



# **Red Bank Corridor Project**

**HAM-32F-0.00**

PID 86461

## **APPENDIX A**

### **Red Bank Corridor Red Flag Summary Report**

**RED FLAG SUMMARY REPORT**

**HAM-32F-0.00**

**PID 86461**

**RELOCATED SR-32 SEGMENT 1**

**RED BANK CORRIDOR IMPROVEMENTS**

**EASTERN CORRIDOR MULTIMODAL PROJECTS**

**HAMILTON COUNTY, OHIO**

**SUBMITTED TO**



**OHIO DEPARTMENT OF  
TRANSPORTATION**

District 8

Project Manager Keith Smith

505 S. State Route 741

Lebanon, Ohio 45036

August 1, 2011

**SUBMITTED BY**



URS Corporation

564 White Pond Dr.

Akron, OH 44320

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**HAM 32F-0.00 Relocated SR-32 Segment 1  
Red Bank Corridor Improvements  
PID 86461**

**GENERAL**

<b>Project Name (County, Route,</b>	HAM-32F 0.00	<b>PID:</b>	86461
<b>Date Red Flag Summary Completed:</b>	August 1, 2011	<b>Prepared By:</b>	David Wormald, PE, AICP
<b>City, Township or Village Name(s):</b>	City of Cincinnati, Village of Fairfax	<b>ODOT Project Manager:</b>	Keith Smith

**GENERAL PROJECT PLANNING INFORMATION:**

**Project Description:**

Eastern Corridor Segment I (HAM-32F-0.00) includes access and capacity improvements to 2.0 miles of Red Bank Expressway/Road between IR 71 and US 50, including the Red Bank Expressway/Road mainline, major intersections, and the local access network. Segment I also includes coordination with other proposed Eastern Corridor improvements, including tie-in to a new interchange at US 50/Red Bank Road (Segment II/III; HAM/CLE-32-0.00; PID 86472), bikeway, transit improvements, and green infrastructure.

**Background**

*Tier 1 Work Program:* Tier 1 activities documented in the Eastern Corridor Tier 1 EIS involved development and preliminary assessment of two mainline alternatives for improved Red Bank Road, including an improvement alternative on existing alignment and a bypass alternative. Three local access improvement options were also evaluated.

Additional study conducted in 2006 identified four mainline options and two local access improvement options (in support of the mainline) to be carried forward for further evaluation. The four mainline alternatives generally follow the existing alignment of Red Bank Expressway/Road, and differ in access configuration at Erie Avenue and Madison Road. Development of these alternatives is documented in the “*Preliminary Input for Assessment of Feasible Alternatives for Eastern Corridor Segment I (Red Bank Road)*” submitted to the HCTID, City of Cincinnati and ODOT in December 2006.

*Current Project Status:* Segment I is following the current 10-Step Project Development Process (PDP) for Minor Projects. The Tier 1 work and subsequent alternatives development for Segment I performed in 2006 completed the Minor PDP to the end of Step 2, except for Concurrence Point #1, which involves providing opportunity for public input on the mainline and local access alternatives currently under consideration as described above.

**Scope Elements**

Activities described in this scope of services are a continuation of the alternatives development completed in 2006, and include the work necessary to finish Step 2 (Concurrence Point #1) and complete Step 3 (preliminary engineering/environmental analysis).

A separate scope and fee proposal will be developed to complete Segment I through Step 4, which involves environmental clearance and developing Stage I design. A Level 4 Categorical Exclusion is anticipated.



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**Project Limits/General Location:**

The project is located within the Madisonville neighborhood of the City of Cincinnati north of Erie/Brotherton and within the Village of Fairfax South of Erie Brotherton.

Project extends along Red Bank Expressway/ Road (CR-67) from Interstate 71 at its northern terminus south to Fair Lane a distance of approximately 2.0 miles.

The study extends east and west along the adjacent cross streets approximately 1,000 ft in either direction. Major Cross A streets include Duck Creek Road, Madison Road, Hetzel Street, and Erie/Brotherton Avenues. Lateral limits along Red Bank Expressway/Road are 300 ft and along other local network streets 100 ft.

**ODOT DISCIPLINE INVOLVEMENT:**

*List name and phone number of individual(s) representing each discipline during the site visit and preparation of the Red Flag Summary. One individual may represent multiple disciplines.*

DISCIPLINE	NAME	PHONE NUMBER
ODOT County Manager		
District Planning & Engineering Administrator	Joseph Vogel	513 933-6603
District Planning and Programming Administrator	Andy Flugggeman	513 933-6597
Project Manager	Keith Smith	513 933-6590
District Geotechnical Engineer	Joe Smithson	
District Traffic Engineer	Jay Hamilton	513 933-6584

**EXTERNAL AGENCY INVOLVEMENT:**

*Indicate external agency involvement during identification of red flags. List the name and phone number of individual(s) representing each agency during the site visit.*

AGENCY	NAME	PHONE NUMBER
City of Cincinnati	Martha Kelly	513 352-3648
Village of Fairfax	Jennifer Kaminar	513 327-6503
Hamilton County Engineers Office	Ted Hubbard	513 946-4250

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General Project Planning Information	
<p>Structures:</p> <p>Bridge Number: <b>I&amp;O Railroad over Red Bank Expressway City Bridge RR-35</b> Structure File Number <b>3162672</b></p> <p>Bridge Number: <b>Erie Ave over SORTA RR City Bridge 23</b> Structure File Number <b>3160939</b></p> <p>Bridge Number: <b>Erie Ave over Red Bank Expressway City Bridge 22</b> Structure File Number <b>3160998</b></p> <p>Bridge Number: <b>Red Bank Road over I&amp;O Railroad City Bridge 36</b> Structure File Number <b>3160947 (Closed)</b></p>	<p>Project Sponsor: <b>ODOT</b></p> <p>Is local legislation required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is FHWA oversight required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Is project location on congestion/safety list? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Estimated Cost: <b>\$346.3 M (OKI LRTP Estimate)</b></p>	<p>Problem identified by (<i>indicate document date</i>):</p> <p>■ District Work Plan _____</p> <p>■ Congestion Study: Hamilton County TID Eastern Corridor Study SR-32 Segment I PID 22970 (Dec. 2006)</p> <p>■ Safety Study _____</p> <p>■ Major New _____</p> <p>■ MPO TIP _OKI 2008-2001 TIP Amendment No.15 4-9-09</p> <p>■ MPO LRP OKI 2030 LRTP Project No 655</p> <p>■ Access Ohio _____</p> <p>■ Hot Spot Location _____</p> <p>■ HSP Location _____</p> <p>■ Other _____</p>
<p>Funding Source(s): <b>TBD</b></p> <p>■ Federal _____</p> <p>■ State _____</p> <p>■ Local _____</p> <p>■ Private _____</p>	
<p>Are funding splits required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Specify: <b>TBD</b></p>	
<p>Anticipated quarter and Fiscal Year of project award: <b>TBD</b></p>	
<p>• Are there any other projects in the area (ODOT, local or utility) that might conflict with the project (e.g., a local project on the proposed detour route for the ODOT project, a resurfacing project a year after a pavement marking project)?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Specify. HAM 32 - 2.50 Relocated SR-32 is located immediately south of the project area. Local intersection improvements at Madison/Redbank Expressway to accommodate Medpace Development.</i></p> <p>• Are there growth or land use changes in the area surrounding the project that could have an impact on project scope?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Specify. On going private office and retail development ongoing south of Madison Road including new access points and additional trip generation.</i></p> <p>Are there any known public involvement issues? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Specify. Public Involvement for this project is being conducted in conjunction with overall Eastern Corridor Multimodal Projects which includes the relocation of SR-32 and potential rail transit improvements. Some local property owners and businesses have inquired about the status of the project and specifically what impact the project may have to their respective property.</i></p>	

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**GENERAL EXISTING INFORMATION:**

Legal Speed 45 mph (Red Bank Expressway), 35 mph local arterials/collectors 25 mph on local streets.  
 Design Speed 45 mph on Red Bank Expressway, 35 mph local arterials/collectors, 25 mph on local streets.

**Traffic Data:**

Opening Year ADT: **TBD**

Design Year ADT: **TBD**

Design Hourly Volume: **TBD**

Directional Distribution: **TBD**

Trucks (24 Hour B&C): **TBD**

*(Traffic data does not need to be certified for the Red Flag Summary.)*

**Functional Classification:**

- Principal Urban Arterial **CR-0067 (future SR-32) Red Bank Expressway, CR-0612 Madison Road (West of Red Bank)**  
 Minor Urban Arterial **Madison Road (East of Red Bank)**
- Urban Collector: **Duck Creek Rd. Stewart Ave, Erie/Roslyn Brotherton, Bramble Ave.**
- Local, **Hetzel St., Fair Lane, Shannon Way, Murray Rd, Virginia Ave.**

**Locale: Urban**

National Highway System (NHS): **None at this time: (SR-32 East of I-275 is Non-Interstate STRAHNET Route)**

Non-NHS Routes: **CR-0067 Red Bank Expressway (Future SR-32) and CR-0612 Madison Rd**

Resurfacing, Restoration and Rehabilitation (3R) Project? ■ Yes    **X** No

**SITE VISIT:**

*A site visit is required for ALL projects. The site visit shall consist of visual inspection of the entire project area including the ditch lines, cut slopes, stream banks, bridge foundations, pavement, embankment slopes, etc.*

Date(s) of site visit: January 13, 2011 (See Appendix I for Field Discussion Items)

**ODOT COUNTY MANAGER CONCERNS:**

*List any comments/requests from the ODOT County Manager.*

**ACCIDENT DATA:**

See Appendix A for additional information.

URS used the ODOT GIS Crash Analysis Tool (GCAT) and Crash Analysis Module (CAM) and Data provided by District 8 to map and analyze data within the project area. Upon review of the location data it was noted that there are coding problems differentiating Red Bank Expressway and Read Bank Road additionally many crashes were given at the same latitude and longitude by the responding officer thus precise locations of crashes could only be discerned by reviewing the individual OH-1 reports. Three years of data 2007-2007 included 535 crashes within the study area. (See figures xx through xx for distribution of the crashes. There were two fatal crashes within the study area during this time period.

Crash analysis was focused on four sub areas as follows:

- Intersection of Red Bank Expressway and Madison Road,
- The Red Bank Road corridor from Duck Creek Road northward to the I-71 underpass (a length of approximately 2500', including the area in front of Seven Hills Middle School),
- Erie Avenue corridor within the project limits, and
- Intersection of Murray Road and Virginia Avenue.

Total crashes for each area were mapped, as well as crashes during the morning and afternoon peak hours. The evaluation of the crashes at each sub-area location was considered separately.

In the vicinity of the intersection of Madison Rd and Red Bank Expressway there were a total of 129 crashes. This results in a crash rate of 4.57 crashes/million entering vehicles vs. the Hamilton County average of 3.95 crashes/MVMT. The crash rates at all other subareas were below the county wide average.

There are a few specific locations that could possibly warrant further study. The intersection of Madison Road and Anderson Place could possibly be studied for a pedestrian traffic signal, or other traffic control enhancements. Rear-end and sideswipe crashes appear to be a problem on the Madison Road approaches to Red Bank Expressway. Efforts to decrease the congestion and queue lengths, and improve lane use signage could possibly improve the crash situation at this intersection.

Based on the crash data, there does not appear to be significant safety problems within project limits which would contribute to the project purpose and need. Nor does the distribution of crashes indicate specific significant problems with roadway geometrics, roadside hazards, lighting or pavement conditions.

<b>ENVIRONMENTAL ISSUES:</b>		
<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<b>Involvement</b>	<b>Resource/Feature</b>	<b>Location/Comments</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Parkland, nature preserves and wildlife areas ( <i>Name</i> )	<p>Rosslyn/Erie Greenspace: A 2.1-acre greenspace area owned by the City of Cincinnati occurs along the Duck Creek stream corridor on the upstream side of Erie Avenue; it is partially within the project study area. There are no recreational components to this site; therefore no Section 4(f) issues are anticipated.</p> <p>No public-owned parks, nature preserves or wildlife areas occur in the project study area boundaries. Ault Park (Cincinnati Parks) is located approximately 300 feet southwest of the project southern boundary.</p>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Cemetery ( <i>Name</i> )	No cemeteries are located in the project study area.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Scenic River ( <i>Name</i> )	The project occurs in the Little Miami River watershed, Duck Creek sub-watershed (Hydrological Unit Code 05090202-140-050). The Little Miami River is a state scenic river and component of the national scenic river system. The Little Miami River main stem is located about 970 feet southeast (straight line distance) from the southernmost study area boundary, and will not be directly impacted by the project. The project may include a crossing of Little Duck Creek.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Public Facilities ( <i>Name</i> )	<p>There is one public school facility and a postal facility in the project study area, including:  <u>Public-owned facilities</u></p> <ul style="list-style-type: none"> <li>• John P. Parker Elementary</li> <li>• U.S. Post Office Madisonville</li> </ul> <p>Additionally, there are a number of daycare, retirement, medical, school, recreational and church facilities in the study area that are privately owned, including:  <u>Other Community Facilities (Privately-owned)</u></p> <ul style="list-style-type: none"> <li>• Seven Hills School</li> <li>• The Cincinnati Children's Home</li> <li>• Madison Villa (private retirement home)</li> <li>• Barrington of Oakley (private assisted living)</li> <li>• Indian Spring of Oakley (private assisted living)</li> <li>• St. Paul Lutheran Church</li> <li>• St Paul Village (private retirement home)</li> <li>• Madisonville Child Care Center (daycare)</li> <li>• Red Bank Professional Office Building (medical office and healthcare)</li> <li>• The Goddard School (private daycare/preschool)</li> <li>• Dupree House (private retirement home)</li> <li>• Cincinnati Sports Club (recreational)</li> </ul>

<b>ENVIRONMENTAL ISSUES:</b>		
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<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Threatened and Endangered Species and/or habitat (e.g., Indiana bat trees, etc.)	<p>U.S. Fish and Wildlife reports that Hamilton County is within the known range of five federal listed species, including:</p> <p><u>Federal endangered:</u></p> <ul style="list-style-type: none"> <li>• Indiana bat (<i>Myotis sodalis</i>)</li> <li>• Running buffalo clover (<i>Trifolium stoloniferum</i>)</li> <li>• Fanshell mussel (<i>Cyprogenia stegaria</i>)</li> <li>• Pink mucket pearly mussel (<i>Lampsilis abrupta</i>)</li> </ul> <p><u>Federal Proposed Endangered:</u></p> <ul style="list-style-type: none"> <li>• Sheepnose mussel (<i>Plethobasus cyphus</i>)</li> <li>• Snuffbox mussel</li> <li>• Rayed Bean mussel</li> </ul> <p><u>Federal Species of Concern</u></p> <ul style="list-style-type: none"> <li>• <u>Bald Eagle</u></li> </ul> <p>Based on reconnaissance field surveys conducted in October 2010, potential summer roosting habitat for Indiana bat occurs sporadically in the project study area, consisting of scattered trees with exfoliating bark and dead limbs/trunks with cavities. Guidance from ODOT-OES on further study of potential Indiana bat habitat in the project study area is pending.</p> <p>Potential suitable habitat for running buffalo clover was noted in the study area, consisting of scattered older residential yards and other wooded areas. These sites will require field survey during the species' flowering season (May-June) to determine presence/absence.</p> <p>No potential habitat for the listed mussel species was noted during reconnaissance field surveys conducted for this project.</p>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Existing cat tails ( <i>Location</i> )	<p>Cattails occur in six distinct areas within the study area. Three areas are considered jurisdictional wetland areas. The remaining three areas are roadside ditch areas that do not meet the U.S. Corps of Engineers jurisdictional wetland criteria (soils, hydrology, and vegetation).</p>

ENVIRONMENTAL ISSUES:		
<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Existing wet areas ( <i>Location</i> )	<p>Three wetlands were identified within the study area, including:</p> <ul style="list-style-type: none"> <li>• a 0.12 acre emergent/scrub-shrub, limited quality Category 1 wetland located at the north end of the study area on the west side of Red Bank Road.</li> <li>• A 0.17 acre emergent seep, limited quality Category 1 wetland located at the east edge of the study area between Duck Creek Road and Madison Road.</li> <li>• A 1.26 acre emergent/open water, good quality Category 2 wetland located in a remnant channel of Duck Creek (see comments for streams, rivers and watercourses, below), just south of Fair Lane towards the south end of the study area.</li> </ul> <p>None of these three features are isolated wetlands.</p>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Streams, rivers and watercourses ( <i>Use Designation</i> )	<p>The project occurs in the Little Miami River watershed, Duck Creek sub-watershed (Hydrological Unit Code 05090202-140-050). Based on reconnaissance field survey, eleven OHW features were observed within the study area, including three USGS perennial streams (Duck Creek, West Fork Duck Creek, and East Fork Duck Creek), two USGS intermittent streams and six other minor stream features. Preliminary assessment indicates that all of the stream features are limited quality with either low or no flow characteristics or have previously been disturbed. Duck Creek, West Fork Duck Creek and East Fork Duck Creek have official OEPA use designations of Limited Resource Water within the study area.</p> <p>Approximately 1,200 feet of Duck Creek channel was relocated through a concrete arch culvert as a component of the “Metropolitan Region of Cincinnati, Duck Creek, Ohio, Local Flood Protection Project”. This third phase of the project was completed in November 2005. The remnant Duck Creek channel has since converted into a Category 2 wetland (see wetland comments above).</p>

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<b>ENVIRONMENTAL ISSUES:</b>		
<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Historic Building(s) ( <i>Location</i> )	<p>See the attached Cultural Resources Coordination Package for additional information. At this time it is not anticipated that historic buildings will be directly impacted by potential alternatives. Further evaluation is required during future steps of the project Development Process.</p> <p>The literature review identified one historic district listed as a NHL and one historic district listed in the NRHP within the study area. The Village of Mariemont Historic District (NHL 07000431) is located at the southeast portion of the study area. The Madison-Stewart Historic District (NRHP 75001419) is located at the intersection of Madison Road and Stewart Avenue in the northeast portion of the study area.</p> <p>The literature review identified two buildings and one industrial park documented in the Ohio Historic Inventory files within the study area. The Stewart House at 5540 Madison Road (HAM-0332-13) and the Weir House at 4931 Stewart Avenue (HAM-0385-13) are contributing resources within the NRHP-listed Madison-Stewart Historic District. Buildings in the Westover Industrial Park, including the building at 5657 Wooster Pike, are contributing resources within the Village of Mariemont NHL historic district.</p>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible	Historic Bridge(s) ( <i>Location</i> )	None
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible	Farmland ( <i>Location</i> )	No current Agricultural Use Value (CAUV) or Agricultural District (AD) parcels are located in the project study area based on review of the 2010 Hamilton County (CAGIS) database.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Air Quality non-attainment area or concerns (ozone particulate or air toxics)	The project area (Hamilton County) is currently in a maintenance area for 8-hour ozone and non-attainment PM <sub>2.5</sub> .



<b>ENVIRONMENTAL ISSUES:</b>		
<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Possible	Landfill(s), Superfund Site(s) and/or evidence of hazardous materials (Location)	<p>Database records review conducted September 3, 2010 (EDR) indicates no landfills or Superfund sites occur within the study area boundaries; however, a total of 70 database records were reported from within the study area, with 34 unique sites having the potential for hazardous materials concerns, including:</p> <ul style="list-style-type: none"> <li>• Schulte Metals, 4909 Charlemer Dr. (CERCLIS, DERR)</li> <li>• Nutone, 4820 Red Bank Road (BROWNFIELDS, INST CONTROLS, DERR, UIC) - currently undergoing partial site redevelopment</li> <li>• Red Bank Distribution, 4000 Red Bank Road (INST CONTROLS, DERR, RCRA-SCEQG, LUST) - recently fully redeveloped</li> <li>• Ford WWTP Former, 3863 Red Bank Road (DERR)</li> <li>• Additional sites with potential concerns, including 15 RCRA (LQG, SQG or CESQG) sites, 14 LUST sites and one FTTS &amp; PADS site.</li> </ul> <p>One historic landfill was noted in the area (referred to as the "City Dump") based on review of 1969 City of Cincinnati plans for Red Bank Road; this site was not listed in the database review conducted in September 2010.</p> <p>Additional effort and/or cost may be required to address the ESA issues associated with the above-listed sites. It is unlikely the project alternatives will affect Schulte Metals, other sites will likely be impacted but have been or are currently being remediated as part of ongoing private redevelopment in the study area.</p>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible	Known Archaeological Sites	None of the study area has been previously subjected to an archeological survey and archaeological sites within the preferred alternative need to be identified and evaluated for significance and integrity at a later step in the PDP process.
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible	Watershed Specific (i.e. Darby or Olentangy) NPDES Permit Area	The project is not located in any USEPA identified watershed specific NPDES Permit Areas.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible	Sensitive environmental justice areas	<p>Review of available OKI environmental justice mapping (based on Census 2000 Block Groups) indicates that both minority and low income EJ target populations occur in the project study area primarily north of Erie/Brotherton Avenue.</p> <p>Census 2010 demographics will be reviewed when available and presented in the project environmental document.</p>

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<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Federal Emergency Management Agency (FEMA) floodplains	Current (2010) FEMA mapping indicates that 100-year FEMA-floodplains and associated floodway zones along Duck Creek mainstem, West Fork Duck Creek, and East Fork Duck Creek within the project study area.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Lake Erie Coastal Management Area	There are no Lake Erie Coastal Management Areas in proximity to the study area.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Sole Source Aquifers (Location)	The study area is located within the boundaries of the USEPA-designated Great Miami Sole Source Aquifer.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible	Wellhead Protection Areas (Specify)	There are no OEPA public water supply wells or source water protection areas located in the study area based on current drinking water source information provided by Ohio EPA (September 15, 2010).

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<i>Make a preliminary determination on whether the following resources will be affected by the proposed project. Comments must identify the location of the issue. Comments are required for any Yes or Possible responses.</i>		
<p>■ Yes ■ No X Possible</p>	<p>Does it appear that noise abatement will be an issue for the project?</p>	<p>A review of the project study area was conducted to identify noise sensitive land uses in accordance with the updated FHWA Noise Abatement Criteria (23CFR772).</p> <p>Four general noise-sensitive areas could potentially experience sound-level impacts as a result of improvements associated with the project mainline alternatives located on or along existing Red Bank Road (see Figure 6) including:</p> <p><b>Area 1</b> - the Dupree House (retirement home) and residences located along the east side of Erie Avenue and along Forest Hill Drive (to the west of existing Red Bank Expressway)</p> <p><b>Area 2</b> - the Goddard School on Red Bank Road and residences located along the west side of Erie Avenue and along Macey Avenue, Erie Station Lane, Centennial Drive, Watertower Court, and Tompkins Avenue (to the east of the existing Red Bank Expressway)</p> <p><b>Area 3</b> - John Parker Elementary School, the Madison Villa (retirement home), the St. Paul Lutheran Church and associated retirement home (St. Paul Village), the Madisonville Child Care Center (daycare), and residences located along Stewart Avenue (north of Madison Road), Anderson Place, Chandler Street, Davies Place, Luhn Avenue, Monning Avenue, and Maphet Avenue (to the east of the existing Red Bank Expressway)</p> <p><b>Area 4</b> - the Seven Hills School on Red Bank Road, the Barrington of Oakley and Indianspring of Oakley assisted living centers along Madison Road (site of the former drive-in theater), and residences located along Ellmarie Drive, Buffer Lane, and Raywill Court (to the west of the existing Red Bank Expressway, just south of I-71).</p> <p>Additional noise sensitive land use areas occurring at the south end of the study area generally south of Fair Lane are being evaluated under the Eastern Corridor HAM/CLE-32F-2.50 Segment II/III</p>
<p>■ Yes ■ No ■ Possible</p>	<p>Other environmental issues</p>	<p>No other environmental issues were noted.</p>

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<b>GEOMETRIC ISSUES:</b>		
<i>Use the design speed, design functional classification and available traffic data to make a preliminary determination as to the geometric standards for the project. Compare these requirements to accident data and impacts if deviations are being considered.</i>		
<b>Design Exception Required?</b>	<b>Design Feature</b>	<b>Preliminary Comments Regarding Justification</b>
X Yes ■ No ■ Possible ■ Not Applicable	Lane Width (including curve widening)	See Appendix C Geometric design Red Flags Evaluation. There are several locations where lane widths are less than the 12' minimum or preferred however City of Cincinnati policy allows for less than 12' lanes in some circumstances.
X Yes ■ No ■ Possible ■ Not Applicable	Graded Shoulder Width	There are several areas where current shoulder widths do not meet ODOT criteria. See the attached table for details of Geometric Design Red Flags
■ Yes X No ■ Possible ■ Not Applicable	Bridge Width	Bridge widths are acceptable
■ Yes X No ■ Possible ■ Not Applicable	Structural Capacity	There are no load restricted bridges within the study area except for Red Bank Road over the I&O railroad which was closed to vehicular traffic in 1997.
X Yes ■ No ■ Possible ■ Not Applicable	Horizontal Alignment (including Excessive Deflections, Degree of Curve, Lack of Spirals, Transition/Taper Rates and Intersection Angles)	South of Erie Ave., Red Bank Expressway does not meet minimum radius and taper rates for the proposed project design speed. See the attached table for details of Geometric Design Red Flags
X Yes ■ No ■ Possible ■ Not Applicable	Vertical Alignment (including grade breaks)	There are several areas where grade breaks exceed ODOT criteria. See the attached table for details of Geometric Design Red Flags
■ Yes X No ■ Possible ■ Not Applicable	Grades	Grades are acceptable where data has been provided
X Yes ■ No ■ Possible ■ Not Applicable	Stopping Sight Distance	There are some locations along Red Bank Expressway (at Brotherton) as well as Duck Creek Road that do not provide adequate stopping sight distance based upon the design speed for the project.
■ Yes ■ No X Possible ■ Not Applicable	Pavement Cross Slopes	See Appendix C Geometric design Red Flags Evaluation
■ Yes ■ No X Possible ■ Not Applicable	Super elevation (Maximum rate, transition, position)	See Appendix C Geometric design Red Flags Evaluation
■ Yes ■ No X Possible ■ Not Applicable	Horizontal Clearance	See the Appendix C Geometric design Red Flags Evaluation. Horizontal Clearance under Erie Ave. is restrictive.

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<b>GEOMETRIC ISSUES:</b>		
<i>Use the design speed, design functional classification and available traffic data to make a preliminary determination as to the geometric standards for the project. Compare these requirements to accident data and impacts if deviations are being considered.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Vertical Clearance	At this time it appears that vertical clearance under the existing bridge structures is sufficient. Clearance may be an issue if geometrics of the existing roadways may be a problem. Clearance over the SORTA Oasis RR has not been verified to date.

<b>GEOMETRIC ISSUES:</b>		
<i>Indicate if the following geometric issues are present or should be considered during project development. Consider work on the mainline as well as any side roads or service roads. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does the existing horizontal alignment need to be modified?	Some modifications to the exiting horizontal alignments may be required for Red Bank Expressway to meet the proposed 45 mph design speed.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does the existing vertical alignment need to be modified?	If the intersections of Red Bank Expressway with Madison Road and Erie are reconfigured, changes in the existing vertical alignments are likely.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does stopping sight distance need to be increased?	If the design speed is increased to 45 mph for Red Bank Expressway the stopping site distance will need to be increased in the vicinity of Brotherton unless this intersection is reconfigured.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does intersection sight distance need to be increased?	See Appendix C Geometric design Red Flags Evaluation
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there geometric issues that may affect traffic safety (including Full or Half-Clover Leaf Interchange, Slip Ramps, Weave Areas, and short acceleration/deceleration lanes). <i>Describe.</i>	Future intersection/interchange configurations at Redbank Expressway and Duck Creek Road, Madison Road as well as Erie/Brotherton could affect traffic safety. Existing geometry does not appear to be a significant contributor to traffic safety accepts as is relates to congestion and rear end crashes at the respective intersections.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any hazards in the clear zone? <i>Specify treatment.</i>	Requires further evaluation depending on the design speed selected
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does existing guardrail need to be replaced (e.g., too low, poor condition)?	Existing Guardrail is in fair condition.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is the area for guardrail anchor assemblies insufficient? (E-98 or B-98)? <i>Consider proper grading around the anchor assembly.</i>	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does the number of turn lanes or through lanes need to be increased?	It is likely that additional turn lanes and through lanes will be required to accommodate future traffic volumes from relocated SR-32. Additional turn lanes at the intersection of Madison Rd. and Red Bank Expressway are planned to accommodate private development in the vicinity.

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<b>GEOMETRIC ISSUES:</b>		
<i>Indicate if the following geometric issues are present or should be considered during project development. Consider work on the mainline as well as any side roads or service roads. Provide additional comments as needed.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are changes to access control required?	It is likely than some changes to access control will be required in the vicinity of Madison and Red Bank Expressway to eliminate direct driveway access near the intersection.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any drive locations that will require special attention during design (e.g., very steep grades, high volume commercial drives, drives close to bridges or intersections)?	See above
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are new mailbox turnouts required?	None known at this time
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there any evidence of accidents due to substandard vertical clearance on overpass structures?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will an interchange be added or modified?	It is possible that a grade separated interchange will be required at the intersection of Red Bank Expressway and Madison Road. The existing interchange of Redbank Expressway, Brotherton and Erie may be modified.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Do the existing intersection radius returns need to be modified to accommodate larger truck turning movements?	Curve radii may need to be adjusted at several locations depending on future configuration of intersections.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does grading need to be upgraded? To what criteria (e.g., clear zone, safety, and standard)?	Grading may need to be upgraded. Requires additional evaluation.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other geometric issues? <i>Describe</i>	To be determined in future steps of the project development process. Potential geometric design issues for the local street network have not been fully evaluated at this time.

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<b>GEOTECHNICAL ISSUES</b>		
<i>Based on the information compiled during this study indicate whether or not the following geotechnical issues are present or should be further considered during project development. Provide additional comments as needed.</i>		
	<b>Design Issues</b>	<b>Comments</b>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of soil drainage problems (e.g., wet or pumping subgrade, standing water, the presence of seeps, wetlands, swamps, bogs)?	See the attached Geotechnical Red Bank Study for additional information.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is the groundwater table anticipated to be affected by construction?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of any embankment or foundation problems (e.g., differential settlement, sag, foundation failures, slope failures, scours, and evidence of channel migrations)?	In service structures appear to be functioning from a geotechnical standpoint. The foundations of the Red Bank Road over the Indiana and Ohio Railroad have erosion at several piers.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of any slope instability (soil or rock)?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of unsuitable materials (e.g., presence of debris or man-made fills or waste pits containing these materials, indications from old soil borings)?	Cincinnati "City Dump" formally located under Red Bank Expressway near Corsica Pl. See Figure 3 for additional info.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of rock strata (e.g., presence of exposed bedrock, rock on the old borings)?	Shallow Bedrock is present in the extreme southwest and northeast corners of the study area. However, over a substantial majority of the study areas the bedrock is greater than 50 ft depth. See the attached Geotechnical Red Bank Study for additional information.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of active, reclaimed or abandoned surface mines?	None known
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there information pertaining to the existence of underground mines?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there Acid Mine Drainage present within the study area?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does subgrade stabilization or an undercut appear to be needed?	Typical subgrade conditions are likely to reflect the presence of fine grained shallow soils throughout the study area.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Should the Office of Geotechnical Engineering be contacted to evaluate the project site?	

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<b>GEOTECHNICAL ISSUES</b>		
<i>Based on the information compiled during this study indicate whether or not the following geotechnical issues are present or should be further considered during project development. Provide additional comments as needed.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Were there any significant items found during plan and specification review? <i>Specify.</i>	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other geotechnical issues? <i>Specify.</i>	See the attached Geotechnical Red Bank Study for additional information.



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<b>PAVEMENT ISSUES:</b>		
<i>Indicate if the following pavement issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
X Yes ■ No ■ Possible ■ Not Applicable	Are pavement cores needed to determine the existing pavement buildup and/or condition?	Existing Pavement build up is known for Red Bank Road/Expressway. Pavement Cores may be required for older local network streets.
■ Yes ■ No ■ Possible ■ Not Applicable	Is the proposed pavement buildup unknown? (For pavement preservation projects, pavement treatment, including pavement type & thickness should be specified in the design scope of services)	Proposed Pavement Buildup is not known at this time.
■ Yes ■ No ■ Possible X Not Applicable	Do dialect tests indicate the existing pavement is in poor condition?	To be determined
■ Yes X No ■ Possible ■ Not Applicable	Does the proposed pavement buildup need to be approved by the Pavement Selection Committee?	
■ Yes ■ No X Possible ■ Not Applicable	Are joint repairs needed?	To be determined in subsequent steps of the Project Development Process
■ Yes ■ No ■ Possible ■ Not Applicable	Are pressure relief joints needed?	To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Are pavement repairs needed?	At this time no significant areas of pavement repairs have been noted on Madison Rd. or Red Bank Expressway. Pavement Repairs may be required on local network streets.
■ Yes ■ No X Possible ■ Not Applicable	Does the maintenance of traffic scheme require additional permanent or temporary pavement?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Does curb need to be replaced due to deteriorated condition or lack of curb reveal?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Does sidewalk need to be replaced or installed?	Possible, To be determined in subsequent steps of the Project Development Process. Improved accommodations for pedestrians and bicyclists are goal of the City of Cincinnati and Village of Fairfax.
■ Yes ■ No X Possible ■ Not Applicable	Are new curb ramps needed?	Possible, To be determined in subsequent steps of the Project Development Process depending on status of future pedestrian facilities within the study area.
■ Yes ■ No X Possible ■ Not Applicable	Do truncated domes need to be installed?	Possible, To be determined in subsequent steps of the Project Development Process depending on status of future pedestrian facilities within the study area.
X Yes ■ No ■ Possible ■ Not Applicable	Is there any work on side roads, service roads, or ramps?	Likely

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<b>PAVEMENT ISSUES:</b>		
<i>Indicate if the following pavement issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Provide additional comments as needed.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any special drive treatments or preferences (e.g., concrete for all drive aprons, curved aprons, etc.)?	To be determined in coordination with the City of Cincinnati
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Has the site received repeated resurfacings in recent years?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does pavement deterioration appear to be caused by drainage or geotechnical problems?	Significant pavement deterioration has not been noted.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other pavement issues? <i>Specify.</i>	

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<b>STRUCTURAL ISSUES: I&amp;O Railroad Over Redbank Expressway SFN 3162672</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
<b>Structure:</b>	<b>Design Issue</b>	<b>Comments</b>
Yes X No Possible Not Applicable	Is it impossible for the structure to be replaced with a prefabricated box culvert or 3-sided box?	
Yes No Possible Not Applicable	Does the bridge (including foundation) violate current design live loading?	
. Yes No Possible Not Applicable	Was the existing structure not built according to plan?	Have not reviewed as built plans but bridge inspection reports do not indicate otherwise.
Yes No Possible X Not Applicable	Is deck coring needed?	
Yes No Possible . Not Applicable	Is the deck delaminated? <i>Specify.</i>	
Yes No Possible . Not Applicable	Is non-destructive testing needed to determine the amount of delaminating?	
Yes No Possible . Not Applicable	Is the bridge deck in poor condition? <i>Specify location and level of deterioration.</i>	
Yes No Possible . Not Applicable	Does a deck condition survey (see Bridge Design Manual) need to be performed?	
Yes No . Possible Not Applicable	Are there areas to be patched or repaired on the deck?	
Yes No Possible . Not Applicable	Is the bridge a poor candidate for an overlay? <i>Specify type of overlay if know.</i>	
Yes X No Possible Not Applicable	Does the bridge rail violate current standards?	Some repairs to the railing and spill guards are recommended in bridge inspection reports.
Yes X No Possible Not Applicable	Is fatigue analysis required?	
Yes No Possible . Not Applicable	Should all fatigue prone details be retrofitted or replaced? <i>Specify.</i>	
Yes X No Possible Not Applicable	Is the abutment (including backwall, beam seats, breastwall, wingwall, etc.) in poor condition? <i>Specify location and level of deterioration.</i>	Minor Seepage and spalling
Yes X No Possible Not Applicable	Is there any evidence of substructure movement (e.g., settlement, rotation)?	

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<b>STRUCTURAL ISSUES: I&amp;O Railroad Over Redbank Expressway SFN 3162672</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes <input type="checkbox"/> No Possible Not Applicable	Are the piers in poor condition? <i>Specify location and level of deterioration.</i>	
Yes <input type="checkbox"/> No Possible Not Applicable	Is there any evidence of existing beam deterioration/section loss, strands exposed, shear joints leaking or longitudinal cracks?	There is surface rusting on the top flange of the girders. Repainting has been recommended
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible Not Applicable	Are the bearings in poor condition?	Some rusting and anchor bolts missing at NW Bearing
Yes <input type="checkbox"/> No Possible <input checked="" type="checkbox"/> Not Applicable	Is elimination of the deck joint impossible? What modifications are necessary?	
Yes <input type="checkbox"/> No Possible <input checked="" type="checkbox"/> Not Applicable	Are new approach slabs needed?	
Yes <input type="checkbox"/> No Possible Not Applicable	Is it impossible for the hinges to be removed to make the members continuous?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Possible Not Applicable	Is the bridge on a curve, skew or superelevation transition?	Bridge is skewed
Yes <input type="checkbox"/> No Possible Not Applicable	Is there any evidence that the bridge does not meet hydraulic capacity?	
Yes <input type="checkbox"/> No Possible Not Applicable	Are there existing sidewalks on or adjacent to the bridge?	
Yes <input type="checkbox"/> No Possible Not Applicable	Is Vandal Protection Fencing required per the BDM?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Possible Not Applicable	Will the structure work require any special maintenance of traffic (e.g., closing of roadway for erection of beams, maintenance of waterway traffic, location of cut line, etc.)? <i>Specify.</i>	Replacement or modification of the structure will require maintenance of Traffic on Red Bank Expressway as well as railroad operations. Any work on the bridge must be coordinated with Rail America (Indiana and Ohio Railroad).
Yes <input type="checkbox"/> No Possible <input checked="" type="checkbox"/> Not Applicable	Is there any erosion in the existing channel?	
Yes <input type="checkbox"/> No Possible <input checked="" type="checkbox"/> Not Applicable	Is the foundation exposed due to scour?	
Yes <input type="checkbox"/> No Possible <input checked="" type="checkbox"/> Not Applicable	Will there be more than 25' of channel relocation?	

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<b>STRUCTURAL ISSUES: I&amp;O Railroad Over Redbank Expressway SFN 3162672</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes No X Possible Not Applicable	Do no opportunities exist to construct the bridge faster (e.g., precast walls, segmental construction)?	
Yes No X Possible Not Applicable	Does the bridge need to accommodate future roadway lanes or railroad tracks?	Bridge may have to accommodate additional lanes on Red Bank Expressway under the structure for future design year
X Yes No Possible Not Applicable	Will temporary shoring be required next to the railroad?	Temporary shoring would likely be needed if the structure is replaced or modified
Yes No X Possible Not Applicable	Are there any problems with the existing retaining walls?	Seepage and minor spalls at the abutments
Yes No Possible Not Applicable	Are there any other structures issues? <i>Specify.</i>	No other issues have been identified at this time. Coordination with I&O Railroad has not taken place to date.

<b>STRUCTURAL ISSUES: Erie Ave. Over SORTA Oasis RR SFN 3160939</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
<b>Structure:</b>	<b>Design Issue</b>	<b>Comments</b>
Yes X No Possible Not Applicable	Is it impossible for the structure to be replaced with a prefabricated box culvert or 3-sided box?	
Yes X No Possible Not Applicable	Does the bridge (including foundation) violate current design live loading?	
Yes X No Possible Not Applicable	Was the existing structure not built according to plan?	Bridge inspection reports do not indicate otherwise.
Yes No Possible X Not Applicable	Is deck coring needed?	
Yes No X Possible Not Applicable	Is the deck delaminated? <i>Specify.</i>	There is some cracking and delamination noted in bridge inspection report
Yes No X Possible Not Applicable	Is non-destructive testing needed to determine the amount of delaminating?	
Yes No X Possible Not Applicable	Is the bridge deck in poor condition? <i>Specify location and level of deterioration.</i>	There is some cracking and delamination noted in bridge inspection report
Yes No X Possible Not Applicable	Does a deck condition survey (see Bridge Design Manual) need to be performed?	
Yes No X Possible Not Applicable	Are there areas to be patched or repaired on the deck?	

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<b>STRUCTURAL ISSUES: Erie Ave. Over SORTA Oasis RR SFN 3160939</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes No X Possible Not Applicable	Is the bridge a poor candidate for an overlay? <i>Specify type of overlay if know.</i>	Wearing surface was overlaid with LMC in 2002
Yes X No Possible Not Applicable	Does the bridge rail violate current standards?	Some repairs to the railing are recommended in bridge inspection reports.
Yes No X Possible Not Applicable	Is fatigue analysis required?	Need to confirm with City staff if load rating has been completed
Yes No Possible Not Applicable	Should all fatigue prone details be retrofitted or replaced? <i>Specify.</i>	
Yes X No Possible Not Applicable	Is the abutment (including backwall, beam seats, breastwall, wingwall, etc.) in poor condition? <i>Specify location and level of deterioration.</i>	Minor cracking and spalling
Yes No Possible Not Applicable	Is there any evidence of substructure movement (e.g., settlement, rotation)?	Rockers re-set in 2002
Yes X No Possible Not Applicable	Are the piers in poor condition? <i>Specify location and level of deterioration.</i>	
Yes X No Possible Not Applicable	Is there any evidence of existing beam deterioration/section loss, strands exposed, shear joints leaking or longitudinal cracks?	There is surface rusting on the top flange of the girders. Repainting has been recommended
Yes No Possible Not Applicable	Are the bearings in poor condition?	Some rusting and rockers reset in 2002
Yes X No Possible Not Applicable	Is elimination of the deck joint impossible? What modifications are necessary?	
Yes No Possible X Not Applicable	Are new approach slabs needed?	Approach slabs overlaid in 2002
X Yes No Possible Not Applicable	Is it impossible for the hinges to be removed to make the members continuous?	
X Yes No Possible Not Applicable	Is the bridge on a curve, skew or superelevation transition?	Bridge is skewed
Yes X No Possible Not Applicable	Is there any evidence that the bridge does not meet hydraulic capacity?	
Yes X No Possible Not Applicable	Are there existing sidewalks on or adjacent to the bridge?	

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<b>STRUCTURAL ISSUES: Erie Ave. Over SORTA Oasis RR SFN 3160939</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
X Yes . No Possible Not Applicable	Is Vandal Protection Fencing required per the BDM?	
X Yes No Possible Not Applicable	Will the structure work require any special maintenance of traffic (e.g., closing of roadway for erection of beams, maintenance of waterway traffic, location of cut line, etc.)? <i>Specify.</i>	Replacement or modification of the structure will require maintenance of Traffic on Erie Ave as well as railroad operations. Any work on the bridge must be coordinated with SORTA, Rail America (Indiana and Ohio Railroad) and Norfolk Southern.
Yes No Possible X Not Applicable	Is there any erosion in the existing channel?	
Yes No Possible X Not Applicable	Is the foundation exposed due to scour?	
Yes No Possible X Not Applicable	Will there be more than 25' of channel relocation?	
Yes No X Possible Not Applicable	Do no opportunities exist to construct the bridge faster (e.g., precast walls, segmental construction)?	
X Yes No Possible Not Applicable	Does the bridge need to accommodate future roadway lanes or railroad tracks?	Bridge may have to accommodate additional lanes on Erie Ave in the future design year.
X Yes No Possible Not Applicable	Will temporary shoring be required next to the railroad?	Temporary shoring will likely be required if the bridge is replaced.
Yes No X Possible Not Applicable	Are there any problems with the existing retaining walls?	Seepage and minor spalls at the abutments
Yes No X Possible Not Applicable	Are there any other structures issues? <i>Specify.</i>	Replace guardrail anchor assemblies and remove vegetation below bridge.

<b>STRUCTURAL ISSUES: Erie Ave. over Red Bank Expressway SFN 3160998</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
<b>Structure:</b>	<b>Design Issue</b>	<b>Comments</b>
Yes X No Possible Not Applicable	Is it impossible for the structure to be replaced with a prefabricated box culvert or 3-sided box?	
Yes No Possible Not Applicable	Does the bridge (including foundation) violate current design live loading?	
. Yes No Possible Not Applicable	Was the existing structure not built according to plan?	Have not reviewed as built plans but bridge inspection reports do not indicate otherwise.

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<b>STRUCTURAL ISSUES: Erie Ave. over Red Bank Expressway SFN 3160998</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes No X Possible Not Applicable	Is deck coring needed?	
Yes No X Possible Not Applicable	Is the deck delaminated? <i>Specify.</i>	There is some cracking and delamination noted in bridge inspection report
Yes No . Possible Not Applicable	Is non-destructive testing needed to determine the amount of delaminating?	
Yes No X Possible Not Applicable	Is the bridge deck in poor condition? <i>Specify location and level of deterioration.</i>	There is some cracking and delamination noted in bridge inspection report
Yes No . Possible Not Applicable	Does a deck condition survey (see Bridge Design Manual) need to be performed?	
Yes No . Possible Not Applicable	Are there areas to be patched or repaired on the deck?	
Yes No Possible . Not Applicable	Is the bridge a poor candidate for an overlay? <i>Specify type of overlay if know.</i>	Wearing surface was overlaid with LMC in 2002
Yes X No Possible Not Applicable	Does the bridge rail violate current standards?	Some repairs to the railing are recommended in bridge inspection reports.
Yes No X Possible Not Applicable	Is fatigue analysis required?	Need to confirm with City staff if load rating has been completed
Yes No Possible . Not Applicable	Should all fatigue prone details be retrofitted or replaced? <i>Specify.</i>	
Yes X No Possible Not Applicable	Is the abutment (including backwall, beam seats, breastwall, wingwall, etc.) in poor condition? <i>Specify location and level of deterioration.</i>	Minor cracking and spalling
Yes No X Possible Not Applicable	Is there any evidence of substructure movement (e.g., settlement, rotation)?	Rockers re-set in 2002
Yes X No Possible Not Applicable	Are the piers in poor condition? <i>Specify location and level of deterioration.</i>	
Yes X No Possible Not Applicable	Is there any evidence of existing beam deterioration/section loss, strands exposed, shear joints leaking or longitudinal cracks?	There is surface rusting on the top flange of the girders. Repainting has been recommended
Yes No . Possible Not Applicable	Are the bearings in poor condition?	Some rusting and rockers reset in 2002



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<b>STRUCTURAL ISSUES: Erie Ave. over Red Bank Expressway SFN 3160998</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes X No Possible Not Applicable	Is elimination of the deck joint impossible? What modifications are necessary?	
Yes No Possible Not Applicable	Are new approach slabs needed?	Approach slabs overlaid in 2002
X Yes No Possible Not Applicable	Is it impossible for the hinges to be removed to make the members continuous?	
Yes X No Possible Not Applicable	Is the bridge on a curve, skew or superelevation transition?	
Yes No Possible Not Applicable	Is there any evidence that the bridge does not meet hydraulic capacity?	
X Yes No Possible Not Applicable	Are there existing sidewalks on or adjacent to the bridge?	
X Yes No Possible Not Applicable	Is Vandal Protection Fencing required per the BDM?	
X Yes No Possible Not Applicable	Will the structure work require any special maintenance of traffic (e.g., closing of roadway for erection of beams, maintenance of waterway traffic, location of cut line, etc.)? <i>Specify.</i>	Replacement or modification of the structure will require maintenance of Traffic on Erie Ave as well as Red Bank Expressway below the bridge.
Yes No Possible Not Applicable	Is there any erosion in the existing channel?	
Yes No Possible X Not Applicable	Is the foundation exposed due to scour?	
Yes No Possible X Not Applicable	Will there be more than 25' of channel relocation?	
Yes No X Possible Not Applicable	Do no opportunities exist to construct the bridge faster (e.g., precast walls, segmental construction)?	
Yes No X Possible Not Applicable	Does the bridge need to accommodate future roadway lanes or railroad tracks?	Bridge may have to accommodate additional lanes on Erie Ave in the future design year.
Yes X No Possible Not Applicable	Will temporary shoring be required next to the railroad?	.
Yes No Possible Not Applicable	Are there any problems with the existing retaining walls?	Seepage and minor spalls at the abutments

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<b>STRUCTURAL ISSUES: Erie Ave. over Red Bank Expressway SFN 3160998</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes No X Possible Not Applicable	Are there any other structures issues? <i>Specify.</i>	None known at this time.

<b>STRUCTURAL ISSUES: Red Bank Road over I&amp;O Railroad SFN 3160947</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
<b>Structure:</b>	<b>Design Issue</b>	<b>Comments</b>
X Yes No Possible Not Applicable	Is it impossible for the structure to be replaced with a prefabricated box culvert or 3-sided box?	
Yes No Possible X Not Applicable	Does the bridge (including foundation) violate current design live loading?	Bridge is currently closed to vehicular traffic and deck has been removed
. Yes No Possible Not Applicable	Was the existing structure not built according to plan?	Have not reviewed as built plans but bridge inspection reports do not indicate otherwise. Currently in a state of disrepair.
Yes No Possible X Not Applicable	Is deck coring needed?	Deck has been removed
X Yes No Possible Not Applicable	Is the deck delaminated? <i>Specify.</i>	Asphalt overlay has delaminated from wooden deck has been partially removed
Yes No Possible . Not Applicable	Is non-destructive testing needed to determine the amount of delaminating?	See above
X Yes No Possible Not Applicable	Is the bridge deck in poor condition? <i>Specify location and level of deterioration.</i>	
Yes No Possible Not Applicable	Does a deck condition survey (see Bridge Design Manual) need to be performed?	Deck has been partially removed
. Yes No Possible Not Applicable	Are there areas to be patched or repaired on the deck?	Deck is in poor condition and closed to vehicular and pedestrian traffic
Yes No Possible . Not Applicable	Is the bridge a poor candidate for an overlay? <i>Specify type of overlay if know.</i>	Deck has been partially removed
X Yes No Possible Not Applicable	Does the bridge rail violate current standards?	Steel beam on west and metal pipe railing on east.
Yes No X Possible Not Applicable	Is fatigue analysis required?	Bridge closed due to superstructure condition
Yes No Possible . Not Applicable	Should all fatigue prone details be retrofitted or replaced? <i>Specify.</i>	See above

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<b>STRUCTURAL ISSUES: Red Bank Road over I&amp;O Railroad SFN 3160947</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
X Yes No Possible Not Applicable	Is the abutment (including backwall, beam seats, breastwall, wingwall, etc.) in poor condition? <i>Specify location and level of deterioration.</i>	Major cracking and spalling noted in bridge inspection report.
Yes No X Possible Not Applicable	Is there any evidence of substructure movement (e.g., settlement, rotation)?	Rockers re-set in 2002
. Yes No Possible Not Applicable	Are the piers in poor condition? <i>Specify location and level of deterioration.</i>	Cracking and deterioration noted in bridge inspection report
X Yes No Possible Not Applicable	Is there any evidence of existing beam deterioration/section loss, strands exposed, shear joints leaking or longitudinal cracks?	Severe loss of section and damage noted in bridge inspection report. Wooden floor beams are deteriorated.
X Yes No Possible Not Applicable	Are the bearings in poor condition?	
Yes X No Possible Not Applicable	Is elimination of the deck joint impossible? What modifications are necessary?	
Yes No Possible X Not Applicable	Are new approach slabs needed?	
X Yes No Possible Not Applicable	Is it impossible for the hinges to be removed to make the members continuous?	
Yes X No Possible Not Applicable	Is the bridge on a curve, skew or superelevation transition?	
Yes No Possible X Not Applicable	Is there any evidence that the bridge does not meet hydraulic capacity?	
X Yes No Possible Not Applicable	Are there existing sidewalks on or adjacent to the bridge?	Wooden sidewalks in poor condition. Closed to the public.
Yes No Possible Not Applicable	Is Vandal Protection Fencing required per the BDM?	
X Yes No Possible Not Applicable	Will the structure work require any special maintenance of traffic (e.g., closing of roadway for erection of beams, maintenance of waterway traffic, location of cut line, etc.)? <i>Specify.</i>	Replacement or modification of the structure will require maintenance of railroad operations below the bridge. Red Bank Road over the railroad is currently closed due to bridge conditions. City has requested that the railroad remove the bridge.
Yes No Possible X Not Applicable	Is there any erosion in the existing channel?	

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<b>STRUCTURAL ISSUES: Red Bank Road over I&amp;O Railroad SFN 3160947</b>		
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. Provide a separate table for each structure.</i>		
Yes No Possible X Not Applicable	Is the foundation exposed due to scour?	
Yes No Possible X Not Applicable	Will there be more than 25' of channel relocation?	
Yes No X Possible Not Applicable	Do no opportunities exist to construct the bridge faster (e.g., precast walls, segmental construction)?	
X Yes No Possible Not Applicable	Does the bridge need to accommodate future roadway lanes or railroad tracks?	Bridge may need to accommodate wider cross section for Red Bank Road if local network improvements are made as well as railroad operations.
X Yes No Possible Not Applicable	Will temporary shoring be required next to the railroad?	Likely if Bridge is replaced
Yes No Possible Not Applicable	Are there any problems with the existing retaining walls?	
Yes No X Possible Not Applicable	Are there any other structures issues? <i>Specify.</i>	Structure needs to be removed or replaced.

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<b>HYDRAULIC ISSUES:</b>		
<b>Indicate if the following drainage issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Provide additional comments as needed.</b>		
	<b>Design Issue</b>	<b>Comments</b>
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Based on visual evidence (height of debris, erosion or other markings left from high water) and approximate drainage areas, does the existing drainage system (culverts, storm sewers and/or ditches) appear to be inappropriately sized and not functioning properly? <i>Describe deficiencies.</i>	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is there evidence of alignment or flow velocity problems (e.g., scour, bank erosions, silting) at culvert entrances or exits?	None have been noted, further evaluation is required.
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there sinkholes or other deterioration in the pavement that would indicate separations in the existing pipes?	None have been noted
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible	Is ditch clean-out required?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input checked="" type="checkbox"/> Not Applicable	Should guardrail over culverts be eliminated with clear zone grading?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Should the existing culverts be replaced?	To be determined. Existing Culvert appears to be in satisfactory condition.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Should the existing culverts be extended?	May need to extend existing culvert under Red Bank Expressway if improvements are made at Madison and Red Bank Intersection.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will a new alignment concentrate flow (in culverts) that is currently overland flow?	Unlikely
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will the maximum height of cover (100') be exceeded for any culvert?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will bankfull design be used for any culverts?	To be determined in subsequent steps of the Project Development Process
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does the existing drainage system have an odor that might indicate that it includes septic connections?	None noted
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is the exposed curb height in existing gutters inadequate to contain flow (include height of proposed resurfacing)?	To be determined. Curbs are not present in some locations.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Do the existing inlets or catch basins need to be raised to meet proposed grade?	Possible, To be determined in subsequent steps of the Project Development Process

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<b>HYDRAULIC ISSUES:</b>		
<b>Indicate if the following drainage issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Provide additional comments as needed.</b>		
X Yes ■ No ■ Possible ■ Not Applicable	Does the project affect a wetland or waterway (e.g., stream, river, jurisdictional ditch)?	See the attached mapping Figures xx. Deerfield and Duck Creek will be impacted.
■ Yes ■ No X Possible ■ Not Applicable	Is the existing and/or proposed channel alignment incompatible with the existing/proposed structure?	Possible, To be determined in subsequent steps of the Project Development Process. Changes to existing channel at Madison and Red Bank may be required.
■ Yes ■ No X Possible ■ Not Applicable	Will channel relocation be required?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Will post construction BMPs be required that could impact R/W or utilities?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes X No ■ Possible ■ Not Applicable	Is there evidence of existing field tiles?	None noted
■ Yes ■ No ■ Possible ■ Not Applicable	Are underdrain outlets not functioning properly?	To be determined
■ Yes ■ No X Possible ■ Not Applicable	Will a new storm sewer outfall be required?	Unlikely but To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Does the drainage work warrant any special maintenance of traffic considerations?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No ■ Possible ■ Not Applicable	Are there any other hydraulic issues? <i>Describe.</i>	

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<b>TRAFFIC CONTROL ISSUES:</b>		
<i>Indicate if the following traffic control (signals, signing, pavement markings, etc.) issues are present or should be considered during project development. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
X Yes ■ No ■ Possible ■ Not Applicable	Do the existing signs need to be replaced due to poor condition?	
■ Yes ■ No ■ Possible ■ Not Applicable	Are there any obvious deviations from requirements of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD)?	Requires further evaluation. Significant deviations have not been noted to date.
■ Yes ■ No X Possible ■ Not Applicable	Is a particular type of pavement marking desired (e.g., paint, epoxy, thermoplastic)?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Will coordination with Ohio Rail Development Commission (ORDC) be required (i.e. at-grade railroad crossings located within 400' of an intersection within the project area)?	Possibly, SORTA owned Oasis line is parallel to the project study area south of Brotherton. Indiana & Ohio Railroad is located over Red Bank Expressway and under Red Bank Road within the project area. New grade separation structures may be necessary.
X Yes ■ No ■ Possible ■ Not Applicable	Will pavement planning affect loop detectors?	Likely, Specific impacts to loop detectors to be determined in subsequent steps of the Project Development Process
■ Yes ■ No X Possible ■ Not Applicable	Will pavement widening affect pole locations?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No ■ Possible X Not Applicable	Will resurfacing affect signal height?	It is likely that existing signals would be replaced as part of overall reconstruction of the Red Bank Expressway Corridor.
■ Yes ■ No X Possible ■ Not Applicable	Does it appear that any traffic control items will fall outside the existing right of way limits (e.g., large signs, strain poles)?	Possible, To be determined in subsequent steps of the Project Development Process
■ Yes ■ No ■ Possible ■ Not Applicable	Are there any accidents that can be related to existing signal deficiencies (e.g., timing, lack of turn lanes)?	Possible but specific causes have not been determined time. Further evaluation may be required at specific subareas. See attached accident maps for additional information. There is some rear end crashes associated with congested conditions at some locations.
■ Yes ■ No X Possible ■ Not Applicable	Do turn lane lengths appear to have insufficient storage capacity?	Possible pending evaluation of future traffic forecasts
■ Yes ■ No X Possible ■ Not Applicable	Does the controller need to be upgraded?	Possible, To be determined in subsequent steps of the Project Development Process in conjunction with the City of Cincinnati.
■ Yes ■ No X Possible ■ Not Applicable	Do proprietary materials need to be specified?	Possible, To be determined in subsequent steps of the Project Development Process in conjunction with the City of Cincinnati.
■ Yes ■ No X Possible ■ Not Applicable	Should signs or signal installations be supplemented with lighting?	Lighting Warrant Analysis will be conducted for the project study area.

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<b>TRAFFIC CONTROL ISSUES:</b>		
<i>Indicate if the following traffic control (signals, signing, pavement markings, etc.) issues are present or should be considered during project development. Provide additional comments as needed.</i>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are any TODS signs present?	Not directly within the study area.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	If traffic control at an intersection is being changed from stop control to signalization, does the stop condition road need to be upgraded to accommodate faster traffic?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other traffic control issues? <i>Specify.</i>	To be determined during future steps of the project development process.

<b>MAINTENANCE OF TRAFFIC ISSUES:</b>
<i>Briefly describe the maintenance of traffic and any constraints. A list of considerations has been provided below.</i>
<b>Maintenance of Traffic Considerations</b>
<p>Maintenance of Traffic will be determined during future steps of the project development process. Specific evaluation of potential maintenance of traffic issues has not been conducted to date pending the development of alternatives to accommodate design year traffic volumes.</p> <p>At this time it is assumed that traffic will be maintained on Red Bank Expressway, Duck Creek, Erie and Madison Roads during construction</p>

<b>Maintenance of Traffic Description</b>
<p>.</p>



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<b>RIGHT OF WAY/SURVEY ISSUES:</b>		
<i>Indicate if right of way or survey issues are present or should be considered during project development. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
X Yes ■ No ■ Possible ■ Not Applicable	Will there be any work beyond the existing right of way limits?	It is assumed that additional capacity will require roadway expansion beyond the existing right of way limits at some locations.
■ Yes ■ No X Possible ■ Not Applicable	Will major real estate relocation acquisition be involved?	It is possible that relocation will be required. Numbers of relocations and total right of way take remain to be determined.
■ Yes ■ No X Possible ■ Not Applicable	Will relocation of residences be involved?	Possible, however it appears that residential relocations will be unlikely
■ Yes ■ No X Possible ■ Not Applicable	Will relocation of businesses be involved?	Possible, especially in the vicinity of Madison Road and Red Bank Expressway
■ Yes ■ No X Possible ■ Not Applicable	Will the project cause relocation of parties that might be eligible for relocation assistance? If so, list the estimated number of residential and non-residential relocations?	Possible, number of relocations to be determined in future steps of the project development process
X Yes ■ No ■ Possible ■ Not Applicable	Will the project require modifying the access control to any properties? If so, list the estimated number and type of properties affected.	Number of properties to be determined. Convenience and retail stores in the Vicinity of Madison Rd. and Red Bank Expressway.
■ Yes ■ No X Possible ■ Not Applicable	Are there any objects within the existing right of way limits that may be considered an encroachment?	To be determined, field survey work has not been completed to date
■ Yes X No ■ Possible ■ Not Applicable	Will it be difficult or impossible to determine the number of involved property owners? If not how many are involved?	
■ Yes ■ No X Possible ■ Not Applicable	Will temporary parcels be needed (e.g., for drive work)?	Acquisition of temporary parcels is likely especially along local network streets as needed.
X Yes ■ No Possible ■ Not Applicable	Will right of way need to be acquired for an agency other than ODOT (e.g., county, city)? <i>Specify.</i>	It is likely that improvements or modifications will be required on Madison Rd and other local network streets which will not be maintained by ODOT.
■ Yes ■ No X Possible ■ Not Applicable	Will additional right of way be needed for utility relocations?	Possible, To be determined in future steps of the project development process.
■ Yes ■ No X Possible ■ Not Applicable	Will right of way need to be acquired for storm sewer outfalls?	Possible, To be determined in subsequent steps of the Project Development Process
X Yes ■ No ■ Possible ■ Not Applicable	Do property owners need to be contacted for the locations of underground items such as leach fields, septic systems, or field tiles that might be affected by the proposed take?	Yes adjacent property owners should be contacted to determine if there are subsurface drainage systems or other utilities which could be affected by future property acquisition.

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<b>RIGHT OF WAY/SURVEY ISSUES:</b>		
<i>Indicate if right of way or survey issues are present or should be considered during project development. Provide additional comments as needed.</i>		
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any mineral rights considerations?	None known
Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any specific property owner concerns? If so, list property owners and concerns.	Cincinnati Sports Club (3950 Red Bank Road) representatives expressed objections to any new roadway connections between Virginia Ave and Red Bank Rd.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are work agreements prohibited for any reason?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are the centerline of right of way and centerline of construction different?	Possible, To be determined in subsequent steps of the Project Development Process. The centerline of the existing roadway is not always at the centerline of the existing right of way.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will right of way be acquired for wetland or stream mitigation?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other right of way or survey issues? <i>Specify.</i>	

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<b>UTILITY ISSUES:</b>		
<i>Indicate if the following utility issues are present or should be considered during project development. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Do existing utilities need to be relocated? <i>If so, please identify.</i>	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is it impossible to minimize utility conflicts? (e.g., by careful placement of storm sewer and under drains)?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Would the project benefit from subsurface utility engineering (SUE)?	Sub-surface utility investigation should be carried out during future phases of the Project Development Process.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there existing utilities on an existing structure that need to be relocated?	None noted on bridge inventory reports or in the field. Need to verify.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any specific utility requirements or concerns? <i>Specify.</i>	Possible, To be determined in subsequent steps of the Project Development Process.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is additional right of way needed to accommodate utility relocations?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there water or sanitary lines that will be relocated as part of the ODOT contract?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other utility issues? <i>Specify.</i>	To be determined. There are several subsurface utilities located within the existing right of way. Existing Duke Energy Substation and high voltage transmission line is located within the project limits but should be minimally impacted by future improvements. Formal Coordination with Duke Energy has not begun to date.

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<b>MISCELLANEOUS ISSUES:</b>		
<i>Indicate if the following issues are present or should be considered during project development. Provide additional comments as needed.</i>		
	<b>Design Issue</b>	<b>Comments</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will any of the construction activity take place over, under, or near railroad property?	Likely under/over Rail America (I&O Railroad) and SORTA owned OASIS Line.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Could material with long lead times for delivery have an impact on the construction schedule (e.g., strain poles, large box culverts, steel beams, etc.)?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will a value engineering study be required due to project cost (total cost greater than \$20 million) or project complexity?	Likely
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will warranties be used?	Possible, To be determined in subsequent steps of the Project Development Process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there aesthetic concerns? <i>Specify.</i>	City of Cincinnati wishes to employ context sensitive design elements and to minimize impact to Madisonville community to the extent possible. Specific plans to incorporate aesthetic design elements remain to be developed during future steps of the project development process
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any concerns relating to noise walls?	Remains to be determined in future steps of the project development process.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there no areas available within the existing right of way for portable plants or waste and borrow sites?	No
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any specific concerns related to pedestrian or bicycle access?	City of Cincinnati and Fairfax wish to improve accommodations for bicyclists and pedestrians.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any concerns related to landscaping?	City of Cincinnati wishes to employ context sensitive design elements and to minimize foot print to the extent possible. Specific plans to incorporate landscaping remains to be developed during future steps of the project development process.
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any concerns related to existing or proposed lighting (e.g., light trespass, river navigation, airway clearance)?	Minimize light trespass onto adjacent residential neighborhoods. Specific lighting details and fixtures may be requested by the City of Cincinnati
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Are there any other project concerns? <i>Specify</i>	
<b>PERMIT ISSUES:</b>		
<i>Indicate if the following permit issues are present or should be considered during project development. Provide additional comments as needed.</i>		
	<b>Issue</b>	<b>Comments</b>

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<b>MISCELLANEOUS ISSUES:</b>		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will an individual Corps of Engineers/ Environmental Protection Agency 404/401 permit be required?	Some impacts to surface water streams and wetlands are anticipated. A Nationwide Permit #14 is most likely applicable for this project, but it is possible that an individual permit may be required, depending on final impacts.
X Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Does it appear that the project can be constructed under a nationwide 404/401 permit? If so, which permit and what specific requirements apply?	See above
<input type="checkbox"/> Yes X No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Will a Coast Guard permit be required?	No
X Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is review by a local public agency or project sponsor required? <i>Specify.</i>	City of Cincinnati, Village of Fairfax, Hamilton County Engineer, SORTA, MSD.
<input type="checkbox"/> Yes X No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is Airway/Highway clearance analysis required?	No
<input type="checkbox"/> Yes <input type="checkbox"/> No X Possible <input type="checkbox"/> Not Applicable	Is State Historic Preservation Office (SHPO) coordination for work involving historic bridges or historic properties required?	To be determined in future steps of the PDP process. See Appendix B for additional information.
<input type="checkbox"/> Yes X No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is coordination with ODNR for work involving State Scenic Rivers, State Wildlife Areas or State Recreational Areas required?	There are no State Wildlife Areas or State Recreational Areas in the project vicinity. The Little Miami River is a state scenic river and component of the national scenic river system. Since the southernmost project limits occur within 1,000 feet of the Little Miami River, coordination with ODNR may be required.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Is coordination with any other agency required (see Location and Design Manual Volume 3)?	City of Cincinnati, Hamilton County Public Works, Hamilton County Engineer, Village of Fairfax, and SORTA.

<b>SCOPE, SCHEDULE AND BUDGET CONSIDERATIONS:</b>		
<i>Based on the responses to the red flag questions, do any of the following need to be modified?</i>		
	<b>Issue</b>	<b>Comments</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Conceptual scope	
<input type="checkbox"/> Yes <input type="checkbox"/> No X Possible <input type="checkbox"/> Not Applicable	Work limits	Termini appear to be reasonable based on current scope of work, need to be coordinated with adjacent Segment II. /III Section PID through remaining steps of the PDP process.
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Probable environmental document type	Categorical Exclusion –Level III is anticipated at this time
<input type="checkbox"/> Yes <input type="checkbox"/> No X Possible <input type="checkbox"/> Not Applicable	Major/Minor/Minimal classification	The cost and scope of this project may require reclassification as a major project moving forward.

**HAM 32F-0.00 Relocated SR-32 Segment 1**  
**Red Bank Corridor Improvements**  
**PID 86461**

<b>SCOPE, SCHEDULE AND BUDGET CONSIDERATIONS:</b>		
<input type="checkbox"/> Yes <input type="checkbox"/> No X Possible <input type="checkbox"/> Not Applicable	Schedule	Schedule is likely to be adjusted during future steps of the PDP process. Project is dependent to some degree on the progress of SR-32 Segments II/III adjacent to the project area. Purpose and need are based on accommodation of future traffic volumes from relocated SR-32.
X Yes <input type="checkbox"/> No <input type="checkbox"/> Possible <input type="checkbox"/> Not Applicable	Budget	To be determined in future steps of the PDP process. Funding for Right of Way and Construction has not been obtained at this time.

**APPENDIX A**  
**CRASH DATA EVALUATION**  
**RED FLAG SUMMARY REPORT**  
**HAM-32F-0.00**  
**PID 86461**  
**RELOCATED SR-32 SEGMENT 1**  
**RED BANK CORRIDOR IMPROVEMENTS**  
**EASTERN CORRIDOR MULTIMODAL PROJECTS**  
**HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320

Date: November 8, 2010

To: Dave Wormald, PE, AICP  
Senior Project Engineer

From: William F. Madden, PE, PTOE  
Senior Traffic Engineer

Subject: **Crash Data Analysis  
ODOT - HAM 32F 0.00  
Relocated SR-32 Segment 1  
Red Bank Corridor  
URS Job Number 15017500**

## **Introduction**

A GIS Crash Analysis Tool (GCAT) and Crash Analysis Module (CAM) were requested from ODOT District 8 staff via e-mail. This request covered the project area as shown on the attached maps. Tom Arnold of District 8 provided the data. A total of 830 crash records – both logged and unlogged by milepost - were provided for five years (2005-2009).

## **Crash Location Uncertainty**

URS GIS staff located the logged crashes by the provided latitude/longitude in the crash data. Initial inspection of the crash locations raised some questions: On Red Bank Expressway, there were not any crashes between Madison Road and the I-71 interchange, save for a few at the Duck Creek Road intersection. The data indicated that there were no crashes on the southbound Red Bank Expressway approach to Madison Road. This is apparently due to location data errors in the initial accident reporting. Similarly there are also, several crashes were “stacked” at *exactly the same* longitude/latitude.

URS conferred with Tom Arnold (ODOT District 8) to determine the potential sources of the location errors in the crash data provided. He explained that the differing locations for Red Bank Road vs Red Bank Expressway may not have been coded by Cincinnati police officers. The similar names in the same vicinity could certainly cause confusion. Also, there are not any entrance driveways on Red Bank Expressway north of Madison Road; therefore this section has not been assigned street address numbers. Cincinnati PD locates crashes almost exclusively by street addresses. Mr. Arnold is of the opinion that Cincinnati PD may have assigned street addresses to this section of Red Bank Expressway. If this is true, these addresses numbers are almost certainly the same for the



two routes. The mixing of the street names and street addresses make reliable crash location on these two routes difficult.

Longitude/latitude could be used as a reliable method to locate crashes, independent of the street address. However, the initial mapping showed that in several locations the crashes were stacked, with as many as twenty crashes at exactly matching GPS coordinates. This seems to be an unlikely event. Two theories as to why this occurred were formulated:

- Cincinnati PD uses a coordinate key for intersections and other common crash locations, and this data is entered into the report form after the crash occurs. A GPS unit to precisely locate the crash is not used.
- The GPS units used to locate the crashes are imprecise, and snap to the nearest known coordinate. This results in the actual crash occurring at some radius around the snapped coordinate.

Either of these scenarios could explain the lack of crash data on the southbound Red Bank Expressway approach to Madison Road. Also, these crashes could have been located by street address on Red Bank Road, not Red Bank Expressway.

An effort was made to look at the individual records with the goal of increasing confidence in the location data. In order to get a better grasp on the data, only the latest three years were considered; the 2005 and 2006 data was eliminated. This resulted in 407 logged records. When the same ratio was applied to the 197 five-year total of unlogged crashes, the number of latest three year unlogged crashes is 128. This gives a total of 535 crashes within the project limits from 2007 to 2009 inclusive.

### **Fatal Crashes**

There were two fatal crashes within the project limits from 2007 to 2009 inclusive:

- On December 4, 2008 a pedestrian was struck when crossing Madison Road at the Anderson Place intersection. The pedestrian – who was carrying a bus pass – was within the marked cross-walk; the driver was charged with vehicular homicide. Given the proximity of St. Paul Village, an apartment complex for senior citizens, and the bus route on Madison Road, the pedestrian flasher at this intersection may need to be upgraded to a full traffic signal.

- On June 3, 2009 a vehicle traveling eastbound on Duck Creek Road lost control and hit a metal pole at the Red Bank Road intersection. The driver was killed in this single vehicle crash. He was suspected of driving under the influence of alcohol, was not wearing a seatbelt, and was suspected of driving 10 MPH above the posted speed limit of 35 MPH.

### **Intersection and Corridor Reviews**

After reviewing the two fatal crashes, we concentrated our efforts on four sub-areas within the project limits:

- Intersection of Red Bank Expressway and Madison Road,
- Red Bank Road corridor from Duck Creek Road northward to the I-71 underpass (a length of approximately 2500', including the area in front of Seven Hills Middle School),
- Erie Avenue corridor within the project limits
- Intersection of Murray Road and Virginia Avenue.

These are the areas that the project team understands from various stakeholders to be the problem locations. Total crashes for each area were mapped, as well as crashes during the morning and afternoon peak hours. Each sub-area location were evaluated separately.

### **Red Bank Expressway and Madison Road Intersection**

The 407 logged records were reviewed by street name in the Excel worksheet to eliminate crashes that did not occur at this intersection. Occasionally individual crash records were consulted, but most of the data sifting was done via the excel spreadsheet in the GCAT. A total of 98 logged records occurred at this intersection. When this same ratio was applied to the unlogged records, 31 crashes occurred at this intersection, for a total of 129 crashes. This gives a crash rate of 4.57 crashes/million entering vehicles. The crash diagram produced by the CAM did locate some of the crashes on the southbound Red Bank Expressway approach.

### **Murray Road at Virginia Avenue Intersection**

The 407 logged records were reviewed by street name in the Excel worksheet to eliminate crashes that did not occur at this intersection. Occasionally individual crash records were consulted, but most of the data sifting was done via the excel spreadsheet.

A total of four (4) logged records occurred at this intersection. When this same ratio was applied to the unlogged records, one (1) crash occurred at this intersection, for a total of five (5) crashes. These five crash reports were reviewed. This gives a crash rate of 0.57 crashes/million entering vehicles. The crash diagram produced by the CAM is included in the exhibits.

### **Erie Avenue Corridor**

The same method used at the Red Bank/Madison intersection was used on the Erie Avenue Corridor. A total of 72 logged crashes were found, and using the ratio of total logged to total unlogged crashes for this corridor 23 unlogged crashes are thought to have occurred here. This gives a total of 95 crashes, for a crash rate of 3.61 crashes/million vehicle miles traveled (MVMT). This is below the Hamilton County average of 3.95 crashes/MVMT.

### **Red Bank Road Corridor**

The same method used at the Red Bank/Madison intersection was used on the Red Bank Road Corridor on the north end of the project limits. However, the individual crash reports were researched due to the small number of crashes. A total of 10 logged crashes were found, and using the ratio of total logged to total unlogged crashes for this corridor 3 unlogged crashes are thought to have occurred here. This gives a total of 13 crashes, for a crash rate of 3.37 crashes/million vehicle miles traveled (MVMT). This is below the Hamilton County average of 3.95 crashes/MVMT.

### **Conclusions**

Based on the crash data for 2007-2009, there does not appear to be a significant safety problem within project limits which would contribute the project purpose and need. Similarly, there do not appear to be significant numbers of crashes that appear to be attributable to existing geometrics, roadside conditions or lighting. Again, this conclusion is based on the crash data provided, and the relative accuracy of the crash locations inherent in any large-scale crash analysis.

There are a few specific locations that could warrant further study. The intersection of Madison Road and Anderson Place could possibly be studied for a pedestrian traffic signal, or other traffic control enhancements. Rear-end and sideswipe crashes appear to be a problem on the Madison Road approaches to Red Bank Road. Efforts to decrease the congestion and queue lengths, and improve lane use signage could possibly improve the crash situation at this intersection.



DRAFT



**LEGEND:**

**Total Traffic Accidents**

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

 Study Area

0 125 250 500

Feet

0 40 80 160

Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

N

 HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

**FIGURE 1**  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF RED BANK  
AND MADISON ROAD

DATE: 10/26/2010	SHEET: 1 of 1
CREATED BY: BC	SCALE: 1 inch= 250 ft.
	JOB NO. 14949072



DRAFT



LEGEND:

Total Traffic Accidents

Study Area

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

0 200 400 800  
Feet

0 60 120 240  
Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 2  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
REDBANK ROAD AND  
SEVEN HILLS MIDDLE SCHOOL

DATE: 10/26/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 400 ft.

URS

JOB NO. 14949072





**LEGEND:**

**Total Traffic Accidents**

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

Study Area

0 125 250 500

Feet

0 40 80 160

Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

N

URS

HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

**FIGURE 3**  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF ERIE AVENUE  
AND RED BANK ROAD

DATE: 10/26/2010	SHEET: 1 of 1
CREATED BY: BC	SCALE: 1 inch= 250 ft.
JOB NO. 14949072	



DRAFT

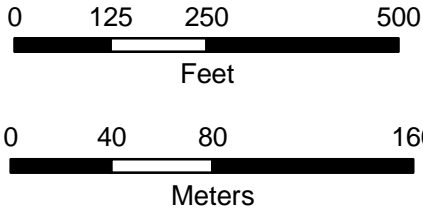


LEGEND:

Total Traffic Accidents

Study Area

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 4  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF MURRAY ROAD  
AND VIRGINIA AVENUE

DATE: 10/26/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 250 ft.

URS

JOB NO. 14949072



DRAFT



**LEGEND:**

**Total Accidents: Weekday AM Peak Hours\***



Study Area

- 1 - 2
- 3 - 4
- 5 - 6

\*Weekday AM Peak Hours:  
Monday-Friday 7 AM-9 AM

0 125 250 500  
Feet

0 40 80 160  
Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

**FIGURE 5: WEEKDAY AM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF RED BANK  
AND MADISON ROAD**

DATE: 11/01/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 250 ft.

**URS**

JOB NO. 14949072



DRAFT

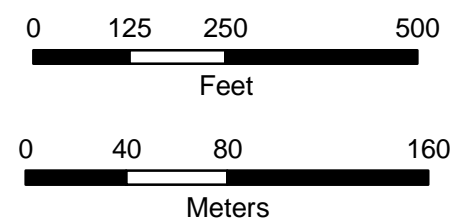


## LEGEND:

**Total Accidents: Weekday PM Peak Hours\***

- 1-2
- Study Area

\*Weekday PM Peak Hours:  
Monday-Friday 4 PM-6 PM



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 6: WEEKDAY PM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF RED BANK  
AND MADISON ROAD

DATE: 11/01/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 250 ft.

URS

JOB NO. 14949072



DRAFT

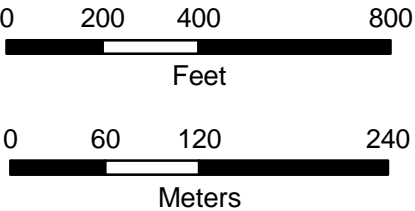


LEGEND:

Total Accidents: Weekday AM Peak Hours\*

- 1 - 2
- Study Area

\*Weekday AM Peak Hours:  
Monday-Friday 7 AM-9 AM



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 7: WEEKDAY AM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
RED BANK ROAD AND  
SEVEN HILLS MIDDLE SCHOOL

DATE: 11/1/2010	SHEET: 1 of 1
CREATED BY: BC	SCALE: 1 inch= 400 ft.
<b>URS</b>	JOB NO. 14949072



DRAFT



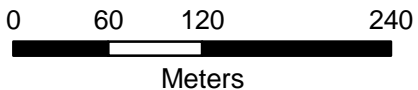
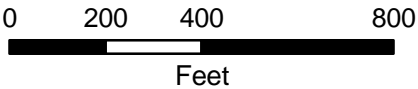
LEGEND:

Total Accidents: Weekday PM Peak Hours\*

• 1 - 2

Study Area

\*Weekday PM Peak Hours:  
Monday-Friday 4 PM-6 PM



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 8: WEEKDAY PM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
REDBANK ROAD AND  
SEVEN HILLS MIDDLE SCHOOL

DATE: 11/1/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 400 ft.

URS

JOB NO. 14949072



DRAFT

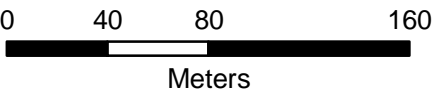
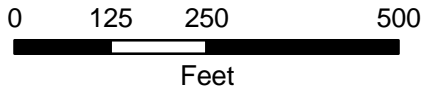


LEGEND:

Total Accidents: Weekday AM Peak Hours\*

- 1 - 2
- Study Area

\*Weekday AM Peak Hours:  
Monday-Friday 7 AM-9 AM



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 9: WEEKDAY AM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF ERIE AVENUE  
AND RED BANK ROAD

DATE: 11/1/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 250 ft.



JOB NO. 14949072





**LEGEND:**

**Total Accidents: Weekday PM Peak Hours\***

• 1-2

Study Area

\*Weekday PM Peak Hours:  
Monday-Friday 4 PM-6 PM

0 125 250 500  
Feet

0 40 80 160  
Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

N

HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

**FIGURE 10: WEEKDAY PM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF ERIE AVENUE  
AND RED BANK ROAD**

DATE: 11/1/2010	SHEET: 1 of 1
CREATED BY: BC	SCALE: 1 inch= 250 ft.
	JOB NO. 14949072




DRAFT

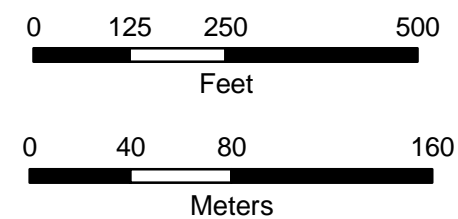


**LEGEND:**

**Total Accidents: Weekday AM Peak Hours\***

- 1-2
-  Study Area

\*Weekday AM Peak Hours:  
Monday-Friday 7 AM-9 AM




BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

**FIGURE 11: WEEKDAY AM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF MURRAY ROAD  
AND VIRGINIA AVENUE**

DATE: 10/26/2010	SHEET: 1 of 1
CREATED BY: BC	SCALE: 1 inch= 250 ft.
	JOB NO. 14949072



DRAFT



## LEGEND:

**Total Accidents: Weekday PM Peak Hours\***

1 - 2

3 - 4

Study Area

\*Weekday PM Peak Hours:  
Monday-Friday 4 PM-6 PM

0 125 250 500  
Feet

0 40 80 160  
Meters

BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 12: WEEKDAY PM PEAK HOURS  
TOTAL TRAFFIC ACCIDENTS: 2007-2009  
INTERSECTION OF MURRAY ROAD  
AND VIRGINIA AVENUE

DATE: 11/2/2010

SHEET: 1 of 1

CREATED BY: BC

SCALE: 1 inch= 250 ft.

URS

JOB NO. 14949072



**APPENDIX B**

**CULTURAL RESOURCES COORDINATION PACKAGE**

**GRAY AND PAPE, INC.**

**RED FLAG SUMMARY REPORT**

**HAM-32F-0.00**  
**PID 86461**

**RELOCATED SR-32 SEGMENT 1**

**RED BANK CORRIDOR IMPROVEMENTS**

**EASTERN CORRIDOR MULTIMODAL PROJECTS**

**HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320



***Cultural Resources Coordination Package  
for Eastern Corridor Segment One  
(Red Bank Road/Expressway),  
Hamilton County, Ohio***

***PID 86461***



**GRAY & PAPE, INC.**  
ARCHAEOLOGY • HISTORY • HISTORIC PRESERVATION

**MAY 5, 2011**

**LEAD AGENCY:**

Ohio Department of  
Transportation

**PREPARED FOR:**

URS Corporation  
564 White Pond Drive  
Akron, Ohio 44320

**PREPARED BY:**

Gray & Pape, Inc.  
1318 Main Street  
Cincinnati, Ohio 45202





**GRAY & PAPE**  
INC.

CULTURAL RESOURCES CONSULTANTS

1318 MAIN STREET  
CINCINNATI, OHIO 45202  
ph 513.287.7700  
fa x 513.287.7703

*Cultural Resources Coordination Package  
for Eastern Corridor Segment One  
(Red Bank Road/Expressway),  
Hamilton County, Ohio*

*PID 86461*



**GRAY & PAPE, INC.**  
ARCHAEOLOGY • HISTORY • HISTORIC PRESERVATION

MAY 5, 2011

**LEAD AGENCY:**  
Ohio Department of  
Transportation

**PREPARED FOR:**  
URS Corporation  
564 White Pond Drive  
Akron, Ohio 44320

**PREPARED BY:**  
Gray & Pape, Inc.  
1318 Main Street  
Cincinnati, Ohio 45202



*Gray & Pape Project No. 10-11701*



GRAY & PAPE  
— I N C —  
CULTURAL RESOURCES CONSULTANTS

**Project No. 10-11701**

**Cultural Resources Coordination Package  
for Eastern Corridor Segment One  
(Red Bank Road/Expressway),  
Hamilton County, Ohio**

**PID 86461**

**Lead Agency: Ohio Department of Transportation**

**Prepared for:  
URS Corporation  
564 White Pond Drive  
Akron, Ohio 44320  
Contact: Scott Buchanan  
Tel: (330) 836-9111**

**Prepared by:  
Jennifer Mastri Burden, M.S.H.P.  
Douglas Owen, M.A.  
Gray & Pape, Inc.  
1318 Main Street  
Cincinnati, Ohio 45202  
Tel: (513) 287-7700**

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**Patrick O'Bannon, Ph.D.  
May 5, 2011**

## **1.0 INTRODUCTION**

The Project Development Process (PDP) requires completion of a Cultural Resources Coordination Package in Step 2 for Minor Arterial projects. The goal of the Cultural Resources Coordination Package is to identify previously recorded cultural resources within the study area, verify the locations of previous identified history/architecture resources, and identify any history/architecture resources within the study area requiring further consideration. No archaeological investigations, beyond a literature review, were conducted at this time. Reported in this document are the results of these efforts, which were intended to identify locations within the study area associated with history/architecture resources that will entail additional study, coordination, creative management or design approaches, or increased right-of-way or construction costs.

Eastern Corridor Segment One (Red Bank Road/Expressway) is the westernmost segment of a four-segment project to relocate and improve SR-32 from I-71 in Cincinnati eastward to Union Township in Clermont County. Segment One is approximately 2.5 miles in length along Redbank Road/Expressway from I-71 south to US-50. The project is located within the City of Cincinnati and Village of Fairfax. This project is one of several multimodal projects recommended for advancement under the auspices of the Eastern Corridor Study to improve transportation between eastern Hamilton County and Clermont County.

## **2.0 SEPTEMBER 2010 – CULTURAL RESOURCE REVIEW**

Gray & Pape staff conducted a literature review through the Ohio State Historic Preservation Office's (OHPO) online GIS site in September 2010. This work identified one historic district listed as a National Historic Landmark (NHL), one historic district listed on the National Register of Historic Places (NRHP), and two buildings and one industrial park previously recorded on Ohio Historic Inventory (OHI) forms within the study area. No resources identified in the Ohio Archaeological Inventory (OAI), bridges, Determination of Eligibility (DOE) resources, or previous cultural resource studies were located within the study area.

Field review of history/architecture resources within the study area of the proposed undertaking was completed in October 2010 to verify the location of the previously identified resources and to identify history/architecture resources requiring further consideration. Pre-1961 history/architecture resources identified during the field review are included in Plates 1–81. Figure 1 depicts the location of the study area boundaries. Figure 2 depicts the orientation of the photographs in Plates 1–81.

### ***2.1 Previous Cultural Resource Studies***

No previous cultural resource studies have been conducted within the study area.

### ***2.2 National Historic Landmarks and National Register of Historic Places***

The literature review identified one historic district listed as a NHL and one historic district listed in the NRHP within the study area. The Village of Mariemont Historic District (NHL 07000431) is located at the southeast portion of the study area. The Madison-Stewart Historic District (NRHP 75001419) is located at the intersection of Madison Road and Stewart Avenue in the northeast portion of the study area.

### ***2.3 Ohio Historic Inventory***

The literature review identified two buildings and one industrial park documented in the OHI files within the study area. The Stewart House at 5540 Madison Road (HAM-0332-13) and the Weir House at 4931 Stewart Avenue (HAM-0385-13) are contributing resources within the NRHP-listed Madison-Stewart Historic District. Buildings in the Westover Industrial Park, including the building at 5657 Wooster Pike, are contributing resources within the Village of Mariemont NHL historic district. Copies of the OHIs are located in Appendix A.

### ***2.4 Ohio Archaeological Inventory***

A review of the Ohio Archaeological Inventory (OAI) files revealed no previously recorded archaeological resources within the study area because the study area has not been previously subjected to archaeological survey. The locations, significance, and integrity of any

archaeological resources identified within the Area of Potential Effects for the preferred alternative will be assessed in a Phase I Archaeology Survey to be completed upon identification and delineation of the preferred alternative.

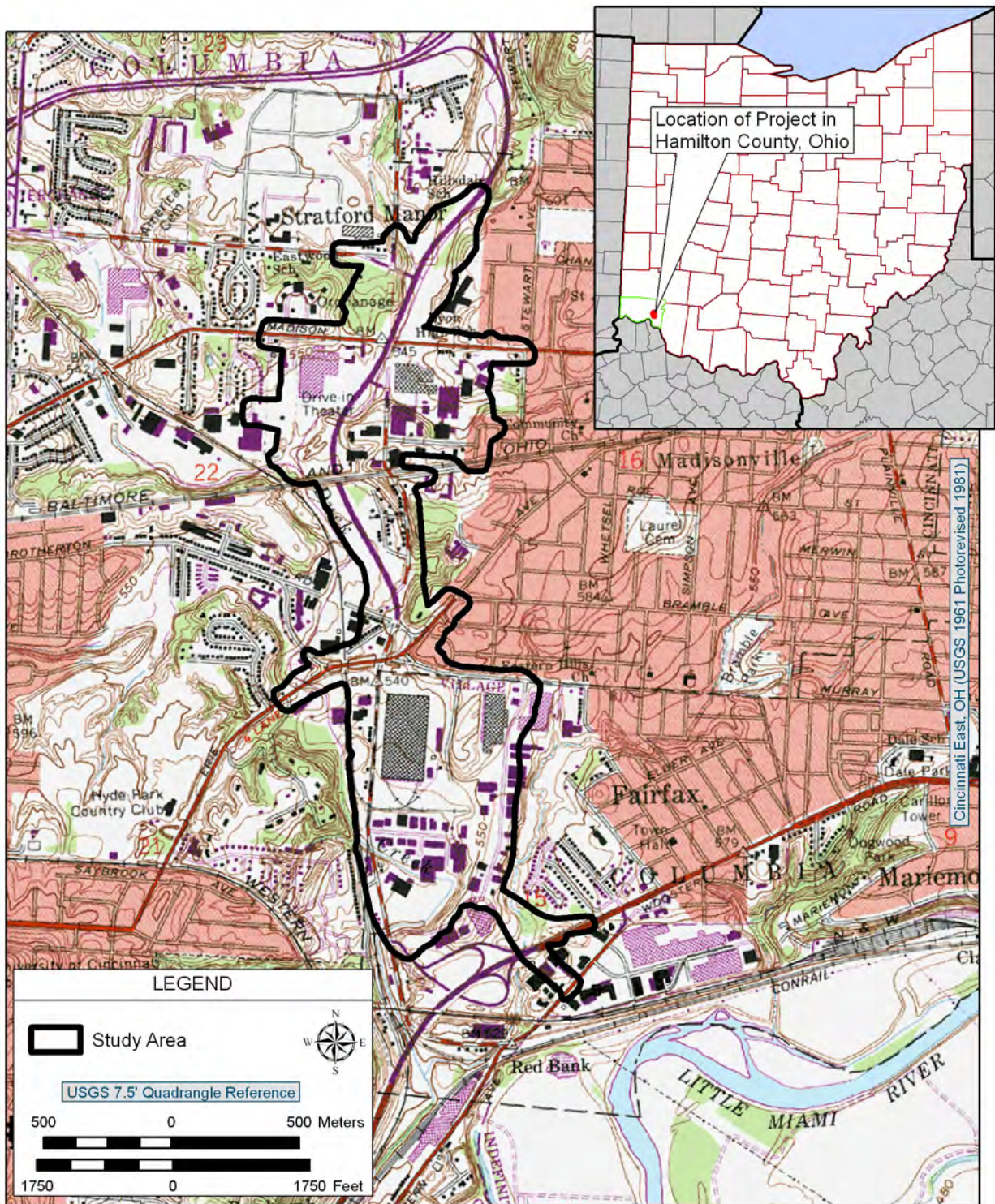
### **3.0 SUMMARY**

Upon the identification of the preferred alternative, Section 106 consultation will be required to determine the APE, the Section 106 effect on historic cultural resources, and appropriate measures to minimize harm if warranted. FHWA, with ODOT as their agent, will identify the APE of the preferred alternative in consultation with the OHPO and Section 106 Consulting parties. Phase I archaeology and history/architecture investigations will be conducted for a defined APE of the selected preferred alternative.

Phase I archaeology investigations will be based on extant field conditions and historic contexts of the preferred alternative. The extant field conditions and historic contexts are not part of the cultural resource coordination package and will be developed at the appropriate steps in the PDP process.

Phase I history/architecture investigations may be required if there is the potential to cause effects to a history/architecture property fifty years of age or older that has not been previously evaluated for inclusion in the NRHP. The effect of the undertaking on historic cultural resources will be presented to the OHPO once the APE and the identification efforts have been completed for the preferred alternative. In regard to the NHL located immediately adjacent to the study corridor, the Village of Mariemont Historic District, FHWA, with ODOT as their agent, are required "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking" (36 CFR Part 800.10). Therefore, efforts to minimize harm to the NHL must be incorporated into refined design.





USGS Topographic Map Showing  
the Project Study Area in Hamilton County, Ohio



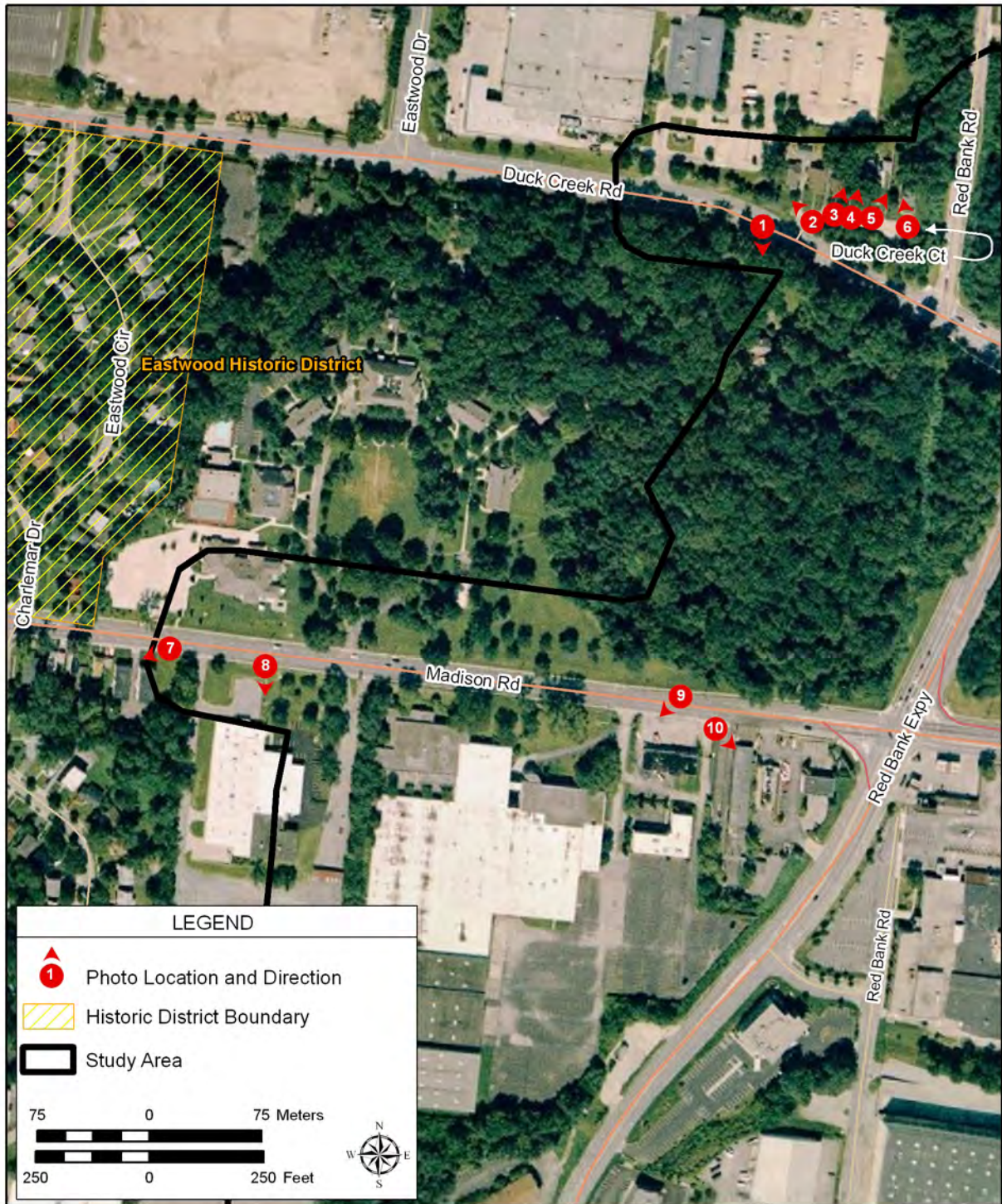


Photo Key - 1 of 5



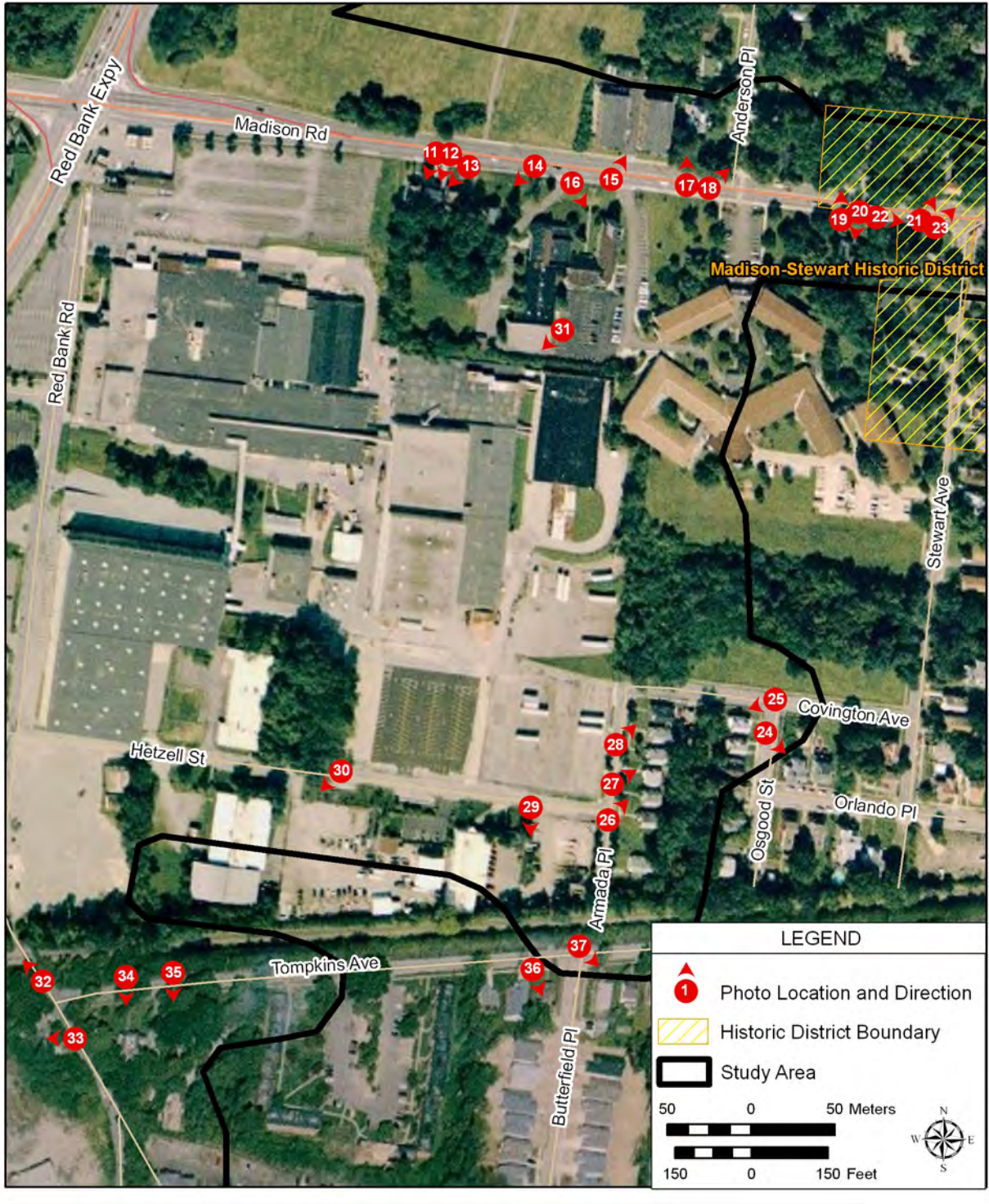


Photo Key - 2 of 5





Photo Key - 3 of 5



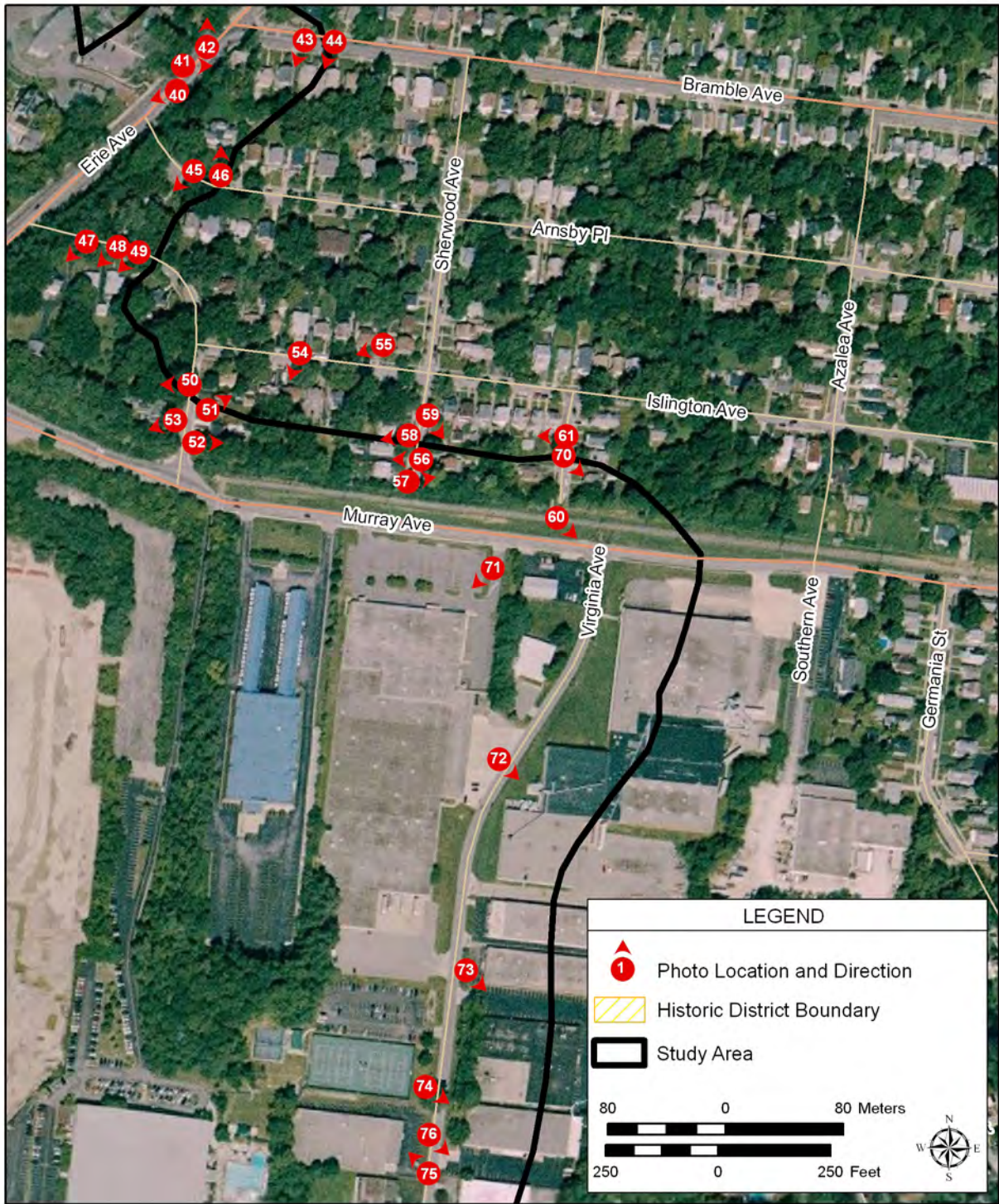


Photo Key - 4 of 5





Photo Key - 5 of 5





Plate 1. View of 5225 Duck Creek Road, facing south.



Plate 2. View of 5228 Duck Creek Court, facing northwest.



Plate 3. View of 5232 Duck Creek Court, facing northeast.



Plate 4. View of 5236 Duck Creek Court, facing northeast.



Plate 5. View of 5240 Duck Creek Court, facing northeast.



Plate 6. View of 5244 Duck Creek Court, facing northwest.





Plate 7. View of 5015 and 5017 Madison Road, facing southwest.



Plate 8. View of 5027 Madison Road, facing south.



Plate 9. View of 5101 Madison Road, facing southwest.



Plate 10. View of 5221 Madison Road, facing southeast.



Plate 11. View of 5413 Madison Road, facing southwest.



Plate 12. View of 5415 Madison Road, facing southwest.





Plate 13. View of 5417 Madison Road, facing southwest.



Plate 14. View of 5429 Madison Road, facing southwest.



Plate 15. View of 5430 and 5438 Madison Road, facing northeast.



Plate 16. View of 5433 Madison Road, St. Paul's Church, facing southeast.



Plate 17. View of 5500 Madison Road, facing north.



Plate 18. View of 5004 Anderson Place, facing northeast.





Plate 19. View of 5524 Madison Road, contributes to the Madison-Stewart NRHP Historic District, facing north.



Plate 20. View of 5525 Madison Road, facing southwest.



Plate 21. View of 5540 Madison Road, HAM-0332-13, contributes to the Madison-Stewart NRHP Historic District, facing northeast.



Plate 22. View of 4931 Stewart Avenue, HAM-0385-13, contributes to the Madison-Stewart NRHP Historic District, facing southeast.



Plate 23. View of 5640 Madison Road, facing northeast.



Plate 24. View of 5530 Orlando Place, facing southeast.





Plate 25. View of 4723 Osgood Street, facing southwest.



Plate 26. View of 4712 Armada Place, facing northeast.



Plate 27. View of 4720 Armada Place, facing northeast.



Plate 28. View of 4722 Armada Place, facing northeast.



Plate 29. View of 5425 Hetzell Street, facing south.



Plate 30. View of 5331 Hetzell Street, facing southwest.





Plate 31. View of 4820 Red Bank Road, facing southwest.



Plate 32. View of Red Bank Road bridge, currently closed, facing northwest.



Plate 33. View of 4535 Red Bank Road, facing west.



Plate 34. View of 5301 Tompkins Avenue, facing south.



Plate 35. View of 5323 Tompkins Avenue, facing south.



Plate 36. View of 5425 Tompkins Avenue, facing southeast.





Plate 37. View of 5503 Tompkins Avenue, facing southeast.



Plate 38. View of 5273 Brotherton Court, facing southeast.



Plate 39. View of 4021 Erie Court, facing south.



Plate 40. View of 4209 Erie Avenue, facing southwest.



Plate 41. View of 4220 Erie Avenue, facing east.



Plate 42. View of 4301 Erie Avenue, facing north.





Plate 43. View of 5605 Bramble Avenue, facing southwest.



Plate 44. View of 5609 Bramble Avenue, facing southwest.



Plate 45. View of 5505 Arnsby Place, facing southwest.



Plate 46. View of 5508 Arnsby Place, facing north.



Plate 47. View of 4129 La Crosse Avenue, facing southwest.



Plate 48. View of 4133 La Crosse Avenue, facing southwest.





Plate 49. View of 4137 La Crosse Place, facing southwest.



Plate 50. View of 4015 La Crosse Avenue, facing west.



Plate 51. View of 4012 La Crosse Avenue, facing northeast.



Plate 52. View of 4004 La Crosse Avenue, facing east.



Plate 53. View of 4003 La Crosse Avenue, facing southwest.



Plate 54. View of 5511 Islington Avenue, facing southwest.





Plate 55. View of 5515, 5519, and 5525 Islington Avenue, facing southwest.



Plate 56. View of 4007 Sherwood Avenue, facing west.



Plate 57. View of 4004 Sherwood Avenue, facing southeast.



Plate 58. View of 4003 Sherwood Avenue, facing southwest.



Plate 59. View of 4002 Sherwood Avenue, facing southeast.



Plate 60. View of 4006 Rex Avenue, facing southeast.





Plate 61. View of 4005 Rex Avenue, facing west.



Plate 62. View of 3922 Erie Avenue, facing northwest.



Plate 63. View of 4031 Red Bank Road, facing northwest.



Plate 64. View of 4011 Red Bank Road, facing southwest.



Plate 65. View of 3951 Red Bank Road, facing southwest.



Plate 66. View of 4010 and 4008 Red Bank Road, facing west.





Plate 67. View of 5518 Fair Lane, facing northeast.



Plate 68. View of 5521 Fair Lane, facing southwest.



Plate 69. View of 5555 Fair Lane, facing southeast.



Plate 70. View of 3962 Virginia Avenue, facing southeast.



Plate 71. View of 3965 Virginia Avenue, facing southwest.



Plate 72. View of 3956 Virginia Avenue, facing southeast.



Plate 73. View of 3950 Virginia Avenue, facing southeast.



Plate 74. View of 3930 Virginia Avenue, facing southeast.



Plate 75. View of 3929 Virginia Avenue, facing northwest.



Plate 76. View of 3924 Virginia Avenue, facing southeast.



Plate 77. View of 3865 Virginia Avenue, facing northwest.



Plate 78. View of 3883 Virginia Avenue, facing northwest.





Plate 79. View of 3717 Jon Len Drive, facing west.



Plate 80. View of 5628 Wooster Pike, facing northwest.



Plate 81. View of 5657 Wooster Pike, contributes to the Mariement Historic District NHL, facing east.

## **Appendix A**

### **OHI Forms**

## OHIO HISTORIC INVENTORY

1. No. HAM-2120-57		4. Present Name(s)		2. County Hamilton	3. Location of Negatives Miami Purchase Association
2. County Hamilton		5. Other Name(s)			
3. Location of Negatives Miami Purchase Association		"Westover" Industrial Park			
6. Specific Location Southwest of Mariemont		16. Thematic Category D-O	28. No. of Stories	4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
7. City or Town If Rural, Township & Vicinity Mariemont		17. Date(s) or Period 1928-1950's	29. Basement? Yes <input type="checkbox"/> No <input type="checkbox"/>		
8. Site Plan with North Arrow		18. Style or Design Functional	30. Foundation Material		
		19. Architect or Engineer	31. Wall Construction	4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
9. Coordinates		20. Contractor or Builder	32. Roof Type & Material		
Lat. _____ Long. _____ U.T.M. Reference 16 725180 4335260 Zone Easting Northing		21. Original Use, if apparent Industrial Park	33. No. of Bays Front Side		
10. Site <input checked="" type="checkbox"/> Building <input type="checkbox"/> Structure <input type="checkbox"/> Object <input type="checkbox"/>		22. Present Use Industrial Park	34. Wall Treatment	4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
11. On National Register? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		23. Ownership Public <input type="checkbox"/> Private <input checked="" type="checkbox"/>	35. Plan Shape rough rect.		
12. Is It Eligible? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		24. Owner's Name & Address, if known	36. Changes (Explain in #42) Addition <input type="checkbox"/> Altered <input checked="" type="checkbox"/> Moved <input type="checkbox"/>		
13. Part of Estab. Hist. Dist.? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		25. Open to Public? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	37. Condition Interior _____ Exterior good	4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
14. District Potent'l? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		26. Local Contact Person or Organization Miami Purchase Association	38. Preservation Underway? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
15. Name of Established District MARIEMONT HISTORIC DISTRICT		27. Other Surveys in Which Included NATIONAL REGISTER	39. Endangered? By What? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
42. Further Description of Important Features 48 acre tract. Industrial Park to SW of Mariemont. Construction began in 1928 and continued until 1950's. Park now filled. Several industries located there, including Keebler, Cincinnati Steel Treating Co., Exquisite Laundry and Dry Cleaning Co., Dorman Products, Inc. Very busy area. Park preserved at Wooster Pk., Mariemont Ave. and Trade St.				4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
43. History and Significance Original Mariemont plan called for Industrial Park on bottoms adjacent and south of RR. Present location deemed more suitable. A receiving and storage point for rail shipments of materials when Mariemont construction was going on.		40. Visible from Public Road? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
44. Description of Environment and Outbuildings Very busy plant area - large trucks. Contributes to the Industrial Park Complex of Mariemont.		41. Distance from and Frontage on Road			
45. Sources of Information Personal observation. The Mariemont Story, Warren Parks 1967.		46. Prepared by M. King		4. Present Name(s) "Westover" Industrial Park	5. Other Name(s)
		47. Organization Miami Purchase Association			
		48. Date 8-9-77 49. Revision Date(s)			

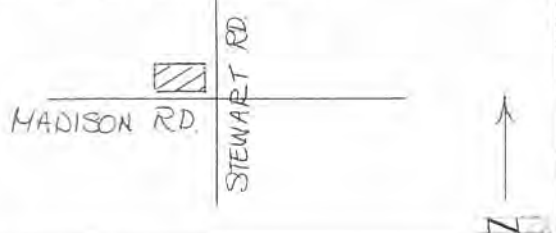
Looking West on Mariemont Avenue





# OHIO HISTORIC INVENTORY

Ohio Historic Preservation Office  
Ohio Historical Center  
Columbus, Ohio 43211

1. No. <u>HAM-332-13</u>		4. Present Name(s) W. W. Hetherington Residence	
2. County Hamilton		5. Other Name(s) Benjamin Stewart House	
3. Location of Negatives Miami Purchase Association			
6. Specific Location 5540 Madison		16. Thematic Category C	
7. City or Town If Rural, Township & Vicinity Cincinnati		17. Date(s) or Period 1833	
8. Site Plan with North Arrow 		18. Style or Design Greek Revival	
		19. Architect or Engineer	
		20. Contractor or Builder	
		21. Original Use, if apparent residence	
		22. Present Use residence	
		23. Ownership Public <input type="checkbox"/> Private <input checked="" type="checkbox"/>	
		24. Owner's Name & Address, if known W. W. Hetherington	
9. Coordinates Lat. _____ Long. _____ U.T.M. Reference 16 724840 4337670 Zone Easting Northing		25. Open to Public? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
10. Site <input type="checkbox"/> Building <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Object <input type="checkbox"/>		26. Local Contact Person or Organization Miami Purchase Association	
11. On National Register? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		27. Other Surveys in Which Included 1960 City of Cincinnati Inventory of Historic Sites and Buildings	
12. Is It Eligible? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
13. Part of Estab. Yes <input checked="" type="checkbox"/> Hist. Dist.? No <input type="checkbox"/>			
14. District Potent'l? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
15. Name of Established District Madison-Stewart Historic District		28. No. of Stories <u>2 1/2</u>	
		29. Basement? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
		30. Foundation Material rubble stone	
		31. Wall Construction brick	
		32. Roof Type & Material gable - slate	
		33. No. of Bays Front 5 Side 0	
		34. Wall Treatment stretcher bond	
		35. Plan Shape L	
		36. Changes (Explain in #42) Addition <input checked="" type="checkbox"/> Altered <input type="checkbox"/> Moved <input type="checkbox"/>	
		37. Condition Interior _____ Exterior <u>excellent</u>	
		38. Preservation Underway? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
		39. Endangered? By What? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
		40. Visible from Public Road? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
		41. Distance from and Frontage on Road 15'	

## 42. Further Description of Important Features

The entry has a porch with fluted Doric columns which support a flat roof porch and balustrade. Windows are 6/6 double hung with shutters. Windows have flat arch lintels with plain moulding. Front facade has 5 bays with a single door center entry. Corbeled interior end chimneys, paneled frieze with paired brackets at corners. A wing in two sections has been added.

## 43. History and Significance

Benjamin Stewart (1780-1862) came to Cincinnati about 1827 from New England. He moved to Madisonville in 1829 and started a lumber business. He became a prominent local businessman.

## 44. Description of Environment and Outbuildings

Carriage house was converted to a residence several years ago. The Stewart house sits as a focal point to an established residential historic district.

## 45. Sources of Information

National Register Nomination

46. Prepared by  
L. F.

47. Organization  
MPA

48. Date 6/76 49. Revision Date(s)



HAM-332  
Hamilton  
W.W. Hetherington Residence  
Benjamin Stewart House

## OHIO HISTORIC INVENTORY

Ohio Historic Preservation Office  
Ohio Historical Center  
Columbus, Ohio 43211

1. No. <u>HAM-13-385</u>		4. Present Name(s)																
2. County <u>Hamilton</u>		5. Other Name(s)																
3. Location of Negatives <u>Miami Purchase Association</u>		<u>L. C. Weir House</u>																
6. Specific Location  <u>4931 Stewart</u>		16. Thematic Category <u>C</u>																
7. City or Town <u>If Rural, Township &amp; Vicinity Cincinnati</u>		17. Date(s) or Period <u>1875</u>																
8. Site Plan with North Arrow		18. Style or Design <u>Italianate</u>																
		19. Architect or Engineer																
		20. Contractor or Builder																
		21. Original Use, if apparent <u>residential</u>																
		22. Present Use <u>residential</u>																
9. Coordinates		23. Ownership Public <input type="checkbox"/> Private <input checked="" type="checkbox"/>																
Lat. _____ Long. _____		24. Owner's Name & Address, if known <u>Madison Methodist Church</u>																
U.T.M. Reference		25. Open to Public? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																
<table border="1"> <tr> <td>1</td><td>6</td><td>7</td><td>2</td><td>4</td><td>8</td><td>4</td><td>0</td><td>4</td><td>3</td><td>3</td><td>7</td><td>6</td><td>2</td><td>0</td> </tr> </table>		1	6	7	2	4	8	4	0	4	3	3	7	6	2	0	26. Local Contact Person or Organization <u>Miami Purchase Association</u>	
1	6	7	2	4	8	4	0	4	3	3	7	6	2	0				
Zone _____ Easting _____ Northing _____		27. Other Surveys in Which Included																
10. Site <input type="checkbox"/> Building <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Object <input type="checkbox"/>		28. No. of Stories <u>2½</u>																
11. On National Register? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		29. Basement? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
12. Is It Eligible? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		30. Foundation Material <u>stone, rubble</u>																
13. Part of Estab. Hist. Dist.? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		31. Wall Construction <u>brick</u>																
14. District Potent'l? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		32. Roof Type & Material <u>gable - slate</u>																
15. Name of Established District <u>Madison Stewart Historic District</u>		33. No. of Bays Front <u>3</u> Side <u>4</u>																
		34. Wall Treatment <u>stretcher bond</u>																
		35. Plan Shape <u>cross</u>																
		36. Changes (Explain in #42) Addition <input type="checkbox"/> Altered <input type="checkbox"/> Moved <input type="checkbox"/>																
		37. Condition Interior _____ Exterior <u>excellent</u>																
		38. Preservation Underway? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
		39. Endangered? By What? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																
		40. Visible from Public Road? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
		41. Distance from and Frontage on Road <u>20'</u>																



## 42. Further Description of Important Features

The roof is imbricated with red and gray slate. The irregular plan creates several angles that are framed with wooden porches with intricate woodwork. The cornice is supported by small brackets. The window lintels are shaped and supported by brackets and are coupled with lugsills supported by brackets.

## 43. History and Significance

L. C. Weir was a Scottish immigrant who lived in Madisonville for a number of years. He sold the house to a Dr. Dart who was a Methodist circuit preacher.

See attached form.

## 44. Description of Environment and Outbuildings

Part of an established district of older residential houses.

## 45. Sources of Information

National Register  
Nomination Form

## 46. Prepared by

L. F. Mitchell

47. Organization Miami Purchase Assoc.

48. Date 6/76 49. Revision Date(s)

HAM-13-385

Hamilton

L. C. Weir House



**APPENDIX C**  
**EVALUATION OF GEOMETRIC DESIGN ISSUES**  
  
.  
  
**RED FLAG SUMMARY REPORT**  
  
**HAM-32F-0.00**  
**PID 86461**  
  
**RELOCATED SR-32 SEGMENT 1**  
  
**RED BANK CORRIDOR IMPROVEMENTS**  
  
**EASTERN CORRIDOR MULTIMODAL PROJECTS**  
  
**HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320

## DESIGN CRITERIA

### RED BANK EXPRESSWAY (CR 67) (Future SR 32)

#### Current (CR 67) Urban Principal Arterial

(NOT Expressway: Some segments divided & some not, only one grade separation)

Design speed= \_\_mph, Posted speed= 35mph (southern) 45mph (northern).

#### Future (SR 32) Urban Principal Arterial

(MAY or MAY NOT be "Expressway": anticipated divided, but percent of grade separations unknown, See ORC 4511.01(ZZ) )

Design speed= 45mph, Legal & Posted speed= 45mph.

ADT=\_\_\_; DHV=\_\_\_; T24(%) =200±.

KEY HIGHWAY DESIGN FEATURES NORMAL DESIGN CRITERIA See L&D Fig. 105-1, & Section 900	SPECIFIC DETAILS	NORMAL DESIGN CRITERIA	EXISTING DATA	STATUS
<b>Lane Width</b> Sect.301.1.2, 303.1; Fig. 301-2, 301-4, 303-1	Lane Width	Preferred: all 12' Expressway: 12' Min. Arterial: 11' Min w/ one 12' each direction	12', 11' Lt (R3 Northward) 11', 11' Lt. (N of Erie Ave.) 10' (under Erie Ave.) 12', 12' Aux. (S of Erie Ave.)	NO
<b>Graded/Curbed Shoulder Width</b> Sect.301.2.3, 303.1; Fig. 301-3, 301-4, 303-1	Divided, Paved & Curbed	Right side: 10' Median: 2 Thru Lanes each dir.: 4' 3 Thru Lanes each dir.: 10' Arterial, 45mph: 1'-2'	0' E/P - F/C (N of Hetzel) 1' E/P - F/C (N of Erie) 0' E/P - F/C (under Erie) 2' E/P - F/C (S of Erie) (Ex. GR is NOT at F/C)	NO
<b>Bridge Width</b> Sect. 302.1; Fig. 302-1, -2, -3	Lateral Clearance	NA	NA	OK
<b>Structural Capacity</b> Sect. 302.1; See Bridge Design Manual	Min. Design Loading	NA	NA	OK
<b>Horizontal Alignment</b> see below	---	---	---	NO
<b>Excessive Deflections</b> Sect. 202.2; Fig. 202-1	Max. Deflection	1d 45'	Unknown	OK
<b>Degree of Curve or Radius</b> Sect. 202.3; Fig. 202-2	Max. Dc or Min. Radius	$Dc \leq 8d\ 00'$ , $R \geq 716'$	R1 1910' (near I-71) R2 1800' (near Duck Cr.) R3 1500' (S of Madison) R4 1200' (at Hetzel St.) R5 900' (at Brotherton Ct.) <b>R6 500' (S of Erie Ave.)</b> R7 859' (at Regency Dr.) R8 1100' (at Shannon Way) R9 1100' (at Fair Ln.)	NO
<b>Lack of Spirals</b> Sect. 202.5, Fig. 202-11	v = 45mph	None Required	None	OK
<b>Transition (Taper) Rates</b> Sect. 301.1.4	Shifting / Narrowing Rate	45 :1	21 :1 (NB S of Erie Ave.)	NO
<b>Intersection Angles</b> Sect. 401.3; Fig. 401-1	Unsignalized Angle Signalized Angle	70d, or 60d RF 60d Min.	Unsignalized $\geq 70d$ Signalized $\geq 60d$	OK
<b>Vertical Alignment</b> Sect. 203; see below	Sag A=4.53%(N/ DuckCr.) Sag A=2.38%(N/ Brother.) Crest A=7.18%(Brother.) Crest A=4.00%(Regency) SagA=2.62%(N/Shannon)	Sag K=79, L=358' Min Sag K=79, L=135' Min* Crest K=61, L=438' Min Crest K=61, L=181' Min Sag K=79, L=135' Min* *based on 3 x Vmph	<b>Sag K=44, L=200'</b> <b>Sag K=42, L=100'</b> <b>Crest K=42, L=300'</b> <b>Crest K=37, L=150'</b> Sag K=57, L=150'	NO NO
<b>Grade Breaks</b> Sect. 203.3.2; Fig. 203-2	Max. Grade Break	0.55%	$\leq 1.1\%$ (Madison - Brother.)	NO
<b>Grades</b> Sect. 203.2; Fig. 203-1	Level, Rolling, Hilly	Expressway: 4% Max. Arterial: 6% Max.	$\leq 4\%$	OK



**HAM-32F-0.00**

URS # 15017500/15017511

**DESIGN CRITERIA**
**RED BANK EXPRESSWAY (CR 67) (Future SR 32)**
**Current (CR 67) Urban Principal Arterial**

(NOT Expressway: Some segments divided &amp; some not, only one grade separation)

Design speed= \_\_mph, Posted speed= 35mph (southern) 45mph (northern).

**Future (SR 32) Urban Principal Arterial**

(MAY or MAY NOT be "Expressway": anticipated divided, but percent of grade separations unknown, See ORC 4511.01(ZZ) )

Design speed= 45mph, Legal &amp; Posted speed= 45mph.

ADT=\_\_\_; DHV=\_\_\_; T24(%)=200±.

KEY HIGHWAY DESIGN FEATURES NORMAL DESIGN CRITERIA See L&D Fig. 105-1, & Section 900	SPECIFIC DETAILS	NORMAL DESIGN CRITERIA	EXISTING DATA	STATUS
<b>Stopping Sight Distance</b> Sect. 201.2; Fig. 201-1, 203-3, -4, -6, -7	Minimum	360'	Horiz: R1 600' (near I-71) R2 380' (near Duck Cr.) R3 360' (S of Madison) R4 400' (at Hetzel St.) <b>R5 300' (at Brotherton)</b> <b>R6 240' (S of Erie Ave.)</b> R7 600' (at Regency Dr.) R8 600' (at Shannon Way) R9 450' (at Fair Ln.) <b>Vert.= 235' (N/ DuckCr.)</b> Vert.= 506' (N/ Brotherton) <b>Vert.&lt; 300' (Brotherton)</b> <b>Vert.= 345' (Regency)</b> Vert.= 456' (N/ Shannon)	<b>NO</b>
<b>Pavement Cross Slopes</b> Sect. 301.1.5; Fig. 301-6	Normal Cross Slope	0.016	<b>Parabolic± (N of Erie)</b> 0.016 (S of Erie)	<b>NO</b>
<b>Superelevation</b> Sect. 202.4; see below	---	---	---	<b>NO</b>
<b>Maximum Rate</b> Sect.202.4.1 & 4.3; Fig. 202-3, -7 thru -10	Superelevation	R1 NC (near I-71) R2 NC (near Duck Cr.) R3 NC (S of Madison) R4 NC (at Hetzel St.) R5 RC (at Brotherton Ct.) R6 0.040 (S of Erie Ave.) R7 RC (at Regency Dr.) R8 NC (at Shannon Way) R9 NC (at Fair Ln.)	R1 Unknown (near I-71) R2 NC (near Duck Cr.) R3 NC (S of Madison) R4 NC (at Hetzel St.) R5 0.035 (at Brotherton Ct.) <b>R6 NC (S of Erie Ave.)</b> <b>R7 NC (at Regency Dr.)</b> R8 NC (at Shannon Way) R9 NC (at Fair Ln.)	<b>NO</b>
<b>Transition</b> Sect. 202.4.5; Fig. 202-4, -5, -6	$(w \times n_1)(e_a)(G)(b_w)$	G = 185	Unknown	<b>NO</b>
<b>Position</b> Sect. 202.4.6; Fig. 202-5	Percent on Tangent	50% - 70% or on spiral	Unknown	<b>NO</b>
<b>Horizontal Clearance</b> (under bridge) Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	Rt. 10' + Barrier Clearance (possible 2' + Barrier Cl.)	11'± (NB under RR) <b>5'± (under Erie Ave.)</b>	<b>NO</b>
<b>Vertical Clearance</b> Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	Preferred: all 17.0' New/reconstr: 16.5' Min. To Remain: 14.0' Min.	20'± (under RR) <b>Unknown (under Erie)</b>	<b>NO</b>

## DESIGN CRITERIA

### MADISON ROAD (CR 612)

Urban Arterial, Design speed=35mph, Legal & Posted speed=35mph.

ADT=\_\_\_; DHV=\_\_\_; T24(%) =\_\_\_.

KEY HIGHWAY DESIGN FEATURES NORMAL DESIGN CRITERIA See L&D Fig. 105-1, & Section 900	SPECIFIC DETAILS	NORMAL DESIGN CRITERIA	EXISTING DATA	STATUS
<b>Lane Width</b> Sect.301.1.2, 303.1; Fig. 301-2, 301-4, 303-1	Lane Width (Less than 50mph)	Min. One 12' Each Way, otherwise 11' Min.	12' Thru, 11' Turn	OK
<b>Graded Shoulder Width</b> Sect.301.2.3, 303.1; Fig. 301-3, 301-4, 303-1	No curb w/slope > 6:1 Urban, Curbed	1' - 2' paved to F/C	0' to F/C	NO
<b>Bridge Width</b> Sect. 302.1; Fig. 302-1, -2, -3	Lateral Clearance	NA	NA	OK
<b>Structural Capacity</b> Sect. 302.1; See Bridge Design Manual	Min. Design Loading	NA	NA	OK
<b>Horizontal Alignment</b> see below	---	---	---	OK
<b>Excessive Deflections</b> Sect. 202.2; Fig. 202-1	Max. Deflection	2d 45m	Unknown	OK
<b>Degree of Curve or Radius</b> Sect. 202.3; Fig. 202-2	Max. Dc or Min. Radius	Dc= 15d 30m, R=370'	None	OK
<b>Lack of Spirals</b> Sect. 202.5, Fig. 202-11	Spiral ( Y / N )	v < 50mph None Required	NA	OK
<b>Transition (Taper) Rates</b> Sect. 301.1.4	Shifting / Narrowing Rate	S <sup>2</sup> /60= 20.5 :1	30:1	OK
<b>Intersection Angles</b> Sect. 401.3; Fig. 401-1	Unsignalized Angle Signalized Angle	70d, or 60d RF 60d Min.	Unsignalized ≥ 70d Signalized ≥ 60d	OK
<b>Vertical Alignment</b> Sect. 203; see below	Crest A = NA Sag A = Unknown	Crest K= NA, L= NA Sag K= Unk., L= 105'Min.	Crest L None Sag K=Unk., L=Unk.	OK
<b>Grade Breaks</b> Sect. 203.3.2; Fig. 203-2	Max. Grade Break	0.95%	Unknown	OK
<b>Grades</b> Sect. 203.2; Fig. 203-1	Level, Rolling, Hilly	8% Max.	≤ 5% ±	OK
<b>Stopping Sight Distance</b> Sect. 201.2; Fig. 201-1, 203-3, -4, -6, -7	Minimum	250'	Horiz: ≥ 250' Vert: ≥ 250'	OK
<b>Pavement Cross Slopes</b> Sect. 301.1.5; Fig. 301-6	Normal Cross Slope	0.016	Parabolic & Varies	NO
<b>Superelevation</b> Sect. 202.4; see below	---	---	---	OK
<b>Maximum Rate</b> Sect. 202.4.1 & .4.3; Fig. 202-3, -7 thru -10	Superelevation	NA	NA	OK
<b>Transition</b> Sect. 202.4.5; Fig. 202-4, -5, -6	(w x n <sub>1</sub> )(e <sub>d</sub> )(G)(b <sub>w</sub> )	G = 161	NA	OK
<b>Position</b> Sect. 202.4.6; Fig. 202-5	Percent on Tangent	50% - 70% or on spiral	NA	OK
<b>Horizontal Clearance</b> (under bridge) Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	NA	NA	OK
<b>Vertical Clearance</b> Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	16.5' Min, 17.0' Pref.	Unknown (to Utilities)	OK



## DESIGN CRITERIA

### DUCK CREEK ROAD (CR 331)

Urban Collector, Design speed=35mph, Legal & Posted speed=35mph.

ADT=\_\_\_; DHV=\_\_\_; T24(%)=\_\_\_.

KEY HIGHWAY DESIGN FEATURES NORMAL DESIGN CRITERIA See L&D Fig. 105-1, & Section 900	SPECIFIC DETAILS	NORMAL DESIGN CRITERIA	EXISTING DATA	STATUS
<b>Lane Width</b> Sect.301.1.2, 303.1; Fig. 301-2, 301-4, 303-1	Lane Width (Commercial)	11' Min., 12' Pref.	10' Min, 12' Max.	<b>NO</b>
<b>Graded Shoulder Width</b> Sect.301.2.3, 303.1; Fig. 301-3, 301-4, 303-1	No curb w/slope > 6:1 Urban, Curbed	1' - 2' paved to F/C	0' to F/C	<b>NO</b>
<b>Bridge Width</b> Sect. 302.1; Fig. 302-1, -2, -3	Lateral Clearance	NA	NA	OK
<b>Structural Capacity</b> Sect. 302.1; See Bridge Design Manual	Min. Design Loading	NA	NA	OK
<b>Horizontal Alignment</b> see below	---	---	---	OK
<b>Excessive Deflections</b> Sect. 202.2; Fig. 202-1	Max. Deflection	2d 45m	Unknown	OK
<b>Degree of Curve or Radius</b> Sect. 202.3; Fig. 202-2	Max. Dc or Min. Radius	Dc= 15d 30m, R=370'	R= 580'±	OK
<b>Lack of Spirals</b> Sect. 202.5, Fig. 202-11	Spiral ( Y / N )	v < 50mph None Required	None	OK
<b>Transition (Taper) Rates</b> Sect. 301.1.4	Shifting / Narrowing Rate	S <sup>2</sup> /60= 20.5 :1	Unknown	OK
<b>Intersection Angles</b> Sect. 401.3; Fig. 401-1	Unsignalized Angle Signalized Angle	70d, or 60d RF 60d Min.	Unsignalized ≥ 70d Signalized ≥ 60d	OK
<b>Vertical Alignment</b> Sect. 203; see below	Crest A = 10.70% Sag A = 8.0%±	Crest K= 29, L= 310'Min Sag K= 49, L= 392'Min	Crest K=23, L=250' Sag L K=19±, L=155'±	<b>NO</b>
<b>Grade Breaks</b> Sect. 203.3.2; Fig. 203-2	Max. Grade Break	0.95%	Unknown	OK
<b>Grades</b> Sect. 203.2; Fig. 203-1	Level, Rolling, Hilly	10% Max.	≤ 8%	OK
<b>Stopping Sight Distance</b> Sect. 201.2; Fig. 201-1, 203-3, -4, -6, -7	Minimum	250'	Horiz: ≥ 250' Vert: ≤ 225'	<b>NO</b>
<b>Pavement Cross Slopes</b> Sect. 301.1.5; Fig. 301-6	Normal Cross Slope	0.016	Parabolic ±	<b>NO</b>
<b>Superelevation</b> Sect. 202.4; see below	---	---	---	OK
<b>Maximum Rate</b> Sect. 202.4.1 & .4.3; Fig. 202-3, -7 thru -10	Superelevation	R=580', NC	NC	OK
<b>Transition</b> Sect. 202.4.5; Fig. 202-4, -5, -6	(w x n <sub>1</sub> )(e <sub>d</sub> )(G)(b <sub>w</sub> )	G = 161	NA	OK
<b>Position</b> Sect. 202.4.6; Fig. 202-5	Percent on Tangent	50% - 70% or on spiral	NA	OK
<b>Horizontal Clearance</b> (under bridge) Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	NA	NA	OK
<b>Vertical Clearance</b> Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	14.5' Min, 15.0' Pref.	Unknown (to Utilities)	OK

## DESIGN CRITERIA

### ERIE AVENUE (CR 608)

Urban Collector, Design speed=35mph, Legal & Posted speed=35mph.

ADT=\_\_\_; DHV=\_\_\_; T24(%) =\_\_\_.

KEY HIGHWAY DESIGN FEATURES NORMAL DESIGN CRITERIA See L&D Fig. 105-1, & Section 900	SPECIFIC DETAILS	NORMAL DESIGN CRITERIA	EXISTING DATA	STATUS
<b>Lane Width</b> Sect.301.1.2, 303.1; Fig. 301-2, 301-4, 303-1	Lane Width (Commercial & Residential)	11' Min., 12' Pref.	Unknown	NO
<b>Graded Shoulder Width</b> Sect.301.2.3, 303.1; Fig. 301-3, 301-4, 303-1	No curb w/slope > 6:1 Urban, Curbed	1' - 2' paved to F/C	Unknown	NO
<b>Bridge Width</b> Sect. 302.1; Fig. 302-1, -2, -3	Lateral Clearance	2' to F/ High Curb or Behind Barrier	Unknown	NO
<b>Structural Capacity</b> Sect. 302.1; See Bridge Design Manual	Min. Design Loading	Bridge Loading	Unknown	OK
<b>Horizontal Alignment</b> see below	---	---	---	OK
<b>Excessive Deflections</b> Sect. 202.2; Fig. 202-1	Max. Deflection	2d 45m	Unknown	OK
<b>Degree of Curve or Radius</b> Sect. 202.3; Fig. 202-2	Max. Dc or Min. Radius	Dc= 15d 30m, R=370'	Unknown	OK
<b>Lack of Spirals</b> Sect. 202.5, Fig. 202-11	Spiral ( Y / N )	v < 50mph None Required	Unknown	OK
<b>Transition (Taper) Rates</b> Sect. 301.1.4	Shifting / Narrowing Rate	S <sup>2</sup> /60= 20.5 :1	Unknown	OK
<b>Intersection Angles</b> Sect. 401.3; Fig. 401-1	Unsignalized Angle Signalized Angle	70d, or 60d RF 60d Min.	Unknown	OK
<b>Vertical Alignment</b> Sect. 203; see below	Crest A = 0% Sag A = 0%+	Crest K= 29, L= 105'Min Sag K= 49, L= 105'Min	Unknown	OK
<b>Grade Breaks</b> Sect. 203.3.2; Fig. 203-2	Max. Grade Break	0.95%	Unknown	OK
<b>Grades</b> Sect. 203.2; Fig. 203-1	Level, Rolling, Hilly	10% Max.	Unknown	OK
<b>Stopping Sight Distance</b> Sect. 201.2; Fig. 201-1, 203-3, -4, -6, -7	Minimum	250'	Unknown	OK
<b>Pavement Cross Slopes</b> Sect. 301.1.5; Fig. 301-6	Normal Cross Slope	0.016	Unknown	NO
<b>Superelevation</b> Sect. 202.4; see below	---	---	---	NO
<b>Maximum Rate</b> Sect. 202.4.1 & .4.3; Fig. 202-3, -7 thru -10	Superelevation	R=___, __	Unknown	NO
<b>Transition</b> Sect. 202.4.5; Fig. 202-4, -5, -6	(w x n <sub>1</sub> )(e <sub>d</sub> )(G)(b <sub>w</sub> )	G = 161	Unknown	OK
<b>Position</b> Sect. 202.4.6; Fig. 202-5	Percent on Tangent	50% - 70% or on spiral	Unknown	OK
<b>Horizontal Clearance</b> (under bridge) Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	NA	NA	OK
<b>Vertical Clearance</b> Sect. 302.1; Fig. 302-1, -2, -3, 905-2	Highway Clearance	14.5' Min, 15.0' Pref.	Unknown (to Utilities)	OK



**APPENDIX D**

**SUPPORTING STUDY – GEOTECHNICAL RED FLAG SUMMARY REPORT**

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**BARR AND PREVOST**

**RED FLAG SUMMARY REPORT**

**HAM-32F-0.00**  
**PID 86461**

**RELOCATED SR-32 SEGMENT 1**

**RED BANK CORRIDOR IMPROVEMENTS**

**EASTERN CORRIDOR MULTIMODAL PROJECTS**

**HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320

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**SUPPORTING STUDY  
GEOTECHNICAL RED FLAG REPORT  
EASTERN CORRIDOR MULTI-MODAL  
TRANSPORTATION PROJECTS  
HAM-32F-0.00  
RED BANK CORRIDOR IMPROVEMENTS: I-71 TO US-50  
SR-32 SEGMENT 1  
  
HAMILTON COUNTY, OHIO  
PID# 86461**

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**For:**

**URS**

564 White Pond Drive  
Akron, Ohio 44320

**Submitted by:**



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**February 8, 2011**

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EXHIBIT 2: SHADED TERRAIN MODEL
EXHIBIT 3: OVERBURDEN THICKNESS
EXHIBIT 4: SURFICIAL GEOLOGY

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APPENDIX B: RED FLAG SUMMARY



**SUPPORTING STUDY  
GEOTECHNICAL RED FLAG REPORT  
EASTERN CORRIDOR MULTI-MODAL  
TRANSPORTATION PROJECTS  
HAM-32F-0.00  
RED BANK CORRIDOR IMPROVEMENTS: I-71 TO US-50  
SR-32 SEGMENT 1  
HAMILTON COUNTY, OHIO  
PID# 86461**

**EXECUTIVE SUMMARY**

This report supports Barr & Prevost's geotechnical contribution to the Red Flag Summary Report for the HAM-32F-0.00 Project (PID #86461) SR-32 Segment 1, one of the Eastern Corridor multi-modal transportation projects planned for Hamilton County. This phase of the project will upgrade Red Bank Expressway from the existing I-71/Red Bank Road interchange to Red Bank /US 50 interchange, a total length of about 2.5 miles. The purpose of the report is to provide an overview of geotechnical conditions along the proposed alignments and identify issues that might require special study or engineering during design.

This segment will expand or closely follow the existing Red Bank Expressway alignment (Red Bank Expressway extends from I-71 to Brotherton Road beyond which it reverts to Red Bank Road) alignment together with a series of local area network access streets. The study was based on existing data and literature that were collected from public agencies, combined with a field reconnaissance.

Geologically, much of the proposed alignment is underlain by variable but significant thicknesses of valley fill that were deposited in the buried valleys of the ancestral Ohio and Licking Rivers. These tend to be dominantly fine-grained deposits, some of which are glacially compacted material (till). Recent fine-grained floodplain deposits mantle the southern part of Segment 1. Bedrock is more than 100 feet (ft) deep along much of this segment.

Improvements may include various bridge structures, retaining walls, drainage structures and cut/fill operations either for new facilities or for modifications to existing infrastructure, depending on the final suite of improvements selected.

In general the geotechnical issues facing designers are typical of this part of Ohio; challenging subgrade conditions for road construction and the need for deep foundations for bridge structures - probably requiring friction piles. Improvements to the local area network of streets may call for the creation of links between existing roads that are, in two cases, separated by abrupt elevation changes. Several retaining walls will be required, the design of which may, in some cases, be complicated by the presence

of existing new walls within the same slopes at those locations.

## **1. INTRODUCTION**

### **1.1. General**

This report presents the results of a geotechnical Red Flag Study for the proposed new highway capacity for Red Bank Expressway (relocated SR-32), a component of the Eastern Corridor multi-modal transportation improvement program in Hamilton and Clermont Counties, Ohio. Highway alternatives for the Eastern Corridor were developed for four geographic segments of the project study area, of which part of Red Bank Road/Red Bank Expressway is Segment 1. Total new highway length for all segments combined is about 12.6 miles. Segment 1 is described in the Tier 1 Final Environmental Impact Statement as:

"..... roadway improvements involve consolidation and management of access points along existing Red Bank Road and Red Bank Expressway in order to establish a controlled access arterial roadway of improved capacity and safety from I-71 to US 50. This segment has a total length of about 2.5 miles, and would expand or closely follow the existing roadway alignment" (US DOT, 2005).

The purpose of this study is to present an overview of the geotechnical conditions along the alignment and identify potential areas of concern to be considered either in design or construction planning. The findings are also summarized in tabular form for inclusion in the overall project Red Flag Summary Report. The study area is shown in Exhibit 1.

Data that can be used to evaluate subsurface conditions in this area are abundant and sources such as the Ohio Department of Transportation (ODOT) Geotechnical Branch, Ohio Department of Natural Resources (ODNR) and the State of Ohio Geographic Information Systems metadata explorer system all contributed to the accumulated data set, together with some private sector sources. The data used in the study has been described in the references section.



## **1.2. Geographic Information System (GIS)**

Spatial geographic data regarding geology, hydrology and hydrogeology and soil type is readily available from government agencies in electronic format. Relevant data were collected and used to develop a baseline picture of conditions along the proposed alignments using geographic information system (GIS) software (GRASS 6.4, 2010). All materials used are described in the References section of this report. Each of the GIS-based exhibits for the report is based on a portable network graphic (png) exported from the GIS to a Scalable Vector Graphics (SVG) Editor (Inkscape, 2010).

## **2. ROUTE**

The feasible alternatives framework previously developed for Segment I has evolved to consist of two main components: highway mainline along Red Bank Expressway and a local access roadway network, as summarized below:

- Highway mainline alternatives incorporating either Grade Separated Tight Diamond Intersections (TDI) or Continuous Flow Intersections (CFI) at Madison Road and Erie Avenue intersections.
- Two side road/intersection improvement options for consolidating traffic access points to Red Bank Road/Red Bank Expressway and improving local access (Alternatives LAN1 and LAN2).

Interchange options at US 50 are not included in this segment.

The study area shown in Exhibit 1 is based on a 500-foot buffer around the currently defined road alignments. This forms the approximate boundary within which data were collected, although in some cases data from well outside this zone have been considered where it was thought to be relevant to, say, the description of soil types in a particular geomorphological zone.

The alignment of the improved mainline follows generally that of the existing Red Bank Road and Red Bank Expressway. (Red Bank Expressway extends from I-71 to Brotherton Road beyond which it reverts to Red Bank Road.) The differences between alternatives lie in the type of interchange that will be constructed at the two major intersections (Madison Road and Erie Avenue). The two local area network alternatives (LANs) differ in limited respects; in particular the routing of LAN traffic in the vicinity of US 50. The project will involve four main elements from a geotechnical standpoint: grade separation structures, drainage structures, retaining walls and paving. Table 1 presents a summary of the proposed structure types and locations that may be of interest from a geotechnical stand point (Balke-American,

2006). This is intended to focus the rest of the study by highlighting areas within the overall project boundary where there are multiple possible geotechnical inputs that will be required for design.

Table 1: Red Bank Road/Red Bank Expressway by Component

Component	Alternatives	Action/Structure <sup>(1)</sup>	Site Location (Exhibit 1)
Proposed Mainline	Grade Separated Tight Diamond Intersection (TDI) at Erie Avenue.	Erie Avenue bridge spanning the SORTA Oasis RR needs to be widened.	1
		Erie Avenue bridge spanning Duck Creek needs to be widened.	2
		Retaining walls need to be constructed to keep fill away from the Duke Energy substation close to the Mainline north of Erie Avenue.	3
		A retaining wall needs to be constructed to keep fill slope close to the Mainline at the culvert crossing at Corsica Hollow.	4
		The tight diamond ramps, being close to the Mainline, will require retaining walls near Erie Avenue on the east side of the Mainline.	5
	Continuous Flow Intersection (CFI) at Erie Avenue.	Relocated Erie Avenue spans the railroad with a new bridge, located such that part-width construction is possible.	1
		A new bridge is needed over the SORTA Oasis RR due to change of grade as required by the CFL.	1
		The Erie Avenue bridge over Duck Creek needs to be widened to accommodate tapers from the Erie Avenue widening and Hike/Bike facilities.	2
		Retaining walls are needed on the north side of Erie Avenue at the Erie Woods Apts.	6

<sup>(1)</sup> Balke-American, 2006.



Table 1: Red Bank Road/Red Bank Expressway by Component (continued)

Component	Alternatives	Action/Structure <sup>(1)</sup>	Site Location (Exhibit 1)
Proposed Mainline	TDI at Madison Road.	The Erie Avenue Bridge over Duck Creek needs to be widened.	2
		A larger bridge opening under Indiana and Ohio RR and Upper Access is proposed similar to the Madison Road/CFI alternative.	7
		The ramp from Madison Road to Duck Creek will require the existing channel to be relocated. A retaining wall in the vicinity will lessen the distance of the relocation and lessen the amount of RW required.	8
		A grade-separated intersection at Duck Creek Road will require a new bridge over Red Bank Expressway.	22
		A retaining wall is needed between the ramp and the Mainline.	9
		Retaining walls are needed to maintain the channel on both sides of Deerfield Creek at the north end of the Madison Road/NW ramp to I-71.	10
	CFI at Madison Road.	New RR structure-shorten the length of the structure.	7
		Widening of Madison Road requires a new culvert.	11
		The culvert under Madison Road/Mainline intersection needs to be extended to accommodate the widening for the CFI.	12
		A new culvert is needed to convey Duck Creek Road to the channel on the east side of the Mainline.	13
		An extension of the existing culvert is needed to accommodate the widening in the same vicinity for the Mainline.	14

Table 1: Red Bank Road/Red Bank Expressway by Component (continued)

Component	Alternatives	Action/Structure <sup>(1)</sup>	Site Location (Exhibit 1)
Local Access Network	LAN1 & 2	A bridge is required for Indiana and Ohio RR crossing.	15
		A bridge is required for Jonlen Drive crossing.	16
		A retaining wall needs to be constructed to keep fill slope out of the existing oxbow on the west side of South Access.	17
		A retaining wall needs to be constructed to keep fill slope out of East Tributary near Jonlen Drive.	18
		A retaining wall needs to be constructed near Shannon Way very near existing buildings to the south.	19
		A retaining wall needs to be constructed on the east side of Red Bank Road to keep the slopes away from the buildings in Erie Avenue Woods and Fountain Apts and the west side for the existing development in Corsica Hollow.	20
		A culvert crossing is needed to maintain positive drainage along South Access to oxbow of Duck Creek.	21

### 3. TOPOGRAPHY

The topography of the Cincinnati area has been strongly influenced by its glacial history and while seemingly complex, its evolution has been simply but succinctly described (Fenneman, 1916):

'A structure of nearly horizontal thin-bedded limestone and shale, reduced to an almost perfect peneplane, uplifted to about 900 feet above the sea and trenched at least 400 feet by large through-flowing streams (Ohio, Miami, and Little Miami), dissected by tributaries



in dendritic fashion almost to maturity near the major valleys but elsewhere young in the cycle following uplift; glaciated (except the southerly border), without glacial erosion and with deposition sufficient to obliterate only the smallest valleys; the master streams displaced in parts by the ice, taking new courses which they have since retained. The larger valleys partly filled by till and glacial outwash, which have since been in part removed.'

Almost every facet of this description is relevant when describing the geography of this project area. The landforms through which it will pass are shown in Exhibit 2, a vertically exaggerated (x15) shaded elevation map based on the statewide 10 meter (m) Digital Elevation Model (DEM) coverage, resampled.

The alignment generally follows the valley of Duck Creek as it flows south towards the Little Miami River (LMR) over glacially deposited soils that occupy the ancestral channel of the Ohio/Licking River. The project neatly spans the ancestral valley from north to south and the depth to bedrock varies accordingly. The high ground shown north and south of the project area is typical of the ~900 ft elevation peneplane and the 400 ft of entrenchment is exemplified by the >200 ft depth of the former river channel that occurs in the vicinity of Madison Road, as shown in Exhibit 3.

The actual topography of the project area is quite subdued with an overall elevation change of only about 50 ft from US-50 up to the I-71 ramp (elevation 527-579 ft). Greater lateral variation exists, and some LAN streets climb that much in less than half a mile as they rise out of the relatively shallow, but steep sided valley of Duck Creek.

#### **4. GEOLOGY**

The geomorphologic processes leading to the current landscape are discussed briefly above. This section provides a more detailed description of local geology. The area is underlain by rocks representing the Cincinnati Series of the Upper Ordovician. These are predominantly shale deposits of the Kope and Fairview formations that are exposed in the Ohio River and LMR valley walls (Fleming, 1975). These formations include lesser amounts of limestone, generally in layers less than 6-12 inches thick. The contact between the Kope and Fairview generally occurs at about elevation 700 feet. Below the Kope the Middle Ordovician begins with a succession of limestone formations. No karst has been mapped in the Red Bank Road/Red Bank Expressway area (ODNR, 2002).

Topography and soil coverage tend to reflect the effects of glaciation even though the City of Cincinnati itself was south of the glacial margin during the two most recent advances (Illinoian and Wisconsinan). Illinoian till is found to the north of the city and partly within the general study area. The erosion of deep, steeply sided valleys by glacial melt water has repeatedly altered the drainage pattern in the area and subsequent infilling of these valleys with glacial outwash and, more recently, with floodplain alluvium

creates a landscape that masks the historical features, but which strongly influences soil conditions in the area. Bedrock on the higher ground tends to be mantled with a relatively thin soil cover consisting of glacial till or, on slopes, colluvium.

The overburden thickness along Red Bank Road/Red Bank Expressway is shown on Exhibit 3, derived from the 10 m ground surface DEM combined with the statewide bedrock surface analysis (ODNR, DGS, 2004). Where zero is indicated on higher ground, some minor soil cover can be expected. The striking feature in Exhibit 3 is the extent of the buried valley system associated with ancestral valley of the Ohio/Licking Rivers as it swings to the northwest into what is known as the Norwood Trough. The thickness of infill deposits varies from almost zero to more than 200 feet, changing rapidly depending on proximity to the bedrock valley walls.

Exhibit 4 is a surficial geology map covering the proposed project area. The nearby shale and limestone highlands mantled with till are evident to the southwest and northeast, generally beyond the study area boundaries, but the buried valley containing deposits of clay, sand, and silt, is readily apparent and dominates the study area. Within the valley, four stratigraphic profiles are mapped. The first (over which Segment 1 of the main line begins - just south of the I-71/ Red Bank Expressway interchange) consists of a thick, up to 40 ft-layer, of Illinoian-age loam till overlying 160 ft of inter-layered fine sand, silt and clay of lacustrine and deltaic origin. The second profile consists of up to 250 ft of the same fine sand, silt and clay, but absent the till mantle. The third profile is the dominant one beneath the Red Bank Road/Red Bank Expressway alignment and again consists of about 180 ft fine sand, silt and clay but mantled with up to 10 ft of Wisconsinian age silt. The fourth profile at the south end of the segment is underlain by Holocene (recent) alluvium that can vary from silt to boulders and is generally up to 20 ft thick. Given its proximity to the valley wall, it is likely that the alluvium overlies bedrock.

The US Department of Agriculture, Natural Resources Conservation Service (2010) mapping of the shallow soil coverage in the area was reviewed to assess potential subgrade conditions along the main line and side streets. The most common map unit names in the area of interest include Bonnell silt loam, Genesee-Urban and Rossmoyne-Urban land complexes. These are all considered 'Very limited' from the standpoint of local road and street development because of their low strength, shrink swell and frost action potential. The AASHTO group classifications are estimated to be A-4, and the entire project area falls within these unit and group classifications.

Earthquake hazard analysis in this part of the country is dominated by proximity to the New Madrid Fault Zone (NMFZ) approximately 330 miles to the southwest. Possible future movements along this fault could generate earthquakes of magnitude 7.0-8.0 with a recurrence period of 500-1,500 years (USGS, 2008). The resulting ground motion would be experienced over a wide area, with Cincinnati located within the likely zone of influence. A cluster of earthquake epicenters of lesser magnitude (< ~ magnitude 5) about 150 miles north of Cincinnati indicates another potential earthquake source area that



is contributory to seismic risk (ODNR, 2005).

## **5. HYDROLOGY/HYDROGEOLOGY**

The buried valley infill deposits form a regionally extensive and important sole source aquifer system known as the Great Miami Aquifer that extends along the valley of the Great Miami River, west of Cincinnati, through the Norwood Trough (along the ancestral valley of the Ohio/Licking Rivers) and into the valley of the LMR. The study area lies completely within the boundary of this sole source aquifer. Based on well logs (see below), the yield in this part of the aquifer is relatively low; probably because of the dominance of finer grained infill deposits than are found, say, in the LMR valley.

A stabilized groundwater table can be expected at the approximate elevation of Duck Creek, the dominant surface water body in the vicinity. In areas of localized ground water withdrawal the water table may be depressed below this level. On the higher ground and along the valley walls, groundwater may occur discontinuously as perched systems.

## **6. PREVIOUS STUDIES AND EXISTING GEOTECHNICAL DATA**

Three primary sources of existing geotechnical data were used to support this study: ODOT's archive of geotechnical exploration reports, the ODNR water well log inventory, and the results of third party geotechnical/geo-environmental studies at two sites along the expressway. While there are undoubtedly other sources, these yielded sufficient data and created an adequate basis for the level of study.

### **6.1. ODOT Geotechnical Exploration Reports**

The ODOT Falcon Geotechnical Docket Management System (GDMS, 2010) web-based archive of geotechnical information produced data from eight geotechnical explorations either within or close to the study area. These range from structure foundation explorations for various bridges to geotechnical exploration of an area afflicted by slope instability. The projects are listed below in Table 2.

The US-50/Red Bank Road listing refers to the 1958 foundation investigations for four bridge structures along a 2,200-ft segment of Columbia Parkway that roughly corresponds to the south edge of the study area. At the west end of that series of projects even the shallow 20 and 30 ft deep borings encountered shale bedrock; further to the east, the valley fill becomes deeper and less fine grained with dominant soil types shifting from A-7-6 (alluvium) to A-1 and A-2 (sands and gravels) consistent with the geological mapping.

Just north of the Duck Creek Road intersection with Red Bank Expressway, the embankment experienced a slope failure in ~1971. The problem was attributed to poor construction practices (excessively wet fill placed on a sloping surface without benching) rather than instability of a natural formation such as the common local culprit, the Kope Formation. The investigation into the cause showed the embankment fill to be silty clay and the foundation soils to be stiff silty clay - probably glacial till, and consistent with the geological mapping.

Further north two projects relating to the original construction of I-71 (I-71 over Red Bank Road and the current Red Bank Expressway ramp system) were investigated in 1965. These are located slightly outside the study area, but serve to characterize soils at the north end of the project which are predominantly hard or stiff glacial till to the depths explored (~50 ft), again consistent with the geological mapping.

The locations of the geotechnical exploration sites are shown on Exhibit 4.

Table 2: ODOT Geotechnical Explorations

Location Number (Exhibit 1)	ODOT Project Identification	Project Type	Soil Type Investigated	Number of Borings	Maximum Depth Explored (feet)
1	HAM-50 Sites 7-10 (Red Bank Road/ US 50 interchange)	Bridge foundations	alluvium /till/ outwash/bedrock	25	30
2	HAM-Red Bank Expressway failure	Embankment failure	fill/glacial till	5	60
3	HAM-71/Red Bank Road	Bridge foundation	lake deposit/till	2 (relevant)	65
4	HAM-71/Red Bank Road ramps	Elevated highway foundations	lake deposit/till	2 (relevant)	50

## 6.2. ODNR Well Logs

ODNR maintains a computerized database of well logs that can be searched by geographic area. A search of the Segment 1 study area revealed the presence of 15 wells in the archive. The locations of these wells



are shown on Exhibit 4.

The information contained is valuable for determining a few critical parameters such as the depth to bedrock, the depth to the water table at the time of drilling and a very generalized lithology based on a description by the driller, as indicated in Table 3. Much of this information has already been synthesized and incorporated into such publications as the bedrock topography map (ODNR, 2004) and the surficial geology map (Brockman, 2004).

Table 3: Selected ODNR Well Logs

ODNR Well Number	Location	Depth (feet)	Lithology (feet)
2028869 - 2028874 (5 wells)	3980 Erie Avenue	21	0-21 clay and silt
2027552 - 2027556 (4 wells)	3601 - 3643 Red Bank Road	42	0-7 clay and sand 7-35 clay 35-42 clay/sand/gravel
9931091	4000 Red Bank Road	136 (120 to rock)	clay sand and gravel sand and clay
2001127 - 2001131 (3 wells)	4205 Red Bank Road	30	0-25 clay 25-30 clay and silt
58802	Red Bank Road (Old Ford Plant)	120 (115 to rock)	0-24 sandy clay 24-64 sand and gravel 64-75 sandy clay 75-115 sand and gravel
100547	Red Bank Road 1/4 mile north of US 50	55	0-51 clay 51-55 lime

Overall, these descriptions are consistent with the expected soils based on the surficial geological mapping. The rock depths are a little smaller than expected, but in the same general range.

### 6.3. Other Geotechnical Sources

Three additional sources of information were reviewed: geotechnical/geo-environmental conditions were investigated for two new developments along Red Bank Road/Expressway and for a US Army Corps of Engineers drainage project along Red Bank Road. Locations of the areas explored are shown on Figure 4.

### *Indian Springs Health Care and Barrington of Oakley*

The logs of five soil borings drilled in support of geotechnical investigations for these developments located south west of the Madison Road/Red Bank Expressway intersection show soil conditions to depths of between 50 and 100 ft (Thelan, 2007). The soils are logged dominantly as silty clay with considerable varving (fine interbedding) indicating a fluvial or lacustrine depositional mode. Significant (10-20 ft thick) sand layers were encountered. These are usually fine grained and dense to very dense. The findings at this site are consistent with the geological model, which predicts up to 10 ft of silt underlain by up to 180 ft of interbedded sand and clay for this area.

### *Former Ford Property*

The former Ford property has been redeveloped following extensive investigation to determine the nature and extent of any adverse environmental conditions. Much of the documentation relating to the process of investigation and remediation has been reviewed including the logs of 15 deep borings drilled for monitoring well installation during groundwater contamination investigations (SECOR, 2004). These describe the materials encountered in geological terms but there is only limited, qualitative information on strength or consistency.

Three borings serve to characterize the overall site conditions: one at the northwest corner not far from the Erie Avenue intersection, one at the southwest corner, and one east of the site at about the mid point. Of the three borings (MW-1D, MW-13D, MW-15D), only MW-13D in the southwest corner, indicated bedrock - at 95 ft. The other two were drilled to depths of 77 ft (MW-1D) and 118 ft (MW-15D) and were both terminated in dense sand. The overall stratigraphy consists of thick layers of silty clay (some logged as 'tightly compacted') and dense sand. These findings are, again, consistent with the geological model.

The groundwater investigation showed that the groundwater table in this area is at an elevation of 470 - 485 ft (about 60-80 ft below ground surface) with about 15 ft of drop across the site from west to east. This suggests that there is an active pumping center that is controlling the flow direction and depressing the groundwater table.

### *US Army Corps of Engineers Drainage Project*

The US Army Corps of Engineers has conducted geotechnical explorations in connection with Duck Creek flood control projects in the general area of interest. Specifically, a group of 10 borings were drilled in 1995 to investigate conditions at the south end of the project near the former Swallens site. Conditions were reported as 10 - 15 ft of fill consisting of silty clay with gravel.



## 7. RECONNAISSANCE

A field reconnaissance of the proposed Red Bank Expressway Improvements (I-71 to US 50–Relocated SR-32, Segment 1) area was conducted on October 7, 2010 to review the general layout of the project, to observe geotechnical conditions that might be apparent and to provide a preliminary assessment of site conditions at primary structure locations. The structure locations listed in Table 1 were each visited and, to the extent possible, photographed and described.

Observations of general geotechnical interest include:

The upper reaches (within the project boundary) of Duck Creek and its north and northwest tributaries flow through fairly shallow, but steep-sided valleys formed in silty soils that appear to offer poor erosion resistance (Photographs 1 and 2). In the vicinity of the proposed Duck Creek Road relocation, large pieces of broken concrete slabs have been placed in the creek bed to retard scour and erosion (Photograph 3).

The current alignment of mainline Red Bank Road does not depend on any significant cuts or fills (Photographs 4 and 5). Those shallow fills that do exist within the project area such as at Duck Creek Road at Red Bank Expressway, and Madison Road at Red Bank Expressway appear to be performing satisfactorily and the limited embankment slopes look stable (Photographs 6 and 4). Cut slopes, such as Duck Creek Road at Red Bank Road, also appear to be stable (Photograph 7).

Recent commercial developments that back up to Red Bank Road (Upper Access) have already encroached significantly into the foot of this hillside and required retaining walls up to about 13 ft in height. Widening of the Upper Access towards these developments may be complicated by the need to increase the height of segmental block walls that were not originally designed to be raised (Photograph 8).

Existing in-service bridges (Indiana and Ohio Railroad over Red Bank Expressway (Photograph 9), SORTA Oasis Railroad under Erie Avenue (Photograph 10) and Erie Avenue over Red Bank Expressway (Photograph 11) appear to be functioning well from a geotechnical standpoint. No evidence of settlement of the piers was observed or distortion of the abutments or spill through slopes where present. The spill through slopes at Erie Avenue over Red Bank Road are paved to minimize erosion. Foundations of the closed road bridge at Red Bank Road crossing of the Indiana and Ohio Railroad are experiencing severe erosion that might lead to eventual loss of stability (Photograph 12).

The extension of Track Street (aka Shannon Way) to link with Virginia Avenue will involve a significant elevation increase (~ 22 ft) over what is currently a distance of 140 ft (Photograph 13). With construction

of a longer embankment this could be accomplished over a distance of about 500 ft, at approximately 6% grade. The embankment could be free standing with 2:1 side slopes, or retained on one or both sides by MSE walls.

A similar situation exists at the connector from Virginia Avenue down across the Duck Creek ox-bow to the South Access road (Photograph 14). Here the elevation difference is 44 ft over a horizontal distance of 210 ft. The distance from Virginia Avenue to the proposed location of the South Access is on the order of 525 ft and a cut/fill design incorporating the Duck Creek ox-bow would have to be graded at more than 8% to fit in the space as currently planned. Slope stability for both the cut and fill segments of such a design, and the foundation conditions in the ox-bow should be evaluated carefully.

In summary, while there are several items described above that will require careful evaluation, no geotechnical issues were observed that would rise to the status of a 'red flag' and require more than the normal level of geotechnical exploration and analysis as set out in the Specification for Geotechnical Exploration (ODOT, 2010).

A photographic record of the reconnaissance was maintained and representative photographs are provided in Appendix A.

## **8. GEOTECHNICAL CONDITIONS AND CONSIDERATIONS**

Geotechnical conditions within the study area, as indicated by the results of geotechnical explorations and well logs reviewed, are consistent with the general geological model described in the literature. The shallow soils as described by the soil survey mapping are also consistent with this.

The entire project area is underlain by dominantly fine grain materials that infill the ancestral valley of the Ohio/Licking Rivers to depths of more than 200 ft. This will mean that elements of design that are influenced by geotechnical conditions may be sized near the upper end of their overall spectrum, but in a range that is not unusual for development projects in this part of Ohio.

### **8.1. General Grading**

The amount of mass grading associated with the project is likely to be relatively small. Two areas of potential concern were identified at the south end of the LAN system where two links from the low Red Bank Road area to the higher Virginia Avenue are planned. These will traverse a steep bluff and require a significant cut and fill combination to achieve the increase in grade. Soil conditions in the vicinity are expected to be generally sandy to a depth on the order of 20 ft.



## **8.2. Subgrade**

Subgrade conditions are classified as 'Very limited' and the soils as A-4. This is likely to indicate a CBR value of ~ 6 (at the low end of the range). The need for subgrade treatment will depend largely on the density, moisture content and sub classifications as determined during the geotechnical exploration. If soils are found to be A-4(b) (ODOT classification), measures will be required to address frost action potential through stabilization or undercut. Similarly, excessively weak or wet soils will require stabilization or undercut.

## **8.3. Bridge Structure Foundations**

Bridge work (modification, replacement or new structure) may be required at several locations depending on the combination of alternatives selected. These possibilities are highlighted in Table 1 and may be characterized from south to north:

### *Erie Avenue over Red Bank Expressway*

The depth to bedrock is likely to be on the order of 125 ft. The valley fill below a surface layer of silt is mapped as inter-layered sand and clay. This is likely to have moderate load bearing characteristics; sufficient for the design of friction supported deep foundations.

### *Erie Avenue over SORTA Oasis Railroad*

Depth to bedrock is estimated to be about 100 ft and the soil conditions similar to those at the adjacent road crossing.

### *Red Bank Road over Indiana and Ohio Railroad*

Depth to bedrock is estimated to be about 250 ft. The soil conditions will likely be similar to those at the Erie Avenue crossings, but absent the surface silt layer. Friction piles will again be required to support the replacement bridge structure.

### *Indiana and Ohio Railroad over Red Bank Expressway*

Depth to bedrock is estimated to be almost 200 ft. The soil conditions will likely be similar to those at the Erie Avenue crossings; the surface silt layer may or may not be present as this is close to the edge of the mapped unit. Friction piles will again be required to support any modification to the bridge structure.

#### *Madison Road and Red Bank Expressway*

A grade-separated intersection may require one or more bridge structures that will be underlain by conditions similar to those at Erie Avenue. The depth to bedrock is estimated to be about 150 feet and the overlying soils are interbedded sands and clay with a silt stratum at the surface. Friction piles will be required to support any bridge structure that is planned.

#### *Duck Creek Road and Red Bank Expressway*

A grade-separated intersection will require a bridge structure to carry the northbound ramp over Red Bank Expressway. The depth to bedrock is estimated to be about 100 ft. The soil conditions are mapped without the silt mantle, but observations of the creek banks in this area during the field reconnaissance suggest that it is present and that the soil profile will be generally similar to that at the Madison Road intersection.

### **8.4. Drainage Structures**

Several major culvert modifications are expected to be required and these are typically located in low areas where shallow soil conditions are the worst. However, major drainage improvements have recently been carried out throughout the area and design requirements are not likely to be unusual, but as indicated above, at the upper end of the size or support spectrum.

### **8.5. Retaining Walls**

Retaining walls will be required to support slopes that will be modified to accommodate widened roadways in the eastern part of the LAN network. These may be co-located at sites where recent commercial development has already encroached into the toe of these slopes with ~12 ft high cuts. Existing segmental block walls may not have been designed considering the potential need that they be raised or that the live loading pattern on them be changed.

Retaining walls will also be required around the main line interchanges where space for slopes is limited. These could be founded on relatively weak soils that may require some improvement or undercut.

## **9. SUMMARY**

In general the geotechnical issues facing designers are typical of this part of Ohio; challenging subgrade conditions for road construction and the need for deep foundations for bridge structures - probably requiring friction piles. Development of the local area network of streets may call for the creation of links



between existing roads that are, in two cases, separated by abrupt elevation changes. Several retaining walls will be required, the design of which may, in some cases, be complicated by the presence of new walls within the same slopes at those locations.

A Red Flag Summary is presented in Appendix B.

It has been a pleasure to be of service to URS in performing this Red Flag Study for the Red Bank Road Segment 1 Improvements.

Respectfully Submitted,

**Barr & Prevost**



Caroline Duffy, P.E.  
Project Manager



Stuart Edwards, P.E.  
Geotechnical Engineer

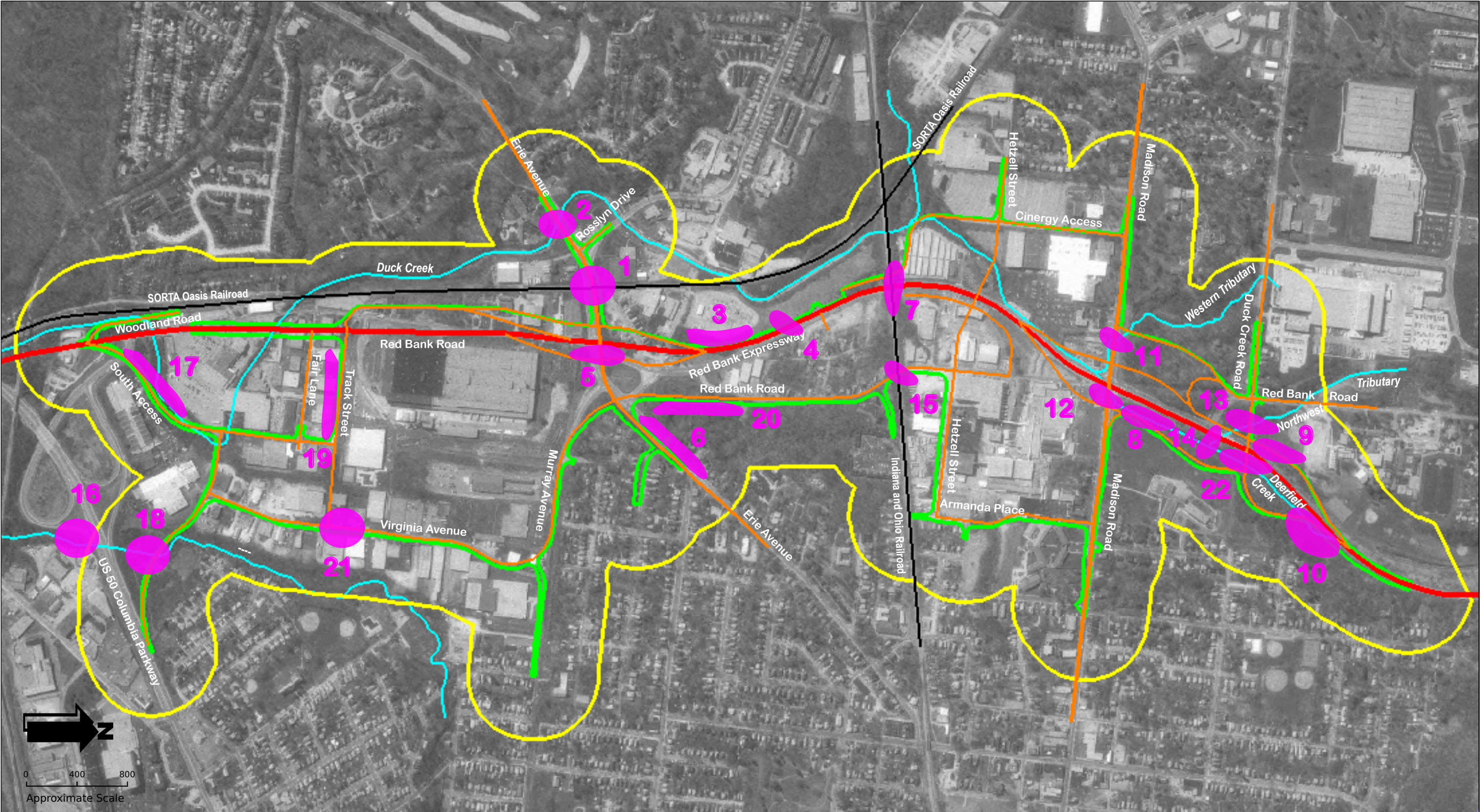
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Legend

-  18
-  Study Area
-  Limit of Improvements
-  Streams
-  Area Roads
-  Mainline Red Bank Expressway
-  Railroads



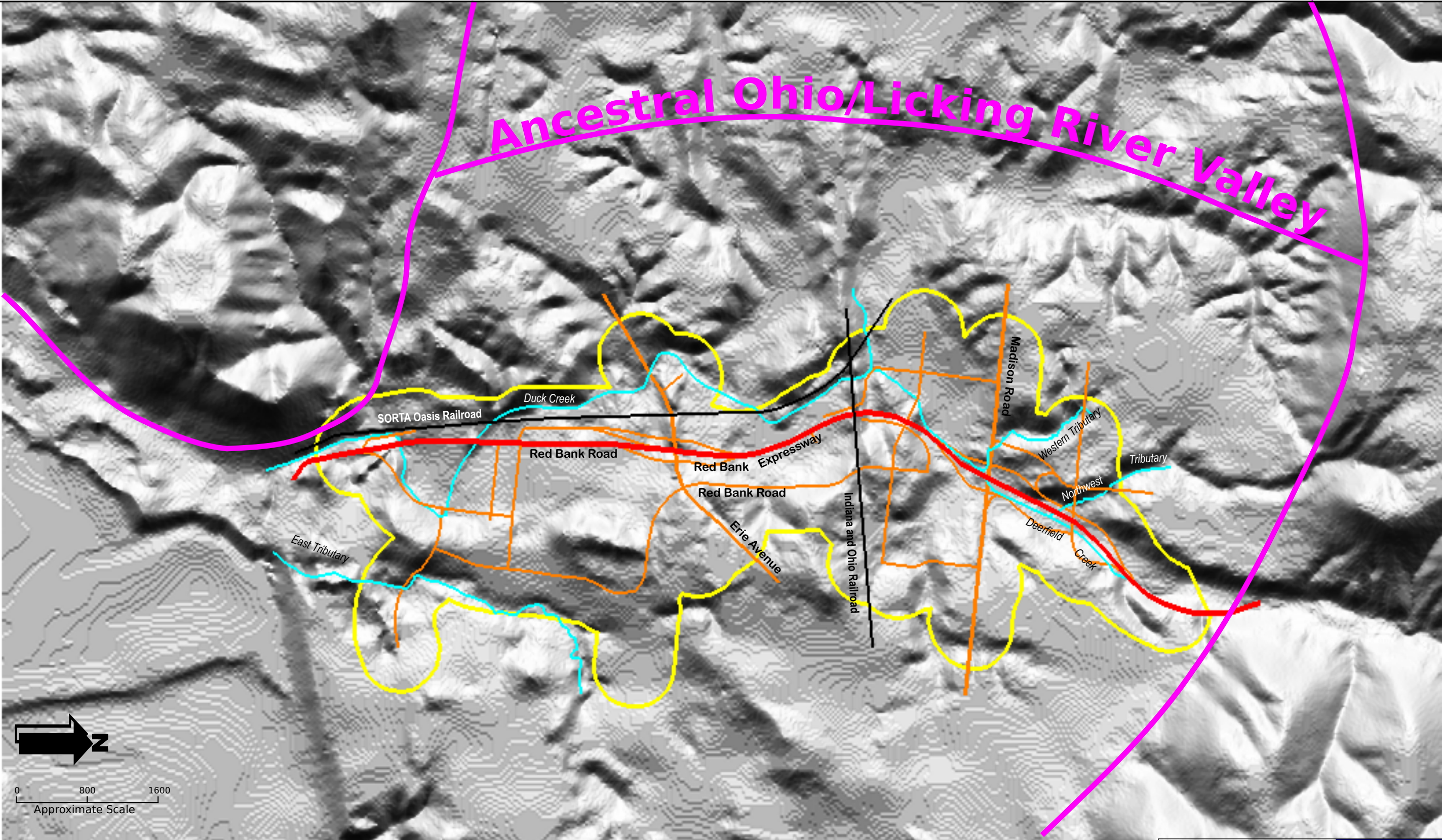
Geotechnical Red Flag Study

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Exhibit 1: Study Area

Eastern Corridor Multi-modal Transportation Projects  
Red Bank Expressway Improvements: I-71 to US-50  
SR-32 Segment 1





Legend

- Edge of Ancestral Ohio River Valley
- Study Area
- Streams
- Area Roads

- Mainline Red Bank Expressway
- Railroads

Vertical Exaggeration = 15

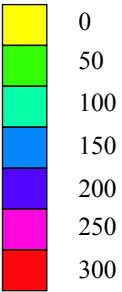
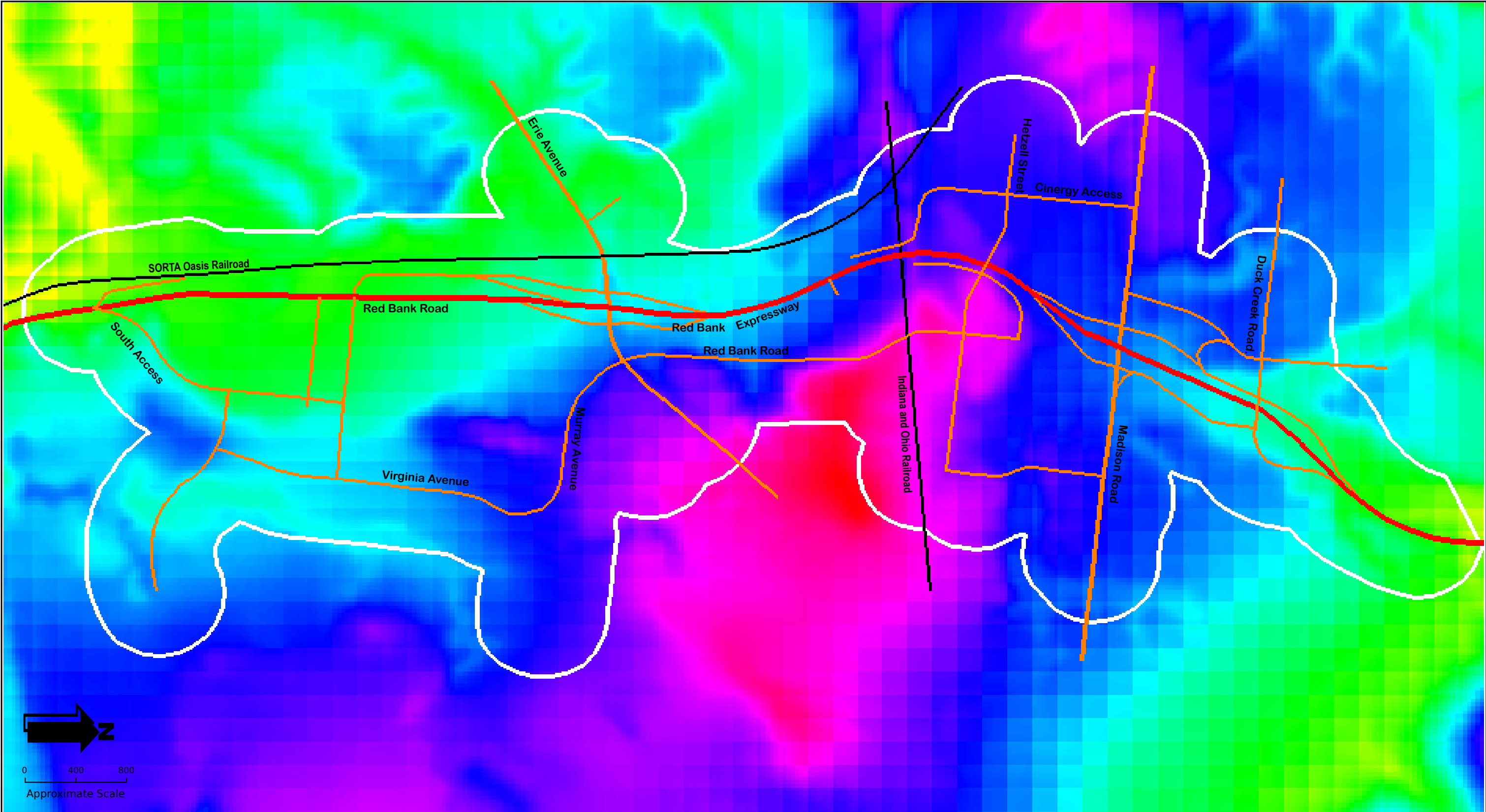
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Exhibit 2: Shaded Terrain Model

Eastern Corridor Multi-modal Transportation Projects  
Red Bank Expressway Improvements: I-71 to US-50  
SR-32 Segment 1





Legend

Overburden  
Thickness  
(feet)



Mainline Red Bank Expressway  
Railroads  
Study Area  
Area Roads



Geotechnical Red Flag  
Study

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**Exhibit 3: Overburden Thickness  
(Depth to Bedrock)**

Eastern Corridor Multi-modal Transportation Projects  
Red Bank Expressway Improvements: I-71 to US-50  
SR-32 Segment 1



Geologic Units

- S-L
- Shale-dominant bedrock and clay-rich, bedrock-derived colluvium, prone to landsliding, Ordovician-age. Interbedded shale, gray, thin to thick bedded, and limestone, medium gray, thin to medium bedded, fossiliferous. Shale ranges from 50% to 85% of the unit, although minor limestone-rich beds are present. Unit associated with the shale-rich Kope Formation, on steep slopes near Cincinnati and north of Cincinnati, and with the Waynesville Formation on uplands in the northern part of the map area. On side-slopes and toe-slopes, unit is clay-rich colluvium with downslope-oriented limestone slabs and organic matter. Colluvium has relatively low shear strength and is the source of numerous landslides, especially on steep slopes. Landslides commonly form at the colluvium-bedrock interface.
- L-S
- Limestone-dominant bedrock and bedrock-derived colluvium, Ordovician-age. Interbedded limestone, medium gray, thin to medium bedded, fossiliferous, and shale, 450 gray, thin to medium bedded. Limestone ranges from 50% to 85% of the unit, although shale-rich beds are present. Includes Point Pleasant, Fairview, Grant Lake, Arnheim, Liberty and Whitewater Formations. On side-slopes and toe-slopes, unit is colluvium, predominantly clay with downslope-oriented limestone slabs and organic matter. Colluvium has relatively low shear strength and is the source of numerous landslides, especially on steep slopes.
- Ti
- Loam till, Illinoian-age. Generally overlain by up to 3.5 feet of loess, but loess may be 10 feet thick along bluffs bordering major rivers. Till may contain silt, sand, and gravel lenses. Sand/silt/clay percentages of till vary widely averaging 25/47/28 percent and range from 8/43/49 percent to 34/41/25 percent (Wentworth classification). Upland areas leached to 6 feet, including loess cap. Joints/fractures common. Averages 20 to 30 feet thick and ranges to 90 feet thick in buried valleys. Stratigraphic names: Richmond and Centerville Tills approximately west of the Great Miami River, RainsboroTill east of the river. Landsliding may occur in oversteepened, wet areas. Deposited by glacial ice. Most common surficial unit in the southeastern part of the map area.
- SC
- Interlayered medium-fine to fine grained materials, unspecified age. Fine sand predominates and includes clay, silt, and thin gravel interbeds. Variable thickness and sequence of lithologies. Unit identified from well logs and is similar to unit CS but coarser; up to 150 feet thick. Deposited as lacustrine and proximal deltaic facies as well as overbank sediments within the area's largest valleys.
- S
- Sand, generally Wisconsinian-age. Contains minor amounts of disseminated gravel and thin lenses of silt and gravel; grains well to poorly sorted, moderately to well rounded with high quartz percentage; finely laminated to massive, may be cross bedded; locally may contain organics as disseminated particles or sticks and logs. Beds may be lithified by calcium carbonate in stable valley-side exposures; concretions may be present with varying degrees of cementation. In deep buried valleys, may be older than Wisconsinian- age; up to 50 feet thick. A fluvial unit in low terraces and buried valleys throughout the map area.
- L
- Silt, generally Wisconsinian-age. Contains localized clay, sand, or gravel layers. Laminated to massive; disseminated organics commonly present, may contain fossil snails, clams, and small branches or logs. Carbonate-cemented concretions in finer silt. Up to 100 feet thick, but generally thinner. Fine silts develop shallow angle slumps; coarse silts prone to piping, may be thixotropic ("quick sand"). Lacustrine deposit found in low-level slackwater terraces and buried valley-fills throughout the map area.
- a
- Alluvium, Holocene-age. Includes a wide variety of textural classes from silt to boulders with disseminated or concentrated organics; generally not compact; rarely greater than 20 feet thick. Found within floodplains of modern streams throughout the entire map area. Mapped only where areal extent and thickness are significant.
- C
- Clay, generally Wisconsinian-age. Massive to laminated; may contain thin interbedded silt, fine sand, and minor gravel; clay content may exceed 80%. Laminated clay commonly contains thin silt or sand partings. May contain joints/fractures 6 to 12 inches apart and disseminated organics, fossil snails and clams. Unit may contain areas of modern alluvium. In deep buried valleys, includes till and may be older than Wisconsinian-age. Generally less than 30 feet thick; landslide-prone. Lacustrine deposit on lowland surfaces, low-level terraces, and buried valley-fills throughout the map area.



Source: Brockman, 2004.

- Other Geotechnical Explorations

1 - Indian Springs

2 - Former Ford Plant

3 - US Corps of Engineers Drainage
- ODOT Geotechnical Exploration Sites

1 - Site 7 Columbia Parkway Extension

2 - Site 8 Columbia Parkway Extension

3 - Site 9 Columbia Parkway Extension

4 - Site 10 Columbia Parkway Extension

5 - Red Bank Road Slope Failure

6 - I-71 over Old Red Bank Road (bridge)

7 - I-71/Red Bank Road Ramps (2)
- Mainline Red Bank Expressway

Railroads

Study Area

Area Roads

ODNR Well Locations and ID number

58802

Thickness Estimates (Soils)

- |      |                             |
|------|-----------------------------|
| X    | 10 ft                       |
| (X)  | up to 10 ft - where present |
| X2   | 20 ft                       |
| X20  | 200 ft                      |
| X20- | up to 200 ft                |

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Exhibit 4: Surficial Geology

Eastern Corridor Multi-modal Transportation Projects  
Red Bank Expressway Improvements: I-71 to US-50  
SR-32 Segment 1

**APPENDIX A**  
**RECONNAISSANCE PHOTOGRAPHS**

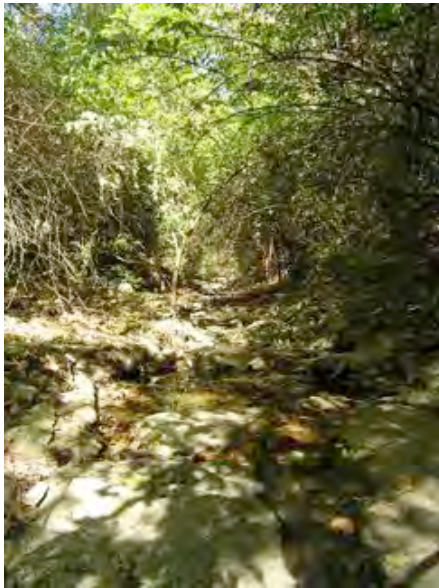




1. Erosion of silty creek bank soils - Duck Creek



2. Erosion of silty creek bank soils - Northwest Tributary



3. Concrete slabs in creek bed as scour protection - Northwest Tributary



4. Typical low embankment - Red Bank Expressway at Madison Road looking North



5. Relatively flat terrain - Red Bank Expressway south from Indiana and Ohio Railroad to Erie Avenue



6. Typical low embankment - Madison Road looking east to Red Bank Expressway





7. Cut slope - Red Bank Road looking south to Duck Creek Road



8. Existing 12 ft high retaining wall below Red Bank Road



9. Indiana and Ohio Railroad crossing Red Bank Expressway



10. Erie Avenue crossing of SORTA Oasis Railroad





11. Erie Avenue crossing over Red Bank Expressway



12. Erosion damage to bridge piers – Red Bank Road over Indiana and Ohio Railroad



13. Current end of Track Street (Shannon Way) looking east - abrupt elevation change occurs in distance to Virginia Avenue.



14. General view towards proposed Jonlen Drive/ South Access. Duck Creek ox-bow approximately at tree line and abrupt elevation change to Virginia Avenue beyond.

**APPENDIX B**  
**RED FLAG SUMMARY**



# RED FLAG SUMMARY

Red Flag Summary Completed: July 2010

## Purpose

The purpose of this Red Flag Summary is to identify concerns that could cause revisions to the following:

- Anticipated design and construction scope of work
- Proposed project development schedule
- Estimated project budget
- Potential impacts of the project on the surrounding area

## Instructions

A written Red Flag Summary is required for both major and minor projects. A written Red Flag Summary is optional for minimal projects; though red flag issues must still be identified.

A field review is required for all projects. Each specialty area of the Red Flag Summary should be completed by individuals who possess sufficient experience to enable them to correctly identify and evaluate issues arising from the field review.

In the Location/Comments field provide information concerning potential impacts that is brief, but gives enough detail to allow an understanding of the issue(s).

The scope of services document should account for any issues identified in the Red Flag Summary that have the potential to affect scope, schedule, and budget.

A list of resources that may need to be consulted in order to complete this form can be found in the introduction to Appendix H of the Project Development Process Manual.

## Red Flag Summary Deliverables

Provide an expanded Study Area Map identifying project design constraints identified through the Red Flag Summary. Tables, photographs or other support material may also be submitted with the Red Flag Summary to illustrate specific problem areas. **(This information is mandatory for Major Projects.)**

## General

<b>Project Name (County, Route, Section):</b>	Red Bank Road Improvements: I-71 to US-50	<b>PID:</b>	86461
<b>Date Red Flag Summary Completed:</b>	10/13/10	<b>Prepared By:</b>	se
<b>City, Township or Village Name(s):</b>		<b>Project Manager:</b>	

## GEOTECHNICAL ISSUES:

Based on the information compiled during this study indicate whether or not the following geotechnical issues are present or should be further considered during project development. Provide additional comments as needed.

	Design Issue	Comments
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of soil drainage problems (e.g., wet or pumping subgrade, standing water, the presence of seeps, wetlands, swamps, bogs)?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is the groundwater table anticipated to be affected by construction?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of any embankment or foundation problems (e.g., differential settlement, sag, foundation failures, slope failures, scour, evidence of channel migrations)?	In-service structures generally appear to be functioning satisfactorily from a geotechnical standpoint. The foundations of the closed Upper Access / Penn Central bridge are experiencing severe erosion at several piers.
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of any slope instability (soil or rock)?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of unsuitable materials (e.g., presence of debris or man-made fills or waste pits containing these materials, indications from old soil borings)?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Possible <input type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of rock strata (e.g., presence of exposed bedrock, rock on the old borings)?	Shallow bedrock is present in the extreme southwest and northeast corners of the study area. However, over a substantial majority of the area it is >50 ft in depth.
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there evidence of active, reclaimed or abandoned surface mines?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there information pertaining to the existence of underground mines?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Is there Acid Mine Drainage present within the study area?	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Possible <input type="checkbox"/> No <input type="checkbox"/> N/A	Does an undercut or subgrade stabilization appear to be needed?	Typical subgrade conditions are likely to reflect the presence of fine grained shallow soils throughout the study area
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Should the Office of Geotechnical Engineering be contacted to evaluate the project site?	
<input type="checkbox"/> Yes <input type="checkbox"/> Possible <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Were there any significant items found during plan and specification review? Specify.	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Possible <input type="checkbox"/> No <input type="checkbox"/> N/A	Are There any other geotechnical issues? Specify.	1. Space constraints caused by existing retaining structures along the Upper Access present design challenges. 2. Steep natural slopes between Virginia and South Access create slope design challenges.

# **APPENDIX E**

## **BRIDGE INSPECTION REPORTS**

### **CITY OF CINCINNATI**

.

## **RED FLAG SUMMARY REPORT**

**HAM-32F-0.00**

**PID 86461**

## **RELOCATED SR-32 SEGMENT 1**

## **RED BANK CORRIDOR IMPROVEMENTS**


## **EASTERN CORRIDOR MULTIMODAL PROJECTS**

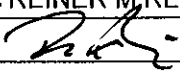
## **HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320



BRIDGE NAME / INSPECTION ITEM		SPN	RATING
ERIE AVENUE BRIDGE OVER RED BANK ROAD		3160998	7 A
Inspected By: REINER M REISING, P.E.		PE: PE	Init: RMR Date: 07/01/2010
Signature: 			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: CITY (ENG) #22	Insp Resp: CITY	Maint Resp: CITY (ENG.)	
County: CIN	Route: ERIE	Unit: 0300	BrType (Main/Appr Spans): 322 / Year Built: 4380
Survey: 10111NNN		Needs to be Inventoried By:	
Load Rating %: 150		Load Rating Analyst Initials: AG	Load Rating Analysis Date: 09/21/2001
Inspection satisfies AASHTO Manual for Maintenance Inspection of Bridges "Routine Inspection" requirements.			
Not all main structural members were inspected within "arms reach" distance.			
File Location: 19-17-43 TO 49			
1	FLOOR: Minor cracking w efflor; diag. cracks w efflor - part. near abut; spall mostly @ E abut. N-side & CON'T BELOW		2
2	WEARING SURFACE: LMC overlayed (2002); diag. cracks @ corners; trans. cracks; long. cracks (S)		2
3	CURBS, SIDWALKS/WLK WAYS: Trans. cracks; diag. crack @ SW corner; popouts; silane applied (1995).		2
5	RAILING: Minor map cracking; vert. cracks w efflor; popouts; minor scrapes (N); veg. growing in conc. jts.		2
6	DRAINAGE: Street inlets off ends of bridge.		1
7	EXPANSION JOINTS: Sleeper slabs installed 2002.		1
8	DECK SUMMARY:		7
9	STR. ALIGNMENT: Slight sag @ N beam.		1
10	BEAMS/GIRDERS/SLAB: Spot rust; pitting & minor LOS; minor corr. @ abut. conc. inter- CON'T Superstructure Notes BELOW		2
11	DIAPHRAGMS/CROSSFRAMES: Spot rust & minor corr; some bent; some cast into abut; cracked CON'T Superstructure Notes BELOW		2
24	BEARING DEVICES: Painted (1988); minor corr; rockers reset (2002).		1
28	PROTECTIVE COATING SYSTEM (YEAR/CONDITION): Spot rust; minor corr; white granular mat'l deposited CON'T BELOW:	Type: Year: 1981	5
31	LIVE LOAD RESPONSE: Noticable mvmt. under truck loading.		S
32	SUPERSTRUCTURE SUMMARY: Redundant; not fatigue prone.		7
33	ABUTMENTS: Cast around beams; minor cracking; horiz. cracks near top w seepage & efflor; diag. crack @ SW corner.		2
34	ABUTMENT SEATS: Not applicable.		
35	PIERS: Flex. cracks on E pier w minor efflor; hairline flex. cracks @ SW underside of cap; some areas patched; patches		2

BRIDGE NAME / INSPECTION ITEM		SRN	RATING
ERIE AVENUE BRIDGE OVER RED BANK ROAD		3160998	7 A
Inspected By: REINER M. REISING, P.E.		PE: PE	Init: RMR Date: 07/01/2010
Signature: 			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: CITY (ENG) #22	Insp Resp: CITY	Maint Resp: CITY (ENG.)	
36	PIER SEATS: Minor cracks.		2
37	BACKWALLS: Not applicable.		
38	WINGWALLS: Seepage; minor erosion.		1
41	SLOPE PROTECTION: Conc. slope protection (full height-both sides) w minor cracks.		2
42	SUBSTRUCTURE SUMMARY:		7
55	PAVEMENT: Asphalt overlayed (2002); grade @ inlet @ NE results in abrupt rise in pvmt. @ CON'T		2
	Approaches Notes BELOW		
56	APPROACH SLABS: LMC overlayed (2002); long. cracks @ W.		1
57	GUARDRAIL: Slight damage @ NE; wood posts rotting.		2
58	RELIEF JOINTS: @ ends of approach slabs, through curb.		1
59	EMBANKMENT: Slight erosion @ WW.		2
60	APPROACHES SUMMARY: Stairs closed @ SW; SW s/w settled @ approach.		7
65	VERTICAL CLEARANCE:		1
66	GEN/APPRAS/OPERATIONS:	Condition:	7 A

#### Deck Notes:

FLOOR CON'T: W abut S-side; delams & spalling along TF of girders; rust stains; honeycombing E span.

#### Superstructure Notes:

BEAMS/GIRDERS/SLAB CON'T: face; beams cast into abut; slight sag in center span esp. N most beams; N fascia beam TF bent @ 2nd diaphragm from W.

DIAPHRAGMS/CROSSFRAMES CON'T: weld @ some damaged X-frames @ abut.

PROTECTIVE COATING SYSTEM: on BF of beams; corr. @ TF.


#### Substructure Notes:

PIERS CON'T.: cracking.

#### Approach Notes:

PAVEMENT CON'T: approach slab; trans cracks(W); breaking up @ app. slab(W).



BRIDGE NAME / INSPECTION ITEM		SPIN	RATING
ERIE AVENUE BRIDGE OVER RED BANK ROAD		3160998	7 A
Inspected By: REINER M REISING, P.E.		PE:PE	Init:RMR Date:07/01/2010
Signature: 			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: CITY (ENG) #22	Insp Resp: CITY	Maint Resp: CITY (ENG.)	

**General Notes:**

2002 Overlay plans: 29-24-1 to 28

**Maintenance Items:**

- 1) Seal jt. bet. approach slabs & asphalt pvmnt.
- 2) Clean & seal jts. in approach walks.
- 3) Program guardrail posts & b/o's for replacement.
- 4) Seal cracks in wearing surface.

**Inspection Notes:**

1979 Rehab plans state reduced set filed in misc.

05/01/2009 Contacted Marc Conner (cincinnati bell) about low aerial line in E span.

BRIDGE NAME / INSPECTION ITEM		SFN	RATING
RED BANK EXPRESSWAY RAILAMERICA OVERHEAD		3162672	7 A
Inspected By: REINER M REISING, P.E.		PE: PE	Init: RMR Date: 02/12/2010
Signature:			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: RR #35	Insp Resp: RR & CITY	Maint Resp: RR (RAILAMER)	
County: CIN	Route: REDBK	Unit: 4531	BrType (Main/Appr Spans): 363 / Year Built: 7000
Survey: NNNNNNNN		Needs to be Inventoried By:	
Load Rating %: 0	Load Rating Analyst Initials:	Load Rating Analysis Date: / /	
Sent to: Company: RailAmerica			
Title: Asst. General Mngr.			
First Name: Biff		Last Name: Konrad	
Address: 497 Circle Freeway Drive			
Suite 230		Phone: (513)860-1000	
City: Cincinnati		ST: OH	Zip: 45246- Fax:
Inspection satisfies AASHTO Manual for Maintenance Inspection of Bridges "Routine Inspection" requirements.			
Not all main structural members were inspected within "arms reach" distance.			
File Location: 23-58-26 TO 34			
1	FLOOR: Seepage @ long. jt; minor cracks; spall @ E abut; efflor; minor spalls/delams @ TF; stalactites forming.		1
3	CURBS, SIDWLKS/WLK WAYS: Veg. growing.		2
5	RAILING: Dented; spill guards bent; 1 spillguard missing @ NW corner - 1 post loose @ SW; gravel CON'T Deck Notes BELOW		4
7	EXPANSION JOINTS: Seepage.		2
8	DECK SUMMARY:		7
9	STR.ALIGNMENT:		1
10	BEAMS/GIRDERS/SLAB: Widespread surface rust; rusting @ TF		1
11	DIAPHRAGMS/CROSSFRAMES: Rusting.		2
20	LOWER LATERAL BRACING: Rusting; missing bolt @ NW.		2
21	TOP LATERAL BRACING: Rusting; missing bolt @ SW.		2
24	BEARING DEVICES: Anchor bolts loose (lifted) @ SE & NE; spot rust; anchor bolt missing @ NW.		3
28	PROTECTIVE COATING SYSTEM (YEAR/CONDITION): Spot rust; pigeon droppings; dirt on flanges.	Type: Year: 1970	2
32	SUPERSTRUCTURE SUMMARY: Not fatigue prone, not redundant.		7
33	ABUTMENTS: Seepage on face, esp W; cracking, esp. E; isol. spalls.		2



BRIDGE NAME / INSPECTION ITEM		SFN	RATING
RED BANK EXPRESSWAY RAILAMERICA OVERHEAD		3162672	7 A
Inspected By: REINER M REISING, P.E.		PE:PE Init:RMR	Date:02/12/2010
Signature:			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: RR #35		Insp Resp: RR & CITY	Maint Resp: RR (RAILAMER)
34	ABUTMENT SEATS: Seepage.		1
37	BACKWALLS: Seepage; minor spalling @ SE.		2
38	WINGWALLS: Minor cracking.		1
42	SUBSTRUCTURE SUMMARY:		7
65	VERTICAL CLEARANCE:		1
66	GEN/APPRAIS/OPERATIONS:		Condition: 7 A

**Deck Notes:**

RAILING CONT: slipping past spillguards; some tubes corr.

**General Notes:**

Shop drawings: 22-10-45 to 51

Bridge # 12/96

**Maintenance Items:**

- 1) Repair railing & spillguards.
- 2) Reset loose (lifted) anchor bolts - check for missing anchor bolts.
- 3) Replace spillguard @ NW part of railing.
- 4) Repaint Structural Steel.

**Inspection Notes:**

South track removed.

Did not attempt to access top of bridge.

BRIDGE NAME / INSPECTION ITEM		SFN	RATING
ERIE AVENUE BRIDGE OVER SORTA		3160939	7 A
Inspected By: REINER M REISING, P.E.		PE: PE Init: RMR	Date: 07/02/2010
Signature:			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #: CITY (ENG) #23		Insp Resp: CITY	Maint Resp: CITY (ENG.)
County: CIN	Route: ERIE	Unit: 0290	BrType (Main/Appr Spans): 322 / Year Built: 4380
Survey: 10111NNN		Needs to be Inventoried By:	
Load Rating %: 150		Load Rating Analyst Initials: AG	Load Rating Analysis Date: 09/21/2001
Inspection satisfies AASHTO Manual for Maintenance Inspection of Bridges "Routine Inspection" requirements.			
Not all main structural members were inspected within "arms reach" distance.			
File Location: 19-17-37 TO 42			
1	FLOOR: Cracks w efflor. - part. near abut. w delam; also diag. cracks w efflor. near abuts; CON'T BELOW		2
2	WEARING SURFACE: LMC overlayed (2002); portions of edge lines (thermoplastic) obliterated; long. CON'T Deck Notes BELOW		2
3	CURBS, SIDWLKS/WLK WAYS: Trans. cracks; popouts; silane applied (1995); spalled @ NW.		2
5	RAILING: Vert. cracks; map cracking; small spalls; impact damage @ SW; efflor; 8 bolts missing @ NE; CON'T BELOW		2
6	DRAINAGE: Street inlets off bridge.		1
7	EXPANSION JOINTS: Sleeper slabs installed (2002); seal broken @ NW.		1
8	DECK SUMMARY:		7
9	STR. ALIGNMENT:		1
10	BEAMS/GIRDERS/SLAB: Spot rust; pitting & minor LOS; corr. @ abut/conc. interface; beams cast into abuts; CON'T BELOW:		2
11	DIAPHRAGMS/CROSSFRAMES: LOS d/t torch cutting @ W; some bent @ abut.; spot rust & minor CON'T BELOW		2
24	BEARING DEVICES: Rockers reset (2002); painted 1988; minor corr; some anchor plt. nuts not completely fastend.		2
28	PROTECTIVE COATING SYSTEM (YEAR/CONDITION): Spot rust; minor corr; flaking on BF & web; CON'T Superstructure Notes BELOW		Type: 5 Year: 1981
31	LIVE LOAD RESPONSE: Noticable under truck load.		S
32	SUPERSTRUCTURE SUMMARY: Redundant; not fatigue prone.		7
33	ABUTMENTS: Integral; minor cracking; horiz. cracks @ top w seepage & efflor.		2
35	PIERS: Minor cracks; gunite repairs; hor. cracks in columns of fixed pier center span side.		2
36	PIER SEATS: Minor cracks; spall patched (2002); animal droppings.		1



BRIDGE NAME / INSPECTION ITEM		SFN	RATING
ERIE AVENUE BRIDGE OVER SORTA		3160939	7 A
Inspected By: REINER M REISING, P.E.		PE:PE Init:RMR	Date:07/02/2010
Signature:			
Reviewed By:		PE: Init: Date: / /	
Signature:			
Bridge #: CITY (ENG) #23		Insp Resp: CITY	Maint Resp: CITY (ENG.)
37	BACKWALLS: integral, Not Applicable		
38	WINGWALLS: Seepage @ abut. interface.		1
41	SLOPE PROTECTION:		1
42	SUBSTRUCTURE SUMMARY:		7
55	PAVEMENT: Asphalt overlayed (2002); trans. cracks; breaking up @ app. slab.		2
56	APPROACH SLABS: LMC (2002); long. cracks; gap bet. app. walk & bridge approx. 1.25".		1
57	GUARDRAIL: Minor impact damage @ SW approach; wood posts rotting.		2
58	RELIEF JOINTS: Asphalt overlayed.		1
59	EMBANKMENT: Slight erosion @ WW.		2
60	APPROACHES SUMMARY:		8
65	VERTICAL CLEARANCE:		1
66	GEN/APPRAIS/OPERATIONS:	Condition:	7 A

#### Deck Notes:

FLOOR CON'T: seepage; spalling along edge of TF of beams; spalling w exp. reinf. steel in center span; rost spots.

WEARING SURFACE CON'T: tending towards diag. cracks near abut; trans. cracks over piers.

RAILING CON'T: minor scratch marks on tubes @ NW.

#### Superstructure Notes:

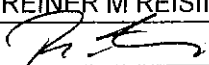
BEAMS/GIRDERS/SLAB: corr. @ TF some LOS; 5th beam from N, poss. cracked rivet in E span; 4th beam from S & center span 5th from S, pack rust w poss. LOS C/P in E span.

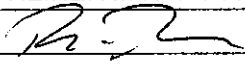
DIAPHRAGMS/CROSSFRAMES CON'T: corr; x-frames bent @ E abut; welds cracked @ some bent angles.

PROTECTIVE COATING SYSTEM CON'T: rust undercutting paint; white granular mat'l deposited on BF.

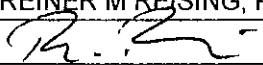
BRIDGE NAME / INSPECTION ITEM		SFN	RATING
ERIE AVENUE BRIDGE OVER SORTA		3160939	7 A
Inspected By: REINER M REISING, P.E.		PE: PE Init: RMR	Date: 07/02/2010
Signature:			
Reviewed By:		PE: Init:	Date: / /
Signature:			
Bridge #: CITY (ENG) #23	Insp Resp: CITY	Maint Resp: CITY (ENG.)	
<b>Maintenance Items:</b>			
1) Remove brush piled against E pier. 2) Cut down exp. jt. filler where extended up onto walk @ SW. 3) Clean & seal jt. bet. approach slabs & asphalt pvmt, both sides. 4) Clean & seal jts. in approach walks. 5) Clean & seal gap bet. app. walk & bridge walk @ NE. 6) Program guardrail posts & b/o's for replacement. 7) Replace 8 bolts @ railing @ NE abut. 8) Fix snag @ NW end piece.			
<b>Inspection Notes:</b>			
1979 Rehab plans state reduced set filed in misc.			



BRIDGE NAME / INSPECTION ITEM	SRN	RATING
RED BANK ROAD BRIDGE OVER RAILAMERICA	3160947	1 K
Inspected By: REINER M REISING, P.E.	PE: PE Init: RMR	Date: 11/05/2009
Signature: 		
Reviewed By:	PE: Init:	Date: / /
Signature:		
Bridge #: RR #36	Insp Resp: RR & CITY	Maint Resp: RR (RAILAMERICA)
County: CIN	Route: REDBK	Unit: 4532
BrType (Main/Appr Spans): 363 /		Year Built: 1500
Survey: 0000N110	Needs to be Inventoried By:	
Load Rating %: 25	Load Rating Analyst Initials:	Load Rating Analysis Date: / /
Sent to:	Company: RailAmerica	
	Title: Assist. General Mgr.	
First Name: Biff	Last Name: Konrad	
Address: 497 Circle Freeway Drive		
Suite 230		Phone: (513)860-1000
City: Cincinnati	ST: OH	Zip: 45246- Fax: (513)682-4645
Inspection satisfies AASHTO Manual for Maintenance Inspection of Bridges "Routine Inspection" requirements.		
Not all main structural members were inspected within "arms reach" distance.		
File Location:		
1 FLOOR: Wood planks.		2
2 WEARING SURFACE: Long. cracks in asphalt overlay; veg. growing on deck; debris.		3
3 CURBS, SIDWALKS/WLK WAYS: Wood walks; angle missing @ SE; wood curbs w steel angle; some wooden planks loose.		2
5 RAILING: Steel beam railing @ W; metal handrail @ E.		2
6 DRAINAGE: Water drains over the sides; ponding.		2
7 EXPANSION JOINTS: None apparent.		
8 DECK SUMMARY:		6
9 STR. ALIGNMENT: Slight sag in E girder (main span).		2
10 BEAMS/GIRDERS/SLAB: Bottom c/p's completely rusted thru; widespread pack rust & LOS.		4
11 DIAPHRAGMS/CROSSFRAMES: Sev. LOS; gusset plates perf; 1 horiz. member missing CON'T Superstructure Notes BELOW		4
12 JOISTS/STRINGERS: Wood joists function as floor; see FLOOR above.		
13 FLOOR BEAMS: Wood beams; cracking & splitting; general deter; has fungus or mildew.		2
14 FLOOR BEAM CONNECTIONS: Wood seated on steel; cracking & splitting.		2

BRIDGE NAME / INSPECTION ITEM		SPN	RATING
RED BANK ROAD BRIDGE OVER RAILAMERICA		3160947	1 K
Inspected By: REINER M REISING, P.E.		PE: PE	Init: RMR Date: 11/05/2009
Signature: 			
Reviewed By:		PE:	Init: Date: / /
Signature:			
Bridge #:	RR #36	Insp Resp:	RR & CITY
		Maint Resp:	RR (RAILAMERICA)
20	LOWER LATERAL BRACING: All appear loose (members sagging); 1 member appears to have		4
	CONT Superstructure Notes BELOW		
24	BEARING DEVICES: Corr; debris covered; sig. LOS; no bearings @ some locs.		3
28	PROTECTIVE COATING SYSTEM (YEAR/CONDITION): Corr. & LOS.	Type:	0
		Year: 1980	
31	LIVE LOAD RESPONSE: None noted (bridge closed)		S
32	SUPERSTRUCTURE SUMMARY: Not fatigue prone, not redundant.		1
33	ABUTMENTS: Heavily gunited; cracks; seepage; wood planks @ N displaced; major crack @ NW.		3
34	ABUTMENT SEATS: Mud; cracks; moist.		3
35	PIERS: Corr. & pack rust @ bases; sev. cracks & spalls @ bases; A-bolts pushed up & CON'T		3
	Substructure Notes BELOW		
36	PIER SEATS: Corr; pack rust; LOS.		3
37	BACKWALLS: Deter. of stone.		3
38	WINGWALLS: Stone & gunite deter; timber rails @ NE; cracks @ NW.		2
42	SUBSTRUCTURE SUMMARY:		3
55	PAVEMENT: Slight settlement; cracks in asphalt; utility cuts.		3
57	GUARDRAIL: Steel beam @ S end only; not conn. to bridge; nearly buried @ SE; impact damage & leaning out @ SW.		2
59	EMBANKMENT: Erosion @ NE & SE; utility work seems to have precipitated small slide @ SE; CON'T		3
	Approach Notes BELOW		
60	APPROACHES SUMMARY: Settlement @ S.		4
62	WARNING SIGNS: Posted "No Outlet" ahead of bridge on N side; both sides posted "Bridge Closed".		1
64	UTILITIES: Gas main abandoned in place.	Type: NYNNNNN	1
65	VERTICAL CLEARANCE:		N
66	GEN/APPRASIS/OPERATIONS: Bridge closed on 6/20/1997 d/t superstructure deter.	Condition:	1 K



BRIDGE NAME / INSPECTION ITEM	SRN	RATING
RED BANK ROAD BRIDGE OVER RAILAMERICA	3160947	1 K
Inspected By: REINER M REJSING, P.E.	PE: PE	Init: RMR Date: 11/05/2009
Signature: 		
Reviewed By:	PE:	Init: Date: / /
Signature:		
Bridge #: RR #36	Insp Resp: RR & CITY	Maint Resp: RR (RAILAMERICA)

**Superstructure Notes:**

DIAPHRAMS/CROSSFRAMES: & diag. buckled; 2nd horiz. member no longer attached @ girder & is hanging from rod bracing; 3rd horiz. member no longer attached @ 1 end.

LOWER LATERAL BRACING: buckled; bridge may be wracked.

**Substructure Notes:**

PIERS CON'T: missing; stone deter. & undermining @ post support @ SE & NW.

**Approach Notes:**

EMBANKMENT CON'T: piers being undermined by cont. erosion.

**Maintenance Items:**

- 1) Remove bridge.
- 2) Remove veg. from fence @ S so "Road Closed" sign stays visible.
- 3) Remove "One Lane Bridge" sign @ N.
- 4) Straighten "No Outlet" sign @ N.

**Inspection Notes:**

Guardrail & CLF across bridge @ each end.

# **APPENDIX F**

## **FIELD REVIEW DISCUSSION AND STAKEHOLDER COMMENTS**

### **RED FLAG SUMMARY REPORT**

**HAM-32F-0.00**

**PID 86461**

### **RELOCATED SR-32 SEGMENT 1**

### **RED BANK CORRIDOR IMPROVEMENTS**

### **EASTERN CORRIDOR MULTIMODAL PROJECTS**

### **HAMILTON COUNTY, OHIO**



URS Corporation  
564 White Pond Dr.  
Akron, OH 44320

**RED FLAG FIELD REVIEW ATTENDANCE LIST****HAM 32 0.00F****PID 86461****RELOCATED SR-32 SEGMENT I****REDBANK CORRIDOR IMPROVEMENTS****January 13, 2011**

NAME	FIRM	EMAIL ADDRESS	PHONE
Dave Wormald	URS	<a href="mailto:dave_wormald@urscorp.com">dave_wormald@urscorp.com</a>	513.419.3997
Scott Buchanan	URS	<a href="mailto:scott_buchanan@urscorp.com">scott_buchanan@urscorp.com</a>	330.836.9111
Keith Smith	ODOT	<a href="mailto:keith.smith@dot.state.oh.us">keith.smith@dot.state.oh.us</a>	513.933.6590
Rick Hively	ODOT	<a href="mailto:rick.hively@dot.state.oh.us">rick.hively@dot.state.oh.us</a>	513.933.6600
Jay Hamilton	ODOT	<a href="mailto:jav.hamilton@dot.state.oh.us">jav.hamilton@dot.state.oh.us</a>	519.933.6584
Doug Gruver	ODOT	<a href="mailto:doug.gruver@dot.state.oh.us">doug.gruver@dot.state.oh.us</a>	513.933.6606
Scott Kramer	ODOT	<a href="mailto:scott.kramer@dot.state.oh.us">scott.kramer@dot.state.oh.us</a>	513.933.6610
Doug Raters	ODOT	<a href="mailto:doug.raters@dot.state.oh.us">doug.raters@dot.state.oh.us</a>	513.933.6629
Tammy Campbell	ODOT	<a href="mailto:tammv.campbell@dot.state.oh.us">tammv.campbell@dot.state.oh.us</a>	513.933.6694
Jim Burns	URS	<a href="mailto:jim_burns@urscorp.com">jim_burns@urscorp.com</a>	216.622.2396
Doug Miller	ODOT	<a href="mailto:doug.miller@dot.state.oh.us">doug.miller@dot.state.oh.us</a>	513.933.6603
Jenny Kaminer	Farifax	<a href="mailto:jkaminer@fuse.net">jkaminer@fuse.net</a>	513.527.6503
Caroline Duffy	Barr & Prevost	<a href="mailto:cduffy@barreng.com">cduffy@barreng.com</a>	513.476.6271
Stuart Edwards	Barr & Prevost	<a href="mailto:sedwards@barreng.com">sedwards@barreng.com</a>	513.271.0623
Martha Kelly	City of Cincinnati	<a href="mailto:martha.kelly@cincinnati_oh.gov">martha.kelly@cincinnati_oh.gov</a>	513.352.3648
Greg Long	City of Cincinnati	<a href="mailto:greg.long@cincinnati_oh.gov">greg.long@cincinnati_oh.gov</a>	513.352.5289
Ted Hubbard	Hamilton County Engineer	<a href="mailto:ted.hubbard@hamilton.co.gov">ted.hubbard@hamilton.co.gov</a>	513.946.8903
Stephen Curless	URS	<a href="mailto:steve_curless@urscorp.com">steve_curless@urscorp.com</a>	513.419.3504
Deb Osborn	Entran	<a href="mailto:dosborne@entran.us">dosborne@entran.us</a>	513.761.1700





## MEMORANDUM

**DATE:** January 10, 2011  
**TO:** Scott Buchanan  
**FROM:** David L Wormald, PE, and AICP  
**RE:** HAM 32.00F  
PID 86461  
Relocated SR-32 Segment 1 Redbank Corridor Improvements

### *Red Flag Summary Field Review Discussion Items*

#### *General Items*

- Project limits I-71 to Fair Lane
- Includes Cross Streets and local network, Madison Rd, Duck Creek Rd, Brotherton/Erie, Virginia & Hetzel Ave.
- Posted Speed 35/45 mph on mainline (Design Speed 55 mph?)

#### *Environmental Items*

##### Community Facilities

- Schools, Seven Hills, Parker Elementary
- Post Office
- Several Churches, Retirement Centers, Cincinnati Children's' Home
- Historic Districts in Mariemont and Madison/Stewart Rd (primarily outside project limits)
- Potential sensitive noise receptors

##### Hazardous Materials

- ESA Sites – Numerous sites located within the project area,
- Major sites include Nutone, Former Ford Factory (Walmart and surrounding new development), Ford WWTP and Schulte Metal (Charlemar Dr just west of old drive-in)



- **Historic City Dump at Corsica Hollow north of I&O Railroad**

### **FEMA Floodplains and Wetlands**

- **Portion of the project area in FEMA 100-year floodplain between I&O Railroad and Brotherton Ct.**
- **Detention basin on NW quadrant of Madison Rd. and Redbank Expressway**
- **Good quality wetland (Cat 2) in old Duck Creek remnant channel west of Red Bank Rd / south of Fair Lane (access from parking lot on old Swallens site) – associated with USCOE flood control project**

### ***Roadway Geometrics***

- **The existing roadway includes several design exceptions for 55 mph design speed**
- **Lane widths and shoulder widths are substandard north of Erie**
- **Intersection improvements are underway and planned at Madison and Red Bank Intersection**

### ***Geotechnical Issues***

- **Deep Foundations Required for Structures**

### ***Structures***

- **Four bridges and major culvert within the study area, Bridges are in good to fair condition with exception of Red Bank Road over I&O Railroad. City has asked for it to be removed.**
- **I&O RR over Red Bank Expressway could be a constraint to adding additional capacity.**
- **Major Culvert under Madison and Redbank – Good Condition but constraint on lowering roadbed and future structures.**

### ***Utilities***

- **High Voltage Transmission Lines and Substation**
- **Water/Sewer – Located along Madison and at Various Intersections – See Mapping for additional details.**



- **Gas line crossing at southern portion of the project area**
- **RR Coordination with SORTA-Oasis, (NS and I&O Railroads)**

### ***Landuse***

#### **Recent and Ongoing Developments**

- **Madison Circle**
- **Medpace**
- **Corsica Hollow**
- **Red Bank Village**
- **Red Bank Crossings**



## **FIELD REVIEW COMMENTS**

1. E-mail from Tammy Campbell – ODOT D-8, dated 1-14-11

Scott and Keith,

I have no further comments on the red flag document. The traffic items will have to be addressed as the final alignment is determined as stated in the red flag.

Thanks.

Tammy K. Campbell, P.E.  
District 8 Traffic Maintenance Engineer  
513-933-6694  
tammy.campbell@dot.state.oh.us

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2. E-mail from Martha Kelly – City of Cincinnati, dated 1-27-11

Scott,

Thank you for the reminder! I did not have any comments relative to the red flag site visit or those types of issues in the document. However, I did notice some references to the design speed being 55 mph. It has been the City's position that the speed of Red Bank Expressway within the City (and in Fairfax due to similar land use conditions) would be no higher than 45 mph. It is planned that sidewalk would be installed on one side of the roadway and a shared path on the other, with a reasonable tree lawn separation. Since your staff will be considering alternatives and doing preliminary engineering, it is important that we all agree to a design speed for that portion being designed under your contract.

Please let me know if you would all like to discuss further.

Martha

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3. E-mail from Caroline Duffy – Barr & Prevost, dated 2-3-11

Here is a summary of the discussion held at the kickoff meeting:

A discussion was held at the kickoff meeting for the HAM-32F-0.00 project held on January 13, 2011 concerning the location of the local area network (LAN). The Village of Fairfax representative was not able to stay for the entire meeting, so I relayed their concerns. The Virginia Avenue business owners are opposed to a connection of Virginia Avenue into a LAN as they feel it is not needed. Those business owners are preparing a formal document stating these oppositions and will be submitted soon to the team.

In addition, a discussion was held on how to provide for limited access on the new Red Bank Road from Erie Avenue to the new interchange at Columbia Parkway. Historical discussions included the scenario where the existing signals/intersections on Red Bank at the Wal\*Mart and on Red Bank at Fair Lane

**HAM 32F-0.00 Relocated SR-32 Segment 1**  
**Red Bank Corridor Improvements**  
**PID 86461**

would be closed. This traffic would be redirected to the existing intersection of Red Bank Road and Shannon Way and that intersection would be signalized. The intersection of Fair Lane and Ford Circle would become a four-legged intersection with the new north leg connecting to Shannon Way to provide access to Fair Lane and Ford Circle. In addition, the currently undeveloped Gorilla Glue site and possibly the former Velva Sheen/QuebecCor World site could be connected through to Ford Circle from the new Red Bank Road by the existing ColBank Ramp and provide a Lower Access Road to the Wal\*Mart site. In this case, perhaps a Virginia Avenue connection would not be warranted.

In any case, no decisions can be made until the traffic modeling is completed and typical sections and alignments can be determined. If the new Red Bank Road has numerous access points, there will be congestion and the businesses might suffer the fail due to that congestion.

Thanks,  
Caroline

**Caroline Duffy, PE**  
Senior Traffic Engineer

**Barr & Prevost**  
**Engineering | Testing | Surveying**

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4. E-mail from Keith Smith – ODOT D-8 dated 2-7-11

We have discussed this issue with Rebekah Anderson of Central Office. She, Jay Hamilton, Andy Fluegemann and myself are all in agreement that the Design Speed should be 45 mph for this project. Martha Kelly's email of 1/27/11 expresses the same.

Thanx,

Keith

Keith Smith, P.E.  
Environmental Engineer/Team Leader, ODOT D-8  
Keith.Smith@dot.state.oh.us  
1-800-831-2142 or 513-933-6590

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5. E-mail from Dave Wormald – URS, dated 2-8-11

During the project Red Flag Field Review on January 13<sup>th</sup> 2011 the following significant items were discussed by representatives of the project design team and staff from the City of Cincinnati, Hamilton County Engineers office and Village of Fairfax. These items represent potentially significant red flags which should be considered in subsequent steps of project development.

**HAM 32F-0.00 Relocated SR-32 Segment 1**  
**Red Bank Corridor Improvements**  
**PID 86461**

Potential Improvements to Virginia Avenue

There was discussion concerning the recommendations for a new connection from Virginia Avenue to US-50 and/or Red Bank Road made in the 2006 Eastern Corridor Planning Study. Based upon the current conditions, landuses and traffic/accident data it does not appear that significant improvements are required to address congestion or safety issues. Generally representatives of the local governments felt that identification of existing issues should be closely coordinated with property and businesses owners along Virginia Ave. Virginia Avenue Business is working to establish a group to coordinate with the project development collectively. As the project proceeds ODOT and the design team will engage the Virginia Ave Business community representatives .

Railroad Owned Bridge (Old Red Bank Road over Indiana and Ohio Railroad SFN 3160947)

There is an existing railroad owned bridge closed in 1997 due to deterioration of the superstructure) which conveys Old Red Bank Road over the Indiana and Ohio Railroad. The City has requested that the railroad repair, replace or removed the existing structure but has not received a response. The 2006 Eastern Corridor Planning Study recommended improvements to Old Red Bank Road in the vicinity to act as a local circulator route. If Old Red Bank road is improved to provide alternative connectivity north and south of the Indiana and Ohio Railroad it will be necessary to replace this structure. It is assumed that any future structure will be owned and maintained by the City of Cincinnati. Formal railroad coordination has not commenced on this project at this time. The disposition of this bridge will be the subject of future railroad coordination and could be a limiting factor for improvements to Old Red Bank road to provide north-south connectivity.

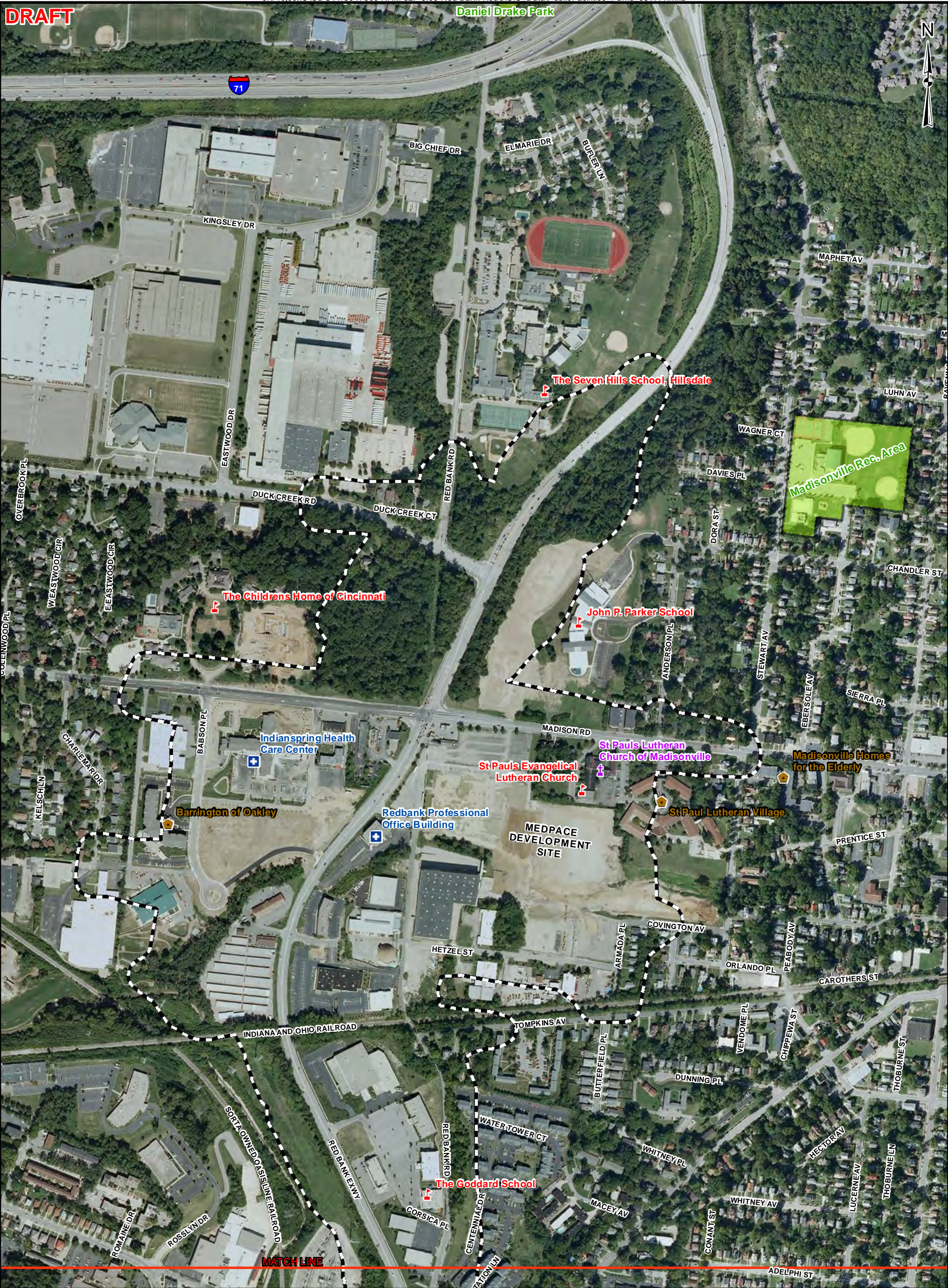
Local Public Circulation Medpace Development

The 2006 Eastern Corridor Planning Study recommended the potential extension of Amanda Pl. north to Madison Rd. Given the current redevelopment of the area for the Medpace development this scenario is no longer feasible. The City and developer have had ongoing discussions regarding site plan circulation and public access. Primary drives and access points are intended to become public streets. The developer is interested in the future disposition of the “Old” Red Bank Road right of way south of Madison Rd. and how the this property may be impacted by potential future improvements at Red Bank Expressway and Madison Rd. ODOT and the design team will need to closely coordinate project development with the City and Developer in the near term as the project is built out.



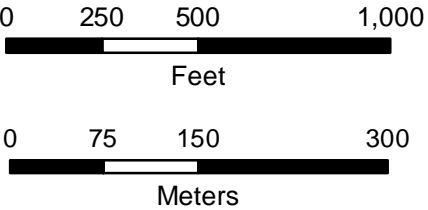
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Daniel Drake Park



LEGEND:

- Study Area
- Parks, Preserves & Greenspace
- School
- Church
- Medical
- Independent Living/Retirement Home
- Other Community/Public Facility



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

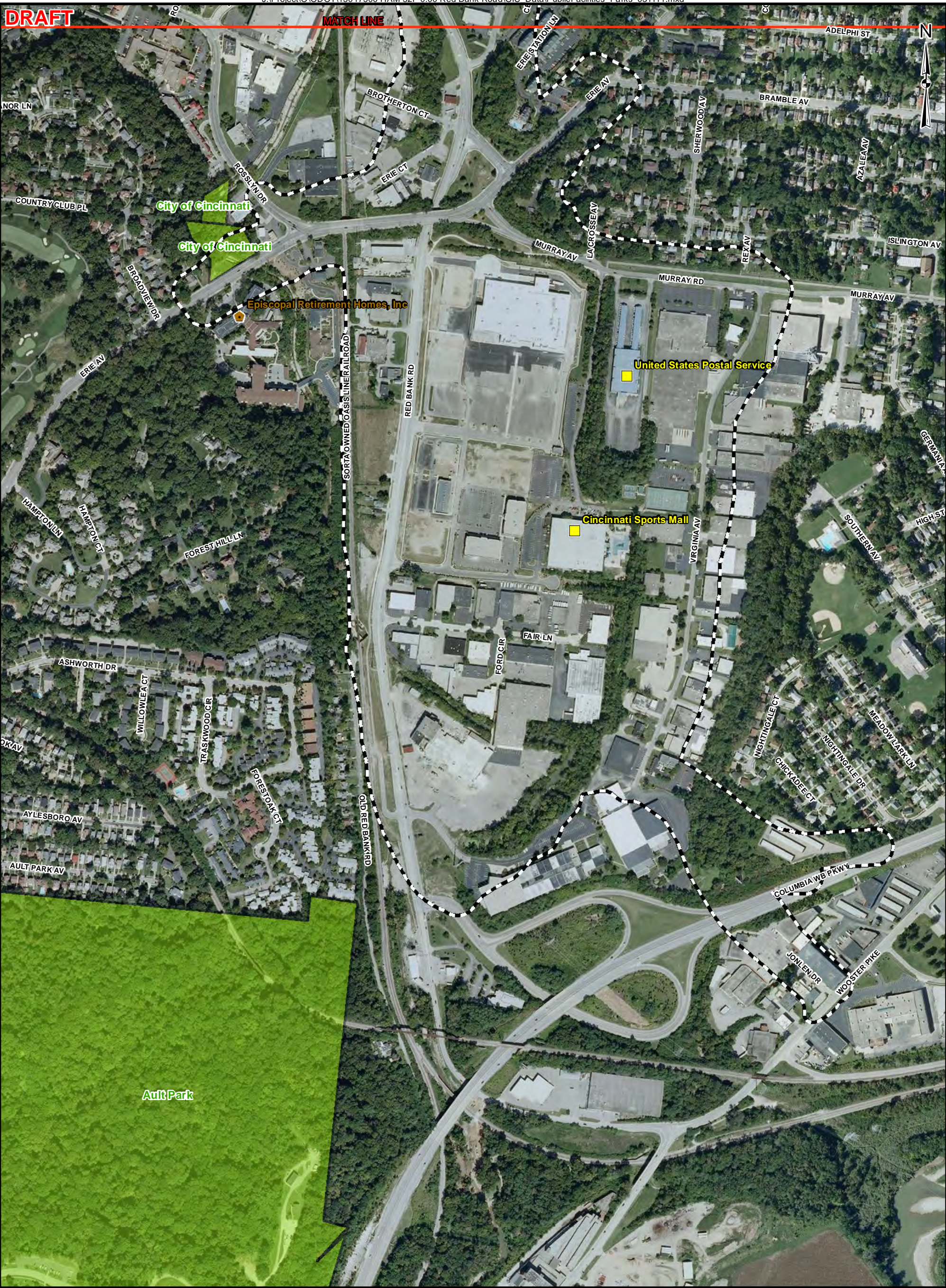
FIGURE 1  
PARKS AND COMMUNITY/PUBLIC FACILITIES  
NORTH

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CREATED BY: AG	SCALE: 1 inch= 500 ft.
	JOB NO. 14949072



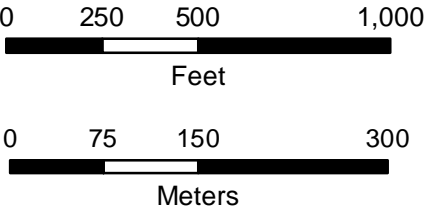
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MATCH LINE



LEGEND:

- Study Area
- Parks, Preserves & Greenspace
- School
- Church
- Medical
- Independent Living/Retirement Home
- Other Community/Public Facility



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

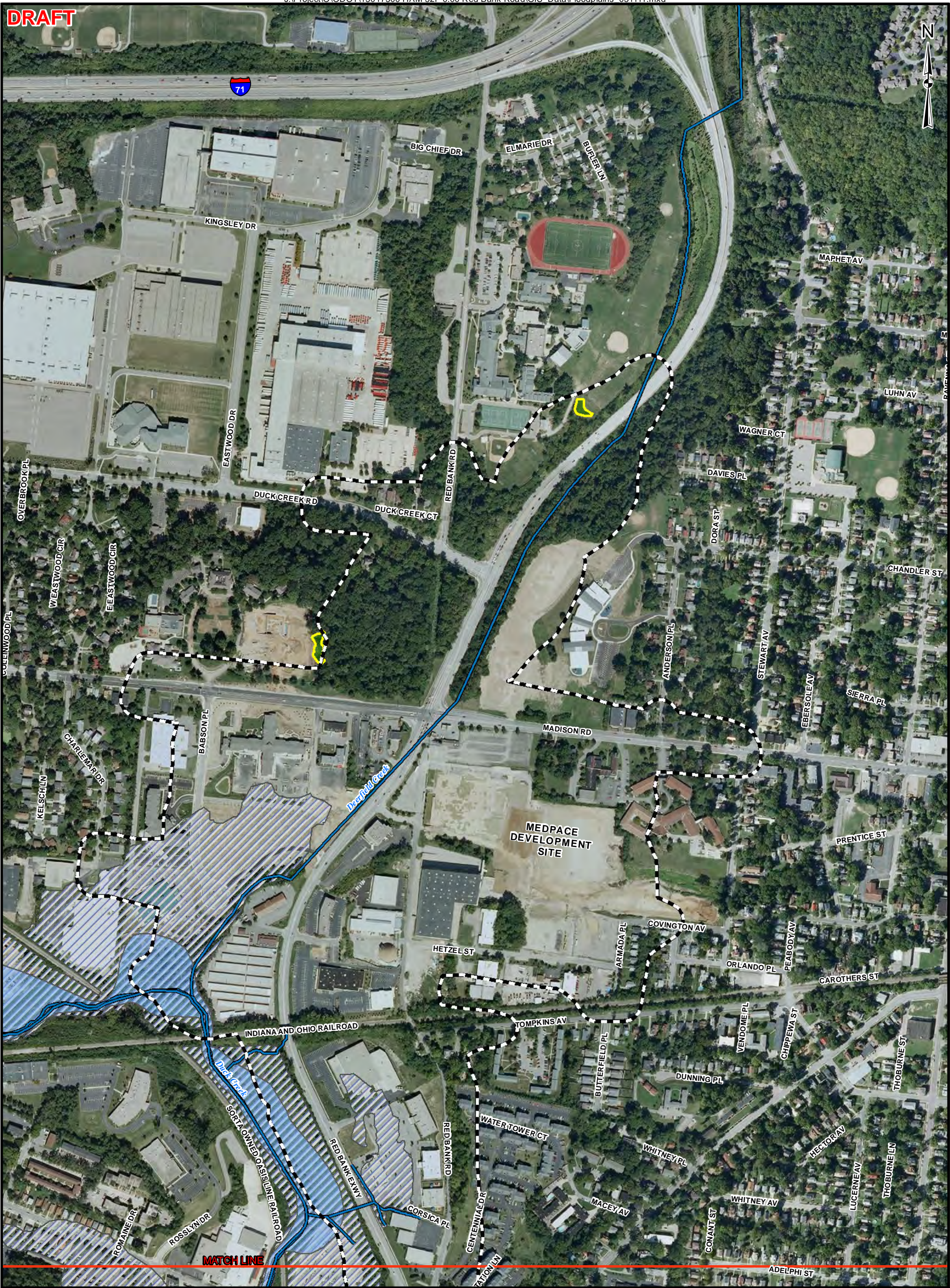


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 1  
PARKS AND COMMUNITY/PUBLIC FACILITIES  
SOUTH

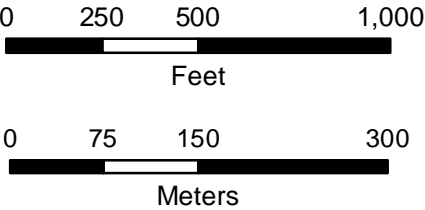
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CREATED BY: AG	SCALE: 1 inch= 500 ft.
	JOB NO. 14949072





LEGEND:

- Study Area
- 100-year Floodplain
- Floodway
- Wetland
- FEMA River & Stream



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

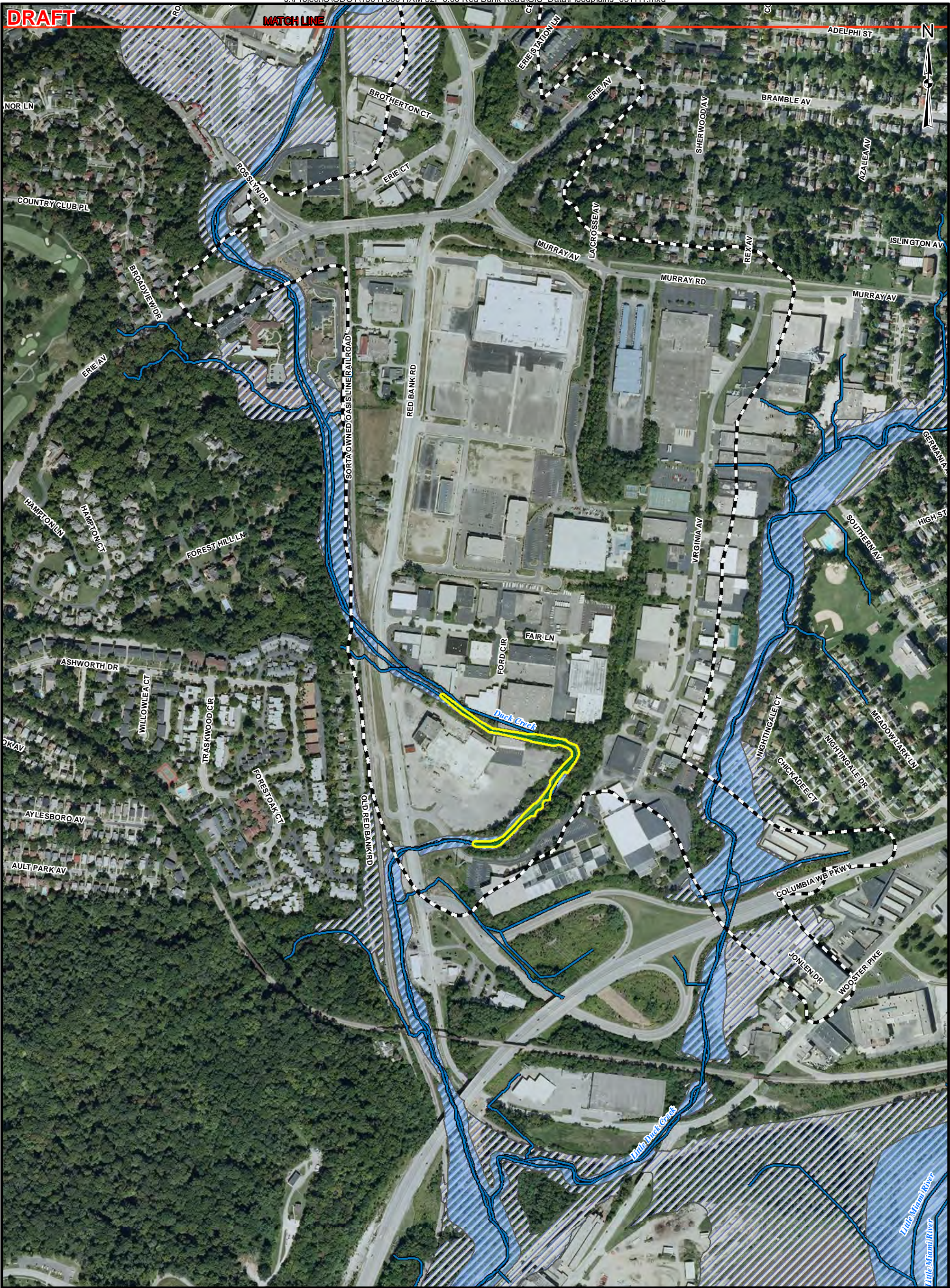


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 2  
HYDROLOGIC FEATURES AND FLOOD DATA  
NORTH

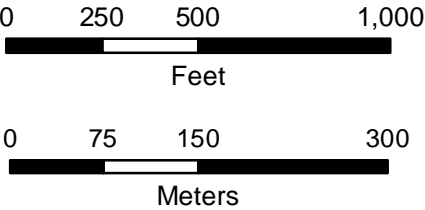
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CREATED BY: AG	SCALE: 1 inch= 500 ft.
	JOB NO. 14949072





LEGEND:

- Study Area
- 100-year Floodplain
- Floodway
- Wetland
- FEMA River & Stream



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 2  
HYDROLOGIC FEATURES AND FLOOD DATA  
SOUTH

DATE: 3/11/2011	SHEET: 2 of 2
CREATED BY: AG	SCALE: 1 inch= 500 ft.
	JOB NO. 14949072



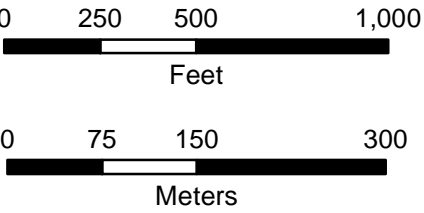


Map ID	Name	Address	Facility ID
1	Nine West Distribution Corp	5379 Kingsley Dr	LUST
2	Coca-Cola Bottling Group/Cincinnati	5100 Duck Creek Rd	LUST, UST, RCRA-CESQG, FINDS
3	Seven Hills School Hillsdale	5400 Red Bank Rd	RCRA-CESQG, FINDS
4	Childrens Home of Cincinnati High School	5050 Madison Rd	NPDES
5	United Dairy Farmers No 129	5311 Madison Rd	FINDS, UST, RCRA NonGen
6	Saint Paul Lutheran School	5433 Madison Rd	FINDS
7*	Nutone, Inc	Madison and Red Bank	RCRA-NonGen, FINDS
8*	Nutone Parcel #05	5235 Madison Road	BROWNFIELDS
9	Rainbow Car Wash	5215 Madison Rd	LUST, FINDS, UST
10	Workingmans Friend #522	4851 Red Bank Rd	UST, LUST, FINDS
11	South Western Publishing Co	5101 Madison Rd	FINDS
12*	Schulte Metal & Finishing Inc	4909 Charlemar Dr	CERCLIS, DERR
13	Integra Lifesciences Corp	4900 Charlemar Dr	RCRA-CESQG, FINDS
14	Springdale Cleaners	4791 Red Bank Road	RCRA-SQG
15	Dunbar Facility	Red Bank and Hetzel	LUST
16	Crest Craft Co	4625 Red Bank Rd	RCRA-CESQG, FINDS
17	Electric Service Co	5331 Hetzel Ave	FTTS, PADS, RCRA-NonGen, FINDS
18	DOVER Elevator	5000 Brotherton Rd	SPILLS, UNREG LTANKS, UST, FINDS
19	Sunoco Service Station; Stop N Go	3905 Brotherton Rd	RCRA-CESQG, FINDS

LEGEND:

- Study Area
- HazMat Database Site
- Historic City Dump\*

\*Sites of Concern:  
Additional time and costs should be included in the project to address regulatory and potential liability concerns associated with these sites. Some sites have been, or are undergoing remediation.



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

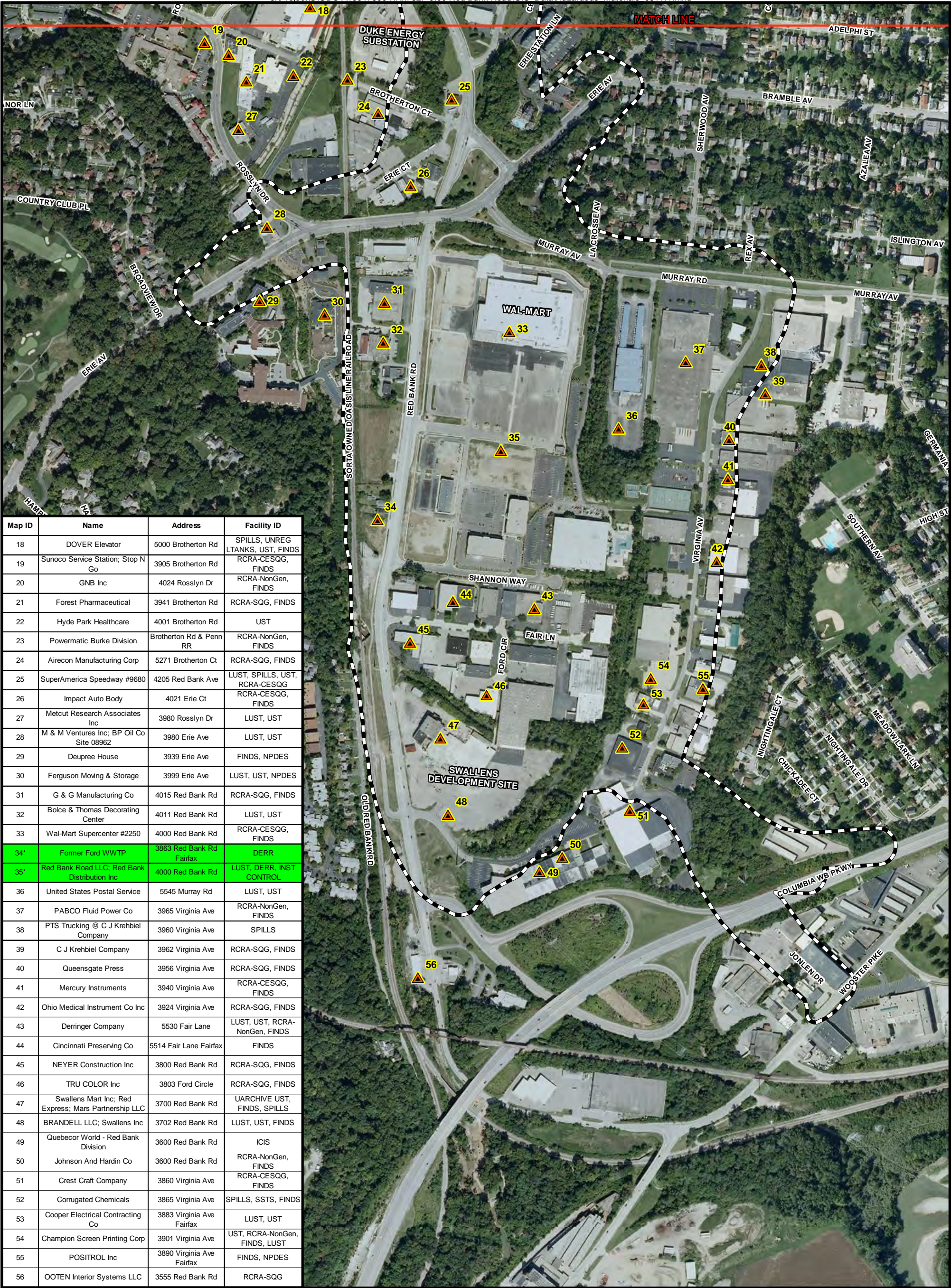


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 3  
HAZARDOUS MATERIAL SITES  
NORTH

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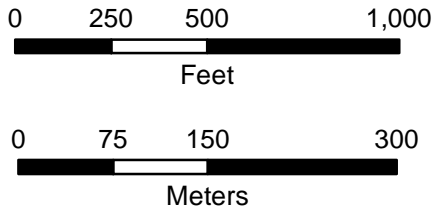




LEGEND:

- Study Area
- HazMat Database Site
- Historic City Dump\*

\*Sites of Concern:  
Additional time and costs should be included in the project to address regulatory and potential liability concerns associated with these sites. Some sites have been, or are undergoing remediation.



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ESRI World Imagery; Aerials Express, 2009



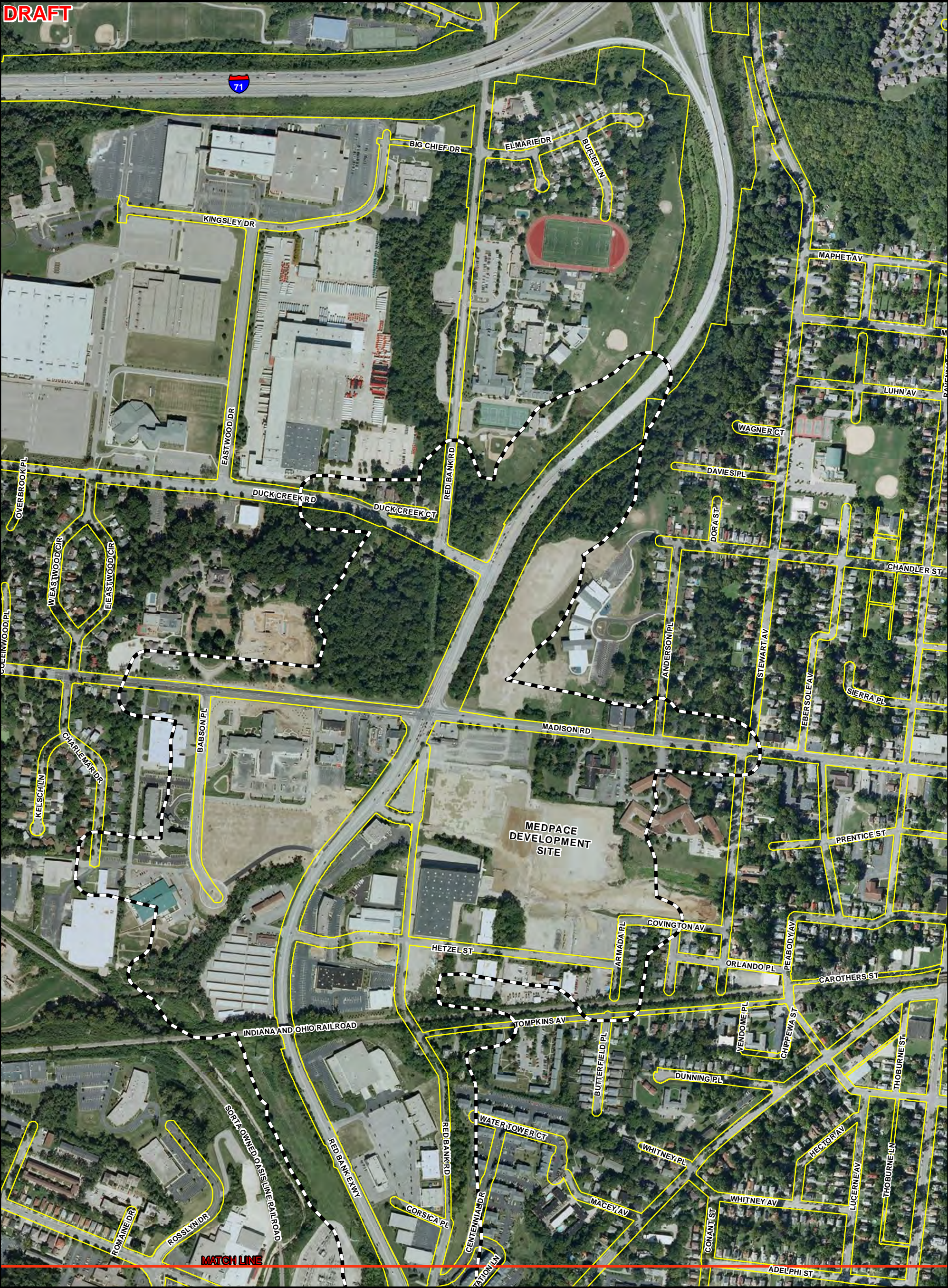
HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 3  
HAZARDOUS MATERIAL SITES  
SOUTH

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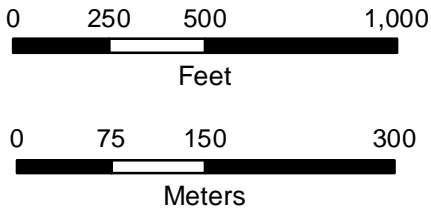


DRAFT



LEGEND:

- Study Area
- CAGIS Road ROW



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

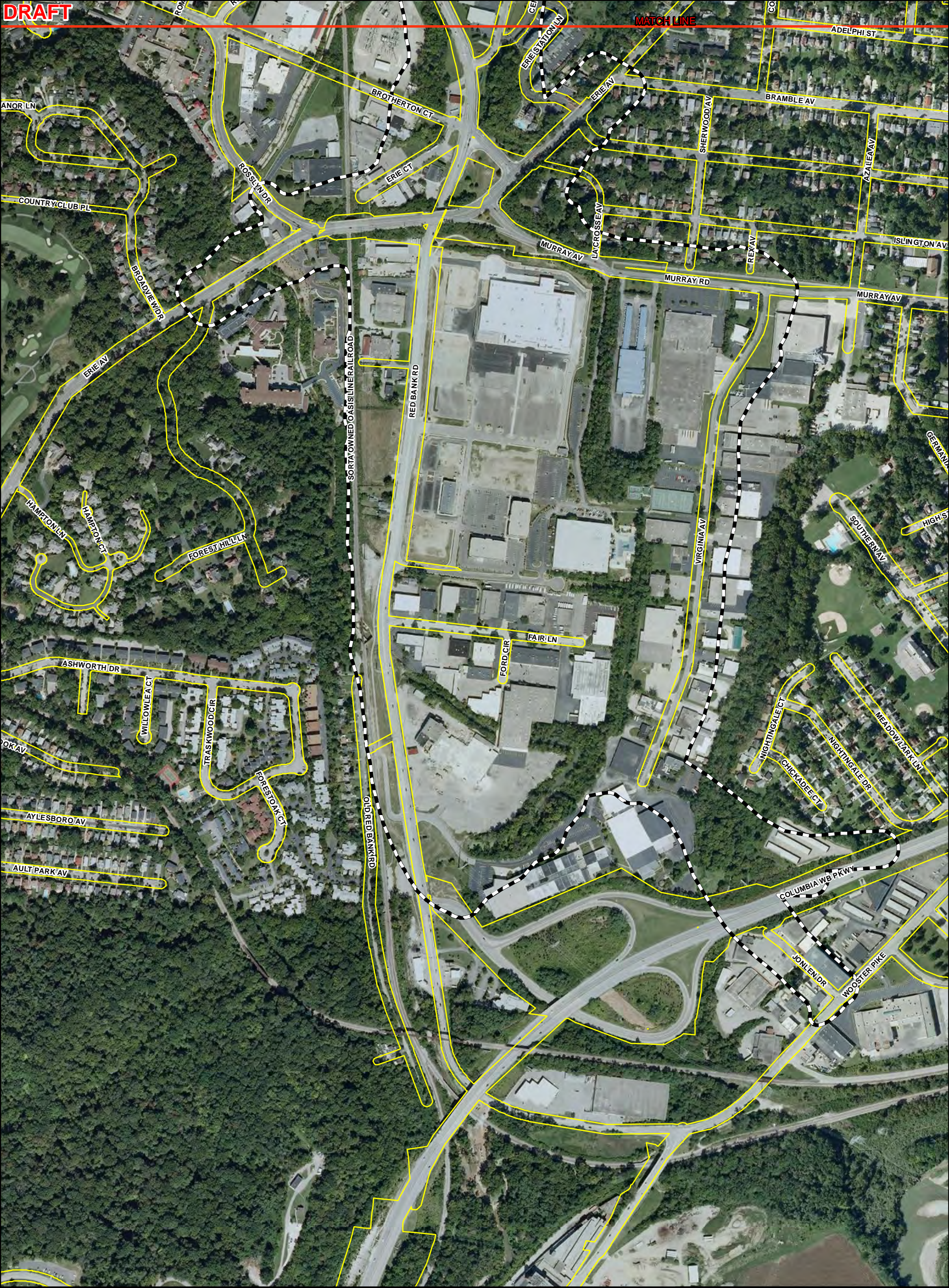


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461



FIGURE 4  
RIGHT OF WAY  
NORTH

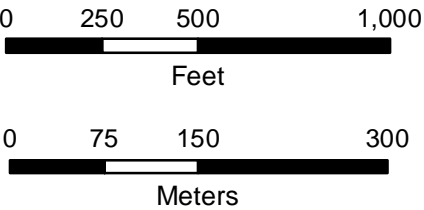
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**LEGEND:**

-  Study Area
-  CAGIS Road ROW



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



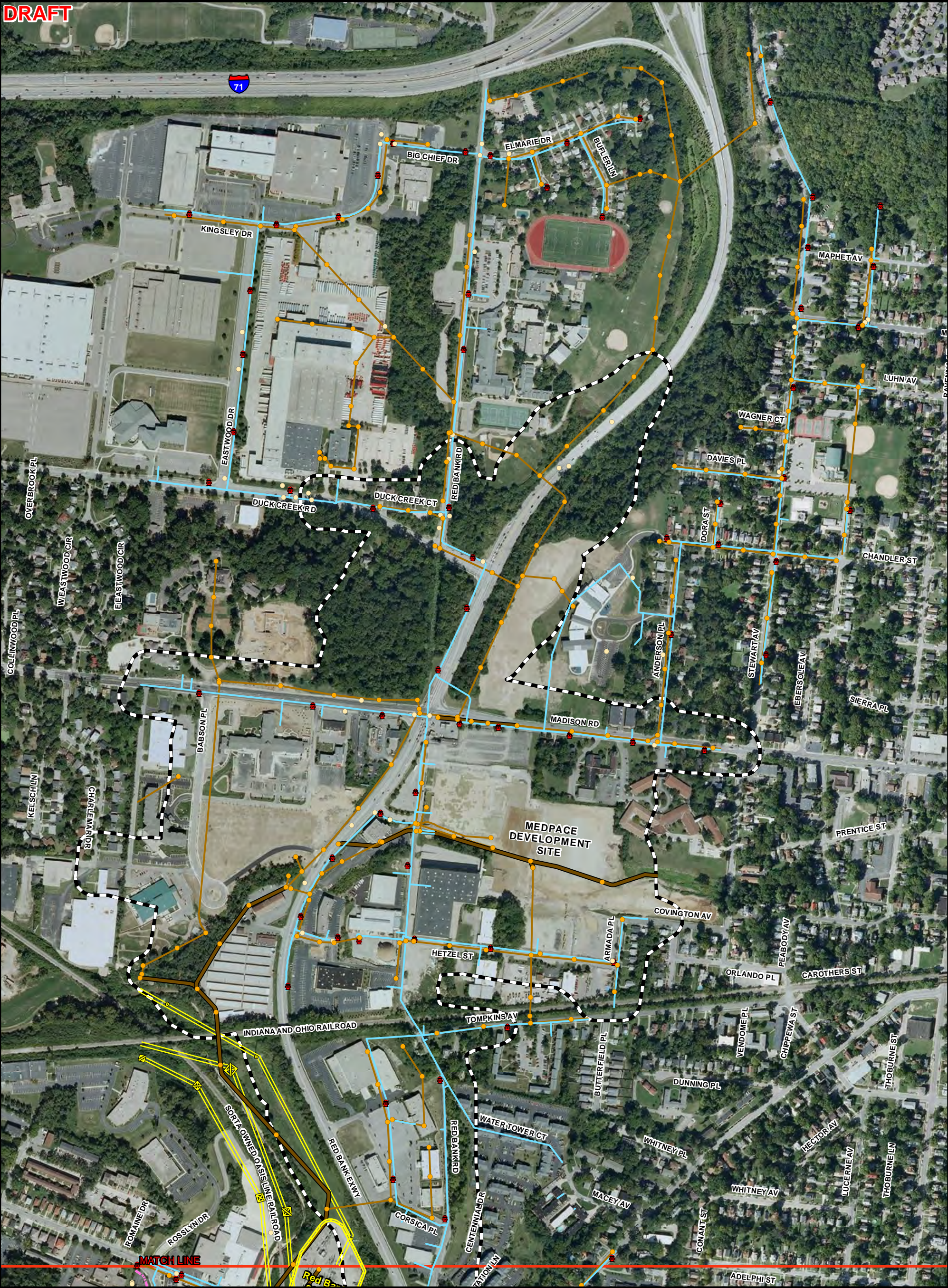
HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 4  
RIGHT OF WAY  
SOUTH

DATE: 3/11/2011	SHEET: 2 of 2
CREATED BY: AG	SCALE: 1 inch= 500 ft.
	JOB NO. 14949072

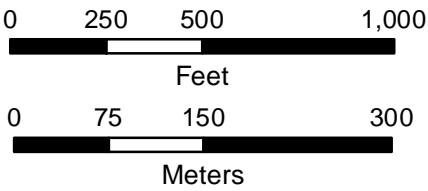


DRAFT



LEGEND:

- Study Area
- Fire Hydrant\*
- MSD Manhole\*
- Other Manhole\*
- MSD Sewer Line\***
- Diameter < 36 in.
- Diameter > 36 in.
- Water Main\*
- Gas Pipeline\*\*
- High Voltage Electric
- Transmission Line\*\*\*
- Substation Boundary\*
- Electric Lattice Tower\*



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009  
DATA SOURCES:  
\*CAGIS; \*\*POWERmap, 2009;  
\*\*\*2009 Aerial Photography

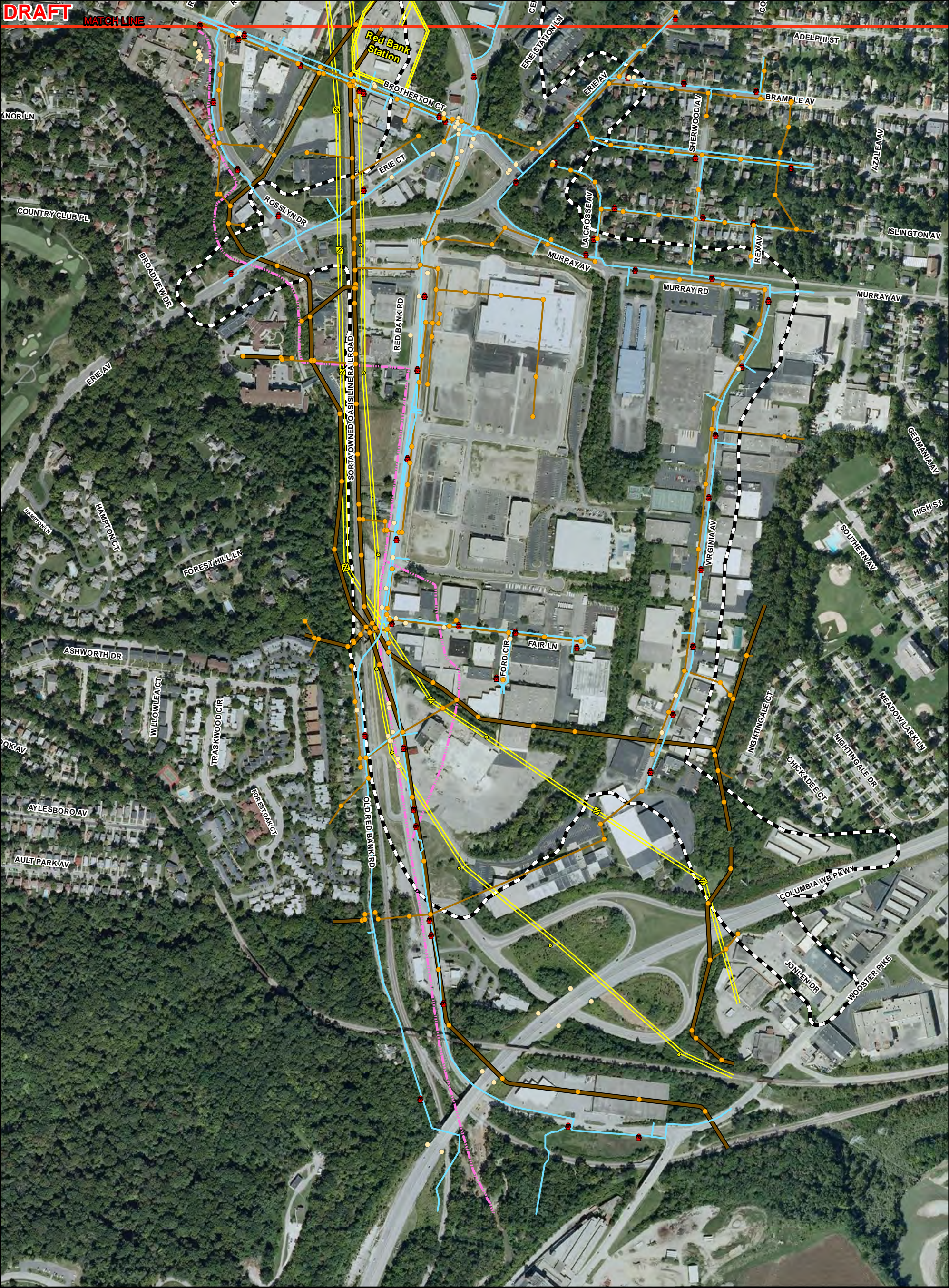


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 5  
UTILITIES  
NORTH

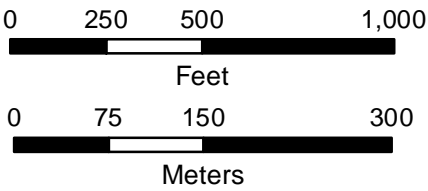
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CREATED BY: AG	SCALE: 1 inch= 500 ft.
<b>URS</b>	JOB NO. 14949072





LEGEND:

- Study Area
- Fire Hydrant\*
- MSD Manhole\*
- Other Manhole\*
- MSD Sewer Line\***
- Diameter < 36 in.
- Diameter > 36 in.
- Water Main\*
- Gas Pipeline\*\*
- High Voltage Electric
- Transmission Line\*\*\*
- Substation Boundary\*
- Electric Latice Tower\*



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009  
DATA SOURCES:  
\*CAGIS; \*\*POWERmap, 2009;  
\*\*\*2009 Aerial Photography

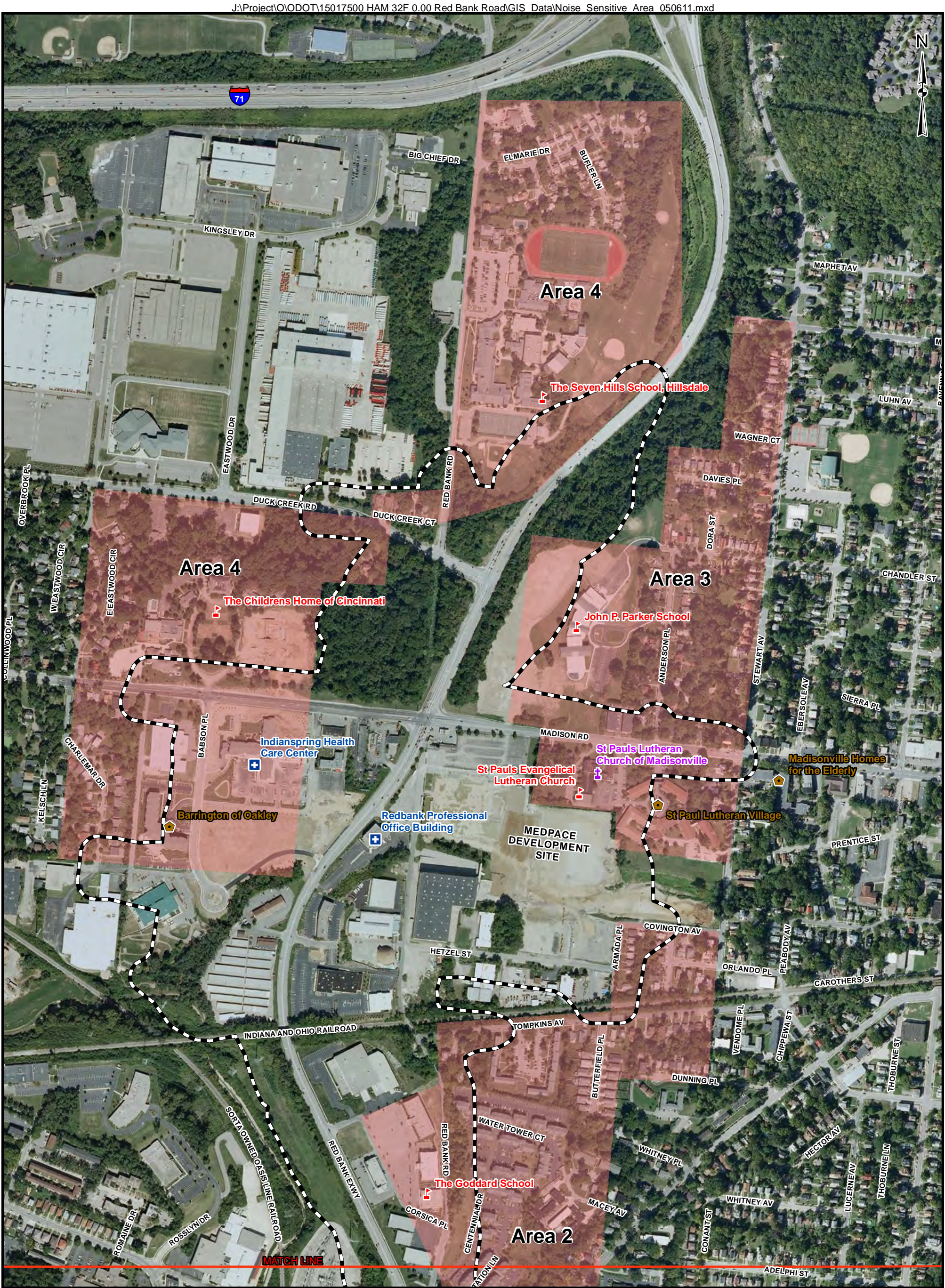


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 5  
UTILITIES  
SOUTH

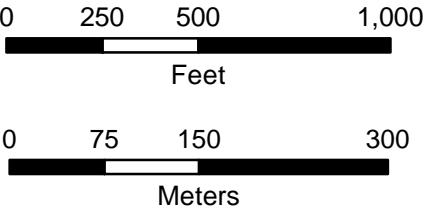
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<b>URS</b>	JOB NO. 14949072





LEGEND:

- Study Area
- Noise Sensitive Area
- School
- Church
- Medical
- Independent Living/Retirement Home
- Other Community/Public Facility



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009

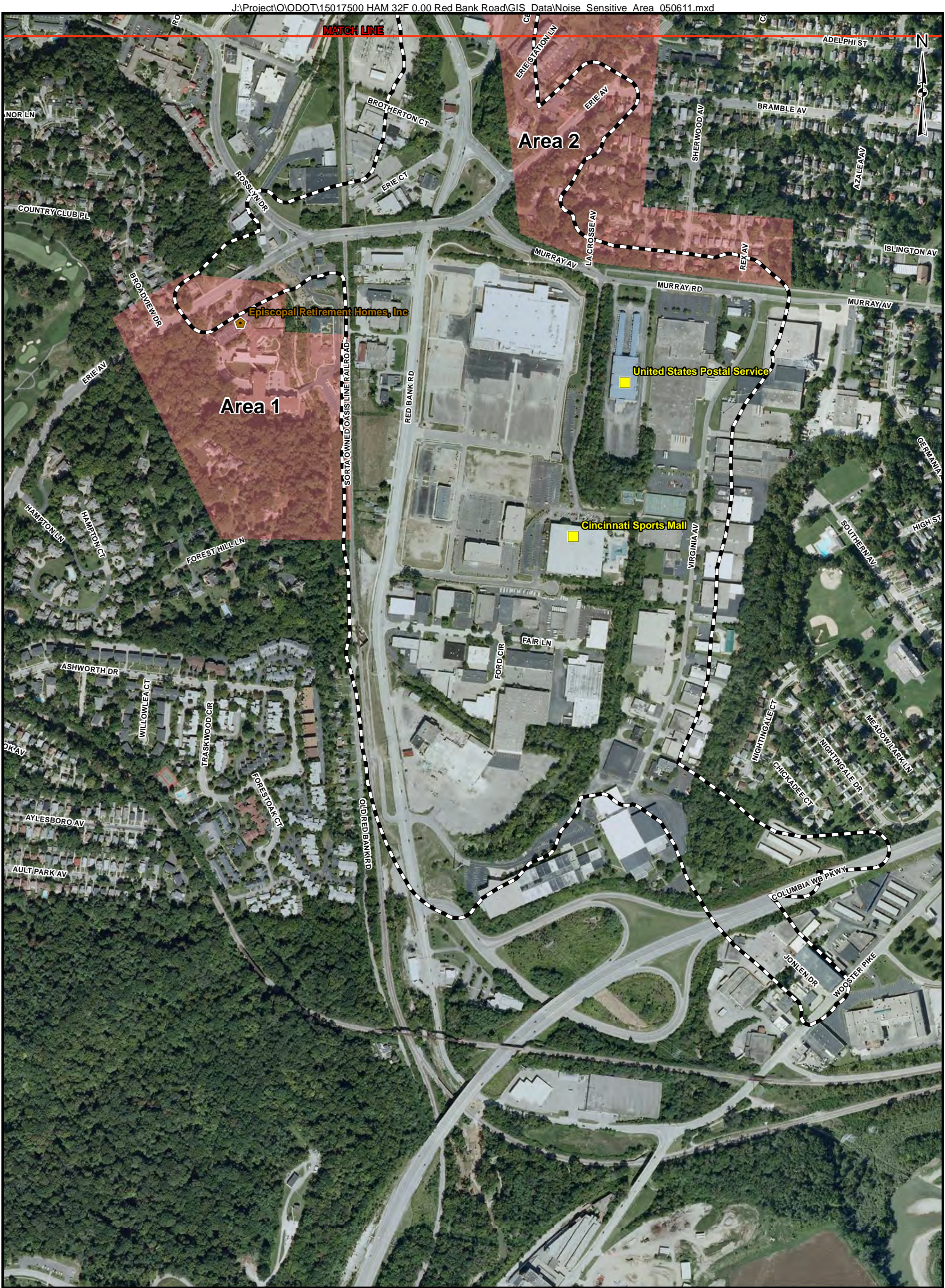


HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 6  
NOISE SENSITIVE AREAS  
NORTH

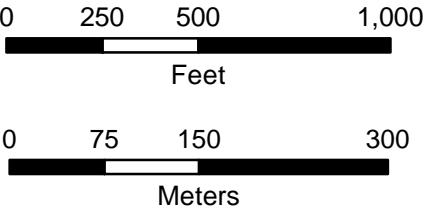
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	JOB NO. 14949072





**LEGEND:**

- Study Area
- Noise Sensitive Area
- School
- Church
- Medical
- Independent Living/Retirement Home
- Other Community/Public Facility



BASE MAP SOURCE:  
ESRI World Imagery; Aerials Express, 2009



HAM 32.00F SEGMENT 1  
REDBANK ROAD CORRIDOR  
PID 86461

FIGURE 6  
NOISE SENSITIVE AREAS  
SOUTH

DATE: 5/06/2011

SHEET: 1 of 2

CREATED BY: AC

SCALE: 1 inch= 500 ft.

**URS**

JOB NO. 14949072