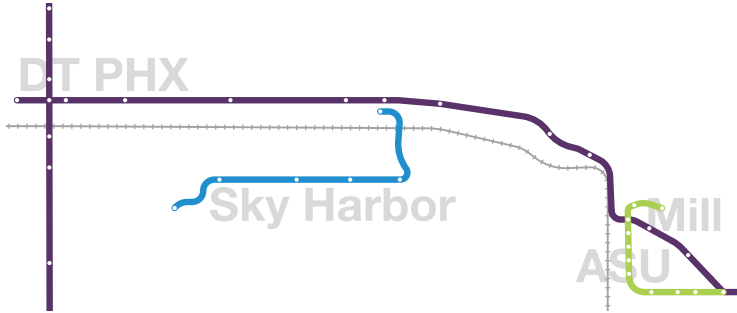


A stylized, handwritten signature of 'James Graef' in black ink.

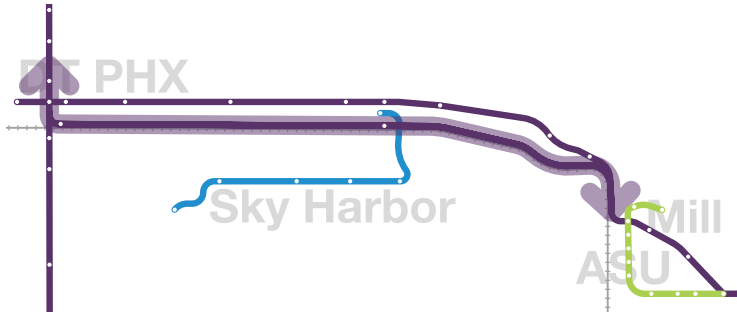
for a better built environment

more info at jamesgraef.com | jameshgraef@gmail.com | 814.777.7099

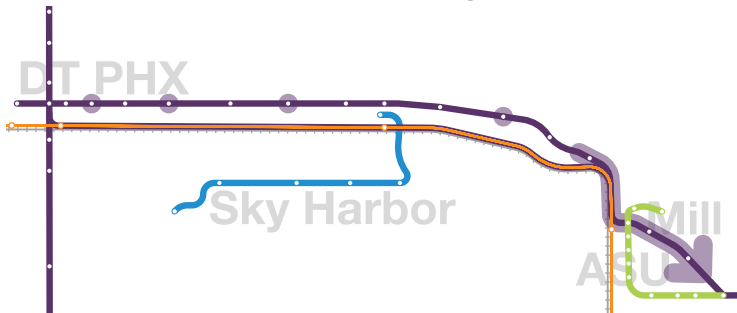
Existing, slow light rail system: 26 min between downtowns



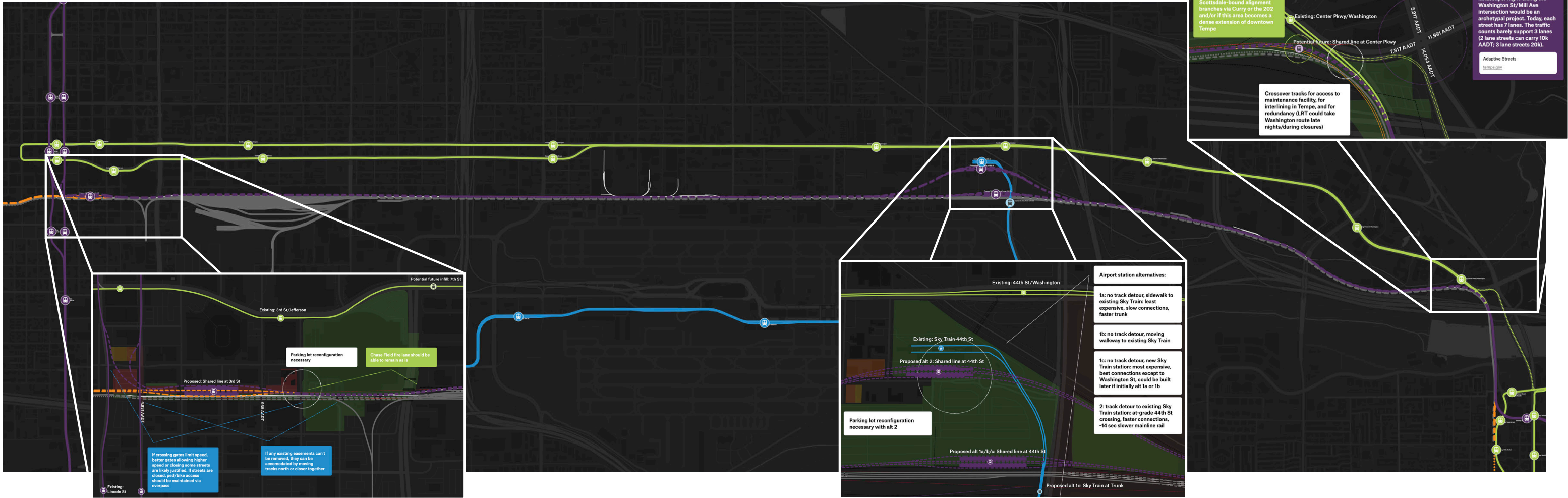
Express line speeds trip to 11 min: 7+ min faster than driving



More frequency & initial commuter rail segment at no extra cost



Interactive alignment map showing track centerlines and curves. Zoom in at jamesgraef.com/vm-regional-rail



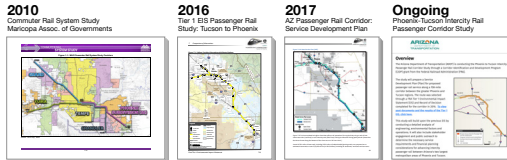
first time light rail will be
faster than driving
between any two points,
anywhere in the valley

Light rail	Commuter/intercity rail
- Turbulent political support	+ Broad political support
+ Existing ridership base and extensive network	- Cold start: neither ridership nor infrastructure

Leverage the **benefits of both** to move our rail network **forward**

Decades of commuter and intercity rail studies

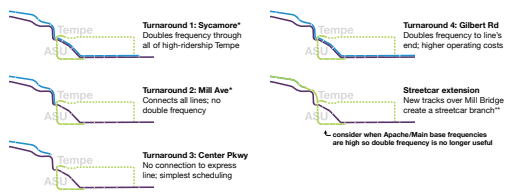
All plan the Phoenix to Tempe corridor as a network trunk



97.5% of valley households have a car
Express rail's **newly addressable market**
2.5% don't
One of the 250k cars on Loop 202 between Phoenix and Tempe today

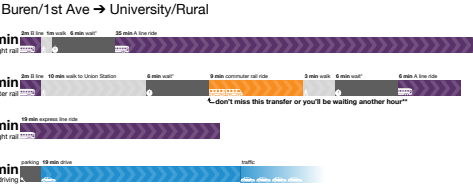
The existing line can improve service in Tempe

Possibilities, ranked by likely efficiency:



Commuter rail alone doesn't speed light rail trips

Commuter rail frequencies and transfer times negate speed benefits



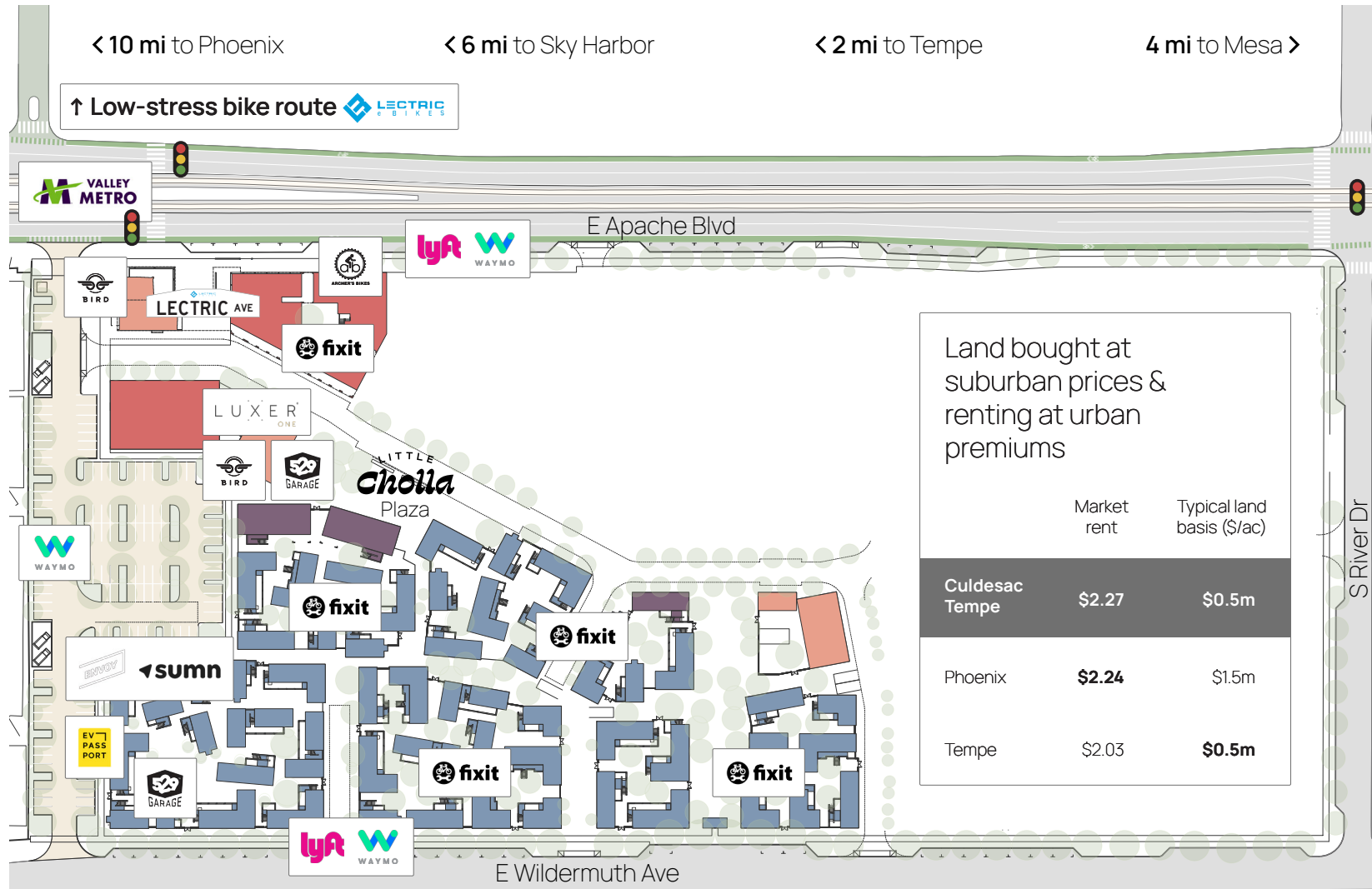
independent capital project analysis 2024 - 2026
Proposal to add alternative to ADOT study to speed light rail at very low cost

Light rail alignment that could speed trips between key destinations to be faster than driving. Substantial additional ridership and an easy-to-build-on alignment mean the project would have a remarkably low cost per rider. The map was created using a PyGIS script which builds track centerlines and fillets based on track dimensions and curve radii (created beginning 2022 before LLMs made vibecoding easy).



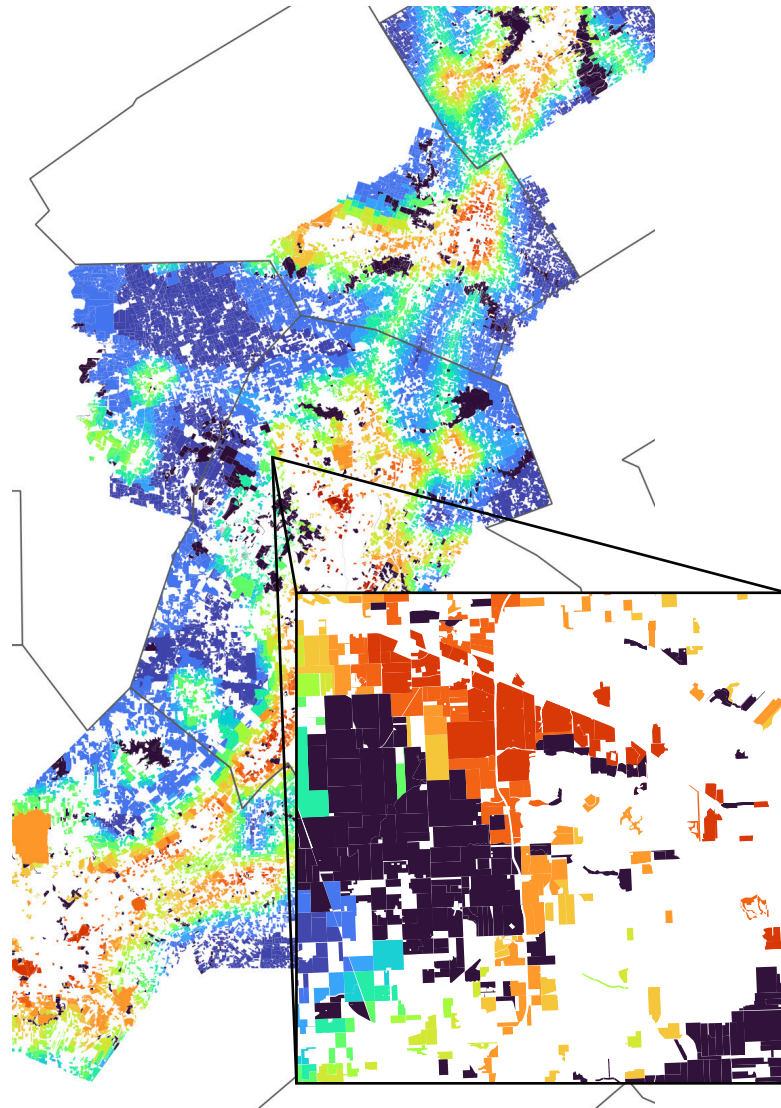
Phoenix—Tempe Express Rail, AZ

more info at jamesgraef.com/vm-regional-rail

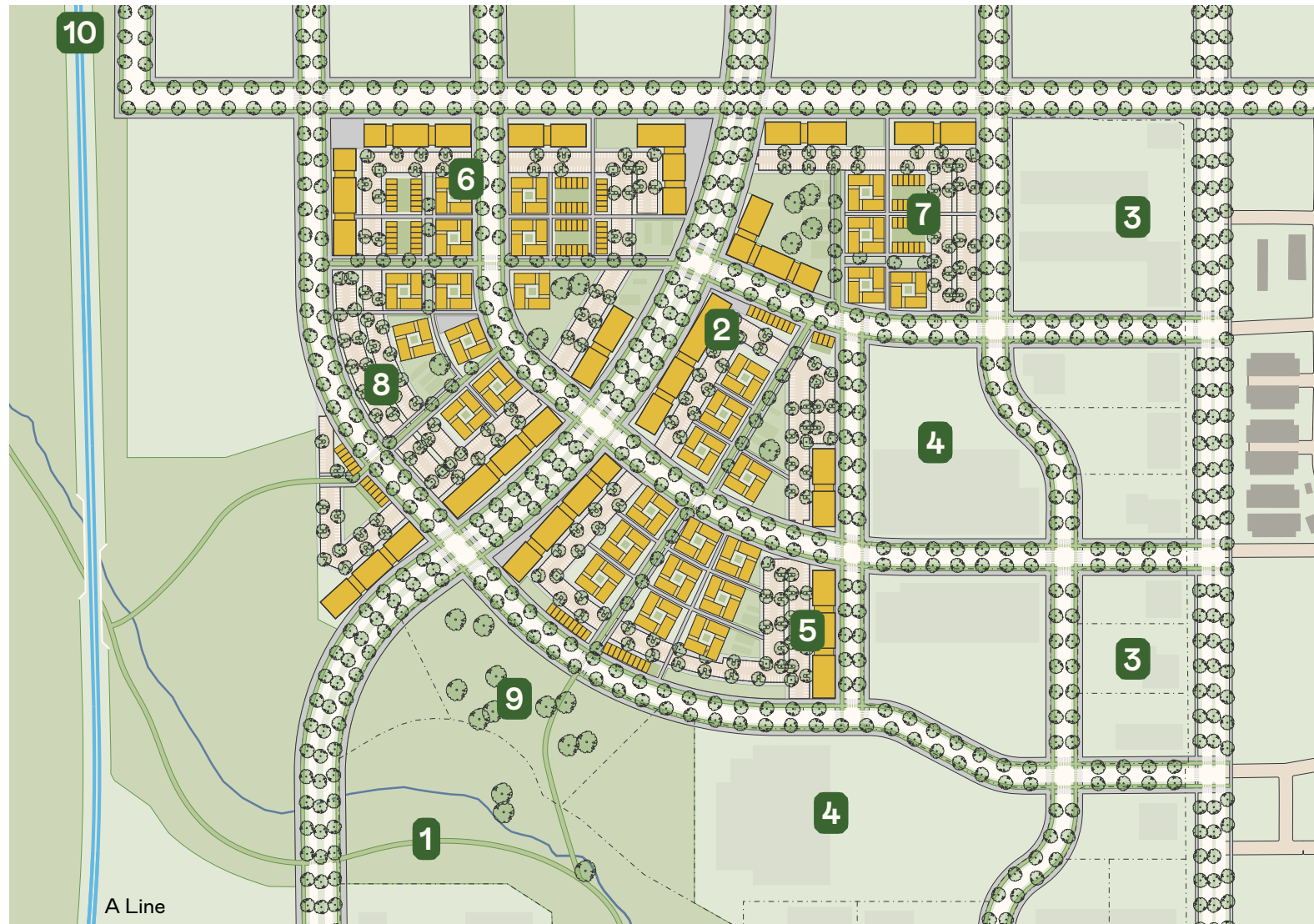


individual contributions to Culdesac projects 2022 - 2026
Culdesac builds car-free neighborhoods

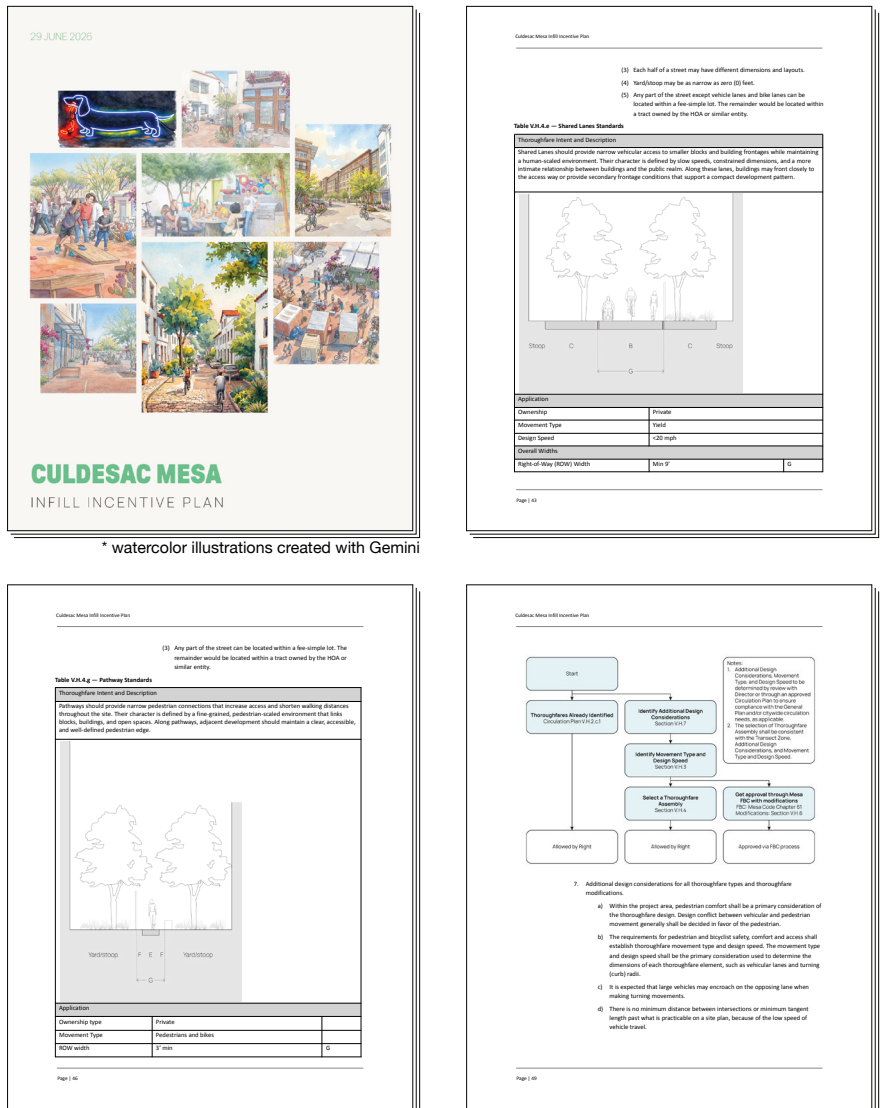
One of many maps I've created for tours, city meetings, and investor decks. This map shows Culdesac's many mobility partners which provide benefits and discounts to residents. I manage and coordinate the portfolio of mobility benefits.



GIS output of a PyGIS algorithm which ranks land parcels based on possibility and promise of development. Weighted factors evaluated include size; current land use; proximity to noise, parks, transportation corridors, and grocery stores.



One of dozens of site plans created for future Culdesac neighborhoods. Sites are designed to maximize constructability, walk/bikeability, and transit access while conforming to code and city standards. Site plans created in CAD, Rhino (incl. Grasshopper parametric generation), and Illustrator.

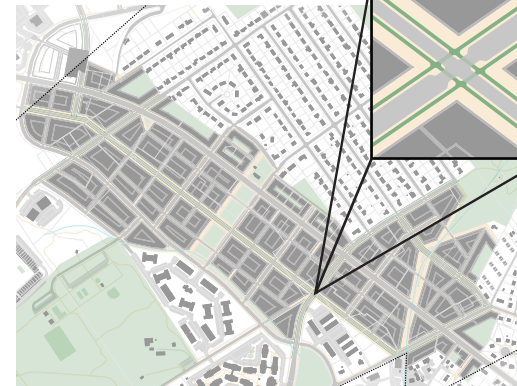


Selection of pages from our customized zoning code created for Culdesac Mesa. I lead the rezoning and citizen engagement process. The city's Infill Development zoning district allows us to customize building form, uses, street sections, and approvals.

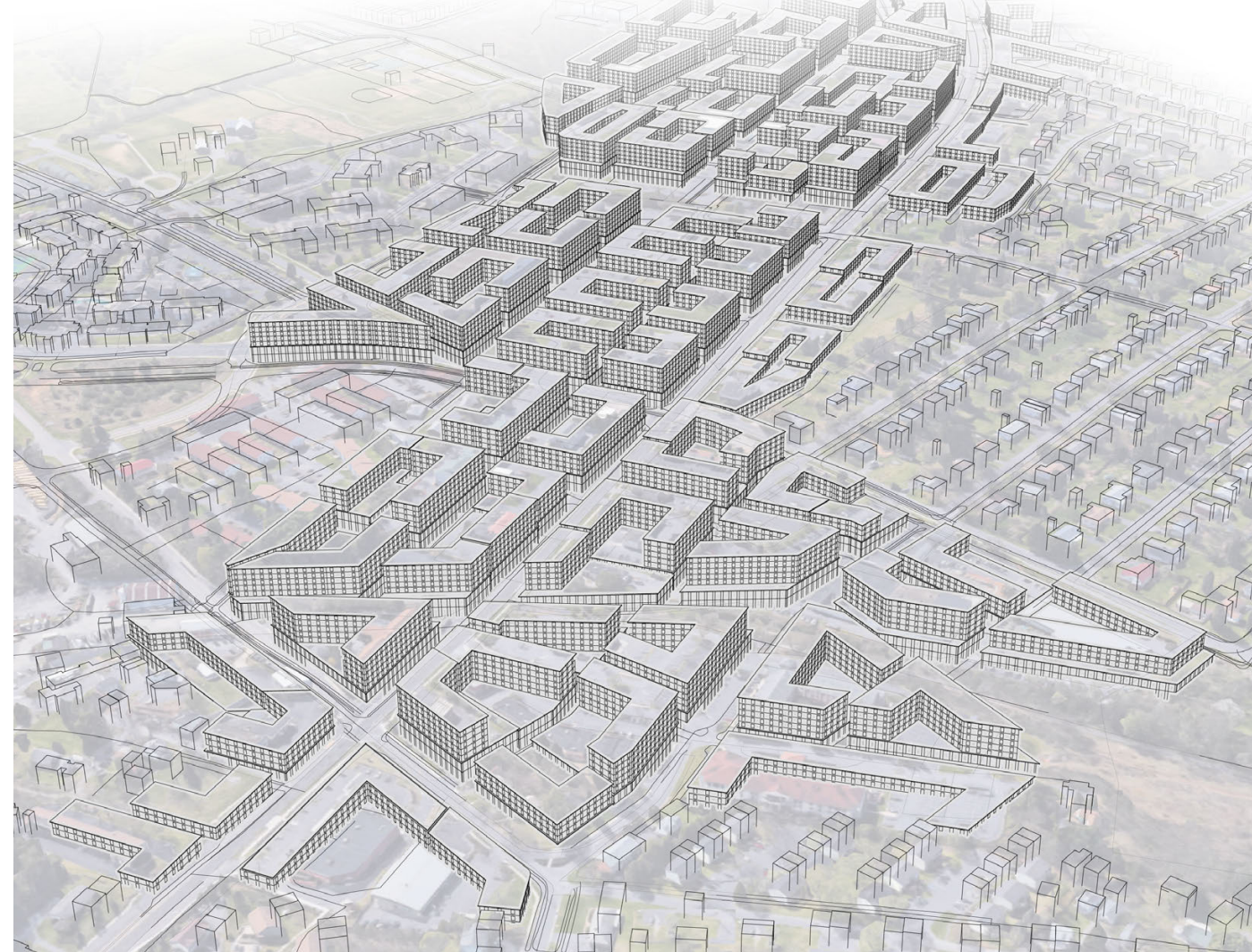
Centerline and zone inputs



Parametrically generated plan



Grasshopper-generated neighborhood outcome



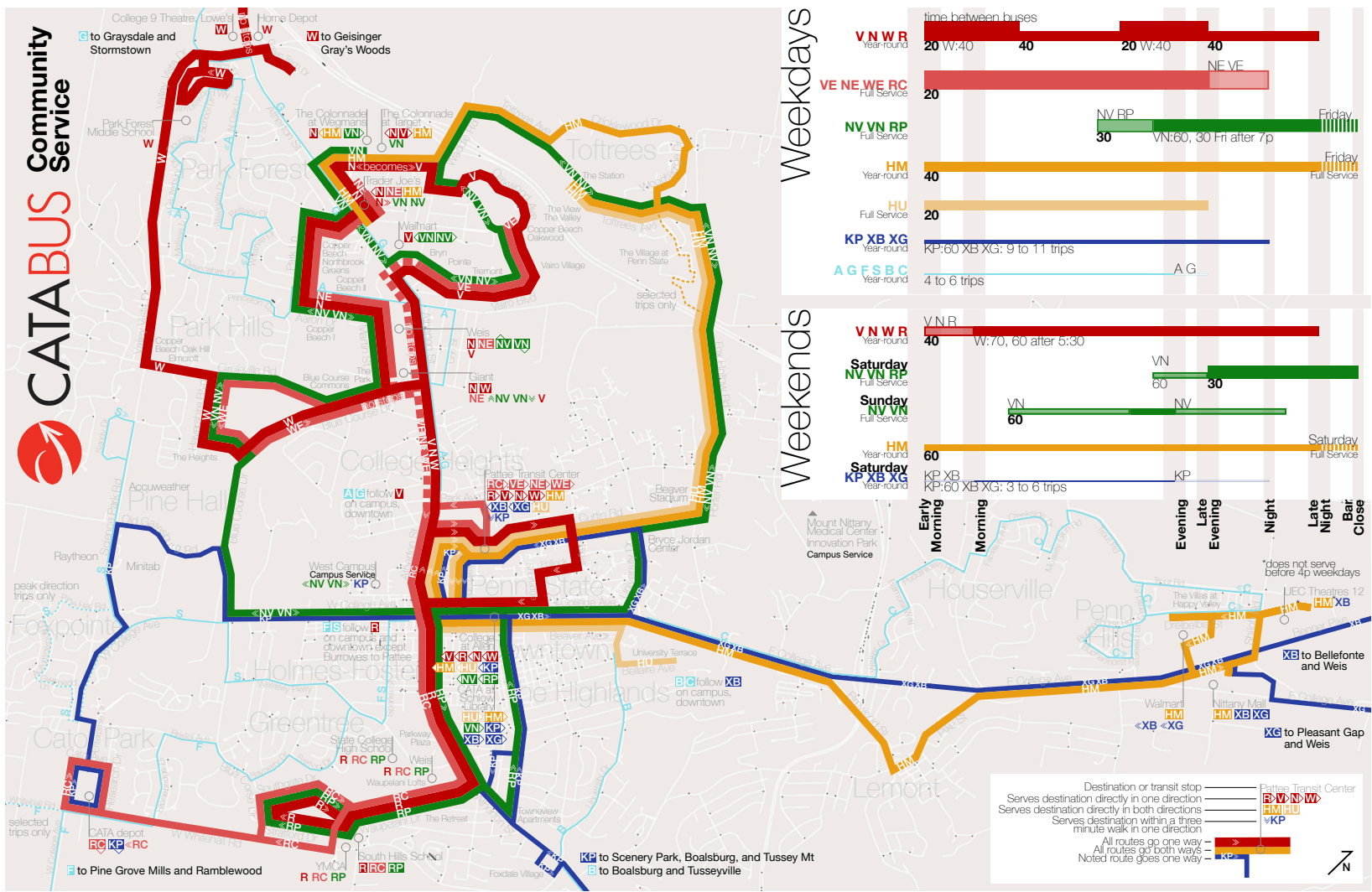
Gemini-prompted view based on photo with CAD export overlay, shown at right



individual independent project 2021
grasshopper script visualizing an example walkable development

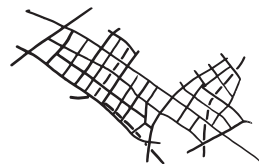
Communities are often against changing zoning regulations. If stakeholders were better able to visualize their future neighborhood, they may be more willing to rezone. Parametric modeling via Grasshopper scripting generates the fully built-out form of a neighborhood, including cornices, windows, and bulb-outs at intersections, and could be updated according to community input.

Proposed System Map Showing Frequencies



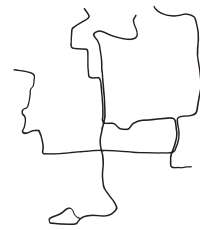
individual independent project 2019

This report provides strategies to increase ridership on CATA buses by making operations more efficient. Categories of improvements include faster boarding times (proof-of-payment, all-door boarding, bus interior layout), network efficiency changes, increased reliability through bus lanes, clearer wayfinding through graphic design (shown above), and strategies for better interagency cooperation. An appendix suggests a timeline for implementation.



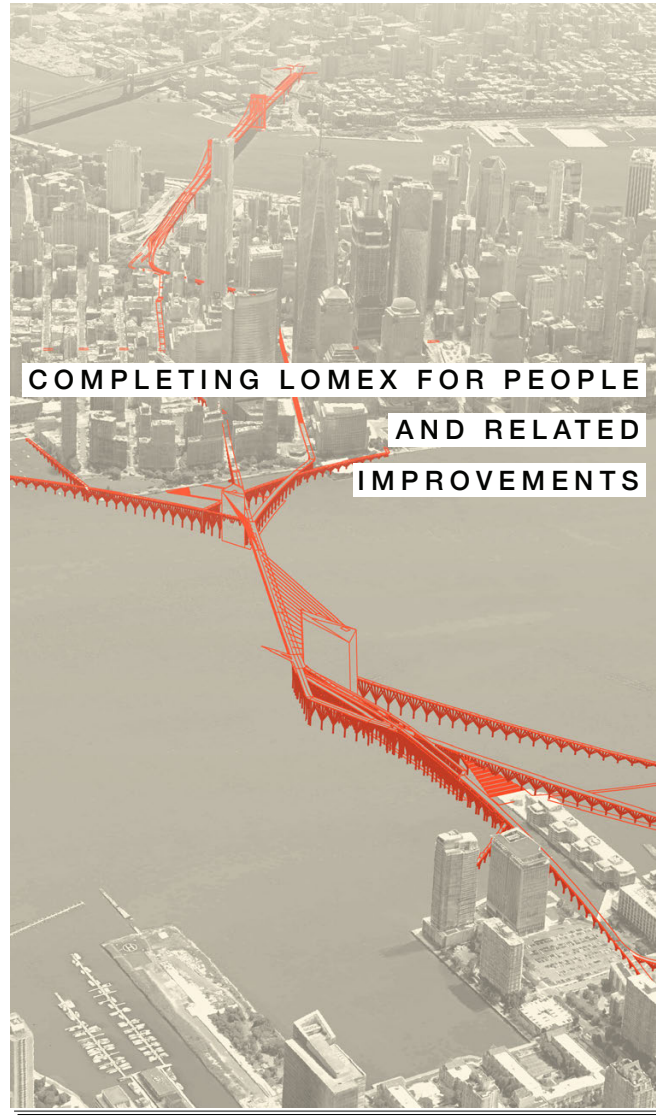
Parametric Neighborhood Generator, Centre Region, PA

more info at jamesgraef.com/parametric-neighborhood

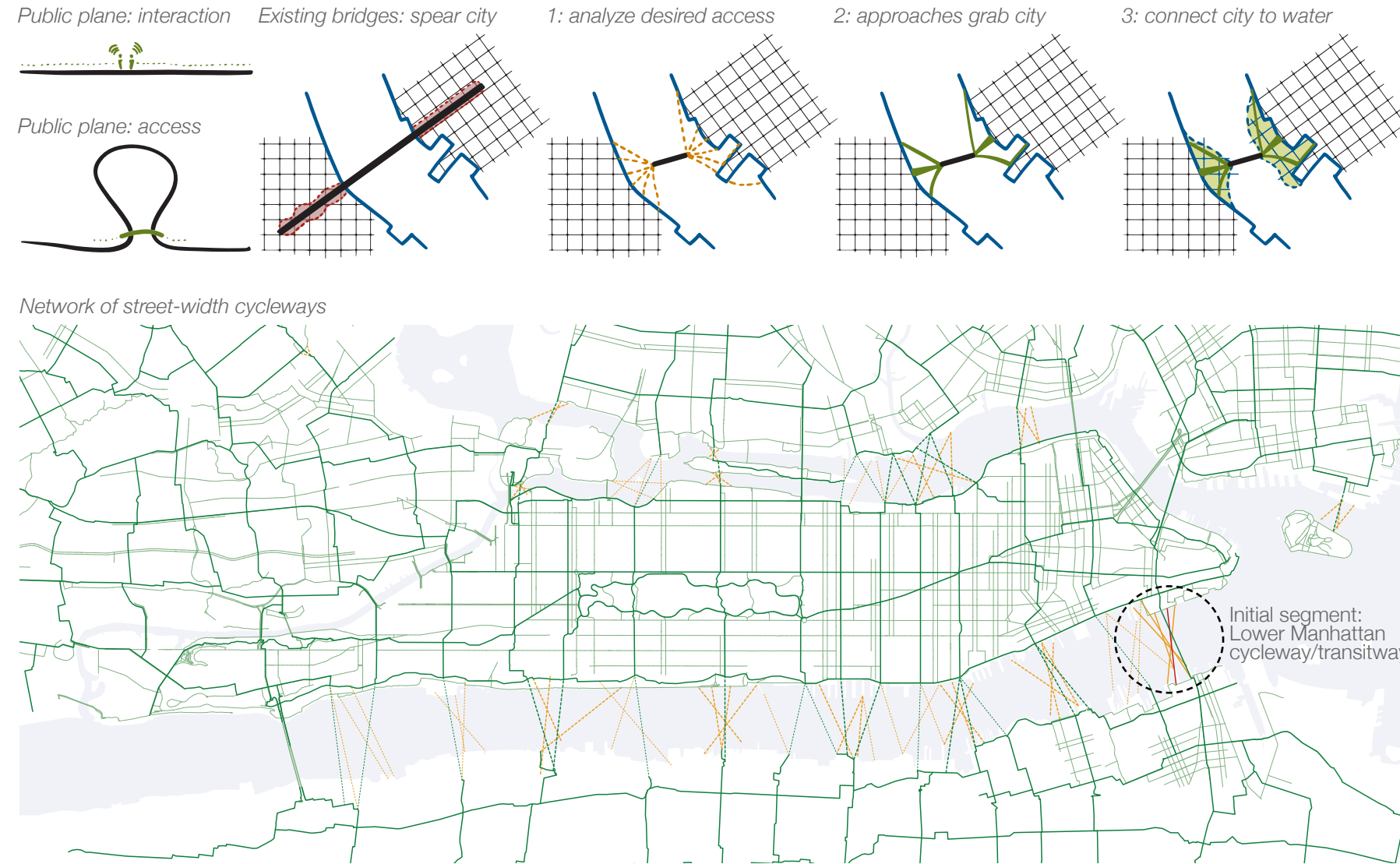


CATABus Operations Improvement Report, State College, PA

more info at jamesgraef.com/cata-operations

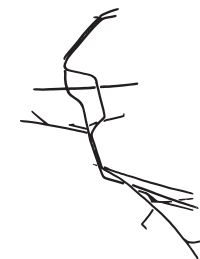


COMPLETING LOMEX FOR PEOPLE AND RELATED IMPROVEMENTS



individual undergraduate thesis 2021
satisfying Bachelor of Architecture and Schreyer Honors College requirements

The public ground plane of a city is the catalyst for interpersonal interaction, but bypassing the public plane allows for much faster movement. Bridges usually optimize for access, but they could instead become an integral part of a waterfront's public plane. This proposal completes the Lower Manhattan Expressway from Brooklyn to Jersey City for people on sidewalks, bikes, and transit.



The Public Plane: Completing the Lower Manhattan Expressway (LoMEX), NYC more info at jamesgraef.com/thesis



Building and Greenspace

individual studio project 2020
created with direction from Sankofa Village Community Garden



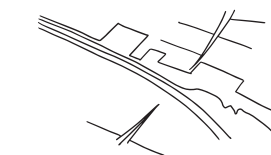
South Facade



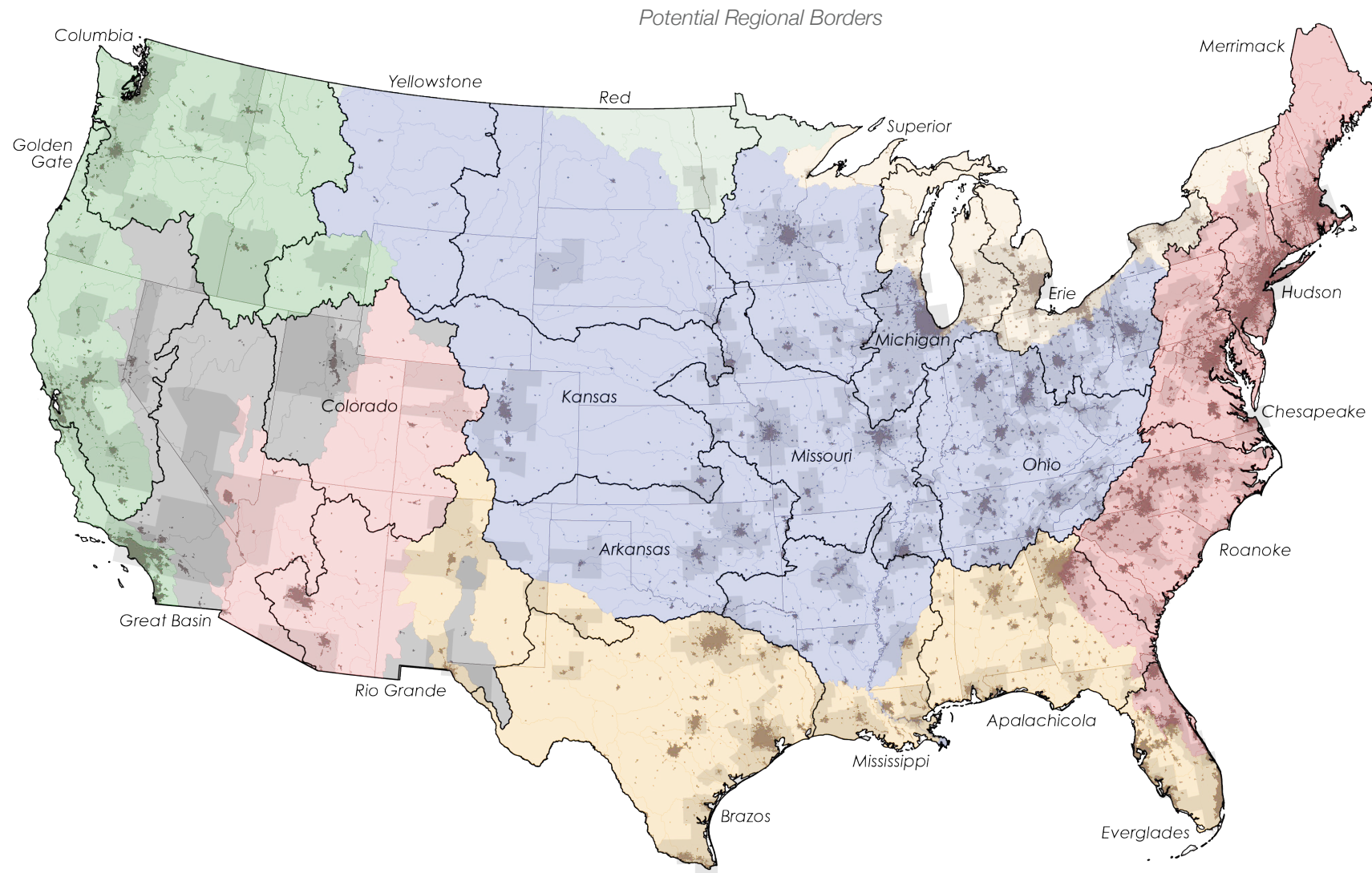
South Elevation

View from Greenhouse

This catalyst project attempts to create urban space in a neighborhood which has become progressively less urban over the last several decades. Urban space is restored aesthetically by recreating street walls based on historic Sanborn insurance map property lines, and practically by mixing uses using those property lines as framework. Unlike previous nearby urban development, this project includes green space—as part of a potential future greenway corridor along the East Busway.



Sankofa Village Education Center and Urban Farm, Pittsburgh, PA more info at jamesgraef.com/urban-farm



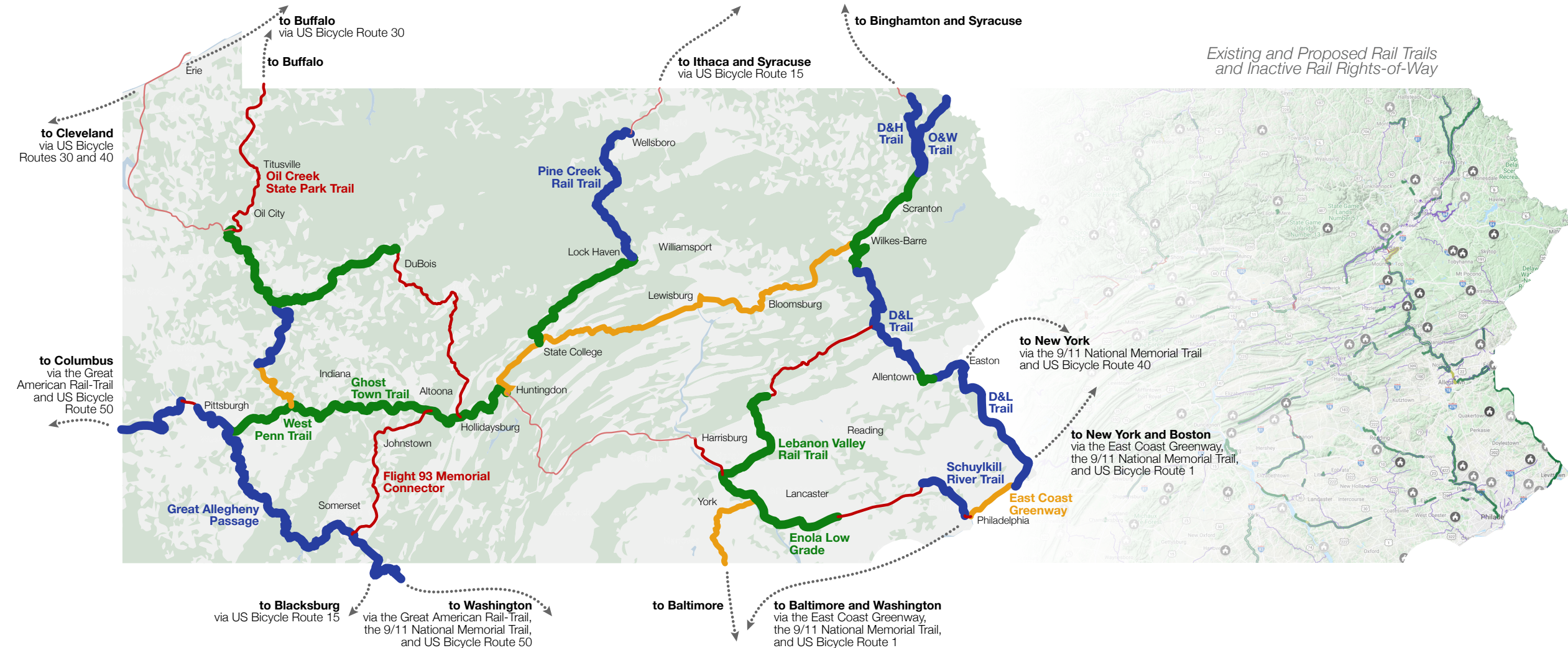
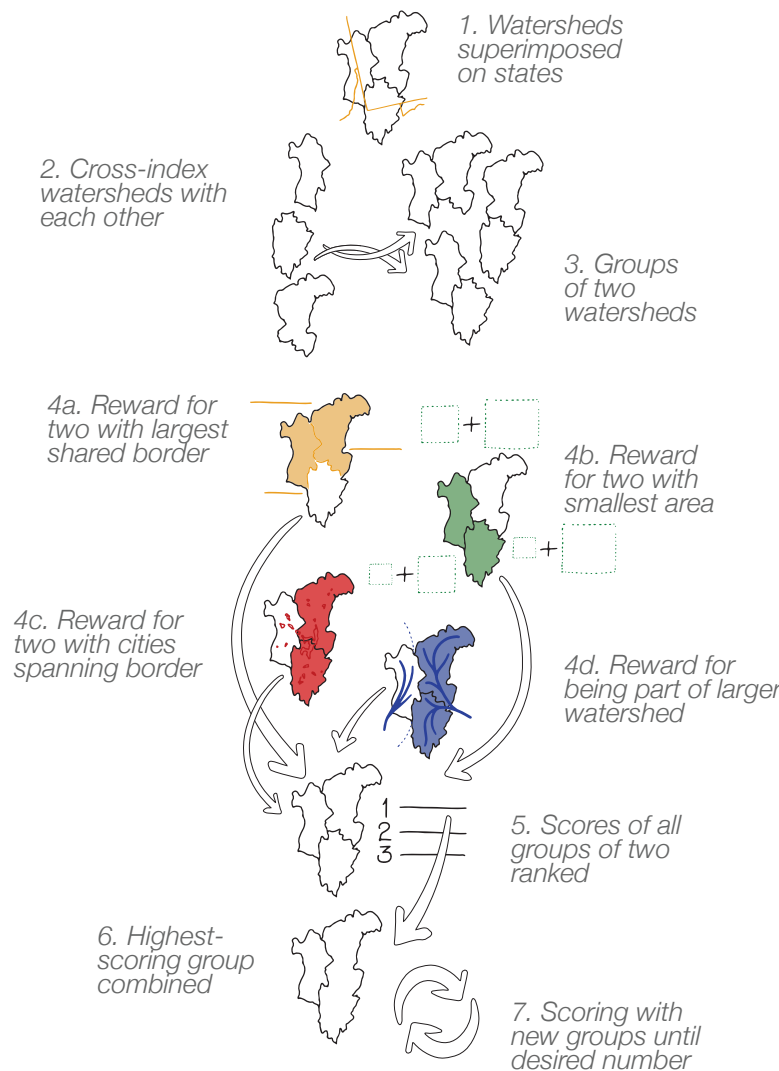
individual studio project 2020
part of a three part project connecting cities and water

Borders would often be more efficient if they followed watershed and development boundaries, rather than historical lines on a map. Small watersheds could be grouped into regions parametrically, based on propensity scores. These regions would be better able to coordinate cities and natural resources, because their borders would be on the natural boundaries between urban areas and water bodies.



WaterCity Regions

more info at jamesgraef.com/watercity-regions



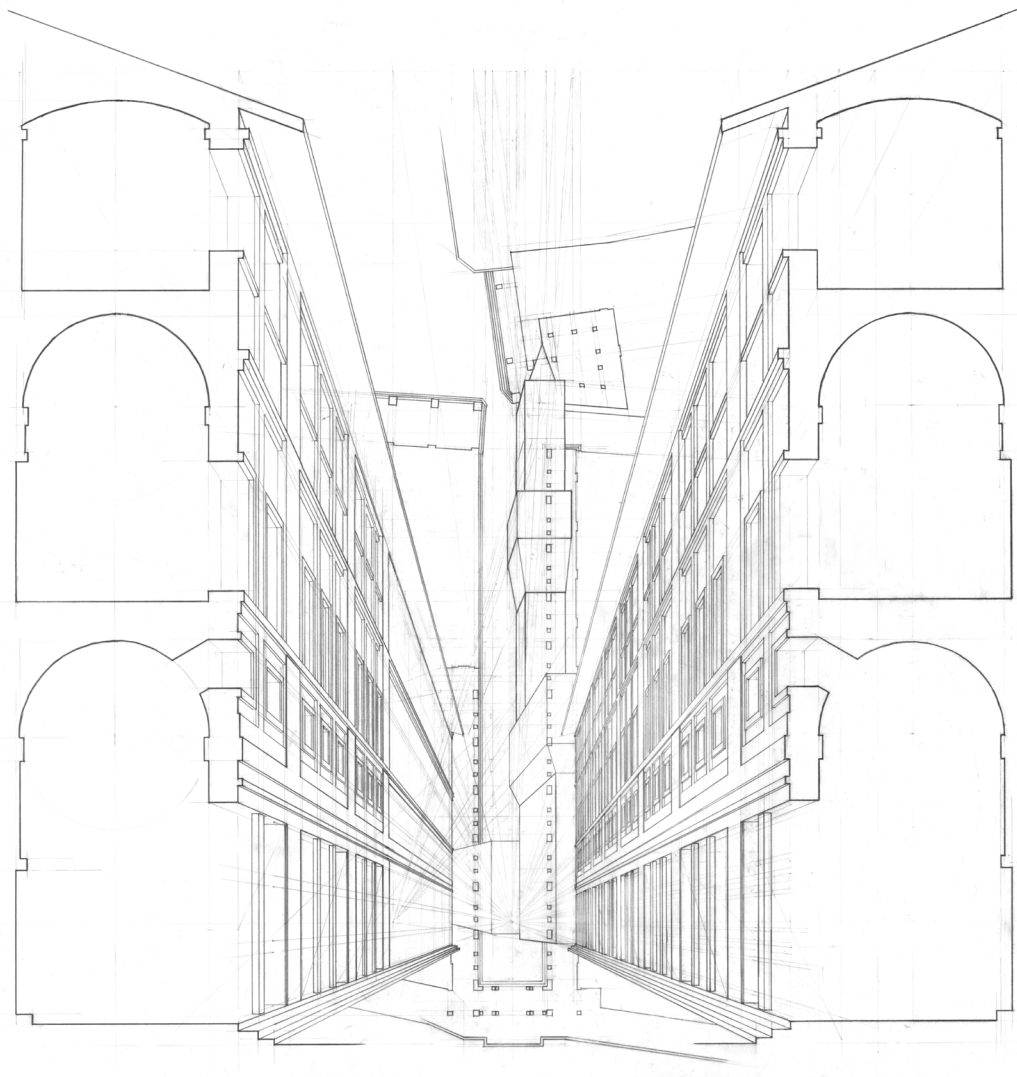
individual independent project 2020

Pennsylvania has a world-class set of rail-trail shared-use paths stretching across the state. Some have endeavored to become trail systems: most notably, the Great Allegheny Passage begins in Pittsburgh and leads to Washington DC along the C&O Canal towpath trail. These rail trails and other unused rights-of-way could become the catalyst for a statewide network of safe, comfortable, enjoyable, and useful off-road shared-use paths for use as recreation trails and active transportation corridors.

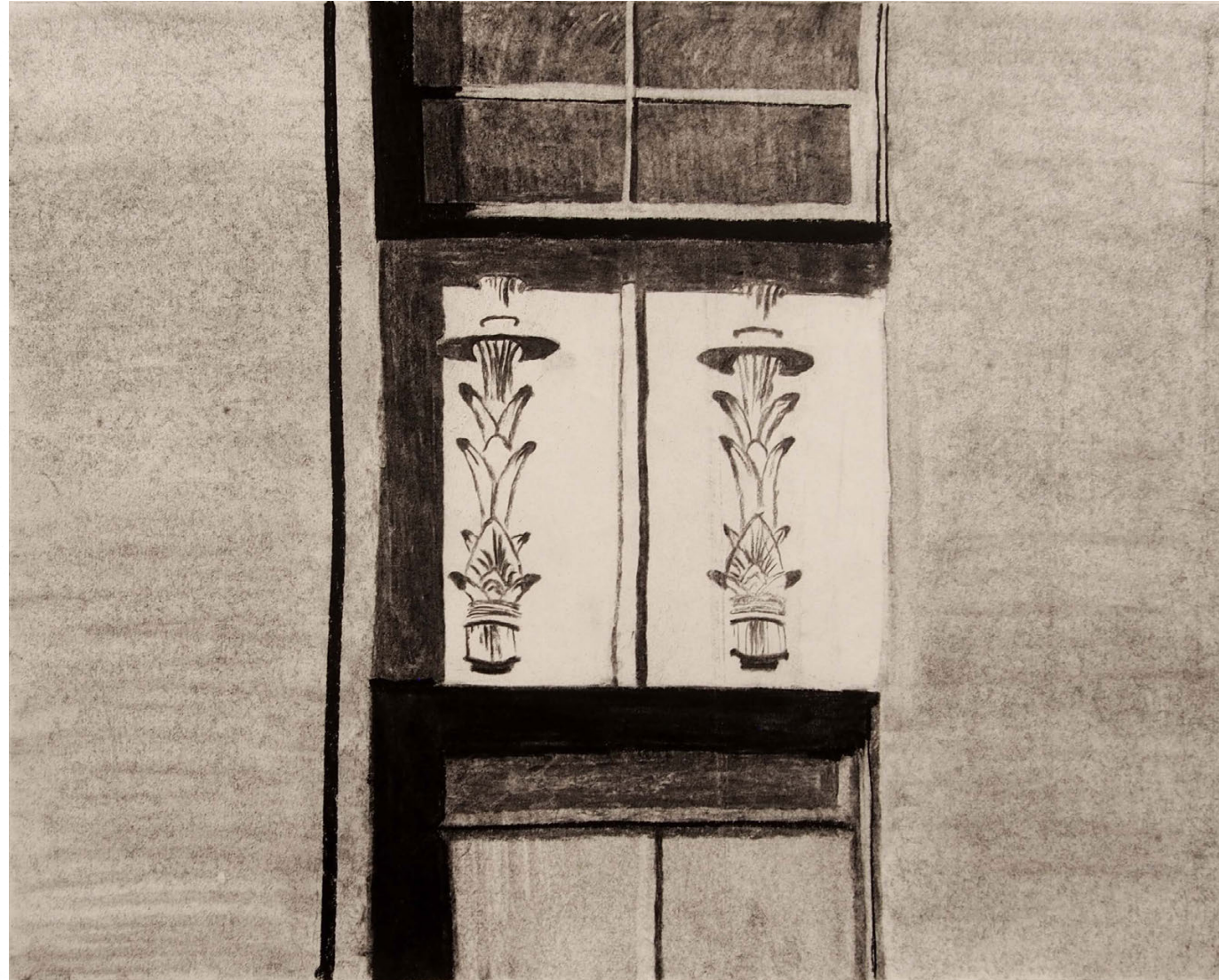


Pennsylvania Cycleway Network

more info at jamesgraef.com/pa-cycleways



individual visual communications project 2016
pencil on vellum, 20 x 20 inches
**Perspective, principally one-point,
overlaid on plan of Piazzale degli
Uffizi toward Palazzo Vecchio,
Florence, Italy.**



individual studio project 2016
charcoal on sketch paper, 24 x 18 inches
**Freehand charcoal sketch of
window detail on Frear Building,
Penn State University campus,
University Park, PA.**



Hand Drawing

Urban Portrait

more info at jamesgraef.com/hand-drawing

James Graef