

## **Appendix C – Storm Drain System Calculations**

## Worksheet for 12-Inch Pipe Capacity

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.012	
Channel Slope	0.00500	ft/ft
Normal Depth	0.94	ft
Diameter	1.00	ft

### Results

Discharge	2.94	ft <sup>3</sup> /s
Flow Area	0.77	ft <sup>2</sup>
Wetted Perimeter	2.65	ft
Hydraulic Radius	0.29	ft
Top Width	0.47	ft
Critical Depth	0.73	ft
Percent Full	94.0	%
Critical Slope	0.00731	ft/ft
Velocity	3.83	ft/s
Velocity Head	0.23	ft
Specific Energy	1.17	ft
Froude Number	0.53	
Maximum Discharge	2.94	ft <sup>3</sup> /s
Discharge Full	2.73	ft <sup>3</sup> /s
Slope Full	0.00579	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	94.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.94	ft
Critical Depth	0.73	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00731	ft/ft

## Worksheet for 15-Inch Pipe Capacity

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.012	
Channel Slope	0.00500	ft/ft
Normal Depth	1.18	ft
Diameter	1.25	ft

### Results

Discharge	5.32	ft <sup>3</sup> /s
Flow Area	1.20	ft <sup>2</sup>
Wetted Perimeter	3.33	ft
Hydraulic Radius	0.36	ft
Top Width	0.57	ft
Critical Depth	0.94	ft
Percent Full	94.4	%
Critical Slope	0.00700	ft/ft
Velocity	4.43	ft/s
Velocity Head	0.31	ft
Specific Energy	1.49	ft
Froude Number	0.54	
Maximum Discharge	5.32	ft <sup>3</sup> /s
Discharge Full	4.95	ft <sup>3</sup> /s
Slope Full	0.00578	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	94.40	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.18	ft
Critical Depth	0.94	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00700	ft/ft

## Worksheet for 18-Inch Pipe Capacity

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.012	
Channel Slope	0.00500	ft/ft
Normal Depth	1.41	ft
Diameter	1.50	ft

### Results

Discharge	8.66	ft <sup>3</sup> /s
Flow Area	1.72	ft <sup>2</sup>
Wetted Perimeter	3.97	ft
Hydraulic Radius	0.43	ft
Top Width	0.71	ft
Critical Depth	1.14	ft
Percent Full	94.0	%
Critical Slope	0.00676	ft/ft
Velocity	5.02	ft/s
Velocity Head	0.39	ft
Specific Energy	1.80	ft
Froude Number	0.57	
Maximum Discharge	8.66	ft <sup>3</sup> /s
Discharge Full	8.05	ft <sup>3</sup> /s
Slope Full	0.00579	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	94.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.41	ft
Critical Depth	1.14	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00676	ft/ft

## Worksheet for 24-Inch Pipe Capacity

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.012	
Channel Slope	0.00500	ft/ft
Normal Depth	1.88	ft
Diameter	2.00	ft

### Results

Discharge	18.64	ft <sup>3</sup> /s
Flow Area	3.06	ft <sup>2</sup>
Wetted Perimeter	5.29	ft
Hydraulic Radius	0.58	ft
Top Width	0.95	ft
Critical Depth	1.55	ft
Percent Full	94.0	%
Critical Slope	0.00643	ft/ft
Velocity	6.08	ft/s
Velocity Head	0.57	ft
Specific Energy	2.45	ft
Froude Number	0.60	
Maximum Discharge	18.64	ft <sup>3</sup> /s
Discharge Full	17.33	ft <sup>3</sup> /s
Slope Full	0.00579	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	94.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.88	ft
Critical Depth	1.55	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00643	ft/ft

**Date:** 12/13/2021 **Prepared by:** MWO  
**Project No.:** 4104.004  
**Subject:** Detention System Sizing & Orifice Calc  
**Project Title:** The Altair Apartment Complex

**1.0 Detention System Sizing Equation**

Calculation per Truckee Meadows Regional Drainage Manual, Chapter 1300, Section 1303.1.2 - Rational Formula Method, April 30, 2009

$$V = 60(t_c * (Q_{in} - Q_{out}))$$

Where, V = Volume in ft<sup>3</sup>;  
t<sub>c</sub> = Time of concentration in minutes;  
Q<sub>in/out</sub> = Peak flow rate in cfs.

Q <sub>10</sub> Existing	3.9	cfs
Q <sub>10</sub> Proposed	9.7	cfs
Tc Proposed	5	min
<b>V</b>	<b>1740</b>	<b>cf</b>

**2.0 Pipe Orifice Equation**

Calculation per FHWA HEC 22 - Urban Drainage Design Manual, Chapter 8 - Detention and Retention Facility, September 2009. (Publication No. FHWA-NHI-10-009)

$$Q = CA (2gh)^{1/2}$$

where, Q = discharge in cfs;  
A = cross-sectional area of conduit in ft<sup>2</sup>;  
g = gravitational constant (32.2 ft/sec<sup>2</sup>);  
h = head, in ft, above centerline of orifice opening;  
C = orifice coefficient (0.65).

<b>Basin Orifice @ 10-Yr</b>		<b>Design Storm Allowable Flow Out</b>
C	0.65	
d (pipe diameter)	7 in	
A	0.267 ft <sup>2</sup>	
g	32.2 ft/sec <sup>2</sup>	
h	2.3 ft	
Q/orifice=	2.11 cfs	<b>2.4 cfs</b>
Number of Orifices	1	
<b>Total Q</b>	<b>2.11 cfs</b>	

**PRELIMINARY SANITARY SEWER REPORT****FOR****THE ALTAIR  
CARSON CITY, NEVADA***Prepared for:***Kingsbarn Realty Capital  
1645 Village Center Circle, Suite 200  
Las Vegas, NV 89134****December 14, 2021***Prepared by:***Wood Rodgers, Inc.  
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12/14/21  
Megan Overton, P.E.  
Associate



**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

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### **APPENDIX A**

VICINITY MAP

PRELIMINARY SEWER LAYOUT

### **APPENDIX B**

SEWER TRIBUTARY MAP (PROVIDED BY CARSON CITY)

SEWER TRIBUTARY LAND USE & CONTRIBUTION EXHIBIT (WILLIAM ST, WASHINGTON ST, WALSH ST)

SEWER TRIBUTARY LAND USE & CONTRIBUTION EXHIBIT (12-INCH PUBLIC MAIN)

SEWER FLOW SUMMARY CALCULATION SPREADSHEETS

FLOWMASTER OUTPUT:

- 8-INCH SEWER MAIN HALF FULL CAPACITY @ MINIMUM SLOPE
- 10-INCH SEWER MAIN HALF FULL CAPACITY @ MINIMUM SLOPE
- 12-INCH SEWER MAIN HALF FULL CAPACITY @ MINIMUM SLOPE



## INTRODUCTION

This report shall serve as the Preliminary Sewer Study for development of the proposed Altair project in Carson City, Nevada. The purpose of this report is to address the sewerage issues that result from development of the proposed project site in accordance with the *Carson City Development Standards* and sound design and engineering practices. This report describes the proposed sewer improvements, quantifies the estimated sanitary sewer flows to be generated from the project, and evaluates the downstream capacity of the existing public sewer network.

## PROJECT AREA AND DESCRIPTION

The proposed project site (APN's 002-161-06 and 002-161-07) is approximately 4.9± acres in size and is located within a portion of Section 17 in T15N, R20E, MDB&M, in Carson City. It is bounded by E. William Street to the north, N. Stewart Street to the east, E. Washington Street to the south, and N. Plaza Street to the west. An existing Jack in the Box restaurant is located outside the northeast corner of the project site. (Reference the Vicinity Map in the appendix of this report.)

The Altair project is a multi-family apartment complex consisting of 5 three-story apartment buildings totaling approximately 89,000 square feet, amenities, landscaping, associated utilities, and surface parking in support of 207 residential units.

The project will likely be constructed in one phase, initiated by site-wide clearing, grubbing, demolition, and mass grading, followed by civil infrastructure and building construction. Once completed, the site will be accessed from Stewart Street near the middle of the block.

## EXISTING CONDITIONS

The parcel is currently a mix of developed and undeveloped land with both private and public utilities crossing throughout the property. The north end and southwest corner are developed with buildings, parking lots, and minimal landscape area. The remainder of the site is vacant.

Three existing public sewer mains are located within the vicinity of the project. An existing 8-inch PVC public sanitary sewer main is north of the site running west to east in William Street, an existing 8-inch AC public sanitary sewer main is south of the site running west to east in Washington Street, and an existing 12-inch PVC public sanitary sewer main extends through the site from west to east in alignment with Sophia Street. Existing slopes in the two 8-inch mains are not known, so they are conservatively estimated at the minimum allowable slope of 0.4%. The 12-inch public main crossing the property has a surveyed slope of 0.4% and the next downstream section has a surveyed slope of 1.3%.



## OFFSITE TRIBUTARY AREAS

An investigation was conducted to determine existing flow contributions to each of the three public sewer mains both upstream of the project site and downstream to the nearest interceptor line in order to check for available capacity. Carson City provided flow tributary maps. Then Wood Rodgers evaluated the properties located within the mapped boundaries, estimated peak flows, and summarized the available capacity in each line. FlowMaster was used to calculate pipe capacities for each of the three pipe sizes encountered downstream. Pipe capacities are conservatively based on half-full flow, minimum allowable pipe slopes, and a roughness coefficient of 0.014. Appendix B includes the maps and calculation sheets. The table below summarizes the findings.

Tributary Line	Upstream Peak Flow (gpd)	Downstream Peak Flow (gpd)	Total Peak Flow (gpd)	Min Pipe Slope	Pipe Capacity at Min Slope (gpd)	Available Capacity (gpd)
8" William St.	181,950	0	181,950	0.4%	229,298	47,348
8" Washington St. (Part 1 of 2)	28,600	0	28,600	0.4%	229,298	200,698
10" Walsh St. (Part 2 of 2)	28,600	235,150	263,750	0.25%	328,706	64,956
12" Project Site	267,450	0	267,450	0.19%	465,989	198,539

## PROPOSED DEVELOPMENT FLOW ANALYSIS

The proposed preliminary peak daily flow from the project site was calculated using estimated sewage contributions for multi-family projects. An average peak flow of 700 gal/day/unit was assumed. The resulting peak flow from the project site is summarized in the table below.

Source	# of Units	Unit Flow Rate	Peak Flow (gpd)
Building A	52	700 gal/day/unit	36,400
Building B	14	700 gal/day/unit	9,800
Building C	57	700 gal/day/unit	39,900
Building D	62	700 gal/day/unit	43,400
Building E	22	700 gal/day/unit	15,400
<b>Total</b>	<b>207</b>		<b>144,900</b>

The total peak flow estimated to be generated by the site is 144,900 gpd. Based on available estimated capacity in the existing lines and the proposed flow from the project site, the existing 12" public main is the only line that can accept flow from the entire project site. The William Street main and Washington Street main can accept flows from no more than one or two buildings each.



This report estimates the proposed sewerage contribution from the project in relation to Carson City's minimum sewer system requirements. There will not be any non-domestic waste introduced into the sanitary sewer system with regard to this project.

## PROPOSED SEWER DESIGN

Development of the project site includes installation of new sewer main and relocation of the existing 12-inch public main. Relocation of the existing 12-inch public main will include new manholes along an alignment that jogs around the south end of Building A and connects to the existing line in the Jack in the Box parking lot. Three of the five proposed buildings (Buildings A, B, and E) will connect directly to the 12-inch main with minimum 4-inch diameter sewer services. Building C will connect to the 12-inch public main by way of a new private on-site 8-inch main starting at Building C and extending north through drive aisles to the 12-inch public main.

Building D's finish floor elevation is expected to be too low in elevation in order to utilize the 12-inch public sewer main. Therefore, it is proposed that Building D will connect to the 8-inch public sewer main in Washington Street. (Reference the Preliminary Sewer Layout in Appendix A of this report.)

The proposed sanitary sewer system was preliminarily designed to meet the requirements outlined in the *Carson City Development Standards*. Specifically, these improvements will satisfy the minimum size of 8-inch mains and 4-inch laterals as well as minimum slopes based on pipe size. The entire proposed sanitary sewer system will be constructed with PVC pipe and an easement will be granted over the relocated 12-inch public sewer main.

## OFFSITE SEWER IMPROVEMENTS

The existing 12-inch public sewer main that crosses the project site is too shallow for connection of the proposed development. However, the existing 12-inch public sewer main directly downstream of the project site is significantly steeper at about 1.3%. Therefore, it is proposed that development of the project site will include lowering the existing downstream sewer main from the Jack in the Box parking lot to the next downstream manhole on the east side of Stewart Street, which is approximately 225 linear feet. Lowering the existing pipe to meet the minimum slope allowed by code (0.19%) will result in the sewer main depth increasing by approximately 2 feet across the project site.

Redesign of the offsite sewer main preserves *Carson City Development Standards*, allows 4 of the 5 proposed buildings to gravity sewer to the main, and alleviates the need for an on-site lift station or reconstruction of public sewer main further downstream to upsize mains for additional capacity.



## CONCLUSION

The existing public sewer system, to which the proposed private development will connect, will sufficiently serve the proposed project after reconstruction of the 12-inch main. The flow contribution from the project site to the existing mains is calculated to be within the available capacity of the downstream system and the proposed on-site private system as well as the proposed public system reconstruction meets Carson City's design standards. This report is preliminary in nature and a final technical sewer study will be completed to support final design.

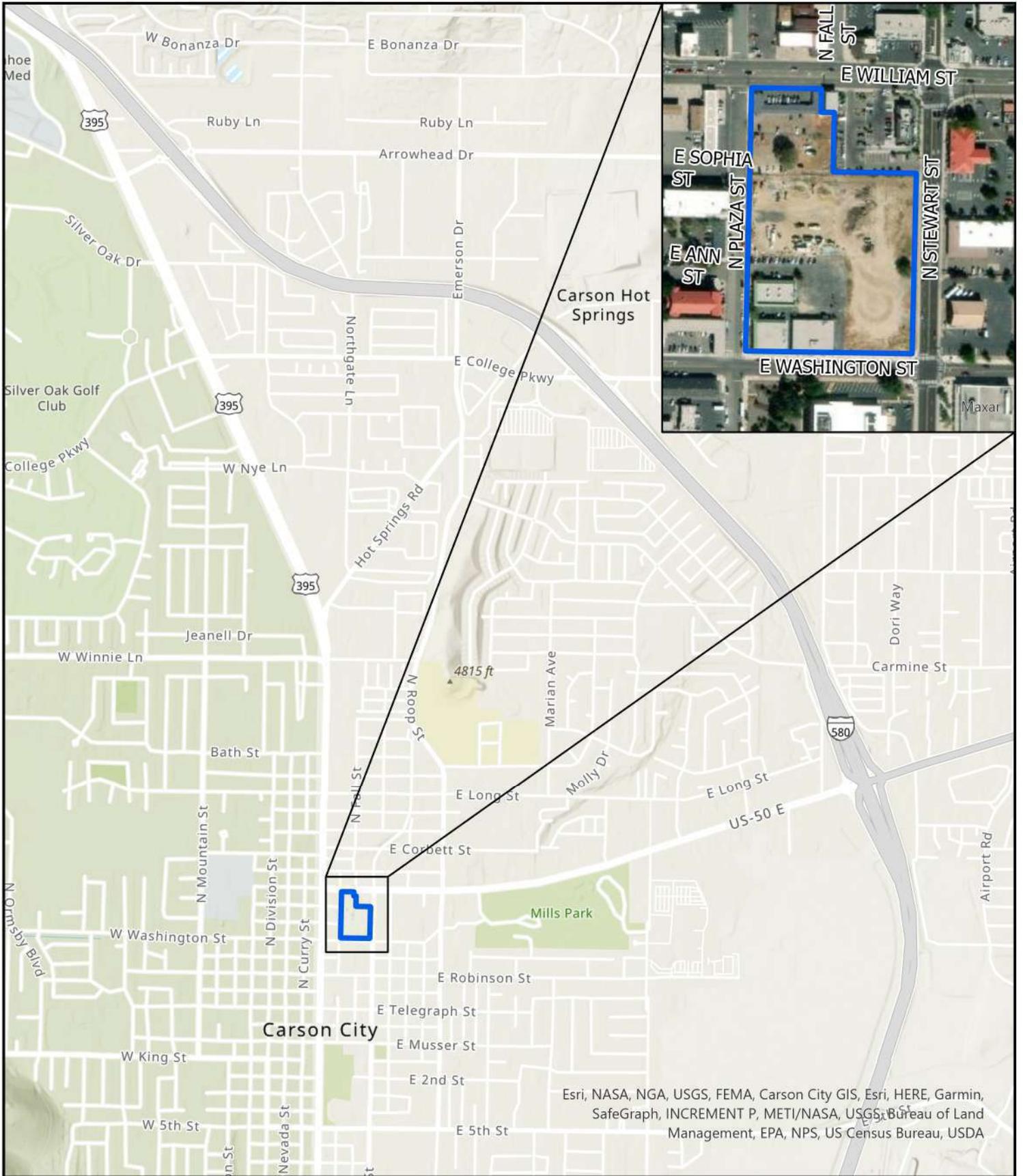
## REFERENCES

Bentley Systems, Incorporated, Flowmaster V8i (Select Series 1), Copyright 2009.

*Carson City Municipal Code, Title 18 Appendix – Carson City Development Standards*, November 30, 2021.

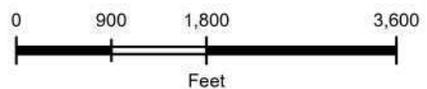


## APPENDIX A



Esri, NASA, NGA, USGS, FEMA, Carson City GIS, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

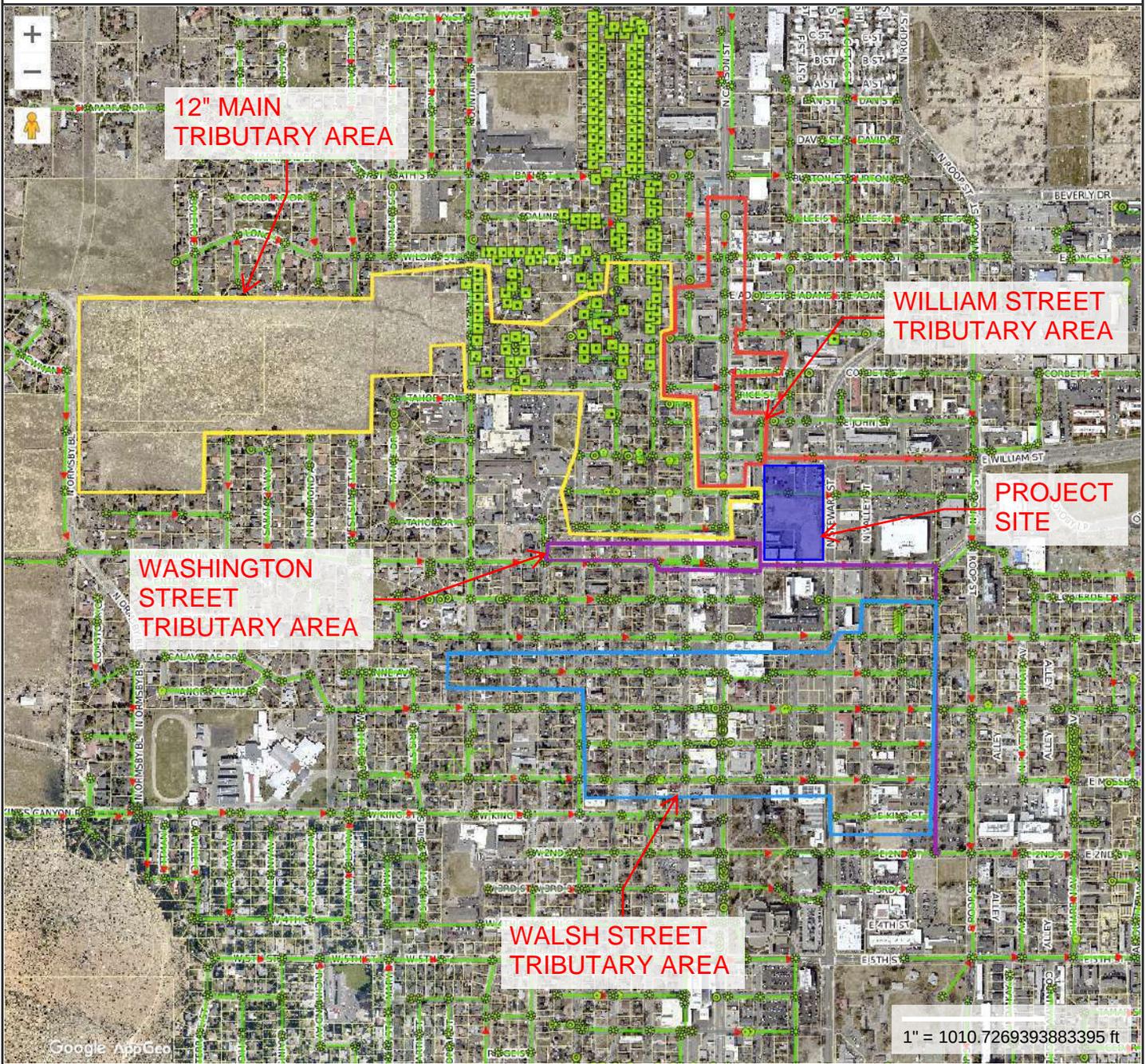
**VICINITY MAP**  
**THE ALTAIR**  
**CARSON CITY, NV**  
**DECEMBER 2021**





## **APPENDIX B**

### Sewer Markup



**Property Information**

**Property ID** 00817225  
**Location** 2239 POOLE WAY  
**Owner** MONTES SEVERO  
**Acres** 0.29



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

Carson City , NV makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 11/17/2018  
Data updated 11/17/2018

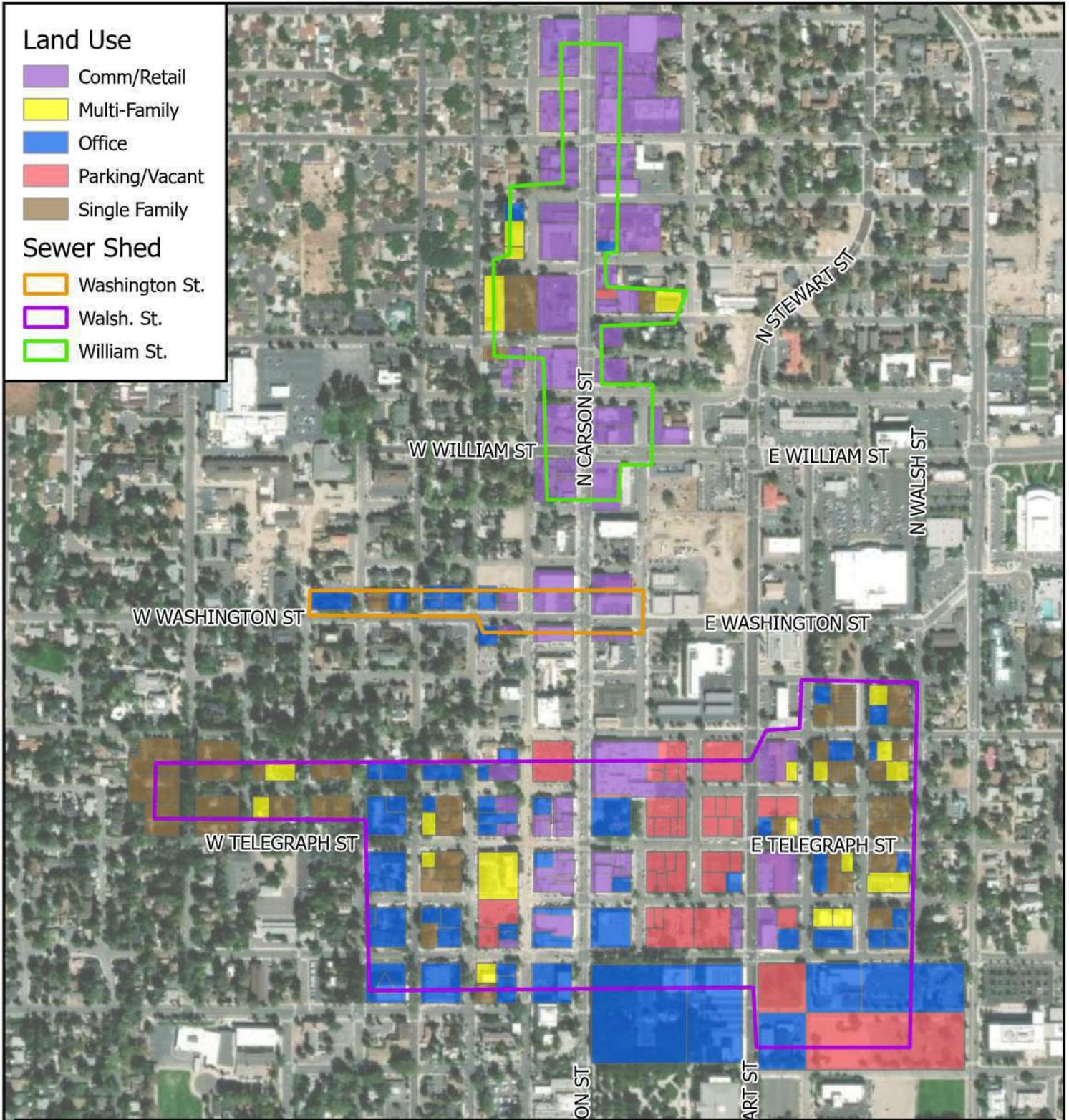
Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

### Land Use

- Comm/Retail
- Multi-Family
- Office
- Parking/Vacant
- Single Family

### Sewer Shed

- Washington St.
- Walsh. St.
- William St.



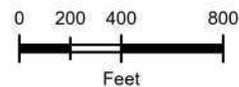
Sewer Shed	Multi-Family Units	Single Family Units	Total Commercial Acres	Total Office Acres	Parking/Park Acres
Walsh. St.	72	59	5.8	21.6	11.9
Washington St.	0	2	2.2	1.5	0
William St.	44	5	14.5	0.3	0.1

## SEWER TRIBUTARY LAND USE AND CONTRIBUTION EXHIBIT

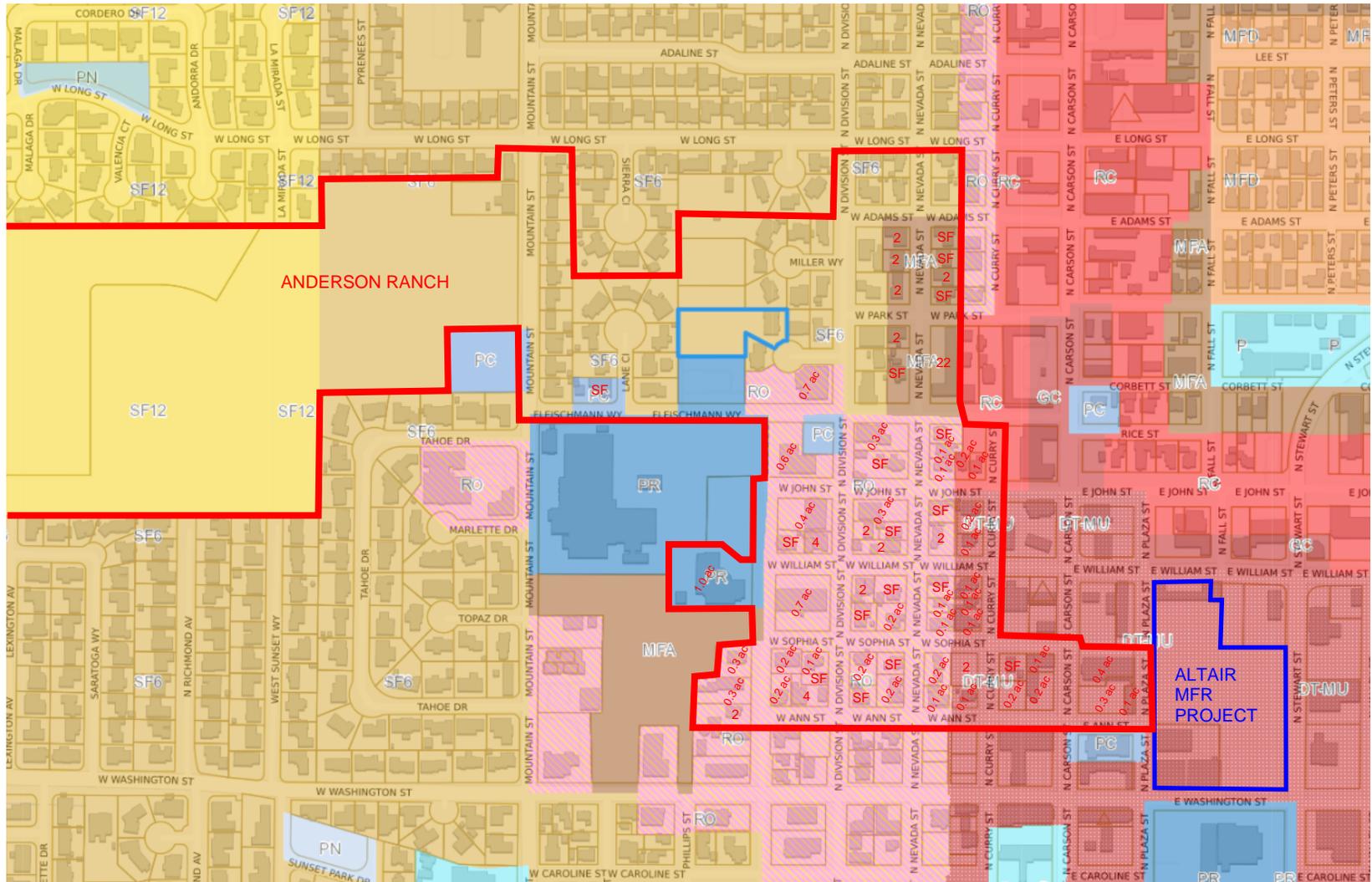
THE ALTAIR SEWER ANALYSIS

CARSON CITY, NV

DECEMBER 2021



# THE ALTAIR - 12 INCH PUBLIC SEWER MAIN SEWER TRIBUTARY LAND USE & CONTRIBUTION EXHIBIT ON CARSON CITY ZONING MAP



**LEGEND:**

SF = Single Family Residential in Non-SFR zoning

## ac = Parcel Size in Acres (ex. "0.1 ac")

# = Quantity of Apartment Units on Multifamily Parcel (ex. "2")

# The Altair MFR Project

Off Site Sewer Flow Estimate: 8-Inch Main in William Street

12/14/2021

Identity or Use/Zoning	Quantity	Unit	Unit Flow Rate (gpd/unit)	Flow (gpd)	Reference
Multi Family Apartments	44	Units	700	30,800	Carson City Zoning Map & Sewer Shed Map
Single Family Residential	5	Lots	1050	5,250	Carson City Zoning Map & Sewer Shed Map
Commercial	14.5	Acres	10000	145,000	Carson City Zoning Map & Sewer Shed Map
Office	0.3	Acres	3,000	900	Carson City Zoning Map & Sewer Shed Map
Parkings & Parking Lots	0.1	Acres	0	0	Carson City Zoning Map & Sewer Shed Map
<b>Total</b>				<b>181,950</b>	

\*Single Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 3 = 1,050 gpd/lot

\*Multi Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 2 = 700 gpd/unit

\*Commercial Peak Flow Rate = 10,000 gallons per day per acre

\*Office Peak Flow Rate = 3,000 gallons per day per acre

8" sewer capacity @ minimum slope (0.4%)	229,298	gpd
Available capacity	47,348	gpd

# The Altair MFR Project

Off Site Sewer Flow Estimate: 8-Inch Main in Washington Street

12/14/2021

Identity or Use/Zoning	Quantity	Unit	Unit Flow Rate (gpd/unit)	Flow (gpd)	Reference
Multi Family Apartments	0	Units	700	0	Carson City Zoning Map & Sewer Shed Map
Single Family Residential	2	Lots	1050	2,100	Carson City Zoning Map & Sewer Shed Map
Commercial	2.2	Acres	10000	22,000	Carson City Zoning Map & Sewer Shed Map
Office	1.5	Acres	3,000	4,500	Carson City Zoning Map & Sewer Shed Map
Parkings & Parking Lots	0	Acres	0	0	Carson City Zoning Map & Sewer Shed Map
<b>Total</b>				<b>28,600</b>	

\*Single Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 3 = 1,050 gpd/lot

\*Multi Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 2 = 700 gpd/unit

\*Commercial Peak Flow Rate = 10,000 gallons per day per acre

\*Office Peak Flow Rate = 3,000 gallons per day per acre

8" sewer capacity @ minimum slope (0.4%)	229,298	gpd
Available capacity	200,698	gpd

## The Altair MFR Project

Off Site Sewer Flow Estimate: 10-Inch Main in Walsh Street (downstream of Washington St)

12/14/2021

Identity or Use/Zoning	Quantity	Unit	Unit Flow Rate (gpd/unit)	Flow (gpd)	Reference
Multi Family Apartments	72	Units	700	50,400	Carson City Zoning Map & Sewer Shed Map
Single Family Residential	61	Lots	1050	64,050	Carson City Zoning Map & Sewer Shed Map
Commercial	8	Acres	10000	80,000	Carson City Zoning Map & Sewer Shed Map
Office	23.1	Acres	3,000	69,300	Carson City Zoning Map & Sewer Shed Map
Parkings & Parking Lots	11.9	Acres	0	0	Carson City Zoning Map & Sewer Shed Map
<b>Total</b>				<b>263,750</b>	

\*Single Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 3 = 1,050 gpd/lot

\*Multi Family Residential Peak Flow Rate (8" to 10" Mains) = 350 gallons per day \* peaking factor of 2 = 700 gpd/unit

\*Commercial Peak Flow Rate = 10,000 gallons per day per acre

\*Office Peak Flow Rate = 3,000 gallons per day per acre

10" sewer capacity @ minimum slope (0.25%)	328,706	gpd
Available capacity	64,956	gpd

## The Altair MFR Project

Off Site Sewer Flow Estimate: 12-Inch Main through project site

12/14/2021

Identity or Use/Zoning	Quantity	Unit	Unit Flow Rate (gpd/unit)	Flow (gpd)	Reference
Anderson Ranch	1	EA	-	152,250	Final Sewer Report
Single Family Residential	56	Lots	750	42,000	Carson City Zoning Map & Sewer Shed Map
Muliti Family Apartments	42	Units	500	21,000	Carson City Zoning Map & Sewer Shed Map
Public Community - parking lot	1	Lots	-	0	Carson City Zoning Map & Sewer Shed Map
Public Regional - parking lot	1	Lot	-	0	Carson City Zoning Map & Sewer Shed Map
Public Regional - Hospital	1	Acre	10,000	10,000	Carson City Zoning Map & Sewer Shed Map
Residential Office	5.4	Acres	3,000	16,200	Carson City Zoning Map & Sewer Shed Map
Downtown Mixed Use - Commercial	2.3	Acres	10,000	23,000	Carson City Zoning Map & Sewer Shed Map
Retail Commercial	0.3	Acres	10,000	3,000	Carson City Zoning Map & Sewer Shed Map
<b>Total</b>				<b>267,450</b>	

\*Single Family Residential Peak Flow Rate (12" Interceptor Mains) = 250 gallons per day \* peaking factor of 3 = 750 gpd/residence

\*Multi Family Residential Peak Flow Rate (12" Interceptor Mains) = 250 gallons per day \* peaking factor of 2 = 500 gpd/unit

\*Commercial Peak Flow Rate = 10,000 gallons per day per acre

\*Office Peak Flow Rate = 3,000 gallons per day per acre

12" sewer capacity @ minimum slope (0.19%)	465,989	gpd
Available capacity	198,539	gpd

## Worksheet for 8-Inch Sewer: Capacity @ Minimum Slope

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00400	ft/ft
Normal Depth	0.33	ft
Diameter	0.67	ft

### Results

Discharge	229297.73	gal/day
Flow Area	0.17	ft <sup>2</sup>
Wetted Perimeter	1.05	ft
Hydraulic Radius	0.17	ft
Top Width	0.67	ft
Critical Depth	0.28	ft
Percent Full	50.0	%
Critical Slope	0.00767	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	0.40	ft
Froude Number	0.70	
Maximum Discharge	0.76	ft <sup>3</sup> /s
Discharge Full	0.71	ft <sup>3</sup> /s
Slope Full	0.00100	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	49.99	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.33	ft
Critical Depth	0.28	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00767	ft/ft

## Worksheet for 10-Inch Sewer: Capacity @ Minimum Slope

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00250	ft/ft
Normal Depth	0.42	ft
Diameter	0.83	ft

### Results

Discharge	328706.45	gal/day
Flow Area	0.27	ft <sup>2</sup>
Wetted Perimeter	1.31	ft
Hydraulic Radius	0.21	ft
Top Width	0.83	ft
Critical Depth	0.31	ft
Percent Full	50.0	%
Critical Slope	0.00703	ft/ft
Velocity	1.86	ft/s
Velocity Head	0.05	ft
Specific Energy	0.47	ft
Froude Number	0.57	
Maximum Discharge	1.09	ft <sup>3</sup> /s
Discharge Full	1.02	ft <sup>3</sup> /s
Slope Full	0.00063	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.42	ft
Critical Depth	0.31	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00703	ft/ft

## Worksheet for 12-Inch Sewer: Capacity @ Minimum Slope

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00190	ft/ft
Normal Depth	0.50	ft
Diameter	1.00	ft

### Results

Discharge	465989.31	gal/day
Flow Area	0.39	ft <sup>2</sup>
Wetted Perimeter	1.57	ft
Hydraulic Radius	0.25	ft
Top Width	1.00	ft
Critical Depth	0.35	ft
Percent Full	50.0	%
Critical Slope	0.00656	ft/ft
Velocity	1.84	ft/s
Velocity Head	0.05	ft
Specific Energy	0.55	ft
Froude Number	0.52	
Maximum Discharge	1.55	ft <sup>3</sup> /s
Discharge Full	1.44	ft <sup>3</sup> /s
Slope Full	0.00048	ft/ft
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.50	ft
Critical Depth	0.35	ft
Channel Slope	0.00190	ft/ft
Critical Slope	0.00656	ft/ft



December 14, 2021

Carson City  
201 N. Carson Street  
Carson City, NV 89701

RE: Water Letter in support of the Altair development Special Use Permit

The purpose of this letter is to address anticipated water system impacts resulting from the proposed project. The proposed project site (APN's 002-161-06 and 002-161-07) is approximately 4.9± acres in size and is located within a portion of Section 17 in T15N, R20E, MDB&M, in Carson City. It is bounded by E. William Street to the north, N. Stewart Street to the east, E. Washington Street to the south, and N. Plaza Street to the west. An existing Jack in the Box restaurant is located outside the northeast corner of the project site. A Vicinity Map is included for reference.

The Altair project is a multi-family apartment complex consisting of 5 three-story apartment buildings totaling approximately 89,000 square feet, amenities, landscaping, associated utilities, and surface parking in support of 207 residential units. It is anticipated that the project will be constructed in a single phase. The attached Preliminary Water Plan shows the proposed site development.

Several existing public water mains are located in the vicinity of the project site. There is an existing 4-inch CI main in William Street to the north, an existing 8-inch PVC main in Stewart Street to the east, an existing 24-inch PVC main in Washington Street to the south, an existing 6-inch PVC main extending through the property in alignment with Ann Street, and a 6-inch PVC main in Plaza Street to the west. Of all the existing public water mains surrounding the property, the 6-inch main in Plaza Street is the only main that does not extend the entire length of the project. Therefore, in accordance with Carson City's Development Code, extension of the 6-inch main in Plaza Street north to William Street and south to Washington Street is proposed with this development.

Development of the proposed Altair project will require relocation of the 6-inch public water main currently crossing through the property. The proposed rerouting of the water main follows paved drive aisles within the project site from Plaza Street to Stewart Street. The main will be located within an easement that will be granted at the time of development. The new alignment will provide multiple benefits including easy access to the water main for services and a fire hydrant within the project's core as well as avoiding conflicts with existing utilities in Washington Street, which is already congested with a 54-inch storm drain main, an 8-inch sewer main, a 24-inch water main, and miscellaneous underground electrical conduit.

All proposed services to the property, whether they are domestic, irrigation, or fire, will include backflow preventers and will be designed in accordance with Carson City's Development Code. All water main extensions and relocations will use C900 PVC pipe.

The Altair Development SUP Water Letter

December 14, 2021

Page 2 of 2

Although there are several existing fire hydrants surrounding the property, additional fire hydrants will be needed in order to meet fire hose pull reach requirements specified in the International Fire Code. The new fire hydrants will be designed in accordance with Carson City standards and easily accessible to the fire department.

In July of 2021, Carson City Public Works issued an Intent to Serve Letter for this project. The letter indicates that at the time of issuance, there was adequate capacity in the system to serve the proposed 207-unit apartment complex. (A copy of the intent to serve letter is attached for reference.) Therefore, it is not anticipated that the proposed development will create a negative impact to the existing public infrastructure and no offsite improvements, beyond what is already discussed in this letter, will be needed.

Please consider this letter in lieu of a Water System Report and feel free to contact me at 775-530-1650 or [moverton@woodrogers.com](mailto:moverton@woodrogers.com) with any questions you may have.

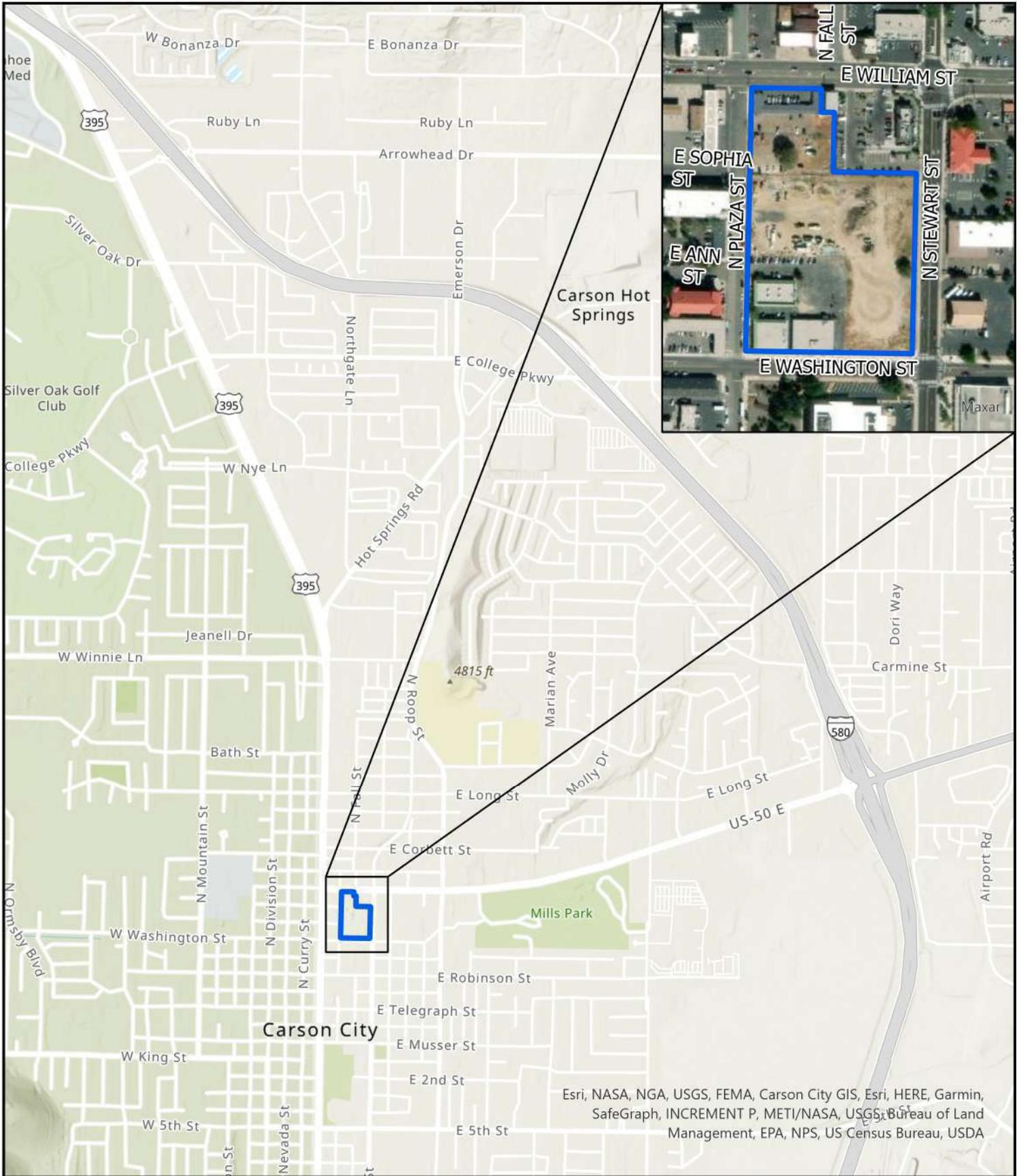
Sincerely,



Megan Overton, P.E.  
Associate

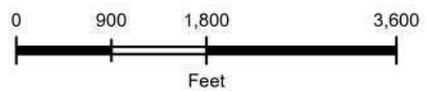
Enclosures:

Vicinity Map  
Preliminary Water Layout  
Intent to Serve Letter



Esri, NASA, NGA, USGS, FEMA, Carson City GIS, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

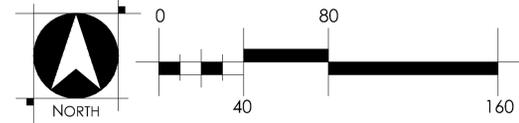
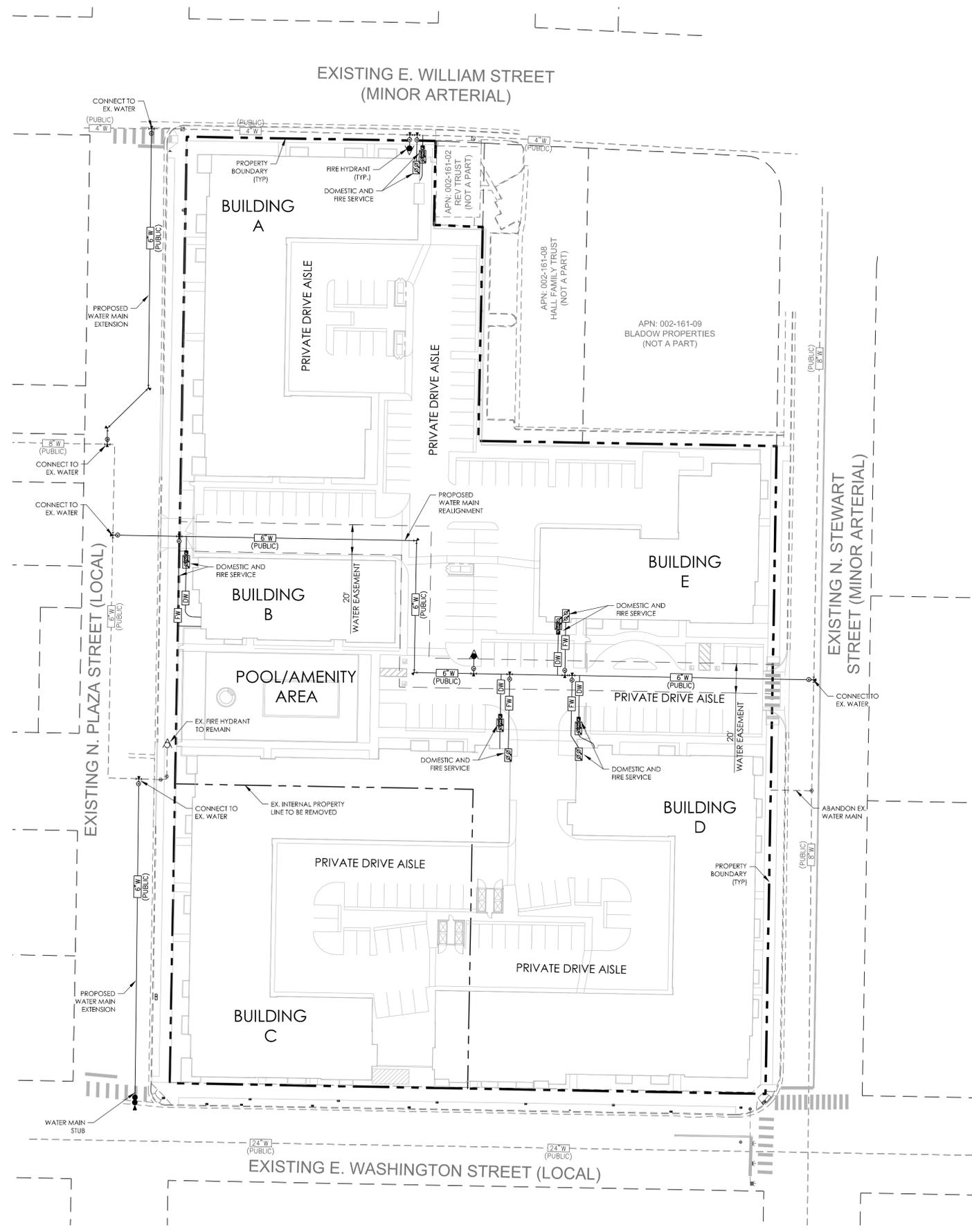
**VICINITY MAP**  
 THE ALTAIR  
 CARSON CITY, NV  
 DECEMBER 2021



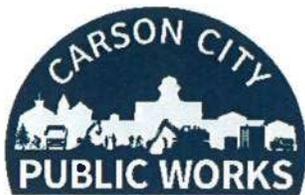
# PRELIMINARY WATER LAYOUT

# THE ALTAIR

CARSON CITY, NEVADA  
DECEMBER, 2021



**WOOD RODGERS**  
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME  
1361 Corporate Boulevard Tel 775.823.4068  
Reno, NV 89502 Fax 775.823.4066



**CARSON CITY NEVADA**  
**Consolidated Municipality and State Capital**  
**PUBLIC WORKS**

July 7, 2021

Mr. Anthony Hama  
 Kingsbarn Capital & Development  
 1645 Village Center Circle, Suite 200  
 Las Vegas, NV 89134

Subject: Intent To Serve Letter: William Street Apartments

Dear Mr. Anthony Hama:

This letter constitutes a tentative commitment to supply water and sewer service to the William Street Apartments based on the site plan provided on July 2, 2021. This commitment is dependent on the confirmation that the development can meet fire flow. A water main analysis and a sewer main analysis will be required, and improvements to City infrastructure may or may not be necessary based on these analyses. Also, any requirements provided during the Major Project Review will need to be adhered to. The total amount of acre-feet of water tentatively committed to this development shall be 64.6 acre feet per year. The maximum sewer capacity tentatively committed to the development shall be 26,910 gallons per day. The domestic water service pressure expected at the point of connection to the existing system will not be less than 40 psi.

Domestic Usage	207 Apartments	0.3 ac-ft/yr/apartment	62.1 ac-ft/yr
Irrigation Usage	0.63 ac. of grass	4 ac-ft/yr/ac	2.5 ac-ft/yr
Total water usage			64.6 ac-ft/yr
Sewer Usage	207 Apartment	130 gpd/apartment	26,910 gpd

As you are aware, Carson City has in place a growth management ordinance. The building construction, within this subdivision shall be subject to the City's Growth Management Ordinance, which has been designated to keep the growth within the water resources and sewage disposal capabilities of Carson City.

This Intent to Serve is based on the Owner meeting the infrastructure improvements required by the Major Project Review.



**CARSON CITY NEVADA**  
**Consolidated Municipality and State Capital**  
**PUBLIC WORKS**

This commitment of available resources shall not be valid or binding on Carson City if recordation of the final map is not performed within two (2) years of the date of the Major Project Review.

If I can answer any questions, please call me at 775-283-7079.

Sincerely,

A handwritten signature in blue ink, appearing to read "S. M. Pottéy".

Stephen Pottéy, PE  
Senior Project Manager, Carson City Development Engineering

c: Edmund Quaglieri, PE Water Utility Manager  
Andy Hummel, P.E. Wastewater Utility Manager  
Randall Rice, PE City Engineer  
Carson City GIS  
Anthony Hama Kingsbarn Capital & Development



**SHEET INDEX**

SHEET	DESCRIPTION
G1.0	COVER SHEET
G1.1	PROJECT INFORMATION - UNIT SUMMARY, PARKING
G1.2	CONCEPTUAL PERSPECTIVES
G1.3	CONCEPTUAL PERSPECTIVES
A1.0	SITE PLAN
A1.1	LOFT DIAGRAM
A2.0	BUILDING A PLAN
A2.1	BUILDING A PLAN
A2.2	BUILDING B PLAN
A2.3	BUILDING C PLAN
A2.4	BUILDING C PLAN
A2.5	BUILDING C PLAN
A2.6	BUILDING D PLAN
A2.7	BUILDING D PLAN
A2.8	BUILDING D PLAN
A2.9	BUILDING E PLAN
A3.0	BUILDING A ELEVATIONS
A3.1	BUILDING A ELEVATIONS
A3.2	BUILDING B ELEVATIONS
A3.3	BUILDING B ELEVATIONS
A3.4	BUILDING C ELEVATIONS
A3.5	BUILDING C ELEVATIONS
A3.6	BUILDING D ELEVATIONS
A3.7	BUILDING D ELEVATIONS
A3.8	BUILDING E ELEVATIONS
A3.9	BUILDING E ELEVATIONS
A3.10	CONCEPTUAL BUILDING SECTIONS
A4.0	CONCEPTUAL UNIT PLANS
A4.1	CONCEPTUAL UNIT PLANS
A4.2	CONCEPTUAL UNIT PLANS
C-1	CIVIL SITE PLAN
L.1	LANDSCAPE PLAN



**Project Team**

**APPLICANT / OWNER**  
KINGSBARN CAPITAL AND DEVELOPMENT  
1645 Village Center Circle, Suite 200  
Las Vegas, NV 89134  
702.454.9001  
Contact: Anthony Hama, Alisha Hooks  
ahama@kingsbarn.com, Ahooks@kingsbarn.com

**RESIDENTIAL ARCHITECT**  
ARCHITECTS ORANGE  
144 N. Orange Street  
Orange, CA 92866  
(714) 639-9860  
Contact: Michael Heinrich  
michaelh@aoarchitects.com

**LANDSCAPE ARCHITECT**  
LA STUDIO NEVADA, LLC  
1552 C Street  
Sparks, NV 89431  
(775) 323.2223  
Contact: Ryan Hansen  
ryan@lastudionevada.com

**CIVIL ENGINEER**  
WOOD ROGERS, INC.  
2190 East Pebble Road, Suite 200  
Las Vegas, NV 89123  
(702) 220.3680  
Contact: Megan Overton  
movertone@WoodRogers.com

**VICINITY MAP**



REVISION LOG		
NO.	DESCRIPTION	Date
1	SUBMITTAL 1	12.16.21
2		
3		
4		
5		

**THE ALTAIR**

KINGSBARN CAPITAL & DEVELOPMENT  
1645 Village Center Circle, Suite 200,  
Las Vegas, NV 89134 (702) 454-9001



**KINGSBARN**  
CAPITAL & DEVELOPMENT

CARSON CITY, NEVADA

**L.A. Studio Nevada**  
the landscape architecture studio  
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440  
www.lastudionevada.com

**WOOD ROGERS**

**AO ARCHITECTS**  
144 NORTH ORANGE ST., ORANGE, CA 92866  
(714) 639-9860

**G1.0**



DATE: 12-16-2021  
JOB NO.: 2021-125

THE ALTAIR, CARSON CITY, NEVADA																																					
3-Story Stair Enclosure Project																																					
BLDG	STUDIO		1 BEDROOM														2 BEDROOMS										TOTAL										
	S1	S2-L	A0	A1	A1-L	A1A	A1A-L	A2	A2-L	A3	A3-L	A4	A4-L	A4C	A4C-L	A5	A6	A7	B1	B1-L	B2	B2-L	B2A	B2A-L	B3	B3-L		B4	B4-L	B5	B5-L	B5A	B5A-L	B6	B6-L	B7	B7-L
A		2	4	10	5	2	1	2	2	3	3					2	1		3	2	1	1			1	1			2	1	2	1					52
B				3	2			4	4																	1											14
C	1	1	2	4	3	2	1	2	2	3	3	1	1	1	1	3		1	3	3	2	2	1	1	1	2	1	2	1	2	1	1	1	1			57
D	1	1	2	4	2	2	1	3	3	3	3	2	1	2	1	3		1	7	4	1	1	2	2	1	1		2	1	2	1	1	1	1		62	
E	1			2	1					1	1			1	1	3				1			1	1		2	1				1	1	1	1		22	
TOTAL	3	4	8	23	13	6	3	11	11	10	10	3	2	4	3	9	2	3	13	10	4	4	4	4	3	3	4	3	6	3	6	4	3	3	1	1	207
	7		121														79										207										
	1.4%	1.9%	3.9%	11.1%	6.3%	2.9%	1.4%	5.3%	5.3%	4.8%	4.8%	1.4%	1.0%	1.9%	1.0%	4.3%	1.0%	1.4%	6.3%	4.8%	1.9%	1.9%	1.9%	1.9%	1.4%	1.4%	1.9%	1.4%	2.9%	1.4%	2.9%	1.9%	1.4%	1.4%	0.5%	0.5%	100%
	3%		58%														38%										100%										

UNIT SUMMARY			
Unit	Unit SF	Qty.	SF TOT.*
S1	596	3	1,788
S2-L	836	4	3,344
A0	602	8	4,816
A1	753	23	17,319
A1-L	971	13	12,623
A1A	825	6	4,950
A1A-L	1056	3	3,168
A2	731	11	8,041
A2-L	952	11	10,472
A3	710	10	7,100
A3-L	921	10	9,210
A4	791	3	2,373
A4-L	1017	2	2,034
A4C	813	4	3,252
A4C-L	1,041	3	3,123
A5	636	9	5,724
A6	639	2	1,278
A7	783	3	2,349
B1	1,069	13	13,897
B1-L	1,333	10	13,330
B2	1,012	4	4,048
B2-L	1,260	4	5,040
B2A	1,012	4	4,048
B2A-L	1,260	4	5,040
B3	1,053	3	3,159
B3-L	1,301	3	3,903
B4	1,091	4	4,364
B4-L	1,374	3	4,122
B5	1,160	6	6,960
B5-L	1,449	3	4,347
B5A	1,266	6	7,596
B5A-L	1,570	4	6,280
B6	1,122	3	3,366
B6-L	1,431	3	4,293
B7	1,037	1	1,037
B7-L	1,248	1	1,248
<b>Avg.</b>	<b>962</b>	<b>207</b>	<b>199,042</b>

\* RESIDENTIAL UNIT NET AREA

BALCONY SUMMARY			
Unit	Deck SF	Qty.	SF TOT.**
S1	59	3	177
S2-L	51	4	204
A0	51	8	408
A1	52	23	1,196
A1-L	55	13	715
A1A	52	6	312
A1A-L	55	3	165
A2	59	11	649
A2-L	59	11	649
A3	43	10	430
A3-L	48	10	480
A4	55	3	165
A4-L	55	2	110
A4C	53	4	212
A4C-L	53	3	159
A5	58	9	522
A6	54	2	108
A7	50	3	150
B1	50	13	650
B1-L	50	10	500
B2	48	4	192
B2-L	48	4	192
B2A	48	4	192
B2A-L	48	4	192
B3	38	3	114
B3-L	38	3	114
B4	61	4	244
B4-L	61	3	183
B5	66	6	396
B5-L	66	3	198
B5A	66	6	396
B5A-L	66	4	264
B6	54	3	162
B6-L	54	3	162
B7	50	1	50
B7-L	46	1	46
<b>Avg.</b>	<b>53</b>	<b>207</b>	<b>11,058</b>

\*\* RESIDENTIAL BALCONY NET AREA

TOTAL BUILDINGS GSF						
BLDG	A	B	C	D	E	TOTAL
Level 1	19,915	7,358	25,292	25,246	11,330	89,141
Level 2	20,232	4,787	23,727	25,750	10,088	84,584
Level 3	18,687	7,124	23,981	23,936	10,599	84,327
Loft	5,858	1,819	5,605	5,602	1,784	20,668
<b>TOTAL</b>	<b>64,692</b>	<b>21,088</b>	<b>78,605</b>	<b>80,534</b>	<b>33,801</b>	<b>278,720</b>

**THE ALTAIR**  
 KINGSBARN CAPITAL & DEVELOPMENT  
 1645 Village Center Circle, Suite 200,  
 Las Vegas, NV 89134 (702) 454-9001



CARSON CITY, NEVADA



144 NORTH ORANGE ST., ORANGE, CA 92866  
 (714) 639-9860

PROJECT INFORMATION

DATE: 12-16-2021  
 JOB NO.: 2021-125

**AO ARCHITECTS**  
 Architecture. Design. Relationships.  
 (714) 639-9860

**G1.1**



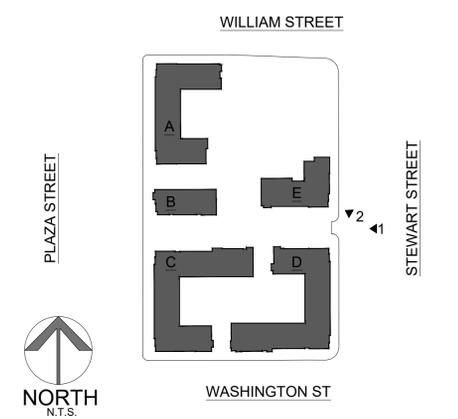


1 BUILDING D & E  
S STEWART ST.



2 BUILDING E - LEASING CORNER  
S STEWART ST.

KEY MAP



BUILDING PERSPECTIVE G1.2

THE ALTAIR

CARSON CITY, NEVADA

KINGSBARN CAPITAL & DEVELOPMENT  
1645 Village Center Circle, Suite 200,  
Las Vegas, NV 89134 (702) 454-9001



DATE: 12-16-2021  
JOB NO.: 2021-125  
AO ARCHITECTS  
144 NORTH ORANGE ST., ORANGE, CA 92866  
(714) 639-9860



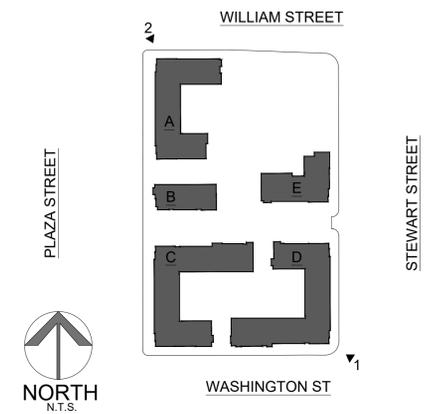


1 BUILDING D - SOUTH STEWART ST.



2 BUILDING A - NORTH CORNER E WILLIAM ST

KEY MAP



BUILDING PERSPECTIVE

G1.3

DATE: 12-16-2021  
JOB NO.: 2021-125

THE ALTAIR

KINGSBARN CAPITAL & DEVELOPMENT  
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Las Vegas, NV 89134 (702) 454-9001



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CARSON CITY, NEVADA



AO ARCHITECTS  
144 NORTH ORANGE ST., ORANGE, CA 92866  
(714) 639-9860



# SITE PLAN - 207 DU

**PROJECT DESCRIPTION:**  
 3-STORY WITH LOFTS, PRIVATELY FUNDED MARKET-RATE APARTMENTS (R-2 OCCUPANCY) WITH ATTACHED GARAGES (U OCCUPANCY), TYPE VA CONSTRUCTION WITH NFPA 13R AND 13 SPRINKLER SYSTEMS. THE MIXED OCCUPANCY SHALL BE SEPARATED (CBC SECTION 508.4).

**SITE AREA:** 4.98 AC  
**UNITS:** 207 DU  
**DENSITY:** 41.56 DU/AC

**APN:** 002-161-06  
 002-161-07

**PARKING REQUIRED:**  
 STUDIO 7 X 1.00 = 7  
 1 BR 121 X 1.00 = 121  
 2 BR 79 X 1.25 = 99  
 GUEST 207 X 0.125 = 26  
**TOTAL REQ'D.** 253 ST

**PARKING PROVIDED:**  
 GARAGE 109  
 OPEN STALLS 144  
**FINAL TOTAL PROV'D.** 253 ST

## LEGEND

	BLDG FOOTPRINT	89,391 SF (40%)		ADA RESIDENTIAL PEDESTRIAN P
	LANDSCAPE	23,866 SF (12%)		ADA EXISTING PEDESTRIAN PAT
	HARDSCAPE	104,006 SF (48%)		EXISTING BIKE PATH
	SITE AREA:	217,263 SF (100%)		20' FIRE ACCESS TRUCK
	CLUB/ FITNESS/ YOGA	5,600 SF		EXISTING STREET FIRE HYDRANT
	LEASING	2,750 SF		
	250 SF PUBLIC MINI-PARK			

## NOTES:

- STANDARD PARKING SIZE 9'X18'-6"; COMPACT PARKING SIZE 8'X16'-0"
- STANDARD GARAGE SIZE 10'X20'
- 25 AND 26 FEET AISLES
- NO WELDING, FLAMMABLE FINISH PAINTING/DRIPPING, OR HANDLING OF FLAMMABLE MATERIALS WILL TAKE PLACE ON PROPERTY.
- NO HAZARDOUS MATERIALS TO BE USED IN PROCESS.
- PROJECT SIGNAGE ON BUILDING FACADE T.B.D.
- NO LARGE STORAGE FACILITIES ARE LOCATED ON SITE.
- COMMUNITY AMENITIES INCLUDE OUTDOOR HISTORICAL ARCH FEATURE AND 250 SF OF PUBLIC OPEN SPACE PER DT-MU E.2.b.1.b and E.2.b.1.d.

## VICINITY MAP



1"=40'-0" 0 20' 40' 80' 120'

SITE PLAN

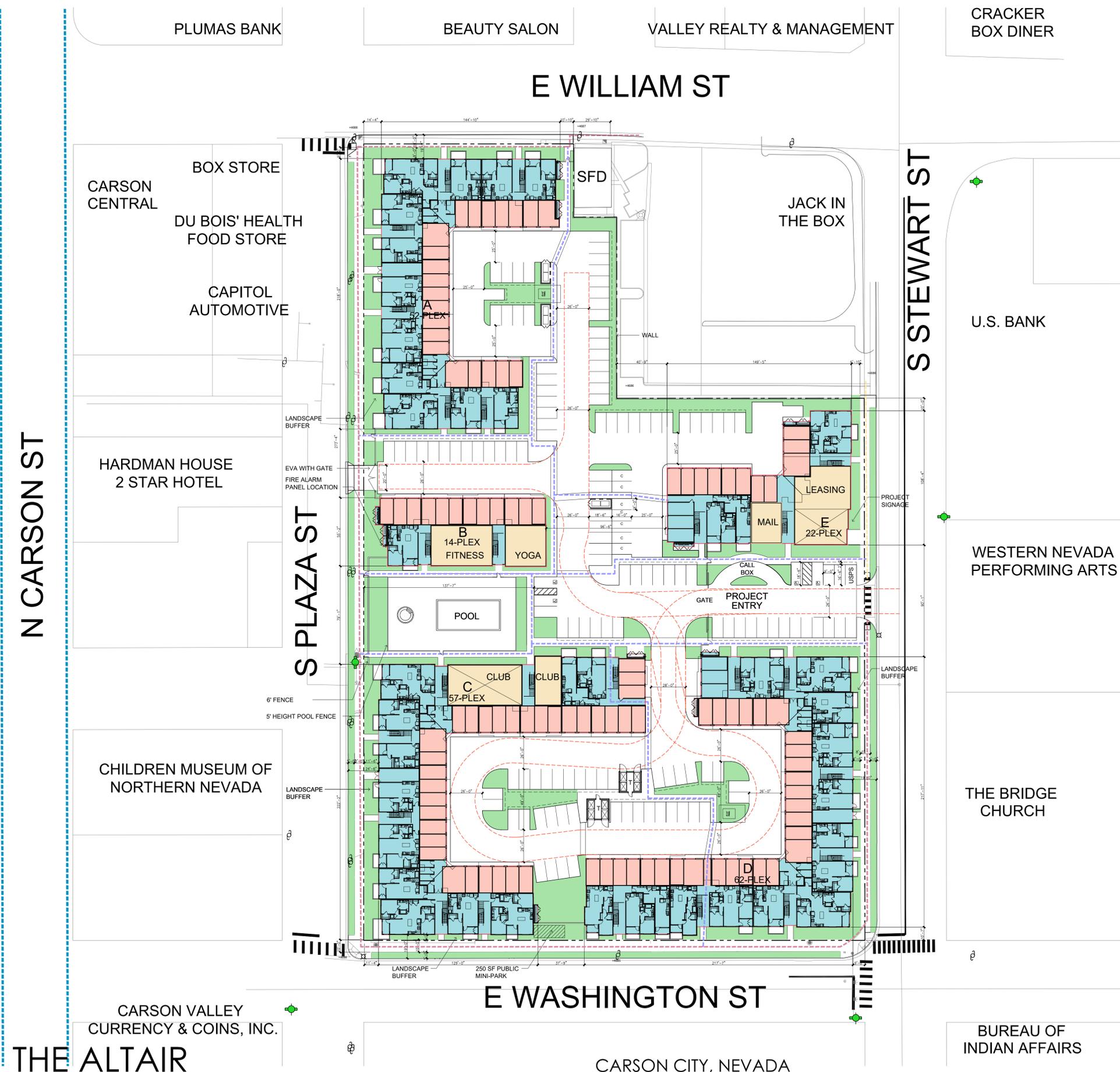
A1.0



NORTH

DATE: 12-16-2021  
 JOB NO.: 2021-125

**AO ARCHITECTS**  
 144 NORTH ORANGE ST., ORANGE, CA 92866  
 (714) 639-9860



THE ALTAIR

**KINGSBARN** CAPITAL & DEVELOPMENT  
 1645 Village Center Circle, Suite 200,  
 Las Vegas, NV 89134 (702) 454-9001



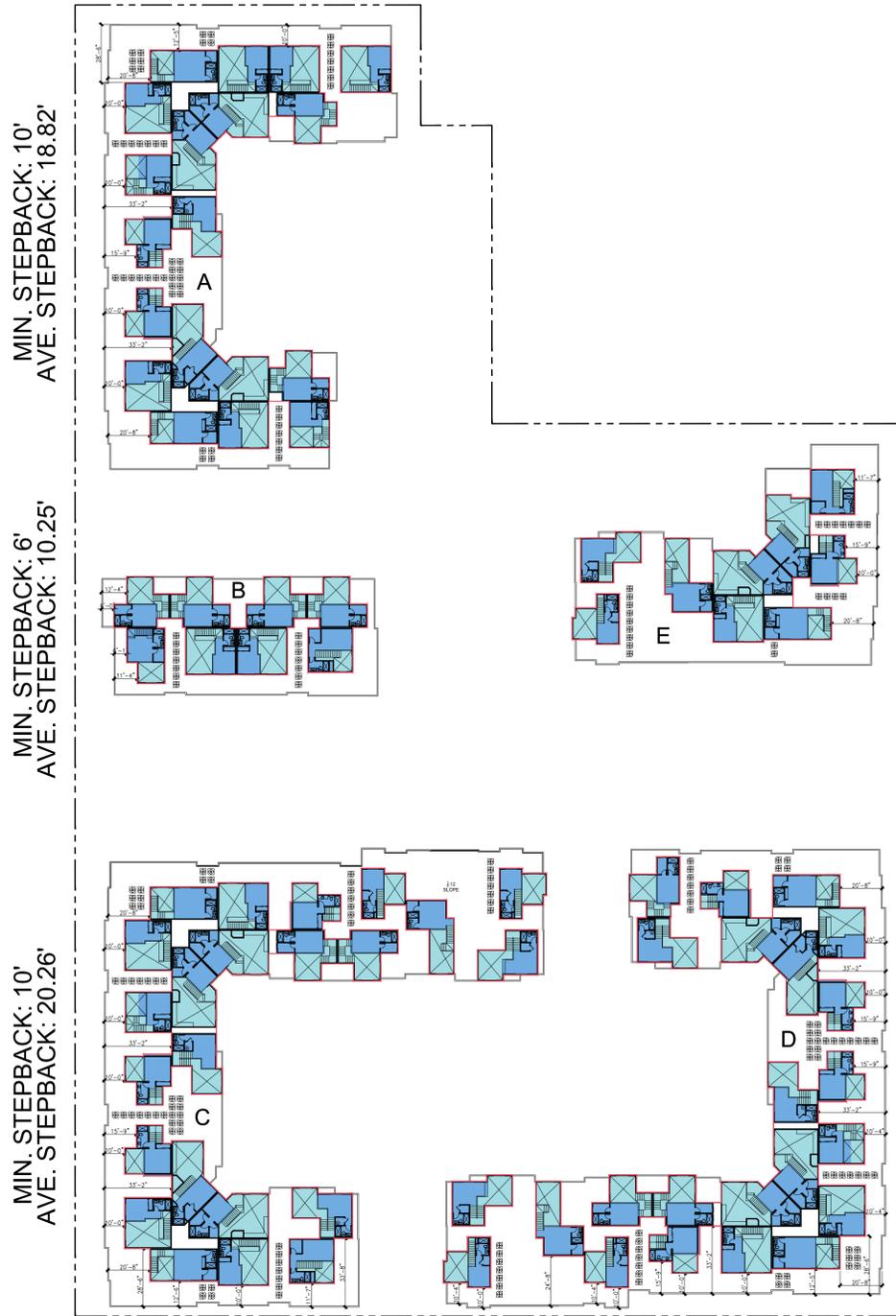
CARSON CITY, NEVADA



144 NORTH ORANGE ST., ORANGE, CA 92866  
 (714) 639-9860

# E WILLIAM ST

MIN. STEPBACK: 10'  
AVE. STEPBACK: 14.68'



MIN. STEPBACK: 10'  
AVE. STEPBACK: 18.82'

MIN. STEPBACK: 6'  
AVE. STEPBACK: 10.25'

MIN. STEPBACK: 10'  
AVE. STEPBACK: 20.26'

MIN. STEPBACK: 10'  
AVE. STEPBACK: 17.13'

MIN. STEPBACK: 10'  
AVE. STEPBACK: 19.31'

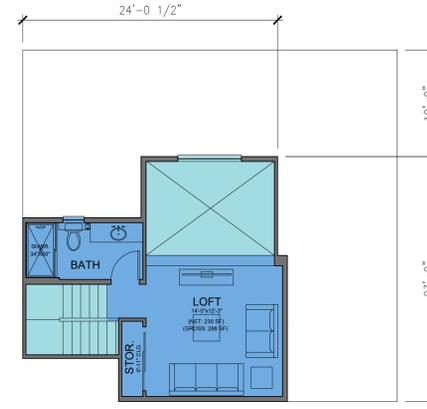
MIN. STEPBACK: 10'  
AVE. STEPBACK: 23.5'

MIN. STEPBACK: 10'  
AVE. STEPBACK: 20.26'

S PLAZA ST

S STEWART ST

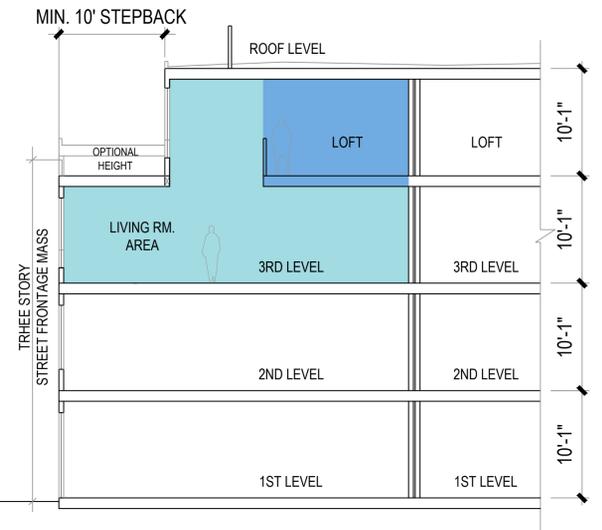
# E WASHINGTON ST



TYPICAL LOFT UNIT PLAN

## LEGEND

- INDICATES STAIRS/ VOLUME CEILING AT LOFTS
- INDICATES AREA OF RESIDENTIAL



### LOFT DIAGRAM DESCRIPTION:

	MINIMUM STEPBACK			AVERAGE STEPBACK		
<b>WILLIAM STREET</b>	BLDG A 10' MIN.			BLDG A 14.68' AVE.		
<b>WASHINGTON STREET</b>	BLDG C 10' MIN	BLDG D 10' MIN		BLDG C 17.13' AVE	BLDG D 19.31' AVE	
<b>PLAZA STREET</b>	BLDG A 10' MIN	BLDG B 6' MIN	BLDG C 10' MIN	BLDG A 18.82' AVE	BLDG B 10.25' AVE	BLDG C 20.26' AVE
<b>STEWART STREET</b>	BLDG D 10' MIN	BLDG E 10' MIN		BLDG D 20.26' AVE	BLDG E 23.5' AVE	



CONCEPTUAL LOFT PLAN DIAGRAM

A1.1

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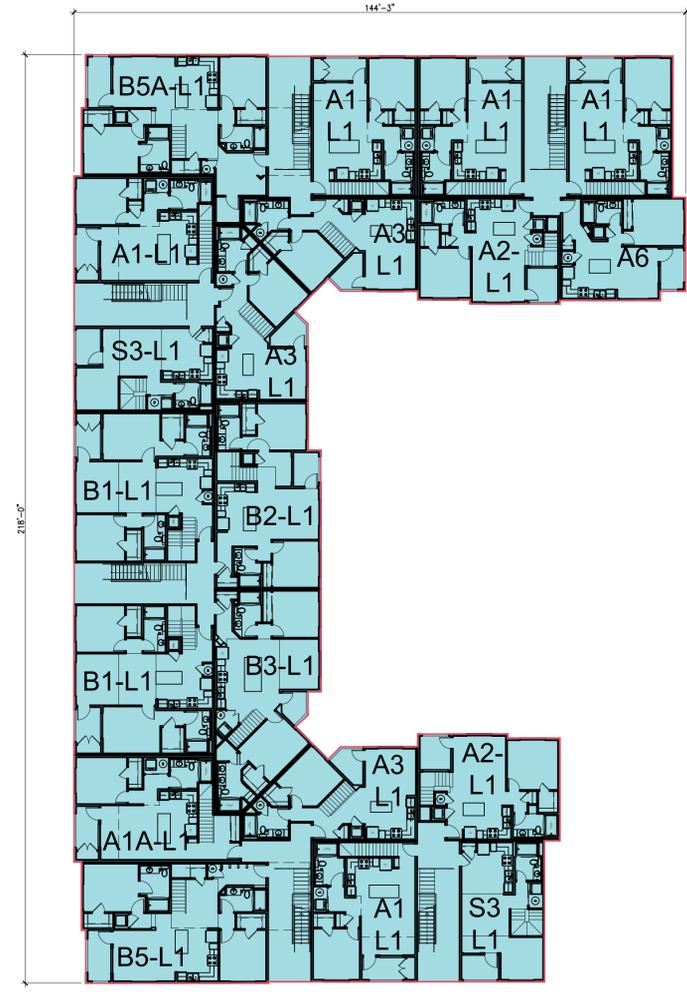
AO ARCHITECTS  
CONCEPTUAL LOFT PLAN DIAGRAM  
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(714) 639-9860

DATE: 12-16-2021  
JOB NO.: 2021-125

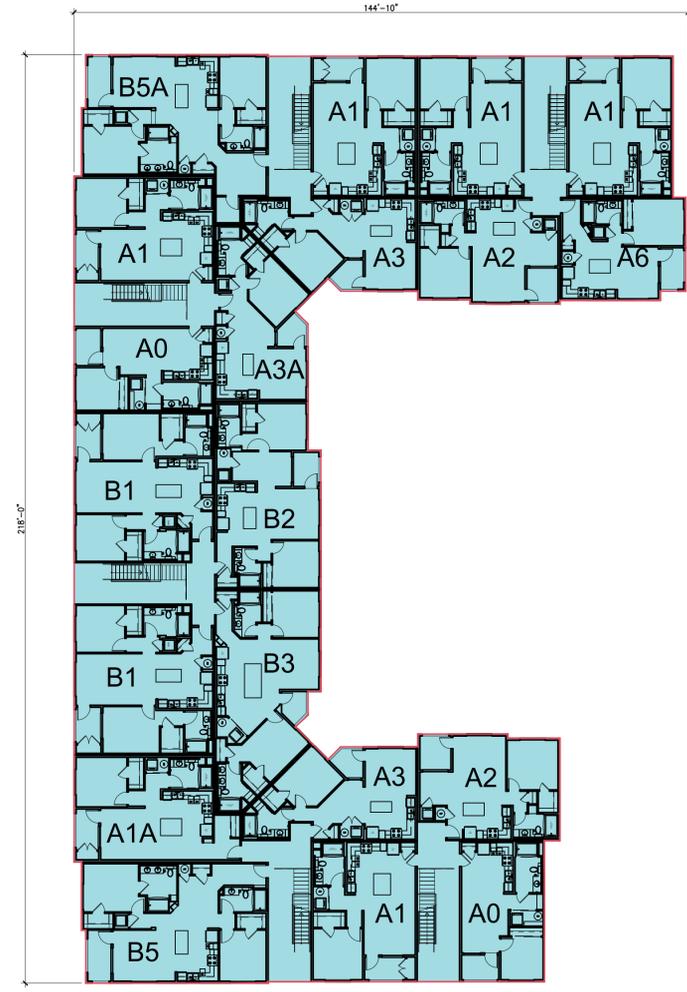


LEGEND

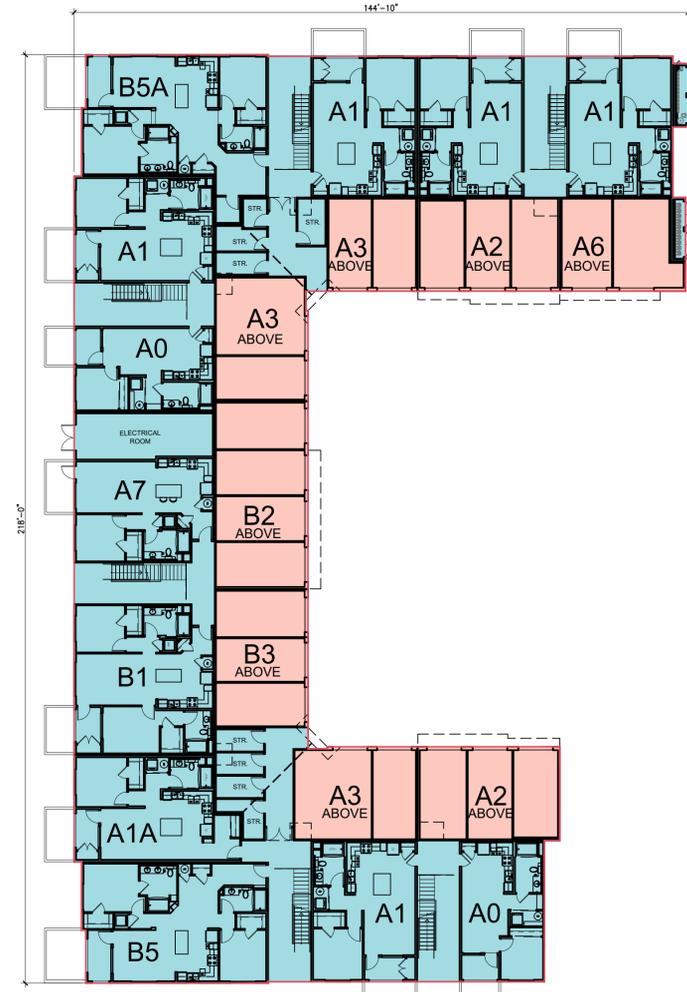
- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



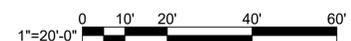
BLDG A - LEVEL 3



BLDG A - LEVEL 2



BLDG A - LEVEL 1



BUILDING A PLANS

A2.0

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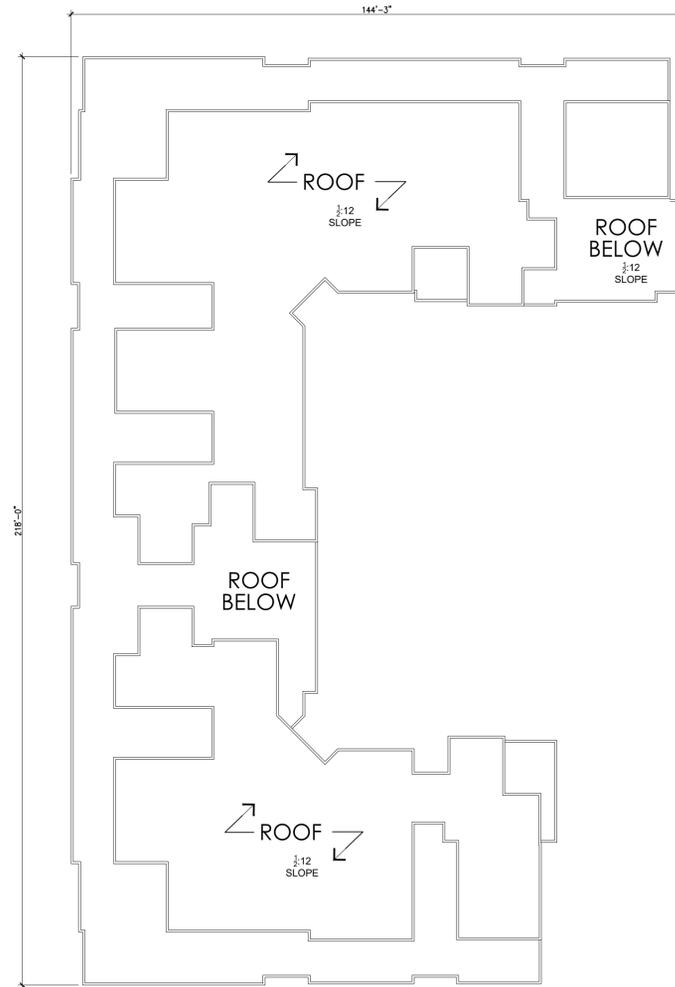
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(714) 639-9860

AO ARCHITECTS  
Architecture. Design. Relationships.

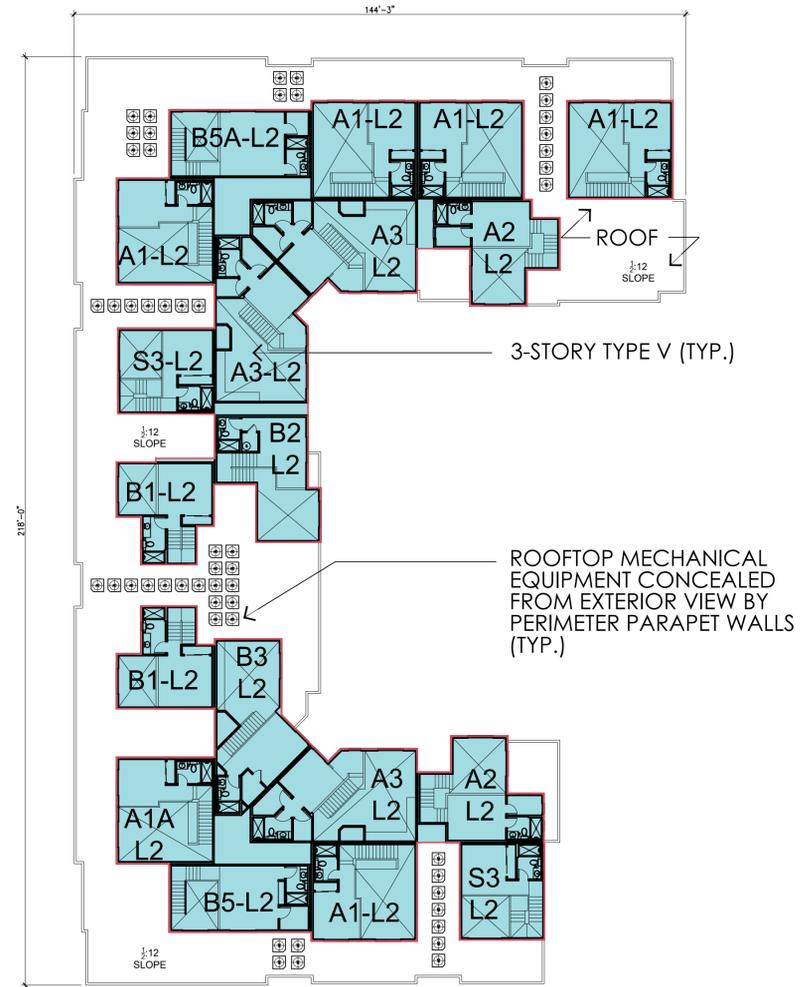


LEGEND

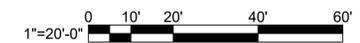
- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



BLDG A - ROOF LEVEL



BLDG A - LOFT LEVEL



BUILDING A PLANS

A2.1

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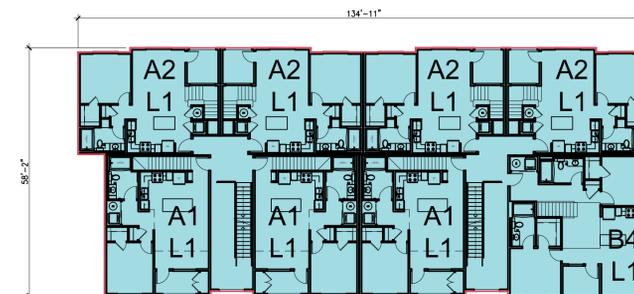
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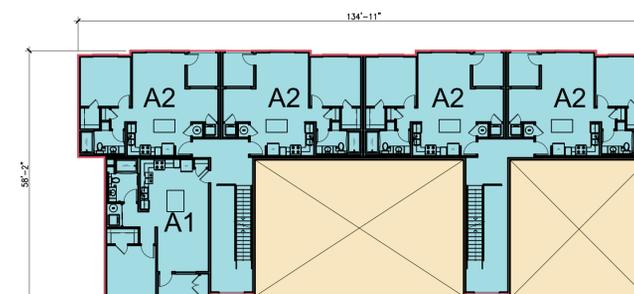


LEGEND

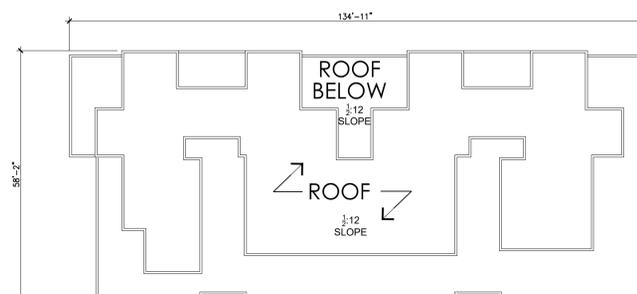
-  INDICATES AREA OF RESIDENTIAL
-  INDICATES AREA OF AMENITIES
-  INDICATES AREA OF PARKING



BLDG B - LEVEL 3



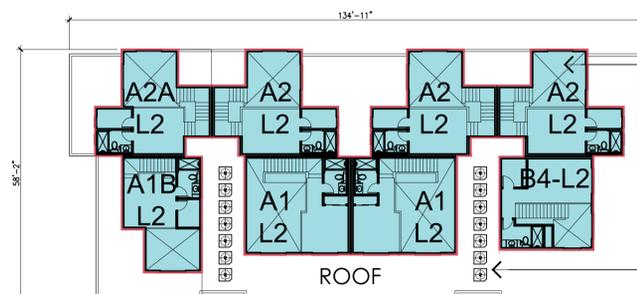
BLDG B - LEVEL 2



BLDG B - ROOF LEVEL



BLDG B - LEVEL 1



BLDG B - LOFT LEVEL

3-STORY TYPE V (TYP.)

ROOFTOP MECHANICAL EQUIPMENT CONCEALED FROM EXTERIOR VIEW BY PERIMETER PARAPET WALLS (TYP.)



BUILDING B PLANS

A2.2

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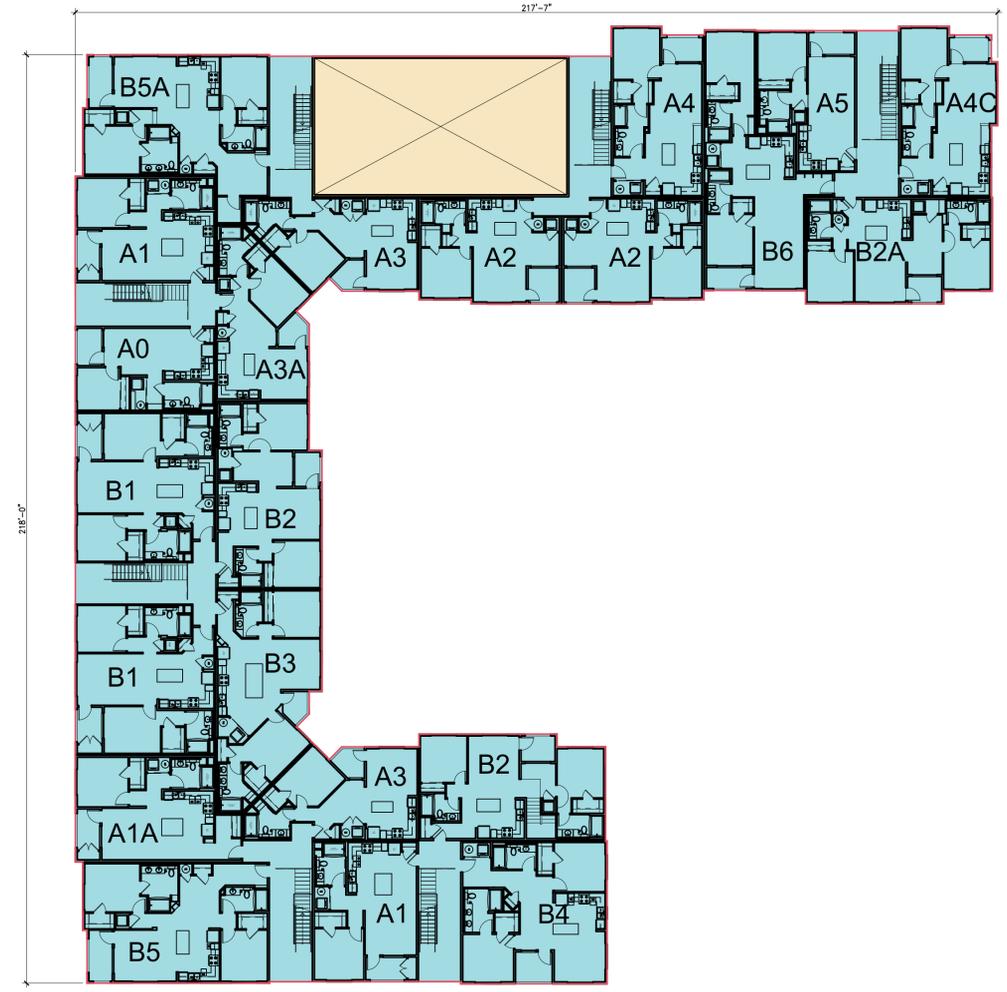


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LEGEND

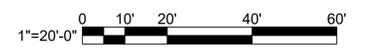
- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



BLDG C - LEVEL 2



BLDG C - LEVEL 1



BUILDING C PLANS

A2.3

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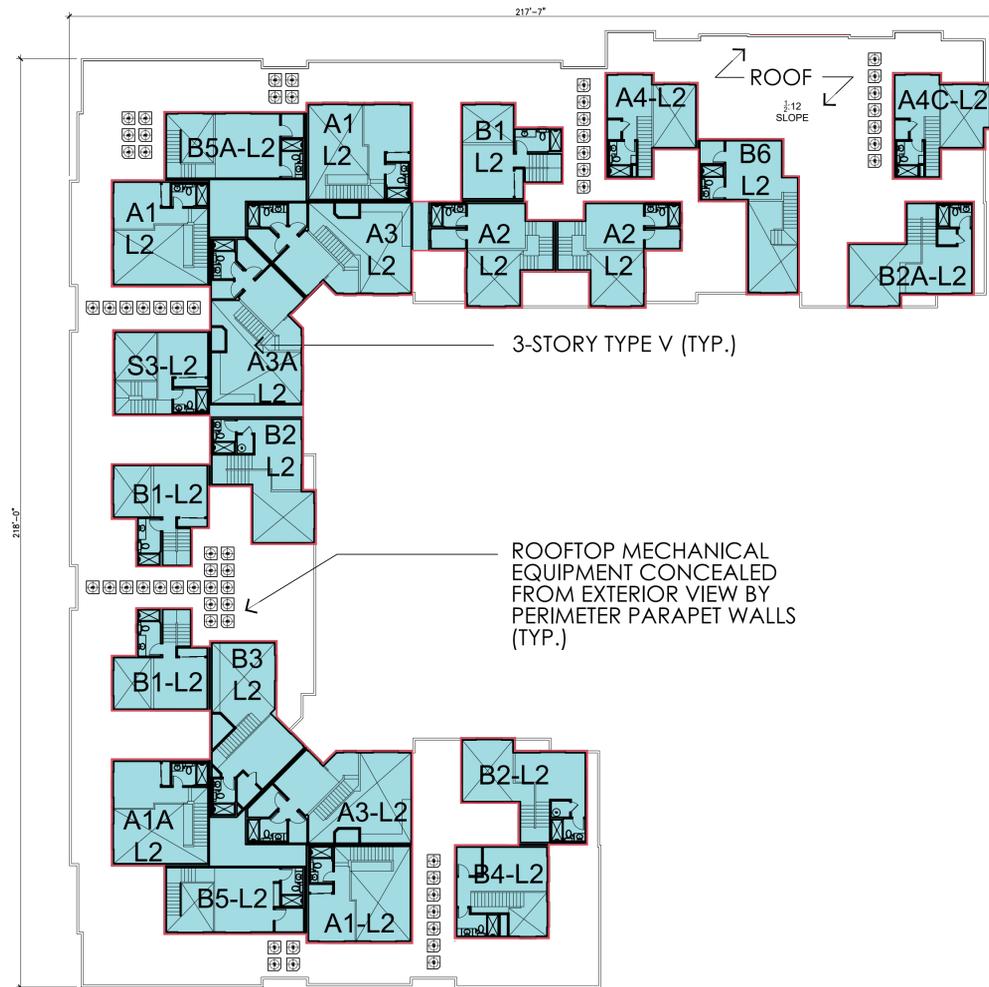


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(714) 639-9860

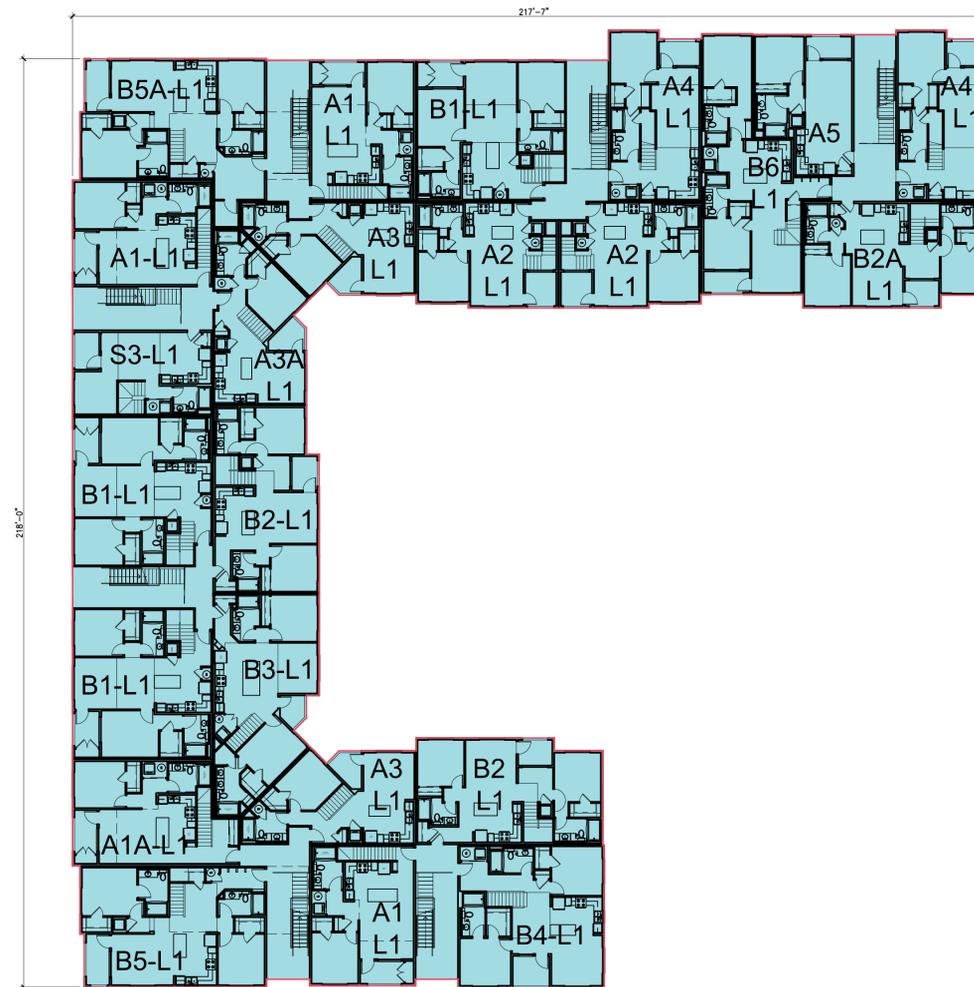


LEGEND

- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



BLDG C - LOFT LEVEL



BLDG C - LEVEL 3



BUILDING C PLANS

A2.4

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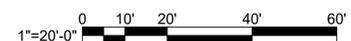


**LEGEND**

- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



**BLDG C - ROOF LEVEL**



**BUILDING C PLANS**

**A2.5**

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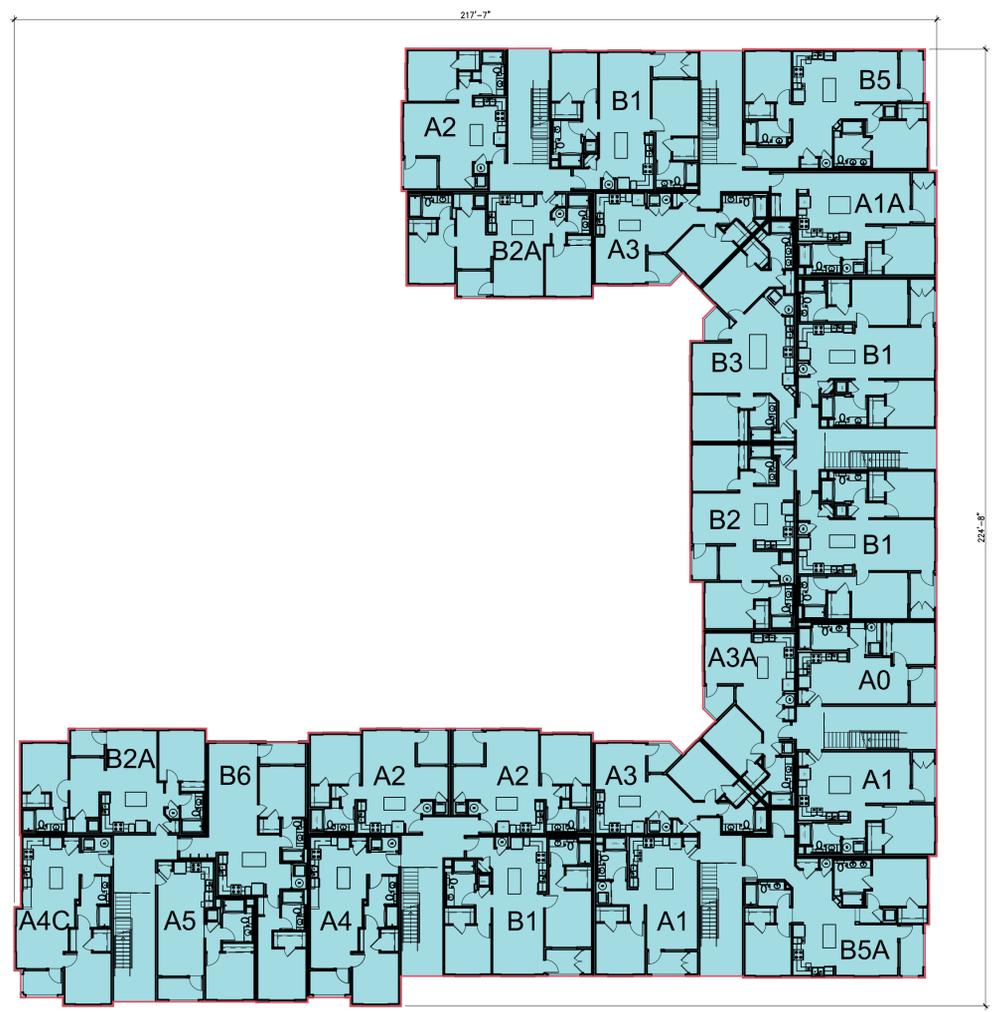


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LEGEND

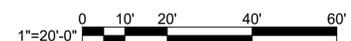
- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



BLDG D - LEVEL 2



BLDG D - LEVEL 1



BUILDING D PLANS

A2.6

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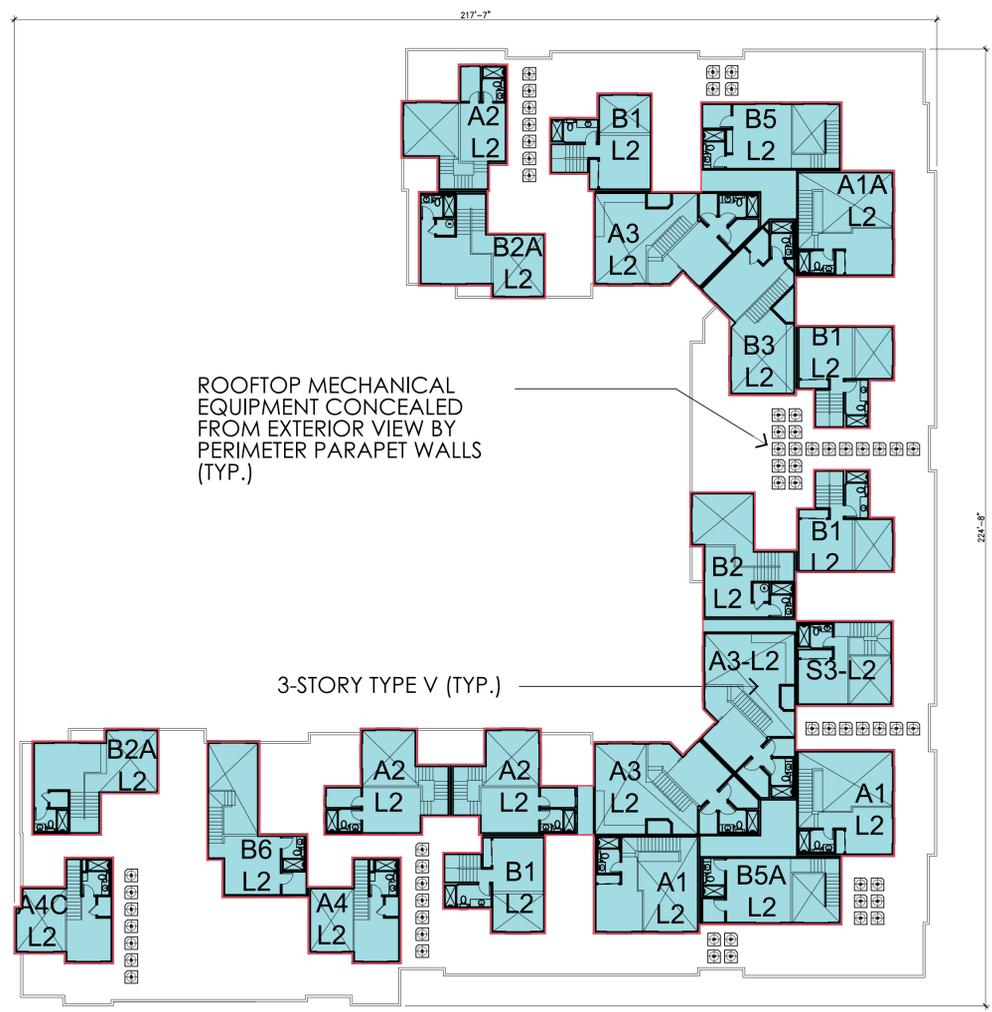


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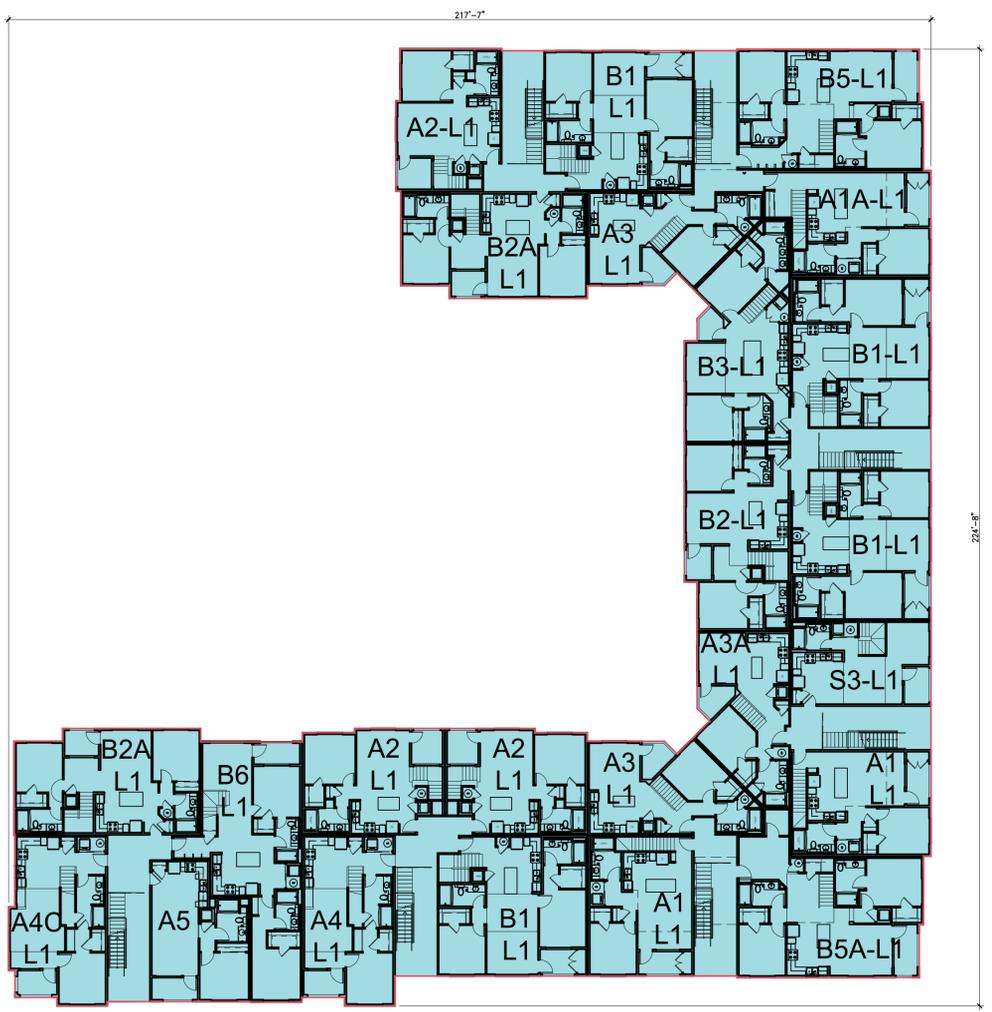


LEGEND

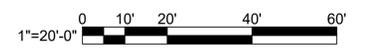
- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



BLDG D - LOFT LEVEL



BLDG D - LEVEL 3



BUILDING D PLANS

A2.7

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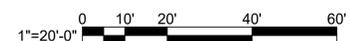


**LEGEND**

- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING



**BLDG D - ROOF LEVEL**



**BUILDING D PLANS**

**A2.8**

**THE ALTAIR**

CARSON CITY, NEVADA

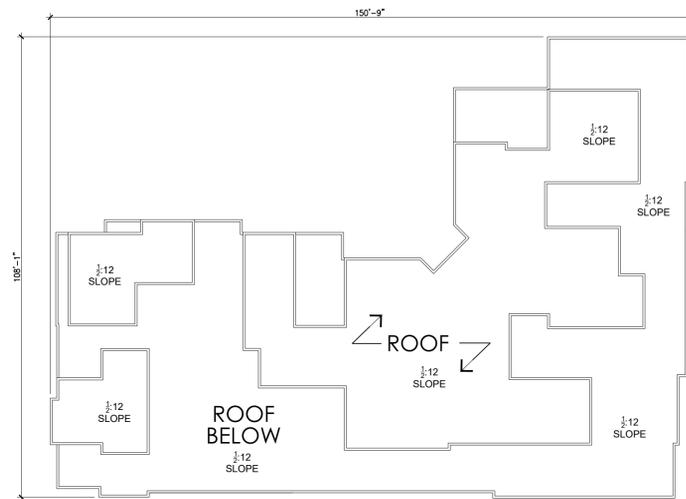
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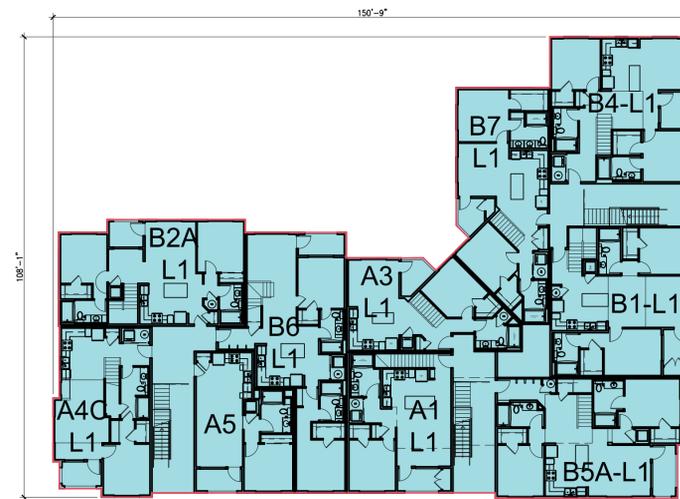
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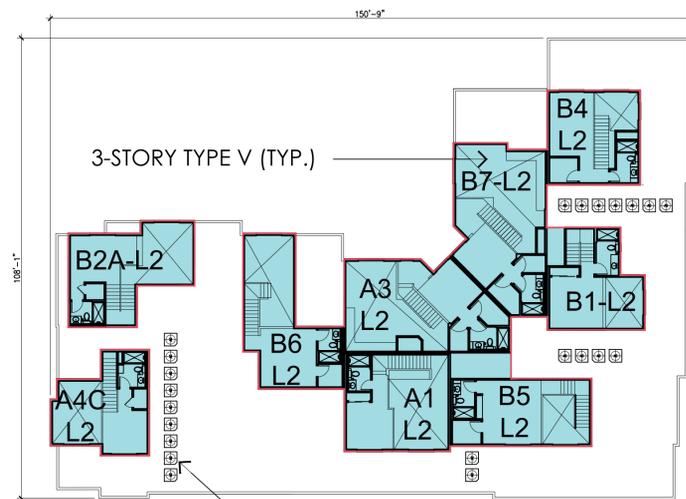
BLDG E - ROOF LEVEL



BLDG E - LEVEL 3

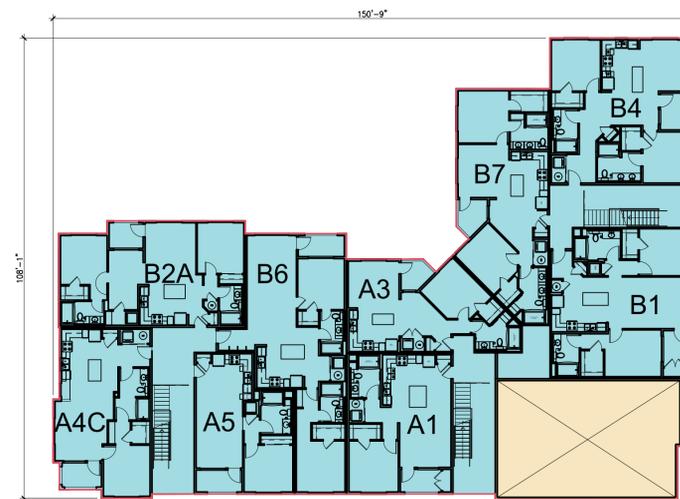
LEGEND

- INDICATES AREA OF RESIDENTIAL
- INDICATES AREA OF AMENITIES
- INDICATES AREA OF PARKING

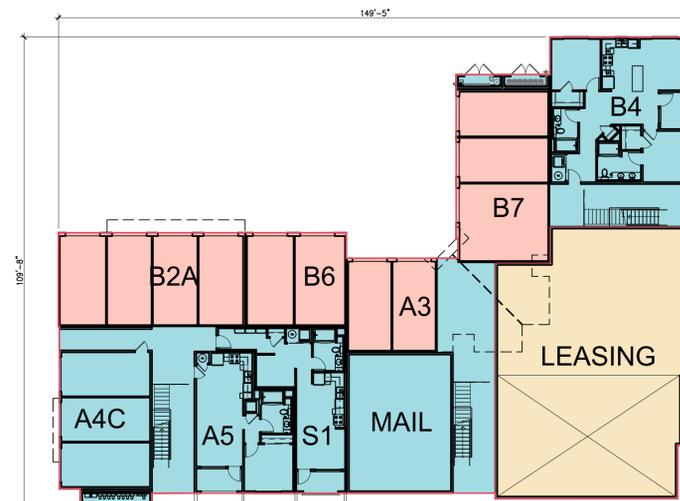


BLDG E - LOFT LEVEL

ROOFTOP MECHANICAL EQUIPMENT CONCEALED FROM EXTERIOR VIEW BY PERIMETER PARAPET WALL (TYP.)



BLDG E - LEVEL 2



BLDG E - LEVEL 1



BUILDING E PLANS

A2.9

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## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
- 7 METAL RAILING, PAINTED
- 8 METAL GATE, PAINTED
- 9 METAL DOOR, BRONZE FINISH
- 10 ALUMINUM STOREFRONT SYS. WITH CLEAR GLASS, BRONZE FINISH
- 11 VINYL SLIDER WINDOWS OVER FIXED, BRONZE COLOR WITH CLEAR GLASS  
11a VINYL FIXED WINDOW  
11b VINYL SLIDER WINDOW
- 12 METAL PANEL GARAGE DOOR
- 13 EXTERIOR WALL LIGHT FIXTURE
- 14 LIMESTONE VENEER

FOR FURTHER INFORMATION NOT SHOWN HERE, REFER TO SHEET A4.0 FOR THE COLOR AND MATERIAL BOARD

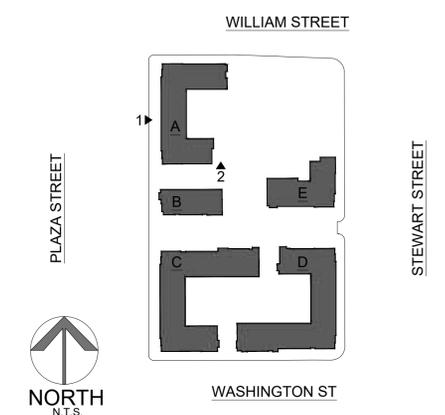


**1** WEST ELEVATION  
TOWARD S PLAZA ST.



**2** SOUTH ELEVATION

## KEY MAP



1"=10'-0" 0 5' 10' 20' 30'

CONCEPTUAL BUILDING A ELEVATIONS

A3.0

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AO  
Architecture.  
Design.  
Relationships.

### GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

### MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
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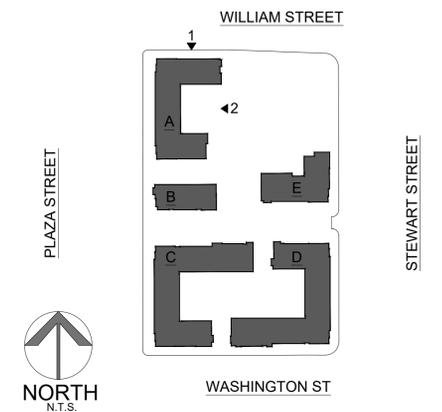


1 NORTH ELEVATION



2 EAST ELEVATION

### KEY MAP



CONCEPTUAL BUILDING A ELEVATIONS

A3.1

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## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
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- 14 LIMESTONE VENEER

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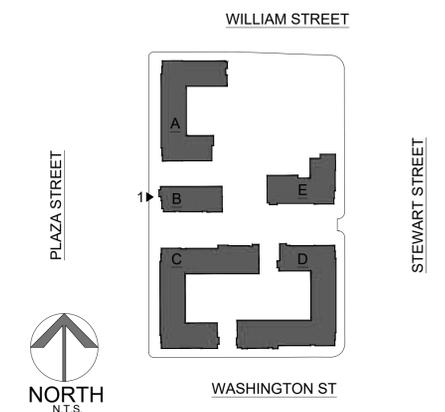


**1** WEST ELEVATION  
TOWARD S PLAZA ST.



**2** SOUTH ELEVATION

## KEY MAP



1"=10'-0" 0 5' 10' 20' 30'

CONCEPTUAL BUILDING B ELEVATIONS

A3.2

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### GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

### MATERIAL / COLOR LEGEND

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- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
- 7 METAL RAILING, PAINTED
- 8 METAL GATE, PAINTED
- 9 METAL DOOR, BRONZE FINISH
- 10 ALUMINUM STOREFRONT SYS. WITH CLEAR GLASS, BRONZE FINISH
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11b VINYL SLIDER WINDOW
- 12 METAL PANEL GARAGE DOOR
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- 14 LIMESTONE VENEER

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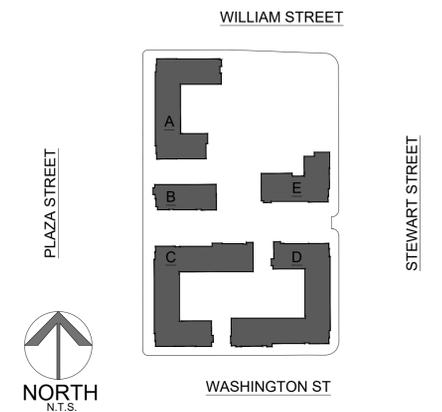


1 NORTH ELEVATION



2 EAST ELEVATION

### KEY MAP



CONCEPTUAL BUILDING B ELEVATIONS

A3.3

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## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
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- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
- 7 METAL RAILING, PAINTED
- 8 METAL GATE, PAINTED
- 9 METAL DOOR, BRONZE FINISH
- 10 ALUMINUM STOREFRONT SYS. WITH CLEAR GLASS, BRONZE FINISH
- 11 VINYL SLIDER WINDOWS OVER FIXED, BRONZE COLOR WITH CLEAR GLASS  
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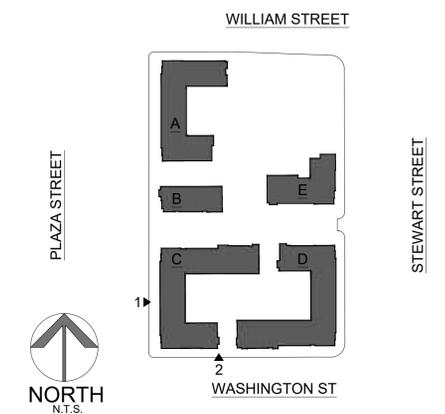


**1** WEST ELEVATION  
TOWARD S PLAZA ST



**2** SOUTH ELEVATION  
TOWARD E WASHINGTON ST.

## KEY MAP



1"=10'-0"

CONCEPTUAL BUILDING C ELEVATIONS

A3.4

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### GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

### MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
- 7 METAL RAILING, PAINTED
- 8 METAL GATE, PAINTED
- 9 METAL DOOR, BRONZE FINISH
- 10 ALUMINUM STOREFRONT SYS. WITH CLEAR GLASS, BRONZE FINISH
- 11 VINYL SLIDER WINDOWS OVER FIXED, BRONZE COLOR WITH CLEAR GLASS  
11a VINYL FIXED WINDOW  
11b VINYL SLIDER WINDOW
- 12 METAL PANEL GARAGE DOOR
- 13 EXTERIOR WALL LIGHT FIXTURE
- 14 LIMESTONE VENEER

FOR FURTHER INFORMATION NOT SHOWN HERE, REFER TO SHEET A4.0 FOR THE COLOR AND MATERIAL BOARD

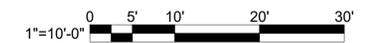
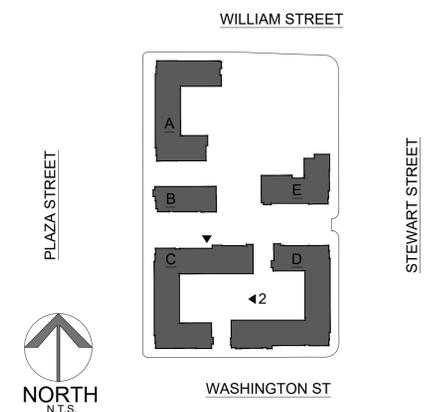


1 NORTH ELEVATION



2 EAST ELEVATION

### KEY MAP



CONCEPTUAL BUILDING C ELEVATIONS

# A3.5

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**AO ARCHITECTS**

DATE: 12-16-2021  
 JOB NO.: 2021-125



## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
- 7 METAL RAILING, PAINTED
- 8 METAL GATE, PAINTED
- 9 METAL DOOR, BRONZE FINISH
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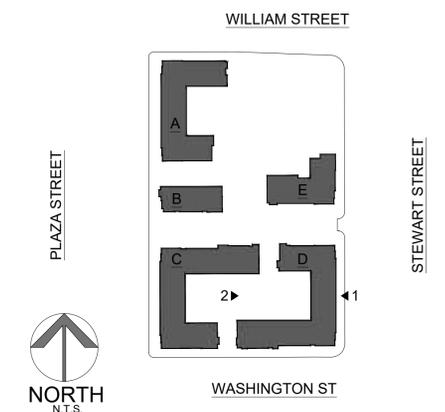


**1** EAST ELEVATION  
TOWARD S STEWART ST



**2** WEST ELEVATION

## KEY MAP



1"=10'-0" 0 5' 10' 20' 30'

CONCEPTUAL BUILDING D ELEVATIONS

**A3.6**

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### GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

### MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
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FOR FURTHER INFORMATION NOT SHOWN HERE, REFER TO SHEET A4.0 FOR THE COLOR AND MATERIAL BOARD

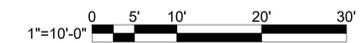
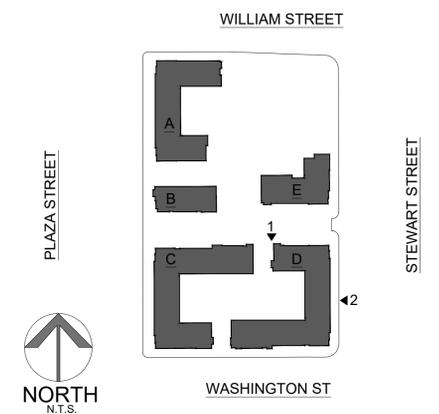


**1** NORTH ELEVATION



**2** SOUTH ELEVATION  
TOWARD E WASHINGTON ST.

### KEY MAP



CONCEPTUAL BUILDING D ELEVATIONS

# A3.7

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## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
- 6 METAL CANOPY WITH STAY CABLE BRACKETS
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- 14 LIMESTONE VENEER

FOR FURTHER INFORMATION NOT SHOWN HERE, REFER TO SHEET A4.0 FOR THE COLOR AND MATERIAL BOARD

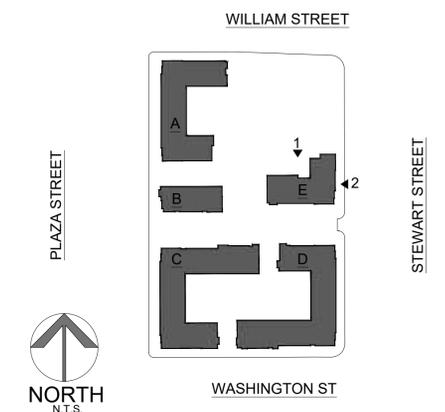


1 NORTH ELEVATION



2 EAST ELEVATION TOWARD S STEWART ST.

## KEY MAP



1"=10'-0" 0 5' 10' 20' 30'

CONCEPTUAL BUILDING E ELEVATIONS

A3.8

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AO ARCHITECTS  
Architecture.  
Design.  
Relationships.

## GENERAL NOTES

REFER TO SHEETS A2.10 - A2.13 FOR ENLARGED ELEVATIONS WITH MATERIALS KEYNOTED

## MATERIAL / COLOR LEGEND

- 1 STUCCO 20/30 FINISH
- 2 THIN BRICK VENEER
- 3 EXTERIOR TRIM
- 4 METAL WALL CAP, PAINTED
- 5 FRAMED CANOPY WITH SMOOTH STUCCO FINISH
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FOR FURTHER INFORMATION NOT SHOWN HERE, REFER TO SHEET A4.0 FOR THE COLOR AND MATERIAL BOARD

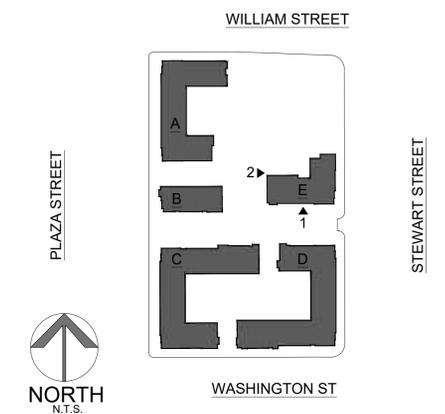


**1** SOUTH ELEVATION  
TOWARD ENTRY DRIVE



**2** WEST ELEVATION

## KEY MAP



1"=10'-0" 0 5' 10' 20' 30'

CONCEPTUAL BUILDING E ELEVATIONS

**A3.9**

DATE: 12-16-2021  
JOB NO.: 2021-125

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**1** WEST ELEVATION - BUILDING A, B & C  
TOWARD S PLAZA ST.

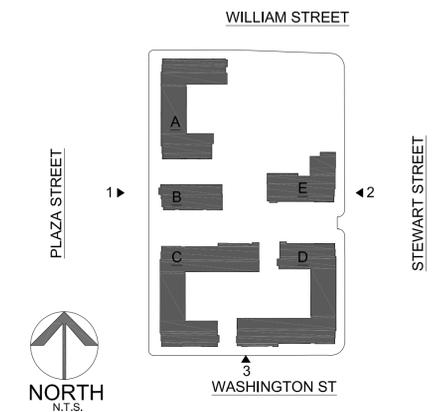


**2** EAST ELEVATION - BUILDING D, E & A  
TOWARD STEWART ST.



**3** SOUTH ELEVATION - BUILDING C & D  
TOWARD WASHINGTON ST.

**KEY MAP**



1"=20'-0" 0 10' 20' 40' 60'

STREET ELEVATIONS

**A3.11**

DATE: 12-16-2021  
JOB NO.: 2021-125

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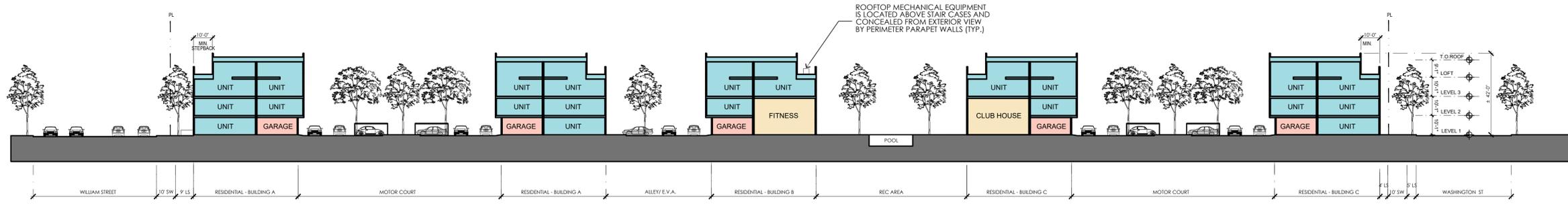
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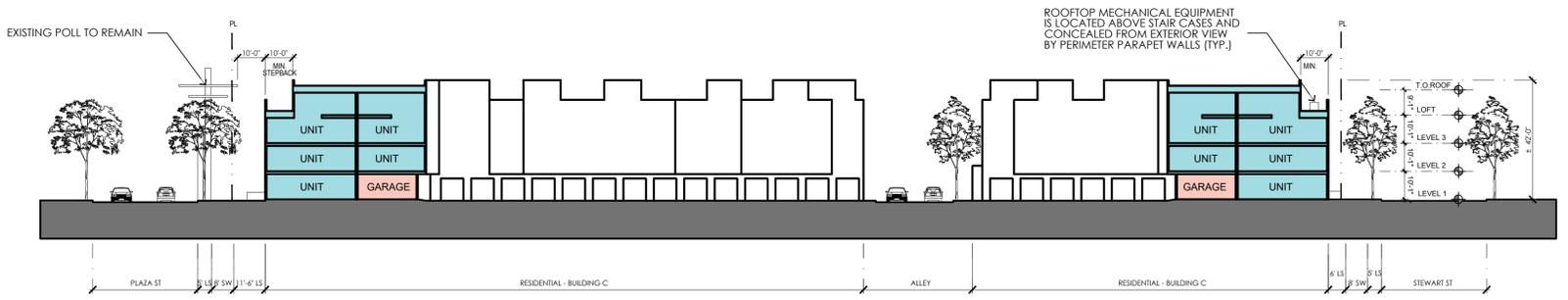


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SECTION A-A



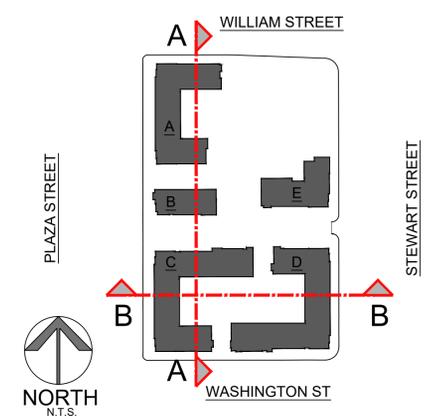
SECTION B-B

NOTE:  
ALL HEIGHTS INDICATED ARE FROM  
FINISHED FLOOR TO 'BASE' PARAPET  
HEIGHTS. FOR ACTUAL BUILDING  
HEIGHTS SEE ELEVATION SHEET.

LEGEND

- AMENITY SPACE
- 1 CAR GARAGE
- RESIDENTIAL DWELLING

KEY MAP



CONCEPTUAL BUILDING SECTIONS

A3.11

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BUILDING C - WEST ELEVATION (PLAZA ST)



BUILDING D - SOUTH ELEVATION (WASHINGTON ST)



BUILDING E - SOUTH ELEVATION

**PAINT SWATCHES**



① **STUCCO**  
20/30 FINE SAND



② **ALUMINUM STORE-FRONT SYSTEM**



③ **METAL CANOPY**



④ **METAL RAILING**



⑤ **VINYL WINDOWS**  
WHITE



⑥ **METAL DOOR**  
1-PANEL GLASS  
ENTRY DOOR



⑦ **FRENCH LIMESTONE VENEER**  
BLACK FOREST



⑧ **FRENCH LIMESTONE VENEER**  
COUNTRY BEIGE



⑨ **FRENCH LIMESTONE VENEER**  
FRENCH WHITE



⑩ **BRICK VENEER**  
COLOR TO MATCH



⑪ **BRICK VENEER**  
COLOR TO MATCH



⑫ **WOOD GARAGE DOOR**  
TO MATCH PAINT SPEC

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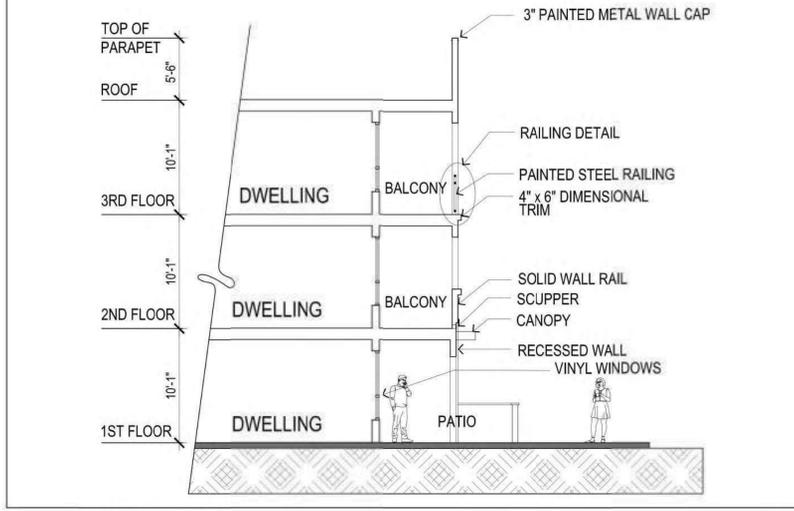
MATERIAL BOARD

DATE: 12-16-2021  
JOB NO.: 2021-125

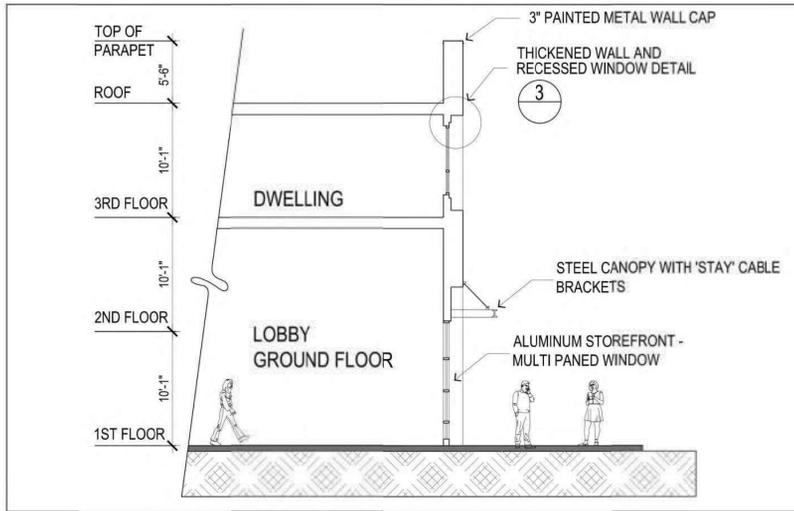
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**A5.1**





**WALL SECTION B AT BALCONY**  
SCALE: 1/8" = 1'-0"  
0' 8' 16' 32'



**WALL SECTION A AT LOBBY**  
SCALE: 1/8" = 1'-0"  
0' 8' 16' 32'



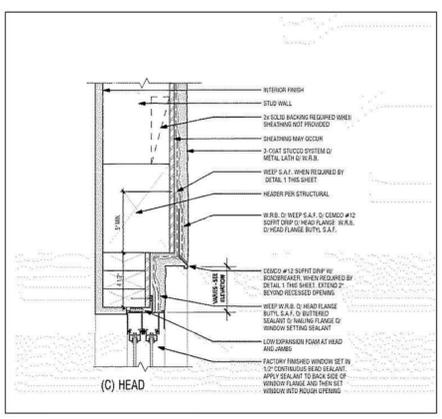
**SOUTH ELEVATION**  
SCALE: 1/16" = 1'-0"  
0' 16' 32' 64'



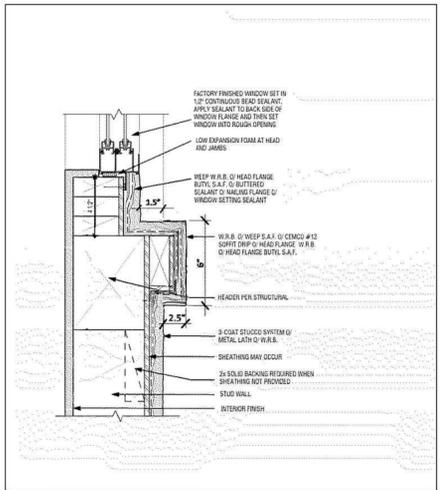
**BALCONY**



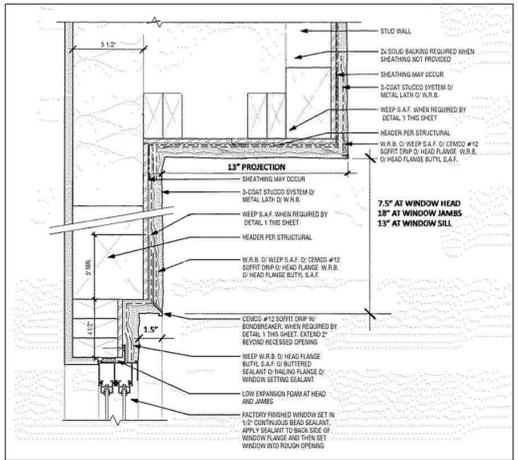
**LOBBY**



**DETAIL 1**  
SCALE: 1.5" = 1'-0"  
0' 6" 1' 2'



**DETAIL 2**  
SCALE: 1.5" = 1'-0"  
0' 6" 1' 2'



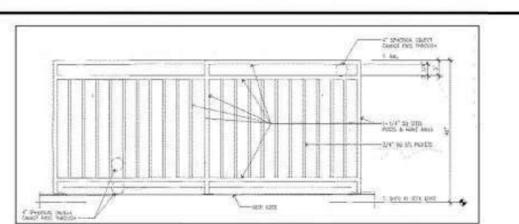
**DETAIL 3**  
SCALE: 1.5" = 1'-0"  
0' 6" 1' 2'



**APARTMENT WINDOWS**  
SLIDER OVER FIXED W/ ADDED MULLION  
BRONZE EXTERIOR COLOR  
MANU: AVI (OR EQUAL)



**LOBBY WINDOWS & DOORS**  
ALUMINUM MULLIONS  
W/ CLEAR GLASS  
MEDIUM STYLE DOORS  
BRONZE COLOR  
MANU: KAWNEER (OR EQUAL)



**RAILING DETAIL PAINTED STEEL  
BRONZE COLOR**  
SCALE: 1/2" = 1'-0"  
0' 1' 2' 4'



PROJECT DETAILS

A5.2

DATE: 12-16-2021  
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