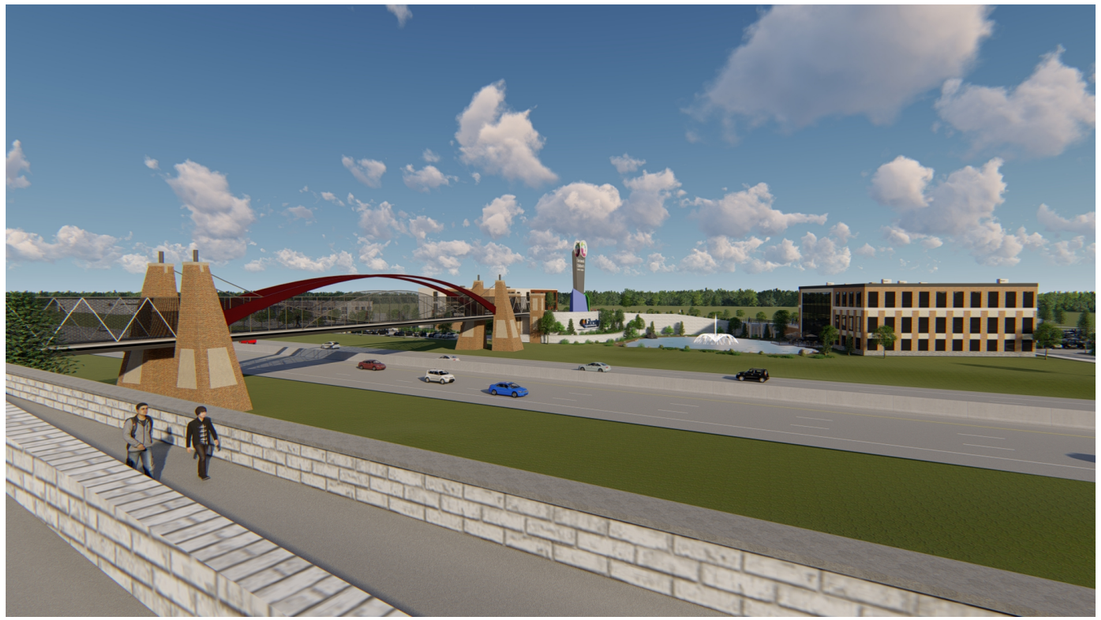
LIBERTY TOWNSHIP SR129 PEDESTRIAN BRIDGE FEASIBILITY STUDY

October 1, 2018



FINAL REPORT
October 1, 2018

PREPARED FOR:

Liberty Township

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PRELIMINARY INFORMATION

PROJECT GOAL

The overall goal of Liberty Township is to construct a pedestrian/bicycle overpass or a vehicular overpass of SR 129 from Liberty Center to the vicinity of Cincinnati Children's Hospital. This overpass will improve the connectivity in the area and provide safe access across SR 129. The overpass with have a usable width of 12 feet face-to-face of bridge railing.

PROJECT SCOPE

The scope of this project is to conduct a study to evaluate the costs, aesthetics, funding sources and schedules for the construction of either a pedestrian/bicycle overpass or a vehicular overpass of SR 129 from Liberty Center to the vicinity of Cincinnati Children's Hospital. LJB and MSP to complete the development of two preliminary horizontal and vertical alignment alternatives for the pedestrian/bicycle overpass and one preliminary horizontal and vertical alignment for the vehicular overpass (removed from study at the August 21, 2018 Township Trustee Meeting). LJB to partner with MSP in the development of two aesthetic alternatives for the bike/pedestrian structure and one aesthetic alternative for the vehicular structure (removed from study at the August 21, 2018 Township Trustee Meeting). Other items of this study to include development of preliminary opinions of probable construction costs and outline funding cycles and potential funding stack to fund the project including schedule for construction.

PROJECT TIMELINE (TO DATE)

- May 15, 2018 – Project Kickoff Meeting at Liberty Township
- June 1, 2018 – LJB/MSP conducted a field visit
- July 16, 2018 – LJB e-mailed ODOT and OKI to request "red flags" for the project
- July 18, 2018 – LJB received ODOT "red flag" comments for the project
- July 24, 2018 – LJB conducted a conference call with OKI to discuss "red flags"
- July 25, 2018 – LJB/MSP and Liberty Township had a conference call and Skype meeting to outline the preliminary alignments and determine next steps
- August 14, 2018 – LJB/MSP and Liberty Township had a conference call and Skype meeting to discuss the project and progress on the study
- August 21, 2018 – LJB/MSP presented four (4) alternative alignments to the Liberty Township Trustees. Based on the outcome of that meeting, two of these alternatives have been removed from the study. The high skewed pedestrian bridge and the vehicular bridge has been removed from consideration.
- September 13, 2018 – LJB/MSP presented two (2) alternative alignments to the following project stakeholders: Liberty Township, Butler County, ODOT District 8 and OKI.

SUMMARY OF ODOT RED FLAGS

- A bridge over SR 129 would require abutments 30 feet from the edge line – LJB acknowledges, but this will need to be reviewed during subsequent phases of the project.
- ODOT recommends no pier at the median of SR 129 – LJB concurs
- The bridge will require 12-foot high curved vandal protective fencing – LJB concurs
- Any logos or lettering on the bridge will need to be approved by ODOT Central Office – LJB concurs
- The proposed walk/path should meet ADA compliance – LJB concurs
- If a prefabricated truss is selected for the structure, a perpendicular alignment to SR 129 is simpler than one that is skewed – LJB acknowledges
- There is an overhead truss sign on SR 129 about 600' from the proposed structure. Will this affect the visibility of the sign? – LJB acknowledges, but this will need to be reviewed during subsequent phases of the project.
- It seems that a proper intersection for a vehicular bridge would be more substantial and encroach into the L/A R/W. Would ODOT/FHWA allow this? – After the August 21st Township Meeting, a vehicular bridge option has been removed from consideration.
- If a vehicular bridge is added, this would be a significant change to the mall access. Would other traffic/road improvements have to be considered along Cincinnati Cincinnati Rd, Yankee, etc? – After the August 21st Township Meeting, a vehicular bridge option has been removed from consideration.

SUMMARY OF OKI RED FLAGS AND ROBERT KOEHLER CONFERENCE CALL

- The project would not be eligible for federal transportation funds through OKI since it is connecting to a private development – LJB acknowledges
- The only way that federal transportation funds can be used is if the project connected to public right-of-way – LJB acknowledges
- If a vehicular bridge is proposed, the roadway would need to be functionally classified, which is a disadvantage for a vehicular bridge option – LJB acknowledges
- Robert Koehler identified other potential funding sources – LJB acknowledges and summarized project funding in a subsequent section of this report.

SUMMARY OF PRELIMINARY ALIGNMENTS AND PROJECT FUNDING

PRELIMINARY BRIDGE STRUCTURE TYPES

Based on the anticipated overall bridge length and LJB's experience with similar structures, LJB anticipates three different bridge structure types to be investigated as part of this study; prefabricated truss, steel girder and prestressed concrete I-beams. For this draft report, the preliminary alignments have been created assuming the worst-case structure depth over SR 129. The estimated construction cost at this phase of the study also assumes a blended structure cost between the three structure types listed above. The construction costs presented in this study also assume minimal aesthetic considerations such as paint and/or concrete sealing colors and concrete form liner patterns.

PRELIMINARY ALTERNATIVE ONE (PEDESTRIAN/BICYCLE)

The alignment for this alternative makes the connection from the top of Taylor Street on the south side of SR 129 to Yankee Road to the north side of SR 129. This alignment crosses SR 129 at a small angle (skew), turns left and runs adjacent to SR 129 and then turns right and runs adjacent to the Pediatric Associates office building prior to connecting to Yankee Road. The overall length of this connection is approximately 1,200 feet.

Benefits to Alternative One

- Does not split the Cincinnati Children's Hospital property on the north side of SR 129 as much as Alternatives 2.
- The alignment will not require 5-foot landing every 30 feet on the north side of SR 129 and will utilize a maximum grade of 5%.
- Due to the small angle (skew), the bridge length will be minimized. The smaller overall bridge length will help to minimize the overall construction costs.
- The orientation (small angle to SR 129) will provide a "gateway" appearance.
- Pedestrian bridge access points are located at the midpoint of both developments.
- Property adjacent to pedestrian bridge on north side will have direct access to bridge.

Disadvantages to Alternative One

- Potential Mechanically Stabilized Earth (MSE) Wall and embankment on the north side of SR 129 will block the SR 129 westbound view of the Pediatric Associates office building.
- This has a higher construction cost in comparison to Alternative 2.

Estimated Construction Costs for Alternative One

- $3.7 million

PRELIMINARY ALTERNATIVE TWO (PEDESTRIAN/BICYCLE)

The alignment for this alternative makes the connection from the top of Taylor Street on the south side of SR 129 to Yankee Road to the north side of SR 129. This alignment crosses SR 129 at a small angle (skew), turns right (behind the Cincinnati Children's Hospital sign) and connects to Yankee Road. The overall length of this connection is approximately 1,100 feet.

Benefits to Alternative Two

- The alignment will not require 5-foot landing every 30 feet on the north side of SR 129 and will utilize a maximum grade of 5%.
- Due to the small angle (skew), the bridge length will be minimized. The smaller overall bridge length will help to minimize the overall construction costs.
- The orientation (small angle to SR 129) will provide a "gateway" appearance.
- With the north end of the bridge near the Cincinnati Children's Hospital sign, there are opportunities to incorporate this sign into the overall aesthetics of the project.
- This has the lowest anticipated construction cost of any alternatives.
- Properties adjacent to pedestrian bridge on the north side can be developed with the pedestrian access in mind.

Disadvantages to Alternative Two

- Splits the Cincinnati Children's Hospital property on the north side of SR 129 in comparison to Alternative 1.

Estimated Construction Costs for Alternative Two

- $3.2 million

ADDITIONAL INFORMATION PROVIDED TO LIBERTY TOWNSHIP ON SEPTEMBER 8, 2018

Clarification on Estimated Construction Costs listed in this report.

- The cost above only includes minimal aesthetic considerations like paint or sealing colors for the bridge beams or walls, and standard concrete form liner patterns. It also includes the ODOT standard vandal protective fencing.
- MSP is currently developing aesthetic options. At this time, it is difficult to determine the exact costs, but we estimate it would add approximately $600,000 to the overall construction cost of the project.
- Generally, a new bridge will not require much, if any, maintenance for the first 25 years. Depending on the bridge type, after 25 years bridges typically need painted or a concrete overlay on the bridge deck, which would be in the order of $1 million. After 50 years, bridges will need a new concrete deck and maybe painted again. For a ballpark estimate for the maintenance for this bridge, I would estimate $1 million every 25 years until complete replacement after 75 to 100 years. Since this bridge is over an ODOT route, ODOT will perform the annual bridge inspections as part of their annual program. There may be small maintenance items that ODOT recommends each year, but generally these can be programmed 5 years out, unless they find something critical. Pavement resurfacing for the approach should be planned for every 20-25 years as well at a cost of approximately $100,000 in today's dollars. These maintenance items are not included in the total initial construction costs included in the total below.
- The $3.2 million does not include consultant design fees for any ODOT required studies, environmental, R/W, project design, construction plans or construction inspection. For estimating purposes, the following can be used at this time for an all-in initial construction budget:
  - Construction cost estimate - $3,200,000
  - Aesthetic upgrades as described above - $600,000
  - ODOT Alternatives Evaluation Report / Structure Type Study - $75,000
  - Environmental (assuming ODOT does not do the Environmental Document or support) - $30,000
  - R/W - $50,000
  - Project Design and Construction Plans (12-15% of construction costs) - $480,000
  - Construction Inspection (8-10% of construction costs) - $320,000
  - **TOTAL INITIAL CONSTRUCTION PROJECT BUDGET = $4,755,000**

FUNDING THE PROJECT

Pedestrian and bicycle bridges, similarly to other public infrastructure capital projects, in the State of Ohio have historically received public grant funding from a variety of sources. In other instances, private foundations, donations or local government capital improvement dollars have been used to fund these projects. Through the development of this study, the team has sought to identify funding sources to be pursued by Liberty Township to reduce the total investment of township capital improvement dollars into the project.

Funding sources explored for this project include Federal Highway Administration funding programs including Surface Transportation Program (STP), Transportation Alternatives Program (TAP), and Congestion Mitigation and Air Quality Improvement Program (CMAQ) as well as Ohio Department of Natural Resources (ODNR) Recreational Trails Program (RTP). Some programs that come to mind for public transportation projects were not further explored for this project because bicycle and pedestrian projects are not eligible for Ohio Public Works Commission (OPWC) funding and ODNR's Clean Ohio Trail Fund (COTF) is intended for use on longer trail networks rather than urban recreational trail connections.

Federal Highway Administration Funding programs are available to Liberty Township through application to OKI Regional Council of Governments (OKI) which serves as the local Metropolitan Planning Organization (MPO). Applications are typically due to OKI in June with funding available five years from the date of application. Applications are solicited each year for STP and TAP projects and competition for these funds are with OKI agencies only. Applications are solicited for CMAQ projects bi-annually with the next application period in 2019 and projects compete statewide for this funding. Each of these programs are extremely competitive and, as a result, regional planning organizations work to distribute awards amongst their member communities. The township should prioritize its funding pursuits for each given program year when applying for these funds and should coordinate the application strategy closely with OKI staff to maximize the opportunity to fund these and other regionally significant transportation projects over the next several years.

While bicycle and pedestrian bridge projects are eligible for each of the STP, TAP and CMAQ programs, this project was found to not be eligible as the southern end of the project connects to a developer-owned facility rather than a public right of way. Had the New Community Authority for the development owned Taylor Street and other roadways inside the development to make the connection to the public right of way at Liberty Way, these funding sources may have been eligible for the project. While we recommend pursuing these funding sources for other related and connected projects as described later in this section, we do not recommend further exploration of these funding sources for this bridge project. A map depicting the facilities owned by the New Community Authority for the Liberty Center development is attached to this report.

The ODNR RTP grant applications are due February 1st of each year. The size of grants available through this program is smaller than the STP and CMAQ programs and would not be the recommended primary funding source for this project. While subject to change, grant awards are expected to be limited to $500,000 for the near future. This funding source requires that the construction of the project be complete within 15 months of the execution of the funding agreement between ODNR and the township. These funds should be pursued as a way to reduce the local match if private funding for the entire project is not secured. ODNR will require that the township has ownership or an easement for a period of at least 15 years for the project area. Securing this easement for the southern end of the project area will be required.

Funding this bridge project with private foundation grants and/or private donations will also require review of the project by ODOT. It is likely that a significant factor in the willingness to invest in the bridge and associated trail will be the advertising and publicity aspects of the overpass. Aesthetic items within the public right of way of State Route 129 will require review by the ODOT Central Office Aesthetics Committee. Including words or logos on the structure will require that the path carries a similar name such that the words are used to describe the overpass rather than provide advertising. Finally, the structure and construction within the State Route 129 right of way will require the township to apply for and be granted a permit through ODOT.

As a result of the research conducted on funding options for this project, the most likely and recommended strategy for the funding of the bridge and eventual connection of this path to Liberty Way and Voice of America MetroPark follows:

- **State Route 129 Pedestrian Bridge**
  - Secure private donations for the construction of the bridge and path connection to Yankee Road.
  - Secure dedicated right of way or easement for the path and bridge alignment from Yankee Road to Taylor Street.
- **Path along Liberty Way from Wyle Street to Cox Road**
  - Evaluate the feasibility, develop construction cost estimates, and pursue CMAQ, STP or TAP funding for the widening of the Liberty Way bridge over I-75 and the construction of a path from the Liberty Center Development to Cox Road.
  - This project is believed to be eligible for these funding sources without additional development or connections required due to the presence of the existing public right of way along Liberty Way.
- **Shared use path between the Pedestrian Bridge and the Liberty Way Path**
  - With the construction of the State Route 129 pedestrian bridge, construction of a shared use path around the Liberty Center development provides linkage between the public right of way that will be dedicated with the pedestrian bridge and the public right of way at Liberty Way.
  - Evaluate the feasibility, develop construction cost estimates, and pursue CMAQ, STP or TAP funding for the construction of a path connecting the pedestrian bridge and Liberty Way path.
  - Coordinate alignment of this eastern connection route with the modifications to the Liberty Way interchange.

EXAMPLE PROJECT PHOTOS



Wright State Way Pedestrian/Bike Bridge for City of Beavercreek, Ohio



Wright State Way Pedestrian/Bike Bridge for City of Beavercreek, Ohio – Bridge Approach ADA Landings (also visible on Google Maps)



Wright State University Pedestrian Bridge in City of Fairborn, Ohio



Adams Street Vehicular Bridge with Pedestrian/Bike Facilities in City of Troy, Ohio

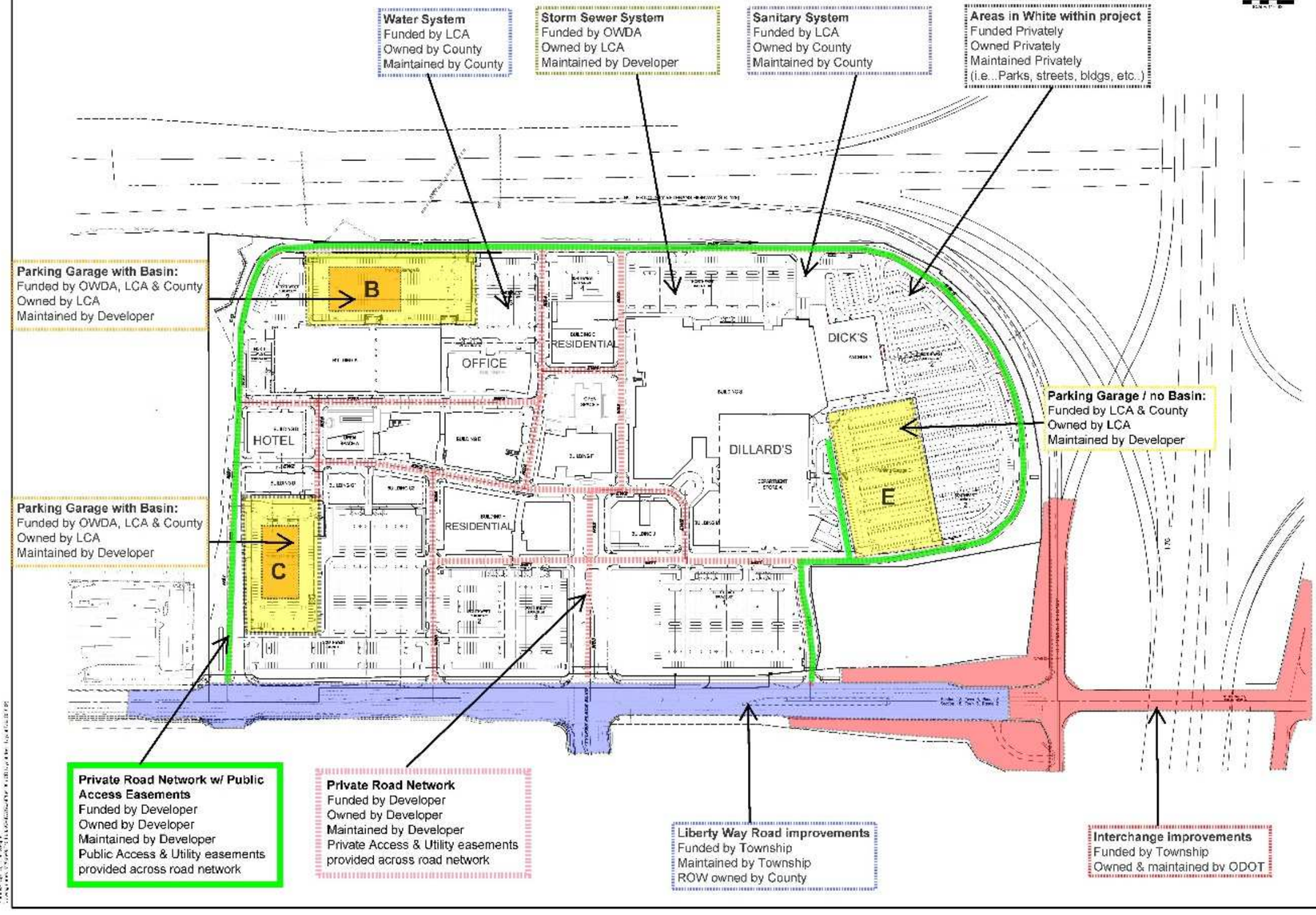


Mad River Pedestrian Bridge in City of Dayton, Ohio (showing decorative lighting)



Austin Pike Interchange Bridge in Miamisburg, OH (showing decorative fencing and lighting)

LIBERTY CENTER PUBLIC IMPROVEMENTS
OWNERSHIP, FUNDING & MAINTENANCE
OCTOBER 8, 2014



STEINER

Bucksbaum

SITE BIDDING DOCUMENTS
LIBERTY CENTER PHASE 1
OVERALL LAYOUT PLAN

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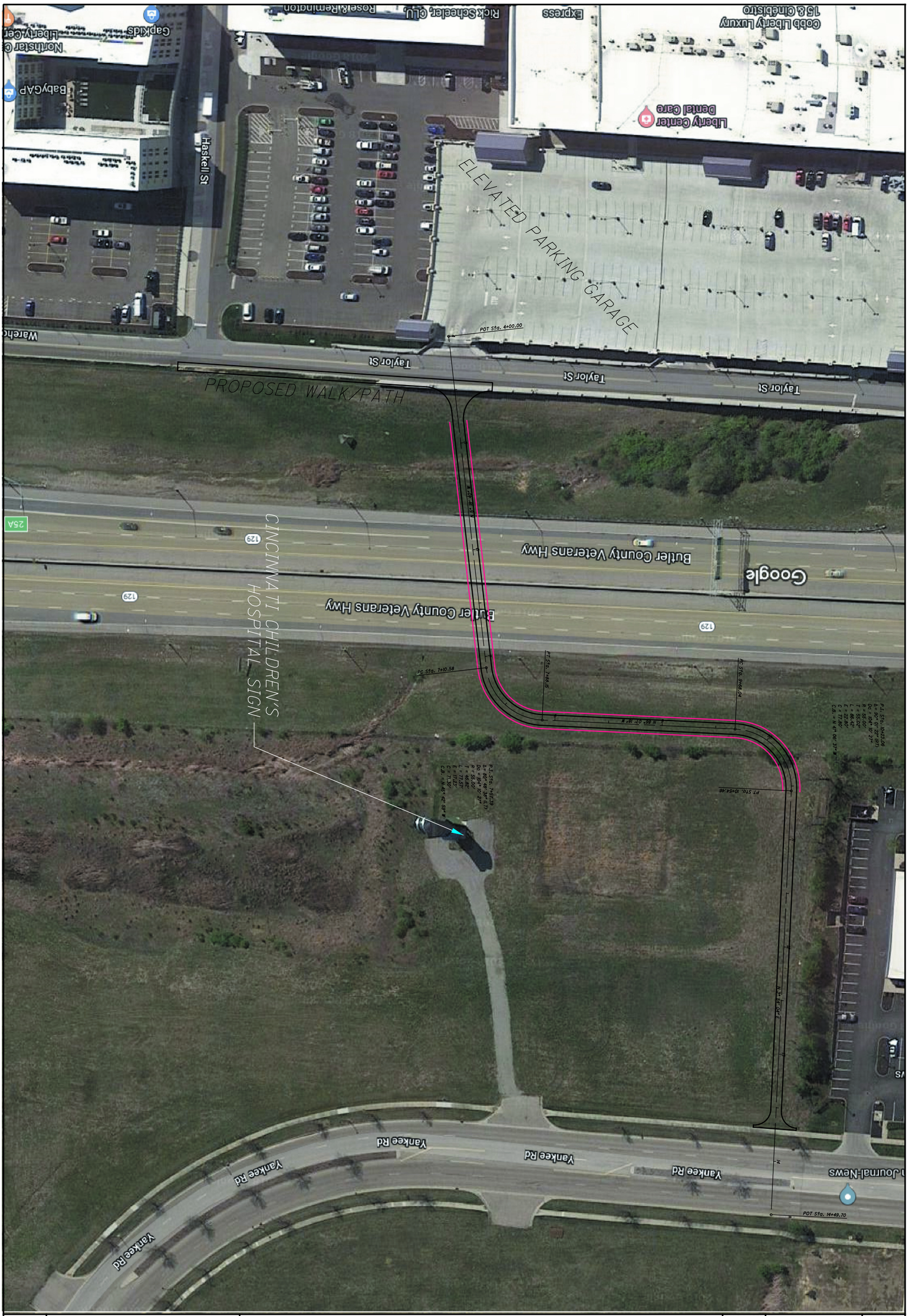

S.R. 129 OVERPASS STUDY	ALTERNATE ONE (PEDESTRIAN/BIKE)	CALCULATED GKB CHECKED DWS	0 20 40 80 HORIZONTAL SCALE IN FEET	N

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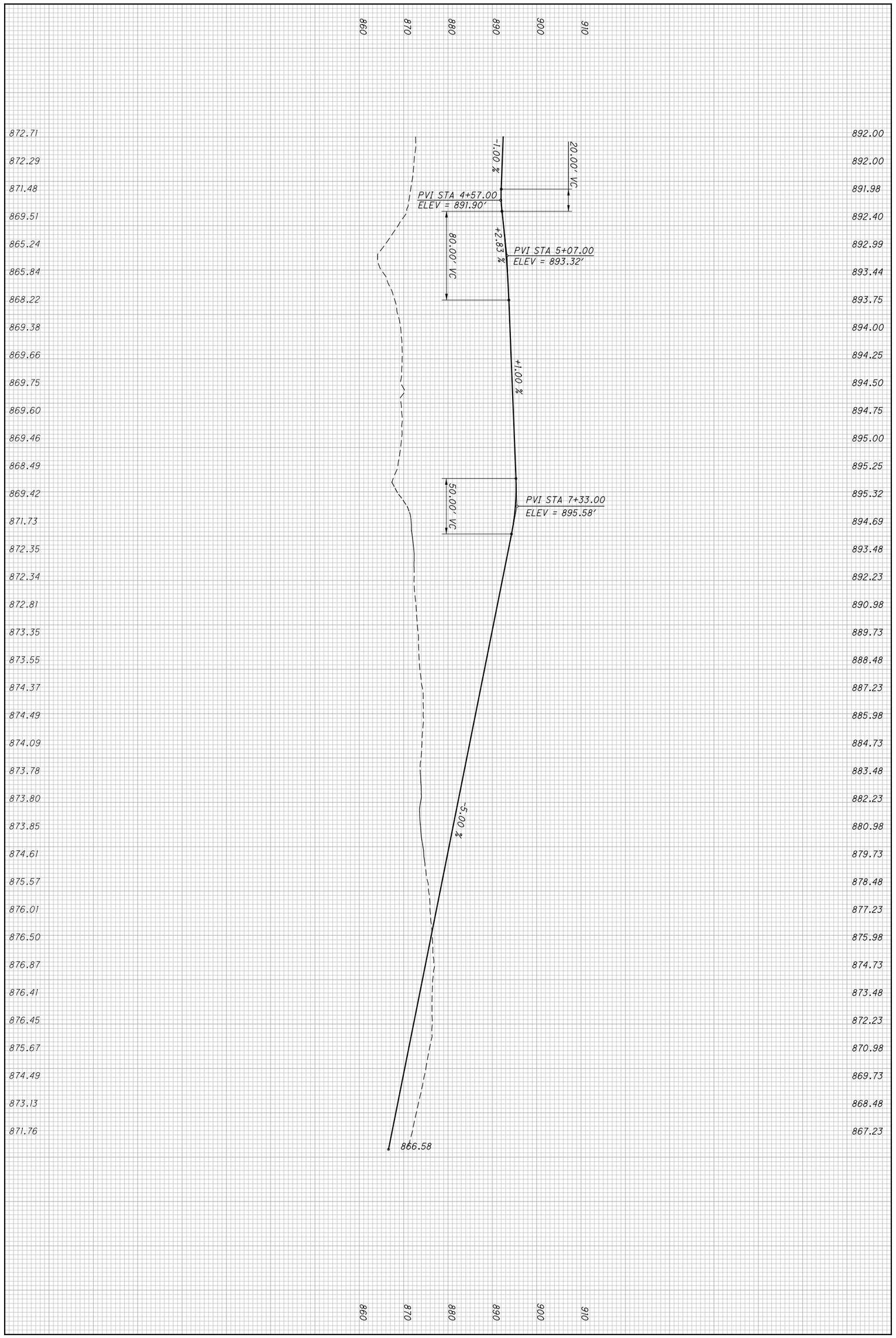
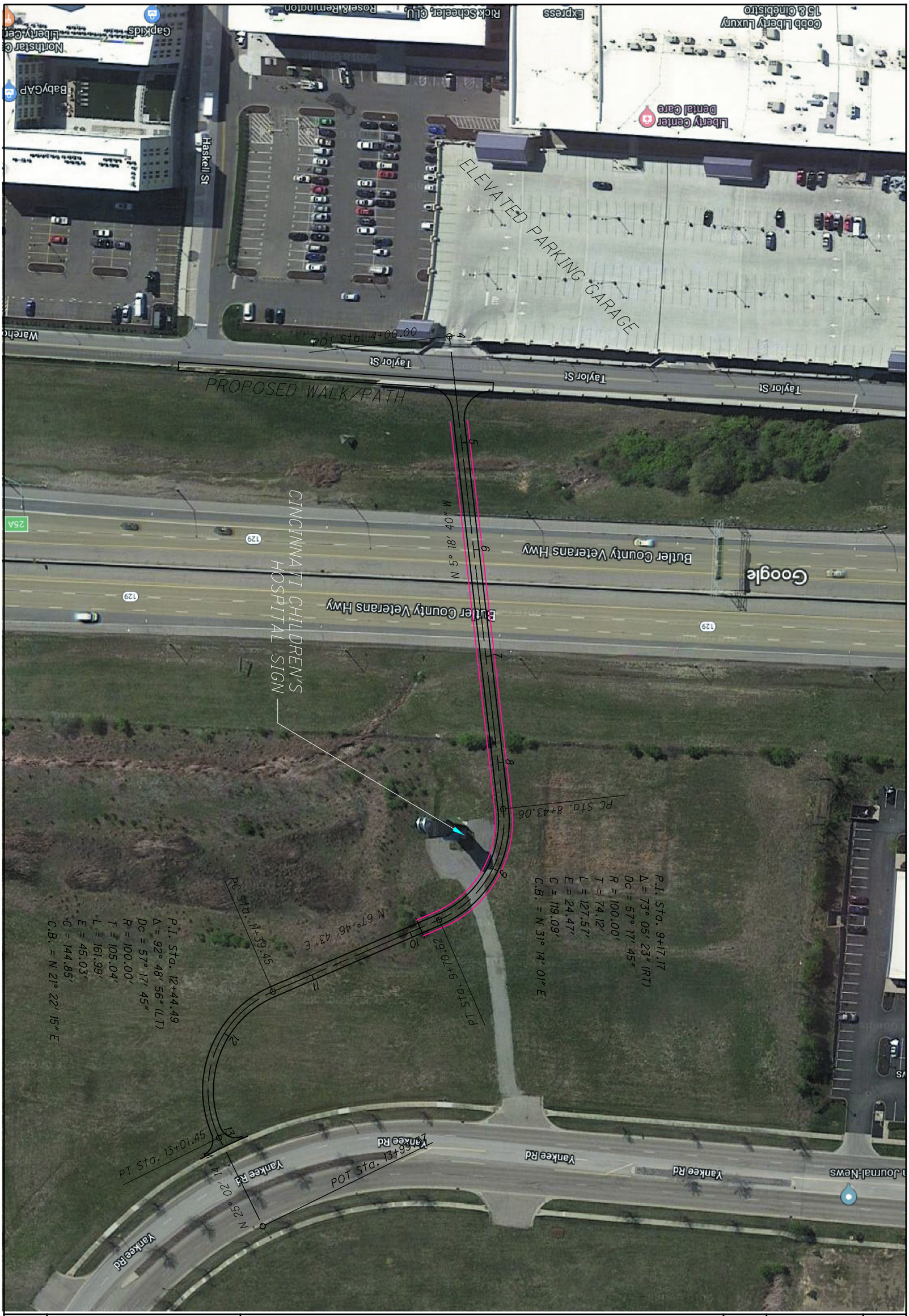


	S.R. 129 OVERPASS STUDY	PROFILE ALTERNATE ONE	CALCULATED GKB CHECKED MAG



S.R. 129 OVERPASS STUDY	ALTERNATE TWO (PEDESTRIAN/BIKE)	CALCULATED GKB CHECKED DWS	0 20 40 80 HORIZONTAL SCALE IN FEET	N

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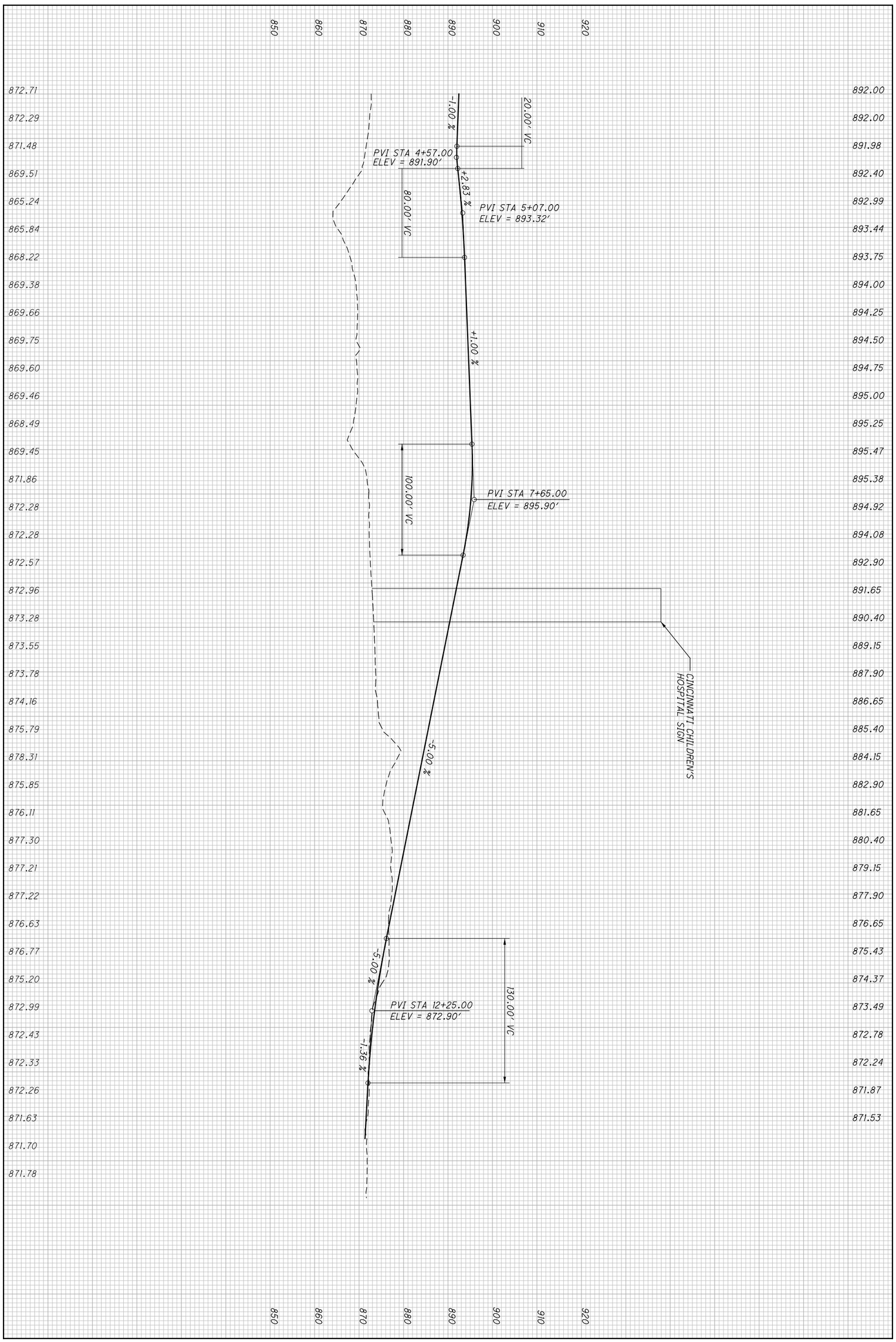
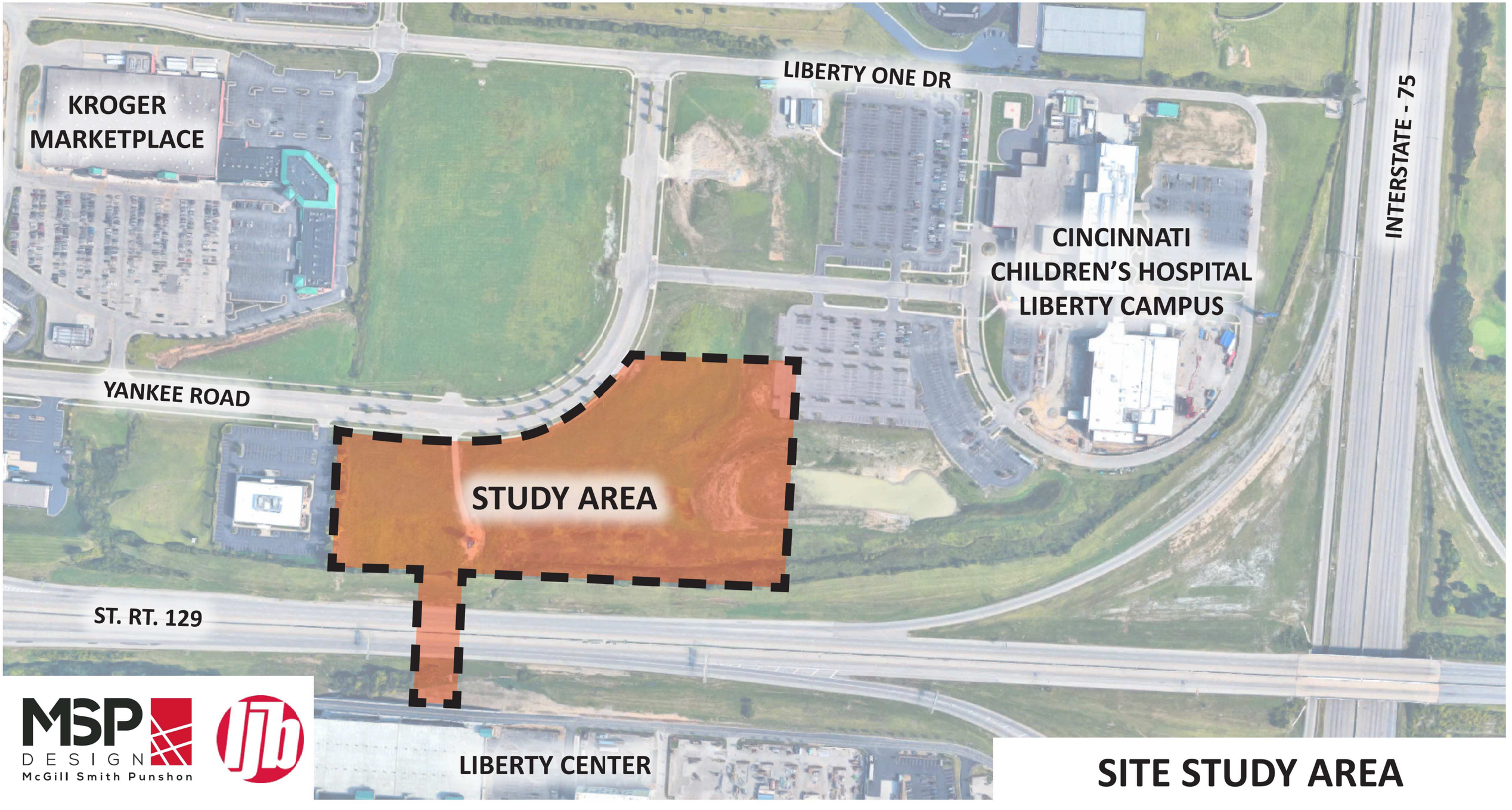


1	S.R. 129 OVERPASS STUDY	PROFILE ALTERNATE TWO	CALCULATED GKB CHECKED MAG



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SITE STUDY AREA



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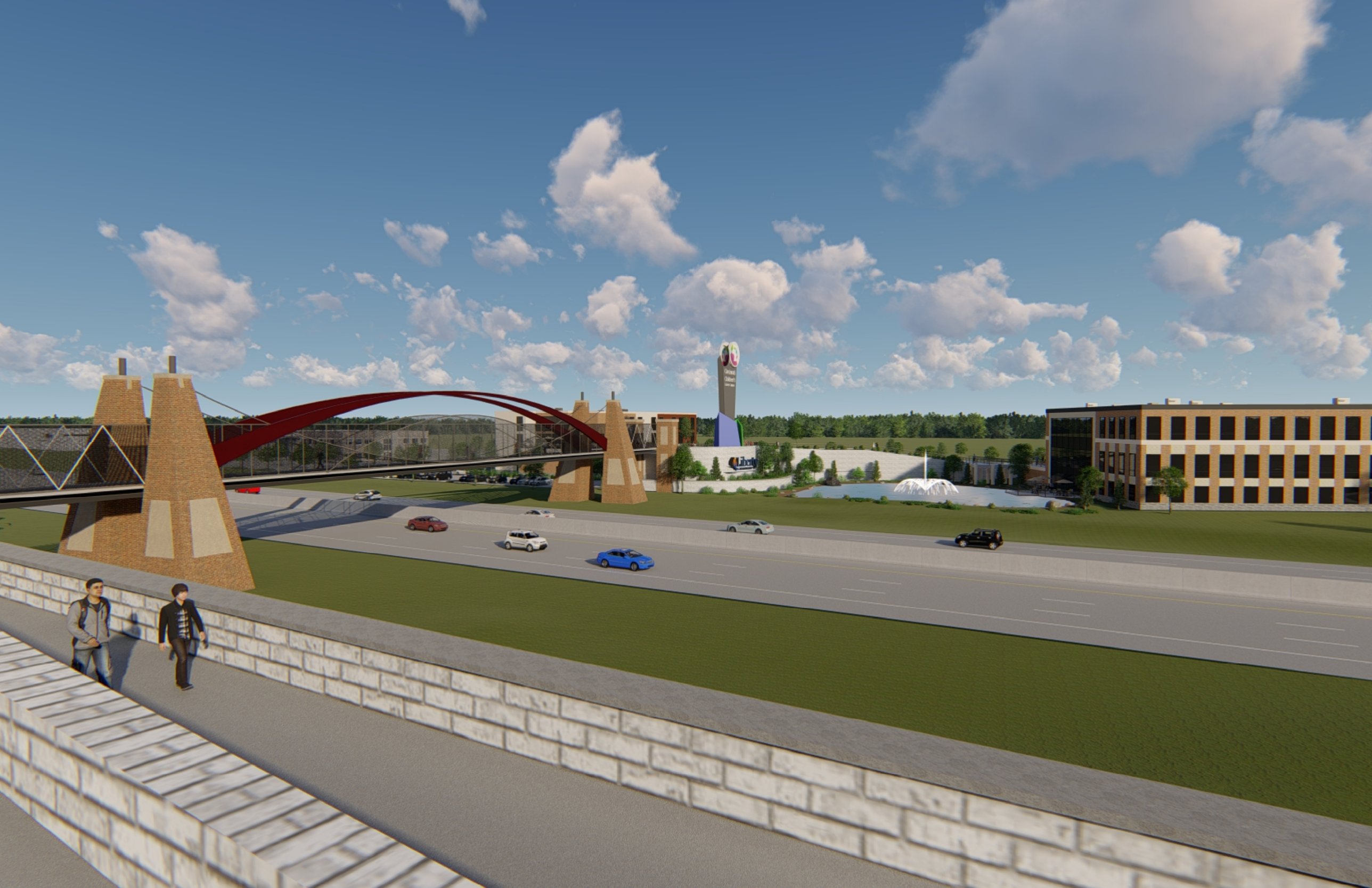
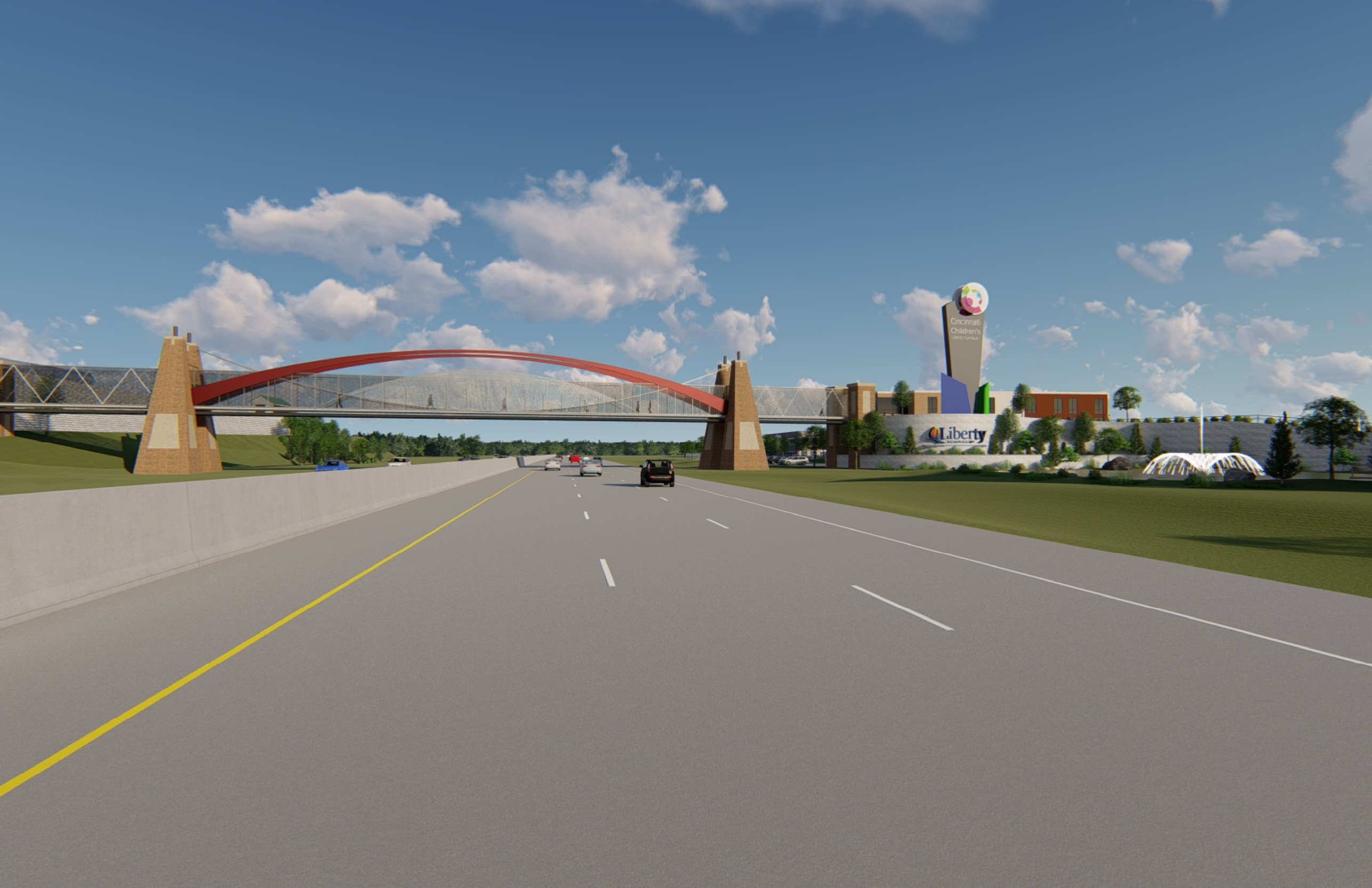
SITE PLAN CONCEPT



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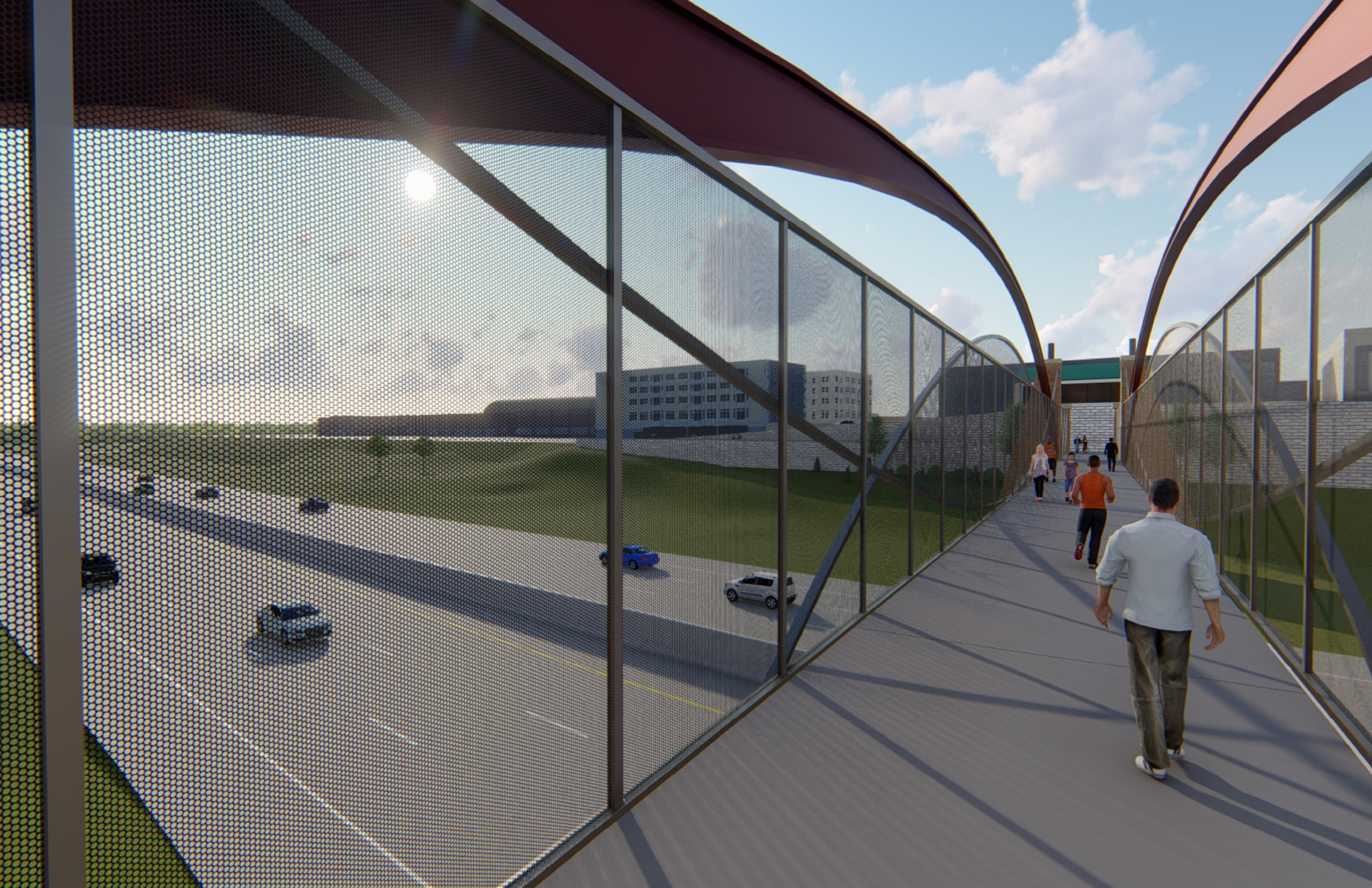


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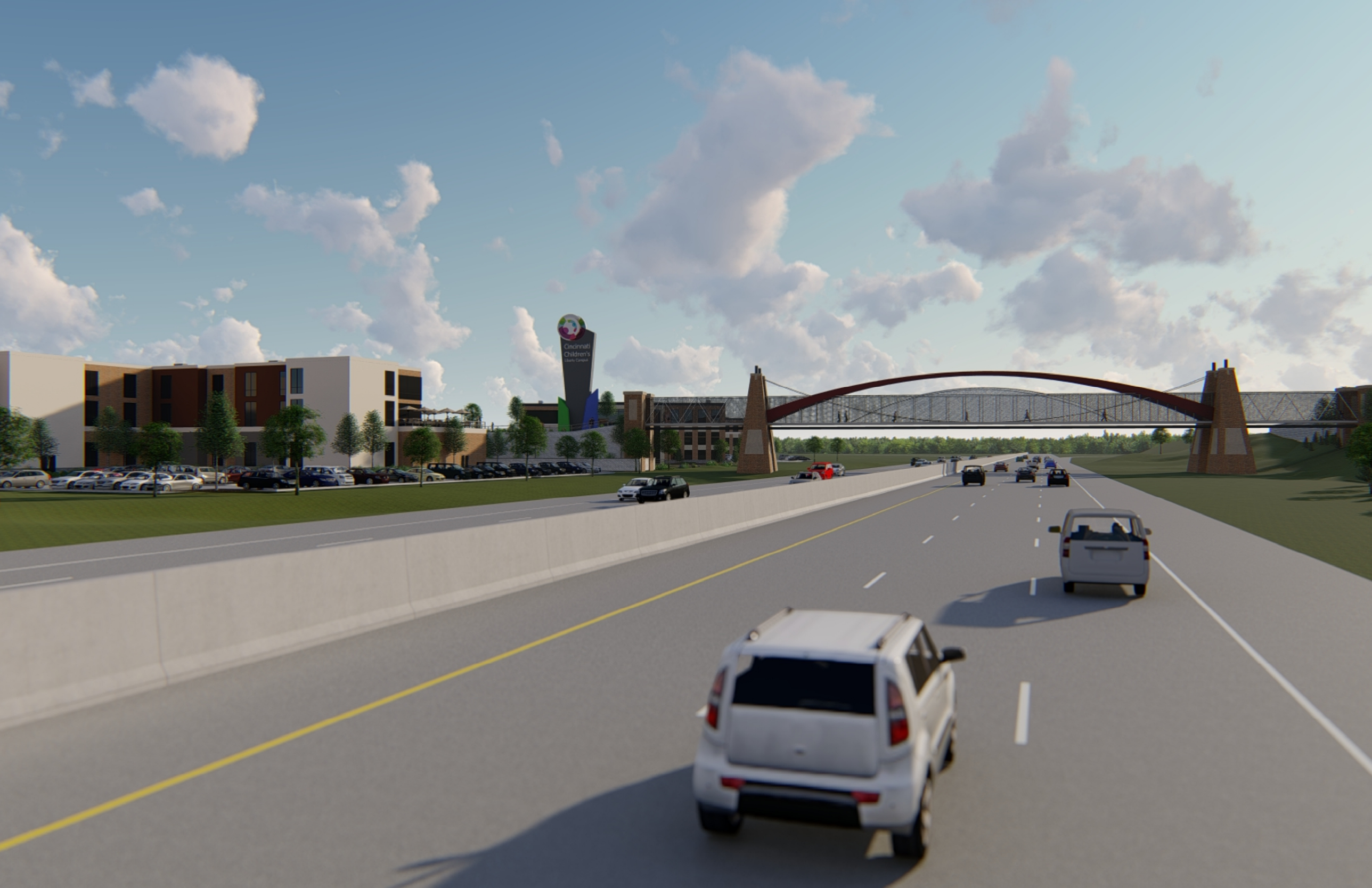
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