

# U City Annex + Trinity Renovation Historic & Sustainability Review

March 17, 2022

Trinity  
Services

# Agenda

1. Project Overview
2. Sustainability Review
3. Historic Significance
4. Key Features of Interest (Historic)
5. Site Design & Materials
6. Next Steps + Schedule

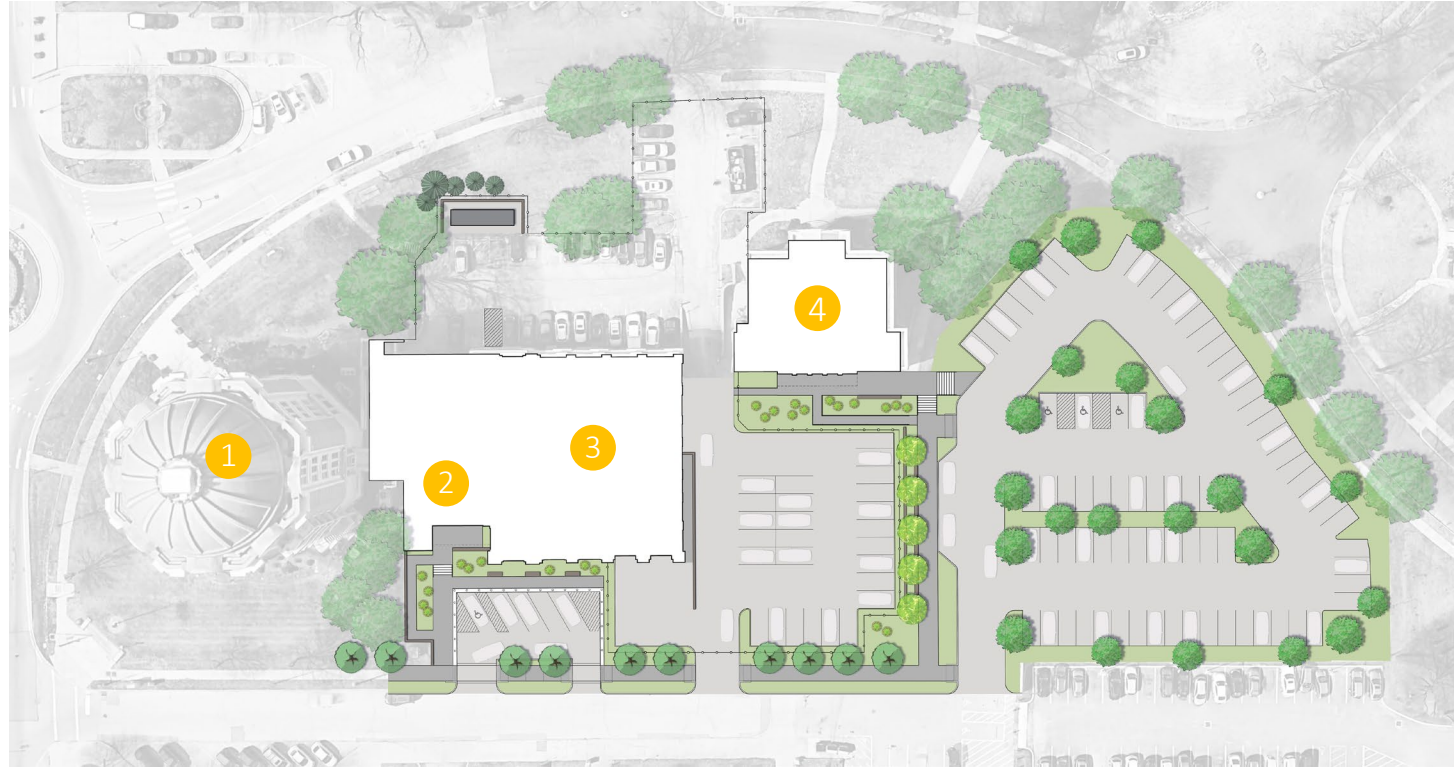
## Project Overview

Trivets

# Project Scope

## Overview:

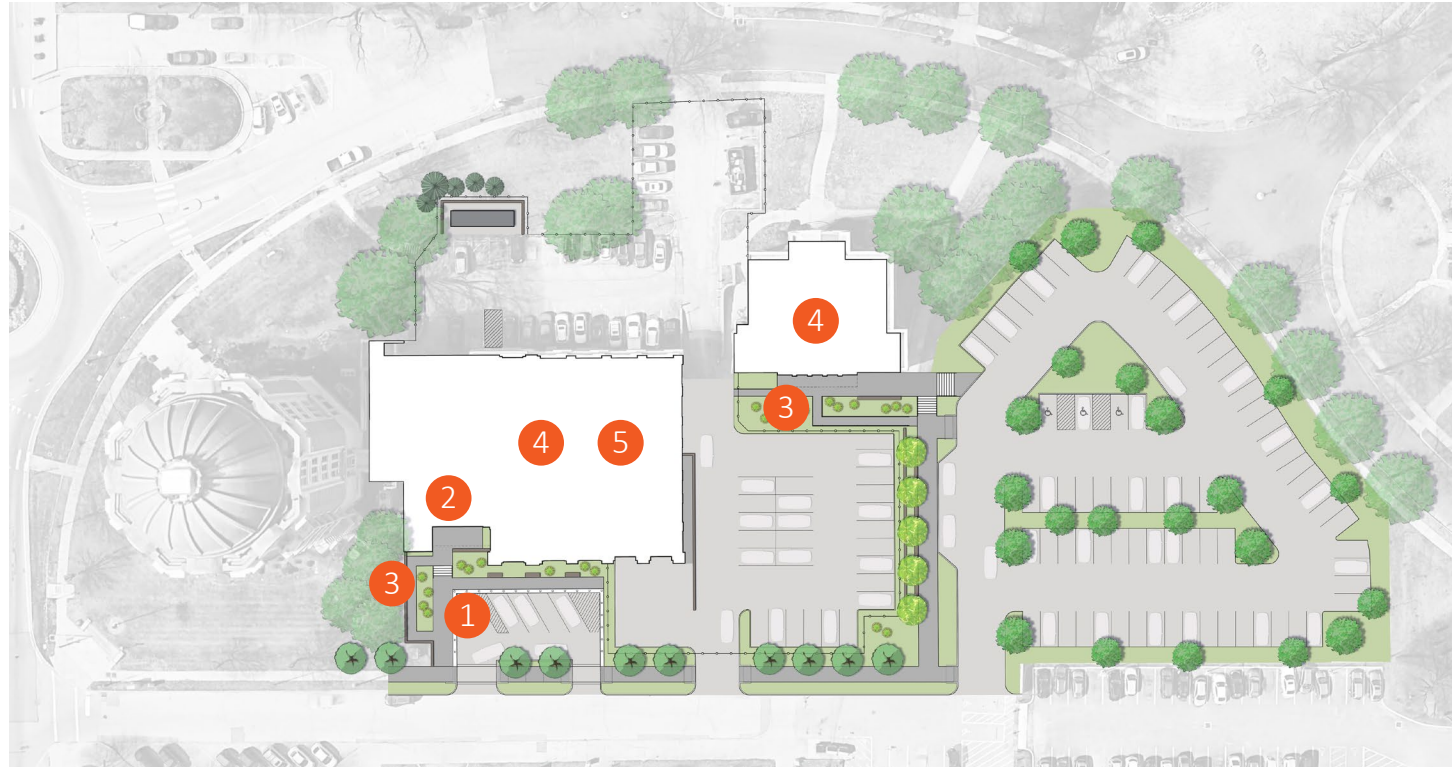
1. City Hall – no work this project
2. One-Stop Shop for City Services
3. Police Headquarters
4. City Courts



# Project Scope

## Architecture:

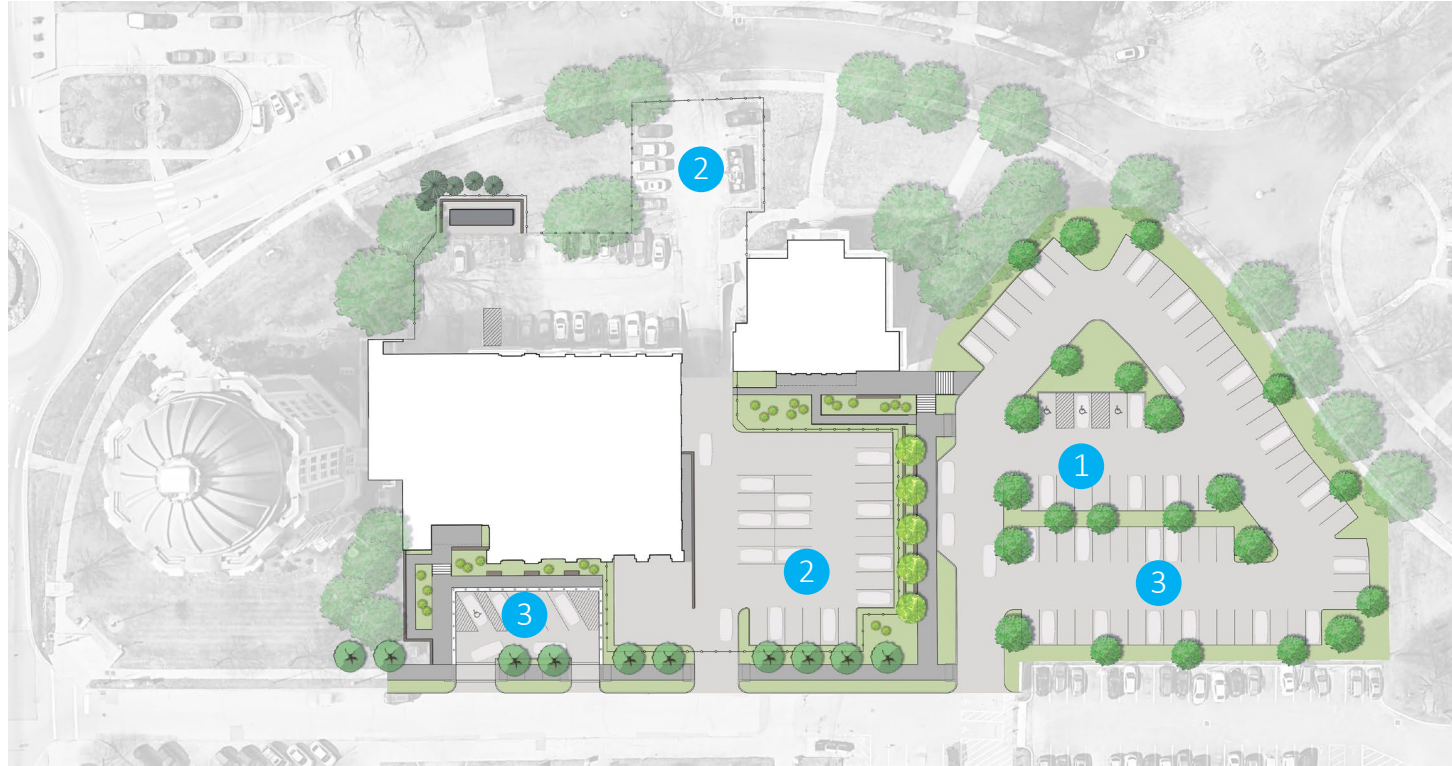
1. New main entry point for City Hall Campus
  2. One-stop area for public facing City Hall services
  3. Accessible entrances and security check points
  4. Updated/new restrooms
  5. Structural retrofit as required for essential services
- + Restore character defining features



# Project Scope

Site:

1. Remove temporary police structures
2. Provide secure parking for police parking and sallyport
3. Public parking













# Sustainability Review

Trivets

# Sustainability Goals

Overview:

1. 2030 Challenge
2. AIA Design Excellence Measures
3. Reduce Energy Use Intensity (EUI)

				
<p><b>Design for Integration</b></p> <p>Good design elevates any project, no matter how small, with a thoughtful process that delivers both beauty and function in</p>	<p><b>Design for Equitable Communities</b></p> <p>Design solutions affect more than the client and current occupants. Good design positively impacts</p>	<p><b>Design for Ecosystems</b></p> <p>Good design mutually benefits human and nonhuman inhabitants.</p>	<p><b>Design for Well-being</b></p> <p>Good design supports health and well-being for all people, considering physical, mental, and emotional effects on building</p>	<p><b>Design for Resources</b></p> <p>Good design depends on informed material selection, balancing priorities to achieve durable, safe, and healthy projects with an</p>
				
<p><b>Design for Water</b></p> <p>Good design conserves and improves the quality of water as a precious resource.</p>	<p><b>Design for Economy</b></p> <p>Good design adds value for owners, occupants, community, and planet, regardless of project size and budget.</p>	<p><b>Design for Energy</b></p> <p>Good design reduces energy use and eliminates dependence on fossil fuels while improving building performance, function,</p>	<p><b>Design for Discovery</b></p> <p>Every project presents a unique opportunity to apply lessons learned from previous projects and gather information to refine the</p>	<p><b>Design for Change</b></p> <p>Adaptability, resilience, and reuse are essential to good design, which seeks to enhance usability, functionality, and value over time.</p>



# Mechanical System - General

## Design Goals

- System Fits in with Interior Design Goals / Preserve Building Character
- High System Efficiency to meet City Goals
- High Level of Space Control

## System Characteristics

- Distributed Cooling Units
- Separated Dedicated Outdoor Air Systems
- Minimize large ducts thru spaces

## Advantages

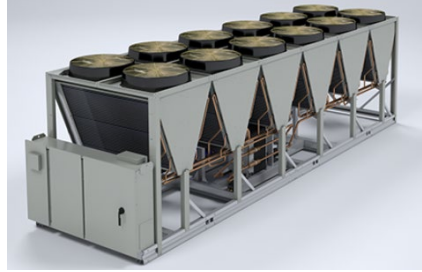
- Highly Efficient Design
- De-Couple Outdoor Air from Space Cooling



# Mechanical – System Cooling

## Cooling Plant

- Air Cooled Chiller Plant
- Two 140 Ton Chillers Sized for 100% capacity each.
- Primary / Secondary Pumping Arrangement
- Variable Speed Compressors



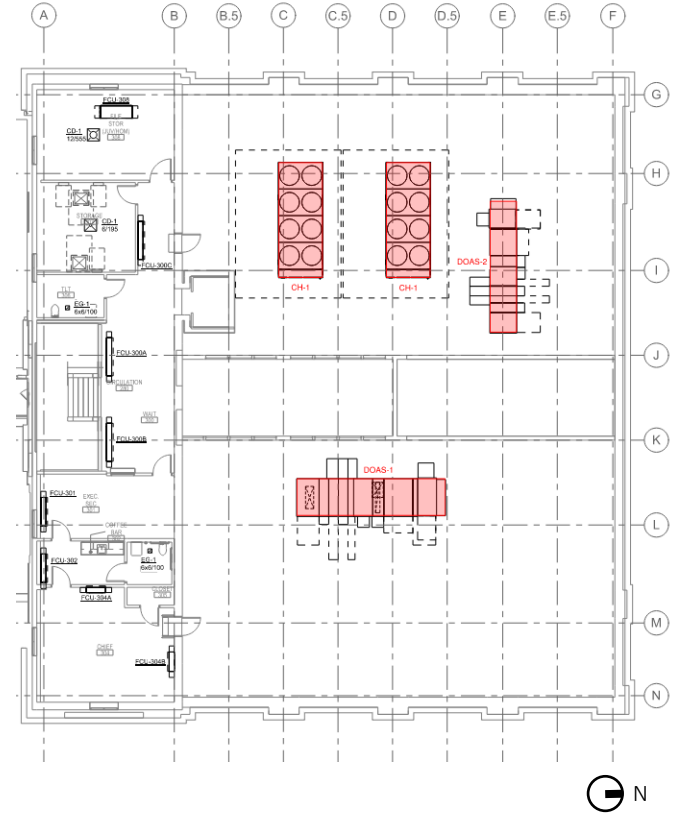
## Space Conditioning

- Four Pipe Fan Coil Units
- Console Style
- Above Ceiling Ducted
- Horizontal Cabinet



## Dedicated Outdoor Air System

- Rooftop Outdoor Air Unit
- Terminal Units in space
- CO2 control for High Occupancy Spaces
- Chilled Water Cooling Coil
- Heating Water Heating Coil
- Energy Recovery Wheel
- Integral Building Exhaust Fan



# Mechanical – System Heating

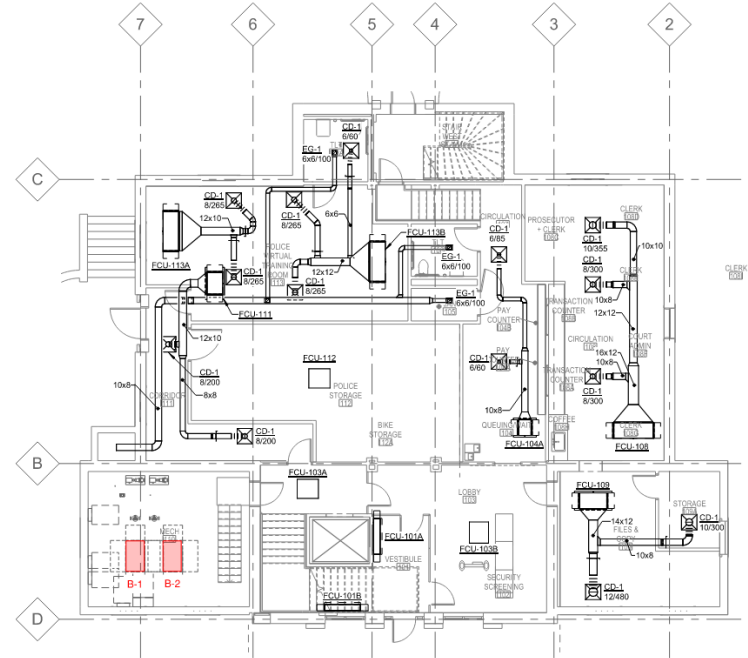
## Heating Plant

- Condensing Boiler Plant
- Two 1,750 MBH Boilers Sized for 100% Capacity Each
- Primary / Secondary Pumping Arrangement
- High Efficiency, Designed with low return water temperature.



## Space Conditioning

- Four Pipe Fan Coil Units
- Console Style
- Above Ceiling Ducted
- Horizontal Cabinet



# Assumptions

Energy simulations were performed on the Annex (~37,000 sqft) and Trinity (~8,500 sqft) buildings in University City, MO to analyze compliance with city energy guidelines. The proposed HVAC systems were modeled compared to the baseline systems as defined by IECC 2018. Modifications to the building envelope have not yet been included in the analysis. The table details assumed values included in the initial analysis.

Climate Zone: 4A	Baseline	Proposed: 1
<b>Envelope Construction</b>		
Exterior Walls	Face brick, 8" block: U-0.091	Face brick, 8" block: U-0.091
Roof	Steel w/ 6" ins: U-0.046	Steel w/ 6" ins: U-0.046
Slab on Grade	F-0.73	F-0.73
Windows	Double pane clear: U-0.60; SHGC: 0.82	Double pane clear: U-0.60; SHGC: 0.82
Window to Wall Ratio	15.0%	15.0%
<b>Electrical Systems</b>		
Lighting (W/sqft)	0.80	0.70
Receptacle Power (W/sqft)	1.10	1.10
<b>Mechanical and Plumbing Systems</b>		
HVAC System Types	Packaged VAV w/reheat	4 pipe Fan Coil w/DOAS
Cooling Performance	Air Cooled Unitary Dx - 9.8 EER	Air Cooled Chiller - 11.462 EER
Heating Performance	Hot Water Boiler - 80%	Hot Water Boiler - 96%
Domestic Water Heating	Electric Water Heater - 90%	Electric Water Heater - 90%

Energy Source	Utility Costs		Metric Tons of CO2
Electric	\$0.092 per kWh	\$0.027 per kBtu	0.000211 per kBtu
Natural Gas	\$0.937 per therm	\$0.009 per kBtu	0.000053 per kBtu

Utility costs obtained from national EIA data

# Target

All projects, prior to approval for construction, will be required to demonstrate that the following analyses support the final project delivered:

- a. Estimate the energy consumption and long-term operating costs of the building built to minimum code requirements;
- b. Propose energy efficiency measures based on current technology and site location that exceed current City energy code requirements by a minimum of thirty percent (30%);
- c. Estimate the energy consumption and long-term operating costs from the measures proposed in Subsection **(C)(2)(b)**;
- d. Estimate the reduction in carbon dioxide produced between Subsection **(C)(2)(a)** and **(C)(2)(b)** and value this reduction at not less than twenty dollars (\$20) per ton per year;
- e. Provide a life cycle analysis of the costs and benefits of proposed measures, including the value of Subsection **(C)(2)(d)** based on a twenty-year analysis period for measures proposed in Subsection **(C)(2)(b)**; and
- f. Include all measures proposed in Subsection **(C)(2)(b)** that provide the project a fifteen-year payback or provide a yield equal to or better than that earned on the reserve fund.

\*to use the performance path for compliance IECC 2018 requires you to beat the prescriptive path (option 1) by a minimum of 15%. If we are using the performance path (option 3) and we need to beat this improvement, we would need to improve over the prescriptive path by 45%.

## Results – early analysis

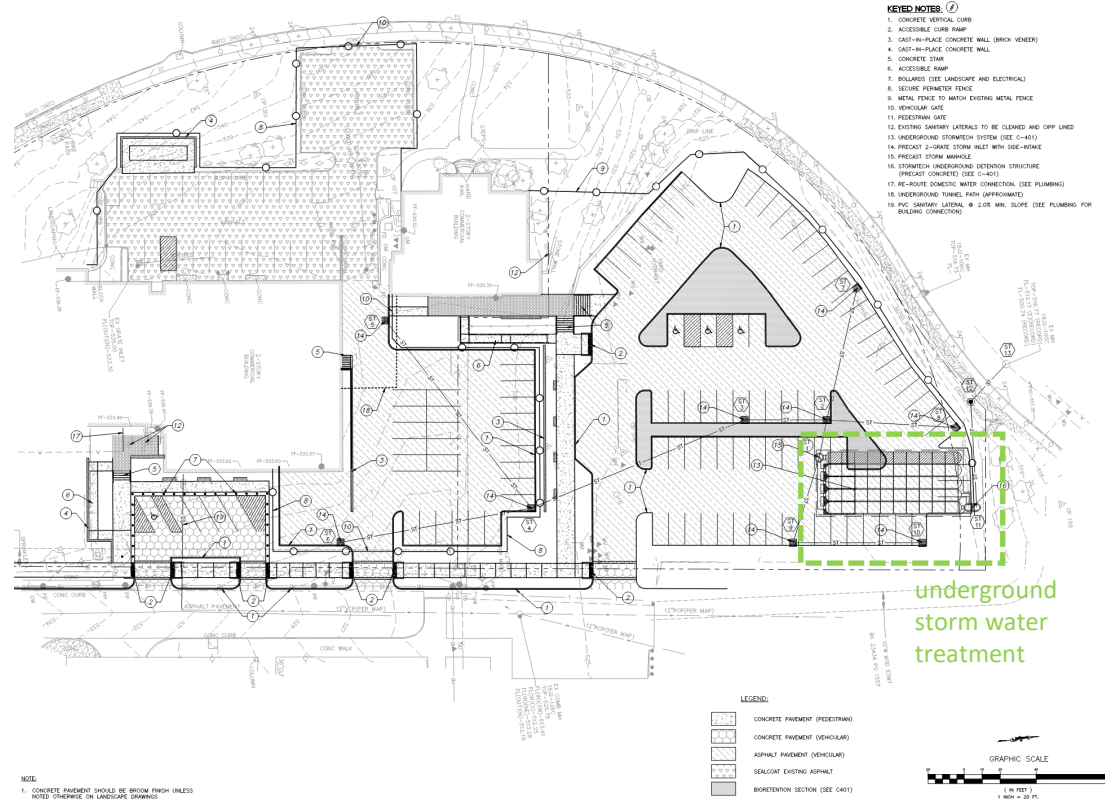
System/Plant	Energy Cost		EUI		CO2	
	(\$/yr)	Savings (%)	(kBtu/sqft /yr)	Savings (%)	(metric tons)	Savings (%)
Baseline – Packaged VAV w/Reheat	\$81,000	-	101	-	586	-
Proposed – 4 pipe fan coil units with DOAS	\$69,000	16%	71	29%	513	12%

- The energy consumption data is listed as ENERGY USE Intensity (EUI). EUI is a measure of how much energy the building uses per square foot of building area per year.
- Values in table represent data obtained from first pass energy model and may not represent the final values pending further information and model iterations.

# Stormwater Management

## Overview:

1. MSD has reported downstream issues of the project site. As such MSD requires the treatment of the new work to be equal to that of a greenfield site.
2. Two MSD stormwater requirements will be met:
  1. Volume Reduction (reducing the amount of stormwater leaving the site)
  2. Flood Protection (reducing the rate at which stormwater water is leaving the site)
3. Both requirements will be addressed with an underground chamber style detention system located at the north end of the site.



**Historic Significance**

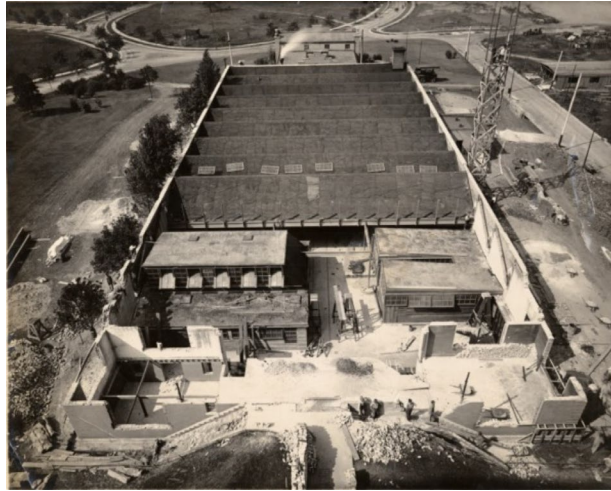
**Trivets**



# Press Building (“Annex”) Modifications



1903: press annex constructed



1908: deconstruction &  
reconstruction of press annex



1910: completion of new press annex  
envelope design

# Press Building (“Annex”) Modifications



1940: fire at annex building left only 5 original bays remaining



# City Support Services History



1930: Women's magazine acquired for U City's City Hall



1934: Press Annex houses U City's police & fire departments

# Trinity History

<b>KLIPSTEIN &amp; RATHMANN, Architects</b>	
316 North Eighth Street · St. Louis, Mo.	
PUBLIC LIBRARY & AUDITORIUM FOR THE CITY OF UNIVERSITY CITY · MISSOURI	Com. No. 792
G30 TRINITY AVE. UNIVERSITY CITY	Sheet No. 5
Drawn by <u>D.E.C.</u> Traced by <u>D.E.C.</u> Checked by _____	
Scale <u>AS NOTED</u> Date <u>Nov. 22, 1938</u>	

Form 10-330a (July 1969)	UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE	STATE Missouri
	NATIONAL REGISTER OF HISTORIC PLACES INVENTORY - NOMINATION FORM	COUNTY St. Louis
	(Continuation Sheet)	FOR NPS USE ONLY ENTRY NUMBER      DATE

(Number all entries)

1. #1      CITY HALL PLAZA HISTORIC DISTRICT

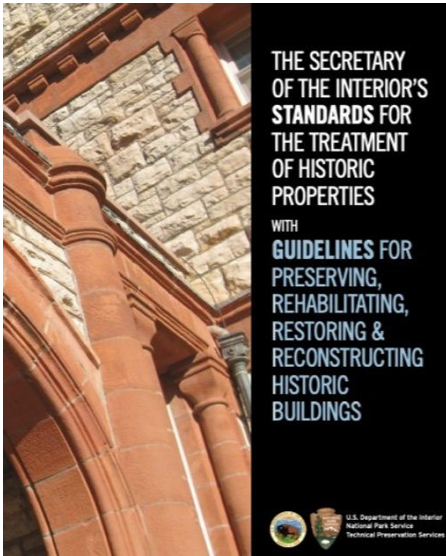
<u>COMMON NAME</u>	<u>HISTORIC NAME</u>
1. City Hall	1. Woman's Magazine Building, Executive Magazine Building
2. Police Station/Firehouse	2. Magazine Press Building
3. Ward Building	3. Art Institute of the People's University
4. Lion Gates, Entrance Pylons	4. Entrance Pylons

- Period of Significance: 1902-1912
- Boundary includes Trinity site
- Still treating it as a significant historic structure



# Historic Standards

Secretary of the Interior's Standards  
for Rehabilitation



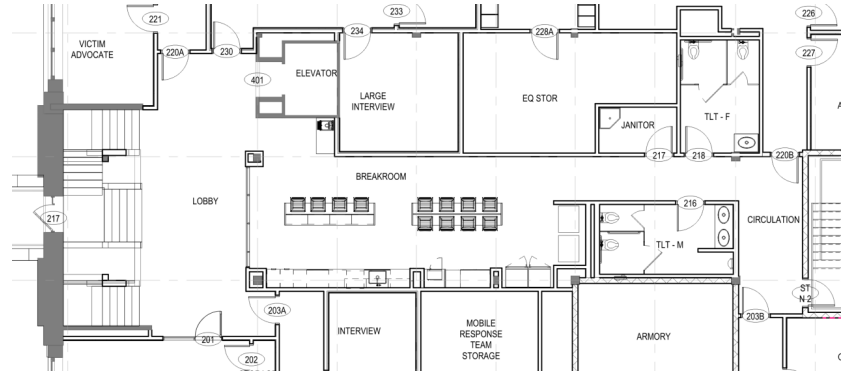
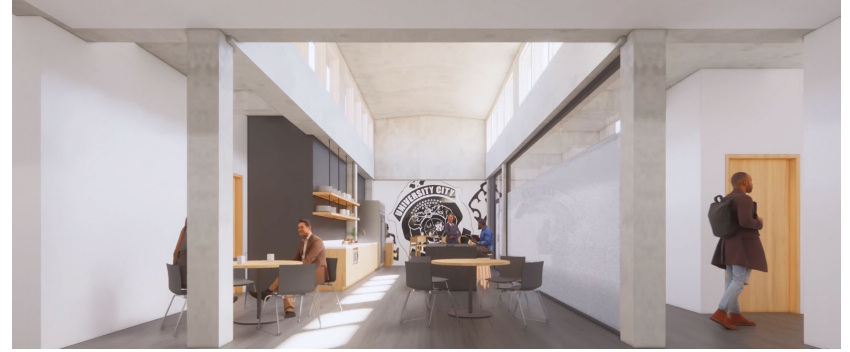
**Key Features of Interest (Historic)**

**Trivets**

# Annex – clerestory



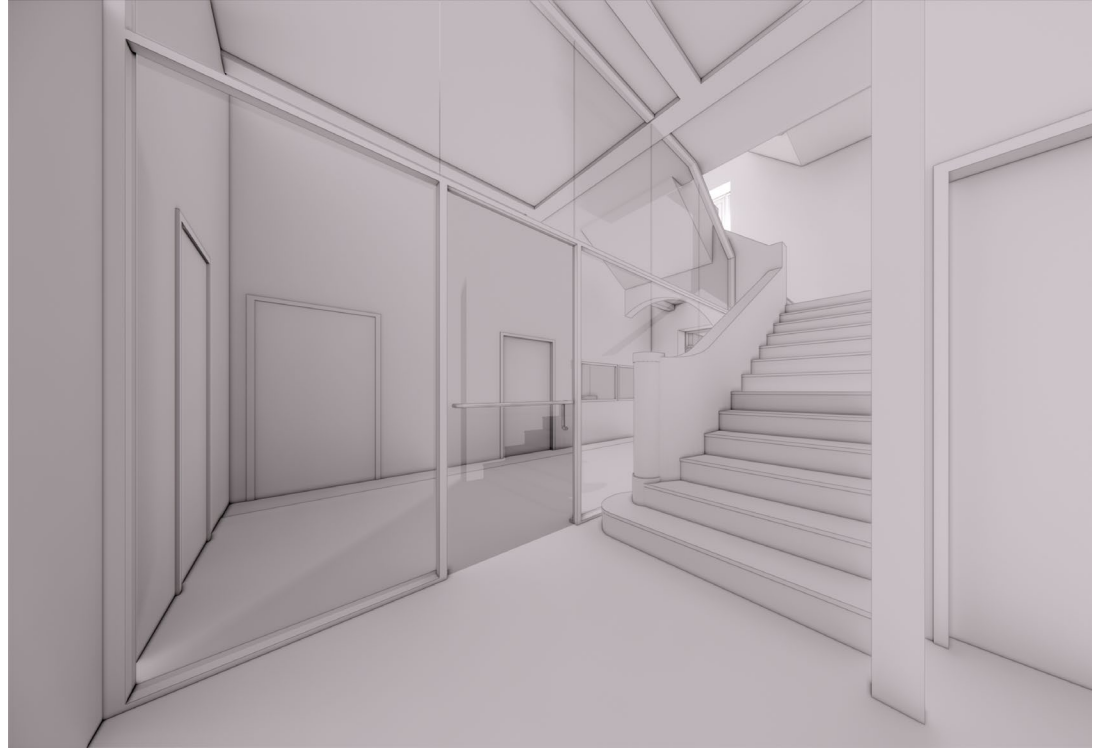
1910: Women's League Convention



# Annex – historic stair



existing condition










# Annex – seismic upgrade



first floor



-  location of concrete shear wall on interior
-  window infill for structural or planning needs
-  window upgrade for security



east (primary) elevation

# Annex – seismic upgrade






second floor



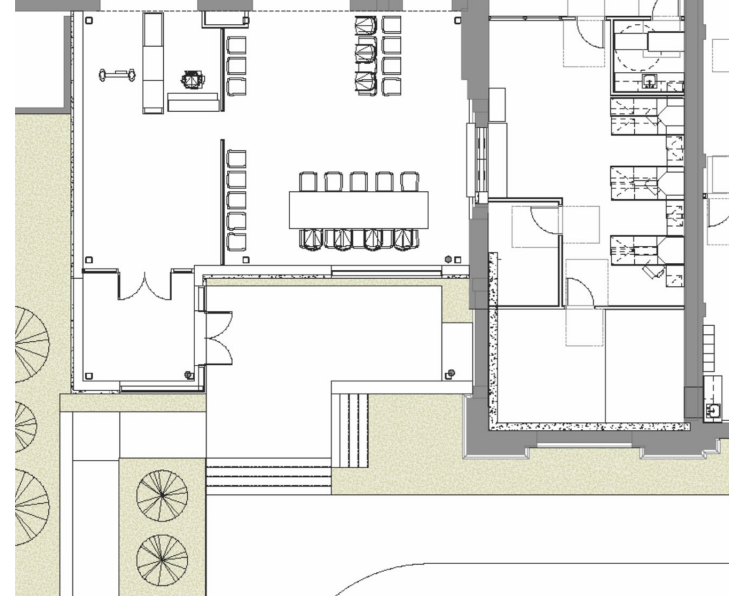
west facade



partial south facade

-  location of concrete shear wall on interior
-  window infill for structural or planning needs
-  window upgrade for security

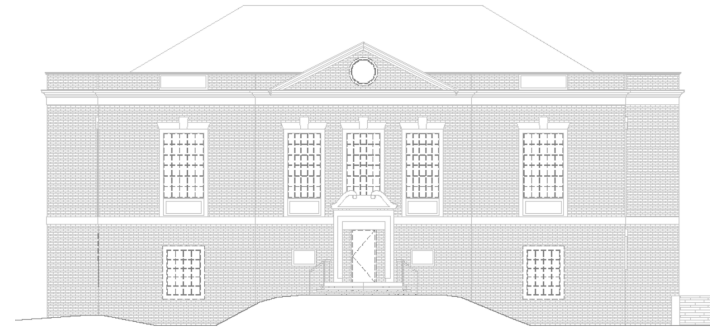
# Annex – new entrance



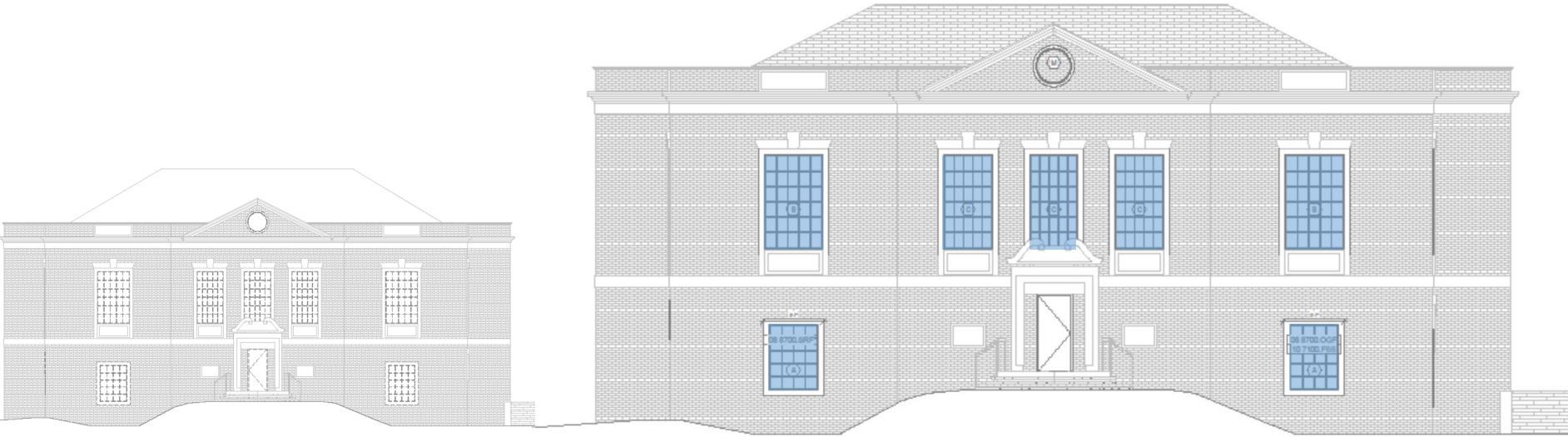
plan @ new public entrance



# Trinity – west (primary) elevation



# Trinity – west (primary) elevation

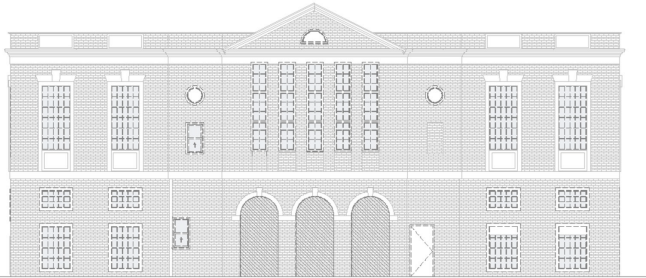


existing

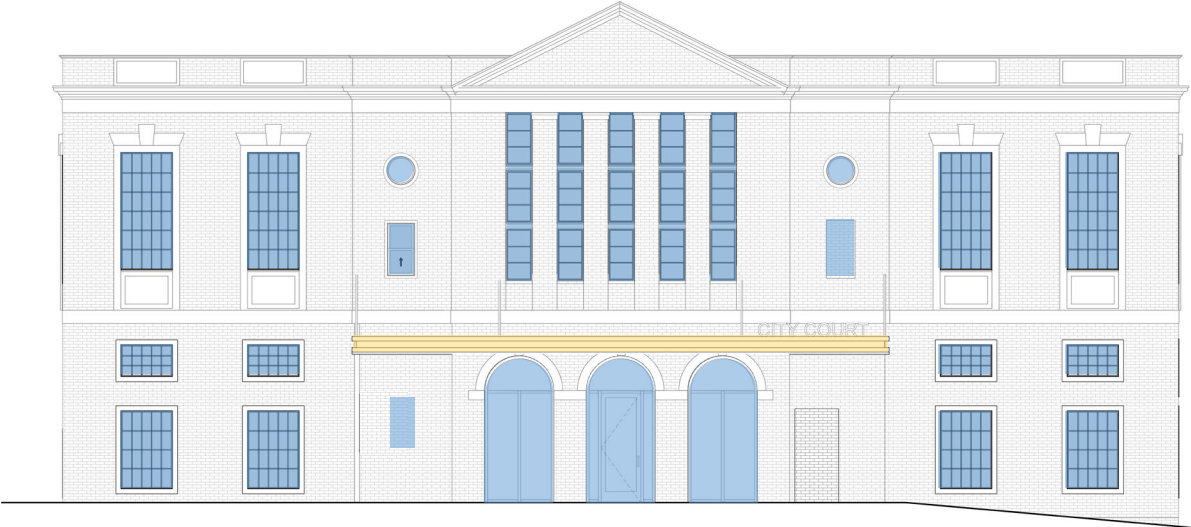
new



# Trinity – east (secondary) elevation



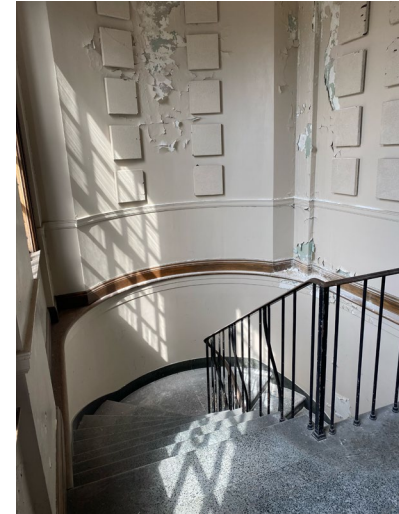
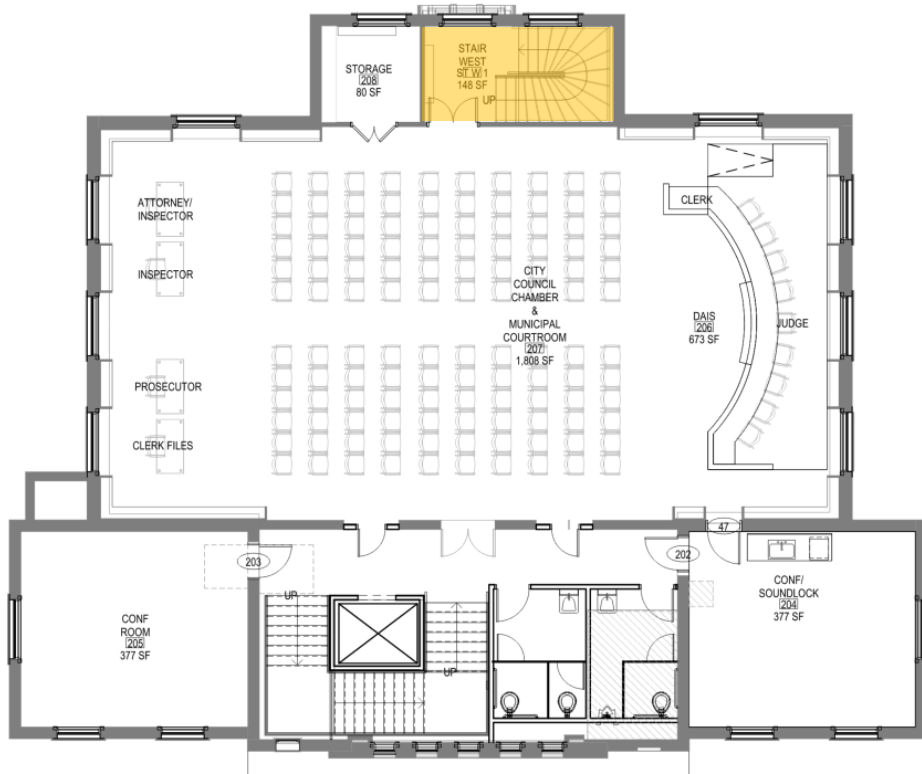
existing



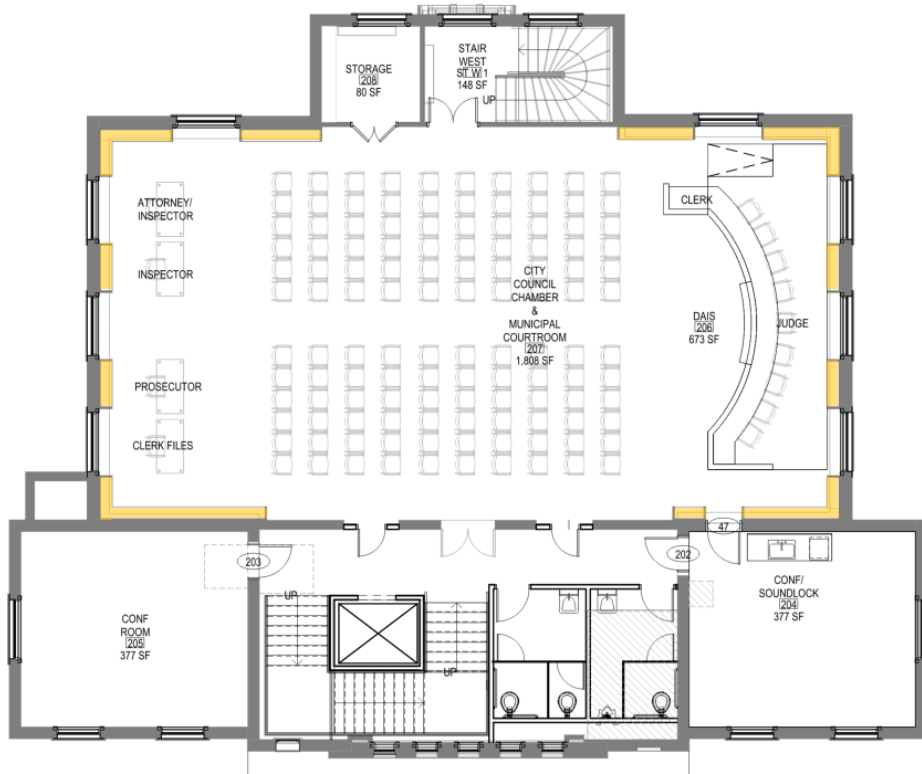
new



# Trinity – historic stair



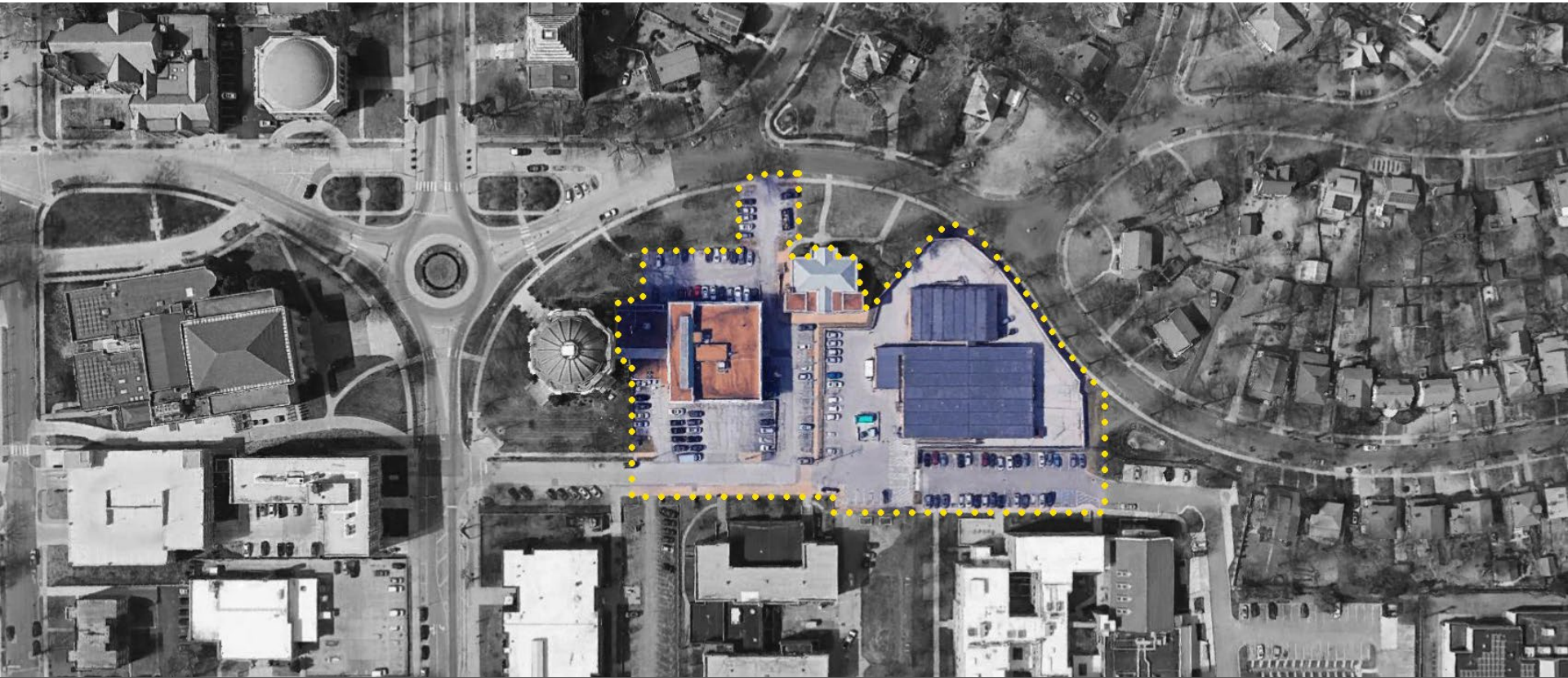
# Trinity – municipal courts



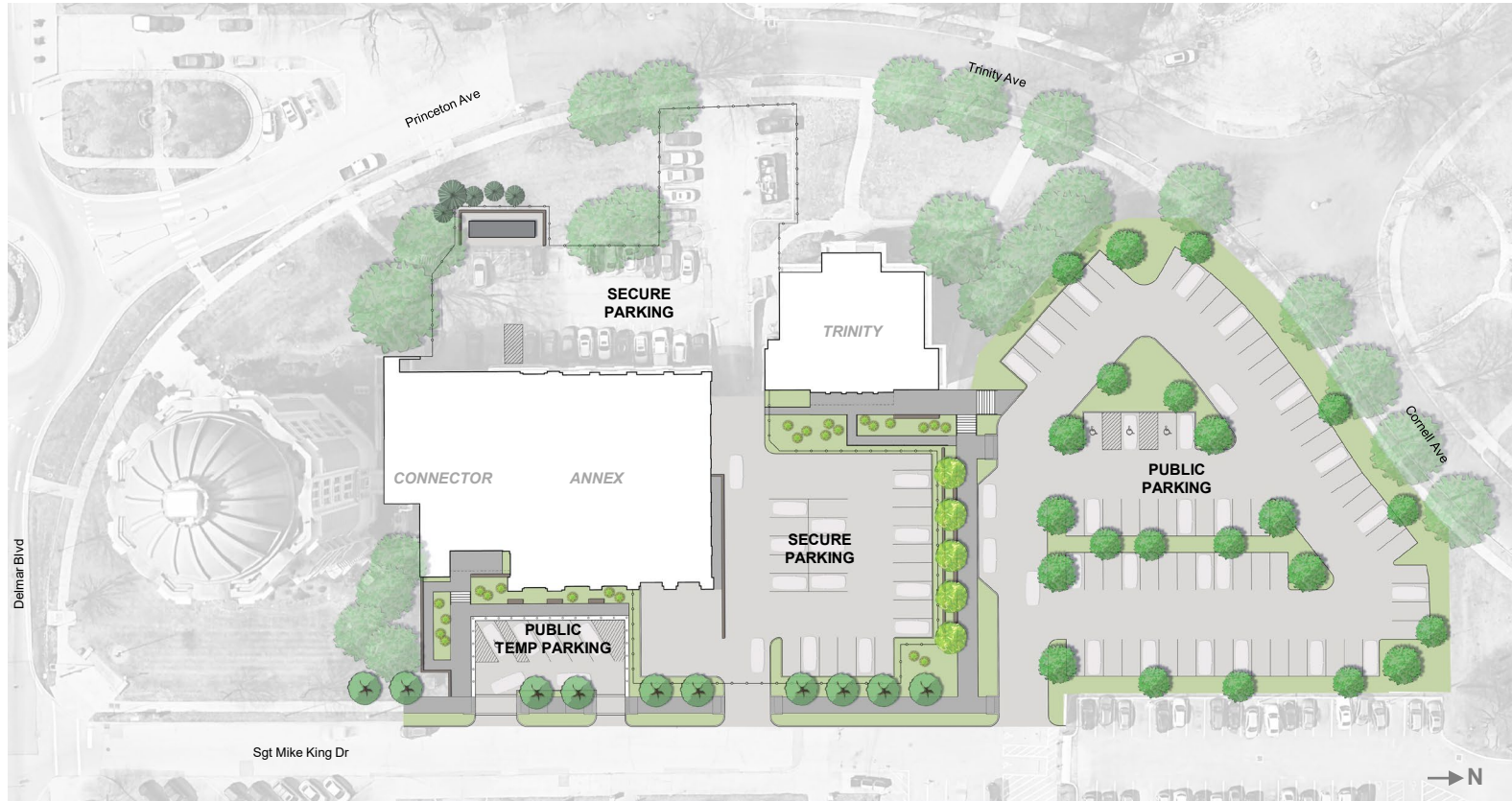
**Site Design & Materials**

**Trivets**

# Site Planning



# Site Plan



# Site Design – Material Palette Inspiration



Limestone

Brick



## Basis of Design:

Site hardscape material palette to be complimentary to the limestone and brick of the Annex Building with metals of black, stainless steel, and silver

# Site Design – Material Palette



Concrete Sidewalk



Concrete Pavers



Accent Colored Concrete



Seatwall (*brick + precast cap*)



Trench Drains (*cast iron*)



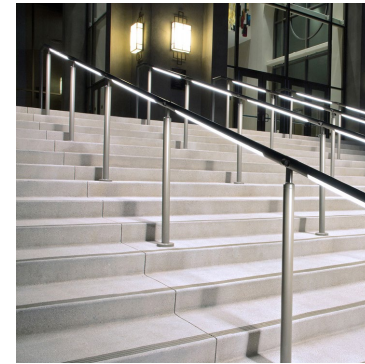
Security Fence



Existing Ornamental Fence



Security Bollards (*stainless steel*)

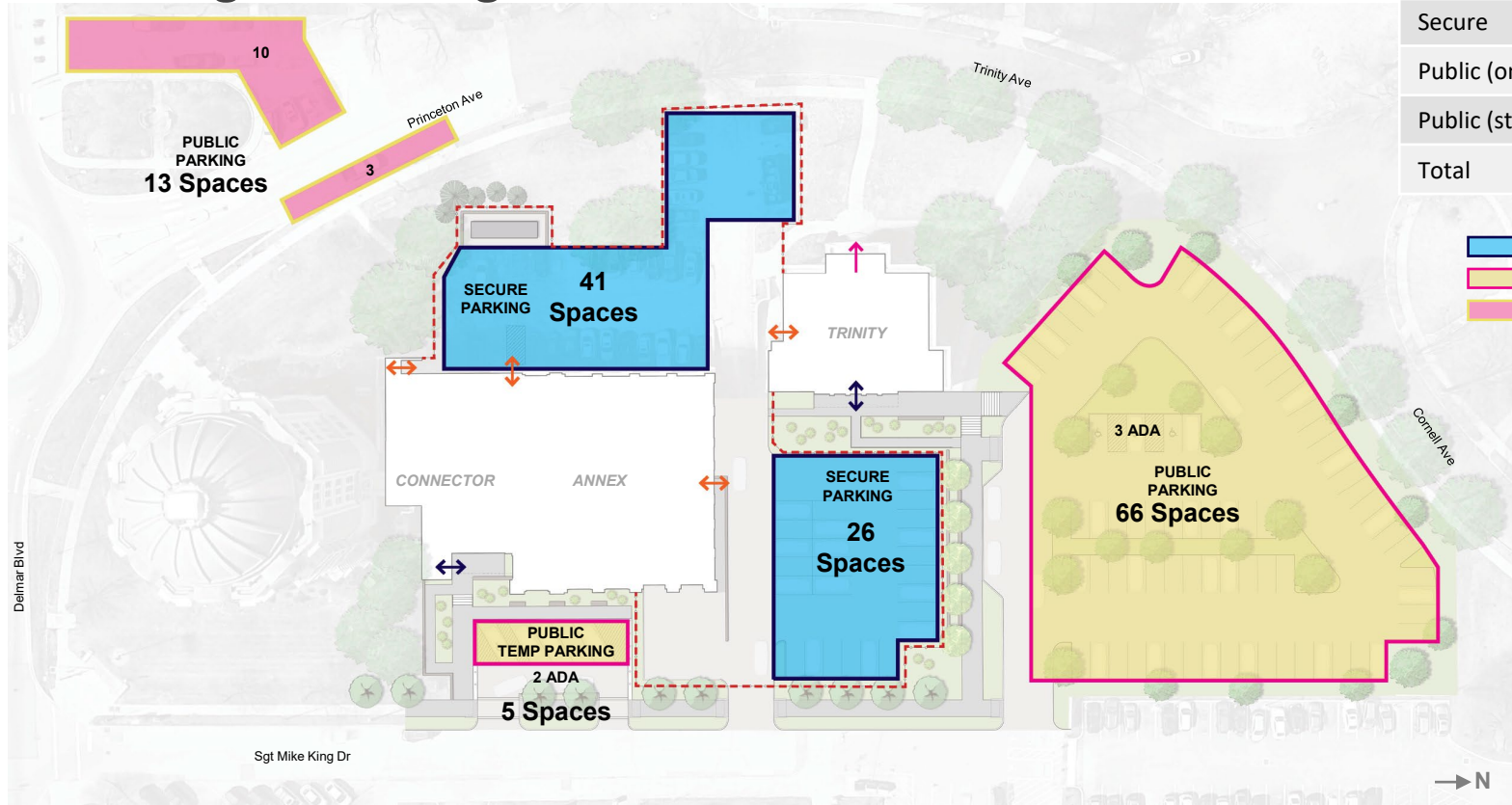


Handrails (*stainless steel*)



Site Furniture  
(*trash / recycling / bike racks*)

# Site Design - Parking



	Program
Secure	67
Public (on-site)	71
Public (street)	13
<b>Total</b>	<b>151</b>

### Parking Legend

- Secure Parking
- Public Parking (on-site)
- Public Parking (street parking)



**Project Schedule**

**Trivets**

# Schedule

- March 31, 2022 Design Development Submission
- July, 2022 Construction Documents Submission
- October, 2022 Construction Start
- December, 2023 Substantial Completion (estimated date)
- December, 2023 Open to Public (estimated date)

Thank you.

Trivets