

# LARGE FILING SEPERATOR SHEET

CASE NUMBER: 09-552-EL-BLN

FILE DATE: June 30, 2009

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**Letter of Notification to the Ohio Power Siting Board**  
**Case Number 09 - 0552<sup>EL</sup> - BLN**

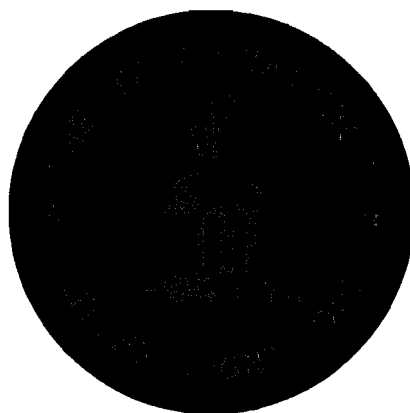
The City of Hamilton Electric Department  
Proposed Substation No. 4 to Substation No. 13 138 kV Transmission Line Project

June 29, 2009

This project involves the extension of 138 kV electric transmission service between the City of Hamilton's proposed replacement Substation No. 4 near Hooven and Wulzen Avenues and its proposed new Substation No. 13 to be located near the Vora Technology Park at Locust Avenue and University Boulevard. Since the substations and transmission line lie entirely within the Hamilton corporation limits and will serve Hamilton residents exclusively, this project could be constructed pursuant to Ohio Home Power Rules granted by the Ohio Constitution. Without waiving its Home Power Rule rights, the City of Hamilton is submitting this Letter of Notification to the Ohio Power Siting Board for review and approval to proceed with construction of this project.

Hamilton has retained the services of its trade association and engineering consulting services provider, American Municipal Power - Ohio (AMP-Ohio), to research land use, agricultural district land, archaeological and cultural resources, ecological resources and other socioeconomic impacts associated with the development of this project. AMP-Ohio and its subcontractors performed the field studies, made resource agency contacts and completed other investigations/studies between November 2008 and March 2009. The results of these studies are included in the appropriate sections of this Letter of Notification where requested. In some other cases, field data and reports are attached for your reference.

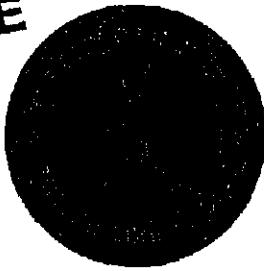
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Department of Electric

City of Hamilton, Ohio  
345 High Street, Hamilton, Ohio 45011  
Telephone 513 785-7202  
FAX 513 785-7230  
www.hamilton-city.org

June 30, 2009

Ms. Kim Wissman  
Executive Director  
Ohio Power Siting Board  
The Public Utilities Commission of Ohio  
180 East Broad Street  
Columbus, Ohio 43215-3793

**RE: Letter of Notification for the Proposed City of Hamilton Substation No. 4 to  
Substation No. 13 138kV Transmission Line**

Dear Ms. Wissman:

The City of Hamilton proposes to build a 1.5 mile 138kV transmission line between proposed replacement Substation No. 4 located near Hooven and Wulzen Avenues and proposed new Substation No. 13 near Locust Avenue and University Boulevard. The purpose of this project is to improve electric system reliability and enhance economic development in the city.

The proposed project provides the advantage of maximizing the use of existing right-of-way corridors to minimize environmental and socio-economic impact. Only about 400 feet of the proposed route will lie outside of existing right-of-ways.

The attached Letter of Notification is submitted for your review pursuant to Rule 4906-1-01 of the Administrative Code, as determined by the "Application Requirement Matrix for Electric Transmission Lines" in Appendix A of the rule. The City of Hamilton appreciates your review of this Letter of Notification and stands ready to answer any questions you may have.

Sincerely,

Anthony P. Pochard  
Acting Director of Electric  
City of Hamilton

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**Letter of Notification to the Ohio Power Siting Board**  
**Case Number 09 - 0552 - BLN**

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Proposed Substation No. 4 to Substation No. 13 138 kV Transmission Line Project

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## Table of Contents

<b>4906-11-01 Letter of Notification Requirements.....</b>	<b>1</b>
<b>(A) A letter of notification filed with the board shall contain the information described in paragraphs (B) to (E) of this rule. If the applicant requests expedited processing of the letter of notification, in addition to filing the letter with the docketing department, the applicant shall also serve a copy of the letter of notification directly with the board's executive director or the executive director's designee at or before the foiling of the expedited letter of notification by hand delivery or overnight courier service. ....</b>	<b>1</b>
<b>(B) General Information containing the following information:.....</b>	<b>1</b>
<b>(1) The name of the project and applicant's reference number, if any, names and reference number(s) of resulting circuits and a brief description of the project, and why the project meets the requirements for a letter of notification. ....</b>	<b>1</b>
<b>(2) If the proposed letter of notification project is an electric power transmission line or gas or natural gas transmission line, a statement explaining the need for the proposed facility. ....</b>	<b>2</b>
<b>(3) The location of the project in relation to existing or proposed lines and stations shown on the maps and overlays provided to the Public Utilities Commission of Ohio in the applicant's most recent long-term forecast report. .</b>	<b>3</b>
<b>(4) The alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to impacts associated with socioeconomic, natural environment, construction, or engineering aspects of the project. ....</b>	<b>3</b>
<b>(5) The anticipated construction schedule and proposed in-service date of project. ....</b>	<b>8</b>
<b>(6) An area map of not less than 1:24,000 scale clearly depicting the facility's location with clearly marked streets, roads, and highways, and clearly written instructions for locating and viewing the facility. ....</b>	<b>10</b>
<b>(7) A list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained. ....</b>	<b>12</b>
<b>(C) Technical Features of the Project .....</b>	<b>13</b>
<b>(1) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements. ....</b>	<b>13</b>
<b>(2) For electric power transmission lines, the production of electric and magnetic fields during the operation of the proposed electric transmission line. The discussion shall include:.....</b>	<b>26</b>
<b>(a) Calculated electric and magnetic field strength levels at one meter above ground under the lowest conductors and at the edge of the right-of-way for: .....</b>	<b>26</b>
<b>(i) Normal maximum loading. ....</b>	<b>26</b>
<b>(ii) Emergency line loading. ....</b>	<b>26</b>
<b>(iii) Winter normal conductor rating. ....</b>	<b>26</b>

(b) A discussion of the company's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width. ....	28
(3) The estimated cost of the project by federal energy regulatory commission account, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905 of the revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). ....	28
(D) Socioeconomic data. Describe the social and ecological impacts of the project. The description shall contain the following information: .....	29
(1) A brief, general description of land use within the vicinity of the proposed project, including: .....	29
(a) a list of municipalities, townships, and counties affected; and .....	29
(b) estimates of population density adjacent to rights-of-way within the study corridor (the U.S. census information may be used to meet this requirement). ....	29
(2) The location and general description of all agricultural land (including agricultural district land) existing at least sixty days prior to submission of the letter of notification within the proposed electric power transmission line right-of-way, or within the proposed electric power transmission substation fenced-in area, or within the construction site boundary of a proposed compressor station. ....	31
(3) A description of the applicant's investigation (concerning the presence or absence of significant archeological or cultural resources that may be located within the area likely to be disturbed by the project), a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation. ....	31
(4) Documentation that the chief executive officer of each municipal corporation and county, and the head of each public agency charged with planning land use in the area in which any portion of the facility is to be located have been notified of the project and have been provided a copy of the letter of notification. The applicant shall describe the company's public information program used in the siting of the proposed facility. The information submitted shall include either a copy of the material distributed to the public or a copy of the agenda and summary of the meeting(s) held by the applicant. ....	32
(5) A brief description of any current or pending litigation involving the project known to the applicant at the time of the letter of notification. ....	33
(6) A listing of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and construction of the project. ....	33
(E) Environmental data. Describe the environmental impacts of the proposed project. This description shall include the following information: .....	34
(1) A description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species,	

threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the area likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation..... 34

(2) A description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the areas likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation..... 35

(3) Any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts. .... 36

## **List of Figures**

1. Vicinity of Substation No. 4
2. Vicinity of Substation No. 13
3. Project Route Map
4. Project Map Showing Other Transmission Lines and Substations in the Project Area
5. Project Schedule
6. Map Showing Major Streets within 1,000 Feet of the Project Centerline
7. Structure 69301 (Hamilton Section)
8. Material List for Structure 69301 (Hamilton Section)
9. Structure 69306 (Hamilton Section)
10. Material List for Structure 69306 (Hamilton Section)
11. Structure 69302 (Hamilton Section)
12. Material List for Structure 69302 (Hamilton Section)
13. STD#3 Structure (Hamilton/Duke Energy Section)
14. Material List for STD#3 Structure (Hamilton/Duke Energy Section)
15. STD#4 Structure (Hamilton/Duke Energy Section)
16. Material List for STD#4 Structure (Hamilton/Duke Energy Section)



## **List of Tables**

- 1. Right-of-Way Requirements**
- 2. Transmission Line Operating Characteristics**
- 3. Number and Types of Structures: Hamilton Section**
- 4. Number and Types of Structures: Hamilton/Duke Energy Section**
- 5. Right-of-Way and Land Requirements**
- 6. Calculated Electric Field Values**
- 7. Calculated Magnetic Field Values**
- 8. Estimated Capital Costs: Hamilton Section**
- 9. Study Area Demographics**

## **List of Appendices**

- A. Duke Energy Cost Estimate to Upgrade Hamilton/Duke Energy Section**
- B. Hamilton Electric System Strategic Plan**
- C. AMP-Ohio Transmission Routing Study**
- D. Transmission Line Route Drawing with Stationing**
- E. Environmental Documentation Report Prepared by BBCM**
- F. Ohio Historic Preservation Office Concurrence Letter**
- G. Community Leader/Organization Contact Log**
- H. Comment Cards Received at the April 28, 2009 Public Meeting**
- I. Permit Application Forms and Submitted Applications**
- J. Reptile and Amphibian Habitat Survey Report**

## **4906-11-01 Letter of Notification Requirements**

- (A) A letter of notification filed with the board shall contain the information described in paragraphs (B) to (E) of this rule. If the applicant requests expedited processing of the letter of notification, in addition to filing the letter with the docketing department, the applicant shall also serve a copy of the letter of notification directly with the board's executive director or the executive director's designee at or before the filing of the expedited letter of notification by hand delivery or overnight courier service.**

Hamilton is not requesting expedited processing of this Letter of Notification.

**(B) General Information containing the following information:**

- (1) The name of the project and applicant's reference number, if any, names and reference number(s) of resulting circuits and a brief description of the project, and why the project meets the requirements for a letter of notification.**

The name of the project is the Hamilton Substation No. 4 to Substation No. 13 138 kV Transmission Line Project. The project will consist of an approximately 1.5 mile single circuit 138kV transmission line on wood and steel monopole structures, mostly occupying existing rights-of-way (ROW) held by the CSX Railroad, the City of Hamilton, the Ohio Department of Transportation, and Duke Energy. A small amount of ROW was obtained from private landowners. Hamilton has secured the necessary right-of-way for this project from all parties. The line will connect proposed replacement Hamilton Substation No. 4 located near Hooven and Wulzen Avenues (Figure 1) with proposed new Hamilton Substation No. 13 near Locust Avenue and University Boulevard (Figure 2).

From Substation No. 4 the line will cross the CSX Railroad and parallel the west side of the railroad to a point southwest of Central Avenue. From the point southwest of Central Avenue, the line will cross US Highway 127 (Pleasant Avenue) and head northwest to a point coincident with an existing Duke Energy 69 kV transmission line. The line will then follow the existing Duke Energy line to proposed new Substation No. 13 (See Figure 3). The junction with Duke's 69 kV line just west of Pleasant Avenue (U.S. 127) is the demarcation between the Hamilton Section and the Hamilton/Duke Energy Section of this line. Duke Energy is aware of and accepts Hamilton's intention to jointly occupy their 69 kV transmission line and has provided Hamilton with a cost estimate for the necessary upgrades. A copy of Duke's cost estimate for the upgrade is provided in Appendix A.

The proposed transmission line will make use of twenty-five 75 - 95 foot tall wood monopoles that already exist for electric distribution purposes along the west side of the CSX Railroad ROW. There will be four pole replacements from the CSX Railroad ROW to replacement Substation No. 4. There will be one new pole and one pole replacement

between CSX ROW and Hamilton/Duke joint line. From the Hamilton/Duke Energy 69 kV junction to Substation No. 13, Duke will replace eight existing wood poles with steel monopole structures. In addition to the Duke 69 kV and Hamilton 138 kV transmission lines, the steel poles will also support two 13.8 kV Hamilton distribution lines.

Substation No. 4 and Substation No. 13 will function as both transmission and a distribution interchanges. Substation No. 4 is an existing substation that will be updated and relocated. The update will include two new 25 MVA transformers to replace the existing transformers. The replacement substation will retain the six distribution circuits served by the existing substation. The six circuits consist of the Bobmeyer Rd./SHIP Feeder, Hamilton Foundry Feeder, Line 1643 B Feeder, Line 3141B Feeder, SOID (Southern Ohio Industrial District) Feeder and the Williams Avenue Feeder. Each of the Substation No. 4 circuits has an average ampacity of 465 amps at 13,800 volts.

Proposed Substation No. 13 will also have two 25 MVA transformers and will serve five or six 13.8 kV distribution circuits. Substation No. 13 will be used to reduce the load on Substation No. 4 which is currently operating at 90% of capacity and absorb expected load growth from the University Commerce Park and Vora Technology Park developments.

Using the Application Requirement Matrix for Electric Transmission Lines in Appendix A to OAC 4906-1-01, the proposed transmission line described above meets the definition of 1(e) because it is between 125 and 300 kV and does not exceed two miles in total length. Projects meeting this definition qualify for the Letter of Notification approval process.

**(2) If the proposed letter of notification project is an electric power transmission line or gas or natural gas transmission line, a statement explaining the need for the proposed facility.**

Hamilton has developed a strategic plan (Appendix B) for relieving electric system bottlenecks and meeting the city's electric supply needs into the next decade. In addition to the Substation No. 4 to Substation No. 13 138 kV Transmission line, which is the subject of this application, Hamilton will be proposing a 138 kV transmission line from the SOID Substation to Substation No. 10 later this year.

Specifically, the Substation No. 4 to Substation No. 13 transmission line project is being undertaken to relieve Hamilton 138 kV transmission lines 103-111 and 111-151 and the 138/69 kV autotransformers located at Hamilton Substations No. 10 and No. 15, and to provide capacity for proposed hydroelectric generation from the Captain Anthony Meldahl Locks and Dam near Willow Grove, Kentucky. As mentioned above, Substation No. 4 and No. 13 will also provide increased distribution reliability and a source of distribution capacity for load growth near Substation No. 13. As discussed in

Hamilton's strategic plan, the Substation No. 4 to Substation No. 13 138 kV circuit is the most economical means of accomplishing this objective. Furthermore, AMP-Ohio's routing study (Appendix C) demonstrates the route discussed in this Letter of Notification results in the least ecological, cultural and socio-economic impact.

Hamilton has a 2007 estimated population of 62,285 and serves as the seat of Butler County government. In addition to being a seat of local government, Hamilton is a major economic center in southwestern Ohio. The city's electric department was founded in 1895 and today serves just over 30,000 meters (90% residential). The city owns and operates a 104.5 MW coal-fired power station and a small 1 MW hydroelectric plant within its corporation limits. Hamilton also owns and operates a 76 megawatt (MW) hydroelectric plant at the Greenup Locks and Dam near Greenup, Kentucky and, as mentioned above, is looking to develop additional hydroelectric generation capacity at the Meldahl Locks and Dam. Due to the location of a substantial percentage of city-owned generation assets outside its city limits, Hamilton imports a significant portion of its total energy through its 138 kV interconnection with Duke Energy. Consequently, it is imperative for the city to maintain a robust electric transmission system.

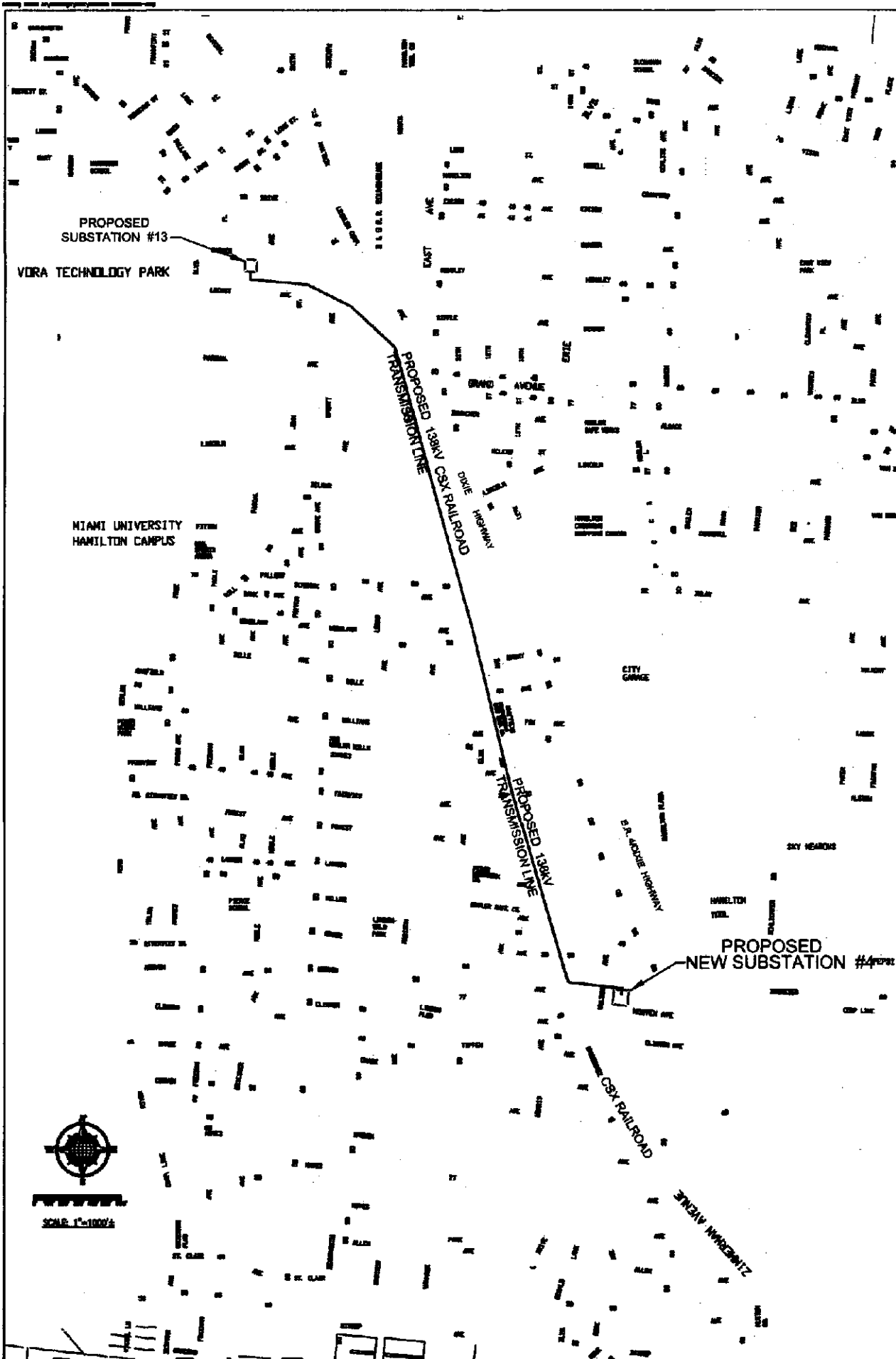
**(3) The location of the project in relation to existing or proposed lines and stations shown on the maps and overlays provided to the Public Utilities Commission of Ohio in the applicant's most recent long-term forecast report.**

The City of Hamilton is not subject to regulation by the Public Utilities Commission of Ohio; hence, a long-term forecast report with supporting maps and overlays has not been filed with the Commission. A map showing this project in relation to other electric transmission lines and substations within 1,000 feet of the transmission line centerline are included as Figure 4.

**(4) The alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to impacts associated with socioeconomic, natural environment, construction, or engineering aspects of the project.**

Alternatives to construction of this line were carefully considered by the city. "No build" alternatives included adding local base-load generation resources, conservation measures and alternate transmission system upgrades.

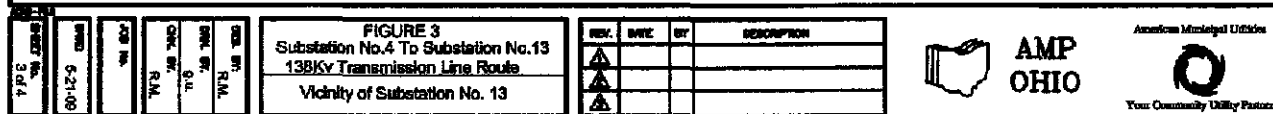




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**FIGURE 2**  
 Substation No. 4 To Substation No. 13  
 138Kv Transmission Line Route

REV.	DATE	BY	DESCRIPTION
1			
2			
3			







Adding local base load generation is not a feasible option because a new base load power plant requires an 8 – 10 year planning and permitting horizon which extends beyond the period of projected need for additional electric supply capacity. Moreover, local environmental quality issues such as Butler County's non-attainment designation for ozone and fine particulate matter may extend the permitting timeline or substantially increase the cost of the local generation option for fossil fuel-based generation projects. Because of substantial cost and schedule uncertainties that extend well beyond the projected need, this option was rejected.

Opportunities for reducing demand through improved load management and/or energy efficiency projects are frequently evaluated by the city. Where such programs result in a lower cost, reliable energy source for its customers, they are pursued. For example, the city encourages its customers to delay non-essential electric consumption to non-peak periods, and the city or its agents provide technical assistance designed to reduce energy peak demand and consumption. Because much of the projected load increase is expected to come from new, high technology businesses, demand control alone will be insufficient to meet the needs of new customers.

Hamilton performed load flow studies and performed other analyses to determine the least cost feasible means of increasing system reliability and capacity. Options besides the Substation No. 4 to Substation No. 13 transmission line failed to optimize system reliability and capacity and minimize costs.

After determining a 138 kV transmission line from Substation No. 4 to Substation No. 13 is necessary, Hamilton commissioned AMP-Ohio to evaluate several route options. AMP-Ohio considered socioeconomic, natural environment, ecological, cultural, construction and engineering impacts and determined the route proposed in this application is the route best suited for the proposed project as it balances the positive and negative impacts of the project. A copy of the routing study is included in Appendix C.

**(5) The anticipated construction schedule and proposed in-service date of project.**

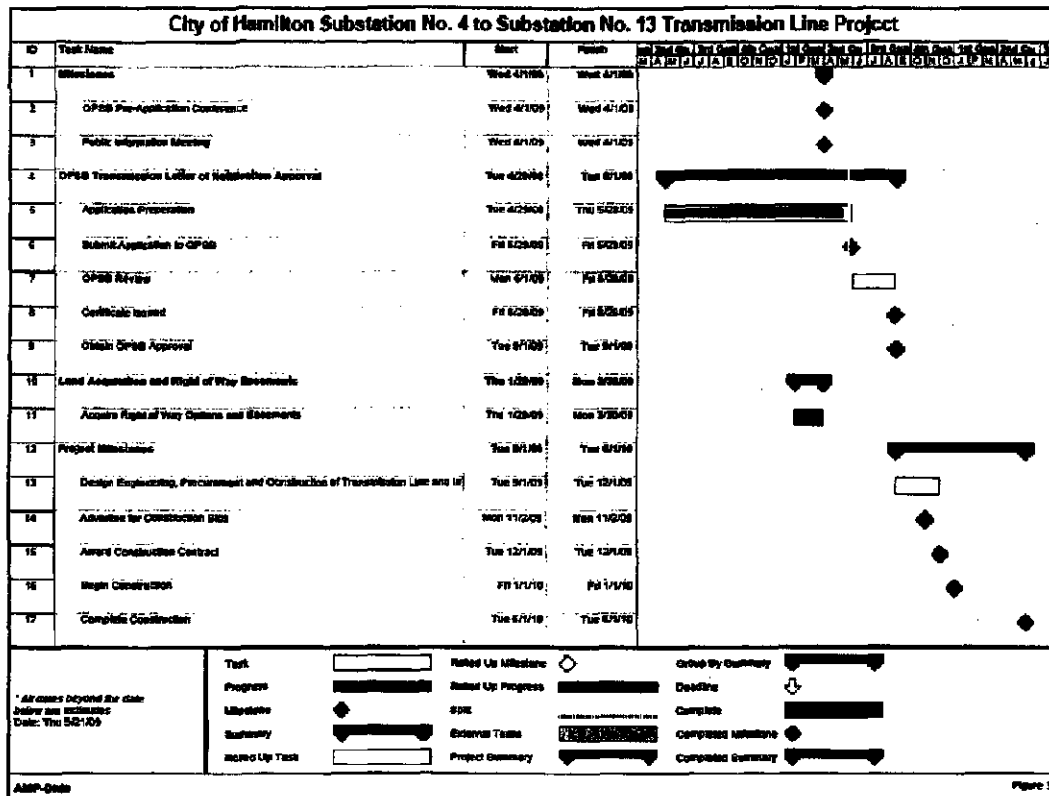
The projected schedule for construction and operation of the Substation No. 4 to Substation No. 13 transmission line is summarized below:

- Complete Land Acquisition and Right-of-Way Easements: March 2009
- Ohio Power Siting Board Pre-Application Conference: April 2009
- Public Information Meeting: April 2009
- Docket application with the OPSB: June 2009
- Obtain OPSB Approval and Certificate of Environmental Compatibility: August 2009
- Design, Engineering, and Material Procurement: September 2009 – December 2009
- Advertise for Construction Bids: November 2009
- Award Construction Contract: December 2009

- Submit Notice of Intent for Coverage Under Ohio EPA General NPDES Permit No. OHC000003 (Stormwater Pollution Prevention Plan for Construction Activities): December 2009
- Begin Construction: January 2010
- Commercial Operation of Transmission Line: June 2010

A graphical presentation of the schedule is provided in Figure 5.

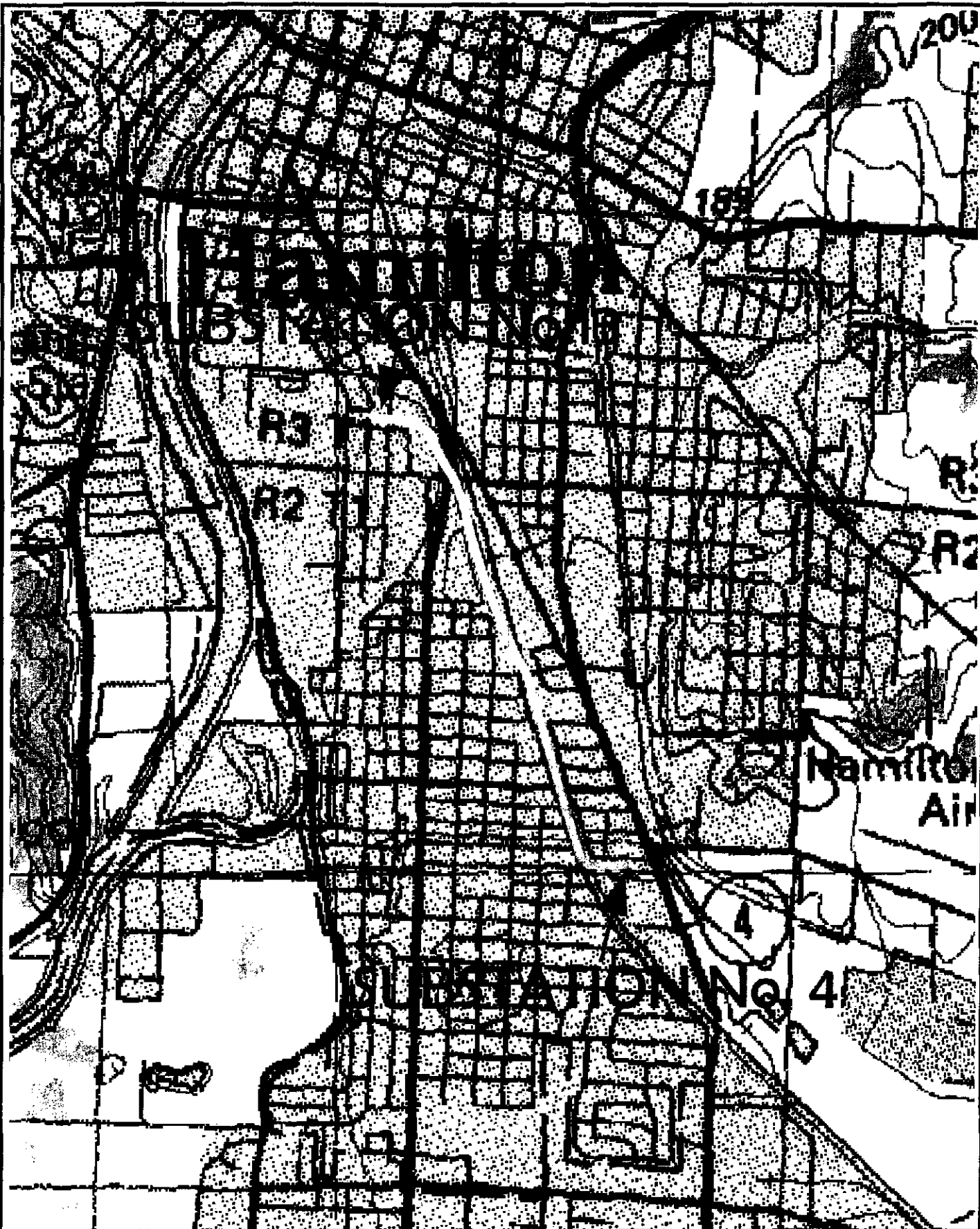
Figure 5



**(6) An area map of not less than 1:24,000 scale clearly depicting the facility's location with clearly marked streets, roads, and highways, and clearly written instructions for locating and viewing the facility.**

Figure 6 is a 1:24,000 map showing the transmission line with its origination and termination points. The map also includes clearly identified major streets, roads, and highways within 1,000 feet of the project centerline. To assist regulatory personnel and other interested parties with location and observation of the transmission route, driving directions are also included. For clarity, the transmission line has been divided into two sections:

- (1) Poles occupied exclusively by Hamilton Electric Department equipment;  
and
- (2) Poles occupied by Hamilton Electric Department and Duke Energy equipment.



MESA

FIGURE 6  
 138kV TRANSMISSION LINE  
 SUBSTATION #4 TO SUBSTATION #13  
 HAMILTON ELECTRIC DEPARTMENT

DATE	APPROVED BY	REVISIONS
3-6-09	R.M.	

The Hamilton Section originates at Substation No. 4 (Station 0 + 00 as measured along the project centerline) and proceeds to the intersection with Duke Energy's 69 kV transmission line (Station 71 + 75). The Hamilton/Duke Energy Section begins at Station 71 + 75 and proceeds to the point of termination at Substation No. 13 or Station 82 + 00. See Appendix D for a map of the transmission route with stationing.

To locate the transmission line origination point at Substation No. 4:

- From Interstate Highway 75 exit at State Route 129 (Butler County Regional Highway) and head west toward Hamilton.
- Turn left at State Route 4 (Erie Boulevard).
- Turn right at Hooven Avenue and head west to its junction with Wulzen Avenue. This will be the approximate location of the new Substation No. 4.
- From Hamilton Substation No. 4 (Station 0 + 00) the route will cross the CSX Railroad and parallel the west side of the CSX Railroad approximately 1.2 miles to a point southwest of Central Avenue (Station 67 + 20).
- From the point southwest of Central Avenue, the route will cross US Highway 127 (Pleasant Avenue), heading northwest to a point coincident with an existing Duke Energy 69 kV transmission line (Station 71 + 75).
- The route then heads west to its termination at proposed Hamilton Substation No. 13 near Locust Avenue and University Boulevard (Station 82 + 00), coincident with the existing Duke Energy 69 kV Transmission Line.

To locate the transmission line termination point at Substation No. 13:

- From State Route 129, turn left onto U.S. 127.
- Turn right onto Knightsbridge Drive.
- Turn left onto University Boulevard.
- Substation No. 13 will be located on the east side of University Boulevard, opposite Vora Technology Drive, near Locust Avenue.

**(7) A list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.**

Table 1 is a list of properties that will be crossed by the transmission line ROW. For those portions of the line where the utility rights are already controlled by the City of Hamilton, no further action is necessary. Hamilton recently obtained the rights to install and maintain the transmission line over land controlled by the CSX Railroad and Porter Advertising, completing acquisition of all required land use rights from Substation No. 4 to Substation No. 13.

**Table 1**  
**Right-of-Way Requirements**

Owner(s)	Easement Holder	Start Station	End Station	Transmission Line Rights Obtained
City of Hamilton	City of Hamilton	0+00	6+30	Yes
CSX Transportation	City of Hamilton	6+30	67+20	Yes
CSX Transportation	City of Hamilton	67+20	67+90	Yes
Porter Advertising, LLC	City of Hamilton	68+60	71+75	Yes
Tri-City Auto (Richard Peterson)	City of Hamilton	71+00 Right	71 + 40 Right	Yes
City of Hamilton	Duke Energy	71+75	82+00	Yes

**(C) Technical Features of the Project**

**(1) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.**

**Operating Characteristics**

The Substation No. 4 to Substation No. 13 transmission line is expected to be in service at all times except when it needs to be de-energized for maintenance or emergency conditions. The line is designed to operate at a nominal voltage of 138 kV. Due to changing conditions within the transmission system, the voltage level may be expected to fluctuate between 5% +/- of the nominal voltage level. Current levels on this line will also vary depending on the system conditions and the demand for electrical energy. Typical average load levels will result in typical current flows in the circuit of approximately 59.65 Amperes per phase. Weather extremes will cause increased loading and currents. In addition, lower loads and currents are expected during night hours and on weekends when most industries, commercial establishments and residences in Hamilton are operating at reduced capacity. Under peak conditions, the line is expected to carry 114.72 Amperes per phase. Under emergency conditions or if some other transmission facility in the regional transmission system is out of service, the line could experience 267 Amperes of current. The maximum rated current capacity of the line under

emergency conditions is 530 Amperes per phase in the summer and 530 Amperes per phase in the winter. The aluminum wire capacity in the winter would be in the range of 630 amps but Hamilton rates the line capacity at 530 amps winter and summer. These load levels are not expected under current system conditions; however, such levels are possible with continued system growth and expansion, extreme weather conditions, and other outage situations. Operating characteristics are summarized in Table 2 below.

**Table 2**  
**Operating Characteristics: Current Flow (Amperes per phase) at Select Conditions**

Typical Average	Peak Conditions	Emergency Conditions	Maximum Rated Summer Current Capacity	Maximum Rated Winter Current Capacity
59.65	114.72	267	530	530

#### Number and Types of Structures

The Hamilton Electric section of the route, primarily paralleling the CSX Railroad, will have twenty-five 75 - 95 foot wood monopoles used for electric distribution service at the lower elevations. The 138 kV transmission line will occupy the upper elevations of the poles. Typical drawings and material lists for the existing wood monopoles along the Hamilton Section and the proposed structures along the Hamilton/Duke Energy Section needed to complete the route are included in Figures 7 through 16. The number and types of new and existing pole structures required to complete the route are listed in Table 3 (Hamilton Section) and Table 4 (Hamilton/Duke Energy Section) below.

**Table 3**  
**Number and Types of Existing, Replacement and New Pole Structures**  
**Hamilton Section**

Structure Type	New Number	Replacement Number	Existing Number
69301 (STD#1)	1	1	21
69302 (STD#2)	0	0	1
69306 (STD#3)	0	4	0

The wood pole structures listed in Table 3 will be supported in compacted aggregate and existing soil. The additional wood pole structures (one new and one replacement) needed to span the distance between the junction with the Hamilton Electric/Duke Energy Section and Hamilton's last existing wood pole along the CSX ROW will be designed and installed in accordance with Hamilton Electric Department specifications.



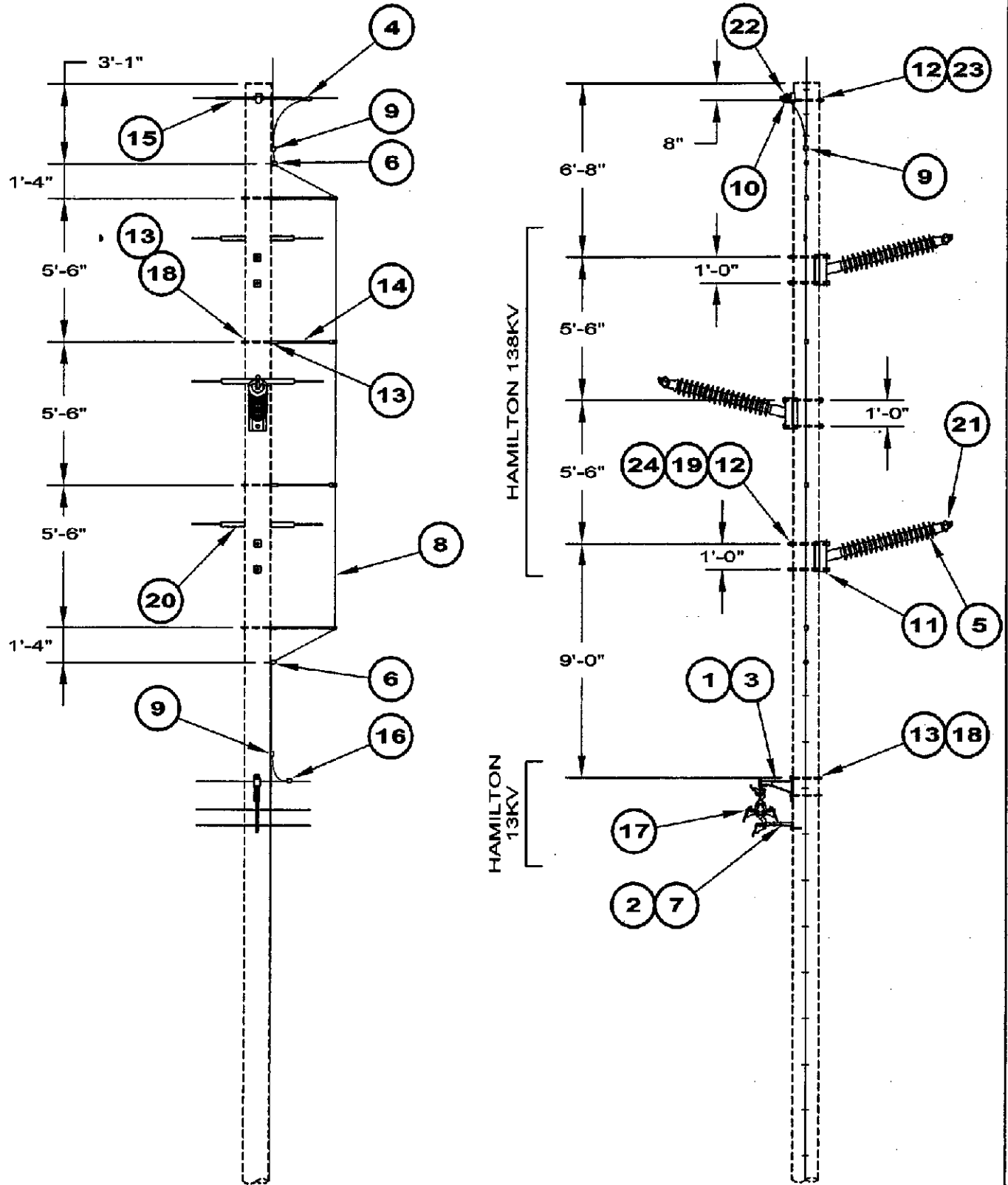


FIGURE 7

HAMILTON 138 KV TRANSMISSION  
0 - 2 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

DATE:  
11/20/2008

DRAWN BY:  
JLM

REV:

REV BY:

# CITY OF HAMILTON

STD #1

## ELECTRICAL STANDARD MATERIAL LIST

ITEM	QUANTITY	CITY PART NO.	DESCRIPTION
1	1	40015	TANGENT BRACKET STIRRUP
2	1	40083	ANTI-SWAY BRACKET
3	1	40085	TANGENT MESSENGER BRACKET
4	1	40171	SQUEEZE-QN
5	3	41072	HORIZ. INSULATOR POST, RUBBER, CLAMP-STYLE
6	2	41830	HOUSE KNOB, 3" SCREW
7	1	42182	1/2" X 4 1/2" LAG SCREW
8	AS REQD	42560	#4 COPPERWELD
9	2	43265	SQUEEZE-ON #302-82
10	1	44291	STATIC WIRE BRACKET
11	6	44424	SQUARE FLAT WASHER, 3/4" HOLE
12	7	44510	SQUARE CURVED WASHER, 3/4" HOLE
13	10	44698	SQUARE CURVED WASHER, 5/8" HOLE
14	4	44923	DOWN LEAD BRACKET
15	1	44925	ARMOR ROD 7#10 ALUMOWELD
16	1	44927	SQUEEZE-ON, WR379 4/0-2
17	AS REQD	45412	AERIAL CABLE SPACER
18	6	AS REQD	5/8" MACHINE BOLT, LENGTH AS REQD
19	6	AS REQD	3/4" MACHINE BOLT, LENGTH AS REQD
20	3	AS REQD	ARMOR ROD
21	3	AS REQD	CLAMP
22	1	AS REQD	CLAMP FOR 7#10 ALUMOWELD
23	1	AS REQD	LINE POST STUD, 3/4"
24	6	AS REQD	SPRING WASHER

### FIGURE 8

DATE:

11/20/2008

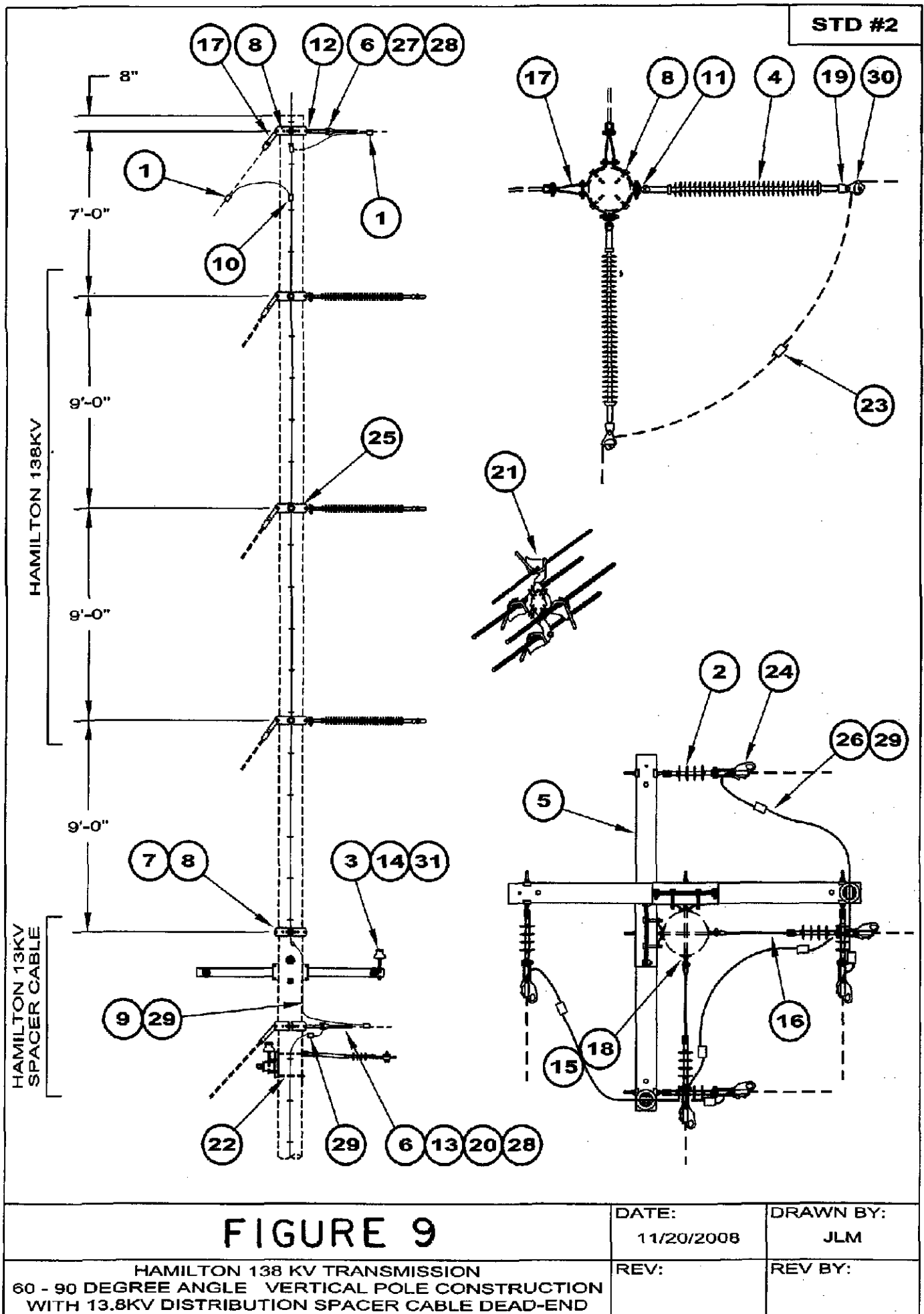
DRAWN BY:

JLM

HAMILTON 138 KV TRANSMISSION  
0 - 2 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

REV:

REV BY:



# CITY OF HAMILTON

STD #2

## ELECTRICAL STANDARD MATERIAL LIST

ITEM	QUANTITY	CITY PART NO.	DESCRIPTION
1	3	40171	SQUEEZE-ON
2	6	40951	DEAD-END INSULATOR
3	2	40963	5/8" CROSS-ARM PIN
4	6	41073	SUSPENSION INSULATOR, 69KV AND 138KV
5	2	41120	8'-0" HEAVY DUTY CROSS-ARM
6	6	41450	CLEVIS TO CLEVIS LINK
7	2	42078	CHAIN LINK POLE BAND
8	24	42181	1/2" X 4 1/2" LAG SCREW
9	AS REQD	42603	2/0 COPPER, INSULATED
10	2	43265	SQUEEZE-ON #302-82
11	6	44137	FIGURE 8 LINK, TWISTED
12	AS REQD	44141	FIGURE 8 LINK, PLAIN
13	2	44168	3/4" X 3" BOLT WITH KEY
14	2	44230	PIN-TYPE INSULATOR, 1" THREADED HOLE
15	4	44252	3/4" EYENUT
16	2	44267	20" EXTENSION LINK
17	12	44480	CONNECTING LINK
18	4	44510	SQUARE CURVED WASHER, 3/4" HOLE
19	6	44909	SOCKET EYE CONNECTOR
20	2	44912	PREFORM GRIP FOR 7#6
21	AS REQD	45412	AERIAL CABLE SPACER
22	4	AS REQD	3/4" MACHINE BOLT, LENGTH AS REQD
23	3	AS REQD	IMPACT CONNECTOR
24	6	AS REQD	DEAD END CLAMP
25	4	AS REQD	FOUR-WAY POLE BAND
26	3	AS REQD	JUMPER
27	2	AS REQD	PREFORM GRIP
28	4	AS REQD	SHEAVE WHEEL
29	9	AS REQD	SQUEEZE-ON
30	6	AS REQD	STRAIN CLAMP
31	2	AS REQD	TOP TIE

### FIGURE 10

DATE:

11/20/2008

DRAWN BY:

JLM

HAMILTON 138 KV TRANSMISSION  
60 - 90 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE DEAD-END

REV:

REV BY:

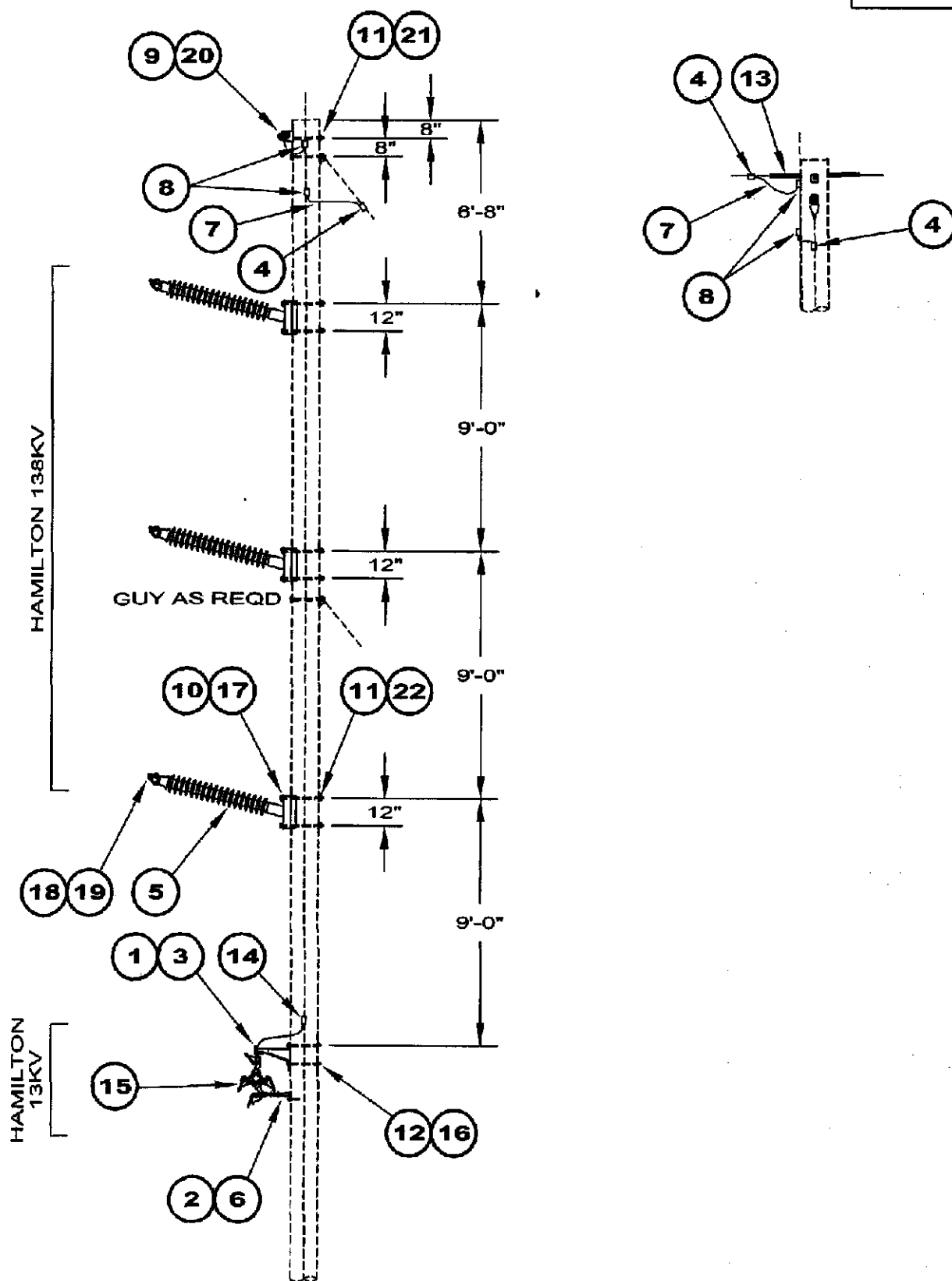


FIGURE 11

HAMILTON 138 KV TRANSMISSION  
3 - 15 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

DATE:  
3/3/2009

DRAWN BY:  
JLM

REV:

REV BY:

# CITY OF HAMILTON

STD #8

## ELECTRICAL STANDARD MATERIAL LIST

ITEM	QUANTITY	CITY PART NO.	DESCRIPTION
1	1	40015	TANGENT BRACKET STIRRUP
2	1	40083	ANTI-SWAY BRACKET
3	1	40085	TANGENT MESSENGER BRACKET
4	2	40171	SQUEEZE-ON
5	3	41072	HORIZ. INSULATOR POST, RUBBER, CLAMP-STYLE
6	1	42182	1/2" X 4 1/2" LAG SCREW
7	AS REQD	42560	#4 COPPERWELD
8	2	43285	SQUEEZE-ON #302-82
9	1	44291	STATIC WIRE BRACKET
10	6	44424	SQUARE FLAT WASHER, 3/4" HOLE
11	7	44510	SQUARE CURVED WASHER, 3/4" HOLE
12	2	44698	SQUARE CURVED WASHER, 5/8" HOLE
13	1	44925	ARMOR ROD 7#10 ALUMOWELD
14	1	44927	SQUEEZE-ON, WR379 4/0-2
15	AS REQD	45412	AERIAL CABLE SPACER
16	2	AS REQD	5/8" MACHINE BOLT, LENGTH AS REQD
17	6	AS REQD	3/4" MACHINE BOLT, LENGTH AS REQD
18	3	AS REQD	ARMOR ROD
19	3	AS REQD	CLAMP
20	1	AS REQD	CLAMP FOR 7#10 ALUMOWELD
21	1	AS REQD	LINE POST STUD, 3/4"
22	6	AS REQD	SPRING WASHER

### FIGURE 12

DATE:

3/3/2009

DRAWN BY:

JLM

HAMILTON 138 KV TRANSMISSION  
3 - 15 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

REV:

REV BY:

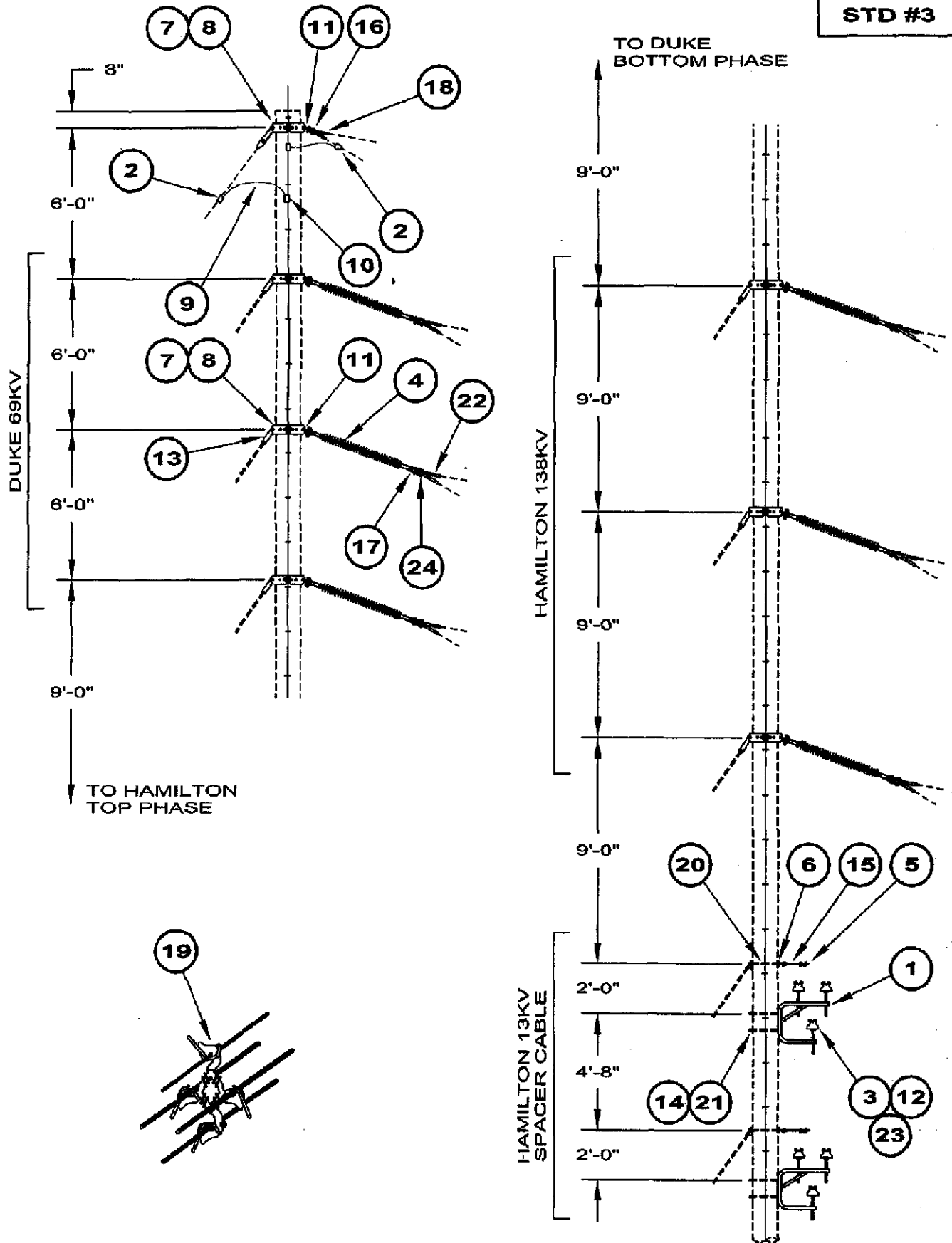


FIGURE 13

HAMILTON 138 KV TRANSMISSION  
RUNNING ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

DATE:  
11/20/2008

DRAWN BY:  
JLM

REV:

REV BY:

# CITY OF HAMILTON

STD #3

## ELECTRICAL STANDARD MATERIAL LIST

ITEM	QUANTITY	CITY PART NO.	DESCRIPTION
1	2	40084	ANGLE BRACKET
2	2	40171	SQUEEZE-ON
3	6	40963	5/8" CROSS-ARM PIN
4	6	41073	SUSPENSION INSULATOR, 69KV AND 138KV
5	2	41935	ANGLE CLAMP
6	2	41983	5/8" EYELET 'D'
7	7	42078	FOUR-WAY POLE BAND
8	28	42181	1/2" X 4 1/2" LAG SCREW
9	AS REQD	42560	#4 COPPERWELD
10	2	43265	SQUEEZE-ON #302-82
11	7	44137	FIGURE 8 LINK, TWISTED
12	6	44230	PIN-TYPE INSULATOR, 1" THREADED HOLE
13	7	44480	CONNECTING LINK
14	4	44510	SQUARE CURVED WASHER, 3/4" HOLE
15	2	44576	CLEVIS EYE
16	1	44906	STATIC SUSPENSION CLAMP
17	6	44909	SOCKET EYE CONNECTOR
18	1	44925	ARMOR ROD, 7#10 ALUMOWELD
19	AS REQD	45412	AERIAL CABLE SPACER
20	2	AS REQD	5/8" MACHINE BOLT, LENGTH AS REQD
21	4	AS REQD	3/4" MACHINE BOLT, LENGTH AS REQD
22	6	AS REQD	ARMOR ROD
23	6	AS REQD	SIDE TIE
24	6	AS REQD	SUSPENSION CLAMP

### FIGURE 14

DATE:

11/20/2008

DRAWN BY:

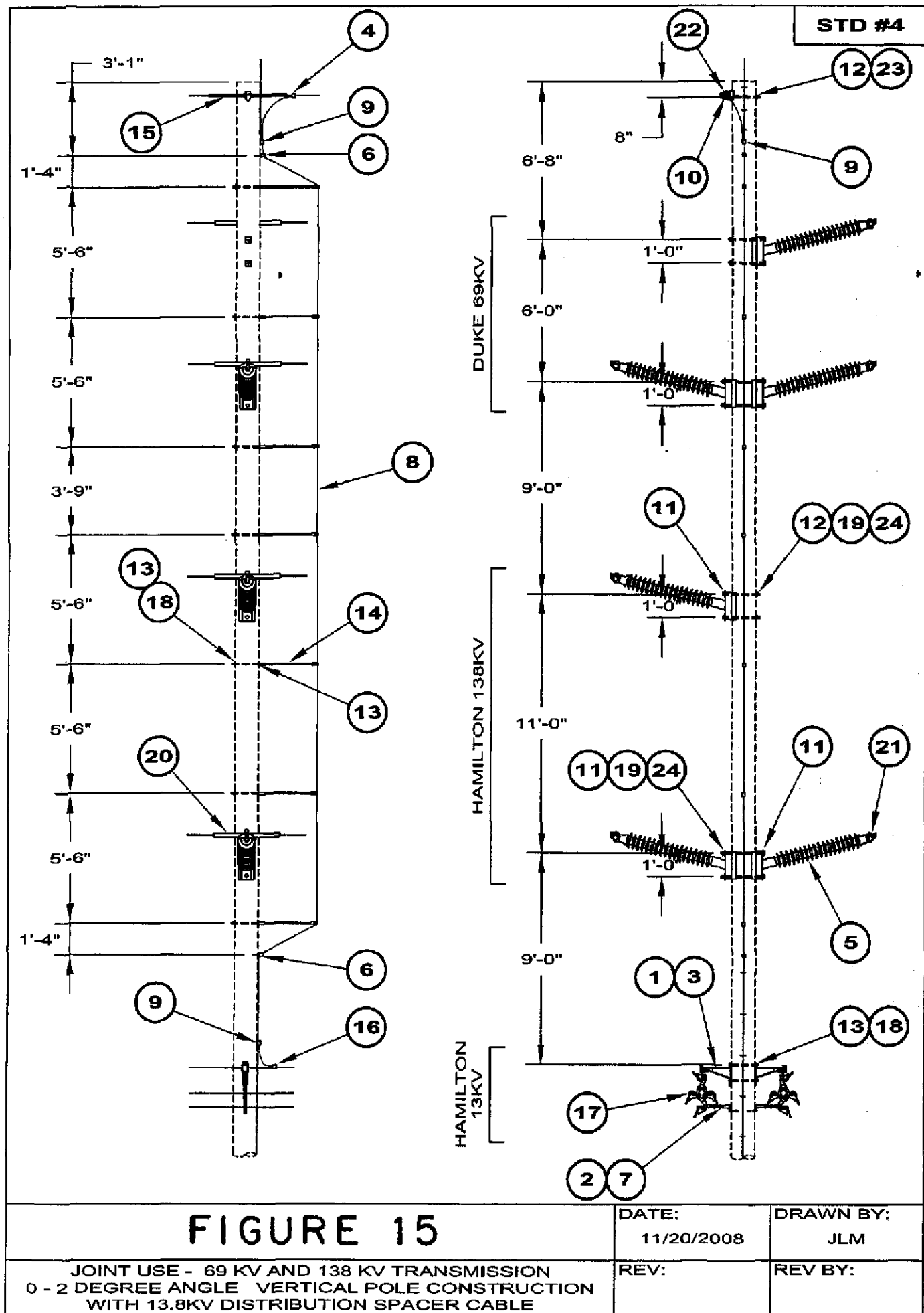
JLM

HAMILTON 138 KV TRANSMISSION  
RUNNING ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

REV:

REV BY:





# CITY OF HAMILTON

STD #4

## ELECTRICAL STANDARD MATERIAL LIST

ITEM	QUANTITY	CITY PART NO.	DESCRIPTION
1	2	40015	TANGENT BRACKET STIRRUP
2	2	40083	ANTI-SWAY BRACKET
3	2	40085	TANGENT MESSENGER BRACKET
4	1	40171	SQUEEZE-ON
5	6	41072	HORIZ. INSULATOR POST, RUBBER, CLAMP-STYLE
6	2	41830	HOUSE KNOB, 3" SCREW
7	2	42182	1/2" X 4 1/2" LAG SCREW
8	AS REQD	42560	#4 COPPERWELD
9	2	43265	SQUEEZE-ON #302-82
10	1	44291	STATIC WIRE BRACKET
11	12	44424	SQUARE FLAT WASHER, 3/4" HOLE
12	5	44510	SQUARE CURVED WASHER, 3/4" HOLE
13	14	44698	SQUARE CURVED WASHER, 5/8" HOLE
14	7	44923	DOWN LEAD BRACKET
15	1	44925	ARMOR ROD 7#10 ALUMOWELD
16	1	44927	SQUEEZE-ON, WR379 4/0-2
17	AS REQD	45412	AERIAL CABLE SPACER
18	9	AS REQD	5/8" MACHINE BOLT, LENGTH AS REQD
19	8	AS REQD	3/4" MACHINE BOLT, LENGTH AS REQD
20	6	AS REQD	ARMOR ROD
21	6	AS REQD	CLAMP
22	1	AS REQD	CLAMP FOR 7#10 ALUMOWELD
23	1	AS REQD	LINE POST STUD, 3/4"
24	8	AS REQD	SPRING WASHER

**FIGURE 16**

DATE:

11/20/2008

DRAWN BY:

JLM

JOINT USE - 69 KV AND 138 KV TRANSMISSION  
0 - 2 DEGREE ANGLE VERTICAL POLE CONSTRUCTION  
WITH 13.8KV DISTRIBUTION SPACER CABLE

REV:

REV BY:

**Table 4**  
**Number and Types of Existing, Replacement and New Pole Structures**  
**Hamilton/Duke Energy Section**

Structure Type	New Number	Replacement Number	Existing Number
STD#3	0	3	0
STD#4	0	3	0
STD#8	0	1	0

The steel pole structures listed in Table 4 will be direct buried in accordance with Duke Energy specifications. All new steel pole structures will be either galvanized or have a painted finish similar to the appearance of galvanizing.

**Right-of-Way and Land Requirements**

As shown in Table 5 below and the drawing provided in Appendix D, the majority of the Substation No. 4 to Substation No. 13 transmission route will be in or parallel to existing right-of-way (ROW) or on land owned by the City of Hamilton. Fractionization of private property has been minimized. Also note property controlled by ODOT for U.S. 127 will be spanned; therefore an easement is not required. A permit to cross U.S. 127 is not required within Hamilton city limits.

**Table 5**  
**Right-of-Way and Land Requirements**

Owner(s)	Easement Holder	Start Station	End Station	Within Existing ROW	Parallel to Existing ROW
City of Hamilton	City of Hamilton	0+00	6+30	Minor Avenue Alley and Zimmerman Avenue ROWs	NA
CSX Transportation	City of Hamilton	6+30	67+20	West Side of Railroad	NA
CSX Transportation	City of Hamilton	67+20	67+90	No	No
Porter Advertising, LLC	City of Hamilton	68+60	71+75	No	No
Tri-City Auto (Richard Peterson)	City of Hamilton	71+00 Right	71+40 Right	No	Yes
City of Hamilton	Duke Energy	71+75	82+00	Existing Duke Energy 69 kV ROW	NA

**(2) For electric power transmission lines, the production of electric and magnetic fields during the operation of the proposed electric transmission line. The discussion shall include:**

**(a) Calculated electric and magnetic field strength levels at one meter above ground under the lowest conductors and at the edge of the right-of-way for:**

**(i) Normal maximum loading.**

**(ii) Emergency line loading.**

**(iii) Winter normal conductor rating.**

Electric and magnetic fields are produced by the presence of voltage and current associated with any electrical device including the operation of the Substation No. 4 to Substation No. 13 transmission line. Electric fields are produced by voltage, and magnetic fields are produced by current. In both cases, the field strength is related to the

source, the geometry of the source, the distance from the source, and the interaction of any other sources of electric and magnetic fields in the vicinity.

The electric field produced by a 138 kV transmission line is predictable and may be calculated for the specific wire geometry proposed for this transmission line and the three operating conditions specified above. The calculated electric field values are summarized in Table 6 below. The maximum electric field for any condition is 1.5% of the threshold of human sensation (15kV/m).

**Table 6**  
**Calculated Electric Field Values**

	Normal Maximum Line Loading	Winter Normal Conductor Rating	Emergency Line Loading (Single Contingency Outage)
Current (Amperes)	114.7	530	267
Electric Field at ROW Edge (kV/m)	0.48	0.48	0.48
Maximum Electric Field at Centerline (kV/m)	0.23	0.230	0.23

Electric fields can induce a voltage on metallic objects which may be located close to the transmission line. This is usually not a problem with 138 kV transmission lines because of the relatively high ground clearances used for this voltage level. The induced voltage can be eliminated by properly grounding the metallic objects. Although stray voltage problems are unlikely, the Hamilton Electric Department will work with adjacent property owners if any problems develop.

Magnetic fields can be calculated for electric transmission lines, but it is very difficult to predict instantaneous field strength at a particular location because the field is dependent on the total load current for each phase, the current of the shield wire or neutral, other magnetic fields in the vicinity including the earth's background magnetic fields, other grounding systems in the area, and other conditions. As electric load and current conditions change in the transmission line, so do the magnetic fields. Magnetic fields are not perceived by humans at the levels generated by electric transmission lines. Unlike electric fields, ordinary materials do not provide a shield from magnetic fields. Magnetic field impacts are expected to be insignificant. Magnetic field values for the transmission line under the three operating conditions listed above have been calculated and are summarized in Table 7.

**Table 7**  
**Calculated Magnetic Field Values**

	Normal Maximum Line Loading	Winter Normal Conductor Rating	Emergency Line Loading
Current (Amperes)	114.7	530	267
Magnetic Field at Row Edge (mG)	53.1	52.4	52.1
Maximum Magnetic Field at Centerline (mG)	54.4	46.25	51.25

**(b) A discussion of the company's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.**

Research has not established a relationship between electric and magnetic fields and any adverse health effects. Nonetheless, the City of Hamilton practices prudent avoidance to the extent practicable.

The Hamilton Electric Department, through its standard design practices, has evaluated possible alternative conductor configurations and phasing arrangements to provide the lowest values of electric and magnetic field strengths at ground level, edge of ROW. All sections of the line will use dissimilar phasing on the different circuits to provide for lower magnetic fields associated with cancellation effects. The structure heights to be used have been designed to provide clearances over the ground and other objects to permit an emergency operation level of conductor temperature at 212 degrees F with conductors at least 35 feet above ground. The national Electric Safety Code (NESC) requires electric transmission lines to be at least 18.5 feet above ground. The better than minimal heights above ground provide low values of electric and magnetic fields.

Finally, the city has selected the route that minimizes long term exposure to electric and magnetic fields by avoiding residences and other sensitive land uses occupied by people for extended periods of time (i.e., greater than 8 hours per day).

**(3) The estimated cost of the project by federal energy regulatory commission account, unless the applicant is not an electric light company, a gas company or**

**a natural gas company as defined in Chapter 4905 of the revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business).**

Cost estimates for the Hamilton Electric Section of the project are identified in Table 8. Costs applicable to the Hamilton Electric/Duke Energy Section are estimated at \$804,000; thus total project cost is expected to be \$1,503,615 (2009 USD). Because design of the line has not been completed and the recent instability in building supply costs, the capital costs should be considered budgetary estimates +/- 20%.

**Table 8  
Estimated Capital Costs  
Hamilton Section**

Project Accounts	2009 USD (\$)
Land and Land Rights	241,500
Miscellaneous	115,930
Poles, Fixtures, Conductor & Devices (including labor)	342,185
Total	699,615

**(D) Socioeconomic data. Describe the social and ecological impacts of the project. The description shall contain the following information:**

**(1) A brief, general description of land use within the vicinity of the proposed project, including:**

**(a) a list of municipalities, townships, and counties affected; and**

**(b) estimates of population density adjacent to rights-of-way within the study corridor (the U.S. census information may be used to meet this requirement).**

Hamilton conducted a general socioeconomic, ecological and environmental survey of the preferred and alternate routes and nearby areas to evaluate the impacts associated with the construction and operation of the proposed transmission line. This study included field surveys, review of land use maps, review of population estimates and projections for the area, and a review of local and regional development plans. Hamilton used this information in selecting the preferred route, assessing the transmission line construction and operation issues along the route, and assessing the potential social and economic impacts on the adjacent neighborhoods.

#### Land Use Impacts

The project area is dominated by dense urban land use within the City of Hamilton. For the most part, land use along the route is dominated by older, established industrial and commercial land uses. However, there are significant clusters of established residential land use along the transmission route (paralleling the west side of the CSX Railroad

Corridor) and near proposed Substation No. 13. Also, to the west and south of Substation No. 13 is Miami University's Hamilton Campus.

The construction and operation of the transmission line is not expected to have a significant impact on existing land uses, including urban residences. Temporary impacts to existing residences are likely to be limited to intermittent low-level construction noise and temporary partial street closures. To lessen the impacts, construction activities will be limited to daylight hours only and carefully coordinated to minimize public inconveniences. No land uses will need to be moved or modified as a result of this project.

#### Socioeconomic Impacts

This project is being undertaken as part of the City of Hamilton's strategic plan to provide the electric infrastructure necessary to spur development and revitalize an area suffering from recent manufacturing plant closures and other job relocations and to improve the reliability and efficiency of Hamilton's electric transmission and distribution system. Hamilton's position as the primary electric energy supplier within its corporation limits provides an opportunity for its customers, especially high technology, start-up companies to obtain delivery of reliable and economical electrical energy.

The construction of this transmission line will have a significant impact on the local economy beyond the short term stimulus provided by the construction activities and procurement of local goods and services. The transmission line will be used to supply economical, reliable electrical energy to the Vora Technology Park, University Commerce Park and other customers. The successful development of the Vora Technology Park and University Commerce Park is expected to provide a substantial number of new jobs with additional positive impacts multiplying through the local and regional economies. High technology development will help retain and enhance the existing mixed land use community and improve the economy in the vicinity of the transmission line.

#### Municipalities, Townships, and Counties Affected

This project lies entirely within the City of Hamilton. Hamilton is the seat of government for Butler County and the largest city in the county.

#### Population

The transmission line route lies within or adjacent to Butler County Census Tracts 2, 3 and 4. Population figures derived from U.S. Census published data for these Census Tracts and the broader region are summarized in Table 9 below. Additional census data is included in the Environmental Documentation Report prepared by BBCM (Appendix E).



**Table 9**  
**Study Area Demographics**

Location	1990 Census	1990 Population Density	2000 Census	2000 Population Density	2007 Population (Projected)	2007 Population Density (Projected)
City of Hamilton, Ohio	61,368	2,777	60,690	2,746	62,285	2,818
Butler County, Ohio	291,479	623.8	332,807	712.2	357,888	765.8
Census Tract 2	5,075	3,476	4,287	2,936	4,398	3,012
Census Tract 3	3,795	2,691	3,961	2,809	4,063	2,881
Census Tract 4	4,858	5,108	4,317	4,539	4,429	4,657

Source: US Census Bureau (<http://factfinder.census.gov> and <http://www2.census.gov>)

**(2) The location and general description of all agricultural land (including agricultural district land) existing at least sixty days prior to submission of the letter of notification within the proposed electric power transmission line right-of-way, or within the proposed electric power transmission substation fenced-in area, or within the construction site boundary of a proposed compressor station.**

There are no agricultural land uses within the vicinity of this project.

**(3) A description of the applicant's investigation (concerning the presence or absence of significant archeological or cultural resources that may be located within the area likely to be disturbed by the project), a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

The City of Hamilton, acting through its consultants, retained the services of Ohio Valley Archaeology, Inc. (OVAI) to conduct a Phase I Cultural Resource Literature Review and Field Survey in the vicinity of the Substation No. 4 to Substation No. 13 Transmission Line Project. A copy of OVAI's report is included in Appendix E of the attached Environmental Documentation report prepared by BBCM. OVAI determined the proposed transmission line project will not impact known cultural resources and has little or no potential to affect archaeological sites. The Ohio Historic Preservation Office

(OHPO) in a letter dated May 14, 2009 concurred with OVAI's findings. A copy of the OHPO's letter is provided in Appendix F.

For convenience, OVAI's summary of their investigation findings is reproduced below:

*No previously recorded cultural resources (OAI, OHL, or NRHP properties/district) are located within the Substation #4 to the proposed Substation #13, 138 kV Overhead Transmission Line project in the City of Hamilton, Fairfield Township, Butler County, Ohio. No structures are indicated within the proposed Substation #13 locale on the 1875 atlas or the 1915 15' USGS map. For the most part, the preferred transmission line Route 1 will follow along an existing railroad line, which first appears on the 1875 atlas. No structures appear to be within or adjacent to Route 1 on the 1875 atlas, 1915 15' USGS map or the current 1965 (PR 1981 and 1988) 7.5' USGS maps. Several structures appear to be located adjacent to alternate Route 2 on the 1875 atlas, 1915 15' USGS map and the current 1965 (PR 1981 and 1988) 7.5' USGS maps.*

*Based on map information extending back to 1875, it is unlikely that significant historic-era archaeological sites will be impacted by the proposed project. Although both routes will utilize existing poles and the visual impact along both routes is considered minimal due to the presence of numerous other power lines and poles in the area; Route 1 will traverse along an existing railroad line, which is slightly shorter, in distance, than Route 2. Also, Route 2 is known to be adjacent to a previously recorded, extant structure, BUT-290-09 (Plates 20-21).*

*In sum, the Substation #4 to the proposed Substation #13, 138 kV Overhead Transmission Line project will not impact known cultural resources. In addition, the entire project including the preferred and alternate routes will have little or no potential to impact archaeological sites. Although an archaeological survey might be justified within the proposed Substation #13 locale, it is doubtful that this area contains NRHP eligible archaeological sites. This locale has been severely disturbed over the past 30 years with the abandonment and razing of structures, which limits the potential for intact, historic-era archaeological deposits. The potential for prehistoric archaeological sites within Substation #13 is also minimal given that it is located in a low-lying area. No further work is recommended for the project.*

**(4) Documentation that the chief executive officer of each municipal corporation and county, and the head of each public agency charged with planning land use in the area in which any portion of the facility is to be located have been notified of the project and have been provided a copy of the letter of notification. The applicant shall describe the company's public information program used in the siting of the proposed facility. The information submitted shall include either a copy of the material distributed to the public or a copy of the agenda and summary of the meeting(s) held by the applicant.**

Since the announcement of the expansion plans for the City of Hamilton Electric System, Hamilton has diligently kept open lines of communication with community leaders and the general public regarding the proposed transmission line. A list of community leaders and organizations contacted regarding the Application is listed in Appendix G.

Leaders contacted included the Chief executive officers for the City of Hamilton and Butler County as well as the heads of the OKI Regional Planning Commission and the Butler County Department of Development Planning Commission. These entities will also be provided with a complete copy of the Letter of Notification application. The Hamilton Electric Department has participated in regular meetings with federal, state and

local elected and appointed officials affected by their strategic plan and this project. Hamilton representatives have also attended and participated in local meetings and have regularly corresponded with interested parties as developments occur. Attendance at local community meetings has enabled Hamilton to communicate with the business community and local residents and provide updates on the project.

Hamilton held a public informational meeting on the proposed transmission line on April 28, 2009 in Hamilton, Ohio at Miami University's Hamilton Campus. Property owners adjacent to the project were invited to the meeting via U.S. Mail and public service announcements by local cable TV service providers, radio stations and newspaper outlets. Approximately 15 residents attended the meeting. Eleven comment cards were received regarding the project. Verbal and written comments received were supportive of the project, particularly selection of primary the route along the CSX Railroad. A copy of the comment cards received is provided in Appendix H.

Throughout the planning, approval and construction phases, Hamilton will continue to keep the public informed on developments. Hamilton has assigned Mr. Jerry Flick the responsibility of working with the news media and coordinating other public education efforts and requests for information. Hamilton will post information and updates on the project on its website, [www.hamilton-city.org](http://www.hamilton-city.org)

**(5) A brief description of any current or pending litigation involving the project known to the applicant at the time of the letter of notification.**

There is no known litigation at this time.

**(6) A listing of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and construction of the project.**

Local Requirements

- None

State Requirements

- Ohio EPA Spill Prevention, Control and Countermeasure (SPCC) Plan for Substation No. 4 and Substation No. 13
- Ohio EPA Storm Water Pollution Prevention Plan (SWP3) and Notice of Intent (NOI)/Notice of Termination (NOT)
- Ohio Power Siting Board (OPSB) Approval of Letter of Notification

Federal Requirements

- None

An SPCC plan is required to prevent and control the release of oil from the oil-filled electrical equipment that will be used in Substation Nos. 4 and 13. The plan is not required to be submitted to Ohio EPA or USEPA for review and approval; however, the plan must be certified by a professional engineer registered in Ohio. The plan must be in place and effective within six months of erection of any oil-filled equipment with single tank capacity exceeding 660 gallons or aggregate capacity exceeding 1,320 gallons.

An SWP3 is required by Ohio General Permit OHC000003 for construction activities disturbing more than one acre of land. While the construction of individual transmission line components is not expected to disturb more than one acre, the overall project will disturb more than one acre. The permitting process is initiated by the submission of a NOI to be covered by Ohio EPA General Permit OHC000003 at least 21 days prior to the start of construction. Ohio EPA will acknowledge coverage with an approval letter. A NOT must be filed to end coverage.

Because storm water pollution prevention is specific to the field conditions and the construction techniques employed, preparation of the SWP3 will be the general contractor's responsibility. The Hamilton Electric Department and any subcontractors will approve the plan and abide by its requirements. A copy of general Permit OHC000003 and the NOI and NOT forms are included in Appendix I.

The OPSB Letter of Notification approval is the subject of this application. It is important to note, with the exception of the OPSB Letter of Notification, none of the state permits identified above impact the design of the project and do not represent critical path items that must be resolved prior to OPSB approval.

**(E) Environmental data. Describe the environmental impacts of the proposed project. This description shall include the following information:**

**(1) A description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the area likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

The United States Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) were contacted regarding the potential for occurrence of endangered species, threatened species, rare species, species proposed for listing, species under review for listing and species of special interest within the project corridors. ODNR's Division of Natural Areas and Preserves (DNAP) reported no records of rare or endangered species near the proposed route.

ODNR's Division of Wildlife (DOW) reported the project is within the range of the federal endangered Indiana bat (*Myotis sodalis*) and the following state endangered species:

- Blue corporal dragonfly (*Ladona deplanata*)
- Kramer's cave beetle (*Pseudonaphthalmus Kramer*)
- Ohio cave beetle (*Pseudonaphthalmus ohioensis*)
- Cave salamander (*Eurycea lucifuga*)

The DOW determined that impacts to the Indiana bat can be avoided by conserving roost trees and limiting tree cutting between September 30 and April 1. The DOW also determined impacts to the blue corporal dragonfly are unlikely due to its mobility, and impacts to Kramer's cave beetle and the Ohio cave beetle are unlikely because Ohio's Cave Protection Law (ORC Section 1517.21) protects caves from impacts.

The DOW concluded the project lies within the range of the cave salamander and this species has been found in Fairfield Township, Butler County. Due to proximity to current records, the DOW recommended a habitat survey be conducted. Jeffrey G. Davis, an expert herpetologist approved by the DOW and familiar with the project area, concluded Eastern box turtles (*Terrapene c. carolina*), a species of special concern; Kirtland snakes (*Clonophis kirtlandii*), a state threatened species; and the Eastern cricket frog (*Acris c. crepitans*), a species of special concern may also be present in the project area. Mr. Davis conducted a habitat survey on March 21, 2009 and concluded suitable habitat for the cave salamanders and the Eastern cricket frog does not exist in the project area and no further study is recommended. Mr. Davis did note the presence of suitable habitat, cover and forage for the Kirtland snake and the Eastern box turtle and recommended a presence/absence study for these two species. A copy of Mr. Davis' habitat survey report is included as Appendix J. A copy of the Kirtland snake and Eastern box turtle presence/absence survey report will be submitted as a supplement to this application.

The USFWS declined to comment on the presence of threatened or endangered species in the vicinity of the proposed route. Instead, their response referred to the Service's Region 3 Section 7 Technical Assistance website at

<http://www.fws.gov/midwest/endangered/section7/s7process>. Consultation with the Technical Assistance website suggests the Indiana bat (*Myotis sodalis*) may be affected by this project. The USFWS web site also indicates impacts to the Indiana bat can be avoided by conserving roost trees and limiting required cutting to the September 30 – April 1 time period. A copy of the ODNr and USFWS responses are provided in the attached Environmental Documentation Report prepared by BBCM, Appendix E.

**(2) A description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the**

**areas likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.**

ODNR's DNAP was contacted regarding the presence of areas of ecological concern within the route boundaries. DNAP concluded: "There are no existing or proposed state nature preserves at the site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations, state parks, state forests, scenic rivers, or wildlife areas within the project area." As mentioned above, a complete copy of the DNAP response is provided in the Environmental Documentation Report prepared by BBCM, Appendix E.

A literature review and field survey within 1,000 feet of the transmission line centerline was conducted to verify DNAP's conclusions and identify ecological features outside the purview of DNAP. The literature review included the Butler County Auditor's Geographic Information System, the United States Geological Survey (USGS) 7.5' topographic quadrangle maps, National Wetlands Inventory (NWI) maps, and soil survey maps for Butler County.

The literature review and field survey found no evidence of national forests, federal or local parks, designated or proposed federal or local wildlife refuges, federal or local wildlife management areas, federal or local wildlife sanctuaries, or wetlands. A copy of the Preliminary Jurisdictional Waters (wetlands) Delineation report is provided in the Environmental Documentation Report prepared by BBCM, Appendix E.

The transmission line from Substation No. 13 to the point of departure from Duke Energy's 69 kV transmission line is located within Zone B of the March 15, 1979 Flood Insurance Rate Map for the City of Fairfield, Ohio. Zone B is defined as "Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood." A copy of the referenced Flood Insurance rate Map is provided in the Environmental Documentation Report prepared by BBCM, Appendix E.

**(3) Any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.**

Unusual conditions are not known to exist and were not encountered during the field surveys associated with the transmission route.

## **Appendix A**

### **Duke Energy Cost Estimate to Upgrade Hamilton/Duke Energy Section**

## BILLING AUTHORIZATION

Job/Agreement No.

935448

The Undersigned hereby agrees to pay the Utility Company for the work performed by the Utility Company pursuant to the above referenced Job/Agreement or, in the event of no referenced Job/Agreement No., for the work described below. The amount specified below is approximate and may be more or less upon completion of all related work for this project. The entire amount shall be due upon receipt of invoice.

**The Billable Amount will be the Actual Cost of the Job**

**Based on Time & Material**



The Preliminary Estimate of Job =

\$804,000 - \$5,000  
= \$799,000

Utility Company

- ☒ Duke Energy - Ohio  
☐ Duke Energy - Kentucky  
☐ Duke Energy - Indiana

Utility Company Representative:

Roger Zimmerman

ESTIMATE GOOD FOR 60 DAYS FROM:

02/11/2009

Description and Location of Work:

Rebuild 2,610 foot section of F-3865 in order to accommodate City of Hamilton 12kV, 69kV, and 138kV circuits for the new Vera Substation. The project is located in Hamilton from East and Hensley Ave, across Pleasant and Central Ave to University Blvd.

Invoice To: City of Hamilton Electric Department

Address: One Renaissance Center, 345 High Street, 4<sup>th</sup> Floor

City: Hamilton

State: OH

ZIP: 45011

ATTN: Mark Brandenburger, CM

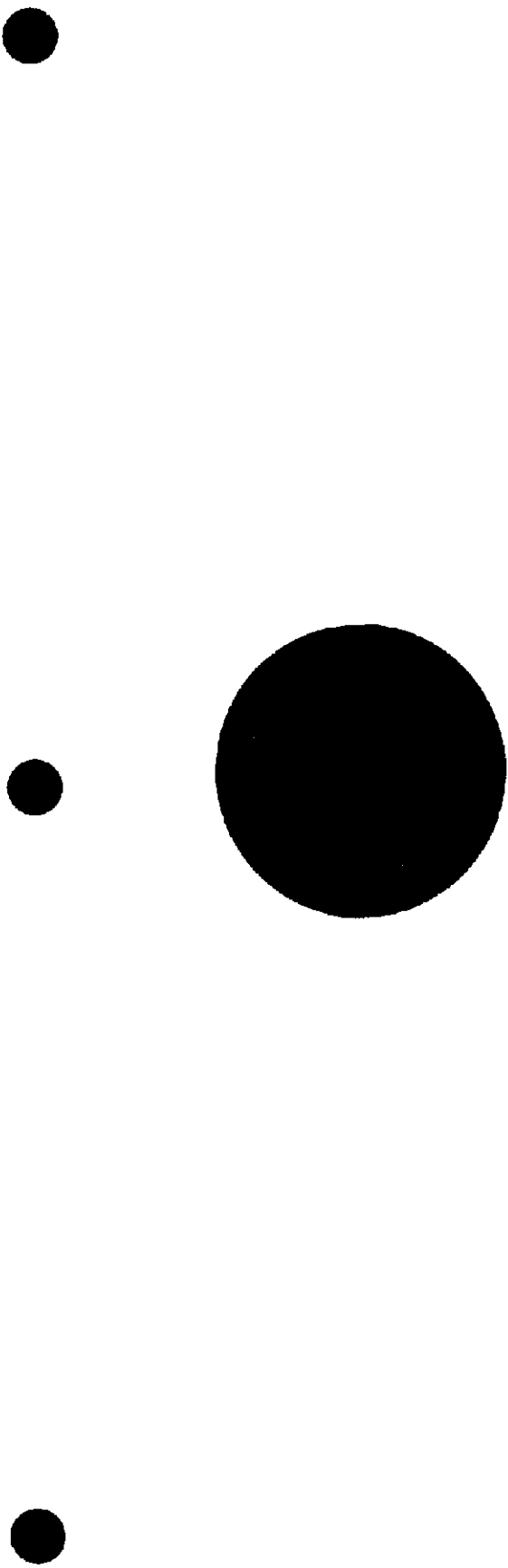
Phone: 513.785.7224

Signature \_\_\_\_\_ Date \_\_\_\_\_



## **Appendix B**

### **Hamilton Electric System Strategic Plan**



# Municipal Electric System Plan For The Future

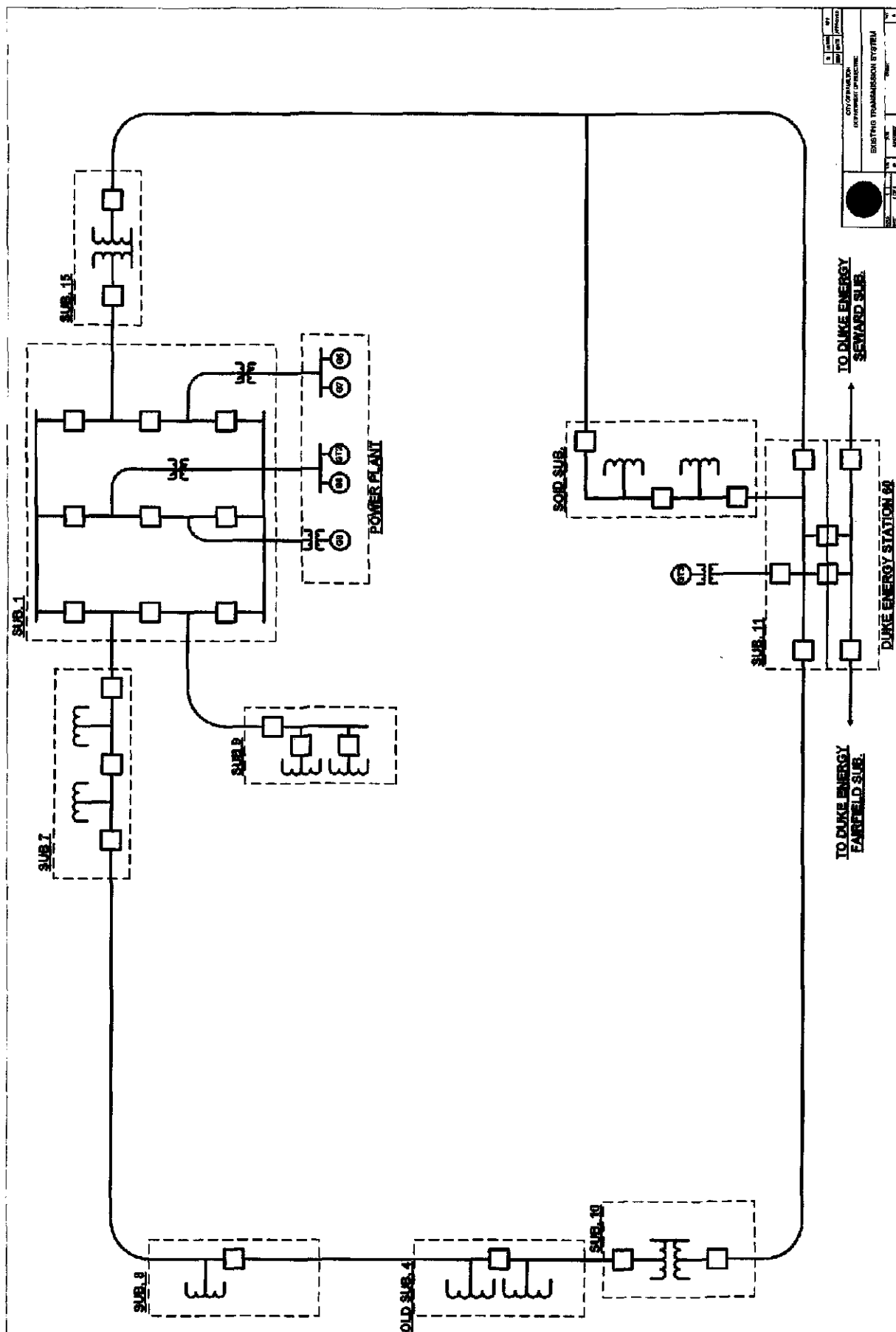
City of Hamilton

# System Overview

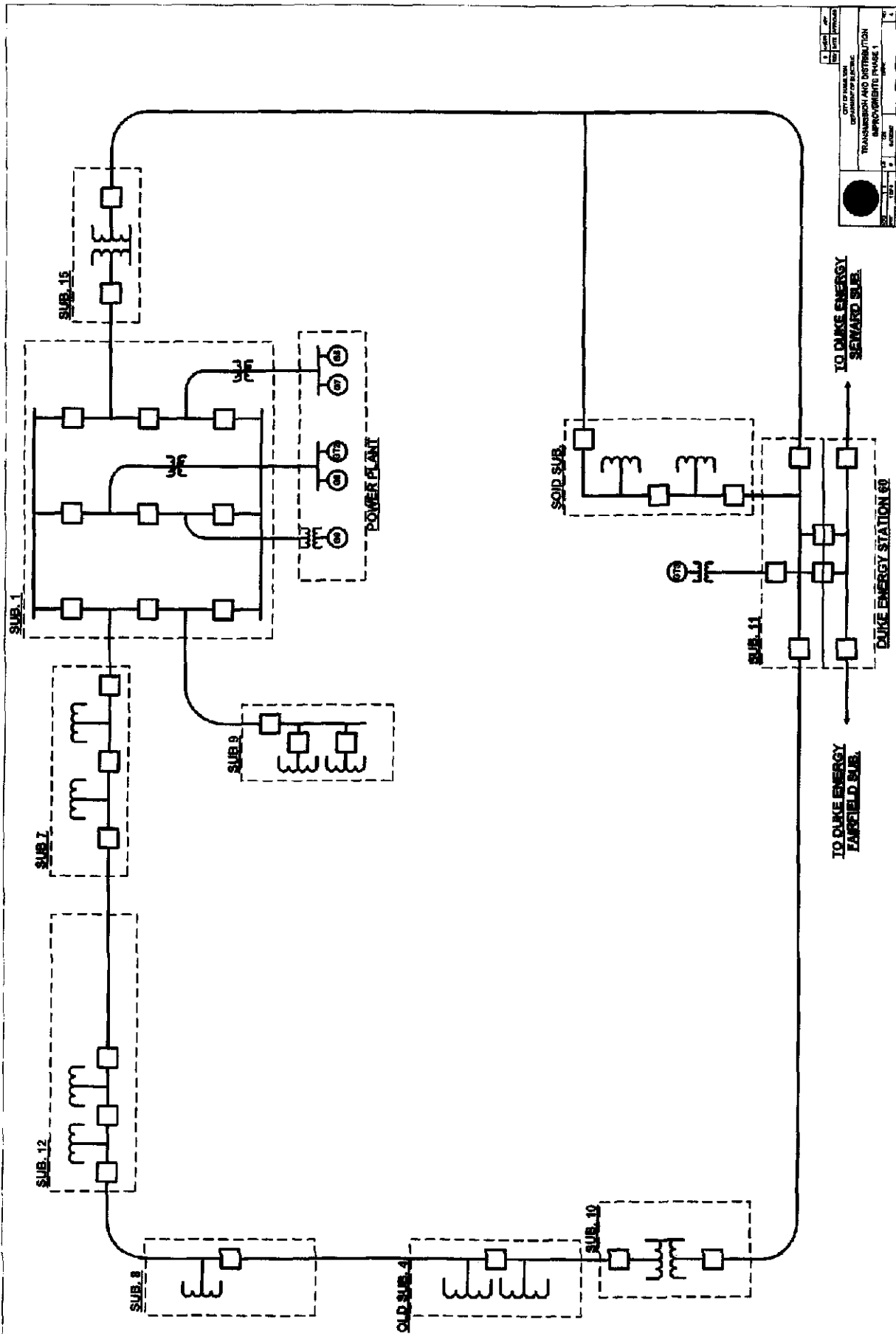
- 165 MW peak load (+4% over previous peak)
- 630,000 MWH 2007 in-system energy sales (+8%)
  - 271,000 MWH Residential (+6%)
  - 201,000 MWH Commercial (+6%)
  - 158,000 MWH Industrial/Large User (+13%)
- 29,550 meters
  - 26,500 Residential
  - 2,975 Commercial
  - 50 Industrial/Large User

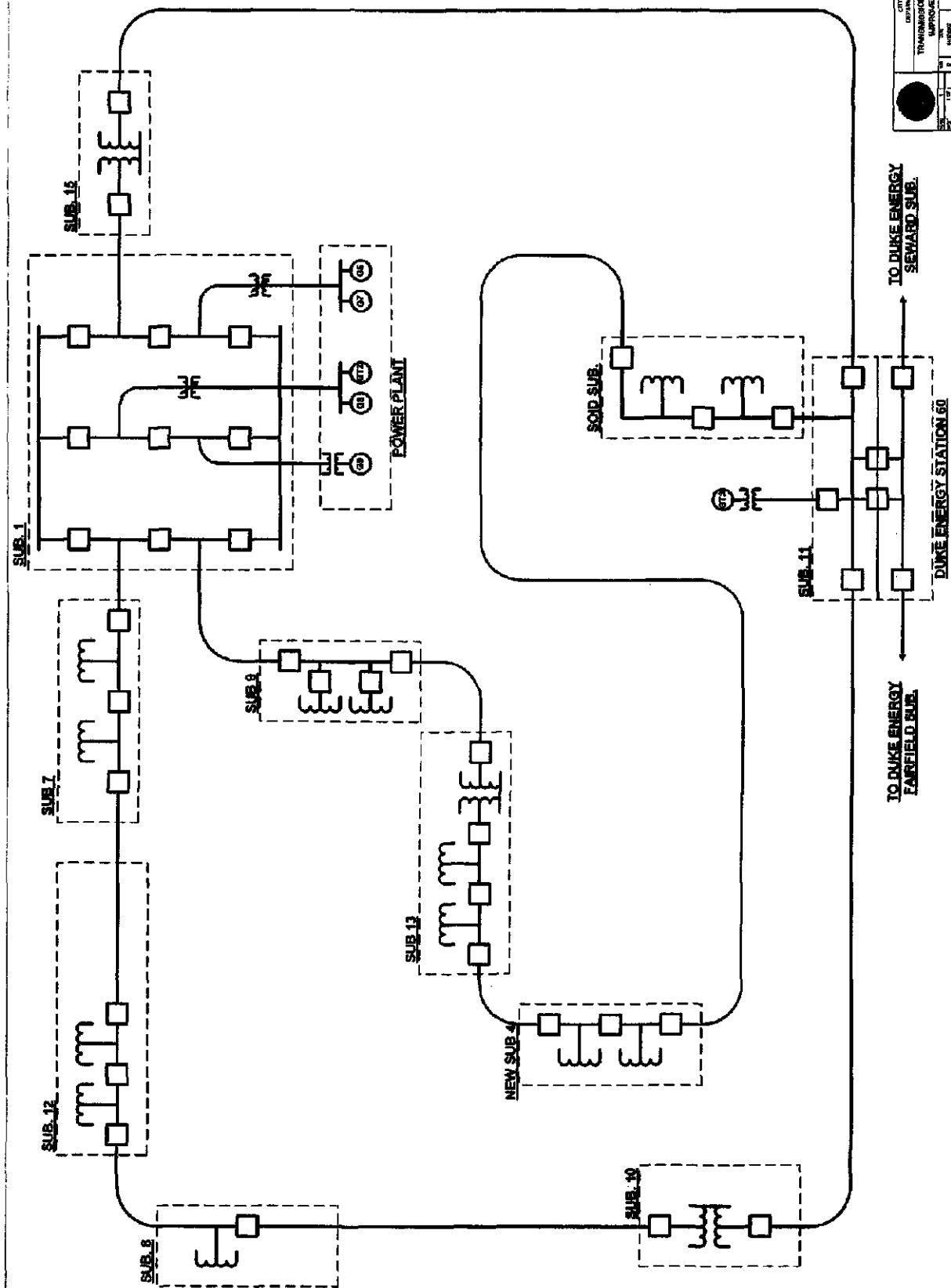
# System Overview

- 22 Miles of 138 KV & 69 KV Transmission
  - Closed-Loop Transmission System
    - Most substations are double-end fed for reliability
    - Two 83 MVA auto-transformers provide voltage stepdown
  - Connected to Eastern Grid at 138 KV via Duke Energy
- 13 Substations throughout the City
  - 3 Transmission only
  - 5 Transmission/Distribution
  - 5 Distribution only
- Distribution at 13.8 KV & 4.16 KV

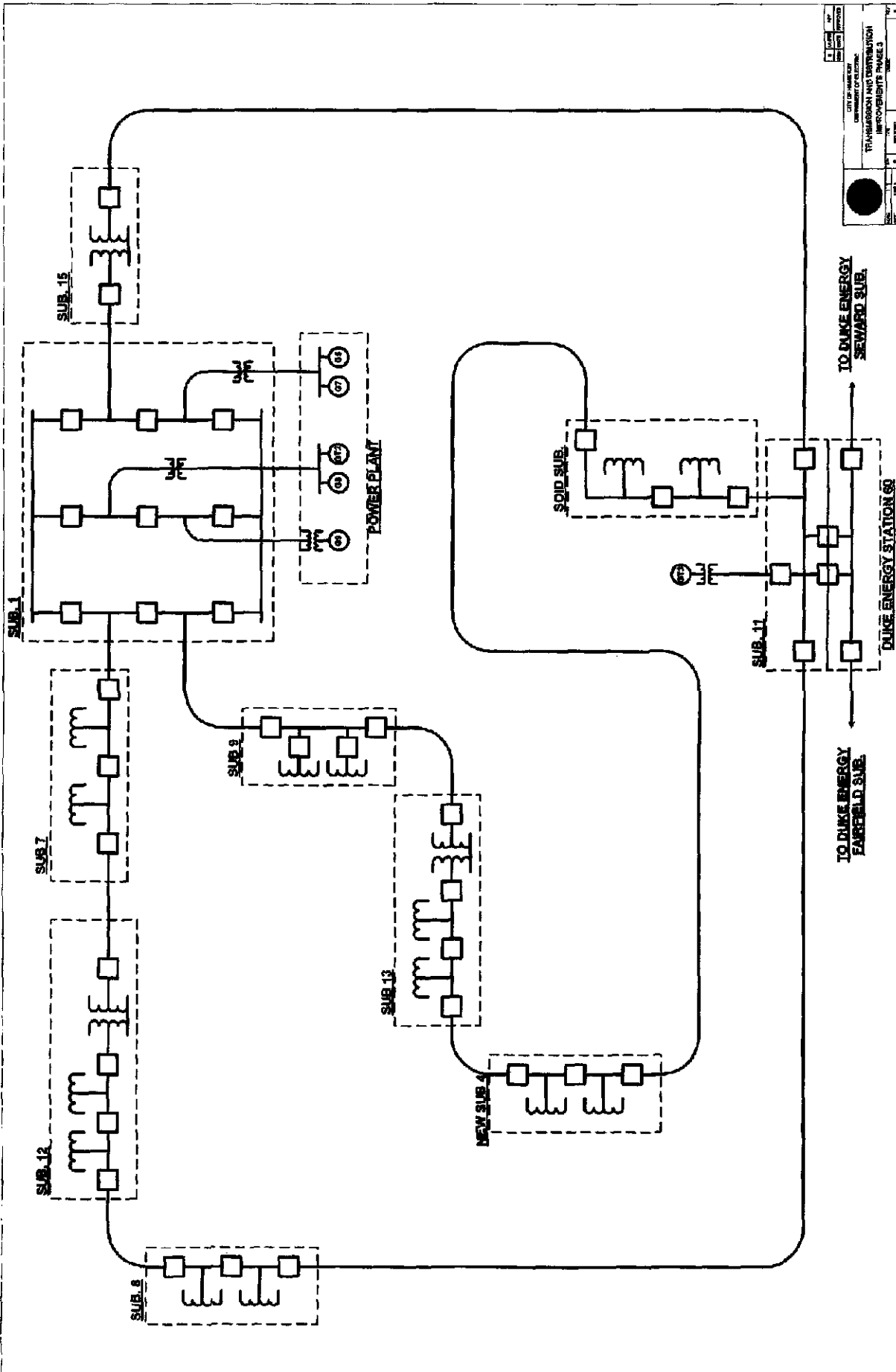


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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DATE	BY	CHKD	APP'D
10/1/80	J. L. HARRIS	J. L. HARRIS	J. L. HARRIS
CITY OF HARRIS DEPARTMENT OF PUBLIC UTILITIES TRANSMISSION AND DISTRIBUTION IMPROVEMENTS PHASE 1			
SHEET NO. 1		OF 1	





# SCHEDULE

- Substation 12 in service 4th quarter 2009
- Substation 13, Substation 4 and new transmission lines in service 4th quarter 2010

# CHALLENGES

- Equipment lead time
  - 42-57 weeks for power transformers
  - 36-40 weeks for switchgear
- Both new 138 KV transmission lines require approval from Ohio Power Siting Board.

# BUDGET

Phases 1 & 2 are included in the improvements currently underway:

- Phase 1 - \$10,000,000
- Phase 2 - \$15,000,000
- Total currently budgeted - \$25,000,000

Phase 3 will be evaluated/budgeted beginning in 2012.

# Plan Summary

- Reduces 69 KV connected transformers to less than capacity of two autotransformers
  - Sub. 7, Sub. 9 & Sub. 1 (Power Plant) will remain connected at 69 KV due to space limitations
- Provides 3<sup>rd</sup> transmission link to national grid.
- Provides reserve capacity for future growth.
- Allows for future generation.
- Allows for future connection to PJM.

# Questions?

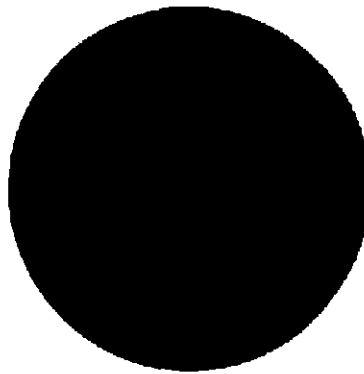


## **Appendix C**

### **AMP-Ohio Transmission Routing Study**

**City of Hamilton, Ohio, Electric Department  
Substation 4 to Substation 13 138kV Transmission  
Line  
Route Selection Study**

Proposed for the City of Hamilton, Ohio, Electric Department  
Hamilton Municipal Building  
345 High Street  
Hamilton, Ohio 45011  
(513) 785-7000



March 9, 2009

Prepared by American Municipal Power-Ohio, Inc. (AMP-Ohio)  
2600 Airport Drive  
Columbus, Ohio 43219  
(614) 337-6222



## **Table of Contents**

<b><u>Section</u></b>	<b><u>Page</u></b>
1. Introduction.....	1
2. Methods	
2.1 Routing Criteria.....	1
2.2 Data Collection and Constraint Identification.....	2
2.3 Identification and Evaluation of Potential Routes .....	2
3. Results.....	3

### **Figures**

1. Route 1
2. Route 2

### **Tables**

1. Comparison of Important Features of Routes 1 and 2 between Hamilton Substation No. 4 and Hamilton Substation No. 13

## 1. Introduction

American Municipal Power-Ohio, Inc. (AMP-Ohio) was retained by the City of Hamilton Electric Department to identify and evaluate possible 138 kilovolt (kV) transmission line routes from Hamilton Substation No. 4 to proposed new Hamilton Substation No. 13. Environmental, socio-economic, cultural and engineering data were used to evaluate the potential routes for impacts on sensitive land uses, critical wildlife habitats, and significant environmental features. The routes also were evaluated for engineering constraints that may affect capital and operations and maintenance costs. Two alternative routes were identified and evaluated.

## 2. Methods

### 2.1 Route Selection Criteria

With an understanding of the project objectives, AMP-Ohio proposed the following criteria to be used to identify and evaluate potential routes:

- Minimize route length.
- Minimize route deflections.
- Maximize the use of existing right-of-ways and municipally -owned land (e.g., power lines, railroads, public highways, pipelines, etc).
- Maximize the use of existing pole structures.
- Minimize contact with significant environmental features and critical wildlife habitat.
- Minimize private property fragmentation.
- Maximize distances to residences, businesses and sensitive public land uses (e.g., parks, schools, hospitals, etc.).
- Minimize railroad and improved highway crossings.
- Minimize contact with terrain and land uses that will have a negative impact on transmission line construction and maintenance costs.
- Minimize contact with cultural features of significant historical value (cemeteries, historical landmarks, etc.).

These criteria are designed to minimize adverse environmental and socio-economic impacts while minimizing the cost of constructing and maintaining a 138kV transmission line through a mixed use, urban area. For route selection purposes, the route evaluations were evaluated on a single-circuit monopole design with a right-of-way width of 150 feet, edge-to-edge.



## **2.2 Data Collection and Constraint Identification**

Data for this evaluation were obtained from local, state, and federal resource agencies, aerial photography, USGS topographic maps, National Wetlands Inventory maps, soil survey maps and field surveys conducted from public right-of-ways.

These data were used to identify both positive and negative routing constraints. Positive and negative constraints and their geographical relationship to each other were used to identify and evaluate potential routes as further described below.

## **2.3 Identification and Evaluation of Potential Routes**

Using the positive and negative constraints listed in Section 2.1, potential routes between Substation 4 and proposed new Substation 13 were identified. The goal was to find the shortest and easiest to build and maintain route with minimal adverse impact on the environment and the community. Because no route is optimal for all constraints and certain intangible impacts are impossible to quantify, more than one route was identified.

Because the proposed transmission line will support customers in the vicinity of the Miami University – Hamilton Campus and the Vora Technology Park and Substation 4 is the closest substation that can support the potential loads, the study area is limited to the corridor connecting these two locations. Since the study corridor is relatively short (approximately 1.5 miles) and the area under consideration is very congested, only two alternative routes were identified and those routes are not completely independent.

The two alternative routes were evaluated and an ordinal rank score for each constraint was developed. The two routes were compared to each other using the quantified constraints and the intangible characteristics associated with each route. This analysis resulted in one of the routes being preferred over the other. The lower composite rank score indicates the least offensive route.

### 3. Results

There are two main existing right-of-way corridors that approximate the shortest distance between Substation 4 and proposed new Substation 13 – a CSX Railroad line and Dixie Highway. From a point southwest of the CSX Railroad / Dixie Highway junction, the two routes are coincident over a generally west by northwest route to Substation 13. Other potential routes dramatically increased the number of horizontal deflections, street crossings, exposure to residential land uses and the overall route distance and were eliminated from further consideration.

Route 1 is identified on Figure 1 and further described below:

Route 1 originates at Substation 4 and heads west along an alley between Minor and Hooven Avenues and crosses both Zimmerman Avenue and CSX Railroad right-of-way. Route 1 then heads north-northwest along the west side of the railroad tracks to a point southwest of Central Avenue. From the point southwest of Central Avenue, Route 1 crosses US Highway 127 (Pleasant Avenue) and heads northwest to a point coincident with an existing Duke Energy 69 kV transmission line. From this point to proposed Substation 13, Route 1 is coincident with the Duke Energy 69 kV transmission line. Also, from this point to proposed Substation 13, Route 1 is coincident with Route 2. Approximately, the last 895 feet of Route 1 will be coincident with the Duke Energy 69 kV Transmission Line and Route 2.

Route 2 is identified on Figure 2 and further described below:

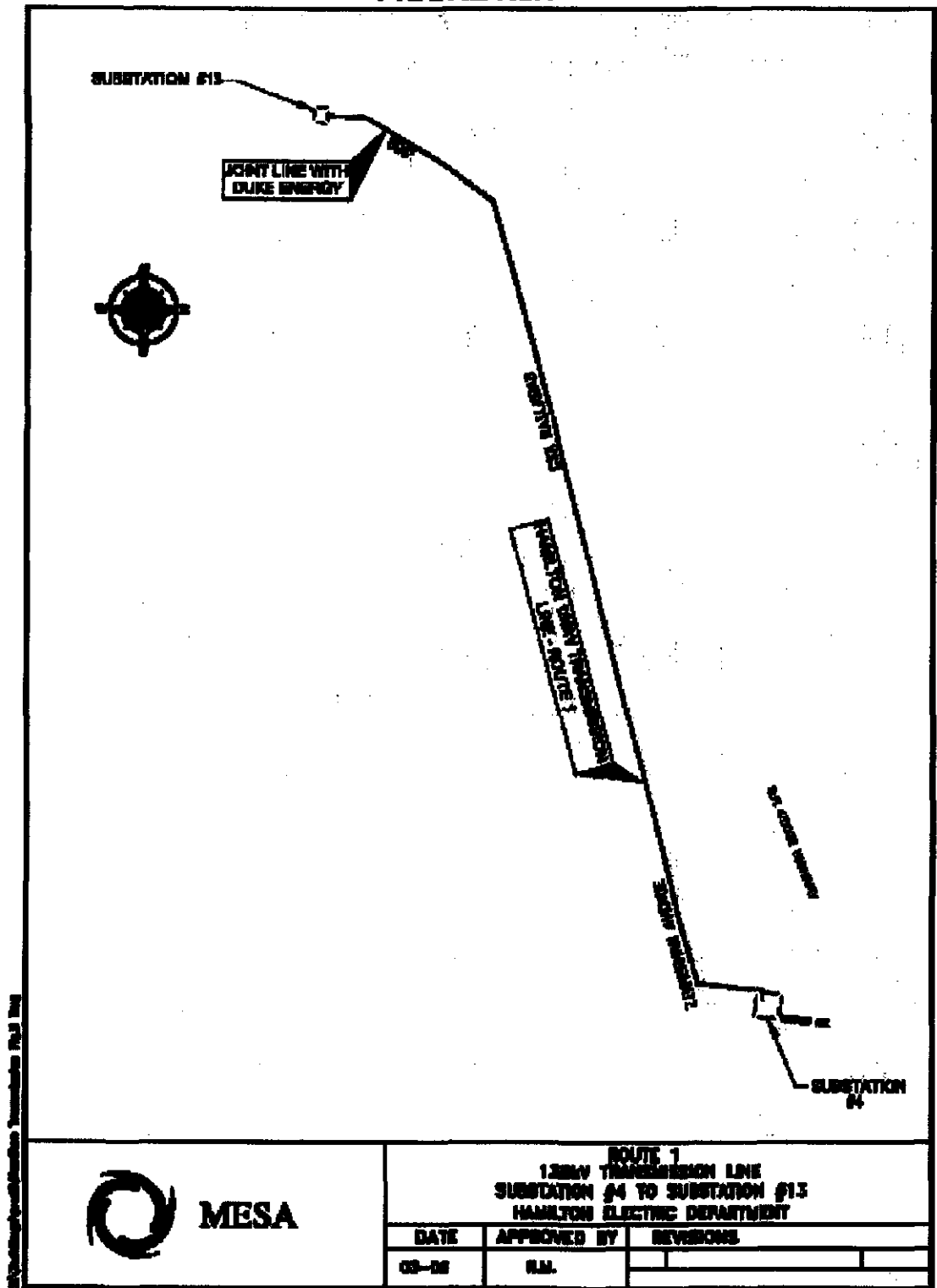
Route 2 originates at Substation 4 and heads east along an alley between Minor Avenue and Hooven Avenue to Dixie Highway. Route 2 then follows the west side of Dixie Highway to the Dixie Highway/Erie Boulevard split. From the split, Route 2 follows the east side of Dixie Highway to a point between East Avenue and the CSX Railroad crossing. From this point, Route 2 crosses Dixie Highway, the CSX Railroad and Pleasant Avenue to its intersection with Route 1. From this point to its termination at proposed Substation 13, Route 2 is coincident with Route 1 as described above.

Table 1 summarizes the important features and rank scores for each route. Route 1 has the lowest total score and was selected as the preferred route for the following reasons:

- Minimizes route deflections.
- Minimizes the total route distance.
- Maximizes the use of existing pole structures.
- Minimizes the number of improved highway and railroad crossings.
- Minimizes environmental impact.
- Minimizes socio-economic impact.

Although less desirable, Route 2 is a viable alternate route.

**FIGURE No.1**

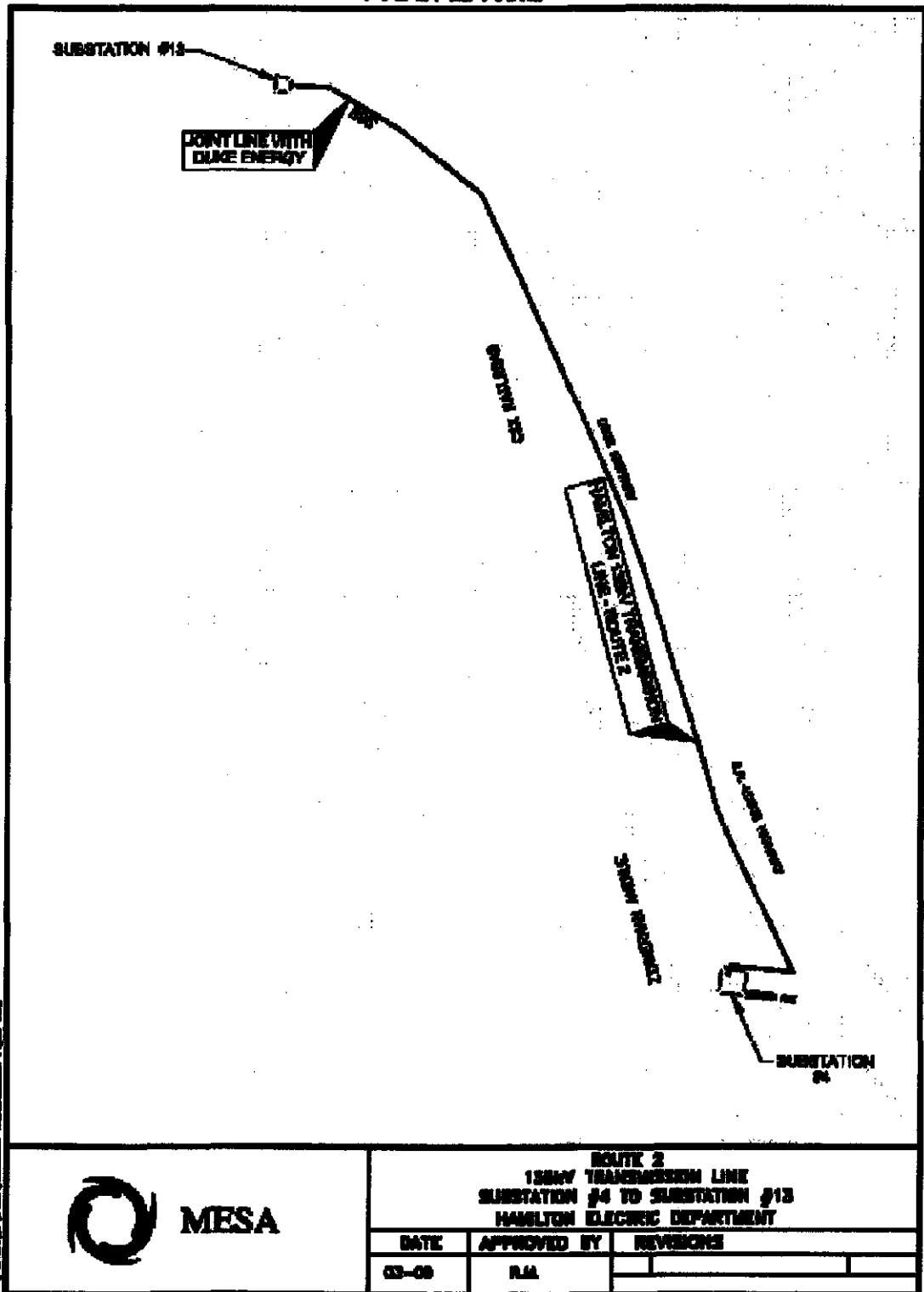


**MESA**

**ROUTE 1  
128KV TRANSMISSION LINE  
SUBSTATION #4 TO SUBSTATION #13  
HAMILTON ELECTRIC DEPARTMENT**

DATE	APPROVED BY	REVISIONS
03-08	R.M.	

**FIGURE No.2**



**Table 1****Comparison of Important Features of Routes 1 and 2 between Hamilton Substation No. 4 and Hamilton Substation No. 13**

Attribute	Route 1 Rank Score	Route 2 Rank Score
Total Length (Ft)	1	2
Length within Existing Rights-of-Way (Ft)	1	1
Parallel to Existing Property Lines (Ft)	1	1
Deflections (Count)	1	2
Residential Land Use Adjacent to the Route (Ft)	1	2
Commercial Land Use Adjacent to the Route (Ft)	1	2
Sensitive land uses within 150 feet Centerline (Count)	1	2
Stream Crossings (Count)	1	1
Floodplains (100 year RI) Crossed (Feet)	1	1
Wetlands Crossed (Feet)	1	1
Public Road/Railroad Crossing (Count)	1	2
Number of Significant Cultural features within 1,000 Feet	1	1
Makes Use of Existing Pole Structures (Feet)	1	2
Total rank score	13	19

## **Appendix D**

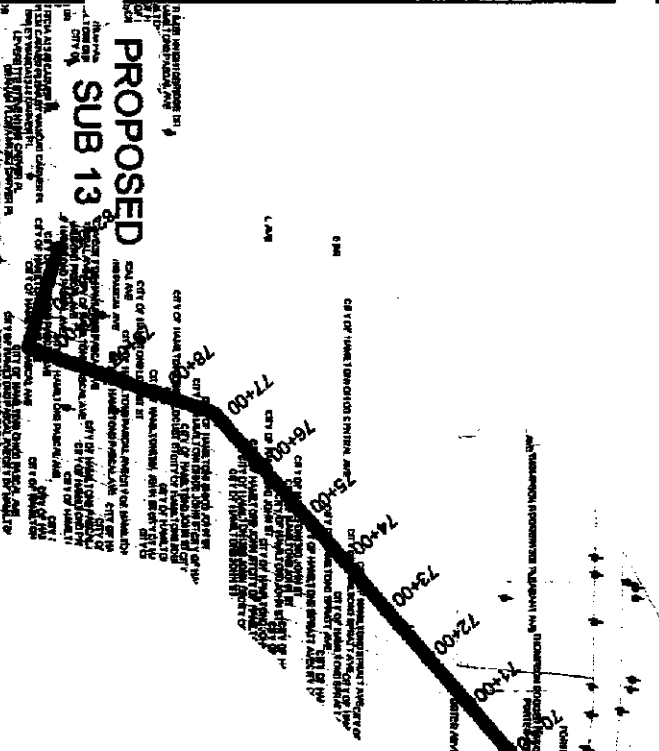
### **Transmission Line Route Drawing with Stationing**

MATCHLINE "B - B"

MATCHLINE "A - A"

MATCHLINE "A - A"

# PROPOSED SUB 13



OWNER	EASEMENT HOLDER	START STATION	END STATION	WITHIN EXISTING R/W	PARALLEL TO EXISTING R/W	TRANSMISSION LINE EASEMENT STATUS
SEVERAL RESIDENTIAL PROPERTY OWNERS WITH FRONTAGE ON LINCOLN AVENUE	CITY OF HAMILTON	0+00	6+30	YES	N/A	NOT REQUIRED
CSX TRANSPORTATION	CITY OF HAMILTON	6+30	67+20	YES	N/A	REQUIRED
CSX TRANSPORTATION	CITY OF HAMILTON	67+20	67+80	NO	NO	REQUIRED
PORTER ADVERTISING	CITY OF HAMILTON	67+80	71+75	NO	NO	REQUIRED
TR-CITY AUTO (Richard Pearson)	CITY OF HAMILTON	71+00 Right	71+40 Right	NO	YES	REQUIRED
CITY OF HAMILTON	N/A	71+75	82+00	YES	N/A	NOT REQUIRED



SCALE: 1"=200'

MATCHLINE "B - B"

SUB 4  
SUB 10



AMP  
OHIO

American Municipal Utilities



Your Community Utility Partner

City Of Hamilton SUBSTATION NO. 4 TO SUBSTATION NO. 13 138KV TRANSMISSION LINE STATION 53+00 TO STATION 77+00			
REV.	DATE	BY	DESCRIPTION
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## **Appendix E**

### **Environmental Documentation Report Prepared by BBCM**



**ENVIRONMENTAL DOCUMENTATION**

**SUBSTATION NO. 4 TO SUBSTATION NO. 13 138 KV TRANSMISSION LINE  
(SHORT LINE)  
HAMILTON, BUTLER COUNTY, OHIO**



**Report to:**

**AMP-OHIO, INC.  
COLUMBUS, OHIO**

**Prepared by:**

**BBC&M ENGINEERING, INC.  
ENVIRONMENTAL SERVICES  
COLUMBUS, OHIO**

**January 20, 2009**



January 20, 2009  
011-11772-E00

Mr. Randy Meyer, QEP  
AMP-Ohio, Inc.  
2600 Airport Drive  
Columbus, Ohio 43219

Re: Environmental Documentation  
Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line)  
Hamilton, Butler County, Ohio

Mr. Meyer:

In accordance with our proposal dated May 2, 2008 and contract dated October 20, 2008, BBC&M Engineering, Inc. (BBCM) is pleased to submit this report documenting the socioeconomic, land use, ecological, and cultural resources in the Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line) study area to AMP-Ohio, Inc. (the "Client"). The purpose of the documentation is to meet requirements established in Ohio Administrative Code (OAC) 4906-15-06 and 4906-15-07 for the proposed electric transmission line installation to supply the Vora Technology Park in Hamilton, Butler County, Ohio (the "site").

We appreciate the opportunity to provide our environmental services to you on this project. Please contact us at (614) 793-2226 if you have questions about this report.

Respectfully submitted,

**BBC&M ENGINEERING, INC.**  
Columbus, Ohio

A handwritten signature in black ink, appearing to read 'Eric P. Slosser'.

Eric P. Slosser  
Project Environmental Scientist

A handwritten signature in black ink, appearing to read 'Mary E. Sharrett'.

Mary E. Sharrett, P.E., LEED® AP  
Senior Engineer

Submitted: 2 hard copies and 2 electronic copies (.pdf and word)

## TABLE OF CONTENTS

<b>I</b>	<b>INTRODUCTION.....</b>	<b>1</b>
(A)	Proposed Alignment.....	1
(1)	Preferred Route.....	1
(2)	Alternate Route.....	1
(3)	Proposed Substation Number 13.....	2
<b>II</b>	<b>OAC 4906-15-06 - SOCIOECONOMIC AND LAND USE IMPACT DOCUMENTATION ....</b>	<b>2</b>
(A)	Literature Search and Map Review.....	2
(B)	Route Alignments and Land Use.....	3
(1)	Proposed Transmission Line Route.....	3
(2)	Proposed Substation Locations.....	3
(3)	General Land Use.....	4
(4)	Transportation Corridors.....	6
(5)	Existing Utility Corridors.....	7
(6)	Noise Sensitive Areas.....	7
(7)	Agricultural Land.....	8
<b>III</b>	<b>CULTURAL RESOURCES .....</b>	<b>8</b>
<b>IV</b>	<b>ECOLOGICAL DOCUMENTATION.....</b>	<b>9</b>
(A)	Summary of Ecological Studies.....	9
(B)	Mapping.....	9
(1)	Proposed Routing.....	9
(2)	Proposed Substation Locations.....	9
(3)	Summary of Ecological Features and Mapping.....	9
(4)	Soil Associations.....	10
(C)	Streams and Bodies of Water.....	11
(D)	Wetlands.....	11
(E)	Naturally Occurring Vegetation.....	12
(F)	Commercial or Recreational Value and Threatened and Endangered Species.....	12
(G)	Slopes and/or Highly Erodible Soils.....	13
<b>V</b>	<b>CONCLUSIONS.....</b>	<b>14</b>
(A)	Land Use.....	14
(B)	Cultural Resources.....	14
(C)	Ecological Documentation.....	14

## **APPENDICES**

### **Appendix A**

Vicinity Map  
Project Plan Sheet Index  
Project Plan Sheets  
Project Plan Sheets (Aerial Photographs)

### **Appendix B**

Land Use Plan with 100' Radius  
Land Use Plan with 1,000' Radius  
Zoning Plan with 1,000' Radius  
City of Hamilton Land Use Districts  
Transportation Corridor Plan  
Noise-Sensitive Areas Plan  
National Wetland Inventory (NWI) Map  
Soil Map of Butler County  
Soil Map Legend  
Map Unit Legend  
Flood Insurance Rate Maps

### **Appendix C**

BBCM Preliminary Jurisdictional Waters Delineation Report, dated January 20, 2009

### **Appendix D**

OVAI Phase I Cultural Resources Report, dated December 9, 2008

### **Appendix E**

US Census Bureau Documentation  
Endangered, Recreational, and Commercial Species List  
ODNR-DNAP letter, dated October 8, 2008  
ODNR-DOW letter, dated December 8, 2008  
Species Profiles (Indiana bat, cave salamander)  
USFWS letter, dated October 23, 2008  
USFWS Federally-Listed Species by Ohio Counties dated November 2008

**ENVIRONMENTAL DOCUMENTATION**  
**Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line)**  
**Hamilton, Butler County, Ohio**

**I INTRODUCTION**

To meet the growing energy demands of the Vora Technology Park in the City of Hamilton, Butler County, Ohio, it is proposed to install a new transmission line from the proposed new Substation No. 4 to a proposed substation (Substation No. 13) located just east of the Vora Technology Park. Two potential routes are proposed for the Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line). The Preferred Route is approximately 1.6 miles in length and will generally parallel the west side of a CSX railroad corridor along Zimmerman Avenue between Hooven Avenue on the south and the intersection of Dixie Highway and US 127 (Pleasant Avenue) on the north. The Alternate Route is approximately 1.6 miles in length and will generally follow the Dixie Highway corridor from Hooven Avenue on the south to the intersection of Dixie Highway and United States (US) Route 127 on the north. The proposed Substation No. 13 is to be constructed near the north end of the Short Line on property owned by the City of Hamilton and the proposed new Substation No. 4 is to be constructed on vacant land along the east side of Wulzen Avenue between Minor Avenue and Hooven Avenue. The "Study Area" is considered the area within 1,000 feet of either the Preferred Route or the Alternate Route.

**(A) Proposed Alignment**

A plan view of the Preferred Route and Alternate Route alignments and locations of the proposed and existing substation is included on a United States Geologic Survey (USGS) 7.5 Minute Topographic Quadrangle map (Vicinity Map) in Appendix A. Detailed Plan Sheets illustrating the Routes and showing the 100-foot radius are included in Appendix A. The base mapping for the plan sheets was obtained from the Butler County Engineer's office. Both the Preferred and Alternate Routes are located within the City of Hamilton. Portions of Fairfield Township and the City of Fairfield are included in the Study Area.

**(1) *Preferred Route***

The Preferred Route has a length of approximately 1.6 miles. Beginning at the proposed new Substation No. 4 (located along the eastern side of Wulzen Avenue between Minor Avenue and Hooven Avenue, (39° 22' 00.04" N, 84° 32' 49.36" W)), the Preferred Route leaves the substation towards the west, crossing Zimmerman Avenue and the CSX railroad corridor. Just west of the railroad corridor, the route turns towards the northwest and travels along the west side of the railroad corridor to approximately the intersection of US 127 (Pleasant Avenue) and Dixie Highway. From the US 127/Dixie intersection the Route heads west to the proposed Substation No. 13 (located southeast of Carver Place and approximately 480 feet east of the Vora Technology Park (39° 23' 05.56" N, 84° 33' 33.22" W)).

**(2) *Alternate Route***

The Alternate Route has a length of approximately 1.6 miles. Beginning at the proposed new Substation No. 4 (located along the eastern side of Wulzen Avenue between Minor Avenue and Hooven Avenue), the Alternate Route leaves the substation towards the east along an alley (between Minor Avenue and Hooven Avenue) to Dixie Highway (State Route 4). The Alternate Route then heads northwest, utilizing the Dixie Highway corridor, to the about the intersection of Dixie Highway and US 127 (Pleasant Avenue). From the US 127/Dixie intersection the Route heads west to the proposed Substation No. 13, located southeast of Carver Place and approximately 480 feet east of the Vora Technology Park.

### **(3) Proposed Substations**

Substation No. 13 (39° 23' 05.56" N, 84° 33' 33.22" W) will be constructed on vacant land southeast of Carver Place and approximately 480 feet east of University Boulevard. The proposed substation would have a maximum footprint of 285 feet by 450 feet.

The existing Substation No. 4 located along the west side of Wulzen Avenue between Hooven Avenue and Minor Avenue will be demolished. A new Substation No. 4 (39° 22' 00.04" N, 84° 32' 49.36" W) will be constructed on vacant land along the east side of Wulzen Avenue just across the street from the existing Substation No. 4.

## **II OAC 4906-15-06 - SOCIOECONOMIC AND LAND USE IMPACT DOCUMENTATION**

### **(A) Literature Search and Map Review**

The Preferred and Alternate Routes are located within the City of Hamilton in Butler County, Ohio. The socioeconomic characteristics of the Study Area are the same for both the Preferred and Alternate Routes due to their close proximity.

According to the latest U.S. Census Bureau information (2000), Butler County's population in 2000 was 332,807. This represents an approximately 0.9 percent increase since 1990. The U.S. Census Bureau projects the population to increase to 367,670 by 2010. The City of Hamilton experienced a decrease in population from 61,368 in 1990 to 60,690 in 2000. Table 06-1 contains summary information regarding population estimates and projections for the Study Area.

<b>TABLE 06-1: U.S. CENSUS BUREAU POPULATION DATA Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line) Hamilton, Butler County, Ohio</b>			
<b>Government Unit</b>	<b>1990 Census</b>	<b>2000 Census</b>	<b>2010 Projection</b>
United States	248,790,925	281,421,906	308,935,581
Ohio	10,847,115	11,353,140	11,576,181
Butler County	291,479	332,807	367,670
City of Hamilton	61,368	60,690	Not Available

Census information, such as the average household size, median household income, unemployment rate, male and female populations, race, median age, and percent of families below the poverty level was obtained for the city, county, state, and national levels. Documentation is included in Appendix E. In 2000, the average household size in Butler County was 2.61 persons and 2.45 for the City of Hamilton; compared to national and state averages of 2.59 and 2.49 respectively. The population distribution of Butler County consists of 48.8 percent male compared to 51.2 percent female; national percentages are 49.1 percent male and 50.9 percent female and state percentages are 48.6 percent male and 51.4 percent female. The median household income in 2000 for Butler County was \$47,885 and the City of Hamilton was \$35,365; compared to national and state averages of \$41,994 and \$40,956.

The 2007 unemployment rate estimate for the nation were 6.3 percent, state 7.2 percent, and county 5.6 percent. The percentage of people below poverty was 8.7 percent for Butler County and 13.41 percent for the City of Hamilton; national and state percentages were 12.38 and 10.60 respectively. The percentage of the population that is white for the City of Hamilton is 88% and Butler County is 90.5% compared to Ohio (84%) and the United States (69.1%). The

average population age for the City of Hamilton is 34.9 years and Butler County is 34.2 years compared to Ohio at 36.2 years and the United States at 35.3 years. Table 06-2 contains summary information from the U.S. Census Bureau.

<b>TABLE 06-2: U.S. CENSUS BUREAU DATA SUMMARY – 2000 DATA</b> <b>Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line)</b> <b>Hamilton, Butler County, Ohio</b>				
	<b>United States</b>	<b>Ohio</b>	<b>Butler Co.</b>	<b>Hamilton</b>
Average Household Size	2.59	2.49	2.61	2.45
Median Household Income	\$41,994	\$40,956	\$47,885	\$35,365
Unemployment Rate (2007)	6.3%	7.2%	5.6%	Not Available
Male Population	138,053,563	5,512,262	162,370	29,183
Female Population	143,368,343	5,840,878	170,437	31,507
Race Total – White Alone	194,552,774 (69.1%)	9,538,111 (84%)	301,078 (90.5%)	53,386 (88%)
% Below Poverty Level	12.38	10.60	8.70	13.41
Median Age	35.3	36.2	34.2	34.9

## **(B) Route Alignments and Land Use**

### **(1) *Proposed Transmission Line Route***

A Vicinity Map at 1:24,000-scale (1 inch equals 2,000 feet), including the area 1,000 feet on either side of the Preferred and Alternate Routes is included in Appendix A. The base map uses USGS mapping from the Hamilton and Greenhills quadrangles. The Preferred and Alternate Routes share a common section, approximately 1,500 feet in length, along the north side of the route. Detailed Project Plan Sheets (1" = 100' scale) illustrating the alignment and substation location are included in Appendix A.

#### **(a) *Preferred Route***

1.6-miles: the Preferred Route begins at the proposed Substation No. 4 located along the eastern side of Wulzen Avenue between Minor Avenue and Hooven Avenue. The Route leaves the substation towards the west, crossing Zimmerman Avenue and the CSX Railroad. Just west of the railroad, the route turns towards the northwest and travels along the west side of the railroad to about the intersection of US 127 (Pleasant Avenue) and Dixie Highway. From the Pleasant/Dixie intersection the route turns west crossing through vacant land to the proposed Substation No. 13. The proposed Substation No. 13 is located southeast of Carver Place.

#### **(b) *Alternate Route***

1.6-miles: the Alternate Route begins at the proposed Substation No. 4 located along the eastern side of Wulzen Avenue between Minor Avenue and Hooven Avenue. The route leaves the substation towards the east (along an alley between Minor Avenue and Hooven Avenue) to the Dixie Highway (State Route 4). At the Dixie Highway/alley intersection, the route will run to the northwest and utilize the Dixie Highway corridor to about the intersection of Pleasant Avenue and Dixie Highway. From the Pleasant/Dixie intersection the route will turn west crossing through vacant land to the proposed Substation No. 13. The proposed Substation Number 13 is located southeast of Carver Place.

### **(2) *Proposed Substation Locations***

The Preferred and Alternate Routes originate at the new Substation No. 4 (39° 22' 00.04" N, 84° 32' 49.36" W) to be located along the eastern side of Wulzen Avenue. The Preferred and



Alternate Routes connect to the proposed Substation No. 13 (39° 23' 05.56" N, 84° 33' 33.22" W), which is planned for a flat, vacant property owned by the City of Hamilton.

### **(3) General Land Use**

Land use in the Study Area is primarily mixed residential, commercial, and industrial. The northwestern portion of the Study Area is vacant, brush-covered land. Based on a pedestrian reconnaissance, 93 residential structures, 52 commercial properties, 12 industrial/manufacturing/warehousing properties, and one historic structure are located within 100 feet of the Routes. Three churches and one adult day care center were identified within 1,000 feet of the Preferred and Alternate Routes, but were not located within 100 feet of the Routes.

Land uses were determined by a pedestrian reconnaissance of the areas within 100 feet of both Routes and by utilizing county auditor maps, city zoning maps, and aerial photographs of areas within 1,000 feet of the Routes. City of Hamilton Land Use Plans with 100-foot radius and 1,000 foot radius are included in Appendix B. A copy of the portion of the City of Hamilton Zoning Plan which includes a 1,000-foot radius is included in Appendix B along with a description of the City of Hamilton Land Use Districts.

#### **(a) Residential**

The Study Area is located in an urban area with large residential areas consisting primarily of single-family homes along both the east and west sides of the Study Area and between the Preferred and Alternate Routes. Most of the homes within 100 feet of the Routes are located along the Alternate Route. Based on an aerial photograph and the Butler County Geographic Information System (GIS) mapping, over 1,000 homes are located within 1,000 feet of both the Preferred and Alternate Routes.

##### Preferred Route

Based on the pedestrian reconnaissance, 45 single-family homes and one apartment are located within 100 feet of the Preferred Route.

##### Alternate Route

Based on the pedestrian reconnaissance, 71 single-family homes and one apartment are located within 100 feet of the Alternate Route. It should be noted that 25 of the aforementioned 67 homes are also located within 100 feet of the Preferred Route.

#### **(b) Commercial**

The Routes are located in an urban area with commercial businesses located along major transportation corridors such as US Route 127 and Dixie Highway/State Route 4. Additionally commercial businesses are located along the CSX railroad corridor. Most commercial properties within 100 feet of the Routes are located along the Alternate Route. The City of Hamilton Zoning Map (Appendix B) indicates areas zoned as business districts within 1,000 feet of the Study Area are located along US 127 (Pleasant Avenue), the Dixie Highway corridor, the State Route 4 corridor, the East Avenue corridor, and the Grand Boulevard corridor. Also, the Zoning Map illustrates the vacant land within 1,000 feet of the northwest portion of the Routes is zoned "Office Planned Development District."

### Preferred Route

Based on the pedestrian reconnaissance, 13 commercial businesses are located within 100 feet of the Preferred Route. The businesses are located along the CSX railroad corridor and along U.S. Route 127 (Pleasant Avenue). The commercial sites include automotive or machine repair businesses, a retail floor cover business, and several unmarked commercial buildings.

### Alternate Route

Based on the pedestrian reconnaissance, 45 commercial businesses are located within 100 feet of the Alternate Route. The businesses are primarily located along the Dixie Highway/State Route 4 corridor. Commercial sites include automotive service businesses, vacant or unmarked commercial buildings, restaurants, gas stations, beauty salon, motels, a self-storage business, a drive-thru grocery store, an animal clinic, a sign business, a graphics business, a dentist office, a putt putt golf course, a salvage business, an accounting office, and a barber shop. Six of the 49 commercial properties are also located within 100 feet of the Preferred Route in areas where the Routes share a common corridor or where the Routes are located with 100 feet of each other.

### **(c) Industrial**

The Routes are located in an urban area with industrial sites located along the CSX railroad corridor. Most industrial properties are located along the Preferred Route. The City of Hamilton Zoning Map (Appendix B) indicates areas zoned for industrial purposes within 1,000 feet of the Study Area are located along both sides of the CSX railroad corridor and along the east side of the Dixie Highway/State Route 4 corridor. A portion of the vacant land near the northwest side of the Routes is zoned "Industrial Planned Development District."

### Preferred Route

Based on the pedestrian reconnaissance, eleven industrial sites are located within 100 feet of the Preferred Route along the CSX railroad corridor.

### Alternate Route

Based on the pedestrian reconnaissance, three industrial sites are located within 100 feet of the Alternate Route along the CSX railroad corridor. One of the three industrial sites is also located within 100 feet of the Preferred Route in an area where the Routes are located near each other.

### **(d) Cultural**

Ohio Valley Archaeology, Inc. (OVAI) completed a "Phase I Cultural Resource Literature Review" report dated December 9, 2008 for the project. The review included a pedestrian survey of the Routes. A copy of the report is included in Appendix D. As part of the report, the following resources were reviewed:

1. *An Archeological Atlas of Ohio* (Mills 1914);
2. Ohio Archaeological Inventory (OAI);
3. Ohio Historic Inventory (OHI);
4. National Register of Historic Places (NRHP) files;
5. OHPO Cultural Resource Management (CRM) reports;
6. 19<sup>th</sup> century atlas of Butler County;
7. The early 20<sup>th</sup> century USGS 15' series topographic maps; and
8. Modern USGS 7.5' series topographic maps.

### **Preferred Route**

The proposed Substation No. 13 for the Preferred Route is within portions of a razed, late 19<sup>th</sup> to early 20<sup>th</sup> century residential neighborhood. The Preferred Route then traverses over a modern commercial property and SR 127 (Pleasant Avenue). After crossing over SR 127, the Route continues south-southeast along the existing CSX railroad corridor. The area surrounding the railroad line and Substation No. 4 consists of a mixture of residential, commercial, and industrial properties/structures, including an abandoned railroad switchyard. The structures appear to be a mix of modern and pre-1958 structures. No OAI, OHI, or NRHP listings were identified within 100 feet of the Preferred Route. A map illustrating the Study Area and OAI and OHI sites is included in Appendix D.

### **Alternate Route**

The Alternate Route will also extend east from the proposed Substation No. 13 location, along the south side of an existing power line. It follows the same course as the Preferred Route until reaching the SR 127/CSX railroad intersection, at which point, it crosses over the railroad line and traverses southeast along the east side of Dixie Highway. Residential, commercial, and light industrial properties/structures, including a cellular tower, are located along Dixie Highway. Most of the commercial and light industry structures are modern although a few appear to be pre-1958 structures, including one previously recorded structure, BUT-290-09 which is located within 100 feet of the Alternate Route. The location of the recorded structure is illustrated on Sheet 3 of the Project Plans in Appendix A and on Figure 2 in Appendix D.

### **(e) Agricultural**

The Routes are located in an urban area. No agricultural land was observed within 100 feet of the Routes during the pedestrian reconnaissance. Agricultural land was not observed within 1,000 feet of the Routes on aerial photographs, auditor mapping, or the city zoning map. Land Use and Zoning Plans are included in Appendix B.

### **(f) Recreational**

No recreational land uses were observed within 100 feet of the Routes during the pedestrian reconnaissance. No parks or other recreational land were noted within 1,000 feet of the Routes on the Butler County Engineer's Office Transportation Map, aerial photographs, auditor mapping, land use or zoning plans, or USGS map.

### **(g) Institutional**

No institutional properties such as churches, schools, hospitals, police, cemeteries, or fire departments were observed within 100 feet of the Preferred or Alternate Routes during the pedestrian reconnaissance. The Butler County GIS was used to determine if churches, schools, hospitals, police, cemeteries, or fire departments are located within 1,000 feet of the Routes. Three churches were identified within 1,000 feet of both Routes. The United Church of Christ located along Laurel Avenue is approximately 150 feet west of the Alternate Route and approximately 400 feet east of the Preferred Route. The Lindenwald Church of God is located along the west side of Pleasant Avenue and approximately 310 feet west of the Preferred Route and 500 feet west of the Alternate Route. One other church is located in the northwest quadrant of the intersection of Grand Boulevard and 13<sup>th</sup> Street, approximately 690 feet east of the Alternate Route and 1,000 feet west of the Preferred Route. The locations of the churches are indicated on the Noise Sensitive Areas Plan (Appendix B).

### **(4) Transportation Corridors**

Both the Preferred and Alternate Routes are located in an urban area and most transportation routes are neighborhood city streets. Major transportation corridors within 1,000 feet of the

Preferred and Alternate Routes are the CSX railroad corridor located along the Preferred Route, the Dixie Highway/SR 4 corridor located along the Alternate Route, and the US 127 (Pleasant Avenue) corridor located across the northwestern portion of the Study Area. Transportation corridors such as roads and railroads are illustrated on the Transportation Corridor Plan (Appendix B).

**(5) Existing Utility Corridors**

A driving reconnaissance was conducted in the vicinity of the Study Area to identify high-tension/high voltage power lines. No overhead high-tension/high voltage power lines (above 140 kV) were noted within 1,000 feet of the Preferred and Alternate Routes.

Existing 13.8 kV electric transmission lines run from Substation No. 4 and along the west side of the CSX railroad corridor to the intersection of US127/Dixie Highway, following the Preferred Route. An existing 138 kV and two 13.8 kV electrical transmission lines are located on the north side of the Routes. The 138 kV and two 13.8 kV lines are located where the Preferred and Alternate Routes merge near the US127/Dixie Highway intersection and run westward along the merged Routes to the proposed Substation No. 13.

**(6) Noise Sensitive Areas**

A pedestrian reconnaissance was used to identify noise sensitive sites such as residences, educational sites, day care facilities, health care facilities, religious sites, parks, recreational areas, wildlife refuges, and cultural/historic sites within 100 feet of the Routes. The Butler County GIS and Zoning and Land Use plans were also used to identify noise sensitive areas within the Study Area.

**Residences**

Forty-six residential noise sensitive sites (45 houses and one apartment) are located within 100 feet of the Preferred Route. Seventy-one residential noise sensitive sites (70 houses, one apartment) are located within 100 feet of the Alternate Route. Additionally, over 1,000 homes are located within the Study Area. The location of houses within 100 feet of the Preferred and Alternate Routes are indicated on the Project Plan Sheets (Appendix A).

**Educational Sites, Day Care Facilities, Parks, Recreational Areas, Wildlife Refuges**

No educational sites, day care facilities, parks, recreational areas, or wildlife refuges were observed within 100 feet of the Routes. A small park (Schuster Park) is located just outside the 100 foot radius at the southwest portion of the Preferred Route (southwest corner of the intersection of Hooven Avenue and Van Hook Avenue).

**Religious Sites**

Three churches were identified within the Study Area. The United Church of Christ located along Laurel Avenue is approximately 150 feet west of the Alternate Route and approximately 400 feet east of the Preferred Route. The Lindenwald Church of God is located along the west side of Pleasant Avenue and approximately 310 feet west of the Preferred Route and 500 feet west of the Alternate Route. One other church is located in the northwest quadrant of the intersection of Grand Boulevard and 13<sup>th</sup> Street, approximately 690 feet east of the Alternate Route and 1,000 feet east of the Preferred Route.

### Health Care Facilities

One adult day care facility is located along the north side of Weller Avenue and approximately 110 feet west of the Alternate Route. A dentist office is located along the Dixie Highway within 100 feet of the Alternate Route.

### Cultural/Historic Sites

One previously recorded structure, BUT-290-09, is located within 100 feet of the Alternate Route. The structure appears to be a two-story, vacant commercial building.

- The location of the churches, residential neighborhoods, dentist office, cultural site, and adult day care facility within the Study Area are indicated on the Noise Sensitive Areas Plan (Appendix B).

### **(7) Agricultural Land**

The Study Area is located in urban areas within the City of Hamilton. Agricultural land was not observed within a 100 foot corridor of the Preferred and Alternate Routes during the pedestrian reconnaissance. Agricultural land was not observed within the Study Area on aerial photographs, auditor mapping, or the city zoning and land use maps.

## **III CULTURAL RESOURCES**

OVAI completed a "Phase I Cultural Resource Literature Review" report dated December 9, 2008 for the project. The review included a pedestrian survey of the Routes. A copy of the report is included in Appendix D.

No previously recorded cultural resources (OAls, OHIs, or NRHP properties/district) are located within 100 feet of the Preferred Route. One OHI structure (BUT-290-09) is located along the Alternate Route and is illustrated on the Noise Sensitive Areas Plan. No structures are indicated within the proposed Substation No. 13 locale on the 1875 atlas or the 1915 15' USGS map. For the most part, the Preferred Route will follow along an existing CSX railroad corridor, which first appears on the 1875 atlas. No structures appear to be within or adjacent to the Preferred Route on the 1875 atlas, 1915 15' USGS map or the current 1965 (PR 1981 and 1988) 7.5' USGS maps. Several structures appear to be located adjacent to the Alternate Route on the 1875 atlas, 1915 15' USGS map and the current 1965 (PR 1981 and 1988) 7.5' USGS maps.

Based on the map information extending back to 1875, it is unlikely that significant historic-era archaeological sites will be impacted by the Preferred or Alternate Routes. Both Routes will utilize existing poles and the visual impact along both routes is considered minimal due to the presence of numerous other power lines and poles in the area. The Preferred Route will traverse along an existing CSX railroad corridor. Also, the Alternate Route is known to be adjacent to a previously recorded, extant structure, identified as BUT-290-09.

The proposed Substation No. 4 to the proposed Substation No. 13, 138 kV Overhead Transmission Line project will not impact known cultural resources. In addition, the Preferred and Alternate Routes will have little or no potential to impact archaeological sites. Although an archaeological survey might be justified within the proposed Substation No. 13 locale, it is doubtful that this area contains NRHP eligible archaeological sites. This locale has been severely disturbed over the past 30 years with the abandonment and razing of structures, which limits the potential for intact, historic-era archaeological deposits. The potential for prehistoric

archaeological sites within Substation No. 13 is also minimal given that it is located in a low-lying area. No further work is recommended for the project.

#### **IV OAC 4906-15-07 - ECOLOGICAL DOCUMENTATION**

##### **(A) Summary of Ecological Studies**

A wetland delineation and ecological assessment were conducted along the Preferred and Alternate Routes which included a 200 foot wide project corridor for each Route. Field work was conducted in November 2008. A summary of the results of the ecological field surveys are presented below. A copy of BBCM's "Preliminary Jurisdictional Waters Delineation" report dated January 20, 2009 is included in Appendix C.

Supplemental ecological information within 1,000 feet of the proposed Routes was obtained through the review of aerial photography, topographic maps, National Wetland Inventory (NWI) maps, and county soil surveys. Information regarding threatened, endangered, commercial, and recreational species was obtained from the Ohio Department of Natural Resources – Division of Natural Areas and Preserves (ODNR-DNAP), Ohio Department of Natural Resources – Division of Wildlife (ODNR-DOW), and United States Fish and Wildlife Service (USFWS).

##### **(B) Mapping**

###### **(1) *Proposed Routing***

Refer to Sections I (A) (1) and (2) of this report for the proposed transmission line route alignments.

###### **(2) *Proposed Substation Locations***

Refer to Section I (A) (3) of this report for the proposed Substation No. 4 and proposed Substation No. 13 locations.

###### **(3) *Summary of Ecological Features and Mapping***

According to the Hamilton and Greenhills, Ohio quadrangles (U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles), surface topography in the Study Area generally slopes downward towards the west/northwest with surface elevations ranging from approximately 600 feet above mean sea level (MSL) on the southern portion to approximately 570 feet above MSL on the northwest portion of the proposed Routes. A copy of a portion of the USGS maps is included in Appendix A.

Aerial photography obtained from the Butler County Engineer's office from 2005 indicates the majority of the Study Area is located in urban areas within the City of Hamilton. A copy of the Project Plans with the 2005 aerial photograph is included in Appendix B.

##### **(a) *Streams and Drainage Channels***

No streams or drainage channels were observed within 100 feet of the Routes during the pedestrian reconnaissance. Streams or drainage channels were not mapped within the Study Area on aerial photographs, topographic mapping, or the soil survey map.

**(b) Lakes, Ponds, and Reservoirs**

No lakes, ponds, or reservoirs were observed within 100 feet of the Routes during the pedestrian reconnaissance. Lakes, ponds, or reservoirs were not mapped within the Study Area on aerial photographs, topographic mapping, or the soil survey map.

**(c) Marshes, Swamps, and Other Wetlands**

According to the National Wetlands Inventory (NWI) map with coverage of the Study Area (Hamilton and Greenhills, Ohio quadrangles), no wetlands are mapped on the Study Area. A copy of a portion of the NWI map is included in Appendix B.

No marshes, swamps, or other wetlands were observed within 100 feet of the Routes during the pedestrian reconnaissance. Marshes, swamps, or other wetlands were not mapped within the Study Area on aerial photographs, topographic mapping, or the soil survey map.

**(d) Woody and Herbaceous Vegetation Land**

The Study Area is located in an urban area and the majority of land along both Routes is dominated by developed properties. Weed-covered, scrub/shrub, and early-successional to second-growth forested areas are located along the northern portion of the Preferred Route and shared Preferred/Alternate Routes in the area of proposed Substation No. 13. Aerial photography indicates similar woody and herbaceous land on the northern portion of the Study Area.

**(e) Threatened and Endangered Species**

The proposed project is located within the range of the federally-endangered Indiana bat (*Myotis sodalis*). The project is also within the range of several state endangered species. A limited number of potential Indiana bat habitat trees are located along the northern portion of the proposed Routes. It is unknown at this time if potential Indiana bat trees will need to be cleared for the project.

**(f) Commercial and Recreational Species**

The majority of the Study Area consists of developed or disturbed areas with limited wildlife habitat. Marginal potential habitat for commercial and/or recreational species is located on the north portion of the Study Area. This habitat consists of scrub/shrub and forested areas. Commercially important species consist of those traded or trapped for fur, pelts, etc. Recreational species are those listed by ODNR as acceptable for hunting. A list of commercial and recreational species with potential habitat in Butler County is provided in Appendix E.

**(4) Soil Associations**

According to the "Web Soil Survey 2.0 – Butler County, Ohio" (Natural Resources Conservation Service), eleven soil types are mapped in the Study Area. Eight of the soil types are classified as "well drained", one soil type is classified as "excessively drained," one soil type is classified as "moderately well drained" and one soil type has no classification. None of the soils in the Study Area are listed as hydric soils. The boundaries of the soil mapping units are indicated on the soil survey map (Appendix B). Table 06-3 provides a summary of the drainage class and hydric soil listing for each soil type.

<b>TABLE 06-3: MAPPED SOIL TYPES</b> <b>Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line)</b> <b>Hamilton, Butler County, Ohio</b>			
<b>Mapping Unit Symbol</b>	<b>Mapping Unit Name</b>	<b>Drainage Class</b>	<b>Hydric Soil*</b>
CdE	Casco and Rodman gravelly loams, 18 to 35% slopes	Well drained	No
EcE2	Eden silt loams, 15 to 25% slopes	Well drained	No
EIB2	Eldean loam, 2 to 6% slopes	Well drained	No
EuA	Eldean-Urban land complex, nearly level	Well drained	No
EuB	Eldean-Urban land complex, gently sloping	Well drained	No
Gn	Genesee silt loam	Well drained	No
Lg	Lanier fine sandy loam	Well drained	No
TpA	Tippecanoe silt loam, 0 to 2% slopes	Moderately well drained	No
Uf	Udorthents and Dumps	Not Listed	No
UpA	Urban land-Eldean complex, nearly level	Well drained	No
WyC2	Wynn silt loam, 6 to 12% slopes, moderately	Well drained	No

\*Source: "Hydric Soils List – Butler County, Ohio" (USDA – NRCS, December 2007).

### **(C) Streams and Bodies of Water**

On November 13 and 20, 2008, BBCM personnel visually observed a 200-foot-corridor along both Routes for indicators of streams and other waters of the U.S. No streams or jurisdictional waters were observed within 100 feet of the Routes during the pedestrian reconnaissance. Streams or drainage channels were not mapped within the Study Area on aerial photographs, topographic mapping, or the soil survey map.

Flood Insurance Rate Maps (FIRMs) were reviewed to determine potential flood zones within the Study Area. According to the maps, the Study Area is located in Flood Zone B which is described as "areas between limits of the 100-year and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood." Copies of the FIRMs and associated flood zone descriptions are included in Appendix B.

### **(D) Wetlands**

On November 13 and 20, 2008, BBCM personnel visually observed a 200-foot-corridor along both Routes for indicators of potential wetlands. On-site wetland determinations were performed in general accordance with the Routine On-Site Determination method described in the "Corps of Engineers Wetlands Delineation Manual" published by U.S. Army Corps of Engineers in 1987.

No wetlands, waters of the U.S., or isolated waters were observed. Refer to Appendix C for BBCM's Preliminary Jurisdictional Waters Delineation report, which includes the documentation of data points recorded and photographs taken during the site reconnaissance.



**(E) Naturally Occurring Vegetation**

Naturally occurring vegetation is primarily limited to the north portion of the Study Area which consists primarily of previously disturbed weed-covered, scrub/shrub, and upland woodland habitat. Dominant woody species observed in the area included: *Populus deltoides* (Eastern cottonwood), *Carpinus caroliniana* (American hornbeam), *Acer saccharum* (sugar maple), *Rosa multiflora* (multiflora rose), and *Lonicera maackii* (amur honeysuckle). Typical urban landscape areas are present on a significant portion of the Study Area.

**(F) Commercial or Recreational Value and Threatened and Endangered Species**

ODNR-DNAP was contacted to request records of rare and endangered species documented within one-half mile of the Study Area. No records for rare or endangered species or other significant natural features, state nature preserves, scenic rivers, unique ecological sites, geologic features, were found in the Study Area. A copy of the ONDR-DNAP letter dated October 8, 2008 is included in Appendix E.

The ODNR-DOW also provided comments regarding threatened and endangered species, as summarized below:

- Indiana bat (*Myotis sodalis*): If trees with suitable bat habitat must be cut between April 2 and September 29, a mist net survey should be conducted in May or June prior to cutting. If no tree removal is proposed, the project is not likely to impact this species.
- Blue corporal dragonfly (*Ladona deplanata*): Due to the mobility of this species, the project is not likely to impact the blue corporal.
- Kramer's cave beetle (*Pseudanophthalmus Kramer*): The Ohio Cave Protection Law protects the habitat for this species; therefore, the project is not likely to impact this species.
- Ohio cave beetle (*Pseudanophthalmus ohioensis*): The Ohio Cave Protection Law protects the habitat for this species; therefore, the project is not likely to impact this species.
- Cave salamander (*Eurycea lucifuga*): Records of this species are located in Fairfield Township which is adjacent to the City of Hamilton. Unless a professional herpetologist approved by ODNR-DOW determines the presence of the salamander is highly unlikely, a presence/absence survey may be required.

A limited number of potential Indiana bat habitat trees were observed on the north portion of the Routes during the pedestrian reconnaissance. The north portion of the Study Area is previously disturbed scrub/shrub, weed-covered, and secondary growth forested habitat. It is unknown at this time if potential bat trees will need to be cleared for the project.

A species profile obtained from ODNR-DOW web-site indicates the cave salamander is typically located in areas in or around "caves, seeps, springs, springhouses, and small forested limestone creeks associated with groundwater." None of the aforementioned habitat types were observed during the pedestrian reconnaissance, therefore, the project is not likely to impact this species. Copies of the ODNR-DOW letter and species profiles for the Indiana bat and cave salamander are included in Appendix E.

USFWS was contacted to request a review of threatened and endangered species records for the project. USFWS responded in a letter dated October 23, 2008, referring to their website for guidance. The USFWS "County Distribution of Ohio's Federally Threatened, Endangered, Proposed and Candidate Species" list dated November 2008 was reviewed. For Butler County, the following species are listed: Indiana bat. A copy of the species list is included in Appendix E.

**(G) Slopes and/or Highly Erodible Land**

According to the "Web Soil Survey 2.0 – Butler County, Ohio" (Natural Resources Conservation Service), soils within the Study Area have slopes ranging from 0% to 35%. Only 2.9% of the land in the Study Area has listed slopes of 6% or more. The majority (91.1%) of the land in the Study Area has slopes of 0% to 6% (slopes are not listed for 6.0% of the land in the Study Area).

Approximately 2.8% of the land in the Study Area is designated "highly erodible land", 3.2% of the land is designated "potentially highly erodible land", 7.5% of the land is designated "not highly erodible land", and 86.5% of the land has no designation. The boundaries of the soil mapping units are indicated on the soil survey map (Appendix B). Table 06-4 provides a summary of the mapped soil names, slope, and highly erodible land designation.

<b>TABLE 06-4: SOIL SLOPES AND HIGHLY ERODIBLE LAND</b> <b>Substation No. 4 to Substation No. 13 138 kV Transmission Line (Short Line)</b> <b>Hamilton, Butler County, Ohio</b>			
<b>Mapping Unit Symbol</b>	<b>Mapping Unit Name</b>	<b>Slopes</b>	<b>Highly Erodible Land Designation*</b>
CdE	Casco and Rodman gravelly loams, 18 to 35% slopes	18% to 35%	Highly Erodible Land
EcE2	Eden silt loams, 15 to 25% slopes	15% to 25%	Highly Erodible Land
EIB2	Eldean loam, 2 to 6% slopes	2% to 6%	Potentially Highly Erodible Land
EuA	Eldean-Urban land complex, nearly level	0% to 2%	Not Listed
EuB	Eldean-Urban land complex, gently sloping	2% to 6%	Not Listed
Gn	Genesee silt loam	0% to 2%	Not Highly Erodible Land
Lg	Lanier fine sandy loam	0% to 2%	Not Highly Erodible Land
TpA	Tippecanoe silt loam, 0 to 2% slopes	0% to 2%	Not Highly Erodible Land
Uf	Udorthents and Dumps	Not Listed	Not Listed
UpA	Urban land-Eldean complex, nearly level	0% to 2%	Not Listed
Wyc2	Wynn silt loam, 6 to 12% slopes, moderately	6% to 12%	Potentially Highly Erodible Land

\*Source: "Highly Erodible Land List – Butler County, Ohio" (USDA – NRCS, December 2004).

## **V CONCLUSIONS**

### **(A) Land Use**

Land use in the Study Area is primarily mixed residential, commercial, and industrial. The northwestern portion of the Study Area is vacant, brush-covered land. Based on the pedestrian survey and review of county and city information, 93 residential structures, 52 commercial properties, twelve industrial/manufacturing/warehousing properties, and one historic structure are located within 100 feet of the Preferred and Alternate Routes (combined). Additionally, three churches and one adult day care center were identified within 1,000 feet of the Preferred and Alternate Routes.

Forty-six noise sensitive sites (45 houses and one apartment) are located within 100 feet of the Preferred Route. Seventy-five noise sensitive sites (71 houses, one apartment, one adult day care facility, one cultural resource listing site, and one dentist office) are located within 100 feet of the Alternate Route. Additionally, three churches and one adult day care facility are located within 1,000 feet of the Routes.

No agricultural land, parks, recreational areas, or wildlife refugees are located within 1,000 feet of the Routes.

### **(B) Cultural Resources**

No previously recorded cultural resources (OAls, OHIs, or NRHP properties/district are located within 100 feet of the Preferred Route. One OHI structure (BUT-290-09) is located within 100 feet of the Alternate Route. Based on information extending back to 1875, it is unlikely that significant historic-era archaeological sites will be impacted by the proposed project. The project will not impact known cultural resources and will have little or no potential to impact archaeological sites. Although an archaeological survey might be justified within the proposed Substation No. 13 locale, it is doubtful that this area contains NRHP eligible archaeological sites. This locale has been severely disturbed over the past 30 years with the abandonment and razing of structures, which limits the potential for intact, historic-era archaeological deposits. The potential for prehistoric archaeological sites within Substation No. 13 is also minimal given that it is located in a low-lying area. No further work was recommended by the archaeological consultant for the project.

### **(C) Ecological Documentation**

The majority of the Study Area consists of previously disturbed and/or developed areas. Weed-covered, scrub/shrub, and forested areas are located on the northern portion of the Study Area. No streams, wetlands, or other surface water features are located within 100 feet of the Routes. Based on aerial photography and various mapping resources, no surface water features are mapped within 1,000 feet of the Routes.

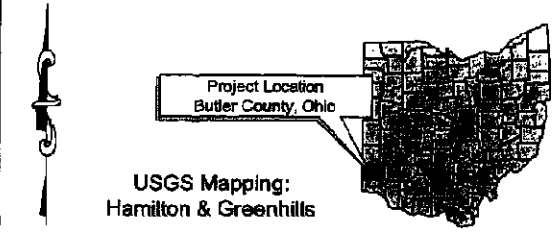
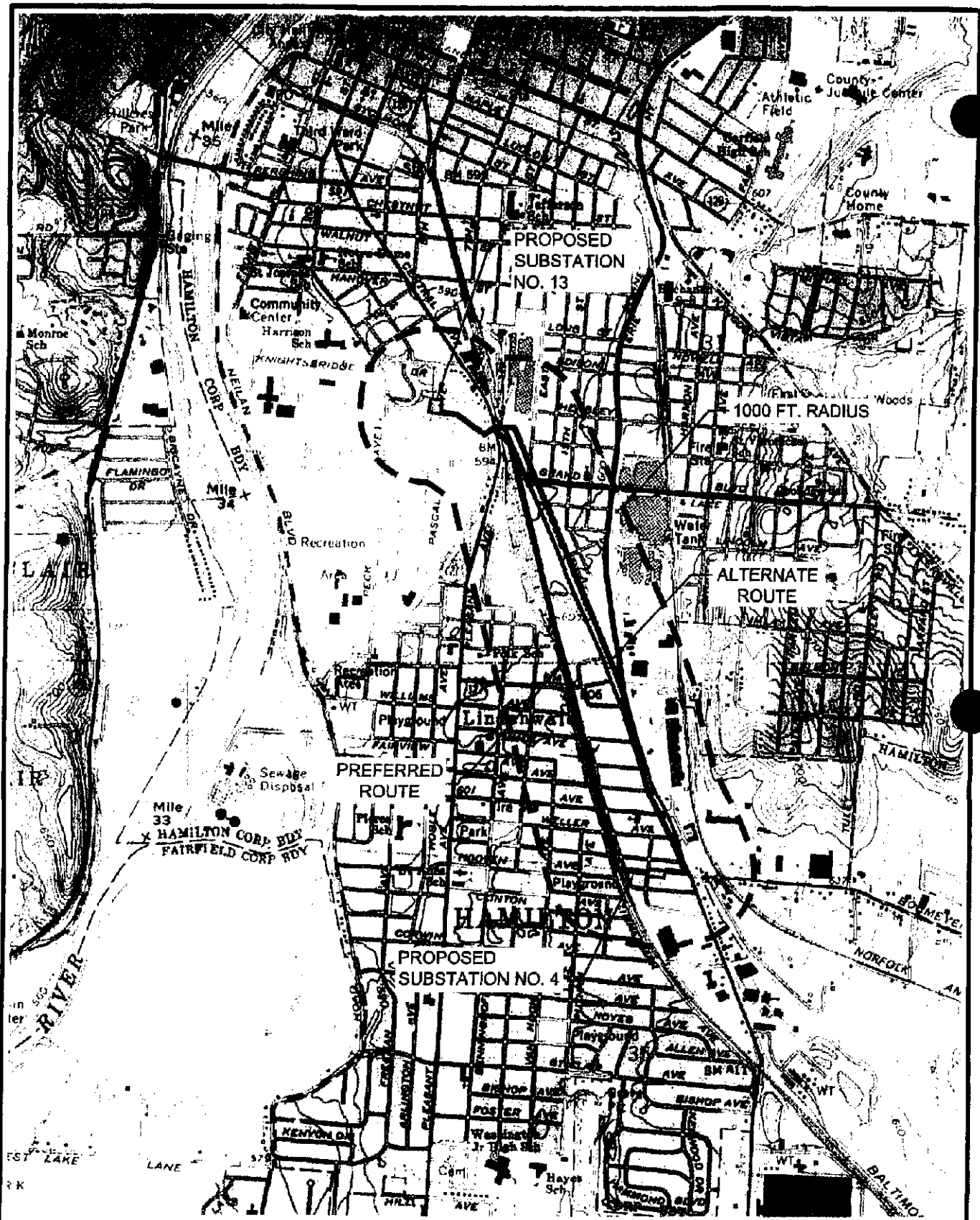
According to flood insurance mapping, the Study Area is located in Flood Zone B. Six soil types in the Eldean-Ockley association are mapped within 1,000 feet of the Routes. No hydric soils are listed within the Study Area.

The proposed project is located within the range of the federally-endangered Indiana bat (*Myotis sodalis*). A limited number of potential bat habitat trees are located along the northern portion of

the proposed Routes. It is unknown at this time if potential bat trees will need to be cleared for the project.

The project is also within the range of several state endangered species: Blue corporal dragonfly (*Ladona deplanata*), Kramer's cave beetle (*Pseudanophthalmus Kramer*), Ohio cave beetle (*Pseudanophthalmus ohioensis*), and the Cave salamander (*Eurycea lucifuga*): Based on the information provided by the DOW and species habitat information, these species are not anticipated to be impacted by the project.

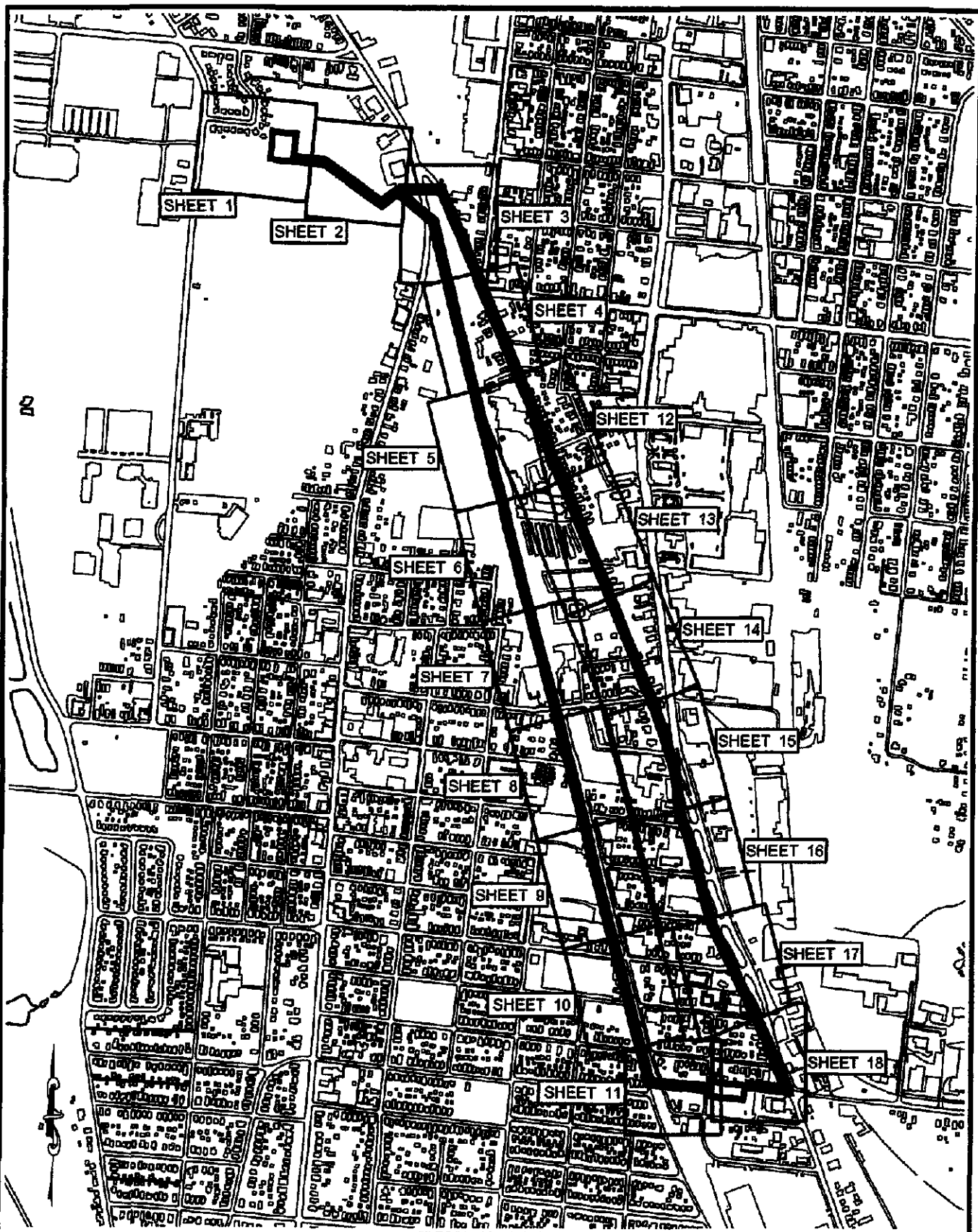
## **APPENDIX A**






VICINITY MAP		
138 KV SHORT LINE HAMILTON, BUTLER CO., OHIO		
Project: 011-11772-E00	Drawn By: MAP	<b>BBCM</b> SOLUTIONS TO BUILD ON Columbus (614) 793-2226 Cleveland (216) 904-1000 Cincinnati (513) 771-8471 Dayton (937) 424-1011
Drawing Date: 11-8-08	Approved By: MES	
Last Updated: 1-16-2009	Scale: 1" = 2000'	
1:1		

Images: ~011-11772-E00 USGS.JPG  
 Xrefs:  
 File Last Updated: Jan 16, 2009  
 Plot Info: 1-16-2009 @ 12:06pm By: NBERndt  
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Images: ~Short Line Base.dwg  
 Xrefs: ~Short Line Base.dwg  
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 Plot Info: 1-16-2009 11:19pm By: NBERNDT  
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### LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES

### SHORT LINE - INDEX

138 KV SHORT LINE  
 HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-2008	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 1000'

**BBCOM**  
 SOLUTIONS TO BUILD ON

Columbus (614) 785-2225  
 Cleveland (216) 601-1000  
 Cincinnati (513) 771-6471  
 Dayton (937) 424-1011

MATCHLINE - SHEET 2

VACANT LAND

PROPOSED  
SUBSTATION NO. 13

VACANT  
LAND

CARVER PL.

UNIVERSITY BLVD.

**LEGEND**

-  ROUTE USED BY BOTH  
THE PREFERRED AND  
ALTERNATE ROUTES
-  100' RADIUS

**SHORT LINE - SHEET 1**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

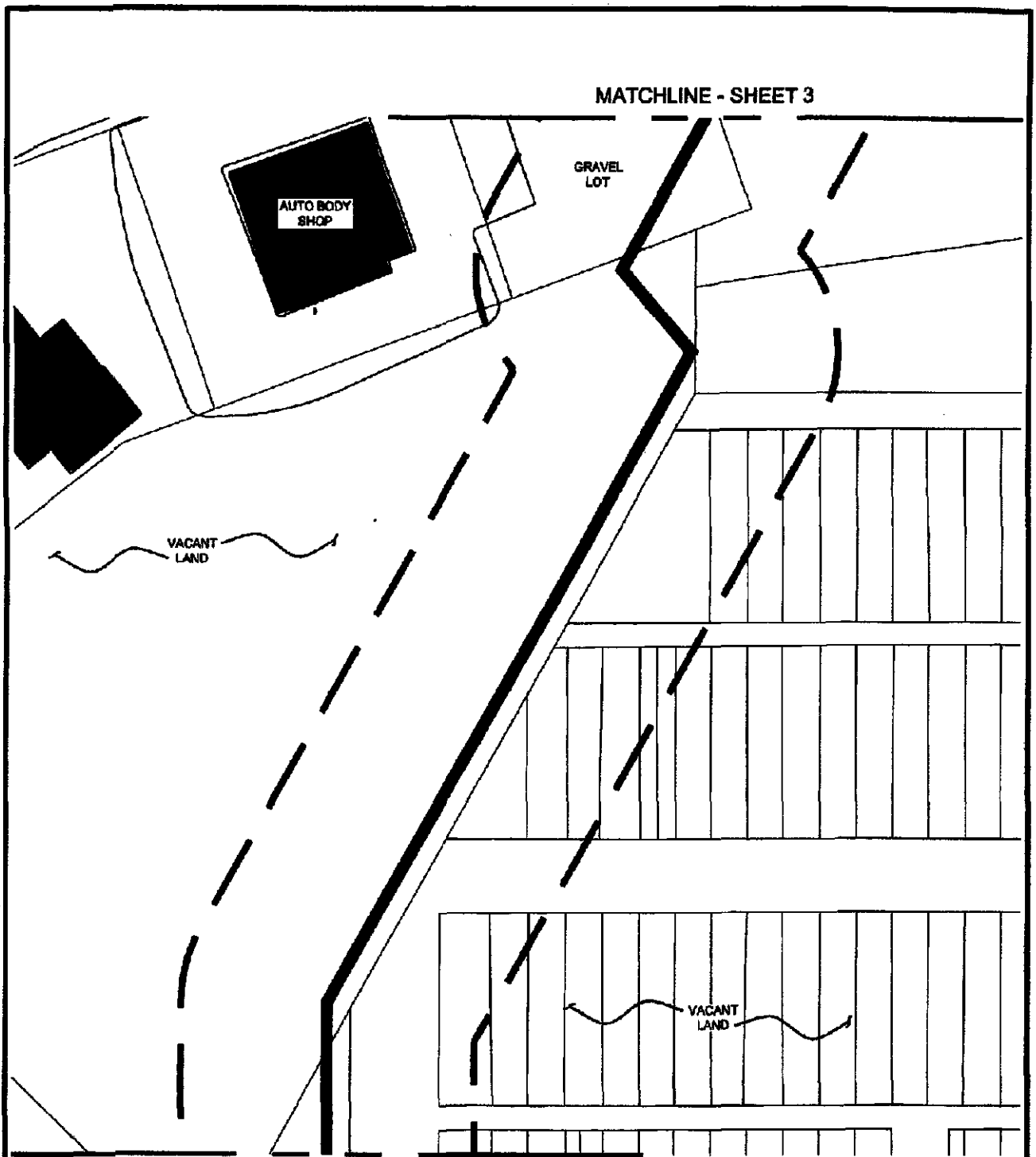
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Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCOM**  
SOLUTIONS TO BUILD ON

Columbus (614) 799-0226  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 484-1011





Images: - Aerial.tif  
Xrefs: - Short Line Base.dwg - Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:55am By: MBERNDT  
BBCOM Filename: HDEPT5\CAD\Drawings\Projects\011-11772-E00\Short Line Plans.dwg Layout: 1





MATCHLINE - SHEET 1

### LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES
-  100' RADIUS

### SHORT LINE - SHEET 2

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 2-18-2009

Scale: 1" = 100'

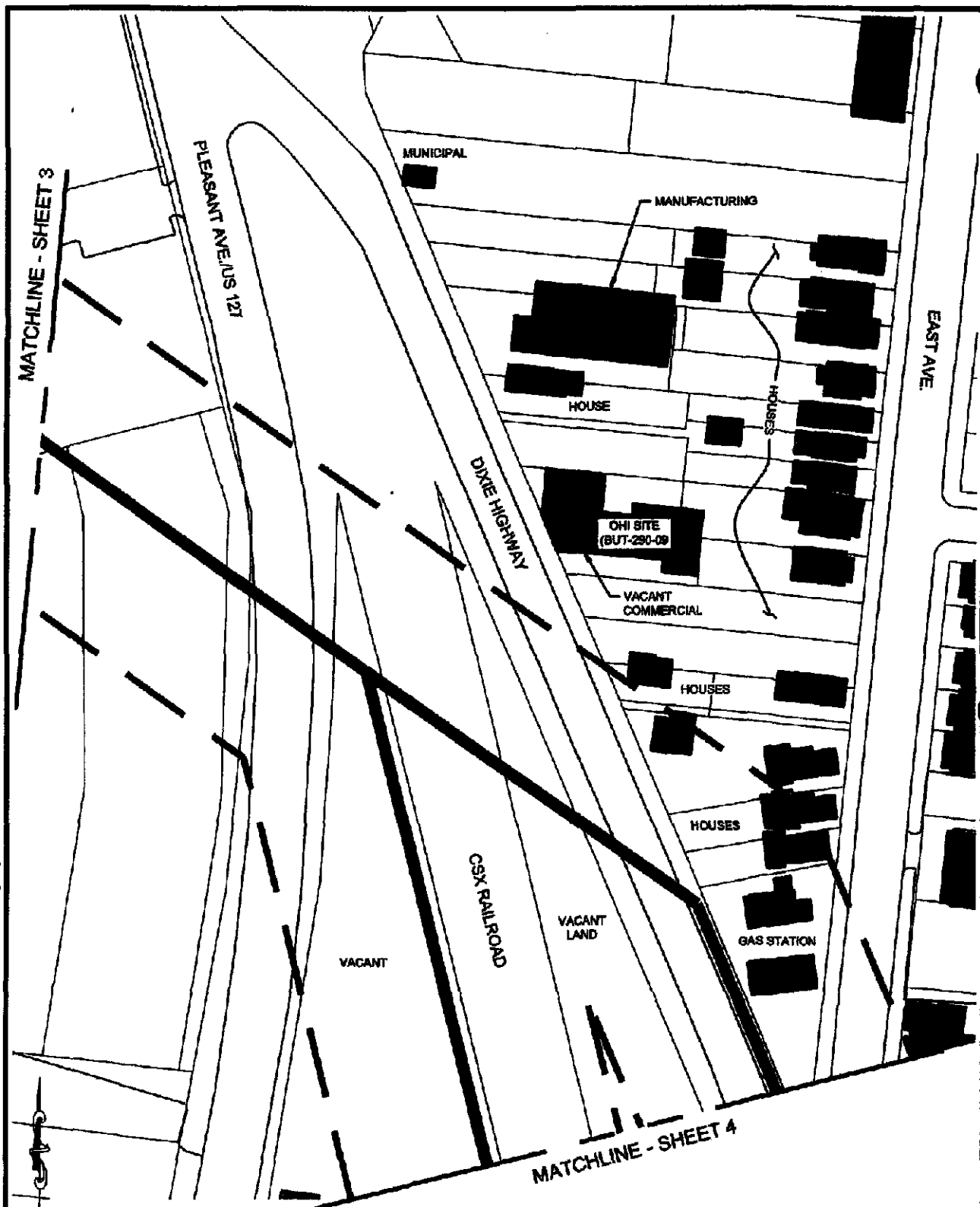
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**BBGM**  
SOLUTIONS TO BUILD ON





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Cleveland (216) 801-1800  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

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 BCGM Filename: HDEPTSCADDDrawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 3



### LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES
-  100' RADIUS

### SHORT LINE - SHEET 3

138 KV SHORT LINE  
 HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 2-18-2009

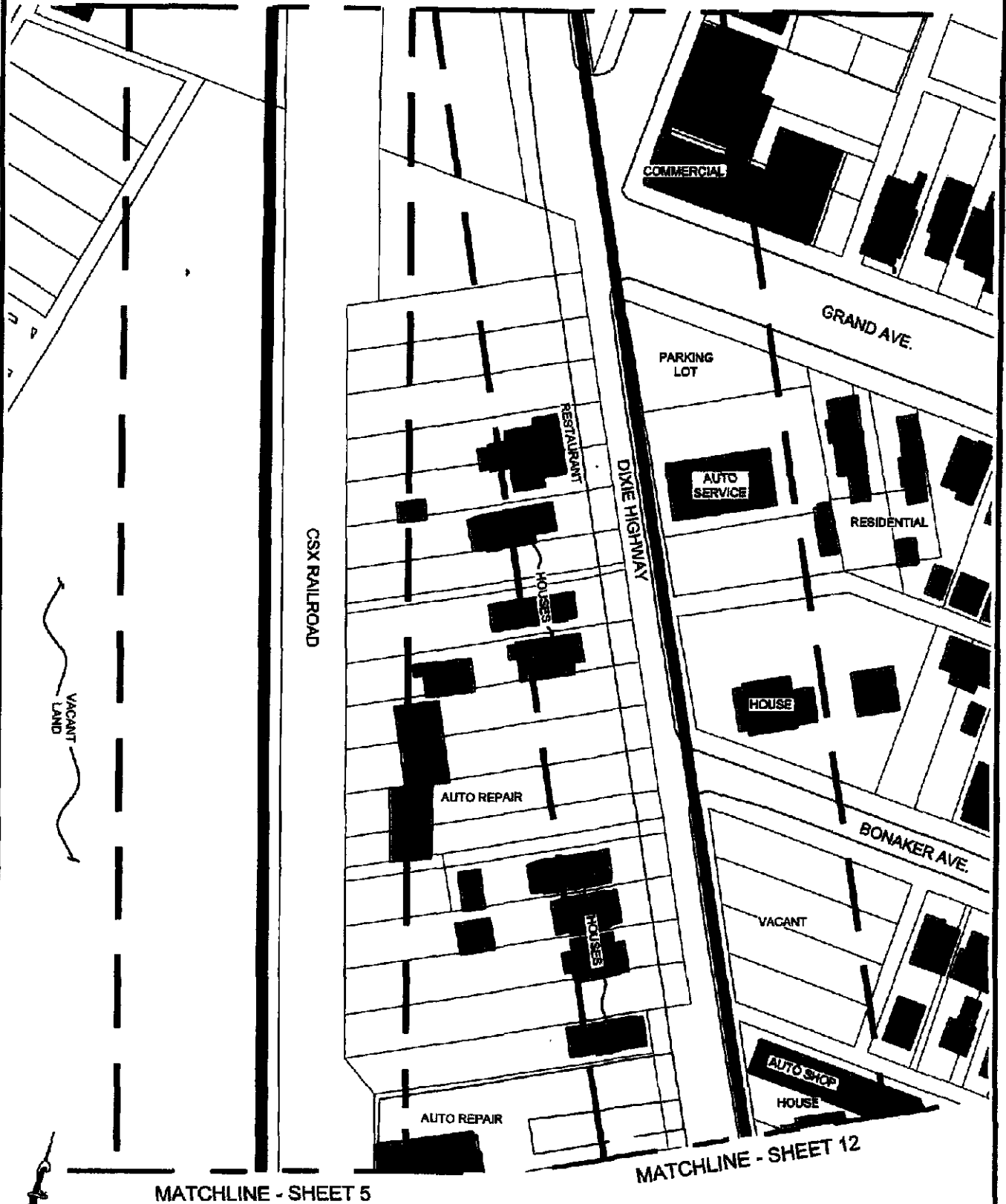
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1:1

**BCGM**  
 SOLUTIONS TO BUILD ON

Columbus (614) 299-2226  
 Cleveland (216) 891-1000  
 Cincinnati (513) 771-9071  
 Dayton (937) 424-1011




MATCHLINE - SHEET 3



MATCHLINE - SHEET 5

MATCHLINE - SHEET 12

# LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  100' RADIUS

## SHORT LINE - SHEET 4

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

Scale: 1" = 100'

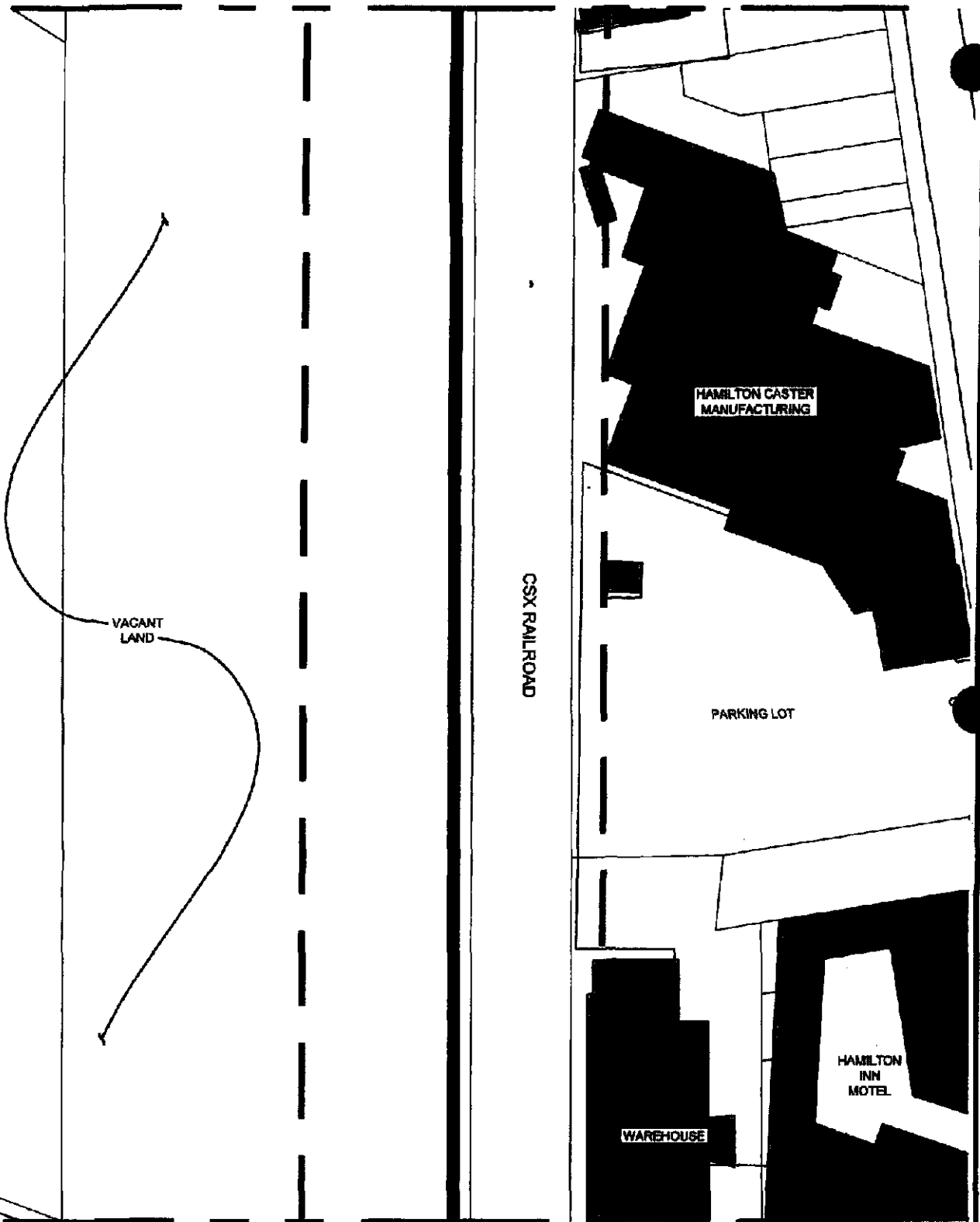
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**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 799-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: ~Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:55am By: NBarndt  
BBCM Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 4

MATCHLINE - SHEET 4



MATCHLINE - SHEET 6

**LEGEND**

-  PREFERRED ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 5**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

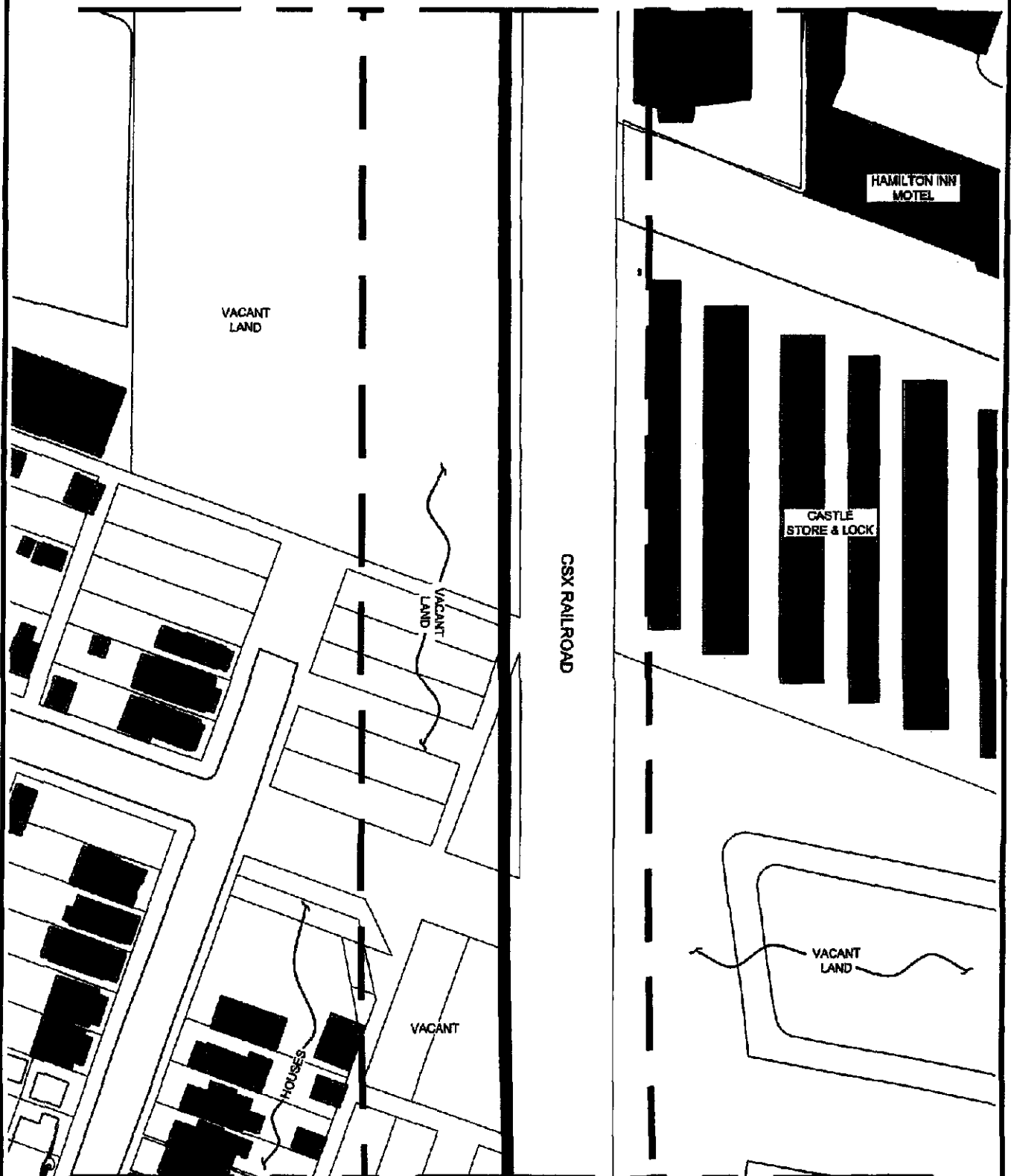
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Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCRM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 426-1811

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MATCHLINE - SHEET 5



MATCHLINE - SHEET 7

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 6**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 783-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-6471  
Dayton (937) 426-1011

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MATCHLINE - SHEET 6



MATCHLINE - SHEET 8

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 7**

**138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO**

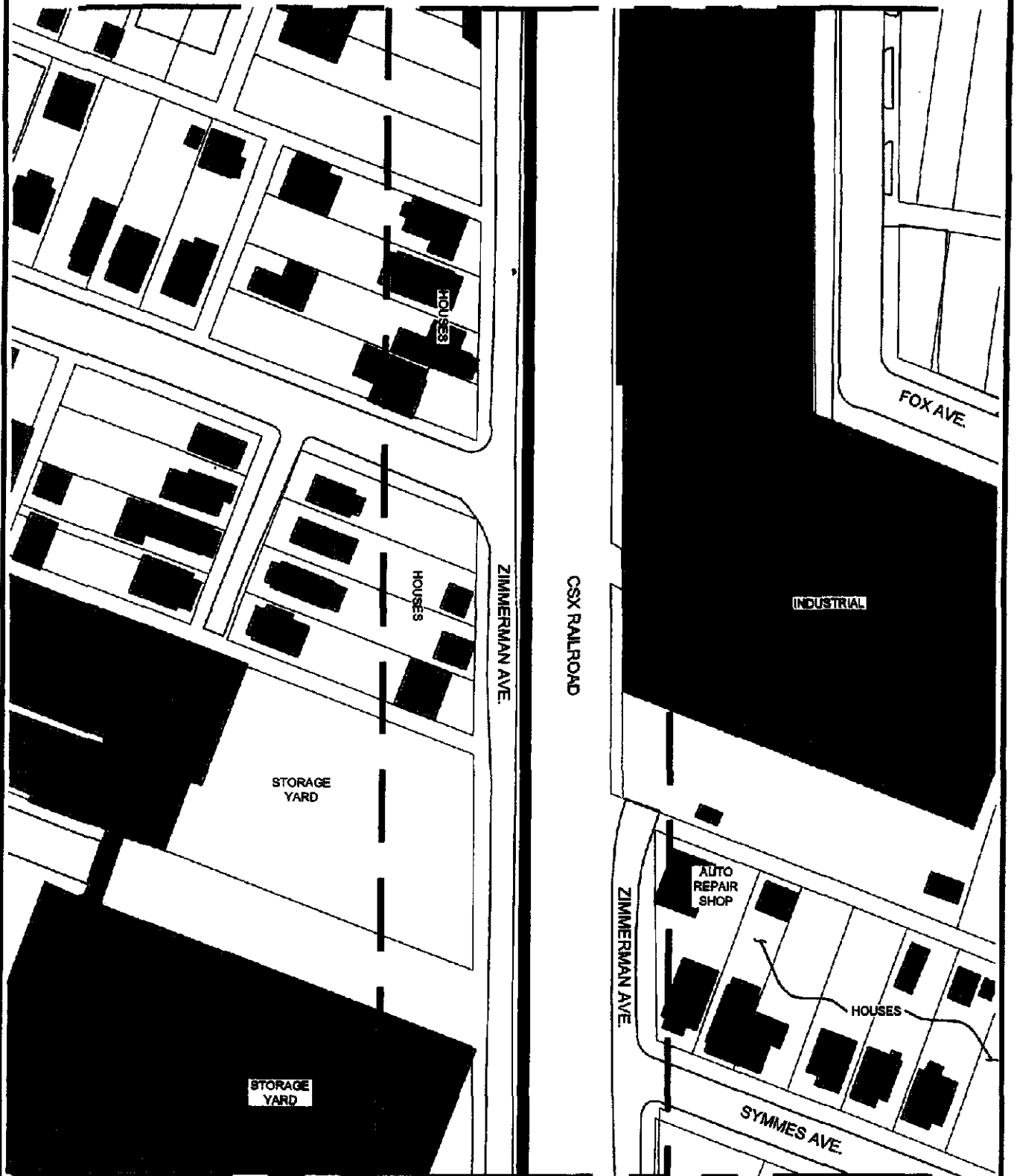
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Last Updated: 1-18-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2228  
Cleveland (216) 391-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

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MATCHLINE - SHEET 7



MATCHLINE - SHEET 9

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 8**

**138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO**

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

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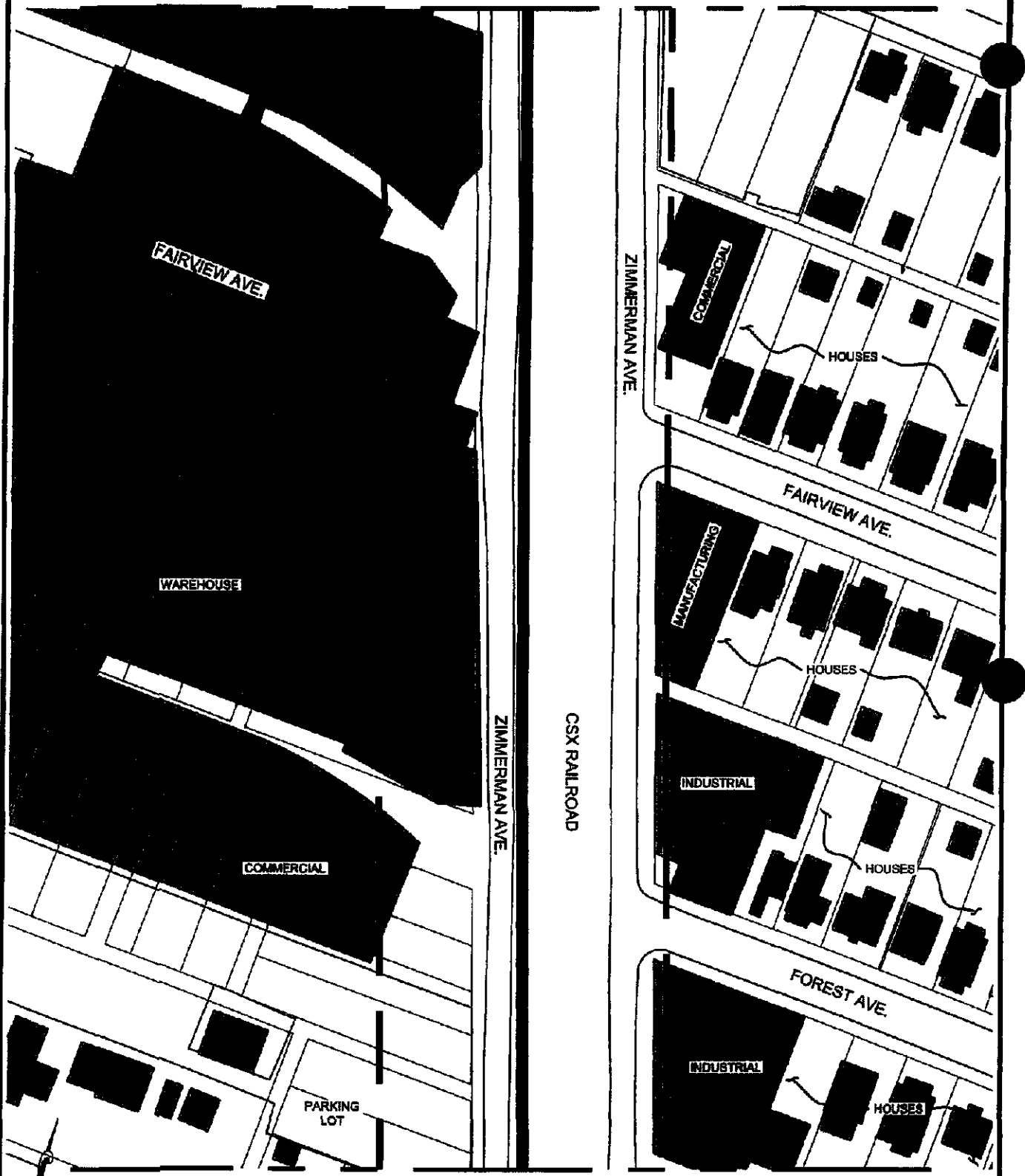
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**BBCGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 783-2228  
Cleveland (216) 504-1080  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

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MATCHLINE - SHEET 8



MATCHLINE - SHEET 10

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 9**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

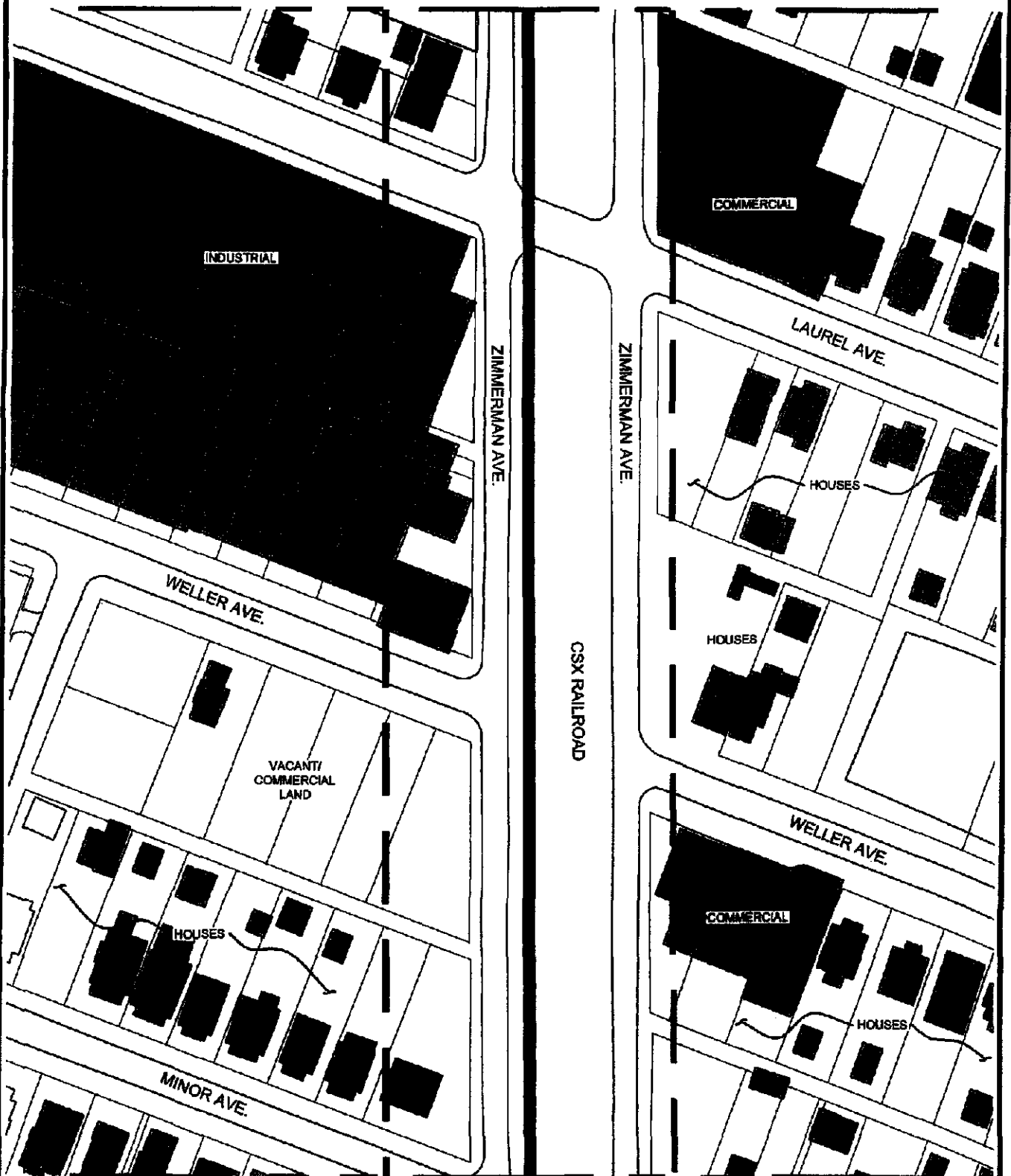
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SOLUTIONS TO BUILD ON

Columbus (614) 788-2226  
Cleveland (216) 891-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: - Aerial.tif  
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MATCHLINE - SHEET 9



MATCHLINE - SHEET 11

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 10**

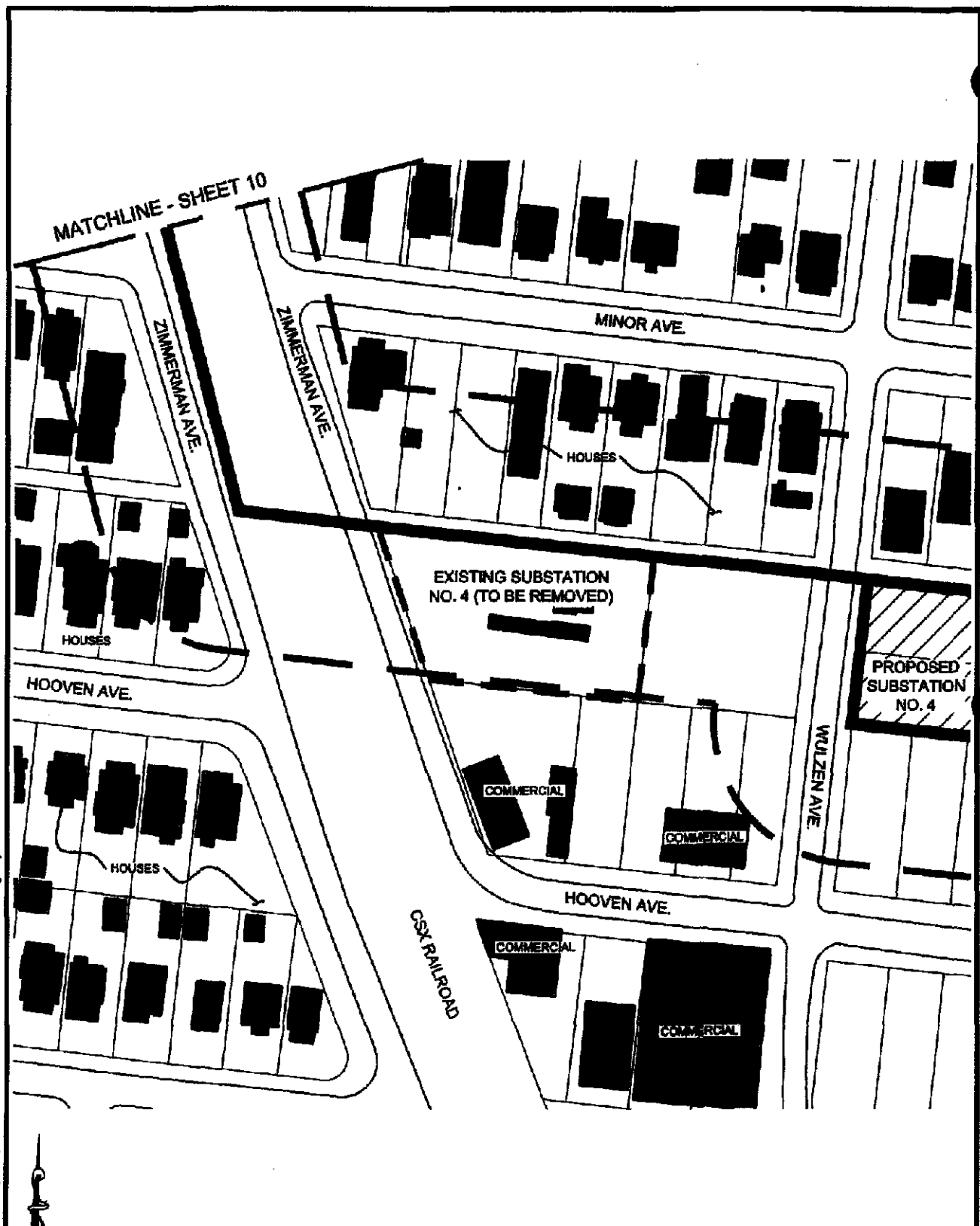
138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-18-2009	Scale: 1" = 100'

**BBCGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 434-1011

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**LEGEND**

PREFERRED ROUTE

100' RADIUS

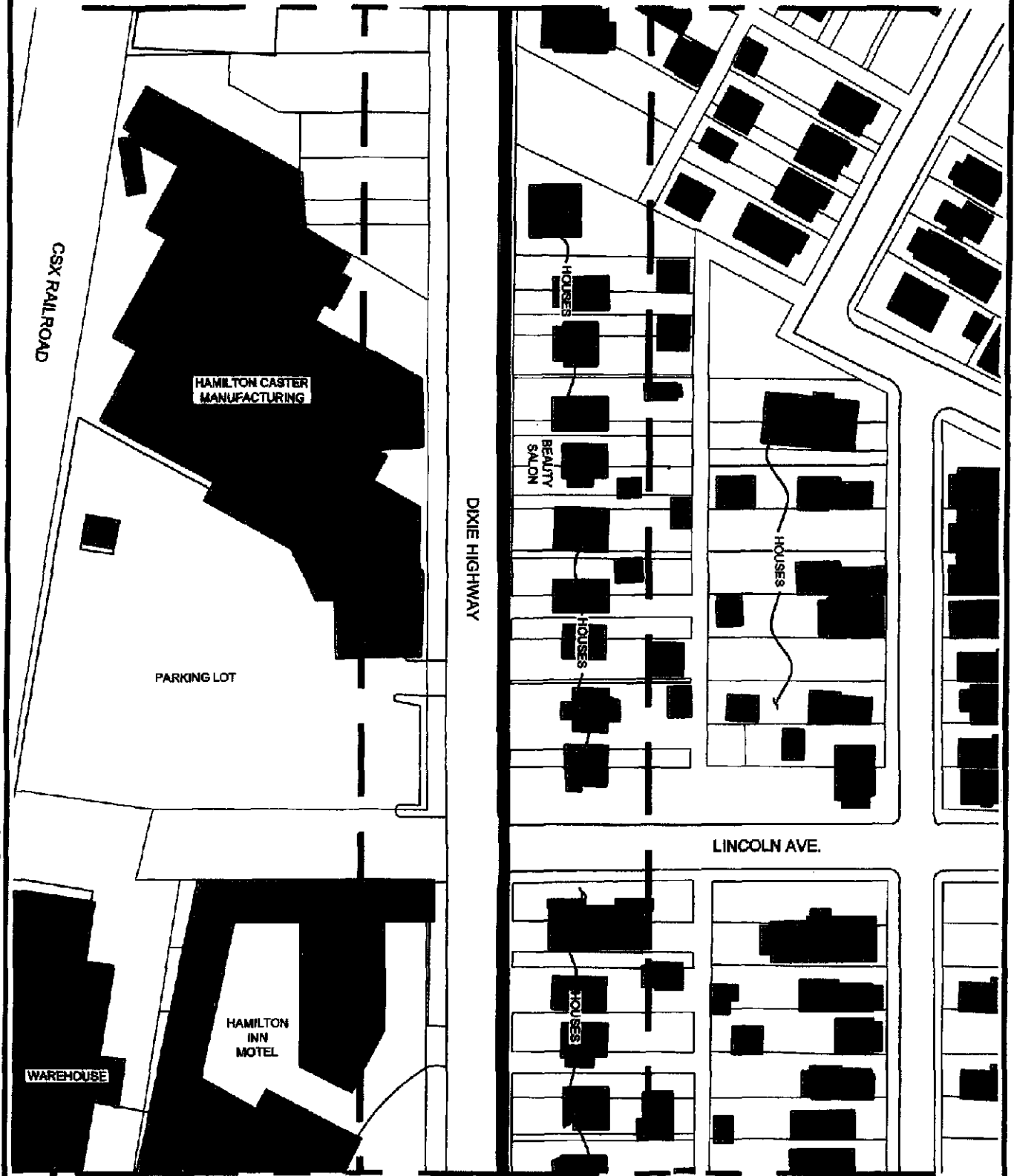
SHORT LINE - SHEET 11			
138 KV SHORT LINE HAMILTON, BUTLER CO., OHIO			
Project: 011-11772-E00		Drawn By: NWB	
Drawing Date: 12-12-08		Approved By: MES	
Last Updated: 2-18-2009		Scale: 1" = 100'	1:1

**BBGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2220  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

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MATCHLINE - SHEET 4



MATCHLINE - SHEET 13

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 12**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

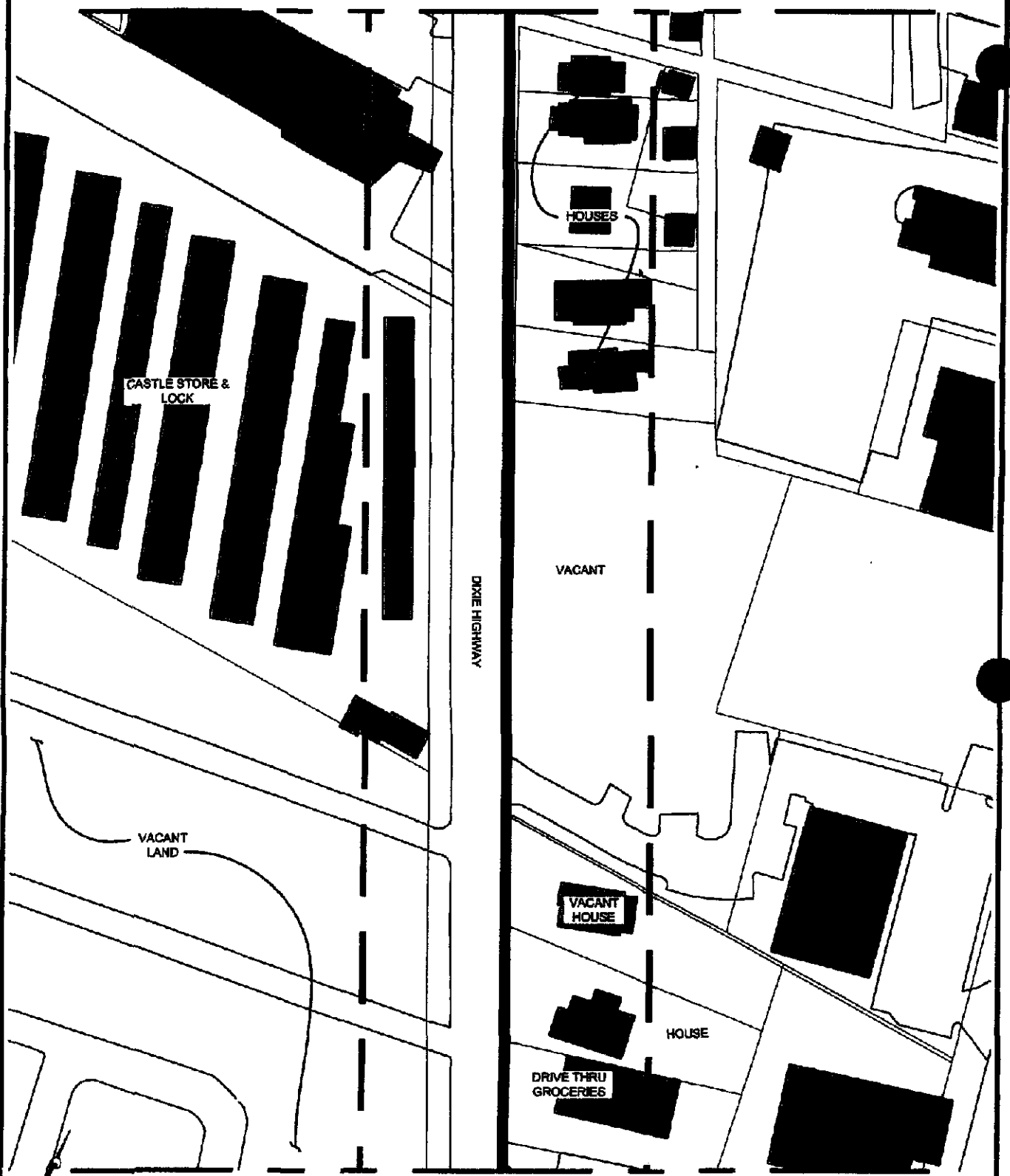
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Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 783-2228  
Cleveland (216) 981-9080  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

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BBCM Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 12

MATCHLINE - SHEET 12



DIXIE HIGHWAY

CASTLE STORE &  
LOCK

HOUSES

VACANT

VACANT  
HOUSE



HOUSE

DRIVE THRU  
GROCERIES

VACANT  
LAND

MATCHLINE - SHEET 14

**LEGEND**

-  ALTERNATE ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 13**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

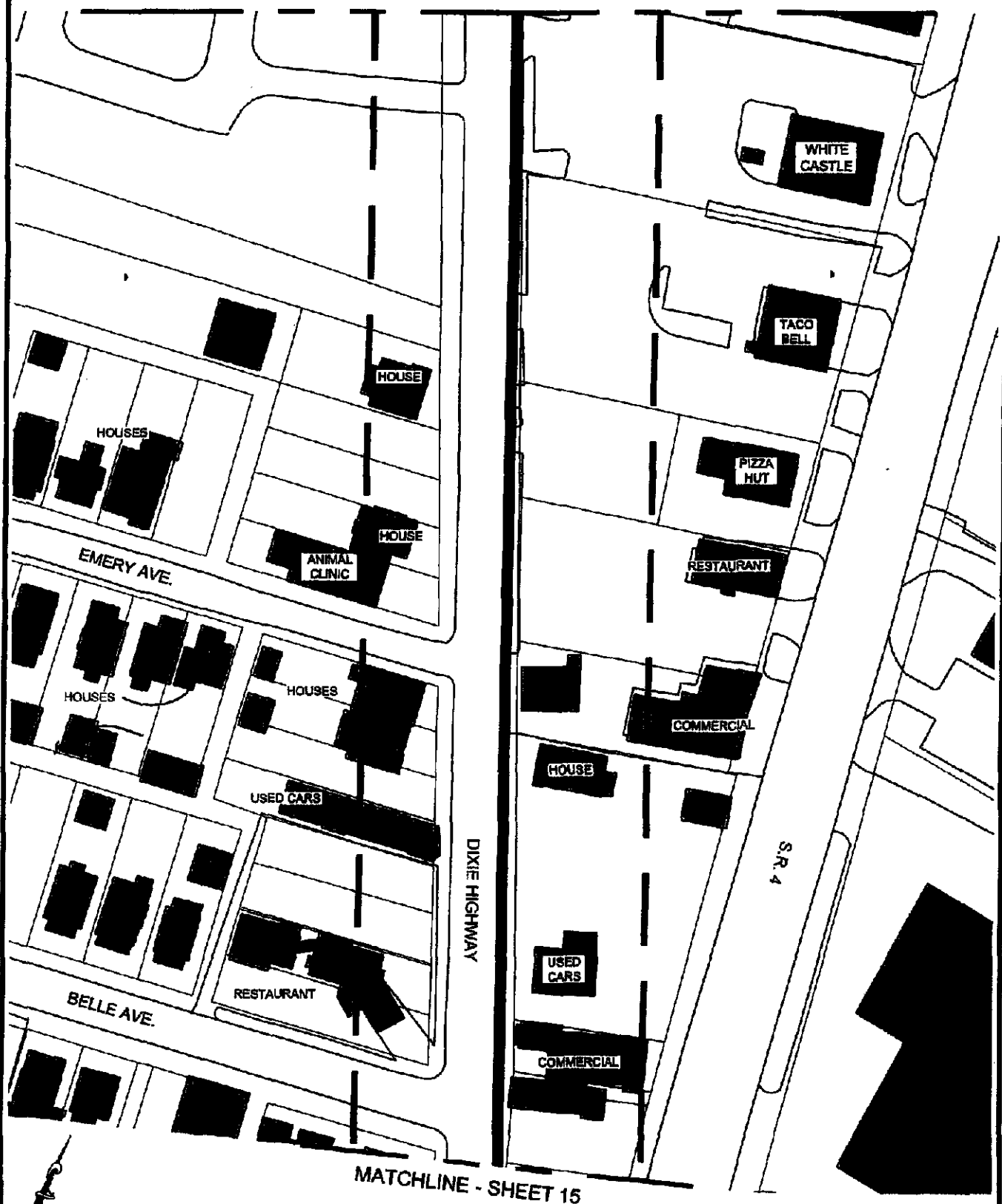
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Last Updated: 1-18-2009	Scale: 1" = 100'



Columbus (614) 795-2225  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011



Images: ~Aerial.tif  
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MATCHLINE - SHEET 13



MATCHLINE - SHEET 15

**LEGEND**

-  ALTERNATE ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 14**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

Scale: 1" = 100'

1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 790-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1811

Images: ~ Aerio  
Xrefs: ~ Short Line Base.dwg ~ Aerio.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:57am By: NBarndt  
BBCAM Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 14

MATCHLINE - SHEET 14



MATCHLINE - SHEET 16

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 15**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

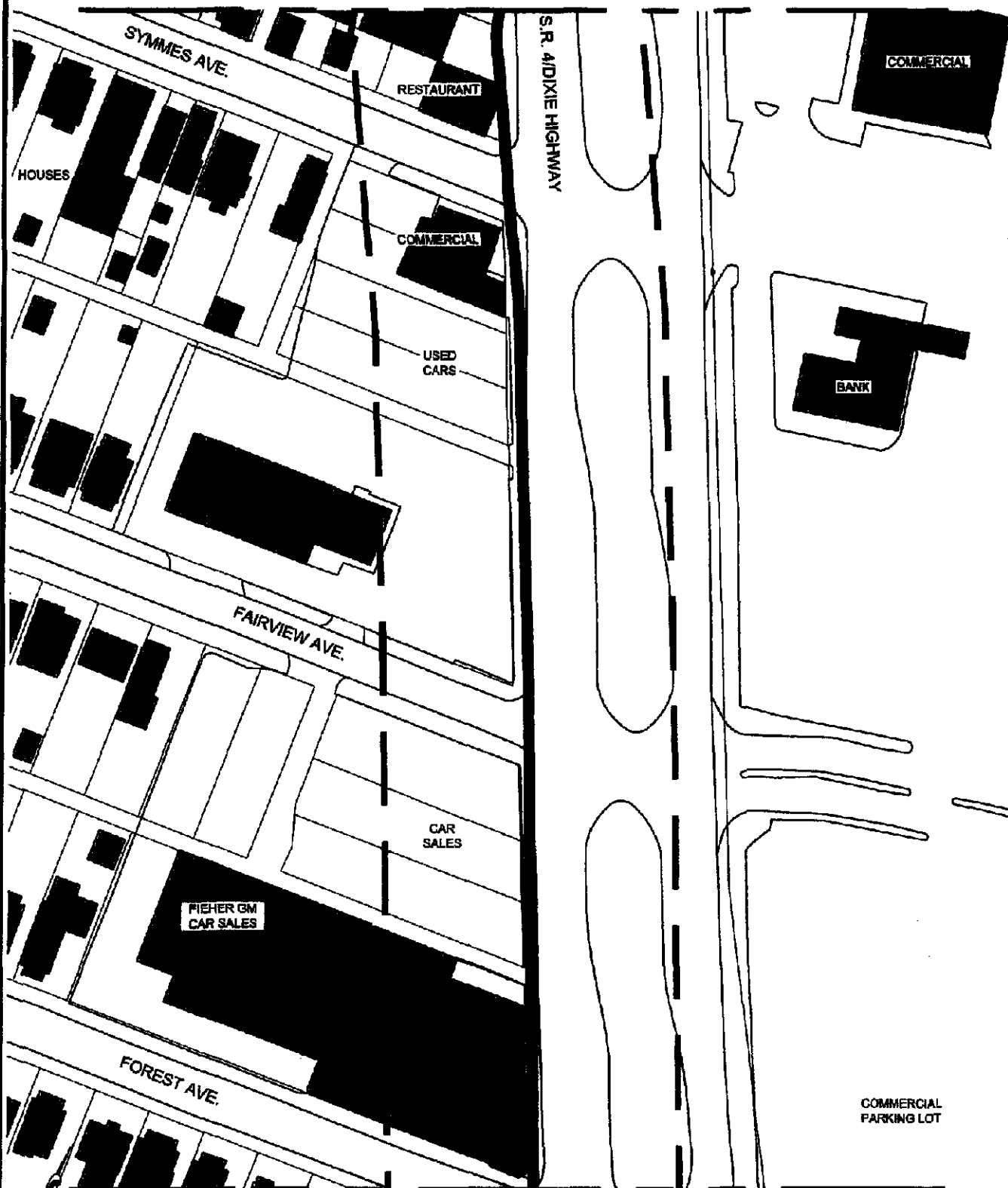
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2228  
Cleveland (216) 801-1800  
Cincinnati (513) 771-8471  
Dayton (937) 426-1011

Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:57am By: NBERNDT  
BBCAM Filename: (\\DEPT\\SCADD\\Drawings\\Project\\011-11772-E00\\Short Line\\Short Line Plans.dwg Layout: 15

MATCHLINE - SHEET 15



MATCHLINE - SHEET 17

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 16**

**138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO**

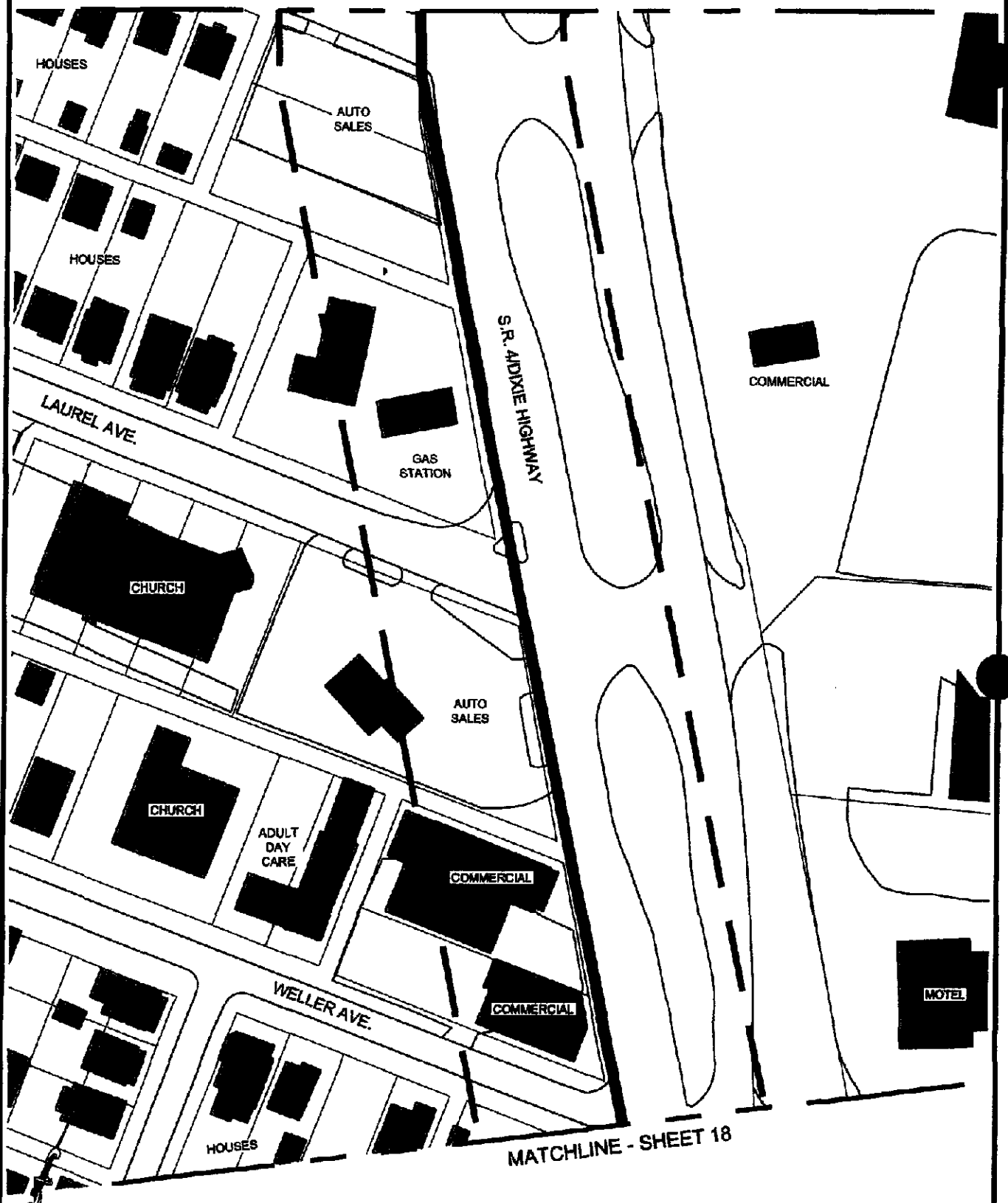
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 763-2226  
Cleveland (216) 591-1090  
Cincinnati (513) 774-0471  
Dayton (937) 426-1011

Images: ~Aerial~  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:57am By: NBERNDT  
BGC&M Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 16

MATCHLINE - SHEET 16



MATCHLINE - SHEET 18

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 17**

**138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO**

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

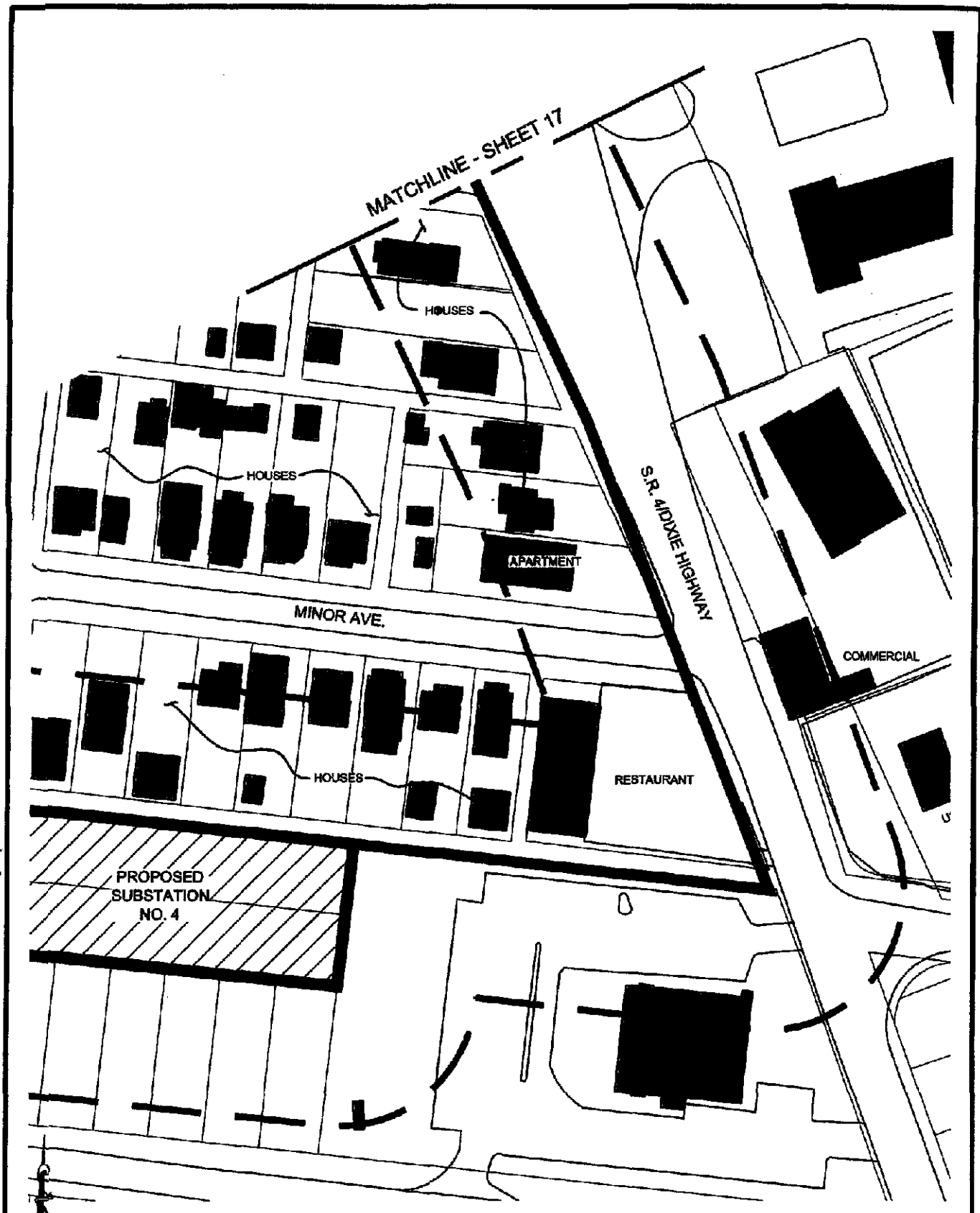
**BBGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 789-2226  
Cleveland (216) 861-1000  
Cincinnati (513) 771-6671  
Dayton (937) 424-1011



Images: ~Aerial.tif  
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File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:57am By: MBERNDT  
BBCAM Filename: I:\DEPT\9CADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 17



Images: ~Aerial  
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 Plot Info: 1-16-2009 10:24:59m By: NBERNDI  
 BDCAM Filename: HDEPTSCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout: 18



**LEGEND**

-  ALTERNATE ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 18**

**138 KV SHORT LINE  
 HAMILTON, BUTLER CO., OHIO**

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
 SOLUTIONS TO BUILD ON

Columbus (614) 799-2229  
 Cleveland (216) 901-1000  
 Cincinnati (513) 771-8471  
 Dayton (937) 424-1011

MATCHLINE - SHEET 2

PROPOSED  
SUBSTATION NO. 13

VACANT  
LAND

VACANT LAND

CARVER PL.

HOUSES

HOUSES

UNIVERSITY BLVD.

# LEGEND

-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES
-  100' RADIUS

## SHORT LINE - SHEET 1

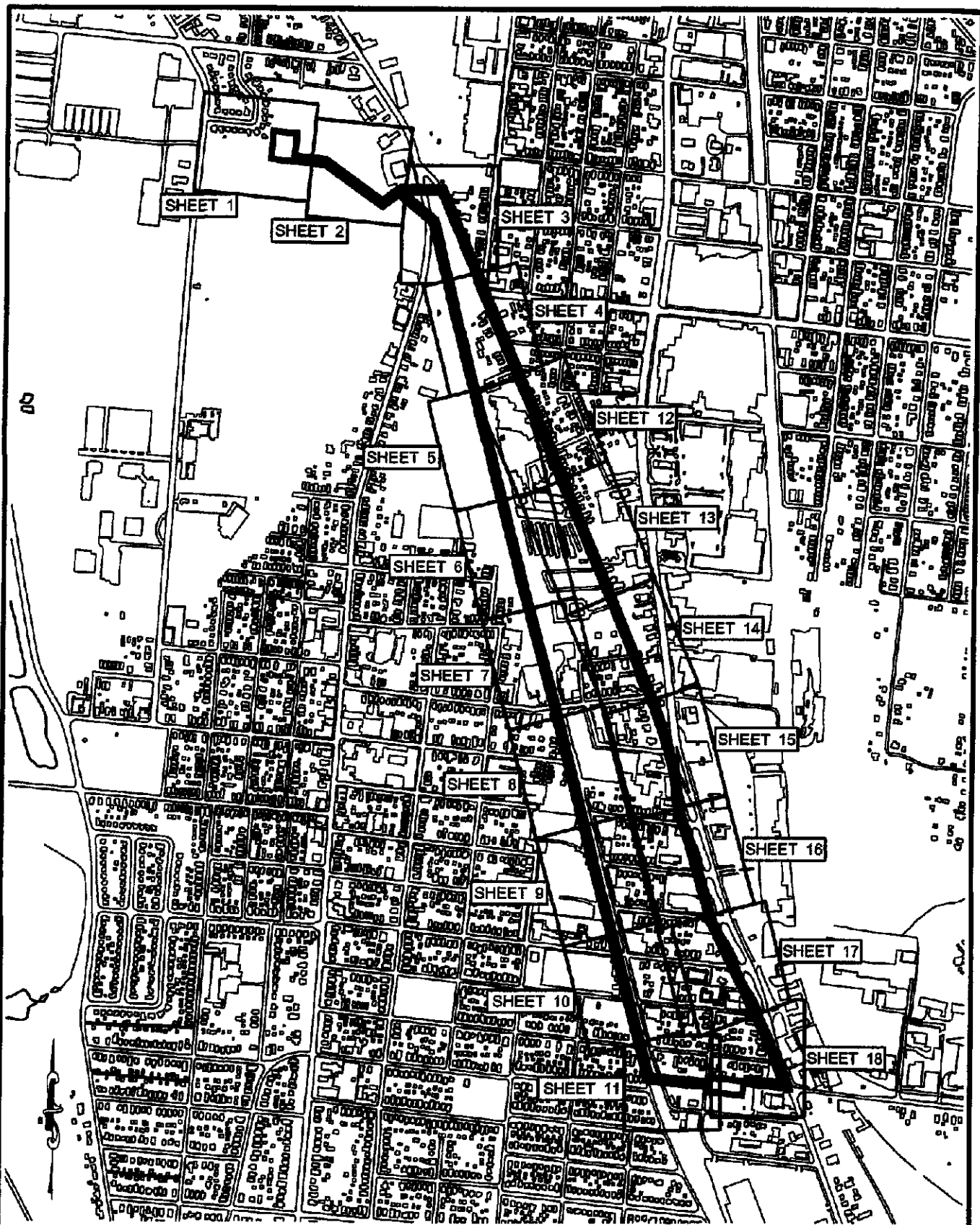
138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1




**BBCRM**  
SOLUTIONS TO BUILD ON

Columbus (614) 783-2228  
Cleveland (216) 981-1080  
Cincinnati (513) 774-6471  
Dayton (937) 424-1011

Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:55am By: NBERndf  
BECAM Filename: I:\DEPTSCADD\Drawings\Projects\011-11772-E00\Short Line Plans.dwg Layout: 1



# **LEGEND**

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES

## **SHORT LINE - INDEX**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-2008	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 1000'

**BBCOM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2228  
Cleveland (216) 901-1800  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

MATCHLINE - SHEET 3



MATCHLINE - SHEET 1



**LEGEND**

- PREFERRED ROUTE
- ALTERNATE ROUTE
- ROUTE USED BY BOTH  
THE PREFERRED AND  
ALTERNATE ROUTES
- 100' RADIUS



**SHORT LINE - SHEET 2**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

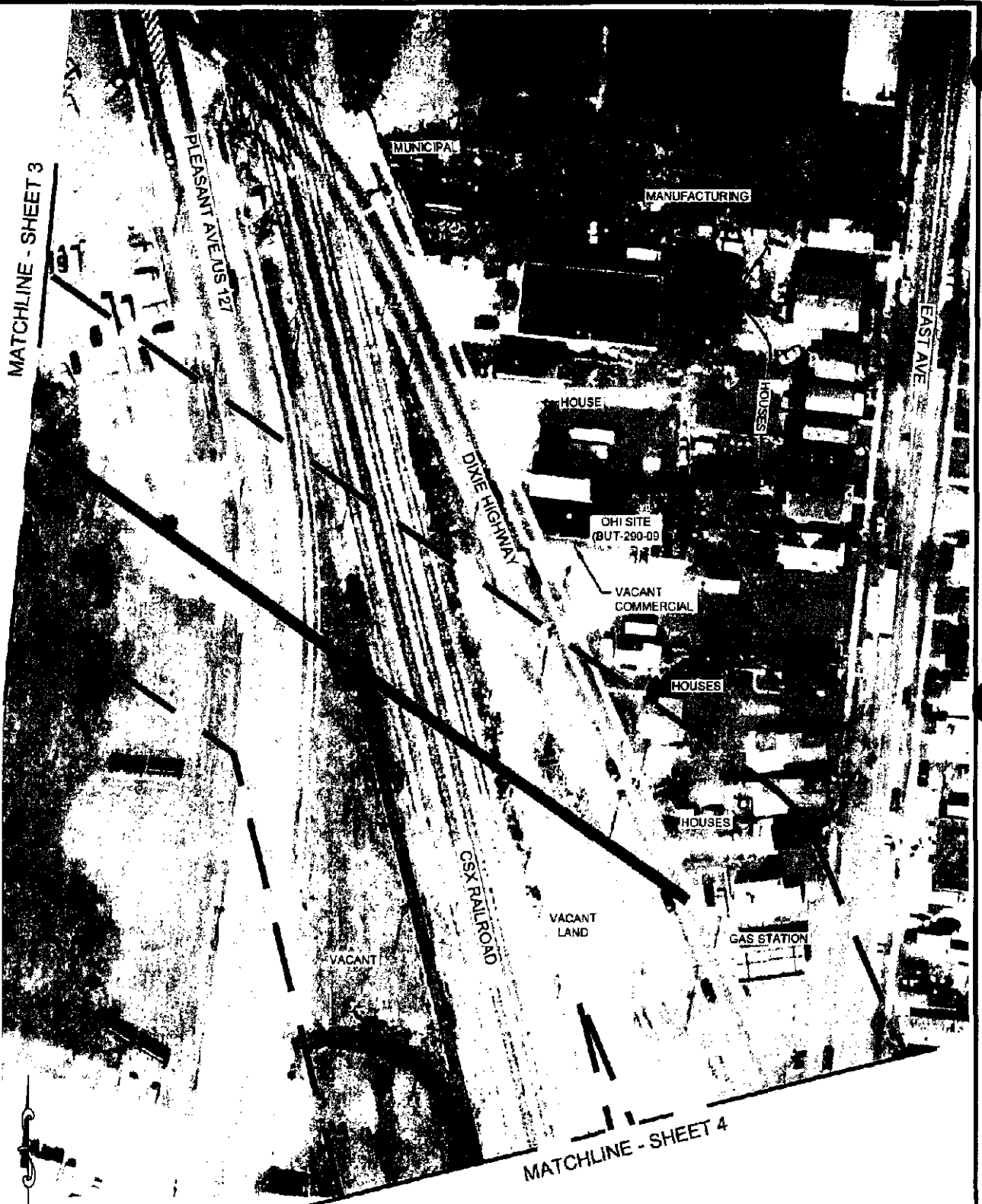
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 2-18-2009	Scale: 1" = 100' 1:1

**BBCM**  
SPECIALISTS IN ELECTRICAL





Columbus (614) 793-2225  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Feb 18, 2009  
Plot Info: 2-18-2009 @ 10:30am By: MBERNDT  
BBCM Filename: \\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Aerial Plans.dwg Layout 2

Images: ~Aerial.tif  
 Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
 File Last Updated: Feb 18, 2009  
 Plot Info: 2-18-2009 @ 10:27am By: NBERNDT  
 BBCCAM Filename: I:\EPTSCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout 3



### LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  ROUTE USED BY BOTH THE PREFERRED AND ALTERNATE ROUTES
-  100' RADIUS

### SHORT LINE - SHEET 3

138 KV SHORT LINE  
 HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 2-18-2009	Scale: 1" = 100'

**BBCCM**  
 SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
 Cleveland (216) 801-1800  
 Cincinnati (513) 771-8471  
 Dayton (937) 434-1011




MATCHLINE - SHEET 3



MATCHLINE - SHEET 5

MATCHLINE - SHEET 12

# LEGEND

-  PREFERRED ROUTE
-  ALTERNATE ROUTE
-  100' RADIUS

## SHORT LINE - SHEET 4

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 783-2228  
Cleveland (216) 861-1000  
Cincinnati (513) 771-6471  
Dayton (937) 426-1011

Images: - Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:47am By: NBERND  
BBC&M Filename: I:\DEPT\CADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 4

# MATCHLINE - SHEET 4



MATCHLINE - SHEET 6

## LEGEND

- PREFERRED ROUTE
- 100' RADIUS

## SHORT LINE - SHEET 5

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
Cleveland (216) 591-1000  
Cincinnati (513) 771-8871  
Dayton (937) 484-1011



Images: -Aerial.tif  
Xrefs: -Short Line Base.dwg -Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:48am By: NBERNDT  
BBC&M Filename: I:\DEPT\SCAD\Drawings\Projects\011-11772-E00\Short Line Aerial Plans.dwg Layout: 5

MATCHLINE - SHEET 5



MATCHLINE - SHEET 7

**LEGEND**

-  PREFERRED ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 6**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

**BBCM**  
SOLUTIONS TO BUILD ON

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

Columbus (614) 795-2228  
Cleveland (216) 991-1000  
Cincinnati (513) 771-3471  
Dayton (937) 424-1011

Images: ~Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:45am By: NBERndt  
BBCM Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 6





MATCHLINE - SHEET 6



MATCHLINE - SHEET 8

**LEGEND**

-  PREFERRED ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 7**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

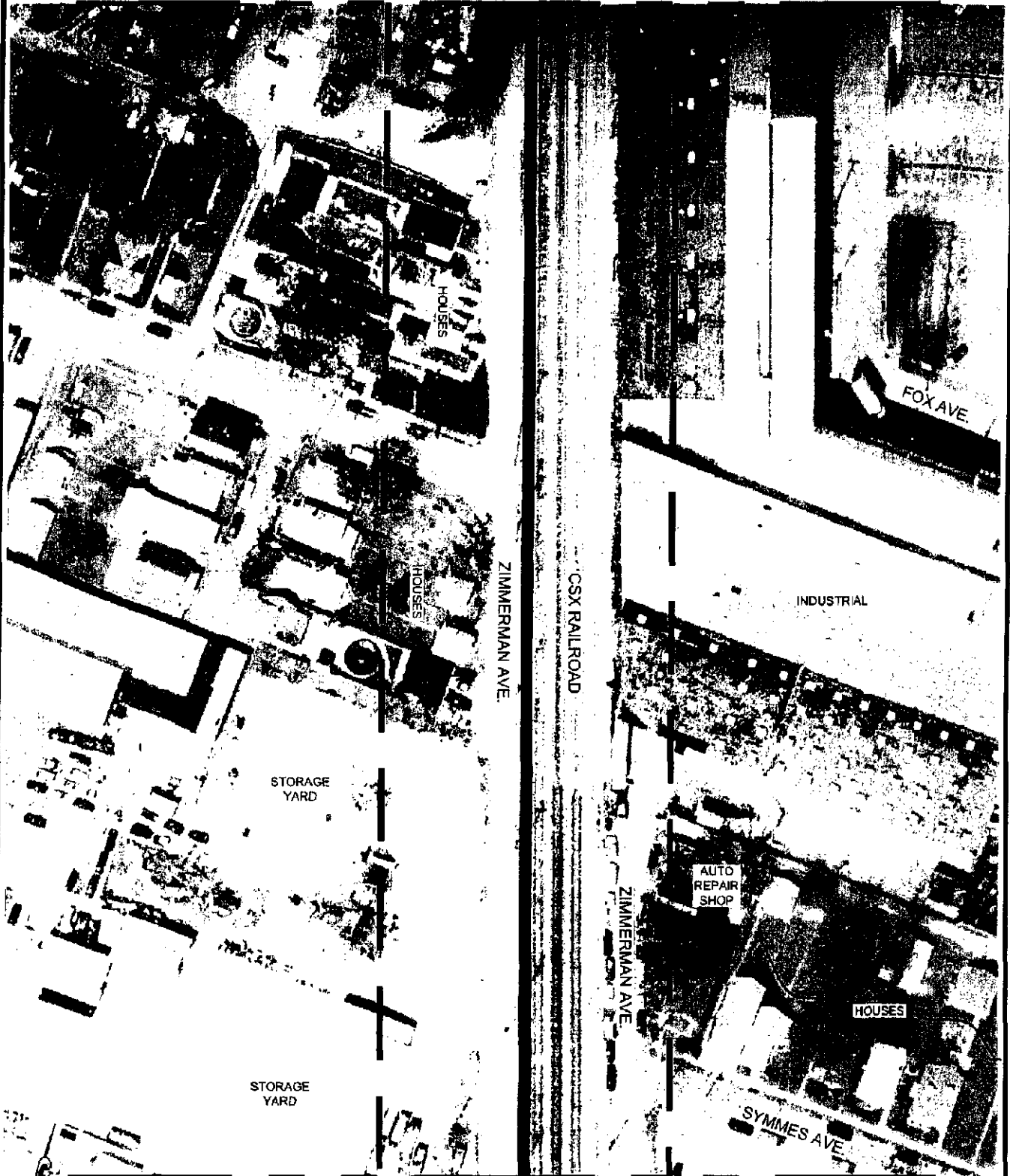
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Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
Cleveland (216) 501-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: - Aerial.tif  
Xrefs: - Short Line Base.dwg - Aerial.dwg  
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BBC&M Filename: (HDEPT)CADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 7

MATCHLINE - SHEET 7



MATCHLINE - SHEET 9

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 8**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

**BBCM**  
SOLUTIONS TO BUILD ON

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

Scale: 1" = 100'

1:1

Columbus (614) 753-2228  
Cleveland (216) 591-1000  
Cincinnati (513) 771-9471  
Dayton (937) 424-1011

Images: - Aerial  
Xrefs: - Short Line Base.dwg - Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:45am By: NBERNDI  
BBCM Filename: \\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 8



**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 9**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
Cleveland (216) 961-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1911

MATCHLINE - SHEET 9



MATCHLINE - SHEET 11

**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 10**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

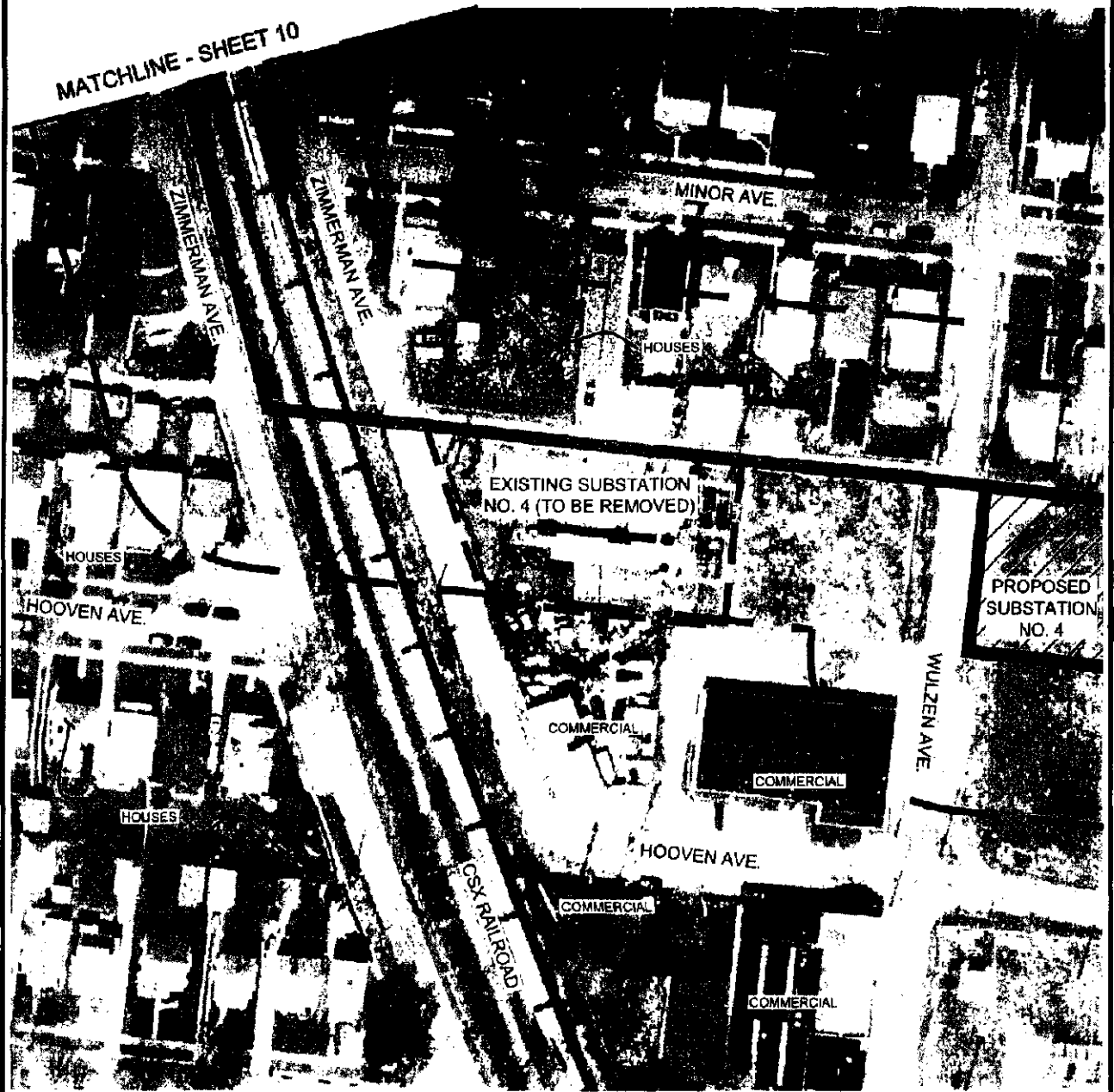
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 799-2226  
Cleveland (216) 961-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: ~Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:50am By: NBERNDT  
BBC&M Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 10

MATCHLINE - SHEET 10



**LEGEND**

- PREFERRED ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 11**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO



Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 2-18-2009	Scale: 1" = 100'

Columbus (614) 793-2226  
Cleveland (216) 891-1000  
Cincinnati (513) 773-0471  
Dayton (937) 424-1011



Images: - Aerial.tif  
Xrefs: - Short Line Boss.dwg - Aerial.dwg  
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Plot Info: 2-18-2009 @ 10:30am By: NBERNDT  
BEC&M Filename: I:\05\PTSCAD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 11

MATCHLINE - SHEET 4



MATCHLINE - SHEET 13

**LEGEND**

-  ALTERNATE ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 12**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

Scale: 1" = 100'

1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 795-2228  
Cleveland (216) 991-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: ~Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
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MATCHLINE - SHEET 12



MATCHLINE - SHEET 14

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 13**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

**BBGM**  
SOLUTIONS TO BUILD ON

Columbus (614) 799-2228  
Cleveland (216) 961-1000  
Cincinnati (613) 771-8471  
Dayton (937) 424-1011

Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
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Plot Info: 1-16-2009 11:52am By: NBERNDT  
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MATCHLINE - SHEET 15

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 14**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

**BBCM**  
SOLUTIONS TO BUILD ON

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

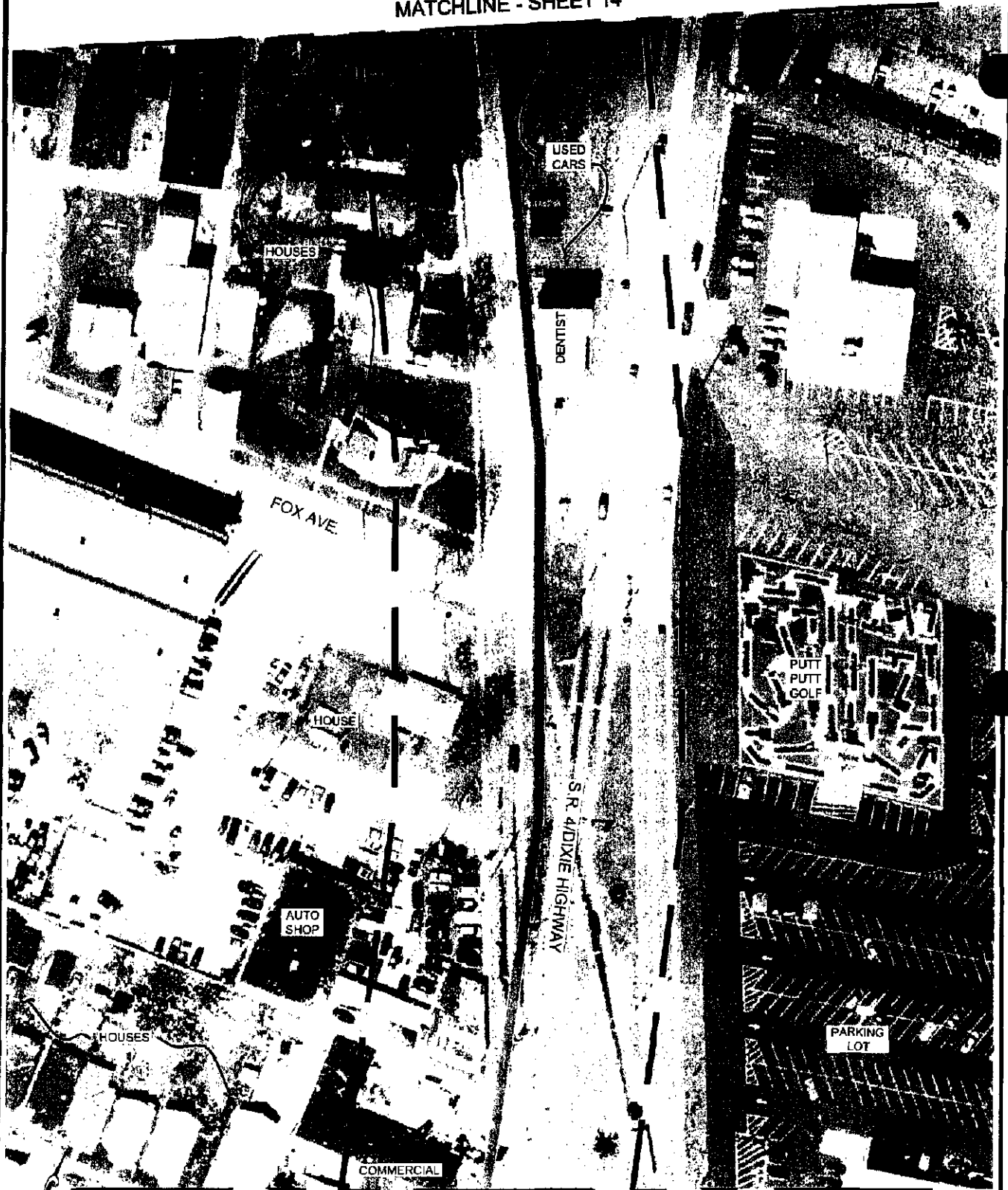
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1:1

Columbus (614) 799-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-9011





MATCHLINE - SHEET 14



MATCHLINE - SHEET 16

**LEGEND**

-  ALTERNATE ROUTE
-  100' RADIUS

**SHORT LINE - SHEET 15**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

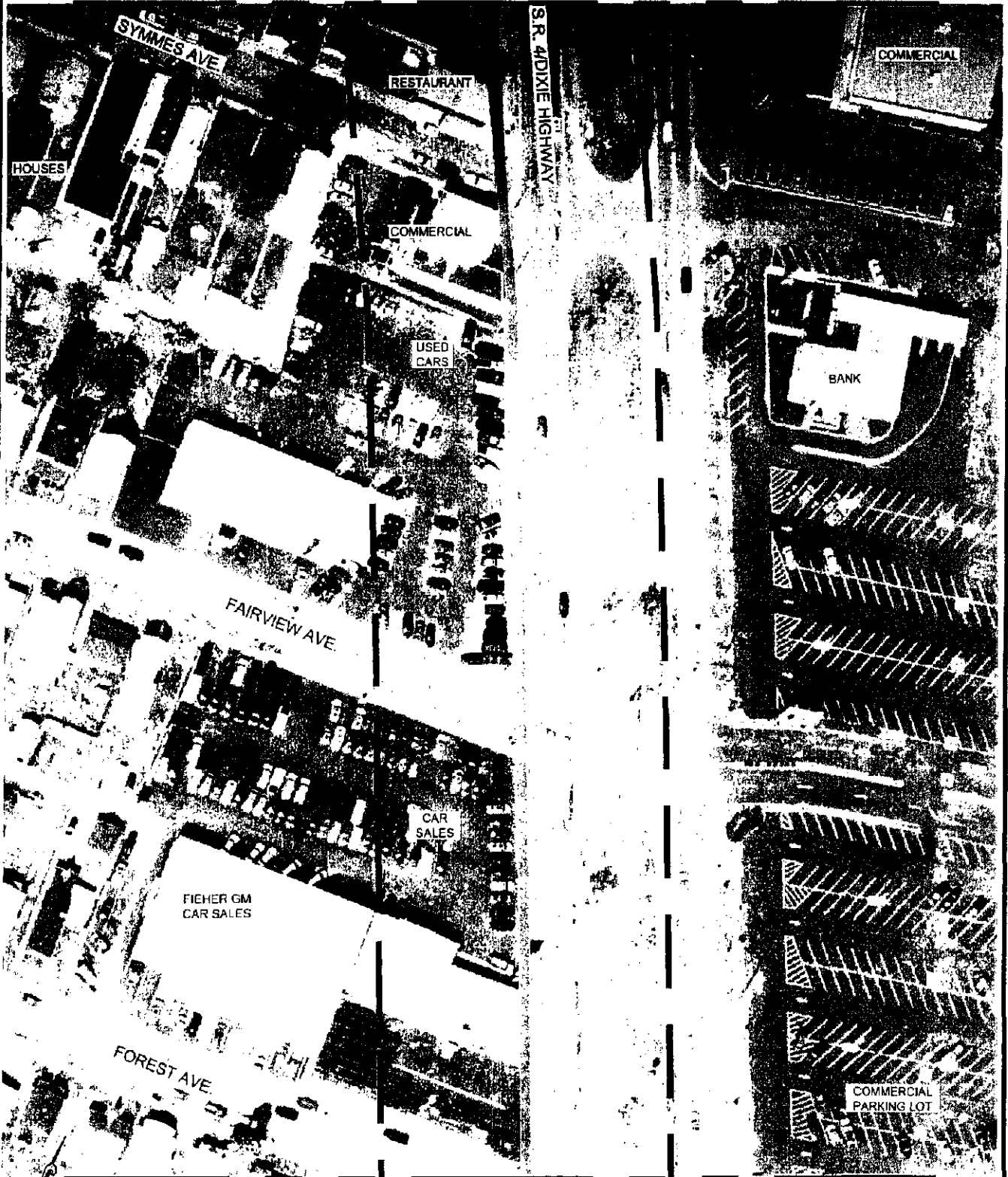
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 785-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-9471  
Dayton (937) 424-1011



Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:53am By: NBERNDI  
BBC&M Filename: I:\DEPT\SCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 15

# MATCHLINE - SHEET 15



MATCHLINE - SHEET 17

## LEGEND

-  ALTERNATE ROUTE
-  100' RADIUS

## SHORT LINE - SHEET 16

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-08

Approved By: MES

Last Updated: 1-16-2009

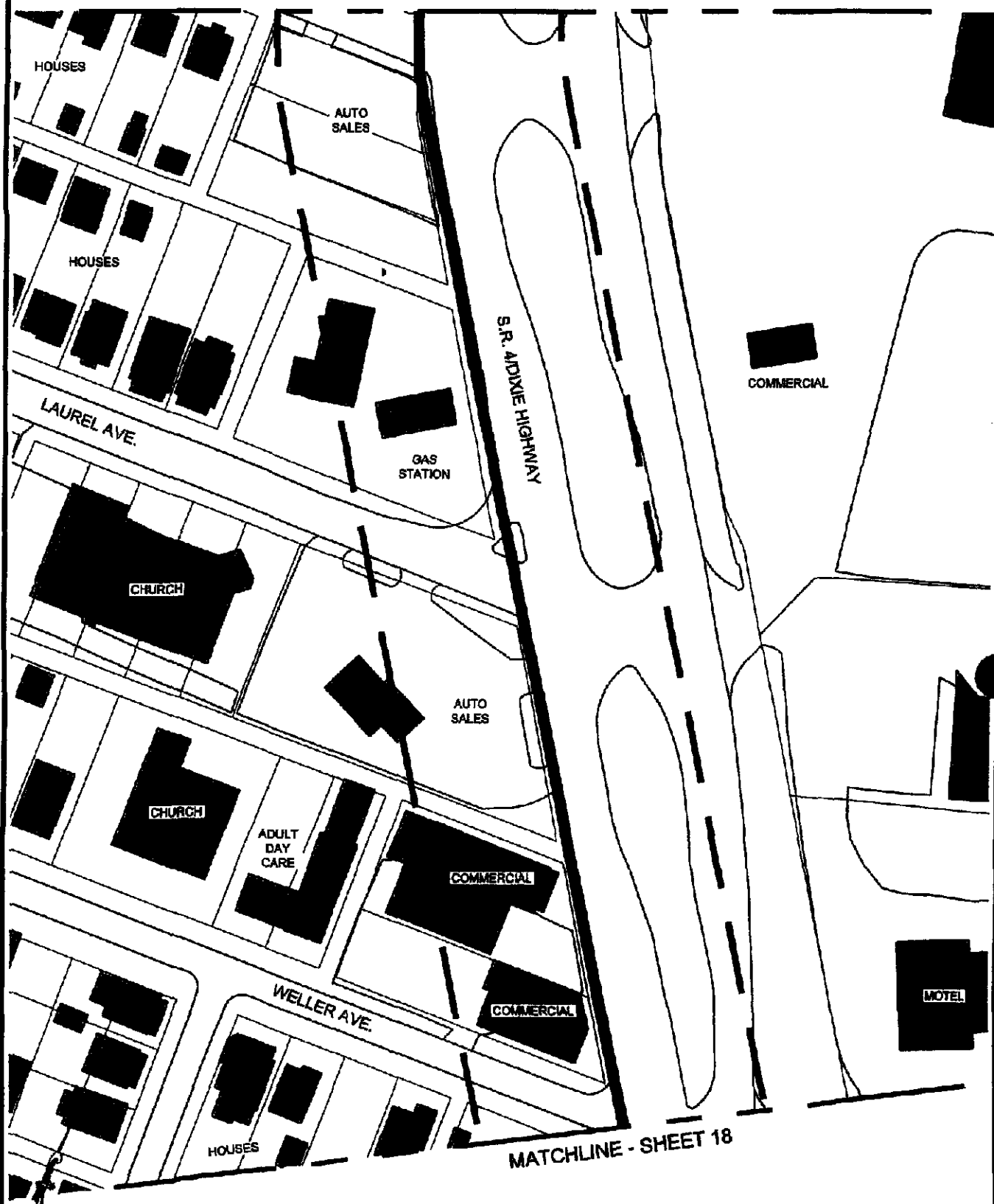
Scale: 1" = 100'

1:1

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 753-2228  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 426-1011

MATCHLINE - SHEET 16



MATCHLINE - SHEET 18

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 17**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

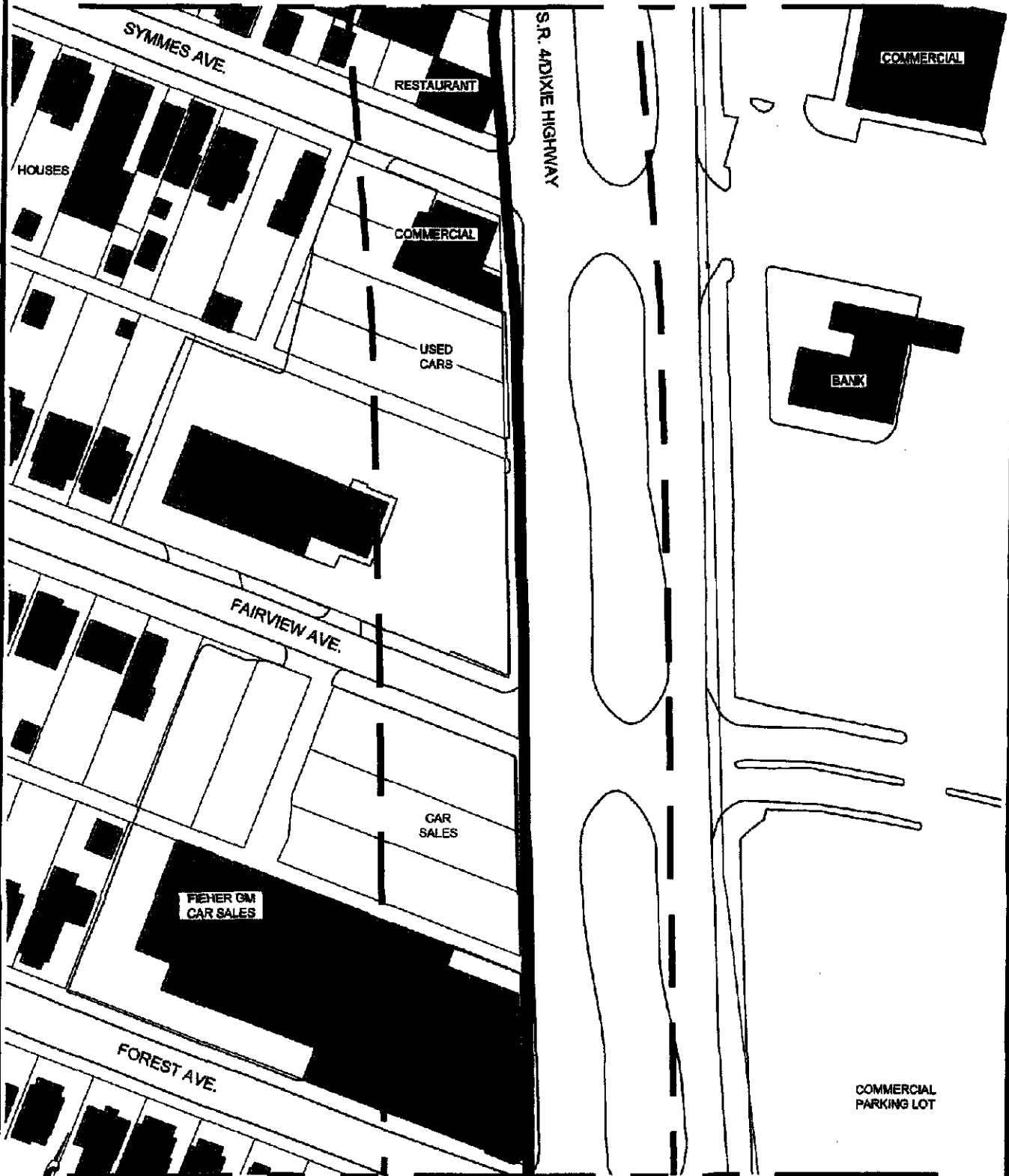
Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2228  
Cleveland (216) 861-1008  
Cincinnati (513) 771-8471  
Dayton (937) 428-1811

Images: ~Aerial.tif  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 11:57am By: NBERAD  
BBC&M File Name: I:\DEPT\SCAD\Drawings\Projects\011-11772-E00\Short Line\Short Line Plans.dwg Layout 17

MATCHLINE - SHEET 15



MATCHLINE - SHEET 17

**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 16**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100'

**BBCM**  
SOLUTIONS TO BUILD ON

Columbus (614) 298-2226  
Cleveland (216) 501-1000  
Cincinnati (513) 771-6471  
Dayton (937) 424-1011

Images: ~Aerial  
Xrefs: ~Short Line Base.dwg ~Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 11:57am By: NBERNDT  
BCCM Filename: HDEPTSCADDDrawings\Projects\011-11772-E00\Short Line Plans.dwg Layout: 16

MATCHLINE - SHEET 17



**LEGEND**

- ALTERNATE ROUTE
- 100' RADIUS

**SHORT LINE - SHEET 18**

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

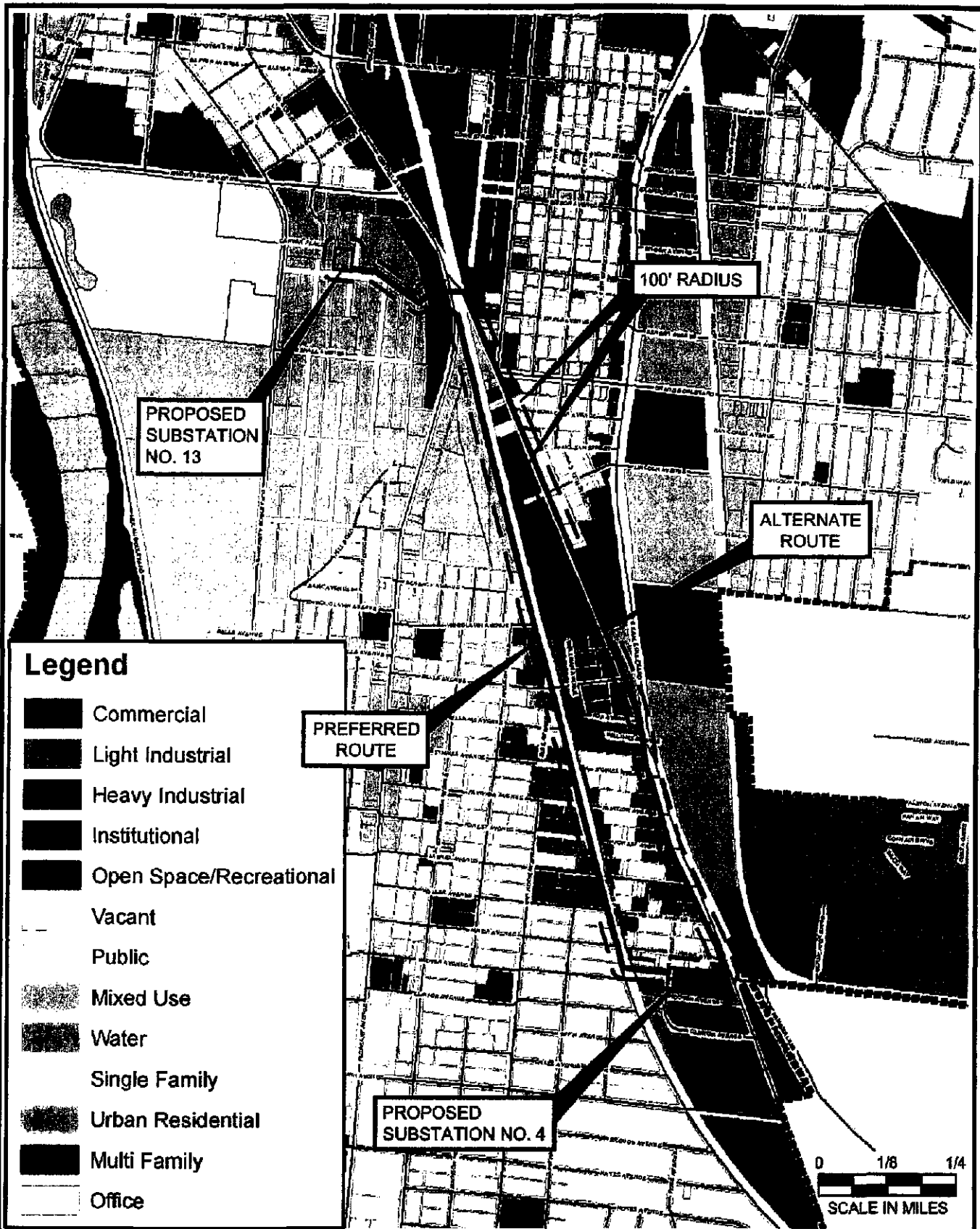
**BBCM**  
SOLUTIONS TO BUILD ON

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-08	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 100' 1:1

Columbus (614) 730-2220  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 494-1011

Images: ~ Aerial  
Xrefs: ~ Short Line Base.dwg ~ Aerial.dwg  
File Last Updated: Jan 16, 2009  
Plot Info: 1-16-2009 @ 2:30pm By: NBERNDT  
BBC&M Filename: I:\DEPTSCADD\Drawings\Projects\011-11772-E00\Short Line\Short Line Aerial Plans.dwg Layout: 18

## **APPENDIX B**



NOTE: LAND USE MAP PROVIDED BY THE CITY OF HAMILTON.

## LAND USE PLAN WITH 100' RADIUS

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: MAP

Drawing Date: 11-17-2008

Approved By: MLN

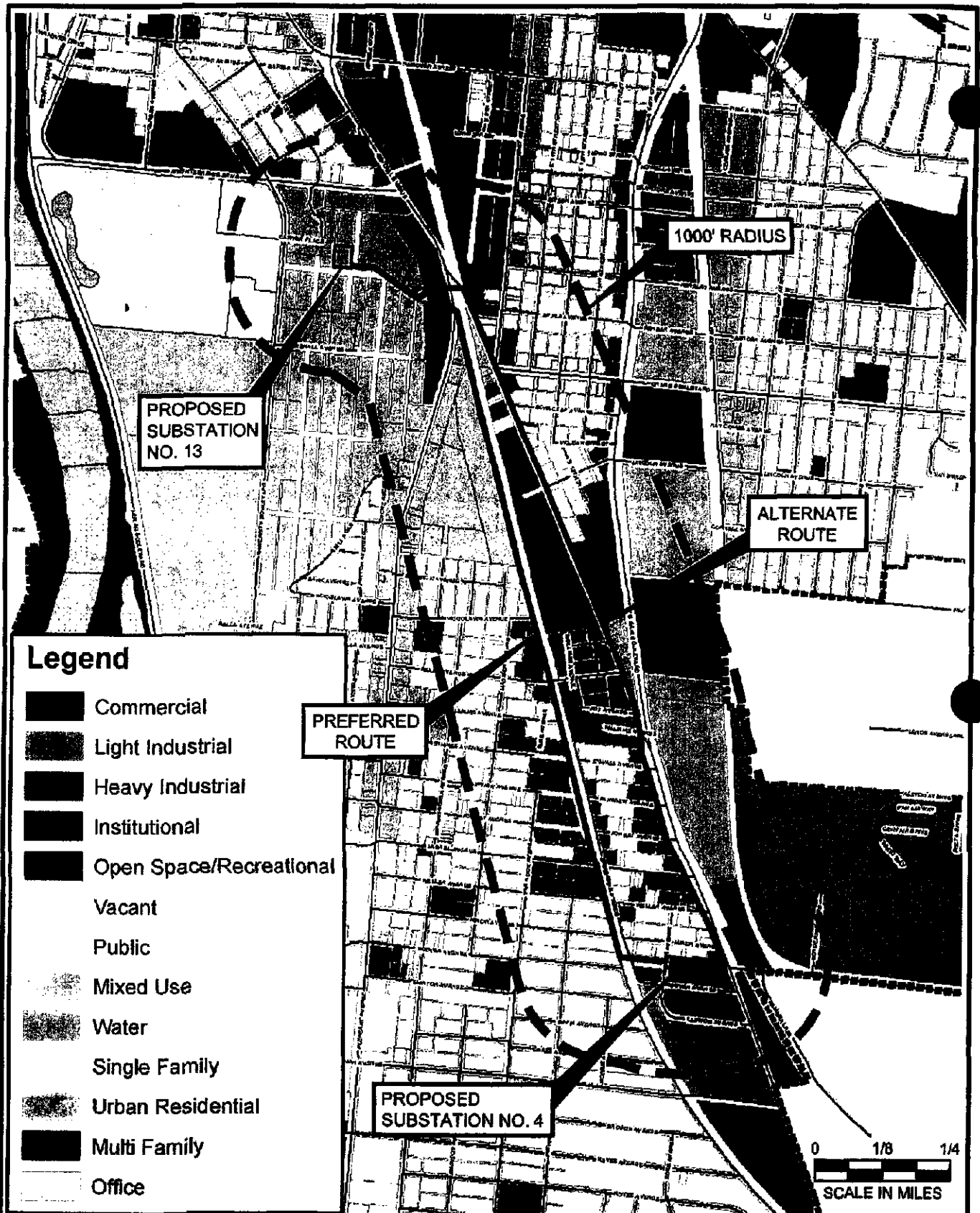
Last Updated: 1-16-2009

Scale: 1" = 1/4 MILE 1:1

**BBC&M**  
SOLUTIONS TO BUILD ON


Columbus (614) 799-2225  
Cleveland (216) 901-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

Images: --future land use map 36x48.jpg  
 Xrefs:  
 File Last Updated: Jan 16, 2009  
 Plot Info: 1-16-2009 @ 1:49pm By: N.Berndt  
 BBGM Filename: I:\DEPT\CA\Drawings\Projects\11-11772-E00\Short Line\Land Use 1000.dwg Layout: 8.5x11P



NOTE: LAND USE MAP PROVIDED  
 BY THE CITY OF HAMILTON.

LAND USE PLAN WITH 1000' RADIUS			
138 KV SHORT LINE HAMILTON, BUTLER CO., OHIO			
Project: 011-11772-E00	Drawn By: MAP		
Drawing Date: 11-17-2008	Approved By: MLN		
Last Updated: 1-16-2009	Scale: 1" = 1/4 MILE	1:1	



Columbus (614) 793-2228  
 Cleveland (216) 881-1000  
 Cincinnati (513) 771-8471  
 Dayton (937) 426-1911

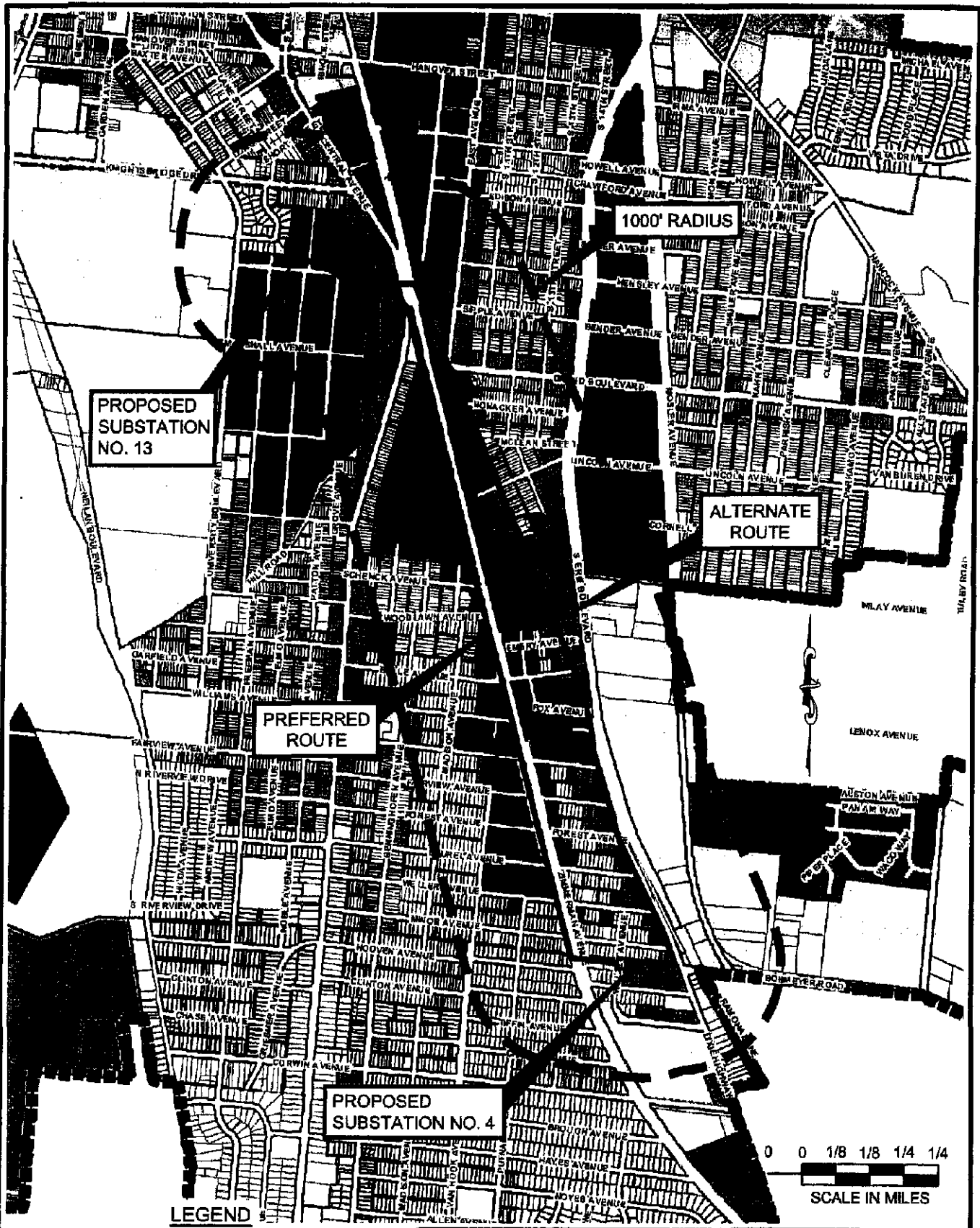


Images: ~Zoning map.jpg

File Last Updated: Jan 16, 2009

Plot Info: 1-16-2009 1:53pm By: NBarndt

BBCAM Filename: I:\DEPT\SCAD\Drawings\Projects\011-11772-E00\Short Line\Short Line Zoning 1000.dwg Layout: Zoning



**LEGEND**

AG	BPD	IPD	R-3
B-1	DSSD	OPD	R-4
B-2	Historic District	R-0	RPD
B-3	HSCSD	R-1	
B-4	I-1	R-2	
BPD	I-2	NIA	

### ZONING PLAN WITH 1000' RADIUS

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

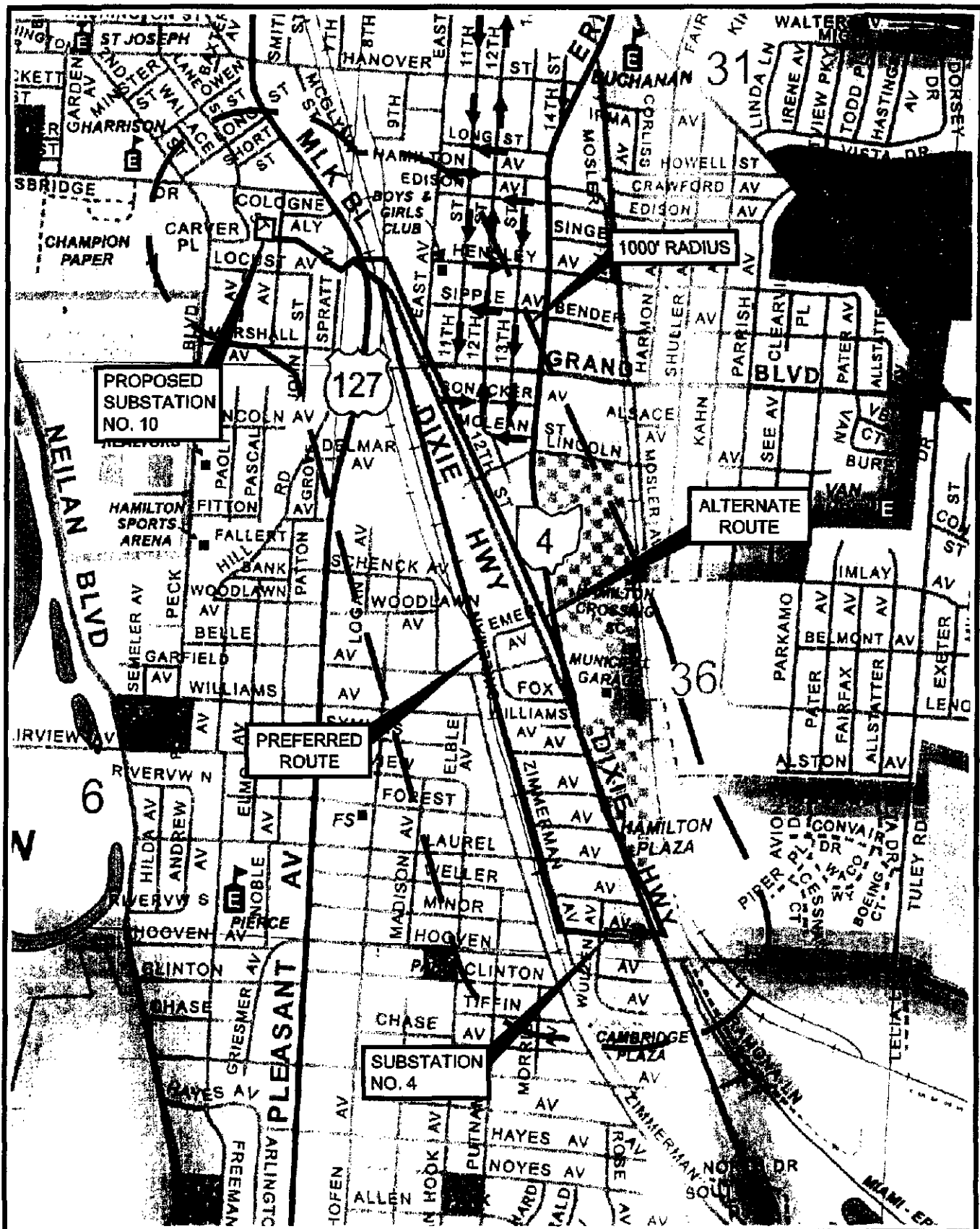
Project: 011-11772-E00	Drawn By: TJM
Drawing Date: 11/13/08	Approved By: MLN
Last Updated: 1-16-2009	Scale: 1" = 1/4 MILE 1:1

**BBCAM**  
SOLUTIONS TO BUILD ON

Columbus (614) 793-2226  
Cleveland (216) 501-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

## **CITY OF HAMILTON USE DISTRICTS**

<b>AG</b>	<b>Agricultural District</b>
<b>B-1</b>	<b>Neighborhood Business District</b>
<b>B-2</b>	<b>Community Business District</b>
<b>B-3</b>	<b>Central Business District</b>
<b>B-4</b>	<b>Urban Business District</b>
<b>BPD</b>	<b>Business Planned Development District</b>
<b>DSSD</b>	<b>Downtown Support Sub District</b>
<b>Historic District</b>	<b>Historic District</b>
<b>HSCSD</b>	<b>High Street Corridor Sub District</b>
<b>I-1</b>	<b>Limited Industrial District</b>
<b>I-2</b>	<b>Industrial District</b>
<b>IPD</b>	<b>Industrial Planned Development District</b>
<b>OPD</b>	<b>Office Planned Development District</b>
<b>R-0</b>	<b>Multi-Family Residence and Office District</b>
<b>R-1</b>	<b>Single-Family Residential District</b>
<b>R-2</b>	<b>Single-Family Residential District</b>
<b>NIA</b>	<b>Neighborhood Initiation Area</b>
<b>R-3</b>	<b>One to Four Family Residence District</b>
<b>R-4</b>	<b>Multi-Family Residence District</b>
<b>RPD</b>	<b>Residential Planned Development District</b>



## TRANSPORTATION CORRIDOR PLAN

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

**BBC&M**  
SOLUTIONS TO BUILD ON

Project: 011-11772-E00

Drawn By: NWB

Drawing Date: 12-12-2008

Approved By: EPS

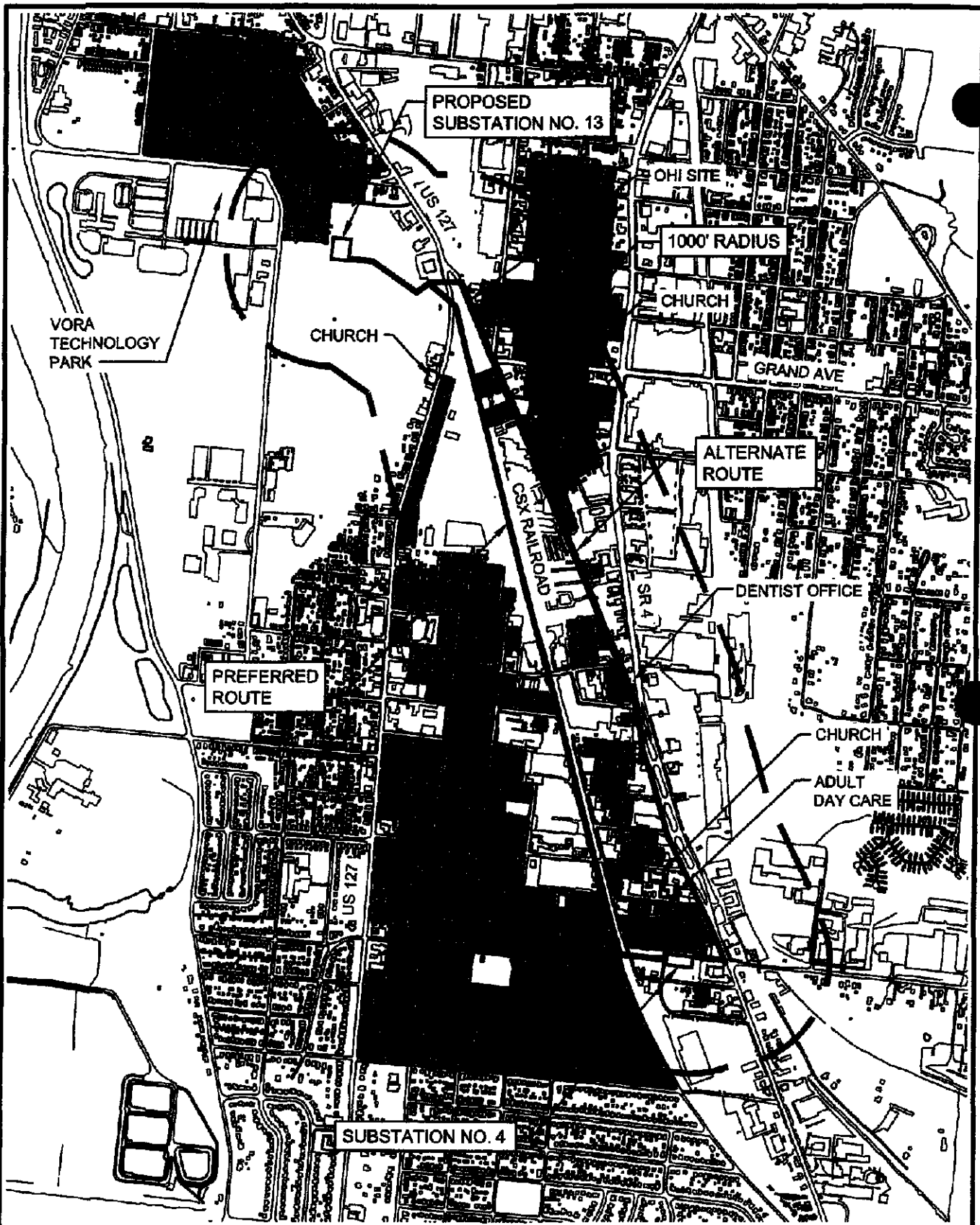
Last Updated: 1-16-2009

Scale: 1" = 1/4 MILE 1:1

Columbus (614) 788-2228  
Cleveland (216) 801-1008  
Cincinnati (513) 771-8471  
Dayton (937) 434-1011

BASE MAP OBTAINED FROM BUTLER  
COUNTY ENGINEER'S OFFICE

Images: ~Short Line Base.dwg  
 Xrefs: ~Short Line Base.dwg  
 File Last Updated: Jan 16, 2009  
 Plot Info: 1-16-2009 1:36pm By: NBERNDI  
 BBGM Filename: I:\DEPT\CADD\Drawings\Projects\011-11772-E00\Short Line\Noise Sensitive Areas.dwg Layout: Residential



# LEGEND



RESIDENTIAL AREAS

## NOISE-SENSITIVE AREA PLAN

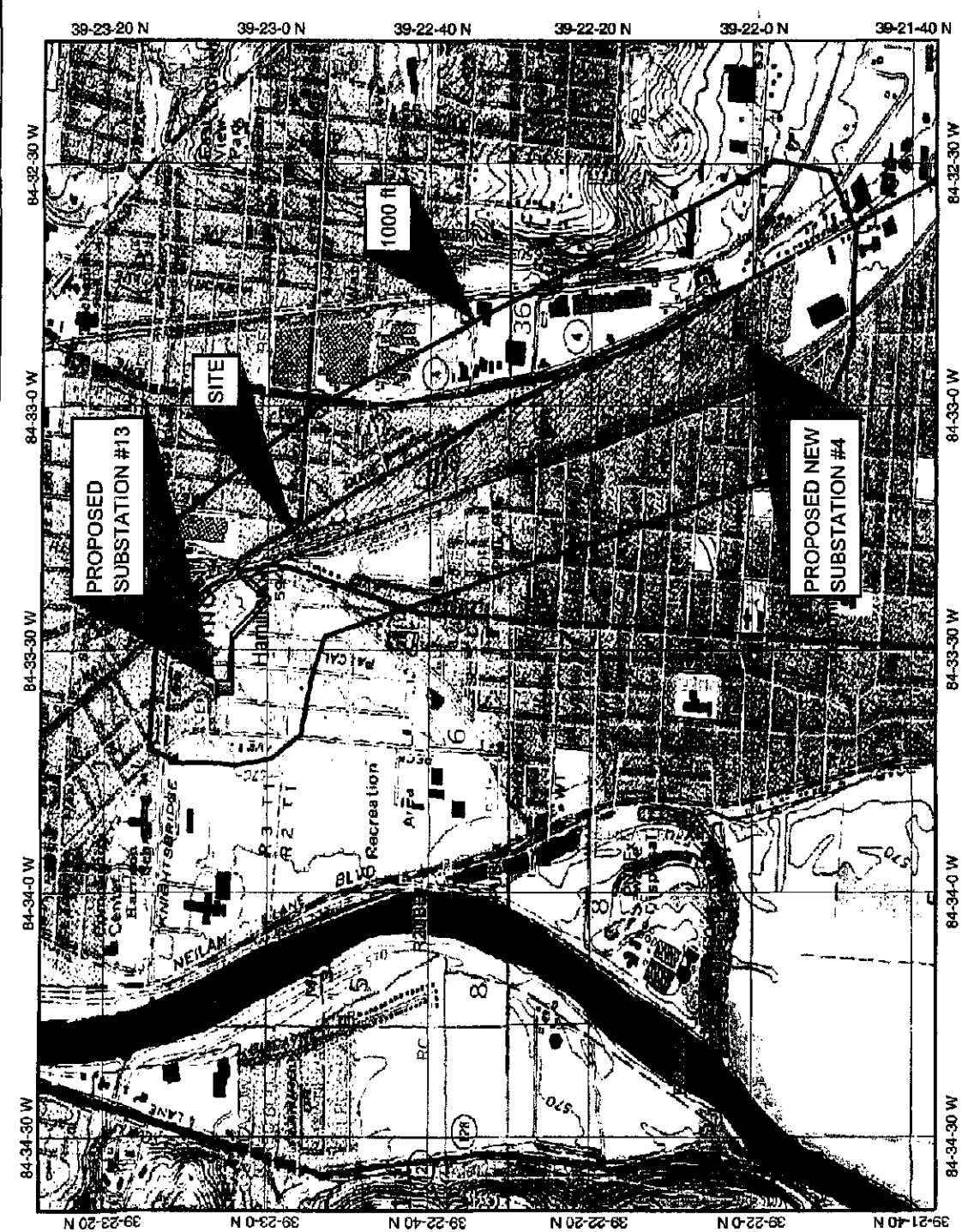
138 KV SHORT LINE  
 HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00	Drawn By: NWB
Drawing Date: 12-12-2008	Approved By: MES
Last Updated: 1-16-2009	Scale: 1" = 1/4 MILE 1:1

**BBGM**  
 SOLUTIONS TO BUILD ON

Columbus (614) 795-2225  
 Cleveland (216) 901-1000  
 Cincinnati (513) 771-8671  
 Dayton (937) 426-1011

# NWI - 138 kV Short Line



Map center: 39° 22' 32" N, 84° 33' 27" W



## Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Not-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Countries 100K
- States 100K
- South America
- North America



Scale: 1:24,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Soil Map—Butler County, Ohio  
(138 kV Short Line)



## MAP LEGEND

Area of Interest (AOI)	Area of Interest (AOI)	Very Stony Spot
Soils	Soils	Wet Spot
Soil Map Units	Soil Map Units	Other
Special Point Features	Special Line Features	
Blowout	Gully	
Borrow Pit	Short Steep Slope	
Clay Spot	Other	
Closed Depression	Political Features	
Gravel Pit	Municipalities	
Gravelly Spot	Cities	
Landfill	Urban Areas	
Lava Flow	Water Features	
Marsh	Oceans	
Mine or Quarry	Streams and Canals	
Miscellaneous Water	Transportation	
Perennial Water	Rails	
Rock Outcrop		
Saline Spot		
Sandy Spot		
Severely Eroded Spot		
Sinkhole		
Slide or Slip		
Sodic Spot		
Spoil Area		
Stony Spot		

## MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 18N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butler County, Ohio  
Survey Area Data: Version 8, Dec 7, 2007

Date(s) aerial images were photographed: 1994; 2000

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Butler County, Ohio (OH017)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CdE	Casco and Rodman gravelly loams, 18 to 35 percent slopes	6.1	2.6%
EuA	Eldean-Urban land complex, nearly level	141.8	61.4%
EuB	Eldean-Urban land complex, gently sloping	18.8	8.1%
Gn	Genesee loam	3.2	1.4%
Uf	Udorthents and Dumps	0.6	0.2%
UpA	Urban land-Eldean complex, nearly level	60.6	26.2%
Totals for Area of Interest (AOI)		230.9	100.0%





NATIONAL FLOOD INSURANCE PROGRAM

# FIRM FLOOD INSURANCE RATE MAP

CITY OF  
FAIRFIELD, OHIO  
BUTLER COUNTY

PANEL 5 OF 10

COMMUNITY-PANEL NUMBER  
3900390005 B

EFFECTIVE DATE:  
MARCH 15, 1979



U.S. DEPARTMENT OF HOUSING  
AND URBAN DEVELOPMENT  
FEDERAL INSURANCE ADMINISTRATION

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the data on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## KEY TO MAP

500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations\* With  
Date of Identification  
e.g., 12/2/74

100-Year Flood Boundary

500-Year Flood Boundary

Base Flood Elevation Line  
With Elevation In Feet\*\*

Base Flood Elevation In Feet  
Where Uniform Within Zone\*\*

Elevation Reference Mark

River Mile

• M1.5

\*\*Referenced to the National Geodetic Vertical Datum of 1929

## \*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.



513

(EL 987)

RM7 X

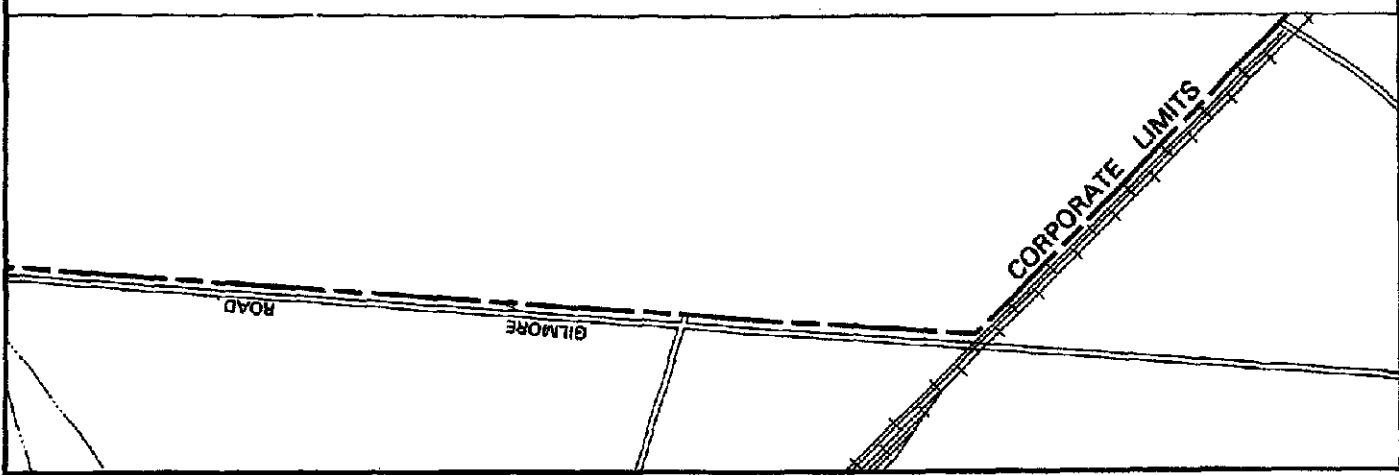
• M1.5

\*\*Referenced to the National Geodetic Vertical Datum of 1929

## \*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
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C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.

ROAD



- A1-A30** Areas of 100-year flood; base flood elevations and flood hazard factors determined.
- A99** Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
- B** Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
- C** Areas of minimal flooding. (No shading)
- D** Areas of undetermined, but possible, flood hazards.
- V** Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
- V1-V30** Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

#### NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

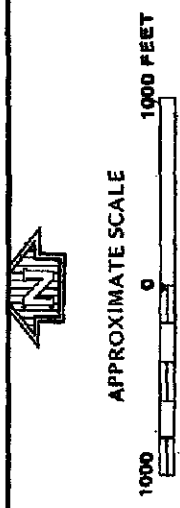
This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

**INITIAL IDENTIFICATION:**  
MARCH 1, 1974

**FLOOD HAZARD BOUNDARY MAP REVISIONS:**  
DECEMBER 27, 1974

**FLOOD INSURANCE RATE MAP EFFECTIVE:**  
MARCH 15, 1979



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP**

**CITY OF  
FAIRFIELD, OHIO  
BUTLER COUNTY**

**PANEL 5 OF 10**

**COMMUNITY-PANEL NUMBER  
380038 0005 B**

**EFFECTIVE DATE:  
MARCH 15, 1979**



**U.S. DEPARTMENT OF HOUSING  
AND URBAN DEVELOPMENT  
FEDERAL INSURANCE ADMINISTRATION**

This is an official copy of a portion of the above referenced flood map. It was extracted using FIRM On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



APPROXIMATE SCALE  
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

# FIRM FLOOD INSURANCE RATE MAP

CITY OF  
HAMILTON,  
OHIO  
BUTLER COUNTY

PANEL 10 OF 10

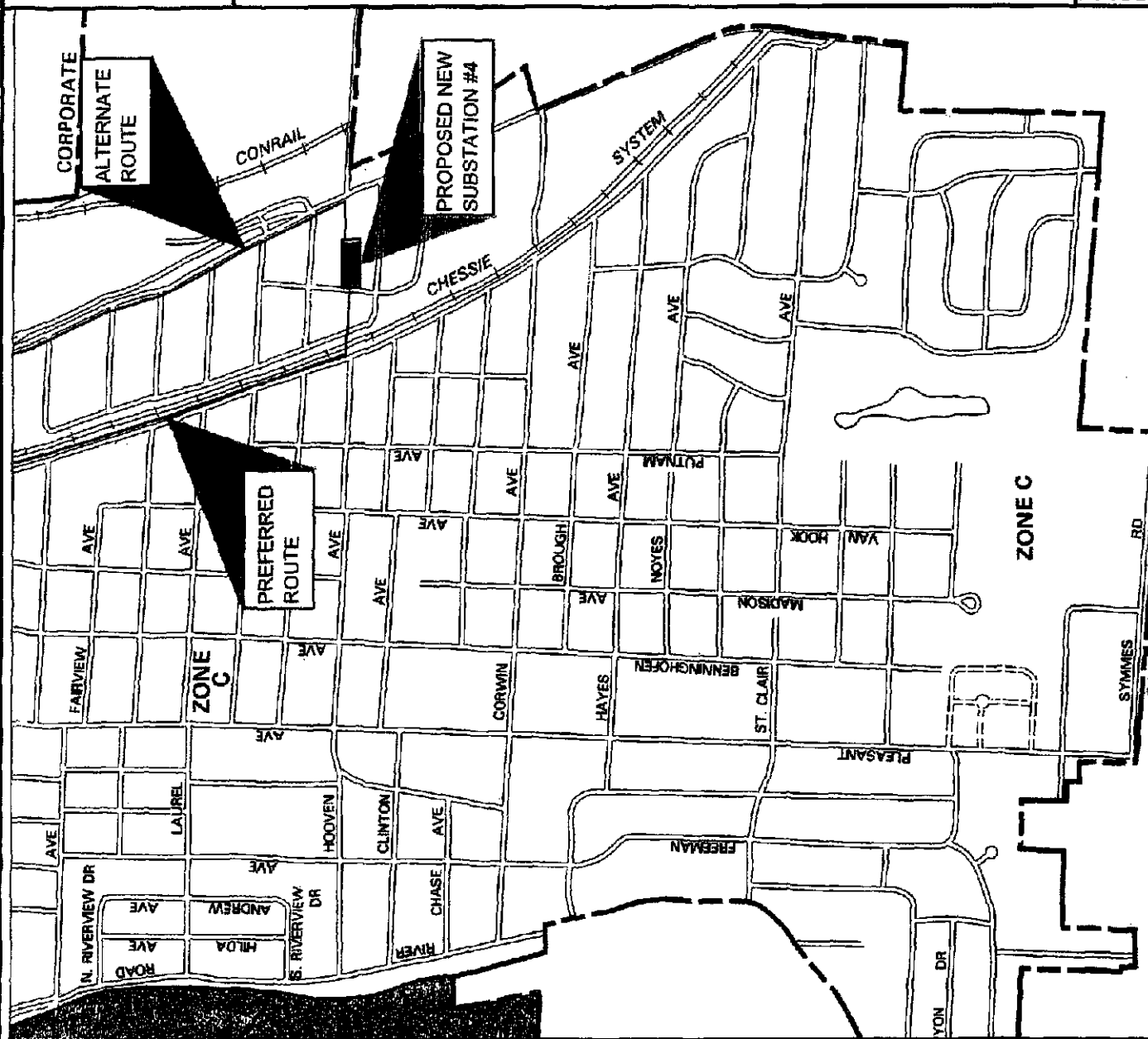
COMMUNITY-PANEL NUMBER  
290039 0010 D

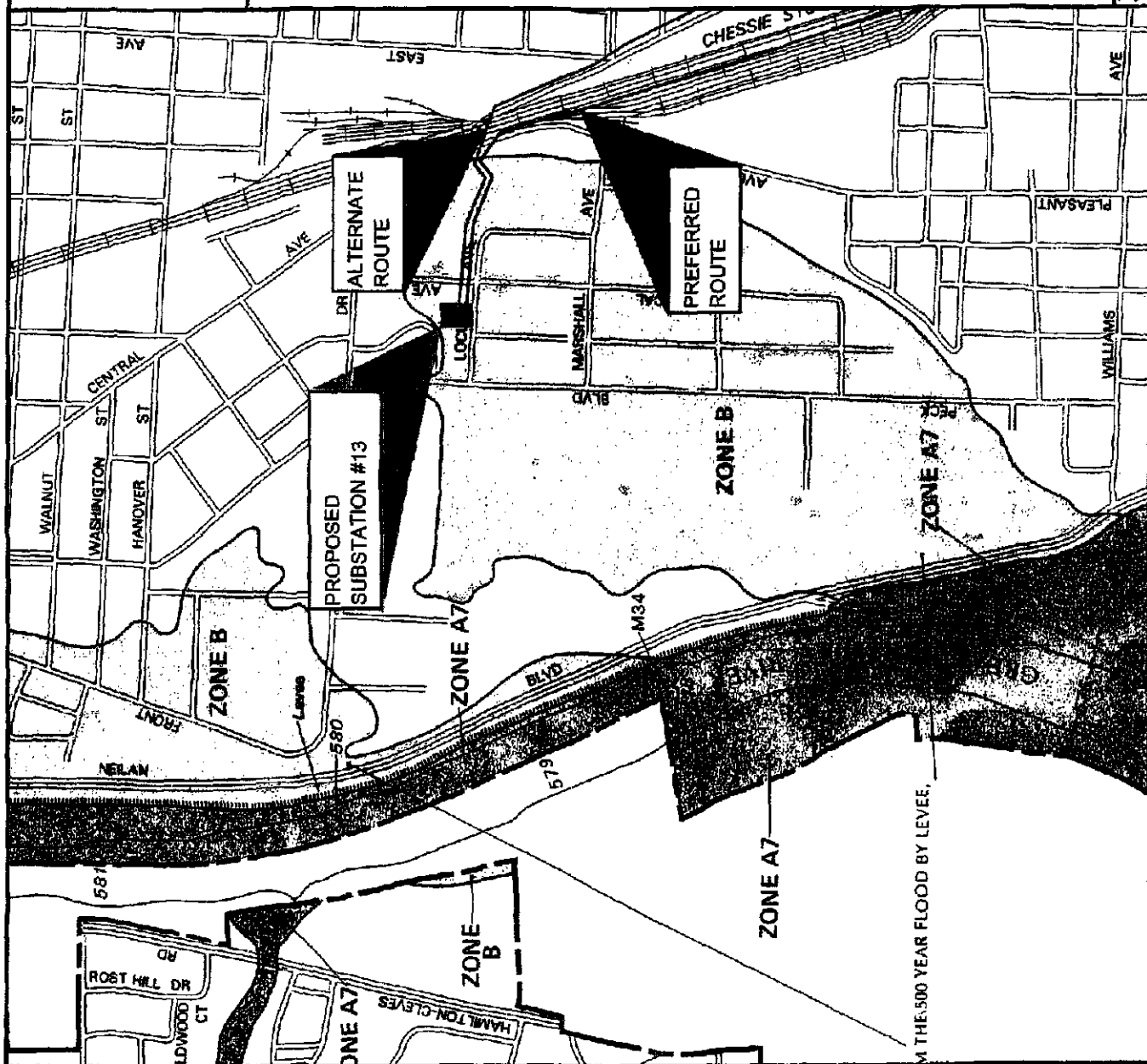
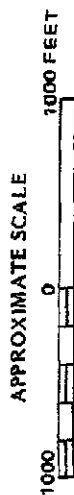
MAP REVISED:  
FEBRUARY 15, 1995



Federal Emergency Management Agency

This is an official copy of a portion of this above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the data on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)





NATIONAL FLOOD INSURANCE PROGRAM

# FIRM FLOOD INSURANCE RATE MAP

CITY OF  
HAMILTON,  
OHIO  
BUTLER COUNTY

PANEL 5 OF 10

COMMUNITY-PANEL NUMBER  
390039 0005 0

MAP REVISED:  
FEBRUARY 15, 1995



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## **APPENDIX B**

### **(PRELIMINARY JURISDICTIONAL WATERS DELINEATION)**

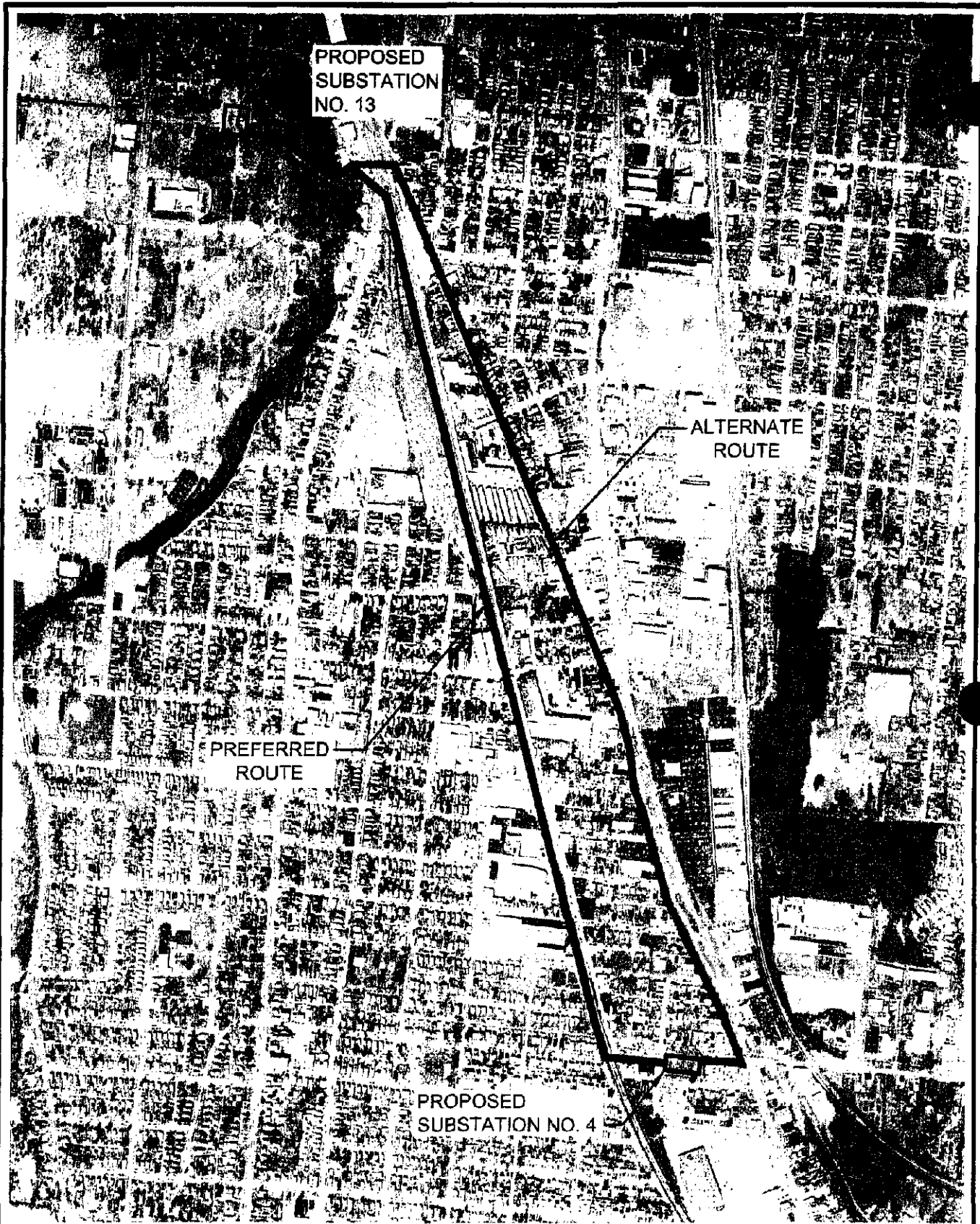
Images: - Aerial.tif

Xrefs:

File Last Updated: Jan 19, 2009

Plot Info: 1-19-2009 4:14pm By: NBERndt

BB&M Filename: \\DEPTSCADD\\Drawings\\Projects\\011-11772-E00\\Short Line Aerial\_PJWD.dwg Layout: AERIAL\_PJWD



Base Map Source: Butler County GIS

## 2005 AERIAL PHOTOGRAPH

138 KV SHORT LINE  
HAMILTON, BUTLER CO., OHIO

Project: 011-11772-E00

Drawn By: MAP

Drawing Date: 12-11-2008

Approved By: MES

Last Updated: 1-19-2009

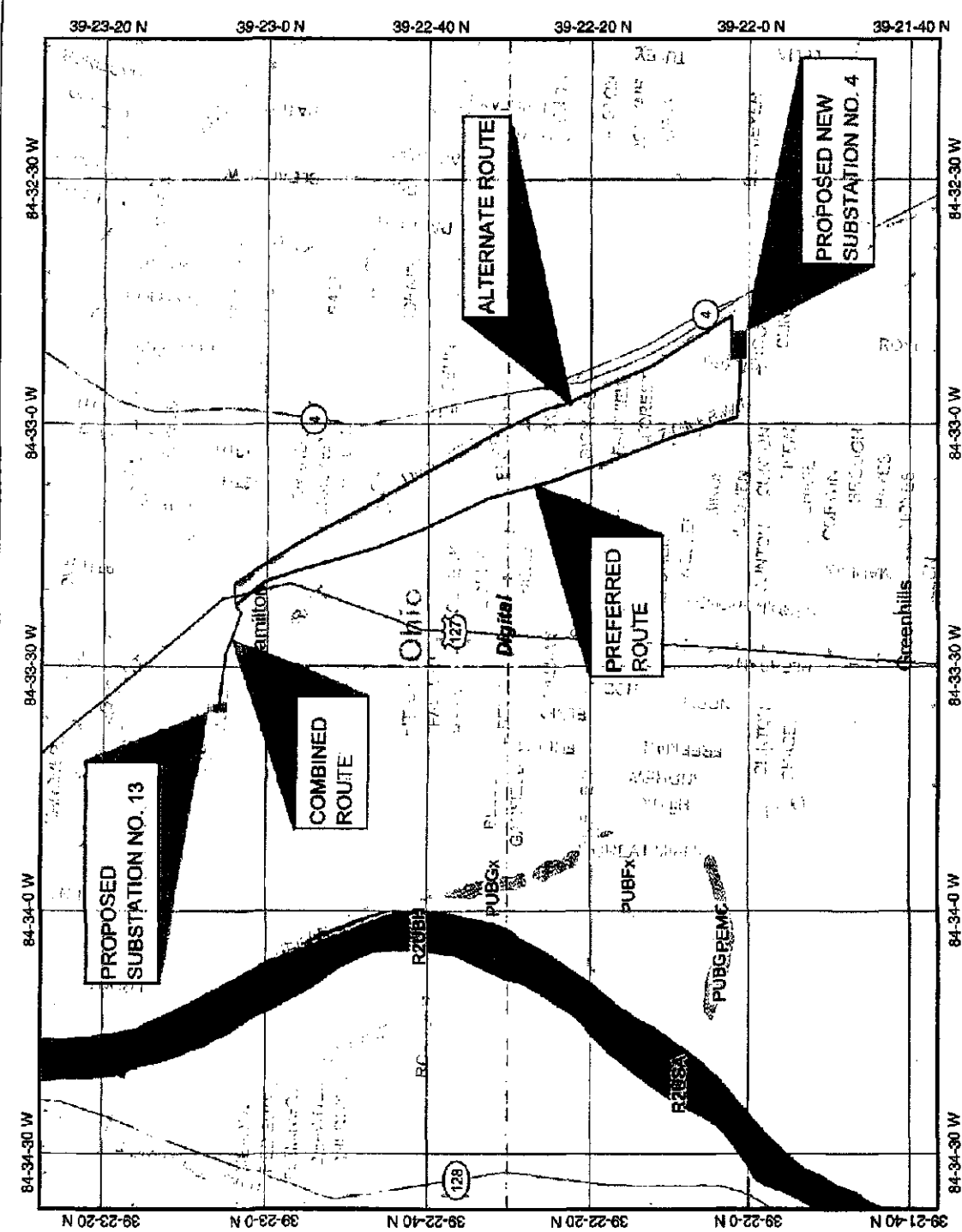
Scale: 1" = 1000'

1:1

**BB&M**  
SOLUTIONS TO BUILD ON

Columbus (614) 763-2226  
Cleveland (216) 501-1000  
Cincinnati (513) 771-8471  
Dayton (937) 424-1011

# NWI - 138 kV Short Line



Map center: 39° 22' 32" N, 84° 33' 25" W

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



## Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forest/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America











































Scale: 1:24,000

Soil Map—Butler County, Ohio  
(138 KV Short Line)





## MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Soils		Wet Spot
	Special Point Features		Other
	Blowout		Special Line Features
	Borrow Pit		Gully
	Clay Spot		Short Steep Slope
	Closed Depression		Other
	Gravel Pit		Political Features
	Gravelly Spot		Cities
	Landfill		Water Features
	Lava Flow		Oceans
	Marsh or swamp		Streams and Canals
	Mine or Quarry		Transportation
	Miscellaneous Water		Interstate Highways
	Perennial Water		US Routes
	Rock Outcrop		Major Roads
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		
	Spoil Area		
	Stony Spot		

## MAP INFORMATION

Map Scale: 1:12,200 If printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butler County, Ohio  
Survey Area Data: Version 8, Dec 7, 2007

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Butler County, Ohio (OH017)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CdE	Casco and Rodman gravelly loams, 18 to 35 percent slopes	1.1	0.7%
EuA	Eldean-Urban land complex, nearly level	80.6	54.4%
EuB	Eldean-Urban land complex, gently sloping	11.8	7.9%
Gn	Genesee loam	7.1	4.8%
Lg	Lanier fine sandy loam	4.7	3.2%
Uf	Udorthents and Dumps	2.0	1.3%
UpA	Urban land-Eldean complex, nearly level	41.1	27.7%
Totals for Area of Interest		148.3	100.0%

**Data Form**  
**Routine Wetland Determination**

Job Number: 011-11772-E00  
Town/Village/City: Hamilton  
Wetland Data Point: 1

Project/Site: 138 kV Short Line  
Applicant/Owner: City of Hamilton  
Investigator: Scott C. Ross

Date: November 13, 2008  
County: Butler  
State: Ohio

[True] Do normal circumstances exist on the site?  
[False] Is the site significantly disturbed (Atypical Situation)?  
[False] Is the area a potential problem area?

Community ID: Upland  
Station ID:  
Plot ID:

**Vegetation**

Dominant Species	Common Name / CofC	% Cover	Indicator
<b>Herbaceous</b>			
X <i>Cirsium arvense</i>	Thistle, Creeping		FACU
X <i>Solidago canadensis</i>	Golden-Rod, Canada		FACU
X <i>Rubus</i> sp.	Blackberry		FACU
X <i>Dipsacus sylvestris</i>	Teasel		NI
<b>Shrub</b>			
X <i>Populus deltoides</i>	Cotton-Wood, Eastern		FAC
X <i>Carpinus caroliniana</i>	Hornbeam, American		FAC

% Species that are OBL, FACW, or FAC (except FAC-): 40

Cowardin Classification:

**Remarks**

Hydrophytic vegetation less than or equal to 50%. Note: unable to I.D. dominant grass species due to lack of inflorescence.

**Hydrology**

[X] Recorded Data (describe in remarks)  
[ ] Stream, Lake, or Tide Gage  
[X] Aerial Photograph  
[ ] Other (describe in remarks)

**Primary Wetland Hydrology Indicators**

[ ] Inundated  
[ ] Saturated in upper 12 inches  
[ ] Water marks  
[ ] Drift lines  
[ ] Sediment deposits  
[ ] Drainage patterns in wetlands

**Secondary Hydrology Indicators**

[ ] Oxidized root channels  
[ ] Water-stained leaves  
[ ] Local soil survey data  
[ ] FAC-Neutral test  
[ ] Other (explain in remarks)

**Field Observations:**

Depth of Surface Water(in.): 0  
Depth to Free Water in Pit(in.): >20  
Depth to Saturated Soils(in.): >20

**Remarks**

Ground surface is likely not inundated or saturated for significant periods during the growing season.

**Soils**

Depth (in.)	Hor.	Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc.
9-20	B	10YR 4/6	10YR 4/1	few	faint	

**Hydric Soils Indicators**

[ ] Histosol  
[ ] Histic Epipedon  
[ ] Sulfidic Odor  
[ ] Probable Aquatic Moist Regime  
[ ] Reducing Conditions  
[ ] Gleyed or Low-Chroma Colors

[ ] Concretions  
[ ] High Organic % in Surface Layer in Sandy Soils  
[ ] Organic Streaking in Sandy Soils  
[ ] Listed on Local Hydric Soils List  
[ ] Listed on National Hydric Soils List  
[ ] Other (explain in remarks)

Unit Name: Genesee loam  
Drainage Class: Well Drained

Taxonomy:  
[X] Field Observations match map

**Remarks**

Matrix chroma greater than two.

**Wetland Determination**

[False] Hydrophytic Vegetation Present  
[False] Hydric Soils Present  
[False] Wetland Hydrology Present

[False] This Data Point is a Wetland

**Remarks**

Upland data point.

**Data Form**  
**Routine Wetland Determination**

Job Number: 011-11772-E00  
Town/Village/City: Hamilton  
Wetland Data Point: 2

Project/Site: 138 kV Short Line  
Applicant/Owner: City of Hamilton  
Investigator: Scott C. Ross

Date: November 20, 2008  
County: Butler  
State: Ohio  
Community ID: Upland  
Station ID:  
Plot ID:

[True] Do normal circumstances exist on the site?  
[False] Is the site significantly disturbed (Atypical Situation)?  
[False] Is the area a potential problem area?

**Vegetation**

Dominant Species	Common Name / CofC	% Cover	Indicator
<u>Herbaceous</u>			
X <i>Cirsium arvense</i>	Thistle, Creeping		FACU
X <i>Poa sp.</i>	Bluegrass		FACU
X <i>Trifolium repens</i>	Clover, White		FACU-
X <i>Festuca rubra</i>	Fescue, Red		FACU

% Species that are OBL, FACW, or FAC (except FAC-): 0

Cowardin Classification:

**Remarks**

Hydrophytic vegetation less than or equal to 50%.

**Hydrology**

[X] Recorded Data (describe in remarks)  
[ ] Stream, Lake, or Tide Gage  
[X] Aerial Photograph  
[ ] Other (describe in remarks)

**Primary Wetland Hydrology Indicators**

[ ] Inundated  
[ ] Saturated in upper 12 inches  
[ ] Water marks  
[ ] Drift lines  
[ ] Sediment deposits  
[ ] Drainage patterns in wetlands

**Secondary Hydrology Indicators**

[ ] Oxidized root channels  
[ ] Water-stained leaves  
[ ] Local soil survey data  
[ ] FAC-Neutral test  
[ ] Other (explain in remarks)

**Field Observations:**

Depth of Surface Water(in.): 0  
Depth to Free Water in Pit(in.): >10  
Depth to Saturated Soils(in.): >10

**Remarks**

Ground surface is likely not inundated or saturated for significant periods during the growing season.

**Soils**

Depth (in.)	Hor. Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc.
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**Hydric Soils Indicators**

[ ] Histosol	[ ] Concretions
[ ] Histic Epipedon	[ ] High Organic % in Surface Layer in Sandy Soils
[ ] Sulfidic Odor	[ ] Organic Streaking in Sandy Soils
[ ] Probable Aquatic Moist Regime	[ ] Listed on Local Hydric Soils List
[ ] Reducing Conditions	[ ] Listed on National Hydric Soils List
[ ] Gleyed or Low-Chroma Colors	[ ] Other (explain in remarks)

Unit Name: Eldean-Urban land complex, nearly level

Taxonomy:

Drainage Class: Well Drained

[ ] Field Observations match map

**Remarks**

Soil fill.

**Wetland Determination**

[False] Hydrophytic Vegetation Present

[False] This Data Point is a Wetland

[False] Hydric Soils Present

[False] Wetland Hydrology Present

**Remarks**

Upland data point; former railroad yard.