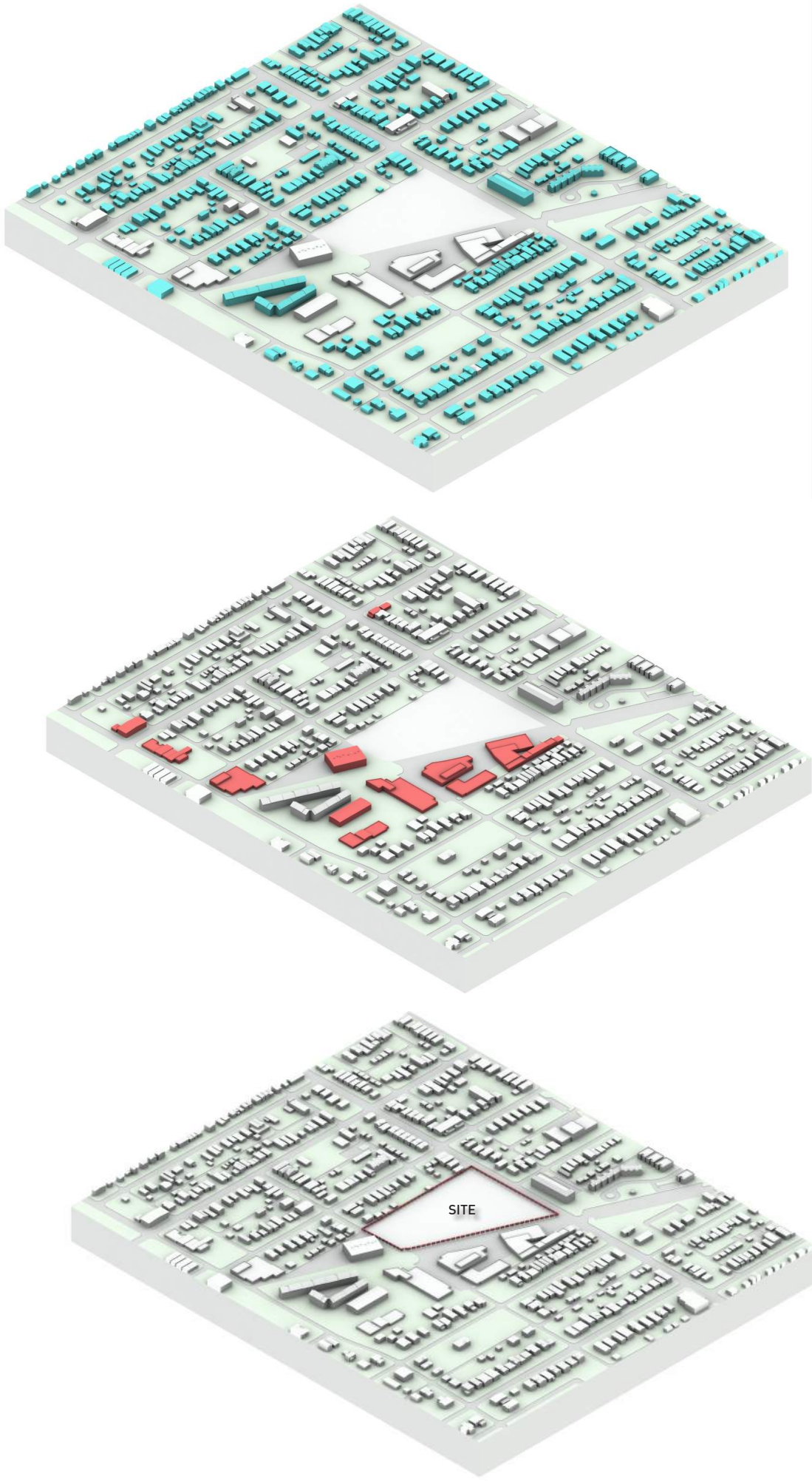

Northwestern Architecture Engineering & Design

385-2-20

January 2023— March 2023

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1. Design Studio Goals
2. Syllabus
3. Project Assignments
4. Project Site | Location
5. Project Site | Aerial Views
6. Project Site | Street Views
7. Project Site | Surrounding Area Program
8. Project Program
9. Digital Information

The goal of this 2-year program of Design Studio/Seminars/Research is to give students a strong, comprehensive and broad understanding of architecture, design, and engineering in the context of our present world. The program will focus on integration of design + engineering, design methods, history, creative thinking, and research while requiring students to realize designs individually as well as working in teams. The program seeks to reinforce creative engineering for future engineers or lead to a Masters in Architecture at an Architecture Graduate Program.

1. History

A few informal history discussions will begin developing a value system by identifying and judging the best buildings that will help decision-making. History of architectural design will seek to develop methodologies and process for useful work approaches.

2. Urbanization

Using the development of Chicago infrastructure and architecture since 1850, students will gain an understanding of the forces at work in our environment.

3. Integrated Design Studio

Design exercises will require students to create buildings ranging from simple to complex; developing graphic and modeling skills, three dimensional representation, energy analysis, design thinking, structure, and mechanical concepts. Graphic and verbal presentations will be required.

4. Teamwork

The complexity of our modern world requires teams of professionals to work together to address building design. A one-week team project with Stanford AE+D students over the internet in second quarter is followed by a third quarter team project for the design of a tall building.

5. Structural Engineering

Professors from Engineering will interact with the studio design work with engineering analysis and calculations of engineering aspects of the design solutions.

6. Building Information Modeling, Sustainability, and Energy Modeling

Student Designs will be developed using REVIT (a BIM platform) followed by energy simulations using EQUEST (an energy modeling platform).

7. Free-Hand Drawing

Students will develop their individual skills of free-hand drawing that will enable them to see, communicate, and to conceptualize. Students will execute several assignments in an iterative process that sharpens their design drawing communication.

8. Seminars/Lectures

Practicing professionals will present case studies of architectural, engineering, contracting, management, and development, that will provide the student with a foundation; for understanding the complexity of architectural practice; and a general appreciation of the modern design world.

9. Readings and Reports

Various reading assignments, group discussions and reports.

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January 2023

SEMINAR / STUDIO APPROACH: JANUARY 2023 - MARCH 2023 | Quarter 2

Class Meets: Tuesdays & Thursdays (4:00pm – 6:00pm)

Instructors: Luis Collado, Jose Luis de la Fuente, Scott Cyphers, (Larry Booth & Mark Sexton)

Class Hours: 40 hrs. Lectures, Seminars, Critiques and Presentations | 164 hrs. min. student time

GUEST LECTURERS

* Patricia Saldaña Natke. Partner | Urban Works
* Aimee Eckmann. Principal | Perkins & Will
* Tracy Salvia. Principal | STLarchitects
* Elaine Shapiro. Project Associate | Thornton Tomasetti
* Laurie Petterson | Crow Island Docent Program
* Ryan Biziorek, Jennifer Smid | ARUP

CLASS SCHEDULE & DELIVERABLES

Date	Time	Instructors / Lecturers	Course Topic	Requirements
Th 01/05	(4-5 pm)	LC/JLF/SC/LB/MS	Course Introduction	Introductions, Assign Studio Project, Fall Quarter review,
	(5-6 pm)	LC/JLF/SC/LB/MS	Lecture: School Design	Luis and Jose Luis to lecture on School design theory and basics for Studio
Tu 01/10	(4-6 pm)	LC/JLF/SC	Lecture: Classroom Learning Unit	Special look at the classroom and comparative analysis
	(5-6 pm)	LC/JLF/SC	Lecture: Education and Architecture	Assign Prototype Classroom Project
Th 01/12	(4-6 pm)	LC/JLF/SC	Critiques: Classroom Plans Concepts	Group Review of Classroom concepts
Tu 01/17	(4-6 pm)	LC/JLF/SC	**Classroom Presentation**	**1. Classroom floor plans including furniture layouts** **2. Axonometric of Classroom** **3. Interior perspectives (two minimum). Include materials**
Th 01/19	(4-6 pm)	Laurie Petterson*	Visit: Crow Island School	Crow Island School Visit
Tu 01/24	(4-5 pm)	Aimee Eckmann*	Lecture: Education Work	Subject Matter TBD. Example: NET ZERO SCHOOL
	(5-6 pm)	LC/JLF	Lecture: Site Analysis Principles	Site Analysis Presentation
Th 01/26	(4-5 pm)	LC/JLF/SC	Group Work	Existing conditions group workshop. Review School Program and Site
	(5-6 pm)	LC/JLF/SC	Critiques: 3 Site Plans Concepts	Group Review of Site concept development
Tu 01/31	(4-5 pm)	Patricia Saldaña Natke*	Lecture: Ethical Material Sourcing	Ethical Material Sourcing and Social Impact in Architecture for Education LC/JLF
	(5-6 pm)	LC/JLF	Lecture: Programming & Design	Introduction to school programming. Focus on Auditorium **Ethical Material Sourcing Synopsis Due**
Th 02/02	(4-5 pm)	Prof. SA Brown	Lecture: Studio Project Structures	Structure Project #1 assigned
	(5-6 pm)	LC/JLF/SC	Critiques: 3 Building Concepts	Group Review: Building Concept Development. Team Site Model (**Rhino Detail)** **(3) Site Drawings, Site Analysis Diagrams, & Rhino Models**
Tu 02/07	(4-6 pm)	LC/JLF/SC	Critiques: 3 Building Concepts	Individual Review: Building Concept Development. Team Site Model (**Rhino Detail)** **Aimee Eckmann presentation Synopsis Due**
Th 02/09	(4-5 pm)	Elaine Shapiro*	Lecture: Wood in Structural Design	Introduction to the use of wood in structural applications
	(5-6 pm)	LC/JLF/SC	Critiques: Building Structure	Individual review of initial structural layouts **Floor Plan with structural diagram including grids**
Tu 02/14	(4-5 pm)	Tracy Salvia*	Lecture: Building Envelope Strategies	Review wall materials and assemblies
	(5-6 pm)	LC/JLF/SC	Group work: Construction Detail #1	Wall Section Workshop **Wood in Structural Design Synopsis Due**
Th 02/16	(4-5 pm)	R. Biziorek - J. Smid*	Lecture: Auditorium Acoustic Design	Auditorium Typologies and the importance of acoustic design
	(5-6 pm)	LC/JLF/SC	Critiques: Construction Detail #2	Individual Review of Wall Section

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Tu 02/21 (4-5 pm)	LC/JLF/SC	Critiques: Auditorium Design	Individual review of initial auditorium designs
			Freehand drawing of typical wall construction section. Scale: 3/4" = 1' – 0"
(5-6 pm)	LC/JLF/SC	Critiques: Mid-term Preparation	Individual reviews of Concept Design progress for midterm
			Building Code - Egress/Exiting. Long Span Spaces - Gym and Auditorium
			Building Envelope Strategies Synopsis Due
Th 02/23 (2-6 pm)	LC/JLF/SC/MS/LB	**Mid-term Presentation**	**1. Site Plan with surrounding buildings, streets and context.** **2. Floor Plans detailing all levels.** **3. Minimum one full building section.** **4. Minimum 2 perspectives ground level & bird's eye view.** **5. Digital model that fits into the group site model**
			Revit perspectives of Main Spaces
Tu 02/28 (4-5 pm)	LC/JLF/SC	Post Mid-Term recap	Humanizing Innovation
(5-6 pm)	LC/JLF/SC	Movie Discussion & Report	*How much does your building weigh Mr. Foster?*
			Auditorium Acoustic Design Synopsis Due
Th 03/02 (4-5 pm)	Prof. SA Brown	Lecture: Studio Project Structures	Structure Project #2 assigned
(5-6 pm)	LC/JLF/SC	Critiques: Interiors	Individual review of building interiors
Tu 03/07 (4-5 pm)	Prof. Larry Booth	Lecture: Design Thinking	Lecture Topic: "Team Thinking - Compass Points"
(5-6 pm)	LC/JLF/SC	Critiques: Concept & Interiors	Individual review of building concept and interiors
Th 03/09 (4–6 pm)	LC/JLF/SC	Final preparation	Last Reviews prior to Final Presentation
			Design Thinking Synopsis Due
Tu 03/14 (2-6 pm)	Invited Critics	**Final Jury Presentation**	**1. Structures Project #2.** **2. Construction Detail #3** **4. Detail Digital model with site** **5. The required drawings are similar to Midterm. However, they should exhibit a much higher degree of quality (detail, color, shadows, materials, furniture etc..)** **o Site Plan with surrounding buildings, streets and context.** **o Floor Plans. All levels. Furniture in classrooms and all main spaces.** **o Minimum of two full building sections.** **o Minimum two exterior and three interior perspectives.** **o Final material selection boards** *All drawings to fit 11x17 horizontal layout with graphic scale and north arrow. Verbal presentation to be 1-2 minutes and describe the main idea / concept*

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January 2023

PROJECT ASSIGNMENTS

Individual Studio Design Project (65%)

- The design problem this quarter is a 68,000 square foot elementary school in Evanston that will serve approximately 400 students.
- Evanston Site – an open block at 1608 Emerson St. at the corner of Emerson St and Darrow Ave.
- Program: See attached program "Rough Order of Magnitude"
- PROJECT GOALS: *Design Thinking and Synthesizing, Critical Judgment, Graphic Skills, Digital and Spatial Visualization and Decision Making*

1. Develop a viable architectural project IDEA.
2. Understand how the program for the school is transformed into a building
3. Understand how building and site reinforce each other
4. Design a building that embraces natural light
5. Research and comply with City of Evanston Zoning and the International building code
6. Research and design a prototypical classroom with emphasis on furniture layout and future flexibility
7. Design a school where circulation is efficient and intuitive.
8. Design a structural system that is efficient and cost effective
9. Research and select materials for the exterior and interior that a durable and sustainable.
10. Develop details in plan and section that describe how the building is constructed.
11. Design a school that is inspiring for the entire community and becomes a tool for learning.
12. Explore how educational spaces might respond to the contemporary culture.

Freehand Drawing Assignment – Construction Detail (15%)

- Choose a typical wall in your building
- Draw wall section from the foundation to the roof
- Indicate construction elements including footings, floor slabs, structural columns and beams, insulation, exterior cladding and roofing
- See Architectural Graphic Standards and pinup examples
- Drawings should be hand drawn at 3/4" = 1-0" on 11"x17" paper
- *PROJECT GOALS: Seeing and Communicating Methods of Construction*

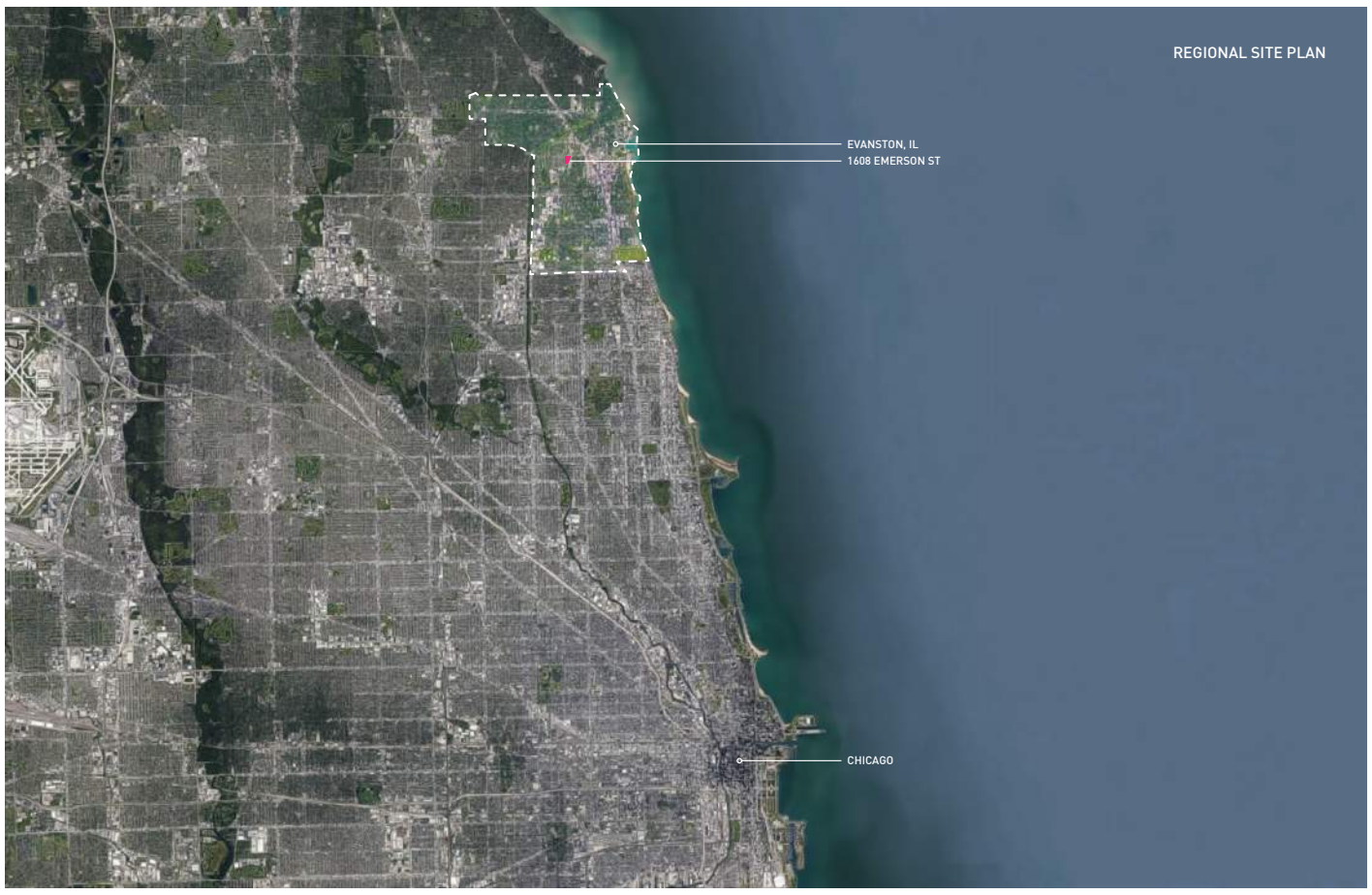
Structural Engineering Assignment (15%)

- Two assignments focusing on the development of each student's structural system
- Students interact with Engineering Professor, SA Brown
- Complete engineering analysis and calculations
- *PROJECT GOALS: Quantitative analysis and Integrating Design + Engineering*

Reports and Readings (5%)

- Guest Lectures - One Page Synopsis
- *PROJECT GOALS: Listening, Understanding and Communicating*

3 | PROJECT SITE . LOCATION



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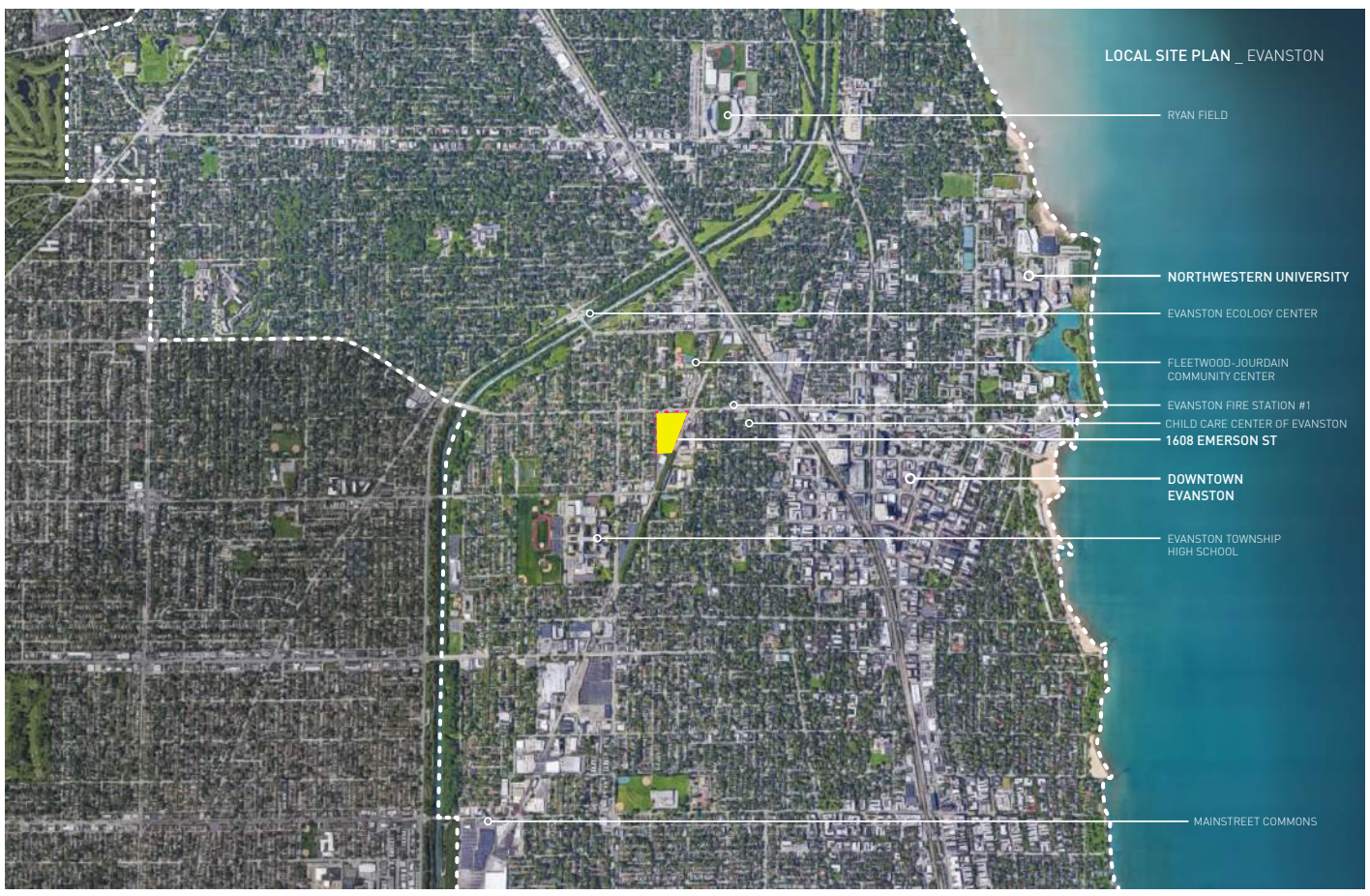


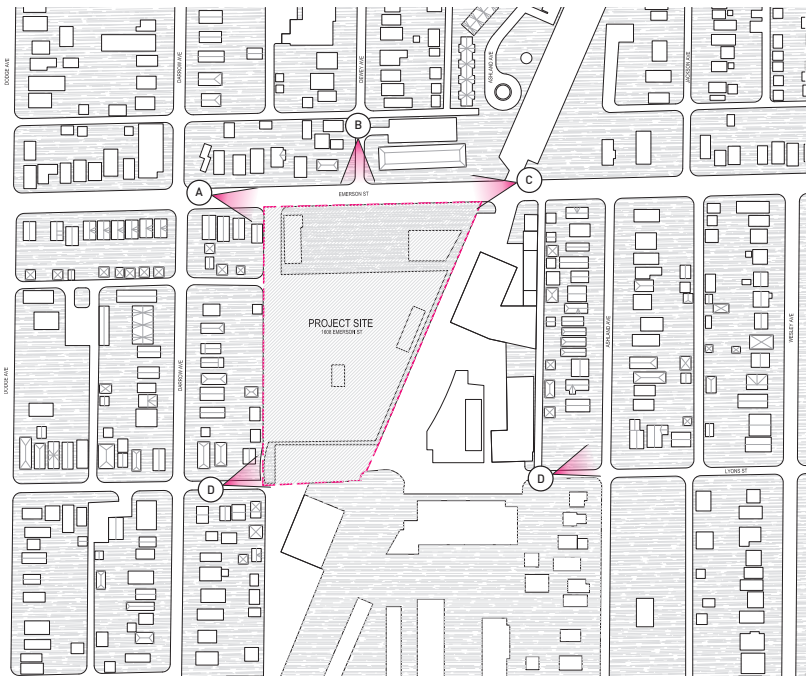
01 LOOKING WEST

03 LOOKING EAST

02 LOOKING NORTH

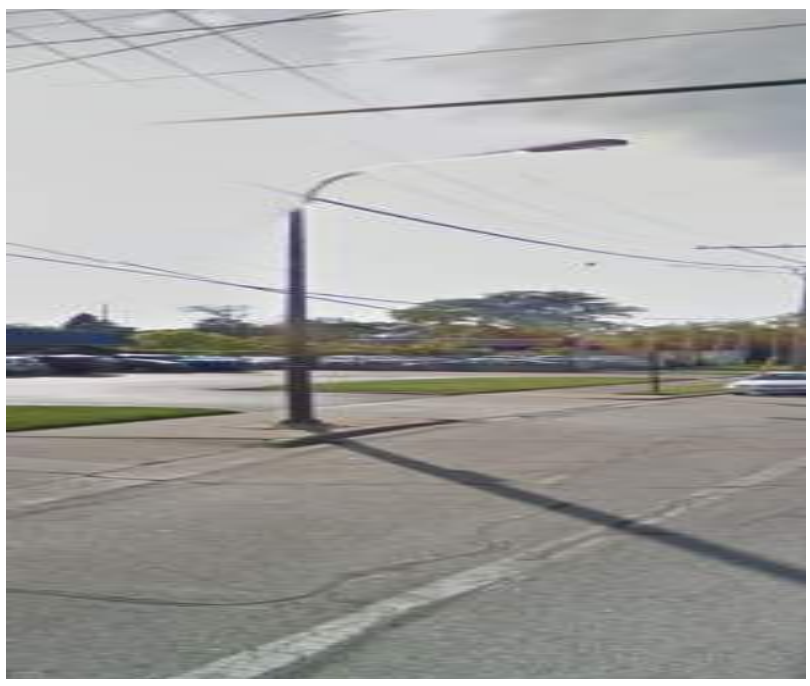
04 LOOKING SOUTH

PROJECT SITE _ STREET VIEWS



A LOOKING EAST ON EMERSON ST

B LOOKING SOUTH ON DEWEY AVE

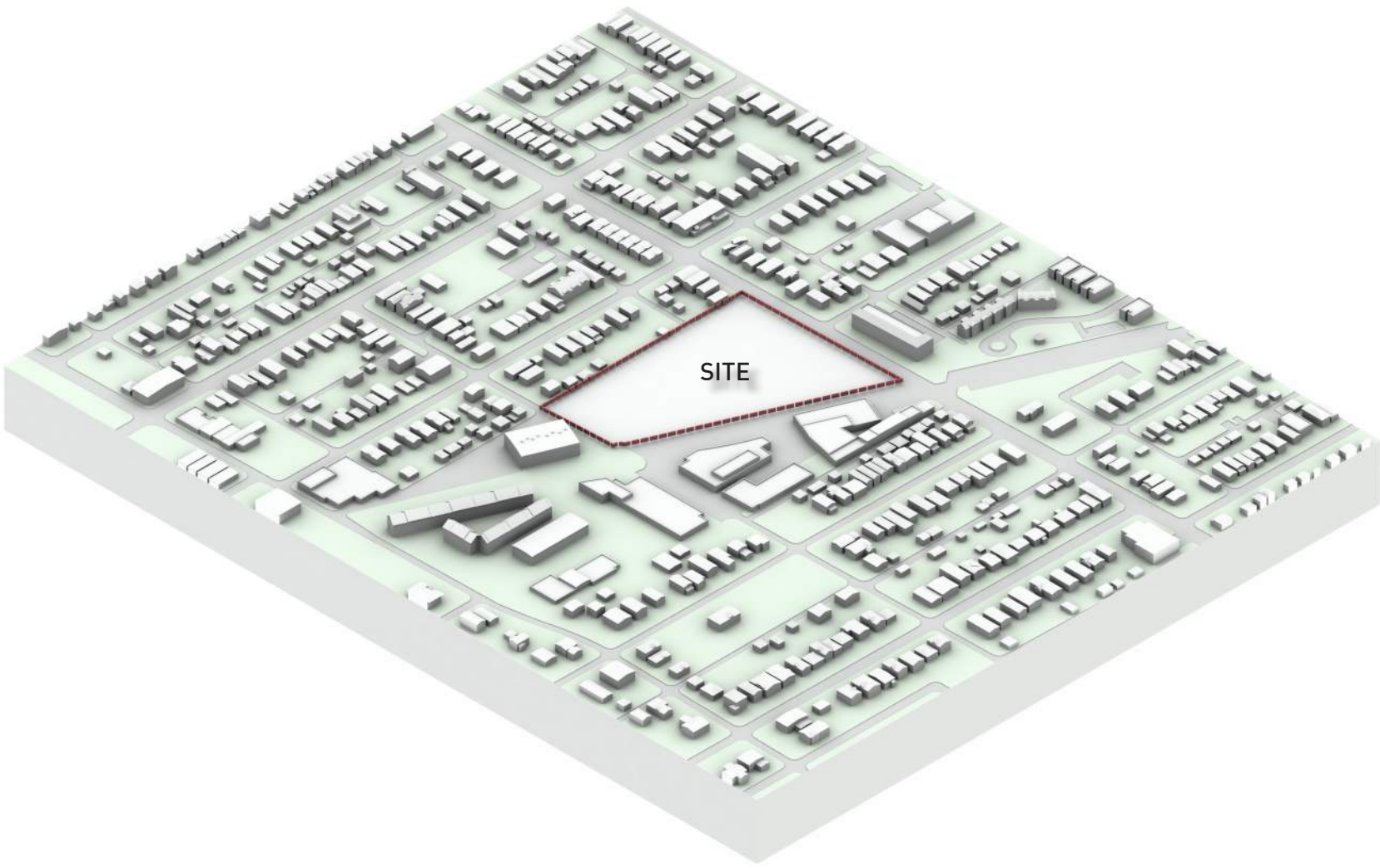


C LOOKING WEST ON EMERSON ST

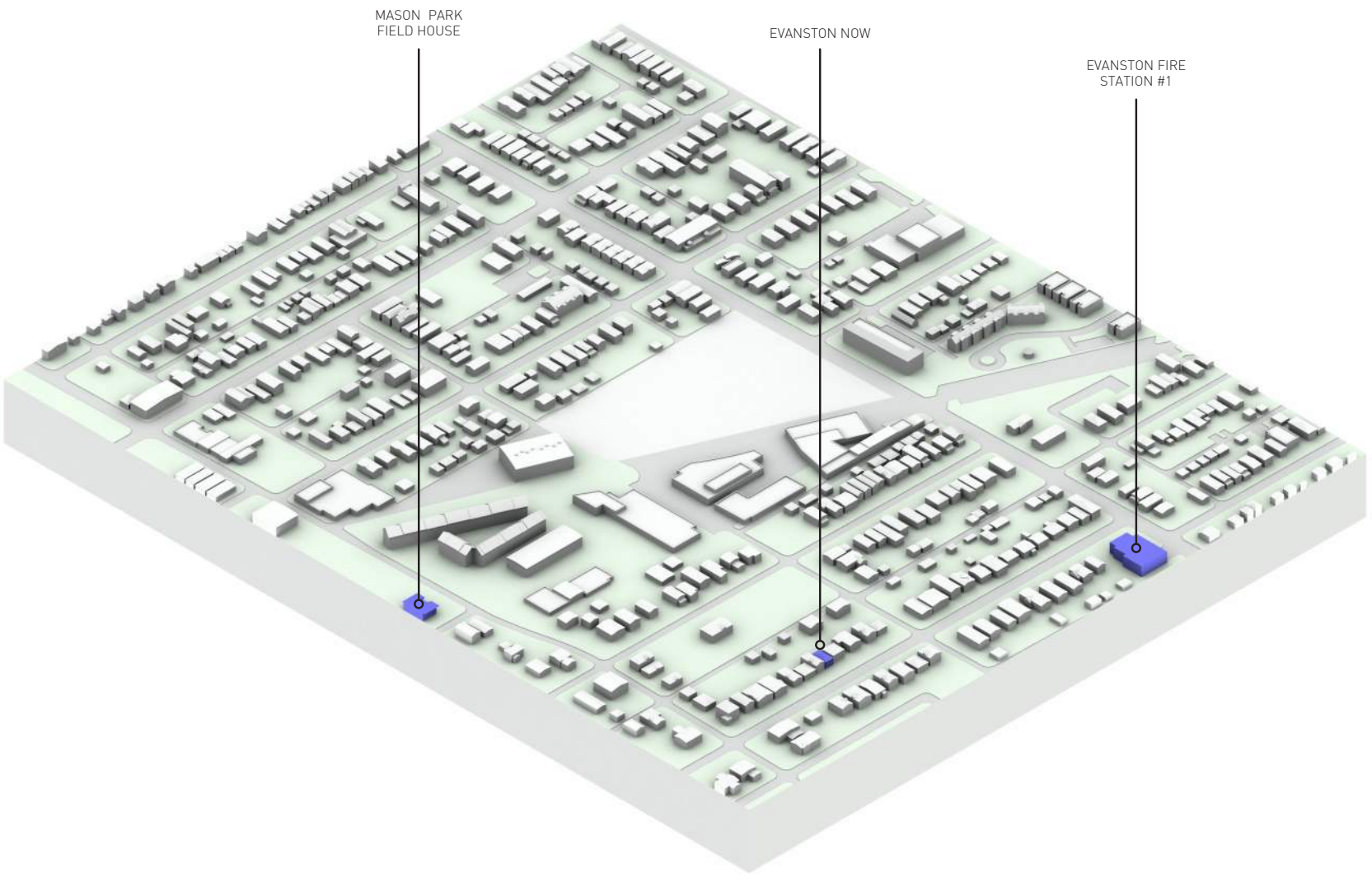
D LOOKING NORTHEAST ON LYONS ST

E LOOKING NORTHWEST ON LYONS ST

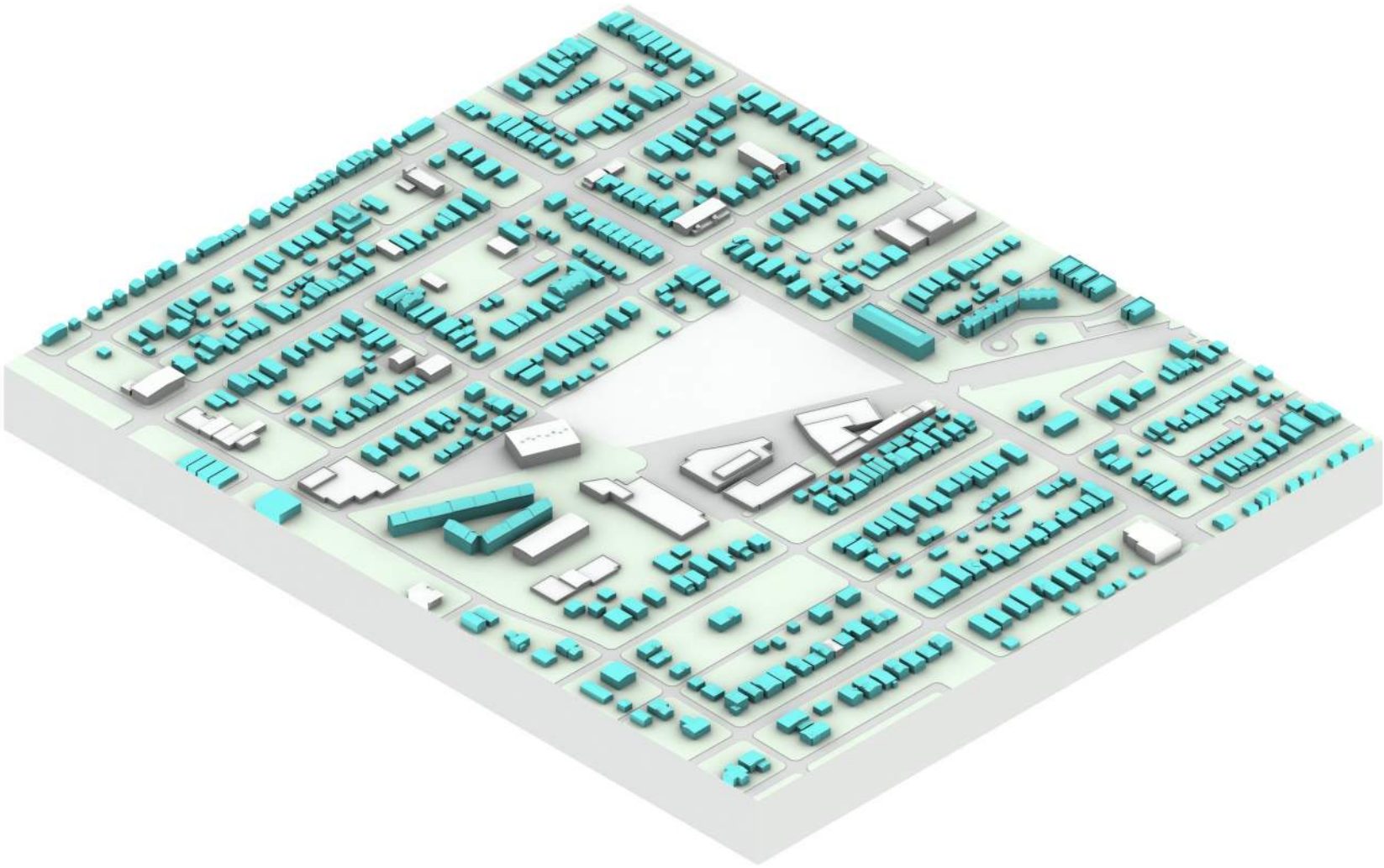
PROJECT SITE _ 1608 EMERSON ST



PROJECT SITE _ PUBLIC BUILDINGS

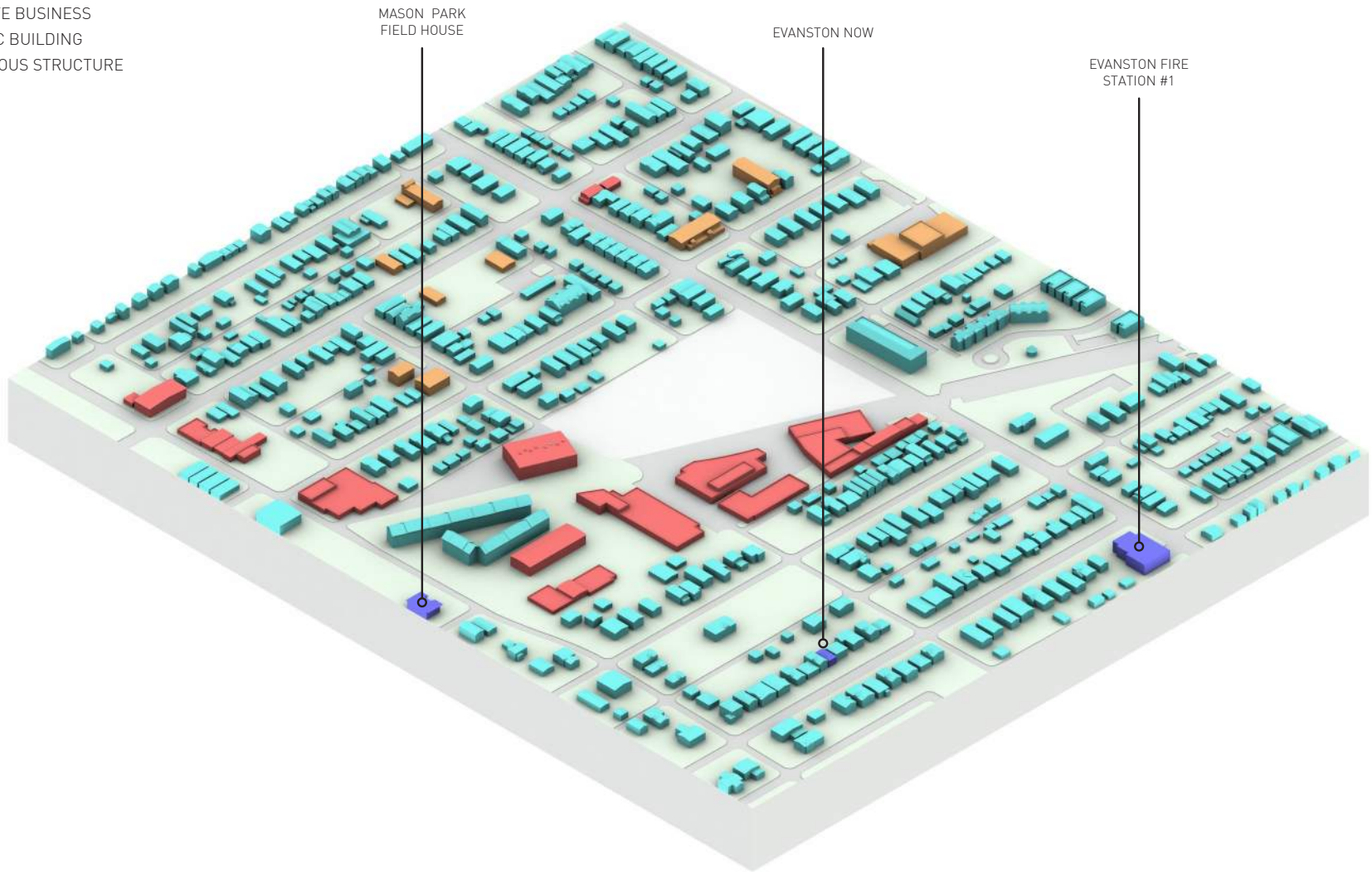


PROJECT SITE _ RESIDENTIAL STRUCTURES

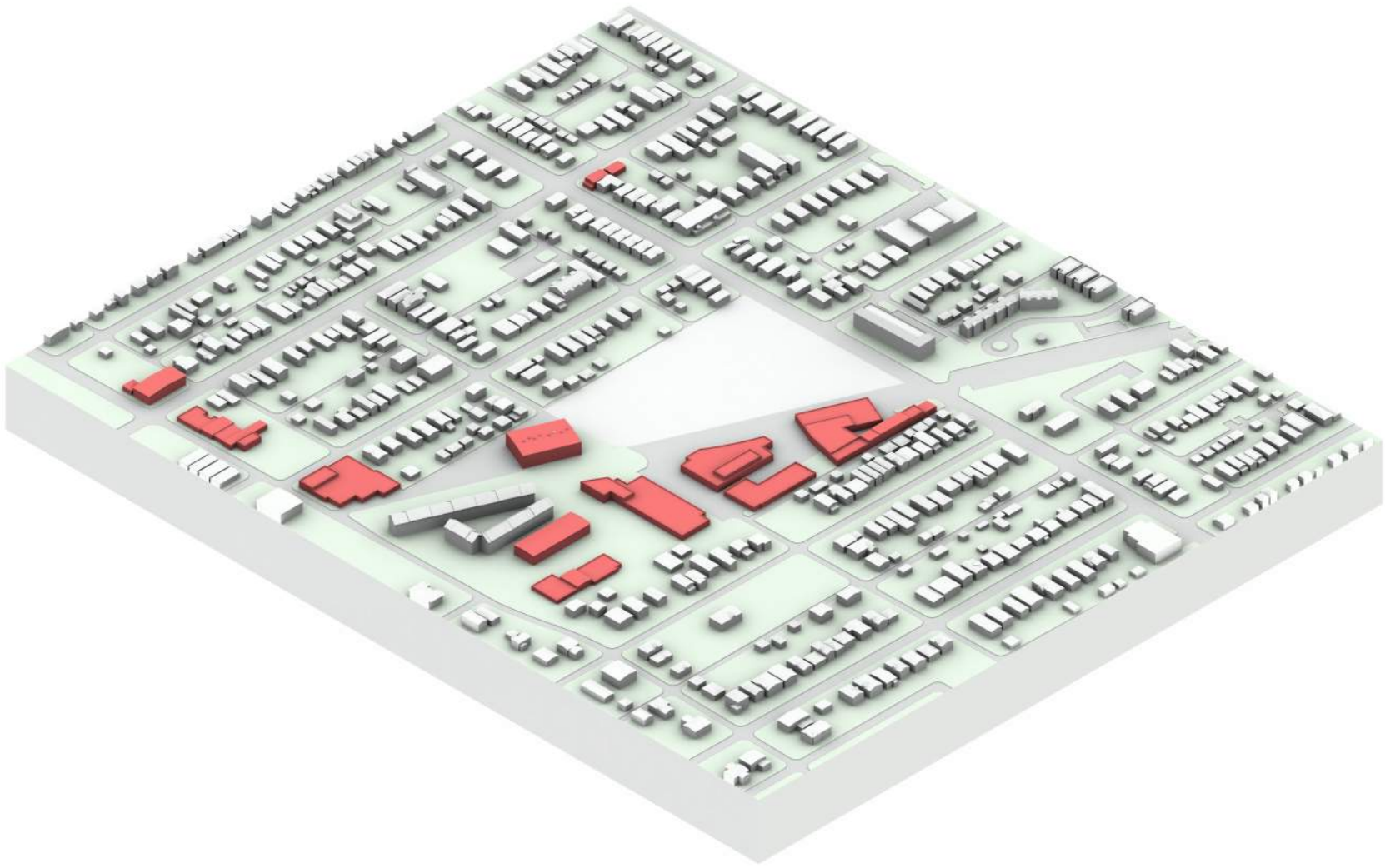


PROJECT SITE _ LOCAL CONTEXT

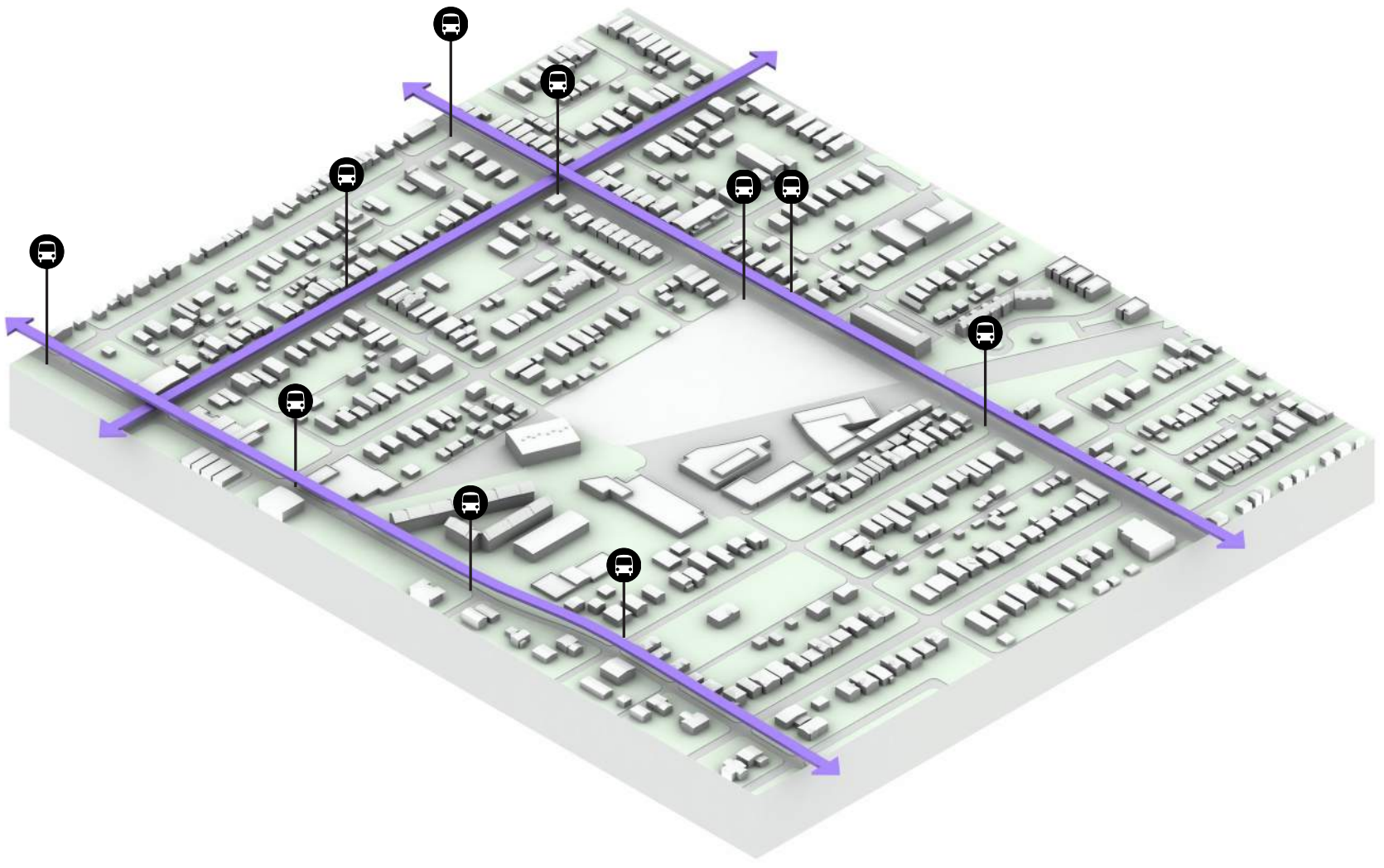
- RESIDENTIAL STRUCTURE
- PRIVATE BUSINESS
- PUBLIC BUILDING
- RELIGIOUS STRUCTURE



PROJECT SITE _ PRIVATE BUSINESSES



PROJECT SITE _ LOCAL TRANSPORTATION ROUTES



1.0 EXTERIOR SPACES		Qty.	Area	Total Area
1.1	**Car Drop-Off / Pick-Up**	1	5,000 sf	**5,000 sf**
1.2	**Outdoor Play-Yard -**	1	30,000 sf	**30,000 sf**
1.3	**Covered Outdoor Area**	1	5,000 sf	**5,000 sf**
1.4	**Play Field(s)**	1	40,000 sf	**40,000 sf**
1.5	**Truck Dock**	1	300 sf	**300 sf**
	SUB-TOTALS			**80,300 sf**

2.0 Elementary		Qty.	Area	Total Area
2.1	**Director of Elementary School**	1	150 sf	**150 sf**
2.2	**Assistant Director**	1	120 sf	**120 sf**
2.3	**Student Services Suite**	1	300 sf	**300 sf**
	Reception *Desk for (2) interns* *Coffee Area* *Refrigerator*		*incl. above*	
	Counselor's Office *Desk* *Shelving* *Round gathering table* *Storage bins, (1) per class for materials*		*incl. above*	
	Learning Specialist's Office		*incl. above*	
	Reading Specialist's Office		*incl. above*	
	Shared Work Area *Computer Stations* *Library*		*incl. above*	
	Conference Room / Meeting Room		*incl. above*	
	Storage Closet		*incl. above*	
2.4	**Pre-Kindergarten Classrooms**	3	700 sf	**2,100 sf**
2.5	**Toilet Room**	1.5	45 sf	**68 sf**
2.6	**Junior Kindergarten Grade Classrooms**	3	700 sf	**2,100 sf**
2.7	**Toilet Room**	1.5	45 sf	**68 sf**
2.8	**Kindergarten Grade Classrooms**	3	700 sf	**2,100 sf**
2.9	**Toilet Room**	1.5	45 sf	**68 sf**
2.10	**1st Grade Classrooms**	3	700 sf	**2,100 sf**
2.11	**Toilet Room**	1.5	45 sf	**68 sf**
2.12	**2nd -5th Grade Classrooms**	12	600 sf	**7,200 sf**
2.13	**Science Room**	2	900 sf	**1,800 sf**
2.14	**Art Studio**	2	900 sf	**1,800 sf**
2.15	**Art Storage**	2	100 sf	**200 sf**
2.16	**Music Room**	2	1,000 sf	**2,000 sf**
2.17	**Printer/Copier Room**s	3	80 sf	**240 sf**
2.18	*Printers, (1) for every (3) classrooms* *Copiers, (1) for every (10) classrooms*			
2.19	**General Curricular Storage**	1	200 sf	**200 sf**
2.20	**Circulation/Hallways**		*incl. in Gross Area*	
	Student Storage *Hooks (coats), (2) per student* *Cubbies (boots, mittens)*		*incl. in Gross Area*	
	Student Art Display		*incl. in Gross Area*	
	SUB-TOTALS			**22,680 sf**

3.0 SHARED PROGRAM		Qty.	Area	Total Area
3.1	**Lobby + Entry Vestibules**	1	400 sf	**400 sf**
3.2	**Library**	1	1,000 sf	**1,000 sf**
	Librarian's Office		*incl. above*	
	Circulation Room / Desk		*incl. above*	
	Library Storage		*incl. above*	
	Dedicated Library / Reading Area		*incl. above*	
3.3	**Auditorium**	1		**5,000 sf**
	Fixed seating (299 ppl)		*incl. above*	
	Stage *Fly space* *Curtain space* *Rigging* *Cat walk*		*incl. above*	
	Projection & Light Booth *Back space for light board + sound* *Projection with screen*		*incl. above*	
3.4	**Auditorium Storage**	1	250 sf	**250 sf**
3.5	**Public Toilet Rooms**	1	400 sf	**400 sf**
3.6	**Cafeteria**	1	1,000 sf	**1,000 sf**
3.7	**Cafeteria Storage**	1	300 sf	**300 sf**
3.8	**Cafeteria Servery**	1	300 sf	**300 sf**
3.9	**Kitchen**	1	400 sf	**400 sf**
3.10	**Kitchen Storage**	1	200 sf	**200 sf**
3.11	**Large Gymnasium**	1	9,120 sf	**9,120 sf**
	(1) Full-size basketball court (retractable hoops) *(2) Half-size basketball courts* *(2) Full-size volleyball courts*			
3.12	**Director of Athletics Office**	1	120 sf	**120 sf**
3.13	**Equipment Storage**	1	250 sf	**250 sf**
3.14	**Locker Room - Boys** ***Bathrooms*** ***Showers*** ***Water fountains***	1	250 sf	**250 sf**
3.15	**Locker Room - Girls** ***Bathrooms*** ***Showers*** ***Water fountains***	1	250 sf	**250 sf**
3.16	**Gymnasium Toilet Rooms**	2	150 sf	**300 sf**
3.17	**Toilet Rooms**	4	200 sf	**800 sf**
	Girls Bathrooms (1 per grade) = 5 toilets/ea.			
	Boys Bathrooms (1 per grade) = 4 urinals, 2 toilets/ea.			
	SUB-TOTALS			**20,340 sf**

4.0 ADMINISTRATION		Qty.	Area	Total Area
4.1	**Reception**	1	400 sf	**400 sf**
	Front desk + support *Lost-and-Found* *Coffee/Refreshments for parents*			
	Waiting Area		*incl. above*	
	Storage		*incl. above*	
4.2	**Nurse's Office and Infirmary**	1	80 sf	**80 sf**
	(3) Cots for students *Sink* *Nurse's desk*			
4.3	**Principal**	1	150 sf	**150 sf**
	Desk *(2) Side chairs* *Play space for small children* *Storage (marketing materials)*			
4.4	**Assistant Principal**	1	200 sf	**200 sf**
4.5	**Board Room/Multi-Purpose Conference Room**	1	300 sf	**300 sf**
	Storage		*incl. above*	
4.6	**Business Office**	1	150 sf	**150 sf**
	Business Manager	1	120 sf	**120 sf**
4.7	**Registrar's Office**	1	120 sf	**120 sf**
4.8	**IT Office & Workroom**	1	150 sf	**150 sf**
4.9	**IT Director's Office**	1	120 sf	**120 sf**
4.10	**Teachers' Lounge**	1	600 sf	**600 sf**
	Break Area w/ Kitchenette *Refrigerator* *Microwave oven* *Sink*		*incl. above*	
	Work Room *Computer stations* *Printer* *Copier*		*incl. above*	
	Shared Storage		*incl. above*	
4.11	**Unisex Accessible Bathroom** (1) *Sink* *(1) Toilet* *(1) Shower*	2	50 sf	**100 sf**
	SUB-TOTALS			**2,490 sf**

5.0 SUPPORT SPACES		Qty.	Area	Total Area
5.1	**Boiler Room**	1	250 sf	**250 sf**
5.2	**Main Switchgear Room**	1	300 sf	**300 sf**
5.3	**Electrical Closet**	4	50 sf	**200 sf**
5.4	**Tel / Data Closet**	7	50 sf	**350 sf**
5.5	**P/FP Pump Room**	1	400 sf	**400 sf**
	Incoming Water Service *Fire Pump + Controller* *Domestic Water Pumps* *Water Heaters*			
5.6	**Elevator + Pump Room**	1	100 sf	**100 sf**
5.7	**Server Room**	1	100 sf	**100 sf**
5.8	**Miscellaneous Storage**	2	50 sf	**100 sf**
5.9	**Janitor's Closet**	2	30 sf	**60 sf**
	Slop Sink *Broom + Mop* *Vacuum Cleaner* *Ladder* *Shelving for Supplies*			
5.10	**Maintenance Workshop/Storage**	1	250 sf	**250 sf**
5.11	**Trash + Recycling Closets**	3	100 sf	**300 sf**
5.12	**Trash + Recycling Room**	1	150 sf	**150 sf**
5.13	**Receiving + Loading Dock**	1	300 sf	**300 sf**
5.14	**Security Closet**	1	50 sf	**50 sf**
	SUB-TOTALS			**2,910 sf**

NET AREA TOTAL		**48,420 sf**
Building Grossing Factor		***0 sf***
Horizontal Circulation (corridors, hallways)		12,500 sf
Vertical Circulation - Stairs		1,200 sf
Vertical Circulation - Elevator		300 sf
Mechanical Shafts		450 sf
Wall thickness (estimated)		5,000 sf
GROSS ELEMENTARY SCHOOL AREA TOTAL		**67,870 sf**

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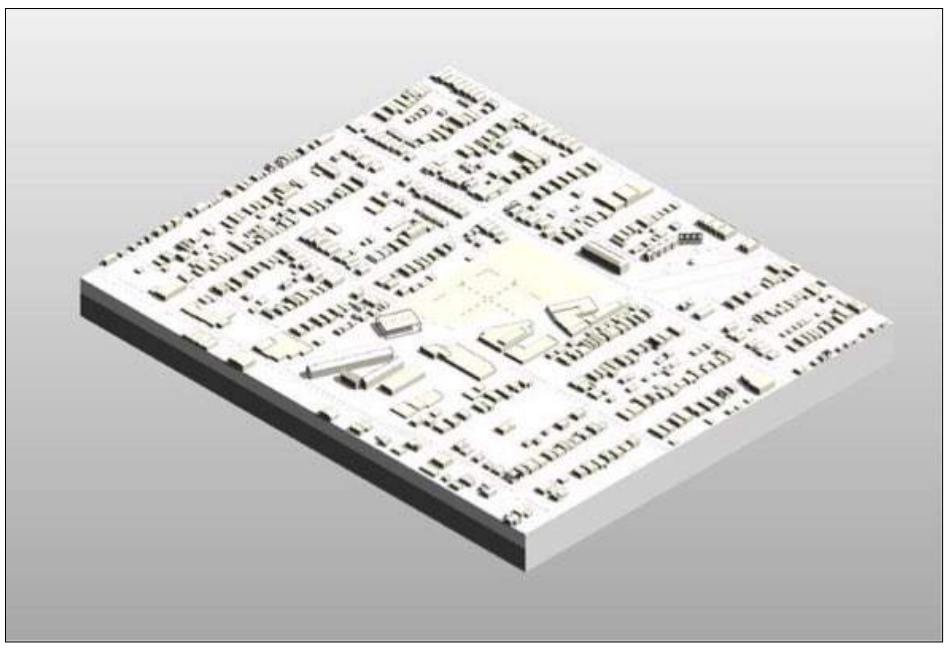
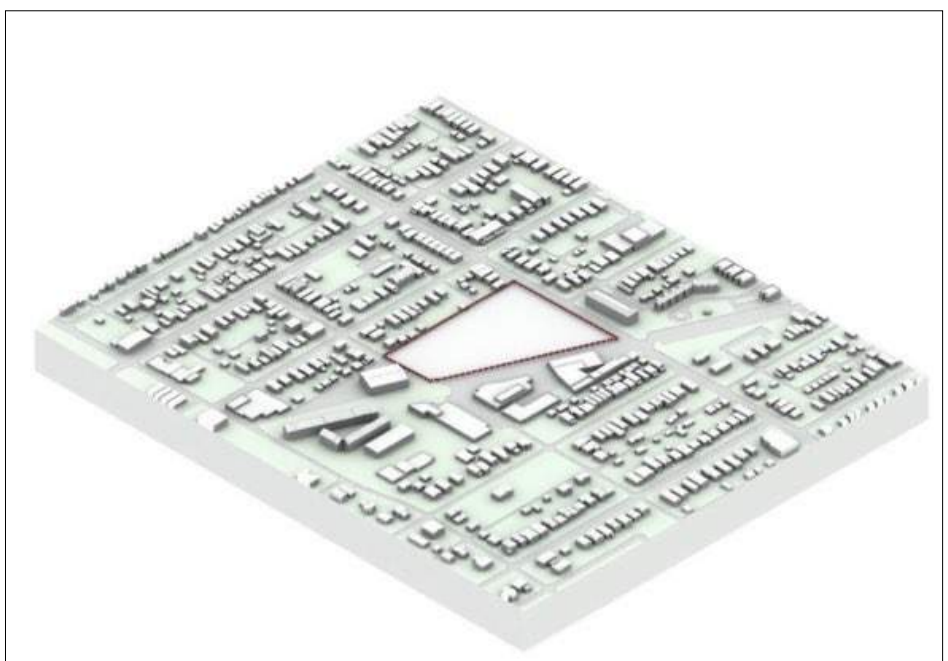


Rhino File .3dm



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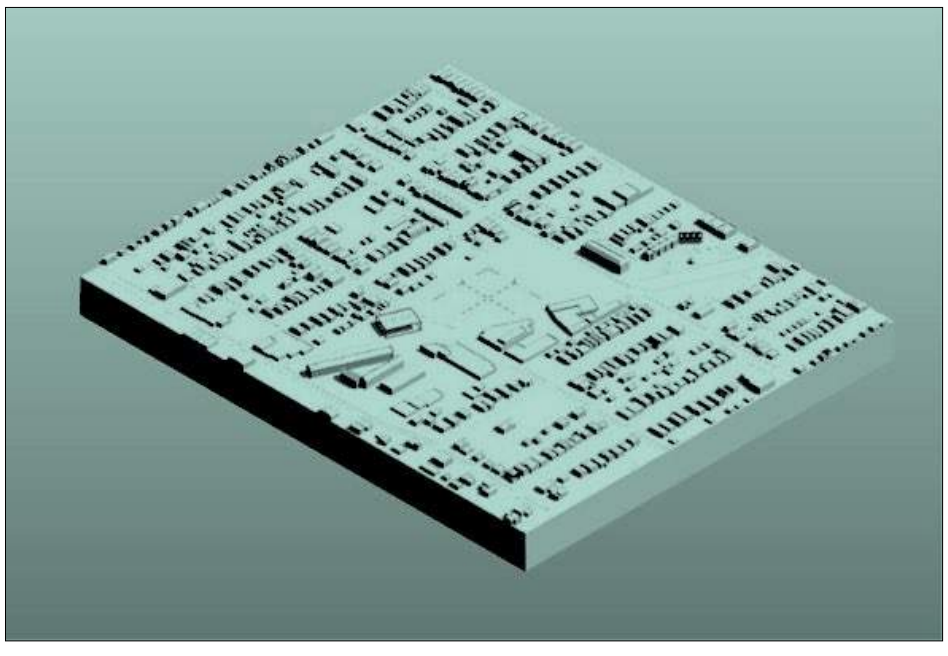

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