



Developing Trails in NEO

Concepts, Challenges, and
Technology

May 31, 2018
Lago East Bank

Sean E. McDermott, P.E.
Chief Planning and Design Officer
Cleveland Metroparks





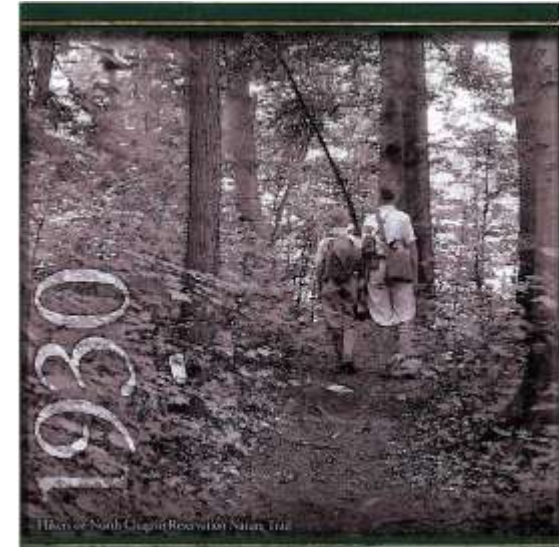
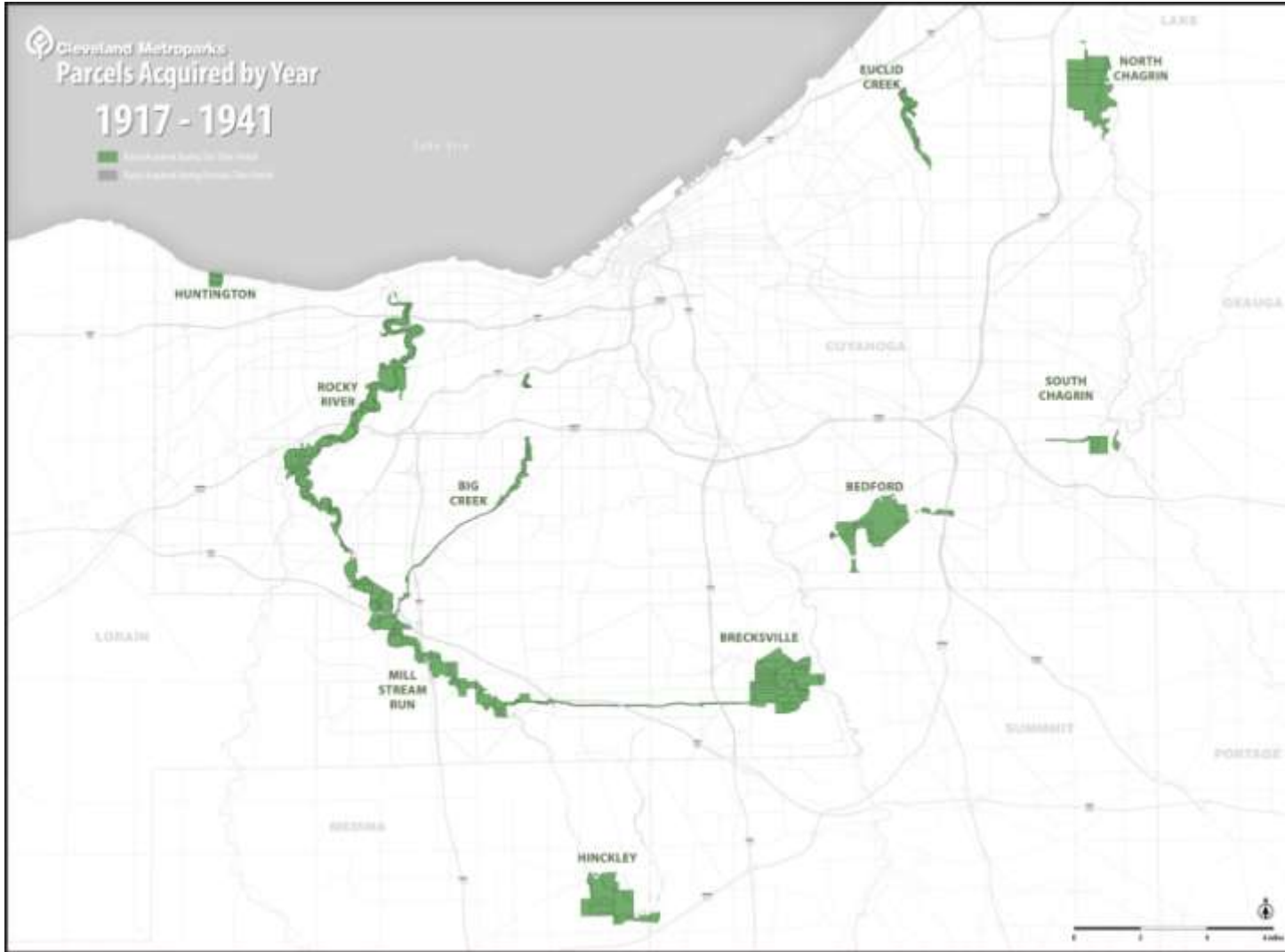
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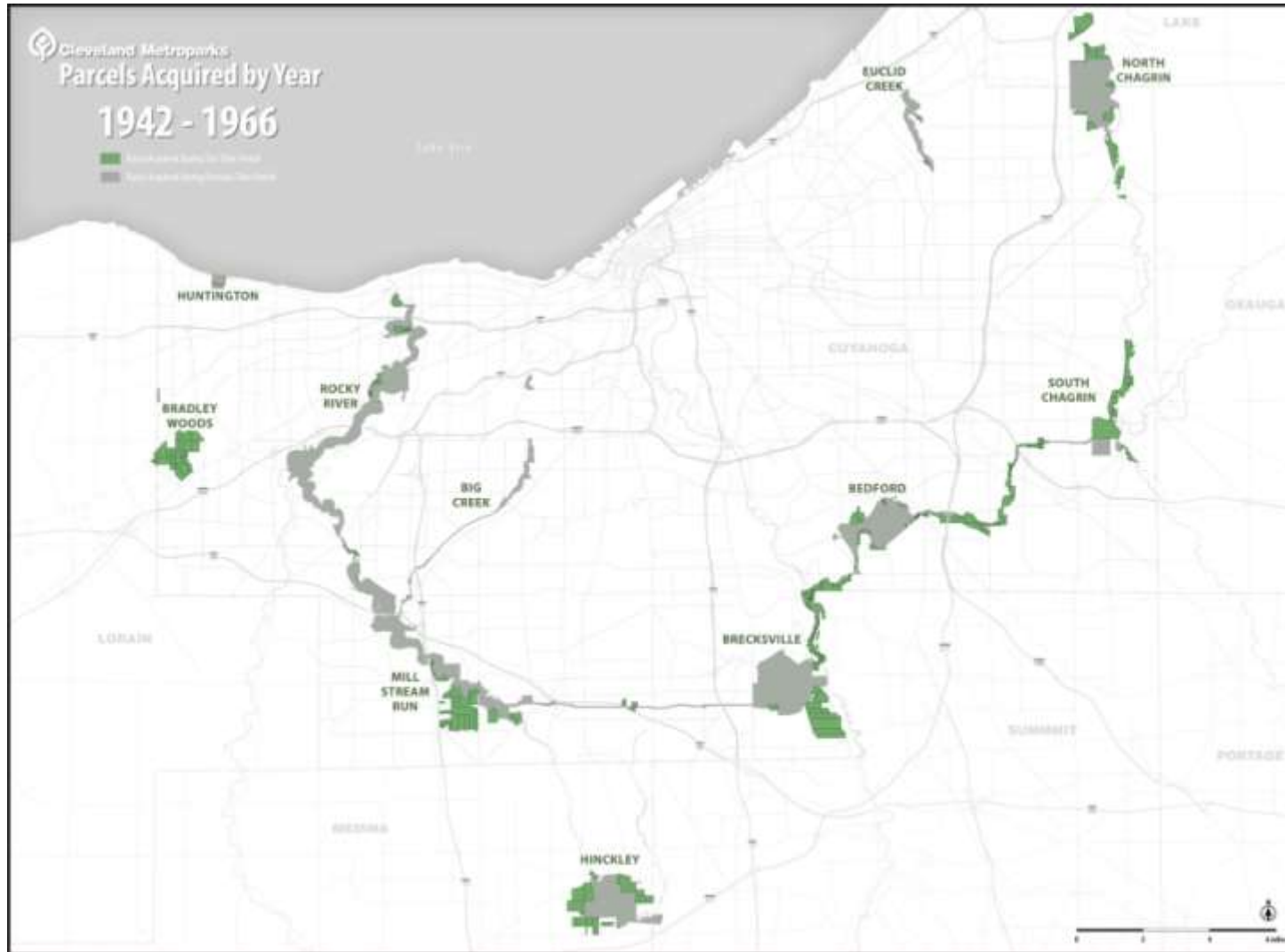
- Trail Development
- Use of Technology
- Cuyahoga River Water Trail



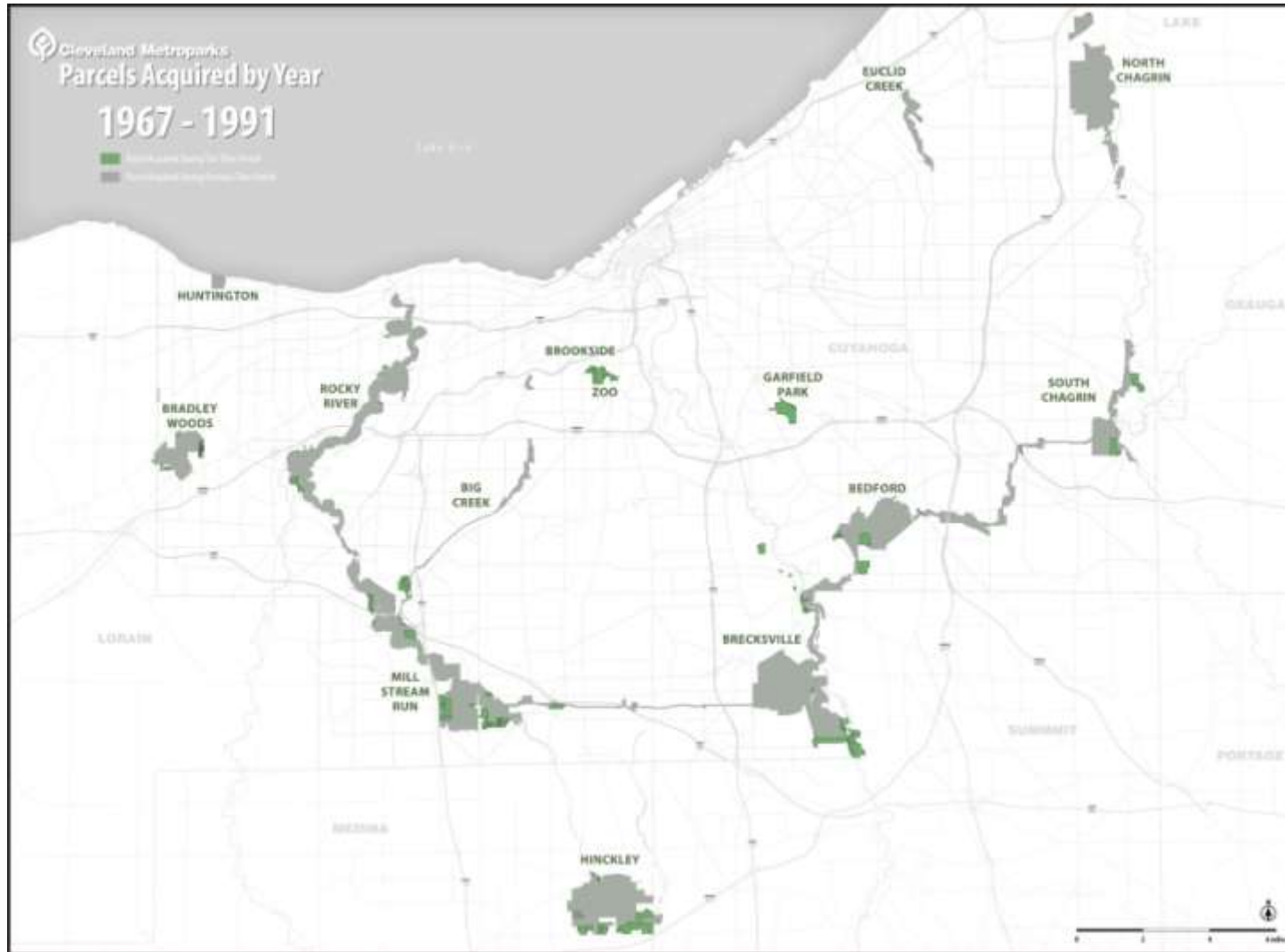
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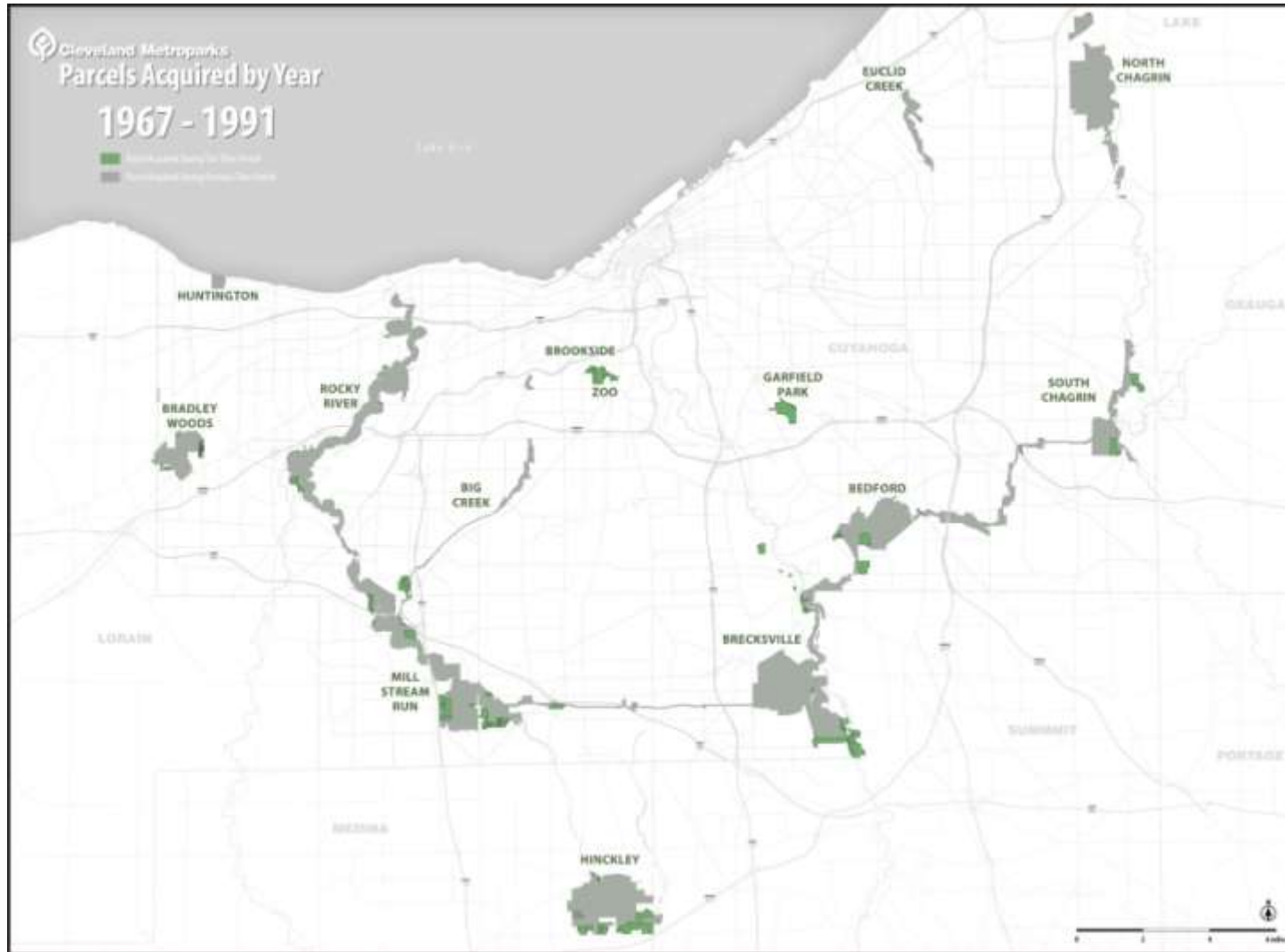
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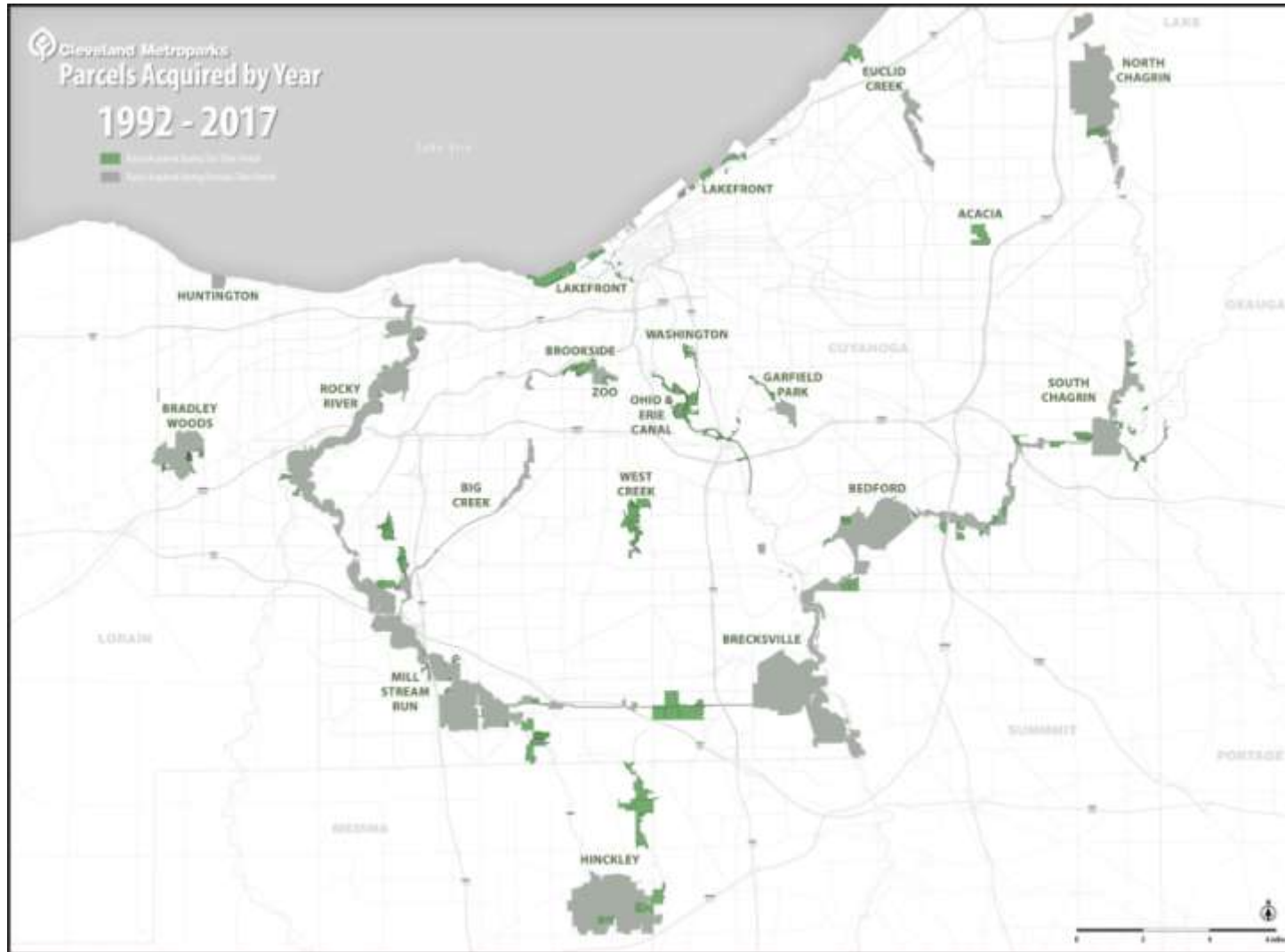
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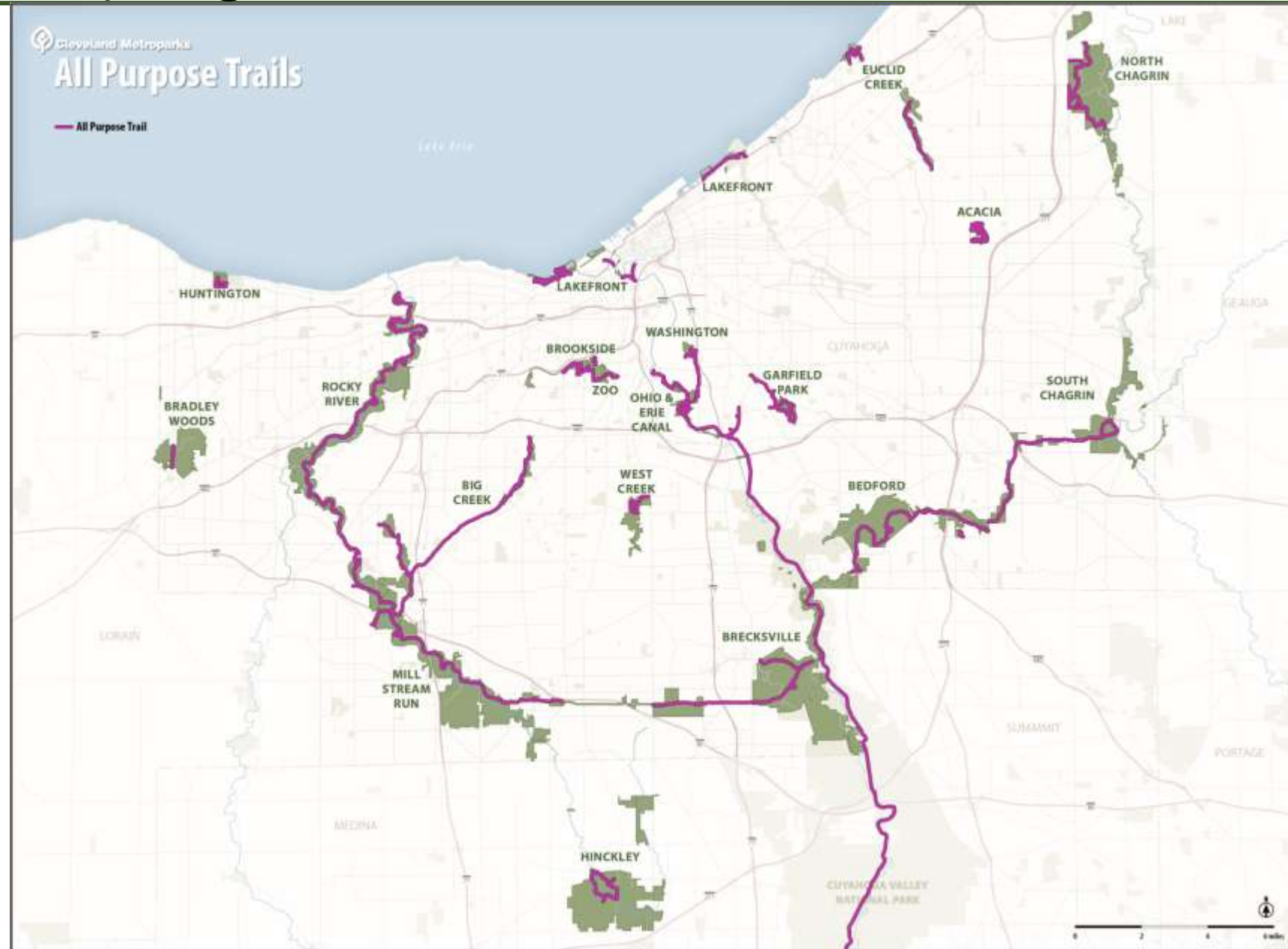
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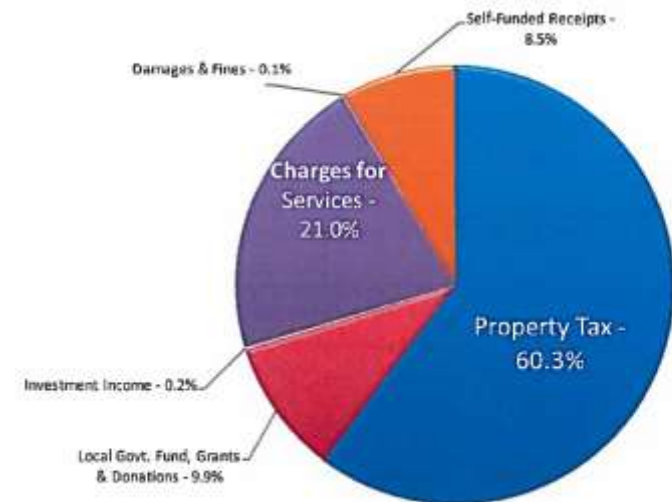
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Cleveland Metroparks – Quick Facts

- Created in 1917
- Subdivision of the State of Ohio – ORC 1545
- Governed by Board of Park Commissioners
- 23,519 acres
- 18 Reservations & Cleveland Metroparks Zoo
 - 8 Reservations within City of Cleveland
 - Acreage in 48 diverse communities
 - Acreage owned in 6 counties
- 8 Golf Courses
- 18.5 million recreational visitors
 - +19,000 programs
- Supported by tax levy
- 300 miles of trails

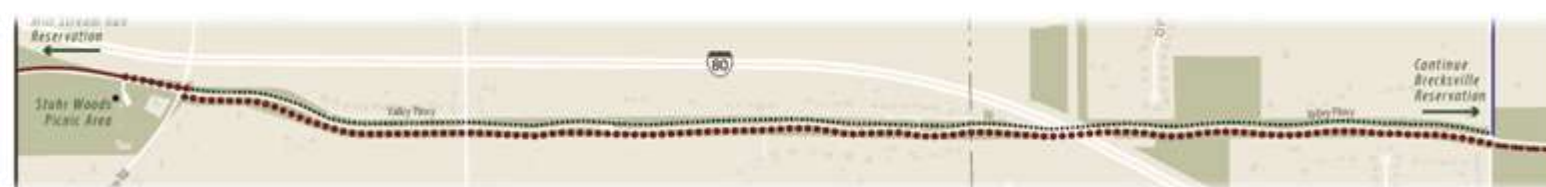


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- Trail Development Challenges
 - Right of Way / Real Estate
 - Political Considerations
 - Physical Barriers
 - Roadways, railroads, watercourse, etc.
 - Utility Corridors
 - Natural Resource Protection
 - Budget and Funding
 - Project Delivery



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- Trail Development Challenges

- Right of Way / Real Estate
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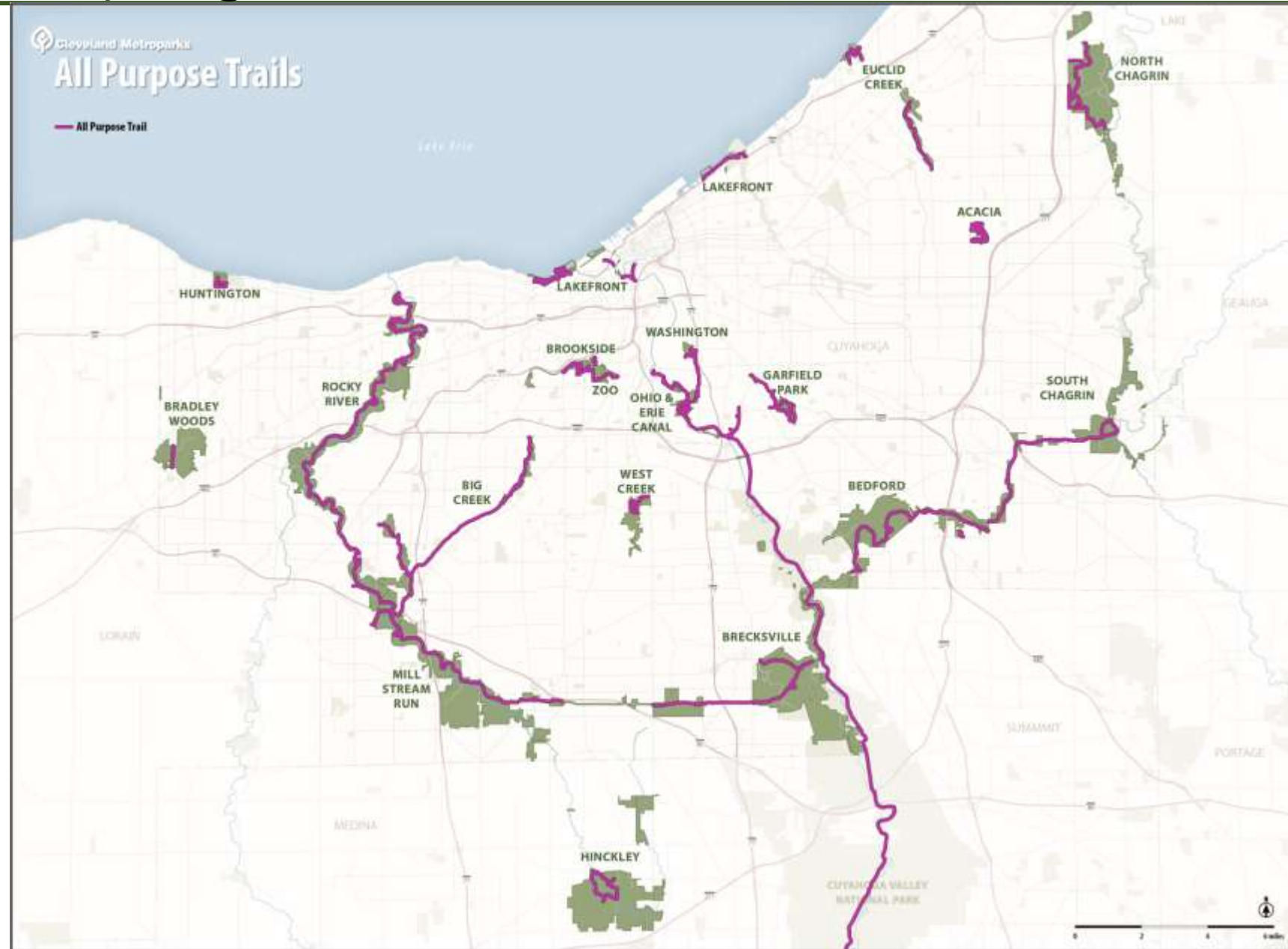
Example Projects

- Valley Parkway Connector Trail
- Mill Creek Connector Trail
- TIGER Trails
 - Connector Trails
 - Whiskey Island Connector
 - Redline Greenway
 - Wendy Park Bridge
- Water Taxi
- Fort Hill Steps

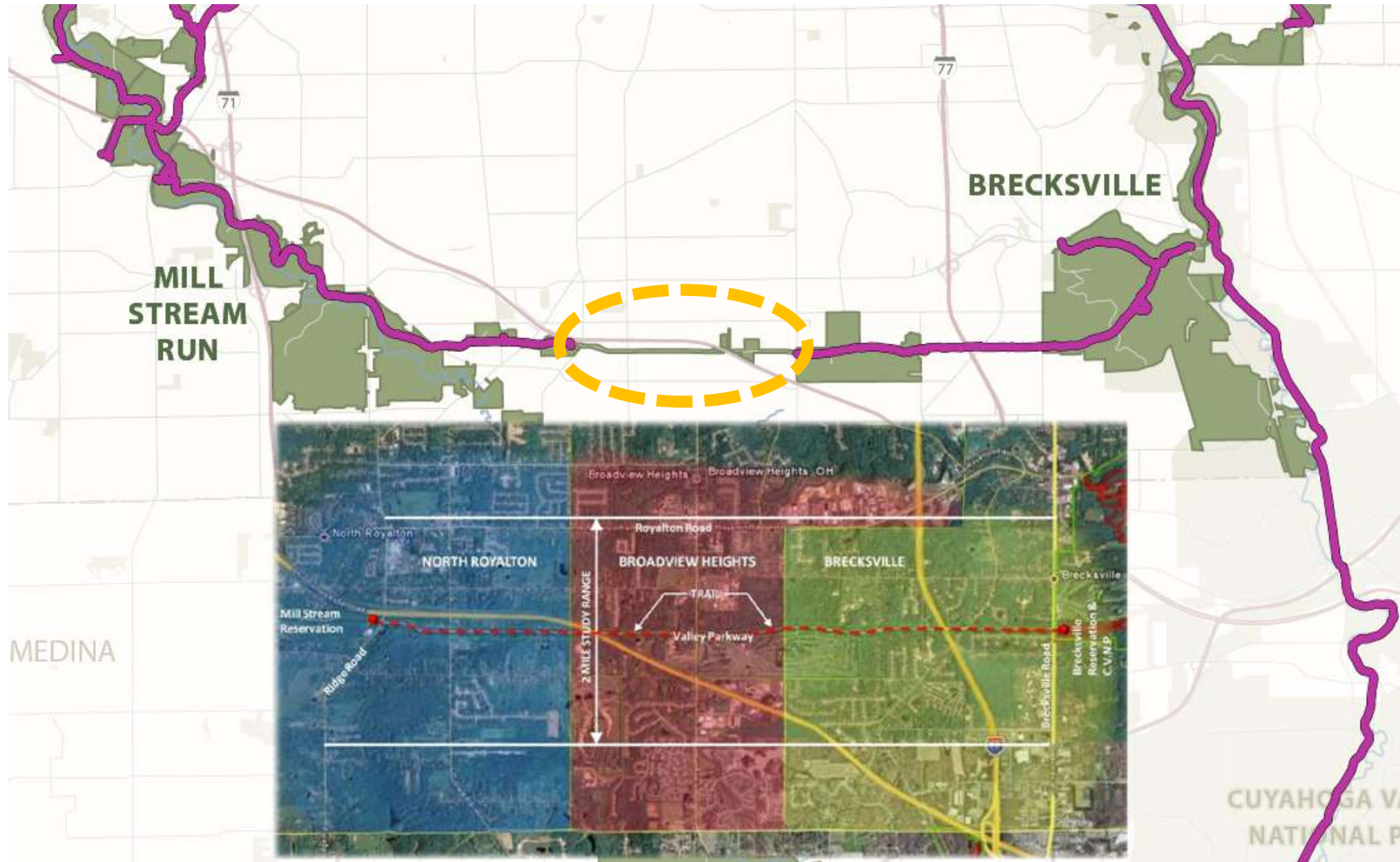
Planning Initiatives

- Metroparks Reservation Plans
- Cuyahoga Greenways
- Vision for the Valley

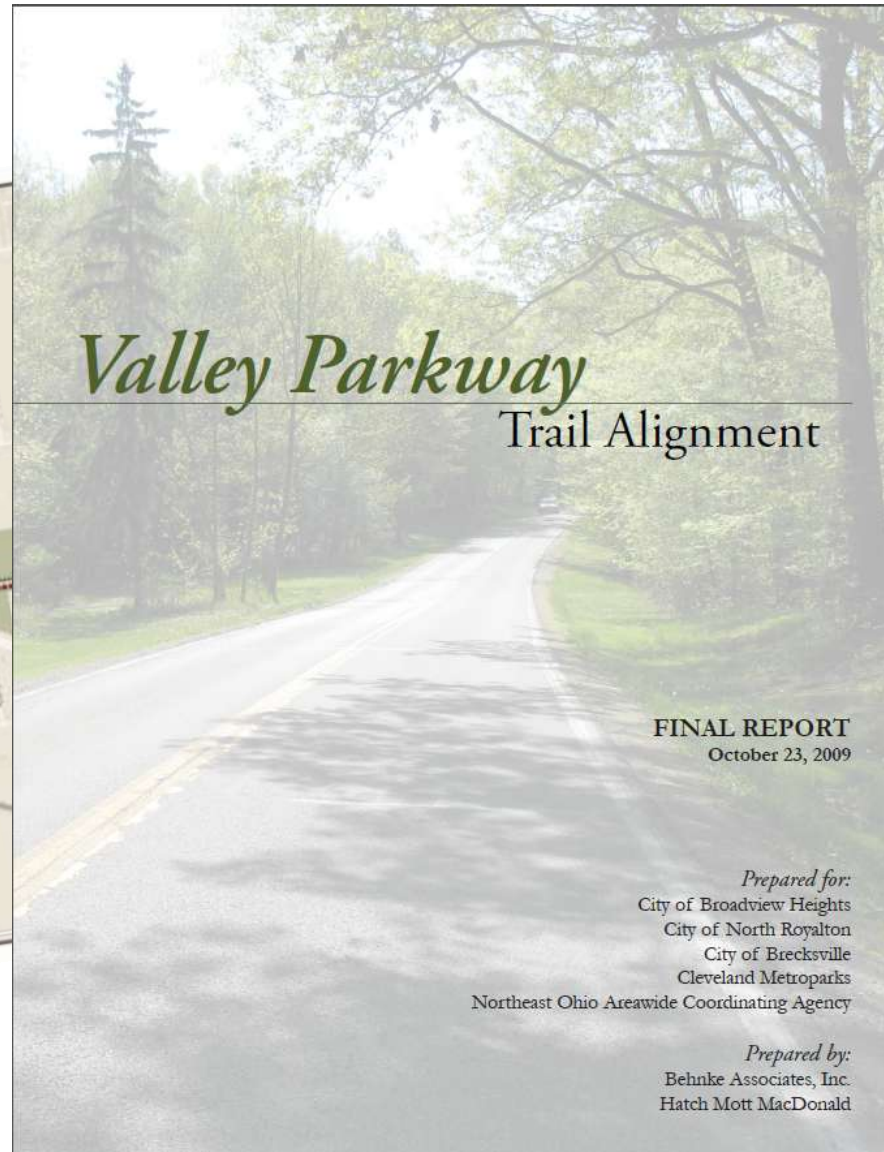
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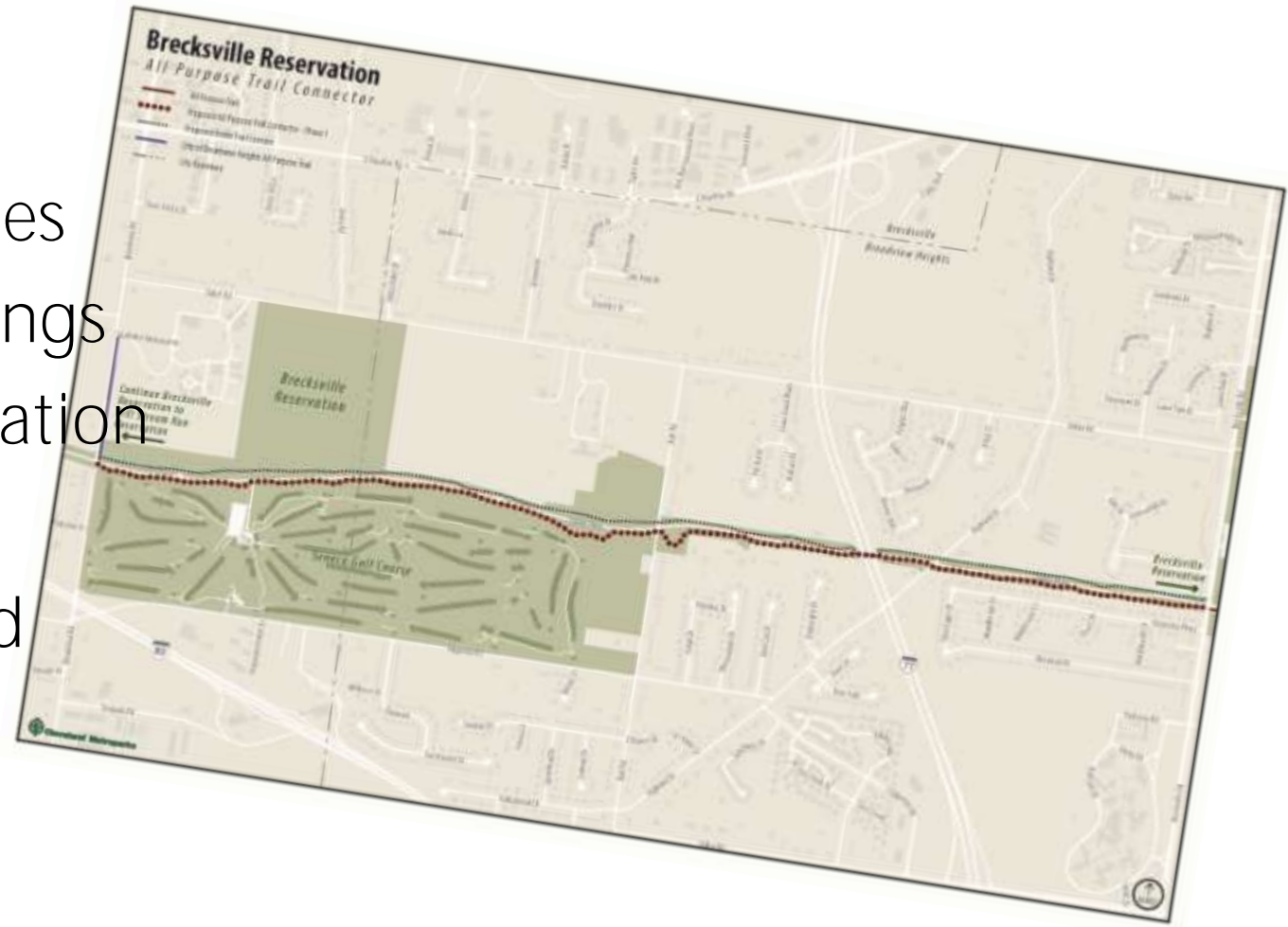
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Valley Parkway Connector Trail – Phases I and II

- 2009 TLCI Study
- All right-of-way owned in fee
- Three supportive municipalities
- I-77 crossing and utility crossings
- Wetland avoidance and mitigation
- 7 funding sources (\$4.8M)
- Phase I – LPA Design-Bid-Build
- Phase II – Design-Build

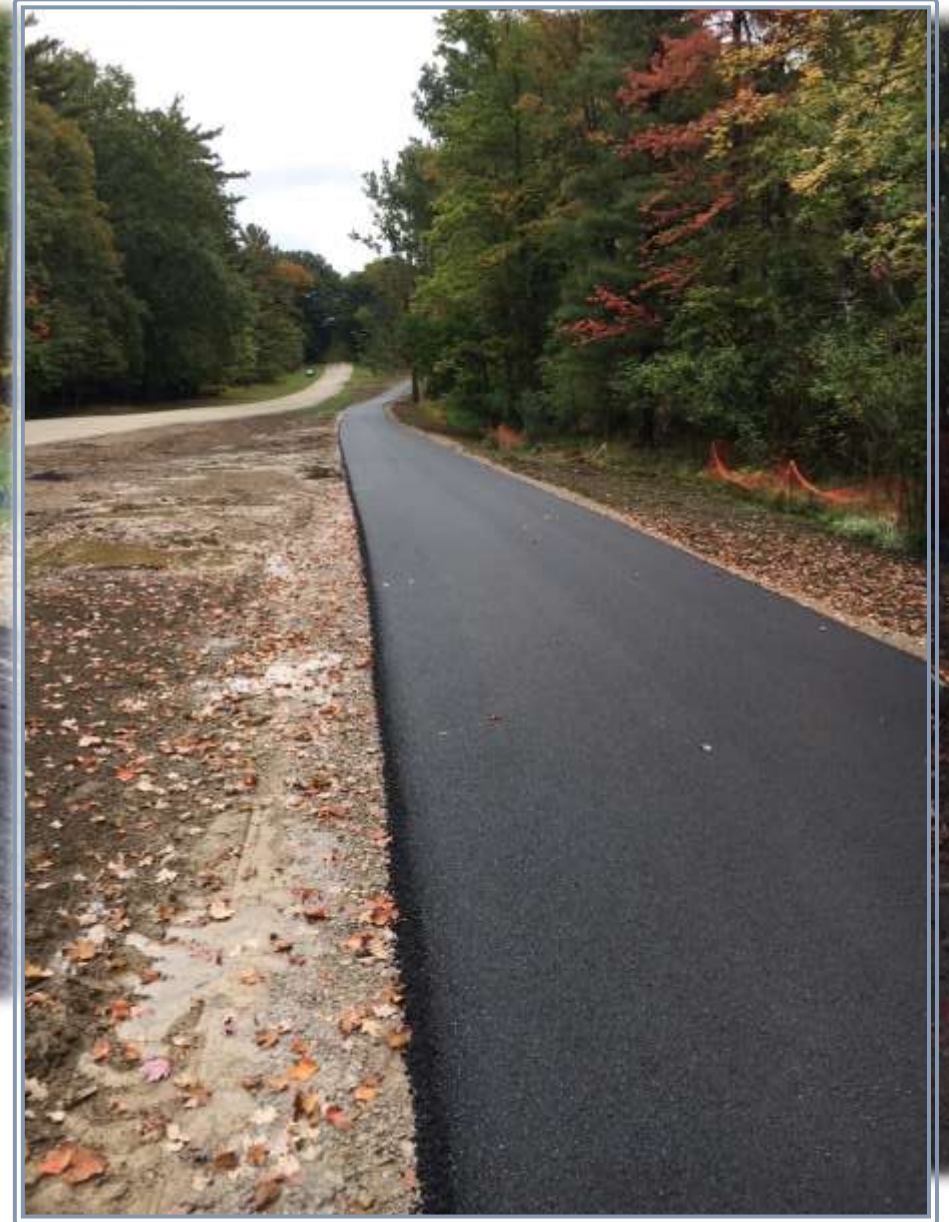


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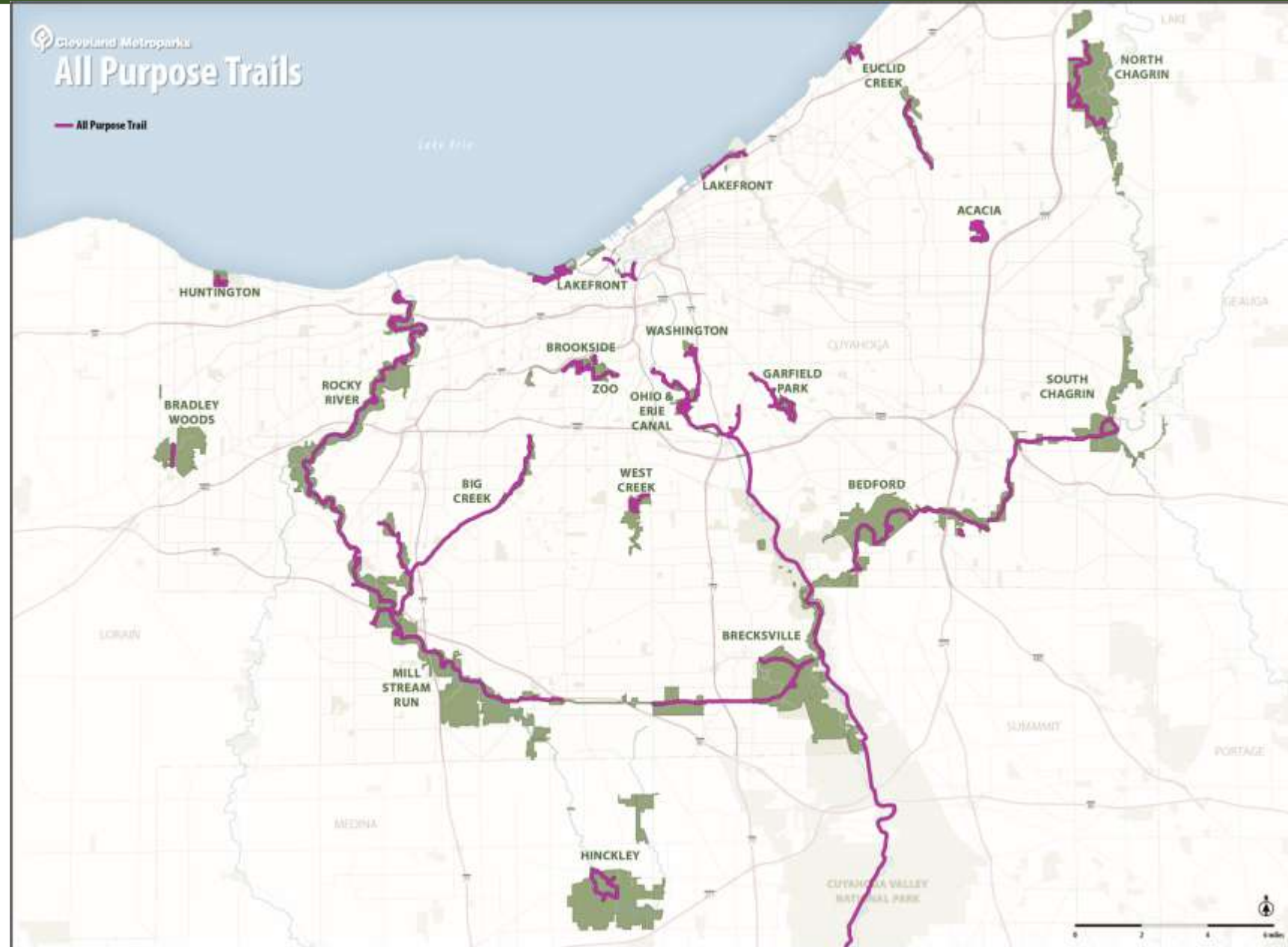


Cleveland Metroparks

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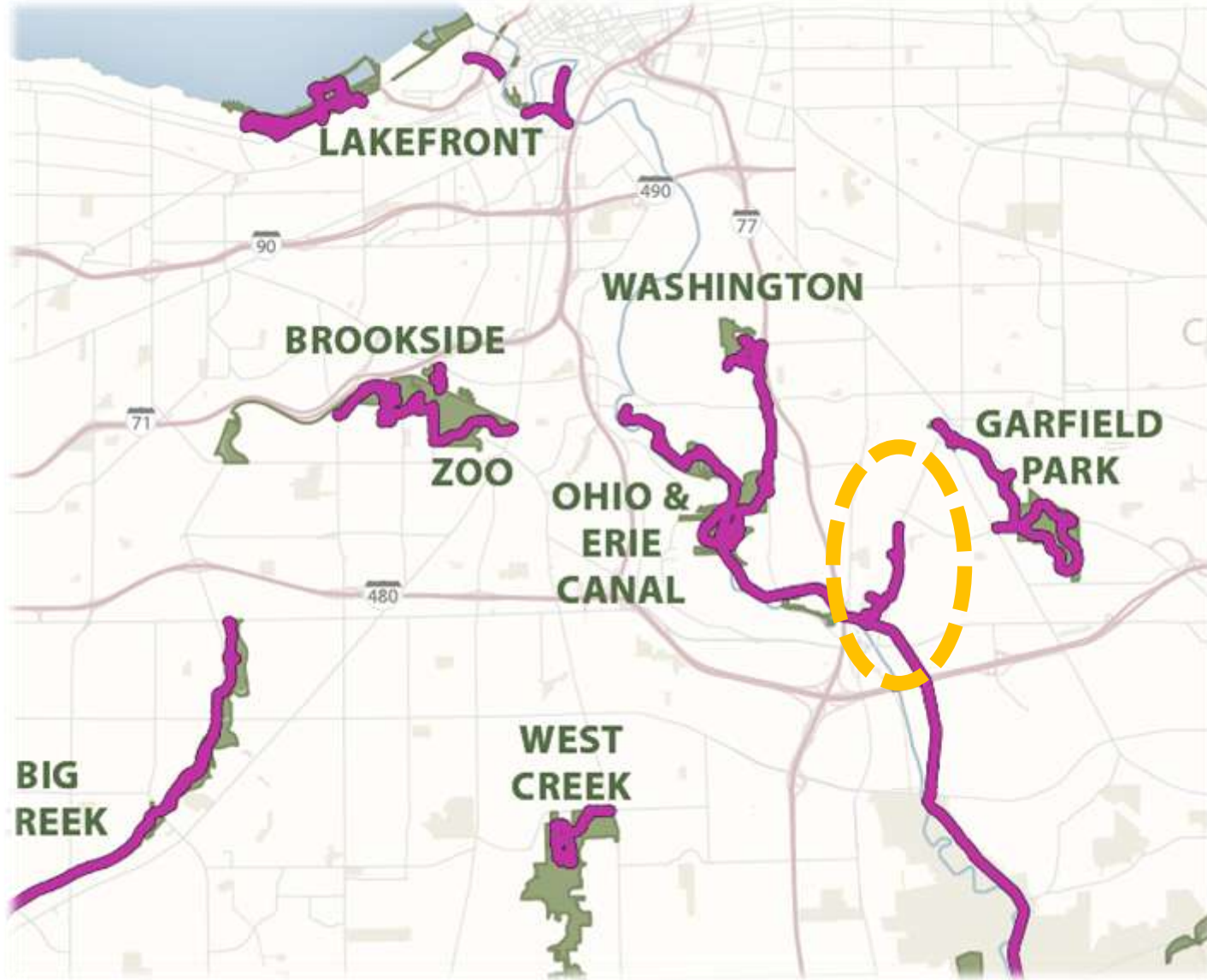


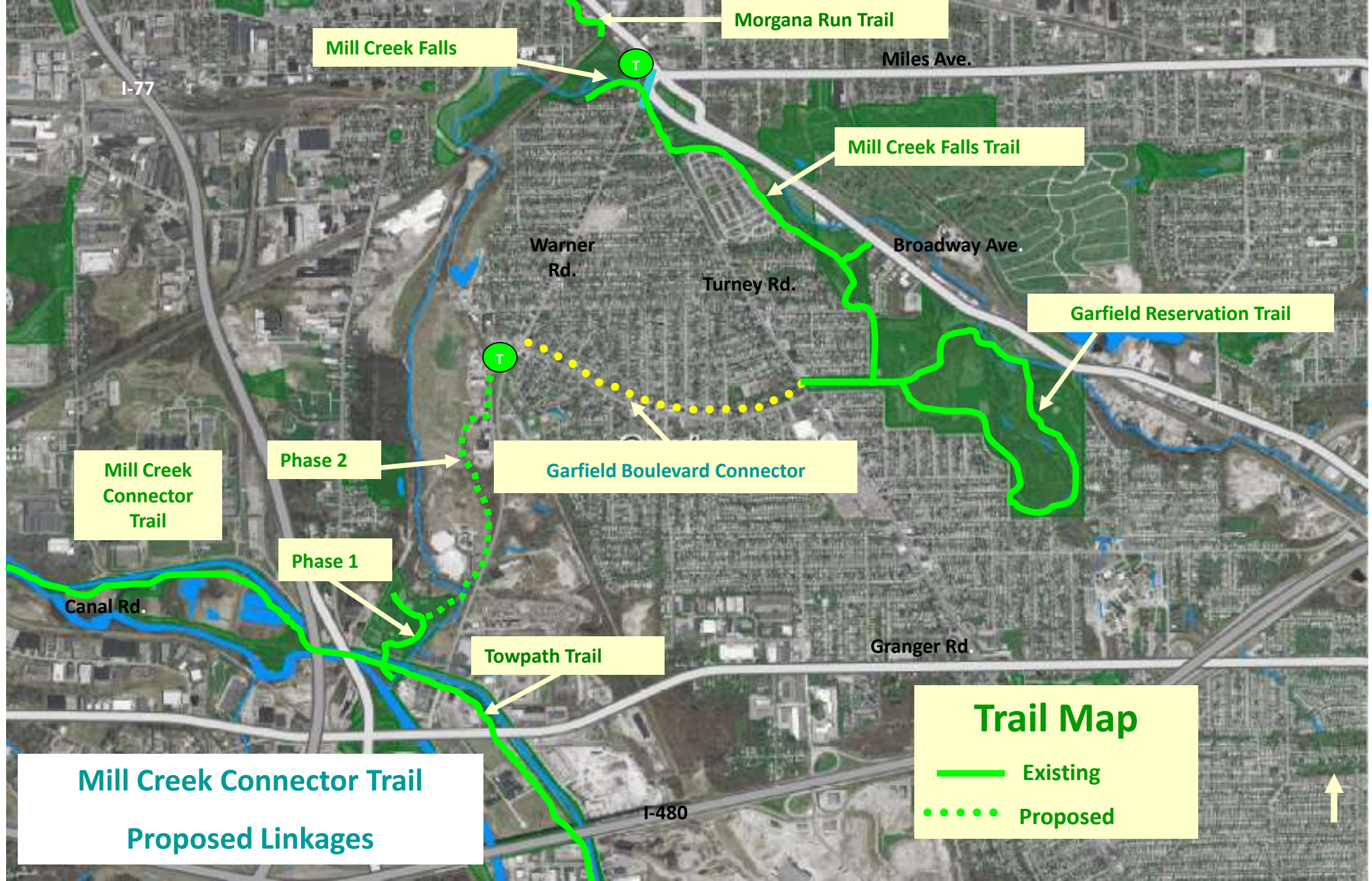
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Mill Creek Connector Trail – Phase II





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Mill Creek Connector Trail – Phase II

- 2005 Planning Study
- Two Phases
- 5 Easements
- Utility conflicts
- Environmental
 - Land Fills
 - Hazardous Waste
 - Former Chemical Plant
- LPA D-B-B
- 1.4 mi, 182' elevation
- \$3.9M (\$1.9 ODOT / NOACA)



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Transportation Investment Generating Economic Recovery (TIGER)



Figure 3. Project Area Aerial Imagery, 1951 (ESRI Cleveland Historic Maps)

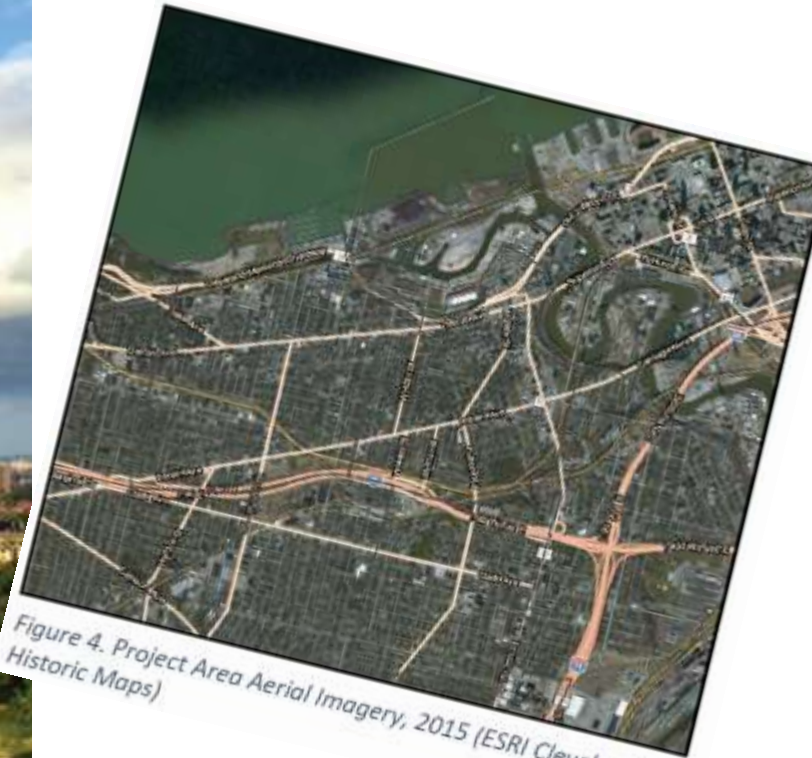
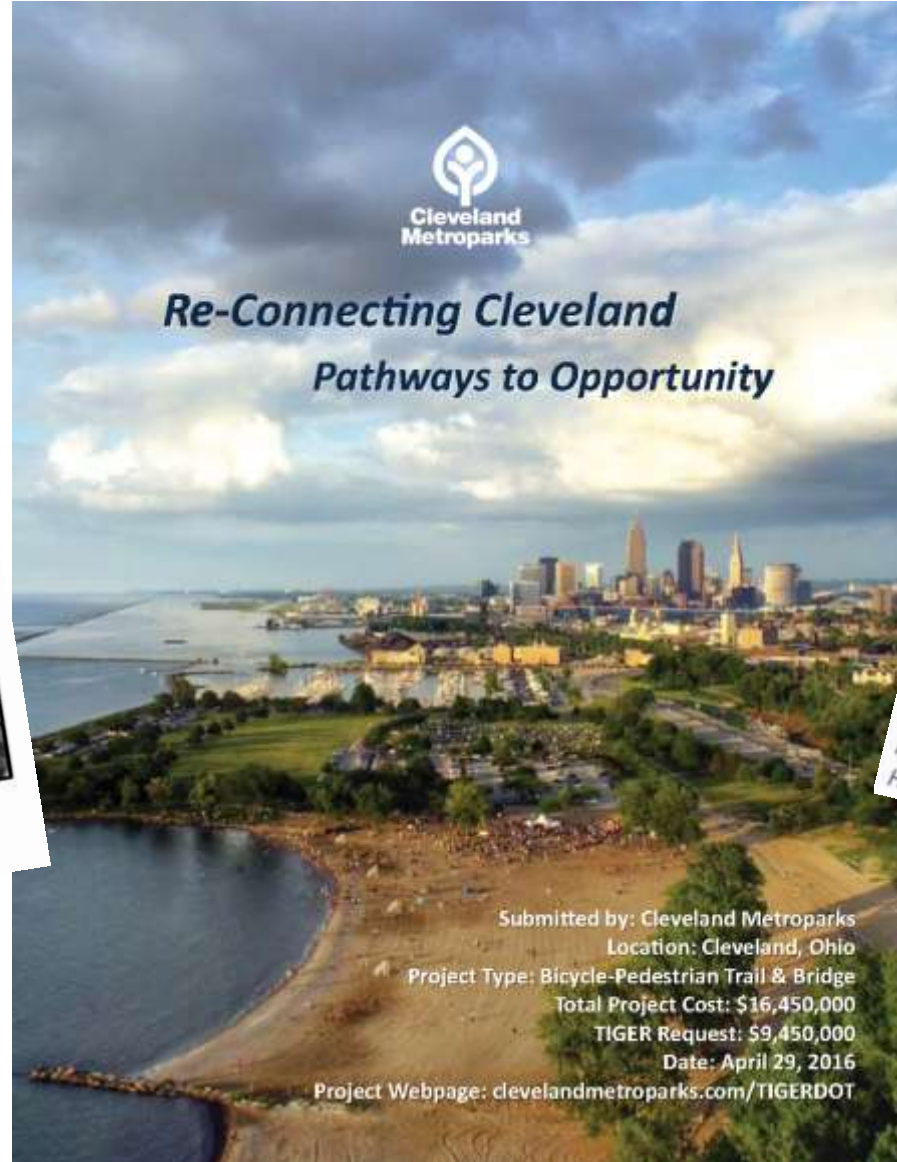
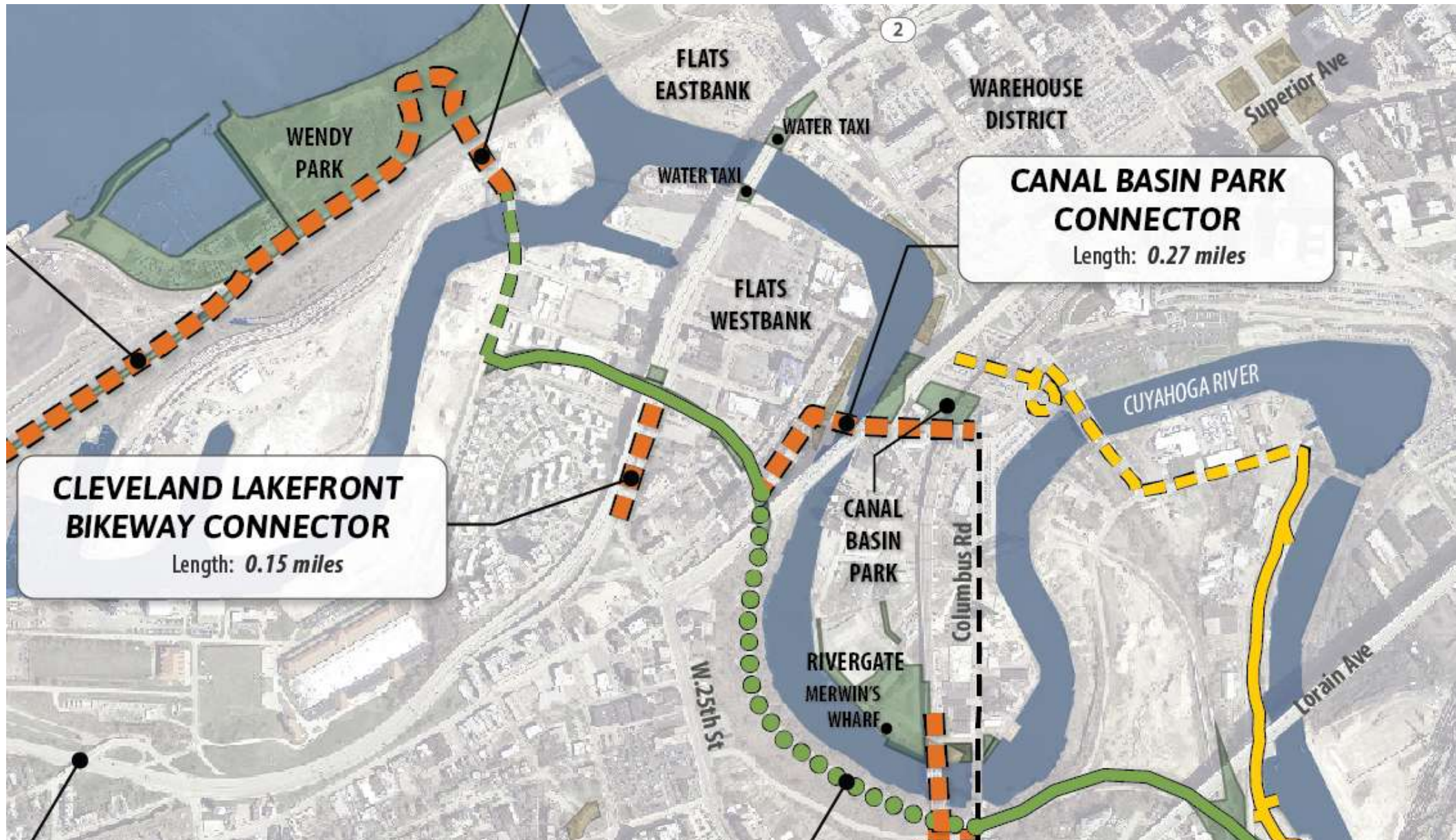


Figure 4. Project Area Aerial Imagery, 2015 (ESRI Cleveland Historic Maps)

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Cleveland Lakefront Bikeway Connector & Canal Basin Park Connector

Design: Michael Baker International

Status: Design nearing completion

Anticipated Construction: Spring 2018-
Summer 2018

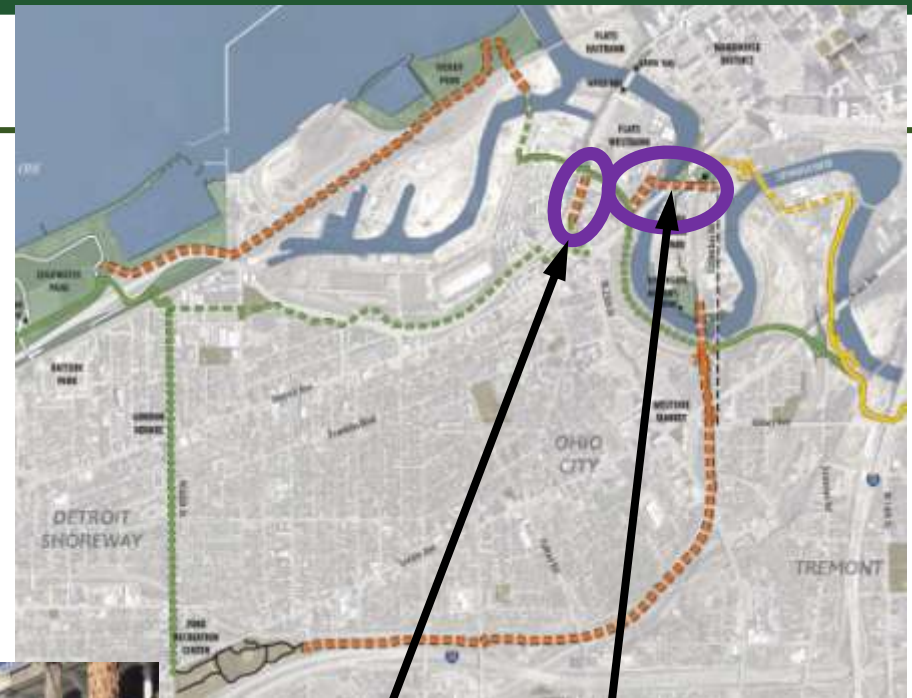


TABLE III (continued)

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY _____
FEDERAL ROUTES _____
STATE ROUTES _____
COUNTY & TOWNSHIP ROADS _____
OTHER ROADS _____



CONTACT BOTH SERVICES TWO WORKING DAYS
BEFORE YOU GO



Oil & Gas Products
Underground Protection Service
1-800-825-0888

PLEASE PREPARE: 815

Additional Features

INTERESTED? CONTACT:

【例 1】某企业 2013 年 12 月 31 日结账前有关账户的余额如下:

RECEIVED: AUGUST 1991, REVISED: DECEMBER 1991, ACCEPTED: JANUARY 1992

03/03/2000, 04:00:00



Revised: 10/12/2007

[illegible]

CONSTRUCTION OF BICYCLE FACILITIES INCLUDING A 0.6-MILE SHARED-USE PATH ALONG MAIN AVENUE, A 0.6-MILE SHARED-USE PATH ALONG DETROIT AVENUE, AND 0.6-MILE DUAL BIKE LANE ON CENTER STREET. WORK ALSO INCLUDES A WIDENING OF THE WESTERN LOWER MAIN AVENUE SIDEWALK BRIDGE AND THE RESURFACING OF CENTER STREET BETWEEN AFRICA AVENUE AND WEST STREET.

PROJECT EARTH DISTURBED AREA: 0.65 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: 0.80 ACRES

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

POB. MO.

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT

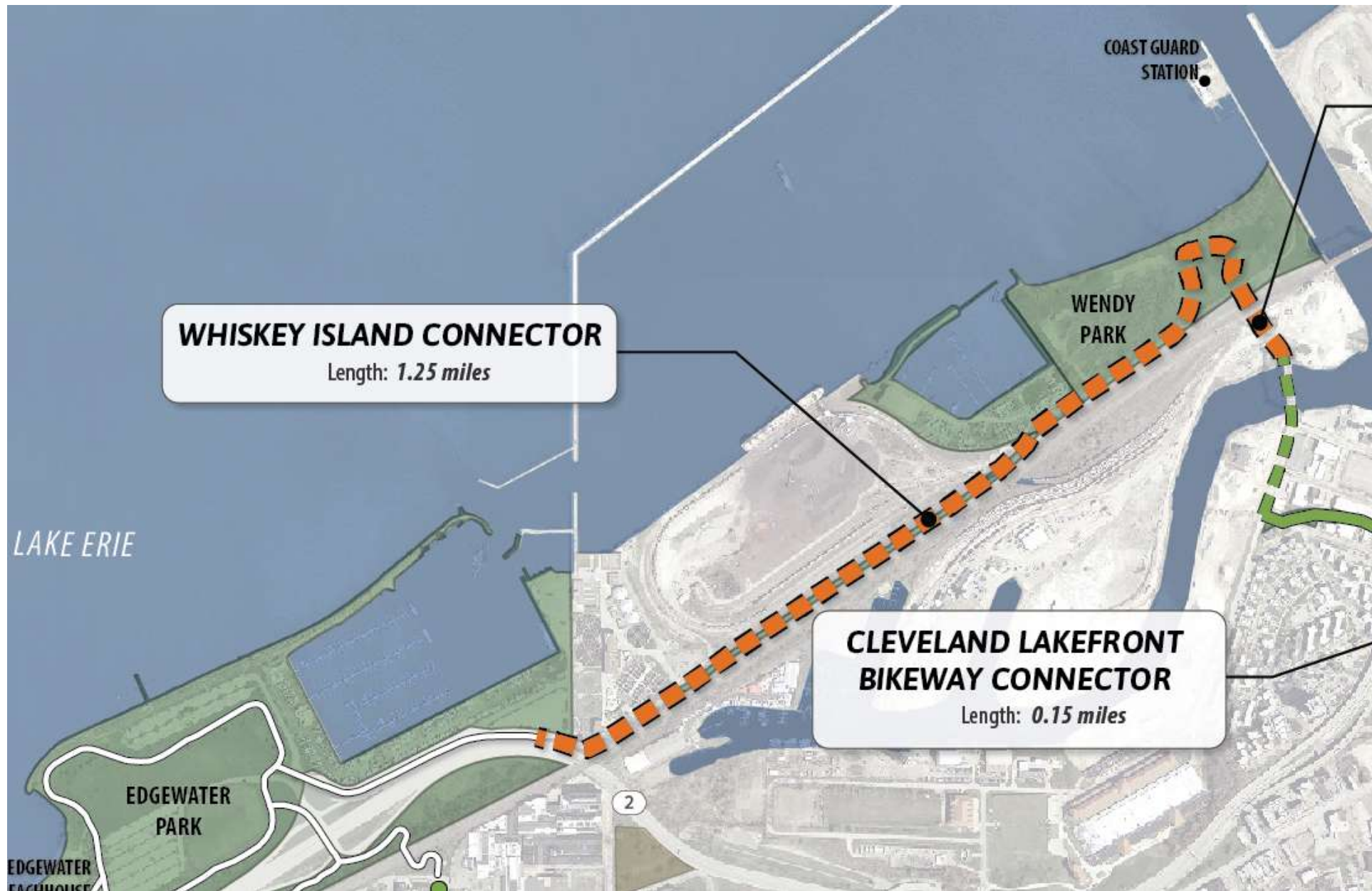
URGENT HIGHWAY/CANAL

€

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Whiskey Island Connector

Design: E.L. Robinson Engineering

Status: Nearing 30% design

Anticipated Construction: Summer 2018-
Summer 2019



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TIME TO

Cleveland Metroparks

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Summer 2019



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Cleveland Metroparks

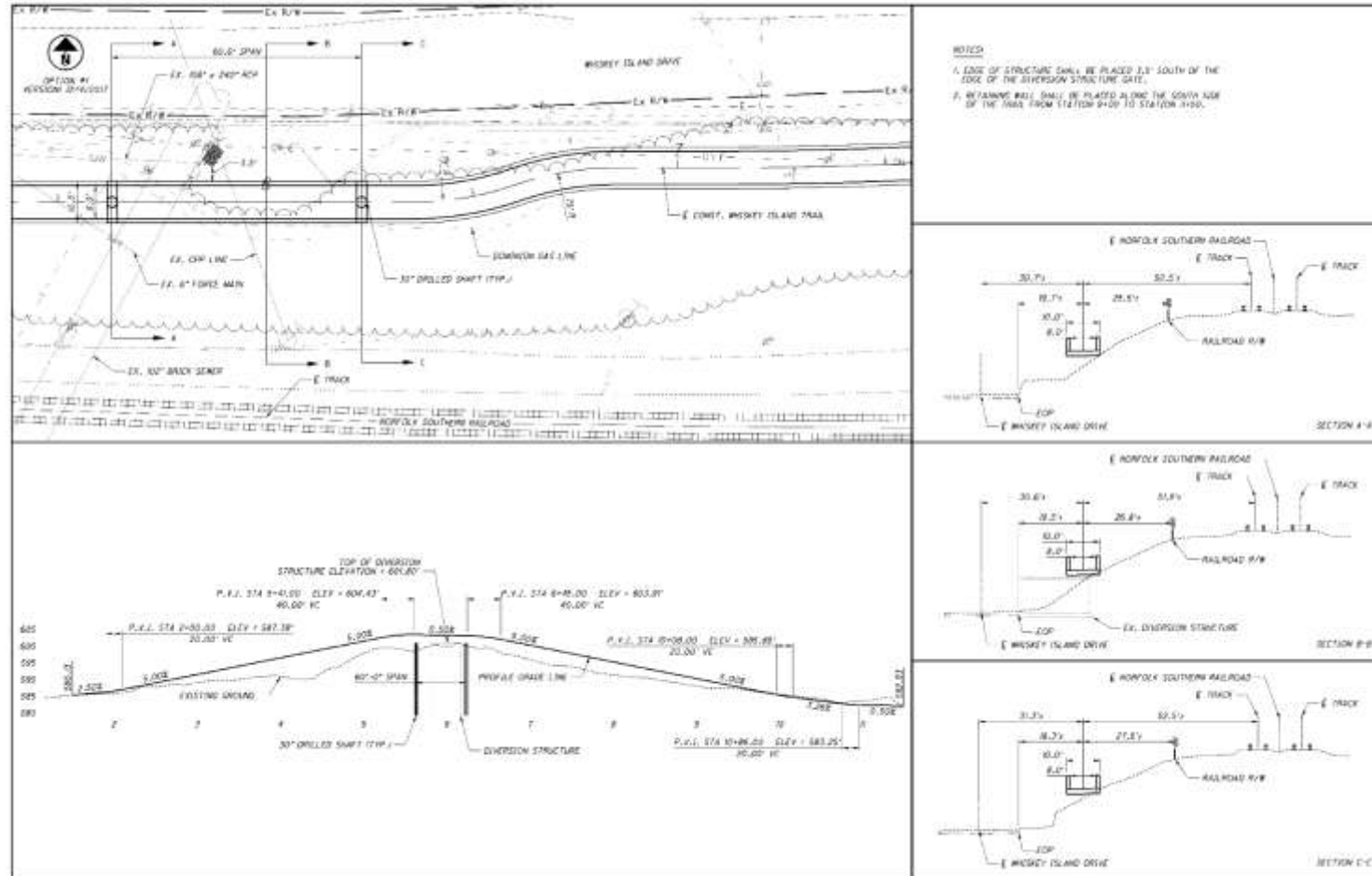
Whiskey Island Connector

Design: E.L. Robinson Engineering

Status: Nearing 30% design

Anticipated Construction: Summer 2019

Summer 2019



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Cleveland Metroparks



WEST TRAIL SECTION



CENTRAL TRAIL SECTION



EAST TRAIL SECTION

WHISKEY ISLAND TRAIL CONNECTOR
TRAIL ALIGNMENT ENLARGEMENT
OCTOBER 15, 2017



E.L. ROBINSON
ENGINEERING
OHM

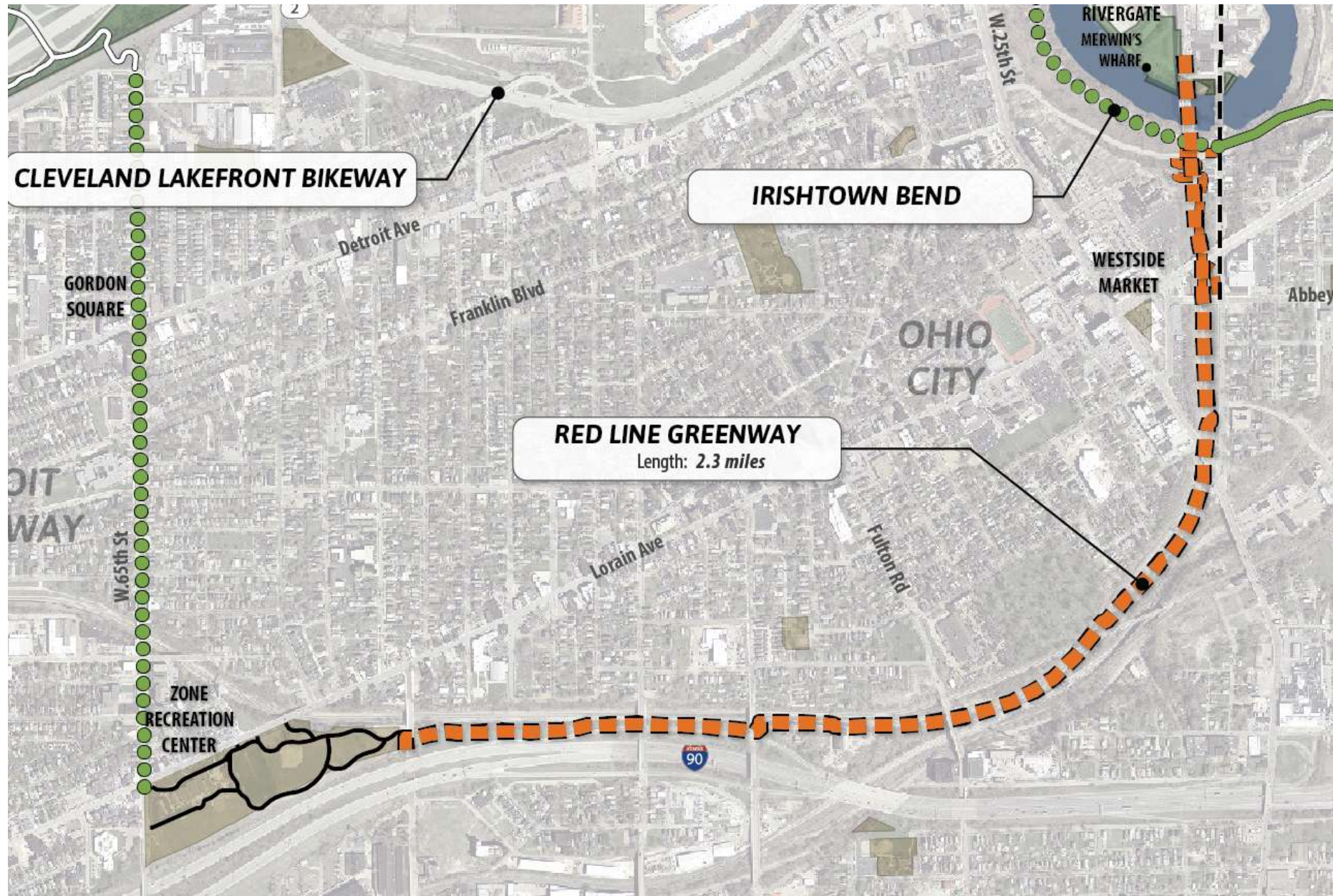
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Red Line Greenway

Design: Michael Baker International

Status: Nearing 30% design

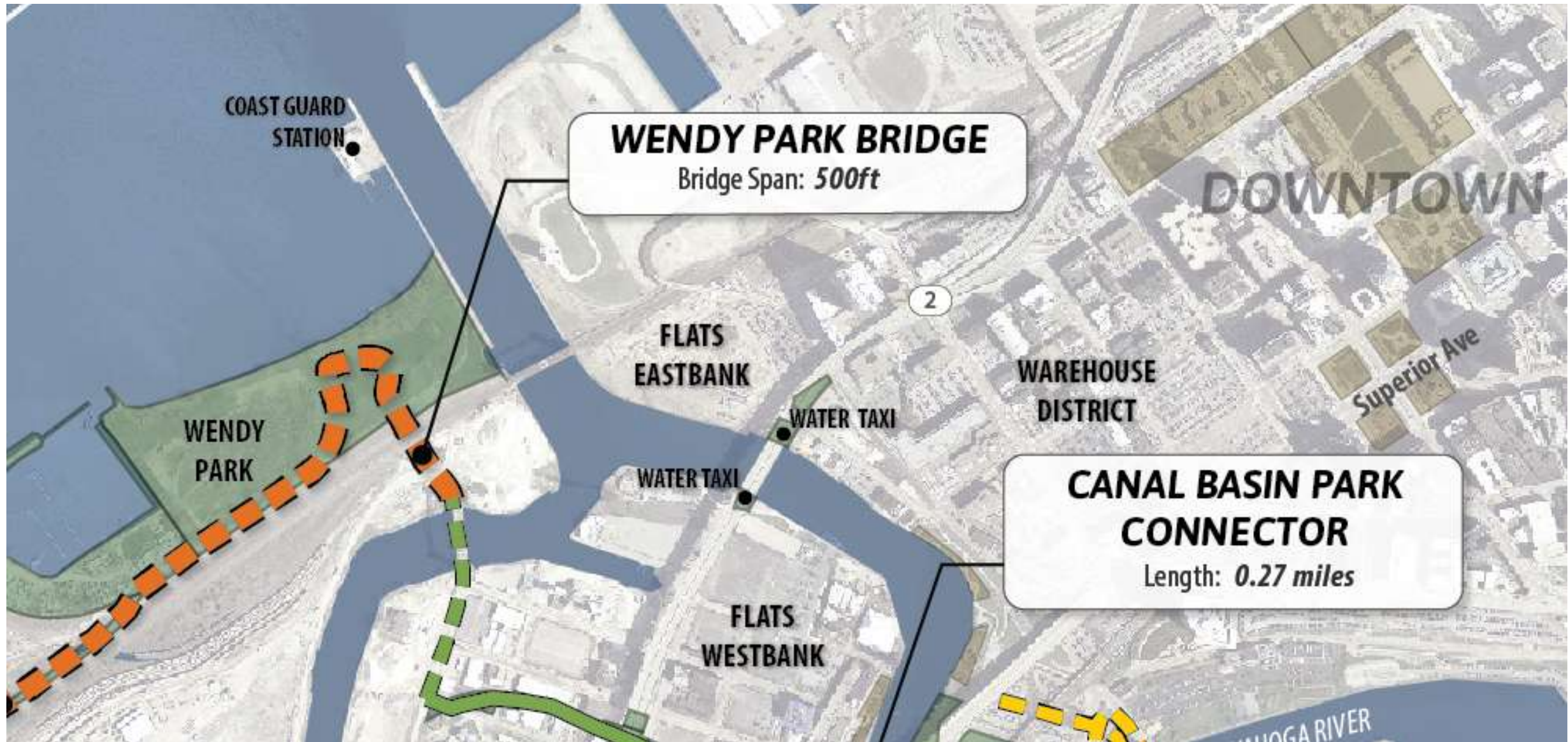
Anticipated Construction: Spring 2019-
Winter 2020



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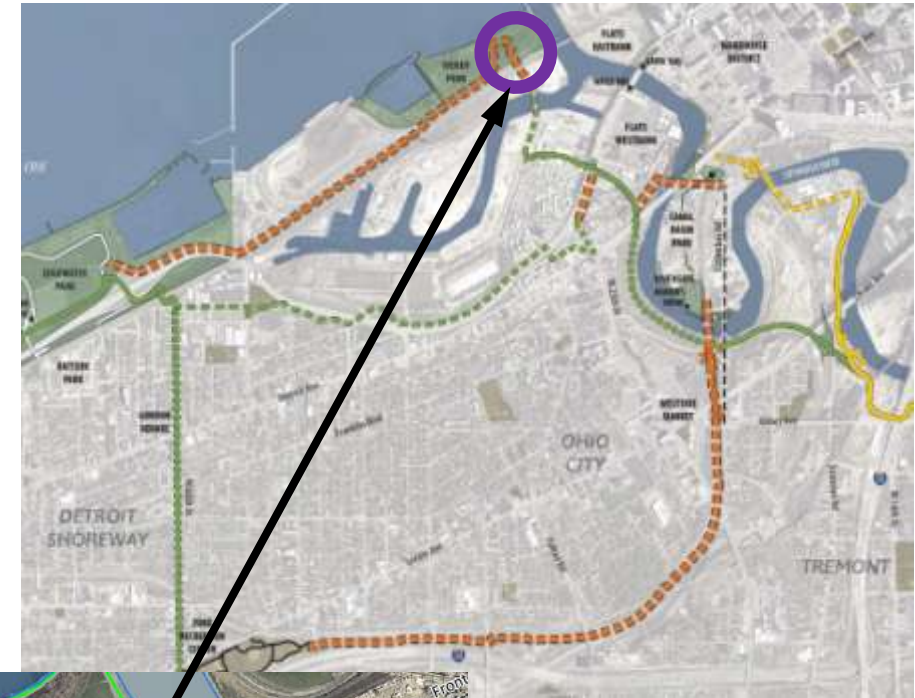
Wendy Park Bridge

Design: KS Associates

Status: 50% design

Anticipated Construction:

Spring 2019 - Fall 2020



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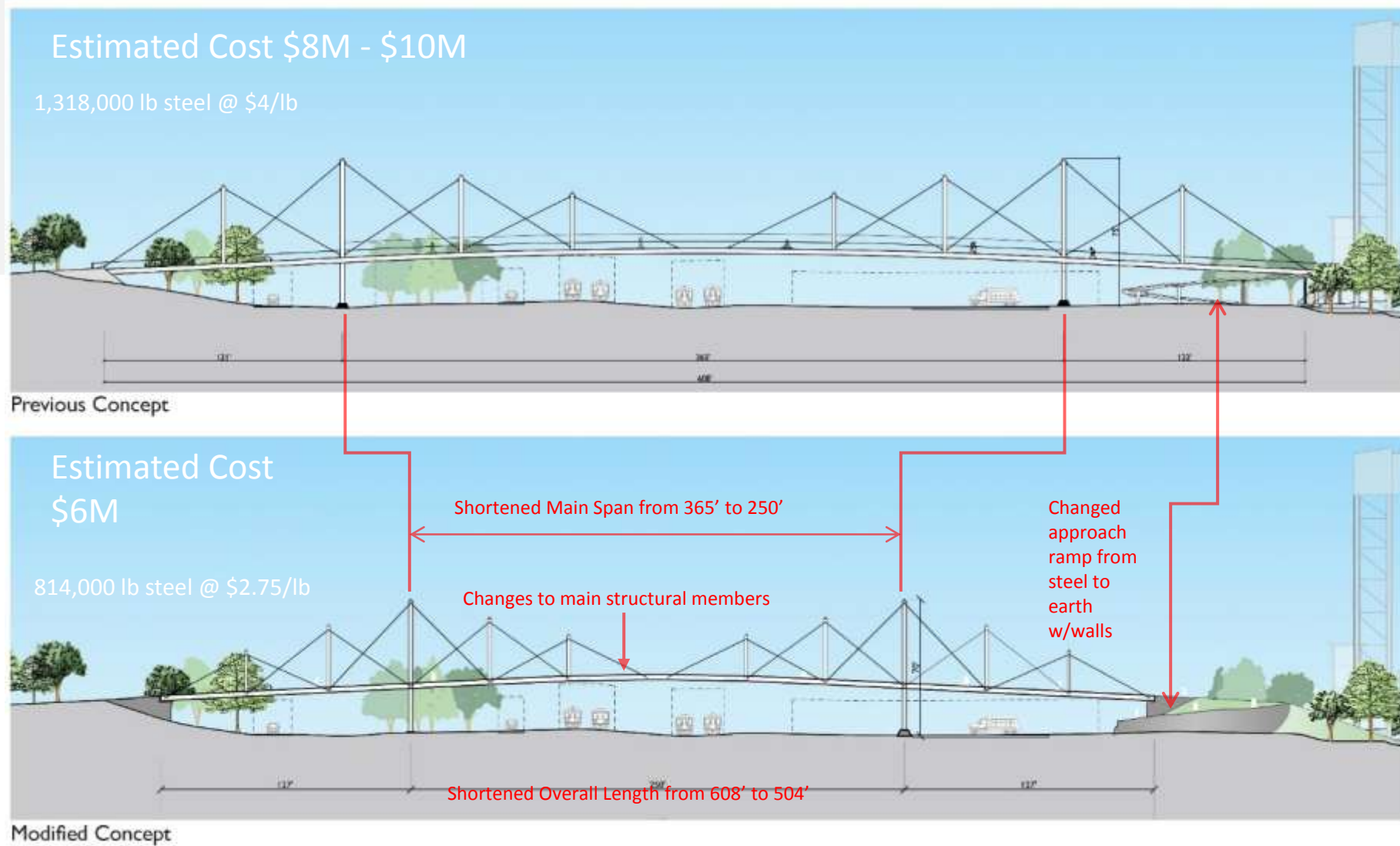
Wendy Park Bridge

Design: KS Associates

Status: 50% design

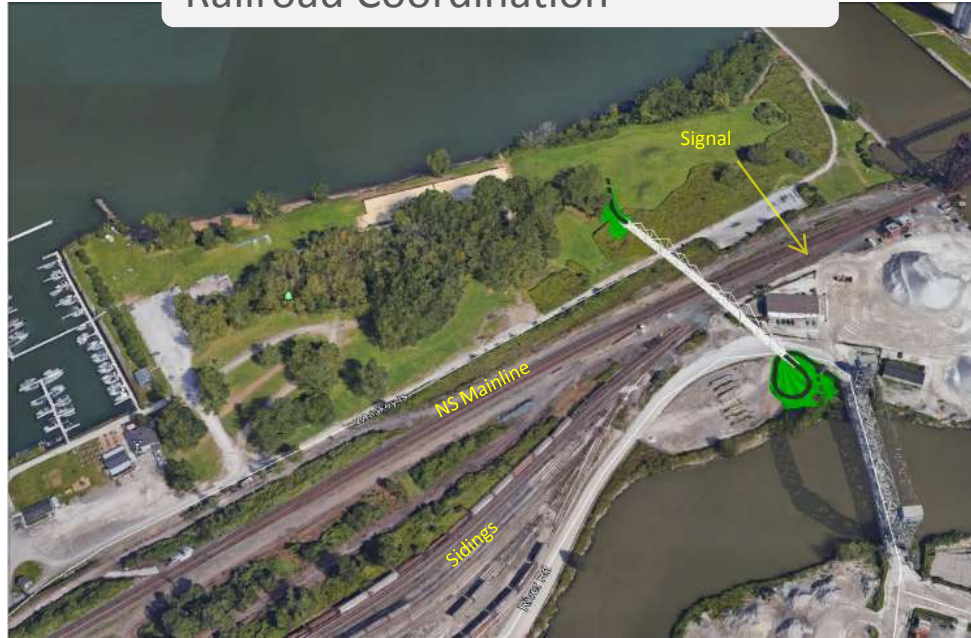
Anticipated Construction:

Spring 2019 - Fall 2020

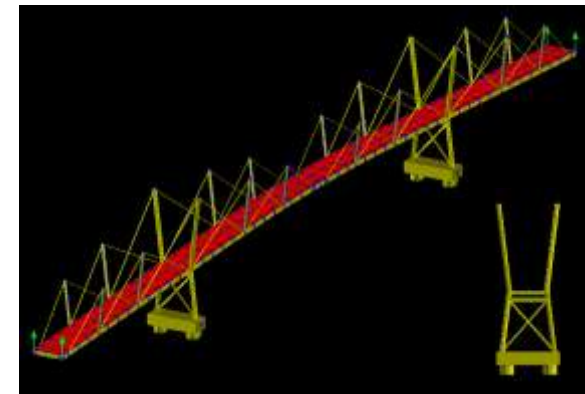
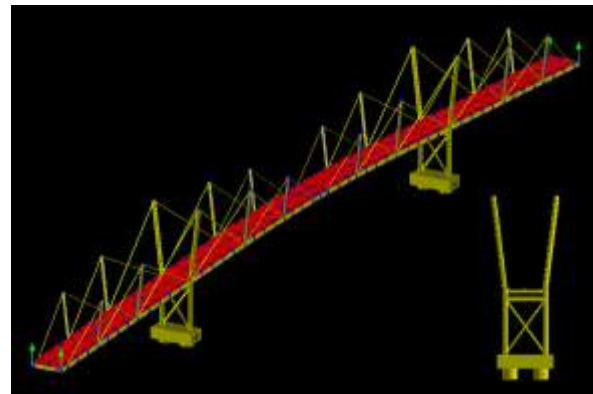


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Railroad Coordination



Bridge Pier Design Analysis



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Railroad Coordination



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Railroad Coordination

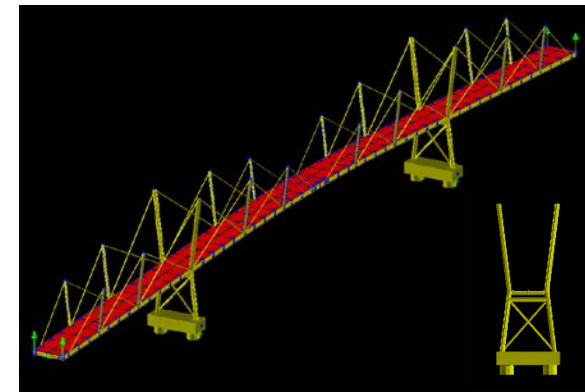
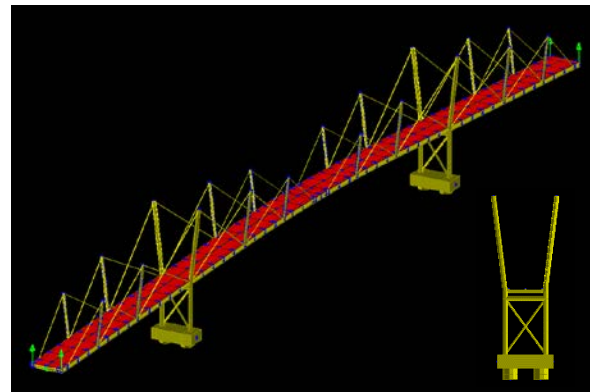


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Railroad Coordination

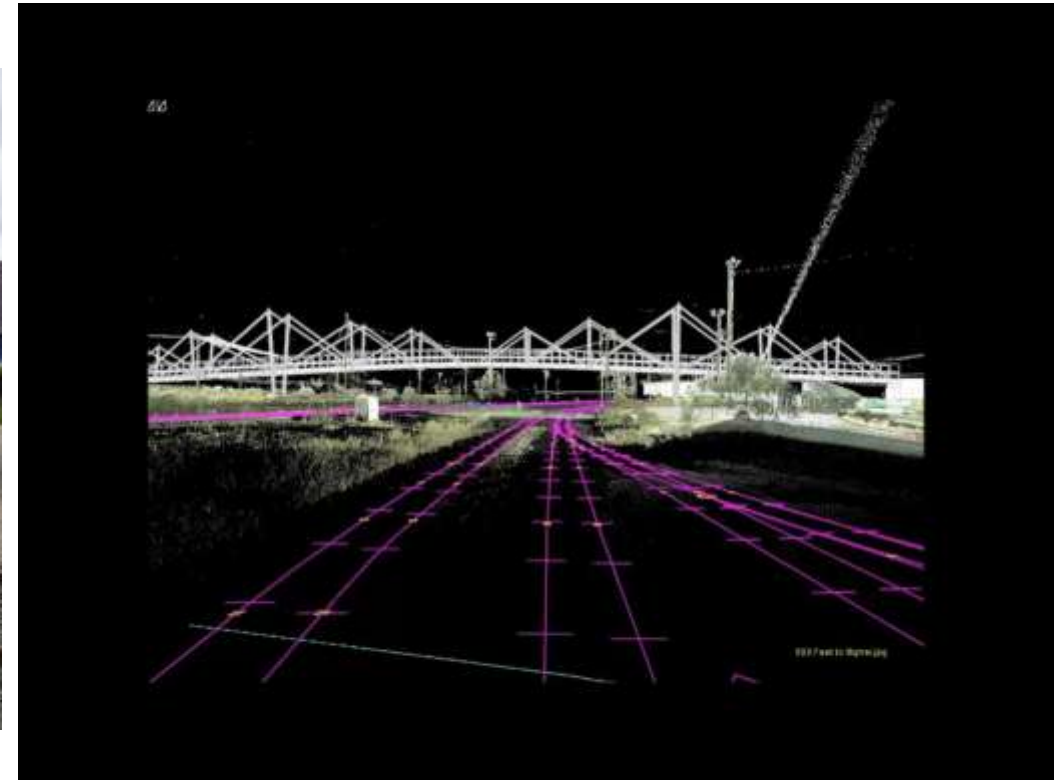


Bridge Pier Design Analysis

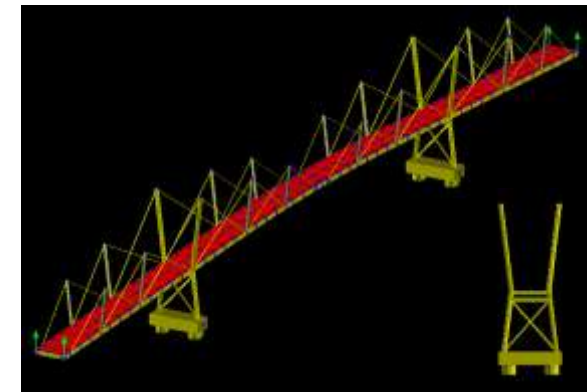
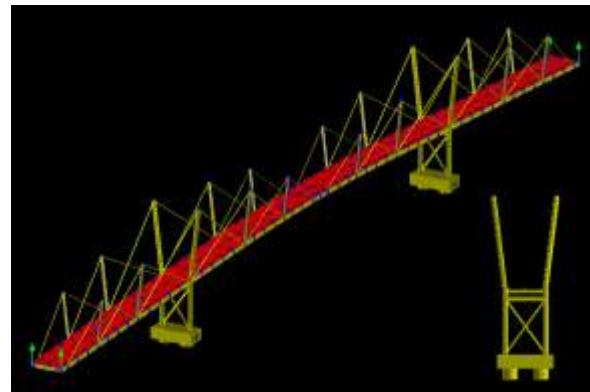


Developing Trails in Northeast Ohio

Railroad Coordination



Bridge Pier Design Analysis



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Wind Loading and Vibration



WIND ENGINEERING SERVICES
WENDY PARK BRIDGE
R000000000
November 15, 2017

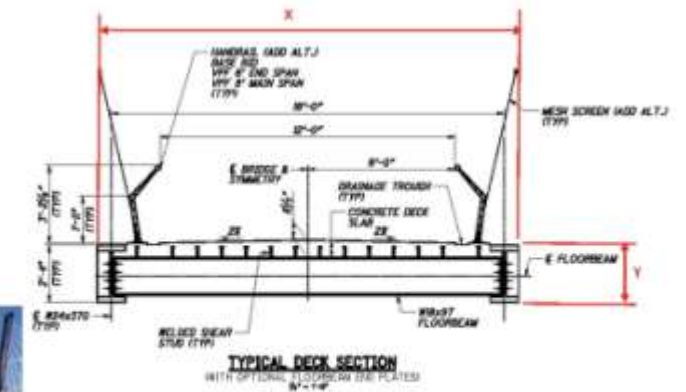
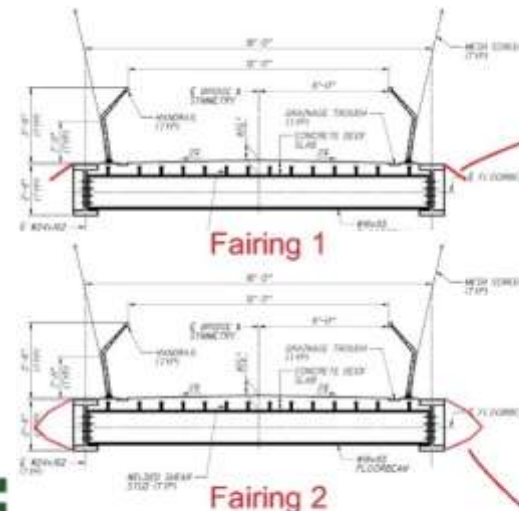
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RWDI Wind Tunnel



Slenderness Ratio = X/Y
Currently = 6 or 7
Desired = 10

Slenderness Ratio Analysis

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Wind Loading and Vibration



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Re-Connecting Cleveland Project Component	Cost	TIGER Request	TIGER % of Total Cost	Federal CMAQ	Federal CMAQ % of Total Cost	Pending State/Local	State/Local % of Total Cost
Wendy Park Bridge							
Construction	\$6,000,000	\$1,000,000	6.1%	\$0	0.0%	\$5,000,000	30.4%
Whiskey Island Connector							
Design/Engineering	\$200,000	\$150,000	0.9%	\$0	0.0%	\$50,000	0.3%
Construction	\$2,900,000	\$2,100,000	12.8%	\$0	0.0%	\$800,000	4.9%
Cleveland Lakefront Bikeway Connector							
Design/Engineering	\$30,000	\$0	0.0%	\$0	0.0%	\$30,000	0.2%
Construction	\$500,000	\$500,000	3.0%	\$0	0.0%	\$0	0.0%
Canal Basin Park Connector							
Design/Engineering	\$20,000	\$0	0.0%	\$0	0.0%	\$20,000	0.1%
Construction	\$200,000	\$200,000	1.2%	\$0	0.0%	\$0	0.0%
Red Line Greenway							
Design/Engineering	\$600,000	\$600,000	3.6%	\$0	0.0%	\$0	0.0%
Construction	\$6,000,000	\$3,400,000	20.7%	\$2,080,000	12.6%	\$520,000	3.2%
Total	\$16,450,000	\$7,950,000	48.3%	\$2,080,000	12.6%	\$6,420,000	39.0%

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Transportation Investment Generating Economic Recovery (TIGER)



Figure 3. Project Area Aerial Imagery, 1951 (ESRI Cleveland Historic Maps)

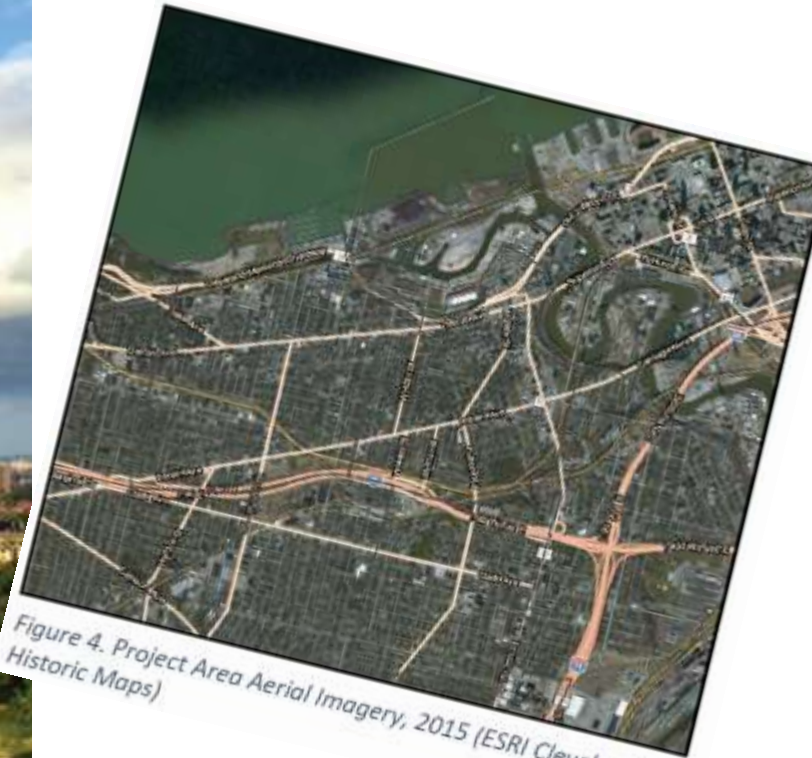
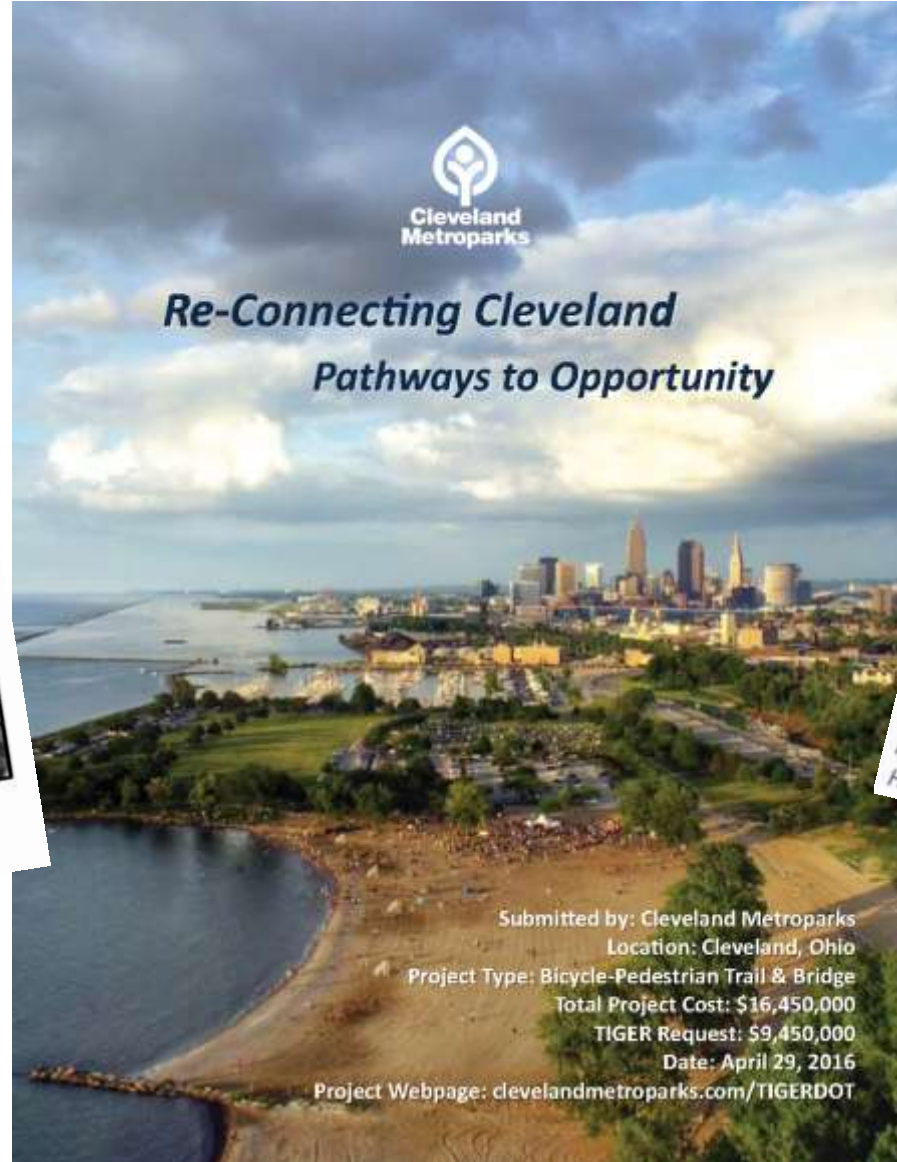


Figure 4. Project Area Aerial Imagery, 2015 (ESRI Cleveland Historic Maps)

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Transportation Investment Generating Economic Recovery (TIGER)

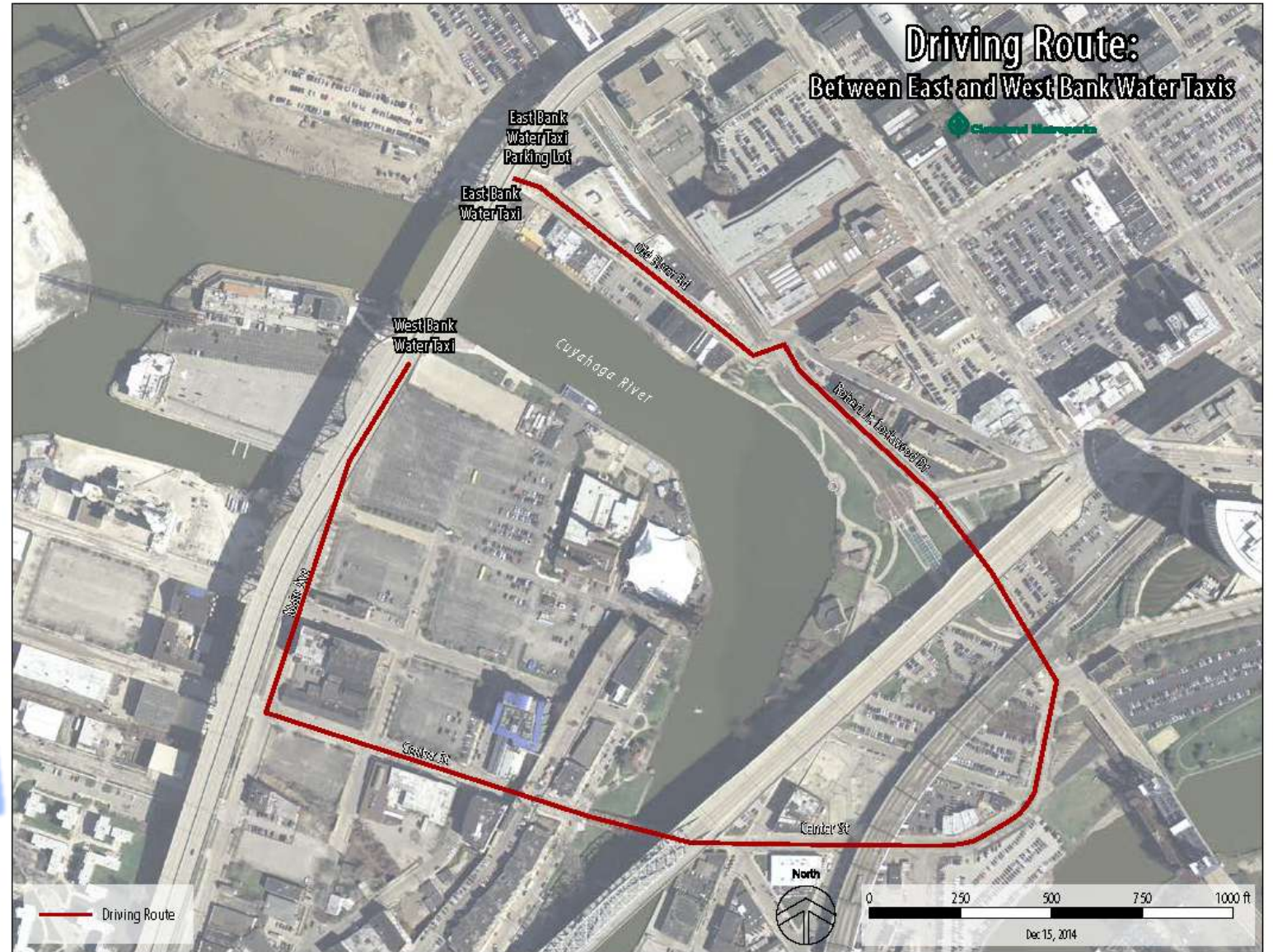
Re-Connecting Cleveland: Pathways to Opportunity Summary of Relevant Community Plans

1. *Cleveland Waterfront District Plan*
2. *Cleveland Bikeway Master Plan*
3. *Canal Basin Framework Plan*
4. *The Canal Basin District Plan*
5. *Cleveland Metroparks 2020 Plan: The Emerald Necklace Centennial Plan*
6. *Cleveland Metroparks Lakefront Reservation Master Plan*
7. *2014 Flats Forward Framework Plan*
8. *Connecting Cleveland 2020 Citywide Plan*
9. *Duck Island Neighborhood Plan*
10. *Gordon Square Community Master Plan*
11. *Ohio City Vision, Transit-Oriented Development: Inter-Modal Urban Design & Wayfinding Plan for the Market District*
12. *Step Up Cleveland: Vision & Tactical Plan for Downtown Cleveland*
13. *Towpath Trail Extension: Alignment and Design Study*
14. *Vibrant NEO 2040: A Vision, Framework, and Action Products for Our Future*
15. *Wendy Park on Whiskey Island: Management Plan 2012*
16. *West 65th Street Corridor Plan*

Figure 3. Project Area Aerial Image
(Historic Maps)

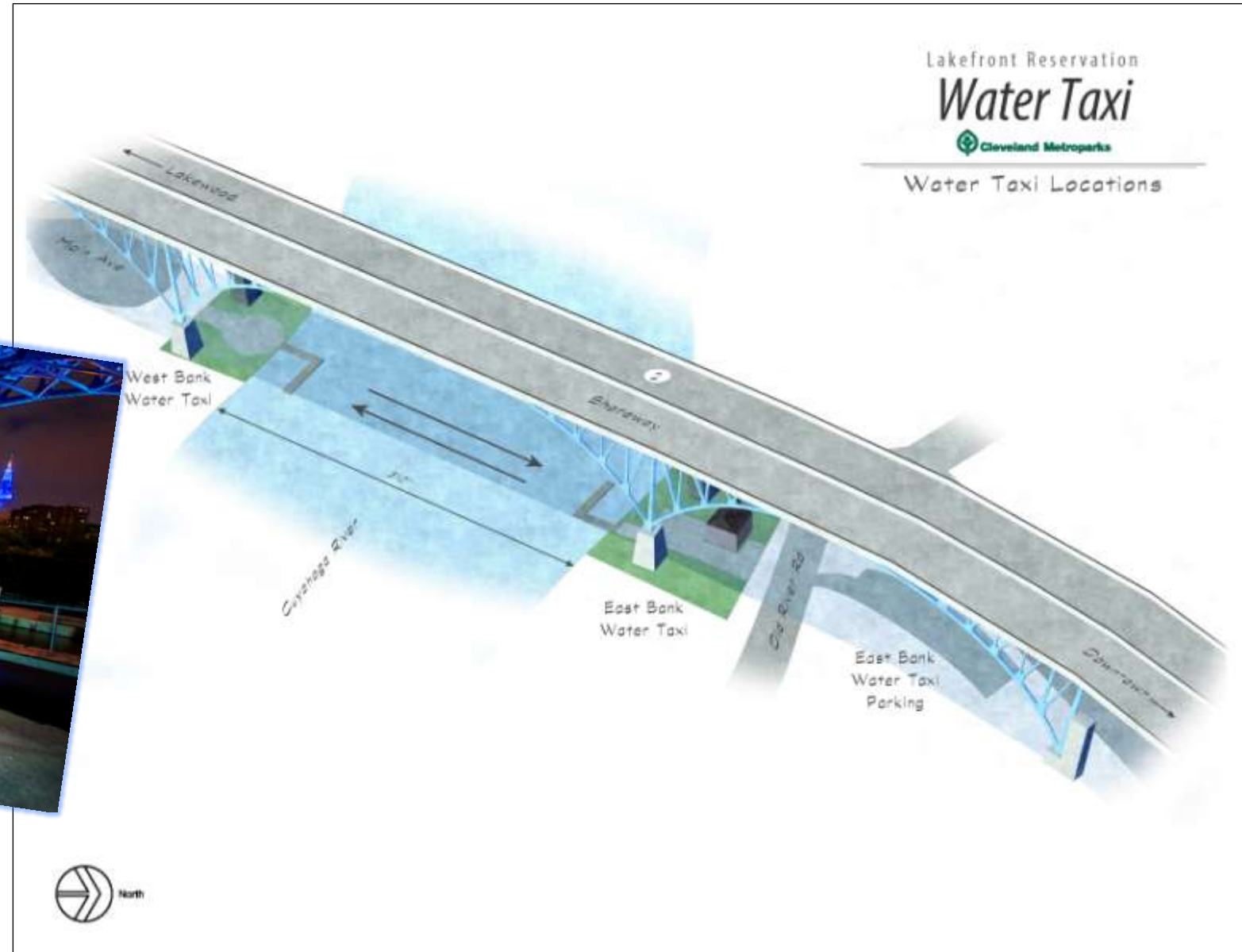


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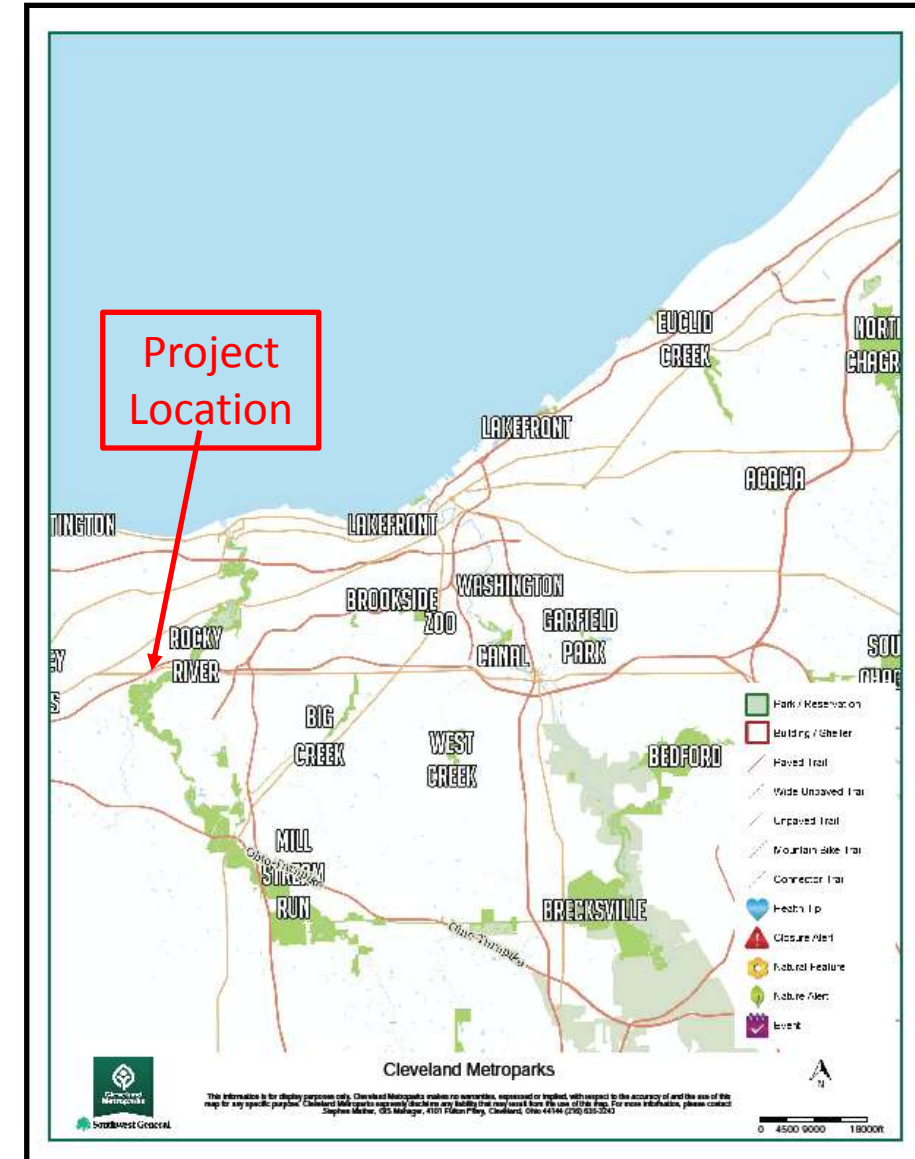
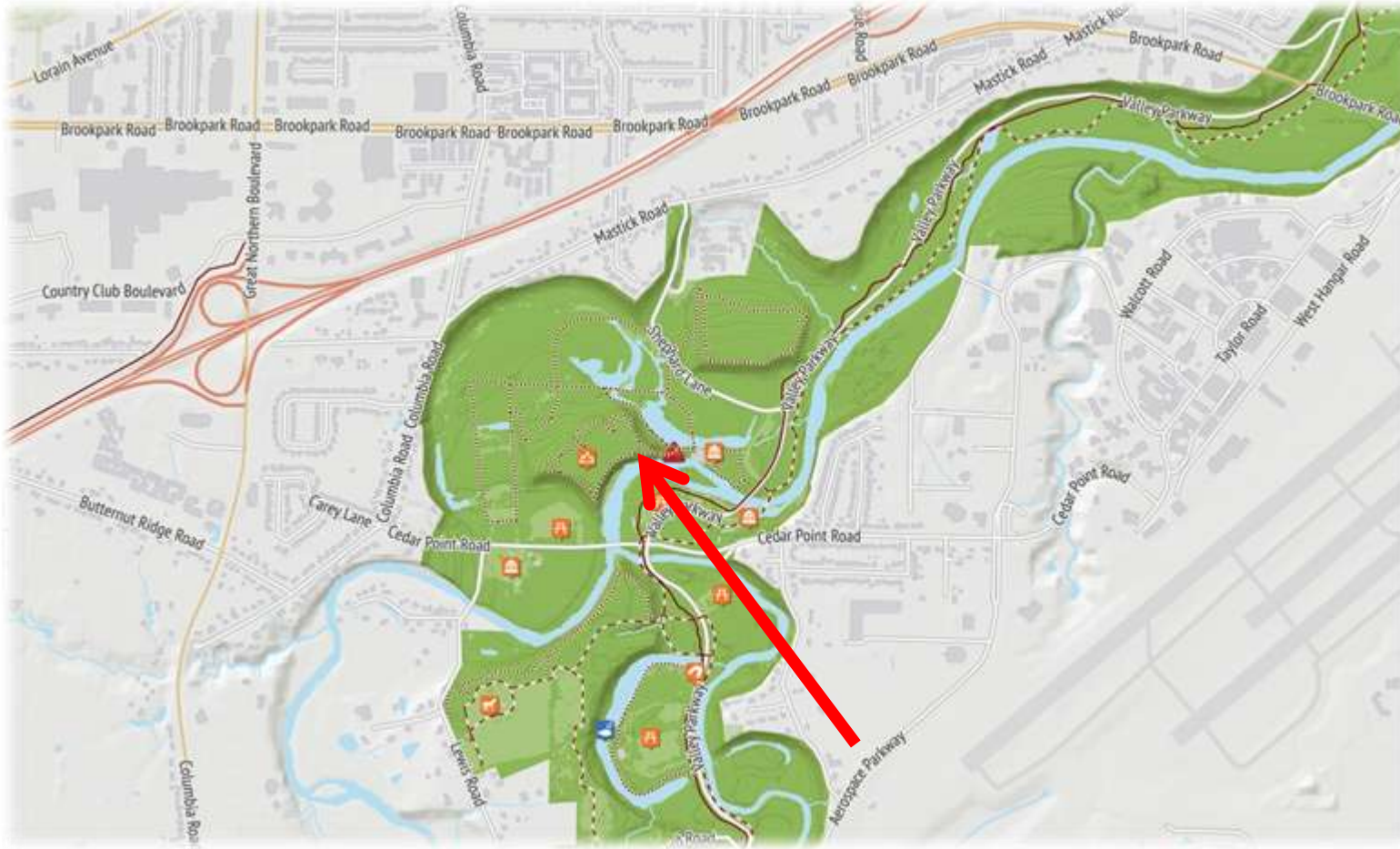
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eLCee2 Water Taxi

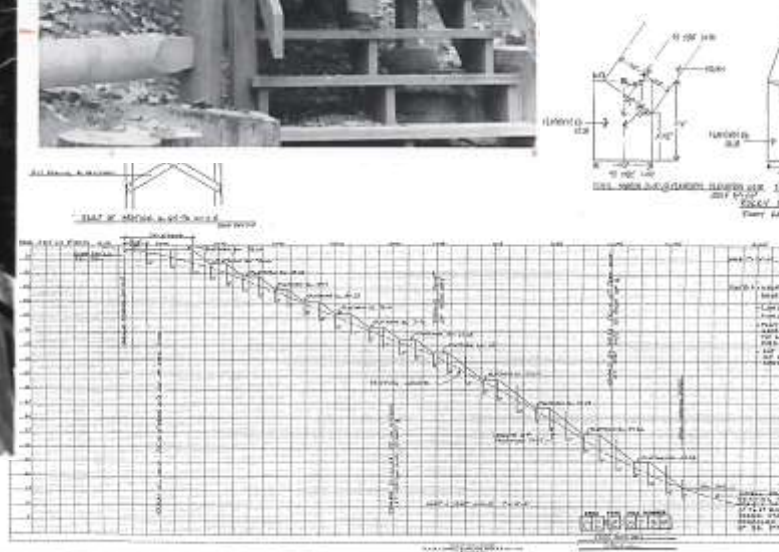
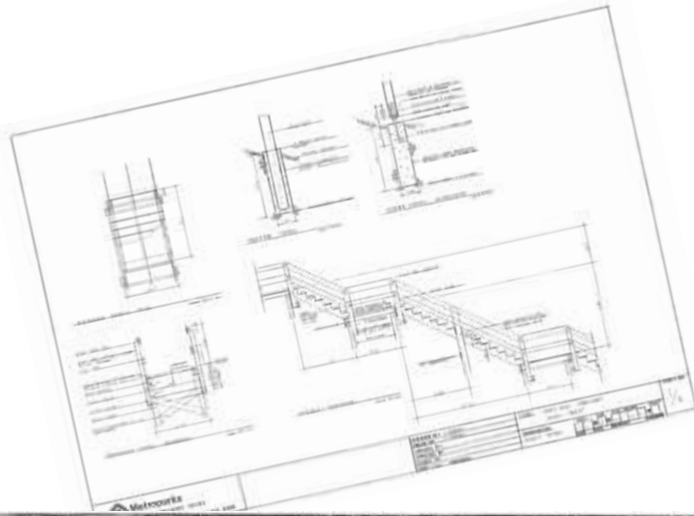


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Rocky River Reservation – Fort Hill Steps



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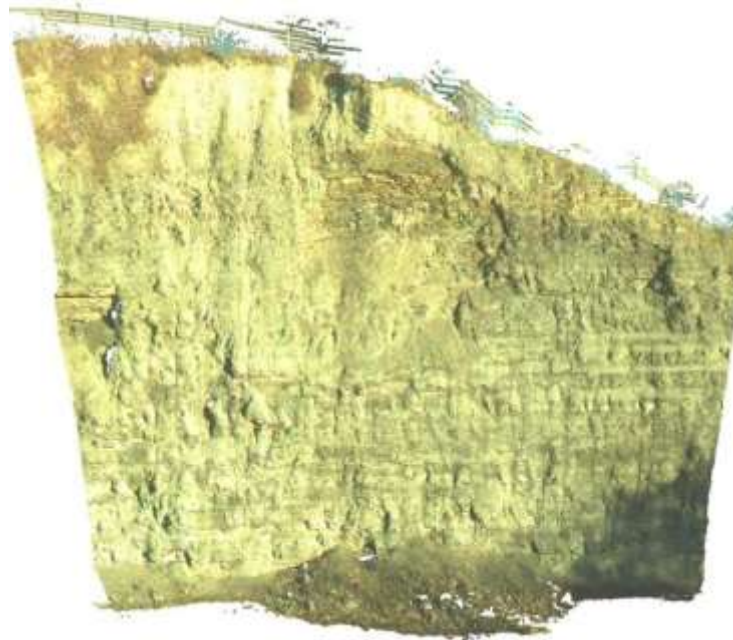


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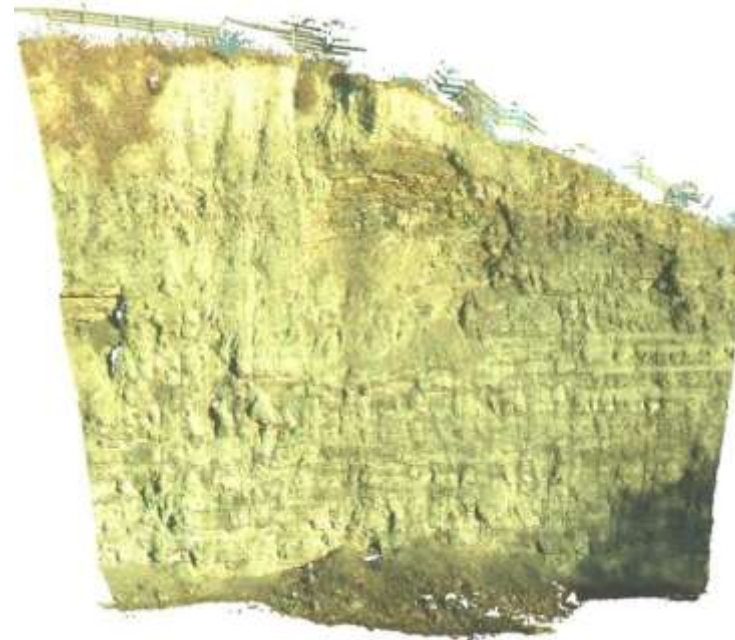
Rocky River
Reservation –
Fort Hill Steps



TIME TO EXPLORE
Cleveland Metroparks

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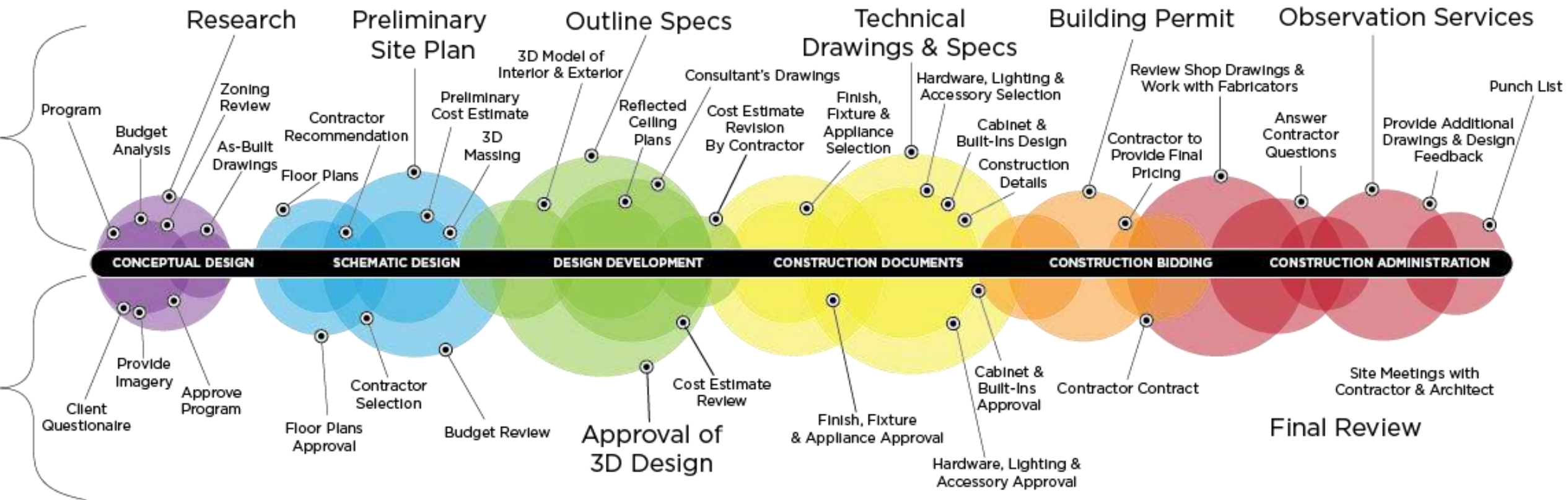
Rocky River Reservation – Fort Hill Steps



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Capital Construction

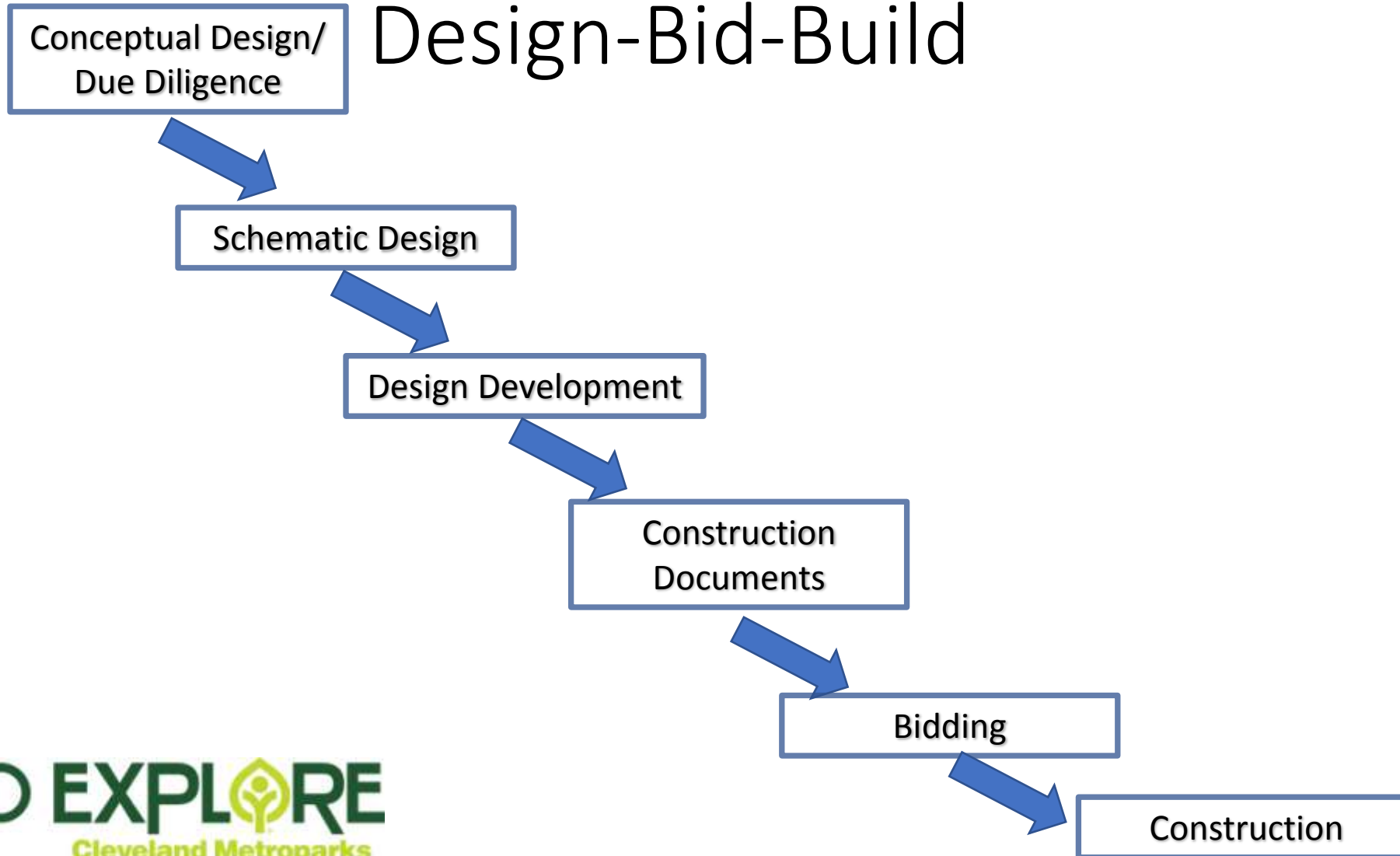
Design-Bid-Build



Developing Trails in Northeast Ohio

Capital Construction

Design-Bid-Build



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Capital Construction

Design-Bid-Build

Conceptual Design/
Due Diligence



Schematic Design



Design Development



Construction
Documents



Bidding



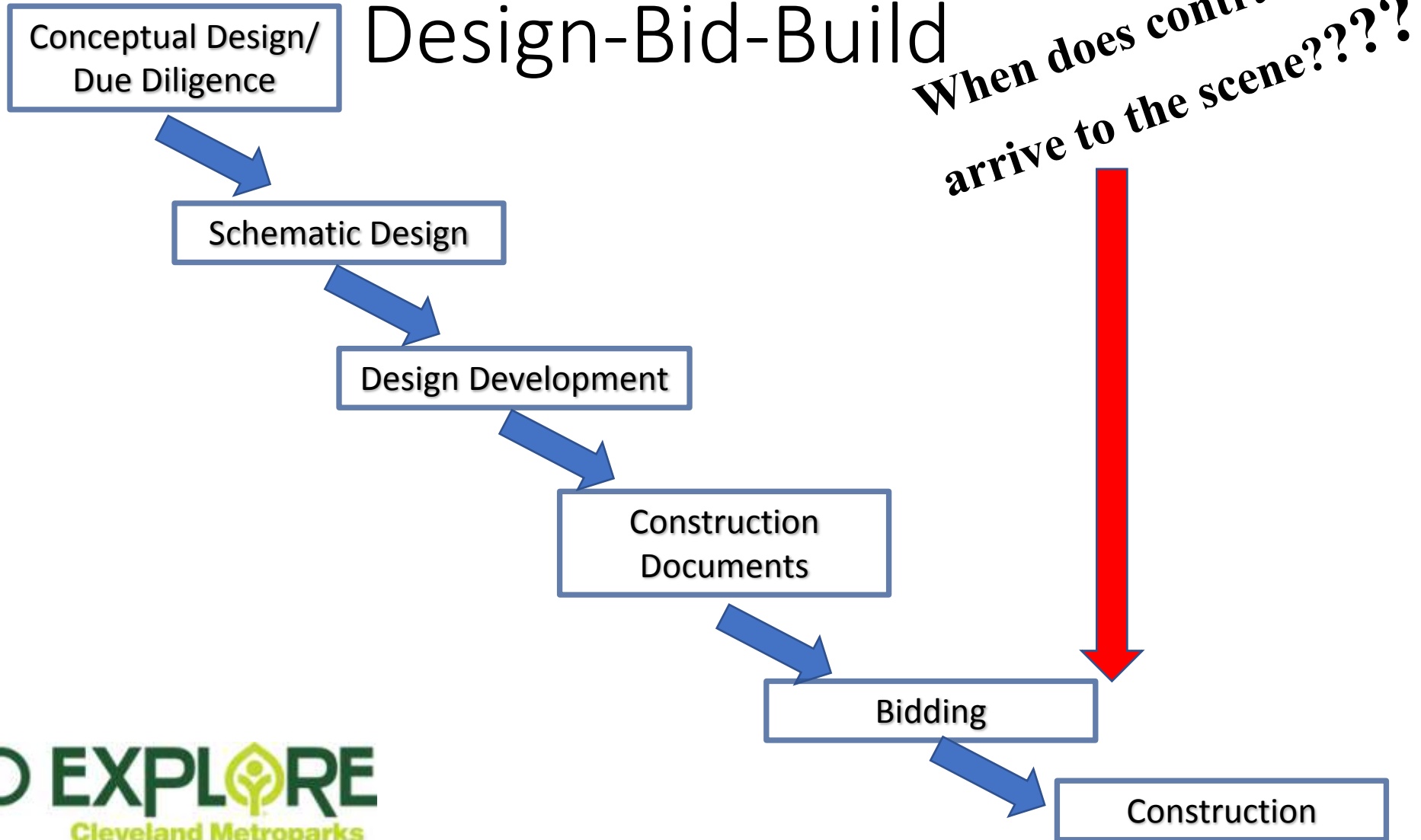
Construction

**When does contractor
arrive to the scene????**

Developing Trails in Northeast Ohio

Capital Construction

Design-Bid-Build



Developing Trails in Northeast Ohio

Capital Construction

Design-Bid-Build

Conceptual Design/
Due Diligence



Schematic Design



Design Development



Construction
Documents



Bidding



Construction

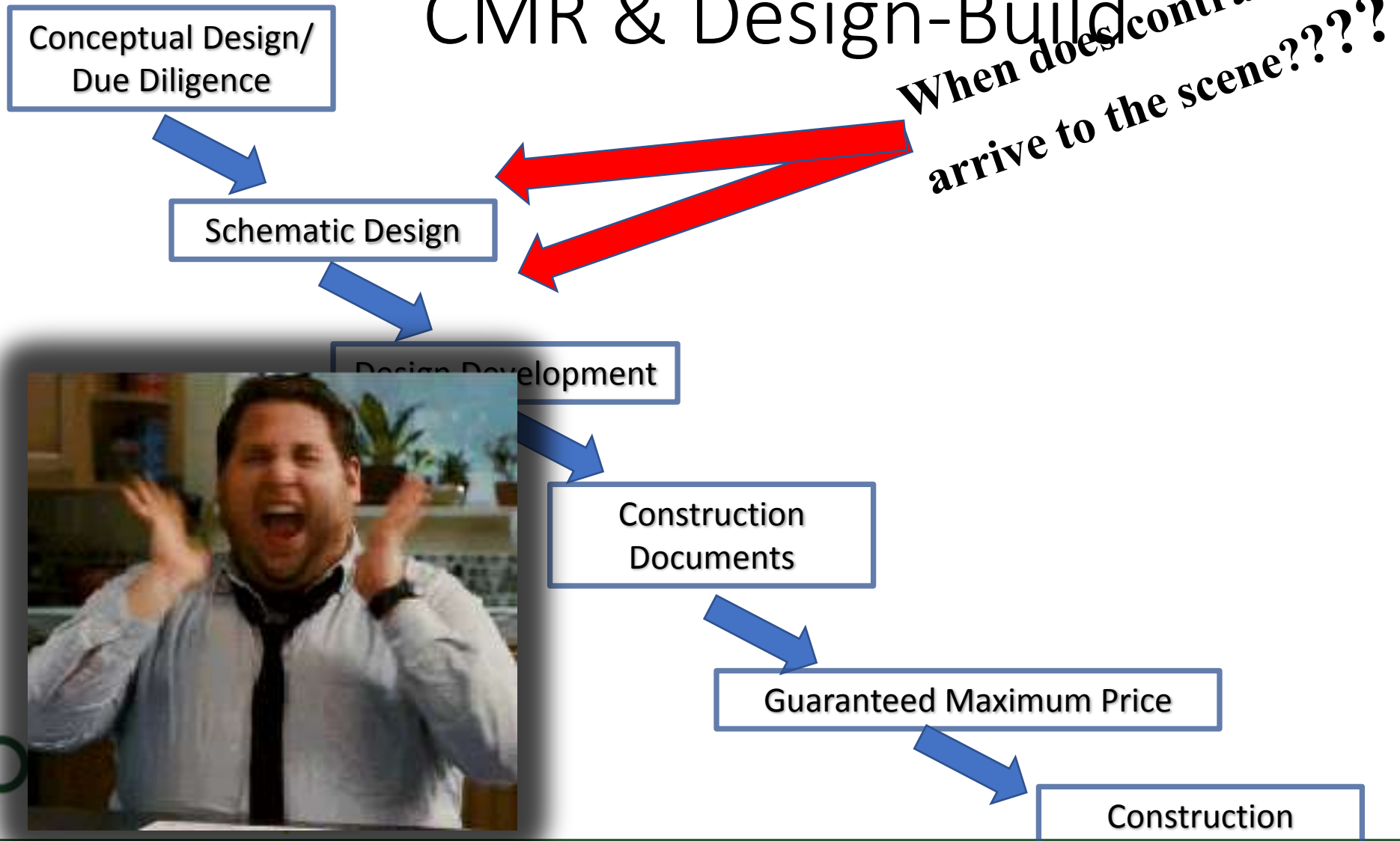
**When does contractor
arrive to the scene???**



Developing Trails in Northeast Ohio

Capital Construction

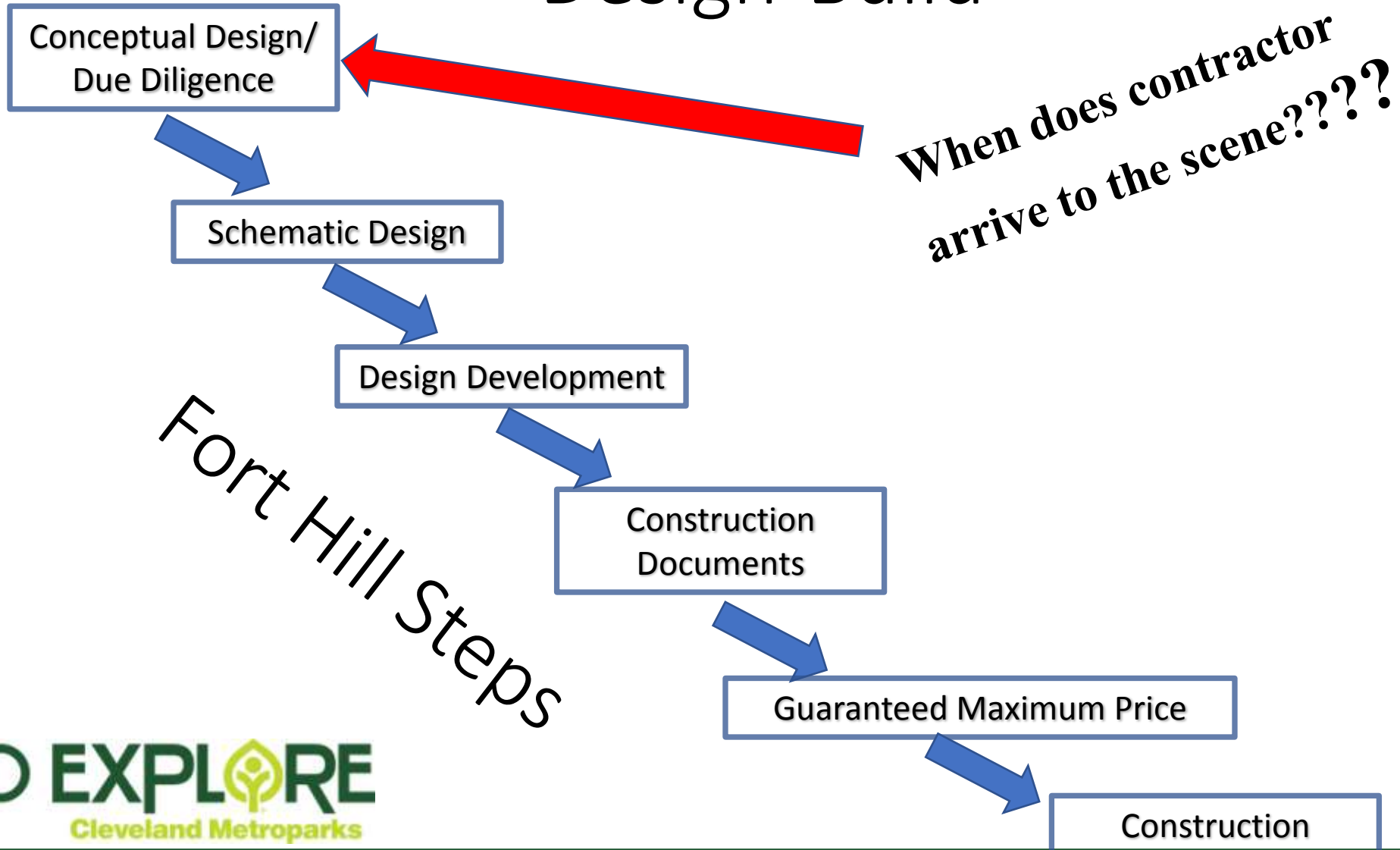
CMR & Design-Build



TIME TO

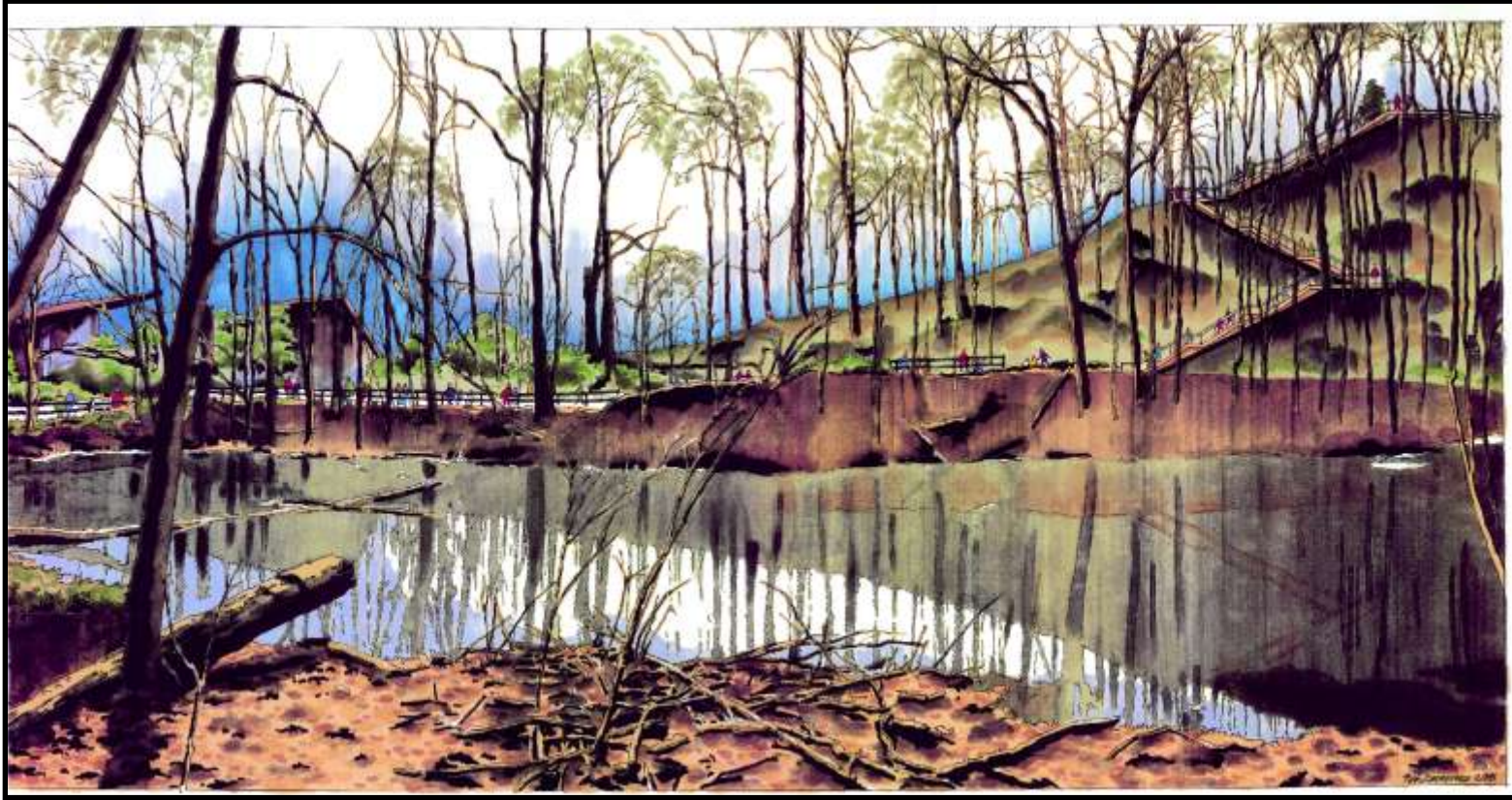
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Design-Build



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Rocky River Reservation – Fort Hill Steps



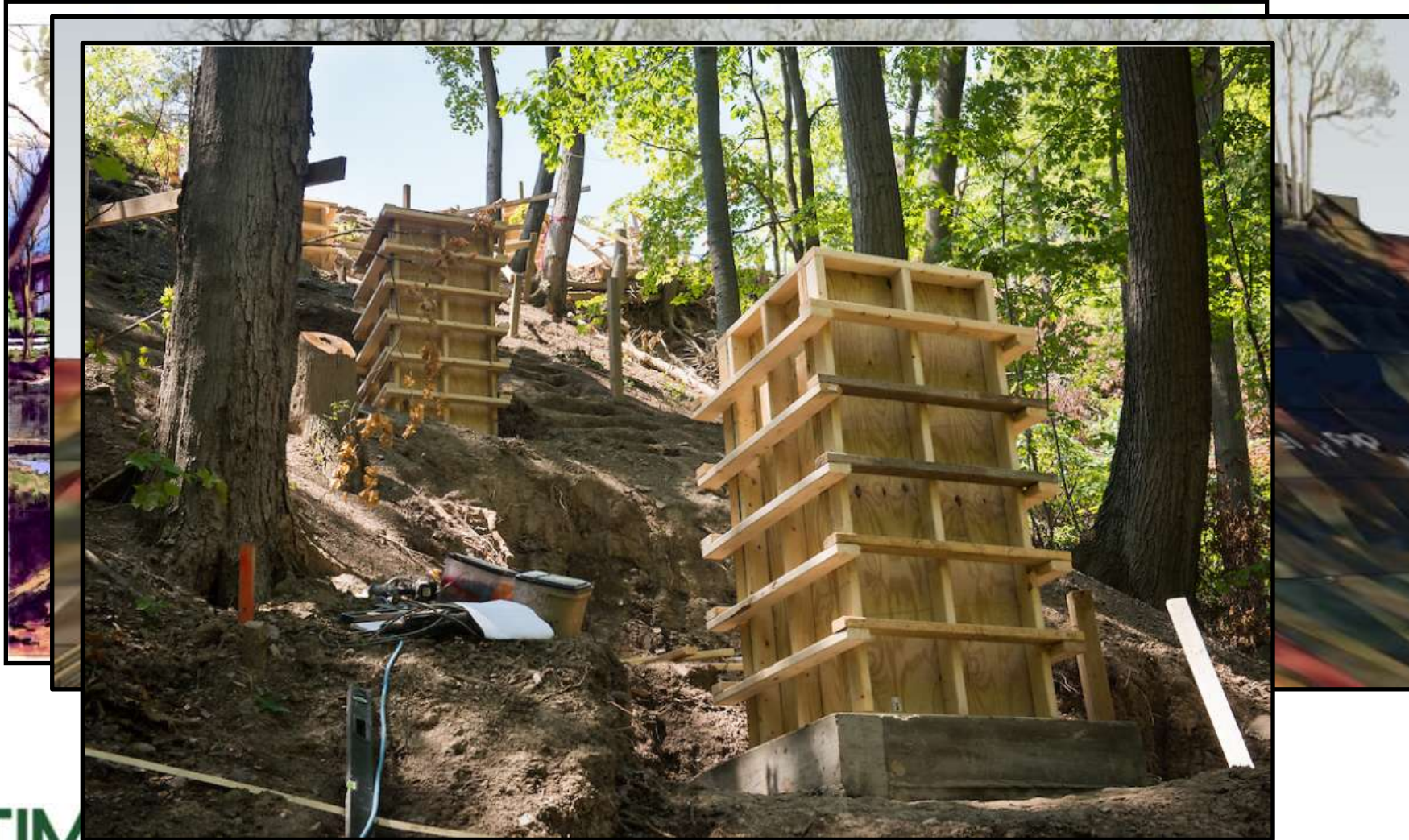
Developing Trails in Northeast Ohio

Rocky River Reservation – Fort Hill Steps



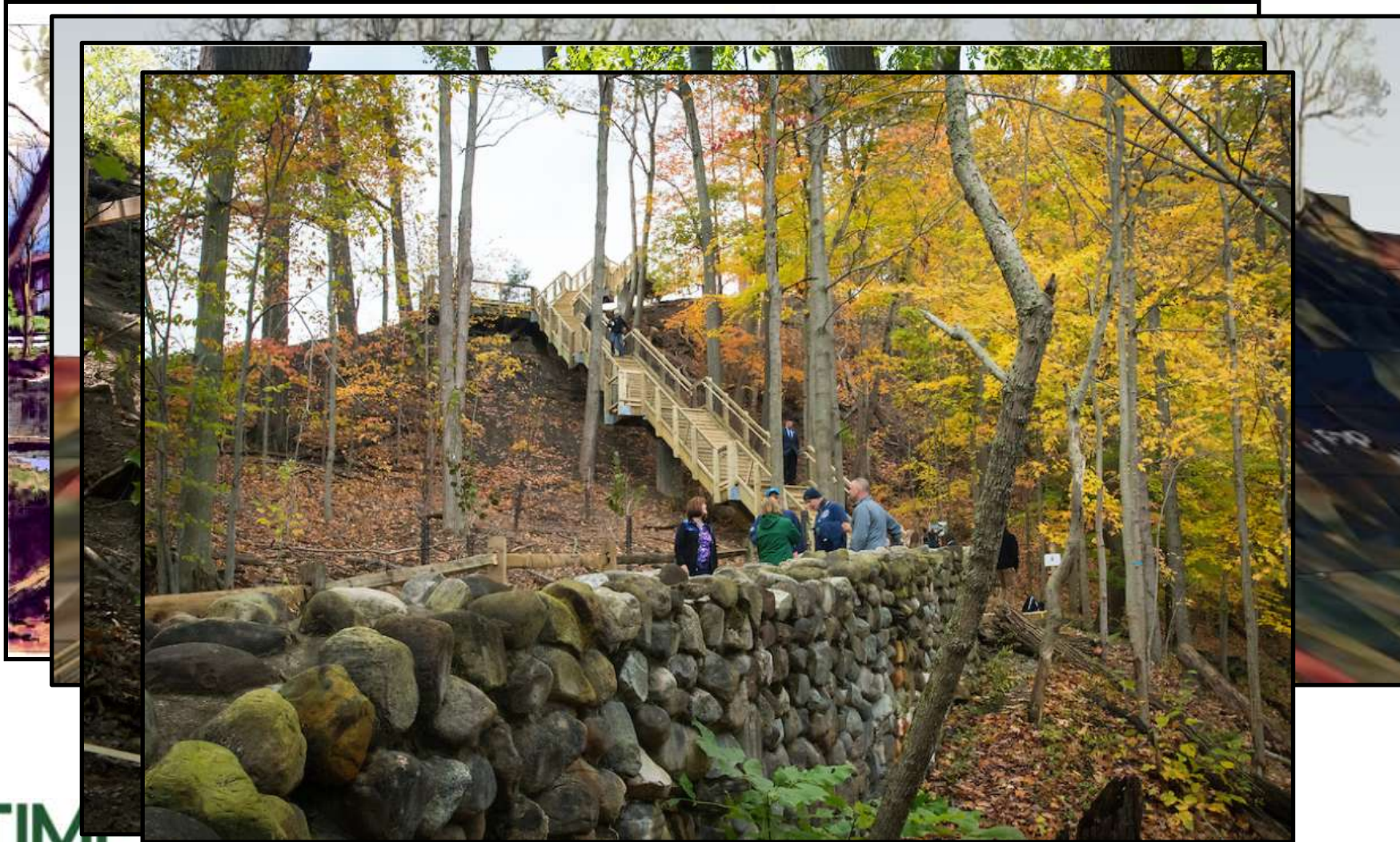
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TIME

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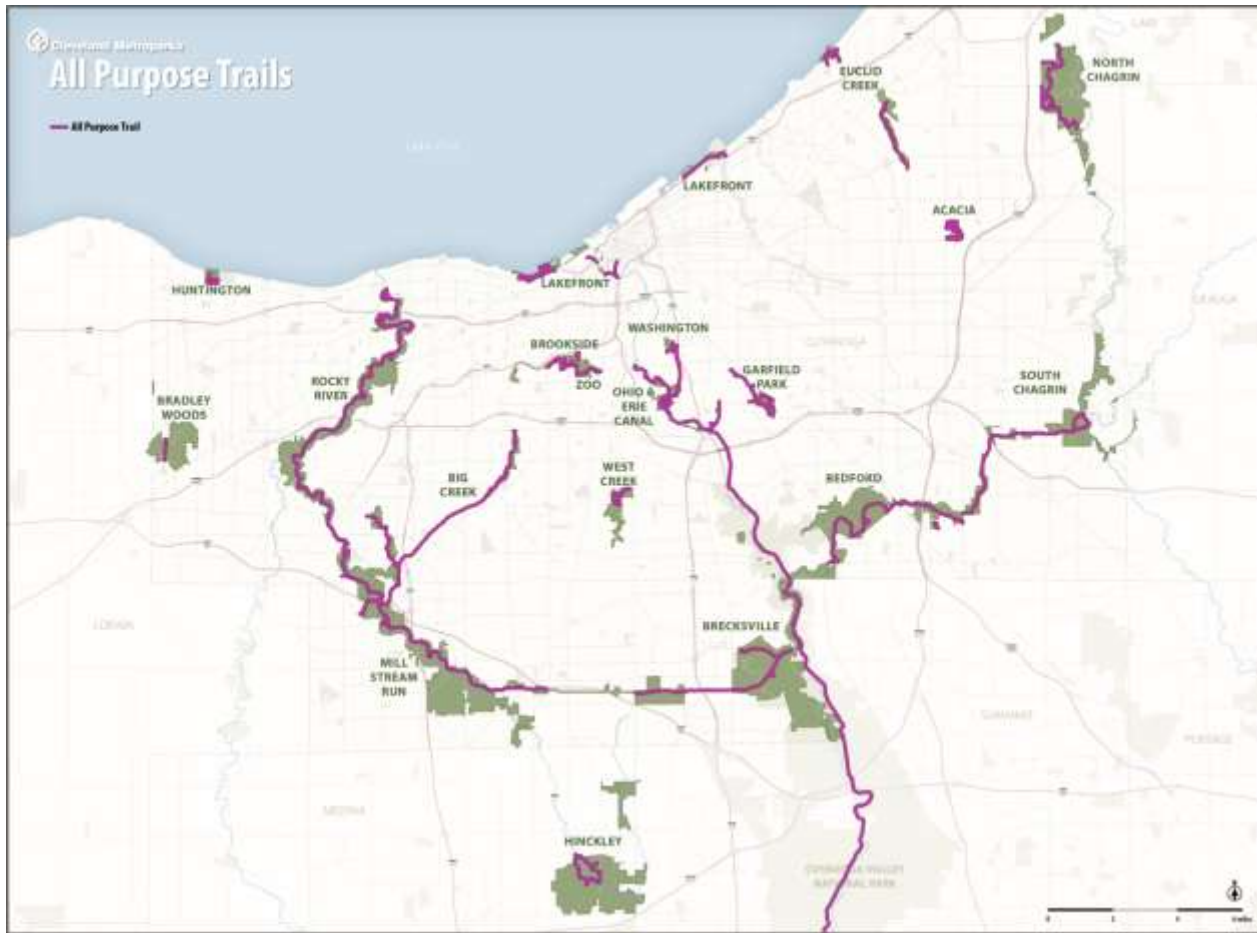
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TIME

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Cleveland Metroparks Reservation Plan Updates



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Park / Open Space

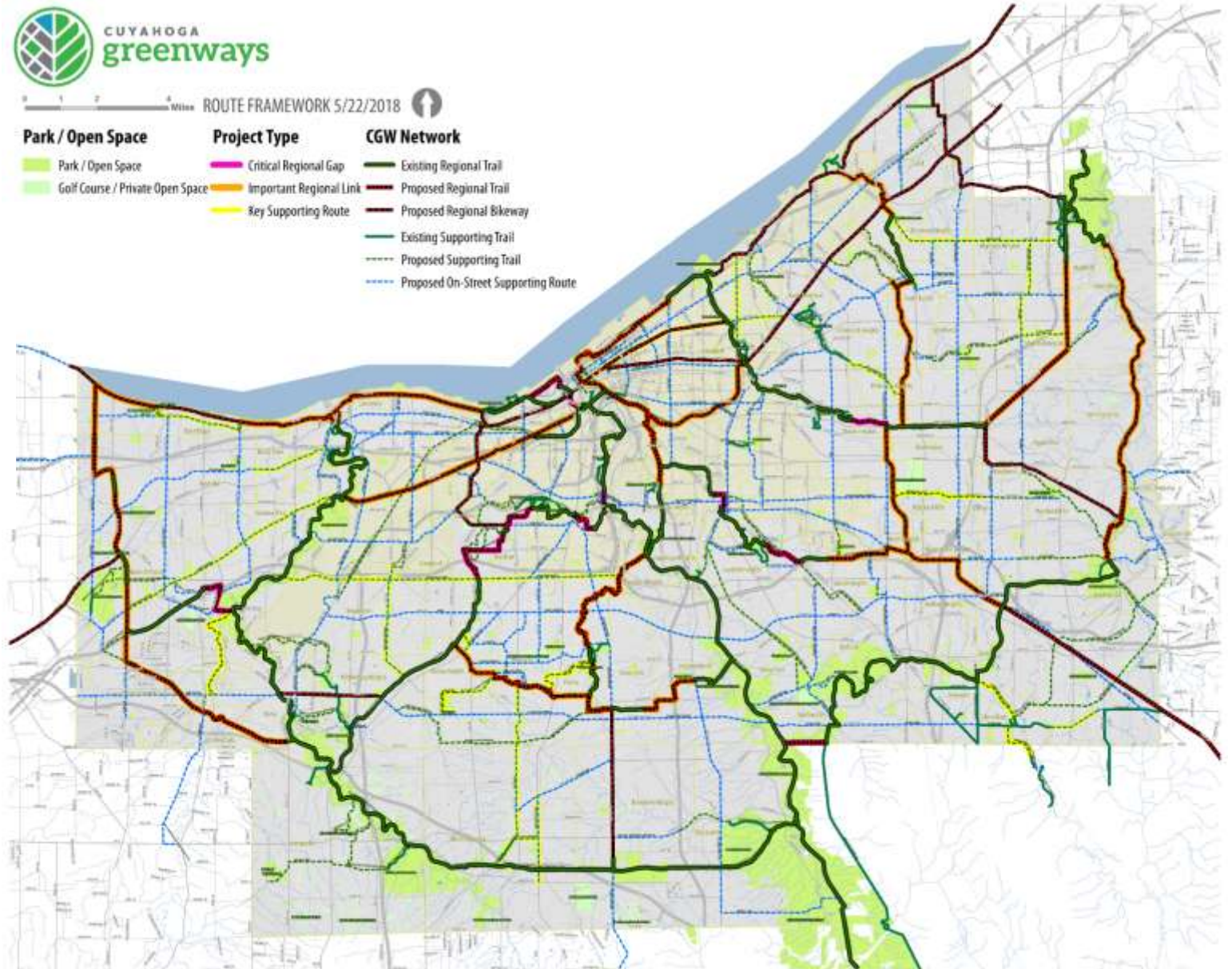
- Park / Open Space
- Golf Course / Private Open Space

Project Type

- Critical Regional Gap
- Important Regional Link
- Key Supporting Route

CGW Network

- Existing Regional Trail
- Proposed Regional Trail
- Proposed Regional Bikeway
- Existing Supporting Trail
- Proposed Supporting Trail
- Proposed On-Street Supporting Route



TIME TO EXPLORE
Cleveland Metroparks

Developing Trails in Northeast Ohio

Vision for the Valley



- Renewed Land Use Vision
- Improve Multi-Modal Options
 - Trail
 - Maritime
- Improved Public Safety
- Increased Public Space
- Connect the East & West Neighborhoods
- Marketing of the River Valley
- Overall Unified Vision



Developing Trails in NEO

Concepts, Challenges, and
Technology

May 31, 2018
Lago East Bank

Sean E. McDermott, P.E.
Chief Planning and Design Officer
Cleveland Metroparks

