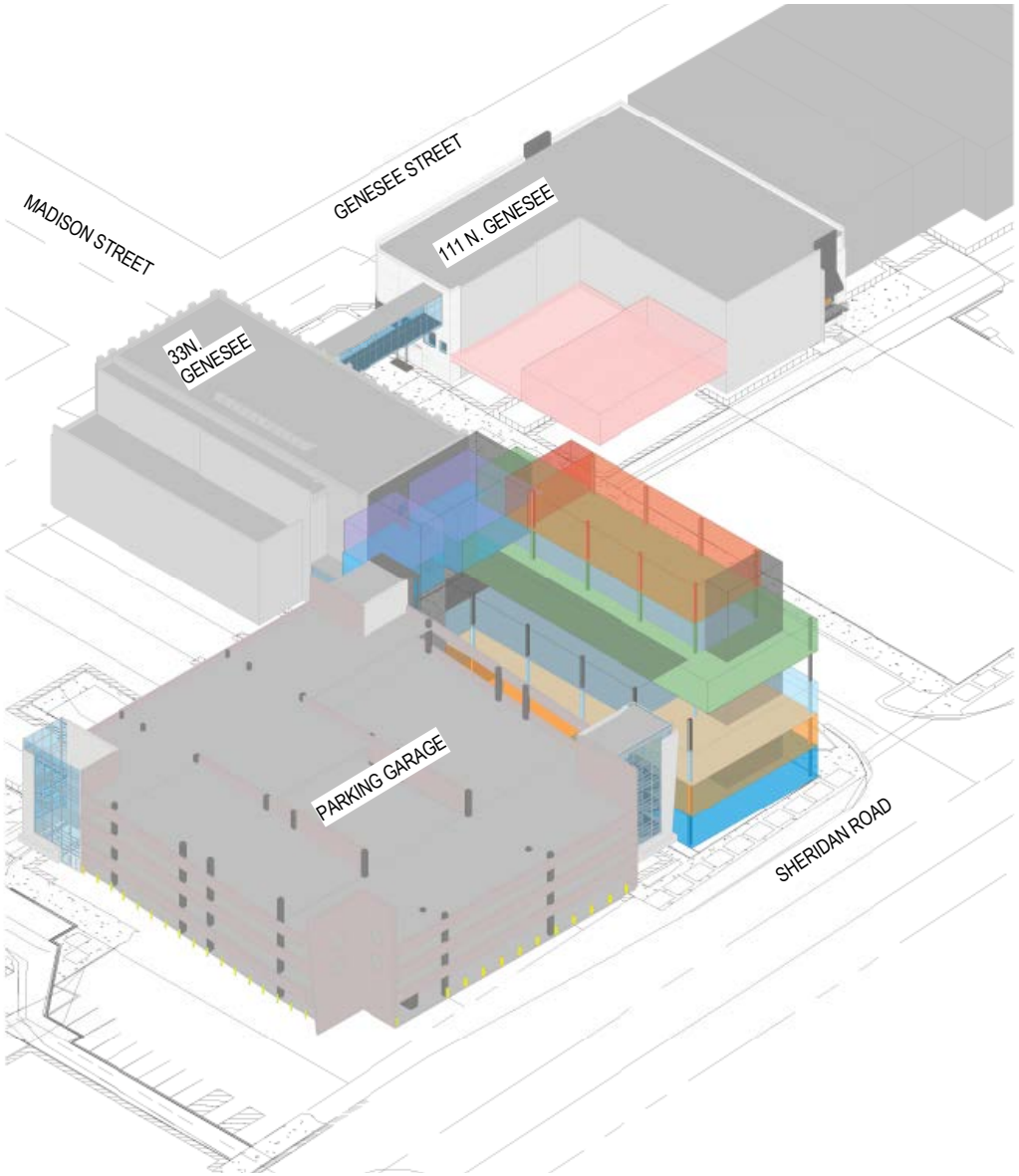


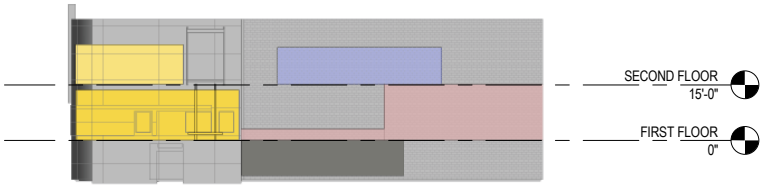
New Building - Level 5

Scale: 1" = 50'-0"

NEW BUILDING CONCEPT SECTIONS



OVERALL 3D VIEW



1 STORY CHILDREN'S LEARNING CENTER
EAST-WEST SECTION

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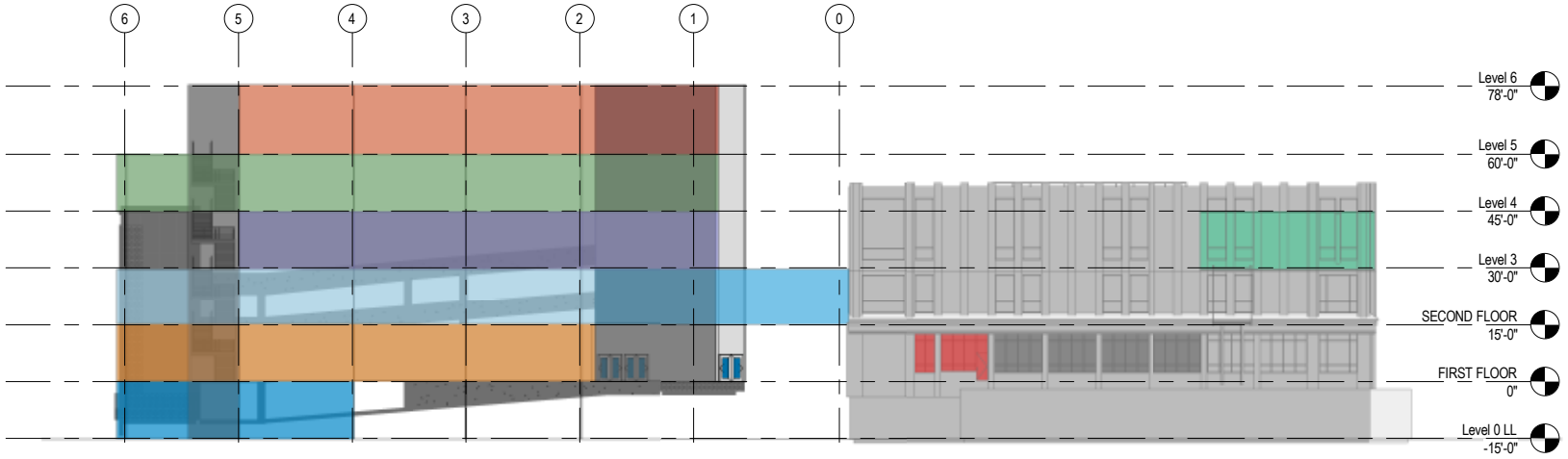
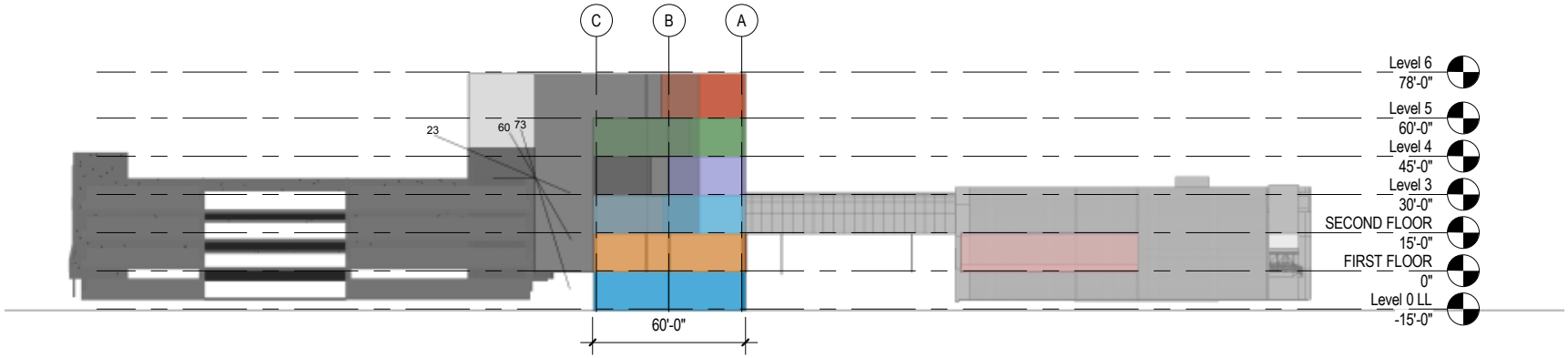
SUSTAINABILITY | PERFORMANCE | DESIGN



6 STORY TOWER EAST-WEST SECTION



6 STORY TOWER NORTH-SOUTH SECTION

NEW BUILDING CONCEPT RENDERINGS

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Proposed New Plan View from Genesee
111 N. GENESEE
33 N. GENESEE
31 N. GENESEE

NEW BUILDING CONCEPT
ELEVATIONS AND MATERIAL DESIGNATIONS

INSULATED METAL PANEL

METAL PANEL & WOOD GATEWAY

CAST STONE MASONRY WALL FACADE RENOVATION

NEW WINDOWS

WEST ELEVATION

WOOD ROOF SOFFIT W/ METAL FASCIA

INSULATED PRECAST PANELS

DOUBLE INSULATED GLAZING

EAST ELEVATION

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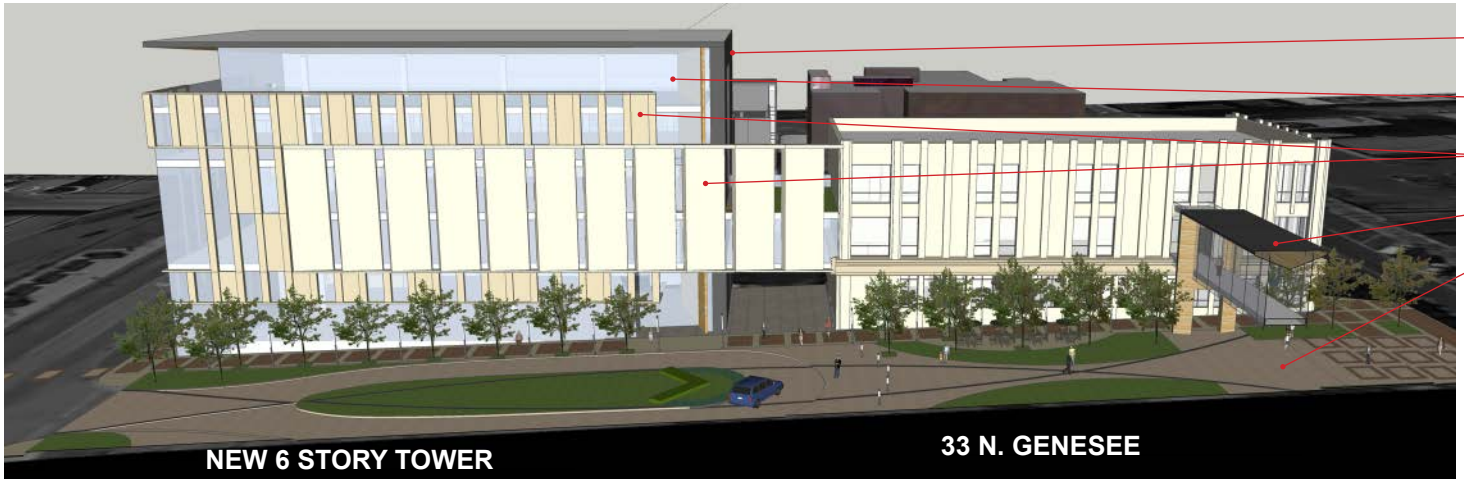
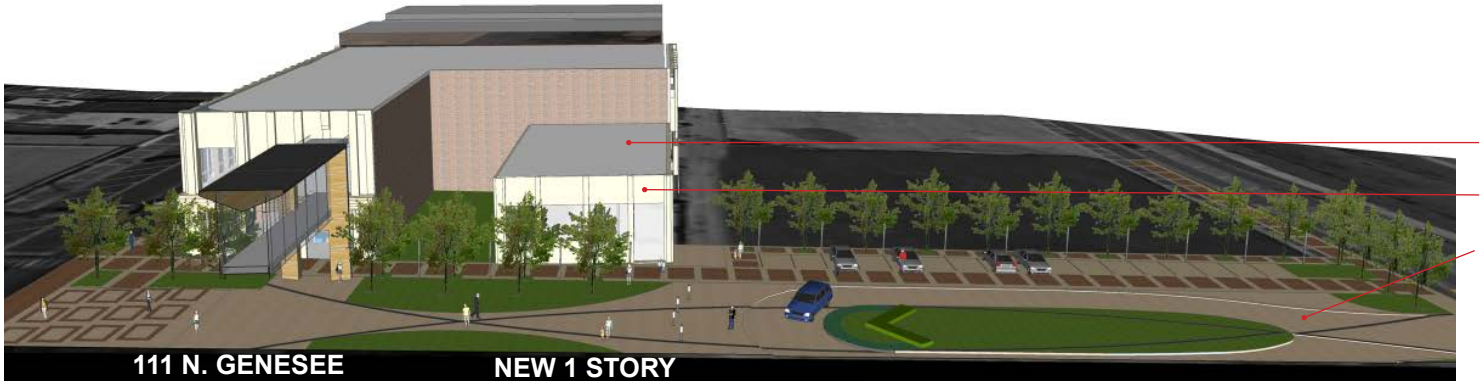
SUSTAINABILITY | PERFORMANCE | DESIGN



INSULATED METAL PANEL
DOUBLE INSULATED GLAZING
INSULATED PRECAST PANELS
METAL PANEL & WOOD GATEWAY
UNIT PAVERS

NORTH ELEVATION



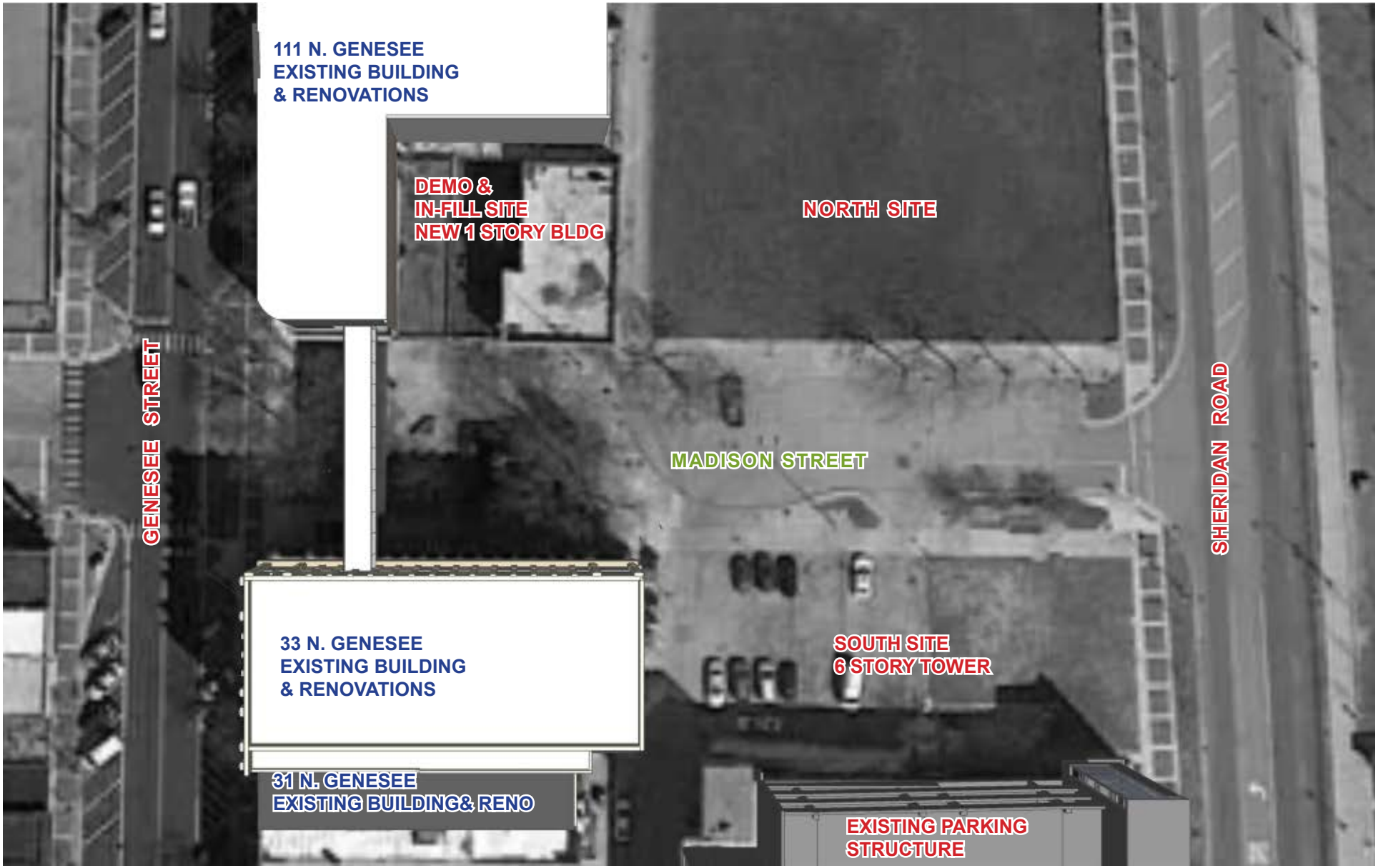
WHITE EPDM ROOF MEMBRANE
CAST STONE MASONRY WALL
UNIT PAVERS

SOUTH ELEVATION
111 N. & NEW 1 STORY

WHITE EPDM ROOF MEMBRANE
DOUBLE INSULATED GLAZING
INSULATED PRECAST PANELS
GREEN ROOF

SOUTH ELEVATION
33 N. & NEW 6 STORY

NEW BUILDING CONCEPT
EXISTING SITE PLAN



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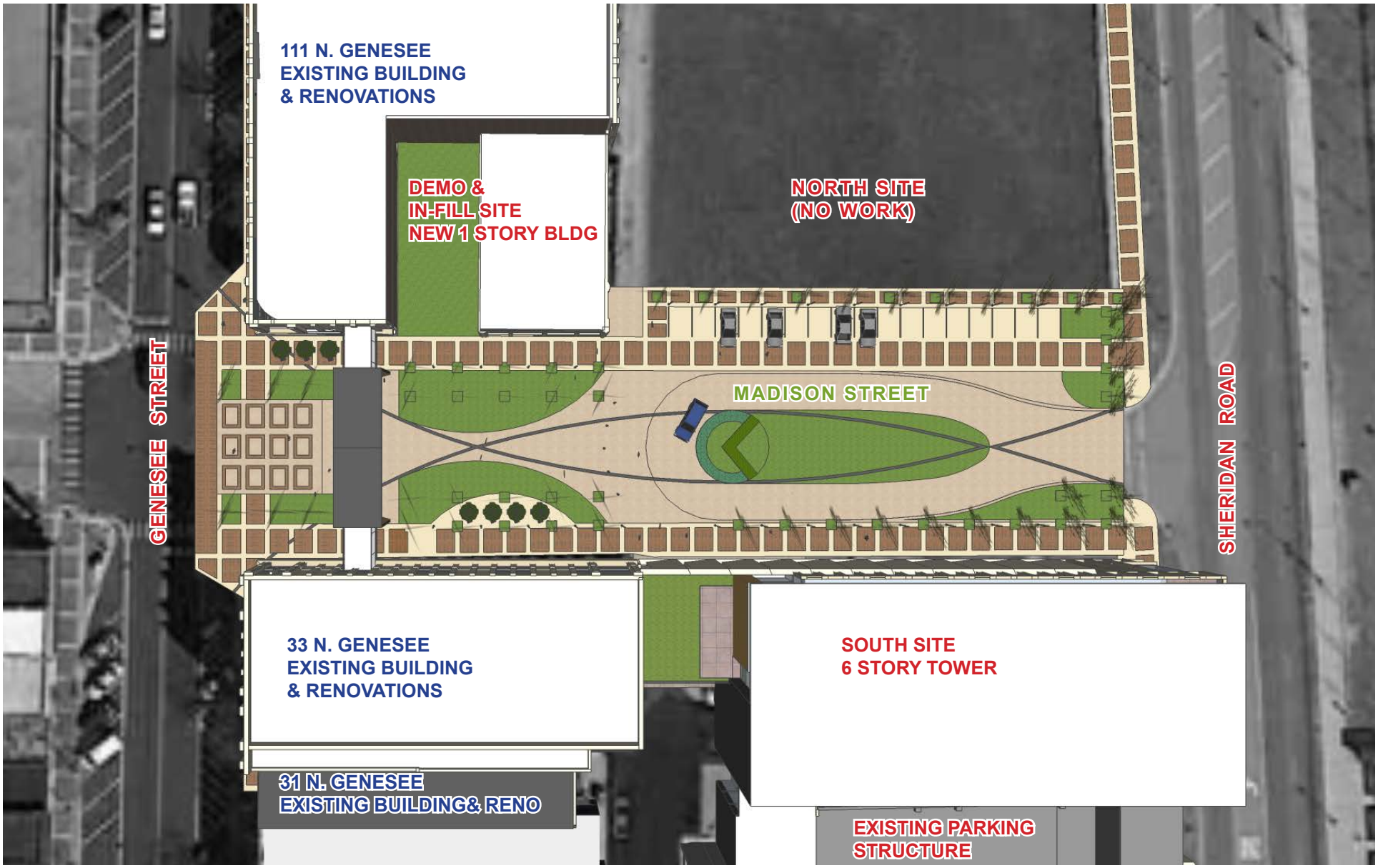
NEW LANDSCAPE/ SITE PLAN



LAKESHORE

7 ENGINEERING DATA

Civil New Work Narrative & Sketches
Structural Work Narrative and Sketches
MEP & Fire Protection Work Narrative and Sketches
Technology Work Narrative and Sketches
Energy Model Report
Masonry Wall Dew Point Calculation
Project Schedule

CIVIL SCHEMATIC DESIGN NARRATIVE

Site Overview

Improvements to the College of Lake County Lakeshore Campus are proposed on Madison Street between Sheridan Avenue and Genesee Street in the City of Waukegan.
Two buildings are proposed. The 6 story tower Student Services and Adult Education Learning Center will be constructed south of Madison Street. The 1 story Children's Learning Center and a playground will be constructed north of Madison Street.

Site Demolition

Approximately 1 acre of existing pavement (concrete sidewalk, asphalt pavement and concrete unit pavers) will be removed for the proposed improvements. Three existing buildings (122, 126, and 128 Madison Street) will be demolished for the proposed improvements. Existing water, storm sewer and sanitary sewer services to demolished buildings will be removed and capped at mains within Madison Street. The parcels where the 6 story tower will be constructed on the south side of Madison Street appear to have foundation remains which will need to be removed to construct the lower level of the building. All existing at grade improvements within the footprints of the proposed buildings and within Madison Street between Genesse street and Sheridan are to be removed. These improvements include existing drainage structures, planters, trees, concrete benches, playground equipment, fence, and stairs.

Approximately 200 linear feet of existing 15" concrete storm sewer routed beneath the proposed 6 story tower will be removed along with two storm manhole structures.

Site Paving and Utility Services

The proposed site area will consist of approximately 0.30 acres of greenspace (landscape/lawn area) and 0.55 acres of paved area. Proposed sidewalk area will be paved with high albedo concrete or alternatively high albedo interlocking concrete permeable pavers. The drop-off loop and driveway will be constructed with a heavy duty bituminous pavement or alternatively interlocking concrete permeable pavers.

The water service connection point for the proposed 6 story tower will be to the 12" watermain located in Sheridan Road. The existing 6" watermain located in Madison Street will serve as the connection point for the water services to the Children's Learning Center.

Approximately 6 inlet or catch basins structures will be used to drain stormwater from the proposed improvements. These drainage structures will connect together with 12" to 18" concrete pipe and will drain to a water quality treatment structure such as a hydrodynamic separator before connecting to the existing 24" diameter storm sewer at the center of Madison Street. Roof drains from the proposed buildings will connect to this system to ensure roof run-off is treated prior to discharging off-site. The water quality structure shall meet the LEED performance requirement of 80% of total suspended solids removal. Approximately 120 linear feet of 15" diameter storm sewer and two storm manhole structures will be installed to re-direct the existing storm sewer that was routed beneath the proposed 6-story building.

An existing 15” sanitary sewer in Madison Street will serve the proposed buildings. Each proposed building will connect to the existing sewer with a 6” sanitary sewer.

A concrete retaining wall offset from the perimeter of the north and south face of the 6 story tower is proposed to provide natural sunlight to the lower level. A stairway and accessible ramp will be installed to provide access to the lower level from Sheridan Street.

The City of Waukegan has requested that the 24” diameter concrete storm sewer, 15” diameter vitrified clay sanitary sewer and 6” ductile iron watermain be replaced within Genesee Street. Each of these sewers and the watermain are approximately 380 linear feet each. The watermain and storm sewer would be replaced in kind. The sanitary sewer would be replaced with equivalent diameter PVC pipe. All existing utility structures associated with the section of utilities being replaced within Madison Street (vaults, manholes, etc.) would be replaced as well. Alternatively, the City may allow the existing sanitary sewer to be re-lined to avoid open excavation and replacement. Each section of sewer and watermain crossing below the overhead bridge shall be cased with 40 linear feet of steel casing pipe.

Landscaping

Landscaping will be provided. All proposed plantings will be native or adapted vegetation that will not require irrigation once established. Plantings will include approximately 40 shade trees, 120 shrubs (deciduous and evergreen), and 400 ornamental grasses/perennials. Street furniture will include up to 20 tree planters, 10 benches , 6 trash receptacles, bicycle racks will be provided to meet LEED requirements and 40 bollards. Tree planters will consist of a 6’ by 6’ landscaped square surrounded by a 6” height barrier curb and 18” high decorative fence.

Up to 40 light fixtures to be provided as a combination of pole mounted and bollard type fixtures.

The proposed playground area will be approximately 3000 square feet. Approximately 20 percent of this area will be landscaped. The remaining 80 percent will be paved with cushioned safety surface such as rubber tile or poured in place safety surface material over a sidewalk pavement section (4” of concrete over 4” of aggregate base course). Alternatively, an engineered wood fiber system can be used over 6” of aggregate base. A ground mounted fabric shelter will screen a portion of the playground. A 2’ high raised concrete planter is proposed along the approximately 190 linear foot perimeter of the playground area.

The playground will consist of one age targeted play structure and five single use apparatuses.
The 0.70 acre vacant lot north of Madison Street can be utilized for construction staging and shall be restored with a minimum of 4” of topsoil and hydro-seeded with turf grass seed.

ENGINEERING DATA
STRUCTURAL NEW WORK NARRATIVE

I. STRUCTURAL SYSTEMS

A. Foundations: Preliminary geotechnical investigations indicate remnants of previous buildings and undocumented fill materials exist within the building footprint. A more detailed geotechnical investigation will be performed to confirm system selections.

1. Types of Foundation Systems:

a) One system type consists of conventional, shallow foundations supported on improved soil. The soil improvement method suggested in the preliminary geotechnical investigation is aggregate piers. Foundation frost walls and footings will be cast-in-place concrete of 4000 psi and 3000 psi, respectively. Foundation reinforcement will be 60 ksi steel.

b) Deep foundations are proposed as another foundation option. Possible types include straight shaft drilled piers approximately 20 feet long or auger cast drilled piles with pile caps. Temporary casing will likely be required for the drilled piers.

2. Special Conditions:

a) Along the existing buildings, foundations may need to include cantilevering grade beams and/or foundations doweled to the existing.

b) Grade elevation along the east side of the building is approximately 7 feet below the west. Cantilevered concrete retaining walls will be provided as grade changes need to be accommodated.

c) Current existing grade elevations will likely require raising the building pad. Self-weight compression and the time to allow it will need to be considered within the construction schedule.

d) Adjacent to 111 N Genesee, an existing building with a basement will require demolition and fill. A new single story (Children's Learning Center) with no basement is proposed at the southeast corner.

B. Slab on Grade:

1. Subgrade preparation: Due to the fill materials mentioned within the foundations section, remedial work is required to occur. The preliminary investigations suggest multiple options. Complete replacement of 12+ feet of material is not considered due to cost and potential settlement of deep fill materials from self-weight compression.

a) Structural Slab: A structural slab will consist of a 10 inch thick slab with reinforcing top and bottom in both directions. Perimeter grade beams would span to deep foundation elements. This option is preferred where the risk associated with settlement cannot be tolerated and where existing fill removal cannot be accomplished. It is anticipated this could occur at Children's Learning Center. The existing building contains a basement. Underneath the New 6 Story Tower, fill depth may also be of significant depth.

b) Partial Removal and Replacement: The New 6 Story Tower is to be located adjacent to an existing parking structure and also 33 N Genesee making full depth removal of fill materials less desirable. Recommendations include fill removal to a depth of 2 feet below final subgrade elevation. The existing

soil is to be densified using proper compaction equipment then engineered fill placed in lifts to raise elevations.

c) Aggregate Piers: To improve existing fill materials, aggregate piers may be spaced throughout the floor plan. This would allow for minimal removal of material. If aggregate piers are selected for support of the building column loads, this option may be advantageous.

2. Slab construction:
   a) Slab thickness will be 4 inches reinforced with welded wire fabric. Concrete strength will be 3500 psi. Where highly loaded areas or masonry partitions walls are located, thickened reinforced concrete slabs will be provided.
   b) Slab depressions will be provided for flooring, equipment, etc.
   c) A 15 mil polyethylene vapor retarder will be provided below the slab.
   d) Due to a high water table, it is anticipated drain tile will be required. There are two design options being considered at the first level. One option is to have the east side down at elevation 634.7 creating the need for retaining walls along the sides to allow grade to rise around this lowered floor. The other option is to have the lowered portion be dropped to approximate elevation 637 and the remaining portion raised to 643.

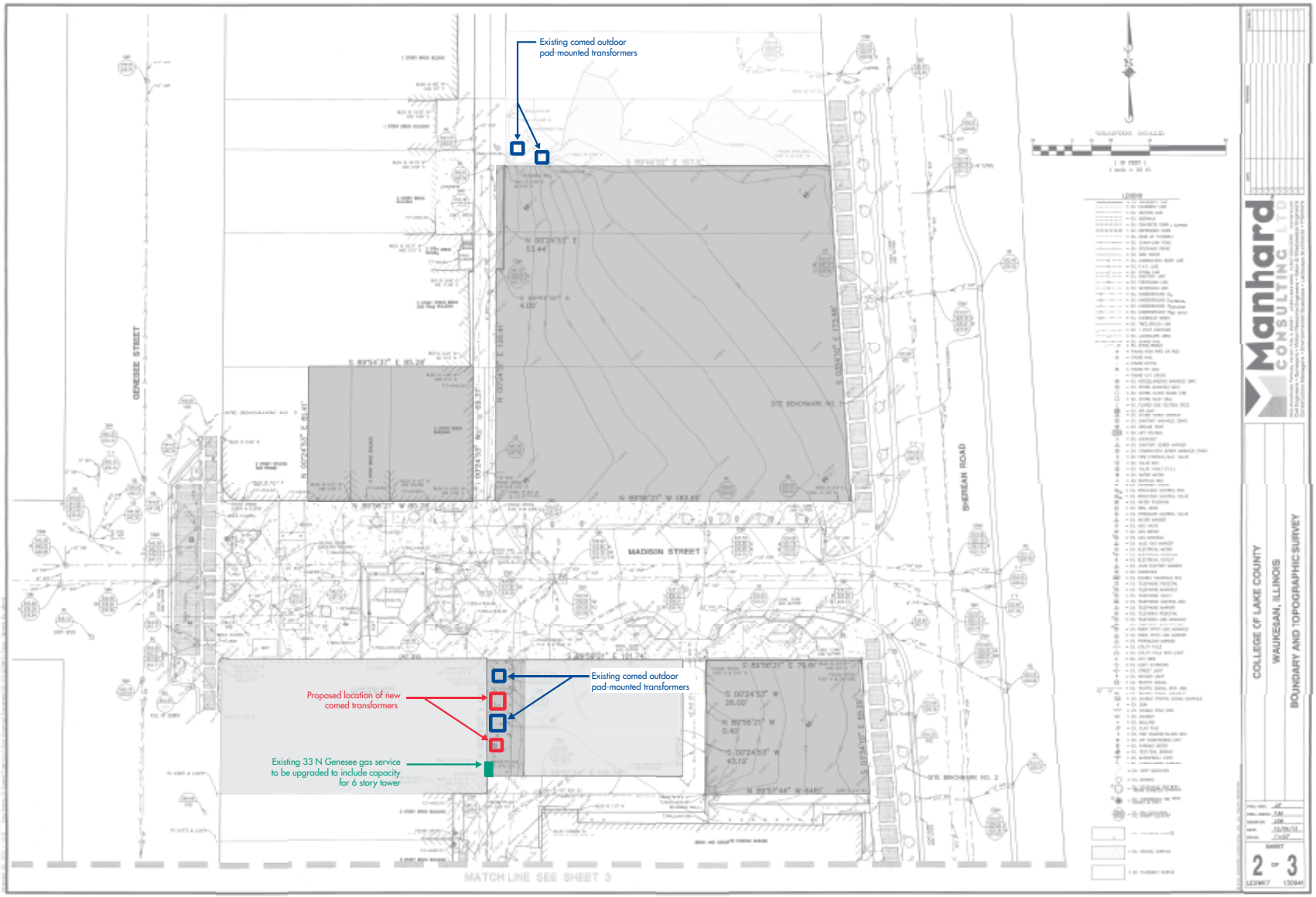
C. Superstructure:
   1. Floor Construction:
      a) Option 1 - Composite Steel and Concrete Floor Construction: Conventional wide flange framing with welded shear studs will support composite steel decking. Concrete slab thickness is anticipated to be 6 1/2” to 7 1/2” overall including the deck, dependent upon required fire rating. The slab will be reinforced with welded wire fabric.
      b) Option 2 - Precast Hollowcore Slabs and Steel Beams: 10” hollowcore slabs with a 2-3” fiber reinforced topping will be supported on steel beams spanning between columns.
   2. Roof Construction:
      a) The typical roof areas may utilize framing schemes matching the floor framing options. Where loads are light, bar joists and steel beams may be used, especially at the single story addition.
      b) To create the overhangs and tapered shape, structural steel wide flanges and other shapes will be used to create custom truss framing which in turn will support bar joists.
      c) Steel deck will span across the trusses.
   3. Columns: Wide flange shapes will be used and are anticipated to be W10 or W12.
   4. Materials:

a)	Structural steel wide flanges	ASTM A992 or A572
b)	Other steel shapes	ASTM A36
c)	Tube steel	ASTM A500, Grade B

D. Lateral Load Resisting System: 10” concrete cast-in-place walls will be used for the lateral support of the structure. Locations will be the stair and elevator towers.

E. Exterior Enclosure: The cladding will be a mixture of curtain wall, precast spandrel panels and metal panel.

Mechanical / Electrical Site Plan



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College of Lake County

LEGATARCHITECTS
SUSTAINABILITY | PERFORMANCE | DESIGN

Mechanical
A. Basis of Design
1. Codes and Standards

Type	Name of Code/Standard	Remarks
Code	International Building Code, 2012	With Waukegan Amendments
Code	International Mechanical Code, 2012	
Code	International Fire Code, 2012	
Code	International Fuel Gas Code	
Code	Illinois Accessibility Code	(71 Ill. Adm. Code 400)
Code	Fire Prevention and Safety	(41 Ill. Adm. Code 100)
Code	Boiler and Pressure Vessel Safety Act	(41 Ill. Adm. Code 120)
Code	Illinois Energy Conservation Code for Commercial Buildings	
Code	International Energy Conservation Code, 2012	
Standard	Capital Development Board Design and Construction Manual	
Standard	LEED (leadership in Energy and Environmental Design) Version 3.0	
Standard	NFPA 54 - National Fuel Gas Code, 2012	
Standard	NFPA 90A – Standard for the Installation of Air Conditioning and Ventilating Systems, 2012	
Standard	ANSI/AIHA Z9.5-2003 – Laboratory Ventilation Standard Occupational Safety and Health Administration (OSHA)	
Standard	2011 ASHRAE Standard 110-1995 – Method of Testing Performance of Laboratory Fume Hoods	
Standard	ASHRAE Standard 62-2010	
Standard	ASHRAE Standard 90.1-2010	
Standard	ASHRAE Standard 55-2010	

Type	Name of Code/Standard	Remarks
Standard	SMACNA: Sheet Metal and Air Conditioning	
Standard	AMCA: Air Moving and Conditioning Association	
Standard	ARI: Air Conditioning and Refrigeration Institute	

2. Design assumptions

a) Weather Data: Chicago, IL/ Waukegan, IL

b) Interior Temperature

	Dry Bulb (F°) - Summer/Winter	RH(%) - Summer
Regularly Occupied Space	75/70	50
Back of House	NA/65	NA

c) Exterior Temperature

	Dry Bulb (F°)	Wet Bulb (F°)
Summer	95	75
Winter	-10	NA

d) Space Ventilation Rates and Acoustic Criteria:

Area Designation	ASHRAE 62.1-2010 Ventilation Rates		NC Rating
	People (cfm/person)	Area (cfm/sf)	
Corridors	0	z0.06	40
Lobby	5	0.06	40

Area Designation	ASHRAE 62.1-2010 Ventilation Rates		NC Rating
Restrooms	70-E /fixture	0	
Active Storage		0.12	
Mechanical / Electrical		0	
Conference	5	0.06	25
Offices	5	0.06	35
Reception	5	0.06	35
Classrooms	10	0.12	30
Library	5	0.12	35
Food Prep	7.5	0.18	
Student Lounge	7.5	0.06	35
Science Labs**	10	0.18	
Stairs			
Retail	7.5	0.12	40
Dental Lab**	10	0.18	35
Daycare	10	0.18	35
Copy Room		0.5-E	
Janitor/Trash		1.5-E	

*E designates exhaust rate
**Exhaust flow rate to be determined by hood/equipment exhaust requirements

e) Interior Loads and Building Envelope: See energy model section for peak interior loads, scheduled diversity, and envelope performance assumptions.

B. Performance specification

1. Overview: The plants serving the 6 story tower and child care center will be sized to replace the existing plants serving

33 NG and 111 NG. The “South Plant” shall serve the 6 story tower and 33 NG via a connecting bridge at the second floor. The “North Plant” shall serve the child care center and 111 NG via a new underground tunnel. See the MECHANICAL - SD Plan for reference and system capacities.

2. Heating

a) South Plant –

(1) Heating shall be provided by (3) 1500 MBH low-mass, condensing hot water boilers. Capacity includes N+1 redundancy. Boilers shall be Aerco BKM series or similar. 92% efficiency or greater.

(2) Heating and cooling shall be provided by (3) 300/600 MBH Cooling/Heating gas-fired, reversible heat pumps. Heat Pumps shall be Robur RTAR series or similar. 1.26 heating COP or greater.

(3) Cooling shall be provided by (21) 175250 TON air-cooled, magnetic bearing centrifugal chiller. Chiller shall be SMARDTSMARDT, MULTISTACK or similar.

(4) Primary/secondary pump arrangement shall be provided for both heating and cooling plants. Pumps shall be provided with vibration isolation and inertia bases.

(5) All new equipment shall be mounted with spring isolators and/or inertia bases for vibration and acoustical isolation.

b) North Plant –

(1) Heating shall be provided by the existing 111 NG boilers.

(2) Cooling shall be provided by (1) 120 TON air-cooled, magnetic bearing centrifugal chiller. Chiller shall be SMARDT, MULTISTACK or similar. Existing cooling-only RTU shall be replaced with a roof-top air-handling unit with chilled water coils. Unit shall be Johnson Controls Solution Outdoor Air Handler or similar.

(3) Primary/secondary pump arrangement shall be provided for both heating and cooling plants.

(4) All new equipment shall be mounted with spring isolators and/or inertia bases for vibration and acoustical isolation.

c) Distribution –

(1) New building: Space sensible heating and cooling shall be addressed by thermally active two-pipe radiant panels. Panels shall be aquatherm polypropylene capillary mat system, Echophit seamless panels or similar. Each radiant thermal zone shall be provided with switch-over valves to select either chilled water or hot water from the distribution loops. See the radiant zone valve diagram for reference. VAV boxes with hot-water reheat shall provide minimum ventilation (typically 1/3-1/4 standard VAV system airflow rates).

(2) Child Care: space heating, cooling and ventilation shall be provided by VAV boxes with hot water re-heat and parameter hot water heat.

(3) New four-pipe air handling units with integral energy recovery wheels shall provide ventilation to the 6 story tower and child care building. The existing basement air handlers in 33 NG and 111 NG shall be refurbished/replaced

with new hot water and chilled water coils. Units shall be custom, modular units similar Johnson Controls Solution Air Handler or similar. Units shall be mounted with vibration isolator springs.

(4) Stairs, vestibules, and equipment and storage spaces shall be provided with hot water unit heaters and concealed hot water cabinet unit heaters.

(5) IT MDF shall be served by four-pipe fan coils. MDF rooms shall be maintained at 72F with a maximum RH of 50%.

(6) Four hydronic loops will serve the 6 story tower and 33 NG. Two high-grade heating and cooling loops with 50% propylene glycol will serve the air handler coils and two low-grade heating and cooling loops will serve the radiant zones in the new building. The child care and 111 NG will have one grade of hot water and chilled water. All chilled water and hot water piping shall be insulated per ASHRAE 90.1-2010 requirements.

d) Renovation Spaces – distribution piping and equipment in 33 NG and 111 NG will only be replaced or modified in renovation spaces. Work shall be staged for minimal disruption of the existing building activities. Distribution piping connecting the new plants to the existing mechanical spaces shall be new.

e) Controls

(1) A full building automation system shall be provided for the 6 story tower and child care building. New controls shall be provided for the refurbished 33 NG and 111 NG air handlers. The BAS shall control the following new equipment:

(a) Distribution pumps
(b) Airflow monitoring stations (to be provided for all units with outside air)
(c) Exhaust fans
(d) Air handling units
(e) Kitchen and Lab exhaust hoods

(2) Manufacturer controllers with BAS integration shall be provided for the following new equipment:

(a) Boilers
(b) Chillers
(c) Heatpumps outside of air-side systems
(d) VAV boxes
(e) Plumbing equipment – booster pumps, sump and sewage ejector pumps
(f) Heat Wheels
(g) Roof-top Units

3. Ventilation

a) Distribution ductwork shall be provided for the 6 story tower and child care building. VAV boxes with hot water reheat shall provide zone level for both buildings.

b) In-line and roof mounted exhaust fans with ducted exhaust shall be provided. A separate system shall be provided for laboratory fume hoods and toilet exhaust. Fully ducted return to all air handlers shall be provided for heat recovery.

c) IT IDF closest shall be provided with a local exhaust fan for heat rejection.

d) Insulation shall be provided per ASHRAE 90.1-2010. All transfer duct shall be provided with acoustical lining. Supply and

return silencers shall be provided for all air handling units and exhaust fans over 2,000 CFM.

e) All equipment shall be mounted with spring isolators for vibration and acoustical isolation.

f) Renovation Spaces – distribution and equipment in 33 NG and 111 NG will only be replaced or modified in renovation spaces. Work shall be staged for minimal disruption of the existing building activities.

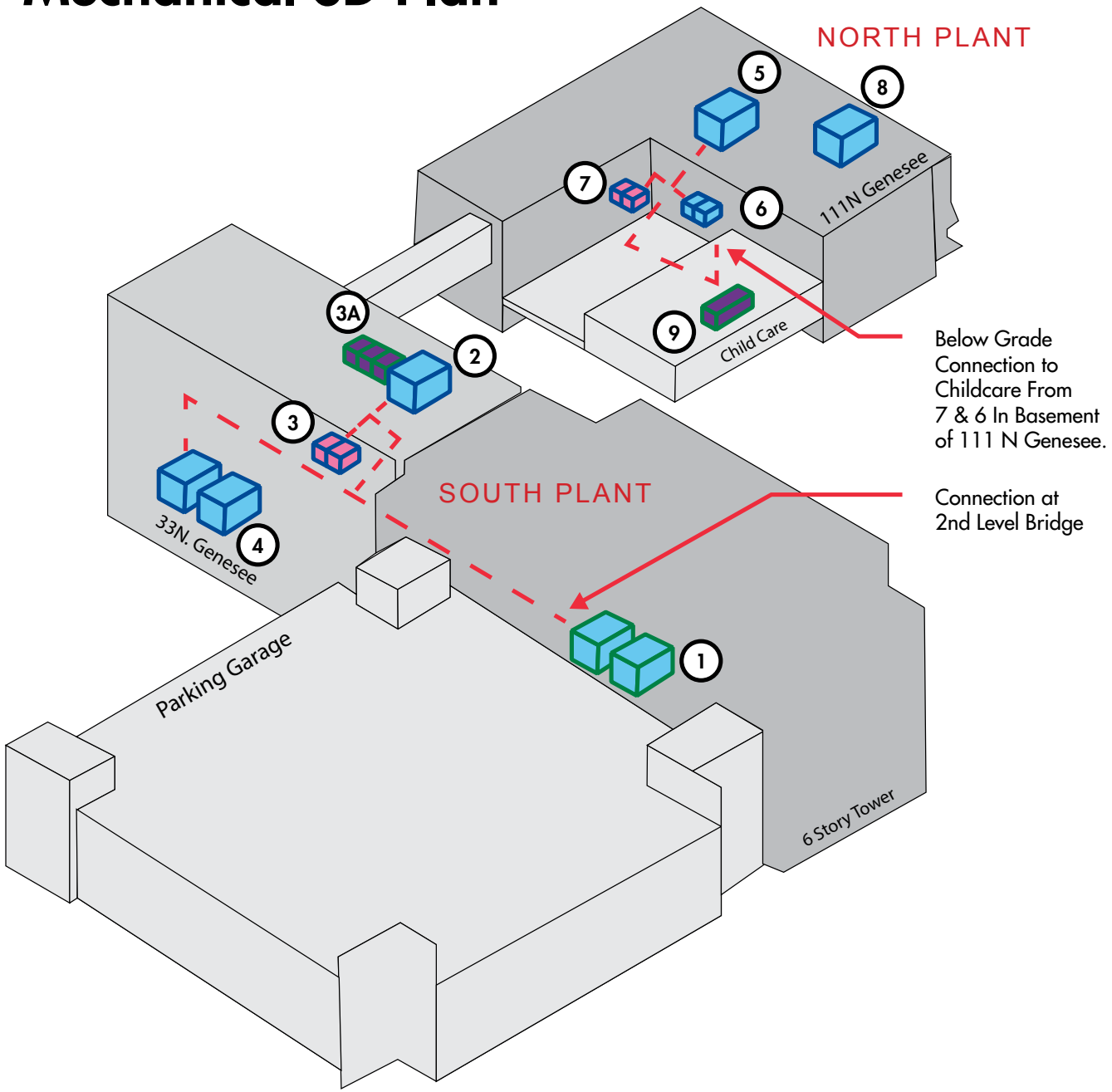
C. Design Alternates

1. Performance monitoring and verification shall be per LEED EAc5 requirements. This will required the following additional controls and electrical scope:
   a) kWh Logging for all fan and pump VFDs
   b) Trending for all OA monitoring stations
   c) OA temperature and space temperatures
   d) Sub-metering for electrical lighting and plug loads
   e) Whole building electricity and gas
   f) Data storage and export for analysis.

2. GEO-EXCHANGE Plant – replace the south plant gas-fired heat pump and chillers with modular heat recovery chillers, Climacool or similar. The geo-exchange field will consist of 80 boreholes at 450’ deep, 20’ on-center. The field will be located under Madison street.

3. Replace the south plant gas-fired heat pump and air-cooled chillers with additional boiler capacity (3) 2500 MBH units and (2) 176 Ton water-cooled chillers and cooling tower. Provide SMARDT, MULTISTACK chiller and Baltimore Aircoil Company cooling tower series 3000 or similar.

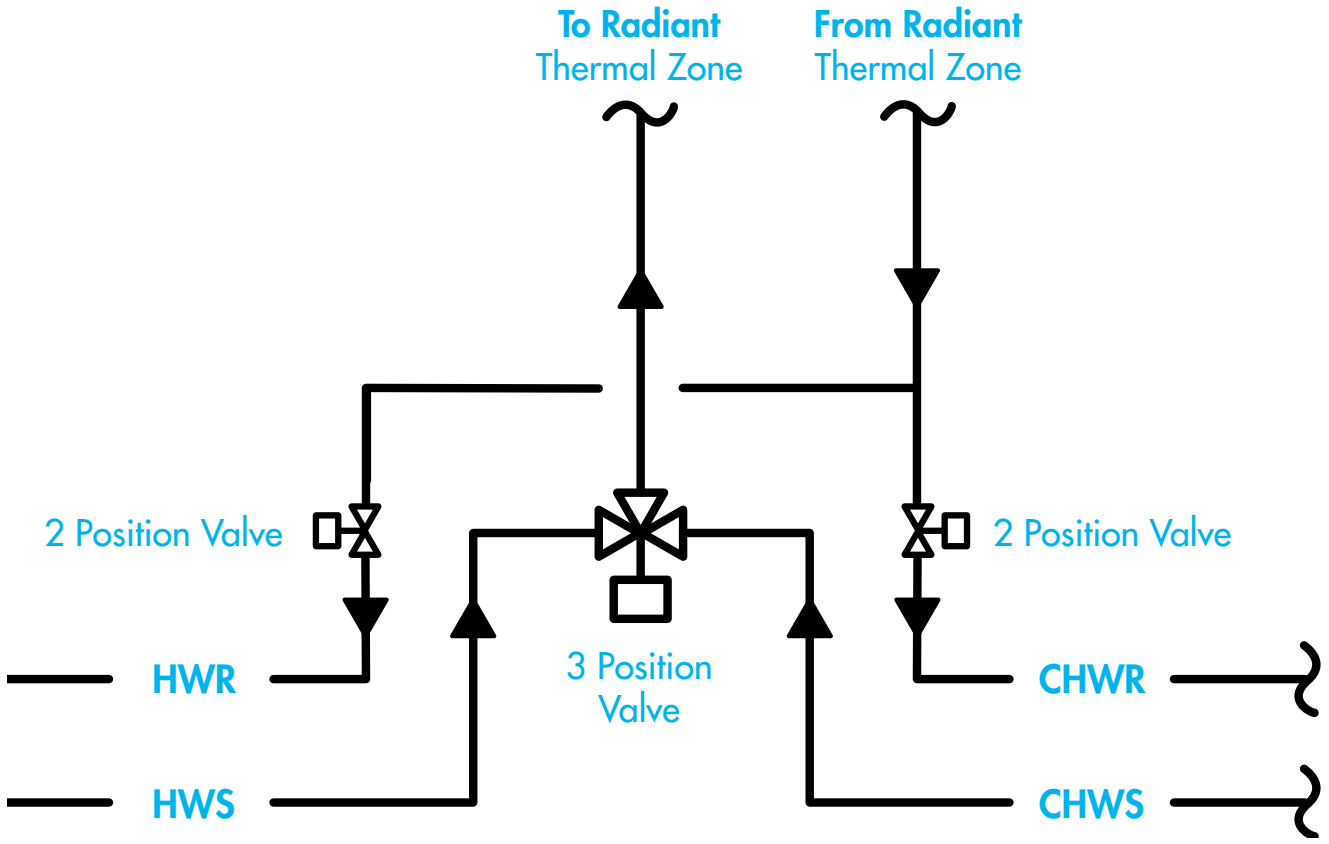
Mechanical SD Plan



Equipment Color Key

- New
- Existing
- Heating
- Cooling
- Dual
- Main Hydronic Artery

Mechanical - Radiant Zone Valves



II. ELECTRICAL

A. Applicable Codes

1. International Building Code - 2012 (IBC)
2. National Electrical Code - 2005 (Superseded by NFPA 2010) (NEC)
3. Illinois Accessibility Code – 1997 (IAC)
4. Illinois Energy Conservation Code for Commercial Buildings - 2012 (IECC)

B. Applicable Laws and Agency Standards

1. NFPA 72 – 2012 (NFPA)
2. NFPA 70 – 2010 (NFPA)
3. NFPA 101 – 2012 (NFPA)
4. NFPA 110 – 2010 (NFPA)
5. Illuminating Engineering Society Lighting Handbook (IES)
6. Occupational Safety and Health Administration (OSHA) – 2003 (OSHA)
7. ASHRAE 90.1 – 2010 Energy Standard for Buildings (ASHRAE)
8. Institute of Electrical and Electronics Engineers – 2008 (IEEE)
9. National Electrical Manufacturers Association – 2008 (NEMA)
10. Underwriters Laboratories – 2008 Fire Protection Directory (UL)

C. Base design Criteria

1. Load Calculation Criteria
   a) Area Load Densities (Power and Lighting)

Area Description	Connected Load Density (VA/sq ft)
Library	4
Chemistry Labs	12
Engineering Labs	12
Microbiology Labs	8
Classrooms	4
General Support Spaces	3
Telecommunications Room	75

b) Equipment Load Densities:

Building System	Load Density (KVA/ton)
Chiller Plant	1
Geothermal Heat Pump	1
Auxiliary Mechanical Equipment	0.7

2. Equipment Sizing Criteria
a) Design Voltages:

System Description	System Voltage
Motors larger than 1/2 HP	480V, 3 phase, 4 wire
General Lighting	120V, 1 phase, 3 wire
Specialty Laboratory Equipment	208Y/120V, 3 phase, 4 wire
Special Equipment	480V, 3 phase, 4 wire
Motors less than 1/2 HP	120V, 1 phase, 3 wire
Receptacles	120V, 1 phase, 3 wire
Specialty Lighting	277V, 1 phase, 3 wire

b) Equipment Sizing Criteria:
(1) The total capacity of the service entrance switchboard will be 1200A at 480Y/277V.
(2) The anticipated connected load is approximately 900kVA and the estimated demand load is 600kVA.
(3) Branch Circuit Load Calculations
(4) Demand Factors
(5) Minimum Bus Sizes
(6) Power Factor Correction
(7) 20% spare capacity for future growth

D. Performance Specification
1. Normal Power Services and Distribution

a) Commonwealth Edison (ComEd) will provide one 480Y/277V pad-mounted transformer adjacent to the existing pad-mounted transformers for 33 N. Genesee. The primary service underground feeders to be encased in a 3" concrete envelope. The secondary service feeders from the new pad-mounted transformer shall supply the main building and be separately tapped for the fire pump service.
b) The 480Y/277V service will enter the building underground via a concrete-encased ductbank, where it will enter the main switchboard room.
c) ComEd shall provide the utility transformer(s), sized in coordination with the engineer of record (EOR).
d) The main service disconnecting means will terminate at a 1200A, 480Y/277V, 3-phase, 4Wire switchboard with main metering. A separate switchboard section shall be provided for the main meter, main circuit breaker, and distribution sections. The main circuit breaker shall be insulated case with LSIG electronic trip.
e) Surge protection device will be provided at main switchboard.
f) Circuit breakers 250A-1200A will be molded case and have adjustable trips.
g) Circuit breakers smaller than 250A shall be molded case and have thermal magnetic trips.
h) 480V-208Y/120V, 115°C rise, step-down transformers will be provided for general lighting and receptacles, small mechanical, and laboratory spaces. Refer to section E.3. All floor mounted transformers shall be provided with 4" high concrete housekeeping equipment pads and spring isolators.
i) Distribution boards and branch panels will be copper bus, 3-phase, 4 wire, 60Hz.
j) Normal power distribution panels will contain bolt-on feeder circuit breakers. Panelboards will be provided with 25% spare load capacity and 25% spare circuit breaker capacity.
k) The fire pump service will terminate at the fire pump controller via a utility C/T cabinet with meter fitting.
l) Designated receptacles in all classrooms and offices shall be shut-off by the occupancy sensor to reduce building plug load consumption from idle equipment. Receptacles shall be clearly labeled.
n) A central uninterruptable power system shall be provided and sized for telecommunications, security, and other critical electrical loads.

2. Emergency/Standby Service and Distribution
   a) A 300kVA 480Y/277V belly-tank diesel or natural gas generator is highly recommended, although not required by code.
   b) Providing an onsite generator will provide the following advantages:
      (1) UPS system size can be minimized
      (2) Standby power will be available in the event of a power outage
      (3) Fire pump will have backup power source in the event of a commercial power utility failure.
   c) Generator loads will be broken into three categories:
      (1) Fire Pump
      (2) Life Safety Loads
         (a) Emergency Lighting and exit signs.

(b) Fire Alarm System
(c) Generator Auxiliary Equipment
(d) Loads which may cause injury or potential hazard in the event of a power loss.

(3) Legally Required or Standby Emergency Loads
(a) Ejector Pumps
(b) Sump Pumps
(c) Smoke Exhaust Fans
(d) Telecommunication Batteries and UPS System
(e) Security System
(f) Fire Elevator
(g) Additional loads requested by facility for backup

d) A minimum of 400 amp, 277/480V, 3-phase, 4-wire generator distribution panel with three individual circuit breakers shall be provided for the generator to separate the fire pump, life-safety, and legally required loads.
e) At least two 4-pole automatic transfer switches (ATS) shall be provided for the life-safety and legally required / standby loads.

f) A dedicated emergency room shall house the automatic transfer switches.
g) Emergency lighting panelboards will have circuit breakers with thermal magnetic trips.
h) Each lowest-tier panelboard will be submetered.

3. Grounding System
a) Complete low-impedance grounding electrode system in accordance with NEC 250 will be provided. System resistance to ground will be 25 ohms or less.
b) Grounding electrode system will include:
(1) Main water service line
(2) Structural steel
(3) Ufer ground (concrete-encased grounding electrodes)
(4) Triad Ground field buried just outside of the main electrical room
c) Equipment grounding system to extend from the building service entrance equipment to each branch circuit, #8 AWG copper minimum.
d) Grounding connection to be bonded by exothermic welds
e) Bonding jumpers to be provided across pipe connections to water meters, dielectric couplings, and expansion/deflection

couplings.

f) All feeders and branch circuits will be provided with an equipment ground conductor. Raceway system shall not be used as an equipment grounding conductor.

g) A separate, insulated ground wire shall be provided from the main electrical room ground bus to the incoming water service line ahead of the meter

h) The main service entrance neutral shall be bonded to the system ground bar within the switchboard by a removable bus bar link

i) Each transformer shall be properly grounded.

j) A bare copper grounding electrode conductor shall extend to all voice/data rooms for their respective ground system bonding.

4. Lightning Protection System

a) A complete lightning protection system to comply with NFPA 780 shall be provided.

b) Air terminals will be solid copper with a tapered point and be at least 10” in height.

c) Conductors shall be bare-stranded copper. Aluminum will be used where the installation is in contact with aluminum surfaces.

d) Ground rods shall be coper-clad steel, ¾” diameter and 10’ long.

e) Air terminal spacing shall not exceed 20’ at the perimeter of the roof.

f) Air terminals spacing shall not exceed 50’ on a flat roof along non-perimeter areas.

g) One down conductor will be provided for every 250’ of building perimeter. A minimum of two down conductors will be provided.

h) Conductors will be configured to provide a two-way path to earth.

i) A ground rod shall be connected to each down conductor.

j) The electric power grounding system shall be bonded to the lightning protection system.

5. Lighting Systems

a) A complete lighting system for all indoor and outdoor illumination will be provided.

b) All lighting will be 120V

c) The indoor lighting system will consist primarily of energy-efficient fluorescent lighting fixtures, or LED fixtures

d) The outdoor lighting system will consist of LED lighting fixtures

e) Indoor lighting controls will consist of room occupancy sensors, low voltage switches and dimmers, photocells, and time clock. See energy model narrative for additional information. Design per ASHRAE 90.1, 2010.

f) Outdoor lighting controls will be controlled by photocells or timeclock.

g) Emergency (egress) lighting shall be provided by unswitched branch circuits from the life-safety panelboard.

h) Exit signs shall be LED.

i) Illumination levels shall be as described in the table below:

Area Designation	Average Maintained Footcandles
Corridors	10
Lobby	20
Restrooms	15
Storage	10
Mechanical / Electrical	20
Conference	30
Offices	30
Reception	40
Classrooms	30
Library	30
Food Prep	50
Student Lounge	20
Science Labs	50
Stairs	10
Retail	40
Dental Lab	150
Daycare	30

6. Fire Alarm Systems
   a) Addressable multiplex initiation and hardwired notification, electronically operated, UL listed, main control panel located in the main building entry, within 15' of firefighter entrance and with 6' of clearance in front.
   b) Control panel to provide initiation, notification, and control in accordance with authorities having jurisdiction.
   c) System printer at engineer's office shall provide a hard-copy record of each alarm occurrence by address, time and location.
   d) Transponder panels within selected electrical riser closets.
   e) Fire alarm risers enclosed in 2-hour construction.

f) One-way voice speakers and 75cd strobes within public spaces including lobbies, corridors, stairs, toilet rooms, and other base building and common areas. Multiple strobes within a single corridor, room or area shall be synchronized.
g) Smoke detectors within elevator lobbies, elevator machine rooms, shafts, and pits to activate elevator recall, and within mechanical rooms, electrical rooms, telecommunications rooms.
h) Carbon monoxide detectors within water heater and gas-fired boiler rooms and rooms and laboratories as necessary.
i) Duct smoke detectors within air handling supply and return ducts and at entrance to return air shaft on each.
j) Remote indication lights adjacent to door for devices located within mechanical rooms, electrical rooms, telecommunication rooms, elevator machine rooms.
k) Remote test stations and indication lights for each duct smoke detector.
l) Connections to elevator controls and BAS for smoke and fire response functions.
m) Fire bells and strobes at fire department connections.
n) Connections to central station service.
o) Connections to water flow tamper switches, and air pressure switches.

7. Renovation Areas
    a) Demolition
        (1) All existing areas to be renovated shall be completely demolished to the panelboard source, or the first current delivering device not within the scope of work.
        (2) Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from a new panel source.
    b) 33 N Genesee
        (1) Basement
            (a) New fused switches and/or circuit breakers, cables and conduit to new panelboards within the scope of renovation shall be provided as required.
        (2) First Floor
            (a) New cable, conduit and panelboards shall be provided for the first floor. The panelboards shall be 208Y/120V, 225A, 3-phase, 4W.
            (b) The police room shall have a dedicated 208Y/120V, 100A, 3-phase, 4W load center.
        (3) Second Floor
            (a) Spaces to be renovated shall have all electrical systems demolished. New branch panels, cables, conduits and circuit breakers shall be provided for the renovated space.
        (4) Third Floor
            (a) Spaces to be renovated shall have all electrical systems demolished. New branch panels, cables, conduits and circuit breakers shall be provided for the renovated space.
    c) 111 N Genesee
        (1) Basement

(a) Spaces to be renovated shall have all electrical systems demolished. New branch panels, cables, conduits and circuit breakers shall be provided for the renovated space.

(2) First Floor

(a) Spaces to be renovated shall have all electrical systems demolished. New branch panels, cables, conduits and circuit breakers shall be provided for the renovated space.

(b) The children's learning center shall have a dedicated 100A, 208Y/120V panelboard, served from the existing switchboard.

(3) Second Floor

(a) Spaces to be renovated shall have all electrical systems demolished. New branch panels, cables, conduits and circuit breakers shall be provided for the renovated space.

d) Site

(1) The existing ComEd pad-mounted transformer locations for 33 N Genesee shall be relocated or modified as required by the City of Waukegan, ComEd, and the owner.

E. Design Alternates

1. Generator Options

a) A life-safety/standby generator will be provided as indicated in the performance specification section.

(1) Different levels of non-life safety backup may be desired by the owner.

(2) Diesel or Natural gas generator shall be determined by the owner. If natural gas is selected, engineer of record will determine if a gas booster pump will be required if existing natural gas pressure is not sufficient.

b) In lieu of a life-safety / standby generator, a UPS (central battery) system will be designed to support all technology and life-safety loads for at least 30 minutes.

2. ComEd Transformer Options

a) A pad-mounted transformer will be provided as described in the performance specification above.

(1) Coordinate the required clearances with the authorities having jurisdiction.

(2) Coordinate the incoming electrical service from ComEd with the civil engineer.

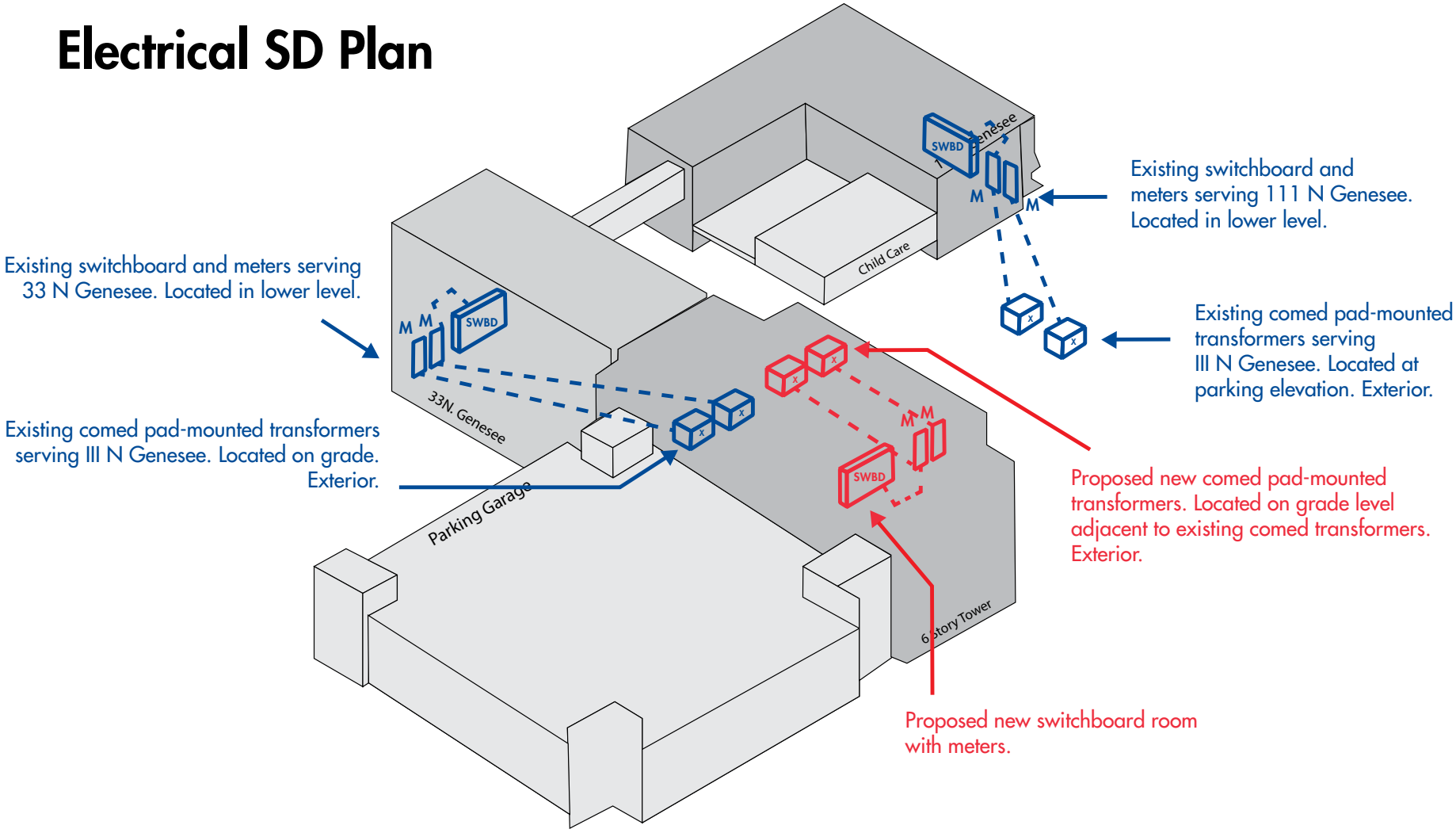
b) In lieu of building over the existing ComEd transformers, a new ComEd vault shall be built in the basement of the new building, or on the first level of the new building. The new ComEd vault will serve 33 N Genesee.

c) If a ComEd vault is not desirable, the ComEd transformers shall be relocated to a location where the City of Waukegan, ComEd, and the building owner approve.

3. Loads shall be separated into mechanical, lighting, and receptacles loads. Meters will be provided for each panelboard, for LEED measurement and verification.

4. Photovoltaic System
   a) A solar photovoltaic (PV) system shall be provided.
   b) The solar array system shall be compliant with ComEd and NEC 690.
   c) Each solar photovoltaic cell/panel shall have an associated micro inverter.
   d) A power monitoring system able to provide historical readings of the PV system status shall be provided.
   e) Fused disconnects shall have fuse isolation switches so that fuses are disconnected from both the PV system and the utility system.
   f) See the energy model section for the system sizing.

Electrical SD Plan



III. PLUMBING

A. Basis of design

1. Codes and standards

Type	Name of Code/Standard	Remarks
Code	2003 International Building Code	With Waukegan Amendments
Code	2004 Illinois Plumbing Code	With Waukegan Amendments
Code	2010 Americans with Disabilities Act (ADA) Accessibility Guidelines	
Code	1997 Illinois Accessibility Code	
Standard	LEED (leadership in Energy and Environmental Design) Version 3.0	
Standard	American Society Of Plumbing Engineers (ASPE) Design Handbooks	
Standard	ASHRAE Standard 90.1-2010	
Standard	Capital Development Board Design and Construction Manual	March 2009

2. Design assumptions
   a) None.

B. Performance specification

1. Renovations to Existing Building Services - 33 N. Genesee St.
   a) Replace double check valve backflow preventer on domestic cold water service with code compliant reduced pressure zone type backflow preventer.
   b) Provide backflow preventer for all janitors closet chemical fill connections to domestic water.
   c) Demolish existing plumbing fixtures in classroom / laboratory spaces. Demolish associated existing domestic cold water, domestic hot water, grease waste and vent, acid waste and vent, and grade 2 water back to pipe mains and cap pipe. Not dead legs are permitted.

d) Provide new plumbing fixtures including epoxy lab sinks and faucets and stainless steel kitchen sinks. For new fume hoods provide epoxy cup sinks and turret connections.
e) Provide new area floor drains at kitchen / break room sinks.
f) Provide new emergency face wash units in some lab spaces near teaching station and near the room's main entrance. Provide combination emergency face wash and shower units in other lab spaces near the room's main entrance. Provide floor drains in front of every emergency shower unit.
g) For lab spaces provide new domestic cold water, domestic hot water, domestic hot water return, grade 2 water, acid waste and vent piping for lab sinks, fume hood cup sinks and emergency fixtures.
h) For break rooms provide new domestic cold water, domestic hot water, domestic hot water return, and grease waste & vent for kitchen / break room sinks. At each kitchen sink provide an isolation valve and dual check backflow preventer for the ice maker, the coffee maker, and the dish washer stub out connections.
i) Provide new sanitary waste and vent for kitchen / break room floor drains.
j) Connect new piping serving new fixtures to existing pipe mains.
k) Provide new insolation valves on all domestic cold water, domestic hot water, domestic hot water return, and grade 2 water connections to pipe main. Isolation valves must be in an accessible locations and have an access panel if located above a hard ceiling.
l) Provide point of use thermostatic mixing valve at all public sinks and lavatories.
m) Domestic cold water, domestic hot water, and domestic hot water return piping shall be copper with fiberglass insulation.
n) Above grade sanitary waste & vent piping shall be PVC.
o) Underground sanitary waste and vent piping shall be cast iron hub and spigot.
p) Grease waste and vent piping shall be cast iron hub and spigot.
q) Acid waste and vent piping shall be polypropylene.
r) Grade 2 water piping shall be CPVC.
s) Provide water hammer arrestors at end of each domestic cold water and domestic hot water pipe branch.
t) Provide trap primer for each remote floor drain.

2. Renovations to Existing Building Services – 111 N. Genesee St.
a) Add code compliant reduced pressure zone type backflow preventer on domestic cold water service.
b) Provide backflow preventer for all janitors' closets and laundry tub chemical fill connections to domestic water.
c) Replace basement sump pump. Clean and jet-rod sump pit out to the sanitary main. Provide new sump pump, level switches, and control panel. Control panes should wired to BMS and capable of providing status and alarm indication to BMS.
d) Demolish existing water closets, urinals, and lavatories. Prepare existing connections for new connections.
e) Provide new water closets, urinals, and lavatories. Prepare existing connections for new connections.

f) New water closets shall be wall mounted, vitreous china, 1.28 gallons per flush, manual flush valve.
g) New urinals shall be wall mounted, vitreous china, 0.5 gallons per flush, manual flush valve.
h) New lavatories shall be wall mounted, vitreous china, 1.0 gpm, battery powered sensor operated faucet.
i) Connect new water closet and urinals to existing cold water stub outs.
j) Provide new point of use thermostatic mixing valve and metal braded supply piping for each lavatory. Provide PVC pipe shield for ADA lavatories.
k) Connect new lavatories to existing cold water stub outs.
l) Provide trap primer for each floor drain.

3. New Service for the New Childhood Learning Center (North in-fill Building)
a) Provide new 2 ½" water service including meter and reduced pressure zone backflow preventer. Provide floor drain under backflow preventer.
b) Provide a new 100 gallon, 200 MBH condensing water heater with a minimum condensing efficiency of 93% to serve learning center fixtures. Provide associated master thermostatic mixing valve set at 120 Deg. F, recirculating pump and expansion tank and all associate piping and fittings.
c) Provide new drinking fountains, kitchen sinks, 3-compartment sinks, dishwasher, clothes washer, water closets, lavatories, and child height water closets and lavatories.
d) Provide floor drains in every toilet room, near each group of sinks, and by clothes washer.
e) Provide new domestic cold water, domestic hot water, domestic hot water return, sanitary waste and vent, and grease waste and vent distribution to every fixture.
f) All new water closets shall be floor mounted, vitreous china, with 1.28 gallons per flush, manual flush valve.
g) New lavatories shall be wall mounted, vitreous china, 1.0 gpm, battery powered sensor operated faucet.
h) Provide new point of use thermostatic mixing valve and braded supply piping for each lavatory. Provide PVC pipe shield for ADA lavatories.
i) Provide point of use thermostatic mixing valve at all sinks and lavatories.
j) Provide wall mounted washing machine outlet box for domestic cold water, domestic hot water, and sanitary waste connections for the clothes washer.
k) At each kitchen sink provide an isolation valve and dual check backflow preventer for the ice maker, the coffee maker, and the dish washer stub out connections.
l) Provide new 6" sanitary service into building.
m) Provide new exterior grease interceptor for kitchen waste. Grease interceptor shall connect to building sanitary service outside upstream of the nearest civil sanitary manhole.

n) Domestic cold water piping, domestic hot water, and domestic hot water return piping shall be copper with fiberglass insulation.
o) Above grade sanitary waste & vent piping shall be PVC.
p) Underground sanitary waste and vent shall be cast iron hub and spigot.
q) Grease waste and vent piping shall be cast iron hub and spigot.
r) Provide water hammer arrestors at end of each domestic cold water and domestic hot water pipe branch.
s) Provide new storm water drainage network consisting of roof mounted deck drains down to underground and out to civil storm drainage network.
t) Provide new storm water overflow drainage network consisting of roof mounted deck drains down to exterior downspout nozzles. Provide splash block at downspout nozzle.
u) All storm and storm overflow piping shall be cast iron hub and spigot.

4. New service for South Site Building (6 Story Tower).
a) Provide one new 4” domestic water service. Provide one 4” water meter and reduced pressure zone backflow preventer for domestic water. Provide floor drain under the backflow preventer.
b) Provide a new triplex packaged booster pump assembly including control panels, disconnect and hydro pneumatic tank. Each pump shall be 5 horse power multi-stage. The control panel shall be connected to the BMS and shall communicate monitor pump operation and alarm status to the BMS.
c) Provide a two (2) new 100 gallon 200 MBH condensing water heater with a minimum condensing efficiency of 93% to serve learning center fixtures. Provide associated master thermostatic mixing valve set to 120 Deg. F, recirculating pump and expansion tank and all associate pipe and fitting.
d) Provide new drinking fountains, water closets, urinals, lavatories, service sinks epoxy lab sinks and faucets, epoxy fume hood cup sinks and turret connections.
e) Provide new emergency face wash units and combination emergency face wash and shower units in lab spaces. Provide floor drains in front of every emergency fixture.
f) Provide floor drains in every toilet room and near service sinks and the water heater.
g) Provide new domestic cold water, domestic hot water, domestic hot water return, sanitary waste and vent, and acid waste and vent distribution to every fixture.
h) For labs provide new Grade 2 water distribution. Connect new Grade 2 service to existing Grade 2 pipe main in building 33 N. Genesee St.
i) All new water closets shall be floor mounted, vitreous china, with 1.28 gallons per flush, manual flush valve.
j) New lavatories shall be wall mounted, vitreous china, 1.0 gpm, battery powered sensor operated faucet.
k) Provide new point of use thermostatic mixing valve and braded supply piping for each lavatory. Provide PVC pipe shield for ADA lavatories.
l) Provide point of use thermostatic mixing valve at all sinks and lavatories.
m) Provide new domestic cold water for each water closet & urinal.

n) Provide new domestic cold water, domestic hot water, domestic hot water return, grade 2 water, acid waste and vent piping for lab sinks, fume hood cup sinks and emergency fixtures and associated floor drains.
o) Provide new 6” sanitary service into building.
p) Provide new 300 gallon acid neutralization tank at basement level. Acid neutralization tank discharge pipe shall connect to sanitary drainage network.
q) Domestic cold water piping, domestic hot water, and domestic hot water return piping shall be copper with fiberglass insulation.
r) Above grade sanitary waste & vent piping shall be PVC.
s) Underground sanitary waste and vent shall be cast iron hub and spigot.
t) Acid waste and vent piping shall be polypropylene.
u) Grade 2 water piping shall be CPVC.
v) Provide water hammer arrestors at end of each domestic cold water and domestic hot water pipe branch.
w) Provide trap primer for each floor drain.
x) Provide elevator pit sump pump. Pump shall have an oil sensing device that will stop the pump from running if oil is detected. Pump shall discharge to an open site drain in the nearest janitor’s closet. A control panel shall be provided wired to the BMS and shall communicate monitor pump operation and alarm status to the BMS.
y) Provide new storm water drainage network consisting of roof mounted deck drains down to underground and out to civil storm drainage network.
z) Provide new storm water overflow drainage network consisting of roof mounted deck drains down to exterior downspout nozzles. Provide splash block at downspout nozzle.
aa) All above ground and underground storm and storm overflow piping shall be cast iron hub and spigot.

C. Design Alternates
1. Remove and replace all original to building galvanized piping with new copper pipe of equivalent size.
2. Remove existing 3” Domestic water service, do not install a new dedicated 2 ½” water service for the New Childhood Learning Center and provide one new 4” combined water service to provide domestic water for 111 N. Genesee and the New Childhood Learning Center.

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IV. FIRE PROTECTION

A. Basis of design

1. Codes and standards

Type	Name of Code/Standard	Remarks
Code	2003 International Building Code	With Waukegan Amendments
Code	2004 Illinois Plumbing Code	With Waukegan Amendments
Code	2000 Life Safety Codes	
Standard	NFPA 13 – Installation of Sprinkler Systems	
Standard	NFPA 14 – Installation of Standpipe Hose Systems	
Standard	NFPA 20 – Installation of Stationary Pumps for Fire Protection	
Standard	NFPA 24 – Installation of Private Fire Service Mains	
Standard	NFPA 30 – Flammable and combustible Liquids	
Standard	NFPA 45 – Fire Protection for Laboratories Using Chemicals	

2. Design assumptions

a) None.

B. Performance specification

1. Renovations to Existing Building Services - 33 N. Genesee St.
   a) Demolish existing sprinkler heads in renovated rooms. Demolish associated branch piping back to branch main and prepare pipe for new connections.
   b) Provide new concealed sprinklers in renovated rooms. Sprinkler temperature rating shall be ordinary hazard.

c) Piping shall be schedule 40 black carbon steel.
d) Provide new concealed fire extinguishers. Provide signage at all fire extinguishers.

2. Renovations to Existing Building Services – 111 N. Genesee St.
   a) Demolish existing sprinkler main back to zone check valve. Provide new sprinkler main, branch mains, branch piping, and sprinklers for all renovated spaces.
   b) Provide new concealed sprinklers in renovated rooms and New Childhood Learning Center. Sprinklers zones be calculated based on light hazard. Sprinkler temperature rating shall be ordinary hazard.
   c) Piping shall be schedule 40 black carbon steel.
   d) Provide new inspectors test and drain connections. Provide floor drain at test connection.
   e) Provide new concealed ABC rated 10 lbs. fire extinguishers. Provide signage at all fire extinguishers.

3. New Service for the New Childhood Learning Center (North in-fill Building)
   a) Fire protection system to be provided as describer in item #2 above.
   b) Provide new concealed ABC rated 10 lbs. fire extinguishers. Provide signage at all fire extinguishers.

4. New service for South Site Building (6 Story Tower)
   a) Provide one new 6” fire water service. Provide one 6” double detector check valve for the fire water service. Provide floor drain under the backflow preventer.
   b) Provide a new 750 gpm, 105 net psi boost, 50 horse power electric driven fire pump, jockey pump and control panel. Control panel shall connect to BMS shall communicate monitor pump operation and alarm status to the BMS.
   c) Provide fire department connection and test header near grade level outside.
   d) Provide one new combination sprinkler standpipe riser and one new stand pipe riser.
   e) Provide new wet pipe sprinkler piping system including mains, cross mains, branch piping, and sprinkler heads.
   f) Provide side wall type sprinklers at top and bottom of elevator shaft.
   g) Provide new concealed sprinklers in rooms with ceilings and exposed upright in spaces without ceilings. Sprinklers zones be calculated based on light hazard. Sprinkler temperature rating shall be ordinary hazard.
   h) Provide new stand pipe riser system and 2 ½” hose connections.
   i) Piping shall be schedule 40 black carbon steel.
   j) Provide new inspectors test and drain connections. Provide floor drain at test connection.
   k) Provide new concealed ABC rated 10 lbs. fire extinguishers. Provide signage at all fire extinguishers.

C. Design Alternates
   1. None.

I. Information Technology Systems (ITS)

A. Introduction

1. The ITS design in this project will include provisions for using the building and campus data network to support ALL network based applications and implementation of the building cabling infrastructure to support applications such as, but not limited to data transmission, VoIP, security (access control, intrusion detection system, and video surveillance), audio visual, closed circuit television building automation and controls.
2. Applicable Codes, Guidelines, Standards and abbreviations
   a. CEC — Chicago Electrical Code
   b. NFPA 70-1999 — National Electric Code
   c. NFPA 99-1999 — National Standard for Health Care Facilities
   d. BICSI — Telecommunications Distribution Methods Manual
   e. American National Standards Institute/Telecommunications Industry Association/ Electronics Industries Alliance (ANSI/TIA/EIA), including associated Addenda and revisions:

ANSI/TIA/EIA-568-B.x	Commercial Building Telecommunications	
ANSI/TIA/EIA-569	Commercial Building Standard for Telecommunications	Pathways and Spaces.
ANSI/TIA/EIA-606	Administration Standard for the Telecommunications	Infrastructure of Commercial Buildings.
ANSI/TIA/EIA-607	Commercial Building Grounding and Bonding	Requirements for Telecommunications.
ANSI/TIA/EIA-526-7	Measurement of Optical Power Loss of Installed	Singlemode Fiber Cable Plant.
ANSI/TIA/EIA-526-14A	Optical Power Loss Measurements of Installed	Multimode Fiber Cable Plant.

   f. NetPOP — Network Point of Presence / Incoming Service Rooms
   g. MDF — Main Distribution Frame
   h. IDF — Intermediate Distribution Frame
   i. ACS — Access Control System
   j. VMS — Video Management System
   k. AV — Audio Visual

B. Structured Cabling System

1. Design Load Criteria
   a. The following cable quantities are based on the approximation for this project. Specific requirements will be confirmed as space programming is complete.
      1) Horizontal data cable channels including wireless access points:
         Category 6A

	500 outlet locations
	+ 125 25% spare
	(625) outlet locations
	X 2 two cables per outlet
	1250 outlet Cables + 25 IP Cameras 1275 data cables

2) Fiber Backbone:

NetPOP to MDF	12-strand multi-mode fiber optic cable 12-strand single-mode fiber optic cable
MDF to each IDF	12-strand multi-mode fiber optic cable 12-strand single-mode fiber optic cable
IDF to each IDF (redundancy)	12-strand multi-mode fiber optic cable 12-strand single-mode fiber optic

3) Copper Backbone:

NetPOP to MDF	300 pair
MDF to IDF	100 pair
IDF to IDF (redundancy)	100 pair

C. Terminations / Hardware
   1. 48 port patch panels sized with a minimum of 30% spare capacity
   2. 110 termination blocks sized with a minimum of 30% spare capacity

D. Patch Cords
   1. 1 to 1 match with data outlet cables and termination hardware

E. Pathways
   1. Sized with a 40% fill capacity

F. Support Room Requirements
   1. NetPOP
      a. Minimum 10'X10' room located in basement or on level one within 50' of the incoming service penetrating the building.
      b. (2) two-post racks 7' high, standard TIA/EIA 19" wide racks. (1) for service provider equipment and (1) spare. 3" wide vertical wire management
      c. Power requirements; minimum 15 watts per square foot
      d. Cooling requirements; none
      e. Ground bars and conductors shall be provided for equipment protection in all support rooms

   2. MDF/Data Center
      a. Minimum 12'X18' room located above level one centrally located in the building core
      b. (4) 30" standard TIA/EIA 19" wide cabinets. (3) for owner provided network equipment and (1) spare
      c. Power requirements; minimum 35 watts per square foot
      d. Cooling requirements; between 68 and 72 degrees Fahrenheit with 30%-50% relative humidity
      e. Ground bars and conductors shall be provided for equipment protection in all support rooms

   3. IDF
      a. Minimum 10'X12' rooms located on 2nd and 5th floors located within 200 feet of the furthest data outlet.
      b. (2) 2-post TIA/EIA 19" wide racks. (1) cable terminations with spare capacity. (1) College of Lake County provided equipment with spare capacity. 6" wide vertical wire management
      c. Power requirements; minimum 25 watts per square foot
      d. Cooling requirements; between 68 and 72 degrees Fahrenheit with 30%-50% relative humidity
      e. Ground bars and conductors shall be provided for equipment protection in all support rooms

G. Security System

   1. The ACS, VMS and intercom headend equipment is existing. New devices will tie back to the existing systems. Specific requirements will be confirmed as space programming is complete

H. Audio Visual System

   2. The AV system shall include typical audio visual devices, display monitors, LCD/DLP projectors, projector screens, videoconferencing, amplified audio, touchscreen control panel. Specific requirements will be confirmed as space programming is complete

TECHNOLOGY NEW WORK NARRATIVE & SKETCHES

I. Renovation Areas

1. Demolition
   a. All existing areas to be renovated shall be completely demolished to its origination within the scope of work.

2. 33 N Genesee
   a. First Floor
      1. Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from the existing termination point.
   b. Second Floor
      1. Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from the existing termination point.
   c. Third Floor
      1. Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from the existing termination point.

3. 111 N. Genesee
   a. First Floor
      2. Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from the existing termination point.
   b. Second Floor
      2. Existing to remain areas which are fed from equipment within the demolition scope shall have a new cable and conduit feed from the existing termination point.

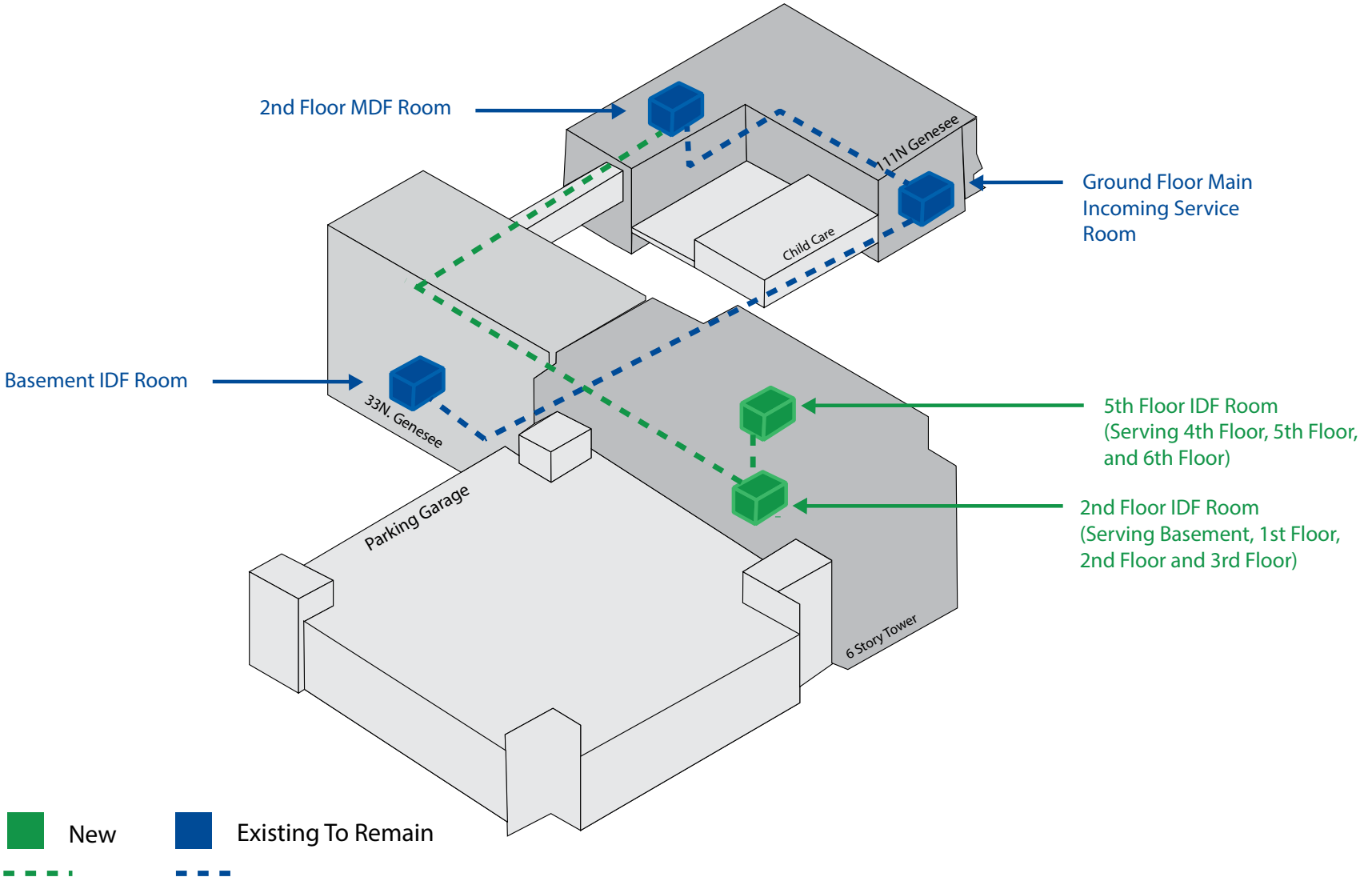
J. Design Alternates

a. Refer to option 1 and option 2 ITS diagrams.
b. Relocating existing MDF in 111 N. Genesee to new 6 story tower
c. Re-work existing MDF. Currently, the cable management is in such disarray, adding additional cabling will be challenging.
d. Provide cooling in existing MDF room. Currently, the room is extremely hot decreasing the network equipment life span.

K. Open Issues

a. Coordinating with the College of Lake County IT personnel.

Option 1 - New IDF Rooms In Main Building



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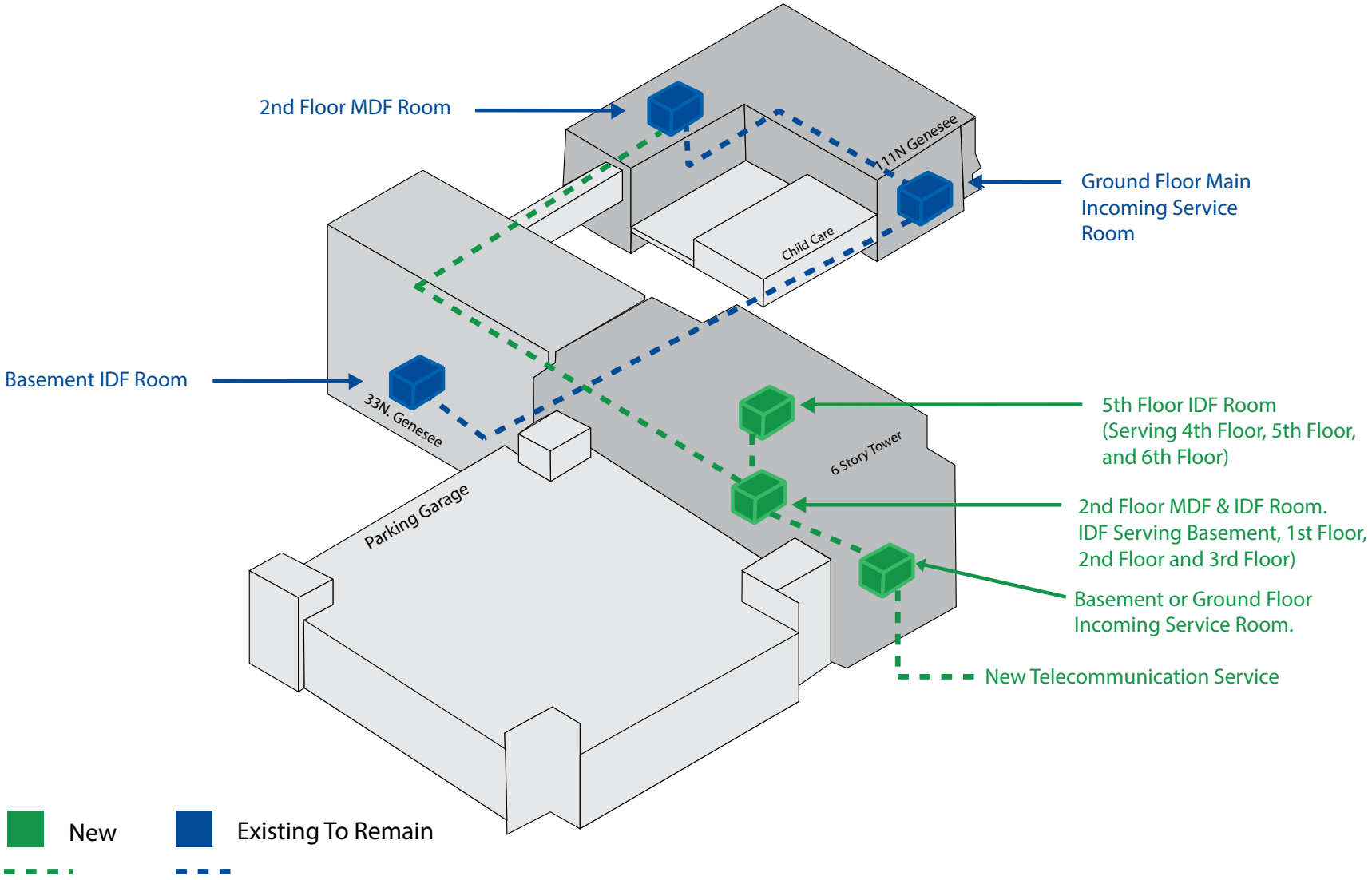
Option 2 - New MDF & IDF Rooms In Main Building



dbHMS impact through engineering

I. GENERAL ASSUMPTION

A. Temperature Setpoints and weather data assumptions -

SEE MECHANICAL SECTION
(Setback temperatures during unoccupied hours are +/- 5°F of the design temperature for each space)

B. Building Envelope

1	**Exterior Wall Construction Description**	Average weight construction (10” Concrete, 6” continuous Insulation)
2	**Exterior Wall Assembly R-value**	R-20
3	**Roof Construction Description**	Insulation entirely above metal deck
4	**Roof Assembly U-value**	R-40
5	**Glazing Percentage**	52%
6	**Fenestration Area-weighted, Assembly U-value** (including effects of the frame)	U-0.35
7	**Fenestration SHGC**	SHGC-0.40

8	**Space-by-Space Interior Lighting Power Densities**	Classroom – 1.24 W/SF Computer Lab – 1.24 W/SF Conference Room – 1.23 W/SF Daycare – 1.24 W/SF Dining – 0.89 W/SF Kitchen – 0.99 W/SF Library (Reading) – 0.93 W/SF Library (Stacks) – 1.71 W/SF Lobby – 0.66 W/SF Mechanical/BOH – 0.95 W/SF Multipurpose – 1.23 W/SF Office (Enclosed) – 1.11 W/SF Office (Open) – 0.98 W/SF Retail – 1.68 W/SF SEE ELECTRICAL SECTION FOR ILLUMINANCE LEVELS
9	**Lighting Controls**	Occupancy Sensors in all spaces that are not 24 hour operation or where automatic shutoff endangers safety. Provide automatic daylighting control for all regularly occupied top- and side-lit areas.
10	**Occupant Density**	Classroom – 70 SF/PP Computer Lab – 40 SF/PP Conference Room – 20 SF/PP Daycare – 40 SF/PP Dining – 20 SF/PP Kitchen – 20 SF/PP Library – 50 SF/PP Lobby – 20 SF/PP Mechanical/BOH – 0 SF/PP Multipurpose – 50 SF/PP Office – 200 SF/PP Retail – 70 SF/PP

11	**Ventilation Rates**	See Mechanical section. ASHRAE 62.1-2010 Rates assumed.
12	**Service Water Heating**	90% Efficient Water Heaters SEE PLUMBING SECTION FOR FURTHER INFORMATION
13	**Receptacle or Process Equipment**	Classroom – 0.25 W/SF Computer Lab – 1.5 W/SF Conference Room – 0.1 W/SF Daycare – 0.1 W/SF Kitchen – 1.5 W/SF Library – 0.2 W/SF Lobby – 0.1 W/SF Multipurpose – 0.25 W/SF Office – 0.75 W/SF Retail – 0.25 W/SF 10% REDUCTION OVER LISTED VALUES ASSUMED FOR SPACES WITH RECEPTACLES TIED TO OCCUPANCY SENSORS
14	**Utilization Schedules**	SEE APPENDIX

III. ALTERNATIVE COMPARISONS

	Description of HVAC System (including efficiencies, if known)	Total Annual Energy Consumption (MMBtu)	Total Annual Energy Cost	Annual Energy Cost Savings
	LEED BASELINE	2,738	$60,766	-
Alternate 1	Gas-Fired Heat Pumps	2,070	$46,066	24.4%
Alternate 2	Condensing Boilers with WC Chillers	2,214	$47,627	21.6%
Alternate 3	Ground-Source Heat Pumps	1,793	$48,638	20.0%

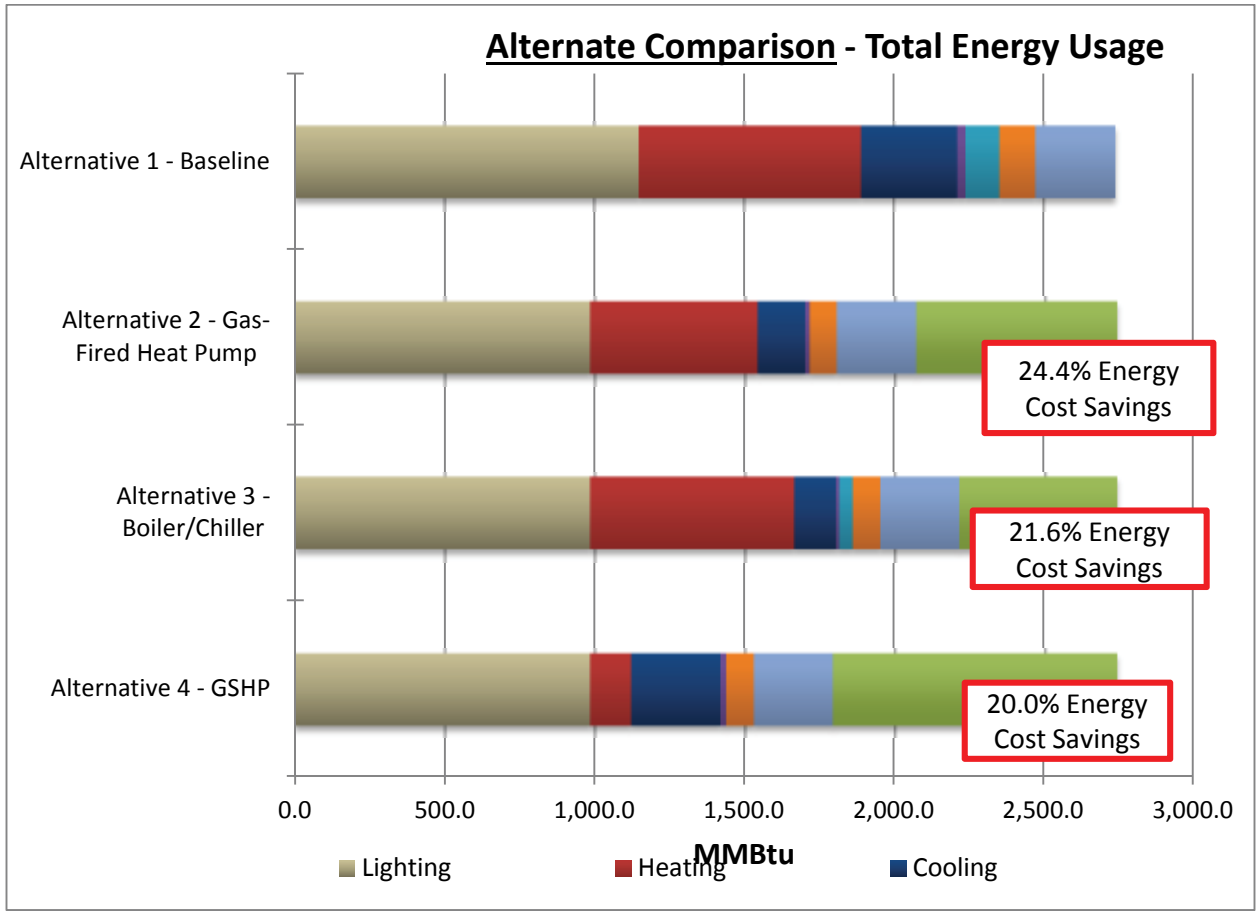


Figure 1: Total annual energy cost savings of alternate system designs

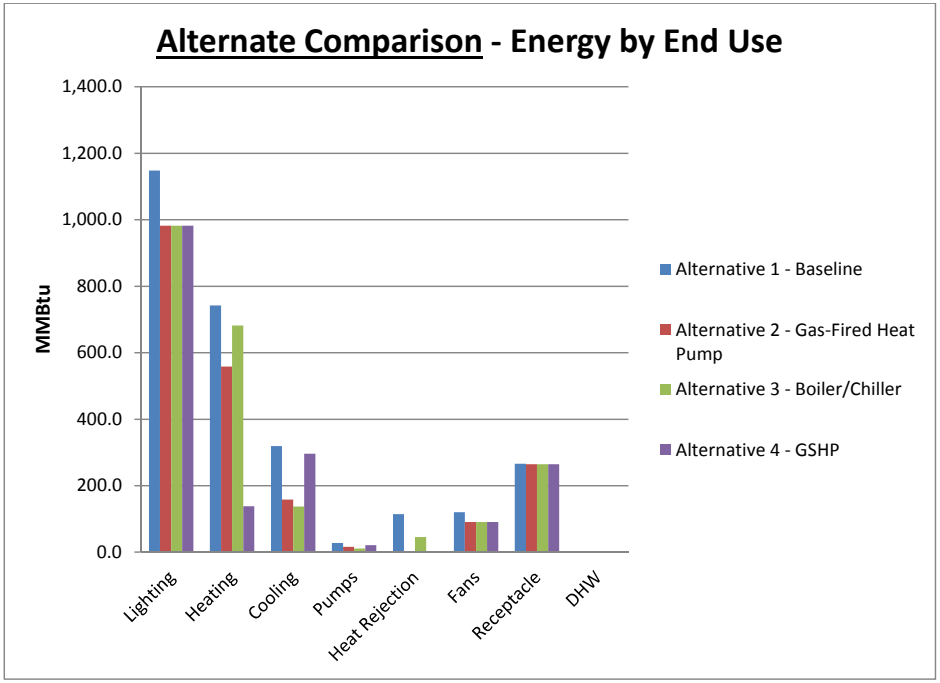


Figure 2: Annual energy cost savings of alternate system designs by end use

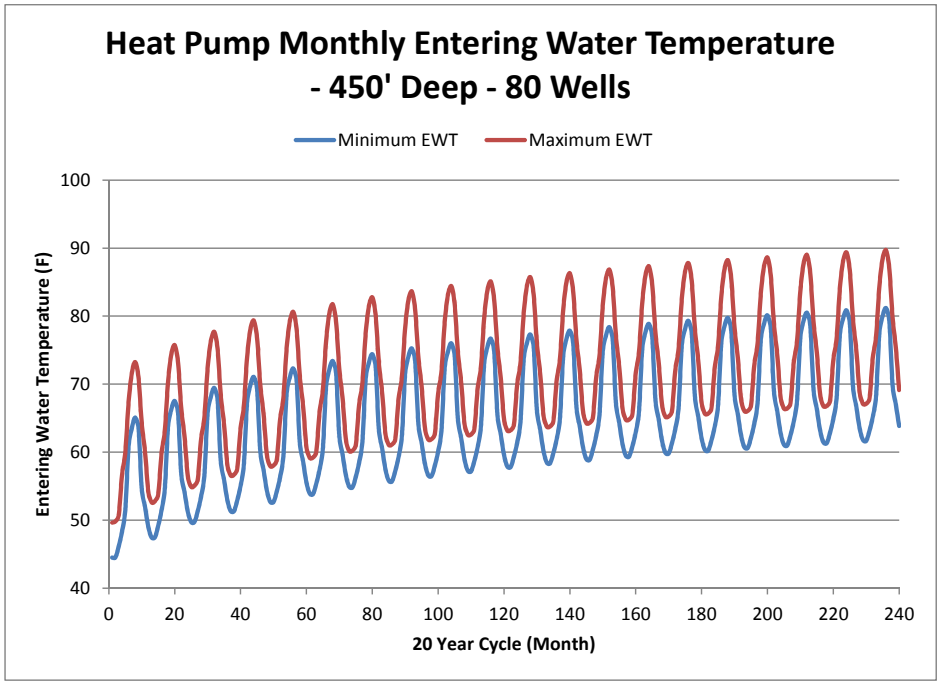


Figure 3: Geothermal well sizing with separate DHW

IV. EUI TARGET FINDER

Uses	College/University (100%)
Energy Breakdown	Electric – 65.4% Gas – 34.6%
Utility Rates	Electric – 0.0925 $/kWh Gas – 0.876 $/therm
Annual EUI Target	46.3 kBtu/SF (70% Better than Median)
Annual Energy Cost Target	$74,308 (70% Better than Median)

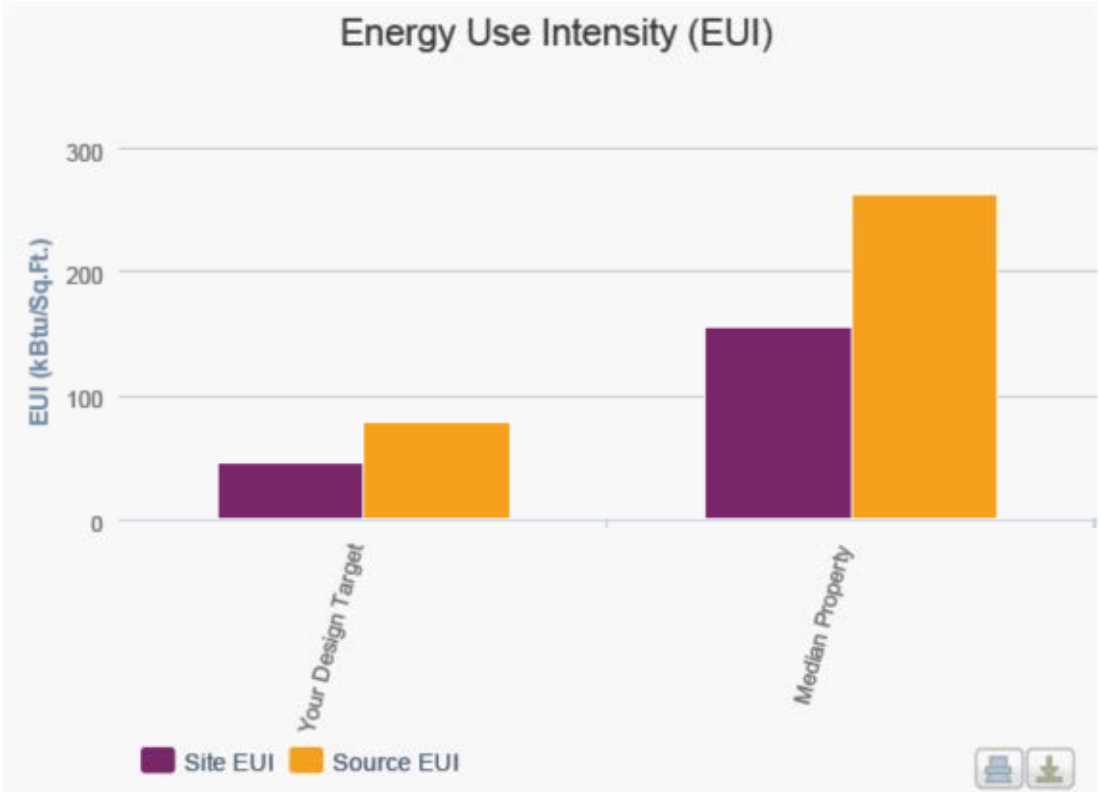


Figure 4: ENERGYSTAR EUI Target Finder

V. RENEWABLE ENERGY – PHOTOVOLTAICS

A. Assumptions

Assumed Utility Rates	Electric – 0.0925 $/kWh Gas – 0.876 $/therm
Assumed Annual Energy Consumption (including 30% Safety Factor)	4,642 MMBtu
Assumed Annual Energy Cost (including 30% Safety Factor)	$96,295
Assumed Energy Breakdown	Electric – 65.4% Gas – 34.6%
Assumed Power Generation Density	18.6 W/SF (Based on SunPower E-20 Series)

B. Results

	OPTION 1	OPTION 2
Array Size	57 kW	106.1 kW
Array Area (including 20% Safety Factor)	3,674 SF	6,840 SF
Annual Energy Generated	72,893 kWh	135,849 kWh
Annual Savings	$7,048	$13,118
Annual Savings Percentage	7%	13%

SEE APPENDIX FOR FURTHER INFORMATION ON ASSUMPTIONS AND RESULTS FOR PHOTOVOLTAIC SYSTEM

BUILDING DATA
ENERGY MODEL APPENDIX - SCHEDULES

APPENDIX

		OFFICES/CHILD CARE		CLASS/LAB/TUTORING/TESTING		LIBRARY		BOOKSTORE		FOOD COURT		MULTIPURPOSE		ENTRY LOBBY	MECHANICAL
	Summary of Design Conditions	Cooling Design: Occupancy: As below Lighting: 100% Always On Ventilation: 100% Always On Equipment: 100% Always On								Heating Design: Occupancy: 0% Always Off Lighting: 0% Always Off Ventilation: 100% Always On Equipment: 0% Always Off					
	Hour of Day	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Typical	Typical
Occupancy	0 - 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1 - 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2 - 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3 - 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4 - 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5 - 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6 - 7	0.00	0.00	0.10	0.00	0.10	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00
	7 - 8	0.30	0.00	0.50	0.00	0.10	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.15	0.00
	8 - 9	1.00	0.00	1.00	0.00	0.10	0.05	0.10	0.10	0.20	0.10	0.40	0.00	0.30	0.00
	9 - 10	1.00	0.00	1.00	0.00	0.60	0.30	0.20	0.20	0.20	0.10	0.40	0.00	0.50	0.00
	10 - 11	1.00	0.00	1.00	0.00	0.60	0.30	0.20	0.20	0.20	0.10	0.40	0.00	0.50	0.00
	11 - 12	1.00	0.00	1.00	0.00	0.60	0.30	0.30	0.30	0.20	0.10	0.40	0.00	0.50	0.00
	12 - 13	1.00	0.00	0.30	0.00	0.30	0.15	0.50	0.50	0.80	0.40	0.10	0.20	0.50	0.00
	13 - 14	1.00	0.00	1.00	0.00	0.60	0.30	0.60	0.60	0.80	0.40	0.10	0.20	0.50	0.00
	14 - 15	1.00	0.00	1.00	0.00	0.60	0.30	0.60	0.60	0.20	0.10	0.40	0.20	0.50	0.00
	15 - 16	1.00	0.00	1.00	0.00	0.60	0.30	0.50	0.50	0.20	0.10	0.40	0.20	0.50	0.00
	16 -17	1.00	0.00	1.00	0.00	0.60	0.30	0.50	0.50	0.20	0.10	0.40	0.20	0.50	0.00
	17 - 18	0.30	0.00	0.50	0.00	0.20	0.10	0.50	0.50	0.40	0.20	0.40	0.20	0.30	0.00
	18 - 19	0.00	0.00	0.00	0.00	0.20	0.10	0.30	0.30	0.40	0.20	0.20	0.00	0.15	0.00
	19 - 20	0.00	0.00	0.00	0.00	0.20	0.10	0.20	0.20	0.30	0.15	0.20	0.00	0.05	0.00
	20 - 21	0.00	0.00	0.00	0.00	0.20	0.10	0.20	0.20	0.20	0.10	0.05	0.00	0.05	0.00
	21 - 22	0.00	0.00	0.00	0.00	0.20	0.10	0.10	0.10	0.00	0.00	0.05	0.00	0.05	0.00
	22 - 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	23 - 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	EFLH	9.60	0.00	9.40	0.00	5.80	2.90	4.80	4.80	4.30	2.15	4.00	1.20	5.10	0.00
Lighting	0 - 1	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	1 - 2	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	2 - 3	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	3 - 4	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	4 - 5	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	5 - 6	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	1.00	0.30
	6 - 7	0.10	0.05	0.10	0.05	1.00	1.00	0.10	0.10	0.05	0.05	1.00	0.05	1.00	0.30
	7 - 8	0.50	0.05	0.50	0.05	1.00	1.00	0.10	0.10	0.50	0.50	1.00	0.05	1.00	0.30
	8 - 9	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	9 - 10	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	10 - 11	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	11 - 12	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	12 - 13	1.00	0.05	0.30	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	13 - 14	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	14 - 15	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	15 - 16	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	16 -17	1.00	0.05	1.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	17 - 18	0.50	0.05	0.50	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
	18 - 19	0.10	0.05	0.05	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	19 - 20	0.05	0.05	0.05	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	20 - 21	0.05	0.05	0.05	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	1.00	0.30
	21 - 22	0.05	0.05	0.05	0.05	1.00	1.00	0.20	0.20	0.50	0.50	1.00	0.05	0.30	0.30
	22 - 23	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	23 - 24	0.05	0.05	0.05	0.05	0.30	0.30	0.10	0.10	0.05	0.05	0.05	0.05	0.30	0.30
	EFLH	10.75	1.20	10.00	1.20	18.40	18.40	14.20	14.20	14.45	14.45	16.40	6.90	18.40	7.20

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ENERGY MODEL APPENDIX - PV WATTS CALCULATION

- PVWatts Calculation
  - 7% Energy Cost – 4 LEED EAc2 Points
  - 13% Energy Cost – 7 LEED EAc2 Points

PVWatts Calculator

RESULTS

72,982 kWh per Year *

Month	Solar Radiation (kWh / m² / day)	AC Energy (kWh)	Energy Value ($)
January	2.48	3,881	405
February	3.31	4,596	480
March	4.11	6,242	652
April	5.22	7,311	763
May	6.14	8,457	883
June	6.29	8,268	863
July	6.48	8,593	897
August	5.45	7,356	768
September	4.79	6,342	662
October	3.81	5,474	571
November	2.42	3,504	366
December	1.90	2,959	309
Annual	4.37	72,983	$ 7,619

Location and Station Identification

Requested Location	111 N Genessee St, Waukegan, IL
Weather Data Source	(TMY2) CHICAGO, IL 27 mi
Latitude	41.78° N
Longitude	87.75° W

PV System Specifications *(Residential)*

DC System Size	57 kW
Module Type	Standard
Array Type	Fixed (open rack)
Array Tilt	20°
Array Azimuth	180°
System Losses	14%
Inverter Efficiency	96%
DC to AC Size Ratio	1.1

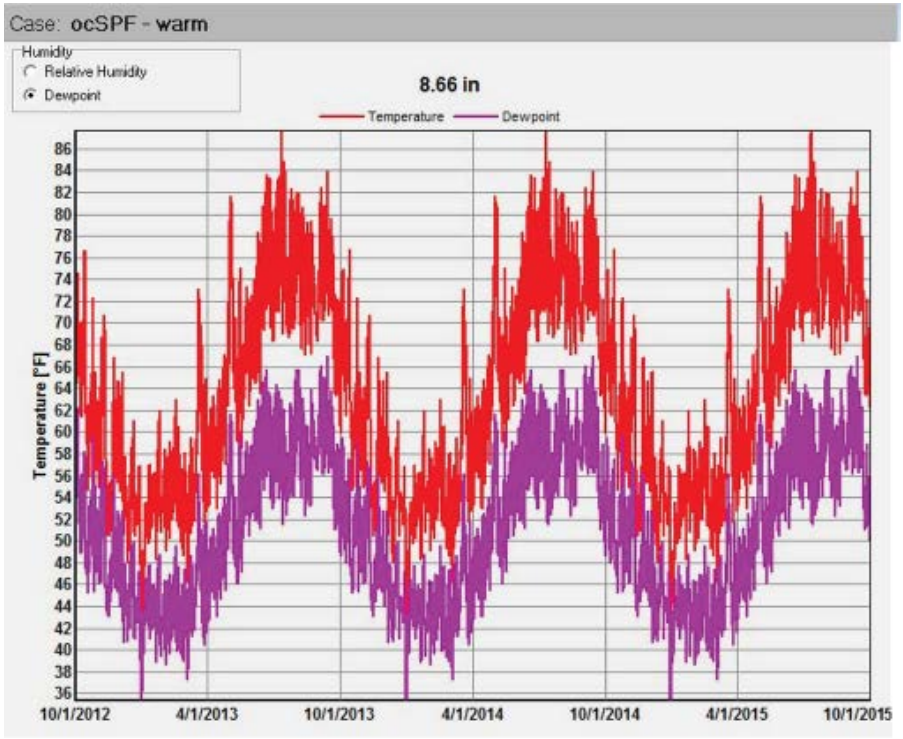
Initial Economic Comparison

Average Cost of Electricity Purchased from Utility	0.10 $/kWh
Initial Cost	3.30 $/Wdc
Cost of Electricity Generated by System	0.21 $/kWh

BUILDING DATA
MASONRY WALL DEW POINT CALCULATION

The wall section is representative of a typical masonry wall construction for the project. The total R-Valuve of the wall is 28.2. The data provided by the dew point calculation test records the dew point occurring outside of the exterior wall sheathing and within the 2 inches of rigid polyisocyanurate insulation.

Johns-Manville performed the dewpoint calculation test of the proposed masonry wall section. The test provided the best type and thickness of insulation to prevent condensation and frost damage during winter conditions.



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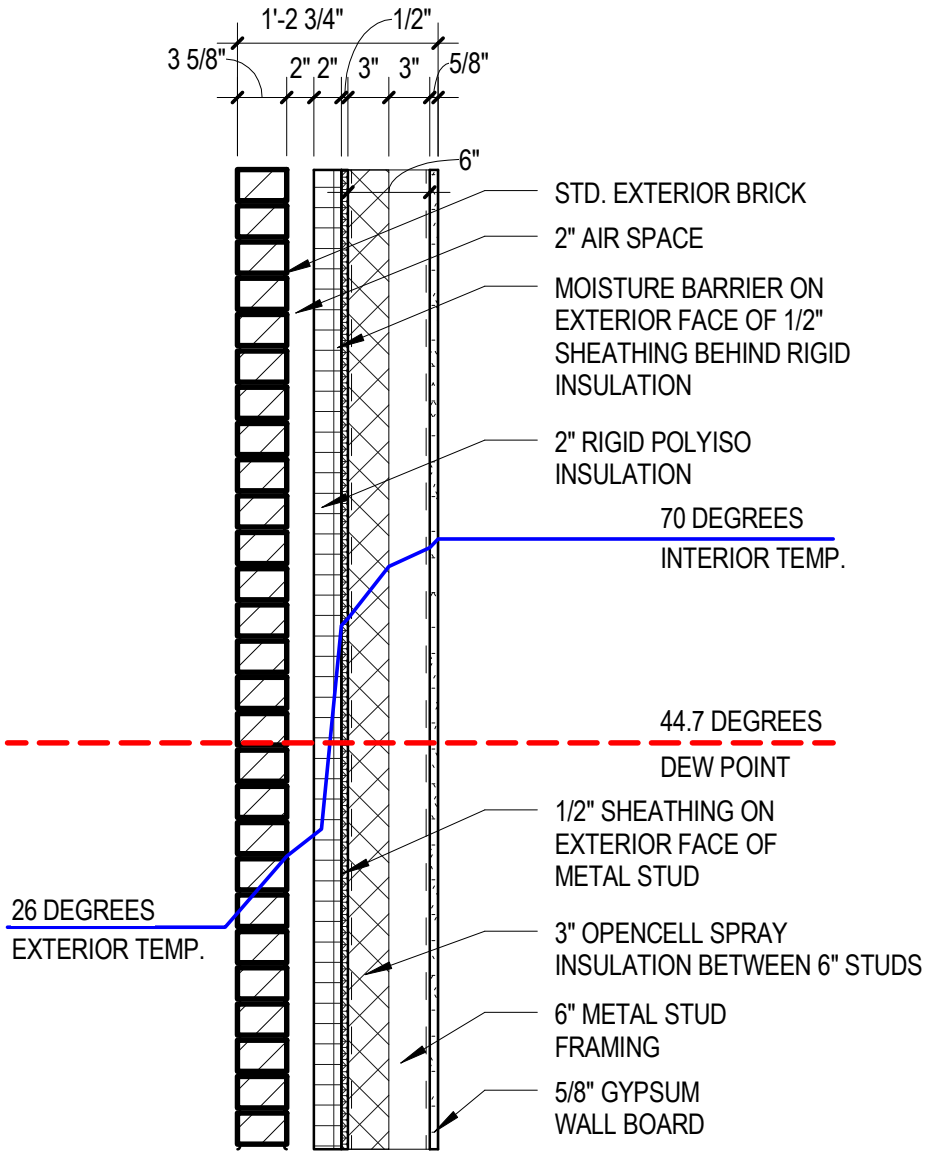
1'-2 3/4"
1/2"
3 5/8"
2"
2"
3"
3"
5/8"
6"
STD. EXTERIOR BRICK
2" AIR SPACE
MOISTURE BARRIER ON EXTERIOR FACE OF 1/2" SHEATHING BEHIND RIGID INSULATION
2" RIGID POLYISO INSULATION
70 DEGREES
INTERIOR TEMP.
44.7 DEGREES
DEW POINT
1/2" SHEATHING ON EXTERIOR FACE OF METAL STUD
26 DEGREES
EXTERIOR TEMP.
3" OPENCELL SPRAY INSULATION BETWEEN 6" STUDS
6" METAL STUD FRAMING
5/8" GYPSUM WALL BOARD

BUILDING DATA
PROJECT SCHEDULE

Capital Development Board
CDB CLC SS-AEC Waukegan
CDB Project Number: 810-056-024
Legat Project No: 213007.10

PHASE	Time	Location	START DATE	END DATE
SCHEMATIC DESIGN			Monday, September 08, 2014	Sunday, February 15, 2015
CDB REVIEW			Sunday, February 15, 2015	Sunday, March 15, 2015
DESIGN DEVELOPMENT			Sunday, March 15, 2015	Tuesday, September 15, 2015
CDB REVIEW			Tuesday, September 15, 2015	Thursday, October 15, 2015
CONSTRUCTION DOCUMENTS/DESIGN (Up to 50% DD)			Thursday, October 15, 2015	Friday, January 15, 2016
50% Design Submission to CDB				Friday, January 15, 2016
CDB REVIEW			Friday, January 15, 2016	Monday, February 15, 2016
DESIGN/CONSTRUCTION DOCUMENTS (from 50% DD to 100% DESIGN)			Monday, February 15, 2016	Sunday, May 15, 2016
100% Design Submission to CDB				Sunday, May 15, 2016
CDB REVIEW			Sunday, May 15, 2016	Thursday, July 14, 2016
Bid Documents Released for Bids				Friday, July 15, 2016
BIDDING & NEGOTIATING				
Pre-bid Meeting				TBD
Receipt-of-Bids (Prime Contract)				Tuesday, November 15, 2016
Award of Contracts				TBD
CONSTRUCTION ADMINISTRATION			Wednesday, March 01, 2017	Friday, February 15, 2019
Punch Lists (New Construction)				TBD
Punch Lists (Renovations)				TBD
Substantial Completion (Addition)				Friday, February 15, 2019
Substantial Completion (Renovations)				Friday, February 15, 2019
CLOSE-OUT				
AE Final Acceptance				Wednesday, May 15, 2019
AE Contract Completion				Friday, May 15, 2020

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LAKESHORE

8 SCHEMATIC DESIGN CHECKLIST

SD Checklist

CDB - SCHEMATIC DESIGN CHECKLIST

PROGRAM ANALYSIS
PA SUBMITTAL DECEMBER 31, 2013
REVISED PA SUBMITTAL JANUARY 6, 2014 - (SUBMITTAL APPROVED)

SCHEMATIC DESIGN
SD SUBMITTAL **FEBRUARY 15, 2015**
CDB REVIEW MARCH 16, 2015

(from Design and Construction Manual March 2009)
5.4 Schematic Design

A. When provided for in Appendix A to the agreement, A/E shall prepare up to three design studies for review and consideration by CDB and the Using Agency, either as part of Program Analysis or as a separate phase.
- Owner approved option has been provided

B. Design studies may include written alternatives, drawings, or other documents as appropriate. Drawings can be sketch format, single line drawings or other as appropriate to illustrate basic information. Submittal shall include written analysis of the advantages and disadvantages of each alternative.
- Provided

C. Provide PPCB form and cost estimates for each schematic design study in project component format per Article 4.6 B.
- Provided

D. Provide LEED checklist for each schematic design study (if applicable).
- Provided

E. Design Development will be based on the alternative accepted by CDB and the User, as modified by their comments during the review process.
- Noted

CDB REVIEW CHECKLIST

Program Analysis (PA) Phase submittal
Design Development (DD) Phase submittal

Date February 15, 2015
Project Number 810-056-024
CDB PM Bruce Locke
A/E Representative Legat Architects

These checklists have been prepared to provide clarity and instruction to A/E's in the preparation of the PA/DD submittal(s). They are intended to clarify the requirements stipulated in CDB's Design and Construction Manual (DCM), *and* ***neither alter nor eliminate*** *the requirements set forth in the* DCM *or in the Professional Services Agreement. CDB recognizes that unique challenges and solutions are inherent in each project. Therefore these requirements should be addressed by the A/E* ***only as applicable*** *to each project and scope of work. Submittals which combine the PA and DD phases should include all applicable requirements for each phase.*

PA submittal

- [x] Narrative indicating the scope of work and a complete basis for the project design
- [x] Diagrams (i.e., floor plans, site plans, flow diagrams, etc.) to graphically supplement the narrative
- [x] Code analysis (see reverse side)
- [x] Statement of compliance with Flood Plain Construction Policy
- [x] Proposed Project Cost Budget form
  - [x] Cost estimate for each trade
- [x] Estimated construction schedule

New buildings, additions

- [ ] Space itemization analysis.
  - [ ] Function and size of space
  - [ ] Number and classification of occupants
  - [ ] Type and quantity of equipment
  - [ ] Required utilities
  - [ ] Special environmental and/or system req's.

Previously included in PA Book Submittal

- [x] Total area of program spaces
- [ ] Report on historical uses of the site N/A
- [x] Masonry wall dewpoint calculation

Remodeling projects

- [x] Statement of the status of asbestos and other hazardous materials (see DCM 5.3.C.5)
- [ ] If required, involvement of the Illinois Historic Preservation Agency has been acknowledged
- [ ] Required general phasing of work has been identified

DD submittal

Budget
- [ ] Proposed Project Cost Budget form
  - [ ] Cost estimate for each trade and major work item

Project Manual
- [ ] Project Summary section 01 11 00 is complete
- [ ] Outline specification for each major project component.
  A Table of Contents list is not acceptable.

Drawings
- [ ] Site Plan
  - [ ] Each building located
  - [ ] Existing CDB Building Numbers are indicated
  - [ ] Existing and finished contours
  - [ ] Ground floor elevations
  - [ ] Roads, walks, parking areas
  - [ ] Utilities
  - [ ] Other site construction
  - [ ] Limits of the contract
  - [ ] Floor Plans
- [ ] All exterior elevations
- [ ] Vertical building sections
- [ ] Location and type of primary structural members
- [ ] Fixed Equipment, including utility service req's.
  - [ ] Plumbing fixtures
  - [ ] Heating
  - [ ] Ventilating
  - [ ] Electrical
  - [ ] Areas requiring acoustical treatment are identified

Other Requirements
- [ ] Current project schedule (not necessarily *contractual* schedule)
- [ ] Soil testing as required by DCM 3.09.H)
- [ ] Seismic design criteria (DCM 3.11.D)
- [ ] Life cycle cost analysis for each alternative energy system considered
- [ ] Statement of compliance with Federal Energy Policy Act and ASHRAE 90.1 (DCM 2.2.B)
- [ ] Model or rendering (if required)
- [ ] Area analysis tabulation (PA comparison)
- [ ] Illumination levels
- [ ] Other negotiated requirements _____

E-MAIL THIS FORM: This form may be submitted to CDB electronically. Attach a completed form to an e-mail addressed to the CDB Project Manager. All CDB e-mail addresses are available on our website: www.cdb.state.il.us.

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