

# UCHealth – University of Colorado Hospital Parking Garage 2 Project

University of Colorado Design Review Board  
Concept Design  
February 13, 2020

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# A. Introductions

# A/E Team



Pact Studios, LLC – Architectural Design



Martin & Martin – Civil and Structural Engineering



Specialized Engineering Solutions – MEP Design; Low Voltage; Lighting Design



Kimley>Horn – Landscape Architecture



Felsburg Holt & Ullevig – Traffic, Transportation, and Parking Study



Lerch Bates – Vertical Transportation



Fd2s – Graphic and Signage Design

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## B. Project Description

# Campus Plan



# Project Goals & Objectives

1. Expand visitor parking proximal to the Anschutz Outpatient Pavilion entrance to support projected outpatient volume growth.
2. Promote greater overall pedestrian safety, including crossing 16th Avenue and accessing parking and bus stop areas, through improved site circulation for both vehicles and pedestrians
3. Create flexibility in the design of the parking structure to accommodate future changes in technology, transportation, and user demographics (patient, visitor, valet, employee)
4. Design to accept a future above grade pedestrian crossing into Anschutz Outpatient Pavilion/Anschutz Cancer Pavilion.
5. Enhance the Patient Experience: what they see and feel including access, cleanliness, and sense of arrival

# Guiding Principles

1. Maintain the attractiveness of the east entrance to the campus. Building should be complimentary to surroundings.
2. Develop a solution that enhances pedestrian and vehicular flow for the Anschutz Medical Campus and the sense of arrival for outpatient visitors.
3. Be mindful of system and component performance and durability. Reduce maintenance demands.
4. Respect the future. Consider sustainable alternatives and capacity for future expansion.
5. Employ lessons learned from existing parking structures on campus.



# Context of Project – Campus





# Existing Connection to Public Spaces



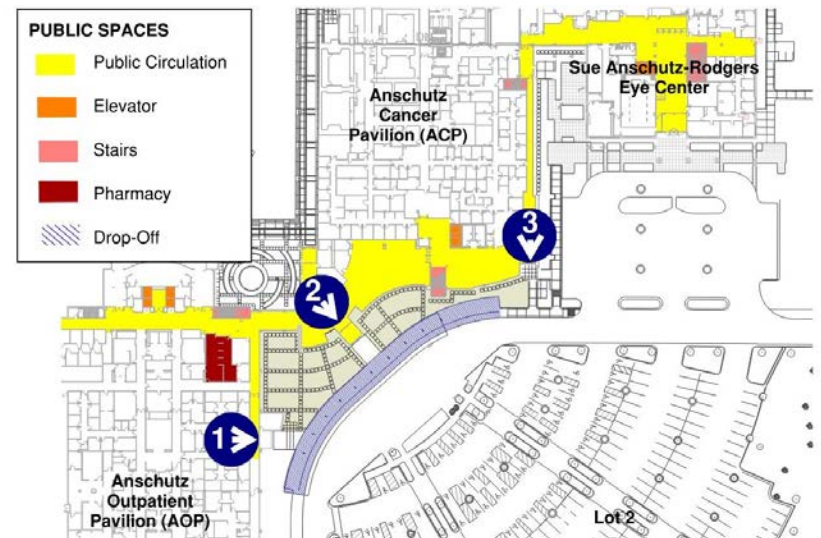
View 2 – From AOP 1st Floor Looking Southeast



View 3– From ACP 1st Floor Looking South



View 1 – From AOP 1st Floor Looking East





# Existing Connection to Public Spaces



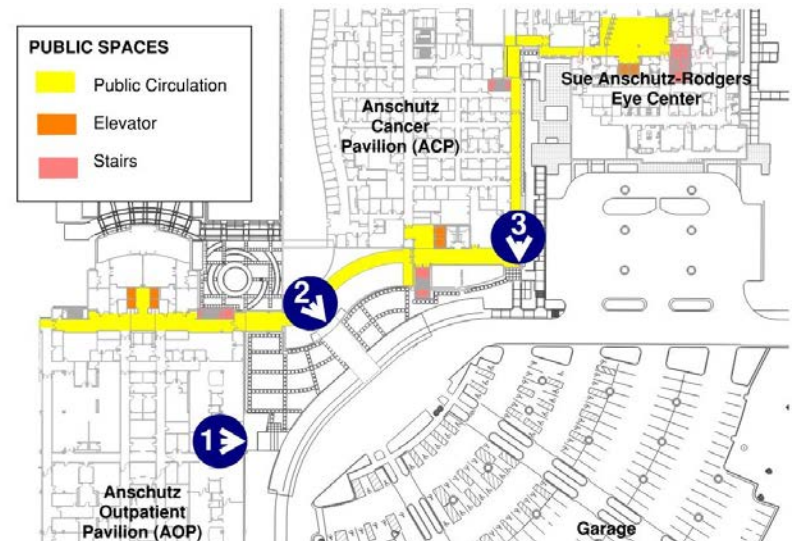
View 2 – From AOP 2nd Floor Looking Southeast



View 3 – From ACP 2nd Floor Looking South



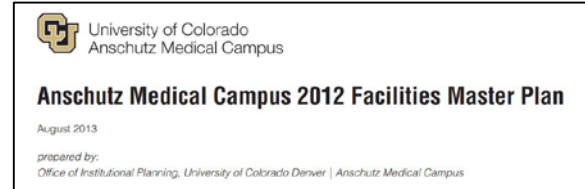
View 1 – From AOP 2nd Floor Looking East



# 2012 Facilities Master Plan

## Development Goals:

- Enhance the patient | visitor centered experience through improvements in accessibility, way-finding and parking.
- Enhance connectivity between the C3 | Hospital and C1 | Academic districts.
- Protect and enhance open space providing an appropriate balance, both qualitative and quantitative, to the build environment.
- Effectively integrate with the regional transportation network.
- Encourage interdisciplinary and inter- institutional collaboration.



## C3 | HOSPITAL DISTRICT

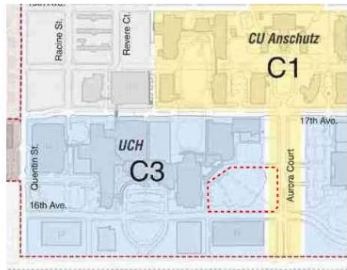
Much larger than a traditional city block, with greater building setbacks, these zones are typically bounded by widely spaced, high-speed, arterial or circulating routes rather than by local streets. Framework allows for the development of very large, interconnected, mega structures



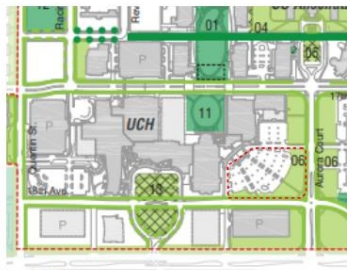
# Site Conditions

## C3 Hospital District Guidelines

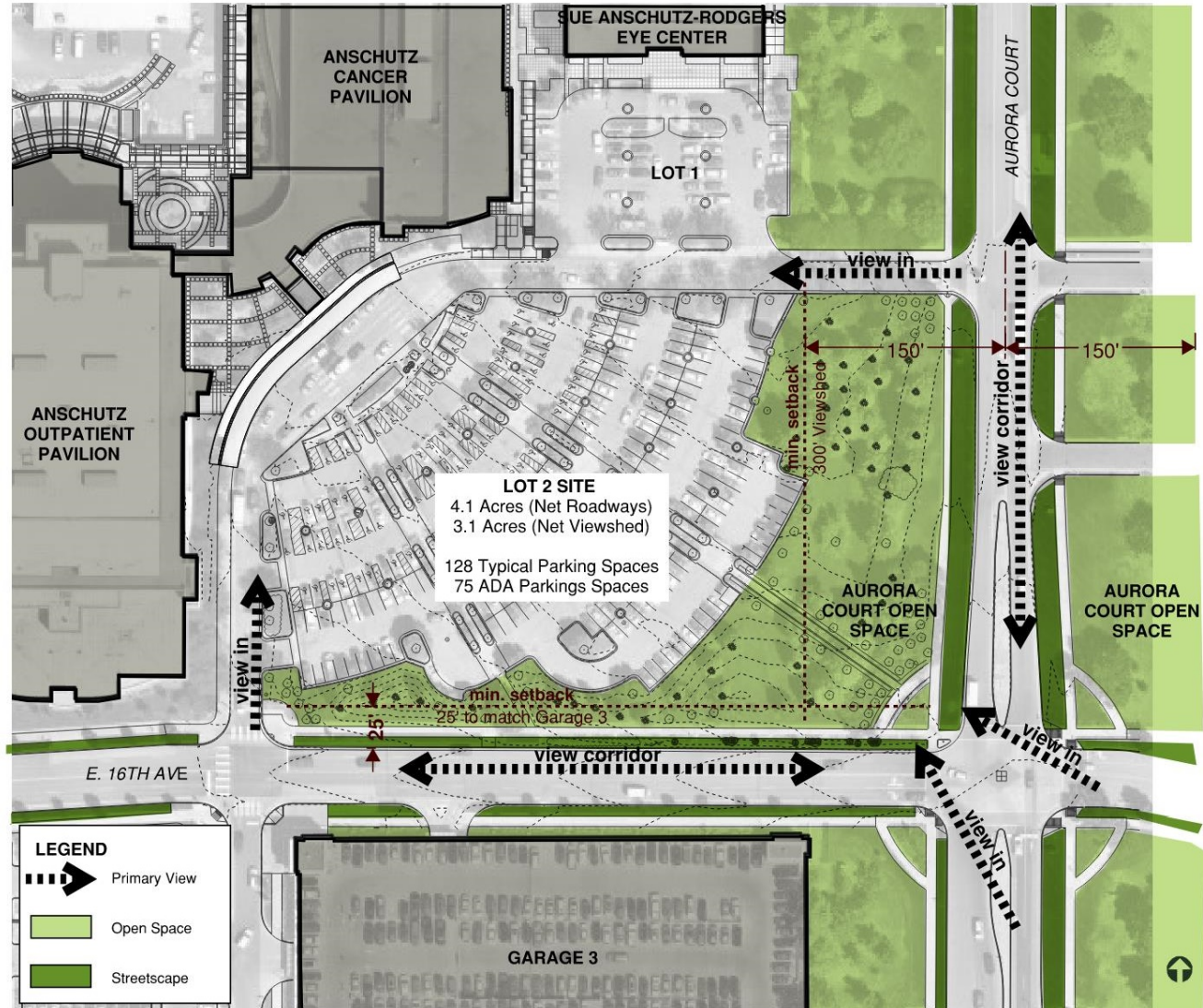
<b>Building Placement:</b>	Greatest density located at center of superblock with lower density development toward the perimeter.
<b>Frontage Types:</b>	Porte Cochere, Healing Gardens, Canopies
<b>Civic Space Typology:</b>	Internal Atria, Commons, & Gardens
<b>Wayfinding Methodology:</b>	Towers   Canopies   Signage
<b>Building Heights:</b>	4 story min., 6 story max. (up to 14 stories w/DRB approval)



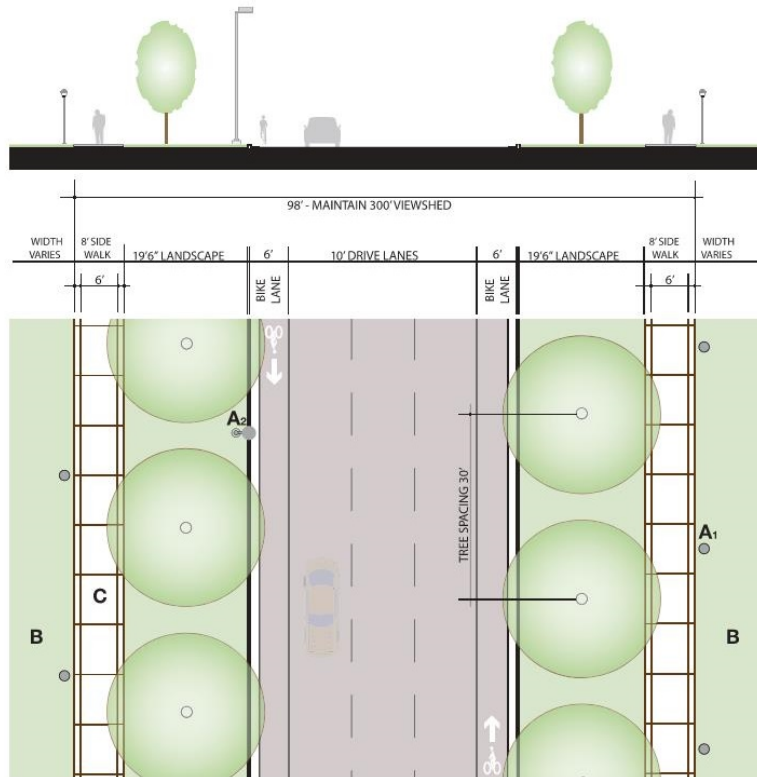
2012 Facilities Master Plan - Character Districts



2012 Facilities Master Plan - Open Space



# Aurora Court Streetscape



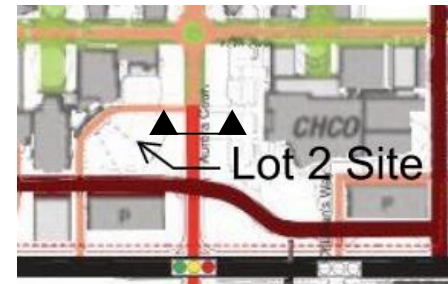
- A<sub>1</sub>** Pedestrian scale lighting fixtures. Vocabulary A
- A<sub>2</sub>** Vehicular scale lighting fixtures. Vocabulary A
- B** Naturalistic prairie landscape
- F** Cast in place concrete with medium broom finish. Saw cut scoring at 8' intervals.

Figure II.3G - Aurora Court (looking north)

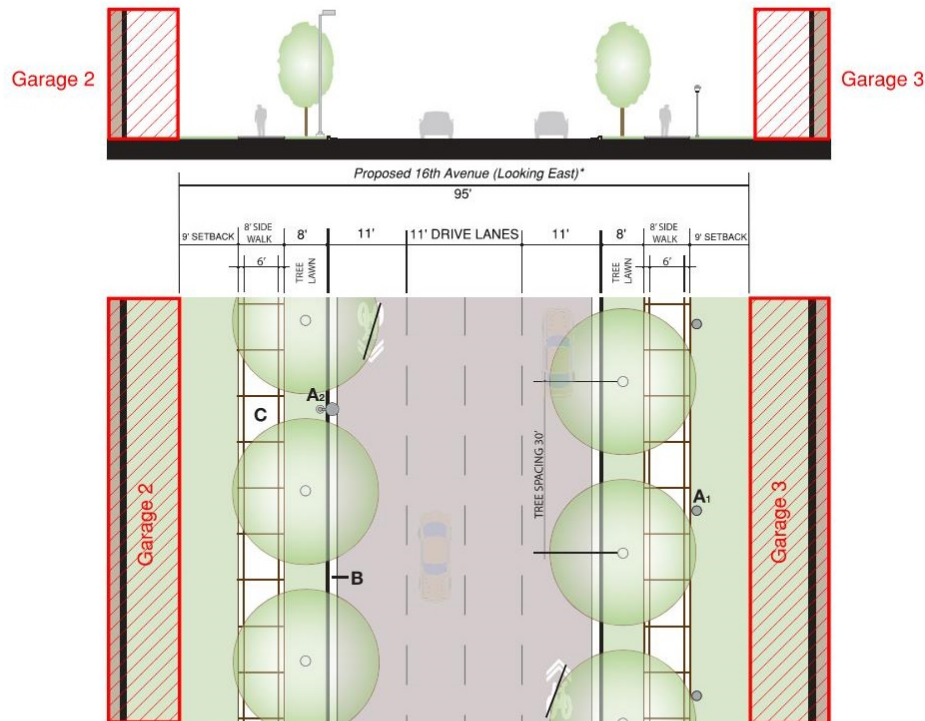
## Aurora Court

Aurora Court shall retain its existing historical character and 300' view shed. Dedicated bike lanes shall be indicated on both sides of the existing roadbed. Vehicular scale pole lighting should continue to be located within the tree lawn on the west side of the roadway with pedestrian scale pole lighting to be added along existing sidewalks. Fixtures should be selected be from Package A of Section II.11 of the Master Plan document.

*Excerpt from 2012 Campus Master Plan*



# 16<sup>th</sup> Avenue Streetscape (Min. Proposed)



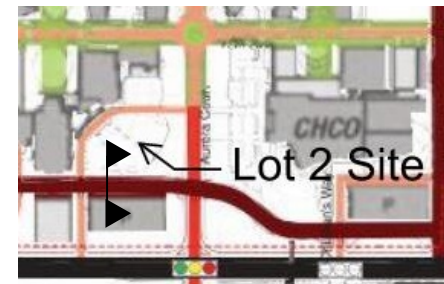
\*16th Avenue streetscape section is not defined in the Master Plan. Proposed streetscape section shown is based on existing conditions along 16th Avenue north of Lot 3 Garage as a Collector roadway.

- A<sub>1</sub> Pedestrian scale lighting fixtures. Vocabulary A
- A<sub>2</sub> Vehicular scale lighting fixtures. Vocabulary A
- B 2' wide cast in place concrete curb and gutter.
- C Cast in place concrete with medium broom finish. Saw cut scoring at 8' intervals.

## Collector Roadways

Victor Street, Quentin and Montview Avenue constitute a system of vehicular collectors surrounding the Academic Village and Hospital districts. Collector roadways should be designed with tree lawns lining the edges of the road. They should have minimum safe lane widths to encourage slower traffic speeds while still providing safe travel. Traffic speeds should not exceed 25 mph. Low impact traffic calming methods should be considered along collector roadways, including varying paving surfaces at important intersections, bulb-outs at major pedestrian crossings and roadside landscaping. Allow for generous sight lines at intersections and at crosswalks. Do not install landscaping elements that will obscure sight lines. Sidewalks should be provided on both sides along the entire length of the road. Road beds should be separated from pedestrian paths by concrete curbs and elevation changes. Lighting along collector street should follow a vocabulary of regularly spaced, vehicular scaled, pole fixtures within the tree lawn on one side of the roadway and pedestrian scale pole fixtures located inside and along the sidewalk on the other. There is no on-street parking planned for any of these collector roadways.

*Excerpt from 2012 Campus Master Plan*





# Site Views



Photo 1 – Looking West along 16<sup>th</sup> Ave



Photo 2 – Looking North along Aurora Ct

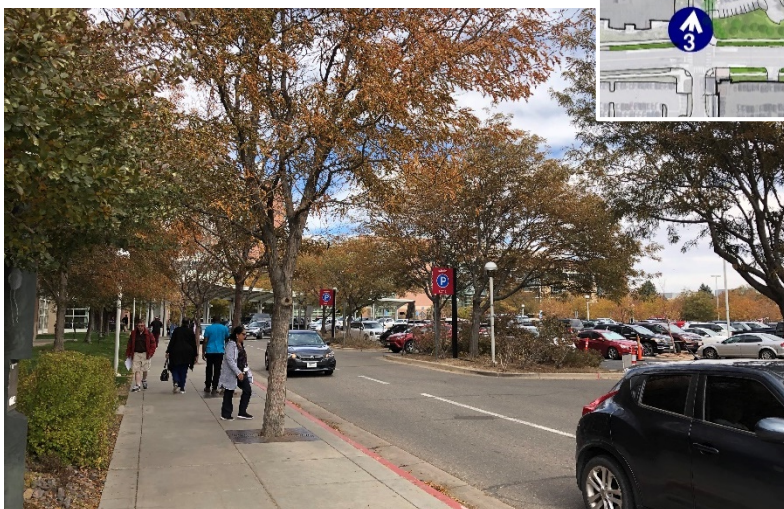


Photo 3 – Looking North towards AOP entrance

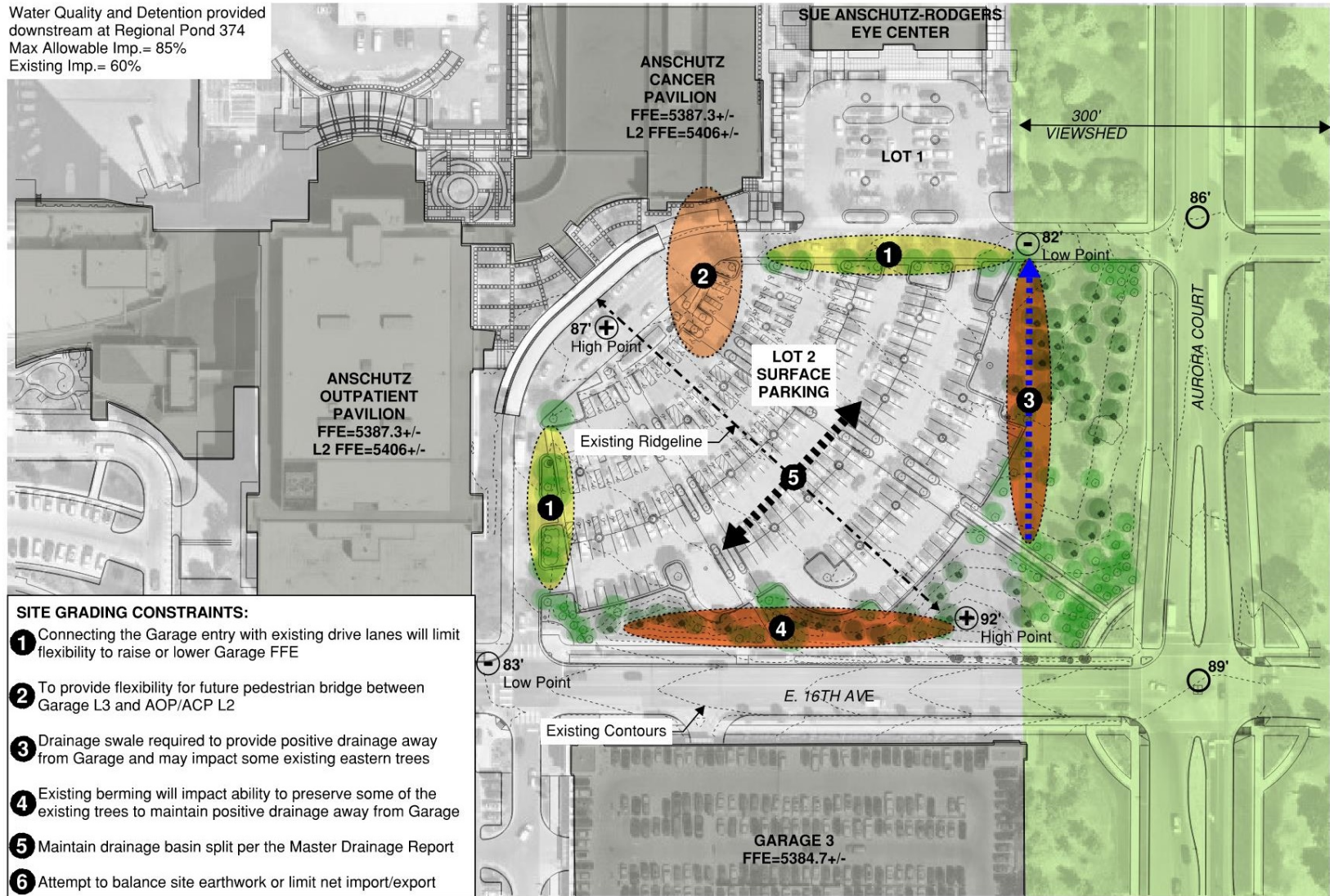


Photo 4 - Looking West towards AOP entrance



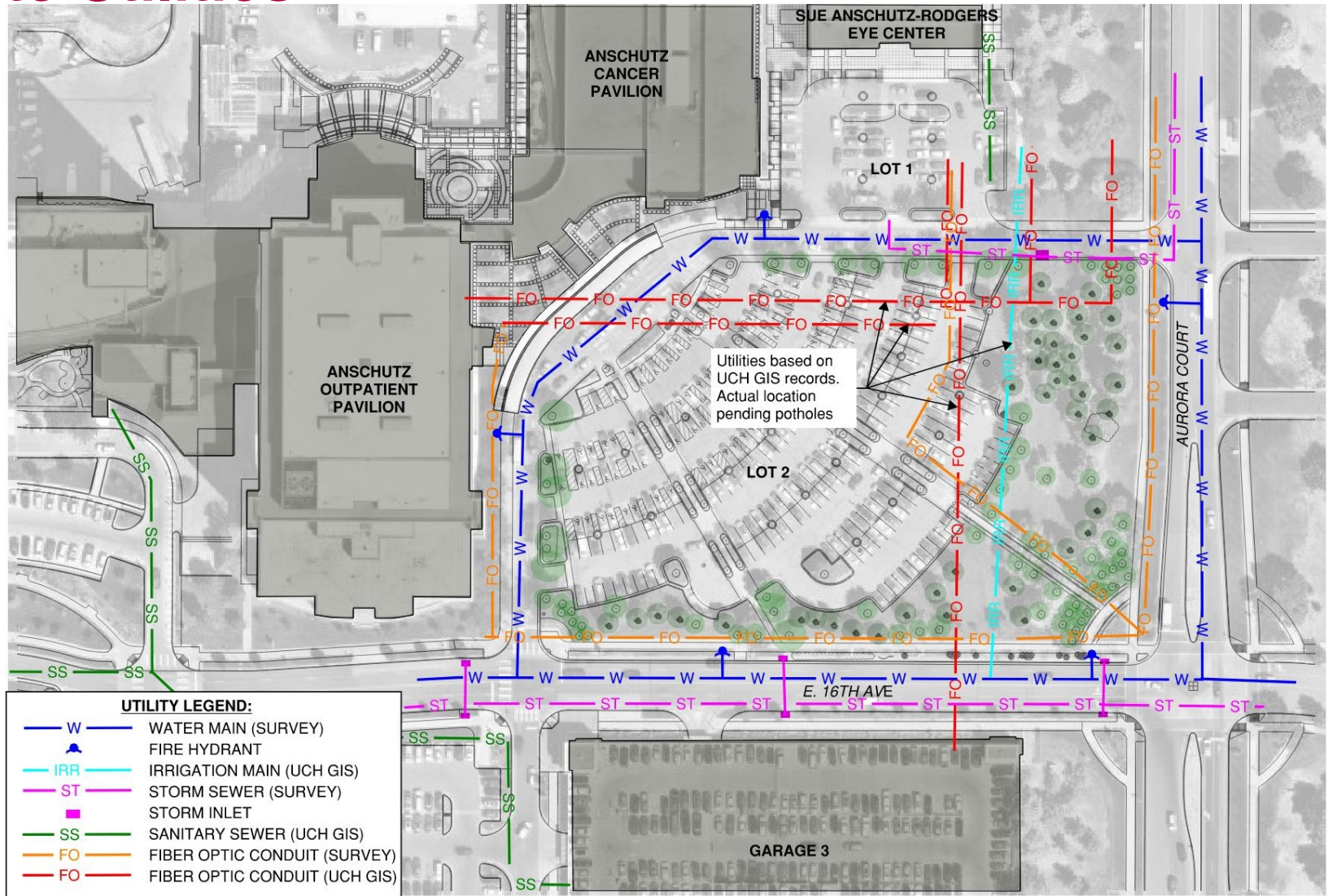
# Site Grading

Water Quality and Detention provided downstream at Regional Pond 374  
Max Allowable Imp.= 85%  
Existing Imp.= 60%






# Site Utilities





# Site Landscape - Existing



 LANDSCAPE BERMS



 EXISTING TREES



 SIGNIFICANT TREE GROVE



 DROP-OFF AREA



 PERIMETER SIDEWALK



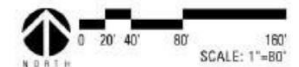
 BUILDING ENTRANCES



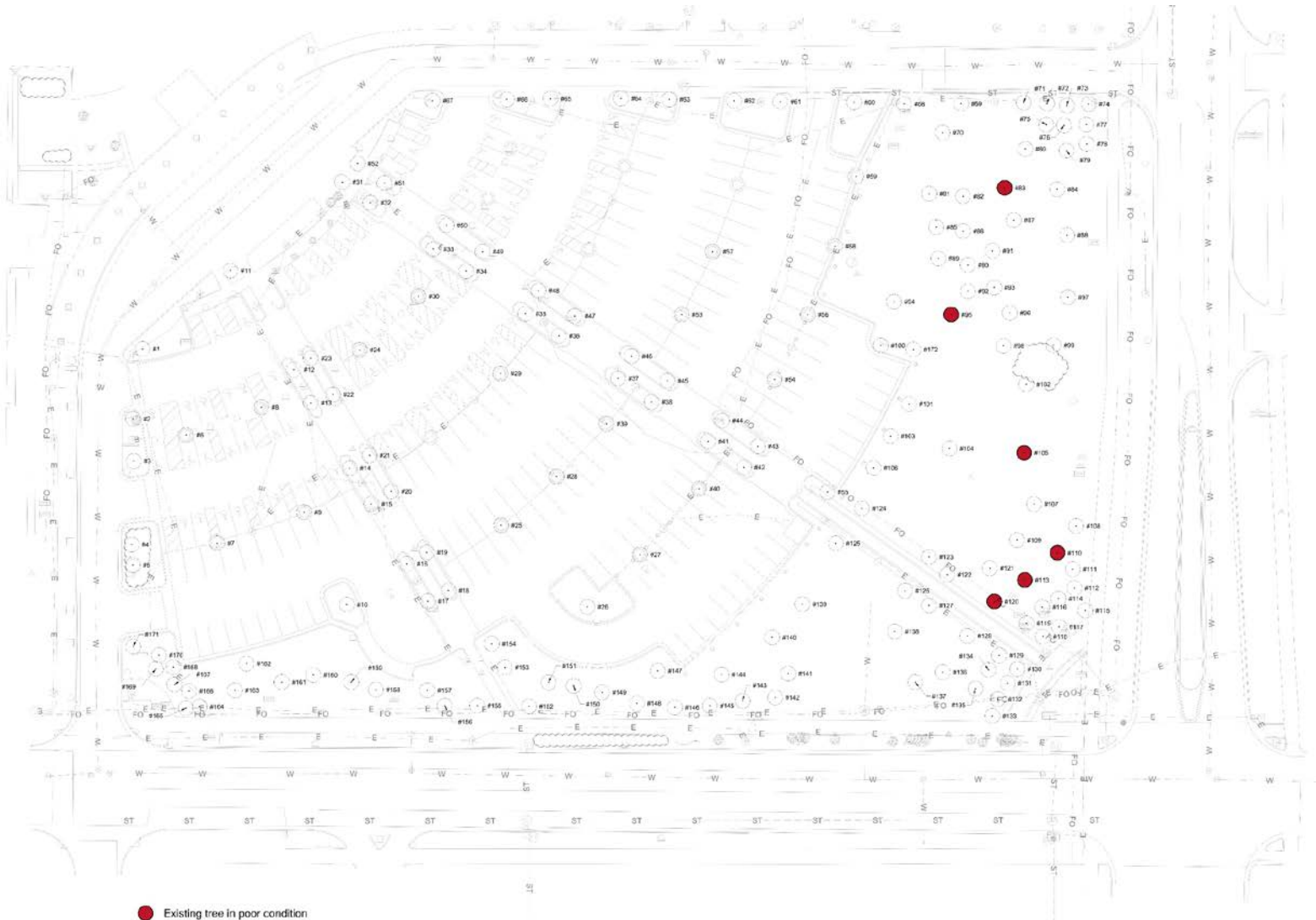
 VALET PARKING AREA



 ADA PARKING AREA

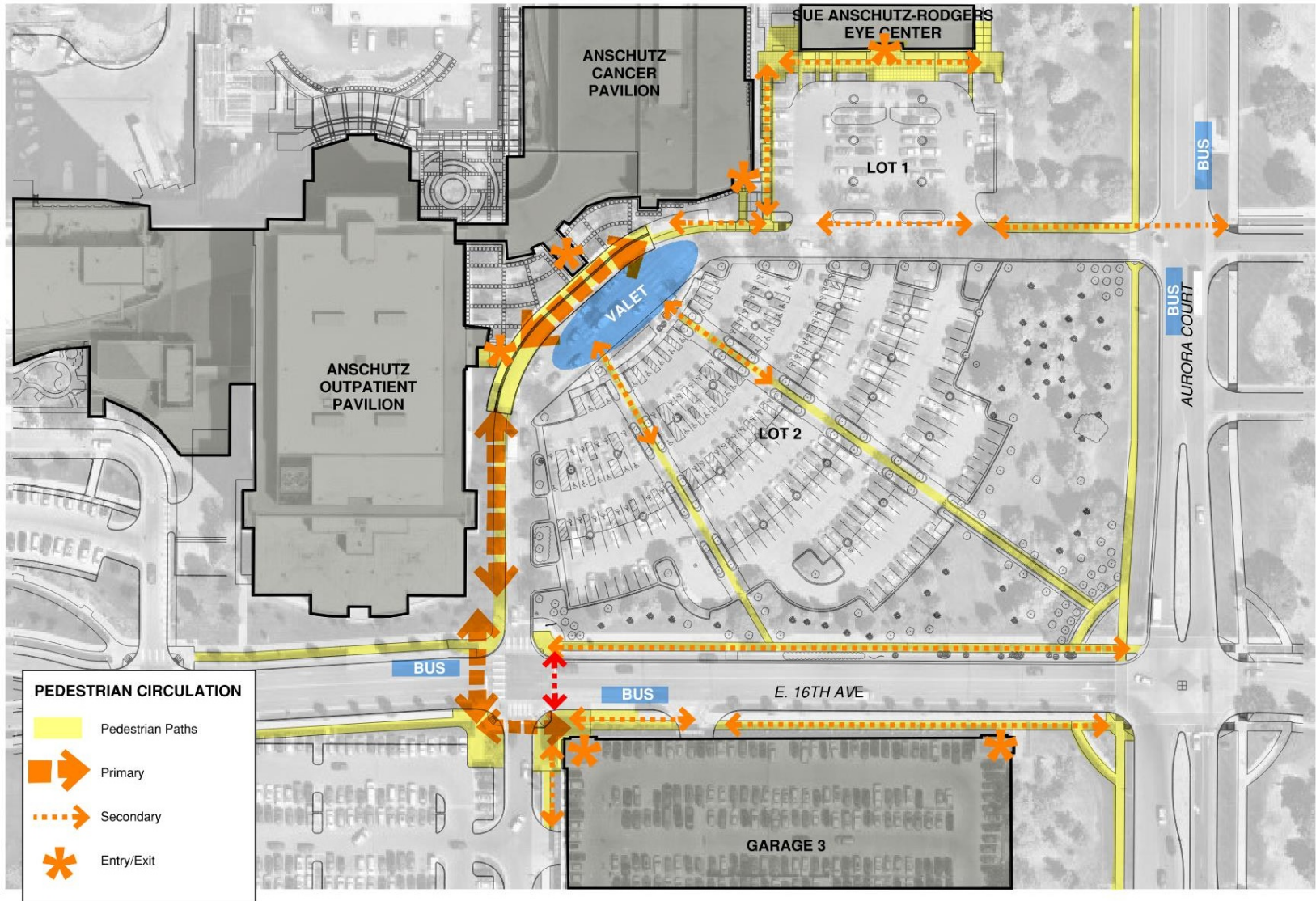


# Site Landscape – Tree Condition Analysis

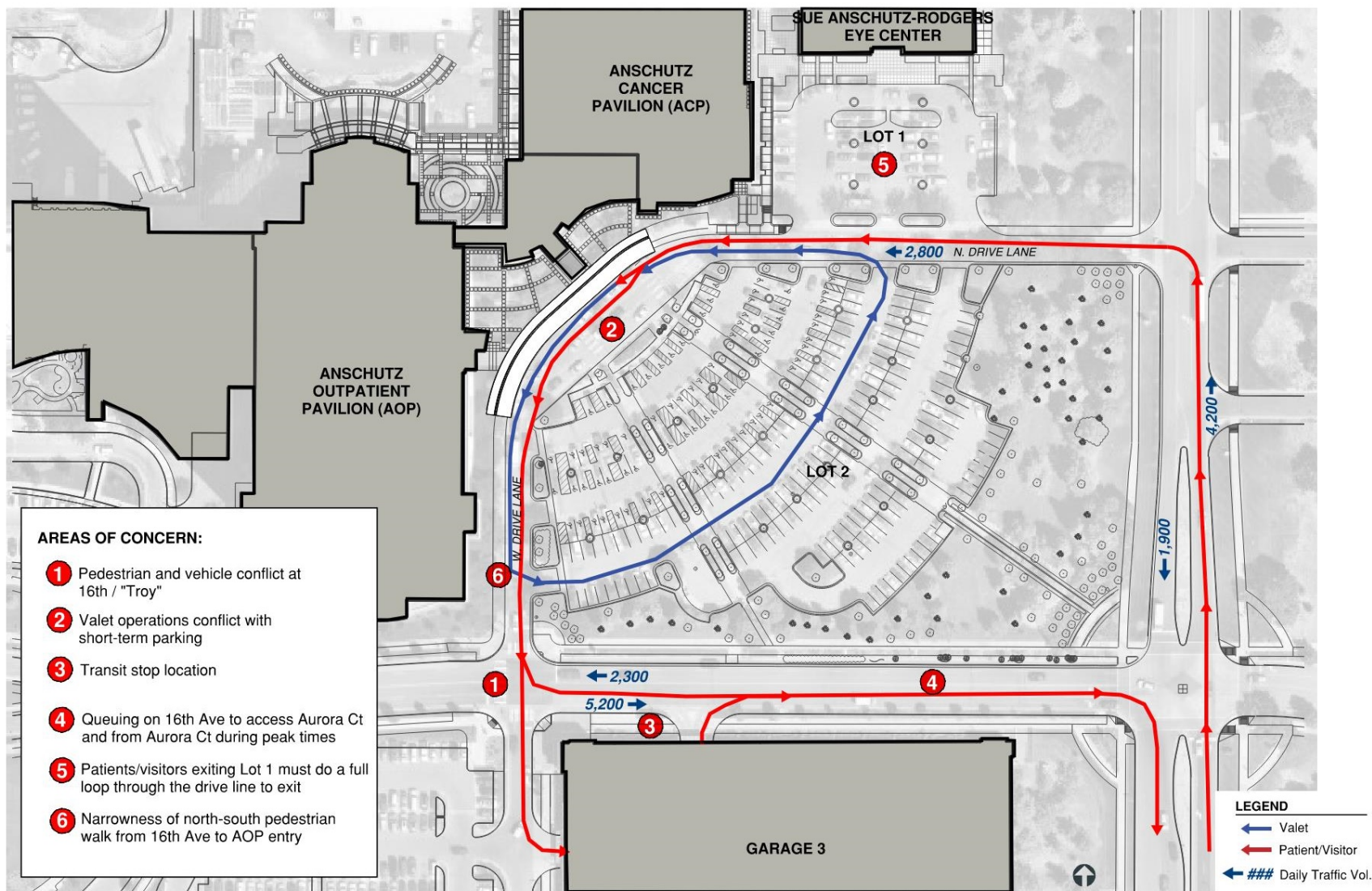




# Site Circulation - Pedestrian

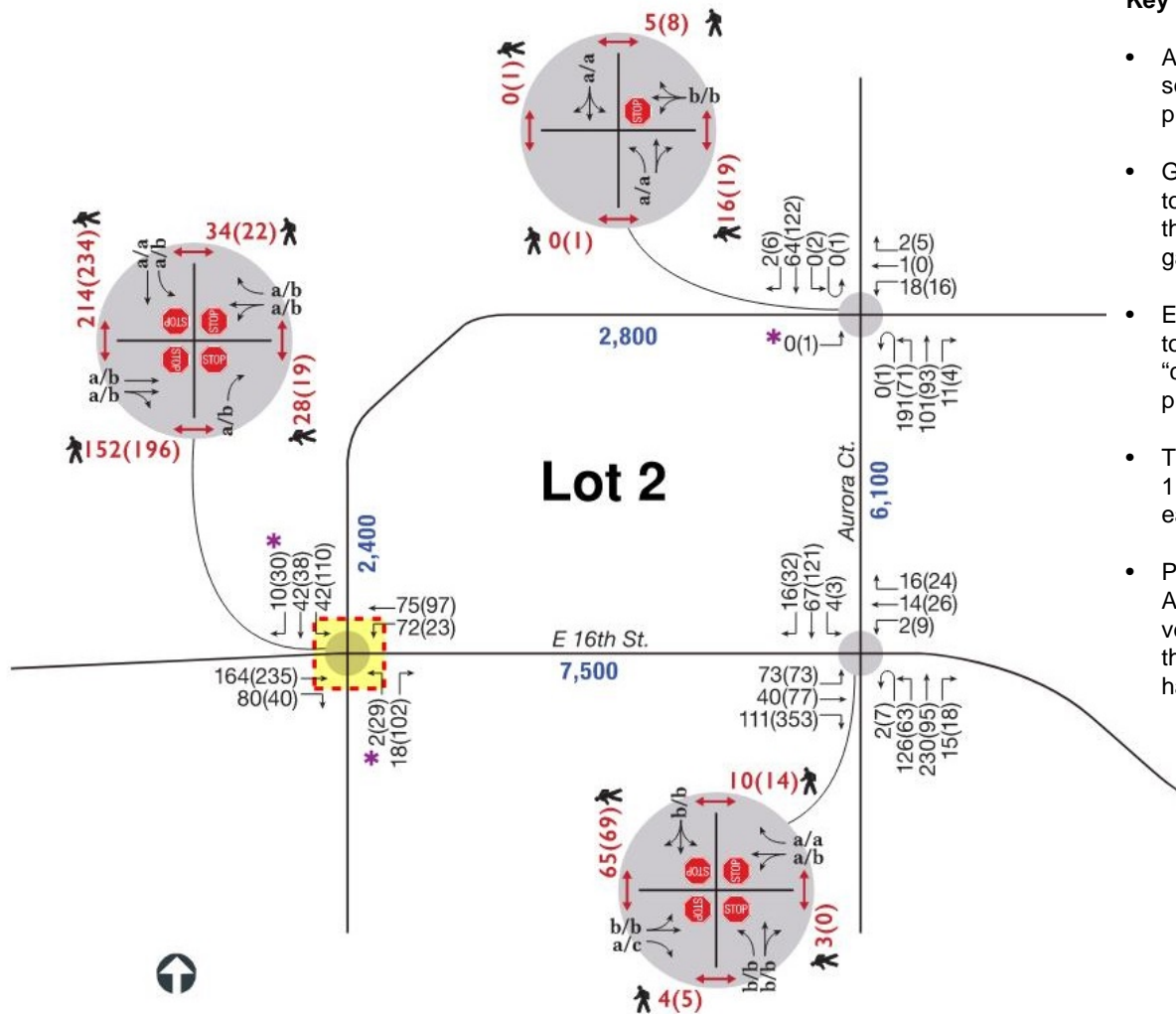


# Site Circulation - Vehicular





# Existing Traffic Conditions



## Key Findings at 16<sup>th</sup> and "Troy"

- Approximately 17% of traffic on the northbound and southbound approaches make turning movements that are prohibited by existing striping and signage at the intersection
- Given background growth and shifting traffic patterns related to Garage 2 we would anticipate 125-150 vehicles making the prohibited southbound right turn movement after the garage is constructed during the PM peak hour
- Elimination of the northbound leg allows for the opportunity to modify the curb for the southbound approach to create "channelization" which will more effectively eliminate these prohibited movements
- This improvement has the ability to eliminate upwards of 1,500 conflicts between pedestrians and turning vehicles each day
- Pedestrians crossing from Lot 4 and Garage 3 to and from AOP would only interact with through movements from vehicles traveling along 16<sup>th</sup> Avenue, and research suggests that turning movements are three to six times more hazardous to pedestrians than through movements

# Site Photos – 16<sup>th</sup> and “Troy”



Photo 1 – Looking West along 16<sup>th</sup> Ave



Photo 2 – Looking South along “Troy”



Photo 3 – Looking North along “Troy”



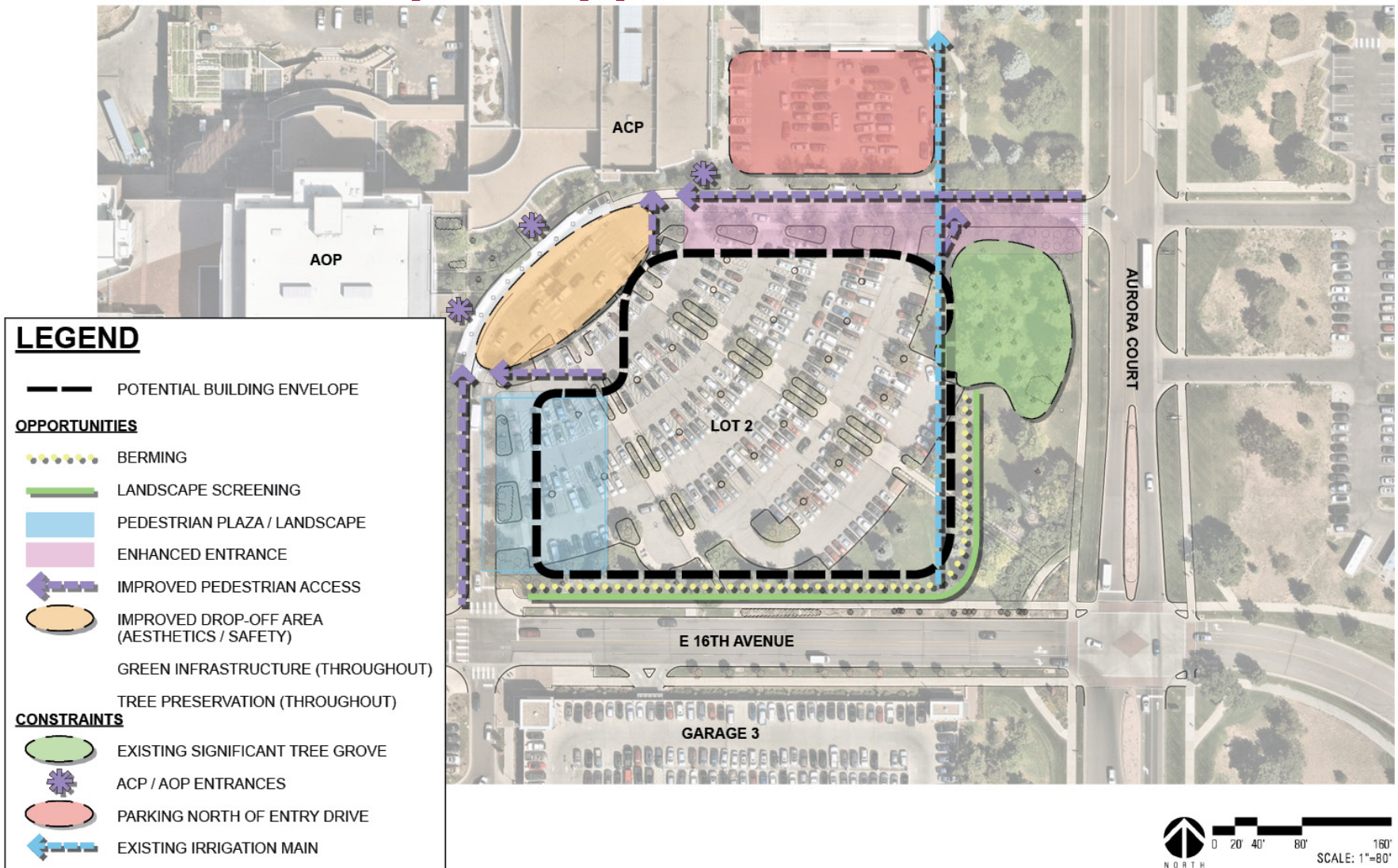
Photo 4 - Looking East along 16<sup>th</sup> Ave

# Summary - Site Constraints

1. Existing grading will impact height of garage in relationship to existing drainage and drive lines.
2. Existing trees on east and south.
3. Existing utilities running underground through the site.
4. Pedestrian conflicts throughout site including valet drop-off and 16<sup>th</sup> and “Troy”.
5. Significant portion of site will be in shade during afternoon, especially during winter.
6. Interaction with adjacent buildings, especially views out from 7-story AOP building to the west of Lot 2.

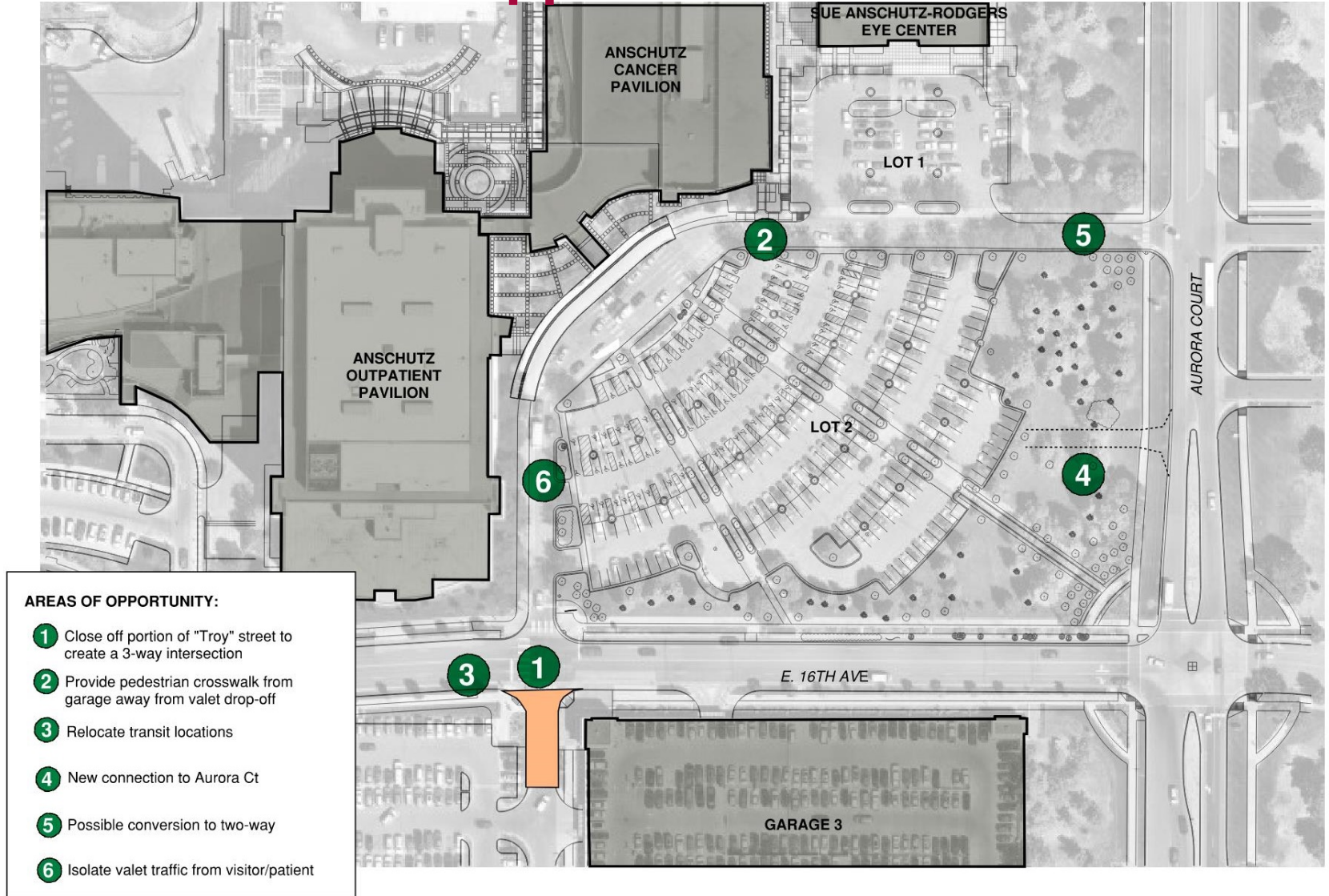


# Site Landscape - Opportunities





# Site Circulation - Opportunities



# Summary - Opportunities

1. Existing grading will impact height of garage in relationship to existing drainage and drive lines.
2. Preserve existing trees and create “park-like” experience for visitors.
3. Minimize disruptions to existing utilities.
4. Improve pedestrian safety throughout the site.
5. Place public spaces away from north side of garage to maximize daylight.
6. Improve entrance arrival.

## C. Sustainable Strategies and Considerations

# Wayfinding System



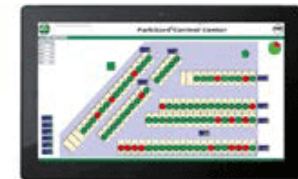
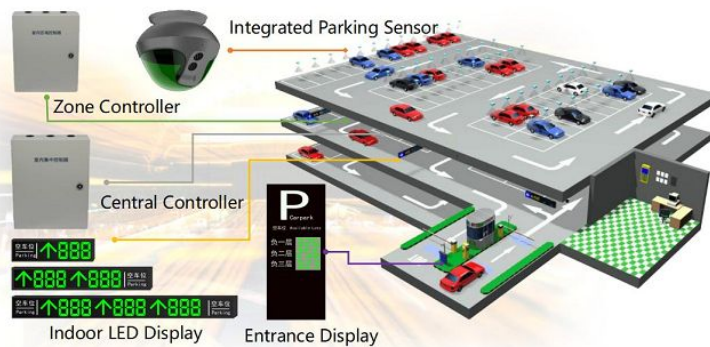
## Notes:

Garage will have overall full/vacancy signage at garage entrances

Considering stall vacancy indicators

Design will accommodate future technology

Ability to link to patients' phone to efficiently direct them to parking space



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# EV Charging Stations



## Notes:

Leadership requested the garage provide infrastructure for two stations per level. Charging stations will not be installed upon initial completion.

Electrical infrastructure will include provisions for (2) EVSE-Ready Outlets will be provided on each level.

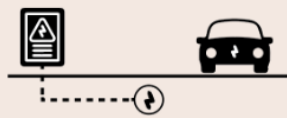
Type	Unit Cost \$
AC Level 1 (trickle charge)	300-1,500
* AC Level 2 (up to 60mi per hour charge)	400-6,500
DC Level 3 Fast Charging (up to 90mi per 20min charge)	10,000-40,000

## 1. EV-Capable

Install electrical panel capacity with a dedicated branch circuit and a continuous raceway from the panel to the future EV parking spot.

[Aspen, CO: 3% of parking is EV-Capable \(IBC\)](#)

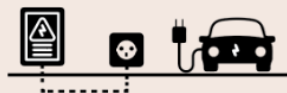
[Atlanta, GA: 20% is EV-Capable \(Ordinance\)](#)



## 2. EVSE-Ready Outlet

Install electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet (typical clothing dryer outlet).

[Boulder, CO: 10% of parking is EV-Ready Outlet](#)



## 3. EVSE-Installed

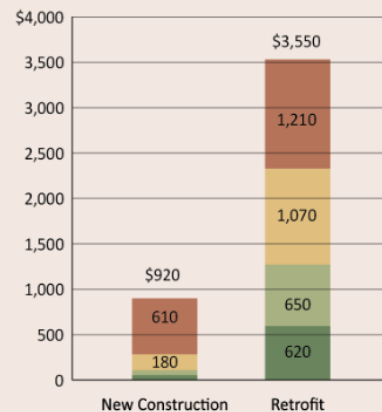
Install a minimum number of Level 2 EV charging stations.

[Palo Alto, CA: 5-10% of parking is EV-Installed](#)



## Cost per EV Parking Space: New Construction vs Retrofit

Case Study prepared for the City and County of San Francisco (2016)



The case study considers a parking lot with ten total spaces and two EV parking spaces, and compares the EV infrastructure installation costs at the time of new construction versus building retrofit. "EV parking spaces" define spaces that have an EV-ready outlet, and include the electrical panel capacity, raceways, breakers, outlet boxes, and wiring to install an EV charger at any given time in the future.

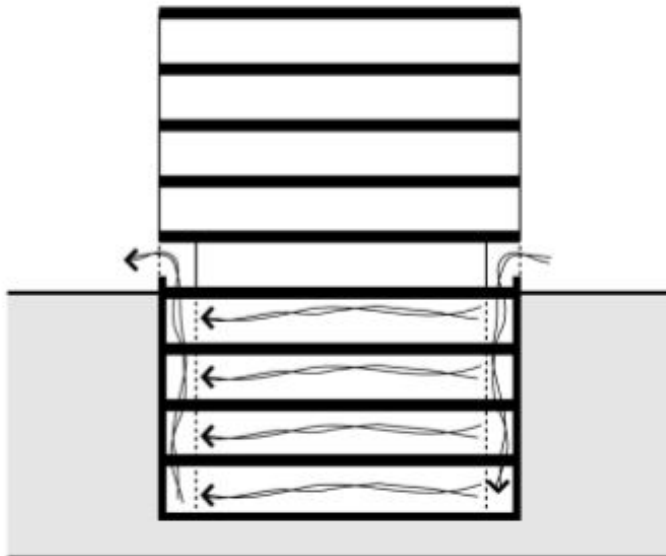
■ Balance of Circuit  
■ Raceway  
■ Permitting & Inspection  
■ Construction Management



# Natural Ventilation



**OPEN PARKING STRUCTURE WITH  
NATURAL VENTILATION**



**ENCLOSED BELOW-GRADE PARKING  
STRUCTURE WITH MECHANICAL  
VENTILATION**

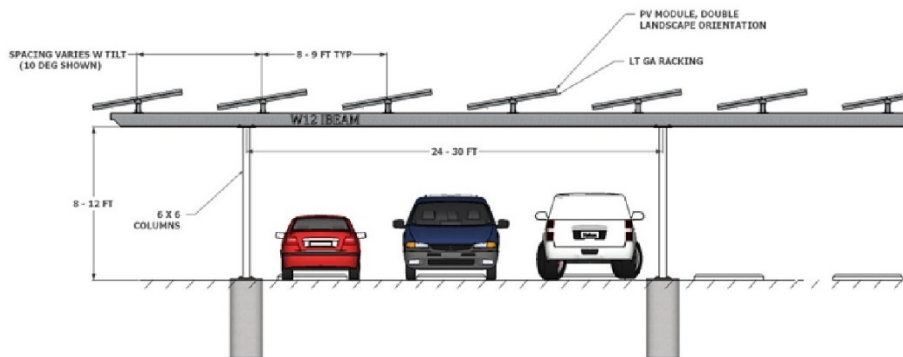
## Notes:

By placing the garage entirely above grade, there are significant savings in both initial construction costs and ongoing operation for mechanically ventilating a garage.

Mechanical ventilation requires a fan and sensor system that must be continually operated. Per UCH facilities team, there have been issues in other garages with sensors working properly.

One example [a northern California garage](#) with a mechanical ventilation system powered by a total of 20 fan motors possessing a combined 100 horsepower. By code, these fans must run 24/7. With no ventilation controls, the fan motors would consume 527,000 kWh per year, with a corresponding peak demand greater than 60 kW. The utility rate for the garage is \$0.205/kWh. That equates to a ventilation cost of more than \$108,000 a year.

# Photovoltaics



## Notes:

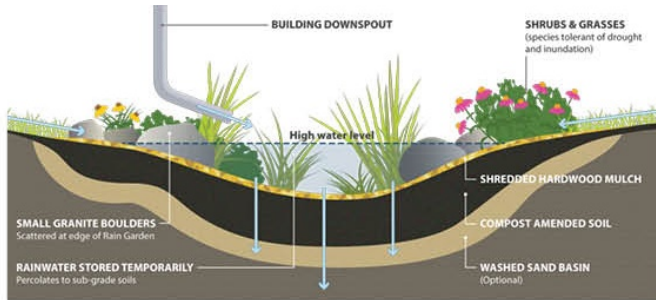
Design team is exploring this as an option for consideration based on recent successful installation at UCHealth Steadman Hawkins Clinic Denver.



UCHealth Steadman Hawkins Clinic Denver



# Planting Materials



ADAPTIVE PLANTING  
INFILTRATION OF STORMWATER  
INFRASTRUCTURE COST SAVINGS

## BIOSWALES



NATIVE, DROUGHT-TOLERANT PLANTING  
COLORFUL PERENNIALS AND SHRUBS  
IRRIGATION COST SAVINGS

## XERISCAPING



### Notes:

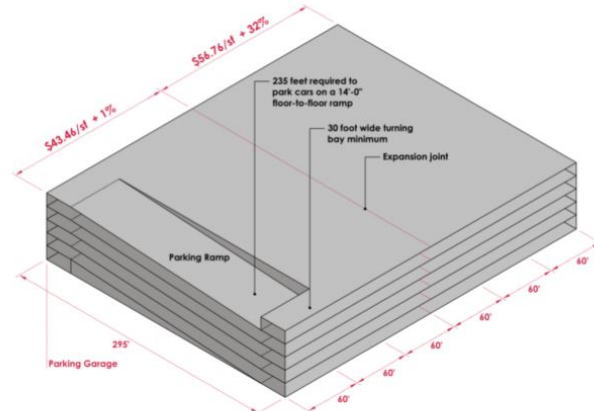
Landscape architects to work closely with Steve Jones (UCH) on appropriate plant types.



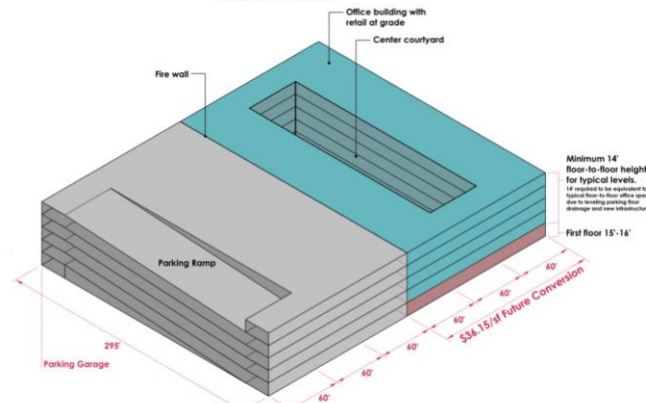
# Adaptive Reuse – Design Strategies



Design ground floor for future liner buildings  
(Up to 10% Premium)



### Initial Construction



### Future Adaptive Reuse

Design for portion of garage to be converted  
(11-25% Premium)



Design to accommodate modular infill units  
(>25% Premium)

# Adaptive Reuse – Cost Premium

Recommended Adaptive Reuse Designs at Relative Percent Premium Above New Structure Cost

## Up to 10% Premium

- Design for taller floor-to-floor heights, especially at grade
- Design for increased floor loads
- Design for less drift (lateral deflection) for future occupied space
- Design for less vertical differential settlement and deflection for future occupied space
- Design for ramps on the edge of floor plan for partial conversion
- Design façade for future building conversion
- Design for future shafts and floor penetrations
- Plan for additional empty utility infrastructure (duct banks, blank panels, sleeves, etc.)
- Plan for oversized or additional MEP rooms
- Design for wider stairs for more occupants in future or provide areas for future stairs and elevators

## 11-25% Premium

- Review if medium span construction is required for future alternate use (30x45 ft. grid)
- Increased setback to property line for future buildings, stairs/elevators, etc. on or more sides
- Design top level of parking for assembly or other “heavy” use like a garden or park, or events

## >25% Premium

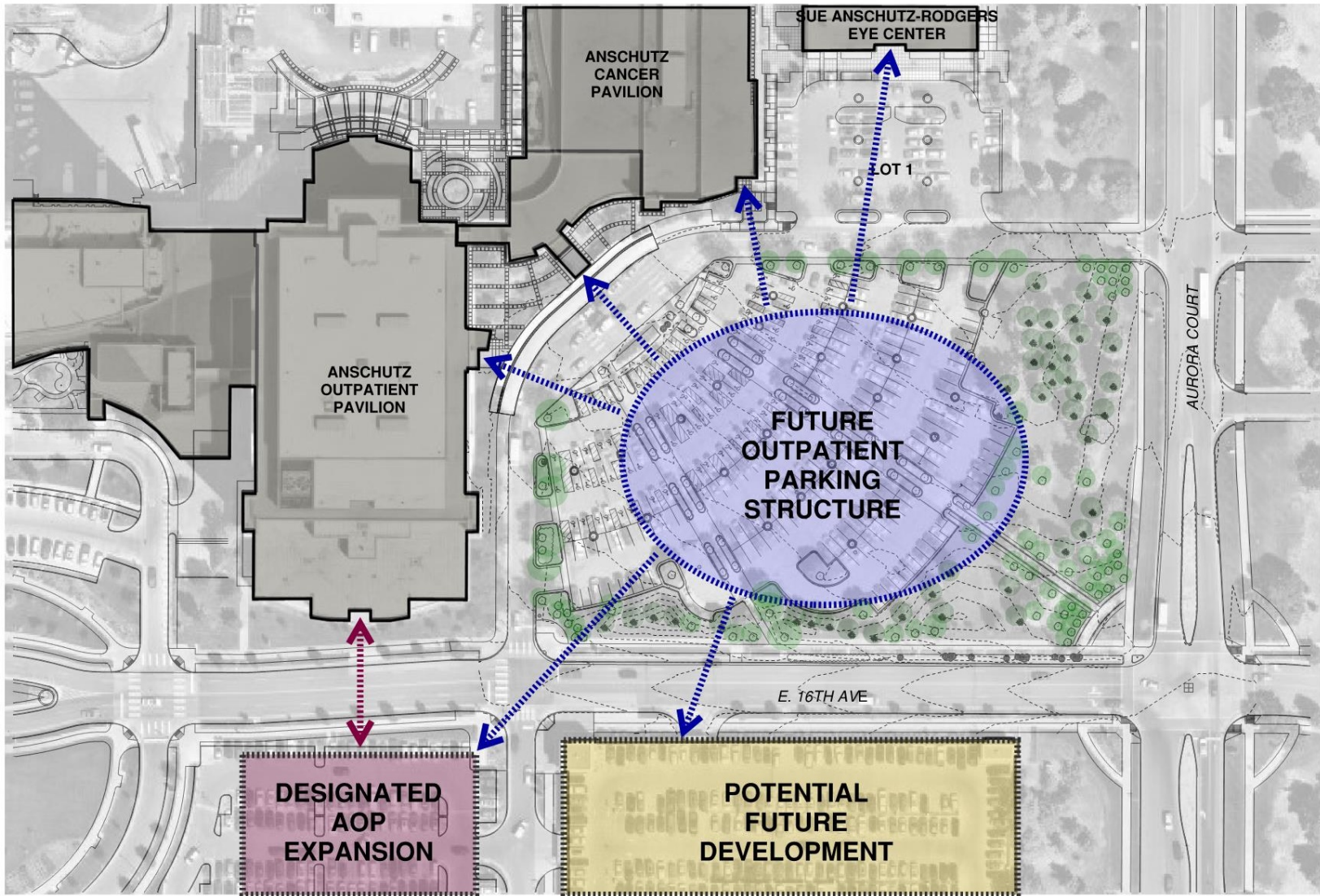
- Review if short span construction is required for future alternate use (30x30 ft. grid)
- Provide all express ramps, all flat parking areas for future removal of express ramps
- Design all floors (or many floors) for 80 psf (or more) live load for future occupant flexibility
- Provide one level of the parking below grade for future support space (MEP, storage, etc.)

*Information provided by Walker Consultants*

## D. Introduce Conceptual Studies



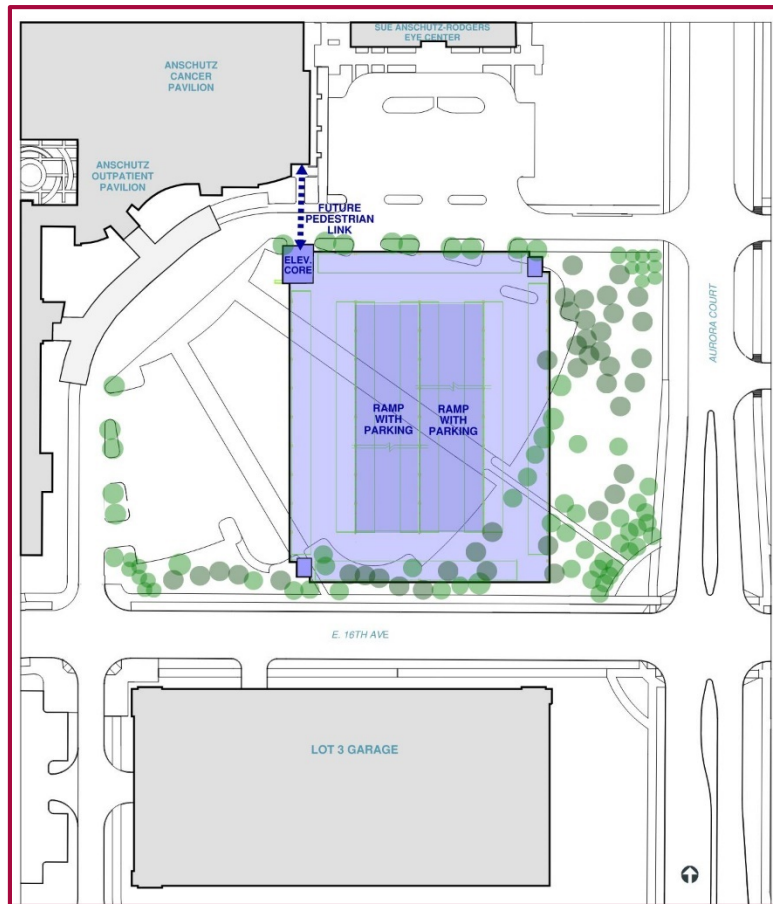
# Potential Future Use



Future Outpatient Parking Structure centralized to support designated and potential campus development



# Early Massing Studies



## 4-Bay N/S – [6 Levels 1,300 Stalls]

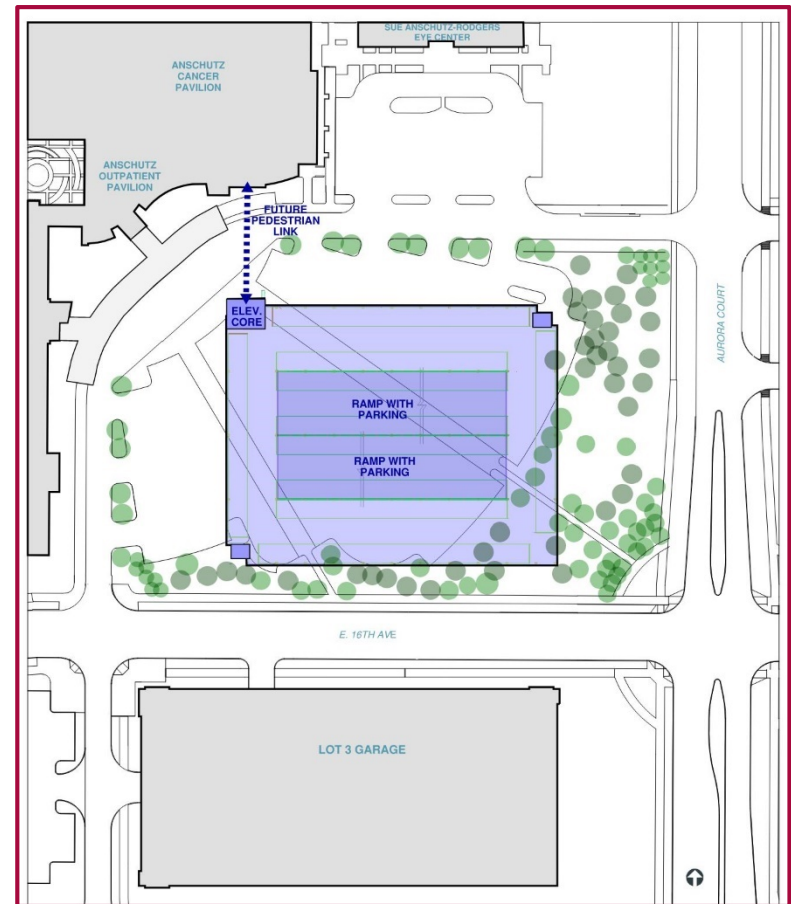
### Pros

- Potential for 'Troy' street improvements
- Potential expansion to west
- Efficient parking structure

### Cons

- Limited north drive improvements
- Structure crowds 16<sup>th</sup> avenue and north drive

Selected for further study



## 4-Bay E/W – [6 Levels 1,300 Stalls]

### Pros

- Potential for north drive improvements
- Potential for 'Troy' street improvements
- Efficient parking structure

### Cons

- Limited expansion opportunities

Selected for further study

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# N/S – Design Scorecard

	Criteria	Evaluation			
		Good	Neutral	Poor	Comments
Overall Site	Vehicular Circulation			x	No opportunity for future Boulevard along north drive lane or for all Garage 2 traffic to exit to Aurora Ct, alleviating congestion at 16th Ave and "Troy"
	Pedestrian Circulation		x		All pedestrians forced to cross along north drive
	Grading			x	Limited space to transition elevation of drive lane to garage on along north entrance
	Utilities			x	Several utilities are impacted
	Land Use	x			Large open space to west of garage
Landscape	Tree Impact			x	Significant impact on existing trees along 16th ave
	Pedestrian Spaces		x		Only one large space on west side of garage
	Site Sections			x	"Canyon" effect along north drive lane, tighter setback along 16th Ave
	Enhanced Landscape Area/Streetscape		x		Limited opportunities to enhance streetscape and pedestrian zones around garage
	Shade Studies		x		North areas will be in shade most of the time, west areas will have good sunlight in spring, summer and fall
Architecture	Overall Massing		x		No opportunities to step down along north or south elevations
	Connection to Public Spaces	x			New garage will partially block views from the outpatient buildings looking out.
	Primary Elevator Core Location		x		Only one potential location at northwest corner
	Future Expansion	x			Opportunities to expand to east and west
	Future Pedestrian Bridge		x		Limited ability to adjust garage height to align at desired 2nd floor outpatient buildings

## Overall Pros:

Good connection to existing buildings by not significantly blocking primary views out of adjacent buildings and deterring people from trying to cross valet drop-off. Ability for future expansion to both east and west depending on garage location.

## Overall Cons:

Grading and utilities will be significant challenge. A significant amount of existing trees will be impacted. Resulting space around building creates tight "canyons" along 16th Ave and north drive lane.

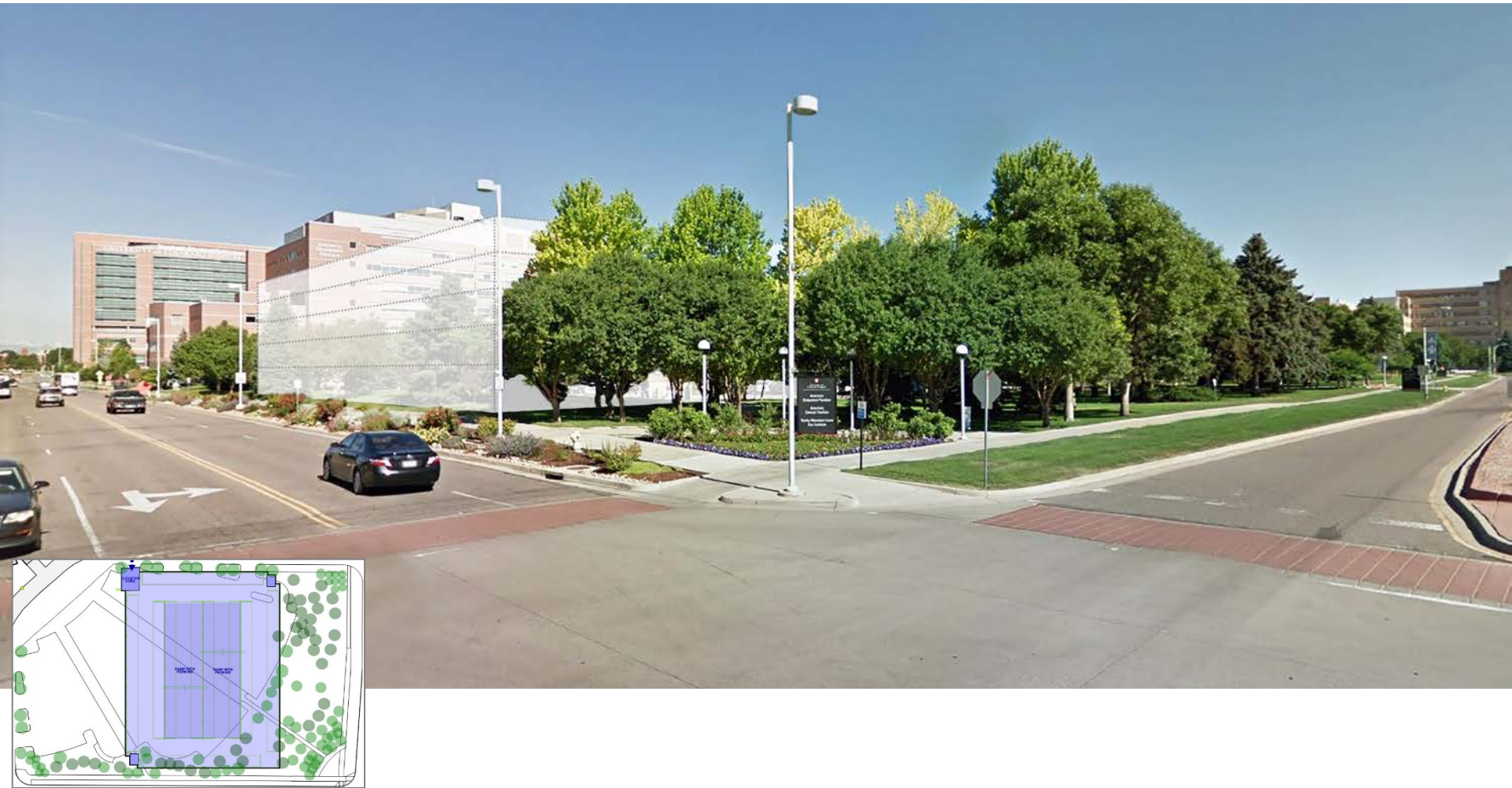


# N/S – Aerial View

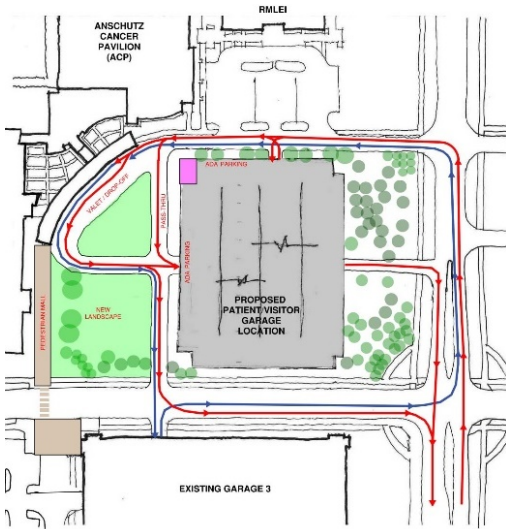




# N/S - Street Level View



# N/S - Early Circulation Studies



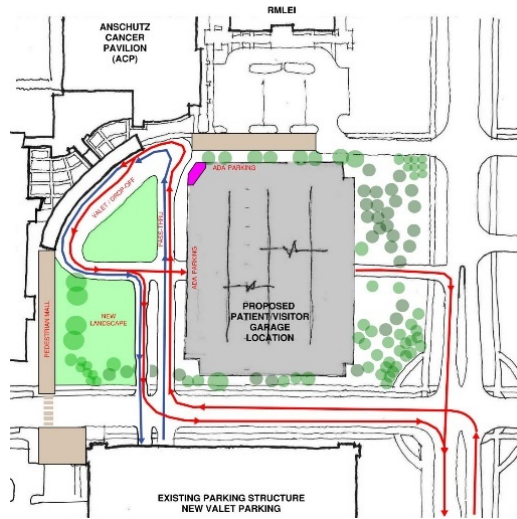
**Figure 4**

**Pros**

- Alleviate traffic at 16<sup>th</sup> and "Troy"
- Pass through lane for people going straight to garage

**Cons**

- Queuing on 16<sup>th</sup> Ave
- Entry point is in middle of garage on west/east sides



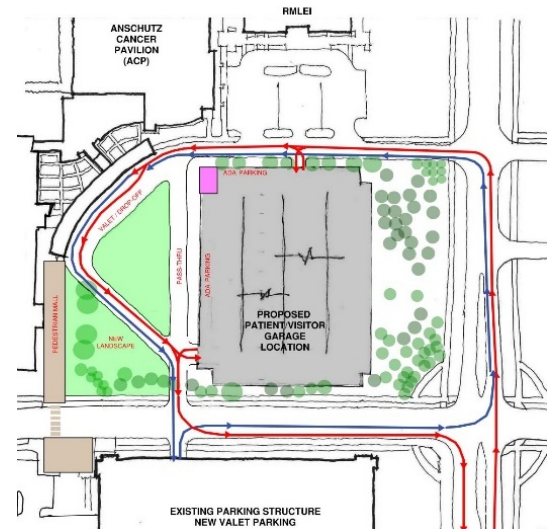
**Figure 4 w/ Boulevard**

**Pros**

- Alleviate traffic at 16<sup>th</sup> and "Troy"
- Pedestrians able to cross at north side without vehicle conflict

**Cons**

- Tight turn-around for valet drop-off
- Limited visibility when approaching the site
- Queuing on 16<sup>th</sup> Ave



**Diagonal**

**Pros**

- Pass through lane for people going straight to garage

**Cons**

- Not enough straight run before 16<sup>th</sup> Ave
- Queuing on 16<sup>th</sup> Ave
- Large island space that is not easily accessible



# N/S - Preferred Circulation

## Pros

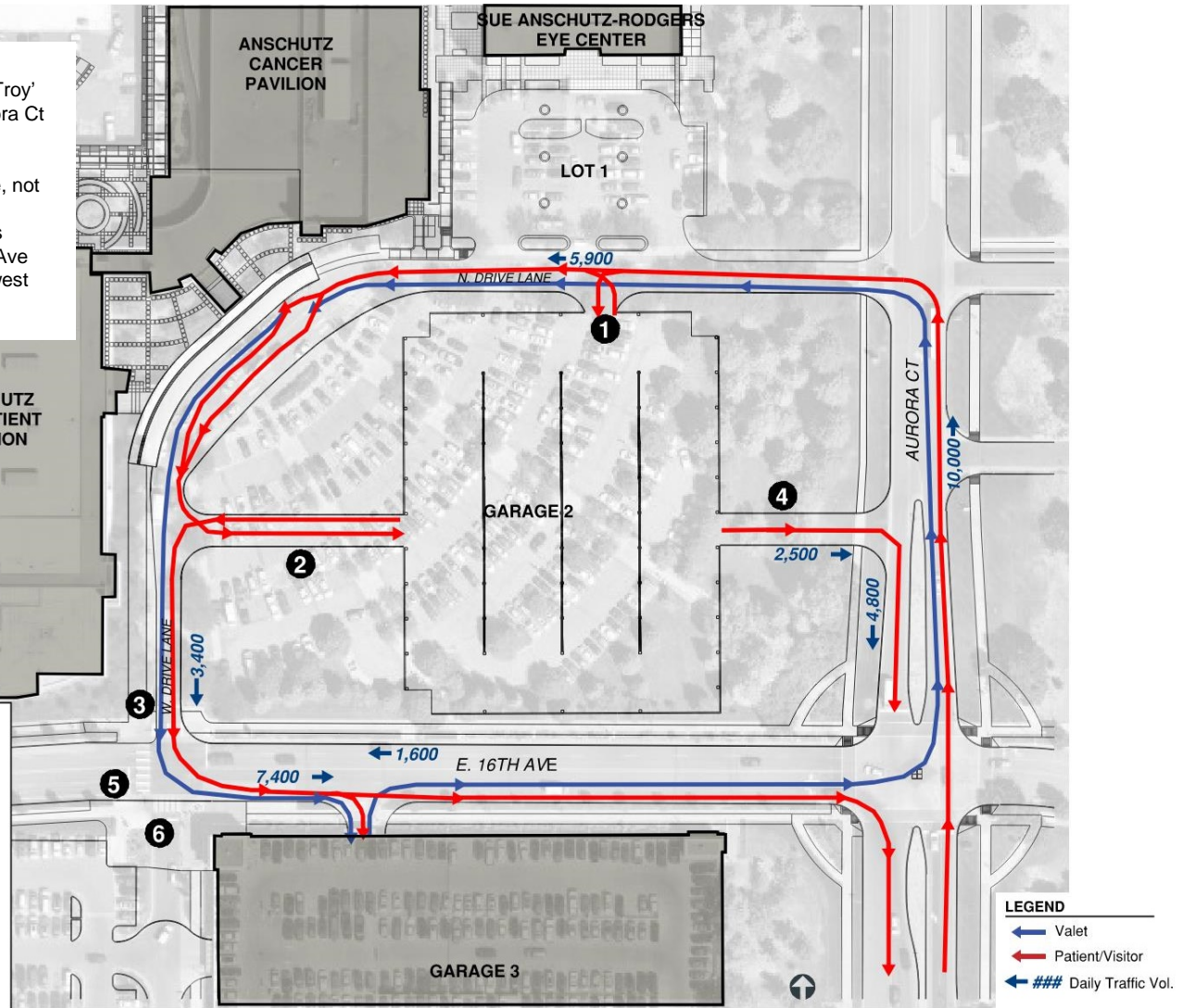
- Alleviate some congestion at 16<sup>th</sup> and 'Troy'
- Portion of garage traffic can exit to Aurora Ct

## Cons

- Entry/exit points to garage are in middle, not aligned with lanes
- Tight setbacks on north and south sides
- Potential for queuing issues along 16<sup>th</sup> Ave
- Entry/Exit vehicle conflict at north and west entrances to Garage 2

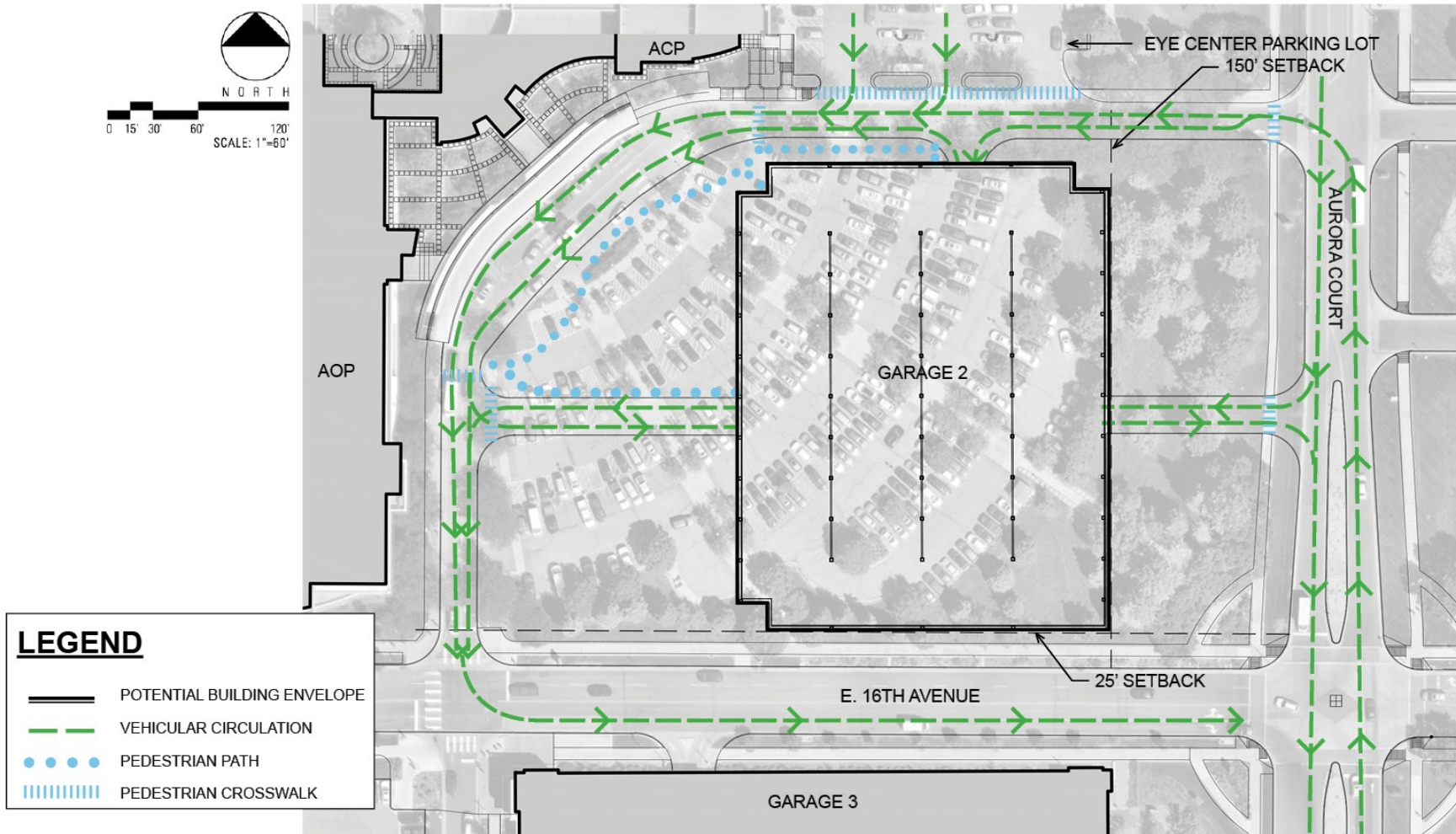
## Improvements:

- 1 New north drive lane into Garage 2
- 2 New west drive lane into Garage 2
- 3 Widen existing sidewalk, reduce to one lane and force left turn only
- 4 New connection to Aurora Ct
- 5 Relocate transit stop
- 6 Close off portion of "Troy St"



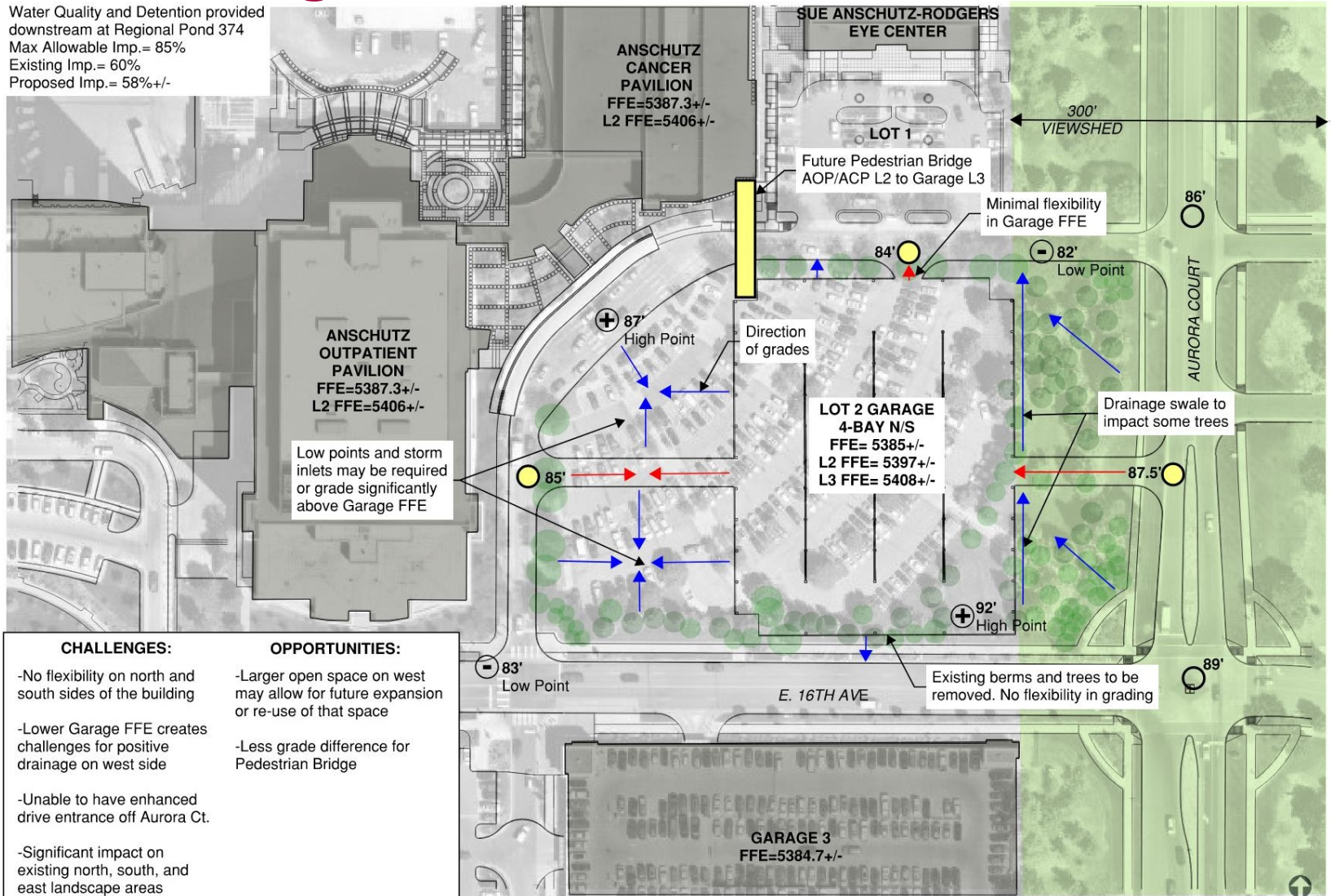


# N/S - Pedestrian and Vehicular Circulation



# N/S - Grading

Water Quality and Detention provided downstream at Regional Pond 374  
 Max Allowable Imp.= 85%  
 Existing Imp.= 60%  
 Proposed Imp.= 58%+/-



## CHALLENGES:

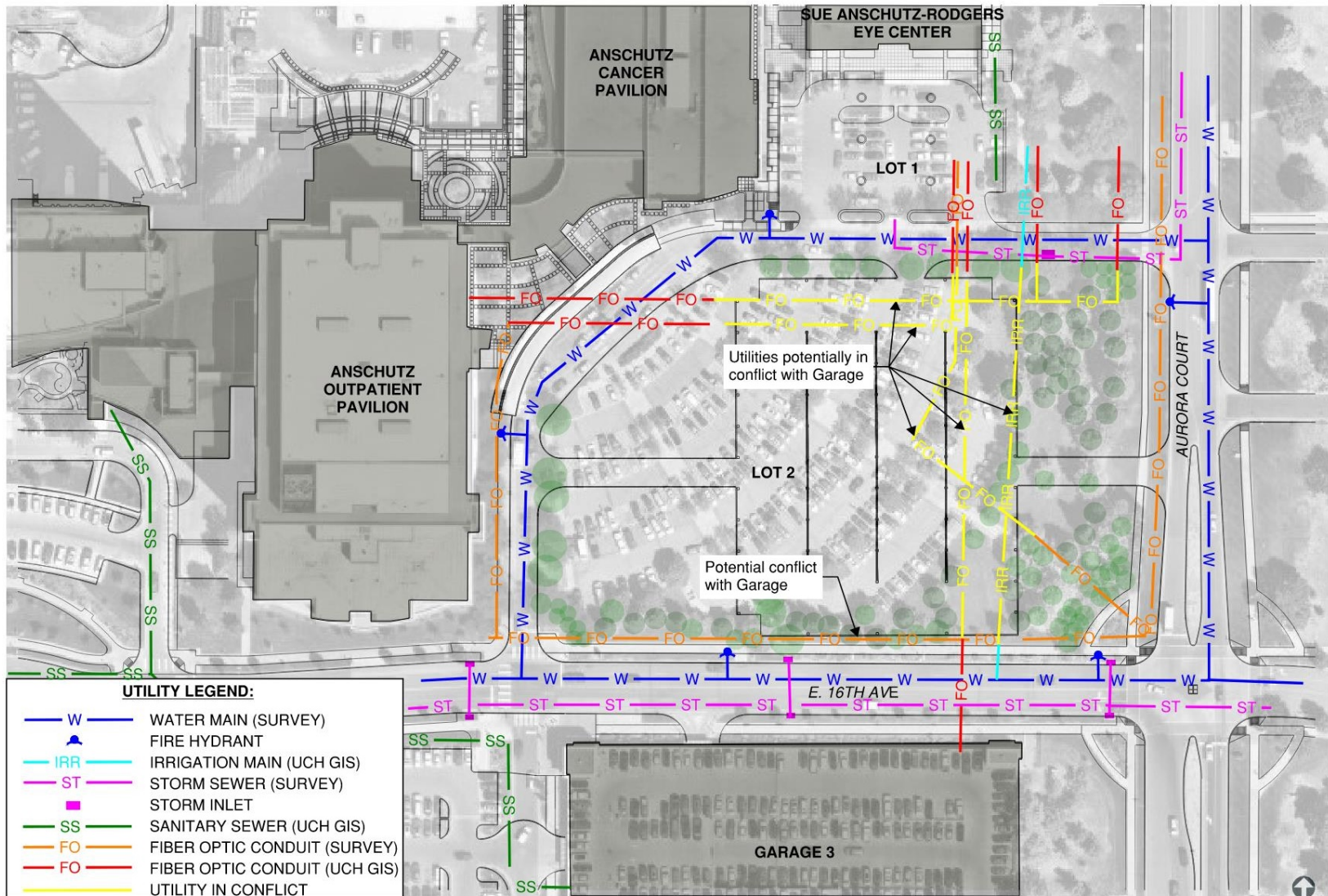
- No flexibility on north and south sides of the building
- Lower Garage FFE creates challenges for positive drainage on west side
- Unable to have enhanced drive entrance off Aurora Ct.
- Significant impact on existing north, south, and east landscape areas

## OPPORTUNITIES:

- Larger open space on west may allow for future expansion or re-use of that space
- Less grade difference for Pedestrian Bridge



# N/S - Utility Conflicts

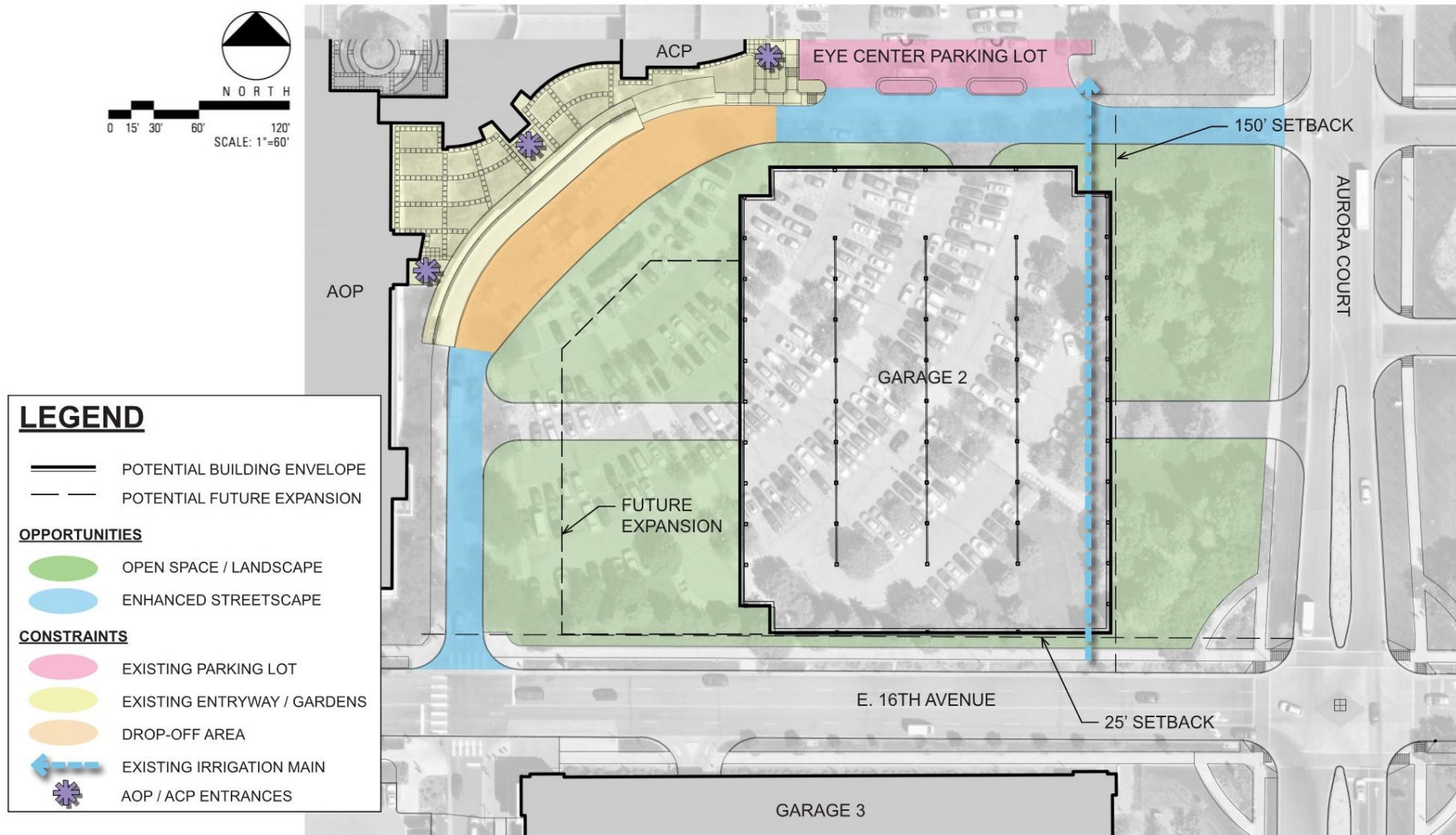




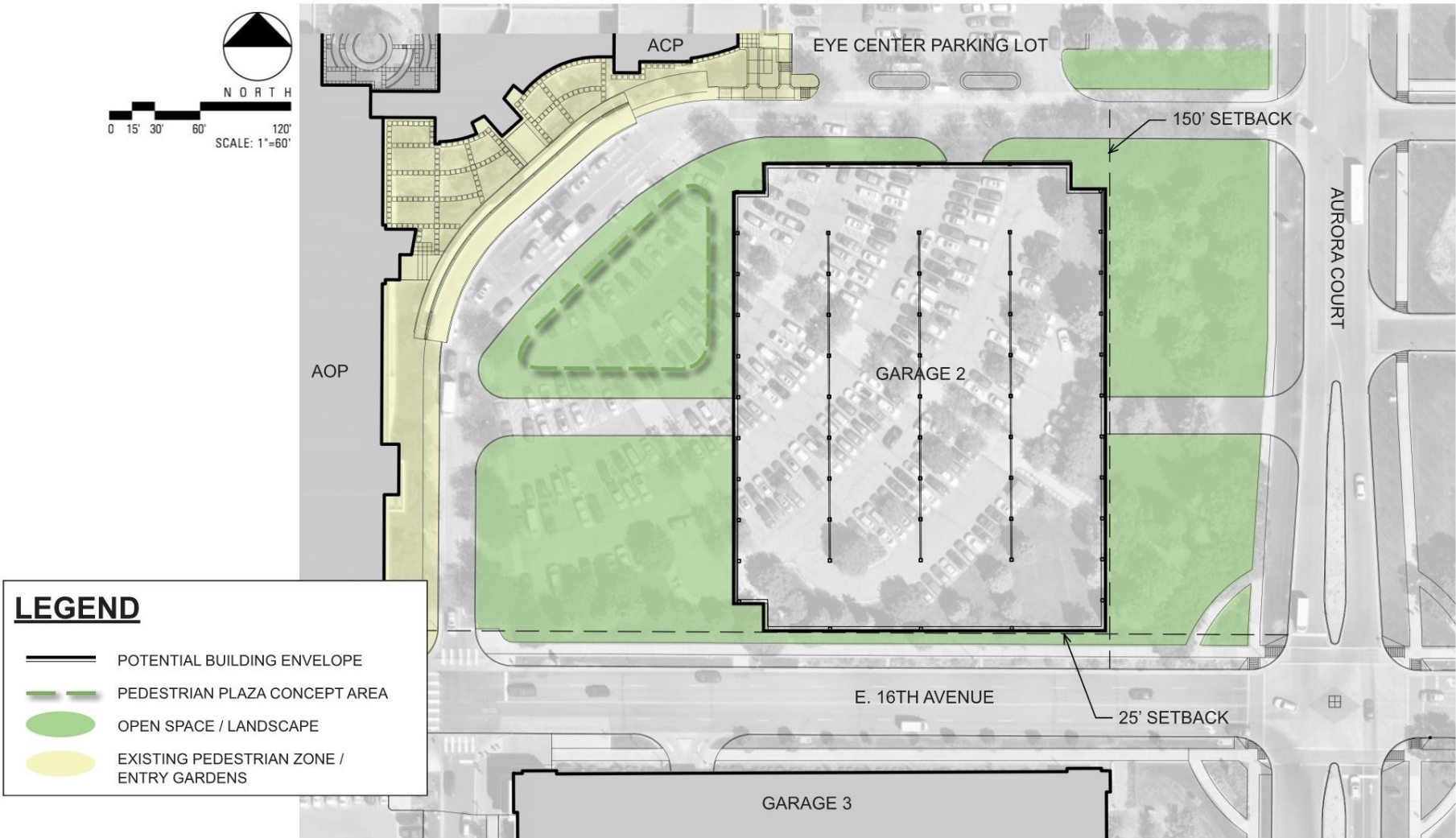
# N/S - Land Use



# N/S - Opportunities and Constraints

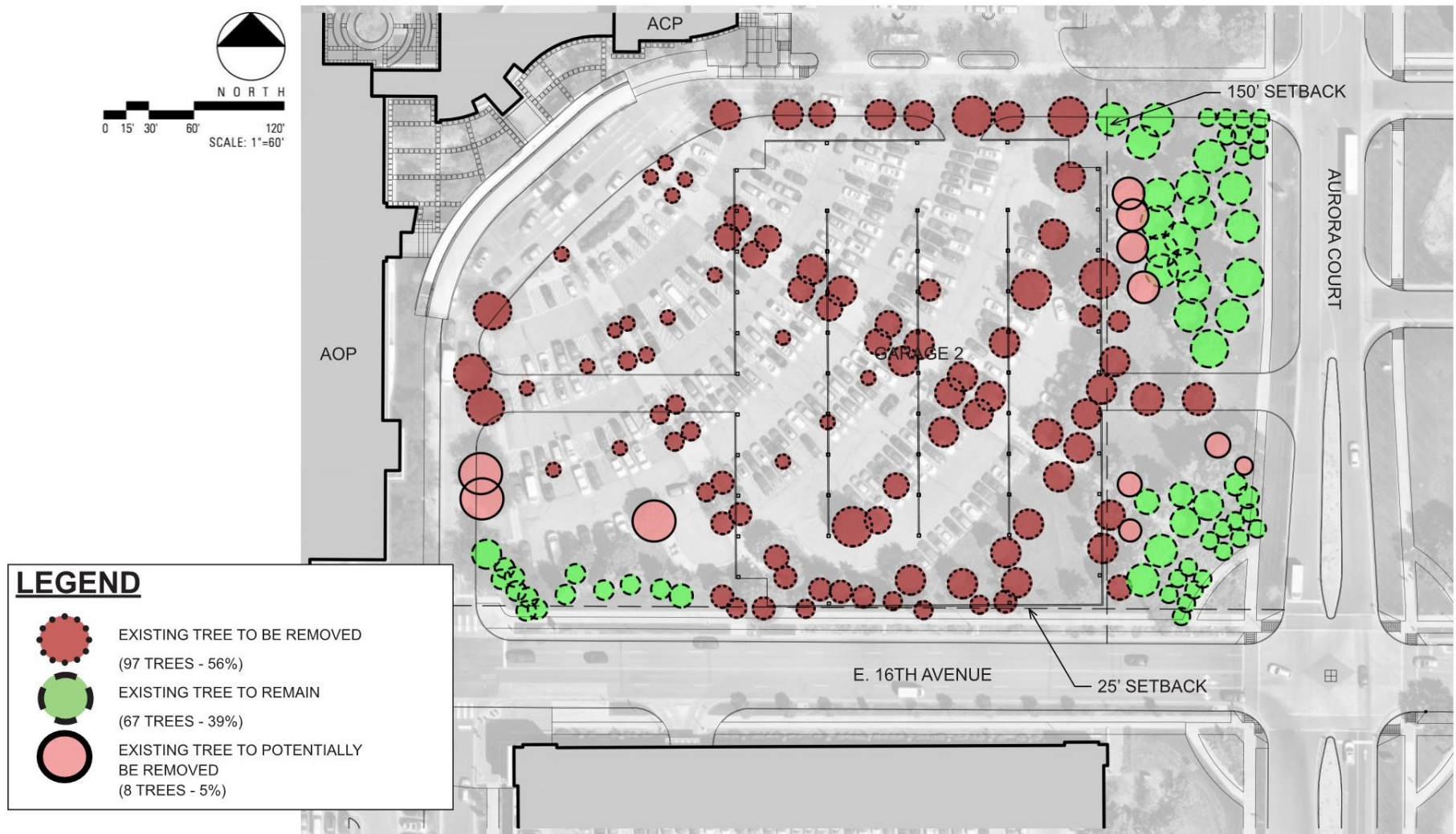


# N/S - Pedestrian Space

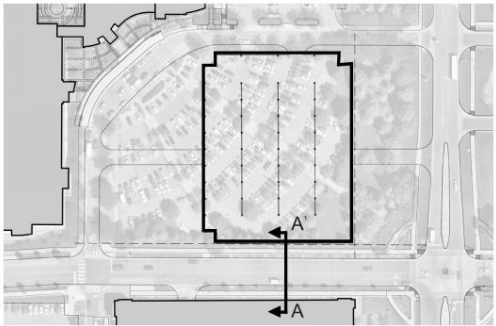
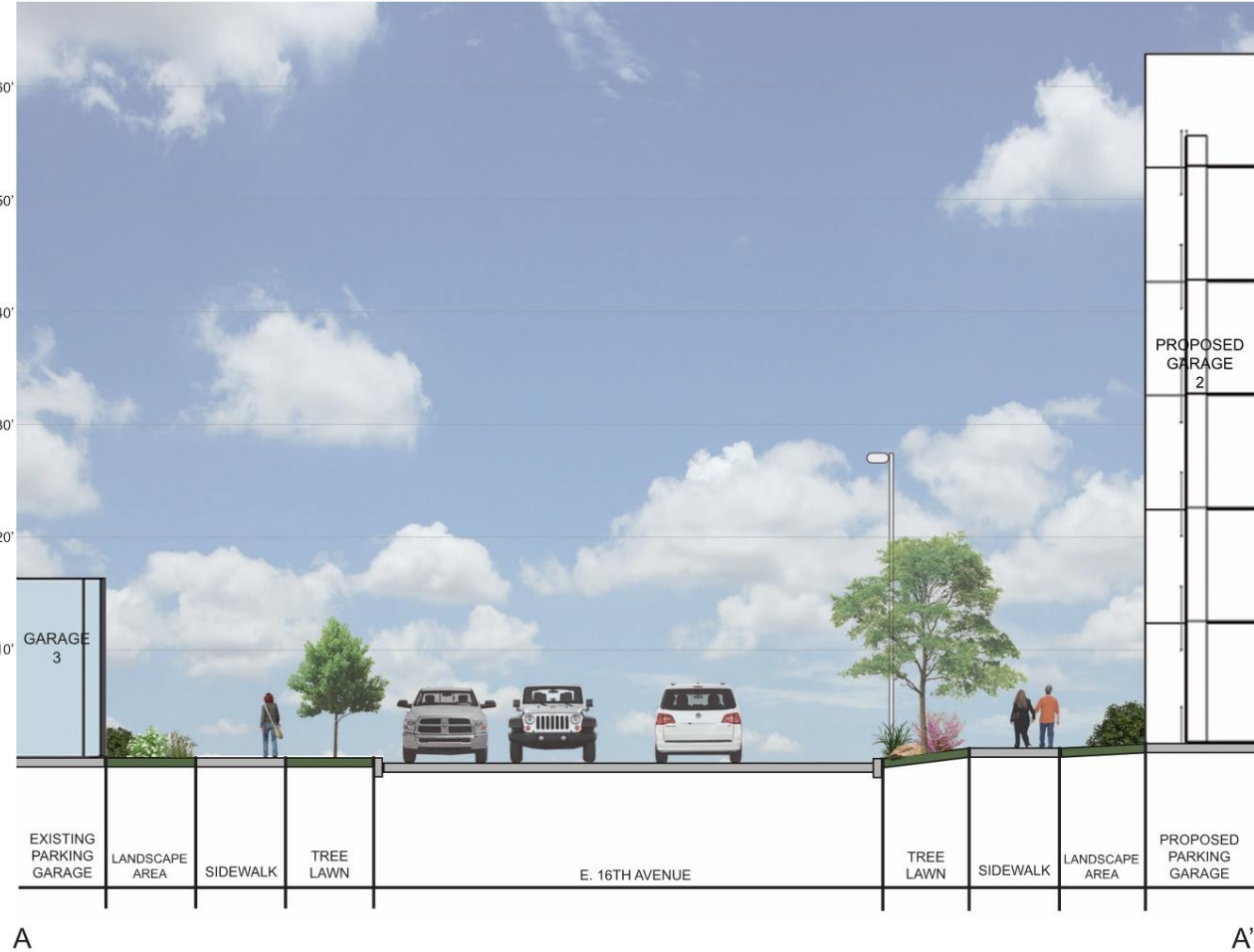




# N/S - Tree Impact



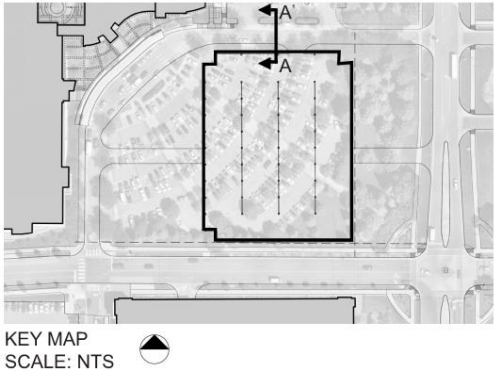
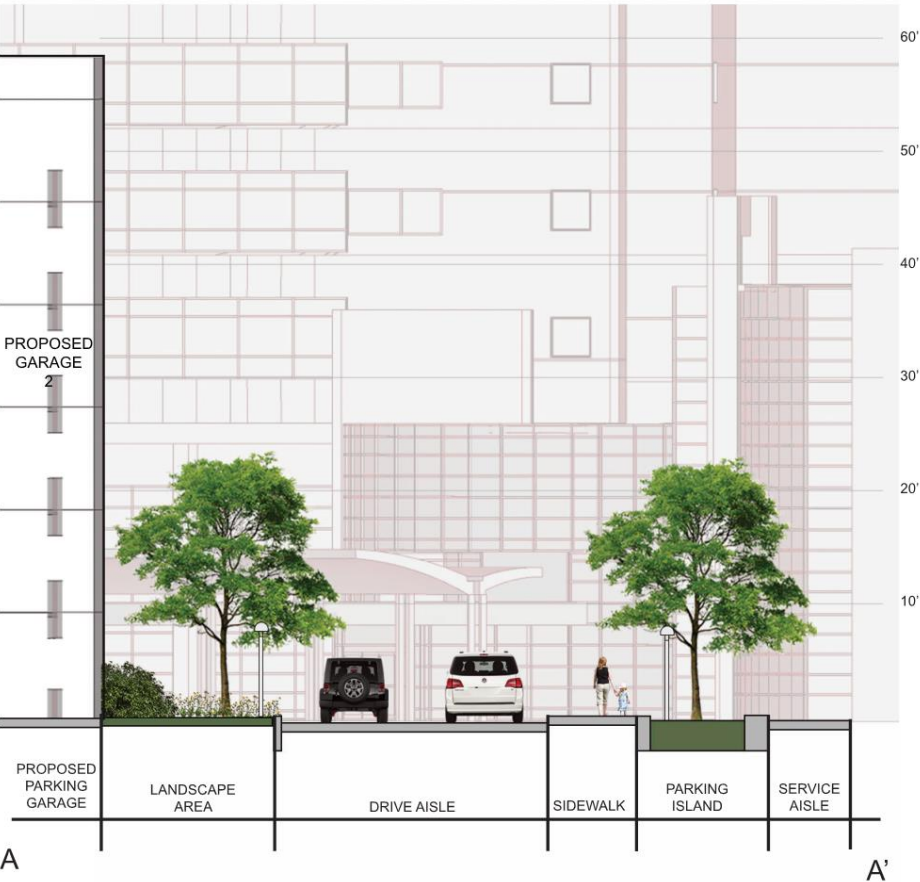
# N/S - South Section (16<sup>th</sup> Ave)



**16TH AVENUE SECTION**  
N/S ORIENTATION



# N/S North Section (Drive Lane)

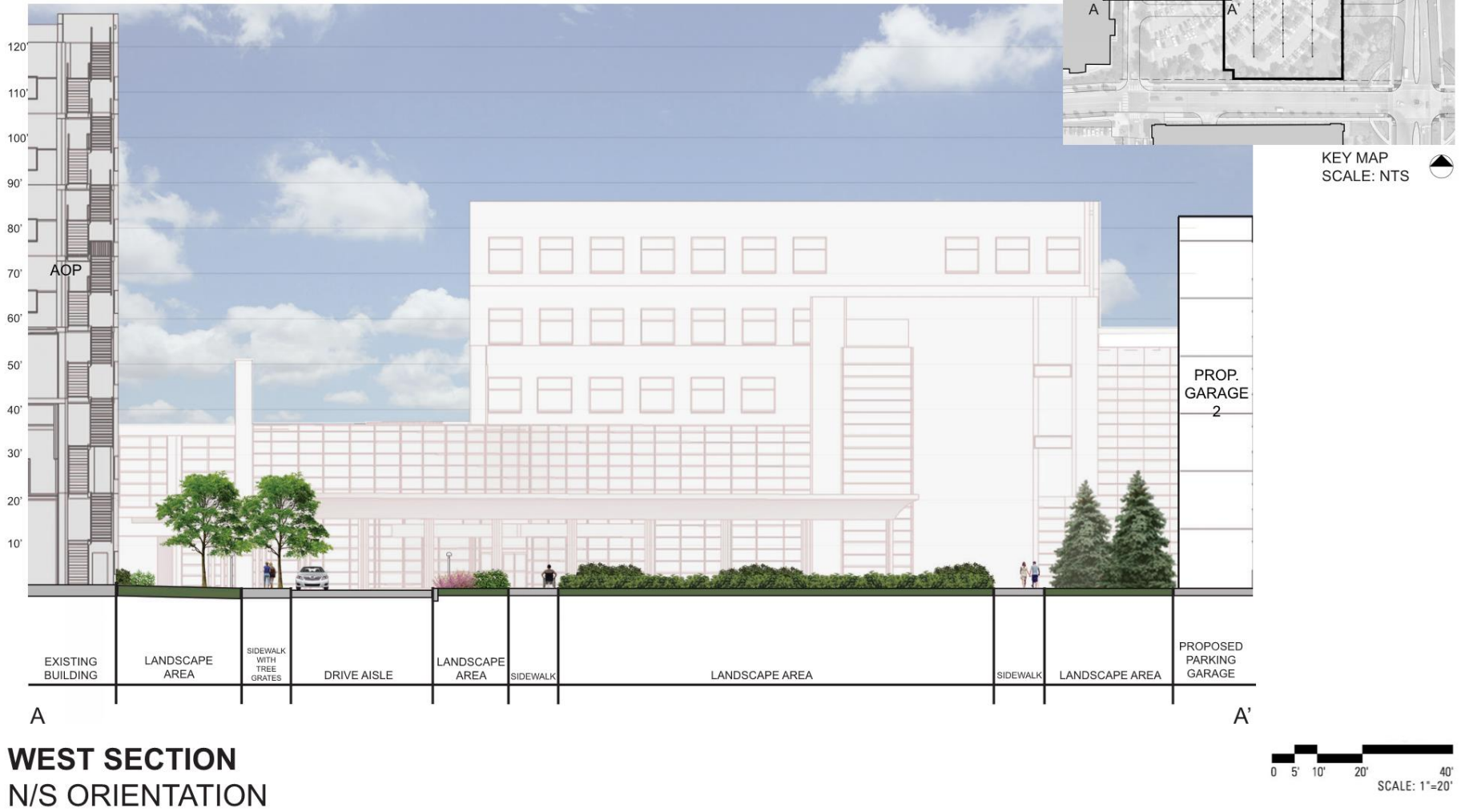


**ENTRY DRIVE SECTION**  
N/S ORIENTATION

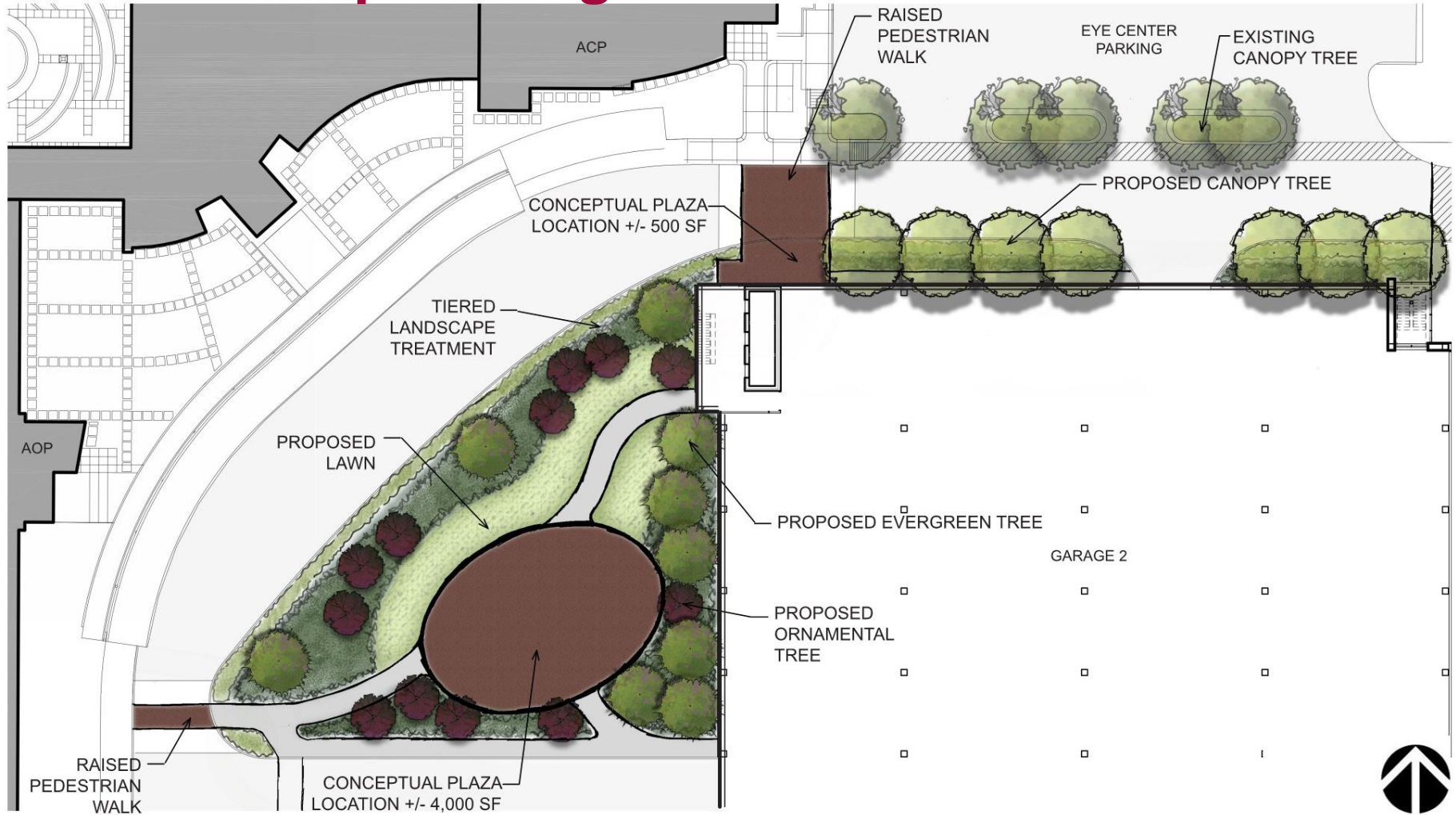




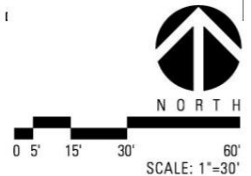
# N/S - West Section (Drive Lane)



# N/S - Concept Enlargement



**CONCEPT ENLARGEMENT**  
N/S ORIENTATION



uchealth



# N/S – Concept Enlargement

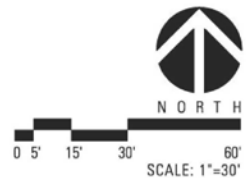




# N/S - Streetscape Enlargement



**ENHANCED STREETSCAPE ENLARGEMENT**  
N/S ORIENTATION



*uhealth*

# N/S – Streetscape Enlargement





# N/S - Solar Studies



March/Sept – 8:00am



June – 8:00am



Dec – 8:00am



March/Sept – 12:00pm



June – 12:00pm



Dec – 12:00pm



March/Sept – 4:00pm



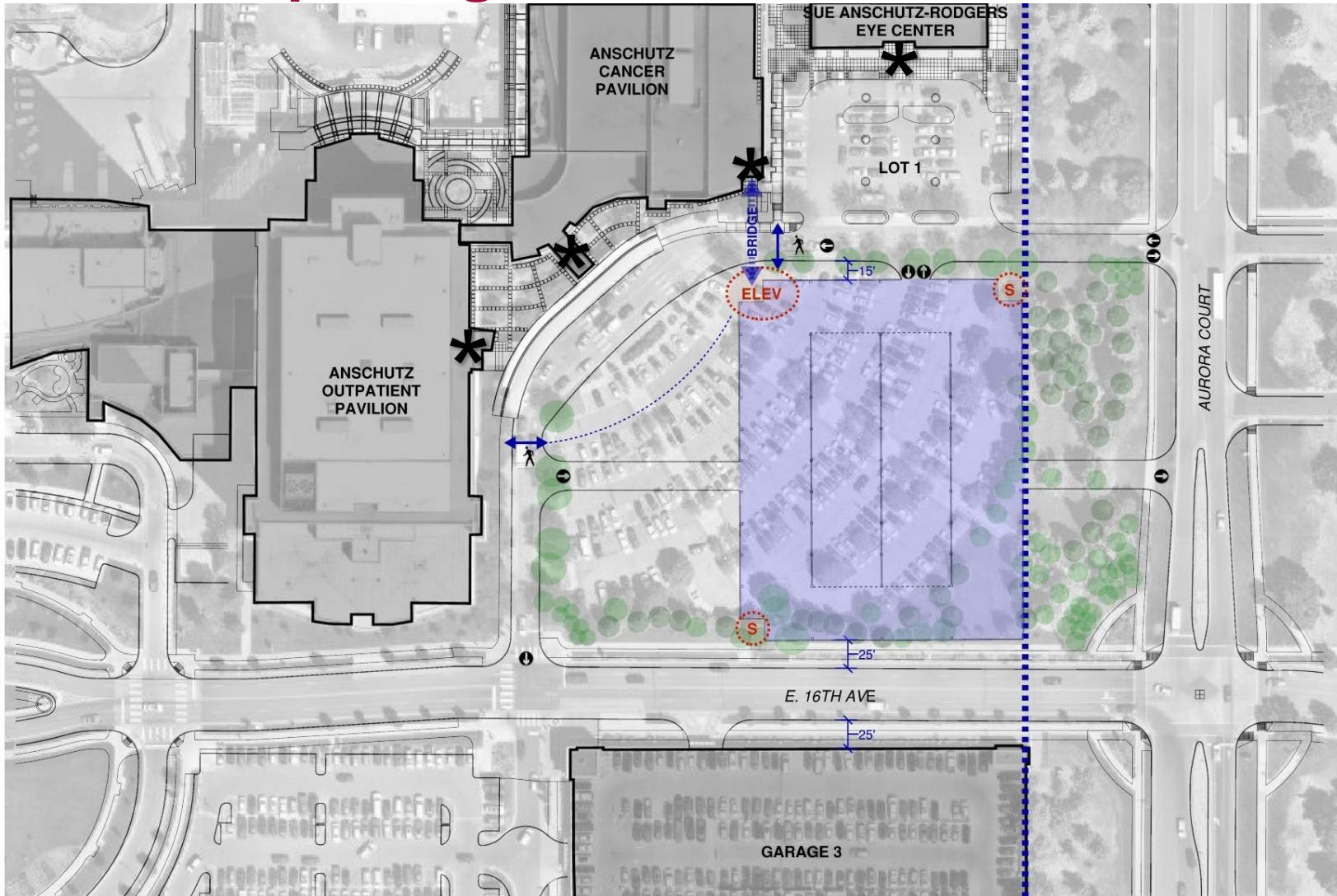
June – 4:00pm



Dec – 4:00pm

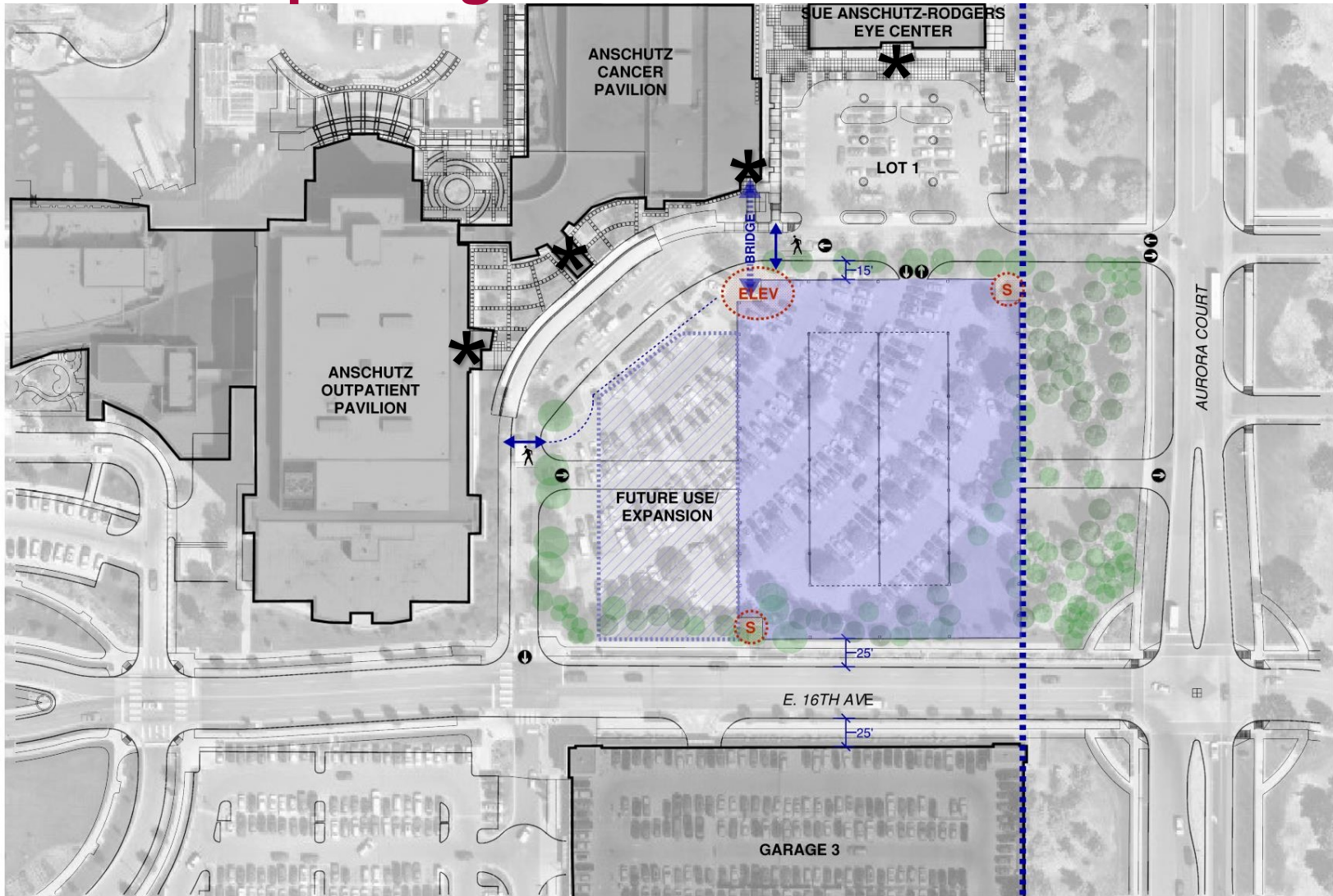


# N/S - Concept Diagram



Aligned East

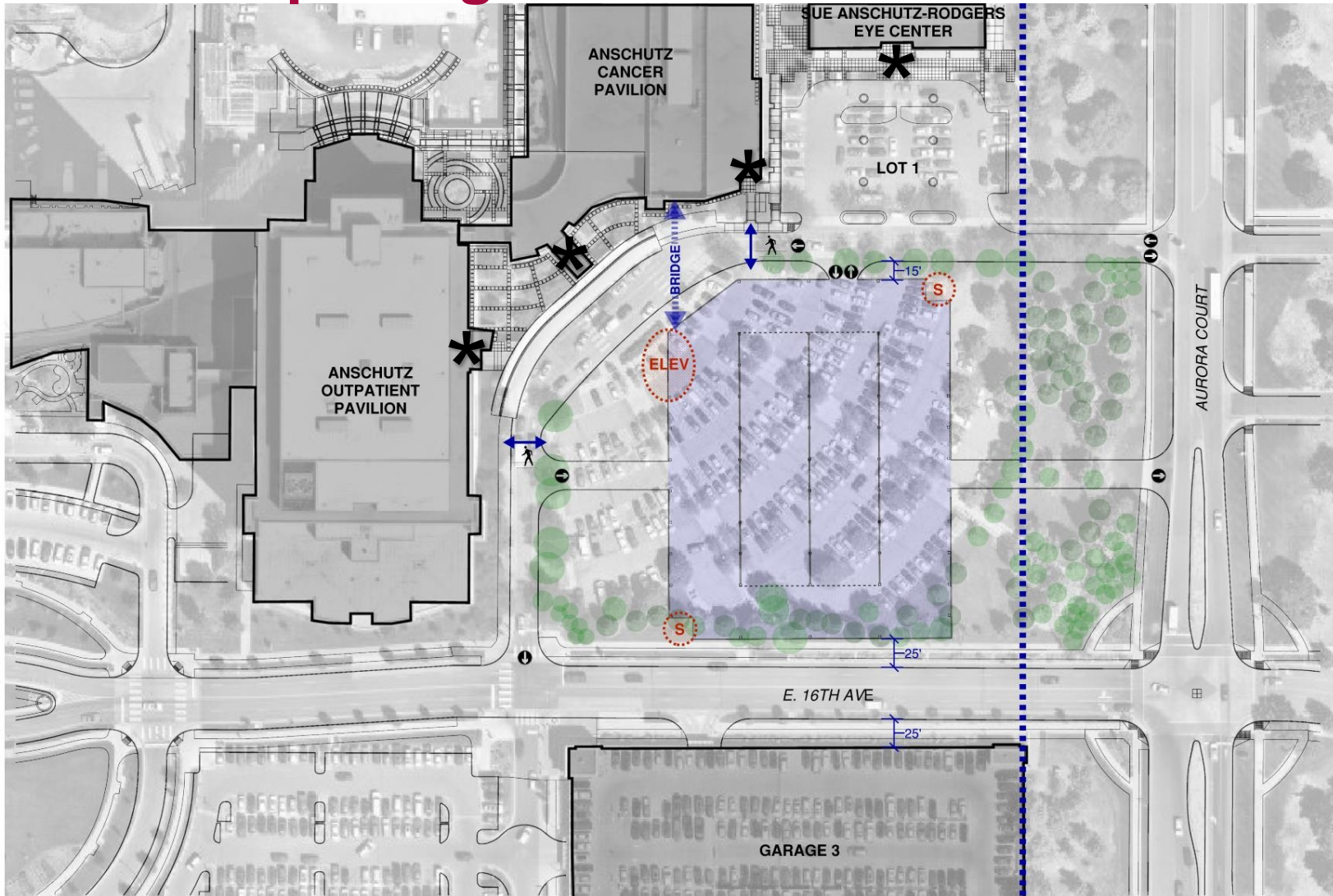
# N/S - Concept Diagram



Aligned East with Future Use



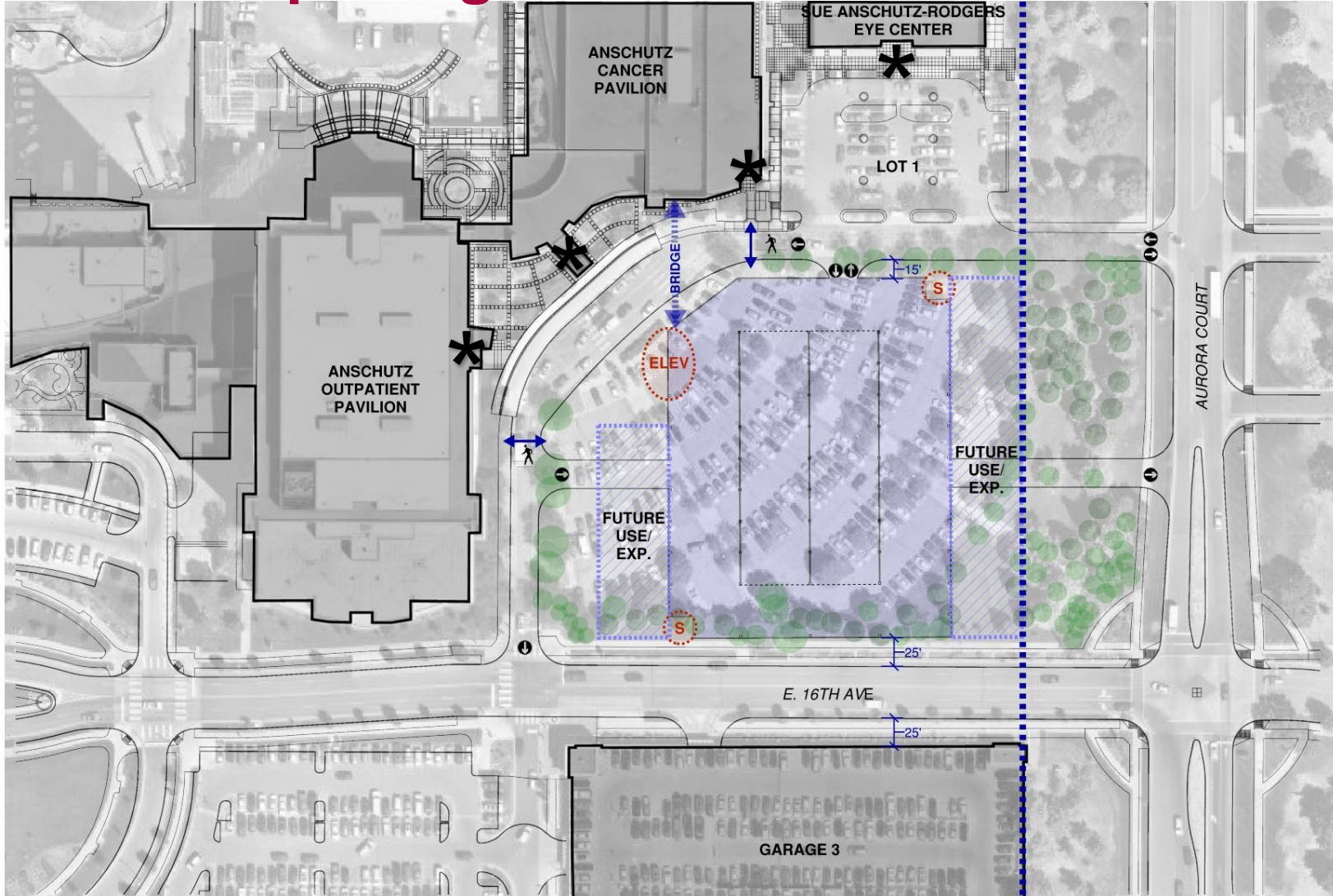
# N/S - Concept Diagram



Offset East



# N/S - Concept Diagrams



Offset East with Future Use

# N/S - Concept Aerial



Aerial Plan



# N/S - Concept Aerial



Aerial View Looking Northwest



# N/S - Concept Aerial



Aerial View Looking Northeast

# N/S - Concept Aerial



Aerial View Looking Southwest

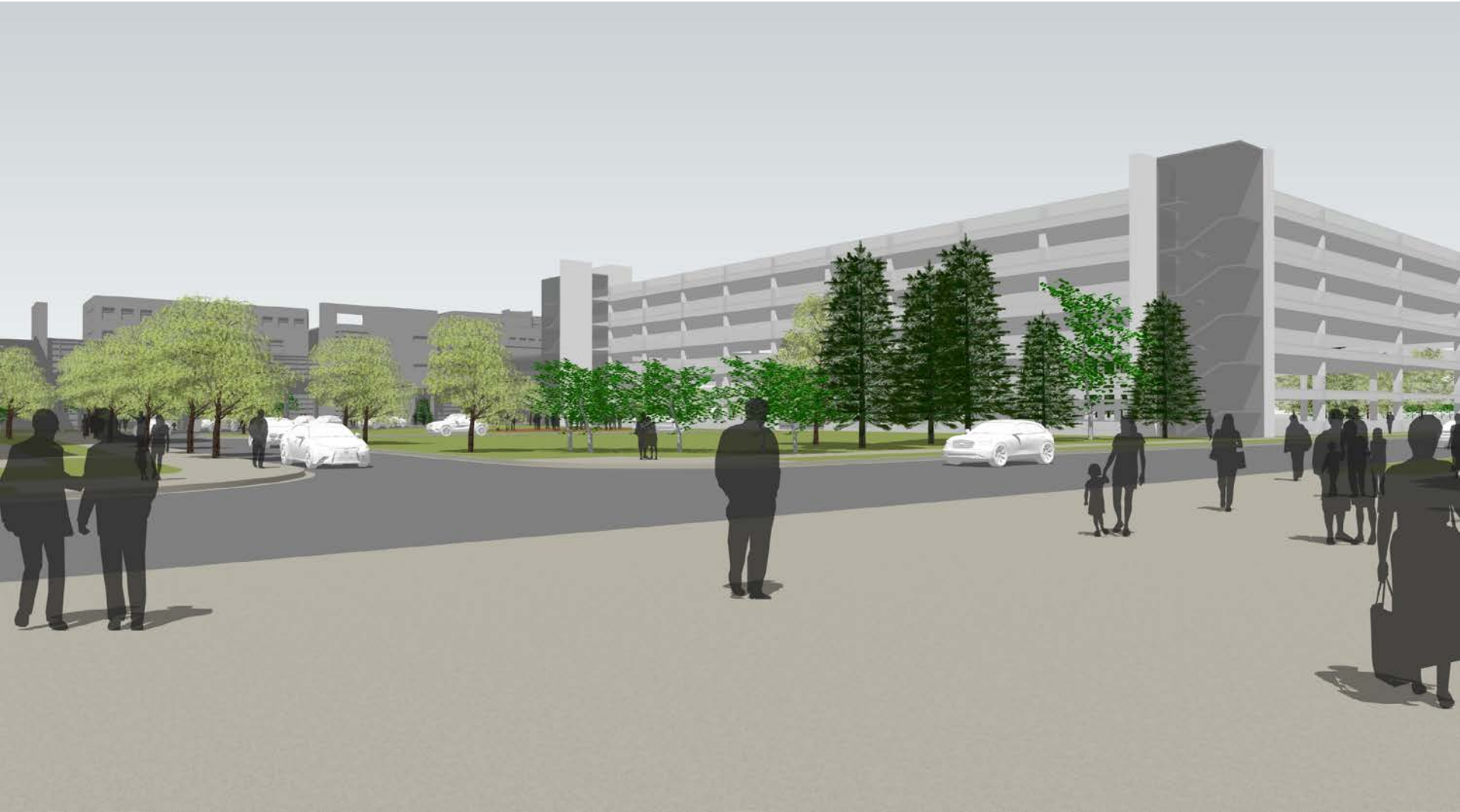
# N/S - Concept Street Level



Street View at 16<sup>th</sup> Ave & Aurora Court Looking Northwest



# N/S - Concept Street Level



Street View at 16<sup>th</sup> Ave & 'Troy' Street Looking Northeast

# N/S - Concept Street Level



**Street View at Entry Drive & Aurora Court Looking Southwest**



# N/S - Connection to Public Areas 1<sup>st</sup> Floor



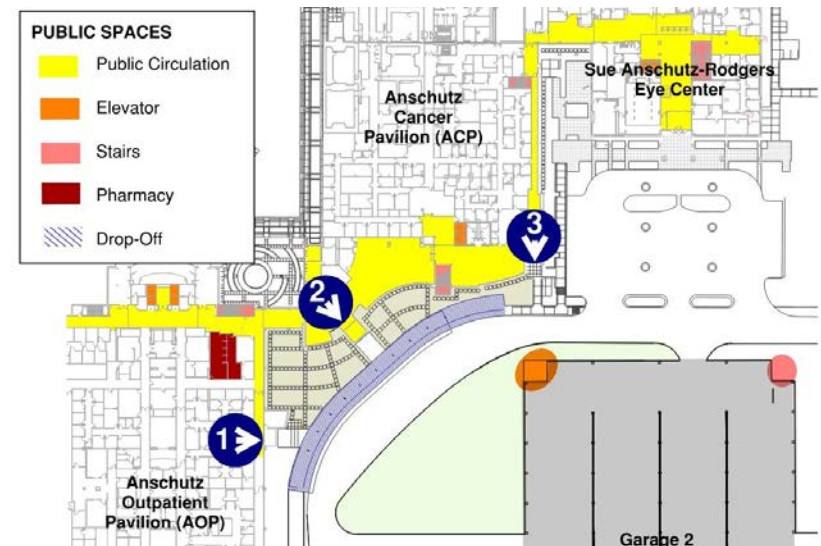
View 2 – From AOP 1<sup>st</sup> Floor Looking Southeast



View 3 – From ACP 1<sup>st</sup> Floor Looking South



View 1 – From AOP 1<sup>st</sup> Floor Looking East





# N/S - Connection to Public Areas 2<sup>nd</sup> Floor



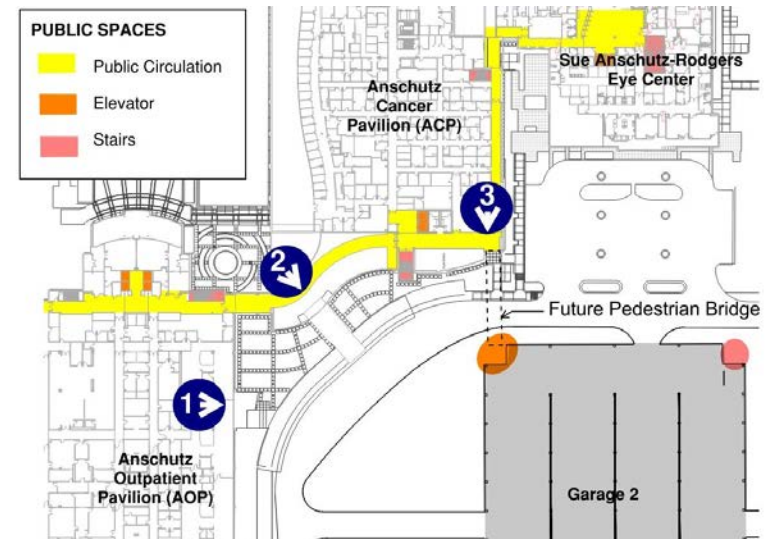
View 2 – From AOP 2<sup>nd</sup> Floor Looking Southeast



View 1 – From AOP 2<sup>nd</sup> Floor Looking East



View 3 – From ACP 2<sup>nd</sup> Floor Looking South



# E/W – Design Scorecard

	Criteria	Quality			Comments
		Good	Neutral	Poor	
General Site	Vehicular Circulation	x			Opportunity for all garage traffic to exit to Aurora Ct and for a new boulevard enhancement entrance feature
	Pedestrian Circulation	x			Pedestrians can choose to cross along west or north drive from garage, opportunity to reduce conflicts at 16th Ave and "Troy"
	Grading		x		Good distance to transition from garage to drive lane on north and south, but still will be challenges with place the garage at optimal elevation
	Utilities		x		Some utilities will be impacted
	Land Use	x			Good open space provided around north and west
Landscape	Tree Impact		x		Will lose some trees along west, but opportunity to save some along 16th Ave
	Pedestrian Spaces	x			New spaces on both west and north to soften garage experience to building entrance
	Site Sections	x			Good separation from drive lanes on north and west of garage and along 16th Ave
	Enhanced Landscape Areas/Streetscape	x			Ample opportunities to enhance experience approaching garage in vehicle and walking around garage as pedestrian
	Shade Studies		x		North areas will be in shade most of the time, west areas will have good sunlight in spring, summer and fall
Architecture	Overall Massing	x			Opportunity to step down along north or south elevations to lower the height for pedestrian experience
	Connection to Public Spaces		x		Good visibility from outpatient buildings to elevator/core element, new garage will partially block view from the outpatient buildings looking out
	Primary Elevator Core Location	x			Flexibility to be located along west, north or chamfered NW
	Future Expansion			x	Limited opportunities in any direction, except vertically
	Future Pedestrian Bridge	x			Good flexibility in location and ability to adjust garage height to align at desired 2nd floor outpatient buildings

## Overall Pros:

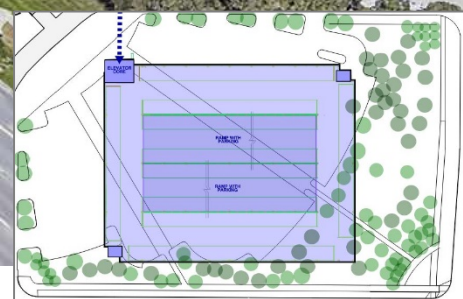
Vehicular and pedestrian circulation can be significantly improved by reducing the traffic at 16th and Troy, creating a safer intersection. Generous pedestrian spaces are created along the north and west sides of the garage, creating a landscape opportunity for the transition from the garage to the outpatient facilities. Overall massing and elevator core locations have more flexibility to enhance the visitor experience from vehicles and pedestrians.

## Overall Cons:

Future expansion is limited. Site utilities and existing trees will be impacted. Building location will partially block existing views from outpatient facilities looking south and west.

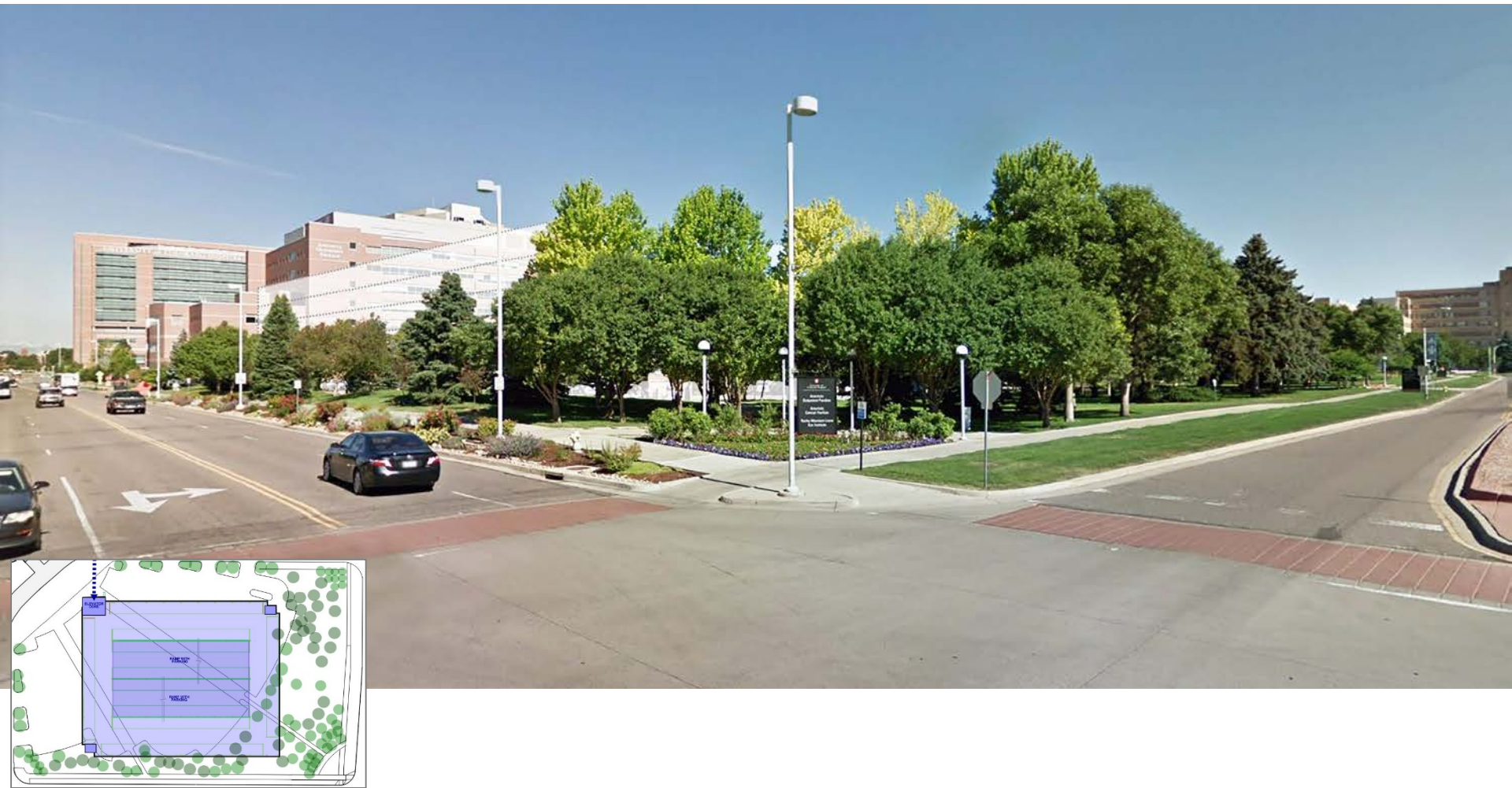


# E/W – Aerial View

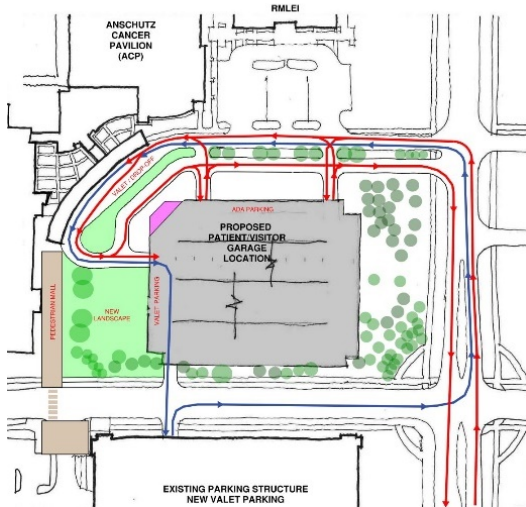




# E/W – Street View



# E/W - Early Circulation Studies



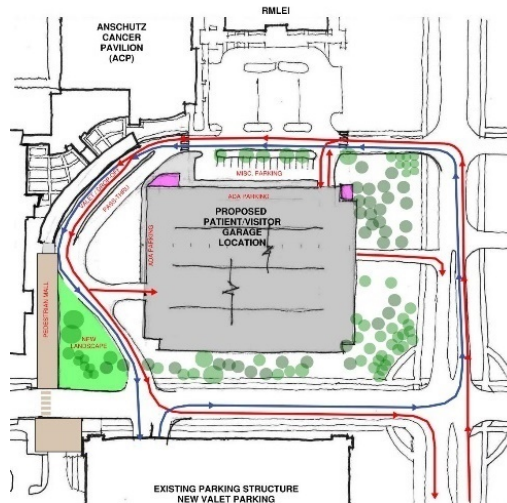
## Full-Boulevard

### Pros

- Alleviate traffic at 16<sup>th</sup> and "Troy"
- Welcoming Boulevard entrance
- Force all garage traffic directly to Aurora Ct

### Cons

- Valet needs to directly access Garage 3
- Tight turn-around at valet drop-off
- All entrances to garage on north
- Good routes for pedestrians to avoid vehicles



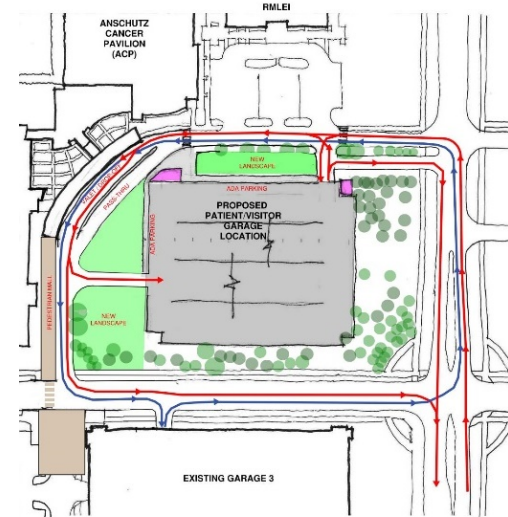
## Diagonal

### Pros

- Alleviate traffic at 16<sup>th</sup> and "Troy"
- Pedestrians able to cross at north side without vehicle conflict
- Good alignment with garage entry/exit points

### Cons

- Impacts to Garage 3 entry/exit
- Not enough straight drive lane connecting to 16<sup>th</sup> Ave
- Queuing on 16<sup>th</sup> Ave



## Mini-Boulevard

### Pros

- Alleviate some congestion at 16<sup>th</sup> and Troy
- Welcoming Boulevard entrance
- Good alignment with garage entry/exit points

### Cons

- Queuing on 16<sup>th</sup> Ave
- Valet forced to loop around site



# E/W - Vehicular Circulation (Preferred Option)

## Pros

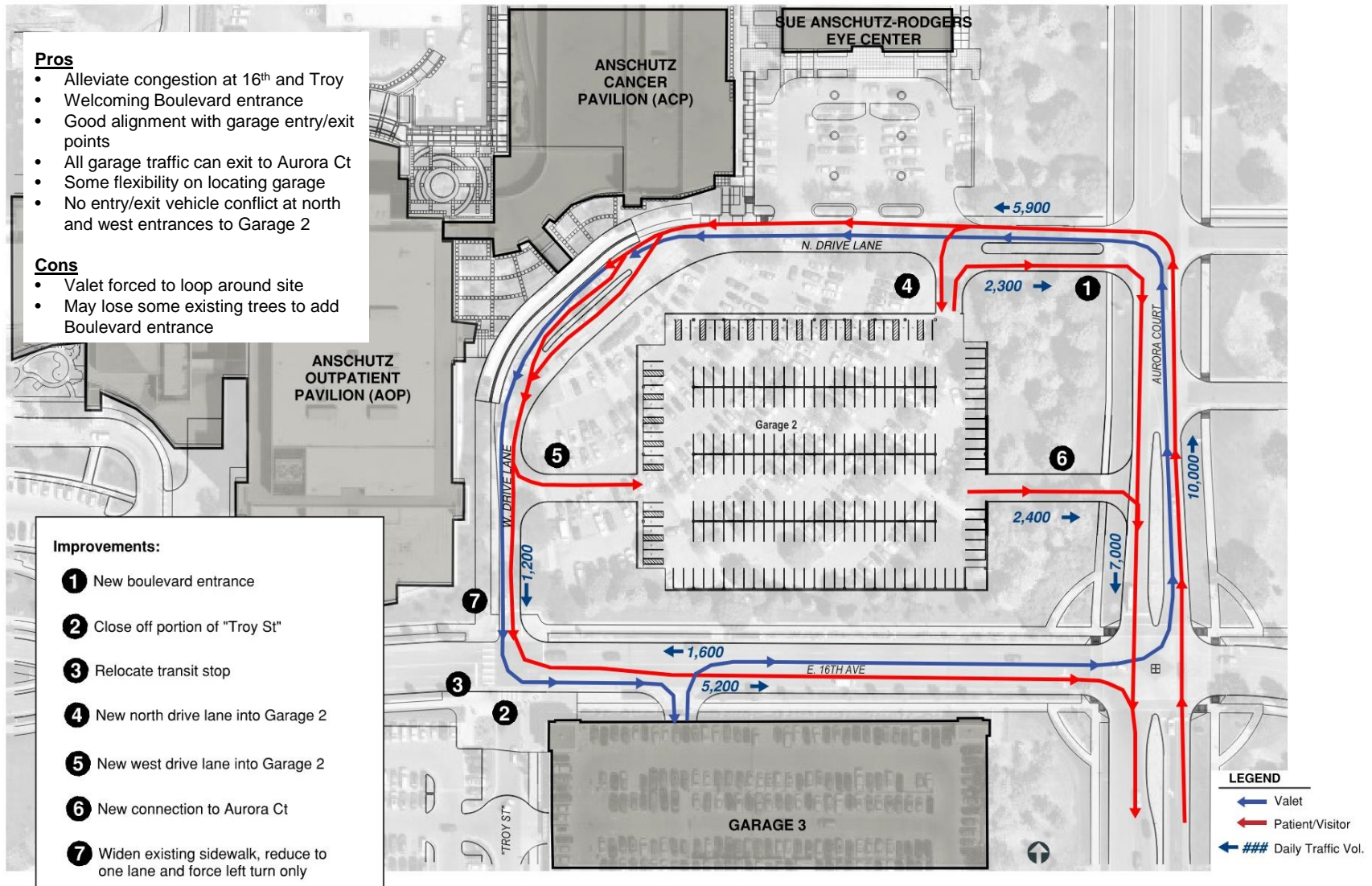
- Alleviate congestion at 16<sup>th</sup> and Troy
- Welcoming Boulevard entrance
- Good alignment with garage entry/exit points
- All garage traffic can exit to Aurora Ct
- Some flexibility on locating garage
- No entry/exit vehicle conflict at north and west entrances to Garage 2

## Cons

- Valet forced to loop around site
- May lose some existing trees to add Boulevard entrance

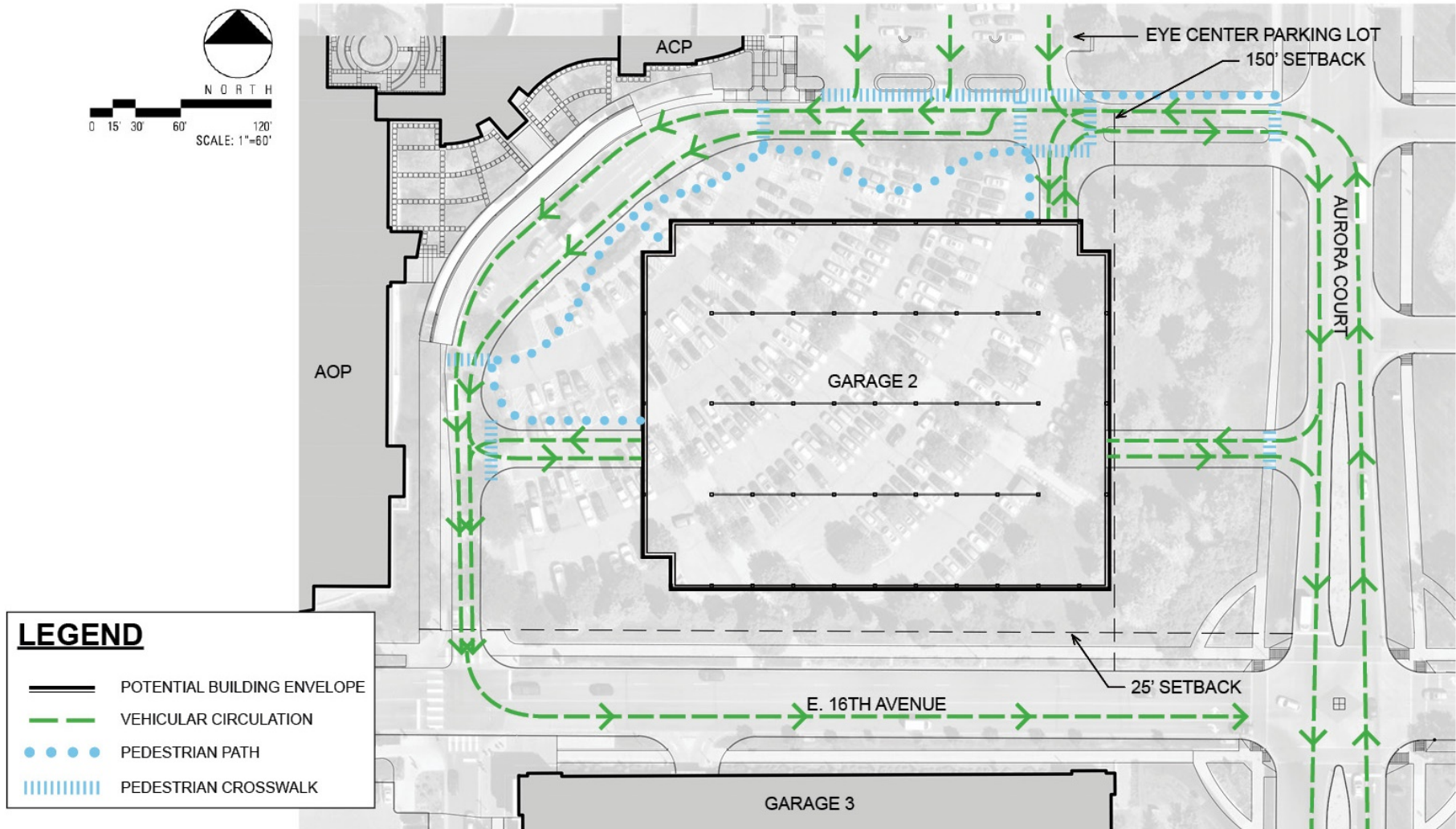
## Improvements:

- 1 New boulevard entrance
- 2 Close off portion of "Troy St"
- 3 Relocate transit stop
- 4 New north drive lane into Garage 2
- 5 New west drive lane into Garage 2
- 6 New connection to Aurora Ct
- 7 Widen existing sidewalk, reduce to one lane and force left turn only



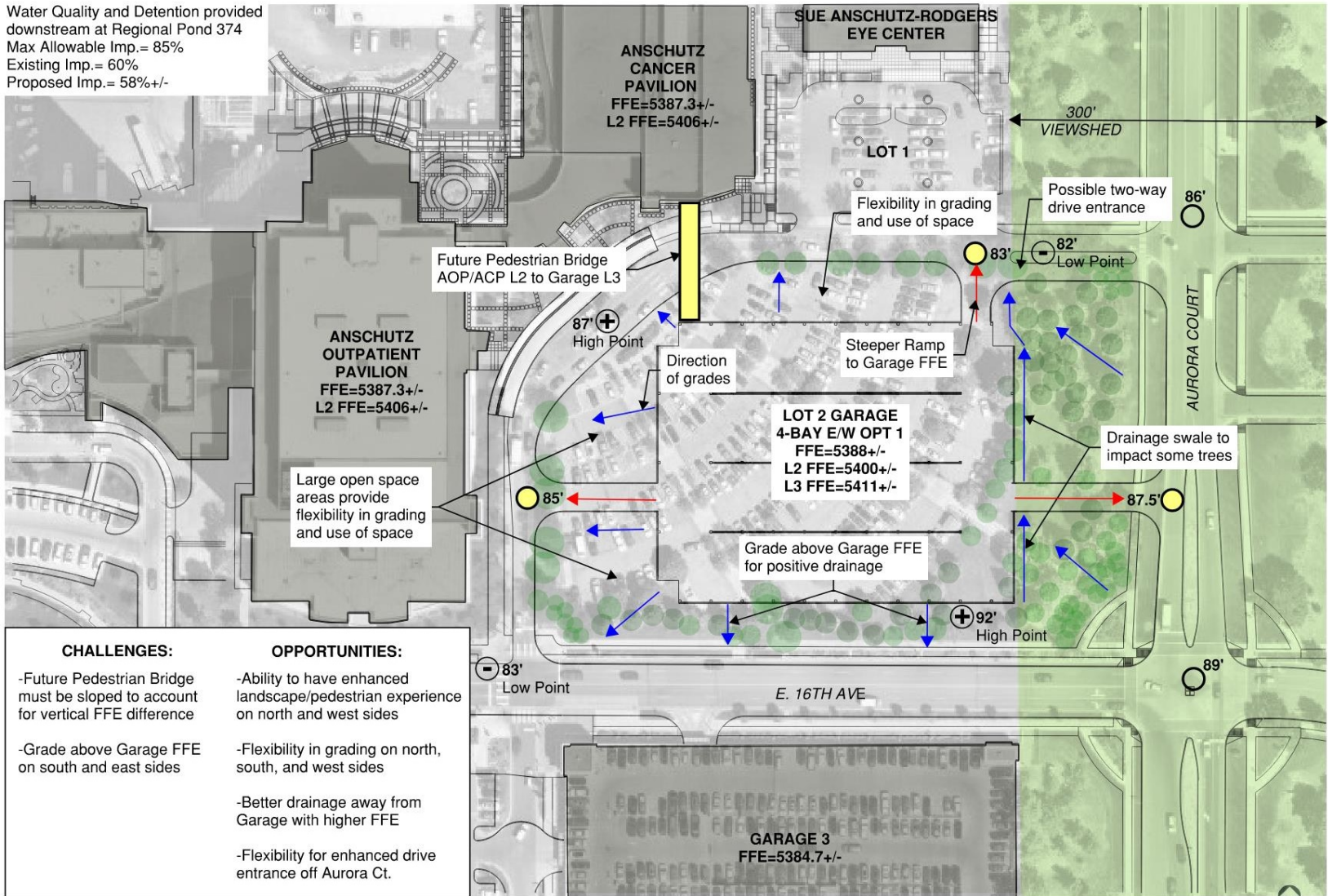


# E/W - Pedestrian and Vehicular Circulation



# E/W - Grading

Water Quality and Detention provided downstream at Regional Pond 374  
 Max Allowable Imp.= 85%  
 Existing Imp.= 60%  
 Proposed Imp.= 58%+/-



## CHALLENGES:

- Future Pedestrian Bridge must be sloped to account for vertical FFE difference
- Grade above Garage FFE on south and east sides

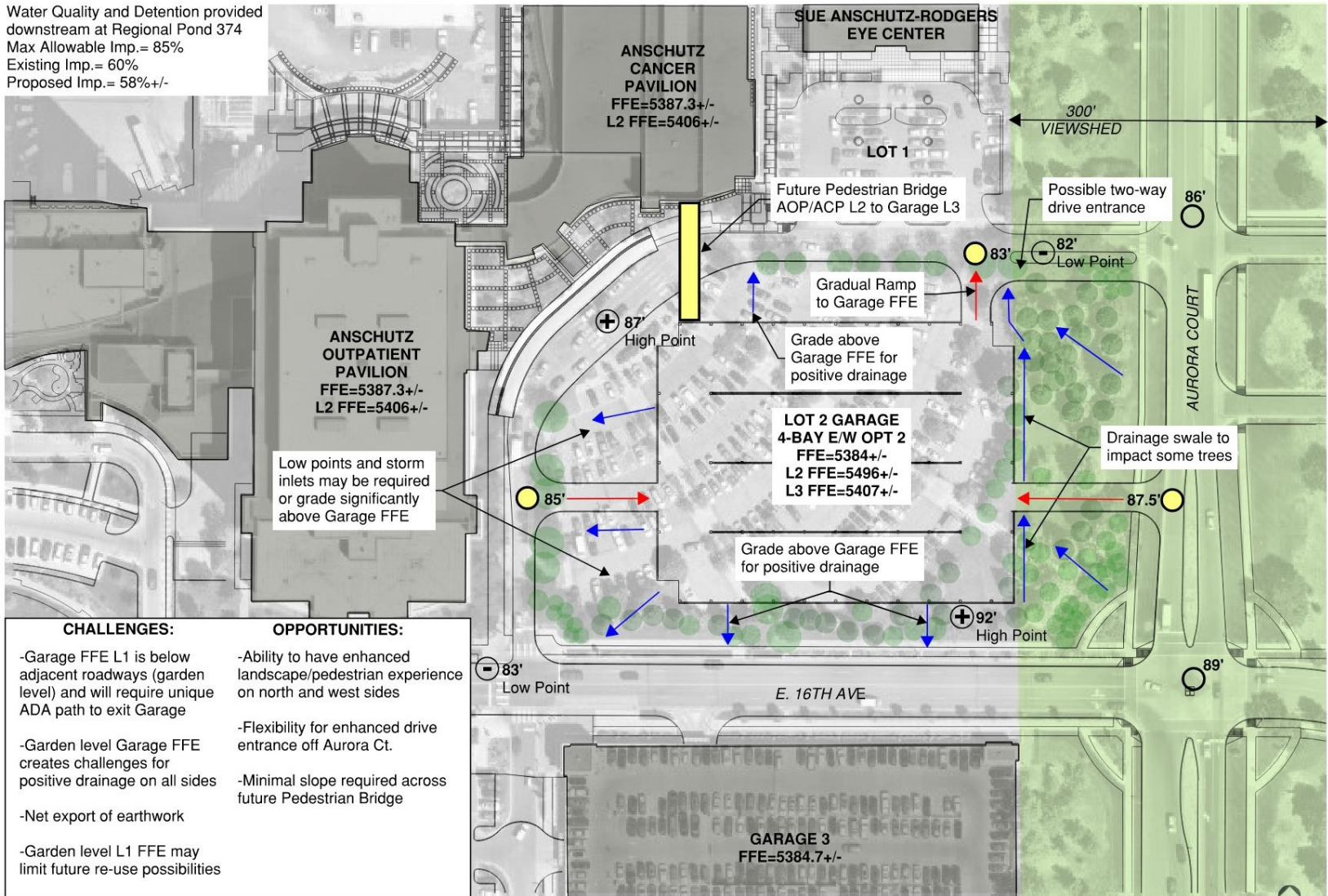
## OPPORTUNITIES:

- Ability to have enhanced landscape/pedestrian experience on north and west sides
- Flexibility in grading on north, south, and west sides
- Better drainage away from Garage with higher FFE
- Flexibility for enhanced drive entrance off Aurora Ct.



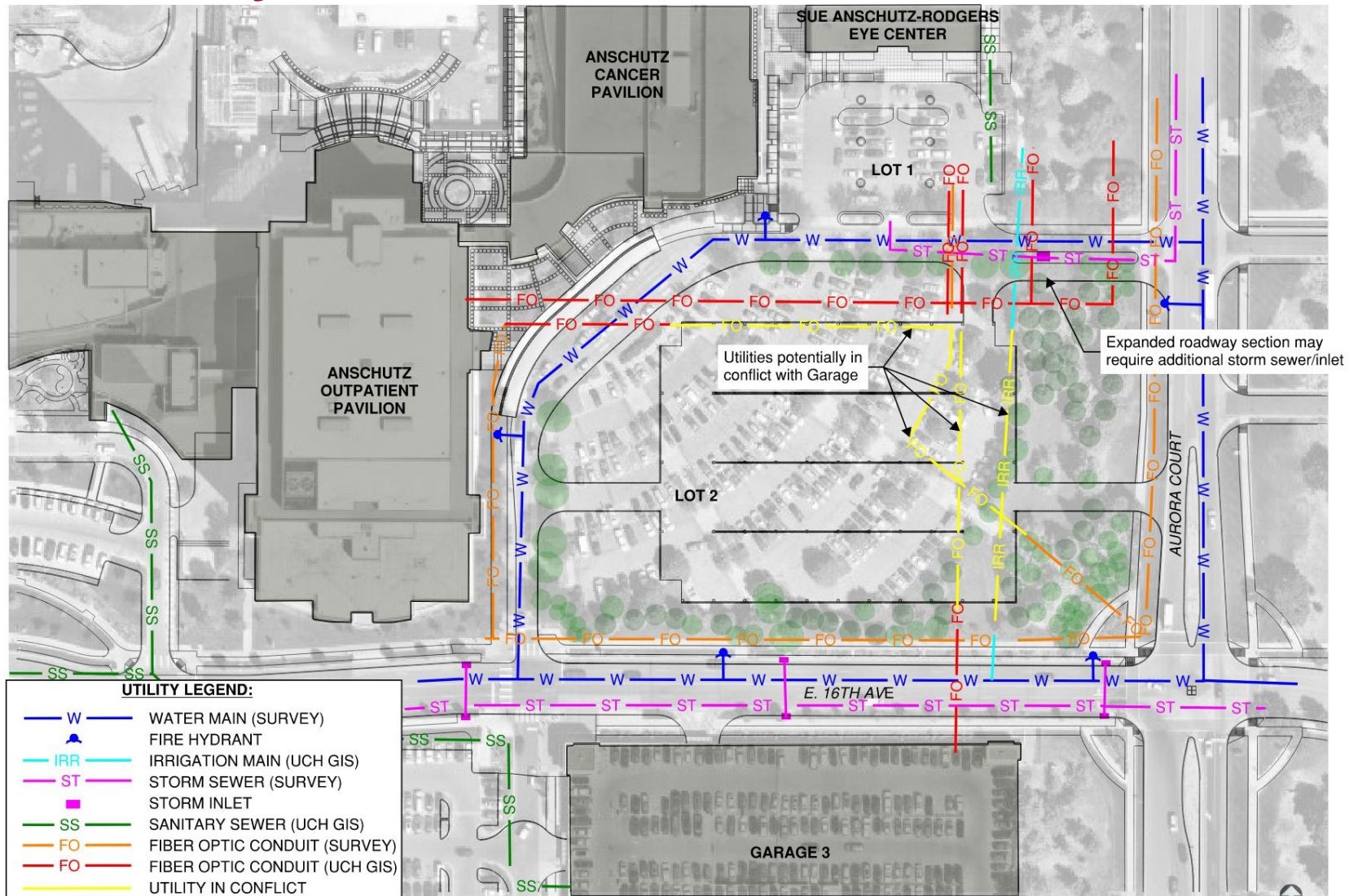
# E/W - Grading

Water Quality and Detention provided downstream at Regional Pond 374  
 Max Allowable Imp.= 85%  
 Existing Imp.= 60%  
 Proposed Imp.= 58%+/-

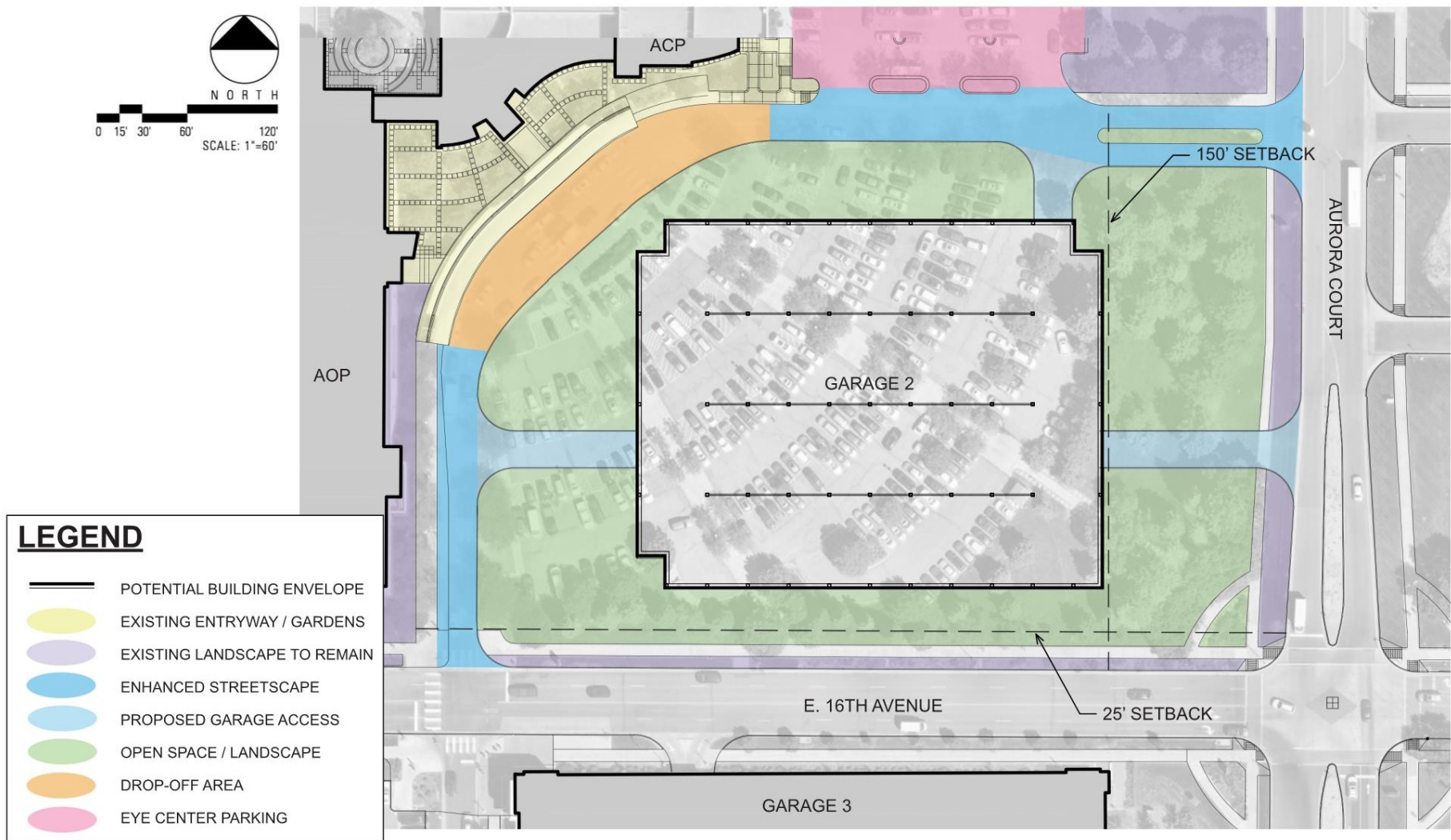




# E/W - Utility Conflicts

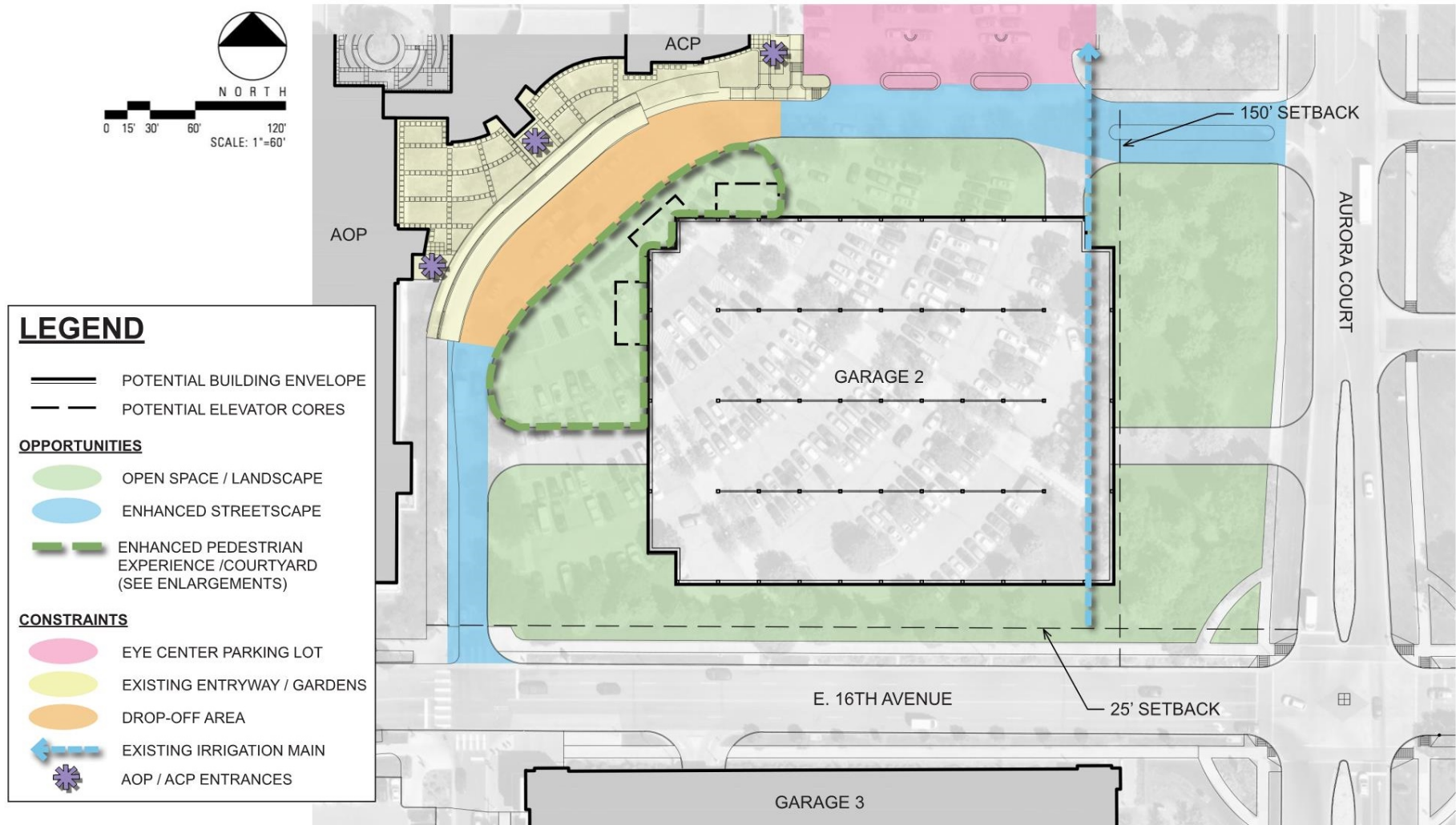


# E/W - Land Use

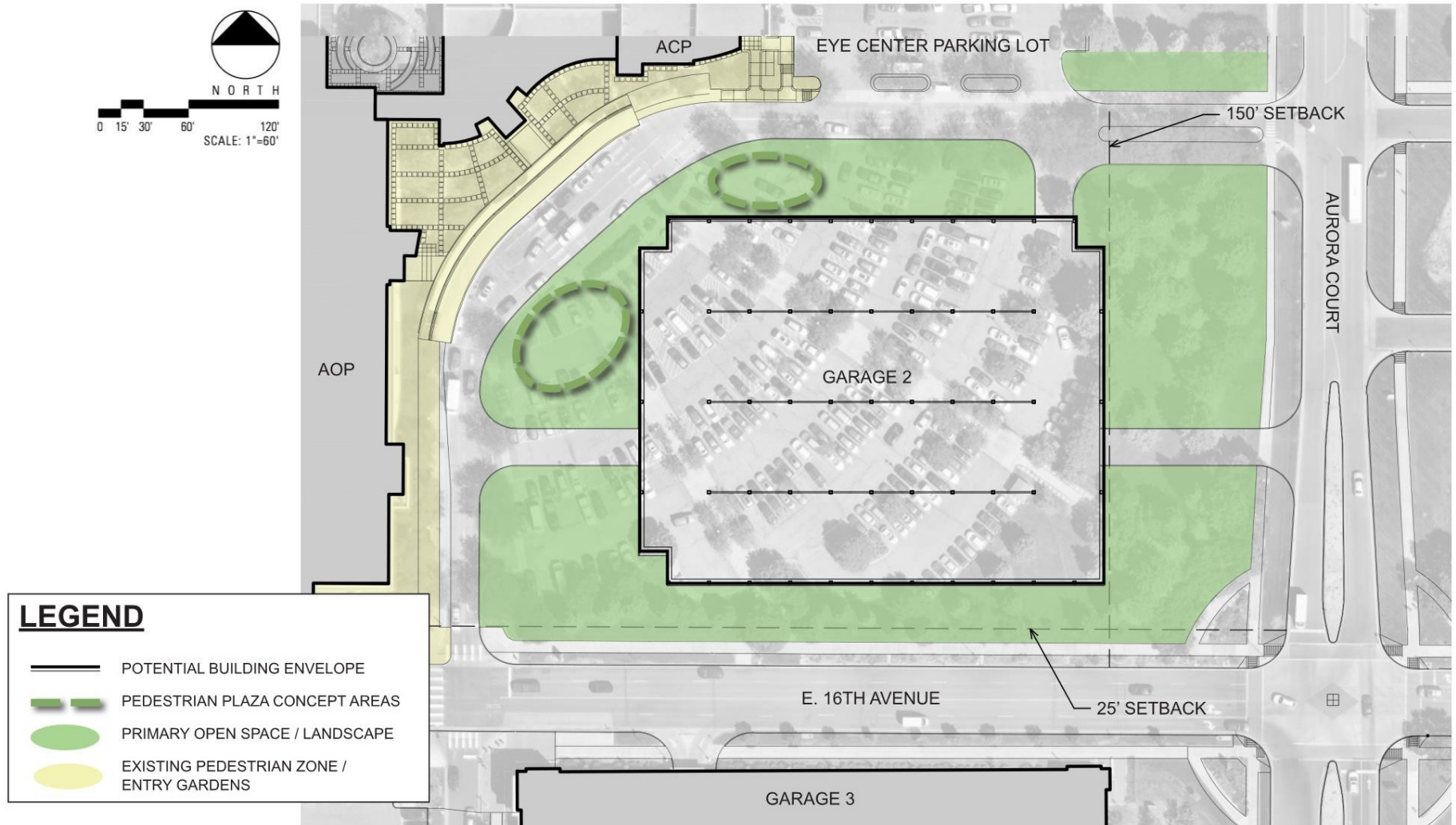




# E/W - Opportunities and Constraints

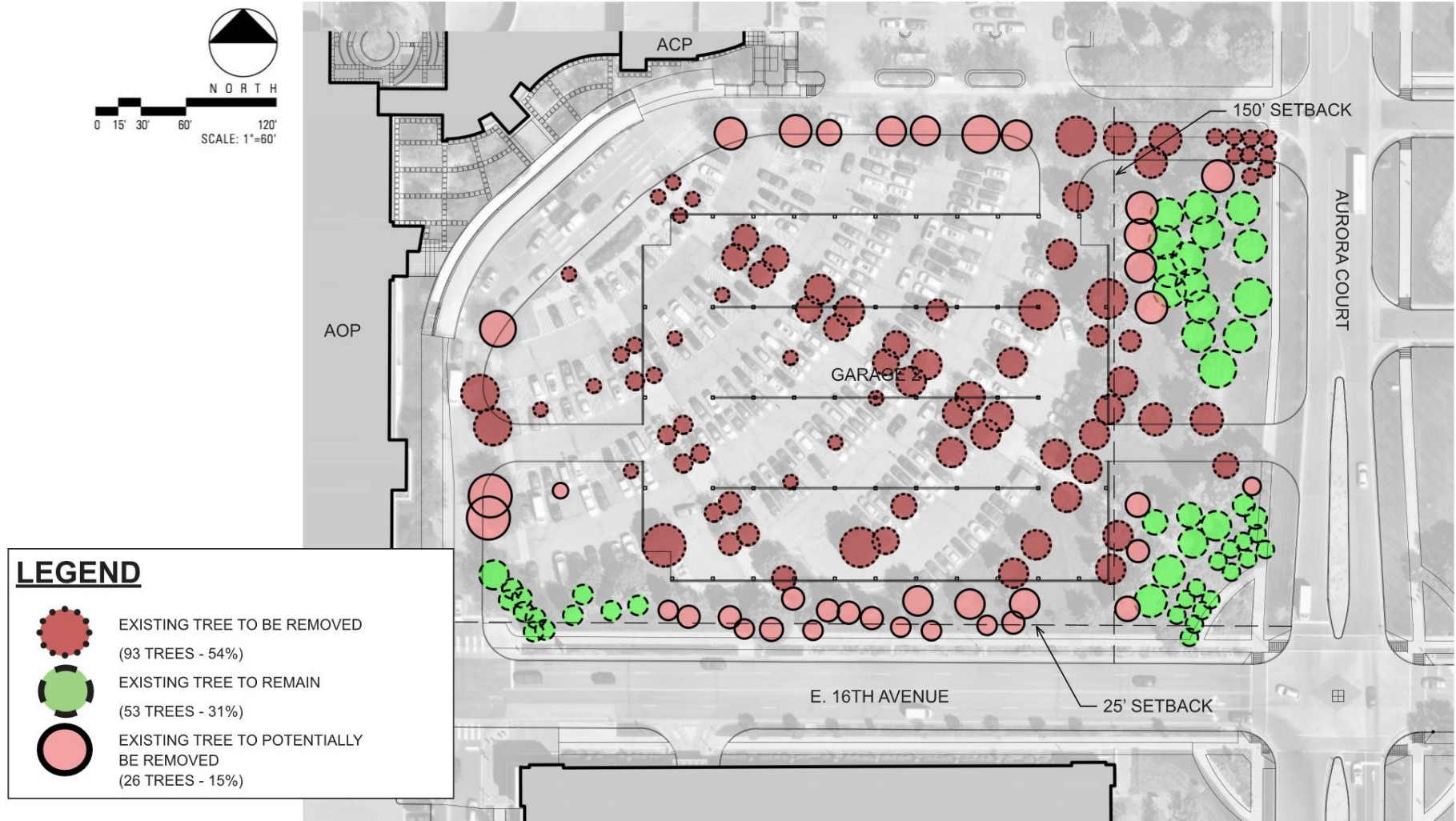


# E/W - Pedestrian Space

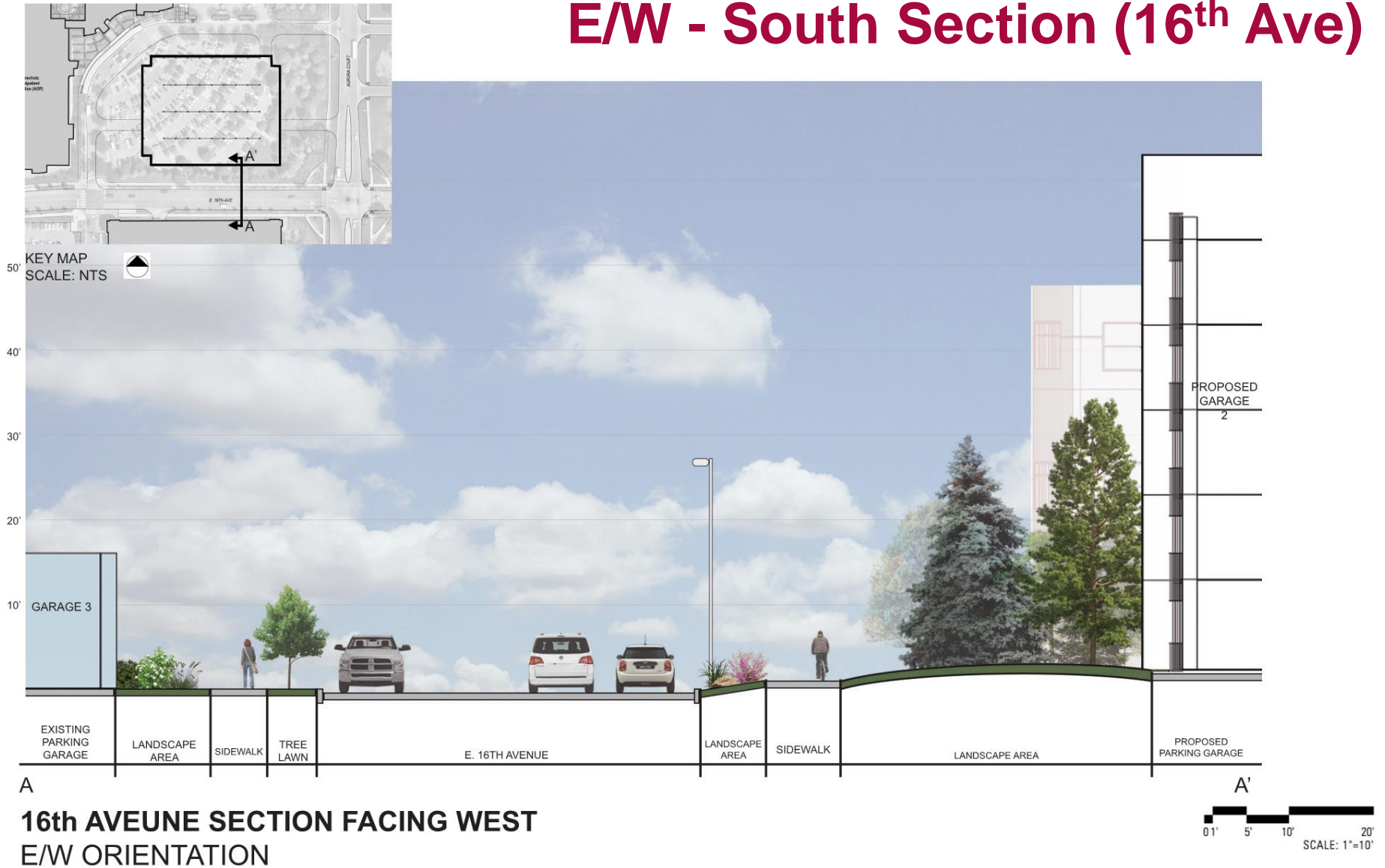




# E/W - Tree Impact

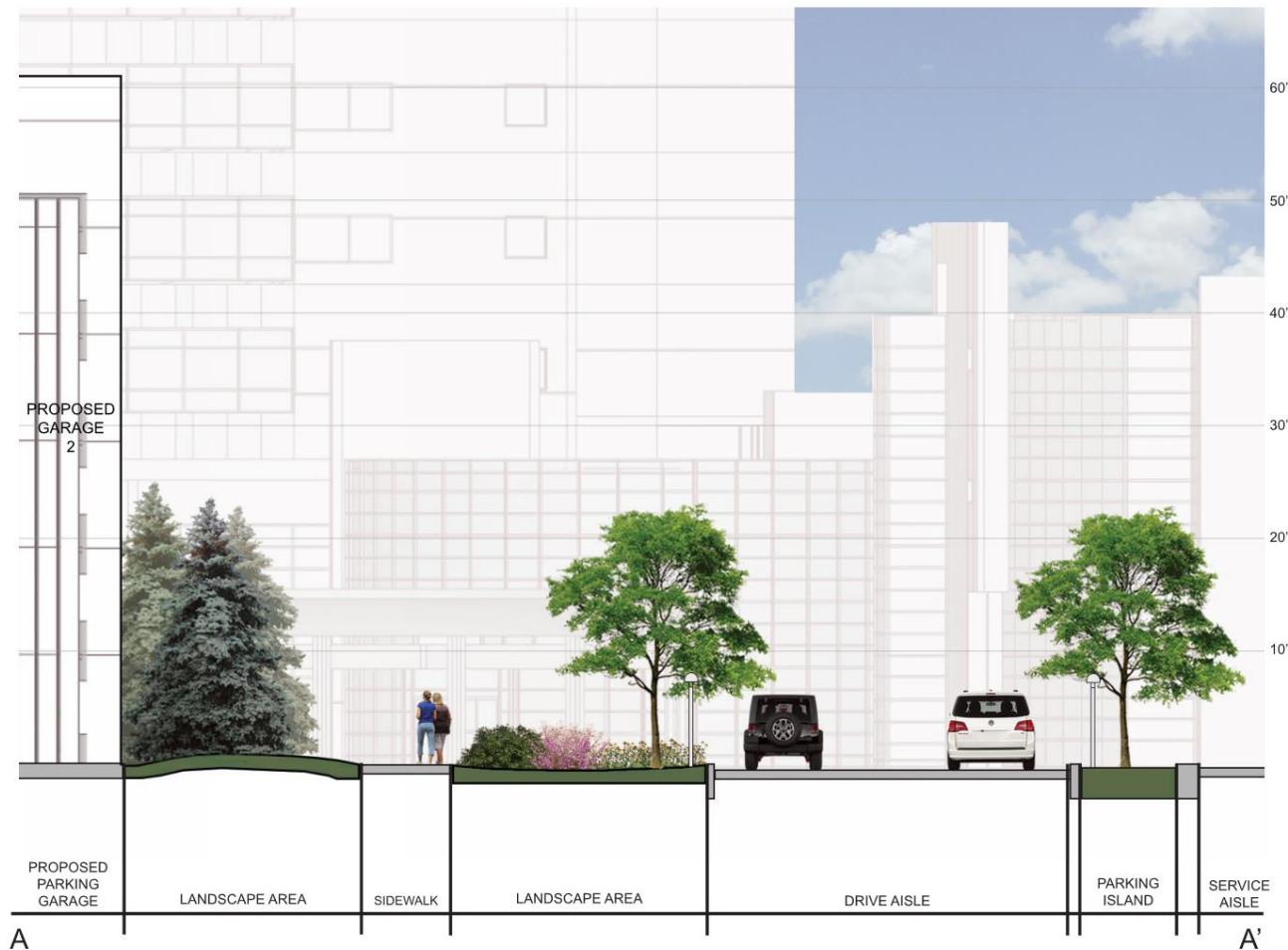


# E/W - South Section (16<sup>th</sup> Ave)

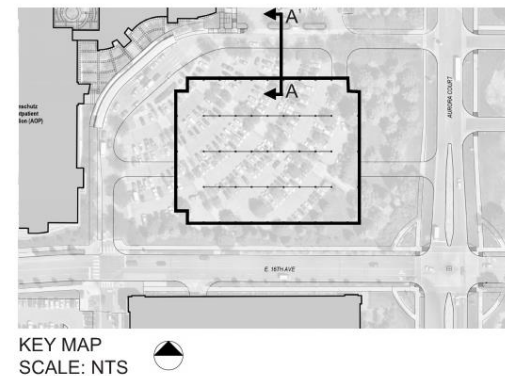




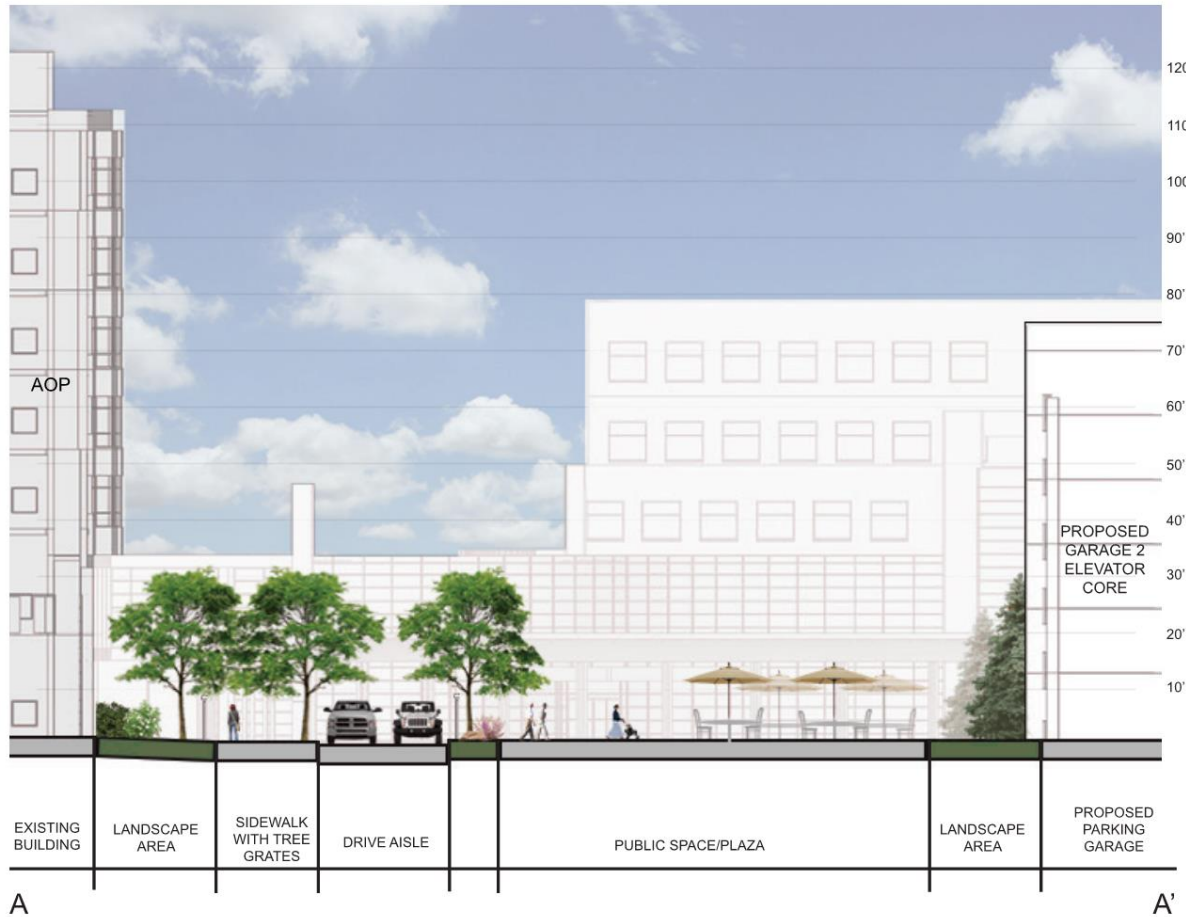
# E/W - North Section (Drive Lane)



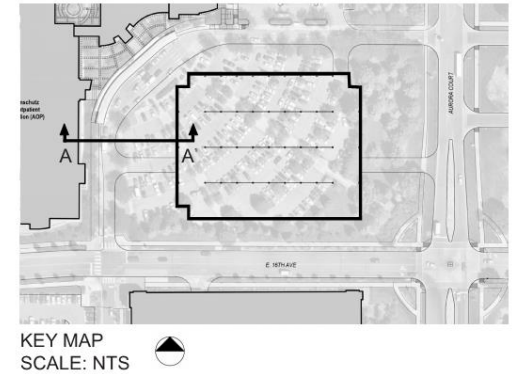
**ENTRY DRIVE SECTION FACING WEST**  
E/W ORIENTATION



# E/W - West Section (Drive Lane)

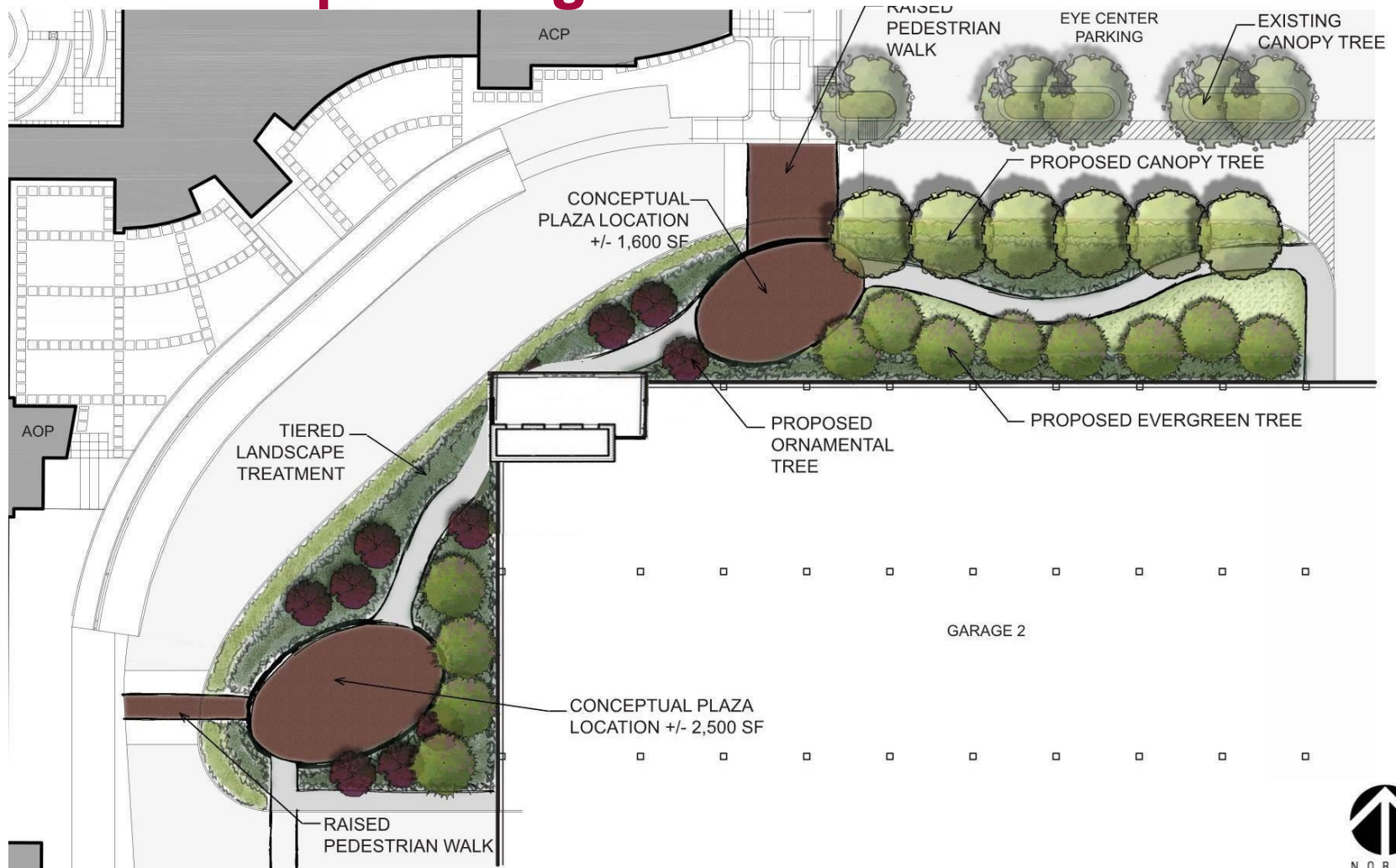


**WEST SECTION FACING NORTH**  
E/W ORIENTATION

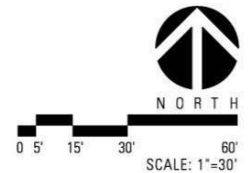




# E/W – Concept Enlargement



**CONCEPT 1 ENLARGEMENT**  
E/W ORIENTATION

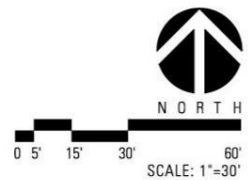
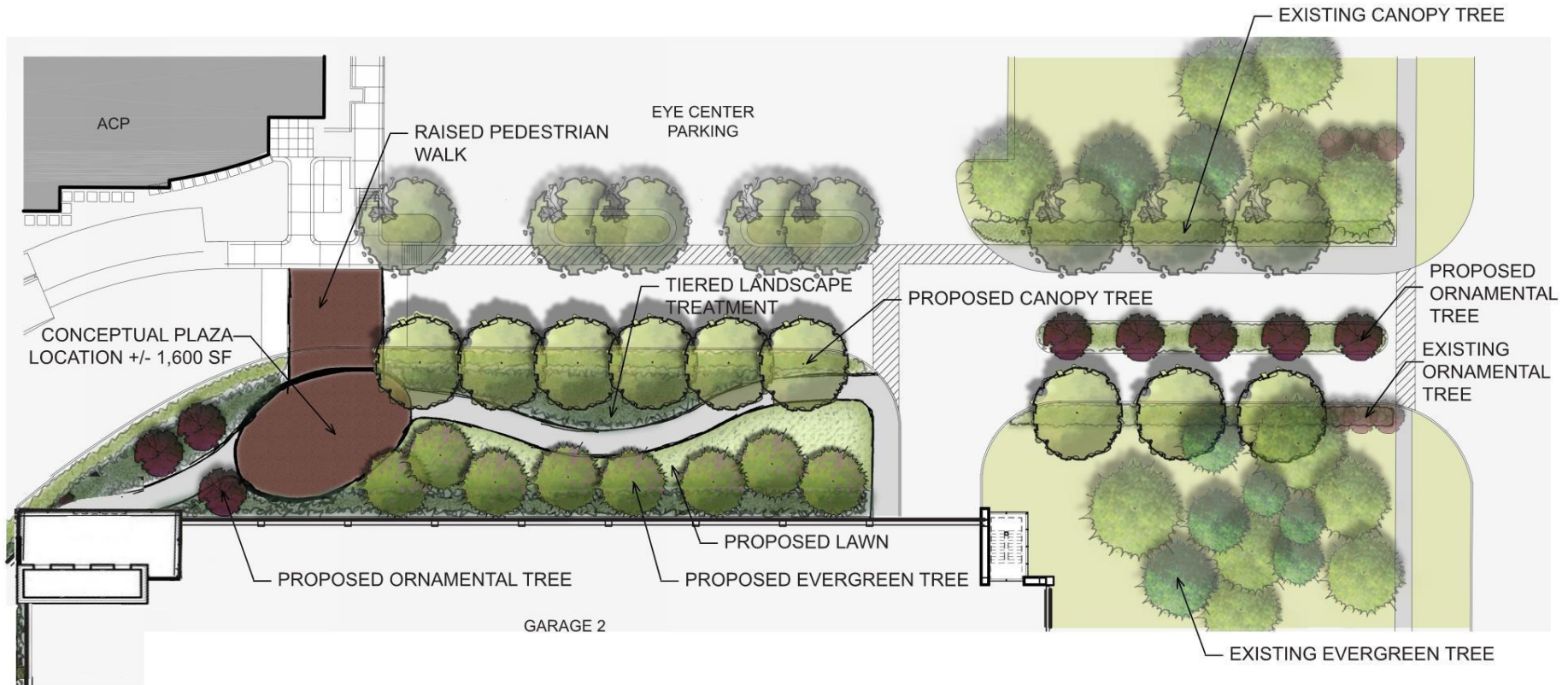


# E/W – Concept Enlargement





# E/W Streetscape Enlargement



# E/W – Streetscape Enlargement





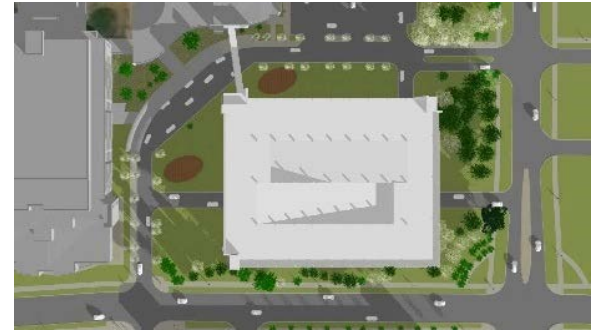
# E/W - Solar Studies



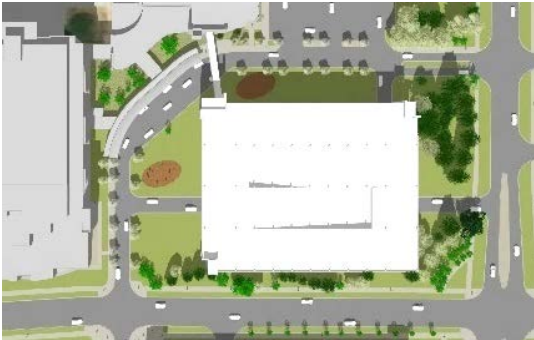
March/Sept – 8:00am



June – 8:00am



Dec – 8:00am



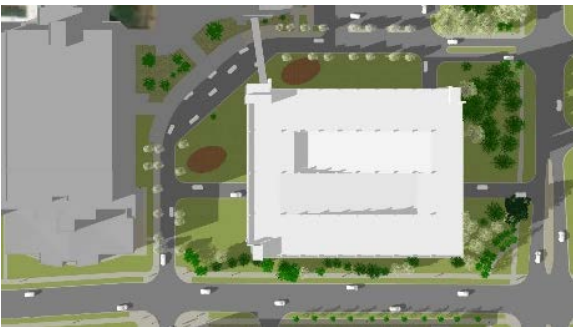
March/Sept – 12:00pm



June – 12:00pm



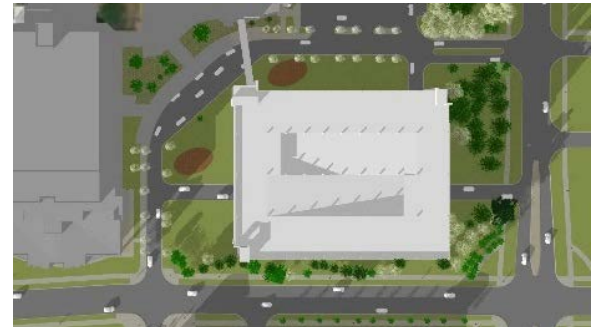
Dec – 12:00pm



March/Sept – 4:00pm

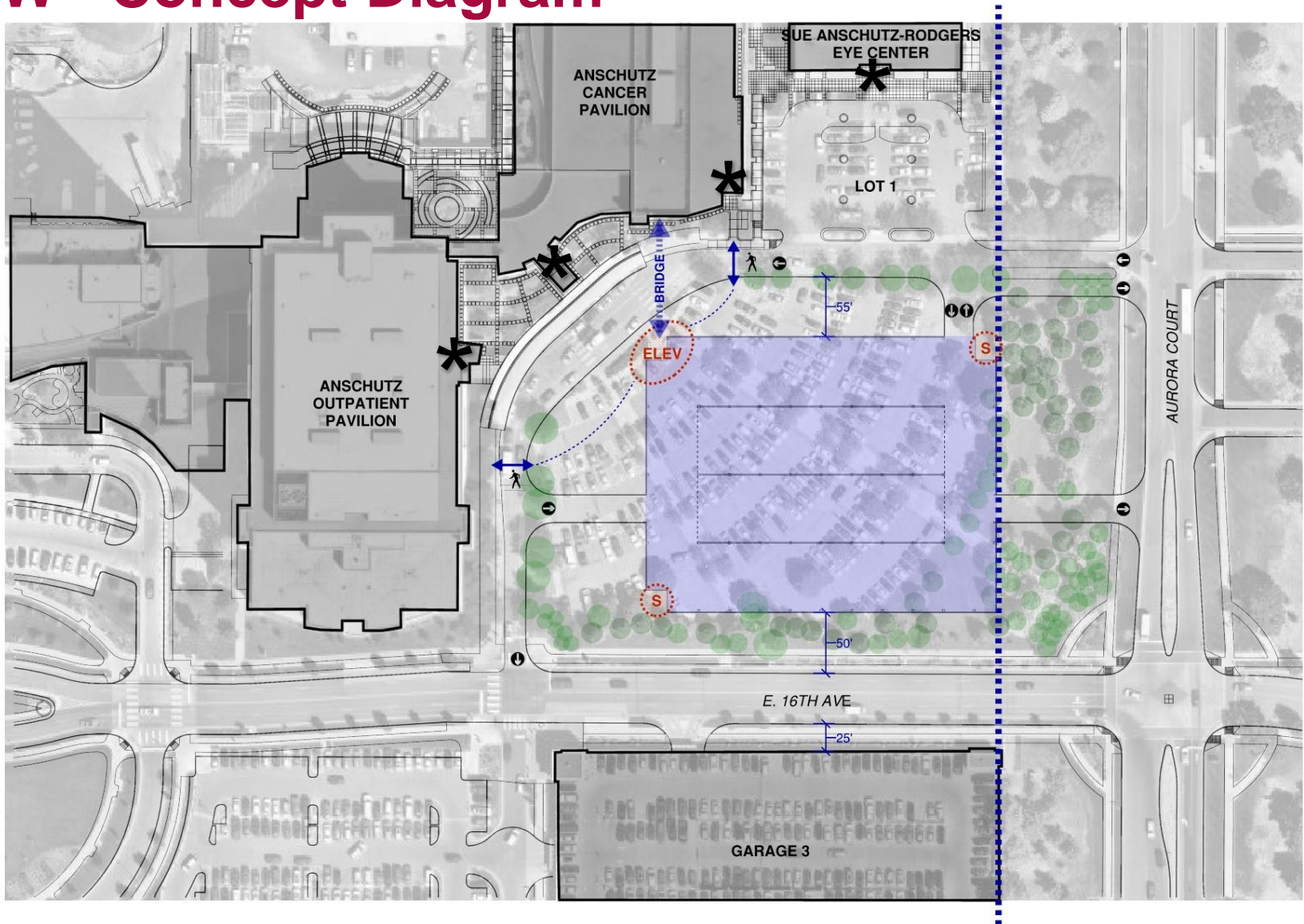


June – 4:00pm



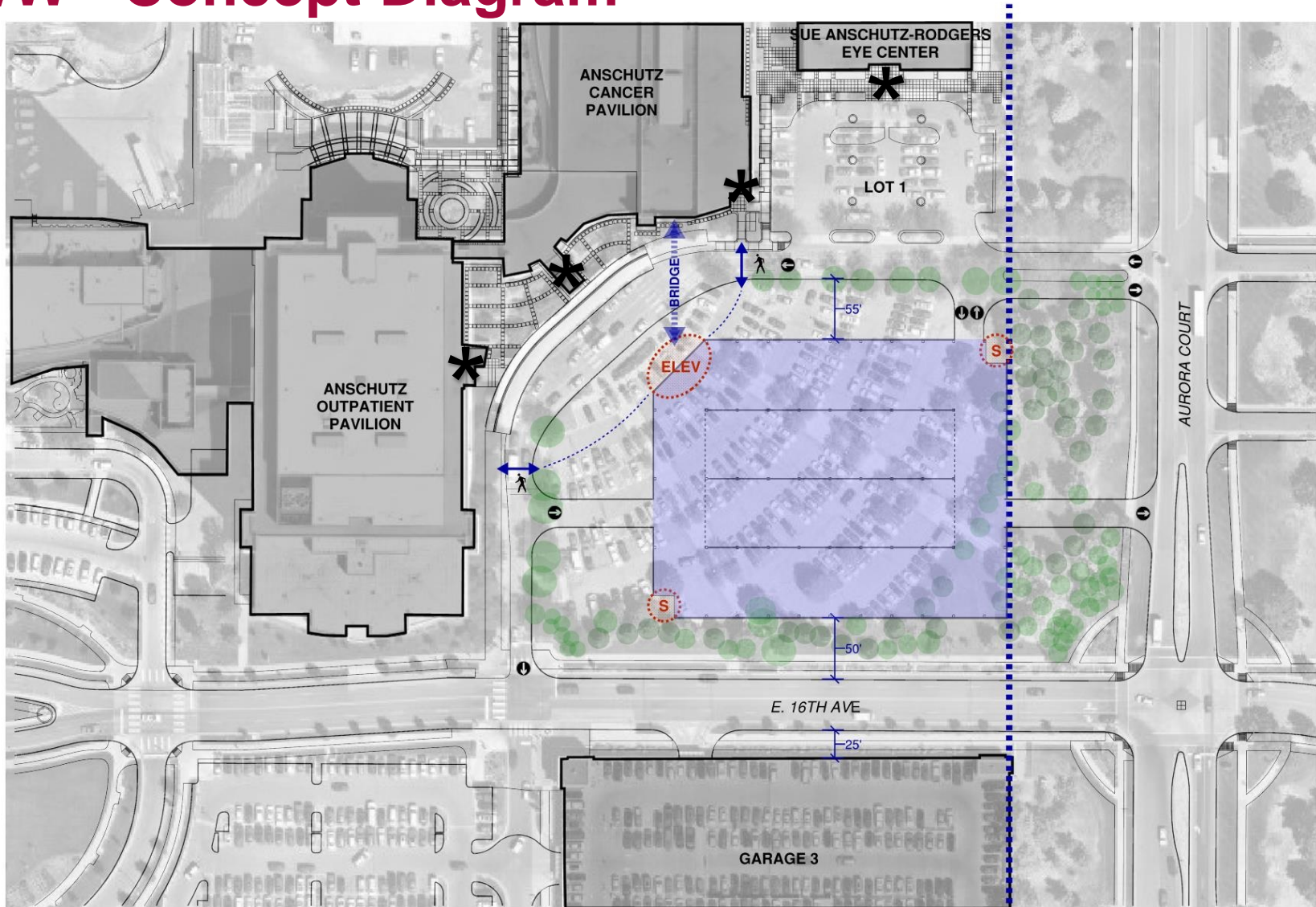
Dec – 4:00pm

# E/W - Concept Diagram

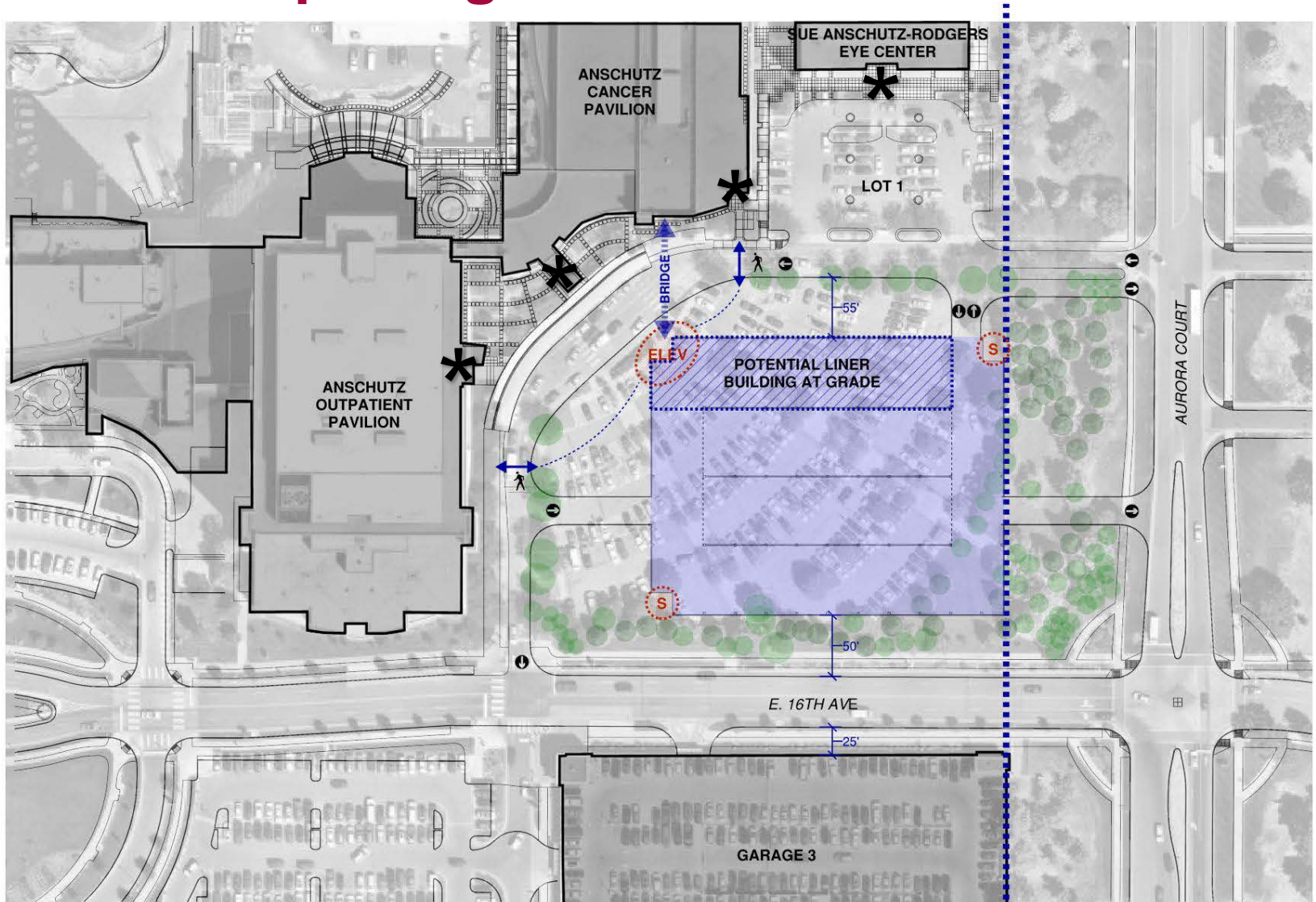




# E/W - Concept Diagram

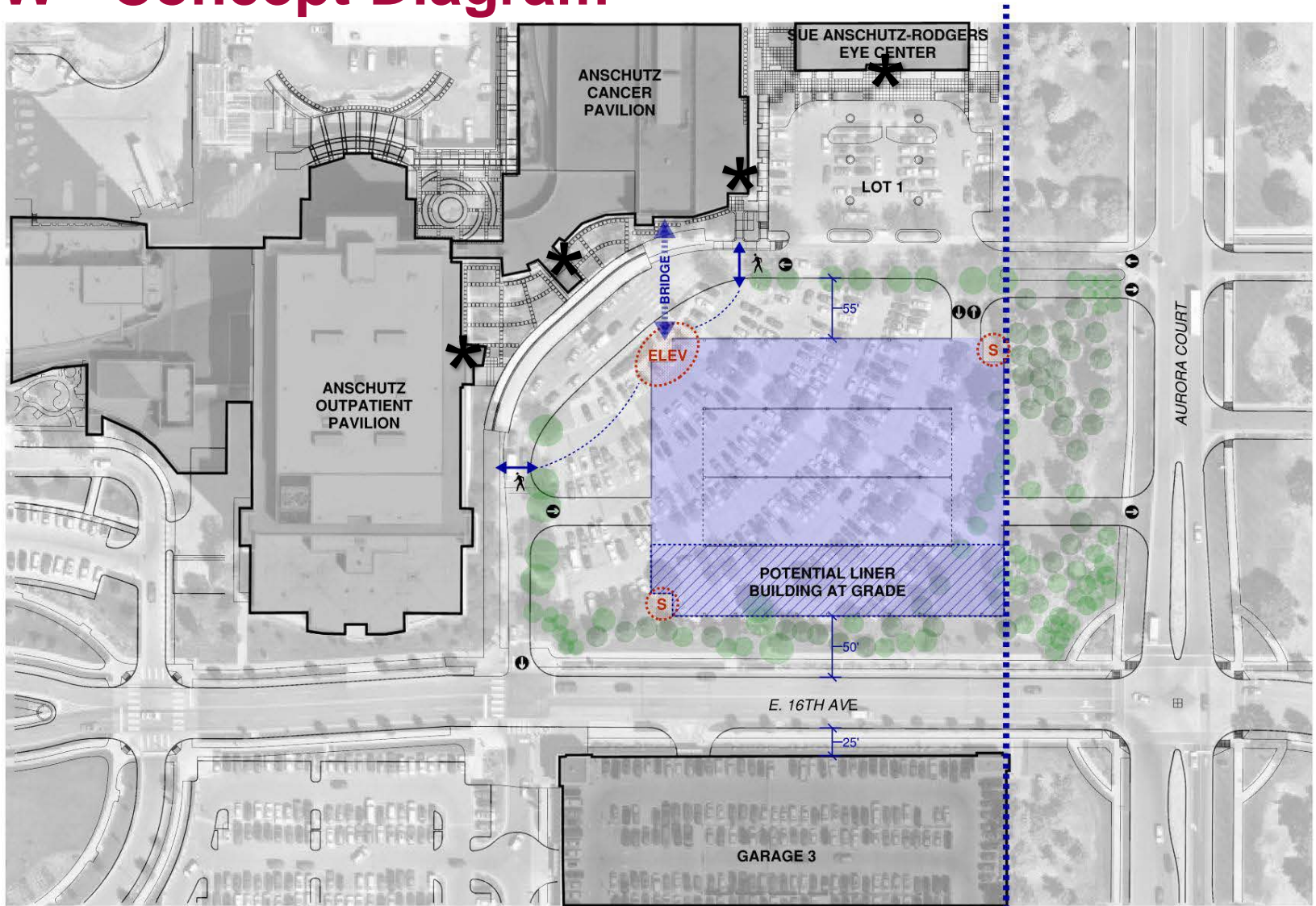


# E/W - Concept Diagram





# E/W - Concept Diagram



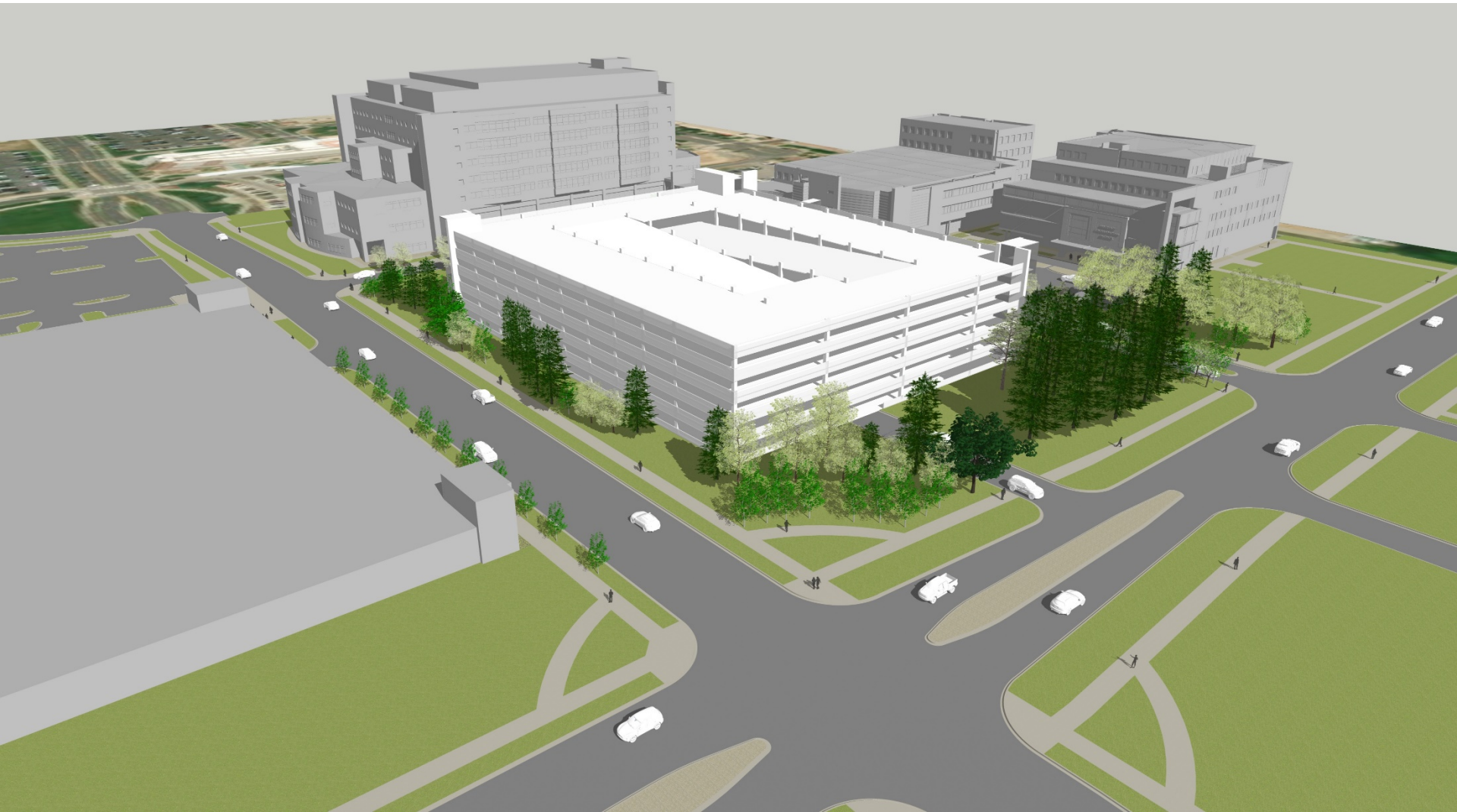
# E/W - Concept Aerial



Aerial Plan



# E/W - Concept Aerial



Aerial View Looking Northwest

# E/W - Concept Aerial



**Aerial View Looking Northeast**



# E/W - Concept Aerial



Aerial View Looking Southwest

# E/W - Concept Street Level



**Street View at 16<sup>th</sup> Ave & Aurora Court Looking Northwest**



# E/W - Concept Street Level



Street View at 16<sup>th</sup> Ave & 'Troy' Street Looking Northeast

# E/W - Concept Street Level



**Street View at Entry Drive & Aurora Court Looking Southwest**



# E/W – Connection to Public Areas 1<sup>st</sup> Floor



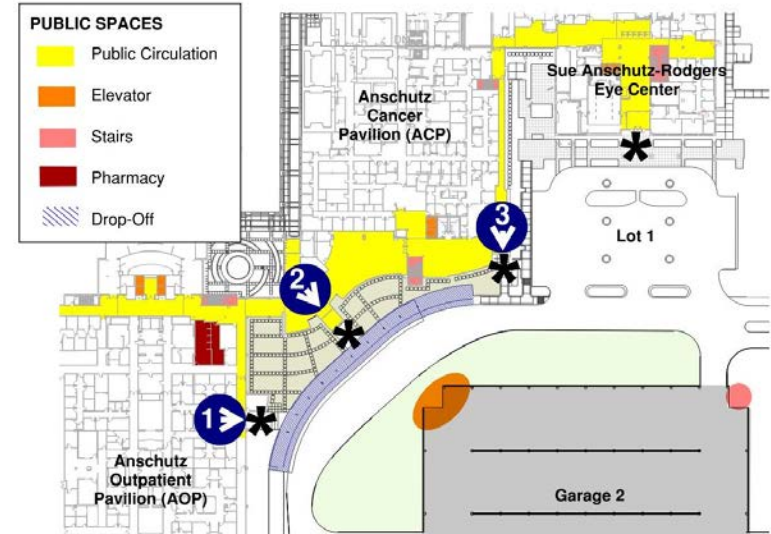
View 2 – From AOP 1<sup>st</sup> Floor Looking Southeast



View 3 – From ACP 1<sup>st</sup> Floor Looking South



View 1 – From AOP 1<sup>st</sup> Floor Looking East



# E/W – Connection to Public Areas 2<sup>nd</sup> Floor



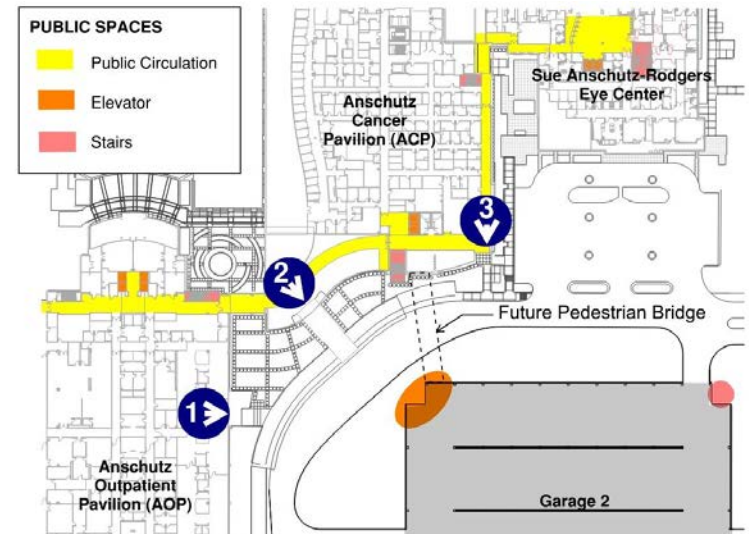
View 2 – From AOP 2<sup>nd</sup> Floor Looking Southeast



View 3 – From ACP 2<sup>nd</sup> Floor Looking South

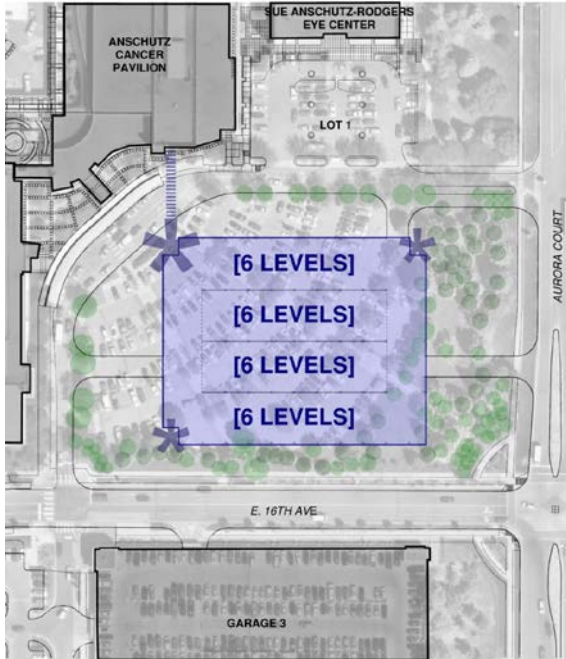


View 1 – From AOP 2<sup>nd</sup> Floor Looking East



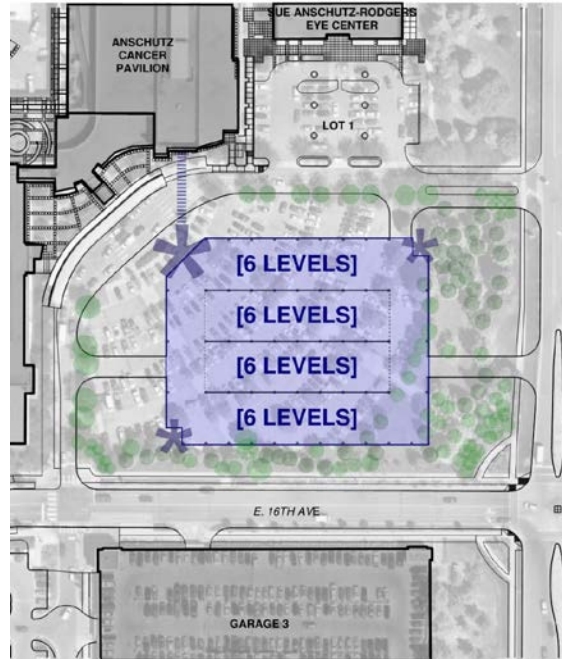


# E/W – North Step-Down



**Base Concept**

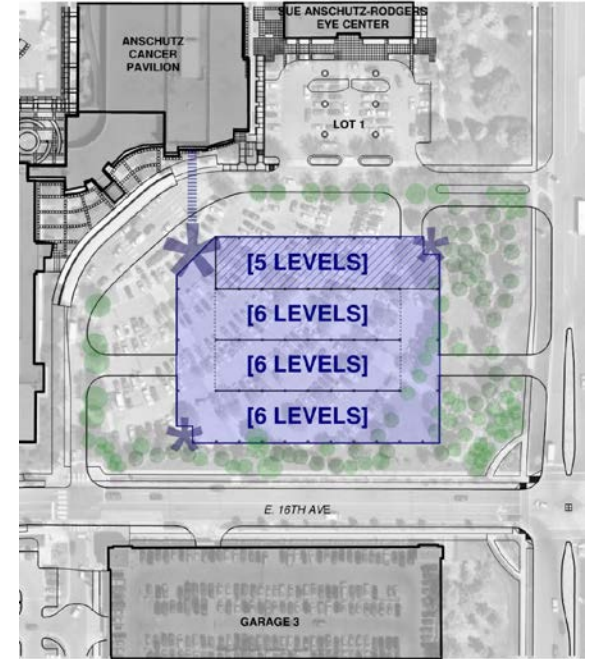
1,300+ Stalls



**Chamfer Concept**

1,300+ Stalls

Chamfer does not significantly impact parking stall count



**Chamfer Concept +  
North Step-Down**

1,300+ Stalls

Step-down requires 9' to be added to the overall width of garage on each level

# E/W - North Step-Down



Aerial View Looking Northwest



# E/W - North Step-Down



**Aerial View Looking Northeast**

# E/W - North Step-Down



**Aerial View Looking Southwest**



# E/W - North Step-Down



Street View at 16<sup>th</sup> Ave & 'Troy' Street Looking Northeast

# E/W - North Step-Down



Street View at Entry Drive & Aurora Court Looking Southwest

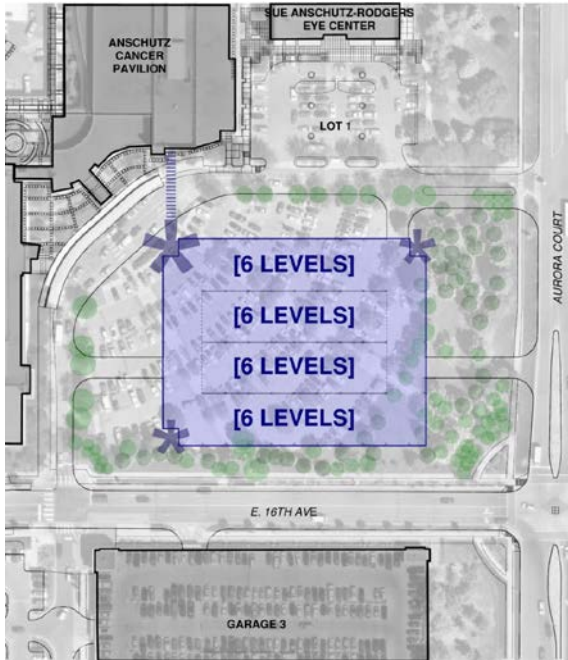


# E/W - North Step-Down



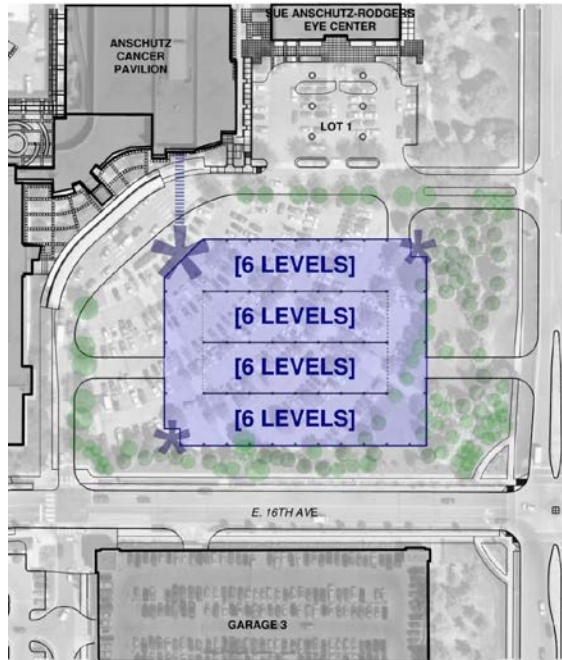
Aerial Plan

# E/W - South Step-Down



**Base Concept**

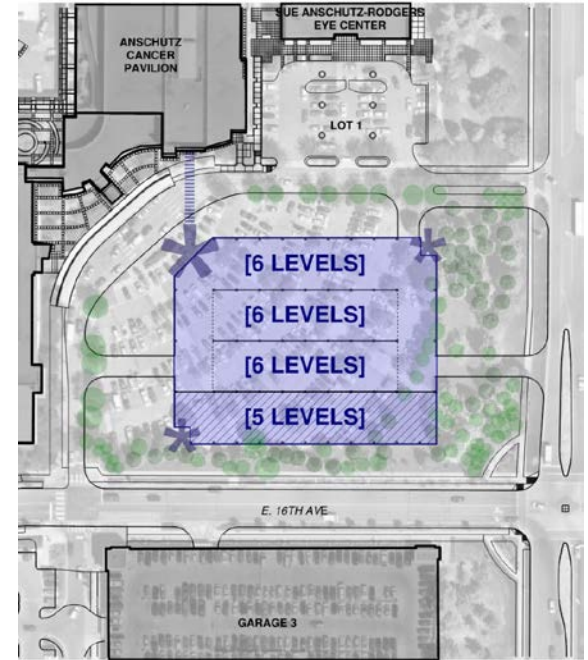
1,300+ Stalls



**Chamfer Concept**

1,300+ Stalls

Chamfer does not significantly impact parking stall count



**Chamfer Concept +  
South Step-Down**

1,300+ Stalls

Step-down requires 9' to be added to the overall width of garage on each level



# E/W - South Step-Down



Aerial View Looking Northwest

# E/W - South Step-Down



Aerial View Looking Northeast



# E/W - South Step-Down



Aerial View Looking Southwest

# E/W - South Step-Down



Street View at 16<sup>th</sup> Ave & Aurora Court Looking Northwest



# E/W - South Step-Down



Street View at 16<sup>th</sup> Ave & 'Troy' Street Looking Northeast

# E/W - South Step-Down



Aerial Plan



## E. Proposed Landscape Palette

# Existing Plant Palette



16TH AVENUE LANDSCAPING



16TH AVENUE LANDSCAPING



COURTYARD LANDSCAPING



COURTYARD LANDSCAPING



# Existing Plant Palette



ENTRYWAY LANDSCAPING



ENTRYWAY LANDSCAPING



ENTRYWAY LANDSCAPING



# Existing Hardscape Materials



DECORATIVE CONCRETE



NATURAL STONE PAVERS



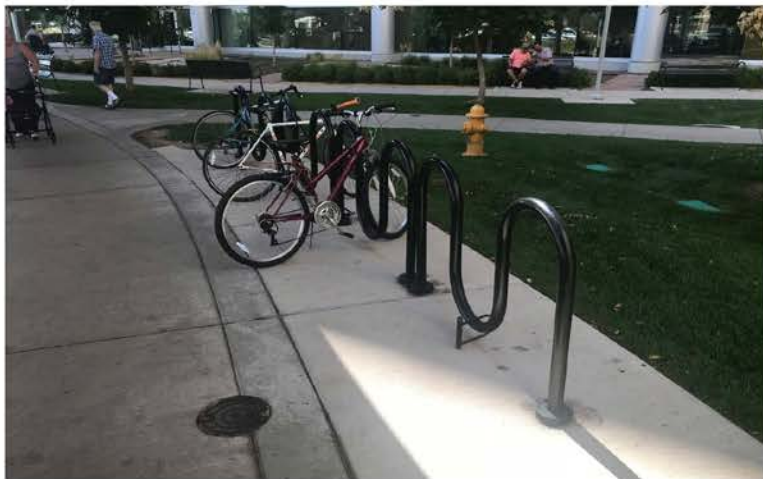
CONCRETE SEATWALL AND CONCRETE SIDEWALK



CONCRETE PAVERS AND STONE MULCH / PATHWAYS



# Proposed Site Furnishings



BIKE RACK



6' WOODEN BENCH



6' METAL BENCH



4' METAL BENCH



# Proposed Plant Palette



AUTUMN BLAZE MAPLE ☀️



PYRAMIDAL ENGLISH OAK ☀️



PONDEROSA PINE ☀️



COLORADO SPRUCE ☀️



SKYLINE HONEY LOCUST ☀️



SPRING SNOW CRAB APPLE ☀️



EASTERN REDBUD 🌙



BLUE SPRUCE ☀️

## PROPOSED PLANT PALETTE

SHADE 🌙 PARTIAL 🌅 SUN ☀️



# Proposed Plant Palette



KNOCKOUT ROSE ☀️



SEA GREEN JUNIPER ☀️



DWARF KOREAN LILAC ☀️ ☀️



OREGON GRAPE HOLLY 🌙



GRO-LOW FRAGRANT SUMAC ☀️ ☀️



INKBERRY HOLLY ☀️ 🌙



VINCA 🌙

## PROPOSED PLANT PALETTE





# Proposed Plant Palette



CLIMBING HYDRANGEA ☾



BLACK-EYED SUSAN ☀ ☀



PAMPAS GRASS ☀ ☀



FEATHER REED GRASS ☀ ☀



PLANTAIN LILY ☾



MINIATURE BEARDED IRIS ☀ ☀



LITTLE BLUESTEM GRASS ☀



SEDGE ☾

## PROPOSED PLANT PALETTE





# Proposed Hardscape Materials & Site Furnishings



DECORATIVE CONCRETE



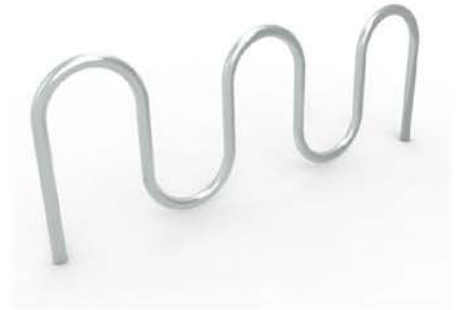
CONCRETE SEATWALL AND STAMPED CONCRETE SIDEWALK



LANDSCAPE FORMS  
SCARBOROUGH TRASH  
RECEPTACLE  
MATERIAL: POWDER  
COATED ALUMINUM  
COLOR: STORM CLOUD



16" DIAMETER GARDCO  
BOLLARD LIGHTING  
MATERIAL: ALUMINUM  
MODEL NO.: RAL7038



HUNTCO BRP SERIES BIKE RACK  
MATERIAL: HOT DIPPED GALVANIZED METAL  
MODEL NO.: BRP7, IN-GROUND



5' SQUARE NEENAH FOUNDRY TREE GRATE  
MATERIAL: STANDARD RAW CAST GRAY IRON  
MODEL NO.: R8712

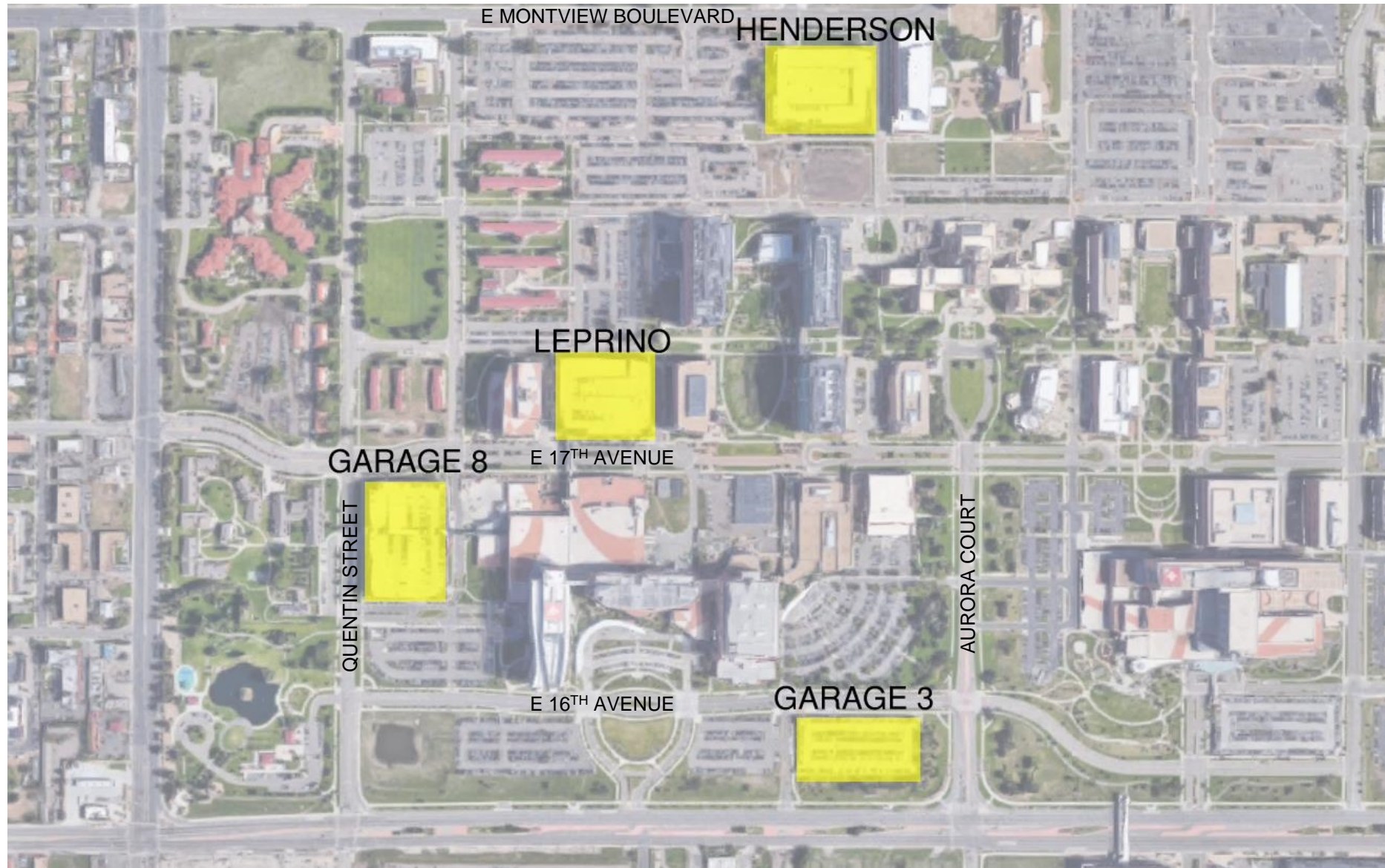


6' LANDSCAPE FORMS SCARBOROUGH BENCH  
MATERIAL: POWDER COATED STEEL  
COLOR: STORM CLOUD

## F. Early Façade & Core Exploration



# Existing Campus Garages



# Garage 8

## Configuration:

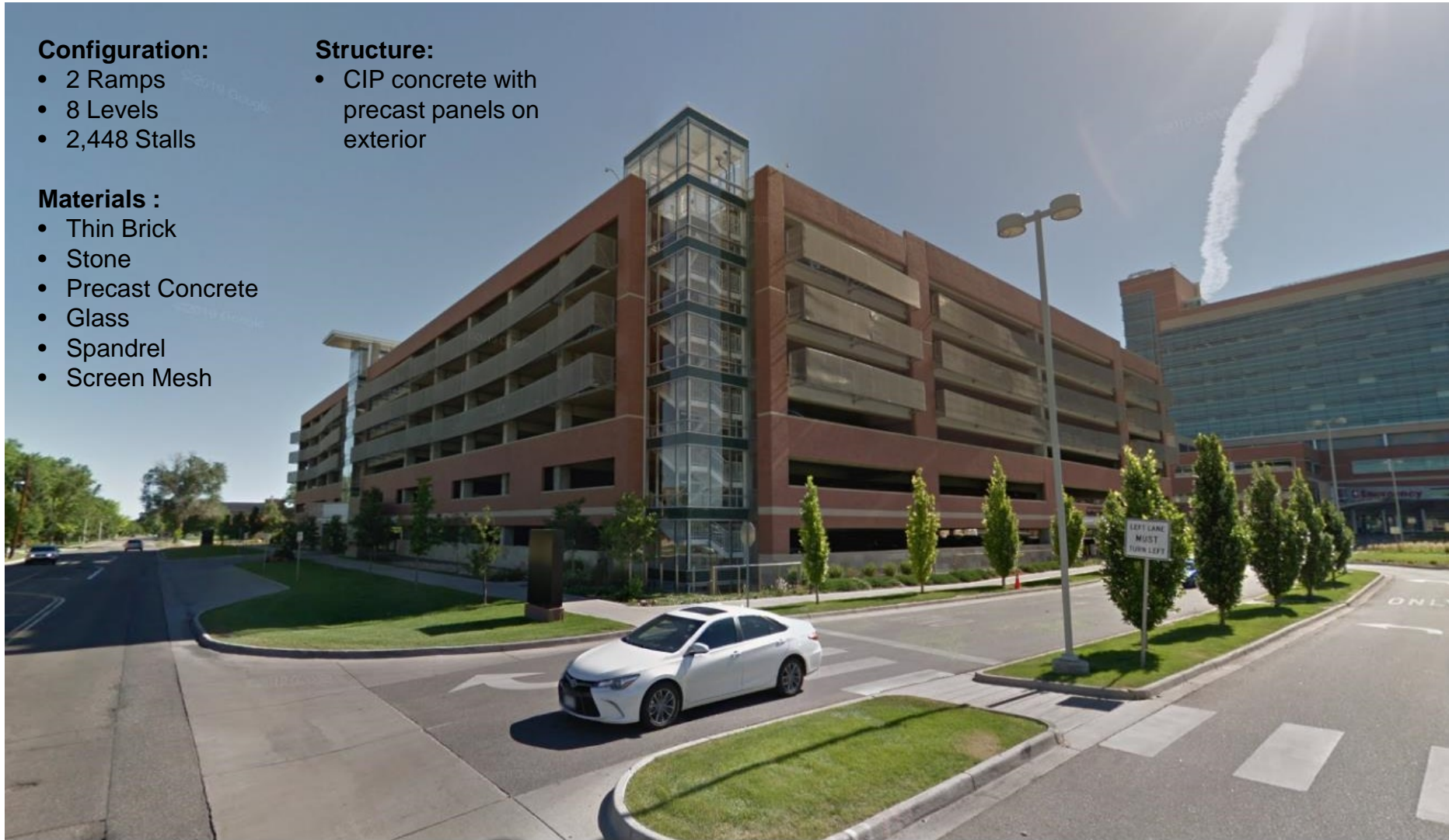
- 2 Ramps
- 8 Levels
- 2,448 Stalls

## Structure:

- CIP concrete with precast panels on exterior

## Materials :

- Thin Brick
- Stone
- Precast Concrete
- Glass
- Spandrel
- Screen Mesh





# Garage 3

## Configuration:

- 1 Ramp
- 3 Levels
- 622 Stalls

## Structure:

- CIP concrete with precast panels on exterior

## Materials :

- Thin Brick
- Stone
- Precast Concrete
- Glass
- Fritted Glass
- Metal Panel



# Henderson Garage

## Configuration:

- 2 Ramps
- 6 Levels
- 1,544 Stalls

## Structure:

- Precast concrete with precast panels on exterior

## Materials :

- Thin Brick
- Stone
- Precast Concrete
- Glass
- Metal Panel





# Leprino Garage

## Configuration:

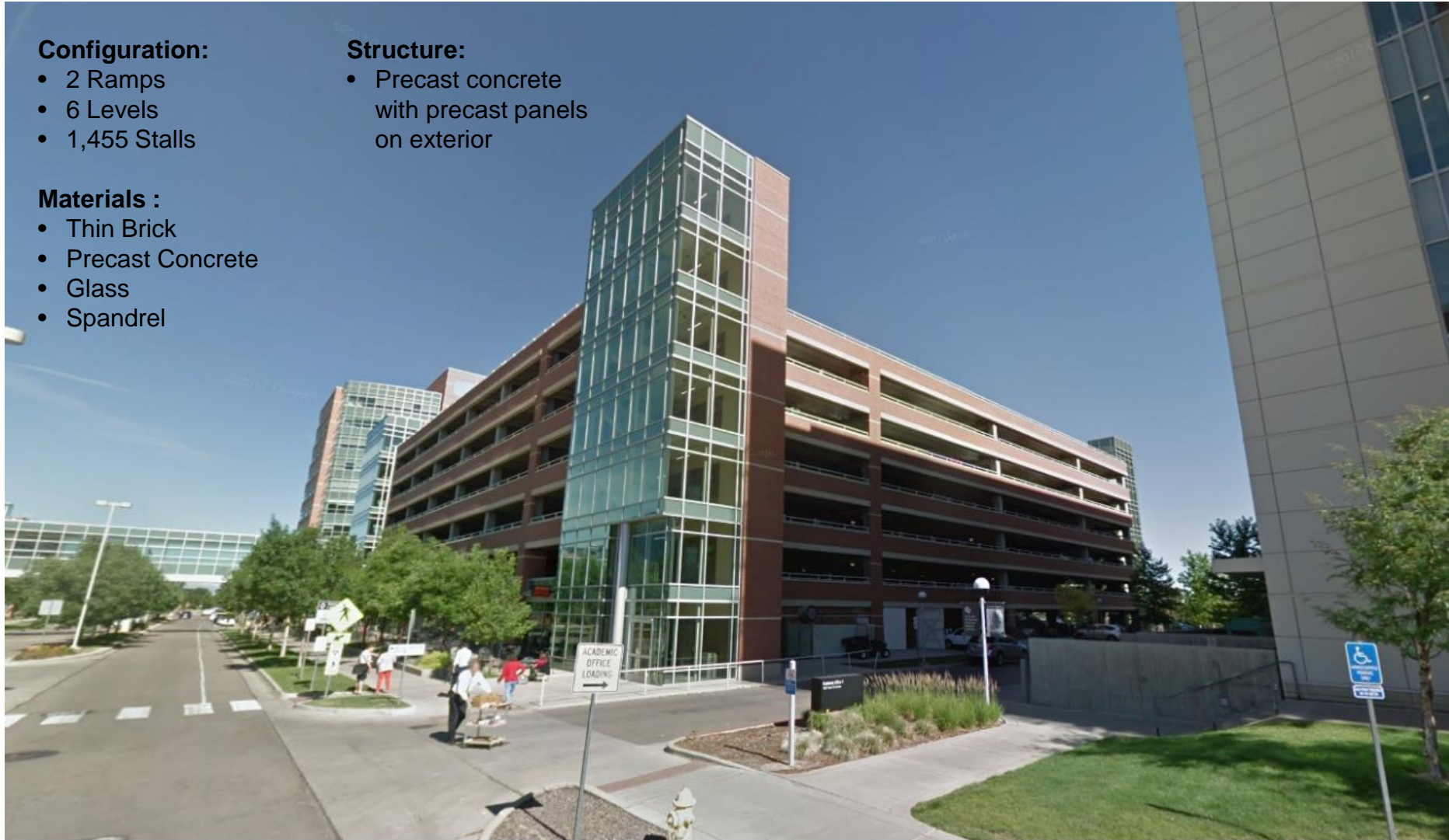
- 2 Ramps
- 6 Levels
- 1,455 Stalls

## Structure:

- Precast concrete with precast panels on exterior

## Materials :

- Thin Brick
- Precast Concrete
- Glass
- Spandrel



# Inspiration



Northwestern University Garage  
Evanston, IL



727 West Madison Garage  
Chicago, IL



East 2nd Street Garage  
Des Moines, IA



Nu Skin Enterprises Garage  
Provo, UT

Scale, Rhythm, Repetition, Pattern - [Glazing]



# Inspiration



10<sup>th</sup> & Wyandotte Garage



Stanford University Garage



Standard Parking



Rockhurst University Garage

Scale, Rhythm, Repetition, Pattern - [Perforation]

uchealth

# Inspiration



151 North Franklin Garage

Chicago, IL



St. Barnabas Garage

Livingston, NJ



Park Place Garage

Birmingham, AL



Harrison Street Garage

Iowa City, IA

Scale, Rhythm, Repetition, Pattern - [Panelization]

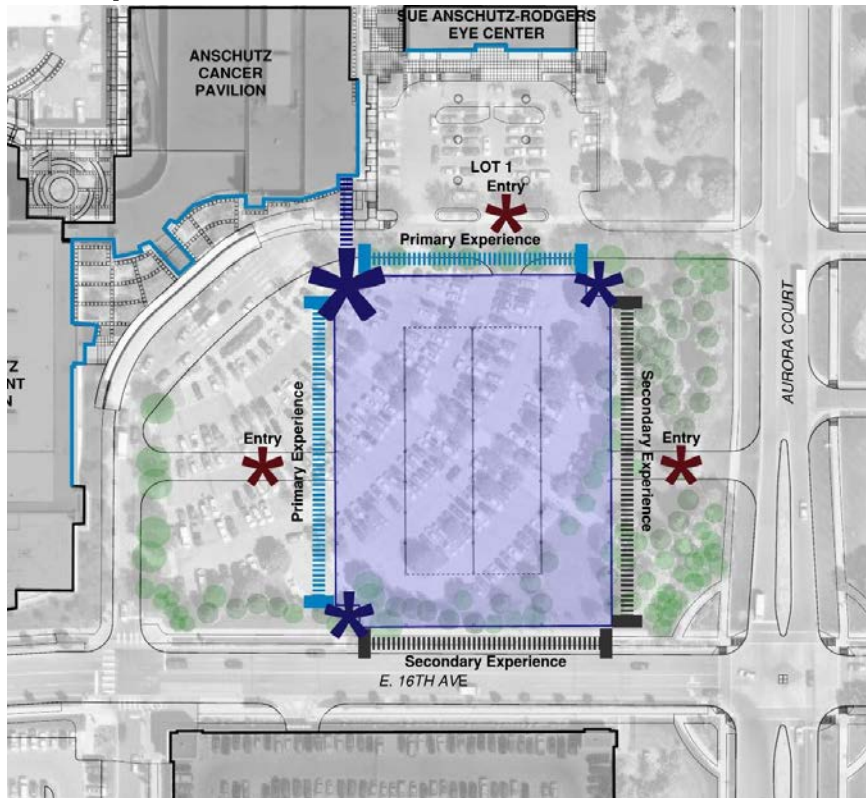
uchealth



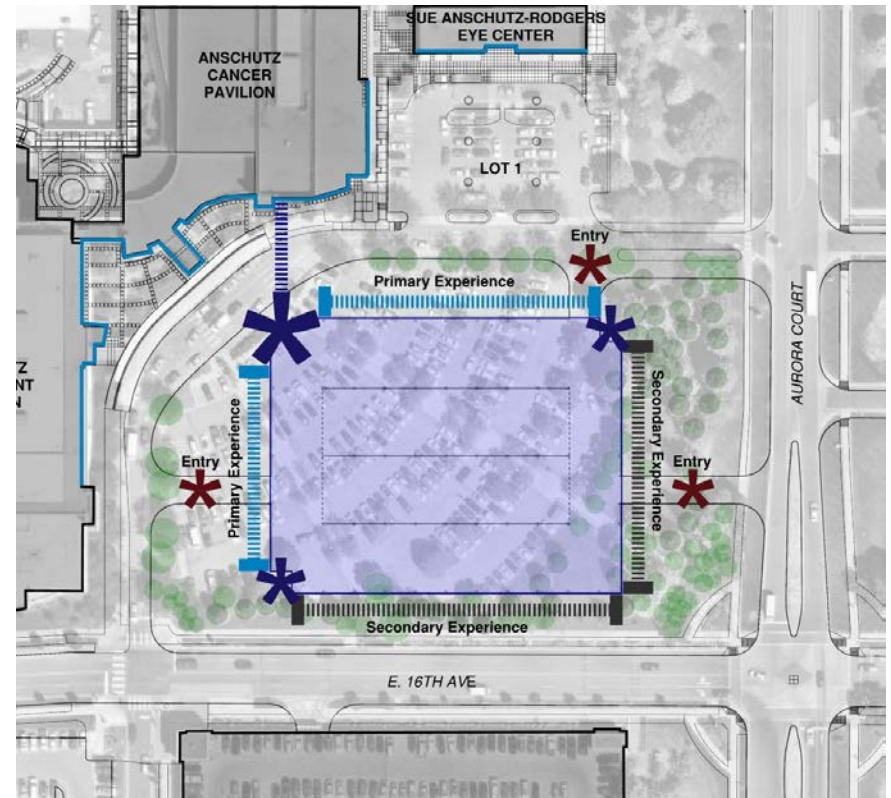
# Façade Experience

The north and west facades have a direct visual connection to the existing campus buildings (Anschutz Outpatient Pavilion, Anschutz Cancer Pavilion, and Sue Anschutz-Rodgers Eye Center). Visitors will have direct interaction with the north and west facades for a significantly longer duration than that of the south and east facades. Scale, rhythm, repetition, and pattern will be used to define points of significance as well as establish contextual presence on the site.

## N/S Option



## E/W Option



# Façade Vignettes – 5 Level



**Brick Veneer Precast System**



**Precast Staggered System**



# Façade Vignettes – 5 Level

Perforated Panel System



Aluminum Slat System

# Façade Vignettes – 6 Level



**Brick Veneer Precast System**

**Precast Staggered System**



# Façade Vignettes – 6 Level



**Continuous Perforated Panel System**



**Spaced Perforated Panel System**

# Accessible Path Study

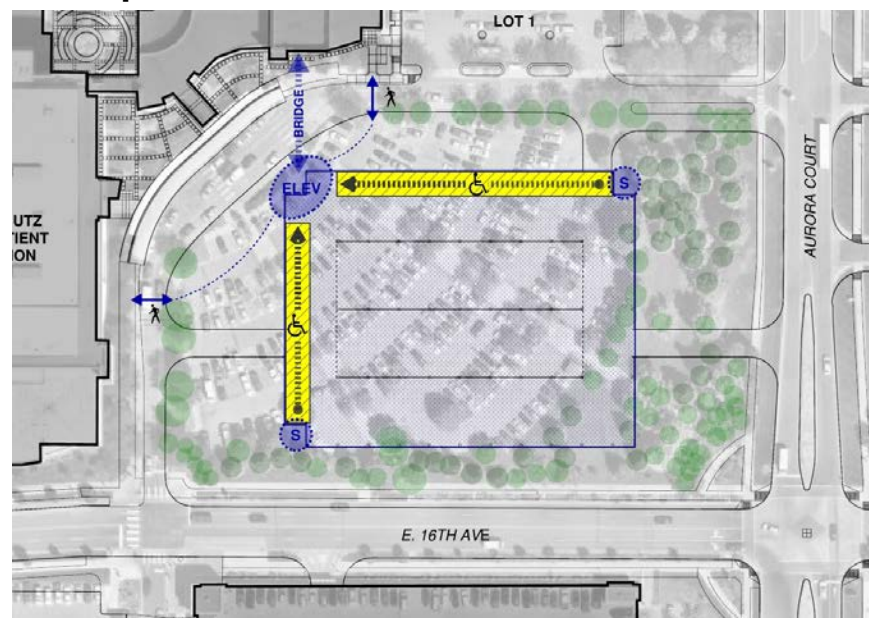
All accessible spaces must have an accessible route to public streets or sidewalks, accessible elevators, or accessible building entrances. An accessible route must have a minimum unobstructed width of 3'-0". **A drive aisle may be part of an accessible route, although it is preferred to place the accessible route at the front of the stalls.** An accessible route can only pass behind other accessible spaces. It is permitted to cross a drive aisle with an accessible route. The running slope along an accessible route cannot exceed 1:20 (5%) and the cross slope cannot exceed 1:48 (2%)

Moving all accessible spaces to the north and west perimeter of the structure provides an opportunity to create an accessible route which does not cross drive aisles and places accessible stalls nearest the elevator core.

## N/S Option

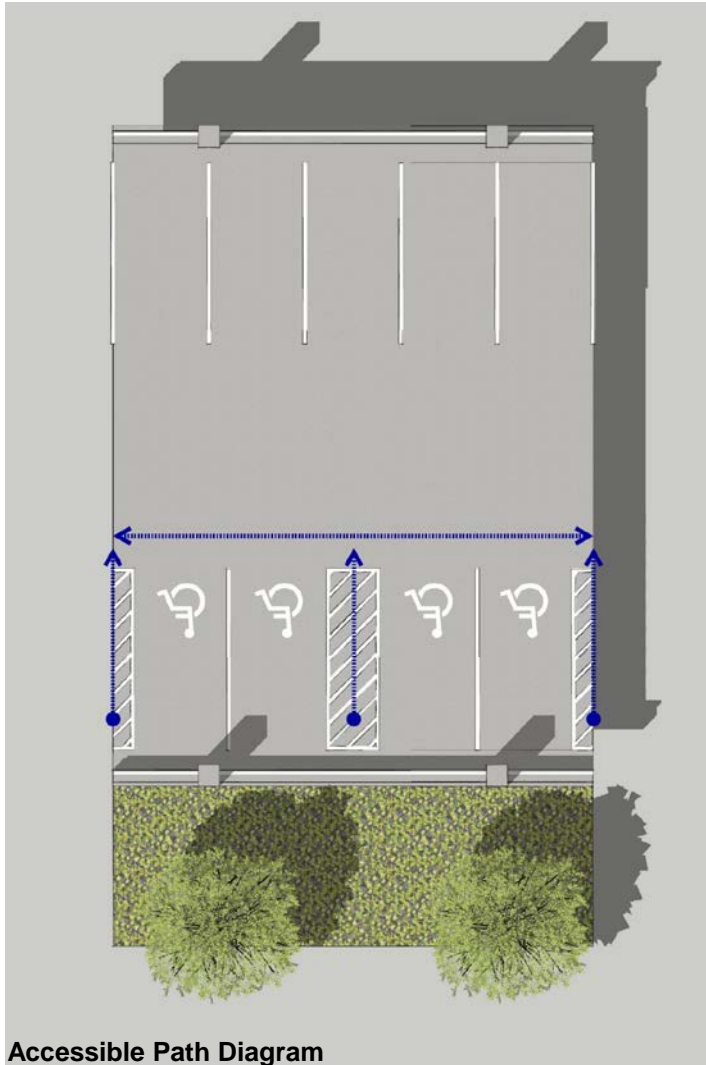


## E/W Option

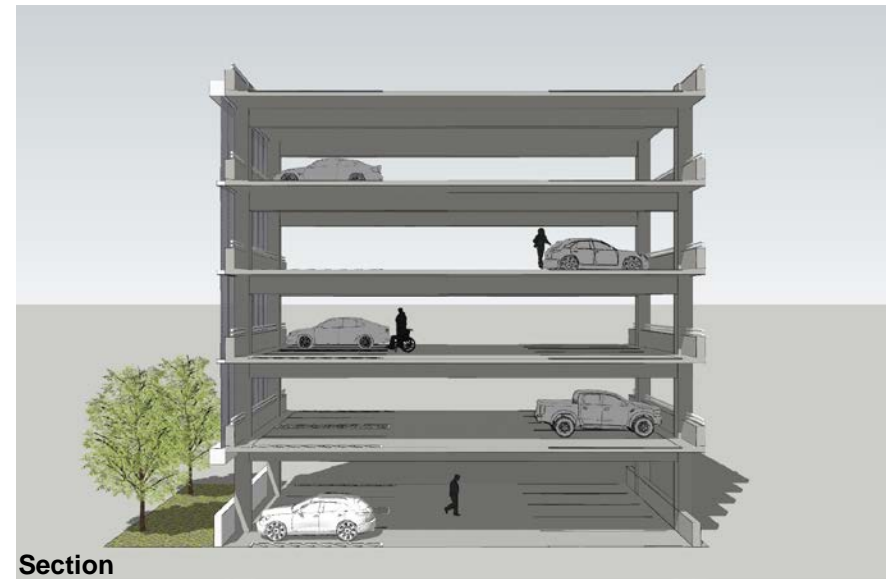




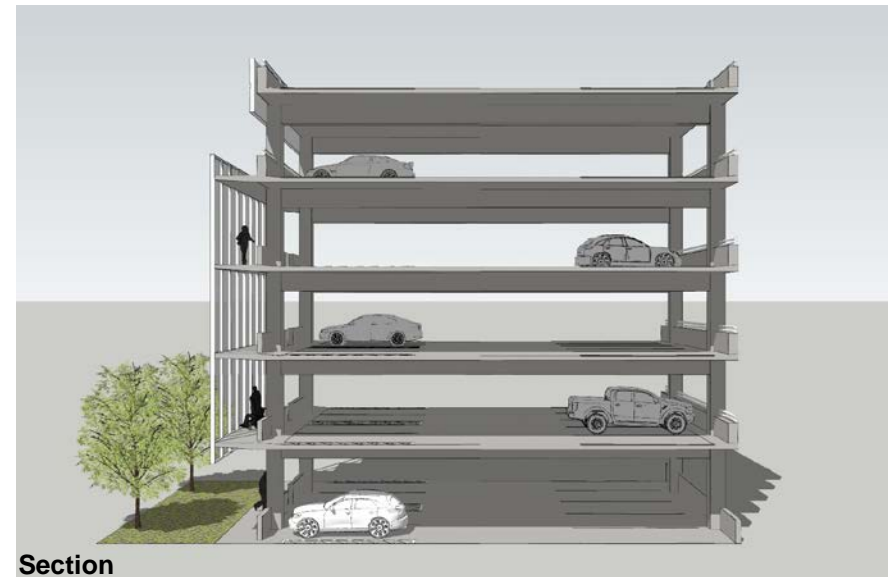
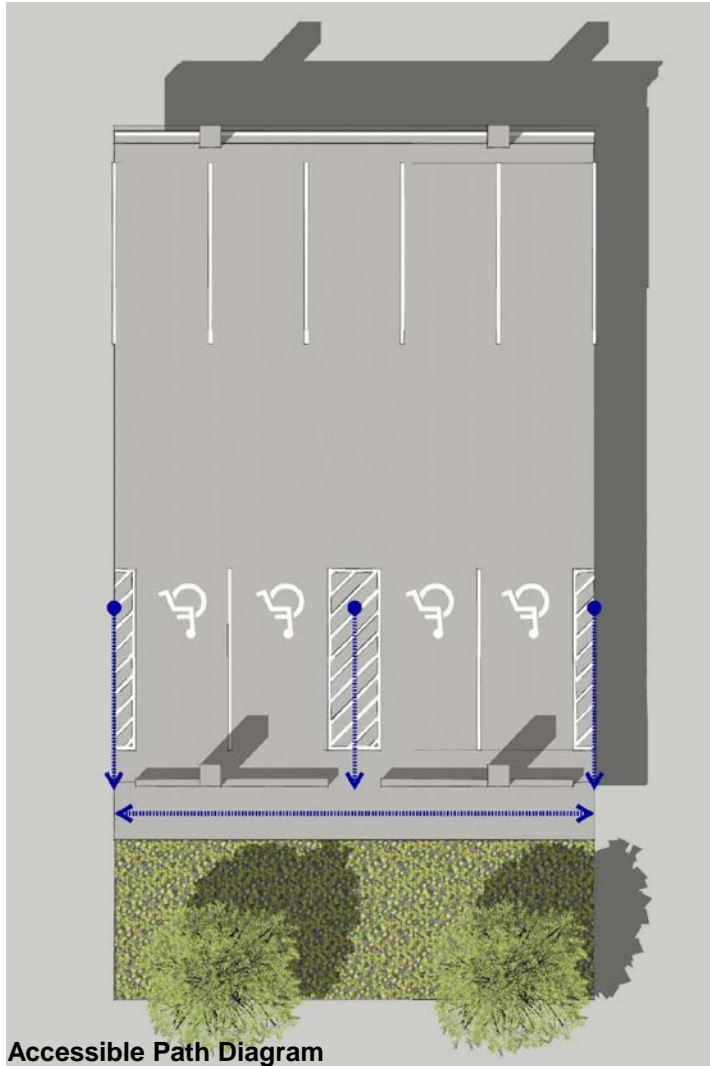
# Accessible Path Study



Typical Parking Structure Layout



# Accessible Path Study



Parking Structure Layout With Dedicated Accessible Path



# Façade Vignettes – Accessible Path



Glazed Panel System



Staggered Glazed Panel System

# Façade Vignettes – Accessible Path



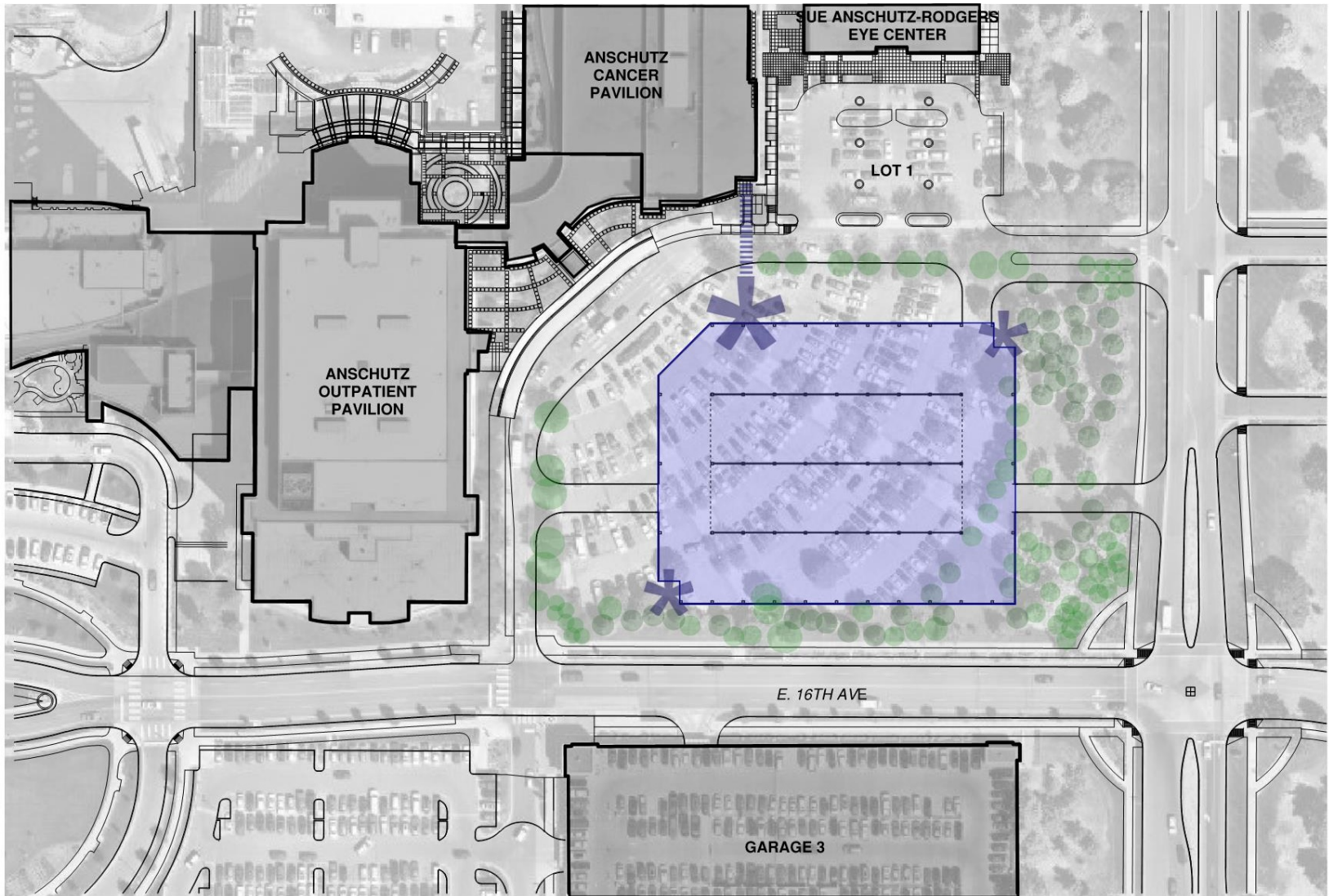
**Staggered Perforated Panel System**



**Offset Perforated Panel System**



# Core Studies – E/W North Core

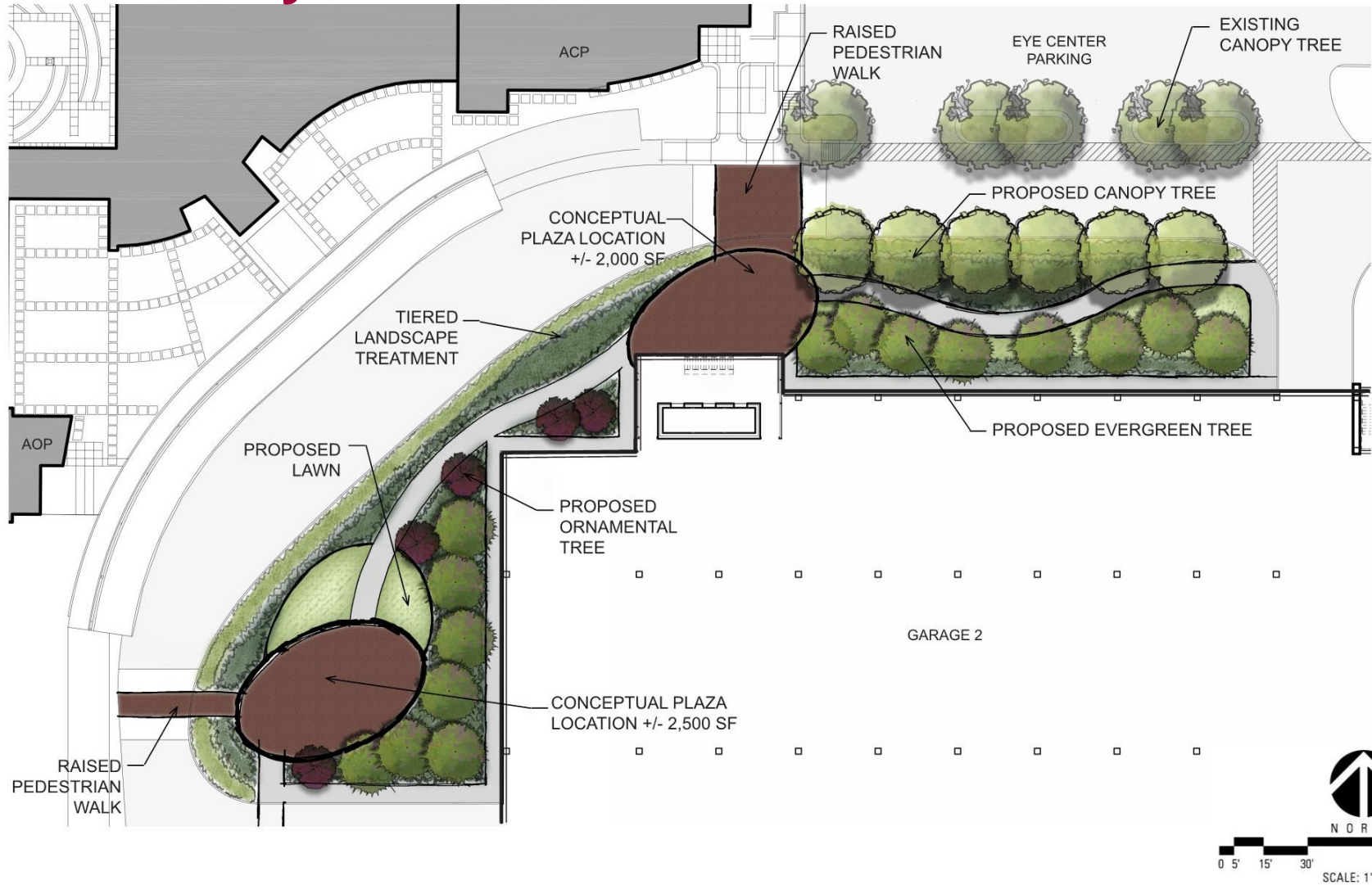


# Core Studies – E/W North Core

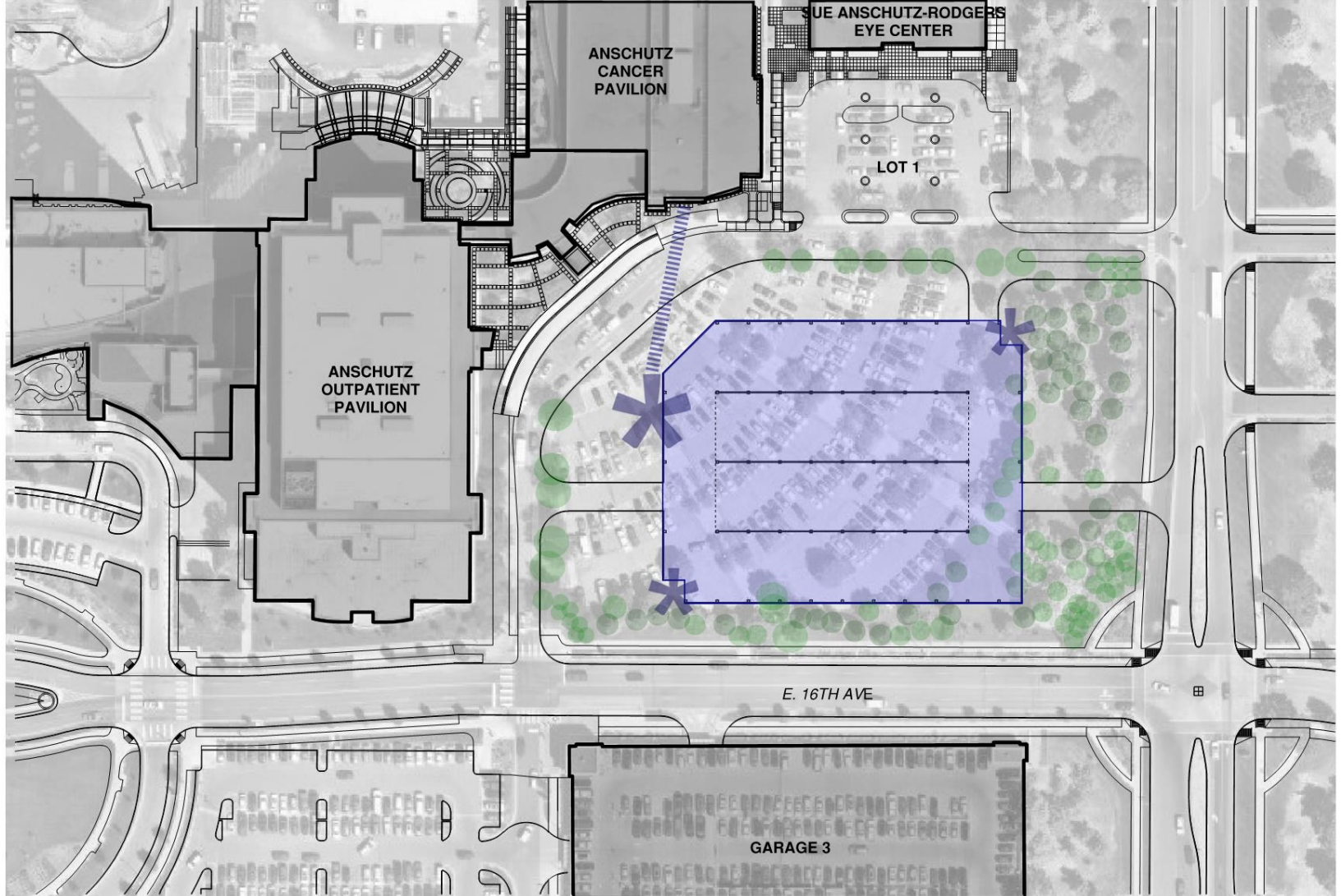




# Core Study – E/W North Core



# Core Studies – E/W West Core

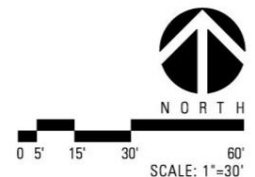




# Core Studies – E/W West Core



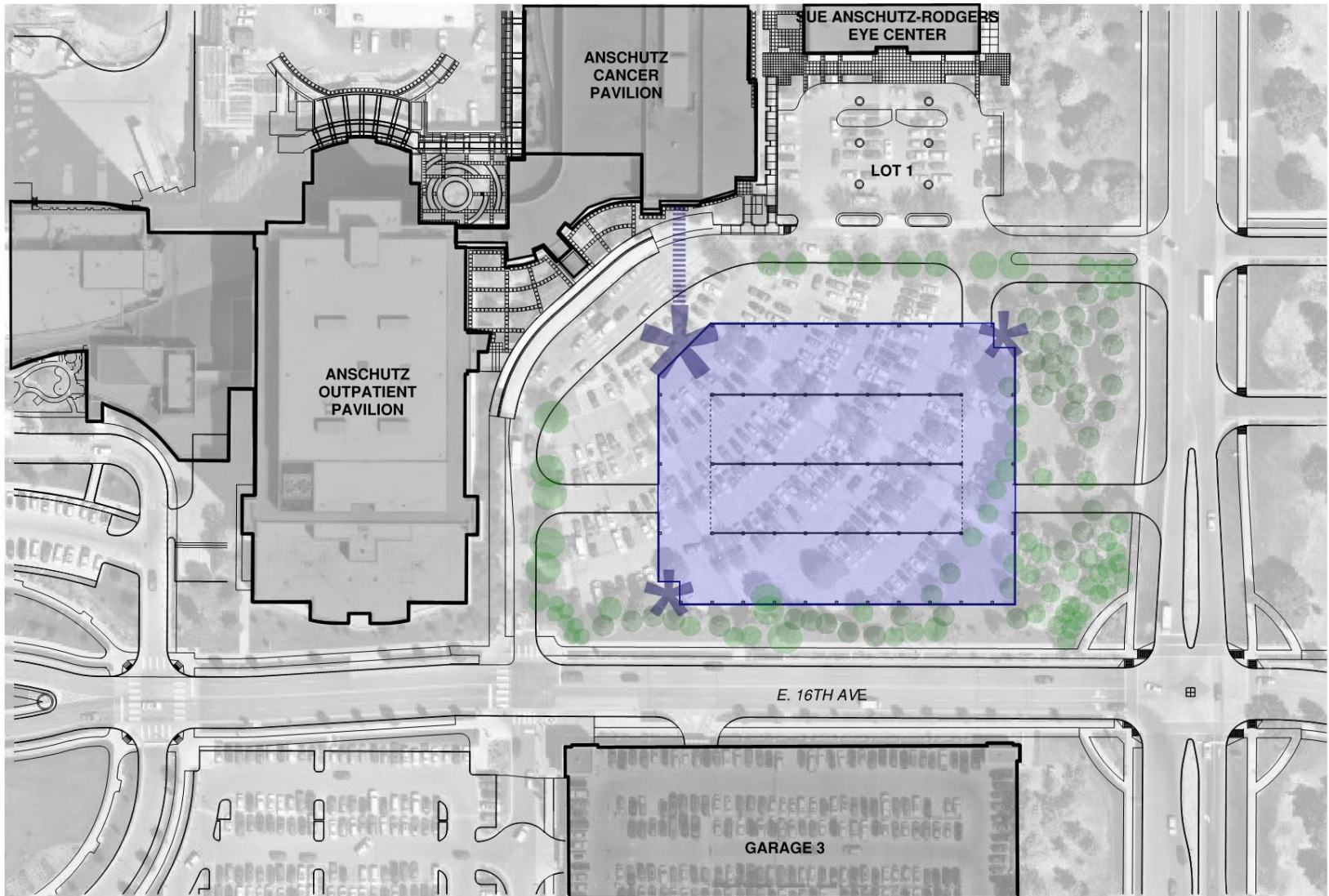
# Core Studies – E/W West Core



uhealth



# Core Studies – E/W Chamfer Core

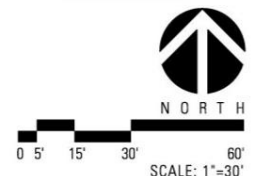
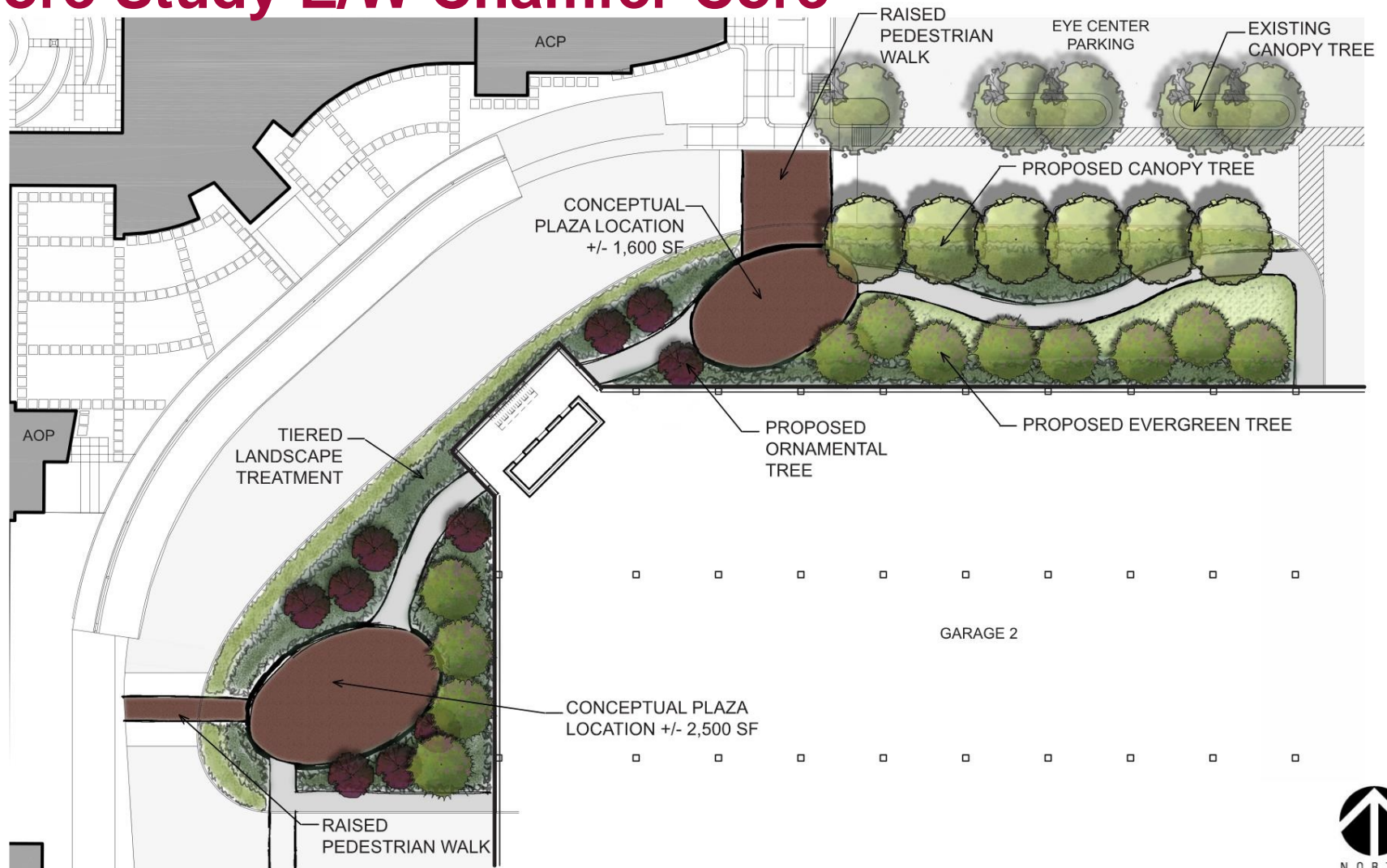


# Core Location – E/W Chamfer Core



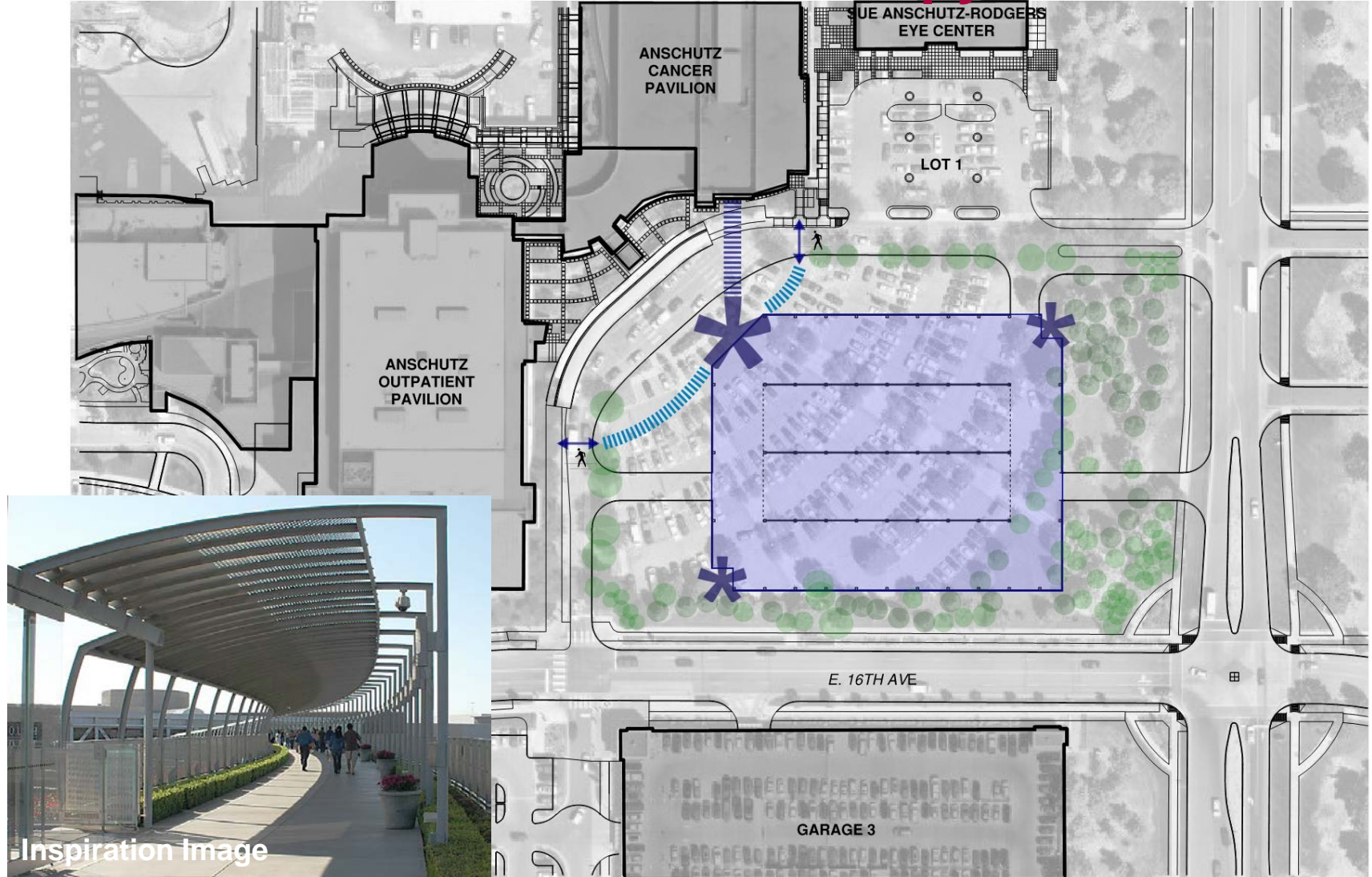


# Core Study E/W Chamfer Core



uhealth

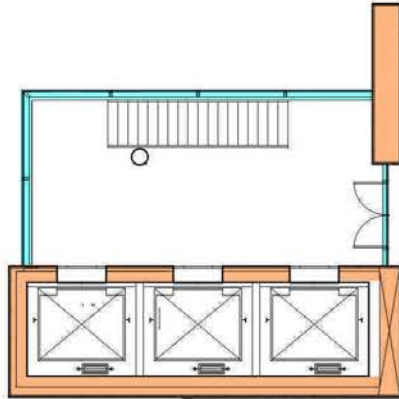
# E/W Chamfer – Pedestrian Canopy



**Pedestrian Canopy to Direct Visitors to Marked Crosswalks**



# Core Studies – Stair & Elevators



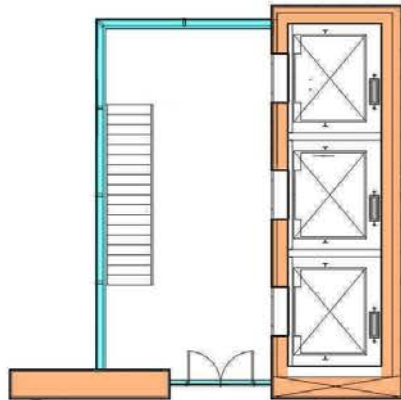
## Option 1

### Pros

- Compact design

### Cons

- Only 1 set of doors
- Limited visibility to adjacent buildings



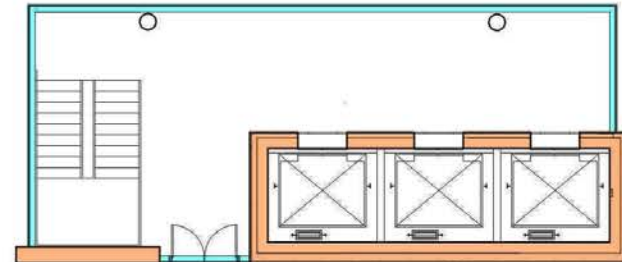
## Option 3

### Pros

- Compact design

### Cons

- Only 1 set of doors
- Limited visibility to adjacent buildings



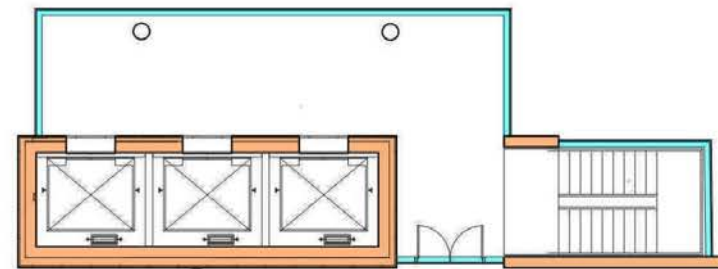
## Option 2

### Pros

- Good visibility to adjacent buildings

### Cons

- Large footprint
- Only 1 set of doors



## Option 4

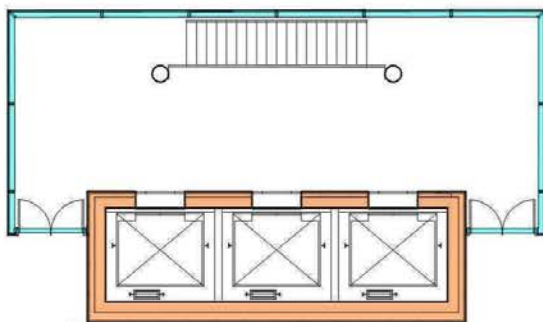
### Pros

- Good visibility to adjacent buildings

### Cons

- Large footprint
- Only 1 set of doors

# Core Studies - Stair & Elevators



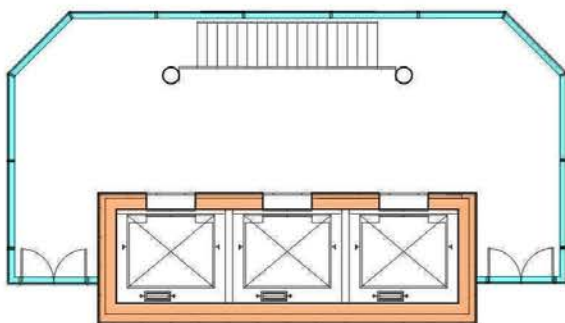
## Option 5

### Pros

- Good visibility to adjacent buildings

### Cons

- Extra space in corners
- Sightlines could be impacted



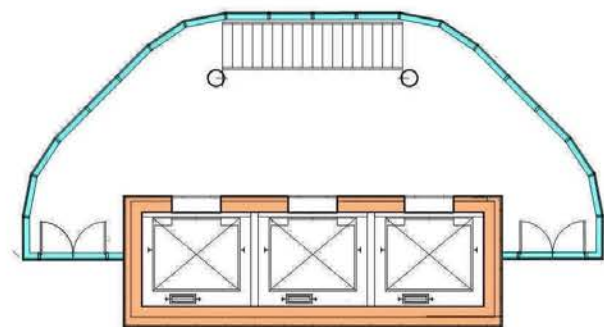
## Option 7

### Pros

- Good visibility to adjacent buildings

### Cons

- Potential blind spot at doors



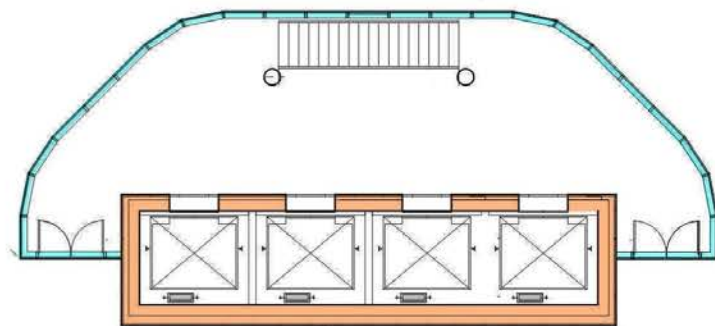
## Option 6

### Pros

- Good visibility to adjacent buildings
- Efficient layout

### Cons

- Potential blind spot at doors
- Tighter space after you enter doors



## Option 8

### Pros

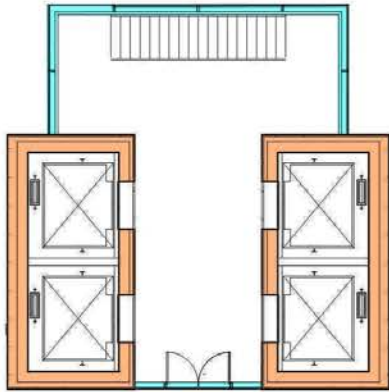
- Good visibility to adjacent buildings

### Cons

- Large footprint
- Potential blind spot at doors
- Tighter space after you enter doors



# Core Studies - Stair & Elevators



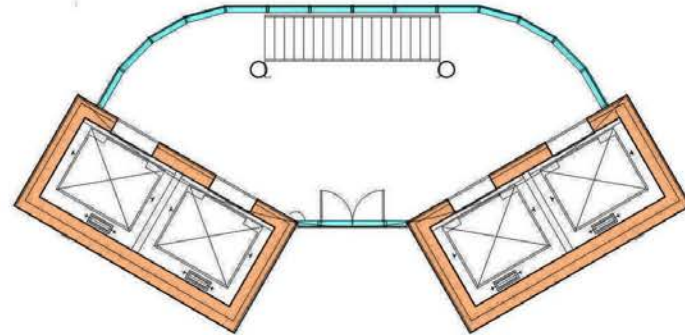
## Option 9

### Pros

- Compact design
- Short distance between elevators

### Cons

- Limited visibility



## Option 10

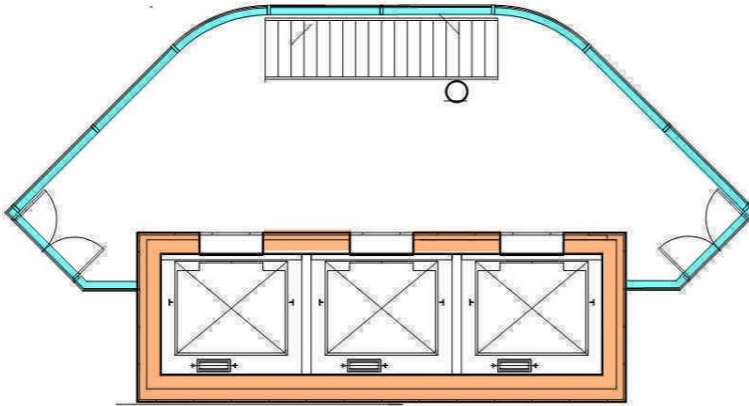
### Pros

- Good visibility to buildings

### Cons

- Angles create challenges

# Core Studies – Preferred Options



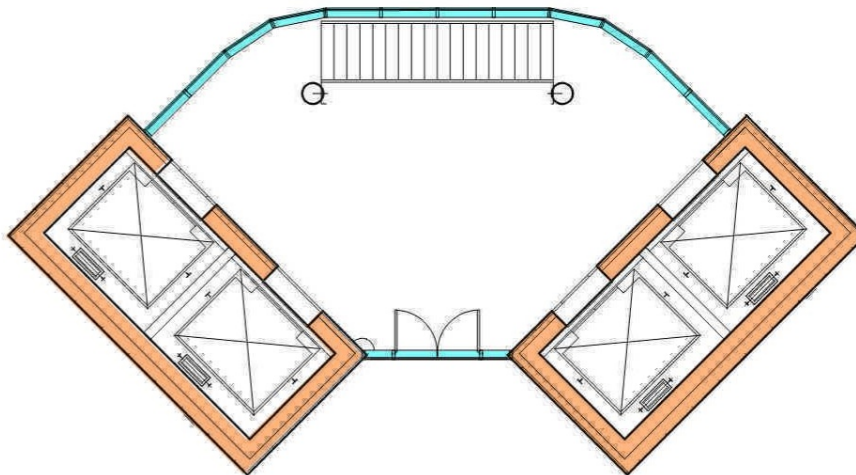
**3-Elevator Option**

## Pros

- Compact design
- No blind spots
- 2 sets of doors
- Curved glass relates to existing AOP entrance
- Good visibility to adjacent buildings

## Cons

- Adding 4<sup>th</sup> elevator expands the footprint



**4-Elevator Option**

## Pros

- Good visibility to buildings
- No blind spots
- Curved glass relates to existing AOP Entrance
- Good visibility to adjacent buildings

## Cons

- Larger footprint
- Only 1 set of doors



**Thank you**





# Appendix

# Master Plan Potential Build-Out Sites

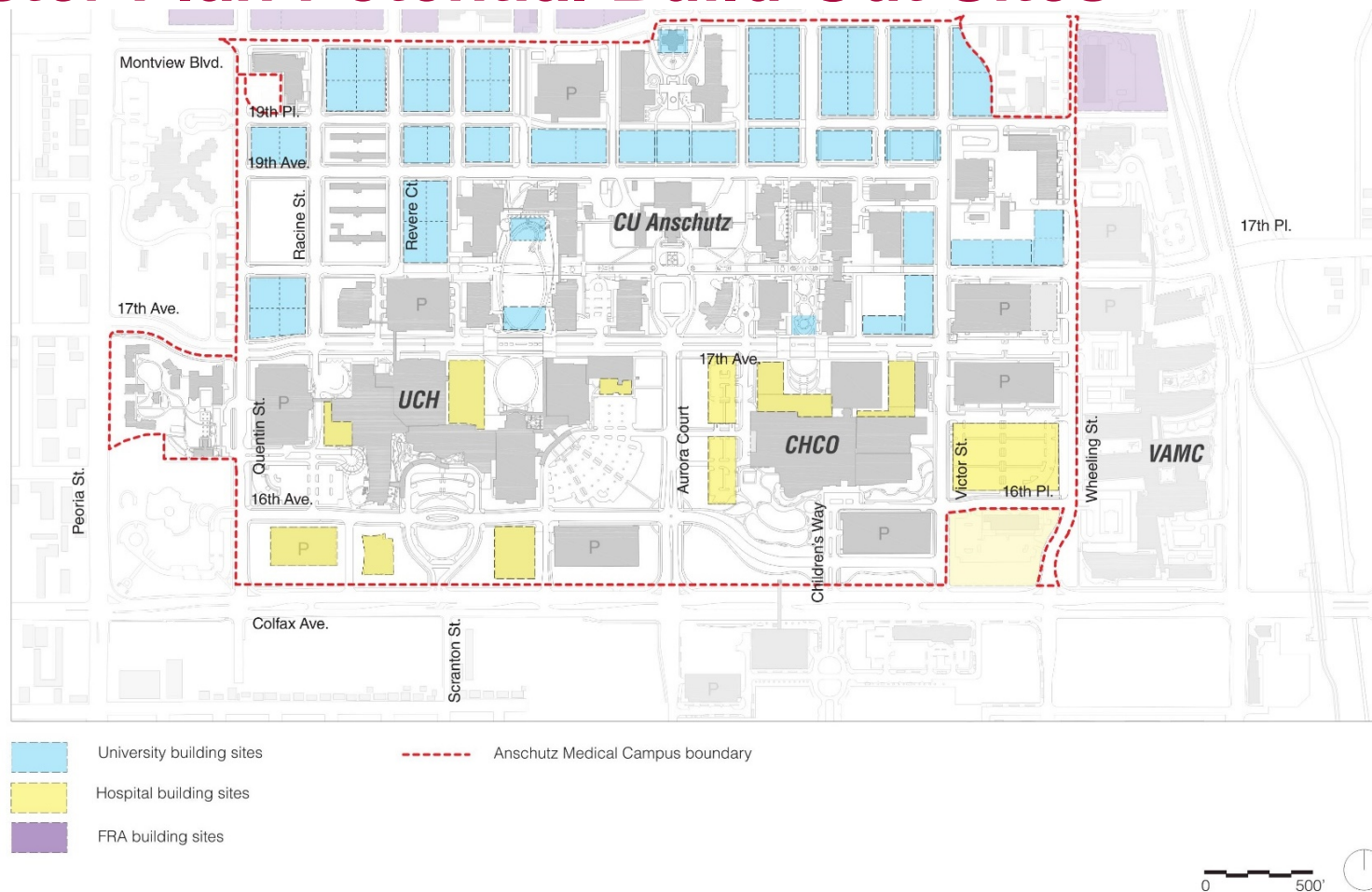
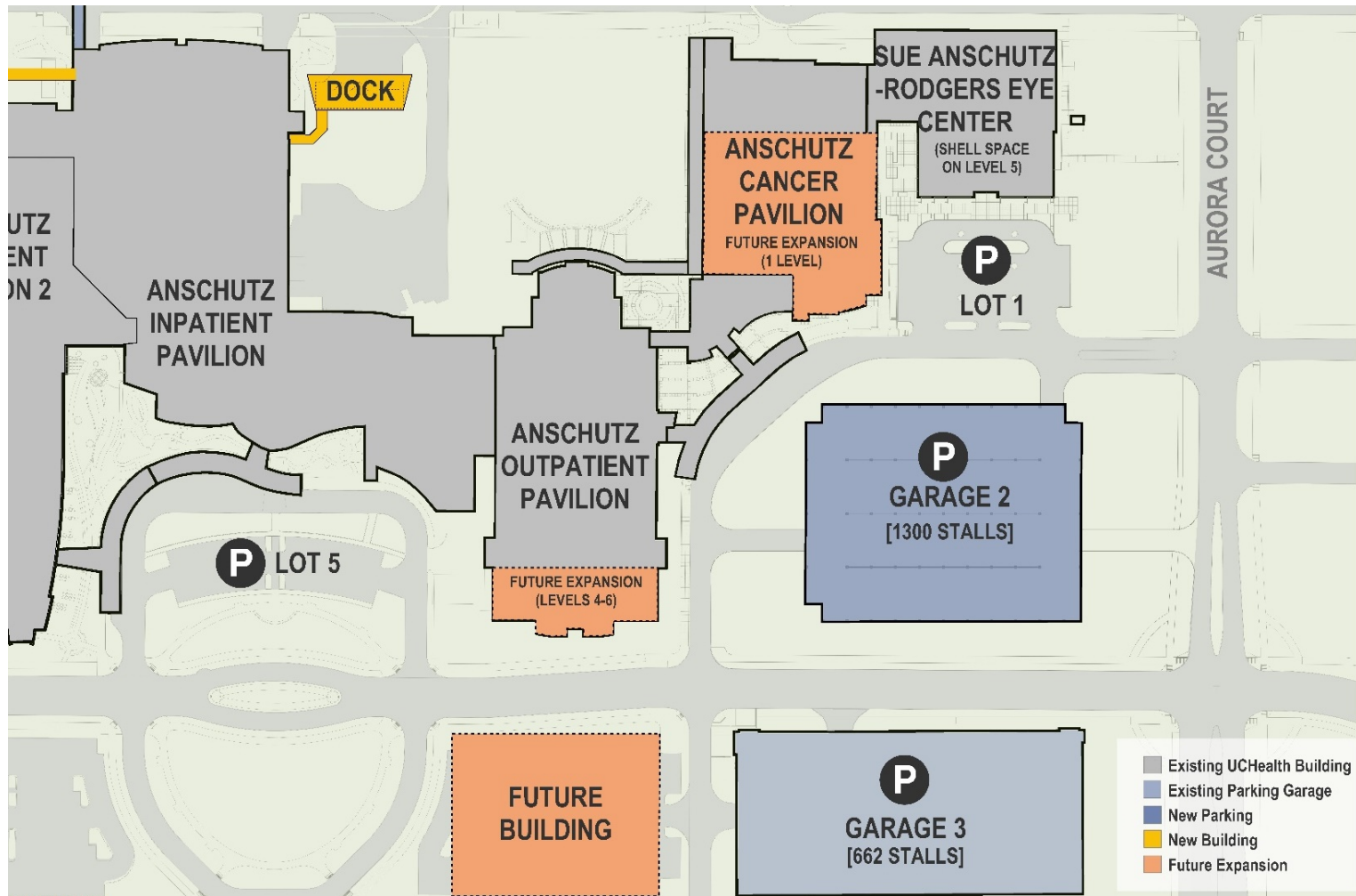


Figure V.4 - Potential Full Build-Out Sites



# Planned Outpatient Expansion



# Parking Projections

	2017/2018	2019 <sup>2</sup>	2020	2021	2022	2023 <sup>3</sup>	2024	2025	2026 <sup>4</sup>	2027	2028	2029
<b>Population Growth</b>												
Inpatient	620	684	684	684	684	787	787	787	859	859	859	859
Outpatient	4,639	5,396	5,666	5,949	6,247	6,559	6,887	7,231	7,593	7,972	8,371	8,790
Employee	6,350	6,383	6,442	6,501	6,560	7,197	7,263	7,330	7,801	7,874	7,948	8,022
Vendors		100	200	1,000	150	100						
<b>Total</b>	<b>11,609</b>	<b>12,563</b>	<b>12,991</b>	<b>14,134</b>	<b>13,641</b>	<b>14,642</b>	<b>14,937</b>	<b>15,349</b>	<b>16,253</b>	<b>16,705</b>	<b>17,178</b>	<b>17,670</b>
<b>Parking Demand</b>												
Inpatient	542	598	598	598	598	687	687	687	750	750	750	750
Outpatient	1,021	1,188	1,248	1,310	1,375	1,444	1,516	1,592	1,672	1,755	1,843	1,935
Employee	4,321	4,343	4,383	4,423	4,464	4,897	4,942	4,988	5,308	5,358	5,408	5,458
Vendors		100	100	800	-850	-50	-100					
<b>Total</b>	<b>5,884</b>	<b>6,229</b>	<b>6,328</b>	<b>7,131</b>	<b>5,587</b>	<b>6,978</b>	<b>7,146</b>	<b>7,267</b>	<b>7,730</b>	<b>7,863</b>	<b>8,001</b>	<b>8,144</b>
<b>Effective Supply<sup>1</sup></b>												
Inpatient	402	402	402	402	402	402	402	402	402	402	402	402
Outpatient	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040
Employee	3,608	4,653	4,558	3,798	4,606	3,513	3,608	3,608	3,608	3,608	3,608	3,608
<b>Total</b>	<b>5,050</b>	<b>6,095</b>	<b>6,000</b>	<b>5,240</b>	<b>6,048</b>	<b>4,955</b>	<b>5,050</b>	<b>5,050</b>	<b>5,050</b>	<b>5,050</b>	<b>5,050</b>	<b>5,050</b>
<b>Adequacy/Deficiency</b>												
Inpatient	(140)	(196)	(196)	(196)	(196)	(286)	(286)	(286)	(349)	(349)	(349)	(349)
Outpatient	19	(148)	(207)	(270)	(335)	(404)	(476)	(552)	(632)	(715)	(803)	(895)
Employee	(713)	310	175	(625)	142	(1,383)	(1,334)	(1,380)	(1,700)	(1,750)	(1,799)	(1,850)
<b>Total</b>	<b>(833)</b>	<b>(34)</b>	<b>(228)</b>	<b>(1,090)</b>	<b>(389)</b>	<b>(2,073)</b>	<b>(2,096)</b>	<b>(2,217)</b>	<b>(2,680)</b>	<b>(2,813)</b>	<b>(2,951)</b>	<b>(3,094)</b>

<sup>1</sup>Effective Supply: the maximum number of parking spaces that can realistically be used within a given system. The number of spaces supplied to each user group is estimated based on peak efficiency usage remaining at 95% of total inventory

<sup>2</sup>Opening of Capri Lot (Net 1,200 spaces)

<sup>3</sup>Tower III completion (Net 103 beds, 576 Employees)

Sunset of Capri Lot (Net loss -1,200 spaces)

<sup>4</sup>Tower III opens more floors( Net gain 72 beds, 403 Employees)



# Ride-hailing Overview

**Ride-hailing is a vehicular based service that arranges one-time, immediate-notice rides through a mobile application that relies on GPS navigation, smart technology, and social networking**

- According to a 2018 survey, roughly 30% (98.2M) of Americans use ride-hailing programs
- Across the healthcare industry, national no-show rates vary between 10 and 30 percent
  - A 2017 Colorado Health Access Survey (CHAS) interviewed over 10,000 households in the state, discovering that nearly 5% of people lacked proper transportation to attend appointments
- In 2019, a team from the University of Colorado, Denver, determined that of 311 ride-hailers surveyed, 1 in 3 agree to using these programs because parking can be difficult to find
- As recent as this year, Uber and Lyft have begun introducing Medical Transportation across the U.S.
  - Lyft is now an enrolled Medicaid Provider in Arizona, following non-emergency medical transportation (NEMT) regulations to provide Medicaid beneficiaries a ride to medical appointments
  - Uber recently launched Uber Health; a booking and coordination initiative that pulls patient appointment information through the Cerner EHR, and arranges rides on behalf of the patient

(Reinhart, 2018)  
(Murray, 2019)  
(Uber, 2020)  
(Lyft, 2019)  
(Schmitt, 2019)  
(Ingold, 2018)  
(Colorado Health Access Survey, 2017)  
(Wicklund, 2019)

# UCHealth Ride-hail Partnering

**In February 2017, the University of Colorado Hospital partnered with Uber, who offered a 30% discount to any passenger travelling to and from the Anschutz campus**

- Increased user volumes, but also increased number of extended-use parkers
  - Locals would park vehicles on campus and use Uber to travel elsewhere
- Program ran for one year, and was terminated by Uber in February 2018 during Corporate restructure
  - Within that year, Uber estimated over 10,300 trips completed, providing roughly \$40,000 in discounts
  - On average, the continued use of a similar program would only yield a 3% decrease in demand, equating to only 55 daily users by year 2025, and 67 daily users by year 2029
  - This accounts for a 5% annual growth rate in the Outpatient population, but has no significant impact on overall parking deficiencies

**The Hospital discharge lounge is launching a program that will pilot the Lyft Concierge platform**

- Will reduce wait time for discharged patients who do not have access to a ride
- Potential reduced cost compared to current Taxi voucher service
- Increased experience for patients using the service

