Vrooman Road Study
(LAK-Vrooman Road PID #5669)

Vrooman Road Study
Lake County, Ohio

TranSystems Corporation

UPDATED PLANNING STUDY

Revised January, 2007 and May, 2008

TranSystems Corporation

VROOMAN ROAD STUDY
(LAK-VROOMAN ROAD PID #5669)

UPDATED PLANNING STUDY

PREPARED FOR:

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JANUARY, 2007
MAY, 2008

Larry Ciborek - Fw: LAK Vrooman Road Study PID#5669

From: <Tom.Sorge@dot.state.oh.us>
To: "Chris Owen" <COWEN@mbakercorp.com>
Date: 6/30/2008 10:37 AM
Subject: Fw: LAK Vrooman Road Study PID#5669

OES does not have any comments on the conceptual planning study. Please forward this to the Lake County Engineer's Office.

Tom Sorge, Environmental Specialist 2
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----- Forwarded by Tom Sorge/Planning/D12/ODOT on 06/30/2008 10:34 AM -----

Mark Locker/Environmental/CEN/ODOT

06/30/2008 09:56 AM

To Mark Carpenter/Planning/D12/ODOT@ODOT
cc James Gates/Environmental/CEN/ODOT@ODOT
Subject LAK Vrooman Road Study PID#5669

Mark,

After careful review of the updated LAK - Vrooman Road conceptual planning study, I do not have additional or substantial comments. The study looks good.

Thank you for the opportunity to review this document.

Mark

Mark A. Locker, AICP
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1.0 INTRODUCTION

1.1 BACKGROUND

The Lake County Engineer's Office (LCEO) contracted with TranSystems Corporation to evaluate deficiencies along Vrooman Road (County Road 227) between State Route 84 and Interstate 90 in Lake County, Ohio.

This study was initiated prior to issuance of ODOT's Project Development Process (PDP) guidance. However, the study followed ODOT's Planning Study Process, and as such, meets the intent of Steps 1 through 4 of the current PDP for Major Projects (the project has since been reclassified to follow the Minor PDP). This report will serve to document the results of the study, meeting the intent of the Public Involvement Plan, Draft Purpose and Need, Existing and Future Conditions Report, and Planning Study Report/Strategic Plan. Literature review and field review information was also available that meets the intent of the Red Flag Summary. The Red Flag Summary and Mapping are included in **Appendix D**.

The improvement to Vrooman Road has been studied and examined in various forms since 1963, including the previous engineering and environmental investigation and studies initiated in the early 1990's. The project proceeded into the environmental clearance phase until, during environmental studies Native American burials were identified within the project limits. The project was then suspended. Following the events of September 11, 2001, the Homeland Security Department nominated Vrooman Road as the preferred emergency evacuation route for the Perry Nuclear Power Plant. As such, the project was revived in 2003 to satisfy Homeland Security requirements. Based on that nomination, and the burden of upkeep of the structurally deficient and functional obsolete bridge structure and deficient roadway, it became imperative for Lake County to address the deficiencies of Vrooman Road. The Vrooman Road Bridge was closed due to damage to the approaches, and possible scour damage to the abutments and pier as a result of flooding in July, 2006. The bridge was reopened in December, 2006 after a five (5) month closure.

The objectives of this study were to perform in-depth analysis of deficiencies in the roadway corridor, explore replacement alternatives for the structurally deficient Vrooman Road Bridge, and recommend a Preferred Alternative for further development.

1.2 STUDY CORRIDOR

Vrooman Road provides access to Perry and Leroy Townships, as well as southeastern Painesville from Interstate 90. The north end of Vrooman Road is State Route 84 (South Ridge Road), in Perry Township. The south end of Vrooman Road is the five-point intersection of State Route 86 and County Roads 208 (Leroy Center Road) and 210 (Huntoon Road) in Leroy Township (**Figures 1 and 2**). The Vrooman Road Study Corridor begins at Interstate 90, which crosses Vrooman Road east to west at a full service interchange within Leroy Township. The Grand River, designated a Wild and Scenic River, is the centerpiece of a steep-sided, narrow valley crossed by Vrooman Road north of Interstate 90, adjacent to the Indian Points and Mason's Landing Parks located just

south of State Route 84 (**Figure 3**). The Perry Nuclear Power Plant is located approximately 7 miles north of the study area (**Figure 4**).

FIGURE 1: MAP OF THE STATE OF OHIO SHOWING THE PROJECT AREA IN RELATION TO DRAINAGE AREAS AND COUNTY BOUNDARIES. (ODNR 2004)

FIGURE 2: MAP OF LAKE COUNTY, OHIO SHOWING THE PROJECT AREA (ODOT 1998)

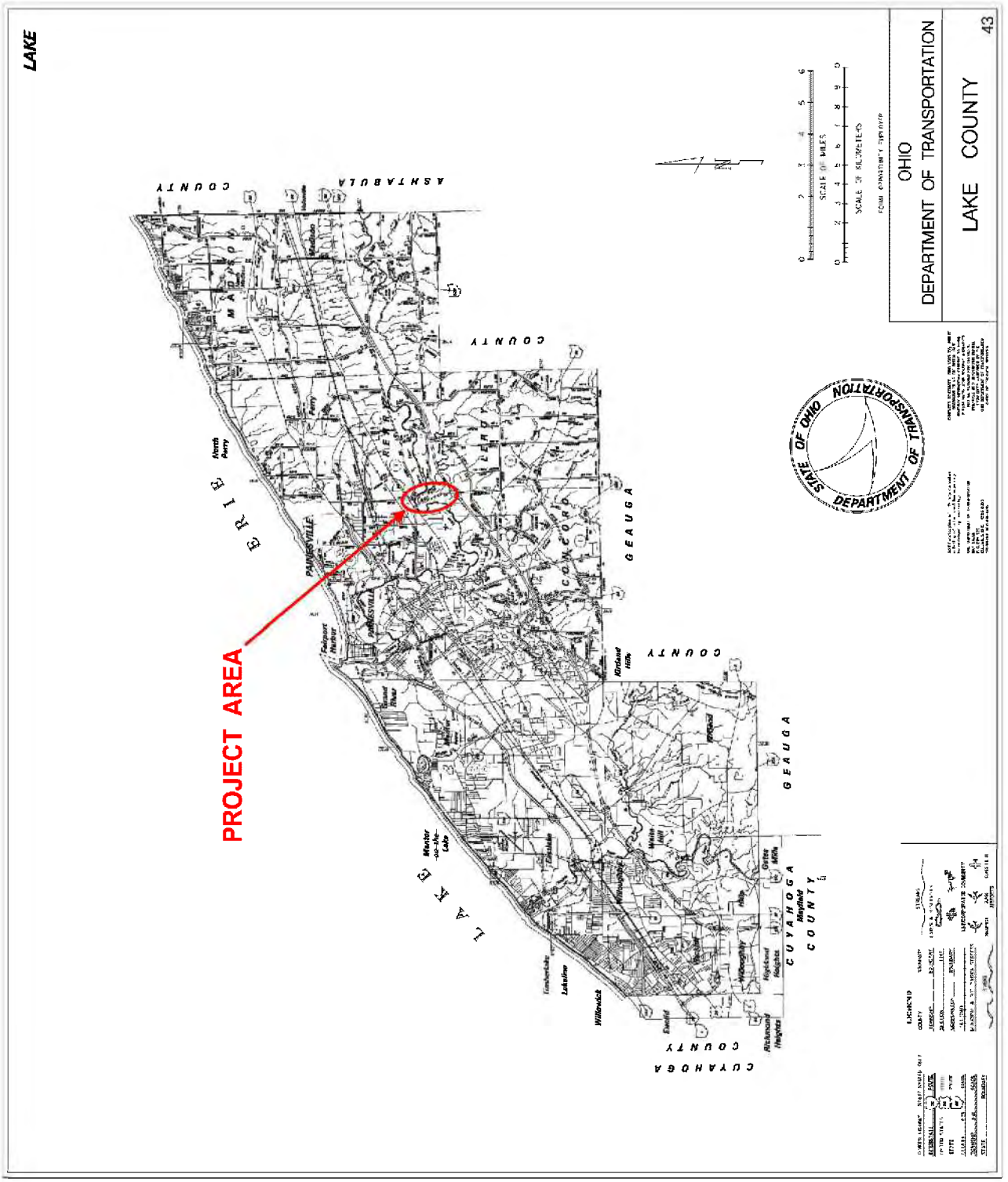


FIGURE 3: VROOMAN ROAD STUDY AREA

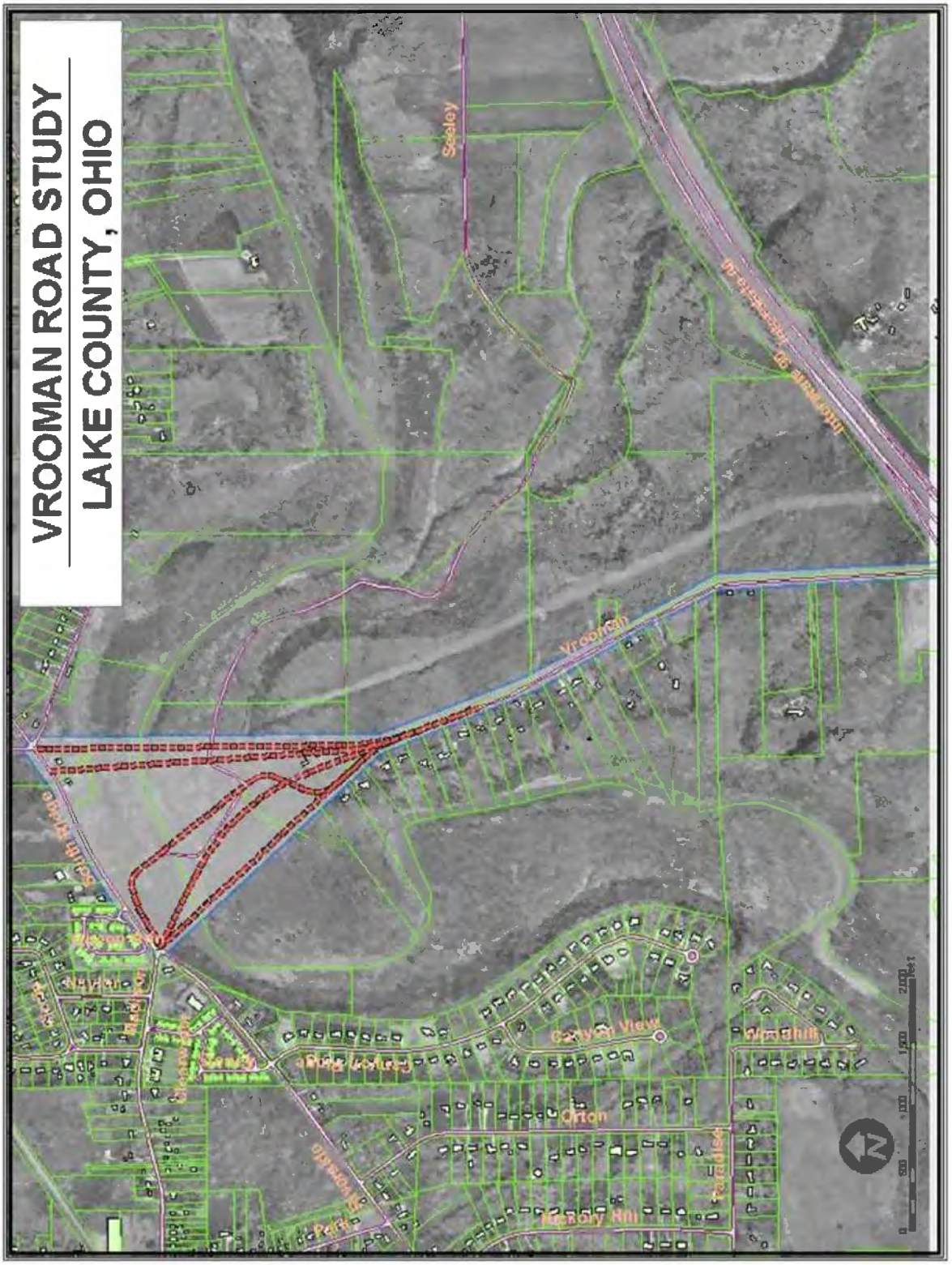
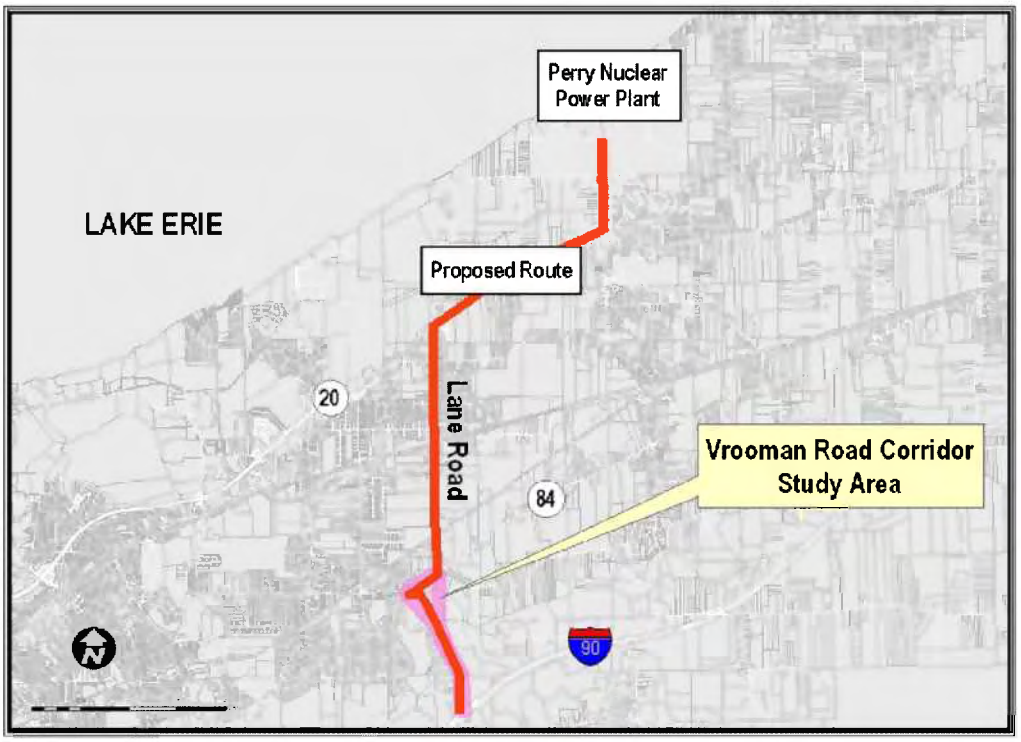


FIGURE 4: PROPOSED PERRY NUCLEAR POWER PLANT EVACUATION ROUTE



PROPOSED PERRY NUCLEAR POWER PLANT EVACUATION ROUTE
VROOMAN ROAD CORRIDOR STUDY

1.3 PUBLIC INVOLVEMENT PLAN

Public involvement during a transportation planning study serves two basic purposes --- to distribute information and to solicit input. In January 2004, TranSystems developed a Public Involvement Plan that addressed both objectives. The Public Involvement Plan summarized how two-way communication would be maintained throughout the Vrooman Road Planning Study and outlined the purpose of public involvement activities:

- Educate the public and decision-makers about the study process and their role within it
- Solicit input on the problems that the study should be designed to solve
- Provide information on the needs identified during the technical analysis
- Solicit input on the alternatives that should be considered
- Provide information on the potential impacts and benefits of each alternative
- Solicit input on the recommended solution
- Provide information on the chosen solution and rationale used in decision-making

STAKEHOLDER COMMITTEE

Step 1 of ODOT's Planning Study Process involves the establishment of two-way communication with the community, other interested parties and the eventual implementing agencies - the Stakeholders. The purpose is to create a mutual understanding between the Project Team and Stakeholders concerning the problem to be addressed, the "critical success factors" for any solution and the process to be followed in analyzing and evaluating solutions.

The Stakeholder Committee was assembled to provide a group of individuals representing various viewpoints and perspectives to be involved in regular progress meetings, providing input and feedback to the study team from the group or agency they represent. Inclusion of all stakeholders was intended to secure their understanding of and "buy-in" to not only the process and the issues, but also the results.

The study began in January of 2004 with the development of a list of potential candidates for the Stakeholder Committee. The Project Team worked with the County to identify appropriate representatives for the Stakeholder Committee. The Project Team contacted these individuals by letter to explain the study, request their involvement, and invite them to the first Stakeholder Committee meeting. A total of six stakeholder meetings were held throughout the Vrooman Road Planning Study.

Stakeholders included:

- Lake County Engineer's Office (LCEO)
- Local Fire and Safety Officials
- Local business owners or community groups
- County Administration
- County Planning and Zoning
- County's Project Manager
- Lake County Metroparks
- Northeast Ohio Area-wide Coordinating Agency (NOACA)
- Ohio Department of Transportation (ODOT)
- Ohio Department of Natural Resources (ODNR)
- Federal Highway Administration (FHWA)
- Communities of Perry, Painesville, Madison, and Leroy Townships

Other citizens and business owners expressed interest and were included as the study progressed. Residents along River Road and on SR 84 became involved subsequent to the public involvement meeting. Details of involvement at each stage are included in the appropriate sections of this document. A complete list of stakeholders is included in **Appendix A**.

NOTIFICATIONS/MAILING LIST

TranSystems developed a general mailing list of all stakeholders as well as residents, property, and business owners, and interested citizens to be kept current on the progress of the study. This list was used to advise of the public meeting.

PUBLIC MEETING

A general public meeting was planned for Step 3 of the study. It was the intent of this meeting to present the conceptual alternative solutions under consideration and solicit feedback from citizens. The content and outcome of this meeting is summarized in Section 3.3 of this report.

1.4 Stakeholder Goals and Objectives

As part of Step 1, a kick-off Stakeholder Committee Meeting was held on January 21, 2004. The Project Team explained the purpose of the study, the planning study process, and the role of the Stakeholder Committee in conjunction with the project. After the group had an understanding of the purpose of the study and their role in the decision-making process, the Project Team solicited input from the group concerning their perception of the situation, the nature of the problems to be solved, and the factors that would define success. This information was used to develop a "Problem Statement" outlining the Stakeholder Committee's definition of the problem to be solved and the desired goals for the Vrooman Road Planning Study:

Problem Statement

The Vrooman Road Planning Study will:

- *Provide acceptable traffic operation for future traffic volumes*
- *Correct identified accident problems*
- *Eliminate flooding of a new bridge spanning across Grand River*
- *Reduce dangerous current steep grade near Vrooman's intersection with State Route 84*
- *Accommodate transit needs; improve safety for truck travel*
- *Provide safe and good access to the Nuclear Power Plant in Perry Township providing unrestricted weight limits;*
- *Eliminate or avoid current geotechnical problems near Vrooman's intersection with State Route 84*
- *Provide an aesthetically pleasing bridge to complement the scenic Grand River*
- *Minimize short and long term impacts on the Grand River*
- *Try to implement an alternative transportation plan (for pedestrians and bicyclists) without using funds from license plate and gas funds*
- *Bring bridge up to standards*
- *Keep utilities along Vrooman Road consistent with future plans and minimize the impacts thereof*

The problem statement was used by the project team in subsequent steps to guide the technical studies to determine Purpose and Need and to develop evaluation criteria for comparing alternatives.

2.0 Existing and Future Conditions / Purpose and Need

The improvement to Vrooman Road has been studied and examined in various forms since 1963, including the previous engineering and environmental investigation and studies initiated in the early 1990's. The project proceeded into the environmental clearance phase until, during environmental studies Native American burials were identified within the project limits. The project was then suspended.

Following the events of September 11, 2001 the Homeland Security Department nominated Vrooman Road as the preferred emergency evacuation route for the Perry Nuclear Power Plant. The structural deficiencies of the bridge, including closure during flooding events, and the geometric deficiencies of both approach roadways reduce the effectiveness of this route. Based on that nomination, and the burden of upkeep of the structurally deficient and functional obsolete bridge structure and deficient roadway, it became imperative for Lake County to address the deficiencies of Vrooman Road.

The project was revived in 2003 to address the deficiencies of the bridge and roadway, and to satisfy Homeland Security requirements. This current project effort, and associated engineering and environmental investigations, were initiated prior to issuance of ODOT's current Project Development Process (PDP) guidance. However, the study followed ODOT's Planning Study Process, and as such, meets the intent of Steps 1 through 4 of the current PDP for Major Projects.

Data analysis conducted in Step 2 focused on quantifying the problems and needs expressed by the Stakeholder Committee in order to develop a Purpose and Need statement. Toward this end, the Project Team obtained and reviewed existing reports to utilize the available information in subsequent activities. Base files were generated in GIS and Microstation for use in project exhibits and design activities. This information was supplemented by evaluation of existing site conditions and original data collection. The results are summarized below. Literature review and field review information was also available that meets the intent of the Red Flag Summary. The Red Flag Mapping is included in **Appendix D**. This report will serve to document the results of the study, meeting the intent of the Public Involvement Plan, Draft Purpose and Need, Existing and Future Conditions Report, and Planning Study Report/Strategic Plan.

The purpose of this project is to replace the structurally-deficient and functionally-obsolete bridge that regularly closes during flood events with a facility that meets current design standards and improves existing geometrics that correct existing roadway deficiencies, while providing a safe, efficient evacuation route that meets the requirements of the US Department of Homeland Security.

2.1 Bridge Condition

The Vrooman Road Bridge (SFN 4337107) is a structurally deficient and functionally obsolete low-level bridge that carries Vrooman Road over the Grand River. It is a two-span steel Warren Polygonal pony truss structure built in 1951. The bridge has an overall structure length of 179'-4½" with each span approximately 88' - 4" center-to-center of truss bearing. The trusses are

spaced 23'-0" center-to-center. A galvanized steel guardrail has been attached to the interior of the truss verticals, effectively reducing the roadway opening. In 1980 the structure underwent a major rehabilitation with the removal and replacement of the timber deck and steel stringers with a timber deck and asphalt wearing surface. The bridge is posted with a 16 ton load limit. While the bridge is posted for no trucks, it is still used by school buses and some emergency vehicles.

The superstructure bears on stone abutments dating from the previous bridge crossing. The stone abutments have a concrete abutment cap that the bridge rests on. The south abutment was reinforced with steel sheet piling in the 1990s to stabilize shifting masonry units. Three of the four stone wingwalls have been retained from the previous bridge crossing, with the southeast wing wall constructed from steel sheet pile.

The current weight limit of 16 tons is too low to allow proper emergency vehicles to traverse the bridge safely. If prompt attention is to be given to emergencies, it is imperative that standard emergency vehicles are able to cross the bridge safely. The current bridge is unacceptable for this purpose because of the load limit and geometric constraints (See **Appendix B**).

The bridge is located within the Grand River flood plain and the bridge deck is below the 100-year flood elevation. See **Figures 5A and 5B**. Over the last 5 years, the bridge and Vrooman Road have been closed on average 2 to 3 times annually in the spring and/or fall, with the typical closure lasting 1 to 2 days. In 2005 the bridge was closed 4 times. In 2006 the bridge was closed from July to December due to extensive damage to the bridge and approach roadway caused by severe flooding of the Grand River. The nearest crossings for emergency use during flood events are Blair Road (2 miles east), an 8-mile detour along a roadway with sharp curves, steep grades and poor sight distances; or State Route 84 (4 miles west), a 9-mile detour through the City of Painesville. These two alternative routes are also subject to occasional flooding. The bridge would need to be raised above the 100 year flood mark to insure that it is not subject to closure as a result of flooding events.

In a 2002 Physical Condition Report, prepared by HNTB Ohio Inc. for the Lake County Engineer, the Vrooman Road Bridge was rated a 4 (in a fair to poor condition) on a scale from 1 (that could assume an imminent failure condition), to 9 (excellent condition). This overall rating is mainly due to the condition of the superstructure (steel trusses, rated as 4), the condition of the substructure (stone abutments rated as a 5) and the condition of the deck (roadway, rated as 6). The condition of all parts of the bridge was reported, as presented in **Table 1**.

In a 2006 Physical Condition Report, prepared by Richland Engineering, Ltd. for the Lake County Engineer, the Vrooman Road Bridge was rated a 3 (in a fair to poor condition) on a scale from 1 (that could assume an imminent failure condition), to 9 (excellent condition). This overall rating is mainly due to the condition of the superstructure (steel trusses, rated as 3), the condition of the substructure (stone abutments rated as a 5) and the condition of the deck (roadway, rated as 5). The condition of all parts of the bridge was reported, as presented in **Table 1**:

TABLE 1: VROOMAN ROAD BRIDGE CONDITION

Bridge Parts	2002 Condition*			2006 Condition**		
	Good	Fair	Poor	Good	Fair	Poor
Bearings			X			X
Channel and Scour		X			X	
Wearing Surface & Floor	X				X	
Floor Beam Connections			X			X
Floor Beams		X			X	
Lower Lateral Bracing			X			X
Abutments, Abutment Seats and Backwalls		X			X	
Pier and Pier Seat		X			X	
Trusses		X			X	
Railing		X				X
Wingwalls		X			X	

* 2002 Physical Condition Report, HNTB Ohio, Inc.
**2006 Physical Condition Report, Richland Engineering, Ltd.

A new bridge structure could be constructed at an elevation higher than the 100 year flood elevation, to make the bridge less susceptible to flooding events. A new bridge structure and approach roadways would be designed to meet current design standards, eliminating structural deficiencies. This would provide a crossing of the Grand River for residents in case of emergency and would provide an evacuation route meeting the needs of the Department of Homeland Security directives. With the replacement of the Vrooman Road Bridge the need for periodic closures, and associated costs, would be eliminated.

2.2 EXISTING ROADWAY DEFICIENCIES

Vrooman Road is classified as an Urban Collector within the Project Limits. Replacement of the Vrooman Road Bridge will necessitate the replacement of the approach roadways to meet current design standards. Each approach has inadequate geometrics, steep grades, unacceptable curves and poor sight distance as compared to applicable roadway standards for its functional classification. The north approach is flanked by a retaining wall that accommodates the differences in grade between State Route 84 and Vrooman Road. The retaining wall itself is in poor condition and has exhibit signs of movement. The cost of maintaining this wall is escalating each year. The replacement of the Vrooman Road Bridge will require that the approach roadways be replaced to meet the design requirements for an Urban Collector.

The existing roadway is approximately 30' wide including two 10'-6" lanes and 4'-6" graded shoulders. The paved shoulder width is approximately 1'-6. Existing roadway conditions are shown in **Photographs 1 through 14**. The LCEO estimates that the stretch of Vrooman Road within the Project Study area requires approximately $75,000 more in annual maintenance costs than similar

lengths of non-deficient roadway. Additional costs are attributable to: increased salting and plowing because of steep grades; special pavement and drainage treatments because of steep grades; repair costs resulting from flooding; guide rail maintenance costs resulting from high number of accidents; and costs associated with closing, cleaning and reopening the road during flood events. ODOT maintenance personnel indicate that no above normal maintenance is required on SR 84 within the Project Limits. The following photographs document some of the existing roadway conditions and deficiencies:

Photograph 1 - Vrooman Road south of the existing bridge, looking south west.

Photograph 2 - Vrooman Road Bridge and the southern approach, looking north.

Photograph 3 - Vrooman Road south of the existing bridge, looking southeast. Seeley Road is on the left side of Vrooman Road

Photograph 4 - Vrooman Road at the intersection of Seeley Road, looking south. The intersection is at the curve at the bottom of the hillside.

Photograph 5 - Vrooman Road at the southern hillside, looking southwest. Approaches to Vrooman Road Bridge are characterized by steep grades and curving alignment.

Photograph 6 - Vrooman Road at the top of the southern hillside, looking south.

Photograph 7 - Vrooman Road Bridge at the northern approach, looking northwest.

Photograph 8 - Vrooman Road north of the Vrooman Road Bridge, looking northwest. This section of Vrooman Road includes the entrance to Mason's Landing Park on the left and the bottom of the northern hillside, from SR 84 in the background.

Photograph 9 - Vrooman Road at the bottom of the northern hillside looking southeast. Vrooman Road Bridge is in the background and Mason's Landing Park entrance on the right.

Photograph 10 - Vrooman Road at the base of the northern hillside, looking northwest. This curve in the road is at the bottom of a steep grade.

Photograph 11 - Vrooman Road at the bottom of the northern hillside, looking west. The retaining wall is on the left side of the roadway.

Photograph 12 - The intersection of SR 84, Vrooman Road, and Madison Avenue at the top of the northern hillside, looking northeast.. Note poor intersection geometry.

Photograph 13 - The intersection of SR 84, Vrooman Road, and Madison Avenue at the top of the northern hillside, looking west along Madison Avenue.

Photograph 14 - The intersection of SR 84, Vrooman Road, and Madison Avenue at the top of the northern hillside, looking south west along SR 84.

Geometrics

Vrooman Road passes through the Grand River Valley between Interstate 90 and State Route 84. The Valley is flanked by steep sided shale cliffs that constrain the geometrics of Vrooman Road. On the southern, more gradual slope of the Grand River Valley, Vrooman Road is forced to traverse a series of curves into the valley bottom; while on the northern end, the roadway makes a sharp turn north of the bridge and then continues up a steep slope to the State Route 84 intersection at a considerable grade. This section of Vrooman Road is classified by ODOT as an Urban Collector with a design speed of 45 MPH.

Grade

The acceptable grade for Vrooman Road given its classification and description as a level road in the ODOT's *Location and Design Manual Volume I* is an 8% grade. Currently, Vrooman Road has a 12% grade on the south side of the Grand River Valley and a 15% grade on the north side. The steep grades make it difficult for motorists with standard transmission vehicles to operate the vehicle safely and properly on the hills, especially at the intersection with State Route 84. All vehicle types are affected in poor weather conditions. Vehicles have slid backwards when forced to stop while climbing the grade north of the river in snowy or icy conditions.

The steep grade also lends itself to problems concerning sight distance to the bridge. A driver approaching the Vrooman Road Bridge is unable to see it until they are almost upon it, making a dangerous approach for motorists traveling southbound from State Route 84. This becomes a problem if the bridge or roadway is too icy, if there is an accident, or any other obstruction on the

bridge or roadway. Further, during the summer months when the Indian Point's and Mason's Landing Parks have the most visitors, issues with poor sight distance pose a danger for pedestrians and bicyclists utilizing the road.

Alignment (Horizontal Curves)

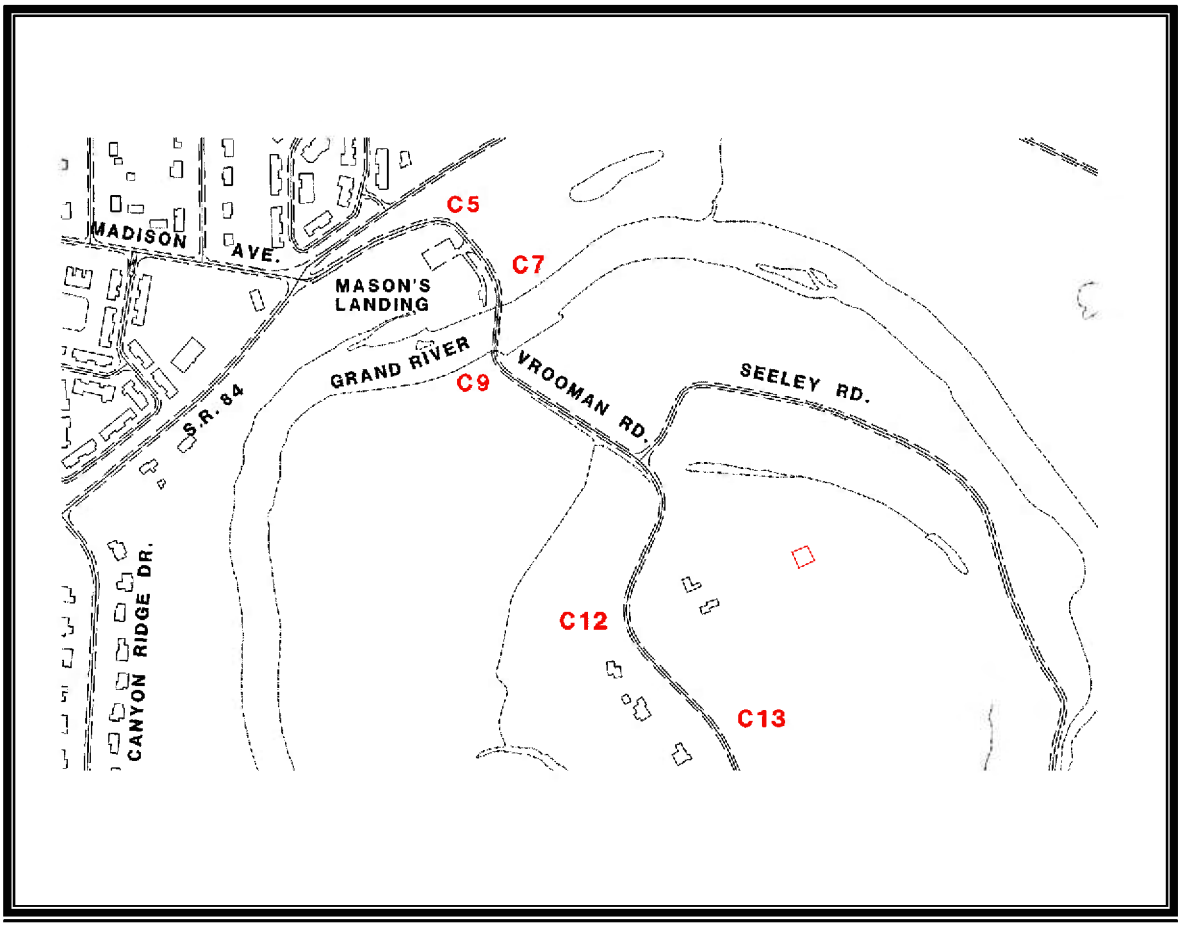
Horizontal curves near the Grand River Valley on the north side approaching State Route 84 are presented in **Table 2**:

TABLE 2: HORIZONTAL CURVES

Curve	Existing		Minimum Acceptable		Check
	D_c	Radius (Feet)	D_c	Radius (Feet)	Yes/No
C5	47° +/-	120 +/-	8°30'	674	No
C7	81° +/-	200 +/-	8°30'	674	No
C9	30° +/-	70 +/-	8°30'	674	No
C12	24° +/-	240 +/-	8°30'	674	No
C13	8° +/-	715 +/-	8°30'	674	Yes

Four of the five curves are below the minimum acceptable radius based on applicable design criteria for Vrooman Road as given by ODOT's *Location and Design Manual Volume I*. The remaining curve is acceptable for this classification of roadway. **Figure 5** shows the locations of the curves.

FIGURE 5: MAP OF EXISTING HORIZONTAL CURVE LOCATIONS



Sight Distance

The sight distance for the intersection of Vrooman Road and State Route 84 is practically non-existent due to the angular approach of Vrooman Road up the Grand River Valley. The proper site distance for a left turn is 500 feet and for a right turn is 430 feet as given in the Ohio Department of Transportation's *Location and Design Manual Volume I*.

The extreme grade on the approach makes mathematical calculations of site distance difficult to perform, but estimates of the existing sight distance were developed based upon field observations. If traffic were to stop at the stop bar, sight distance to the right would be an estimated 50', as the driver must look up and over his right shoulder through guardrail to see oncoming traffic. This is further limited if vegetation has grown up near the guardrail. If the driver were to pull up beyond the stop bar to be at SR 84, it is dangerous because the vehicle would then be in traffic, but the driver would only be able to see approximately 150'. To the left, the driver can see only about 130' along eastbound SR 84, but that would be limited by vegetative growth as well.

Retaining Wall

A retaining wall is located on the north side of the Grand River Valley along the south side of Vrooman Road and roughly parallel to State Route 84. This wall was constructed in or around 1972. and is approximately 250' long and 25' high. The wall is structurally deficient and exhibits some signs of movement. LCEO forces have repaired the retaining wall twice over the last 5 years, at a total cost of approximately $10,000, for an average annual cost of $2000. Repairs have included installing additional bracing and tiebacks. Photographs 15 through 17 show the existing condition of the retaining wall. The wall is a critical structure supporting an already slipping Vrooman Road and SR 84 from sliding into the valley. This retaining wall structure keeps the buildings and structures near the intersection of Vrooman Road and SR 84 from falling into the valley, while also preventing a landslide onto Vrooman Road that would result in the closure of both SR 84 and Vrooman Road.

Photograph 15 - The base of the Vrooman Road retaining wall, looking west.

Photograph 16 - The base of the Vrooman Road retaining wall, looking east.

Photograph 17 - The base of the Vrooman Road retaining wall, looking down from the top.

2.3 CLOSURE DUE TO FLOODING

The Vrooman Road Bridge represents a recurrent maintenance problem for the Lake County Engineer. The maintenance issues are due in part to the bridge structure being below the 100-year flood elevation and subject to repeated flooding. The bridge and Vrooman Road have been closed on average 2 to 3 times annually over the last 5 years in the spring and/or fall (total 10-15 times), with the typical closure lasting 1 to 2 days. Flooding is more prevalent during the months of April through May and October through November as a result of winter thaw and increased rainfall, respectively. The Lake County engineer reports that this route was closed 4 times for over 20 days in 2005. The Vrooman Road Bridge was closed in July, 2006 to December, 2006, due to severe damage to the approach roadway and possible scour damage to the substructure resulting from an extreme flood event. Several times a year, the river empties its banks and floods the approaches, forcing closure. When the Vrooman Road Bridge is closed, the nearest alternative crossings of the Grand River are Blair Road, located approximately 2 miles to the east; and State Route 84 located approximately 4 miles to the west. National Flood Plain maps are included as **Figures 6A and 6B**.

Normal water surface elevation for the Grand River under the Vrooman Road Bridge is 628.3 +/-. The 25 year flood level elevation is 641.02, and the 100 year flood level elevation is 641.66. Refer to Figures 6A and 6B. Existing roadway elevation at the crossing is approximately 641.0. Existing low point elevations (sumps) in the approach roadway to the north and south of the bridge are approximately 632.0 and 631.0, respectively.

The minimum profile for a replacement structure would need to be established so that the low structure elevation would provide one foot of freeboard above the 25 year flood level. So the low structure elevation would need to be above elevation 642.02. Structure depth would then determine the roadway profile elevation. Structure depth is a function of span length and span arrangement. The minimum structure depth for a 240' continuous span structure would be in the range of 7.75' to 9.00'. This would then establish the required low profile elevation somewhere between 649.75 and 651.00, representing a change in profile grade elevation of at least 10' on the approaches and at least 8.75' at the bridge. Current design criteria prohibit a profile that allows the approaches to flood.

FIGURE 6A: FLOOD PLAIN MAP

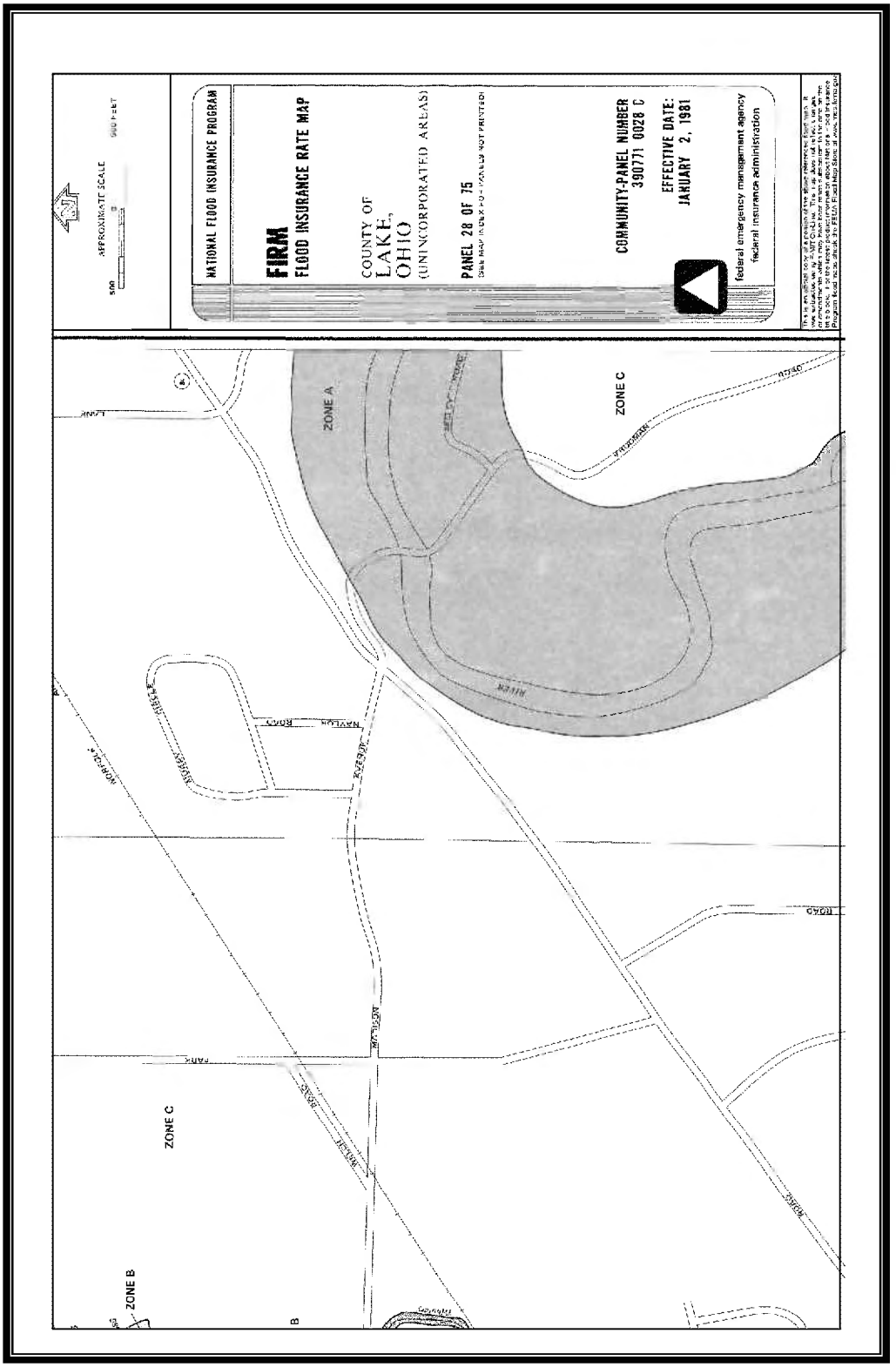
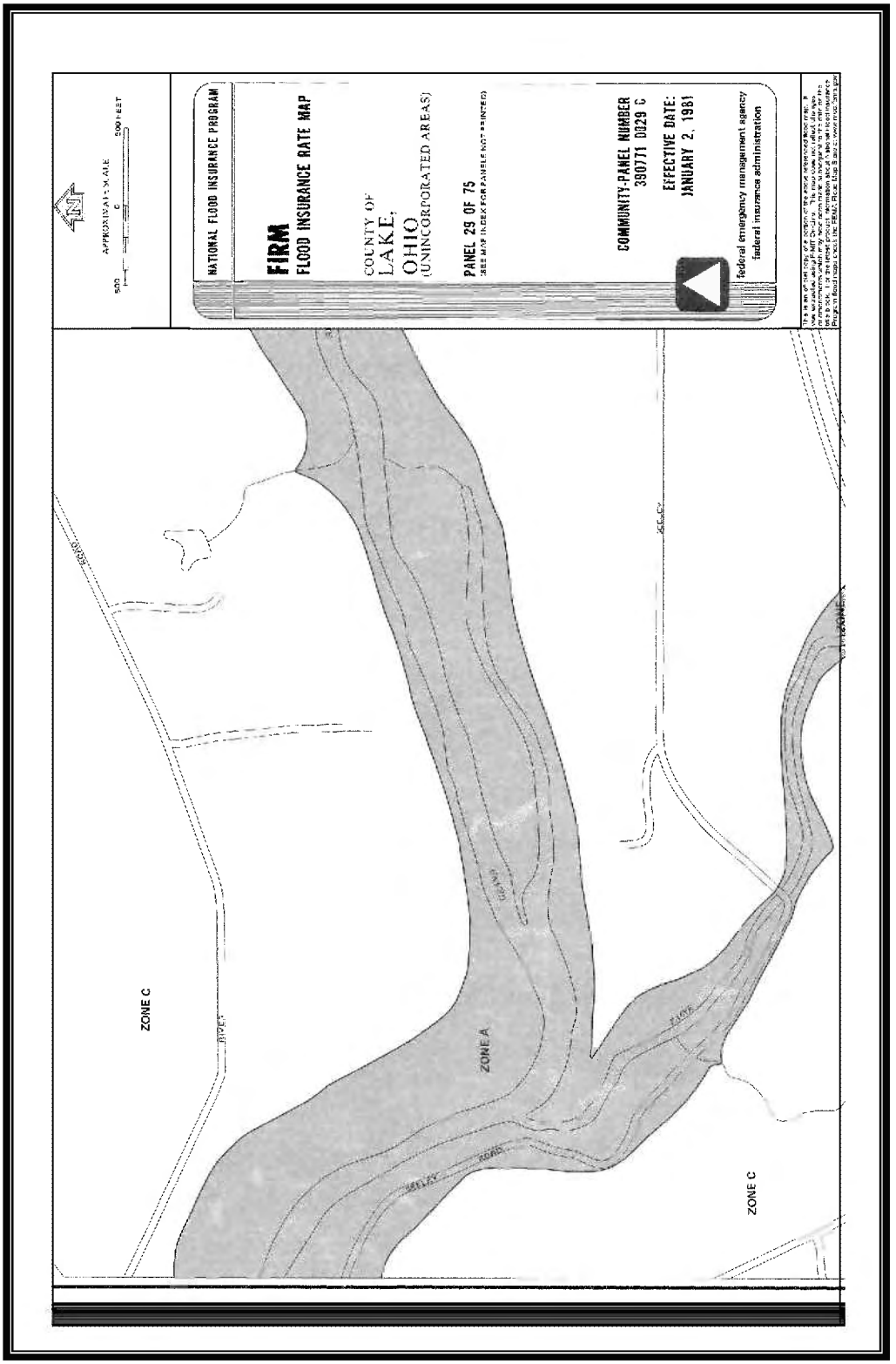


FIGURE 6B: FLOOD PLAIN MAP



2.4 Emergency Evacuation Route

First Energy Corporation has identified designated emergency evacuation routes from the Perry Nuclear Power Plant and the immediate vicinity. These routes are documented on the First Energy web site (www.firstenergycorp.com/perryepi), which is linked to the Lake County EMA website (www2.lakecountyohio.org/ema/). Lake County Residents within a 10-mile radius of the plant have received documents outlining emergency evacuation procedures and routes.

Each of the routes runs effectively east or west, and then in some cases south from the plant. There is at present no route running directly south from the plant. Vrooman Road is not currently included in any of these routes because of previously noted issues limiting its utility. However, the Lake County EMA recognizes that it (Vrooman Road) could provide a vital southbound route away from the plant. Please refer to their letter to the County Engineer's Office dated April 11, 2006 (Appendix E).

Following the events of September 11, 2001, the Homeland Security Department nominated Vrooman Road as the preferred emergency evacuation route for the Perry Nuclear Power Plant. See **Appendix E**. The preferred route follows Lane Road south from State Route 44 State Route 84, where it continues southwest on State Route 84 periodically to Vrooman Road. The route remains on Vrooman Road to the I-90 interchange. See **Figure 2.** The existing geometric and structural deficiencies of this section of Vrooman Road, particularly closures due to flooding, reduce the effectiveness of Vrooman Road as an emergency evacuation route for the Perry Nuclear Power Plant.

2.5 Traffic Volumes and Levels of Service

Existing traffic counts for the study area were obtained and reviewed. Requests for additional traffic data were also prepared and submitted to Lake County. Traffic counts were used to develop existing, opening day, and design year traffic data for the project for use during the study phase. The existing traffic operations were analyzed to determine the presence of any deficiencies under existing conditions for use in the Purpose and Need document and to establish the base condition against which the alternatives were measured. Analysis outputs are included in **Appendix C.**

Traffic Volumes

Turning movement counts collected by GGC Engineers, Inc. and Traff-Pro Consultants, Inc. on 2/10/04 at the study intersections were the basis of the capacity analyses. In addition, TranSystems Corporation estimated the amount of new, heavy vehicle/semi (truck) traffic that is expected to use the new bridge. The number of vehicles that use Vrooman Road to access the park and natural areas was not counted or calculated as part of this effort. This estimation was based on the following assumptions:

- Roughly 75% of the existing truck traffic on State Route 528 north of the State Route 528 Interstate 90 interchange will relocate to Vrooman Road
- Of that traffic, 10% will travel during the Design Hour (AM and PM Peak hours)

- Of the Design Hour truck traffic, 55% will travel in the peak direction
- The peak direction for the truck traffic was assumed to be opposite of the peak passenger vehicle traffic, in order to have the most conservative analysis
- The new truck traffic will increase at the same rate as the existing traffic
- Current routes used by truck traffic are State Route 44 and State Route 528
- There are no businesses within the Project Area generating a large amount of truck traffic
- There is no seasonal adjustment in traffic counts or calculations
- No new truck traffic will reroute from the State Route 44 & Interstate 90 interchange because it travels on limited access facilities
- All of the new truck traffic was assumed to travel north on Vrooman Road to Lane Road

From these assumptions, the additional truck traffic calculated for Opening Year is 458 vehicles per day (vpd), with 46 vehicles in the Peak Hours; for the Design Year it is 679 vpd with 68 vehicles in the Peak Hours. TranSystems estimated that the Opening Year is 2010 and the Design Year is 2030. Using historic traffic data on Vrooman Road, an annual growth rate of 2% per year was calculated. This rate was applied to all the AM and PM Peak Hours to determine the Opening Year and Design Year Peak Hours. These assumptions were not certified and should be treated as a preliminary planning tool.

Level of Service

Based upon traffic counts conducted in 2004, existing Vrooman Road through the study area currently services approximately 14,000 vehicles per day. By 2010, the traffic volume is expected to be 15,300 vehicles per day. By the design year (2030), this is estimated to increase to approximately 17,380 vehicles per day.

Capacity analyses are performed to estimate the maximum amount of traffic that can be accommodated by a roadway facility while maintaining prescribed operational qualities. This analysis is a set of procedures used to estimate the traffic-carrying ability of a roadway facility. This is accomplished using the level of service concept, which generally describes conditions in terms of factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Each level of service is given a letter designation: A to F. Level of service "A" represents the best operation and "F" the worst. The signalized intersection capacity analyses were performed using *Highway Capacity Software (HCS2000)* version 4.1d. The results of the analysis are presented in **Tables 3 and 4**:

TABLE 3: MADISON AVENUE/VROOMAN ROAD AND STATE ROUTE 84 INTERSECTION

Time Period	EB SR 84		WB SR 84		NB Vrooman Rd		SB Madison Ave		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	10.2	B	13.2	B	12.9	B	13.3	B	12.6	B
2010 PM Peak	12.2	B	12.7	B	12.7	B	13.1	B	12.7	B
2030 AM Peak	9.8	A	27.1	C	19.6	B	26.3	C	21.9	C
2030 PM Peak	12.2	B	12.7	B	12.7	B	13.1	B	12.7	B

The 2010 Opening Day No Build conditions were analyzed using *HCS2000* for the AM and PM peak hours and the results showed no capacity deficiencies. All intersections were found to operate overall at LOS C or better. Level of service "C" or better is considered acceptable for a facility of this classification.

The 2030 No Build conditions were analyzed for the AM and PM Peak Hour and limited capacity deficiencies were found. The State Route 84 and Vrooman Road/Madison Road intersection was found to be operating at an overall LOS C during AM Peak hours and LOS B for PM peak hours. The level of service for the intersection at State Route 84 and River Road/Lane Road was found to be LOS B for both AM and PM peak hours. Neither intersection had any deficient approaches. This analysis indicates that the existing number and configuration of lanes are adequate for design year traffic. However, it should be noted for all these analyses that the HCS results do not take into consideration inefficiencies resulting from the poor geometrics of the intersection.

TABLE 4: RIVER ROAD/LANE ROAD AND STATE ROUTE 84 INTERSECTION

Time Period	EB SR 84		WB SR 84		NB River Rd		SB Lane Rd		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	11.2	B	11.8	B	11.4	B	10.5	B	11.4	B
2010 PM Peak	12.4	B	8.9	A	11.9	B	12.5	B	11.7	B
2030 AM Peak	11.9	B	13.2	B	13.2	B	11.4	B	12.6	B
2030 PM Peak	16.4	B	7.3	A	14.6	B	15.9	B	14.5	B

While Level of Service and capacity, have been analyzed for this planning study, they do not appear to be a problem to be addressed by the Purpose and Need for this project. Rather, these appear to be problems caused by inadequacy in the characteristics of the roadway. If the existing structure is replaced and the geometrics of the approaches are brought up to standard, any capacity and Level of Service issues will be addressed.

2.6 SAFETY

A secondary purpose for replacing the Vrooman Road Bridge and its approaches is to improve safety, both on the bridge itself and at the Vrooman Road, Madison Avenue and State Route 84 intersection, and the Vrooman Road and Seeley Road intersection. A new bridge structure and approach roadways would be designed to meet current design standards, eliminating structural and operational deficiencies, and resulting in improved safety on the bridge and at these intersections.

The most recent three years of collision data were obtained from the Ohio Department of Public Safety and local jurisdictions. The data were analyzed to identify any patterns in the history. An accident analysis summary follows showing current accident patterns in the study area.

As shown in **Figure 7**, accidents along Vrooman Road and State Route 84 are located at four major points, three of them are intersections and one is the Vrooman Road Bridge over the Grand River.

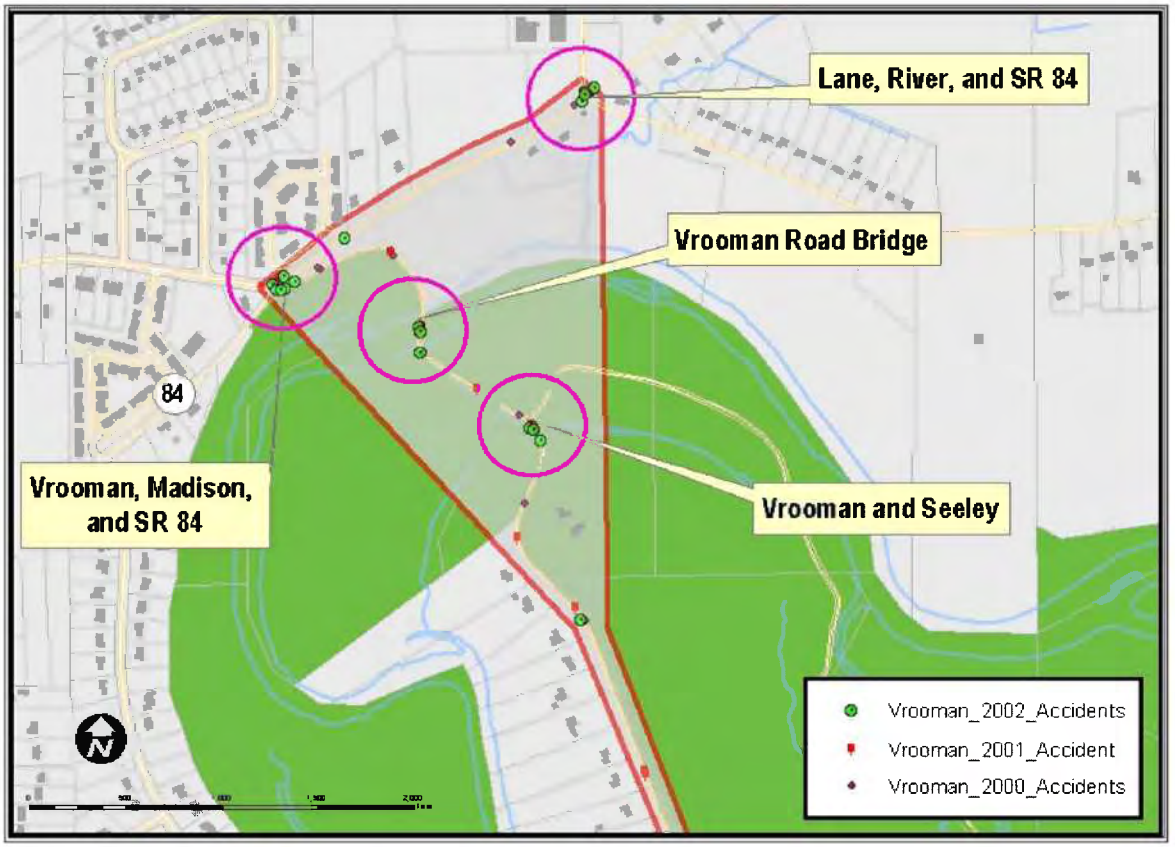
From 2000 to 2002, the total number of accidents at these four locations is as follows:

- Location 1: Vrooman, Madison, and State Route 84 – 12 total accidents
- Location 2: Lane, River, and State Route 84 – 10 total accidents
- Location 3: Vrooman Road Bridge – 8 total accidents
- Location 4: Vrooman and Seeley – 8 total accidents

Over a three-year period, eight accidents or more at a given intersection/location is noteworthy. Geometric problems at Locations 1 and 4 may be the cause for increased crash numbers over this time period. Geometric problems along with substandard lane widths may contribute to accidents at the Vrooman Road Bridge location. The high accident numbers at the intersection of Lane, River, and State Route 84 (Location 2) may be caused by the unusual intersection angles of the two side roads.

The Vrooman Road, Madison Avenue and SR-84 intersection had an accident rate of 3.425 accidents per million vehicles entering the intersection. The Lane Road, River Road and SR-84 intersection had an accident rate of 2.854 accidents per million vehicles entering intersection. The Vrooman Road and Seeley Road intersection had an accident rate of 2.283 accidents per million vehicles entering intersection. The state average accident rate for similar intersections during the same period was 0.20 accidents per million vehicles entering intersections. The accident rate for Vrooman Road between Seeley Road and SR-84 was 2.283 accidents per million vehicle miles. The state average accident rate for two-lane, undivided urban collectors for the same period was 2.186 accidents per million vehicle miles.

FIGURE 7: THREE YEAR ACCIDENT LOCATIONS (2000-2002)



THREE YEAR ACCIDENT LOCATIONS (2000-2002)
VROOMAN ROAD CORRIDOR STUDY

2.7 PURPOSE AND NEED SUMMARY

The purpose of this project is to replace the structurally-deficient and functionally-obsolete bridge that regularly closes during flood events with a facility that meets current design standards and improves existing geometrics correcting existing roadway deficiencies, while providing a safe, efficient evacuation route meeting the requirements of the US Department of Homeland Security.

As part of Stakeholder Committee Meeting # 2, held on February 11, 2004, the Purpose and Need and technical results were discussed. The project team explained that the Purpose and Need was a document that establishes the needs that the project is intended to address and provides the basis or foundation with which to evaluate the alternatives --- those that do not meet the primary needs of the project may be eliminated from further consideration as part of the study.

The Stakeholder Committee identified primary needs of concern and secondary goals to use in the development of the project's Purpose and Need. The primary needs or concerns include:

- Improve the bridge condition
- Improve connection from SR 84 to I-90 to provide access route to power plant that can accommodate all standard vehicle sizes (Homeland Security)
- Eliminate safety and community impacts associated with closure of Vrooman Road due to flooding
- Eliminate existing geometric deficiencies (steep grade, substandard curves)

Secondary project goals include:

- Reduce number of accidents
- Reduce maintenance problems associated with slope adjacent to Vrooman Road at SR 84
- Provide acceptable traffic operation for future traffic volumes
- Accommodate transit needs/school transportation
- Provide an aesthetically pleasing bridge to complement the scenic Grand River;
- Minimize short and long term impacts on the Grand River;
- Accommodate pedestrians and bicyclists
- Accommodate future plans for utilities along Vrooman Road

The Stakeholder Committee established that alternatives should not be discarded based upon failure to meet secondary project goals; however, these factors should be considered if possible in the evaluation of alternatives, along with other criteria such as impacts on residences and communities, consistency with local development goals, cemeteries, park property, historic and archaeological resources, streams, floodplain, and project cost.

The Purpose of this project was developed based on the results of the technical analysis and input from the project's Stakeholder Committee. The current Vrooman Road Bridge is a structurally-deficient and functionally-obsolete bridge that regularly closes during flood events. The primary Purpose of the Vrooman Road Project is to:

- Provide a structurally sufficient crossing of the Grand River that meets the current design standards
- Improve the existing geometrics and correct existing roadway deficiencies
- Provides a safe, efficient evacuation route that meets the requirements of the Department of Homeland Security.

Secondary goals of the Vrooman Road Bridge Project are:

- Provide an acceptable level of service for existing and design year traffic volumes.
- Reduce number of accidents
- Reduce maintenance problems and safety concerns associated with slope adjacent to Vrooman Road at SR 84

3.0 IDENTIFICATION AND EVALUATION OF ALTERNATIVES

3.1 IDENTIFICATION OF CONCEPTUAL ALTERNATIVE SOLUTIONS

A Stakeholder Committee was established as the primary forum for public input for this project as part of the Public Involvement Plan and process. The Stakeholder Committee has been involved in each phase of the project to date to provide feedback, including input into project alternatives. Stakeholder Committee Meeting # 1 was held on January 21, 2004 to introduce the group to the PDP and NEPA processes, including how the Preferred Alternative would be selected; to provide input into the Public Involvement Plan and Problem Statement; and to initiate discussions on concepts that may be developed into Conceptual Alternatives and then into Feasible Alternatives.

Stakeholder Committee Meeting # 2 was held on February 11, 2004 for the Stakeholder Group to identify and discuss an initial range of concepts or ideas that may be used in the development of potential conceptual alternatives. Concepts that were indentified and discussed throughout the meeting that the Stakeholders would like to see considered were:

- Do nothing or No Build
- Replace bridge at its same current location and elevation
- Realign Vrooman Road, raising it to the minimal allowed elevation for 100-year floodplain, eliminating sub-standard curves, and alleviate problems with retaining wall
- Realign Vrooman Road to connect with Lane Road using minimal standards
- Vacate road altogether from State Route 84 to Seeley
- Vacate road, vacate interchange at Vrooman Road, and make new interchange elsewhere
- High level bridge straight across to Lane Road or Madison
- Improve Vrooman from State Route 84 to I-90 eliminating sub-standard items
- Reroute Vrooman east, not necessarily to Lane Road
- Consider ODOT "Alternative 5" from comprehensive plan
- Modify river to address flooding (spillway)

Stakeholder Committee Meeting #3 was held on March 31, 2004 to discuss conceptual alternatives developed by the Project Team from the concepts previously identified in Stakeholder Committee Meeting #2, and the reason for eliminating two of the identified concepts. Nine Conceptual Alternatives along with the No Build option were presented by the Project Team. These Concepts and the Conceptual Alternatives are summarized in **Table 5A** below.

TABLE 5A: CONCEPTS THAT WERE CONSIDERED FOR POTENTIAL CONCEPTUAL ALTERNATIVES

Preliminary Concepts	Stakeholder Input	Conceptual Alternatives Recommended for Further Consideration
Do Nothing or No Build	Carried Forward for Comparison	No Build
Replace bridge at its same current location and elevation	Carried Forward	Replace bridge in Current Location
Realign Vrooman Road, raising it to the minimal allowed elevation for 100-year floodplain, eliminating sub-standard curves, and alleviate problems with retaining wall	Carried Forward	Alternative D: Includes bringing the roadway and bridge just above the 100-year floodplain.
Realign Vrooman Road to connect with Lane Road using minimal standards	Carried Forward	Alternative F: Straightens out Vrooman Road through the valley and ties the road into a five point intersection with Lane, River Road, and State Route 84.
Vacate road altogether from State Route 84 to Seeley	Eliminated as It Does Not Meet All Elements of Purpose and Need	
Vacate road, vacate interchange at Vrooman Road, and make new interchange elsewhere	Carried Forward	Interchange In Alternate Location
High level bridge straight across to Lane Road or Madison	Carried Forward	Alternative A: Straightens the road through the valley tying in at Madison. Alternative B: Includes slightly curved bridge closer to the existing roadway than Alternative A, but still has a straighter roadway throughout the valley. Alternative C: Stays close to the original roadway but would be a curved bridge. Alternative F: Straightens out Vrooman Road through the valley and ties the road into a five point intersection with Lane, River Road, and State Route 84.

Improve Vrooman from State Route 84 to I-90 eliminating sub-standard items	Carried Forward	Incorporated into all remaining Conceptual Alternatives
Reroute Vrooman east, not necessarily to Lane Road	Carried Forward	Alternative E: Straightens out Vrooman Road through the valley and ties the road into State Route 84 just west of Lane.
Consider ODOT "Alternative 5" from comprehensive plan	Carried Forward	Alternative G: "Concept 5" from an ODOT study done in the 1960s.
Modify river to address flooding (spillway)	Eliminated as it will Likely have Very High Environmental Impacts and will not be permissible by ODNR, ACOE, and OEPA	

The Stakeholder Committee eliminated three of the nine Conceptual Alternatives developed by the Project Team.

The "Interchange in Alternate Location" alternative was eliminated because it failed to meet most of the elements of Purpose and Need, only serving to provide improved emergency evacuation, while ignoring the primary Purpose and Need elements of bridge structural deficiencies, retaining wall condition, and closure due to flooding.

Conceptual Alternative C was eliminated because it took up more natural and park land than any of the alternatives with similar concepts, and had an unnecessarily long curve adding to the safety concerns of having a longer bridge during winter months.

Conceptual Alternative G was eliminated because it deviated too far from the original path of the current roadway, and would impact a greater amount of natural and park land in comparison. Conceptual Alternatives A and B were merged together with the idea that the Project Team could adjust or modify slight curvature of the road to optimize the intersection with SR 84 and Madison Avenue. Conceptual Alternatives E and F were also merged together as one concept that could be moved from a pivotal point along River Road and State Route 84 to optimize the intersection with SR 84, Lane Avenue, and River Road.

The Conceptual Alternatives that were not eliminated from the alternative selection process were developed in more detail and were further evaluated by the Stakeholder Committee and the Project Team. These Feasible Alternatives are summarized in **Table 5B** and described in subsequent sections.

The Conceptual Alternatives carried forward as Feasible Alternatives for further evaluation are presented in the following table:

TABLE 5B: FEASIBLE ALTERNATIVES CARRIED FORWARD FOR FURTHER ENVIRONMENTAL AND DESIGN ANALYSIS

Preliminary Conceptual Alternative	Stakeholder Input	Feasible Alternative
No Build	Carried Forward for Comparison	No Build
Replace bridge in Current Location	Carried Forward; Does Not Meet All Elements of Purpose and Need	Alternative D
Interchange in Alternate Location	Eliminated for Failure to Address Most Elements of Purpose and Need	
Alternative A: Straightens the road through the valley tying in at Madison.	Carried Forward; Alternatives A & B Merged	Alternative A
Alternative B: Includes slightly curved bridge closer to the existing roadway than A, but still has a straighter roadway throughout the valley.		
Alternative C: Stays close to the original roadway but would be a curved bridge.	Eliminated; Higher Likely Impacts with No Apparent Advantages Over Other Alternatives	
Alternative D: Includes bringing the roadway and bridge just above the 100-year floodplain.	Carried Forward; Does Not Meet All Elements of Purpose and Need	Alternative C
Alternative E: Straightens out Vrooman Road through the valley and ties the road into State Route 84 just west of Lane.	Carried Forward: Alternatives E & F Merged	Alternative B
Alternative F: Straightens out Vrooman Road through the valley and ties the road into a five point intersection with Lane, River Road, and State Route 84.		
Alternative G: "Concept 5" from an ODOT study done in the 1960s.	Eliminated; Likely Additional Impacts with No Apparent Advantages Over Other Alternatives	

The Conceptual Alternatives that underwent the Stakeholder Committee's screening process and were developed into Feasible Alternatives were developed in more detail and were further evaluated by the Stakeholder Committee. These Feasible Alternatives are described below.

ALTERNATIVE A

Alternative A is a high-level bridge connecting to Madison. This alternative includes intersection improvements at State Route 84 and Madison and State Route 84 and Lane. Along with the intersection improvements, the stretch of State Route 84 between these two intersections will need to be improved as well. Alternative A is presented in **Figure 8**.

Alternative A would accomplish all of the goals of the purpose need. By creating a high-level bridge, Alternative A would: 1) alleviate the flooding problem by bringing the bridge well above the 100-year floodplain; 2) eliminate geometric problems going into the valley; 3) eliminate problems concerning the substandard bridge; 4) reconstruct or remove the retaining wall; and 5) relieve Lake County from maintenance concerns beyond typical needs. Alternative A would also offer an acceptable evacuation route for the Perry Nuclear Power Plant.

ALTERNATIVE B

Alternative B is a high-level bridge connecting to Lane. This alternative will include improvements to the intersection at State Route 84 and Lane. It will also include the reconfiguring of River Road access to State Route 84: either by redirecting its connection with State Route 84 east of its current location, or by turning River Road into a cul-de-sac and developing a side road for access to State Route 84. Alternative B is presented in **Figure 9**.

Alternative B would accomplish all of the goals of the Purpose and Need. By creating a high-level bridge Alternative B would: 1) alleviate the flooding problem bringing the bridge well above the 100-year floodplain; 2) eliminate geometric problems going into the valley; 3) eliminate problems concerning the substandard bridge; 4) reconstruct or remove the retaining wall; and 5) relieve Lake County from maintenance concerns beyond typical needs. Alternative B would also offer an acceptable evacuation route for the Perry Nuclear Power Plant.

ALTERNATIVE C

Alternative C replaces the bridge just above the 100-year floodplain. This alternative also includes widening the roadway up the hill on the northern slope. This results in pushing the intersection of State Route 84 and Madison north of its current location. Alternative C is presented in **Figure 10**.

Alternative C would accomplish replacing the current substandard bridge and retaining wall, along with bringing the bridge and roadway above the 100-year floodplain. However, the substandard

geometrics would still be present thereby not offering an acceptable evacuation route for homeland security purposes.

Although this option fails to meet several elements of the Purpose and Need, it was carried forward for comparison. This was recommended primarily to determine if an option that met most, but not all, of the Purpose and Need elements could have fewer impacts, particularly to the Lake Metroparks property.

ALTERNATIVE D

Alternative D replaces the bridge in its current location only. This alternative only accomplishes replacement of the current substandard bridge and rehabilitation of the retaining wall. As a result, the current issues with flooding and poor geometrics coming in and out of the valley would still exist, thereby not offering an acceptable evacuation route for the Perry Nuclear Power Plant.

Although this option fails to meet many of the elements of the Purpose and Need, it was carried forward for comparison, primarily for use during the coordination process (Section 4(f)) for impacts on the Lake Metroparks property.

NO BUILD

The No Build alternative is a "Do Nothing" alternative which would leave Vrooman Road as is, and require no other action. The No Build alternative would result in the eventual closure of Vrooman Road altogether, due to the poor condition of the bridge. This alternative does not meet the Purpose and Need, but is carried forward for comparison throughout the Project Development Process.

FIGURE 8: ALTERNATIVE A

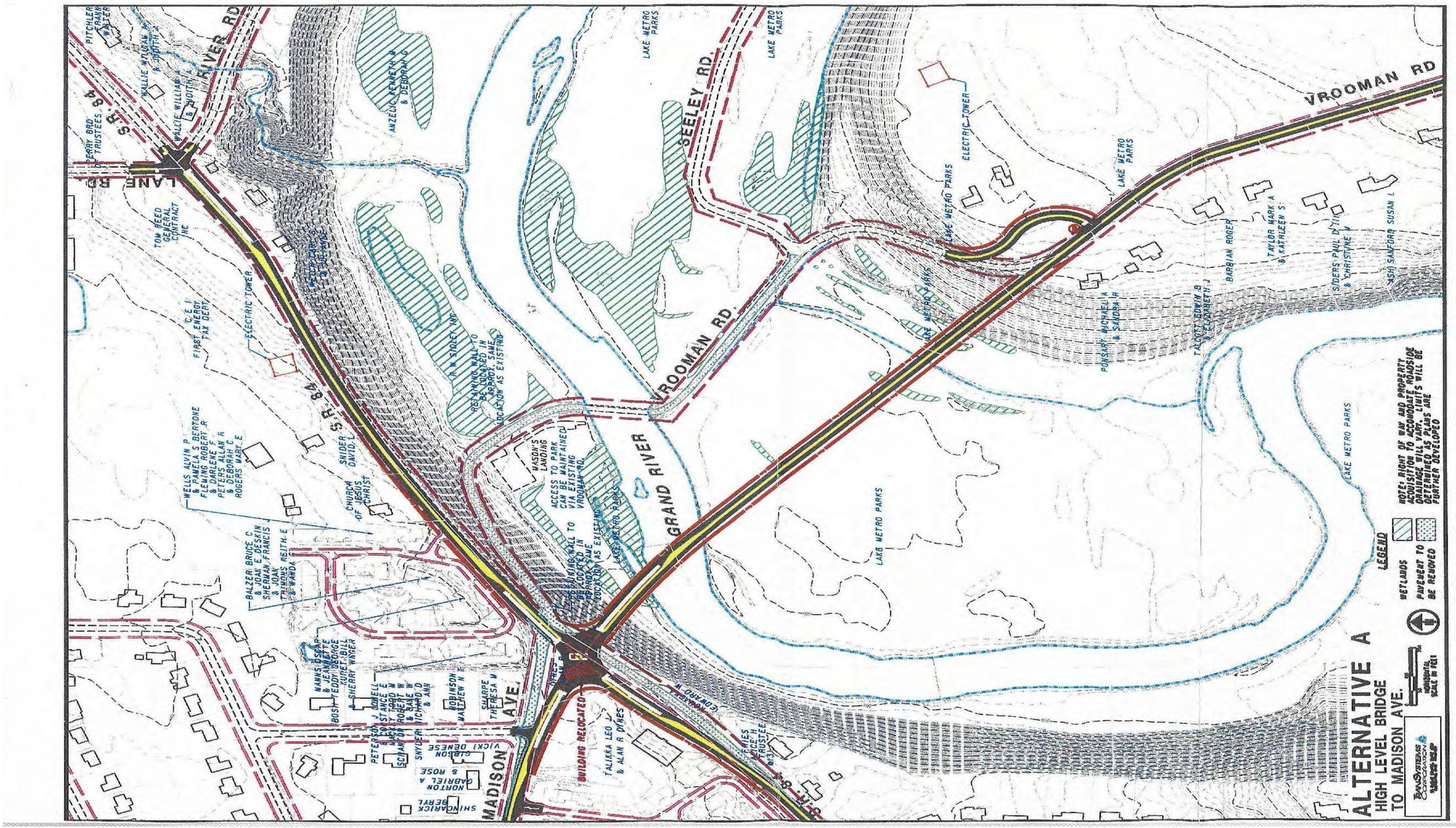


FIGURE 9: ALTERNATIVE B

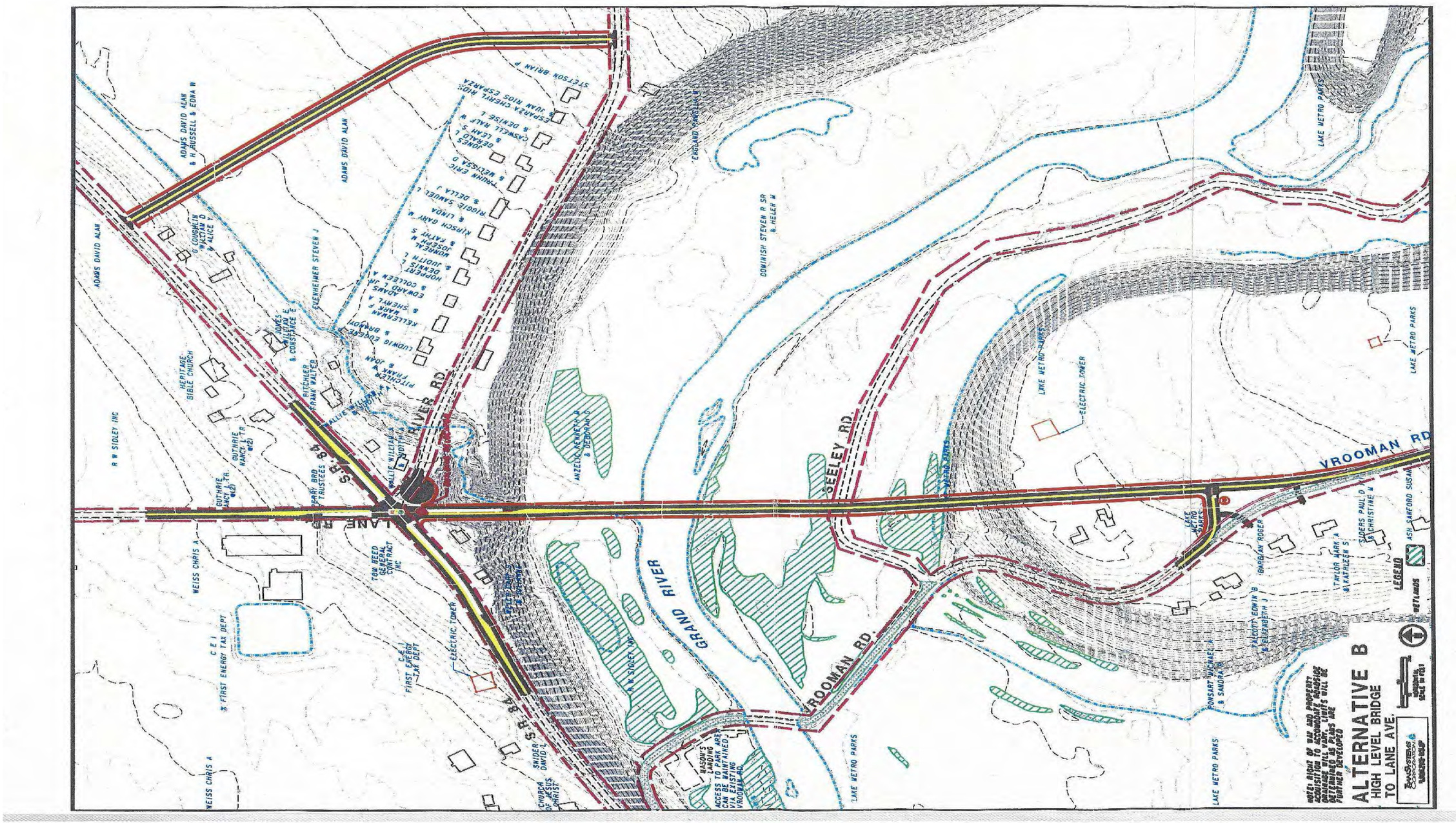
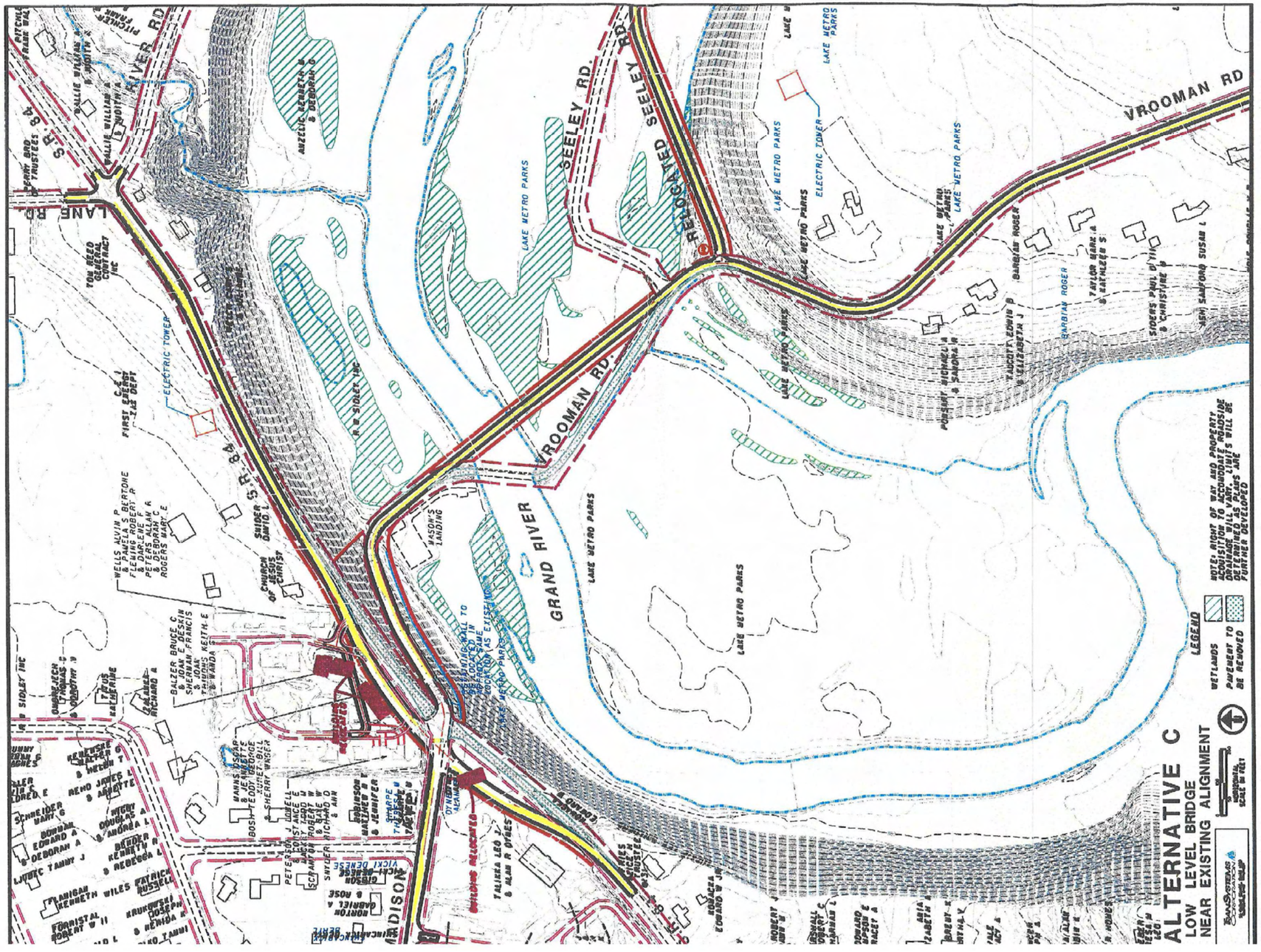


FIGURE 10: ALTERNATIVE C



3.2 Evaluation of Alternatives

The Project Team evaluated Feasible Alternatives A, B, C and D relative to the Purpose and Need and to identify possible impacts to resources. The results of this evaluation are described below. Key elements are summarized in **Table 12**.

RETAINING WALL CONDITION

Regardless of which alternative becomes the Preferred Alternative for the proposed bridge replacement project, the existing retaining wall will need to be removed or reconstructed. This will depend upon details resolved during the Section 4(f) coordination with Lake Metroparks regarding the disposition of Vrooman Road north of the bridge.

The new elevated bridge alternatives would have a bridge structure constructed at an elevation, from ridgeline to ridgeline, meeting current design standards, eliminating the steep grades, poor site distances, and poor geometrics at the bridge and SR 84 intersection. An elevated structure would eliminate the need for a steep roadway along the SR 84 hillside, thereby eliminating the need for a retaining wall to support Vrooman Road and SR 84. The hillside along SR 84 could then be stabilized to prevent any landslides and slipping of SR 84.

If roadway or pedestrian access of some sort is required to be maintained from SR 84, the wall would need to remain in its existing location so that it can support not only SR 84, but also the access to the park.

It may be possible that the existing wall could be removed and the slope re-graded while accomplishing the same goals. However, additional geotechnical analyses and evaluations will be required to make a determination on the appropriate treatment. There will also need to be agreement on who will accept future maintenance responsibility for the reconstructed wall or slope, Lake County, Lake Metroparks, ODOT or some combination.

One difficulty regarding removing and regrading is that it would kill all of the trees on the slopes. A 2:1 can be built in the space (if geotechnical data supports that as the stable slope rate) before reaching the edge of the wetlands, but none of the trees would survive having their bases buried with that amount of dirt, even if they survived the construction process. Therefore, this issue becomes part of the further coordination with Lake Metroparks as well.

Due to these difficulties, it is most likely that a new wall will be constructed in approximately the same location as the existing - either in front of it or behind. Preliminary recommendations suggest the use of a similar wall to existing (solider pile with tie backs) but encapsulating the steel in a concrete barrier surface so that the steel would not be exposed to elements. If the adjacent portion of Vrooman Road stayed open for park traffic only and was not salted in the winter, the retaining wall would have a long life span. The project cost estimates utilize this assumption. More analysis with the affected parties (county, state, and park) will occur before we the details will be well understood on exactly what to construct, where, and who will maintain it.

TRAFFIC VOLUMES & LEVELS OF SERVICE

Alternative A

Alternative A would minimize the changes to exiting traffic patterns; however, there is a potential for increased truck traffic traveling northbound on Vrooman Road, turning right onto eastbound State Route 84, and then turning left onto northbound Lane Road.

To obtain an acceptable level of service in the design year, this alternative needs the following intersection configurations:

- At Vrooman/Madison & State Route 84 intersection, exclusive westbound left turn lane on State Route 84 and exclusive northbound left turn lane on Vrooman
- At Lane/River & State Route 84 intersection, exclusive eastbound left turn lane on State Route 84

Table 6 indicates the Opening Year and Design Year capacities for a signalized Vrooman Road/Madison Avenue & SR 84 intersection:

TABLE 6: VROOMAN ROAD/MADISON AVENUE & SR 84 INTERSECTION

Time Period	EB SR 84		WB SR 84		NB Vrooman Rd		SB Madison Ave		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	11.5	B	11.8	B	10.6	B	11.8	B	11.5	B
2010 PM Peak	13.2	B	12.6	B	10.0	B	12.8	B	12.0	B
2030 AM Peak	13.7	B	16.4	B	10.5	B	16.0	B	14.4	B
2030 PM Peak	21.7	C	20.1	C	8.0	A	23.0	C	17.3	B

With Alternative A, the intersection of Lane Road/River Road and State Route 84 will be affected by the addition of eastbound, left-turning traffic on State Route 84 that originated from Vrooman Road. It is currently a two-way stop-controlled (TWSC) intersection on Lane Road and River Road.

Table 7 lists the Opening Year and Design Year capacity for the stop-controlled intersection:

TABLE 7: LANE ROAD/RIVER ROAD AND SR 84 INTERSECTION WITH TWSC

Time Period	EB SR 84 left		WB SR 84		NB River Rd		SB Lane Rd	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	8.5	A	7.5	A	22.3	C	11.9	B
2010 PM Peak	7.9	A	8.0	A	19.3	C	14.0	B
2030 AM Peak	9.2	A	7.7	A	147.4	F	15.7	C
2030 PM Peak	8.2	A	8.6	A	50.1	F	25.6	D

Since the northbound River Road movement would fail during the design year, the intersection will not function properly with TWSC by that time period. **Table 8** shows the intersection and approach delays and Levels of Service for this intersection under signalized control during the design year:

TABLE 8: LANE ROAD/RIVER ROAD AND SR 84 INTERSECTION WITH SIGNALIZED CONTROL

Time Period	EB SR 84		WB SR 84		NB River Rd		SB Lane Rd		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2030 AM Peak	10.7	B	12.8	B	13.7	B	12.4	B	12.3	B
2030 PM Peak	14.9	B	9.3	A	12.2	B	14.2	B	13.6	B

A traffic signal at the Madison Avenue/Vrooman Road and State Route 84 intersection is warranted for the Opening Year. At the Lane Avenue and State Route 84 intersection, a signal does not meet Peak Hour volume warranted for the Opening Year. Data to complete this analysis is currently unavailable). The intersection appears to function sufficiently with the two-way stop control, although a signal can be warranted for the Design Year based upon Peak Hour Volumes. Both signalized intersection analyses used a 60-second cycle length and should be coordinated.

Alternative B

Alternative B would require the relocation of Vrooman Road to the Lane Road & State Route 84 intersection and the relocation of River Road slightly to the east of its current intersection with State Route 84. This option eliminates the "jog" between Vrooman Road and Lane Road on State Route 84. It would minimize the amount of northbound, right-turning traffic at the new intersection, but would increase the northbound, left-turning traffic for the drivers who wish to go northwest onto Madison Ave. It significantly changes the traffic patterns on this section of State Route 84 by requiring turning movements at Madison Avenue and River Road from vehicles that would have been through movements at their original intersections.

To obtain acceptable levels of service at this intersection in the design year, all approaches require an exclusive left-turn lane.

Table 9 indicates the Opening Year and Design Year capacities for a signalized Vrooman Road/Lane Road & State Route 84 intersection:

TABLE 9: VROOMAN ROAD/LANE ROAD & SR 84 INTERSECTION

Time Period	EB SR 84		WB SR 84		NB Vrooman Rd		SB Lane Rd		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	11.9	B	12.0	B	11.8	B	11.9	B	11.8	B
2010 PM Peak	13.7	B	9.3	A	13.4	B	11.8	B	12.7	B
2030 AM Peak	13.4	B	15.8	B	15.5	B	11.7	B	14.7	B
2030 PM Peak	21.6	C	11.4	B	22.2	C	14.5	B	19.3	B

A traffic signal at Lane/Vrooman Road and State Route 84 appears to be warranted for the Opening Year based upon a preliminary calculation of the Peak Hour Warrant requirements, as well as a signal remaining at SR 84 and Madison.

Alternative C

Alternative C is the most similar to the existing conditions. It does not eliminate the steep grade on the Vrooman Road approach or the severe skew angle of Vrooman Road at the intersection with State Route 84. This analysis is affected by some limitations with the Highway Capacity Software. Primarily, the maximum grade that the software can analyze is 10% while the actual grade on Vrooman Road is roughly 15%. Secondarily, the software does not directly account for the skew angle of Vrooman Road at the intersection. The signal phasing is modified to include split phases for Vrooman Road and Madison Avenue, but the skew angle's impact to turning movements at the intersection isn't addressed.

To obtain acceptable levels of service at this intersection in the design year, all approaches require an exclusive left-turn lane.

Table 10 indicates the Opening Year and Design Year capacities for a signalized Vrooman Road/Madison Avenue & State Route 84 intersection.

TABLE 10: VROOMAN ROAD/MADISON AVENUE & SR 84 INTERSECTION

Time Period	EB SR 84		WB SR 84		NB Vrooman Rd		SB Madison Ave		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2010 AM Peak	17.8	B	20.2	C	20.2	C	19.1	B	19.5	B
2010 PM Peak	19.6	B	19.9	B	19.7	B	19.9	B	19.8	B
2030 AM Peak	16.1	B	34.3	C	34.6	C	33.1	C	30.4	C
2030 PM Peak	20.5	C	33.6	C	34.7	C	32.8	C	31.1	C

The delays are elevated for this alternative because the signal must operate with 3 phases instead of the 2-phase operation used for the other alternatives. The 3 phases are required to allow Vrooman Road to move independently of Madison Avenue, since the skew angle would interfere with those approaches moving simultaneously.

These delays and Levels of Service do not reflect the longer turning times needed for the northbound right turn and the westbound left turn due to the skew angle. In addition, the full impact of the steep grade on Vrooman Road is not reflected in the analysis. Because of these two issues, the delays and LOS shown in the preceding table is probably a best-case scenario and should be considered optimistic.

Additionally, the HCS analysis was run for a signalized intersection at Lane and River Road using a 3-phase cycle instead of 2-phase for both of the Madison Avenue alternatives. The added phase was considered due to the lack of symmetry at the intersection. A 60-second cycle length is appropriate, and the signal is required for capacity reasons in the Design Year, not the Opening Year. **Table 11** shows the AM and PM Design Year capacities:

TABLE 11: SR 84 & LANE ROAD/RIVER ROAD

Time Period	EB SR 84		WB SR 84		NB River Rd		SB Lane Ave		Intersection Total	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2030 AM Peak	19.1	B	22.2	C	22.9	C	22.2	C	21.4	C
2030 PM Peak	25.6	C	12.3	B	24.3	C	25.3	C	23.1	C

As with the High Level Bridge to Madison Avenue, a signal at this intersection would not be warranted until the Design Year.

PROPERTY IMPACTS

Alternative A could require purchase of the commercial property located at the intersection of State Route 84 and Madison. The property owned by Sidley adjacent to the park property may be landlocked by this option. In addition, approximately 3 acres of right-of-way may need to be acquired from the park.

Alternative B could result in one residence being relocated due to placement of the connection to the intersection with Lane and State Route 84. Approximately 3 acres of right-of-way may need to be acquired from the park. River Road would be reconfigured with a cul-de-sac at the intersection of SR 84 and Lane Road. River Road may need to be realigned, requiring the acquisition of approximately 2.5 acres of right-of-way from private ownership. The Sidley Property may also be landlocked as a result.

Alternative C could result in the relocation of the residents of six condominium units in the Canterbury Condominium community just north of State Route 84 at Madison. This may be due to the improvements that could be required for the intersection as a part of this alternative. In addition, right-of-way for the new bridge and realignment of Seeley Road may need to be acquired from the park.

Alternatives D and the No Build option would not require any permanent property acquisitions.

PARK PROPERTY IMPACTS (SECTION 4(F))

The proposed project will impact three properties afforded protection under Section 4(f) of the U.S. DOT Act as parks, recreation areas, or wildlife/waterfowl refuges. (Historic properties are discussed on page 45.) These properties are: the Grand River, an Ohio State Wild and Scenic River ("Wild" designation through project area); the Lake Metroparks' Indian Point Park; and the Lake Metroparks' Mason's Landings Park. These resources are described below:

Grand River
The Grand River was designated Ohio's second Wild and Scenic River in 1974. This 712-square-mile watershed covers 455,680 acres and supports an array of fish, birds, mammals, reptiles, amphibians, and numerous rare plant species.

Lake Metroparks' Indian Point Park, Leroy Township
Lake Metroparks Indian Point Park encompasses 261 acres and includes a picnic area with grills, restrooms, hiking trails and fishing areas.

Lake Metroparks' Mason's Landing Park, Perry, Ohio
Mason's Landing Park encompasses 133 acres and includes a picnic area with grills, restrooms, and fishing areas.

Since Vrooman Road traverses through the park property, crossing the Grand River, there are no alternatives that meet Purpose and Need that can avoid all impacts to these resources. The

potential impacts and challenges for each option related to parks and recreation areas are summarized below. Issues related to the Grand River are included beginning on page 47 in the Ecological Resources section of this document.

Alternative A and B have similar impacts to the parks. Both require approximately 3 acres of right-of-way acquisition necessary for the new bridge. They would also result in noise issues within the valley due to the overhead bridge. Mitigation would be necessary for both alternatives to address access to Mason's Landing Park, replace affected parking, and maintain emergency vehicle access. Several options have been discussed for addressing these issues, including vacating portions of existing Vrooman Road to the parks, relocating parking areas, and replacing the existing bridge with a pedestrian bridge that can handle emergency vehicles.

Coordination with the parks has been ongoing throughout the project from the beginning of the Planning Study. If one of these options is carried forward, it would be developed in more detail during subsequent phases of the Project Development Process to minimize impacts. Then, coordination with Lake Metroparks would continue to finalize the necessary mitigation and obtain concurrence.

Alternative C requires approximately 1 acre of permanent right-of way acquisition necessary for the new bridge and realigned road. It would also have noise affects through the valley. Access to Mason's Landing Park would be unaffected. There would be substantial loss of vegetation as Vrooman Road is reconstructed up the hillside.

Alternative D and the No Build Alternative would not require any parkland and would not affect access to Mason's Landing Park.

Due to location within the Metroparks property and the designation of the Grand River as a wild river in this section, the aesthetics of bridge are a concern. Some simple applications may be done in a cost-effective manner to achieve an aesthetically pleasing bridge across the Grand River Valley. Simple concrete mixtures and paint can be used to blend the bridge into the surroundings. Additional coordination on this issue will continue during subsequent phases of project development.

PEDESTRIAN ACCOMMODATIONS

The minimum recommended shoulder width on the bridge is 8' per ODOT's Location and Design Manual design criteria. The preferred shoulder width is 10'. Design judgment allows shoulder width to be reduced to 3' for bridges over 100' long. Improved conditions for pedestrian and bicycle traffic could be provided by utilizing recommended minimum or preferred shoulder widths for Alternatives A and B.

Alternatives C, D and the No Build option will not change existing substandard geometrics that are currently unsafe for pedestrians and bicyclists.

Pedestrian access to and from the park properties will need to be maintained for any alternative and will be considered during Section 4(f) coordination.

CULTURAL RESOURCES

The proposed undertaking involves the replacement of the Vrooman Road Bridge (SFN 4337107) a two-span, steel, through truss bridge that has been determined to be not eligible for inclusion on the National Register of Historic Places (NRHP).

Two other history/architecture sites have been previously recorded within or immediately adjacent to the project study area and have not been evaluated according to the NRHP criteria. A site visit identified an additional 11 properties within or immediately adjacent to the project study area that are older than 50 years. Therefore, there are several properties that will require evaluation during subsequent phases of project development. Alternative A may affect one of these properties. Alternative B may affect four. Additional investigation will be required if either of these options progresses forward in the project development process to establish eligibility of these properties and determine effects.

The Lake Metroparks' Indian Point Park in Leroy Township is listed on the NRHP by the National Park Service. Indian Point Fort (33LA2) contains a prehistoric village represented by one of the earliest earthen architectural works in this part of Ohio. Two parallel mounds of their earthworks can be seen on the 100-ft ridge situated between Paine Creek and the Grand River. Limited archaeological investigations indicate the Whittlesey Culture inhabited the site. The Whittlesey were an early people who lived in northeast Ohio from 900 A.D. to 1650 A.D. in stockade villages on high bluffs overlooking rivers and lakes. The Indian Point Fort is located immediately adjacent to the project area and is not expected to be affected by the proposed project.

While numerous archaeological sites have been previously recorded on the surrounding landforms, at least two sensitive prehistoric sites are located within the north central portion of the project study area. Limited testing at the Vrooman Road Site (33LA158), situated on a bluff overlooking the floodplain, recovered thousands of artifacts, house patterns, human burials and other cultural features. The Vrooman Road Site has been determined eligible for the NRHP. The Wyman Cemetery Site (33LA165) is located on the Grand River floodplain and was recorded in 1929 as a 'burial ground.' No other information is known about the site.

Since there are known archaeological issues along the ridge above the Grand River, it is anticipated that this will be the largest challenge for any option in further project development. Alternatives A, B and C would all require work in the vicinity of known sites and impact areas that have not yet been studied. **Figure 11** on the following page illustrates the areas of known sites previously surveyed and the areas not yet tested. It is assumed that each of these alternatives has the potential for impacts to archaeological sites eligible for listing on the National Register of Historic Places.

Therefore, if one of these build options were carried forward, additional study will be required to confirm the extent and character of archaeological sites within the impacted area, to identify those that will require preservation in place, and to work with ODOT, the Ohio Historic Preservation

Office and the design team to develop a plan and construction method that would avoid impacts to those areas. Other areas that do not require preservation in place may be proposed for data recovery.

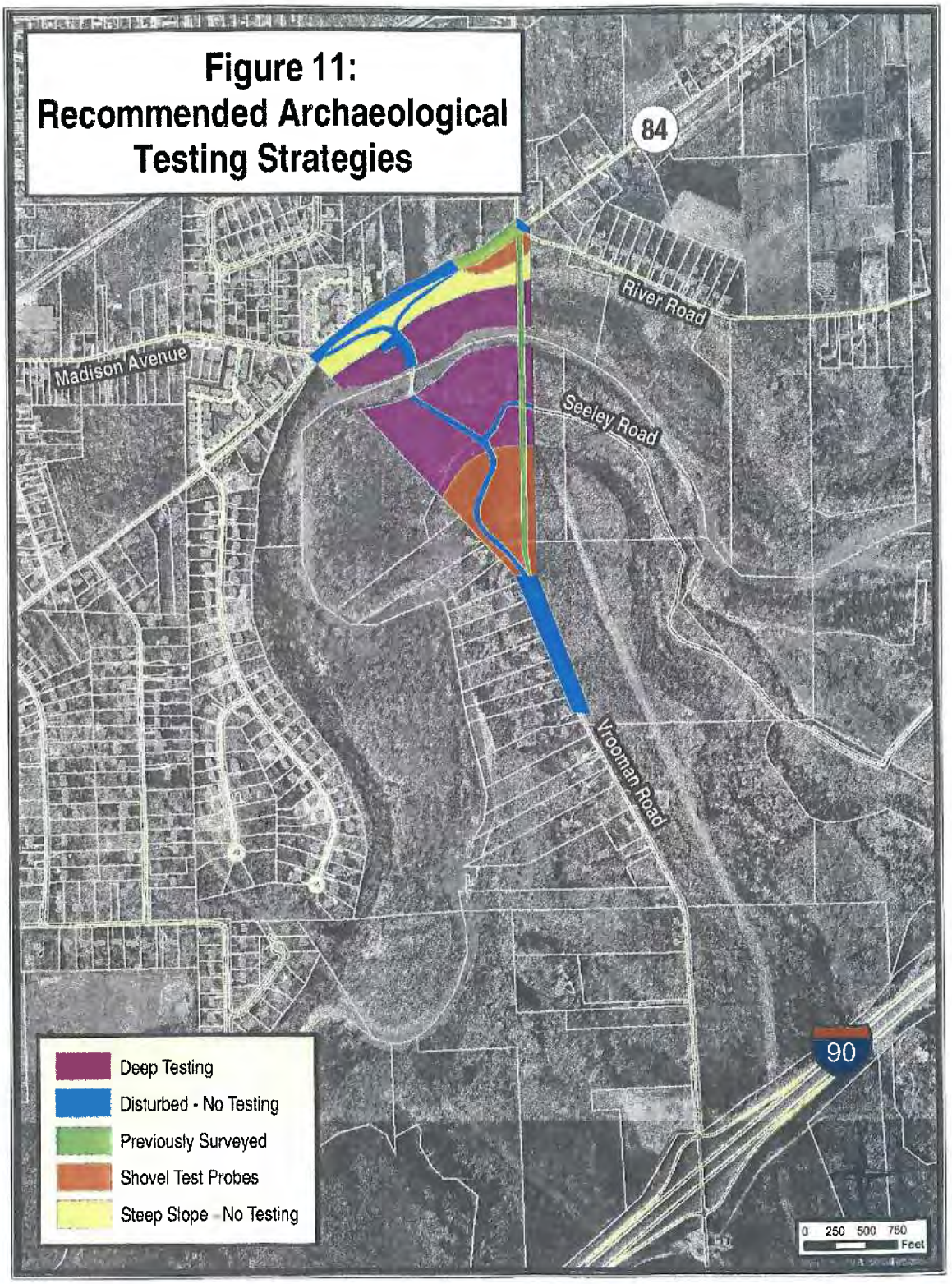


Figure 11:
Recommended Archaeological
Testing Strategies
84
River Road
Madison Avenue
Seeley Road
Vrooman Road
90
Deep Testing
Disturbed - No Testing
Previously Surveyed
Shovel Test Probes
Steep Slope - No Testing
0 250 500 750
Feet

ESA SCREENING

Field reconnaissance and review of regulatory database and mapping information were undertaken in accordance with the Ohio Department of Transportation Environmental Site Assessment Guidelines (September 1999) to identify all suspect parcels within the project study area. Based on the information collected during this ESA Screening, a Phase I Environmental Site Assessment was recommended for the following sites:

- The Northeast Auto Service facility located at 2606 Madison Avenue on the northwest portion of the study area currently conducts automotive repair. A Gulf service station listed as having a LUST incident once operated at this location.

- The former Lane Auto Sales and Wickliffe Truss Manufacturing facility located at 5188 through 5194 Lane Road on the northeast portion of the study area once housed an industrial manufacturing operation and later an auto sales service. Waste materials in the form of petroleum or hazardous waste could have been generated as a result of one or both operations. This facility was a LUST site; however, this incident has been disproved.

- The former service station located at 5848 Vrooman Road on the southwest portion of the study area has been demolished and graded. It is not known if the USTs were removed. Waste materials in the form of petroleum or hazardous waste could have been generated as a result of the service station operation. This facility was not listed on any regulatory database.

All three of these sites would be impacted by Alternatives A and C. The last two would be impacted by Alternative B. Phase I Environmental Site Assessments will be performed during subsequent project development on the affected properties. Alternative D and the No Build would have no impacts.

ECOLOGICAL SURVEY

Field investigations of the study area were conducted on June 17, October 19, November 3 and 10, 2004 and February 15, 2005. The aquatic, terrestrial, and wetland habitats, as well as endangered species were examined according to the Ohio Department of Transportation (ODOT), *Ecological Manual, 2005*.

Two streams comprising approximately 2,326 linear feet, the Grand River, and an unnamed tributary to the Grand River were identified within the limits of the study area. This segment of the Grand River is designated as a state resource water (SRW) and seasonal salmonid habitat (SSH), based on the 1978 water quality standards (Ohio EPA, 2003). Based on the results of a biological field assessment performed by the Ohio Environmental Protection Agency this segment of the Grand River is also designated as an exceptional warm water habitat (EWH), agricultural water supply (AWS), industrial water supply (IWS), and a primary contact recreation stream (PCR) (Ohio EPA, 2003).

The two streams were broken up into six segments (Stream 1, Segments A, B, and C; and Stream 2, Segments A, B, and C) in an effort to document the habitat of the two streams within the proposed study area of the three alternatives. The three stream segments of Stream 1 (Grand River) (Segments A, B, and C) had drainage areas greater than one square mile and had pools greater than 40 centimeters deep and were, therefore, evaluated using the qualitative habitat evaluation index (QHEI). The QHEI scores indicate that stream segments A, B, and C (Grand River) have a provisional aquatic life use designation of exceptional warm water habitat (EWH) based on the QHEI score. Ohio EPA Water Quality Standards reveal that the segments of Grand River within the study area are listed as having an EWH use designation (confirmed with data), and are listed as state resource water (SRW) and seasonal salmonid habitat (SSH). All three segments (Segments A, B, and C) of Stream 2, an unnamed tributary to the Grand River, were considered to be primary headwater habitat (PHWH) and were evaluated using the primary headwater habitat evaluation form (HHEI). The HHEI and the headwater macro invertebrate field evaluation index (HMFEI) revealed that Segments A and B are classified as provisional Class I PHWH streams. Stream 2 (Segment C) is classified as a provisional modified Class II PHWH stream. Stream 2 (Segment C) is highly modified as it intercepts runoff directly from adjoining agricultural fields. Due to the time of year (February) an HMFEI was not conducted however, it will likely score low (provisional Class I PHWH stream) if the biological sampling is completed.

No permanent impacts to the Grand River are anticipated from the construction of the proposed bridge, as footings are not to be located within the boundaries of the river for any of the alternatives. Temporary impacts may occur from the construction of the proposed bridge as a result of construction staging and equipment. The project will require coordination with ODNR as a Wild and Scenic River. Alternative B also has the potential to impact the unnamed tributary of the Grand River, which will be determined during subsequent phases of project development.

Wetlands

The National Wetland Inventory map (NWI) for the Painesville quadrangle was referenced and revealed three potential wetland systems within the study area boundaries. These mapped wetland systems did coincide with wetlands actually found on the ground during the field reconnaissance. The Grand River and the two NWI wetlands were listed as the following types (number of each type follows in parenthesis):

- PFO1Y (2) Palustrine forested, broad leaved deciduous, seasonally semi-permanent flooded.
- R2OWZ (1) Riverine, lower perennial, open water/unknown bottom, intermittently exposed/permanent (Grand River).

During the field reconnaissance, a total of fourteen wetlands comprising approximately 4.22 acres were identified within the study area. The wetlands are comprised of the PEM, PSS, and PFO wetland habitat types. Three wetlands are considered provisional Category 1 wetlands. One wetland (L) is considered a Category 1 or 2 gray zone wetland. Two wetlands are considered provisional Category 2 wetlands. Four wetlands are considered provisional modified Category 2 wetlands. Three wetlands are considered provisional Category 2 or 3 gray zone wetlands. One

wetland is considered a provisional Category 3 wetland. All fourteen wetlands are considered to be adjacent wetlands, meaning they are non-isolated.

Ponds and jurisdictional ditches were not found within the study area. *The Soil Survey of Lake County, Ohio* (1979) shows three soil associations and eleven mapped soil units as occurring in the study area. Only one soil unit within the study area is listed as hydric and only one soil unit within the study area is listed as non-hydric with hydric inclusions (Soil Conservation Service, 1998).

Preliminary calculation indicated that Alternative A would impact 0.13 acres of wetland, compared to 0.36 acres on Alternative B, and 0.09 acres on Alternative C. Alternative D and the No Build were expected to have no impacts. Alternatives A and B, depending on the pier placement and construction methodology for these alternatives, may be able to avoid all wetland impacts. Alternative C is expected to have unavoidable wetland impacts due to fill in the valley.

Endangered Species – Plant Species

A special forest plant community of Hemlock-Hardwood exists within the one mile radius around our study area along with three potentially threatened plant species, American chestnut (*Castanea dentata*), turk's-cap lily (*Lilium superbum*), and Butternut (*Juglans cinerea*). There are three breeding animal concentrations (mollusk beds) located outside of the study area. The one muscle bed located upstream of the study area has two species of concern, round pigtoe (*Pleurobema sintoxia*), wavy-rayed lampmussel (*Lampsilis fasciola*). One threatened species, the black sandshell (*Ligumia recta*) has a general location within the study area. The ODNR Division of Natural Areas and Preserves, Ohio Natural Heritage Database, list of Rare Plant Species for Lake County was reviewed for potential occurrences of endangered, threatened, potentially threatened plant species, or plant species of special concern within the study area (ODNR, 2001). Fifty-eight plant species were identified as endangered, threatened, or potentially threatened in Lake County. These species were noted for possible sightings during field investigations. The Natural Resource Management Plan prepared by Lake Metroparks for Indian Point and Mason's Landing list two plant species as potentially threatened, documented within the study area, sweet-scented Indian plantain (*Cacalia suaveolens*) and turk's-cap lily (*Lilium superbum*). A critical area designated as mole salamander habitat protection zone falls within the study area (Hildebrant, 1995).

Field investigations did not reveal the presence of any state listed endangered, threatened, potentially threatened, or other rare plant species as occurring within the study area. Sweet-scented Indian plantain (*Cacalia suaveolens*) was found throughout the study area; however, this plant is not listed on the latest list of Rare Native Ohio Plants (according to DNAP 2004-2005 Status List). Also, Michigan Lily (*Lilium michiganense*), which is similar to turk's-cap lily (*Lilium superbum*) was identified within the study area and has no status listing according to DNAP (2004-2005). The three potentially threatened plant species, American chestnut (*Castanea dentata*), turk's-cap lily (*Lilium superbum*), and Butternut (*Juglans cinerea*) were not identified within the study area during our investigation, therefore impacts are not anticipated.

Endangered Species – Animal Species

The U.S. Fish and Wildlife Service names several federally-listed threatened, endangered, proposed, and candidate species for Lake County (USFWS, 2005). Those species include the endangered Indiana bat (*Myotis sodalis*), the threatened bald eagle (*Haliaeetus leucocephalus*), the endangered piping plover (*Charadrius melodus*) and critical habitat designated for the piping plover.

No live state or federally-listed endangered, threatened, species of concern, and special interest were identified within the study area.

The Division of Natural Areas and Preserves has no records of any Indiana bat capture locations or hibernacula within a five-mile radius of the study area. This radius contains approximately 16,656 acres of land, of which 7,384.48 acres are forest habitat. Each of the alternatives would impact this habitat within this radius as follows:

- Alternative A would impact 13.6 acres of forested habitat resulting in a 0.18% reduction in overall forested habitat.
- Alternative B would impact 19.7 acres of forested habitat resulting in a 0.26% reduction in overall forested habitat.
- Alternative C would impact 18.3 acres of forested habitat resulting in a 0.25% reduction in overall forested habitat.

Over 99.7% of the forested habitat within the radius would still be available to the Indiana bat.

The federally threatened bald eagle, (*Haliaeetus leucocephalus*) would not be impacted by this project due to the preferred habitat of the bald eagle is mature forests near large open water bodies; this type of habitat does not occur within or adjacent to the study area. The endangered piping plover (*Charadrius melodus*) and critical habitat designated for the piping plover (beaches along shorelines of the Great Lakes) would not be impacted by this project due to the absence of preferred habitat. No impacts to mollusk beds or species of concern, round pigtoe (*Pleurobema sintoxia*), wavy-rayed lampmussel (*Lampsilis fasciola*) or the threatened black sandshell (*Ligumia recta*) which has a general location within the study area will be anticipated as bridge footings are not to be located within the boundaries of the Grand River.

CONSTRUCTION ISSUES

Each option would have different issues associated with its construction. Alternatives A and C would have the longest construction durations on SR 84. Alternative A would also require closure of Vrooman Road for longer than Alternative B, with Alternative C having the longest duration of closure to Vrooman Road.

SUMMARY

The results of the evaluation of Feasible Alternatives are presented in **Table 12**.

Only Alternatives A and B would meet all elements of the purpose and need, with Alternative B providing a more direct route for emergency evacuation. Each would have similar impacts on park property and similar bridge lengths. Alternative B has the potential for impacts to one stream. Alternative A may require one, commercial relocation. Alternative B may require one, residential relocation. Alternative A would affect more parcels and have a longer construction impact on SR 84 and Vrooman Road. Alternative B would affect more properties that will require evaluation for historic eligibility. Both alternatives would require substantial coordination with regard to archaeological resources.

Alternative C would meet many of the elements of the Purpose and Need, but would fail to correct substandard geometrics, which affects the route's operational efficiency, safety, and suitability for emergency services and evacuation. Alternative C would have a shorter bridge length and less permanent right-of-way impact on the park property, but require the relocation of one commercial property and one condominium building with six units and require the longest closure of SR 84 and Vrooman Road during construction. It would have a greater potential for archaeological concerns due to the great extent of work on SR 84 and in the valley.

Alternative D would be expected to have minimal impacts, but meets only two elements of the Purpose and Need. Bridge and retaining wall conditions would be corrected, but existing operational, flooding, safety, and emergency service/evacuation issues would not be addressed.

Alternative E (No Build) would address no elements of the Purpose and Need, resulting in the eventual retaining wall failure or closure of Vrooman Road due to bridge condition.

TABLE 12: FEASIBLE ALTERNATIVES COMPARISON MATRIX

Vrooman Road Study Lake County, Ohio — TranSystems Corporation		Vrooman Road Preliminary Project Impacts				
	ISSUE/CONCERN	**A** High-level to Madison	**B** High-level to Lane	**C** Low-level Close to Existing	**D** Replace Existing	**E** No Build
DESIGN ISSUES	**BRIDGE LENGTH (feet)**	1,800	1,800	1,000	200	N/A
	ADDRESSES GEOMETRIC DEFICIENCIES	YES	YES	NO	NO	NO
	ADDRESSES FLOODING	YES	YES	YES	NO	NO
	ADDRESSES BRIDGE CONDITION	YES	YES	YES	YES	NO
	ADDRESSES/AVOIDS WALL CONDITION	YES	YES	YES	YES	NO
PROPERTY IMPACTS	**POTENTIAL RELOCATIONS**					
	SINGLE FAMILY	0	1	0	0	0
	MULTI FAMILY	0	0	1	0	0
	BUSINESS	1	0	1	0	0
	PROPERTY IMPACTS (parcels)	16	7	9	0	0
ENVIRONMENTAL IMPACTS	**CULTURAL RESOURCES**					
	HISTORY/ARCHITECTURE (properties to be evaluated)	1	4	0	0	0
	ARCHAEOLOGY	Will require evaluation/avoidance			None	None
	ECOLOGICAL RESOURCES					
	WETLANDS (acres)	0.13	0.36	0.09	0	0
	STREAMS (in addition to crossing of Grand River)	0	1	0	0	0
	Park/Section 4(f) - acres perm r/w (preliminary)	3.03	3.02	0.93	0	0
	Additional Impacts	Modified access to Masons Landing; relocation of canoe launch and parking	Modified access to Masons Landing; relocation of canoe launch and parking	Minimal facility impacts; steep grade remains; may be difficult to construct	Minimal impacts; road still floods	Eventual bridge closure; road still floods

3.3 Stakeholder Committee Meeting #4/Public Involvement Meeting

Stakeholder Committee Meeting #4 was held on June 9, 2004 to review the results of alternatives comparison prior to finalizing the work for presentation to the public. Mapping was provided and the Project Team reviewed the impacts of the alternatives and potential mitigation scenarios to obtain input on the development of the alternatives and the benefits and consequences of each option.

A Public Involvement Meeting was held on July 7, 2004 at the Leroy Community Center located at 13028 Leroy Center Road in Leroy, Ohio. The meeting was set up in an open house format, being open to the public from 4:00 PM through 7:00 PM. Representatives from the Lake County Engineer's Office, along with others from ODOT and TranSystems were in attendance to answer questions about the alternatives developed. The purpose of this open house meeting was to present the alternatives for the Vrooman Road Project, to answer questions, and to solicit comments on the proposed alternatives to be considered when choosing a preferred alternative.

The Project Team utilized the alternatives and base map of environmental constraints to develop exhibits for the public meeting. Displays of the alternatives along with typical sections for each alternative were put along the perimeter of the room so that people could peruse them at their leisure. In addition, the matrix comparing the alternatives was provided. Environmental, right-of-way, and comment tables were also set up so that anyone with specific questions, or those wanting to submit their comments could do so anytime during the meeting.

At the meeting comment sheets were handed out to the attendees asking for their input on the developed alternatives and which one each person felt best fit the needs of the project as well as the community. Voice comments were also available to those that might need assistance. Comments were gathered at the meeting and a comment period of two and a half weeks was given so that people could send them in either through the mail or via e-mail. The comment period ended on July 23, 2004.

Sixty-nine people signed the sign-in sheet at the July 7, 2004 public involvement meeting held for the Vrooman Road Study Project. Of those, sixty-six of those were members of the public.

During the comment period, 58 comment forms were received. These comments were summarized and considered during the discussion of recommendations with the stakeholder committee. Per ODOT's request, formal responses to each comment were prepared and mailed in December 2005. A public comment summary matrix, copies of each comment form and the corresponding response letter, are included in **Appendix A**.

Alternative A

Four out of the seven people that chose Alternative A also put Alternative B as a choice, because they felt that either one would solve all of the problems and would be more long-term solutions. Another person chose Alternative A along with both Alternatives C and D, because he felt that any of these options would meet the needs of the project. Another person that chose Alternative A did so because it did not require relocations, did not need to cross the stream, thereby saving money, and did not impacts archaeological resources as Alternative B might. Yet another also chose

Alternatives B, D, and E because he did not want any option that included taking any of the condos on River Road. Other comments in favor of Alternative A did so to would eliminate a five-point intersection and avoid the power lines.

Alternative B

Of the nineteen people that chose Alternative B, four of them also chose Alternative A with the thought that both met the needs of the project. Another person chose Alternative B along with Alternative C as the preferred. Another also chose Alternatives A, D, and E because he did not want any option that included taking any of the condos on River Road. The other thirteen people selected Alternative B for the following cited reasons:

- The alignment provided a 'straight shot'
- Madison Avenue was already a congested intersection
- It provided more direct route to the Perry Nuclear Power Plant
- It takes traffic away from Canterbury Crossing Condominiums
- Fewer impacts to people

Alternative C

Thirty people chose Alternative C as a preferred route. Of these, sixteen also chose other routes as preferred (one also chose Alternative A and D; two also chose Alternatives D and E; and twelve also chose Alternative D as preferred alternatives). Most of the people that chose Alternative C chose it because it still fixed some of the main problems the current roadway and bridge have, but maintains the quiet rural area they have today and would not increase truck traffic. Other comments were that it would cost less and that it would not have a large impact on the Metroparks or the environment.

Alternative D

Twenty-three people chose Alternative D. Of those, sixteen also chose other routes as preferred. (One chose Alternatives A and C; two also chose Alternatives C and E; one also chose Alternatives A, B, and E; and twelve also chose Alternative C). Some of the comments in favor of Alternative D were that it would maintain the integrity of the area by keeping the road the same as it is today, not allow a large amount of truck traffic, and not hurt property values. One person suggested raising the road south of the bridge, saying that would alleviate the flooding problems. Another person did not feel the road needed to be changed for the Perry Nuclear Power Plant if it was not going to be around much longer.

Alternative E

Three people chose Alternative E as a preferred alternative. Of the three, two also chose Alternatives C and D. The third person also chose Alternatives A, B, and D because he did not want any alternative that would take any of the condos. Reasons cited for selecting Alternative E were that high truck traffic volumes were not desired in the area, and maintaining the Metroparks as they are along with property value concerns.

3.4 STAKEHOLDER COMMITTEE MEETING #5

Following the Public Involvement Meeting, and after the comment period had ended, a Stakeholder Committee Meeting was held on July 28, 2004 to discuss recommendations and go over comments received from citizens following the public involvement open house that was held on July 7, 2004. The Project Team presented each of the alternatives again and explained which of the needs each would fulfill, the anticipated impacts, and the comments from the public.

The group discussed the positives and negatives of each option. However, a decision was tabled because the Stakeholder Committee determined that more knowledge about noise and visual impacts should be evaluated before making a decision.

3.5 UPDATE OF ALTERNATIVES

Following Stakeholder Committee Meeting #5, the Project Team put together renderings of how the bridge might look through the valley for the one low-level and two high-level bridge options. In addition, some preliminary noise analyses (planning level only) were completed for each alternative. The conceptual designs were refined, cost estimates were updated, and impacts were revisited.

An updated comparison matrix was assembled for Alternatives A, B, and C and is included on the following page as **Table 13**. The renderings are presented in **Figures 12, 13 and 14**. The results of the noise analyses are presented in **Tables 14, 15, 16 and 17**.

Summary of Alternatives and Costs

	Alternative A	Alternative B	Alternative C
Alignment	High Level Bridge to Madison Ave.	High Level Bridge to Lane Ave.	Low Level Bridge to Madison Ave.
Project Length	12,300'	11,300'	12,700'
Bridge Length	1,800'	1,900'	1,500'
Right of Way*			
Number of Property Owners	8	4	6
Residential Relocations	0	1	6
Business Relcocations	1	0	1
Total Right of Way Acquisition	4.6 acres	6.9 acres	4.4 acres
Maintenance of Traffic	Extensive MOT on SR 84	Limited MOT on SR 84	Vrooman Road Detour and Extensive MOT on SR 84
Archaeology	Requires more relocation of SR 84, which must be designed to avoid known and potential resources	Intersection must be designed to avoid known resources	Requires more relocation of SR 84, which must be designed to avoid known and potential resources
Ecological Resources	~ Loss of habitat due to cutting of trees within new Right of Way and for construction access	~ Potential Stream Impact ~ Loss of habitat due to cutting of trees withing new Right of Way and for construction access	~ Potential Wetland Impact ~ Loss of habitat due to cutting of trees withing new Right of Way and for construction access
Park Issues	~ Property Purchase ~ Loss of Vegetation ~ Relocation of Parking ~ Construction of Pedestrian Crossing for Access to Mason's Landing	~ Property Purchase ~ Loss of Vegetation ~ Relocation of Parking ~ Construction of Pedestrian Crossing for Access to Mason's Landing	~ Increased noise within Park ~ Property Purchase ~ Loss of Vegetation ~ Long Realignment of Seeley Road ~ No access to Park from Vrooman Rd
Hazardous Materials (Phase I's Required)	3	2	3
Noise Impact (From Bridge)	Highest Potential Increase	Lowest Increase	Potential Increase
Traffic/Safety Benefits	~ Flat Grades ~ Eliminates Flooding	~ Flat Grades ~ Limited Turn Movements ~ Eliminates Flooding ~ Cul-de-sac on River Rd-local residential traffic only	~ Eliminates Flooding
Traffic/Safety Drawbacks	~ 90 Degree Bends ~ Increased traffic by condos		~ Potential for poor operations of Madison signal due to grade and tight turn for trucks ~ 90 Degree Bends ~ Increased traffic by condos
Construction Cost**	$16,180,400	$16,703,930	$12,761,000

* Condominium property impacts equal one owner, relocations represent households affected.
** R/W Cost not included

Table 13: Updated Summary of Alternatives and Costs

FIGURE 12: RENDERING OF ALTERNATIVE A

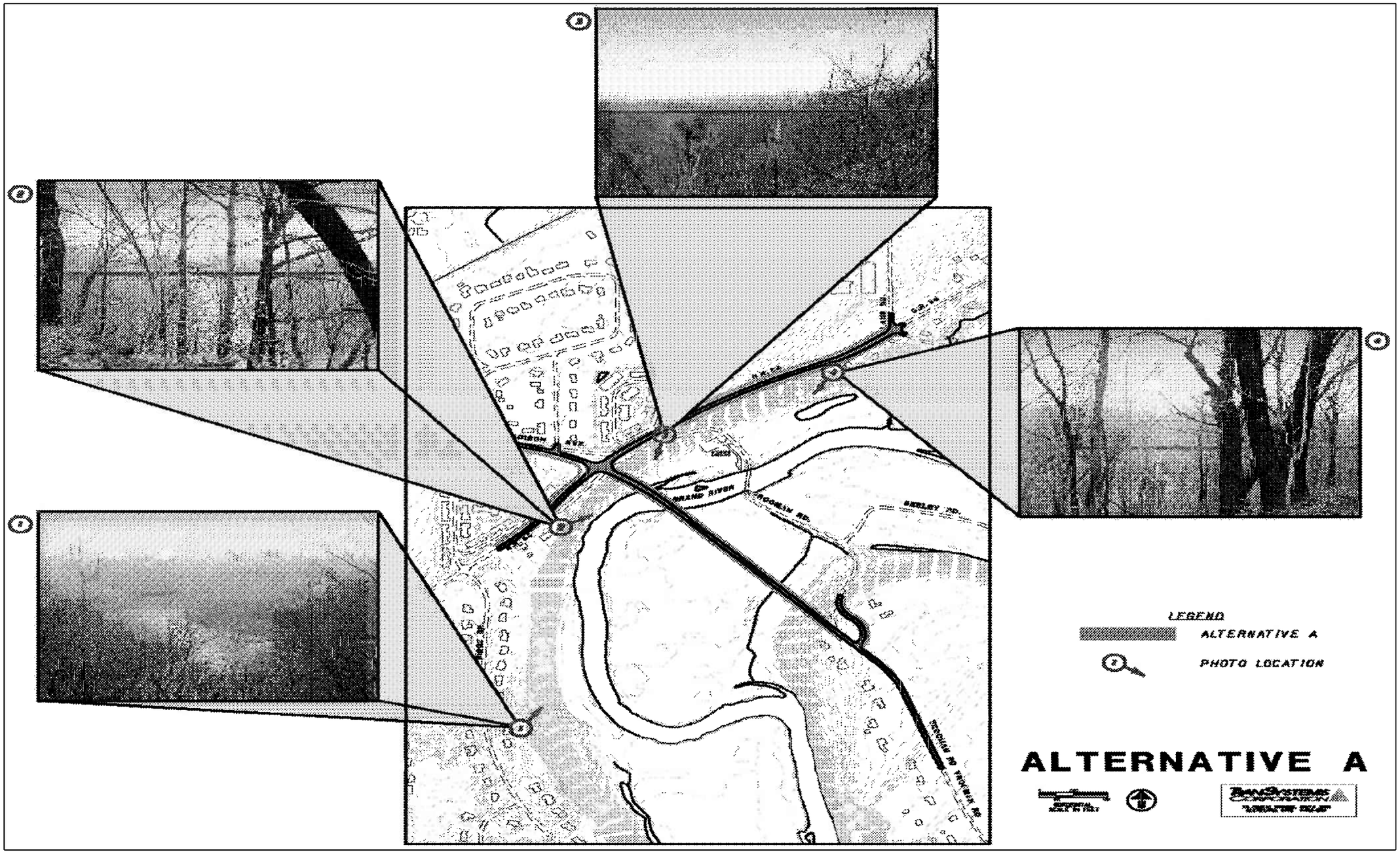


FIGURE 13: RENDERING OF ALTERNATIVE B

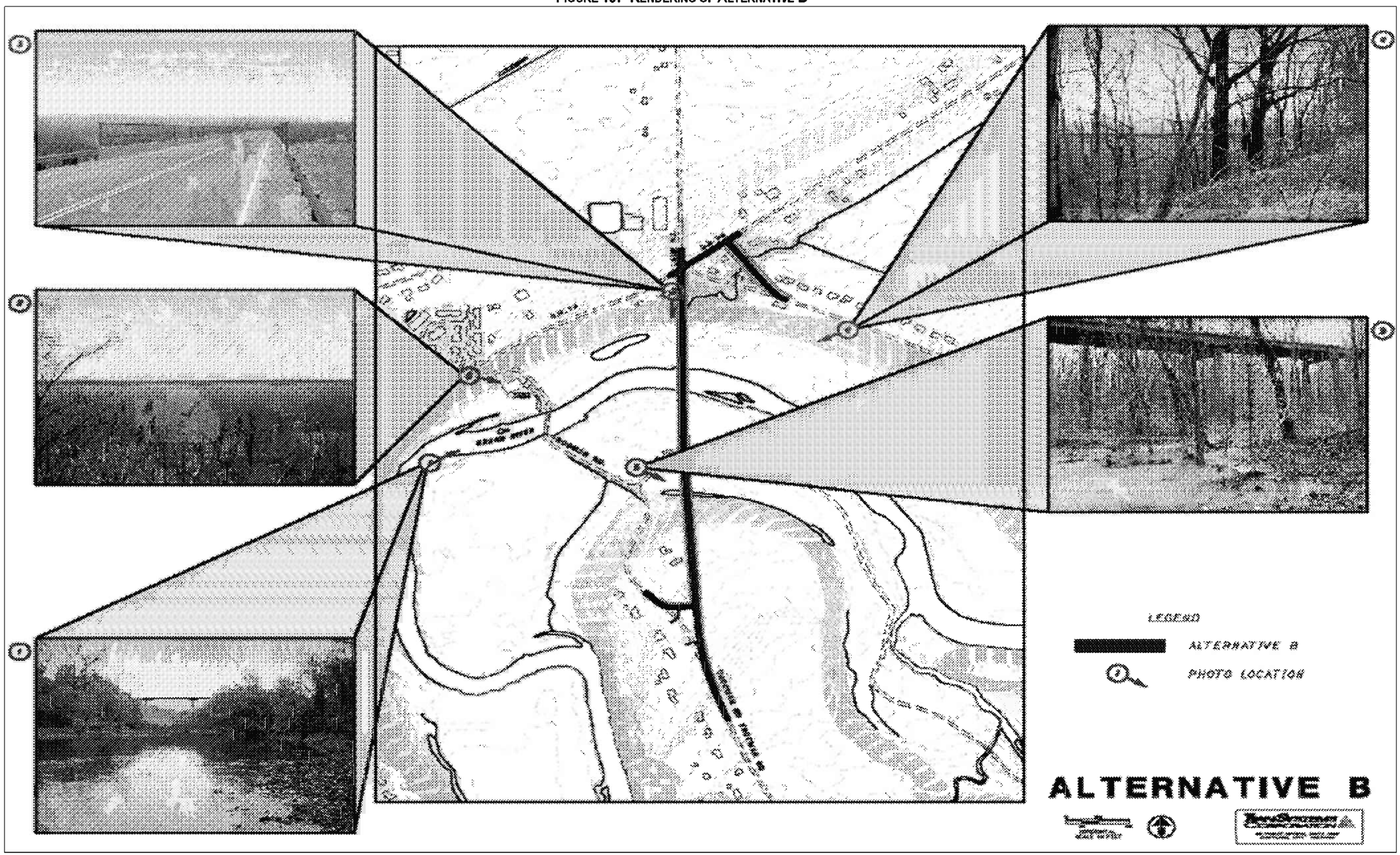


FIGURE 14: RENDERING OF ALTERNATIVE C

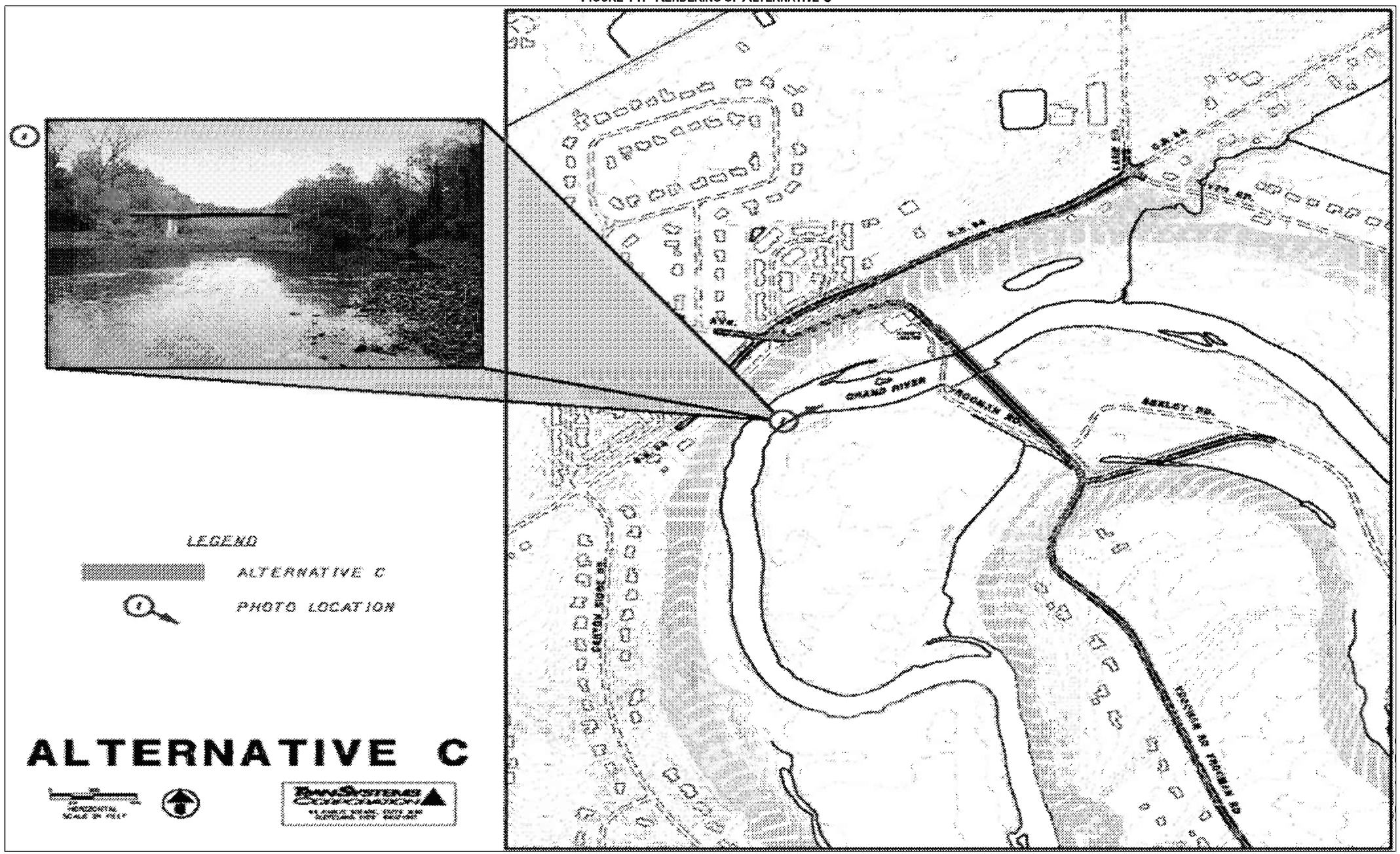


TABLE 14: NOISE IMPACTS MATRIX 1

Vrooman Road Study
Lake County, Ohio
TRANSYSTEMS CORPORATION

Noise Impacts Matrix

		Issue/Concern							
		Roadway Capacity	Vehicle Mix	Roadway Grade	Roadway Geometry	Pavement Type	Roadway Signalization		
Alternatives	No Build	No Change	No Change	High Grade	Non-Linear	No Change	No Change		
	Replace Bridge In Current Location	No Change	No Change	High Grade	Non-Linear	No Change	No Change		
	Alternative A	Set to Design Year	Minimal Increase in Heavy Truck	Low Grade	Linear	Deck with Low Noise	No Change		
	Alternative B	Set to Design Year	Minimal Increase in Heavy Truck	Low Grade	Linear	Deck with Low Noise	No Change		
	Alternative C	Set to Design Year	No Change	High Grade	Non-Linear	No Change	No Change		
	Alternative D								

TABLE 15: NOISE IMPACTS MATRIX 2A

		ALTERNATIVES									
		No Build		Replace Bridge in Current Location		Alternative A		Alternative B		Alternative C	
		Design	Elevated vs Low Bridge Noise Impact	Design	Elevated vs Low Bridge Noise Impact	Design	Elevated vs Low Bridge Noise Impact	Design	Elevated vs Low Bridge Noise Impact	Design	Elevated vs Low Bridge Noise Impact
Issue/Concern	Grade[1]	No Change*	Greater Noise Impact	High Grade*	Greater Noise Impact	Low Grade	Lesser Noise Impact	Low Grade	Lesser Noise Impact	High Grade*	Greater Noise Impact
	Road Geometry[2]	No Change*	Greater Noise Impact	Non-linear*	Greater Noise Impact	Linear	Lesser Noise Impact	Linear	Lesser Noise Impact	Non-linear*	Greater Noise Impact
	Vehicle Mix[3]	No Change*	Lesser Noise Impact	Vehicle type limits*	Lesser Noise Impact	All vehicle types	Greater Noise Impact	All vehicle types	Greater Noise Impact	All vehicle types	Lesser Noise Impact
	Pavement type[4]	No Change*	Greater Noise Impact	Deck replacement	Lesser Noise Impact	Deck replacement	Lesser Noise Impact	Deck replacement	Lesser Noise Impact	Deck replacement	Lesser Noise Impact
	Signalization[5]	No Change	Greater Noise Impact	No Change	Greater Noise Impact	No Change	Lesser Noise Impact	No Change	Lesser Noise Impact	No Change	Greater Noise Impact
	Roadway Elevation[6]	No Change*	Lesser Noise Impact	Low*	Lesser Noise Impact	High	Greater Noise Impact	High	Greater Noise Impact	Low*	Lesser Noise Impact
	Bridge Joints[7]	No Change	Greater Noise Impact	Steel/rubber joint	Lesser Noise Impact	Steel/rubber joints	Lesser Noise Impact	Steel/rubber joints	Lesser Noise Impact	Steel/rubber joint	Lesser Noise Impact

* Not within Current Design Standards
1 High grade ranges from 0 to 8% grade. Low grade ranges from 0 to 2% grade.
2 Non-linear curves range from 0 to 30 degrees.
3 No heavy trucks.
4 Deck replacement will likely be concrete.
5 Signalization should remain the same
6 High elevation should be approximately XXX. Low elevation should be approximately XXX.
7 Likey steel/rubber joints would be used with bridge replacement.

TABLE 16: NOISE IMPACTS MATRIX 2B

		ALTERNATIVES																			
		No Build				Replace Bridge in Current Location				Alternative A				Alternative B^				Alternative C			
Noise Issue/Concern		Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor
	Grade[8]	No Change*	Increase[2]	8	2	High Grade*	Increase[2]	8	2	Low Grade	Decrease[1]	8	1	Low Grade	Decrease[1]	8	1	High Grade*	Increase[2]	8	2
	Road Geometry[7]	No Change*	Increase[2]	7	2	Non-linear*	Increase[2]	7	2	Linear	Decrease[1]	7	1	Linear	Decrease[1]	7	1	Non-linear*	Increase[2]	7	2
	Vehicle Mix[6]	No Change*	Decrease[1]	6	1	Vehicle type limits*	Decrease[1]	6	1	All vehicle types	Increase[2]	6	2	All vehicle types	Increase[2]	6	2	All vehicle types	Decrease[1]	6	1
	Pavement type[5]	No Change*	Increase[2]	5	2	Deck replacement	Decrease	5	1	Deck replacement	Decrease[1]	5	1	Deck replacement	Decrease[1]	5	1	Deck replacement	Decrease[1]	5	1
	Signalization[4]	No Change	Increase[2]	4	2	No Change	Increase[2]	4	2	No Change	Decrease[1]	4	1	No Change	Decrease[1]	4	1	No Change	Increase[2]	4	2
	Roadway Moves[3]	No Change	Increase[2]	3	2	No Change	Increase[2]	3	2	No Change	Increase[2]	3	2	Signal Removed	Decrease[1]	3	1	No Change	Increase[2]	3	2
	Roadway Elevation[2]	No Change*	Decrease[1]	2	1	Low*	Decrease	2	1	High	Increase[2]	2	2	High	Increase[2]	2	2	Low*	Decrease[1]	2	1
	Bridge Joints[1]	No Change	Increase[2]	1	2	Steel/rubber joint	Decrease	1	1	Steel/rubber joints	Decrease[1]	1	1	Steel/rubber joints	Decrease[1]	1	1	Steel/rubber joint	Decrease[1]	1	1
	Alternative Rank^				65				59				48				45				59

^ Alternative with the lowest Rank is likely the Alternative with the least amount of overall noise impact.

Noise Issue/Concern Rank

* Not within Current Design Standards
8 High grade ranges from 0 to 8% grade. Low grade ranges from 0 to 2% grade.
7 Non-linear curves range from 0 to 30 degrees.
6 No heavy trucks.
5 Deck replacement will likely be concrete.
4 Intersection signalization
3 Number of required roadway moves from Vrooman Rd to Lane Rd.
2 High elevation should be approximately XXX. Low elevation should be approximately XXX.
1 Likey steel/rubber joints would be used with bridge replacement.

Noise Factor

1 Decrease in overall noise
2 Increase in overall noise

TABLE 17: NOISE IMPACTS MATRIX 2C

		ALTERNATIVES																	
		No Build*#				Replace Bridge in Current Location*#				Alternative A				Alternative B				Alternative C			
Noise Issue/Concern		Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor	Design	Bridge Noise Impact	I/C Factor	Noise Factor
	Roadway Elevation[8]	No Change	No Change	8	0	Low	No Change	8	0	High	Increase	8	5	High	Increase	8	5	Low	No Change	8	0
	Vehicle Mix[7]	No Change	No Change	7	0	Vehicle type limits	No Change	7	0	All vehicle types	Increase	7	5	All vehicle types	Increase	7	5	All vehicle types	Increase	7	5
	Roadway Moves[6]	No Change	No Change	6	0	No Change	No Change	6	0	No Change	No Change	6	0	Signal Removed	Decrease	6	-5	No Change	No Change	6	0
	Signalization[5]	No Change	No Change	5	0	No Change	No Change	5	0	No Change	No Change	5	0	No Change	No Change	5	0	No Change	No Change	5	0
	Grade[4]	No Change	No Change	4	0	High Grade	No Change	4	0	Low Grade	Decrease	4	-5	Low Grade	Decrease	4	-5	High Grade	No Change	4	0
	Road Geometry[3]	No Change	No Change	3	0	Non-linear	No Change	3	0	Linear	Decrease	3	-5	Linear	Decrease	3	-5	Non-linear	No Change	3	0
	Bridge Joints[2]	No Change	No Change	2	0	Steel/rubber joint	Decrease	2	-5	Steel/rubber joints	Decrease	2	-5	Steel/rubber joints	Decrease	2	-5	Steel/rubber joint	Decrease	2	-5
	Pavement type[1]	No Change	No Change	1	0	Deck replacement	Decrease	1	-5	Deck replacement	Decrease	1	-5	Deck replacement	Decrease	1	-5	Deck replacement	Decrease	1	-5
	Total Noise as Compared to No Change				0				-15				25				-5				20
	Alternative Rank^	No Change				Low Potential Noise Impact				High Potential Noise Impact				Low Potential Noise Impact				Potential Noise Impact			

^ Alternative with the lowest Rank is likely the Alternative with the least amount of overall noise impact.

Noise Issue/Concern Rank

* Not within Current Design Standards

\# Assumes no heavy trucks.

8 High elevation should be approximately 745. Low elevation should be approximately 640.

7 No heavy trucks.

6 Number of required roadway moves from Vrooman Rd to Lane Rd.

5 Intersection signalization

4 High grade ranges from 0 to 15% grade. Low grade ranges from 0 to 3% grade.

3 Non-linear curves range from 0 to 55 degrees.

2 Likely steel/rubber joints would be used with bridge replacement.

1 Deck replacement will likely be concrete.

Noise Factor

-5 Decrease in total noise

0 No change in total noise

5 Increase in total noise

3.6 IDENTIFICATION OF PREFERRED CONCEPT/STAKEHOLDER COMMITTEE MEETING #6

A sixth Stakeholder Committee Meeting was held on February 16, 2005 to identify a Preferred Alternative for the project. A presentation was given by the Project Team illustrating the steps taken by the Stakeholder Committee members to develop a Purpose and Need for the project through the development of feasible alternatives. The Project Team reviewed the pros and cons for each alternative and summarized how each met the Purpose and Need. In addition, the results of further investigation into visual and noise issues were presented. Displays of how each alternative would look from various areas in the park and neighboring communities for each option were shown, along with preliminary noise estimates for each alternative.

Following presentation of this previously requested information, the Stakeholder Committee chose Alternative B, the high-level bridge to Lane Road, as the Preferred Alternative for further development. Only Alternatives A and B meet the Purpose and Need. Alternative B offers similar park and environmental impacts as Alternative A, while providing a more direct route for emergency evacuation and minimizing impacts along SR 84.

Therefore, Alternative B was proposed by the Stakeholder Committee to be carried forward for further development during the Project Development Process.

4.0 NEXT STEPS

The project was initially classified under ODOT's Major Process, Steps 1-4. Based upon a September 21, 2005, coordination meeting with ODOT's District 12 and Office of Environmental Services, this project will now proceed under the Minor Project PDP. Step 4 of the Major Process achieves equivalent milestones of Step 2 of Minor Process. Therefore, the project will next enter Step 3 of the Minor Process.

While the Stakeholder Committee recommended Preferred Alternative to be carried forward in the Project Development Process (PDP) is Alternative B, ODOT determined that Step 3 will also need to continue to consider the "High-Level Bridge to Madison" alternative for comparison. During Step 3, specific alignment alternatives will be developed that achieve the intent of the Alternative B - High-Level Bridge to Lane Road and Alternative A - High-Level Bridge to Madison. Per ODOT, the Step 3 Preliminary Engineering Study will need to consider both Alternatives A and B for comparison.

Step 3 Preliminary design will also include alternative studies for the realignment of River Road. At this time, it is the intent to consult the local community on alternatives to be considered for River Road during the design process, rather than waiting to the formal public comment period.

Step 3 Environmental field studies will include Phase I history/architecture, identification of sensitive noise receptors, collection of socio-economic data, and conceptual RAP survey. In addition, the developed limits of the cemetery at SR 84 and Lane Road will need to be established to be used as a constraint in development of alternatives.

Due to the sensitive nature of the area, archaeological investigations and coordination will be advanced to occur during Step 3 (rather than Step 4). Working closely with the archaeological team, the design team will need to develop a plan and method for construction that avoid impacts to cultural resources that warrant preservation in place or resolve appropriate mitigation for those impacts.

By the end of Step 3 of the Minor Project Development Process, it will be known whether any avoidance options exist for critical cultural resources, and a decision can be made whether to continue with development of this concept. A public meeting would be held (Concurrence Point #2) and public comments solicited on the various design options under consideration.

Once the options are evaluated and public comments are addressed, the most promising will be advanced. During this step, preliminary construction limits will be developed. The ecological survey report will be completed to include impact calculations and coordination will be initiated with ODNR, OEPA, USFWS and ACOE. Noise analyses will be conducted and mitigation measures, if any, will be identified. If any properties warranted additional consideration and could not be avoided, Phase II history/architecture surveys would be conducted. If any farmlands are affected by the realignment of River Road, farmland studies would be done at this time. Lastly, Section 4(f) evaluations would be written, with formal concurrence sought from Lake Metroparks, Lake County, ODOT and FHWA regarding park impacts and proposed mitigation.

Lastly, Step 4 will involve preliminary Section 4(f) evaluations and development of design strategies to minimize harm and potential mitigation scenarios. Important to all the critical issues – park, ecological, and archaeological -- will be a constructability review and development of proposed construction strategy.

At the end of Step 4, the environmental document would be prepared, and Section 4(f) evaluation, Section 106 approval, and Stage 1 design plans completed.

Concurrent with the Project Development Process, the project team and Lake County will be developing a proposed plan for implementation of the project and seeking additional funding, perhaps related to homeland security issues, in order to complete the project. The ultimate timeline for design, right-of-way acquisition, and construction will be heavily dependent on the availability of funds.

The project team and Lake County recognize that there are still substantial hurdles to overcome in the development of the project. The park-related Section 4(f) impacts, river involvement, habitat impacts, and noise issues are similar on both of the alternatives that meet the Purpose and Need. Further analysis and consideration of avoidance, minimization and mitigation will occur during subsequent steps. Coordination with Lake Metroparks, ODNR and USFWS will continue to resolve these details. The primary remaining challenges are historic and archaeological, which are not quantified and resolved during the planning phase. Both issues will require more investigations and coordination under Section 106 and Section 4(f) to determine how these challenges will be overcome.

COUNTY of LAKE
BOARD of COMMISSIONERS

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April 11, 2006

James R. Gills, County Engineer
Lake County Engineer's Office
550 Blackbrook Rd.
Painesville, OH 44077

RE: Vrooman Rd. Bridge Project

Dear Mr. Gills:

As the person fundamentally responsible for disaster planning and preparedness for Lake County, I would like to express my concern with the deteriorating condition of Vrooman Rd. and lend support to the high-level bridge project being proposed by the Lake County Engineer's Office. EMA planners see two problems with Vrooman Rd. First, the 16-ton weight restriction on its bridge over the Grand River prohibits the crossing of large-truck traffic. The fact the roadway is susceptible to seasonal flooding is the second. This is why EMA does not include the road as a dedicated evacuation route in either the county Radiological Emergency Response Plan (RERP) or the Emergency Preparedness Information (EPI) brochure mailed to residents living inside the 10-mile Emergency Planning Zone (EPZ) of the Perry Nuclear Power Plant.

With that said, I believe the proposed high-level bridge is definitely needed to transform Vrooman Rd into a viable transportation asset. The roadway's direct access to Interstate 90 is critical to potential evacuation of those residents living within the 10-mile EPZ, as well as the ability to efficiently deliver critical resources back into the area if needed. With terrorism as the catalyst, both topics are currently in the forefront of disaster planning at all governmental levels.

Thank you for allowing me the opportunity to offer my support of the Vrooman Rd. bridge project. Please let me know if you have any questions.

Sincerely,

Larry Greene Director
Lake County Emergency Management Agency