FORMAL PRESENTATION WITH PUBLIC FEEDBACK BEGINS AT 6 PM

city of CINCINNATI

Western Hills Viaduct
Preliminary Engineering Study
Public Meetings

November 29th, 2016
December 1st, 2016
ODOT PID 85388

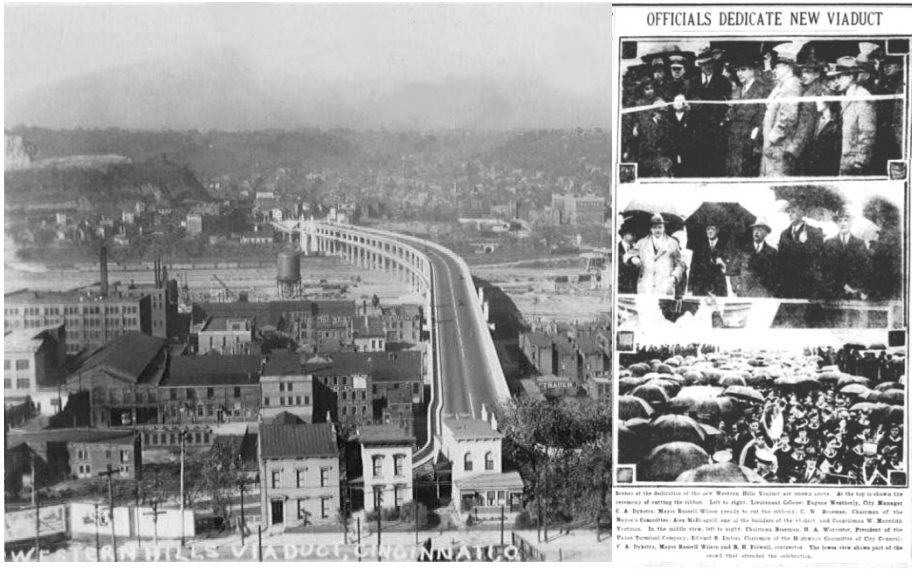
city of CINCINNATI

Outline

- Viaduct Background
- Existing Conditions
- Finding Out About You
- Project History
- Design Constraints & Coordination
- Replacement Alternatives
- Preferred Alternative
- Your Thoughts
- Phasing Plan
- Questions?

Viaduct Background

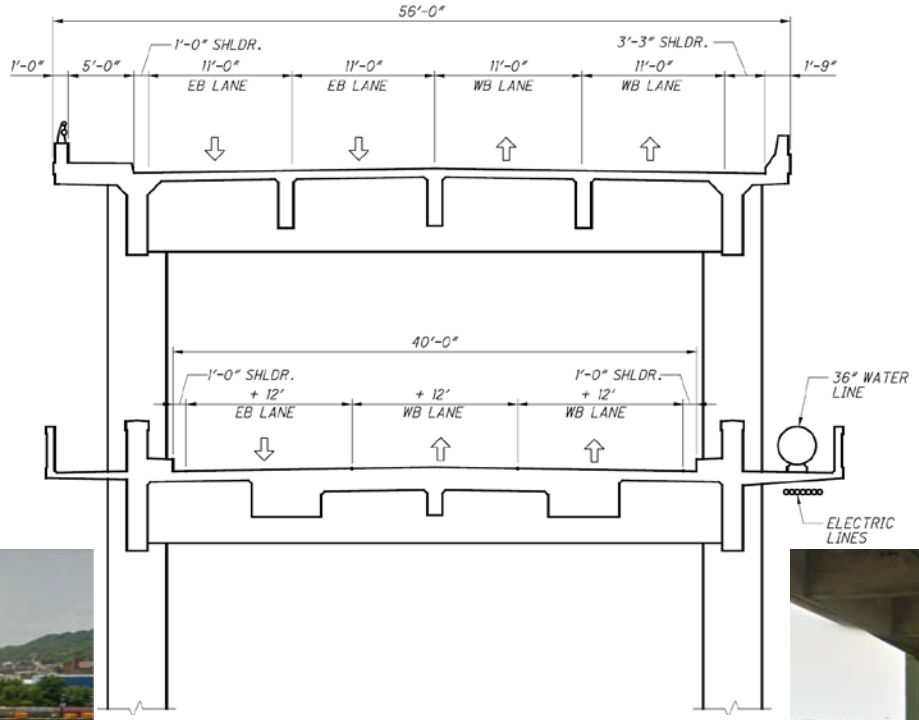
- Construction on the Western Hills Viaduct began in 1930 and was completed in 1932 as part of the Union Terminal Project.



Viaduct Background

- The half mile long viaduct spans the Mill Creek Valley and Railroad Yards.
- Daily Traffic over 55,000 vehicles per day
- The viaduct connects Beekman St., Harrison Ave., Queen City Ave. and Westwood Ave. to Central Pkwy, Spring Grove Ave., McMillan St., and I-75.

Existing Conditions



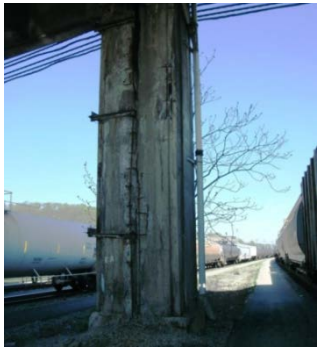
Existing Typical Section

Upper Level

Lower Level

Existing Conditions

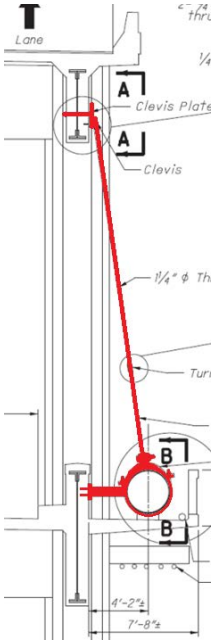
- Constructed in 1932 with major rehabilitation in 1977.
- Reaching the end of its design life.
- Structurally deficient and functionally obsolete
- Temporary Shoring of Lower Deck
- Concrete Deterioration and Structural Steel Deterioration.
- Difficult to inspect embedded steel
- Substandard Geometry
- Inadequate accommodations for Bike and pedestrians.



Water Main Support System

- In 2016 a supplemental support system was added to provide temporary support to the existing water main until its relocation.

- The timing and details for the water main relocation remain to be determined.



Condition Assessments

Roadway Geometry

- Viaduct does not meet current ODOT Design Criteria
- Viaduct fails nearly every normal design criteria except for lane width and grades, although the 11-foot lanes on the lower deck are considered the minimum allowed. A summary of the inadequate criteria is as follows:
  - Upper level, lower level, and west end ramps have inadequate shoulder widths and clearances to the barrier or curb.
  - All ramp horizontal curves and upper level westbound horizontal curve at Harrison have inadequate radii, with many ramp curves having half or less of the desired radius.
  - Eastbound ramp from Harrison has substandard vertical curvature.
  - Nearly all ramps have inadequate stopping sight distance
  - Pavement cross slope is inadequate throughout.
  - Lower level and westbound Harrison ramps have inadequate vertical clearance.

Condition Assessments

Multimodal /Geometrics

- Upper and lower decks provide insufficient shoulders for vehicles and do not have dedicated bicycle facilities.
- No sidewalk on either side of the lower deck and single sidewalk on south side of upper deck with stair connection on west approach (closed at Spring Grove).
- Viaduct currently has no dedicated bicycle facilities.
- SORTA operates four routes on the Viaduct

  No. 6 Queen City

  No. 21 Harrison Ave.

  No. 27 Northside-Casey

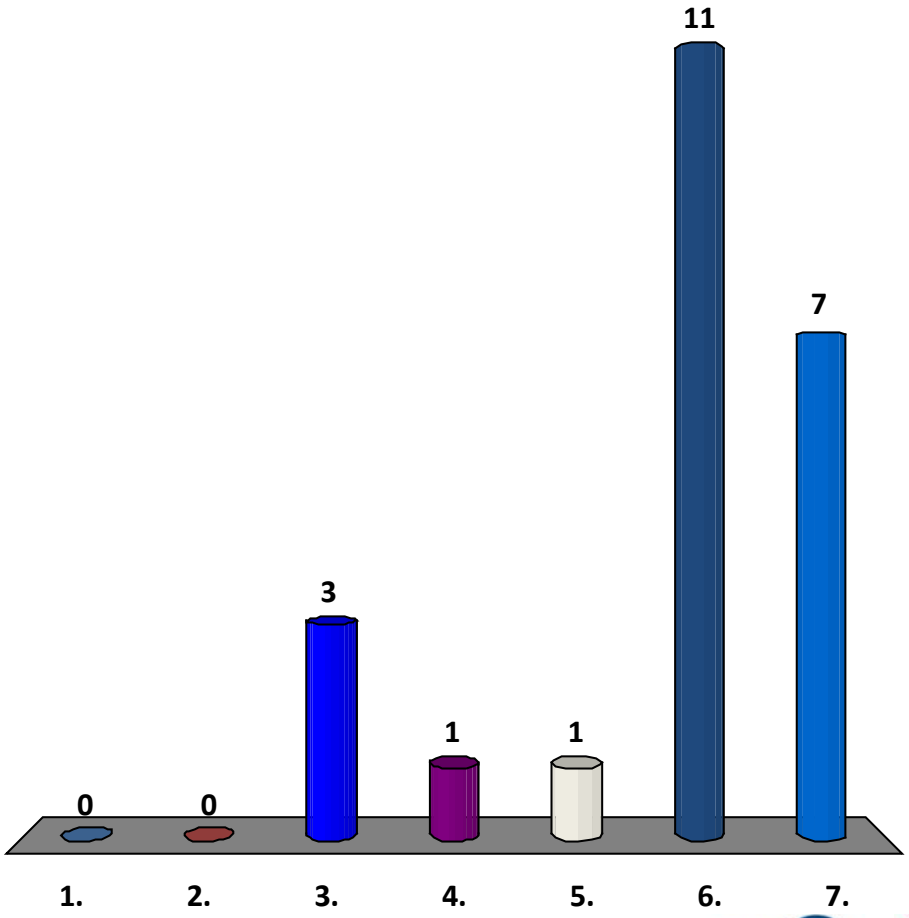
  No. 49 Fairmount - English Woods

Public Feedback Tool: Keypads

- Everyone has input
- Efficient
- Anonymous
- Simultaneous
- Transparent

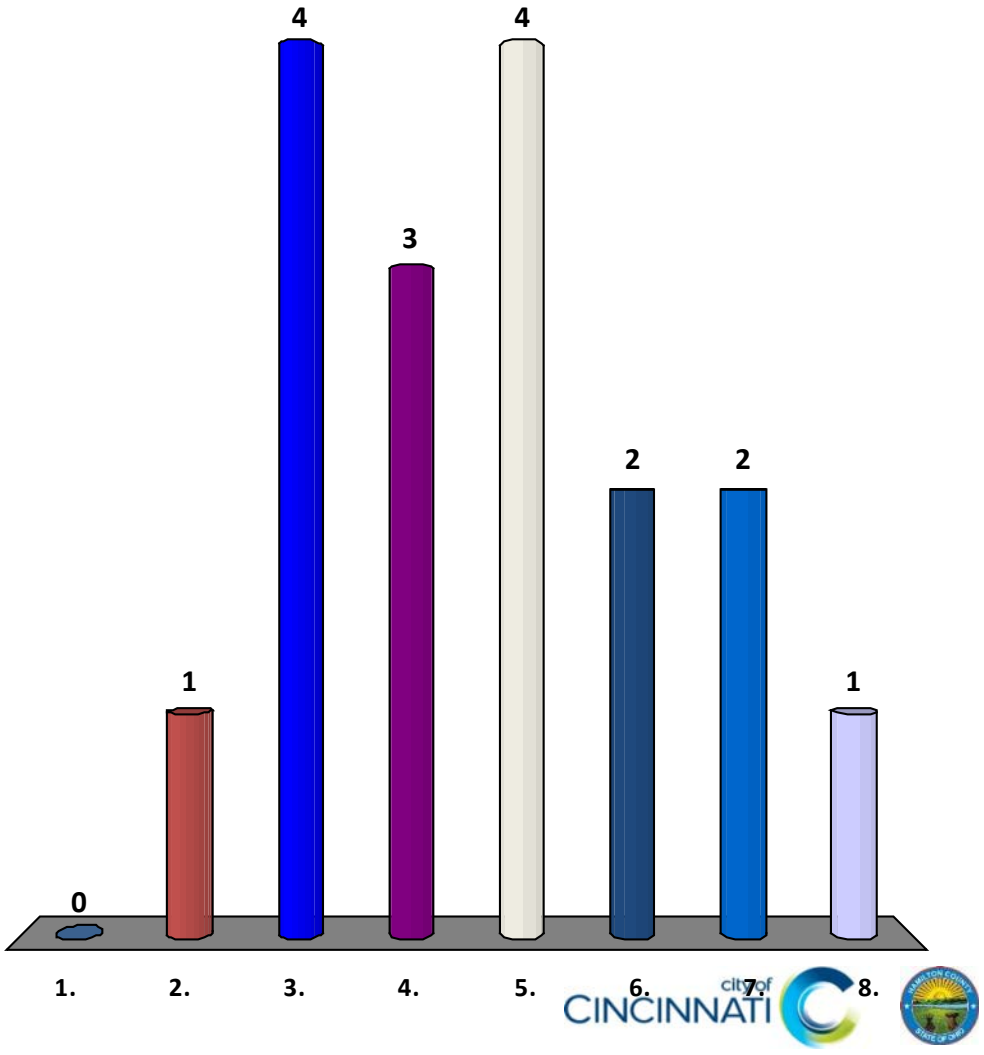
How Did You Hear About this Meeting? (choose up to 3)

1. Radio
2. Newspaper
3. Flyers
4. Neighborhood Councils
5. Television
6. Online-Website
7. Other



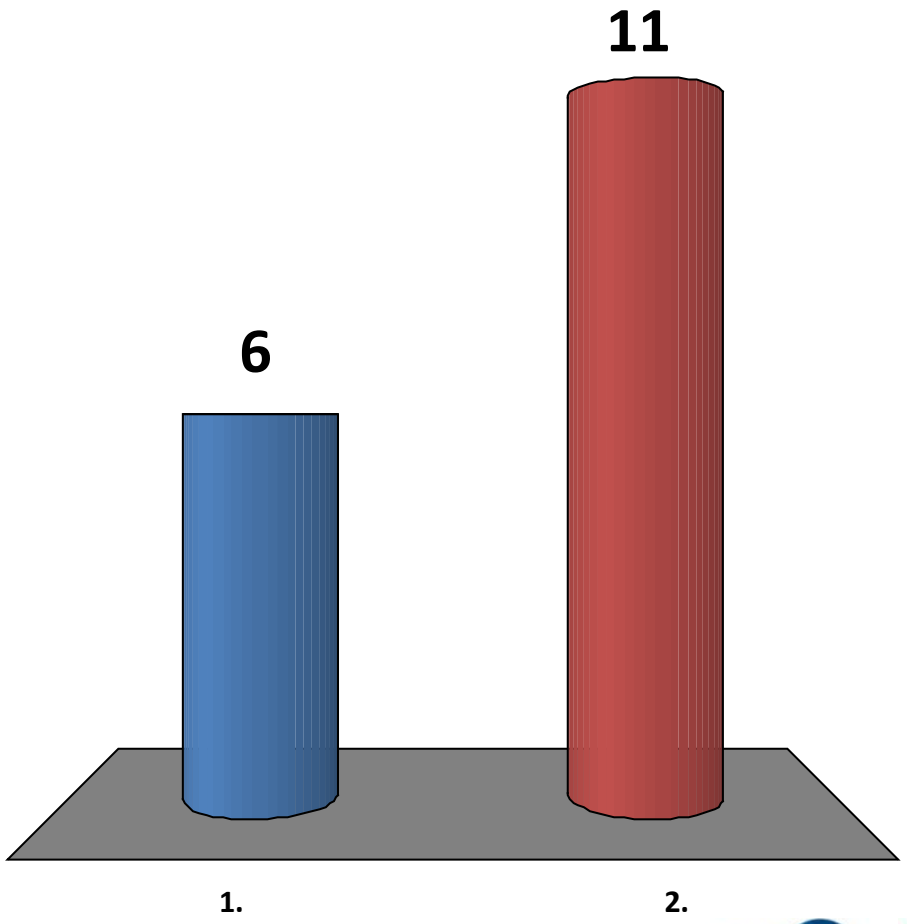
How Young Are You?

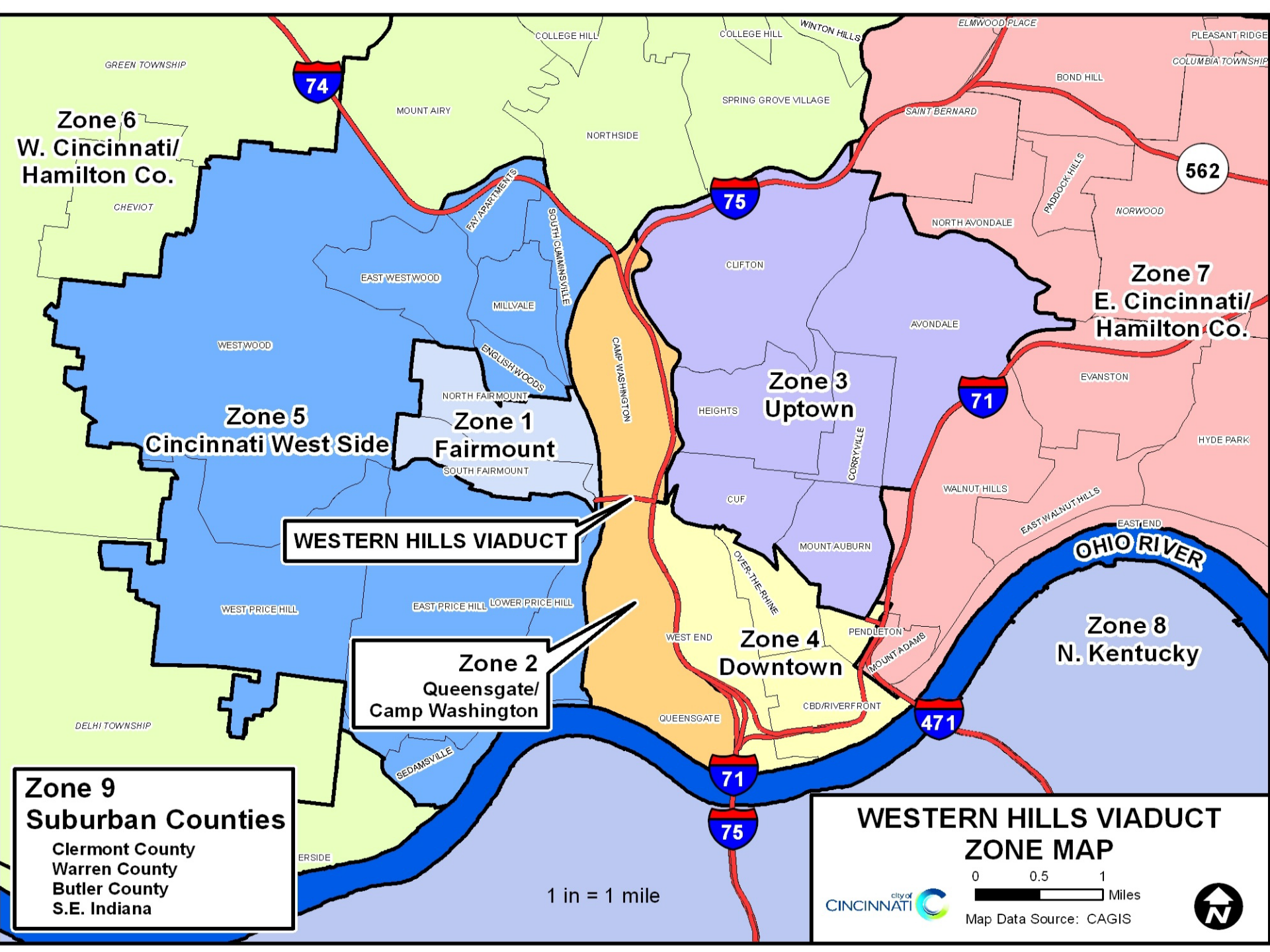
1. 5-15
2. 16-25
3. 26-35
4. 36-45
5. 46-55
6. 56-65
7. 66-75
8. 76-infinity



Male or Female?

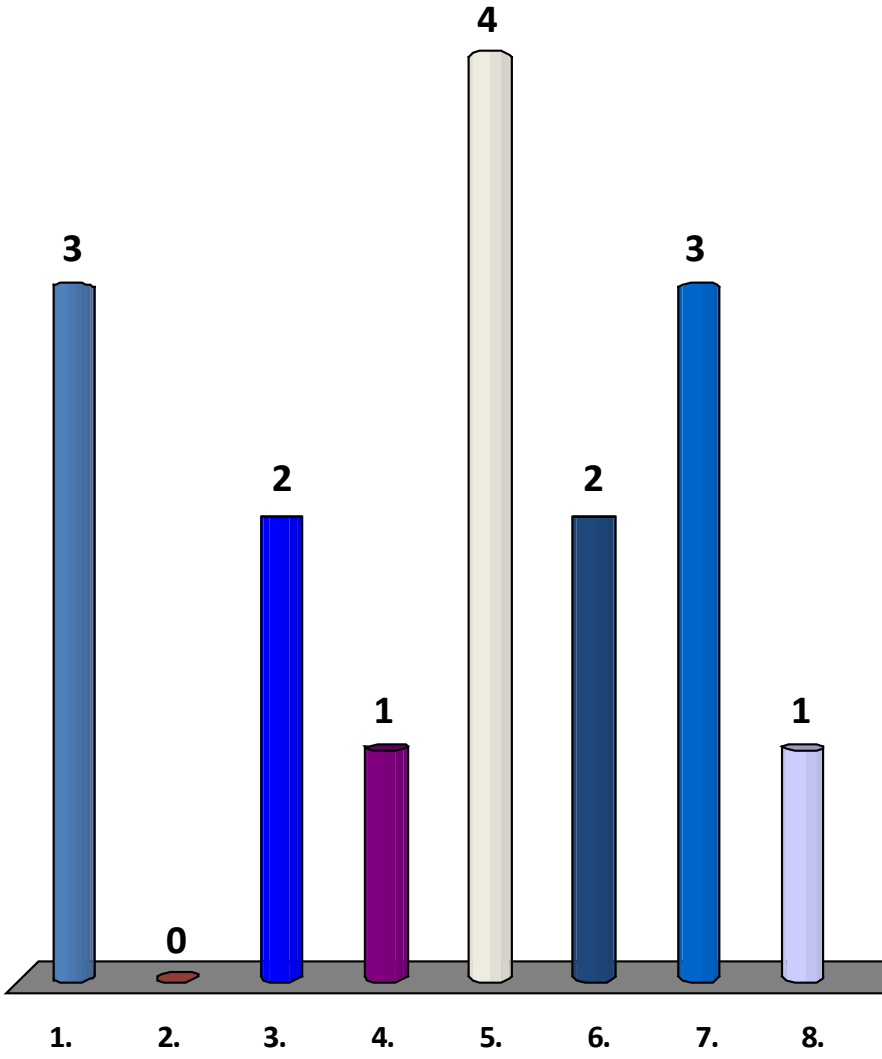
1. Female
2. Male




Zone 6
W. Cincinnati/
Hamilton Co.
Zone 5
Cincinnati West Side
Zone 1
Fairmount
Zone 3
Uptown
Zone 7
E. Cincinnati/
Hamilton Co.
Zone 4
Downtown
Zone 8
N. Kentucky
Zone 2
Queensgate/
Camp Washington
WESTERN HILLS VIADUCT
Zone 9
Suburban Counties
Clermont County
Warren County
Butler County
S.E. Indiana
1 in = 1 mile
WESTERN HILLS VIADUCT
ZONE MAP
0 0.5 1
Miles
Map Data Source: CAGIS
city of CINCINNATI
GREEN TOWNSHIP
COLLEGE HILL
COLLEGE HILL
WINTON HILLS
ELMWOOD PLACE
PLEASANT RIDGE
COLUMBIA TOWNSHIP
BOND HILL
SPRING GROVE VILLAGE
MOUNT AIRY
NORTHSIDE
SAINT BERNARD
PADDOCK HILLS
NORWOOD
NORTH AVONDALE
CLIFTON
AVONDALE
EVANSTON
HYDE PARK
CHEVIOT
FAY APARTMENTS
SOUTH CUMMINSVILLE
EAST WESTWOOD
MILLVALE
WESTWOOD
ENGLISH WOODS
NORTH FAIRMOUNT
SOUTH FAIRMOUNT
CAMP WASHINGTON
HEIGHTS
CORRYVILLE
CUF
WALNUT HILLS
EAST WALNUT HILLS
EAST END
MOUNT AUBURN
OHIO RIVER
OVER-THE-RHINE
WEST PRICE HILL
EAST PRICE HILL
LOWER PRICE HILL
WEST END
PENDLETON
MOUNT ADAMS
CBD/RIVERFRONT
QUEENSGATE
DELHI TOWNSHIP
SEDAMSVILLE
ERSIDE
74
75
562
71
471
71
75

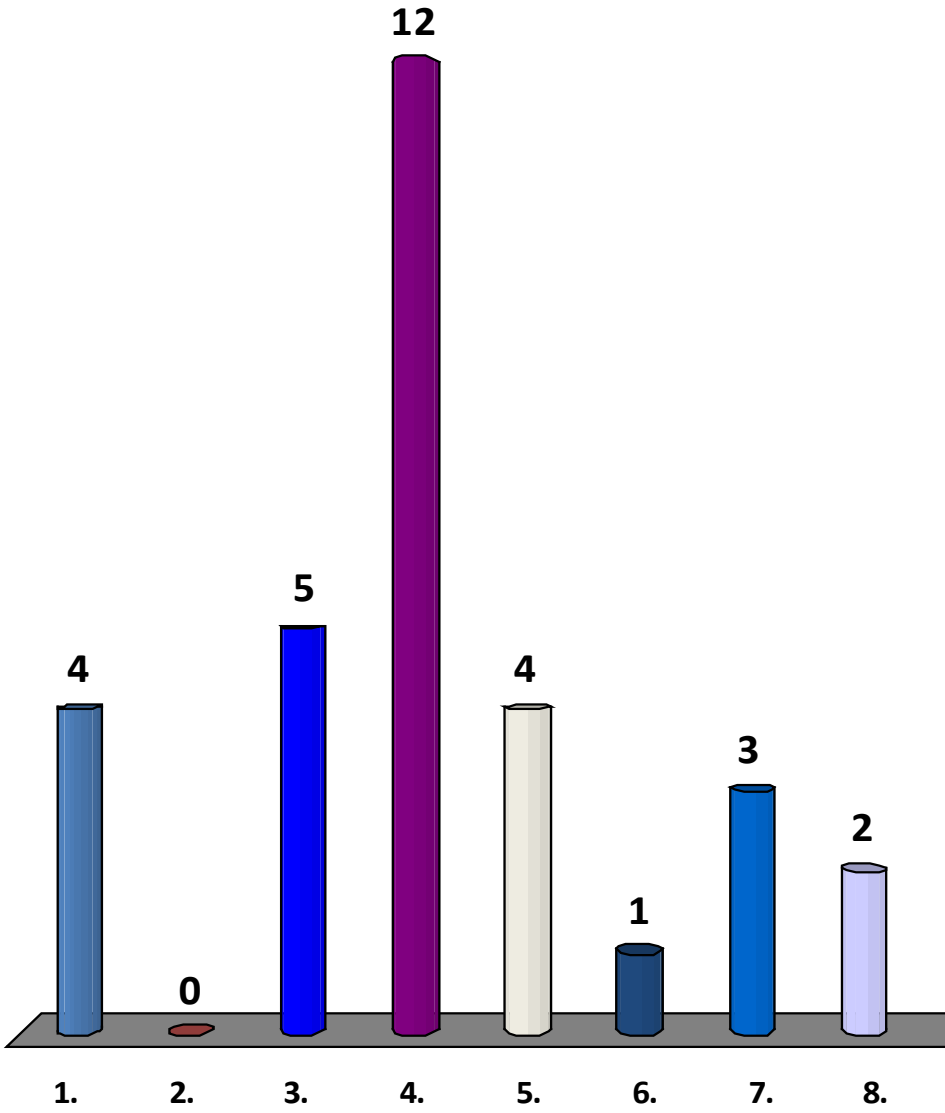
Where do you live?

1. Zone 1: Fairmount Area
2. Zone 2: Queensgate / Camp Washington
3. Zone 3: Uptown
4. Zone 4: Downtown
5. Zone 5: Cincinnati West Side
6. Zone 6: W. Cincinnati / Hamilton County
7. Zone 7: E. Cincinnati / Hamilton County
8. Zone 8: Northern KY.
9. Zone 9: Suburban Counties: Clern Warren, Butler, and S.E. Indiana



Where do you live / work / play / spend your days *(3)*?

1. Zone 1: Fairmount Area
2. Zone 2: Queensgate / Camp Washington
3. Zone 3: Uptown
4. Zone 4: Downtown
5. Zone 5: Cincinnati West Side
6. Zone 6: W. Cincinnati / Hamilton County
7. Zone 7: E. Cincinnati / Hamilton County
8. Zone 8: Northern KY.
9. Zone 9: Suburban Counties: Warren, Butler, and S.E. Indi



Study Timeline

Gathering information on

Existing conditions and goals for the project

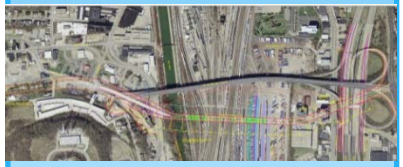
Winter 2012

Discussion of

Conceptual Alternatives

Fall 2013

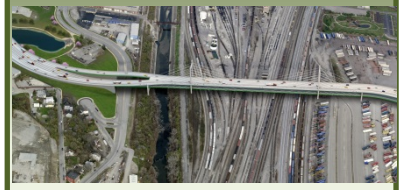
Value Engineering



Feasible Alternatives

Summer 2015

Discussion of



Preferred Alternative

Fall 2016

Western Hills Viaduct

city of CINCINNATI

Project Status

- Project Initiated Summer 2011
- Public Meetings Winter 2012
- Alternatives developed Summer 2012–2013
- Public Meeting Fall 2013
- Refine Alternatives 2014
- Value Engineering Workshop ODOT/FHWA Summer 2015
- Develop Preferred Alternative 2016
- Public Meeting Fall 2016
- Complete Environmental Studies End of 2016
- Select Preferred Alternative Winter 2016/2017
- Secure Funding for Design and Construction-ongoing

Purpose and Need

Purpose: Maintain the transportation link presently provided by the Western Hills Viaduct, which links the west side of Cincinnati and Hamilton County with the downtown/uptown neighborhoods, Spring Grove Avenue, and IR 75.

Need: The progressive structural deterioration of the Viaduct, which has reached the end of its design life, has required shoring portions of the lower deck. Further deterioration could require imposition of load limits in the near future and ultimately require partial or full closure, resulting in a loss of connectivity between surrounding neighborhoods.

Goals and Objectives

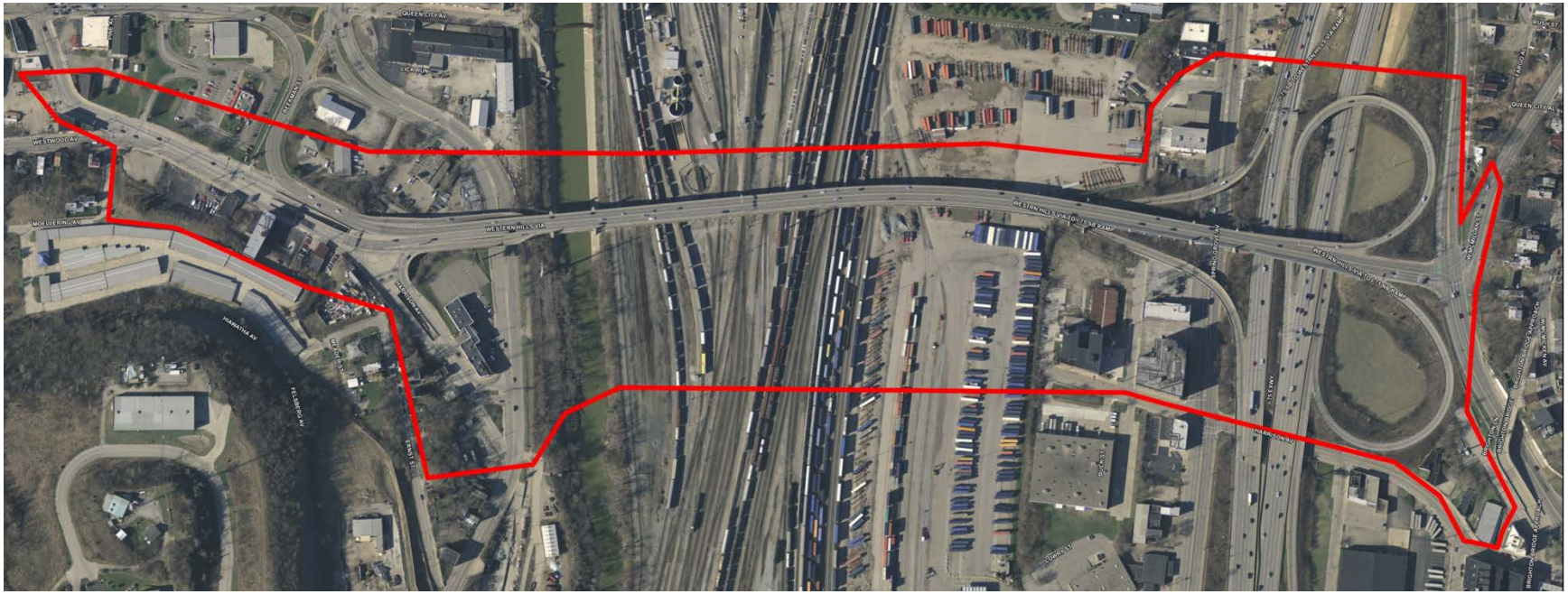
- **Maintain access and connectivity to multiple roads.**
- **Provide a minimum structural condition rating of 7 (Good Condition).**
- **Eliminate or retrofit all existing fracture critical design features.**
- **Reduce and/or eliminate geometric deficiencies to the extent feasible.**
- **Provide an adequate level of service for vehicular traffic.**
- **Improve pedestrian and bicycle accessibility.**
- **Minimize temporary and permanent impacts to railroad operations.**
- **Accommodate the proposed ODOT reconstruction of the IR 75 Interchange and the Metropolitan Sewer District of Greater Cincinnati (MSDGC) Lick Run Greenway Project.**
- **Maintain traffic during construction to the extent practical.**

Input Received

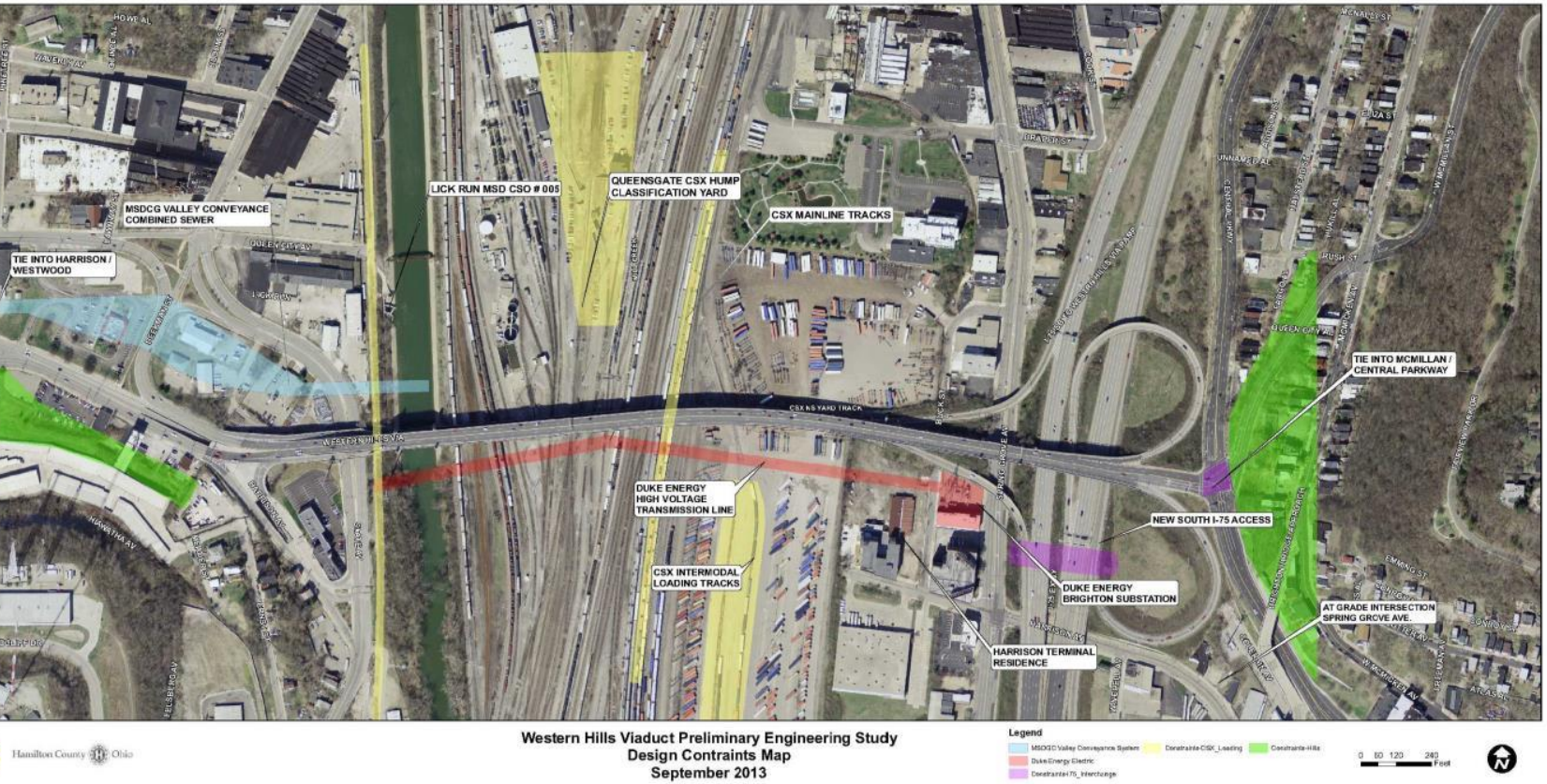
Public meetings were held in January 2012 and September 2013

- Public agreed that Viaduct was in poor condition.
- The Viaduct is mostly used for commuting to Downtown and Uptown from the Western neighborhoods.
- Typical trip lengths are typically 10-30 minutes.
- Bike and pedestrian accommodations are poor and therefore lightly used.
- Maintain access and connectivity to multiple roads.
- Make connections more intuitive to simplify wayfinding.
- Improve geometry and safety.
- Maximum closure period up to six months.
- Consensus for southern alignment
- Preference for double deck configuration with pedestrian access on the outside
- http://www.cincinnati-oh.gov/dote/dote-projects/western-hills-viaduct/

Current Study Area



Design Constraints



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ODOT Coordination

Coordination with ODOT for the reconstruction of I-75 interchange at the Western Hills Viaduct

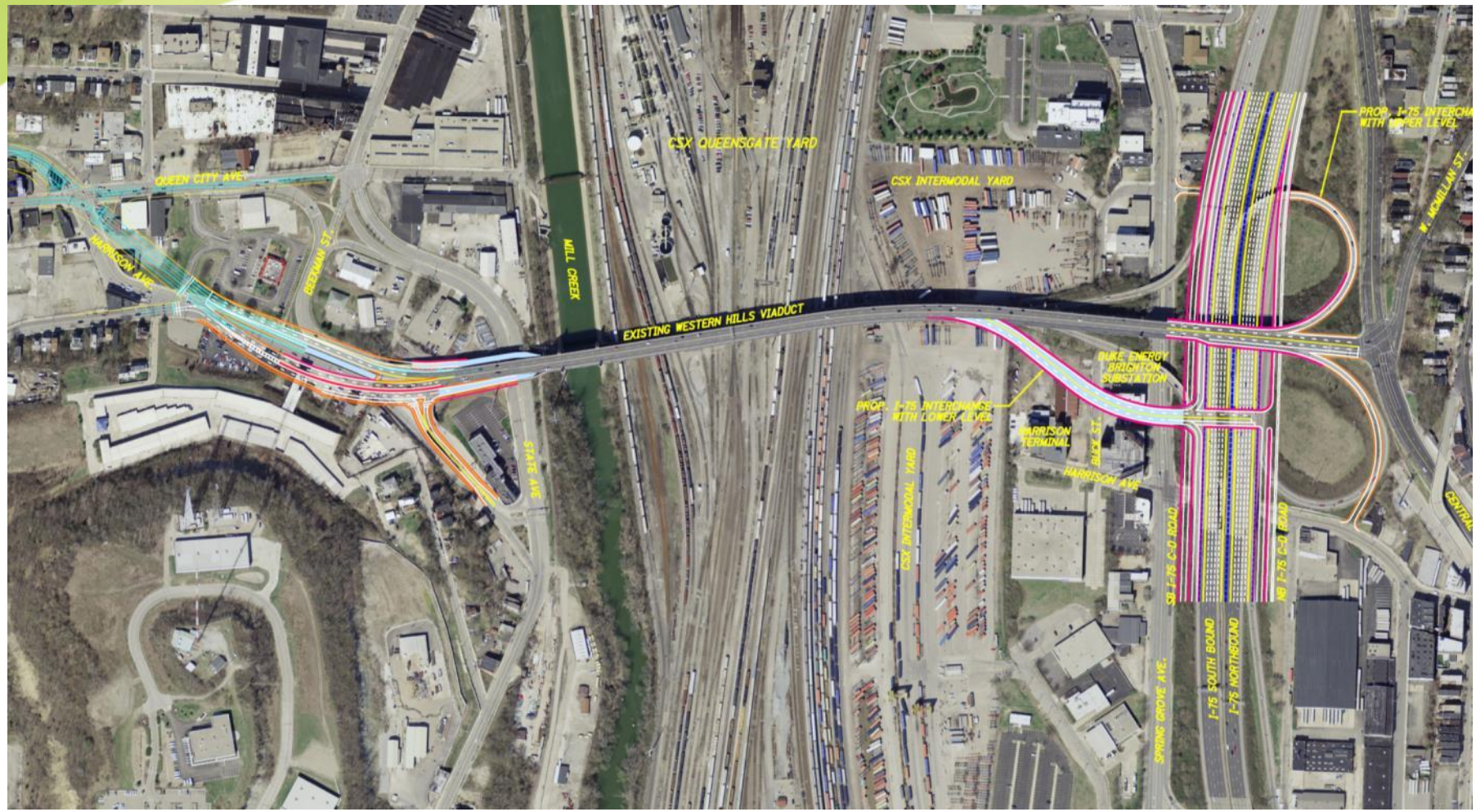
- Partial Interchange (I-75 access provided only to and from the west)
- All Interstate Traffic moved to lower level
- Location of I-75 access ramps fixed due adjacent interchanges
- Relocation of Duke Substation

MSD Coordination

Coordination with MSD for the construction of the Lick Run CSO diversion project.

- Project will change access to and from the west end of the existing viaduct.
- Beekman Street will be removed.
- Opportunity for pedestrian and bicycle linkages.

Rehabilitation Alternative



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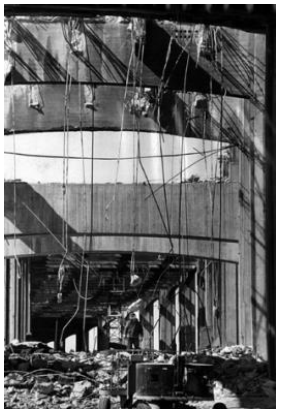
Rehabilitation Alternative

- Design Considerations
  - **Part width construction not practical.**
  - **Long term (3 years +) closure.**
  - **User costs for closure est. $115 M.**
  - **Cannot meet all current design standards.**
  - **Limited ability to improve bike/ped facilities.**
  - **Diminished life expectancy.**
  - **Less right of way requirements.**
  - **Lower construction costs.**


Repair Work On Bridge Would Close It Two Years

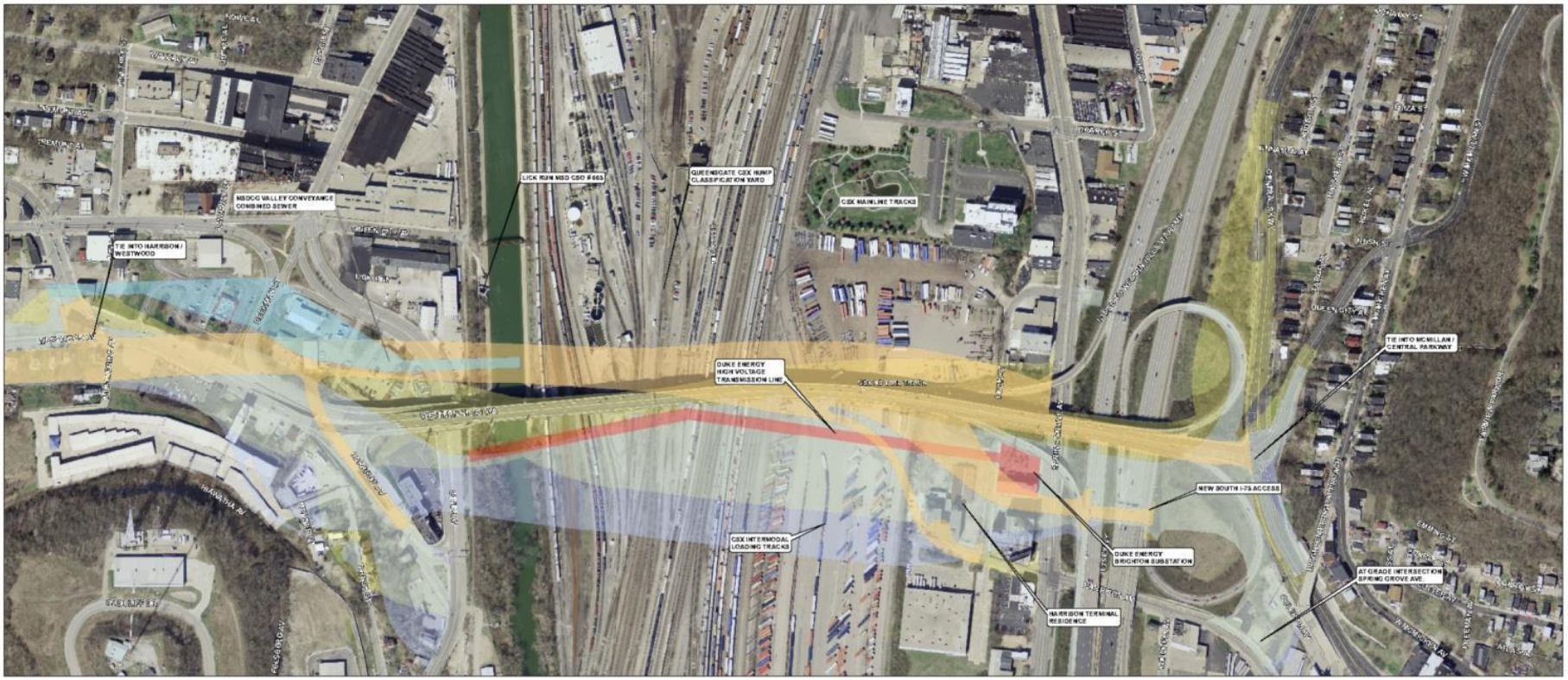
Western Hills Viaduct



Replacement Alternatives

- **Alignments and Profiles**
  - **Approx. 20 alternatives developed and evaluated in 3 corridors.**
  - **Mitigate impacts to Railroad, Duke, and Lick Run VCS project.**
  - **Tie into ODOT I-75 proposed interchange.**

Replacement Alternatives



Replacement Alternatives

Representative Northern Alignment

- Design Considerations
  - **Requires partial demolition of Viaduct during construction (1+ years).**
  - **Interferes with Lick Run VCS.**
  - **Unfavorable approach geometry.**
  - **Impacts CSX Fuel Storage Facility and Hump Track.**
  - **Additional right of way requirements.**
  - **Greater life expectancy.**
  - **Avoids CSX Intermodal Yard.**
  - **Provides improved bike/ped facilities.**

Replacement Alternatives

Representative Middle Alignment

- Design Considerations
  - **Longest duration closure 3+ years due to required demolition prior to construction.**
  - **Temporary support of utilities during construction needed.**
  - **Moderate right of way requirements.**
  - **Greater life expectancy.**
  - **Provides improved bike/ped facilities.**

Replacement Alternatives

Representative Southern Alignment

- Design Considerations
  - **Shortest duration of road closure (6 months or less) due to use of existing Viaduct to maintain traffic during construction.**
  - **Favorable approach geometry.**
  - **Greater life expectancy.**
  - **Provides improved bike/ped facilities.**
  - **Additional right of way requirements.**
  - **Impacts Duke Energy Brighton Substation**

Evaluation Category		Rehabilitation	Northern Alignments	Middle Alignments	Southern Alignments
Purpose and Need Goals	Eliminate Fracture Critical Members	Positive	Positive	Positive	Positive
	Improve Structure Condition Rating	Neutral	Positive	Positive	Positive
	Vehicular Level of Service	Neutral	Positive	Positive	Positive
	Reduce Design Exceptions	Negative	Neutral	Positive	Neutral
	Improved Pedestrian Accommodations	Negative	Positive	Positive	Positive
	Accommodate Bicycle Facilities	Negative	Neutral	Positive	Positive
	Maintain Traffic During Construction	Negative	Neutral	Negative	Positive
	Disruption to Railroad Operations	Negative	Negative	Negative	Negative
Connectivity	Connectivity to Planned I-75 Interchange	Neutral	Negative	Neutral	Positive
	Connectivity to Westwood Blvd.	Neutral	Positive	Neutral	Positive
	Connectivity to State Street	Positive	Negative	Negative	Neutral
	Connectivity to Spring Grove Ave	Neutral	Negative	Neutral	Neutral
	Connectivity to Central Parkway	Neutral	Negative	Neutral	Positive
Railroad/Utlity Impacts	Construction Access	Neutral	Negative	Neutral	Negative
	Impacts to Railroad Intermodal Yard	Neutral	Positive	Neutral	Negative
	Impacts to Railroad Classification Yard	Neutral	Negative	Neutral	Positive
	Impacts to Duke Energy Electrical Lines	Neutral	Positive	Neutral	Negative
	Impacts to GCWW Water Main	Negative	Neutral	Negative	Neutral
	Preserve Portions of Existing Bridge	Positive	Negative	Negative	Neutral
	Impacts to Lick Run VCS	Neutral	Negative	Neutral	Positive
Environmental Impacts	ESA sites	Positive	Neutral	Neutral	Negative
	Properties Impacted	Positive	Neutral	Positive	Negative
	Ecological Impacts	Positive	Neutral	Positive	Neutral
	Cultural/Historic or 4F impacts	Positive	Neutral	Neutral	Neutral
	Environmental Justice	Positive	Neutral	Neutral	Neutral
	Relocations	Positive	Neutral	Positive	Neutral

Legend

- Positive
- Neutral
- Negative

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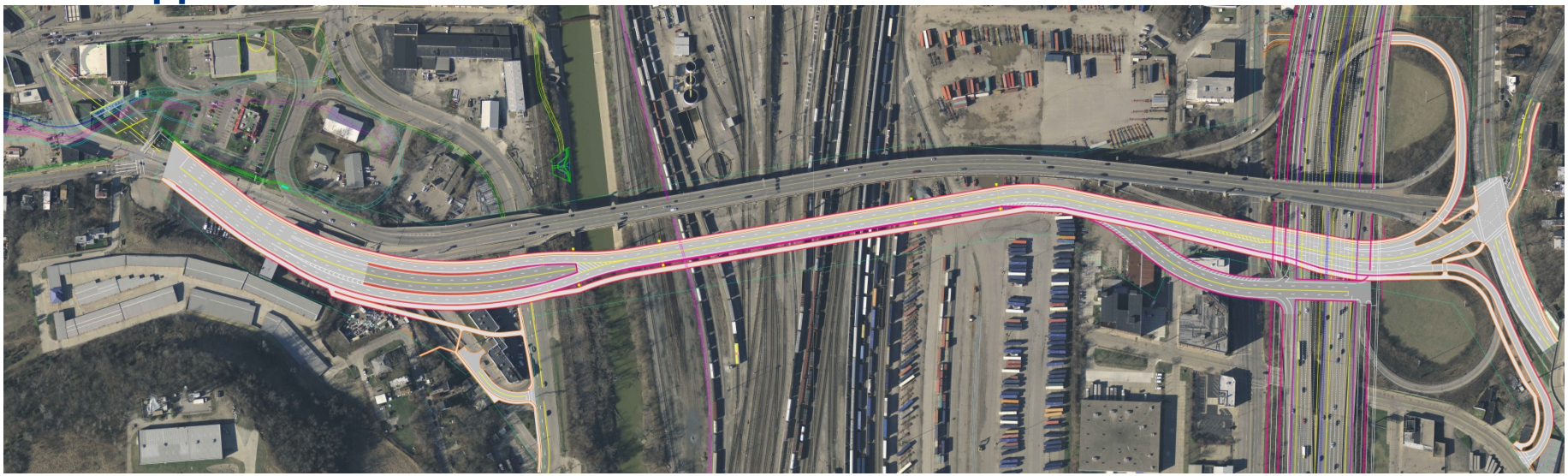
Replacement Alternatives

- Double Deck vs. Single Deck
  - Differing elevations for connections to Central Parkway and I-75.
  - Bottom deck serves as staging for upper deck.
  - Horizontal clearance between existing bridge and Intermodal Terminal is limited.

Recommended Alignment

New long span, double deck bridge south of existing

- Interstate Traffic on Lower Deck
- Local Traffic and Bike/Peds on Upper Deck
- Ties into relocated Harrison Avenue on the West Approach
- Ties into new I-75 Interchange and existing Central Parkway on East Approach



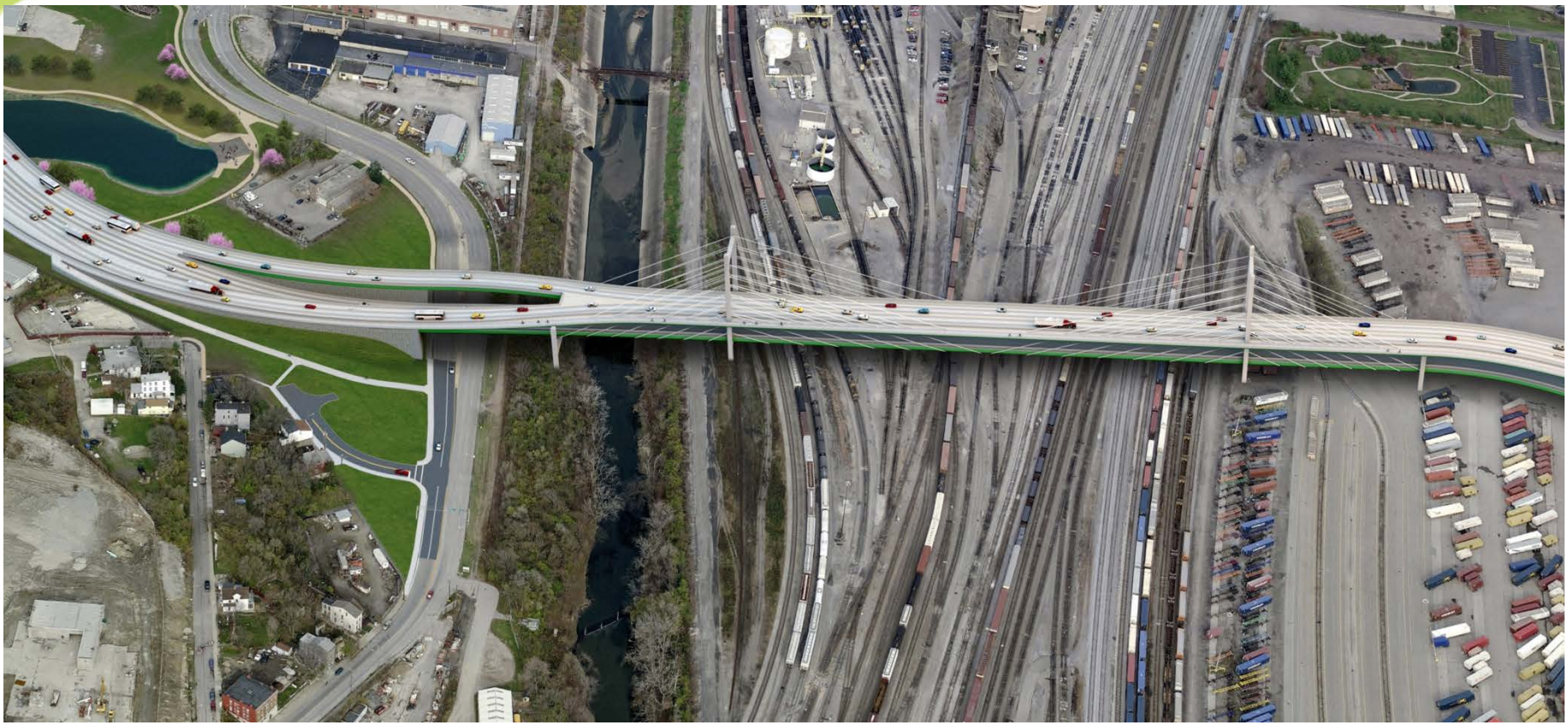
Recommendation

New double deck bridge south of existing

- **Minimizes closure duration**
- **Minimizes potential construction delays**
- **Meets current design standards**
- **Longest life expectancy**
- **Least ongoing maintenance costs**
- **Improved bike and pedestrian accommodations**
- **Less impact to railroad operations during construction and long term**

Replacement Alternative

West Approach



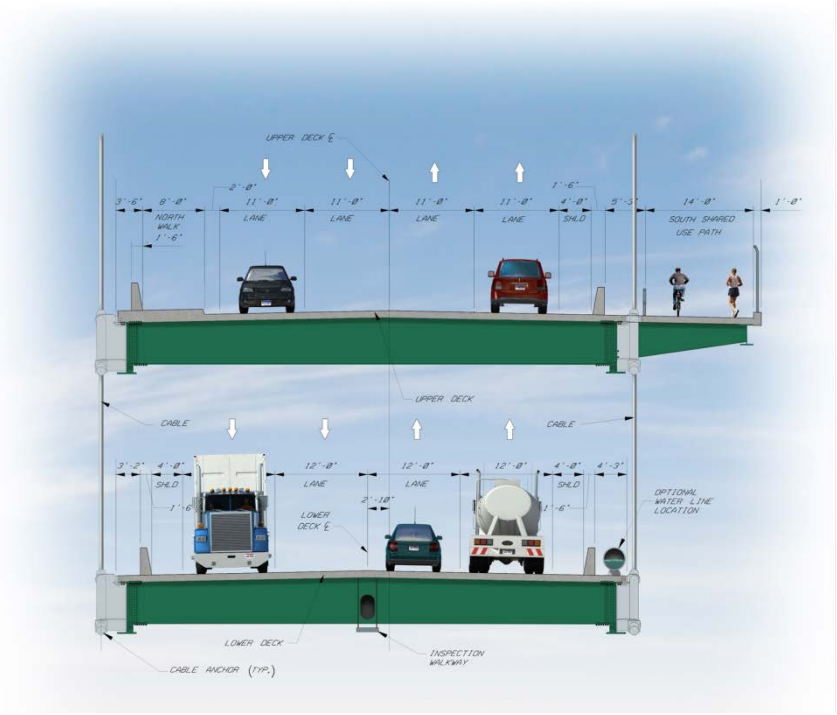
Replacement Alternative

East Approach

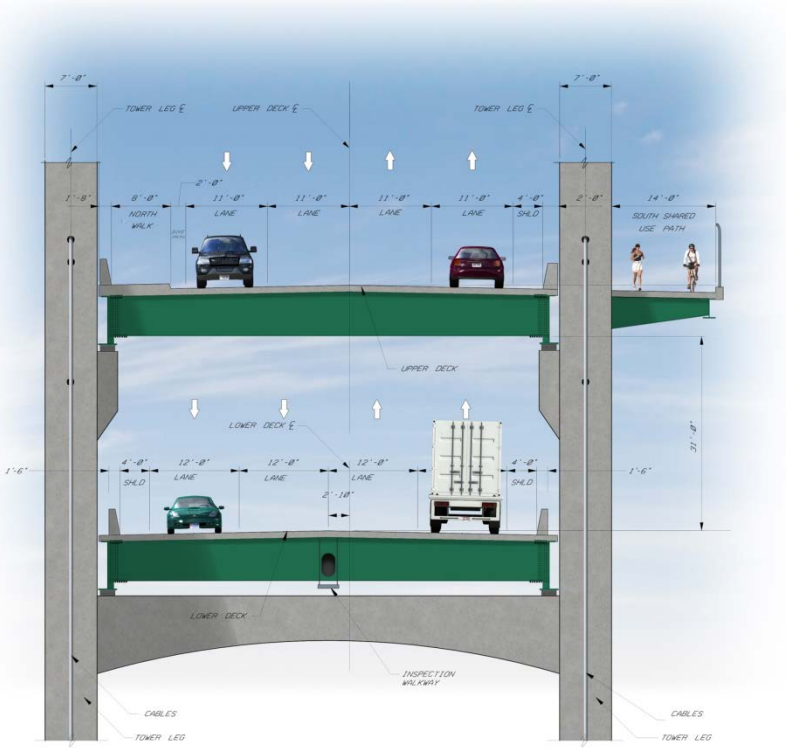
Replacement Alternative

Main Span Cross Sections (Looking East)

Mid Span



Tower



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We need your thoughts.

- **We have given you a lot to think about, and explained why this alternative is preferred, all things considered.**
- **It will be a few years before we move to construction on the project.**
- **Every project has both benefits and challenges.**
- **We'd like you to help us 'take stock' of where we are, regarding both:**
  - **A) The best parts of the project, and**
  - **B) Whatever considerations or concerns you might have, going forward**

Regarding the overall project plan, what are its best aspects? (Nov. 29)

1. No more falling concrete
2. Handicapped accessible
3. Provides pedestrian and bikeways
4. Better connection to McMillan
5. Cable stay design
6. NB I-75 exit switched from LH side to RH side
7. I-75 traffic on a separate, dedicated deck
8. Could accommodate light rail
9. Greater vertical clearance between decks

Regarding the overall project plan, what are its best aspects? (Dec. 1)

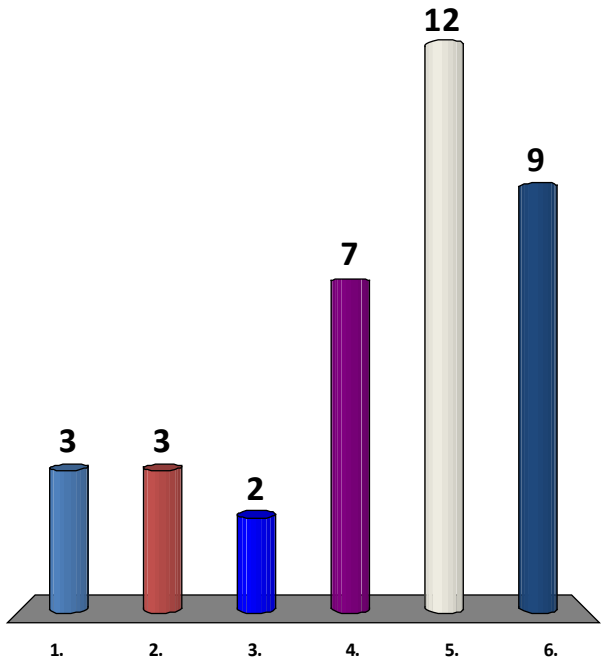
1. Could accommodate light rail
2. Provides bike lane
3. Provides pedestrian lane
4. Improved connectivity

Regarding the overall project plan, where do you see as the most important considerations? (Nov. 29)

1. Breakdown lane width?
2. Keep water main on new viaduct for maintenance access?
3. Are ramps onto I-75 too tight?
4. How will bike / ped lanes connect to rest of network?
5. Will it accommodate bus system and stops?

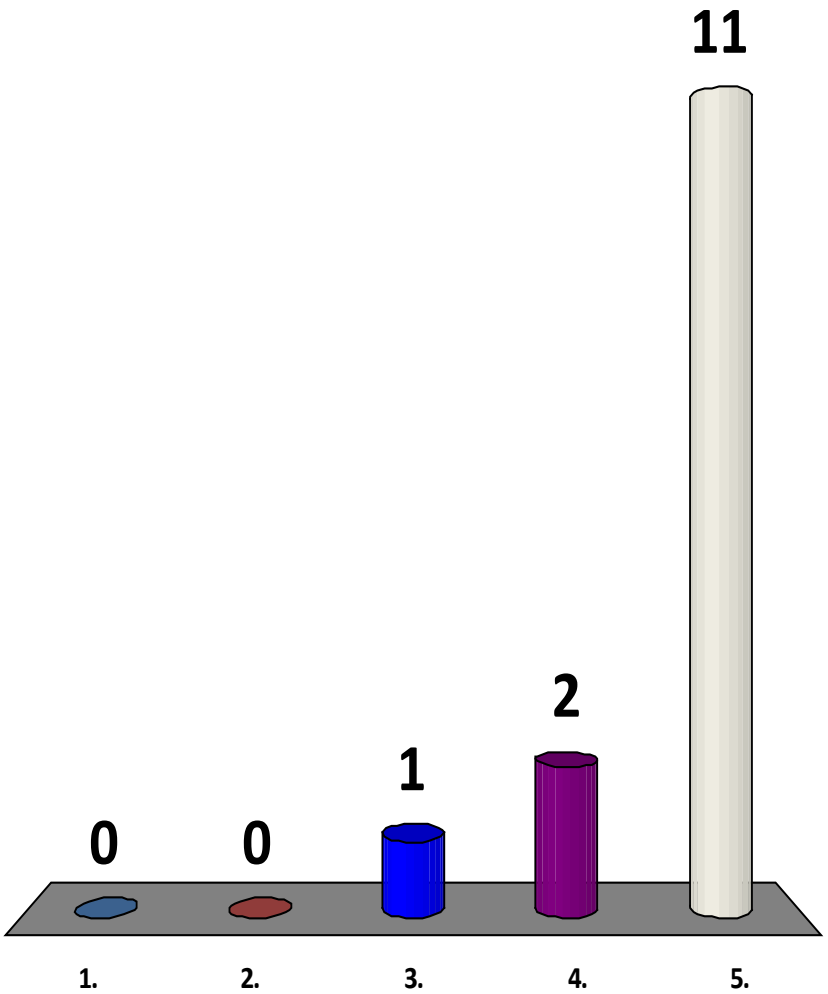
Regarding the overall project plan, where do you see as the most important considerations? (Dec. 1)

1. Project coordination re: construction
2. Alternatives for maintaining traffic during construction
3. Preserving multi-modal options
4. Expanding multi-modal alternatives
5. How will it be financed?
6. 2028 is too far away! (Build it asap).



How suitable do you think this proposed plan is for replacing the Viaduct?

1. Very Unsuitable
2. Somewhat Unsuitable
3. Neutral
4. Somewhat Suitable
5. Very Suitable



Mean = 4.71

Phasing Plan

- **The replacement of the Viaduct will be phased into multiple projects as funding allows.**
- **Timing is subject to change.**

Year	Project	Total Cost
2017	Remove South Utility Trough	$3.2M
2018	Viaduct Repairs	$5.3M
2019	Remove North Utility Trough	$3.2M
2020	Building Dem. and W. Approach Partial Demolition and Reconstruction	$15.0M
2021	Viaduct Repairs	$5.3M
2021	Eastern Approach Demolition and Reconstruction	$8.5M
2022	Duke Substation Relocation Construction	$10.0M
2023	Mill Creek Bridge & Bypass Track Relocation	$8.0M
2025	Viaduct Replacement Project	$231.0M
2028	Demolish Existing Viaduct	$20.5M
		$310.0M

Next Steps - Funding

- **Project is currently funded only through Preliminary Engineering which is scheduled to be completed at the end of 2016 or early 2017.**
- **$5.4M ($6.75M with Local Match) secured through OKI for Right-of-Way Acquisition.**
- **Recommended for award by the Ohio Department of Transportation's Transportation Review Advisory Council (ODOT – TRAC) for:**

  $5.0M to start Detailed Design

  $5.0M for additional Right-of-Way Acquisition

  TRAC board vote to be held January 26, 2017.
- **FASTLANE grant application being considered.**

Additional Information

For additional information:

http://www.cincinnati-oh.gov/dote/dote-projects/western-hills-viaduct

or contact:

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Questions?

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