Feasibility Study for Development of City-Owned Properties:

1510 E. Stadium Boulevard
and
2000 S. Industrial Highway
Ann Arbor, Michigan

Final Report for
the Ann Arbor Housing Commission

By

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List of Abbreviations

AAHC	Ann Arbor Housing Commission
ADA	Americans with Disabilities Act
BR	bedroom
DFDG	Damian Farrell Design Group
F.A.R.	Floor Area Ratio
FHA	Federal Fair Housing Act
GIS	Geographic Information Services
GSF	gross square feet/footage
MBC	Michigan Building Code
NASF	net assignable square feet/footage
R.O.W.	right-of-way
SF	square feet/foot
UDC	Uniform Development Code of the City of Ann Arbor

Introduction and Scope of Study

In the Spring of 2019, the Ann Arbor City Council passed a series of resolutions tasking the Ann Arbor Housing Commission (AAHC) to study ten city-owned properties for use as potential affordable housing sites. The AAHC has identified two of these sites as locations not just for affordable housing, but also as possible sites on which to consolidate AAHC administration and operations, which are currently split between two sites across the City.

Damian Farrell Design Group (DFDG) is pleased to present this Schematic Design Study which explores six scenarios for housing and/or AAHC offices on two sites, 1510 E. Stadium Boulevard and 2000 S. Industrial Highway. This study includes ball-park cost analysis for each scenario, and some variations on scenarios, as requested by the AAHC.

Site #1 is 1510 E. Stadium Boulevard, the currently the site of Ann Arbor Fire Station #2. The AAHC has requested investigation of the following scenarios on this site:

Option 1.1 - **Renovation and expansion of the existing fire station building for the purpose of consolidating AAHC administration and operations.**

Option 1.2 - **Renovation and expansion of the existing fire station building for the purpose of affordable housing**

Option 1.3 - **Site cleared for new construction of affordable housing**

Site #2 is 2000 S. Industrial Highway. The AAHC has requested investigation of the following scenarios on this site:

Option 2.1 - **New construction of separate buildings for AAHC consolidated offices, maintenance operations, and approximately thirty (30) affordable housing units.**

Option 2.2 - **New construction of a single mixed-use building with AAHC consolidated offices and a maximum number of affordable housing units. AAHC garage and maintenance operations could still be a separate building, but minimizing separation would be preferable and connection with a hallway would be desireable.**

Option 2.3 - **New construction of a facility for AAHC consolidated offices and maintenance operations. No housing component in this scenario.**

The focus of this study is general building massing and site/parking layout. Detailed architectural building layout, individual housing unit design, and civil engineering design are not part of the scope of work for this study.

AAHC Program Requirements

AAHC Administration and Maintenance Operations

The AAHC has provided a Program describing net assignable square footage (NASF) for administration and maintenance operations. DFDG has modified the program slightly, adding an additional 5% to each “circulation” line so that the total Tare accounts for circulation and wall thicknesses (Appendix A).

In summary, the Program for AAHC consolidated operations, with DFDG’s modified gross square footage, contains the following:

Administrative Offices	11,753 GSF[1]	
Garage/Maintenance	7,812 GSF	
AAHC Gross Area	19,565 GSF	(18,465 GSF at E. Stadium)

1 Fewer conference rooms at E. Stadium. Less 1,100 NASF from total.

Affordable Housing

Multi-Family Housing will assume the following general sizes for units:

2-bedroom units	840 GSF
1-bedroom units	600 GSF
Studio units	476 GSF

Parking

While the number of required parking spaces is dependent on Building Use according to the UDC, the AAHC Program notes that staff parking for 32 cars, plus 8 spaces for visitors would be ideal at the S. Industrial site. A minimum of 28 cars, plus 5 visitors, would be needed at the E. Stadium site.

The AAHC Program indicates a parking ratio of one (1) car per housing unit. This is permissible in O-Office zoning. Most residential zoning classifications require 1.5 or 2 cars per unit.

Modular Construction

DFDG proposes modular light-frame construction for the affordable housing units in all sceanrios that involve housing. Modular construction has the advantage of significantly reducing construction time and cost compared to conventional light-frame construction.

With modular construction, housing units are designed as a box or series of boxes that are constructed, inspected by building officials, and completely finished in a factory setting. The boxes are then transported to the construction site to be craned into place. Mechanical, electrical, and plumbing systems are designed and built into each box to simply plug together on site. After craning, a comparatively small amount of finish work completes the building, and after completion, a modular project will look no different than a site-built version of the same design.

Damian Farrell Design Group has expertise in light-frame modular construction for multi-family housing. DFDG is currently the architect and developer of a 30-unit condo development in downtown Saline, Michigan which will be modular construction. DFDG owner and principal, Damian Farrell, was a co-presenter at an American Institute of Architects seminar on the topic in February 2020. He shared the stage with Deena Fox of Rosetti Architects, who recently completed a 3-story multi-family development with 100+ modular units called The Corner, at the corner of Michigan and Trumbull in Detroit, site of the former Tiger Stadium.

There is great potential for multi-family modular construction, especially when a design can maximize economies of scale. Modular light-frame construction for multi-family residential is equivalent to stick-framed wood construction in the eyes of the Michigan Building Code:

Use/Occupancy Classification:	R-2 Residential	2015 MBC Section 310.4
Construction Type:	5A	
Sprinklered:	Yes	
Max. Allowable Height:	70’	2015 MBC Table 504.3
Max. Stories:	4 stories	2015 MBC Table 504.4
Max. Allowable Area:	36,000 sf	2015 MBC Table 506.2

General Cost Analysis Method

As the Options presented in this study are schematic in nature and based on very limited information about the existing properties and conditions, estimated building construction costs at this stage can only be general ball-park figures based on regional cost-per-square-foot data from 2019. It is extremely difficult to estimate site development costs without a scope of site work determined by a civil engineer.

The opinions of probable cost in this study are best used as a means to compare the relative cost of the scenarios with each other, understanding that a great deal more architectural design and civil engineering work will need to be done to produce an accurate estimate of cost.

In this study, we will use baseline gross-square-foot costs. We will then adjust those baseline figures in the consideration of conditions presented by each scenario. The following baseline GSF costs will be used in this study:

Site development,* smaller site,underground storm water management	$25/GSF lot area
Site development,* larger site, surface storm water management	$15/GSF lot area
Asbestos removal	$3/GSF
Building demolition**	$4-$8/GSF
Interior demolition **	$4/GSF
Building renovation costs	$200/GSF
New commercial building construction (in-situ)	$150-$200/GSF building area
New modular construction for multi-family housing***	$100-$115/GSF
New butler building for Garage/Maintenance	$50/GSF

The estimates presented in this study consider construction costs only. They do not include: permit fees, tap fees, contingency funds, any fees for architectural, engineering, landscape, and/or interior design services, or any fees for construction management services.

* Site preparation, soil erosion control, site demolition/removals, earthwork, utilities, paving/impervious surfaces, finish landscaping, etc.

** Does not include hauling and landfill costs

*** Does not include transportation and craning fees

Site #1:
Overview of 1510 E. Stadium Blvd

Property ID: 09-09-33-410-003

Existing zoning classification: R1C

Property size: .777 acre (33,846 sf)

Construction Type: undetermined

This property is the site of Ann Arbor Fire Station #2, an approximately 6,452 sf, two-story building with a full basement, plus a 4,770 sf garage that is currently being used to store city-owned vehicles.

The AAHC was not able to provide survey information for the property or the buildings. With regard to site information (i.e. detailed site description, easements, preliminary zoning code review), DFDG refers the Reader to the Appraisal of 1510 E. Stadium Boulevard, completed by Gerald Alcock Company LLC for the AAHC and dated September 11, 2019. DFDG has considered the rezoning recommendations from the Appraisal, when appropriate, for scenarios which include affordable housing.

The AAHC has provided unscaled diagrammatic plans of the building (Appendix B) which DFDG has used, along with Google Earth, to approximate the size and configuration of the fire station building as the basis for the Schematic Design. The AAHC has also provided lists of building materials on site that are confirmed to contain asbestos.

Option 1.1

Renovation and expansion of the existing fire station for AAHC administration and operations

Figure 1.1 (1) - Proposed Site Plan

Scale: 1' = 60'

Proposed Zoning: O- Office District[1]

With a large Program to fit on a very constrained site, parking is the critical driver of the proposed design. The property abuts residential lots to the south and east, so a 15' conflicting use landscape buffer is required for vehicle use areas. It is not possible to fit the required number of parking spaces on the site while maintaining the existing building footprint.

To make the program for Option 1.1 work on this site, the one-story garage on the south side of the building would need to be demolished. A two-story building addition to the north would compensate for the lost square footage. Two additional stories built above the existing core building would provide the square footage required for administrative offices.

1 The existing R1C zoning allows for nonprofit corporation offices as a Special Exception Use, however this site does not meet the minimum lot size requirement of 80,000 sf required for this. UDC Section 5.16.4.B.1.a

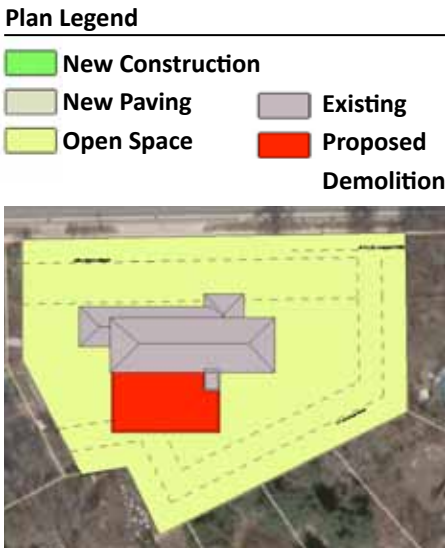


Figure 1.1 (2) - Required buffers and setback lines and Proposed Demolition

Figure 1.1 (3) - Aerial view from the northeast

	Option 1.1	Requirement	Proposed
Program Requirements	AAHC Admin. Office (GSF)	10,653 GSF****	11,222 gsf existing building - 2,426 gsf demolition +10,316 gsf new construct. 19,112 GSF total building
	AAHC Garage/ Maint. (GSF)	7,812 GSF	
	Housing Units (Qty.)	N/A	-
Requirements for O - Office District Zoning	Height	55', 4 stories (max.)	54', with 4 stories
	Front Setback	15' (min.) 40' (max.)	15'
	Side Setback	30' (min.)*	35' (on west), 83' (on east)
	Rear Setback	30' (min.)*	55' (average)
	F.A.R.	75% (max.)	56%
	Landscape Buffer for parking	15' from Residential zones, and 10' from front R.O.W.	15'
	Vehicle Parking	32 cars ** (2 barrier-free)	32 cars (includes 2 barrier-free)
	Bike Parking	4 bikes***	TBD
	Open Space	N/A	-
	Active Open Space	N/A	-

* When abutting Residential. Otherwise none.
** 1 per 333 GSF Office, plus 1 per housing unit
*** 1 per 3000 GSF Office, plus 1 per 5 housing units
50% Class A, 50% Class C
**** Program Area reduced for this site by AAHC

Option 1.1 - Cost Analysis

Site development costs on this site would be relatively high. Because it is a small site, with the required parking leaving little open space, storm water management would likely need to be underground. On the plus side, site utilities are already in place, though capacity would need to be assessed. The baseline figure for developing a small site will be used for this estimate, along with a median cost for building demolition and new construction.

Option 1.1	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$25.00		$25.00	33846	$846,150.00	
Asbestos Removal	$3.00		$3.00	11222	$33,666.00	
Building Demolition	$6.00		$6.00	2426	$14,556.00	
Interior Demolition	$4.00		$4.00	8796	$9,704.00	gut interior
Renovation of interior	$200.00		$200.00	8796	$1,759,200.00	
New Constuction AAHC offices and garage/maint.	$175.00		$175.00	10316	$1,805,300.00	
New construction Housing, in-situ						
New construction Housing, modular						
Other					$125,000.00	5-stop Elevator
			Total estimated cost		**$4,593,576.00**	

Figure 1.1 (4) - Proposed new construcion on existing building

Figure 1.1 (5) - Aerial view from the southeast

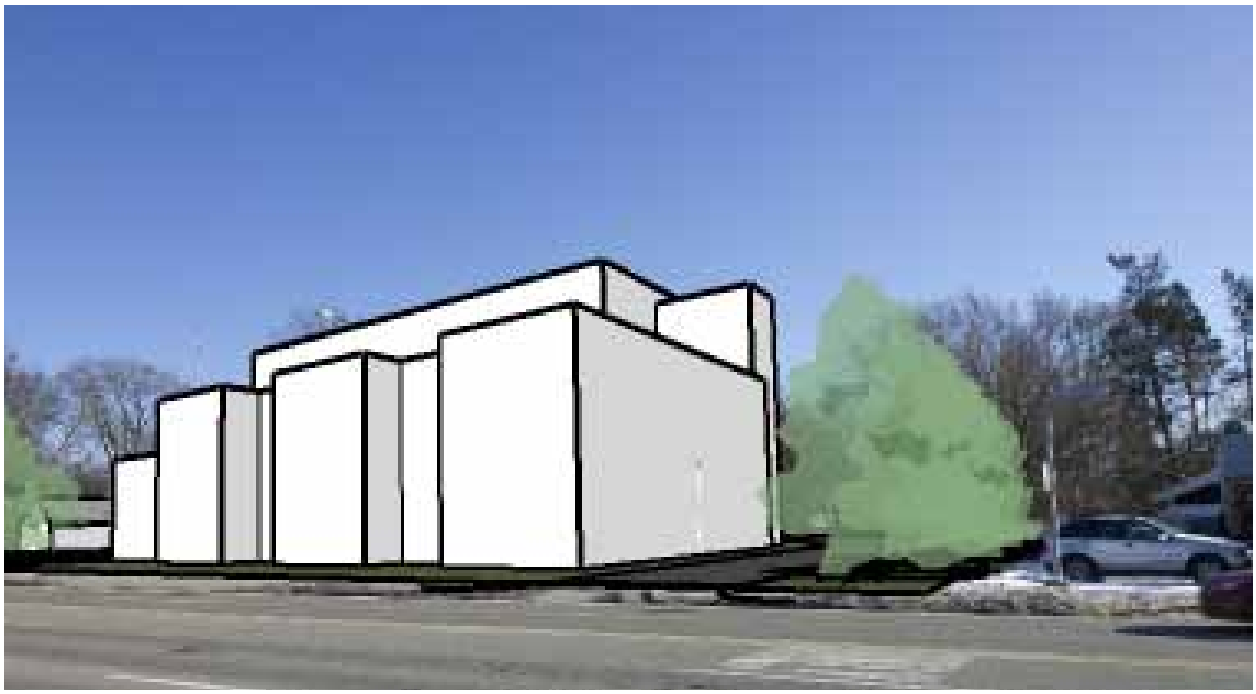


Figure 1.1 (6) - Option 1.1 - Street view of building massing

Option 1.1 - Design Analysis

Site Suitability

The size of the proposed building required to accomodate the AAHC program is out of scale with the surrounding R1C neighborhood. In an attempt to help soften the impact, the proposed building is two-stories at the street and four-stories at the rear. While the existing R1C zoning classification allows offices for non-profit organizations as a special exception use, a site must be a minimum of 80,000 sf to qualify. This parcel, at 33,846 sf, is too small and would therefore need to be re-zoned.

Site Suitability: **0.5** of 5

Sustainbility Score: **1.5** of 5

Environment/Sustainability

There may be some merit to reusing part of the building and utilities from a sustainability standpoint, but it would come at considerable cost. This Option proposes reuse of and addition to the existing building according to the parameters laid out for this study, but in reality, if this Program were to be pursued on this site, it might be more cost-effective to demolish the entire existing building and begin with new construction.

Accessibility Score: **5.0** of 5

Accessibility

The entire building could be made accessible with the addition of an elevator. This Option proposes that the existing hose room could be used and extended for an elevator shaft.

Variation 1.1b

A four-story building for affordable housing with the site plan concept from Option 1.1

Figure 1.1b (1) - Proposed Site Plan and Ground Level Plan

Scale: 1' = 60'

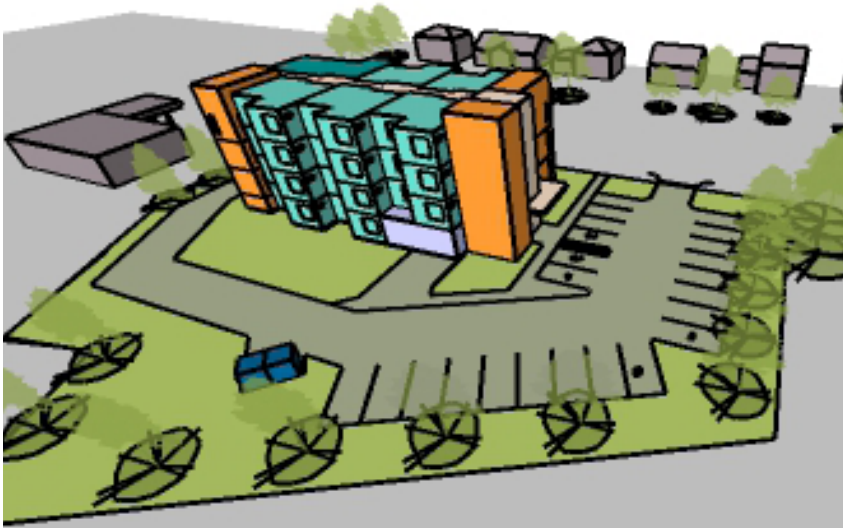


Figure 1.1b (2) - Conceptual diagram of building massing from the southeast

Key

- **Common Space**
- **Stair/Elevator**
- **Hallway**
- **2-Bedroom Unit**
- **1-Bedroom Unit**

Type	Qty.	Unit Size
Studios	0	472 sf
1-BR	20	600 sf
2-BR	3	840 sf
Total	**23 units**	

Figure 1.1b (3) - Aerial view from the northeast

	Variation 1.1b	Requirement	Proposed
Program Requirements	AAHC Admin. Office (GSF)	N/A	
	AAHC Garage/ Maint. (GSF)	N/A	
	Housing Units (Qty.)	max possible	23 units
Requirements for PUD Zoning	Height	55', 4 stories (max.)*	46', with 4 stories
	Front Setback	15' (min.) * 40' (max.)	15'
	Side Setback	30' (min.)*	37' (on west), 87' (on east)
	Rear Setback	30' (min.)*	66' (average)
	F.A.R.	75% max.*	67%
	Landscape Buffer for parking	15' from Residential zones, and 10' from front R.O.W.*	15'
	Vehicle Parking	1 car/housing unit **	23 cars (includes 1 barrier-free)
	Bike Parking	5 bikes***	TBD
	Open Space	TBD	47.3%
	Active Open Space	TBD	approx. 4,230 sf (184 sf/unit)

Proposed Zoning: PUD

This variation far exceeds the allowable number of housing units permissible under any existing Residential zoning classification for a lot this size. A PUD would be required to pursue this variation. The parking ratio shown here is one (1) car per unit.

The building to the north extends to the minimum front setback line, 15' from the front property line. This allows us to maximize parking in the side yard. (UDC Section 5.19.8.A prohibits parking located closer to the street than the front face of the building.)

* Unchanged from Option 1.1 (Office District zoning).
** Proposed: 1 car per housing unit
*** Proposed: 1 bike per 5 housing units
50% Class A, 50% Class C

Variation 1.1b- Cost Analysis

Site development costs are identical to Option 1.1. In situ construction would include the foundation and utilities for the whole building.

Variation 1.1b	Baseline Cost/GSF		Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$25.00		$25.00	33846	$846,150.00	
Asbestos Removal	$3.00		$3.00	11222	$33,666.00	
Building Demolition	$6.00		$6.00	11222	$67,332.00	
Interior Demolition	$4.00		$4.00	0	$-	
Renovation of interior	$200.00		$200.00	0	$-	
New Constuction AAHC offices and garage/maint.	$175.00		$175.00	0	$-	
New construction Housing, in situ	$150.00	$(50.00)	$100.00	5693	$569,300.00	Foundation
New construction Housing, modular	$115.00		$115.00	22772	$2,618,780.00	
Other			$100,000.00	2	$200,000.00	Modular elevator
					Total estimated cost	$4,335,228.00

Figure 1.1b (4) - view from E. Stadium Blvd and Packard Road, looking east.

Figure 1.1b (5) - Option 1.1 - Street view of building massing

Variation 1.1b - Design Analysis

Site Suitability
The proposed building is out of scale with the surrounding R1C neighborhood and the adjacent commercial corridor at Packard Road and E. Stadium Blvd. At this density, this small site yeilds an Active Open Space which is less than two-thirds of what would be required in R3 or R4 zoning (i.e. 300 sf per unit).

Site Suitability: **0.5** of 5

Environment/Sustainability
From a sustainability standpoint, the site and buiding in this Variation are similar to Option 1.1, but with full demolition of the existing buiding. Sustainable design practices like solar energy would not provide a significant benefit relative to the density proposed. Location may be the most significant factor for sustainability since schools, recreation, shopping, etc. are within walking or biking distance.

Sustainbility Score: **1.0** of 5

Accessibility
The new building would be accessible per Fair Housing Guidelines. One barrier-free parking space is required and only one is provided. Additional spaces could be added to allow for visitor parking and additional accessible spaces, but this would reduce Open Space.

Accessibility Score: **4.0** of 5

Option 1.2

Renovation and expansion of the existing fire station as affordable housing

Figure 1.2 (1) - Proposed Site Plan

Scale: 1' = 60'

Proposed Zoning: R4B- Multi-famiy Residential

Plan Legend

- **Existing Building**
- **New Paving**
- **Open Space**

There is sufficient gross square footage in the existing building to fit eleven affordable housing units, which is the maximum allowed in R4B zoning. However, as in Option 1.1, parking is again the major constraining factor. The same 15' conflicting use landscape buffer for vehicle use areas applies on the south and east. In addition to this, Section 5.19.8.C of the UDC requires a minimum of 10' between parking areas and a building with dwelling units on the first floor.

R4B zoning requires 1.5 car parking spaces per unit, so for 11 units, seventeen parking spaces would be required. It is not possible to fit that many spaces on the site with the existing building footprint and the required setbacks and landscape buffers.

As a result, parking is limited to a double-loaded lot on the east side of the property, with a capacity of 14 cars (including one barrier-free). According to R4B parking requirement, nine (9) units is the maximum number of housing units the site can accommodate.

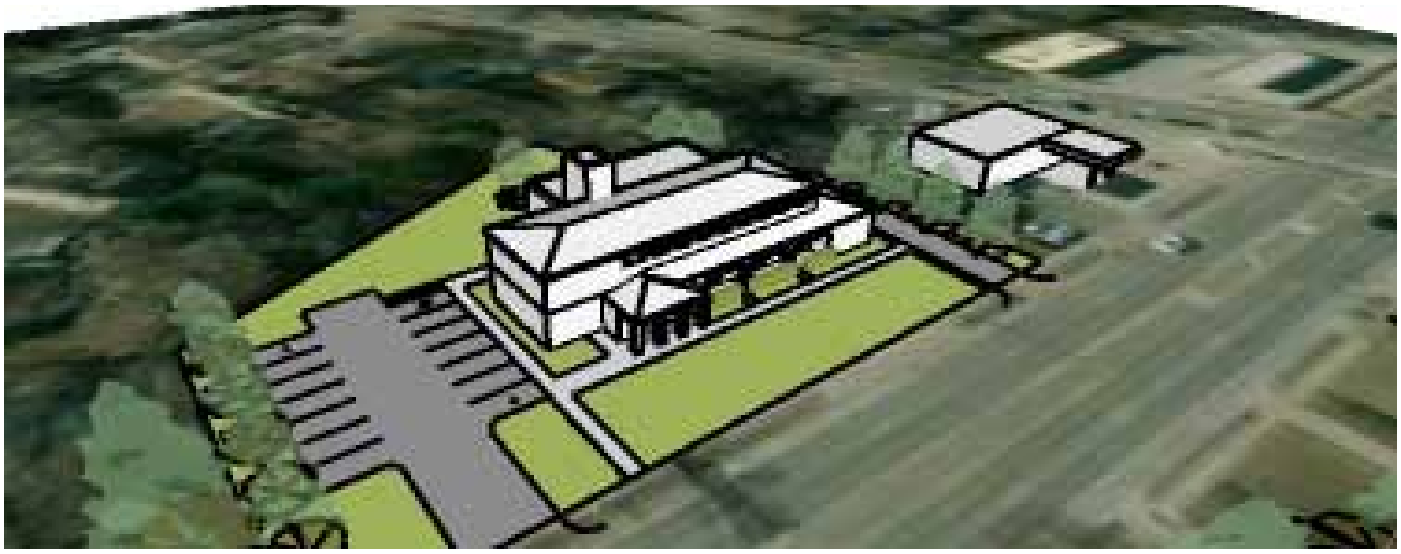


Figure 1.2 (2) - Aerial view from the northeast

	Option 1.2	Requirement	Proposed
Program Requirements	AAHC Admin. Office (GSF)	N/A	-
	AAHC Garage/ Maint. (GSF)	N/A	-
	Housing Units (Qty.)	11 units (max)	9 units
Requirements for R4B - Multi-Family Residential	Height	35' (max.)*	± 32' (existing, no change)
	Front Setback	15' (min.) 40' (max.)	34' (existing, no change)
	Side Setback	12' (min.)**	36' and 83' (no change)
	Rear Setback	30' (min.)**	27' (existing, no change)
	F.A.R.	N/A	-
	Landscape Buffer for parking	15' from Residential zones, and 10' from front R.O.W.	15'
	Vehicle Parking	1.5 cars per housing unit	14 cars (includes 1 barrier-free)
	Bike Parking	1 bike per 5 housing units***	TBD (3 required)
	Open Space	55% (min.)	61%
	Active Open Space	Min. 300 sf per housing unit	808 sf private patios, 2,280 sf sidewalk, yard

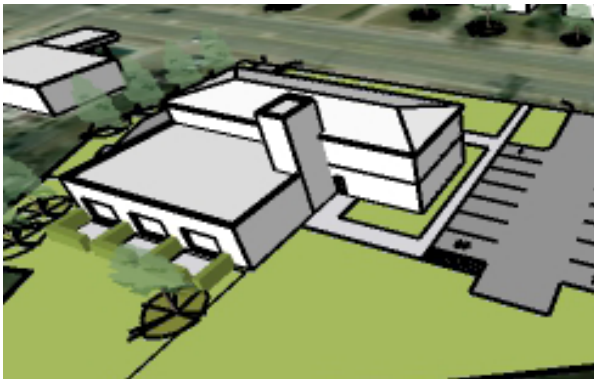


Figure 1.2 (3) - Aerial view from southeast

* 45' max. if parking is below at least 35% of building

** Plus building height setback requirement.

*** 50% Class A, 50% Class C

Figure 1.2 (4) - Proposed First Floor Layout

Scale: 1' = 20'

The proposed general layout contains the following unit mix:

Type	Qty.
Studio	1
1-BR	5
2-BR	3
Total	**9 units**

Most of the building interior would need to be gutted to convert the fire station to housing. The proposed layout preserves the first floor Hall, Office, and the open staircase to the second floor. The laundry would be renovated for resident use. This design assumes that the existing hose room could be converted to an elevator shaft.

With the simple addition of privacy screening, units in the converted garage area on the first floor have the opportunity for private patios that fulfill part of the Active Open Space requirement. Sidewalks would provide more than the balance of the required Active open space, and there is the potential for more recreational space in the back yard, if it will not be needed for stormwater management.

We emphasize that these layouts are based on very limited information about the existing building. They are wholly schematic in nature, and further study would need to be needed to assess the feasibility of this Option.

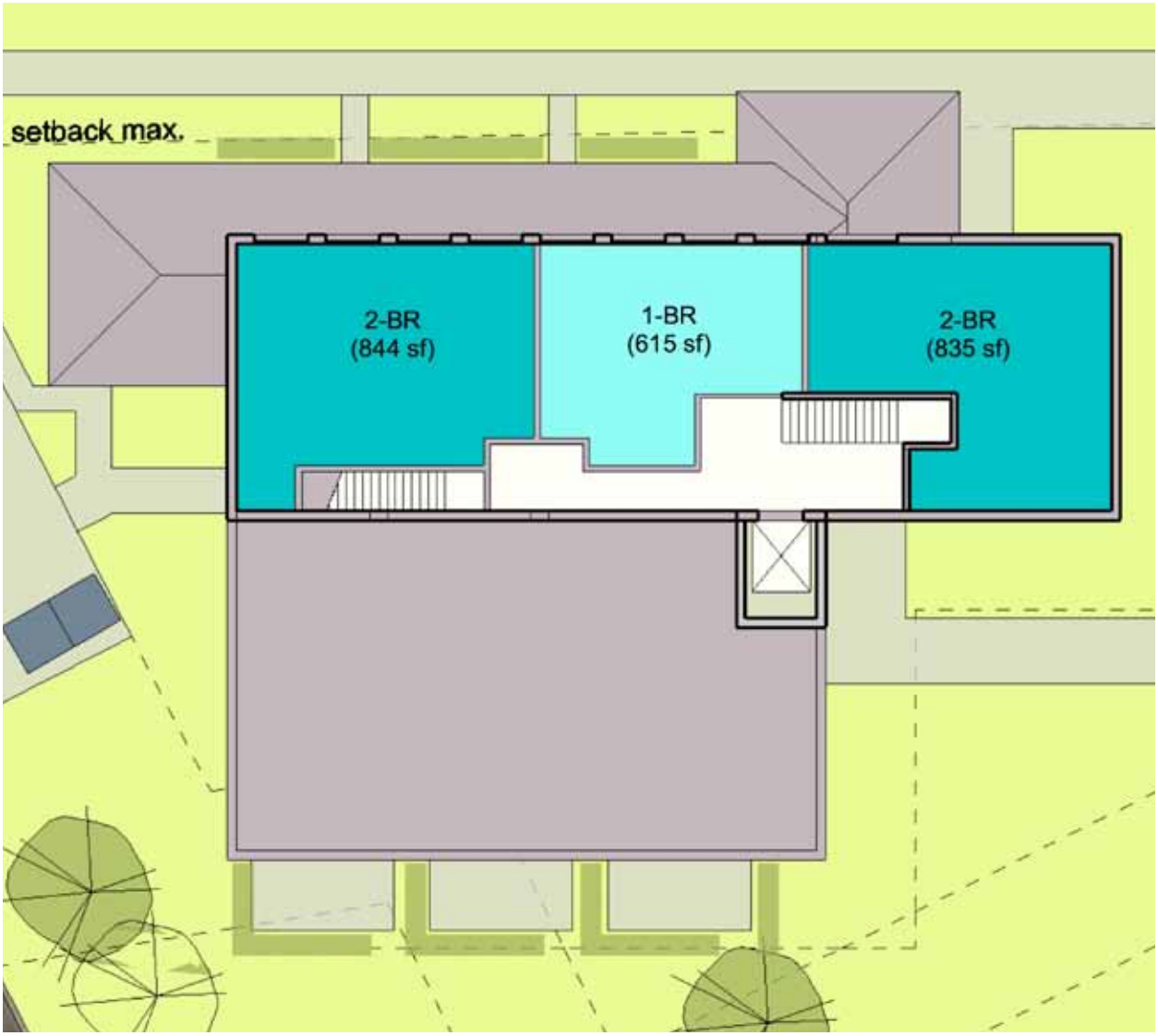


Figure 1.2 (5)- Proposed Second Floor Layout Scale: 1' = 20'

Figure 1.2 (6) - Front view with private covered patios

Option 1.2 - Cost Analysis

Site development costs for this Option would be relatively low. Existing utilities would need to be assessed for capacity, but the only major change to the site would be the addition of the parking lot on the east. Since there is not proposed building addition, storm water calculations would be based primarily on the new parking lot area, and some of this could be offset by the removal of the wide front driveway formerly for firetrucks. It is possible that storm water management could be handled with surface measures only. The adjustment in site development cost reflects the potential savings for less utility and storm water work.

Option 1.2	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$25.00	$(10.00)	$15.00	33846	$507,690.00	
Asbestos Removal	$3.00		$3.00	11222	$33,666.00	
Building Demolition	$6.00		$6.00			
Interior Demolition	$4.00		$4.00	11222	$44,888.00	gut interior
Renovation of interior	$200.00		$200.00	11222	$2,244,400.00	
New Constuction AAHC offices	$175.00		$175.00			
New Constuction AAHC garage/maint.	$175.00		$175.00			
New construction Housing, in-situ	$150.00		$150.00			
New construction Housing, modular	$115.00		$115.00			
Other					**$90,000.00**	3-stop Elevator
				Total estimated cost	**$2,920,644.00**	

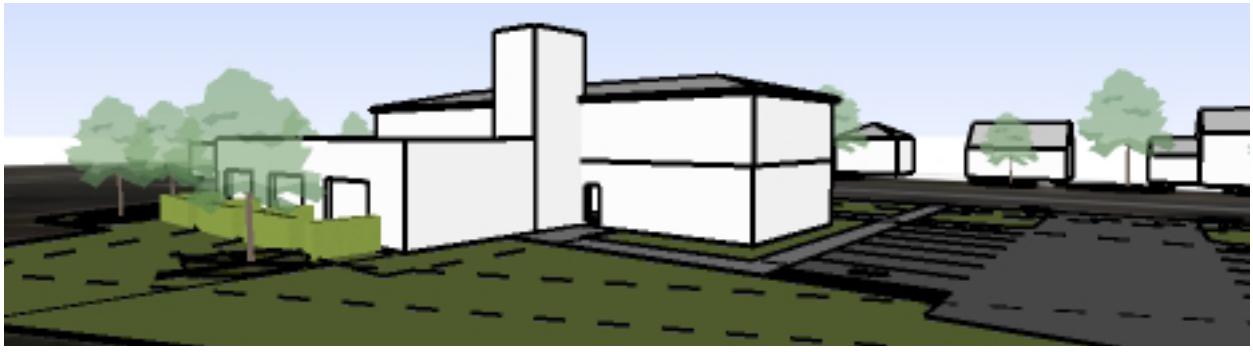


Figure 1.2 (7) - Option 1.2 - View from south east.

Figure 1.2 h - Street view of building massing

Option 1.2 - Design Analysis

Site Suitability

Because it proposes the least amount of change, this Option may present the path of highest support with neighboring property owners. Converting the firestation to residential would bring the use more in line with the surrounding R1C neighborhood.

Site Suitability: **4.5** of 5

Environment/Sustainability

Repurposing the existing structure would keep a large amount of building materials out of a landfill. There is some roof area that could be used for solar panels. Further study would be needed to assess the impact of the tree line to the south.

Sustainbility Score: **3.5** of 5

Accessibility

This scheme could easily accommodate accessible housing as required by FHA. The entire building could be made accessible with the addition of an elevator, which is proposed in the existing hose room. Unit sizes are larger than typical one- and two-bedroom units. This indicates that it would be possible to accomodate full accessiblity in at least some, if not all of the units.

Accessibility Score: **5.0** of 5

Option 1.3

New construction of affordable housing units

Figure 1.3 (1) - Proposed Site Plan - Duplexes

Scale: 1' = 60'

Proposed Zoning: R4B- Multi-famiy Residential

Row houses or townhouses are one solution for a small site with a low cap on the number of living units. Figure 1.3b below shows that eight two-story rowhouse units could fit on the site with a double-loaded parking lot to the east. The result would be a long block of housing that might not fit well in the adjacent R1C neighborhood.

An alternative concept with eight units is a set of duplexes, shown in Figure 1.3 a above, that would be more in scale with the neighborhood. The architectural form is residential in character with a gable roof and open front and back porches. Each unit is a two-story, 2-bedroom apartment with its own mechanical room and washer and dryer. The duplexes could be built on full basements or crawlspaces.

There are four duplexes on the site, with approximately 20' separation between houses. The parking requirement in R4B is 1.5 cars per unit, so eight units require 12 parking spaces, including one barrier-free.

Plan Legend

- **Existing Buildings**
- **Housing Units**
- **New Paving**
- **Open Space**

Figure 1.3 (2) - Site plan with rowhouses. Eight units max with parking lot on east.

Figure 1.3 (3) - Aerial view from the northeast

	Option 1.3	Requirement	Proposed
Program Requirements	AAHC Admin. Office (GSF)	N/A	-
	AAHC Garage/ Maint. (GSF)	N/A	-
	Housing Units (Qty.)	max. possible (up to 11 units allowable by UDC)	8 units (2-BR)
Requirements for R4B - Multi-Family Residential	Height	35' (max.)*	± 26'
	Front Setback	15' (min.) 40' (max.)	29' (to front porches)
	Side Setback	12' (min.)**	40' (on west) 39' (on east)
	Rear Setback	30' (min.)**	43'
	F.A.R.	N/A	-
	Landscape Buffer for parking	15' from Residential zones, and 10' from front R.O.W.	8' min. (average < 15')***
	Vehicle Parking	1.5 cars per housing unit	12 cars (includes 1 barrier-free)
	Bike Parking	1 bike per 5 housing units****	TBD (2 required)
	Open Space	55% (min.)	60%
	Active Open Space	Min. 300 sf per housing unit	196 sf porch for each unit, 1993 sf sidewalks, + yard

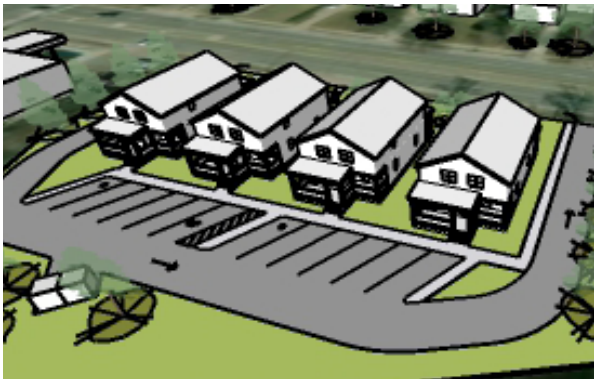


Figure 1.3 (4) - Aerial view from southeast

* 45' max. if parking is below at least 35% of building

** Plus building height setback requirement.

*** As allowed by UDC Section 5.20.4.B.1

**** 50% Class A, 50% Class C

Figure 1.3 (5) - View from parking area

Figure 1.3 (6) - Conceptual diagram

Number of units: 8

Typical unit: Two-story, 2-bedroom, 1 bath, with laundry in unit

Unit size: 1,050 GSF heated space + 196 GSF open front and back porches

Construction Type: 5B- not sprinklered

Foundations and front porches (approx. 7'x14') would need to be built on site. Sixteen 14'x41' modular boxes would be needed for the eight apartments (one lower level and one upper level per housing unit).

Key

New Construction (built on-site)

New Housing Units (modular construction built off-site)

Figure 1.3 (7) - View from Stadium Blvd, looking west

Figure 1.2 (8) - Shared steps lead to two private porch spaces

Option 1.3 - Cost Analysis

Site development costs for Option 1.3 would be relatively high. For this study, it is set at the same rate as Option 1.1. New site utilities would be required for Option 1.3 and it has about the same amount of Open Space as Option 1.1. Further study would be needed to determine whether underground stormwater management practices would be required in this scheme.

The large adjustment from the baseline in-situ construction costs reflects the significantly reduced scale of four residential basements- crawlspaces foundation would be slightly cheaper- plus on-site porch construction as compared to comprehensive commercial construction.

Option 1.3	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$25.00		$25.00	33846	$846,150.00	
Asbestos Removal	$3.00		$3.00	11222	$33,666.00	
Building Demolition	$6.00		$6.00	11222	$67,332.00	
Interior Demolition	$4.00		$4.00			
Renovation of interior	$200.00		$200.00			
New Constuction AAHC offices	$175.00		$175.00			
New Constuction AAHC garage/maint.	$175.00		$175.00			
New construction Housing, in situ	$150.00	$(100.00)	$50.00	5,656	$282,800.00	
New construction Housing, modular	$115.00		$115.00	8,400	$966,000.00	
				Total estimated cost	**$2,195,948.00**	

Figure 1.3 (9) - The fronts and backs of each duplex are identical.

Figure 1.3 (10) - Street view of building massing

Option 1.3 - Design Analysis

Site Suitability

Though a gable-fronted house form with an open front porch does not exactly match the style of houses in the area, the scale of the duplexes is in keeping with the context. Washtenaw County GIS actually shows that this parcel is made up of four R1C lots joined together, so from that perspective, four houses would be very suitable for this site.

Site Suitability: **4.5** of 5

Environment/Sustainability

Modular construction generally produces less waste compared to traditional stick-framed construction. All construction would of course comply with applicable engergy codes. Roof planes are oriented to the east and west, which is not optimal for solar panels, but south-facing porch roofs could be utilized. Further study would be needed to assess the impact of the tree line to the south.

Sustainbility Score: **2.5** of 5

Accessibility

While the proposed concept is compliant with the Fair Housing Act, which does not require housing units with more than one level to be accessible, pursuing this Option would not help the City expand its portfolio of much-needed accessible housing units.

Accessibility Score: **0.0** of 5

Variation 1.3b

Option 1.3 with an accessible-flat alternate unit

Figure 1.3b (1) - Proposed Site Plan - Variation with one stacked-flat duplex

Scale: 1’ = 60’

Figure 1.3b (2) - Duplex configuration

Key

New Construction (built on-site)

New Housing Units (modular construction built off-site)

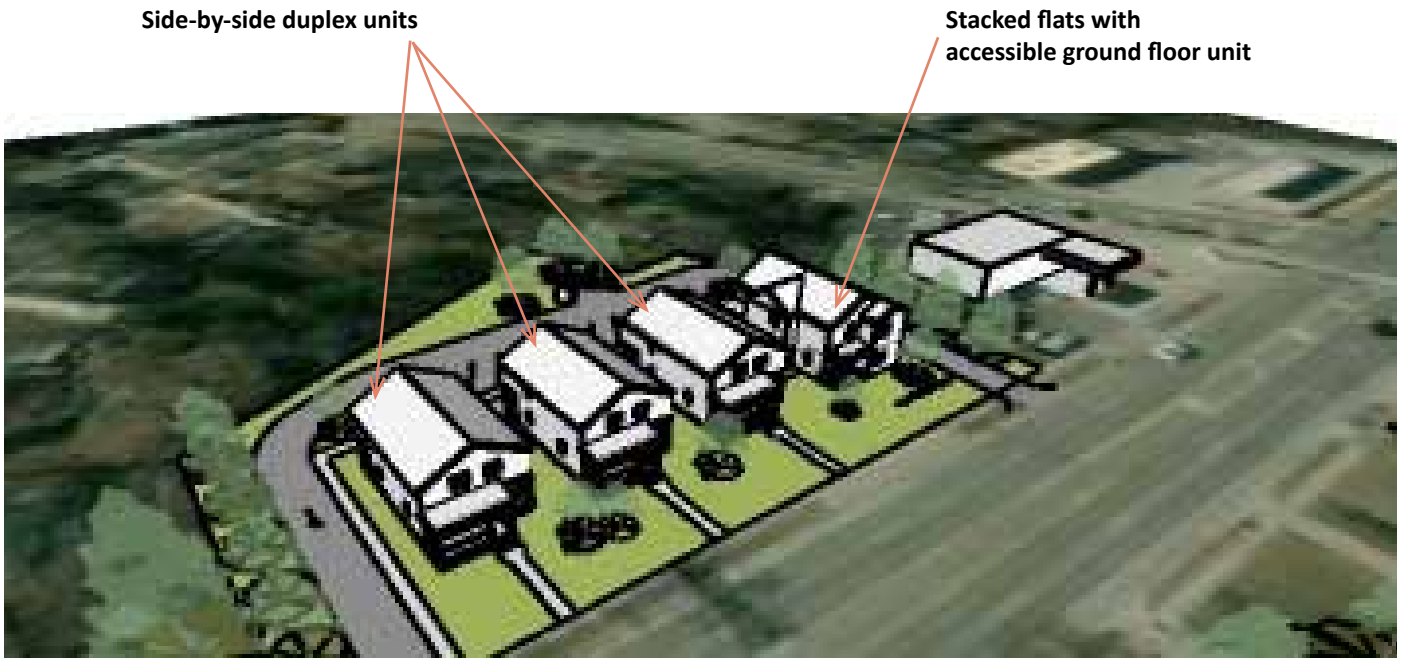


Figure 1.3b (3) - Aerial view from the northeast

Proposed Zoning: R4B- Multi-famiy Residential

Duplex Unit Type	Qty.	Unit Size
Accessible ground-level flat, 2-BR	1	1,120 sf
Walk-up second floor flat, 3-BR	1	1,120 sf
Side-by-side, 2-story, 2-BR	6	1,050 sf
Total	**8 units**	

All units have 1 bath, with laundry and mechanical in unit, plus private open porches or decks.

	Variation 1.3b	Requirement	Proposed
Program Requirements	AAHC Admin. Office (GSF)	N/A	-
	AAHC Garage/ Maint. (GSF)	N/A	-
	Housing Units (Qty.)	max. possible (up to 11 units allowable by UDC)	8 units
Requirements for R4B - Multi-Family Residential	Height	35' (max.)*	± 26'
	Front Setback	15' (min.) 40' (max.)	29' (to front porches)
	Side Setback	12' (min.)**	40' (on west) 39' (on east)
	Rear Setback	30' (min.)**	43'
	F.A.R.	N/A	-
	Landscape Buffer for parking	15' from Residential zones, and 10' from front R.O.W.	8' min. (average < 15')***
	Vehicle Parking	1.5 cars per housing unit	12 cars (includes 1 barrier-free)
	Bike Parking	1 bike per 5 housing units****	TBD (2 required)
	Open Space	55% (min.)	60%
	Active Open Space	Min. 300 sf per housing unit	196 sf porch for each unit, 1993 sf sidewalks, + yard

* 45' max. if parking is below at least 35% of building

** Plus building height setback requirement.

*** As allowed by UDC Section 5.20.4.B.1

Variation 1.3 b - Cost Analysis

Site development costs are identical to Option 1.3. The stacked-flat duplex will increase overall costs slightly. The duplex is a bit larger than the side-by-side duplex units, and there will be additional construction for the stairwell and stair to the second floor, which would be built on site.

Variation 1.3b	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$25.00		$25.00	33846	$846,150.00	
Asbestos Removal	$3.00		$3.00	11222	$33,666.00	
Building Demolition	$6.00		$6.00	11222	$67,332.00	
Interior Demolition	$4.00		$4.00			
Renovation of interior	$200.00		$200.00			
New Constuction AAHC offices	$175.00		$175.00			
New Constuction AAHC garage/maint.	$175.00		$175.00			
New construction Housing, in situ	$150.00	$(100.00)	$50.00	5,900	$295,000.00	
New construction Housing, modular	$115.00		$115.00	8,540	$982,100.00	
				Total estimated cost	**$2,224,248.00**	

Figure 1.3b (4) - View from E. Stadium Blvd. Side-by-side duplex on the left, stacked flats on the right.

Figure 1.3b (5) - Street view of building massing

1.3b Variation - Design Analysis

Site Suitability
Indentical to Option 1.3.

Site Suitability: **4.5** of 5

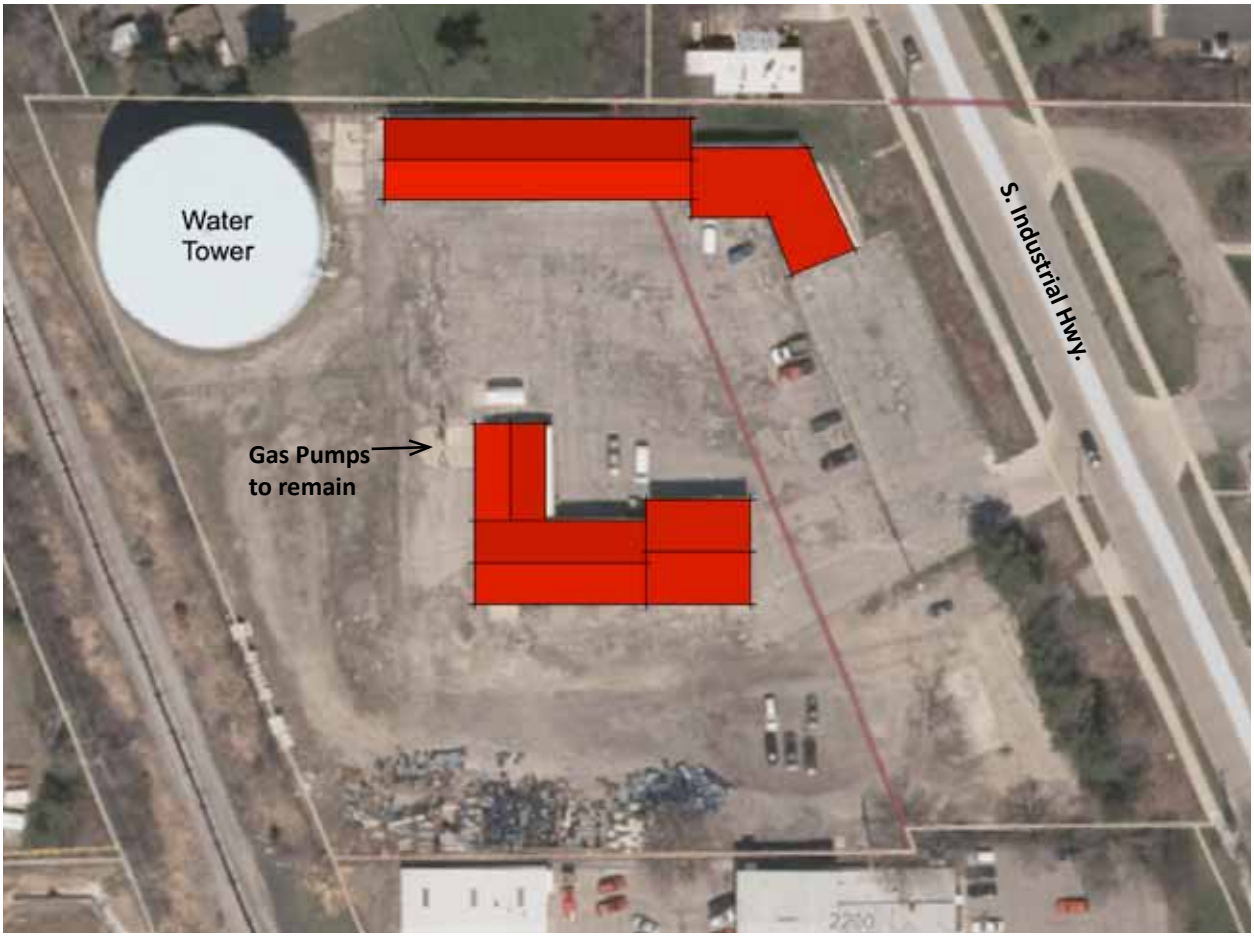
Environment/Sustainability
Indentical to Option 1.3

Sustainbility Score: **2.5** of 5

Accessibility
In addition to compliance with the Fair Housing Act requirements for accessible housing units, this Variation would meet the HUD requirement for Federally-assisted new construction housing to make 5% of the units (or one unit, whichever is greater) accessible.

Accessibility Score: **4.5** of 5

Site #2
Overview of 2000 S. Industrial Highway



Property ID: 09-12-04-200-013
Existing zoning classification: PL- Public Land
Property size: 4.01 acres (174,733 SF)

Existing buildings to be demolished

The property has a water tower, a gas-filling station for city-owned vehibles, and a collection of buildings being used by various City departments, including the AAHC. The water tower, with some easement for access, and the filling station are to remain in all scenarios; other structures would be demolished unless noted otherwise.

The AAHC was not able to provide survey information for the property, underground storage tanks, or the buildings on this site. With regard to site information (i.e. detailed site description, easements, preliminary zoning code review), DFDG refers the Reader to the Appraisal of 2000 S. Industrial Highway, completed by Gerald Alcock Company LLC for the AAHC and dated September 11, 2019. DFDG has considered the rezoning recommendations from the Appraisal, when appropriate, for scenarios which include affordable housing.

DFDG has used site information and aerial photographs from the City of Ann Arbor/Washtenaw County GIS and Google Maps as a basis for the Schematic Design on this site.

Existing view from the south east

View of existing buildings

Option 2.1

New construction of separate buildings for AAHC consolidated offices, maintenance operations, and approximately thirty (30) affordable housing units

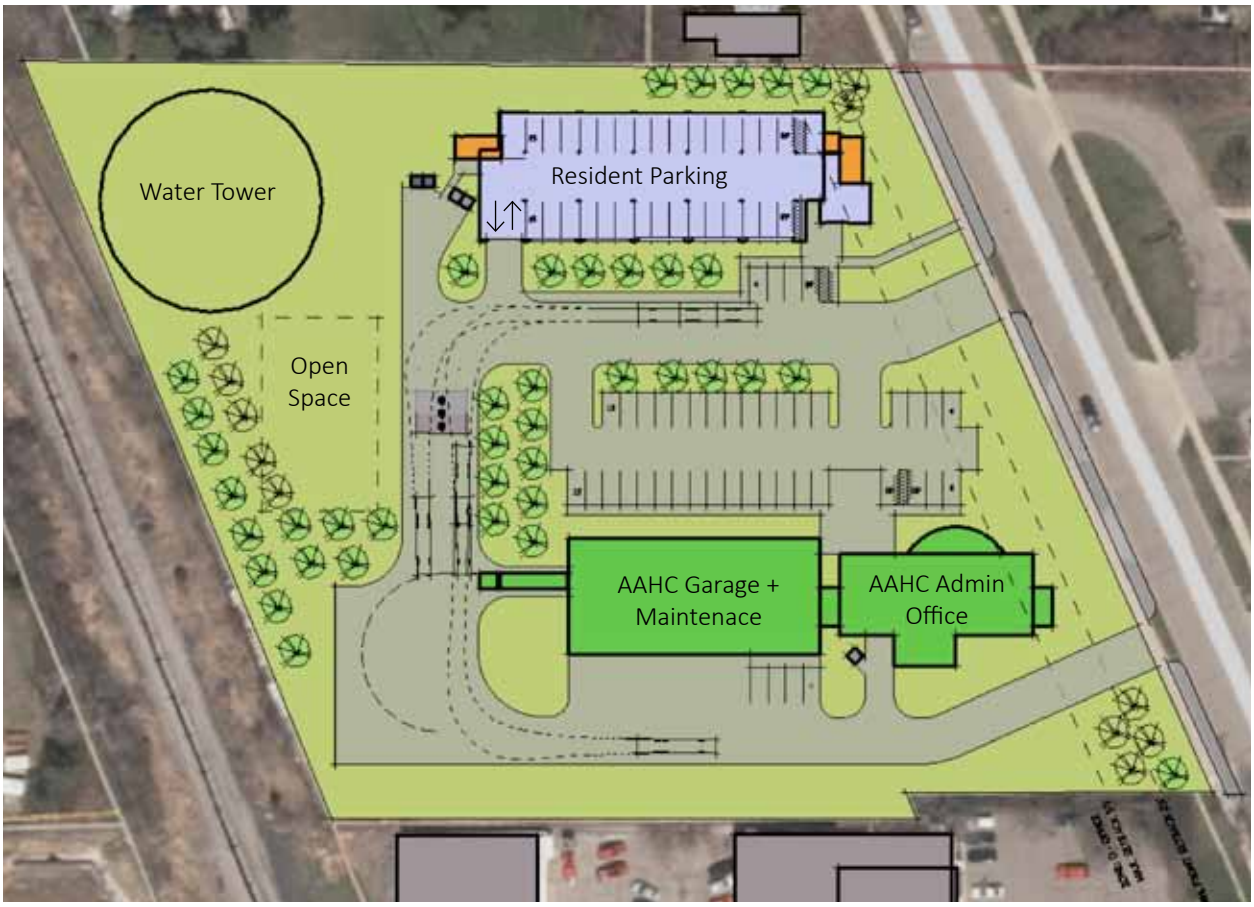


Figure 2.1 (1) - Proposed Site/Parking Plan

Scale: 1' = 60'

Proposed Zoning: O- Office District

This Option places housing on the north end of the property, overlooking the lawn of the neighboring Army Reserve parcel. Locating the housing component of the Program here puts residents closer to existing Residential land uses and to Astor Avenue which would be the fastest route to nearby Frisinger and Woodbury Parks.

A new building for AAHC administration sits on the south side of the lot, with a new 60' x 130' garage and maintenance building to the west.

The AAHC administration building is proposed as a three-story building. In addition to keeping the footprint small for stormwater management purposes, the height helps to transition between the surrounding one-story buildings and the apartment building which, at four stories, would be the tallest building in the immediate area.

Plan Legend

- **New AAHC Buildings**
- **New Parking podium for residents**
- **Vertical Circulation**
- **New paving**
- **Open Space**

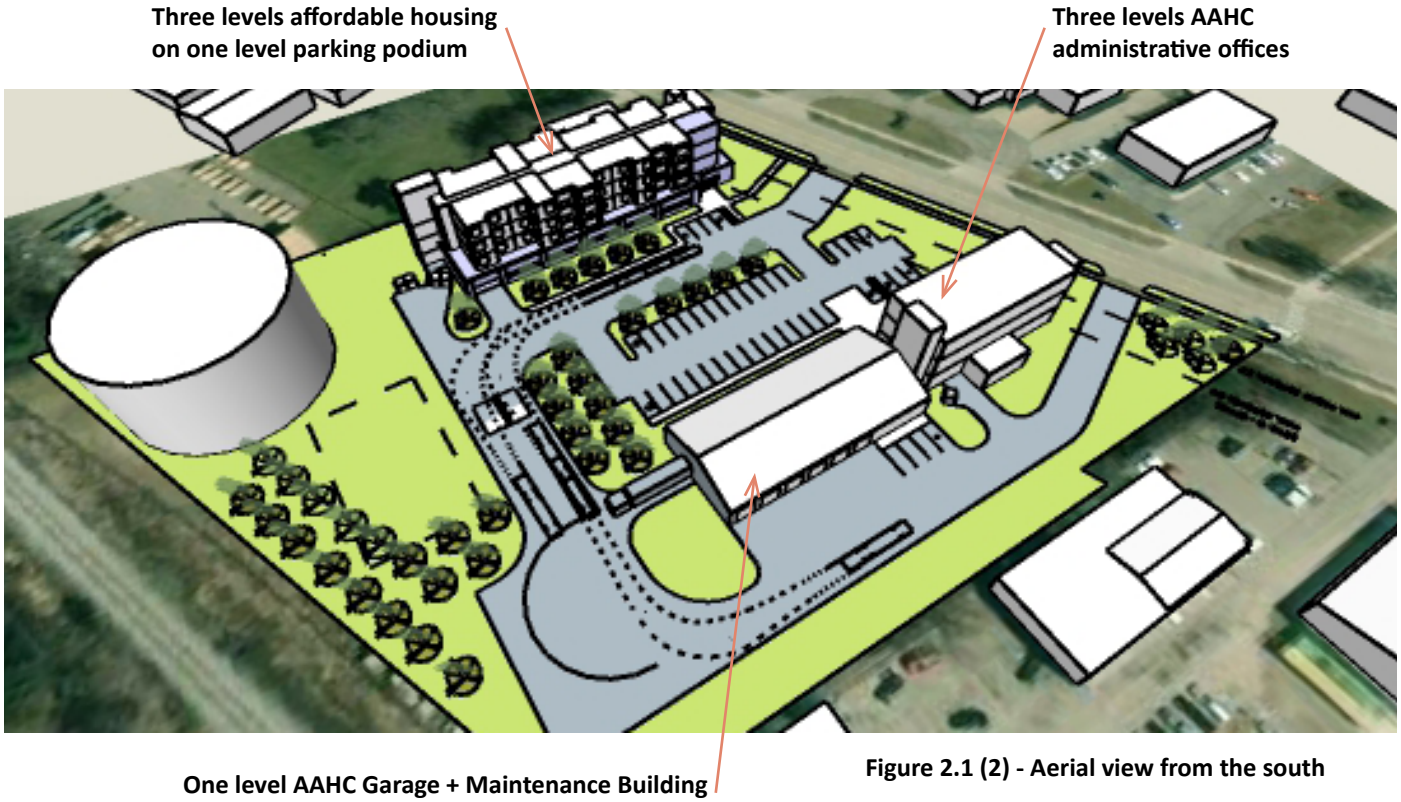


Figure 2.1 (2) - Aerial view from the south

	Option 2.1	Requirement	Proposed
Program Req's	AAHC Admin. Office (GSF)	11,753 GSF	13,600 GSF
	AAHC Garage/ Maint. (GSF)	7,812 GSF	7,800 GSF butler building
	Housing Units (Qty.)	30 units: ten each- Studios, 1-BR, 2-BR	30 units: (6) Studios, (12) 1-BR, (12) 2-BR
Requirements for O - Office District Zoning	Height	None	47'
	Front Setback	15' (min.) 40' (max.)	30'
	Side Setback	None	-
	Rear Setback	None	-
	F.A.R.	75% (max.)	33%
	Landscape Buffer for parking	10' from front R.O.W.	
	Vehicle Parking	36+30 = 66 cars ** (3 barrier-free)	45 cars - Office/Maint. 34 cars - residents/guests
	Bike Parking	4 + 6 = 10 bikes***	TBD
	Open Space	No requirement	59%
	Active Open Space	No requirement ****	6,000+ sf recreation space 4,082 sf sidewalks

Thirty housing units - ten per level on three levels - sit on a precast concrete parking podium dedicated exclusively for resident parking. Additional guest parking is provided at the street entrance.

* When abutting Residential. Otherwise none.
** 1 per 333 GSF Office, plus 1 per housing unit
*** 1 per 3000 GSF Office, plus 1 per 5 housing units
50% Class A, 50% Class C
**** 300 sf per unit is required for in R4B multi-family zoning

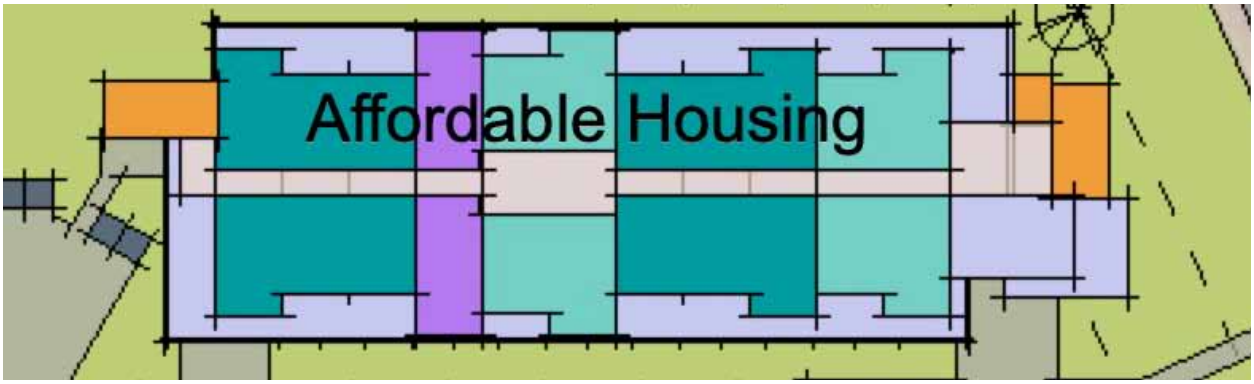


Figure 2.1 (3) - Residential Floor Layout Concept

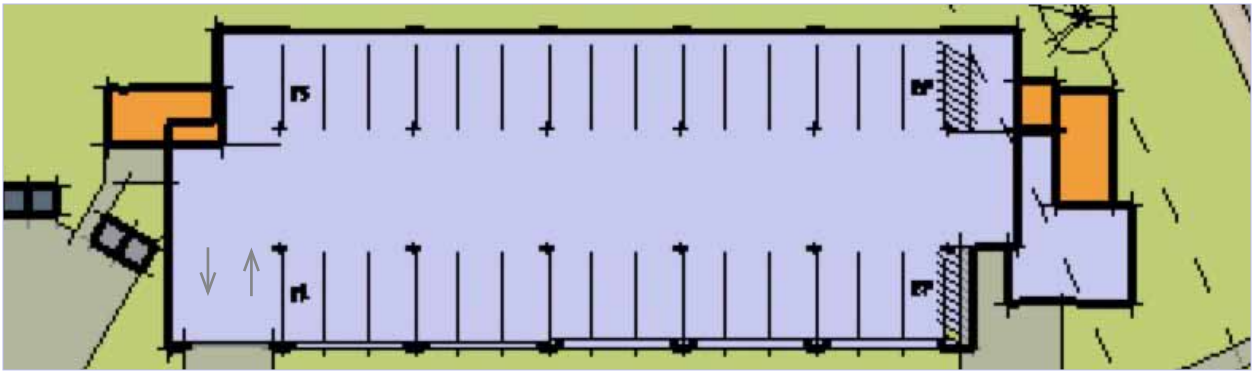


Figure 2.1 (4) - Residential Parking Layout Concept

Scale: 1’ = 40’

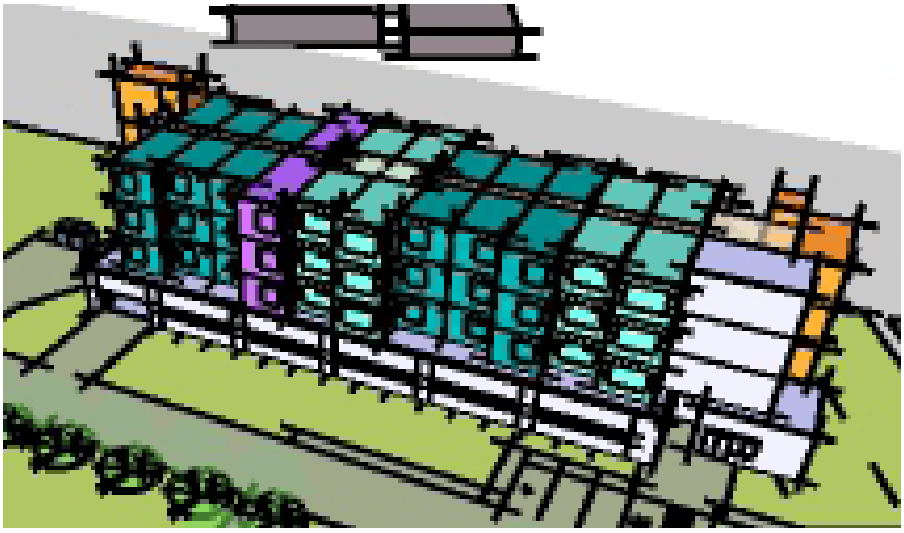


Figure 2.1 (5) - Massing diagram of housing building

Key

- **Podium/Common Space**
- **Stair/Elevator**
- **Hallway**
- **2-Bedroom Unit**
- **1-Bedroom Unit**
- **Studio Unit**

Type	Qty.	Unit Size
Studios	6	472 sf
1-BR	12	600 sf
2-BR	12	840 sf
Total	**30 units**	

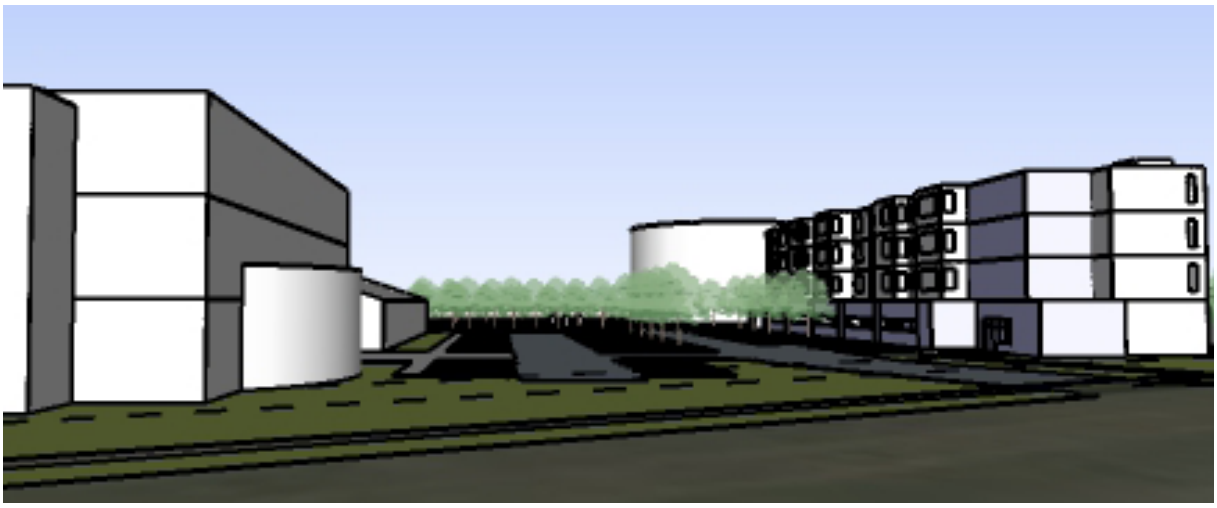


Figure 2.1 (6) - View from S. Industrial, looking west

Figure 2.1 (7) - Aerial view from the north east

Option 2.1 - Cost Analysis

Site development costs-per-square-foot are comparatively lower for a larger site such as this. With the exception of the water tower, the existing buildings would be cleared. New utilities would be required. The estimate assumes that surface storm water management practices will be employed.

Option 2.1	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$15.00		$15.00	174733	$2,620,995.00	
Asbestos Removal	$3.00		$3.00			
Building Demolition	$6.00		$6.00	18596	$111,576.00	
Interior Demolition	$4.00		$4.00			
Renovation of interior	$200.00		$200.00			
New Constuction AAHC offices	$175.00		$175.00	13,600	$2,380,000.00	
New Constuction AAHC garage/maint.	$50.00		$50.00	7,800	$390,000.00	New butler building
New construction Housing, in-situ	$150.00		$150.00	11088	$1,663,200.00	Parking podium
New construction Housing, modular	$115.00		$115.00	25785	$2,965,275.00	
Other				2	$200,000.00	Modular Elevators
			Estimated Cost		**$10,331,046.00**	

Figure 2.1 (8) - View from Garage/Maintenance building across the site

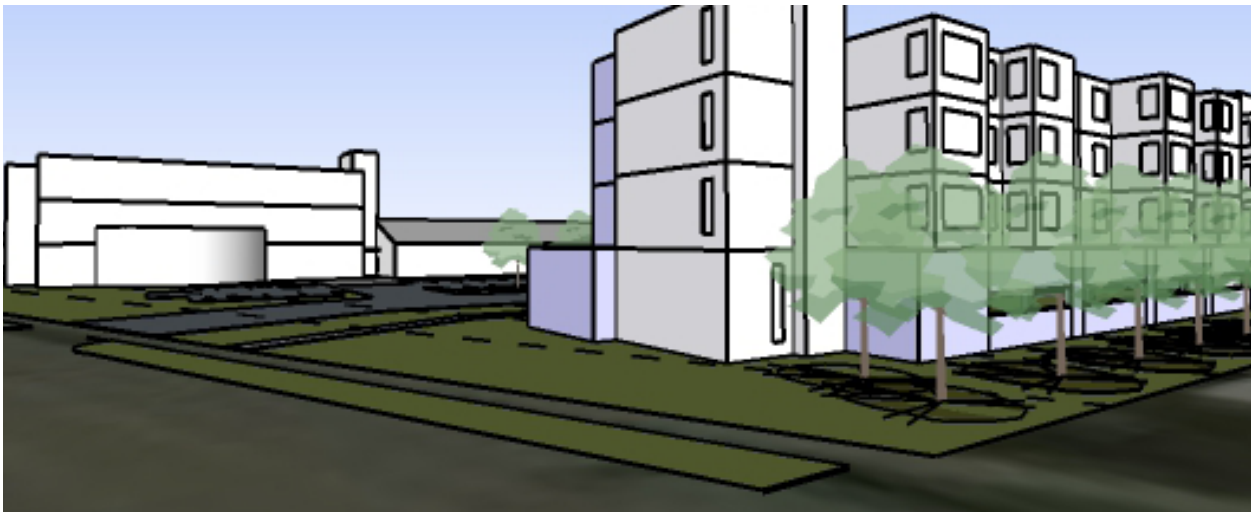


Figure 2.1 (9)- View from S. Industrial, looking south west

Option 2.1 - Design Analysis

Site Suitability

The financing of affordable housing on this site is challenging using federal and state funding sources because the parcel is adjacent to a railroad line on the west. Though uses to the south of the site are industrial/commercial, locating the Adminiatration building on the south side of the site would provide some buffer and transition to the residential use, and there is an existing apartment complex just to the north on the opposite side of S. Industrial.

Site Suitability: **2.5** of 5

Environment/Sustainability

On a large site such as this, there is an opportunity to install a geothermal system in wells, or possibly in trenches. All roof surfaces could accomodate solar cells with no obstruction from neighboring trees.

Sustainbility Score: **3.5** of 5

Accessibility

All new construction would be fully compliant with FHA and ADA standards.

Accessibility Score: **5.0** of 5

Option 2.2

New construction of single mixed-use building for AAHC consolidated offices and affordable housing. Maintenance operations in a separate building.

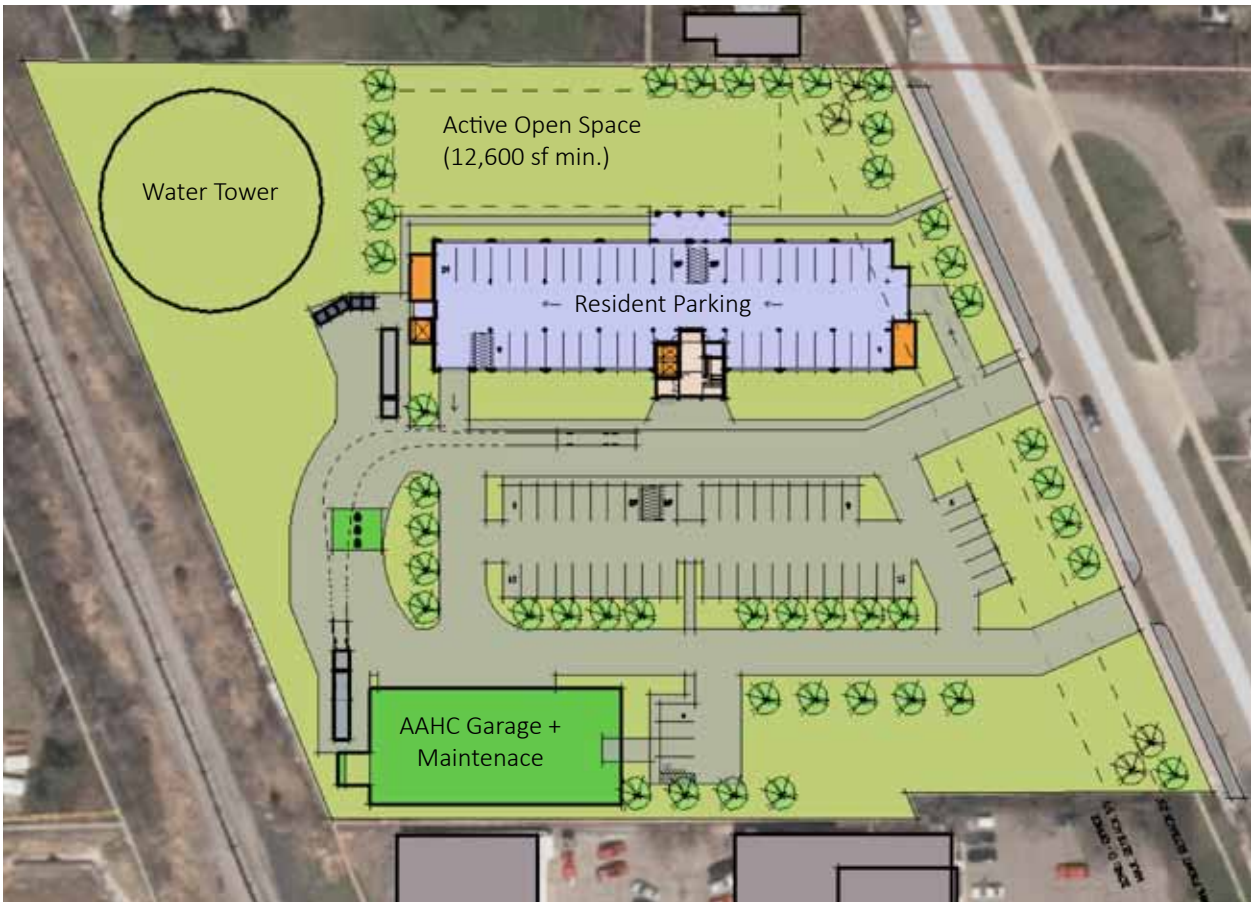


Figure 2.2 (1) - Proposed Site/Parking Plan

Scale: 1' = 60'

Proposed Zoning: O- Office District

The proposed design is a two-level (MBC Type II construction) podium, probably precast concrete, with modular light-frame (Type 5B construction) multi-family housing above. The bottom level of the podium would provide vehicle parking for residents in a single story garage at grade. The level above the parking would be office space for the AAHC.

Plan Legend

- **New AAHC Buildings**
- **New Parking podium for residents**
- **Vertical Circulation**
- **New paving**
- **Open Space**

With few height and area constraints in Office District zoning, the maximum number of housing units possible is actually governed by building code if using modular construction. Type 5B construction for multi-family occupancy when fully sprinklered is limited to 36,000 sf in the Michigan Building Code.

It might be possible to increase the number of units by opting for an alternate construction type. However, the average cost per housing unit could significantly increase, along with the requirement to provide additional parking. Office District zoning does not explicitly require Open Space or Active Open Space, but we have borrowed standards from R4B zoning as a guideline to make the proposed housing comparably amenable to future residents.

The garage/maintenance building in this Option is a separate warehouse building.

Three levels affordable housing on one level of AAHC offices on one level parking podium

One level AAHC Garage + Maintenance Building

Figure 2.2 (2) - Aerial view from the south

	Option 2.2	Requirement	Proposed
Program Req's	AAHC Admin. Office (GSF)	11,753 GSF	15,642 GSF
	AAHC Garage/ Maint. (GSF)	7,812 GSF	7,800 GSF butler building
	Housing Units (Qty.)	30 units: ten each- Studios, 1-BR, 2-BR	42 units: (12) Studios, (18) 1-BR, (12) 2-BR
Requirements for O - Office District Zoning	Height	None	59', with 5 stories
	Front Setback	15' (min.) 40' (max.)	32'
	Side Setback	None	-
	Rear Setback	None	-
	F.A.R.	75% (max.)	33%
	Landscape Buffer for parking	10' from front R.O.W.	
	Vehicle Parking	See note **	50 cars - Office/Maint. 42 cars - Residents
	Bike Parking	See note ***	TBD
	Open Space	No requirement	57%
	Active Open Space	No requirement ****	12,000+ sf rec space 4,082 sf sidewalks

Forty-two housing units on three levels sit on a precast concrete base with AAHC offices on the second floor and a parking level at grade dedicated exclusively for residents.

* When abutting Residential. Otherwise none.
** 1 per 333 GSF Office, plus 1 per housing unit
*** 1 per 3000 GSF Office, plus 1 per 5 housing units
50% Class A, 50% Class C
**** 300 sf per unit is requiredin R4B multi-family zoning

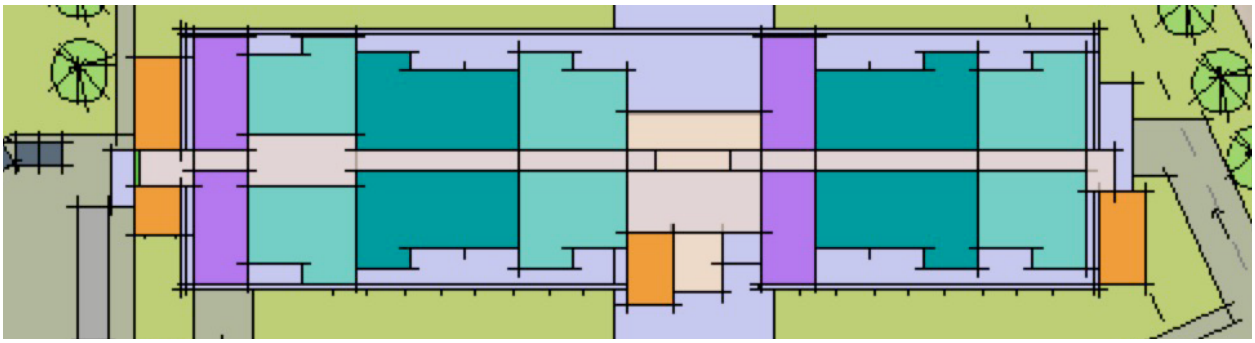


Figure 2.2 (3) - Residential Floor Layout Concept

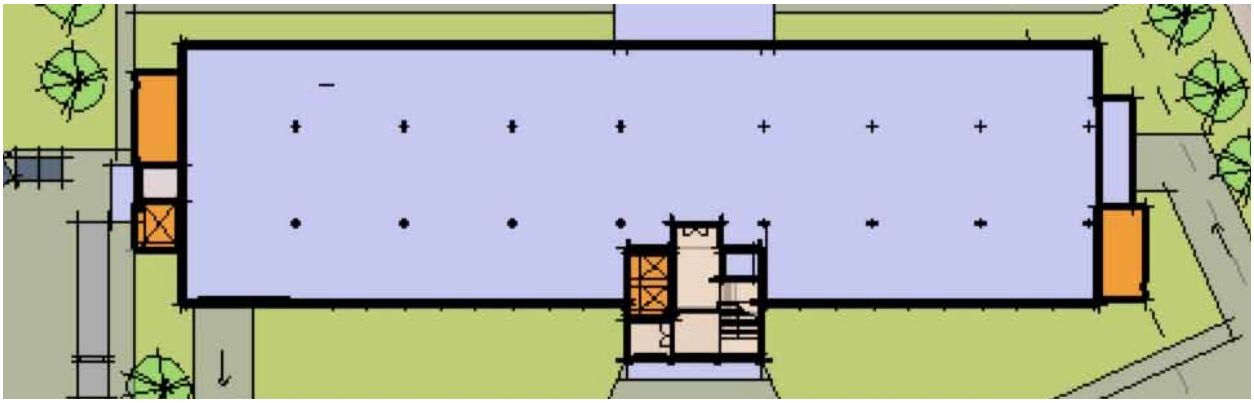


Figure 2.2 (4) - Office Floor

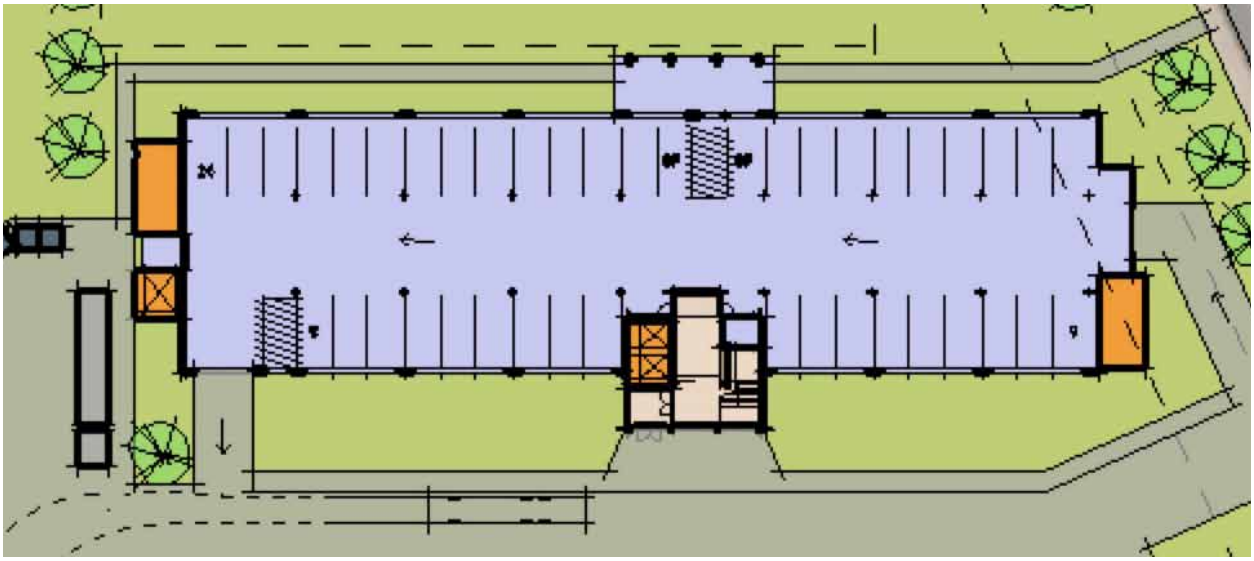


Figure 2.2 (5) - Residential Parking Layout Concept

Scale: 1" = 50'

Type	Qty.	Unit Size
Studios	12	472 sf
1-BR	18	600 sf
2-BR	12	840 sf
Total	**42 units**	

Key

- **Podium/Common Space**
- **Stair/Elevator**
- **Hallway**
- **2-Bedroom Unit**
- **1-Bedroom Unit**
- **Studio Unit**

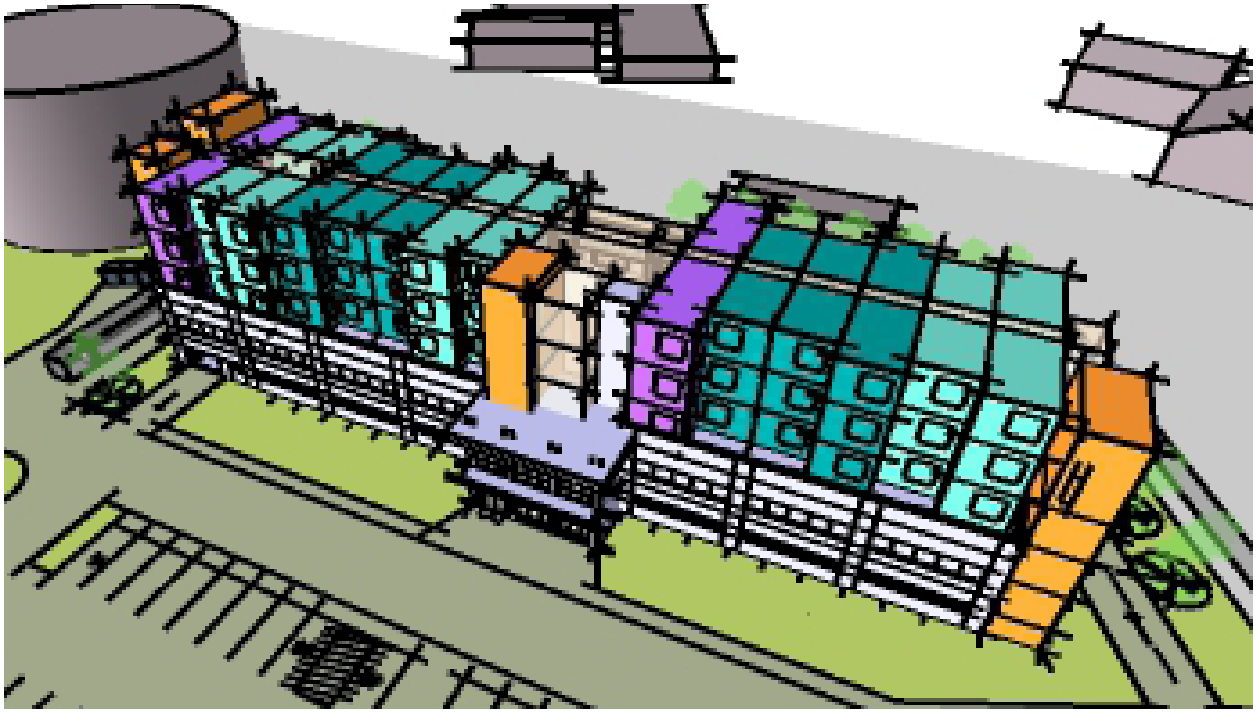


Figure 2.2 (6) - Massing diagram of mixed-use building

Figure 2.2 (7) - Aerial view from the north east

Option 2.2 - Cost Analysis

Site development costs-per-square-foot are identical to Option 2.1 as the scope of work is generally the same. Estimated building costs have increased with the additional square-footage in this proposed design. We have adjusted the square-foot cost of modular housing to account for increasing economies of scale.

Option 2.2	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$15.00		$15.00	174733	$2,620,995.00	
Asbestos Removal	$3.00		$3.00			
Building Demolition	$6.00		$6.00	18596	$111,576.00	
Interior Demolition	$4.00		$4.00			
Renovation of interior	$200.00		$200.00			
New Constuction AAHC offices	$175.00		$175.00	15,642	$2,737,350.00	
New Constuction AAHC garage/maint.	$50.00		$50.00	7,800	$390,000.00	New butler building
New construction Housing, in-situ	$150.00		$150.00	15642	$2,346,300.00	Parking podium
New construction Housing, modular	$115.00	$(10.00)	$105.00	35817	$3,760,785.00	
Other				3	$300,000.00	Modular Elevators
				Estimated Cost	**$12,267,006.00**	

Figure 2.2 (8) - View from south

Figure 2.2 (9)- View from S. Industrial, looking west

Option 2.2 - Design Analysis

Site Suitability
Office use is entirely appropriate on this site. The appropriateness of housing is questionable because the parcel is adjacent to a railroad line on the west.

Site Suitability: **2.5** of 5

Environment/Sustainability
On a large site such as this, there is an opportunity to install a geothermal system in wells, or possibly in trenches. All roof surfaces could accomodate solar cells with no obstruction from neighboring trees.

Sustainbility Score: **3.5** of 5

Accessibility
All new construction would be fully compliant with FHA and ADA standards.

Accessibility Score: **5.0** of 5

Option 2.3

Partial redevelopment of site for AAHC consolidated offices and maintenance operations.

Figure 2.3 (1) - Proposed Site/Parking Plan

Scale: 1' = 60'

Proposed Zoning: PL-Public Land or O- Office District

DFDG proposes a three-story office building with an adjacent building for garage and maintenance operations.

The existing buildings in the center of the site would remain. Detailed analysis of the requirements for storm water management are outside the scope of this study.

Plan Legend

- **New AAHC Buildings**
- **Paved surfaces**
- **Open Space**
- **Existing buildings to demolish**

Figure 2.3 (2) - Proposed building demolition

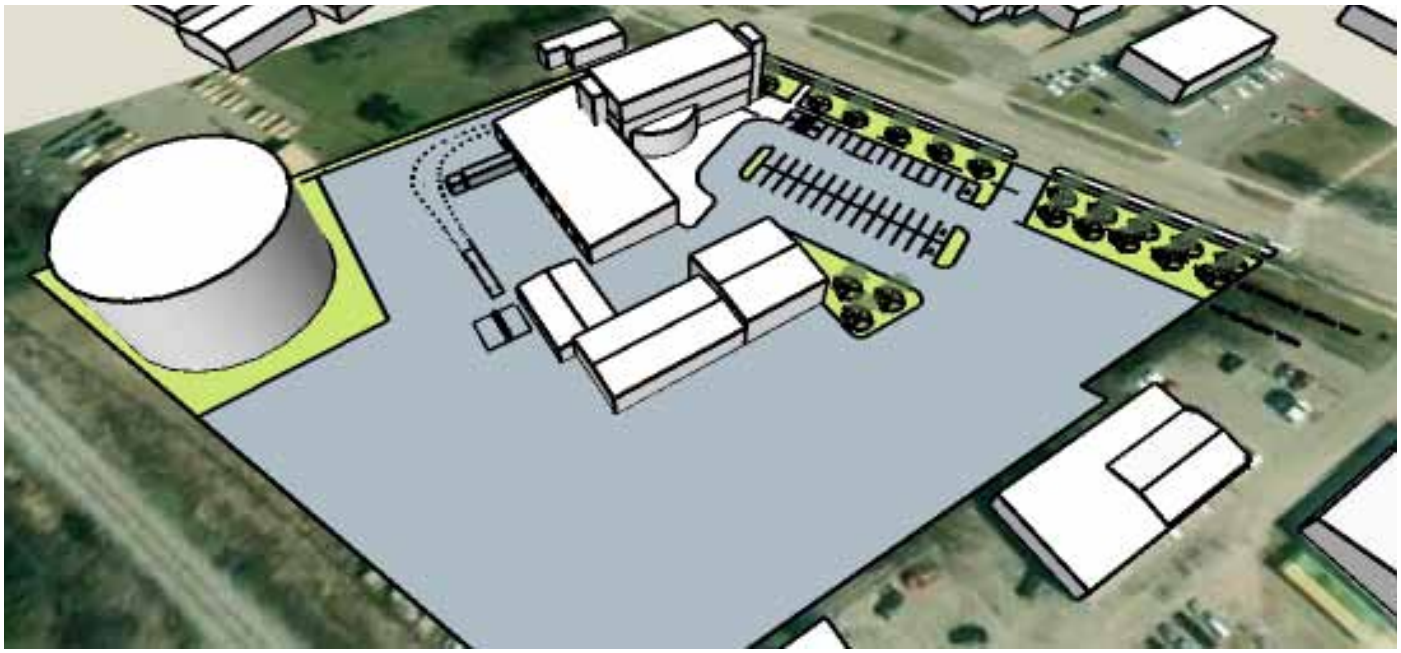


Figure 2.3 (3) - Aerial view from the south

	Option 2.3	Requirement	Proposed
Program Req's	AAHC Admin. Office (GSF)	11,753 GSF	13,600 GSF
	AAHC Garage/ Maint. (GSF)	7,812 GSF	7,800 GSF butler building
	Housing Units (Qty.)	N/A	-
Requirements for O - Office District Zoning	Height	None	42', with 3 stories
	Front Setback	15' (min.) 40' (max.)	32'
	Side Setback	None	-
	Rear Setback	None	-
	F.A.R.	75% (max.)	23%
	Landscape Buffer for parking	10' from front R.O.W.	
	Vehicle Parking	36 cars**	45 cars - Office+Maint. (office: 41 cars min.)
	Bike Parking	5 bikes***	TBD
	Open Space	N/A	-
	Active Open Space	N/A	-

* When abutting Residential. Otherwise none.

** 1 per 333 GSF Office

*** 1 per 3000 GSF Office, 50% Class A, 50% Class C

Option 2.3 - Cost Analysis

Site development costs are calculated on partial development of the site for AAHC facilities only. The rest of the site would be unchanged, The estimates assume that surface storm water management practices will be employed for the proposed new construction.

Option 2.3	Baseline Cost/GSF	Adjustment	Adjusted Cost/GSF	Proposed Area (GSF)	Estimated Cost	Notes
Site Development	$15.00		$15.00	85,535	$1,283,025.00	
Asbestos Removal	$3.00		$3.00			
Building Demolition	$6.00		$6.00	10,003	$60,018.00	partial demo
Interior Demolition	$4.00		$4.00			
Renovation of interior	$200.00		$200.00			
New Constuction AAHC offices	$175.00		$175.00	13,600	$2,380,000.00	
New Constuction AAHC garage/maint.	$50.00		$50.00	7,800	$390,000.00	New butler building
New construction Housing, in situ						
New construction Housing, modular						
Other						
				Estimated Cost	$4,113,043.00	

Figure 2.3 (4) - View from S. Industrial

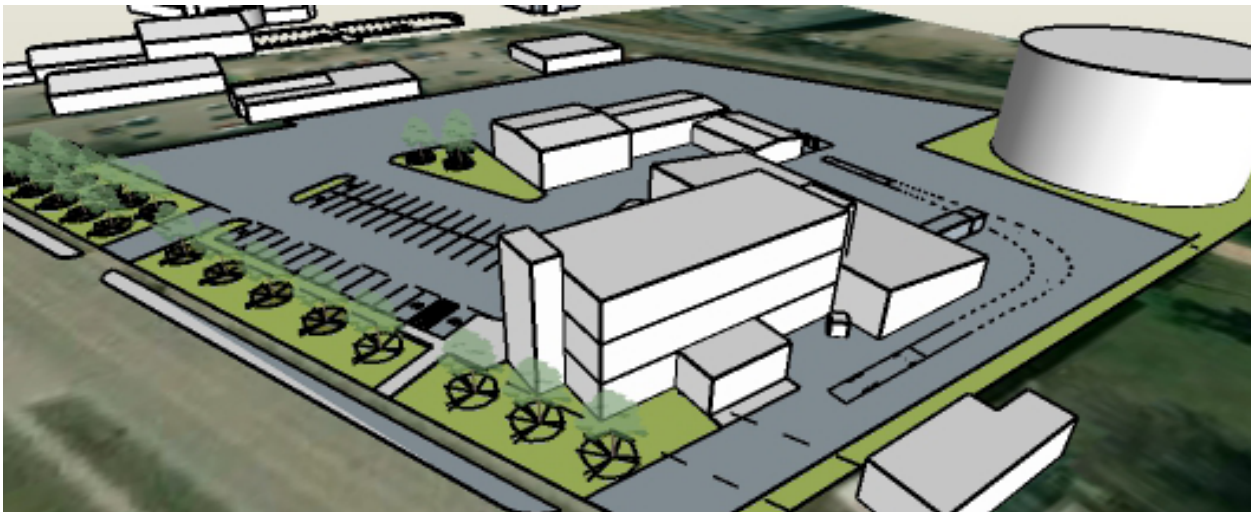


Figure 2.3 (5)- Aerial view from the north east

Option 2.3 - Design Analysis

Site Suitability

Office use is entirely appropriate on this site. The appropriateness of housing is questionable because the parcel is adjacent to a railroad line on the west.

Site Suitability: **5.0** of 5

Environment/Sustainability

The building has a good orientation to maximize solar panel implementation.

Sustainbility Score: **2.5** of 5

Accessibility

All new construction would be fully compliant with ADA standards.

Accessibility Score: **5.0** of 5

Summary Review - 1510 E. Stadium Blvd.

Option 1.1 - E. Stadium Blvd.
Redevelop Firestation #2 for AAHC offices and maintenance

SIte Suitability:	0.5
Sustainability Score:	1.5
Accessibility Score:	5.0

Variation 1.1b - E. Stadium Blvd.
Redevelop Firestation #2 for high-density affordable housing

SIte Suitability:	0.5
Sustainability Score:	1.0
Accessibility Score:	4.0

Option 1.2 - E. Stadium Blvd.
Redevelop Firestation #2 for affordable housing

Site Suitability:	4.5
Sustainability Score:	3.5
Accessibility Score:	5.0

Option 1.3 - E. Stadium Blvd.
Four side-by-side duplexes

Site Suitability:	4.5
Sustainability Score:	2.5
Accessibility Score:	0.0

Variation 1.3b - E. Stadium Blvd.
Three side-by-side duplexes, one stacked-flat duplex

Site Suitability:	4.5
Sustainability Score:	2.5
Accessibility Score:	4.5

1510 E. Stadium Blvd.

	Option 1.1	Variation 1.1b	Option 1.2	Option 1.3	Variation 1.3b
	Redevelop Firestation#2 for AAHC offices and maintenance	Redevelop Firestation#2 for AAHC offices and maintenance	Redevelop Firestation #2 for affordable housing	Site cleared for new affordable housing units	Site cleared for new affordable housing units
Existing Zoning	R1C	R1C	R1C	R1C	R1C
Proposed Zoning	O (Office District)	PUD	R4B	R4B	R4B
Permitted Use	Office	Multi-Famly	Multi-family	Multi-family	Multi-family
Housing units		23 units	9 units	8 units	8 units
Gross Area (sf)					
Demolition	2,426 + gut interior	11,222	gut interior only	11,222	11,222
New Constuction AAHC offices	10,316				
New Constuction AAHC garage					
Renovation of interior	8,796		11,222		
Housing, in situ				5,656	5,900
Housing, modular				8,400	8,540
Area for Site Development	33,846	33,846	33,846	33,846	33,846
Estimated Project Construction Cost	**$4,593,576.00**	**$4,335,228.00**	**$2,920,644.00**	**$2,195,948.00**	**$2,224,248.00**
AAHC facilities Cost/SF	$240.35				
Housing Cost/unit		$188,488.17	$324,516.00	$274,493.50	$278,031.00

Summary Review - 2000 S. Industrial Hwy

Option 2.1 - S. Industrial Hwy.
Redevelop site for AAHC facilities and new affordable housing as separate buidings

Site Suitability:	2.5
Sustainability Score:	3.5
Accessibility Score:	5.0

Option 2.2 - S. Industrial Hwy.
Redevelop site for a mixed-use building for AAHC and new affordable housing

Site Suitability:	2.5
Sustainability Score:	3.5
Accessibility Score:	5.0

Option 2.3 - S. Industrial Hwy.
Parially redevelop site for AAHC offices and maintenance

Site Suitability:	5.0
Sustainability Score:	2.5
Accessibility Score:	5.0

2000 S. Industrial Hwy

	Option 2.1	Option 2.2	Option 2.3
	New AAHC offices, maintenance and new affordable housing as separate buildings	New AAHC offices and affordable housing in a mixed-use building with parking podium.	Redevelop AAHC offices and garage/ maintenance
Existing Zoning	PL (Public Land)	PL	PL
Proposed Zoning	O (Office District)	O (Office District)	PL or O (Office District)
Permitted Use	Office/Multi-Family	Office/Multi-Family	Office
Housing units	30 units	42 units	
Gross Area (sf)			
Demolition	18,596	18,596	10,003
New Constuction AAHC offices	13,600	15,642	13,600
New Constuction AAHC garage	7,800	7,800	7,800
Renovation of interior			
Housing, in situ	11088	15,642	
Housing, modular	25785	35,817	
Area for Site Development	174,733	174,733	85,535
Estimated Project Construction Cost	**$10,331,046.00**	**$12,267,006.00**	**$4,113,043.00**
AAHC facilities Cost/SF	$190.68 *	$189.31*	$192.72
Housing Cost/unit	$204,632.42*	$183,751.96*	

* Includes half of the estimated site development cost

Conclusion

DFDG would like to thank Jennifer Hall, director of the Ann Arbor Housing Commission, for the opportunity to investigate possible uses of 1510 E. Stadium Blvd. and 2000 S. Industrial Hwy. This has been an exercise that sometimes surprised us in its results and pleased us to see how viable some scenarios could really be. We hope that the this Study provides clarity on the potential scenarios requested for these sites, and enables the Housing Commission to move forward in the ultimate goal to provide valuable services and affordable housing to the Ann Arbor community.

DFDG will continue to advocate for Modular Construction where appropriate and we encourage the AAHC to consider the practice for new housing at all potential sites around the City. When done right, Modular can reap significant savings in construction cost and time compared to conventional on-site construction.

If and when the AAHC decides to pursue work on either property in this Study, a great deal more design and engineering work will be needed to investigate the technical and financial feasibility of any proposed scenario. DFDG would be honored to continue the work started in this Study and to eventually see it through to a most satisfying conclusion.

About DFDG and Damian Farrell

Damian Farrell, FAIA, LEED+AP, has been active in the Ann Arbor design community since emigrating from South Africa in the late 1980's. Over the years, he has served on the Board of the Ann Arbor Art Center and as president of AIA-HV (the American Institute of Architects Huron Valley chapter). He is currently on the Boards of ArtTrain USA, and the Michigan Architectural Foundation. Damian Farrell Design Group is known for a broad range of work in residential design. But since its founding in 1992, DFDG has also completed many multi-family and commercial projects in Ann Arbor and the surrounding region.

Appendix A - AAHC Feasibility Study - Program from AAHC, dated 02.13.2020
(Red text original from AAHC. Circulation+tare revised by DFDG on 03.24.2020)

Damian Farrell Design Group, PLLC
359 Metty Drive #4A, Ann Arbor, MI 48103

Project Programing for Ann Arbor Housing Commission Offices

03.24.2020 *DRAFT-Revised to add 5% to each cirulation line for Tare*

Public Space	**Quantity**	**Area (SF)**	**Total Area (SF)**	**Notes**
Lobby/ Meeting Space	1	800	800	Tall Space, if possible, a nice office lobby
Table/Chair Storage	1	100	100	
Reception	1	100	100	Pair w/ Cubicles
Public Restrooms	2	150	300	ADA
Circulation+Tare	-	-	325	25%
Total Square Feet			**1,625**	

Offices	**Quantity**	**Area (SF)**	**Total Area (SF)**	**Notes**
Office Type A (Executive)	2	192	384	12ft x 16ft (min 2 up to 5)
Office Type B (Double)	3	144	432	12ft x 12ft (if 5 Exec, then 0 double)
Office Type C (Single)	14	80	1,120	8ft x 12ft (could do up to 4 smaller then 8 x 12)
Cubicles (@ Reception)	8	25	200	5ft x 5ft (4 to 8 spaces for interns)
Print/Copier Area	2	80	160	2 if 2 separate floors, 1 large if 1 floor
Conference Room A	1	900	900	Could be a dividable space (ideally room for 35 people at tables)
Conference Room B	1	500	500	for fire station may need to elimate this
Conference Room C	3	300	900	These are optional at fire station too
Community Space	0	1,000	0	Multi-Purpose (would add to residential space)
Long Term Record Storage	1	2,000	2,000	to be sprinkled, can be in basement and windowless
Current Record Storage	1	500	500	needs to be near offices, can be in hallways
Supplies Storage	1	100	100	
General Storage	1	100	100	
Security Office/IT	1	100	100	
Staff Restrooms	2	60	120	
Circulation+Tare	-	-	2,255	30%
Total Square Feet			**9,771**	

Support Space	Quantity	Area (SF)	Total Area (SF)	Notes
Utilities Room	1	200	200	
Electrical Closet	1	50	50	
Custodial Closet	1	25	25	
Circulation+Tare	-	-	83	30%
Total Square Feet			**358**	

Maintenance	Quantity	Area (SF)	Total Area (SF)	Notes
Work Space	1	2,000	2,000	
Tools Storage	1	120	120	
Supplies Storage	1	250	250	
Staff Office	8	50	400	Can be 1 large room with desks or cubicles
Staff Locker Rooms	2	400	800	20sf x 20sf (WC & Showers)
Loading Bay	1	1,400	1,400	EXT: 80ft x 14ft / INT: 14ft x 20ft
Circulation+Tare	-	-	714	20%
Total Square Feet			**5,684**	

Garage	Quantity	Area (SF)	Total Area (SF)	Notes
Maintenance Truck Pkg	4	300	1,200	9ft x 18ft TYP Stall + Circ. (4 min but up to 8)
AAHC other vehicles	2	250	500	can park outside without cover
Vehicle Support Storage	1	150	150	1-ton truck can park outside without cover
Circulation+Tare	-	-	278	15%
Total Square Feet			**2,128**	

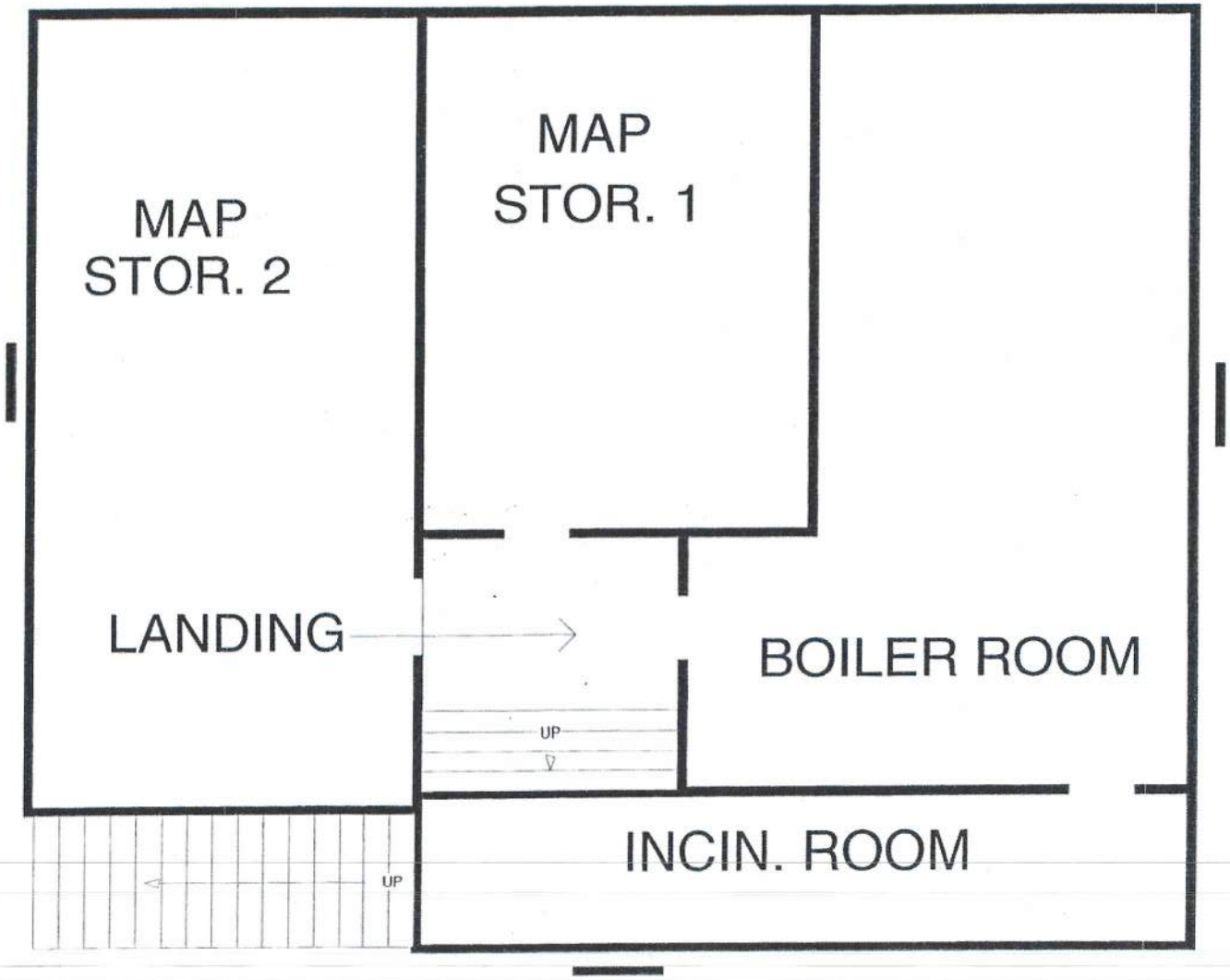
Parking Lot	Quantity	Area (SF)	Total Area (SF)	Notes
Staff Parking	32	300	9,600	Min of 28 staff at fire station
Visitors	8	250	2,000	min 5 visitor at fire station
				Parking req'd determined by Zoning Code
Total Office Program			**19,565**	

Multi-Family Housing	Quantity	Area (SF)	Total Area (SF)	Notes
Two Bedroom Units	10	840	8,400	
One Bedroom Units	10	600	6,000	
Studio Units	10	476	4,760	
Amenities			5,748	30%
Support Space			1,916	10%
Circulation+Tare			4,790	25%
Totals	**30**		**31,614**	

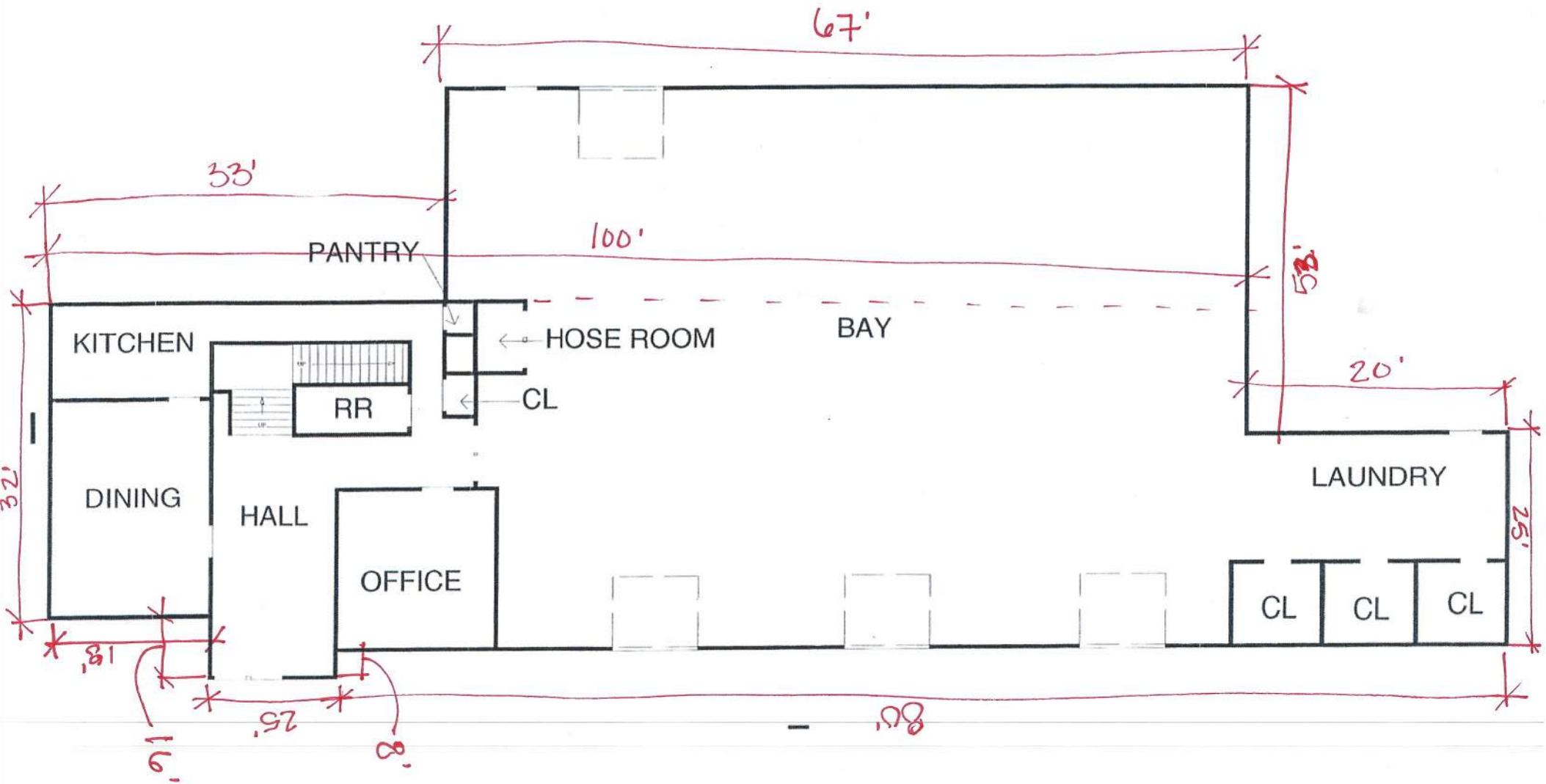
Multi-Family Parking	Quantity	Notes
Standard Parking	60	Depends on Zoning. 2 stalls /unit in R4B
ADA Parking		

Bike Parking	6			Depends on Zoning. 1 stalls /5 units in R4B
Visitor Parking	6	250	1,500	10%
Total Square Feet			**1,500**	

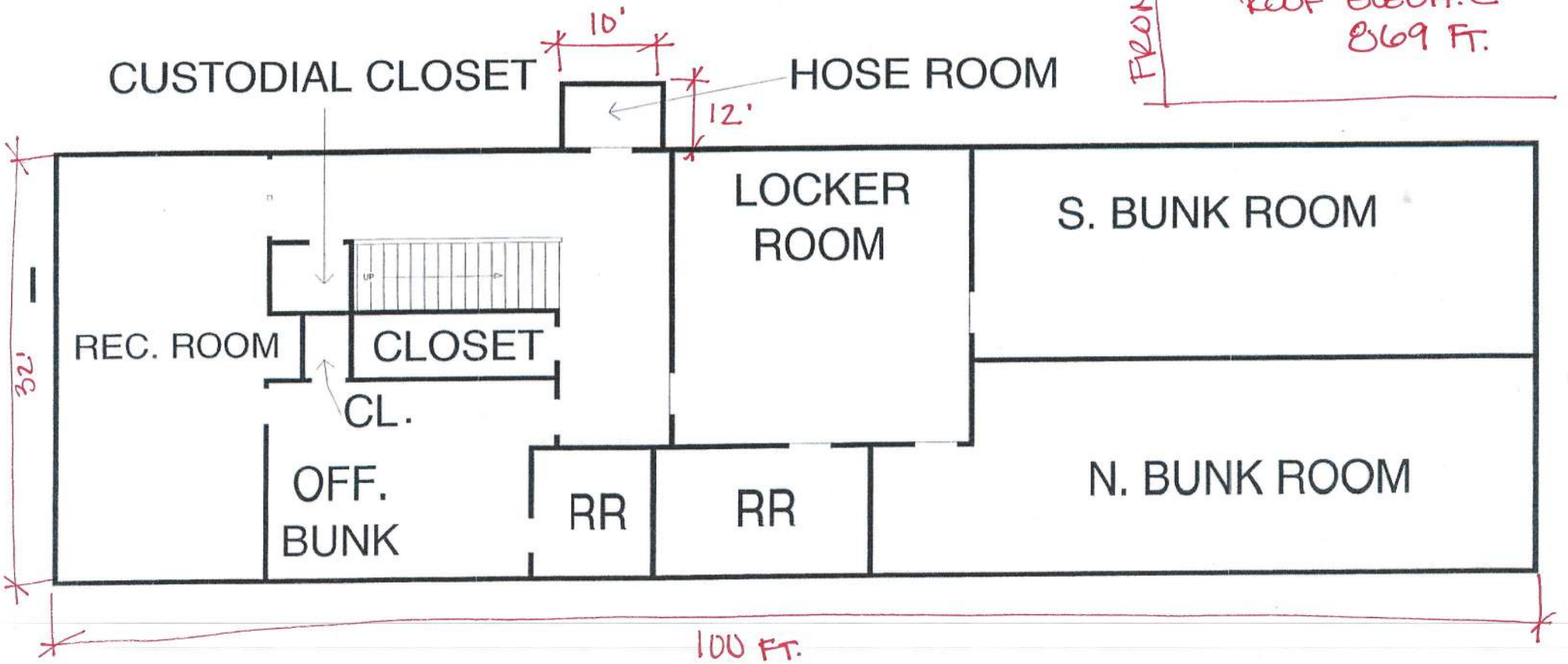
FIRE STATION No.2
BASEMENT



FIRE STATION No.2
1st FLOOR



FIRE STATION No.2
2nd FLOOR



FROM GOOGLE EARTH.

GROUND ELE: 840 FT.

FIRST FLOOR ROOF: ELEV @ : 855 FT.

LARGE GARAGE ELEV @ 856 FT.

T.O. HOSE ROOM @ 875 FT.

SECOND FLOOR ROOF ELEVA. @ 869 FT.