

ENVIRONMENTAL ASSESSMENT

Tienken Road Improvement Project

Livernois Road to Sheldon Road
City of Rochester Hills, Michigan

May 2010

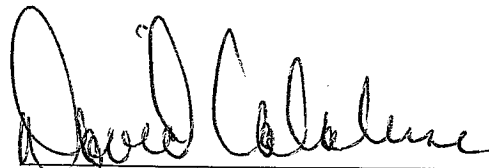
Prepared by

Road Commission for Oakland County

In Cooperation with

U.S. Department of Transportation
Federal Highway Administration

6/4/2010
Date Approved


for Federal Highway Administration

For additional information concerning this proposed project or document, please contact:

Mr. William McEntee
Director of Permits and Environmental Concerns
Road Commission for Oakland County
2420 Pontiac Lake Road
Waterford, MI 48329
Phone: (248) 858-4891

Mr. Dave Williams
Environmental Program Manager
Federal Highway Administration
315 West Allegan Street, Room 207
Lansing, MI 48933
Phone: (517) 702-1820

PREFACE

The National Environmental Policy Act (NEPA) of 1969 requires that Federal government agencies identify and consider the social, economic, and natural environmental impacts of proposed actions as part of their decision-making processes. NEPA also requires that agencies receiving federal aid for a project provide information to the public and consider their input when reaching decisions. Proposed Federal actions are classified into three different categories under NEPA. Class I actions are those that would “significantly” affect the environment and require preparation of an Environmental Impact Statement (EIS). Class II actions are those that do not have a significant effect on the environment. Typically called “categorical exclusion,” Class II actions do not require preparation of an EA or EIS. Class III actions are those for which the significance of impacts is not clear. These actions require preparation of an EA to determine whether an EIS or Finding of No Significant Impact (FONSI) is the appropriate type of documentation.

Section 4(f) of the Department of Transportation Act of 1966 states that it is national policy that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges and historic sites. The Secretary of Transportation may approve a project that requires the use of publicly owned land of a public park, recreation area, wildlife or waterfowl refuge, of land of a historic site of national, state or local significance only if there is no prudent and feasible alternative to using the land, and if the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife or waterfowl refuge, or historic site resulting from the use.

This document was prepared for the Tienken Road Improvement Project located in the city of Rochester Hills, Michigan. It includes several sections that address the following topics:

- The purpose of and need for the project.
- The alternatives that were considered as part of the study.
- The existing social, economic, and environmental conditions in the project area.
- The likely impacts and benefits associated with the Preferred Alternative.
- Mitigation measures that would minimize any harm created by the Preferred Alternative.
- Consultation and coordination conducted with public and government agencies.
- Public comments received on the project.

TABLE OF CONTENTS

CHAPTER 1 – PURPOSE AND NEED1

1.1 INTRODUCTION 1

1.2 PROJECT PURPOSE 1

1.3 PROJECT NEEDS 1

1.4. RECOMMENDATIONS 10

CHAPTER 2 – ALTERNATIVES11

2.1 INTRODUCTION 11

2.2 ALTERNATIVES CONSIDERED..... 12

2.3 DETAILED DESCRIPTION OF PREFERRED ALTERNATIVE..... 16

CHAPTER 3 – ENVIRONMENTAL IMPACTS.....19

3.1 TOPOGRAPHY & SOILS 19

3.2 LAND USE..... 19

3.3 FARMLAND..... 20

3.4 POPULATION DEMOGRAPHICS 20

3.5 RIGHT OF WAY (ROW) ACQUISITIONS AND RELOCATIONS 21

3.6 UTILITY IMPACTS..... 22

3.7 SOCIAL IMPACTS 22

3.8 ENVIRONMENTAL JUSTICE 23

3.9 AIR QUALITY 24

3.10 NOISE ANALYSIS 25

3.11 WATER RESOURCES..... 28

3.12 WETLANDS 29

3.13 THREATENED AND ENDANGERED SPECIES 30

3.14 VEGETATION AND WILDLIFE..... 30

3.15 SECTION 4(F) RESOURCES..... 30

3.16 HISTORIC, ARCHEOLOGICAL AND ARCHITECTURAL RESOURCES 31

3.17 CONTAMINATED SITES 31

CHAPTER 4 – COORDINATION & CONSULTATION.....33

4.1 EARLY COORDINATION 33

4.2 STAKEHOLDER COORDINATION 33

4.3 AGENCY COORDINATION 33

CHAPTER 5 - REFERENCES35

CHAPTER 6 - FIGURES36

APPENDIX A – SUMMARY OF PUBLIC INVOLVEMENT.....37

APPENDIX B – EARLY COORDINATION CORRESPONDENCE38

APPENDIX C - CONCEPTUAL RELOCATION PLAN39

LIST OF TABLES

Table 1-1 Historical Volume Counts on Tienken Road 2
 Table 1-2 Capacity Analysis Results for Existing Conditions (2008)..... 3
 Table 1-3 2030 Future Traffic Volume Projections 4
 Table 1-4 Capacity Analysis Results for Future (2030) No Build Condition..... 4
 Table 1-5 Traffic Crash Patterns by Year for Segment from Livernois to Kings Cove 5
 Table 1-6 Traffic Crash Patterns by Year for Segment from Kings Cove to Rochester 6
 Table 1-7 Traffic Crash Patterns by Year for Segment from Rochester to Sheldon 7
 Table 1-8 Traffic Crash Patterns by Year for Tienken & Livernois Intersection 7
 Table 1-9 Traffic Crash Patterns by Year for Tienken & Kings Cove/Oakbrook Intersection 8
 Table 1-10 Traffic Crash Patterns by Year for Tienken & Rochester Intersection..... 8
 Table 1-11 Intersections with Less than the AASHTO Minimum Sight Distance 9
 Table 3-1 Soil Survey..... 19
 Table 3-2 Population Trends 20
 Table 3-3 2000 US Census Demographics Unique to Rochester Hills 20
 Table 3-4 2000 Census Data by Census Tract (CT) and Block Group (BG)..... 23
 Table 3-5 FHWA Noise Abatement Criteria by Activity Category 26
 Table 3-6 Comparison of Noise Level Analyses to Noise Abatement Criteria (NAC)..... 27

LIST OF FIGURES in CHAPTER 6

Figure 1 Project Location Map
 Figure 2 Preferred Alternative Alignment
 Figure 3 Typical Sections
 Figure 4 Right of Way Needs

LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
APE	Area of Potential Effects
BG	Census Block Group
BMP	Best Management Practices
CAAA	Clean Air Act Amendments of 1990
CO	Carbon Monoxide
CT	Census Tract
dBA	Decibels
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HRC	Hubbell, Roth & Clark, Inc.
LOS	Level of Service
L&WCF	Land and Water Conservation Fund Act of 1965, as amended
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
NAAQS	National Ambient Air Quality Standard
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act (NEPA) of 1969
OPC	Older Persons Commission
PASER	Pavement Surface Evaluation and Rating
PCB	Polychlorinated biphenyls
PCTC	Paint Creek Trailways Commission
PDO	Property Damage Only
PM	Particulate Matter
RCOC	Road Commission for Oakland County
ROW	Right-of-Way
RTP	Regional Transportation Plan
SEE	Social, Economic and Environmental impacts
SEMCOG	Southeast Michigan Council of Governments
SHPO	State Historic Preservation Office or Officer
TIP	Transportation Improvement Plan
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service

CHAPTER 1 – PURPOSE AND NEED

1.1 INTRODUCTION

The Tienken Road Improvement Project is sponsored by the Road Commission for Oakland County (RCOC). The project termini are Livernois Road on the west to Sheldon Road on the east. See Figure 1 in Chapter 6 for a location map. The scope of work includes improvements to the road segment between the project termini and improvements to the intersection of Tienken and Livernois.

The Tienken Road corridor is located in the Detroit urbanized area and is classified as an urban minor arterial in the National Functional Classification System. It is approximately six miles long and serves east-west travel in the northern part of the city of Rochester Hills from Squirrel Road in Auburn Hills to both 25 and 26 Mile Roads in Macomb County. Within the project area, Tienken Road has a rolling topography and provides access to numerous single family residences, multi-family residences, offices, commercial, a few industrial sites and three public schools. Tienken Road also serves as an alternate route to traveling through downtown Rochester on University Drive and Walton Blvd.

The half right-of-way width varies from 33 ft to 75 ft from the road center line. Travel forecasts were based on the Southeastern Michigan Regional Planning Council's (SEMCOG) 2030 regional planning model which projected that the average daily traffic volumes will increase approximately 40 percent between 2009 and 2030. Several alternatives were evaluated before selecting the Preferred Alternative that best met the purpose and need for the project.

This Environmental Assessment (EA) describes the proposed improvements to Tienken Road and the social, economic and environmental (SEE) impacts of the proposed project. The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969.

1.2 PROJECT PURPOSE

The goals of the Tienken Road Improvement Project are to improve the operation and safety of the road. The specific purposes of the Tienken Road Improvement Project are:

- To reduce congestion by accommodating current and projected 2030 traffic volumes
- To improve safety by addressing correctable crash patterns and sight distance limitations
- To provide safer access to schools and public facilities
- To reconstruct structurally deficient sections of the road
- To provide a solution that reflects the Master Plan right-of-way for the corridor
- To accommodate the local community's planning goals and views

1.3 PROJECT NEEDS

This EA provides information about the roadway and its deficiencies. The need for the Project is based on future traffic congestion, current safety concerns and pavement condition. Congestion is the result of increased travel and capacity concerns during peak hours on the existing roadway. Recent developments in the northeast quadrant of the city of Rochester Hills and adjacent communities and the opening of two large public schools have resulted in a greater demand for improvements to area roadways. Segments of the corridor have high rates of rear end and angle crashes which are two indicators of high levels of congestion and inadequate gaps in the traffic stream. Sections of the road

surface have been rated in poor condition and are in need of reconstruction. Sight distance at three unsignalized intersections do not meet current minimum sight distance guidelines and is a factor in the safety concerns on this corridor. Information supporting the need for the project is provided in detail below.

1.3.1 Background

The Tienken Road Project covers approximately 1.6 miles of the corridor. There are three signalized intersections (at Livernois, Kings Cove/Oakbrook and Rochester) and a roundabout at Sheldon. Intersection improvements have been made which result in varying geometries and road width. Currently, 47 percent of the project area is two lanes with right turn lanes or tapers, 34.5 percent of the project area is three-lanes, and 18.5 percent is five lanes or more.

Traffic counts for Tienken Road were provided by the SEMCOG website (www.semco.org) and from machine counts taken by Hubbell, Roth & Clark in 2008 and 2009. Historic Average Daily Traffic (ADT) counts show the growth in traffic volumes in the corridor over the last 20 years. The August 2008 counts were taken when traffic was detoured to Tienken Road because University Drive in the city of Rochester was closed to through traffic for a reconstruction project. Using data from the machine vision cameras at the intersections of Tienken and Livernois and Tienken and Rochester, it was determined that the traffic volumes were approximately 8% higher than normal. Therefore, the actual August 2008 counts were reduced 8% to represent the typical volumes. The adjusted volumes are shown in Table 1-1. For the segment between Rochester and Sheldon Roads, there is growth that coincided with the opening of a new middle school in 1990, a new high school in 2001 and several large residential subdivisions east and west of Sheldon Road.

Table 1-1: Historical Volume Counts on Tienken Road

Date of ADT Count	Livernois - Rochester Segment	Annual Growth	Rochester - Sheldon Segment	Annual Growth
1986	17,136		2,087	
1993	18,168	.7%	5,702	24.7%
October 1998	21,562	3.7%	9,779	14.3%
June 2001	22,538	1.5%	16,047	21.3%
September 2002	23,055	2.3%	N/A	---
June 2003	21,195	-8.0%	19,393	10.4%
October 2007	22,861	2.6%	19,321	0.0%
August 2008	26,080	14.1%	21,730	12.5%
August 2009	23,894	-8.4%	21,334	-1.8%

1.3.2 Existing Traffic Operations (2008)

Within the project limits, the morning (AM) peak hour is 8:00-9:00 AM on Tienken between Livernois and Rochester and 7:00-8:00 AM on Tienken between Rochester and Sheldon. The afternoon (PM) peak hour is 5:00-6:00 PM on both segments. The predominant direction of traffic flow is westbound on Tienken Road in the morning and eastbound on Tienken Road in the afternoon. Turning movement counts at Tienken and Livernois and Tienken and Rochester show that Tienken between Livernois and Rochester Roads serves not only through and local traffic, but it also serves as

a link for northbound and southbound traffic that travels Livernois and Rochester Roads. During the AM peak hour, there is a heavy right turn movement from southbound Rochester Road to westbound Tienken and a similar heavy left turn movement from westbound Tienken onto southbound Livernois Road. During the PM peak hour, the reverse traffic movements have been documented.

All of the signalized intersections in the city of Rochester Hills are part of the FAST-TRAC project – a comprehensive Intelligent Transportation System for arterial roads in Oakland County. The RCOG has installed SCATS (Sydney Coordinated Adaptive Traffic System) and Autoscope (digital video imaging devices) to detect vehicles approaching intersections, to continuously analyze traffic flows and to automatically adjust the traffic signal timings to match the traffic flow. The adaptive traffic control system works 24 hours a day, seven days a week. FAST-TRAC helps to squeeze as much additional capacity out of existing roads as is possible. However, even with FAST-TRAC, the capacity analysis shows that existing levels of service need improvement.

A detailed traffic study was conducted and the report, Tienken Road Traffic Analysis, is available. The study analyzed capacity and level of service (LOS) which is a standardized measurement that reflects the degree of congestion and amount of delay experienced by motorists. LOS is expressed as a letter rating between A and F. LOS A represents a situation where motorists experience minimal congestion, minimal delays, and free-flow of travel. A LOS F represents a situation where motorists experience extreme congestion, long delays, and severely impeded traffic flows. This condition results in increased risk taking and higher crash rates.

The capacity analysis was conducted using Synchro 7.0 software for the three signalized intersections in the project area during the AM and PM peak hours. The capacity analysis results are shown in Table 1-2.

Table 1-2: Capacity Analysis Results for Existing Conditions (2008)

Intersection	Peak Hour	Level of Service by Approach				
		EB	WB	NB	SB	Overall Intersection
Tienken Rd & Livernois Rd	AM	C	C	C	D	C
	PM	D	C	D	D	D
Tienken Rd & Kings Cove /Oakbrook	AM	A	A	D	D	B
	PM	A	A	D	D	A
Tienken Rd & Rochester Rd	AM	D	D	D	D	D
	PM	D	D	D	D	D

1.3.3 Future Traffic Operations (Year 2030)

Future year (2030) traffic volumes are typically based on growth factors provided by SEMCOG regional travel demand forecast model (EH Series) as adopted by the 2030 Regional Transportation Plan (RTP). The region’s development patterns and demographic predictions form the basis for the regional model and this model was predicated on an optimistic economic outlook. The 2030 regional model assumed a 10% increase in population, a 17% increase in households and an 11% increase in jobs between 2005 and 2030. (SEMCOG, 2030 Regional Transportation Plan for Southeast Michigan, November 2004). Based on this model and unconstrained travel demand, the 2030 daily traffic volumes were projected to increase 56% to 65% over the 2008 volumes.

However, since the 2030 RTP was adopted, the economy nationally and especially in Michigan has been in recession. In developing the Direction 2035 RTP, SEMCOG has both reduced the underlying number of persons, households and employment in the region and significantly revised its growth expectations. The 2035 regional model assumes a 3% increase in population, a 14% increase in households and a 5% increase in employment between 2005 and 2035 in the region (SEMCOG, Memo 10/28/08), which is about half of the assumptions used for the 2030 regional model.

Therefore, it was assumed that the slower growth in socioeconomic data will dampen trip making in the near future. In fact, the 2009 daily traffic volumes are lower than the same period in 2008 as shown in Table 1-1. In light of the assumption that trip making is decreasing, the 2030 daily traffic volumes are projected to increase 40% over the 2009 volume levels. The future volumes used in the traffic analysis and for this EA are shown in Table 1-3.

Table 1-3: 2030 Future Traffic Volume Projections

Segment bet Livernois –Rochester 2030 ADT	Segment bet Rochester-Sheldon 2030 ADT
33,500	29,900

The future capacity analysis was conducted using Synchro 7.0 software for the three signalized intersections in the project area during the AM and PM peak hours. The capacity analysis assumes a 40% increase in traffic volumes but no capacity improvements. The results by intersection are shown in Table 1-4.

Table 1-4: Capacity Analysis Results for Future (2030) No Build Condition

Intersection	Peak Hour	Level of Service by Approach				
		EB	WB	NB	SB	Overall Intersection
Tienken Rd & Livernois Rd	AM	D	C	D	E	D
	PM	F	E	F	E	F
Tienken Rd & Kings Cove Dr/Oakbrook	AM	A	D	E	E	D
	PM	E	B	E	E	D
Tienken Rd & Rochester Rd	AM	D	E	D	E	E
	PM	F	F	E	E	F

When compared to the level of service results for existing conditions found in Table 1-2, the Synchro analysis shows that level of service will decrease in the future without capacity improvements. Of the three signalized intersections, the intersection most in need of improvements is Tienken and Livernois. This intersection has a strong relationship to the efficient operation, safety and congestion levels in the project area. The Synchro traffic simulations support this conclusion. Capacity improvements to this intersection are needed to provide an acceptable level of service on Tienken Road in the project area.

The intersection of Tienken and Kings Cove/Oakbrook is a minor intersection and was recently signalized in part to provide gaps in the traffic stream for turning vehicles to the east. The intersection of Tienken and Rochester was reconstructed in 2007 and is currently a seven lane intersection with

dual left turns, two through lanes and a right turn lane in all directions. Additional capacity improvements to either of these intersections will not improve the flow of traffic through the project area.

1.3.4 Pavement Condition

As required by Public Act 499 of 2002, all federal aid eligible roads are included in the State Asset Management Council Pavement Condition Database. Each year since 2005, SEMCOG has rated the pavement condition of the federal aid eligible roads using the Pavement Surface Evaluation and Rating (PASER) system (www.oaklandfac.org). The PASER system assigns a number from 1 to 10 with 10 being the best pavement condition. The ratings are consolidated into three categories of need as defined by the State Asset Management Council:

- Poor (1,2,3,4) Structural Improvement
- Fair (5,6,7) Capital Preventative Maintenance
- Good (8,9,10) Routine Maintenance

The pavement condition on Tienken Road has benefited from specific improvement projects, e.g. intersection reconstruction and routine overlays. Based on the 2009 PASER rating, the majority of the road is in good condition but a portion of the western side of the project is in need of total reconstruction.

1.3.5 Safety

Traffic crash data for the years 2005-2007 were obtained from the Traffic Improvement Association Traffic Crash Analysis Tool for the corridor segments and the intersections at the termini of the project. Crashes directly attributable to intersections’ operation are discussed and analyzed separately. The complete crash analysis can be found in the Tienken Road Traffic Analysis report.

1.3.5.1 Tienken Road Segment Analysis

1.3.5.1.1 The following table summarizes the traffic crashes occurring on the Tienken Road segment (approximately 0.35 mile long) between the intersections of Livernois Road and Kings Cove Road.

Table 1-5: Traffic Crash Patterns by Year for Segment from Livernois to Kings Cove

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	-	-	-	0	0%
Property Damage Only	3	1	4	8	100%
Crash Type	2005	2006	2007	Total	% of Total
Rear End	2	1	3	6	75%
Single Vehicle	1	-	1	2	25%
Total Crashes	3	1	4	8	100%

There were 8 total crashes reported for the segment for the three year period analyzed. The road segment averaged 3 crashes per year. The segment crash rate is 0.80 crashes per million vehicle miles of travel. This rate is below the average Oakland County crash rate of 2.80 per million vehicle miles of travel.

1.3.5.1.2 The following table summarizes the traffic crashes occurring on the Tienken Road segment (approximately 0.65 mile long) between the intersections of Kings Cove Road and Rochester Road.

Table 1-6: Traffic Crash Patterns by Year for Segment from Kings Cove to Rochester

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	5	-	8	13	23%
Property Damage Only	14	8	22	44	77%
Crash Type	2005	2006	2007	Total	% of Total
Rear End	8	5	16	29	51%
Angle	7	1	6	14	25%
Head On	1	-	1	2	4%
Sideswipe Same	1	1	4	6	11%
Sideswipe Opposite	-	-	1	1	1%
Single Vehicle	2	1	1	4	7%
Other	-	-	1	1	1%
Total Crashes	19	8	30	57	100%

Examining just the last three years of crash data did not provide a trend so crashes from 2003 and 2004 were looked at as well. In each of these years, there were 25 crashes so the 30 crashes in 2007 are closer to the norm for this road segment and the eight reported crashes in 2006 are atypical.

There were no fatalities or crashes with serious injuries. Twenty-three percent (23%) of the 57 crashes resulted in an injury to at least one vehicle occupant. Over half of the crashes were rear end type crashes. Twice as many rear-end crashes occur in the eastbound direction as in the westbound. On the south side of this segment are residential lots (60 ft wide) with driveways onto Tienken Road. The eastbound rear-end crashes occur throughout the segment. The westbound rear-end crashes are concentrated at Winry Drive and Pine Street. Rear end crashes are often an indicator of congestion on the road.

Fourteen angle crashes were recorded during the three-year period. One-half of the angle crashes occurred during the PM peak hours. Angle crashes occur when vehicles making left turns are struck by through vehicles. A high percentage of angle crashes is often an indication that the gaps in the traffic are insufficient to allow a left turn to be made safely and that the drivers are taking chances that they can complete their left turns safely.

The road segment from Kings Cove to Rochester averaged 19 crashes per year. The segment crash rate is 3.07 crashes per million vehicle miles of travel. This rate is above the average Oakland County crash rate of 2.80 per million vehicle miles of travel.

1.3.5.1.3 The following table summarizes the traffic crashes occurring on the Tienken Road segment (approximately 0.50 mile long) between the intersections of Rochester Road and Sheldon Road.

Table 1-7: Traffic Crash Patterns by Year for Segment from Rochester to Sheldon

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	4	2	-	6	14%
Property Damage Only	8	7	21	36	86%
Crash Type	2005	2006	2007	Total	% of Total
Rear End	9	5	14	28	67%
Single Vehicle	2	2	2	6	14%
Sideswipe Same	-	1	3	4	10%
Angle	1	-	-	1	2%
Other	-	1	2	3	7%
Total Crashes	12	9	21	42	100%

There were no fatalities or crashes with serious injuries. Two-thirds of the crashes were rear end type crashes and occurred with more frequency in the eastbound direction than westbound. There is a concentration of crashes at Tienken and Courtland Blvd. Nearly half of all the crashes occurred during the peak hours of school arrivals and dismissals for the three schools located off of Tienken Road and within one-half mile of each other.

There were 42 total crashes reported for the segment for the three year period analyzed. The road segment averaged 14 crashes per year. The segment crash rate is 3.53 crashes per million vehicle miles of travel. This rate is above the average Oakland County crash rate of 2.80 per million vehicle miles of travel.

1.3.5.2 Tienken Road Intersection Analyses

1.3.5.2.1 Tienken Road and Livernois Road - This is a signalized intersection with a dedicated left-turn lane on all approaches, one through lane on the northbound and eastbound approaches and a shared through/right turn lane on the westbound and southbound approaches. For the period 2005 through 2007, there were 28 crashes within the intersection, defined by a radius of 200 ft. There were no fatalities but 21% of all crashes were personal injury crashes with minor injuries.

Table 1-8: Traffic Crash Patterns by Year for Tienken & Livernois Intersection

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	2	-	4	6	21%
Property Damage Only	10	6	6	22	79%
Crash Type	2005	2006	2007	Total	% of Total
Head-On Left Turn	2	-	-	2	7%
Angle	0	1	2	3	11%
Rear End	6	4	5	15	54%
Sideswipe	2	1	-	3	11%
Single Vehicle	2	-	2	4	14%
Non-motorized	-	-	1	1	3%
Total Crashes	12	6	10	28	100%

Of the 15 rear-end crashes, nine (9) involved eastbound vehicles and three (3) each occurred on the westbound and northbound approaches. During the PM peak hours of 4:00 – 6:00 PM, 36% of the crashes occurred.

1.3.5.2.2 Tienken Road and Kings Cove Drive/Oakbrook - This is a signalized intersection with a dedicated left-turn lane on Tienken Road. For the period 2005 through 2007, there were six crashes within the intersection, defined by a radius of 200 ft. There were no fatalities but 33% of the six (6) crashes were personal injury crashes with minor injuries. One crash involved a pedestrian. A summary of crash types is shown in the following table.

Table 1-9: Traffic Crash Patterns by Year for Tienken & Kings Cove/Oakbrook Intersection

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	-	1	1	2	33%
Property Damage Only	1	1	2	4	67%
Crash Type	2005	2006	2007	Total	% of Total
Rear End	-	1	3	4	67%
Single Vehicle	1	-	-	1	16.5%
Pedestrian	-	1	-	1	16.5%
Total Crashes	1	2	3	6	100%

1.3.5.2.3 Tienken Road & Rochester Road – This is a major, signalized intersection with dual left turn lanes on all approaches and dual through lanes and a dedicated right turn lane on the northbound and southbound approaches. For the period 2005 through 2007, there were 101 crashes within a 200 foot radius of the intersection. There were 13 personal injury crashes and one injury crash involved a serious injury. The crash summary is shown in the following table.

Table 1-10: Traffic Crash Patterns by Year for Tienken & Rochester Intersection

Crash Type	2005	2006	2007	Total	% of Total
Personal Injury	7	3	3	13	13%
Property Damage Only	22	21	34	88	87%
Crash Type	2005	2006	2007	Total	% of Total
Head-On	2	1	3	6	6%
Angle	9	6	6	21	21%
Rear End	7	22	22	51	50%
Sideswipe Same	8	3	2	13	13%
Sideswipe Opposite	1	-	2	3	3%
Single Vehicle	1	3	1	5	5%
Other	1	-	1	2	2%
Total Crashes	29	35	37	101	100%

Of the 51 rear-end crashes, 16 involved northbound vehicles and 15 involved southbound vehicles. Fewer rear-end crashes occurred on the east and westbound approaches.

1.36 Intersection Sight Distance

Sight distance is an important design factor because of the rolling terrain in the project area. Sight distance is defined as the length of highway visible to the driver for the safe and efficient operation of a vehicle on a roadway. At-grade intersections are inherent points of potential vehicle to vehicle conflict. A driver approaching an intersection should have an unobstructed view of sufficient length to permit control of the vehicle to avoid collision. The American Association of State Highway and Transportation Officials (AASHTO) *Policy on Geometric Design of Highway and Streets, 2004, 5th Edition* is the reference used to analyze the intersection sight distance requirements.

AASHTO presents four cases for intersection control, each of which results in different intersection sight-distance requirements:

- A. No control, with vehicles adjusting speeds to avoid collision.
- B. Stop control on the minor roadway.
- C. Yield control, with vehicles on the minor roadway yielding to the major roadway.
- D. Signal control.

Cases B and D are the most common, with Case B representing the most critical conditions generally encountered. Within Case B are a range of possible operational assumptions regarding the stopped approach.

There are several side streets that have a stop sign at Tienken Road that do meet the current AASHTO minimum sight distance requirements. At a design speed of 50 mph, AASHTO's minimum sight distance requirement is 555 feet. Table 1-11 lists the intersection and the reasons for the sight distance limitations.

Table 1-11: Intersections with Less than the AASHTO Minimum Sight Distance

Intersection	Direction of Travel	Case B1 Turning Left into a Major Highway (ft)	Case B2 Turning Right into a Major Highway (ft)	Reasons for Limitations
AASHTO Minimum sight distance = 555 ft		Design Speed = 50 mph		
Tienken/Winry	NB	412	761	Elevations
Tienken/Pine	NB	489	>2000	Elevations
Tienken/Tienken Ct	SB	>3000	467	Elevations
Tienken/Courtland	NB	379	353	Trees/Signs

The lack of sight distance may be a contributing factor in the number of angle crashes on Tienken Road at Winry and Pine and may be a contributing factor in the number of crashes on Tienken Road at Courtland Blvd.

1.37 Master Right-of-Way

RCOC designates Tienken Road as a County Primary with a planned master ROW of 120 ft. The city of Rochester Hills has adopted a Master Thoroughfare Plan Update that supports the Road Commission's ROW plan. The majority of the Project Area has 60 ft. of half ROW but 31 parcels still have only 33 ft. of half ROW. RCOC will acquire ROW from these parcels by title acquisition or permanent easement. Depending upon the alternative, the number of ROW parcels needed may vary from the 31 parcels noted above.

1.3.8 Community Involvement

Project development has included both formal and informal opportunities to gather input from the public, interest groups, stakeholders and elected officials. See subsection 4.3 for more details. Formal opportunities included an open house on January 21, 2009. Approximately 120 people attended and 30 written comments were received. A second open house meeting was held on July 7, 2009. Over 185 people attended the meeting and comments were received from 122 people. Several meetings with representatives of a citizens' group were held in order to more clearly define alternative cross sections and to better identify community concerns and interests.

1.39 Transportation Improvement Program and Direction 2035 Regional Transportation Plan

Both the current FY'2008 – 2011 Transportation Improvement Program and the Direction 2035 Regional Transportation Plan adopted by SEMCOG list a project to widen Tienken Road from Livernois to Sheldon from two to five lanes. The RCOC has submitted a request to SEMCOG for an amendment to these two regional planning documents to reflect that the 3-lane cross section is the Preferred Alternative. The two planning documents need to be amended before the FHWA will give final approval for this project.

1.4. RECOMMENDATIONS

The information provided in this chapter supports the need for providing capacity at the intersection of Tienken and Livernois, safety improvements including a protective center left turn lane and increased sight distance, replacing failed pavement, safer access to schools and a solution that is consistent with publicly adopted plans and views.

CHAPTER 2 – ALTERNATIVES

2.1 INTRODUCTION

The project development process includes the following phases:

- Tienken Road Corridor Study – In 1999, HRC and Orchard, Hiltz & McCliment, Inc. were selected by the city of Rochester Hills to study the 2015 traffic conditions on the Tienken Road corridor in anticipation of substantial development in the northeast corner of the city. The study included an analysis of Sheldon Road and several key signalized and unsignalized intersections in the corridor between Livernois and Runyon Roads. The study concluded:
 - that Tienken Road will be at unacceptable levels of congestion in 2015 if improvements are not made.
 - that the intersection of Tienken and Rochester Roads needs to be widened.
 - that the intersection of Tienken and Livernois Roads needs to be widened.
 - that the intersection of Tienken and Sheldon Roads needs to be improved and signalized.
 - that the master-planned right-of-way (ROW) for the corridor be 120 feet
- Rochester Hills Master Thoroughfare Plan Update Study – The city of Rochester Hills selected The Corradino Group of Michigan, Inc. to anticipate travel needs for the next 20 years and to ensure that various modes of transportation are appropriately combined in a realistic plan. The report concluded that the Tienken Road corridor:
 - that the master-planned right-of-way (ROW) for the corridor be 120 feet.
 - that the planned roadway section be three lanes.
 - that closing the gaps in the pathways should be done when Tienken Road is improved.
 - that widening Tienken Road from Livernois to Rochester to three lanes was the second highest proposed transportation improvement as developed by the public participation process.
- Traffic Analysis Study – As part of the early preliminary engineering, HRC was asked to forecast traffic volumes, conduct capacity analysis and to analyze crashes in the corridor in order to develop alternatives to improve the Tienken Road corridor between Livernois and Sheldon.
- Supplemental Traffic and Needs Study for Tienken Road Corridor – RCOC selected HRC to forecast traffic volumes, conduct capacity analysis and to analyze crashes in the Tienken Road corridor between Sheldon and Dequindre Roads. The study was used to clarify traffic movements and volumes between Sheldon and Dequindre Roads and showed how future improvements affect traffic in the study corridor.
- Stakeholder meetings in December 2008 and January 2009.
- Early public involvement via open house meetings held in January 2009 and July 2009.
- Early coordination with regulatory agencies.
- Environmental Compliance – the necessary environmental documents are being prepared
- Design
- Right-of-Way (ROW) Acquisition
- Construction

2.2 ALTERNATIVES CONSIDERED

The goals of the Tienken Road Improvement Project are to improve the operation and safety of the road. The criteria used to evaluate the alternatives were the purposes for the Tienken Road Improvement Project stated in Section 1.2. Chapter 6, Figure 3 provides typical cross-sections for the 3-lane (Preferred), 5-lane and 4-lane boulevard alternatives.

2.2.1 No Build

2.2.1.1 Work The No Build Alternative assumes that the Tienken Road project area would retain its current geometry. The road cross-section varies from 22 ft. to 33 ft outside of the intersection improvements. Tienken Road would continue to receive maintenance of pavement, shoulders and guardrail. In the near future, the road will need to be reconstructed as sections of the pavement are in poor condition.

2.2.1.2 Advantages

- No need for additional ROW.
- No construction impact on or disruption to environment.
- No impact to adjacent properties.

2.2.1.3 Disadvantages

- No improvement to the current (2008) level of service at the intersection of Tienken and Livernois which is LOS D.
- No improvement to the future (2030) level of service at the intersection of Tienken and Livernois which is LOS E.
- Does not provide gaps in through traffic stream for turning traffic so does not correct angle crash problem.
- No corrections to sight distance problems.
- Road will continue to be designated a spring weight restriction road.
- Road will need to be reconstructed in near future.
- Gaps in non-motorized paths will not be filled in.

2.2.2 Three-Lane Roadway (Preferred)

2.2.2.1 Work The three-lane alternative, which is the Preferred Alternative, would provide two 12 ft. through lanes, a 12 ft. continuous center left turn lane, a roundabout at the intersection of Tienken and Livernois and right-turn lanes or tapers as needed. This alternative would result in a road width of approximately 41 ft. The crest on Tienken Road between Winry Drive and Pine Street would be lowered by approximately 8 ft. The intersection of Tienken and Sheldon would receive minor rehabilitation. There would be no changes to the intersections of Tienken and Kings Cove/Oakbrook or Tienken and Rochester.

2.2.2.2 Cost The projected cost to acquire the 120 ft. ROW is estimated to be \$3,944,400. This alternative is expected to displace six residences and two businesses primarily due to proximity impacts involving excessively steep driveways. The projected construction cost is \$4,214,000. Total project cost is estimated to be \$8,158,400.

2.2.2.3 Advantages

- Improves safety and level of service with a roundabout at the Tienken and Livernois intersection.

- Improves safety by providing separate lane for left-turning traffic which removes turning vehicles from the travel lanes thereby reducing delay and rear-end crashes.
- Improves safety and sight distance visibility by cutting the hill crest to meet current AASHTO minimum sight distance requirements.
- Can accommodate the construction of additional right turn lanes or tapers where needed.
- Allows for construction of 8-ft. non-motorized paths on both sides of road within the ROW.
- Provides more gaps in the through traffic stream than the no-build alternative.
- Ties into intersection improvements recently made at Tienken and Kings Cove.
- Ties into intersection improvements recently made at Tienken and Rochester.
- Ties into Paint Creek bridge replacement.
- Can be constructed within the planned 120 ft ROW. Measures can be taken to minimize the number of ROW parcels needed and the amount of ROW required from some parcels.
- Provides sound, new pavement.
- Has significant public and local government support.

2.2.2.4 Disadvantages

- Provides fewer gaps in through traffic stream than the 5-lane alternative.
- Requires acquiring ROW which includes total parcel acquisitions and may result in residential relocations if the property owners elect to move.
- Has impacts on adjacent properties such as regrading yards, steeper driveway slopes, tree removal and removal of parking in the ROW.

2.2.3 Four-Lane Roadway with a Full Width Median

2.2.3.1 Work The four-lane boulevard would provide four 12 ft. through lanes with a median width of not less than 48 ft. The intersections of Tienken and Livernois and Tienken and Kings Cove/Oakbrook would have capacity improvements and the intersection of Tienken and Sheldon would receive minor rehabilitation. There would be no improvements to the intersection of Tienken and Rochester. The median would be transitioned to a zero width median to match the existing roadway geometry at the roundabout at Sheldon Road, at the signalized intersection at Rochester Road and west of Livernois Road. The crest on Tienken Road between Winry Drive and Pine Street would be lowered by approximately 8 ft. This alternative would result in a road width of 106 ft. To accommodate this cross-section and utilities, the road ROW would need to be increased to 170 ft.

2.2.3.2 Cost The projected cost to acquire the 170 ft. ROW is estimated to be \$11,411,000. This alternative is expected to displace 34 residences and five businesses because of ROW needs. The projected construction cost is \$6,983,000 with the assumption that the Paint Creek Bridge is not replaced. Total project cost is estimated to be \$18,394,000.

2.2.3.3 Advantages

- Provides better level of service through the design year for the entire Project Area.
- Improves safety and sight distance visibility by cutting the hill crest to meet current AASHTO minimum sight distance requirements.
- Boulevard width is based on turning radius requirement for WB-50 trucks. Narrower medians often resulted in significant off-tracking and rutting. Based on the space needed for the turnarounds the resulting minimum width has been established as 48 ft.
- Beautification potential.
- A boulevard improves safety by reducing the number of conflict points for turning traffic and access management and reduces accident frequency.

- Provides sound, new pavement.

2.2.3.4 Disadvantages

- Cannot be constructed within the planned 120 ft ROW, needs to be 170 ft. ROW. Therefore, would require acquiring additional ROW from nearly all parcels and would result in many residential and commercial relocations.
- Would require acquiring parkland from Paint Creek Trail Commission which is a Section 4(f) and 6(f) property.
- Requires reconstruction of Tienken and Kings Cove/Oakbrook intersection which was recently improved.
- Requires reconstruction of bridge over Paint Creek which was recently widened.
- Would adversely affect the character of the corridor with the removal of many homes and is not a context sensitive solution.

2.2.4 Five-Lane Roadway

2.2.4.1 Work The five-lane alternative would provide four 12 ft. through lanes with a 12 ft. continuous center left turn lane, a roundabout at the intersection of Tienken and Livernois and capacity improvements at the intersection of Tienken and Kings Cove/Oakbrook. This alternative would result in a road width of approximately 65 ft. The crest on Tienken Road between Winry Drive and Pine Street would be lowered by approximately 8 ft. The intersection of Tienken and Sheldon would receive minor rehabilitation. There would be no changes to the intersection Tienken and Rochester.

2.2.4.2 Cost The projected cost to acquire the 120 ft. ROW is estimated to be \$6,458,300. This alternative is expected to displace nine residences and four businesses primarily due to proximity impacts described in 2.2.4.4. The projected construction cost is \$5,500,300. The total estimated project cost is \$11,958,600.

2.2.4.3 Advantages

- Improves safety and level of service with a roundabout at the Tienken and Livernois intersection.
- Improves safety by providing separate lane for left-turning traffic which removes turning vehicles from the travel lanes thereby reducing delay and rear-end crashes.
- Improves safety and sight distance visibility by cutting the hill crest to meet current AASHTO minimum sight distance requirements.
- Provides better level of service through the design year for the entire project area.
- Can accommodate the construction of additional right turn lanes or tapers if needed.
- Allows for construction of 8-ft. non-motorized paths on both sides of road within the ROW.
- Provides more gaps in the through traffic stream than the no-build alternative or the 3-lane alternative.
- Ties into intersection improvements recently made at Tienken and Rochester.
- Ties into Paint Creek bridge replacement.
- Can be constructed within the planned 120 ft ROW.
- Provides sound, new pavement.

2.2.4.4 Disadvantages

- The wider footprint of a 5-lane road will result in more total parcel acquisitions and relocations of residential and business property owners.
- Has more proximity impacts on adjacent properties such as regrading yards, steeper driveway slopes, tree removal and removal of informal residential parking in the ROW.

- Requires reconstruction of Tienken and Kings Cove/Oakbrook intersection which was recently improved.
- There is significant public and local government opposition to this alternative.

2.2.5 Mass Transit Alternative

2.2.5.1 Work This alternative assumes that there is public transit service available within the city of Rochester Hills. The regional transit authority is the Suburban Mobility Authority for Regional Transportation (SMART), which provides both fixed route and demand responsive services in Oakland, Macomb and Wayne Counties. The cities of Rochester Hills and Rochester have elected to opt-out of transit service provided by SMART and there is no public fixed route service in the cities. Demand responsive transportation is available through the Older Persons Commission (OPC) for people 60 years or older or the disabled at any age. Eleven minibuses operate Monday through Saturday and for limited hours on Sunday to attend church services. Approximately 150 people ride the bus daily which results in about 300-400 trips per day. This service provides a critical need but is not viable as an alternative to private automobiles for the majority of residents.

2.2.5.2 Advantages

- Transit ridership reduces the number of individual vehicles on the road and can reduce congestion.
- Transit ridership can have a positive effect on air quality.
- Transit service provides mobility to people of all ages.
- Does not require any new ROW and will not result in any residential or business displacements.

2.2.5.3 Disadvantages

- Would require significant capital and operating funding to provide bus service on a schedule that would reduce volume of vehicular traffic in Project Area.
- Does not improve safety or correct crash patterns.
- Would increase the wear and tear on the road pavement and remove need to reconstruct sections of Tienken Road.
- Does not have public support.

2.2.6 Preferred Alternative Rationale

The purpose and need for the improvement of Tienken Road from Livernois Road to Sheldon Road is based upon the lack of capacity for future traffic volumes, the safety and sight visibility concerns, poor condition of the roadway and community input. There are two alternatives that are feasible, meaning that they can be constructed within the currently available budget, are consistent with the planned ROW for the corridor and will to a greater or lesser extent, achieve the purpose and needs identified.

In order to achieve the purpose and need for the project it is necessary to make significant improvements to the intersection at Livernois Road. The ability of major intersections to safely and conveniently accommodate traffic demand is a critical component in meeting transportation goals. Construction of a roundabout at Tienken and Livernois allows for more efficient flow of traffic on the links. Given the relatively few side streets between Livernois and Kings Cove, there are fewer conflicting turning movements and a lower need for gaps to enter and leave the roadway, which results in few conflicts in this link. In summary, the capacity of the links connecting the intersections becomes less critical. Safe and efficient access to adjacent properties and side streets between major intersections is also critical and must be included in this project.

The two feasible alternatives are the 5-lane cross section and the 3-lane cross section. The 5-lane alternative provides better capacity between major intersections as well as significant improvements in the safety of access to and from adjacent properties and side streets. The 3-lane alternative provides adequate capacity on the links between intersections and improves access and safety but to a lesser extent than the 5-lane alternative.

Alternative cross sections and a combination of these cross sections in the corridor were the subject of meetings with major stakeholders, elected officials and were made available for public review and comment. The 3-lane alternative was strongly supported by the public and local elected officials. The primary reason given was the belief that a narrower roadway that provides for some reduction in congestion and improved safety by providing a center left turn lane while minimizing proximity impacts to adjacent properties and reducing the visual impacts of a wide roadway was most consistent with community goals for the corridor.

The 3-lane alternative is the Preferred Alternative based upon a balancing of the need to achieve an overall improvement to performance of the roadway and to provide flexibility in the roadway design that reflects the character of the area.

2.3 DETAILED DESCRIPTION OF PREFERRED ALTERNATIVE

The improvements included in the Preferred Alternative will be designed using a 50 mile per hour design speed in accordance with AASHTO *Policy on Geometric Design of Highway and Streets, 2004, 5th Edition*, MDOT's 2003 Standard Specifications for Construction and RCOC design guidelines, which include the AASHTO *Policy on Geometric Design of Highway and Streets, 1990 Edition* for designing crest-type vertical curves.

In Chapter 6, Figure 1 provides a project location map and Figure 2 shows the Preferred Alternative alignment. A final alternative will be selected following a formal public hearing and comment period.

2.3.1 Intersections

The Preferred Alternative would include the reconstruction of the intersection of Tienken and Livernois. The traditional signalized intersection will be replaced with a roundabout designed to accommodate the heavy volumes of turning traffic. The Tienken and Kings Cove/Oakbrook intersection will remain unchanged as it was recently improved and signalized. The Tienken and Rochester intersection will also remain unchanged as it was reconstructed and widened in 2007. The roundabout at Tienken and Sheldon operates efficiently and will receive only minor rehabilitation. Right turn lanes and/or tapers on Tienken will be provided at the unsignalized intersections of Winry, Pine, Bedford Square and Courtland as there are none currently.

2.3.2 Culverts

New and replacement culverts would be sized to accommodate the runoff from a 10 year storm event and would convey flows resulting from a 100-year storm event without harmful interference to flood elevations. Hydraulic and hydrological studies will be undertaken during the design phase of the project to determine the proper culvert sizes. Permits from the appropriate agencies will be secured during the design phase.

2.3.3 Stormwater System

The Preferred Alternative will have curb and gutters and an enclosed storm water system designed to accommodate a 10 year storm event. The storm water system will protect the natural waterways by managing the flow of stormwater from the impervious surface. RCOC met with the Michigan Department of Environmental Quality (MDEQ), Michigan Department of Natural Resources (MDNR) and the Clinton River Watershed Council to discuss issues of concern in order to develop the Best Management Practices (BMP) to clean stormwater prior to being released into the Paint Creek. The BMP will be detailed during design phase of the project.

2.3.4 Non-Motorized Facilities

Currently, pedestrian facilities exist on Tienken Road in the Project Area with a few exceptions but the location varies from the north side of the road to the south side of the road. The project will include replacement of existing paths and construction of new paths consistent with RCOC and the city of Rochester Hills standards and will be compliant with the Americans with Disabilities Act of 1990. An examination of the existing Paint Creek bridge plans indicates that a path on the north side of Tienken Road can be accommodated on the bridge adjacent to the travel lanes so there would be continuous paths on both sides of the road. The final path alignment and width will be detailed during the design phase of the project.

2.3.5 Maintenance of Traffic During Construction

During the design of the Tienken Road Reconstruction, RCOC would meet with the key stakeholders including the municipalities, schools, homeowner groups, and emergency services, in order to discuss construction phasing and methods of maintaining traffic during construction. At this time it is anticipated that short term closures for through traffic will be necessary.

2.3.6 Traffic Operations and Safety

2.3.6.1 Tienken and Livernois Intersection - The Tienken Road Traffic Analysis study analyzed two different intersection treatments and conducted a capacity analysis of each for future (2030) traffic volumes. The first was a signalized intersection with two eastbound and westbound through lanes and dual westbound turn lanes. The second was a roundabout with the following lane configuration:

- Northbound Livernois Road – Three-lane entry with one left, one shared left/through/right and one right
- Southbound Livernois Road – Two-lane entry with one shared left/through and one shared through/right
- Eastbound Tienken Road – Two-lane entry with one shared left/through and one shared through/right
- Westbound Tienken Road – Two-lane entry with one shared left/through and one shared through/right

The analysis showed that based on an 85 percent confidence level, the roundabout would provide a LOS B during the AM peak hour with an average intersection delay of 10.2 seconds and a LOS A during the PM peak hour with an average intersection delay of 7.9 seconds. This is a significantly better level-of-service than could be achieved with a signalized intersection. The complete analysis is provided in the Tienken Road Traffic Analysis report.

Safety benefits of roundabout have been documented by studies done by the Insurance Institute for Highway Safety. Overall vehicular accidents declined 39%, accidents resulting in injuries fell 76% and crashes resulting in fatalities or serious injuries were reduced by over 90%. RCOC has found that roundabouts virtually eliminate head-on and T-type collisions which often involve serious injuries.

2.3.6.2 Link Improvements Between Kings Cove and Rochester Road - The Preferred Alternative will cut the hill between Winry and Pine which will improve sight distance and safety in this segment of the project area.

2.3.7 Sight Distance

The Preferred Alternative includes a hill cut of approximately eight (8) feet at the centerline of the road. The proposed alignment includes a 2.2% slope up and a 4.6% down slope for eastbound travel. The proposed vertical alignment is in accordance with RCOC guidelines for vertical alignments and sight distances. The proposed cut at this location affects several properties, primarily at the highest point of the hill between Pine and Winry Streets. The existing driveways in this area currently have relatively steep driveways and while the Preferred Alternative fits within the ROW, as a result of the hill cut, the slopes of the driveways would increase beyond an acceptable level. Due to unacceptable driveway slopes, six residences and two businesses may be displaced. If an alternative with a wider cross section, such as the 5-lane and 4-lane boulevard, were proposed, a greater number of properties would be displaced as these widths cause more driveway slopes to increase beyond an acceptable slope.

CHAPTER 3 – ENVIRONMENTAL IMPACTS

3.1 TOPOGRAPHY & SOILS

Information regarding soils was retrieved from the National Cooperative Soil Survey taken by the Natural Resources Conservation Service under the US Department of Agriculture. Looking at the area within 300 feet of the Tienken Road centerline, the percentage of soils in the immediate vicinity broke down as follows.

Table 3-1: Soil Survey

Soil Classification	Soil Symbol	Percent of Area of Investigation	Percent of Organic Matter
Urban Land	59	32.5%	
Tedrow loamy sand, 0 to 3% slopes	53A	10.9%	1-3%
Urban Land – Spinks complex, 8 to 15% slope	62C	10.0%	2-4%
Riddles sandy loam, 6 to 12% slopes	44C	8.0%	.5-2%
Wasepi sandy loam, 0 to 3% slopes	17A	7.7%	2-4%
Cohoctah fine sandy loam	49	5.1%	1-4%
Riddles sandy loam, 1 to 6% slopes	44B	3.6%	.5-2%
Houghton and Adrian mucks	27	3.4%	55-75%
Urban land-Marlette complex, 0 to 8% slopes	60B	2.9%	1-3%
Brookston and Colwood loams	12	2.6%	3-8%
Spinks loamy sand, 0 to 6% slopes	15B	2.5%	2-4%
Marlette sandy loam, 1 to 6% slopes	10B	2.4%	1-3%
Oshtemo-Boyer loamy sands, 6 to 12% slopes	13C	2.2%	.5-3%
Spinks loamy sand, 6 to 12% slopes	15C	1.9%	2-4%
Urban land-Spinks complex, 0 to 8% slopes	62B	1.5%	2-4%
Riddles sandy loam, 12 to 18% slope	44D	1.1%	.5-2%
Others (4 types)		1.7%	
Total		100.00%	

The soils in the project area are not expected to present design challenges except in very localized areas.

3.2 LAND USE

The land use adjacent to the Tienken Road ROW is primarily residential, both single family and multiple family, with some commercial and industrial concentrations around Rochester Road. There is a private golf course and popular recreational trail at Livernois Road. The Vacant Land Map published by the city of Rochester shows large tracts of vacant land remain in Sections 1 and 2 of the city. (www.rochesterhills.org) A large parcel on the northeast corner of Tienken and Rochester Roads is an older industrial site that is underutilized and is a redevelopment opportunity.

The adopted Master Land Use Plan (McKenna Associates, City of Rochester Hills, Master Land Use Plan, 2007) confirms that there are potential development parcels and that the extension of municipal

water and sewer into Section 1 of the city will attract development. Improvements to Tienken Road are consistent with the Master Land Use Plan.

3.3 FARMLAND

There are no parcels within the project area that are zoned agriculture or actively farmed. Therefore, coordination with the National Resources Conservation Service was not performed because there was no prime or unique farmland within the project area.

3.4 POPULATION DEMOGRAPHICS

The city of Rochester Hills experienced a population boom between 1970 and 1990. The population trends for 2008 and 2030 were obtained from the Southeast Michigan Council of Governments (SEMCOG) and the projections indicate that Rochester Hills's population growth is stabilizing and will increase by no more than 4,000 through the year 2030.

Table 3-2: Population Trends

Year	Rochester Hills	Percent Growth
1970	24,513	
1980	40,776	+66.3%
1990	61,766	+51.5%
2000	68,825	+11.4%
2008	68,244	-0.5%
2030	76,286	+11.4%

Population demographics were obtained from the 2000 US Census. The profile for Rochester Hills was compared to Oakland County and the State of Michigan to determine if there were any significant differences. Table 3-3 shows that Rochester Hills has fewer older persons and blacks, more people with a higher education level, more home owners, more foreign language speakers and less people below the poverty level as compared to the County and the State.

Table 3-3: 2000 US Census Demographics Unique to Rochester Hills

Characteristic	Rochester Hills	Oakland County	State of Michigan
65 years of age or older	10.6%	11.3%	12.3%
Black or African American	2.4%	10.1%	14.2%
Asian	6.8%	4.1%	1.8%
Bachelor's degree or higher	47.3%	38.2%	21.8%
Speak a foreign language at home	14.1%	12.7%	8.4%
Individuals below the poverty level	3.4%	5.5%	10.5%

A more detailed analysis of demographics is provided in subsection 3.8 Environmental Justice.

3.5 RIGHT OF WAY (ROW) ACQUISITIONS AND RELOCATIONS

3.5.1 ROW Plan

RCOC designates Tienken Road as a County Primary with a planned ROW of 120 ft. (RCOC, Master Right-of-Way Plan for County Roads, 1994) which is consistent with the city of Rochester Hills Master Thoroughfare Plan Update (The Corradino Group of Michigan, Inc., 2008). RCOC has established a standard that County Primary roads need a ROW of 120 ft. to accommodate a 3-lane road with right-turn lanes or flares or a 5-lane road, shoulders, drainage, utilities, grading and a non-motorized path on both sides of the road.

Preliminary design of the Preferred Alternative shows that ROW may be needed from 25 parcels. This is less than the 31 parcels that potentially could have been impacted by the project. The ROW by parcel expected to be acquired by fee purchase or permanent easement is shown in Figure 4 in Chapter 6. The Preferred Alternative includes measures to minimize the amount of ROW required east of Rochester Road. This section of the Project Area does not need right turn lanes so there is room to shift the road alignment slightly to the north to avoid taking seven houses on the south side around Courtland Street. These homes are older and were built closer to the edge of road than current zoning set-backs allow. The RCOC was able to reduce the ROW needed from 27 ft. to 17 ft. in front of these houses. The preliminary design also does not require ROW from the last six parcels on the south side of Tienken Road before Sheldon Road. The Preferred Alternative will merge with the current road alignment just east of Lakeview Road and since ROW is not needed in this segment, it will not be acquired.

The Preferred Alternative is expected to displace six residences and two businesses - a veterinary clinic and a medical offices building. . In addition, one vacant parcel will be acquired. The reasons for the total takes are ROW needs and proximity impacts involving excessively steep driveway grades. Based on the Conceptual Relocation Plan (see Appendix C), the local real estate market indicates that there are a sufficient number of replacement sites for both businesses if they elect to move. These businesses will be notified by mail of the public hearing where they will have an opportunity to comment on the impacts of the displacement on their business and their clients. The procedures RCOC will follow to acquire the ROW and total takes is described below.

3.5.2 Right-Of-Way Acquisition and Relocation

3.5.2.1 Compliance with State and Federal Laws – Acquisition and relocation assistance and advisory services will be provided by the Road Commission for Oakland County (RCOC) in accordance with Act 31, Michigan P.A. 1970; Act 227, Michigan P.A. 1972; Act 149, Michigan P.A. 1911, as amended; Act 87, Michigan P.A. 1980, as amended; and the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The RCOC will inform individuals, businesses and non-profit organizations of the impact, if any, of the project on their property. Every effort will be made through relocation assistance to lessen the impact when it occurs.

3.5.2.2 Residential – The RCOC is required by statute to determine the availability of comparable, decent, safe and sanitary housing for eligible displaced individuals. The RCOC has specific programs that will implement the statutory and constitutional requirements of property acquisition and relocation of eligible displacees. Appropriate measures will be taken to ensure that all eligible displaced individuals are advised of the rights, benefits, and courses of action available to them.

- 3.5.2.3 Business, Farms or Non-Profit Organizations** – The RCOC is required by statute to offer relocation assistance to displaced businesses, farms and non-profit organizations. The RCOC has specific programs that will implement the statutory and constitutional requirements of property acquisition and relocation of eligible displacees. Appropriate measures will be taken to ensure that all eligible displaced businesses, farms or non-profit organizations are advised of the rights, benefits, and courses of action available to them. Displaced businesses and organizations will be encouraged to relocate within the same community.
- 3.5.2.4 Purchasing Property** – The RCOC will pay just compensation for fee purchase or easement use of property required for transportation purposes. “Just compensation” as defined by the courts is the payment of “fair market value” for the property rights acquired plus allowable damages to any remaining property. “Fair market value” is defined as the highest price estimated, in terms of money, the property would bring if offered for sale on the open market by a willing seller, with a reasonable time allowed to find a purchaser, buying with the knowledge of all the uses to which it is adapted and for which it is capable of being used.
- 3.5.2.5 Relocation Information** – A booklet entitled “Your Rights and Benefits” detailing the relocation assistance program can be obtained from the Michigan Department of Transportation, Real Estate Division, P.O. Box 30050, Lansing, Michigan 48909 or phone (517) 373-2200.
- 3.5.2.6 Property Acquisition Information** – A booklet entitled “Public Roads & Private Property” detailing the purchase of private property can be obtained from the Michigan Department of Transportation, Real Estate Division, P.O. Box 30050, Lansing, Michigan 48909 or phone (517) 373-2200.
- 3.5.2.7 Conceptual Stage Relocation Plan** – The Conceptual Stage Relocation Plan for this project is attached in **Appendix C**.

3.6 UTILITY IMPACTS

Overhead utilities on the north side of Tienken Road will have to be relocated under all alternative designs except the No-Build. These overhead lines belong to Detroit Edison and are shared with other carriers. Underground utilities may also be affected by the road reconstruction including AT&T fiber optic cables, Consumers Energy, Detroit Edison and watermains for both the Cities of Rochester and Rochester Hills. The impact to these utilities will be evaluated in more detail in the design phase.

The responsibility for costs associated with private utilities will be determined based on the existing property rights. Utilities that are currently in the road ROW are required to relocate at their cost since they are in the ROW by permit. Other utilities are located in private easements where RCOC would need to acquire ROW. These relocation costs are paid by the road project. Tienken Road has a mix of both situations and costs will be determined based on a detailed review of the property rights and recorded documents during the design phase.

3.7 SOCIAL IMPACTS

Social impacts are associated with the relocation of residences or businesses; altering surface transportation patterns; dividing or disrupting established communities; of disrupting orderly, planned

development. The Preferred Alternative will improve access to neighborhoods, schools and businesses and improve the ability of public services to respond to emergencies.

3.8 ENVIRONMENTAL JUSTICE

Executive Order 12898 was signed in 1994 to identify, address and avoid disproportionately high and adverse human health or environmental effects on minority and low-income populations. Subsequently, the USDOT issued a similar order specifically defining the five protected populations that must be included in environmental justice (EJ) analysis. They are low-income, African-American, Hispanic, Asian-American and Native American.

SEMCOG defines significant concentrations for EJ purposes as more than 27 percent of its residents are from the designated racial or ethnic groups, or more than 10 percent of its households live below the poverty level based on 2000 Census data.

According to the 2000 US Census, the Tienken Road project area is covered by three different census tracts. On the north side is Census Tracts 1922 and 1920 and on the south side is Census Tracts 1924 and 1920. Most of the environmental justice data provided by the 2000 US Census has been tabulated in block groups, which are subsets of census tracts. There are five block groups of interest for this environmental review and they cover a geographic area greater than the Tienken Road project area.

Comparing the block group data for EJ protected populations to the SEMCOG definition, the project area does not meet the criteria for EJ concentrations. Comparing the block group data for EJ protected populations to the overall percentage of EJ populations in the city of Rochester Hills, the 2000 US Census data does show a concentration of low-income families and individuals living in the project area. See Table 3-4. The economic census data suggests a concentration of families and especially individuals who live below the poverty level in Block Group 1 of Census Tract 1920. This is the geographic area east of Orion Road and Rochester Road and north of the municipal boundary of the city of Rochester. The US Census does not provide block data (a subset of block groups) for this theme therefore the concentrations cannot be pinpointed more precisely. However, the Preferred Alternative will not relocate any persons in Census Tract 1920. Therefore, based on the demographic analysis, it does not appear that any EJ protected populations will be adversely or disproportionately affected by this project.

Table 3-4: 2000 Census Data by Census Tract (CT) and Block Group (BG)

Characteristic	Rochester Hills	CT 1922 BG 1	CT 1924 BG 4	CT 1920 BG 1	CT 1920 BG 2	CT 1920 BG 3
Black or African American	2.4%	0.8%	1.9%	1.5%	1.4%	1.0%
Asian American	6.8%	5.7%	0.5%	4.2%	1.4%	1.7%
Hispanic	2.3%	1.4%	1.6%	1.8%	0.8%	1.3%
Families below Poverty Level	2.3%	1.3%	0%	3.0%	0%	0.7%
Individuals below Poverty Level	3.4%	1.7%	1.7%	7.0%	3.9%	2.8%

While no specific environmental justice issues associated with the Preferred Alternative have been identified, a continuing effort will be made to identify highly adverse impacts to minority or low-income populations during the public hearing and the property acquisition phase. In the event highly adverse impacts are identified, every effort will be made to actively involve these populations in the project development process, to avoid or mitigate the impacts and to take appropriate action in accordance with the state and federal ROW acquisition laws (see subsection 3.5.2, Right-of-Way Acquisition and Relocation).

3.9 AIR QUALITY

The Clean Air Act Amendments of 1990 (CAAA) and the Final Conformity Rule (40 CFR Parts 51 and 93) direct the Environmental Protection Agency to implement environmental policies and regulations that will ensure acceptable levels of air quality. The CAAA and the Final Conformity Rule affect the proposed project on Tienken Road. As a part of the EA, an Air Quality Analysis Report was prepared in accordance with the provisions of 40 CFR Parts 51 and 93 and is available for review.

3.9.1 Attainment Status of the Study Area

The Tienken Road corridor is located within the Detroit urbanized area. Air quality conformity analysis and planning are the responsibility of the Southeast Michigan Council of Governments (SEMCOG). The Detroit urbanized area is currently designated attainment-maintenance for carbon monoxide (CO) and eight-hour ozone and nonattainment for fine particulate matter PM_{2.5}.

3.9.2 Mesoscale Air Quality (Ozone) Analysis

The regional or mesoscale analysis of ozone determines a project's overall impact on regional air quality levels. The air quality conformity analysis performed by the SEMCOG for the Direction 2035 Regional Transportation Plan (RTP) was conducted assuming that Tienken Road will be widened from 2 lanes to 5 lanes. Since the proposed road geometry of the Preferred Alternative does not match this assumption, RCOC has submitted the revised project description to SEMCOG as part of a formal amendment to the Directions 2035 RTP and the current TIP. SEMCOG will reanalyze mesoscale air quality and the results of this analysis will determine if an area conforms with regulations set forth in the Final Conformity Rule. RCOC expects to have the results of the air quality analysis by May 2010 for inclusion in the EA.

3.9.3 Microscale Air Quality Analysis

Carbon monoxide (CO) is considered a site-specific pollutant that is usually of concern on a local or microscale basis. Automobiles and trucks are major sources of CO emissions, and the highest CO concentrations are generally found immediately adjacent to roadways. To assess the effects of this project on local CO levels, a microscale dispersion analysis was conducted to determine if the Preferred Alternative would result in violations of the National Ambient Air Quality Standards (NAAQS) for CO. NAAQS for CO concentrations are 35 parts per million (ppm) for 1-hour exposure and 9 ppm for 8-hour exposure.

MOBILE6 was used to develop the composite emission rates to be used later in the intersection model, CAL3QHC. The CO concentrations for the Existing, 2030 No-Build Alternative, and 2030 Preferred Alternative were less than 5 ppm which is well below the NAAQS. It is unlikely that these concentrations will ever be experienced because worse case scenarios for wind and atmospheric

conditions were built into the analysis and modeling. The Tienken Road Air Quality Analysis report is available for review.

3.9.4 Particulate Matter Status

Particulate matter (PM_{2.5}) is a complex mixture of extremely small particles and liquid droplets in the air. When breathed in, these particles can reach the deepest regions of the lungs. Exposure to particle pollution is linked to a variety of significant health problems, ranging from aggravated asthma to premature death in people with heart and lung disease. Motor vehicles, particularly diesel trucks, are a major source of PM_{2.5}.

This project is not expected to significantly increase the number of diesel vehicles on Tienken Road and thus would not be considered a project of air quality concern and does not require a hot-spot analysis for conformity to the NAAQS for PM_{2.5}.

3.10 NOISE ANALYSIS

A Traffic Noise Analysis report was prepared in accordance with the provisions of 23 CFR Section 772 of the Federal Code of Regulations and is available for review. The study is in conformance with legislation requiring noise studies for federally funded projects. According to 23 CFR Section 772, Type I projects are either the construction of new highways or a substantial change in an existing highway, either major realignment or an increase in the number of through lanes. The Preferred Alternative is considered a Type I project. Type I projects require a noise analysis to determine if the project will cause significant noise level increases and provide mitigation strategies to be included in design.

A Traffic Noise Analysis was prepared and is available for review. The basic goals of the noise study for a highway project are to minimize the adverse noise impacts on the community and, where necessary and appropriate, to investigate feasible and reasonable measures to mitigate noise impacts. The study will provide the following information:

- Calculation of existing (2008) noise levels
- Estimation of future (2030) noise levels for the No Build and the Preferred Alternative scenarios with 2030 traffic volumes
- Mitigation strategies for detected noise impacts

The impact on noise levels related to highway projects is measured in decibels (dB) on the “A” weighted scale and is expressed as equivalent sound levels (Leq). The Federal Highway Administration (FHWA) has published noise abatement criteria (NAC) for sound levels for various types of land uses. The following table details FHWA’s NAC.

Table 3-5: FHWA Noise Abatement Criteria by Activity Category

Noise Abatement Criteria (NAC)¹			
Hourly A-Weighted Sound Level - decibels (dBA)*			
Activity Category	Leq(h)	L₁₀(h)	Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Lands of which serenity and quiet are of extraordinary significance, serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	--	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.
* Either L ₁₀ (h) or Leq(h), but not both, may be used on a project.			

¹ Copied from FHWA publication *Highway Traffic Noise Analysis and Abatement Policy and Guidance* by the U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch, Washington, D.C., June 1995.

Based on the Federal criteria, MDOT defines a noise impact to be: “Where noise levels are one dBA below or greater than the federal noise abatement criteria, or are expected to increase 10 dBA above existing noise levels for existing conditions, as measured with a sound level meter.” The MDOT guideline level for residential and community (parks) uses is 66 dBA Leq, while for commercial land use, the level is 71 dBA Leq.

3.10.1 Noise Receivers

FHWA Traffic Noise Model (TNM) Software, Version 2.5 was used to calculate the noise levels during the PM peak hour for the three scenarios. The project area is predominantly residential with some recreational, commercial and industrial land uses.

To obtain adequate coverage of the project area, 104 receiver sites were identified at locations adjacent to structures with frontage on Tienken Road for the noise study. Of these 104 receiver sites, representative locations which are estimated to experience the greatest increase in noise levels were selected for inclusion here in the EA. Table 3-6 shows the results of the analyses conducted with the TNM software on 11 sites. The shaded cells indicate that the noise levels exceed MDOT NAC and noise abatement measures need to be considered.

Table 3-6: Comparison of Noise Level Analyses to Noise Abatement Criteria (NAC)

Receiver Site #	Land Use & Address	MDOT NAC	Existing	Future No Build	Future Build
B2-3	Recreation – Trail N side	66	65.7	67.3	67.6
B2-4	Recreation – Trail S side	66	65.6	67.2	67.0
R1-13	Residential – 1090 Hackberry	66	62.9	64.4	60.3
R2-10	Residential – Oakbrook Condo	66	62.8	64.6	64.5
R3-24	Residential – 231 W Tienken	66	60.6	61.9	63.0
R5-2	Residential – 192 E Tienken	66	63.8	65.1	65.3
R5-6	Residential – 250 E Tienken	66	64.6	65.8	66.5
R5-14	Residential – 1087 Lakeview	66	64.5	65.8	66.5
C1-4	Commercial – 870 W Tienken	71	64.5	66.0	64.8
C4-4	Commercial – 70 W Tienken	71	66.8	68.0	67.5
C4-11	Commercial – 6875 N Rochester	71	65.4	66.6	66.5

3.10.2 Existing Conditions

For existing conditions, there were no sites that exceeded the MDOT NAC.

3.10.3 Future No Build

To determine potential impacts to noise if no capacity improvements are made, the no build scenario was analyzed. In the future no build scenario, noise levels increase over existing noise levels from 1.2 to 1.8 dBA. In this scenario, two recreational receiver sites exceed the MDOT NAC of 66 dBA. These two receiver sites are on the Paint Creek Trail crossings on the north and south sides of Tienken Road at the 120 ft. ROW line. There were no residential or commercial receiver sites that exceeded the MDOT NAC for the future no build scenario.

3.10.4 Preferred Alternative

To determine the potential impacts to noise if the Preferred Alternative were constructed, the future build scenario was analyzed. In the future build scenario, noise levels increased over existing noise levels from 0.1 to 3.6 dBA. In this scenario, two recreational sites and two residential sites exceed the MDOT NAC of 66 dBA. The recreational receiver sites are on the Paint Creek Trail and the two residential sites are single family homes east of Rochester Road. There were no commercial receiver sites that exceeded the MDOT NAC for the future build scenario.

3.10.5 Noise Abatement Measures

Noise abatement measures should be considered for all impacted locations. Only mitigation measures that are reasonable and feasible shall be recommended for incorporation into the design of the highway project. For sites B2-3 and B2-4 located at the Paint Creek Trail, it was not reasonable or feasible to provide a noise barrier as it would block the trail from the road crossing. Furthermore, the trail is active recreation as it is used by walkers, runners and even horse riders in places. Since a wall is not practical, nor is a 5dBA reduction in noise feasible, mitigation is not provided as part of this project.

For site R5-6, the affected residence is an older home facing W. Tienken, located on a 65 ft. wide lot and close to the existing road. Access to the residence is provided by a driveway off of W. Tienken Road. The same is true for the adjacent residences. A noise barrier would need gaps in order to provide access to the many residential driveways. Experience indicates that noise barriers are not effective when they have gaps. Since a wall is not practical, nor is a 5dBA reduction in noise feasible, mitigation is not provided as part of this project.

For site R5-14, the affected residence is in a newer subdivision and faces Lakeview Drive. A noise barrier along the side of the residence at the right-of-way line was evaluated. Several different designs of barrier walls were evaluated using the TNM software. None of the options satisfied MDOT's requirement that the barrier provide a reduction of at least 5dBA and stay below MDOT's maximum cost per residence of \$39,137. Therefore, since a wall is not reasonable in cost, noise mitigation is not provided as part of this project.

3.11 WATER RESOURCES

3.11.1 Surface Water

The project is located within the Clinton River Watershed, which has seven subwatersheds. The project is specifically in the Stony/Paint Creek Subwatersheds, which are both high-quality coldwater tributaries. The Clinton River Watershed Council (CRWC) received a grant from the Michigan Department of Environmental Quality in June 2000 to develop a management plan for the Stony Creek watershed. This plan was completed in December 2003. CRWC received a second grant in 2004 to develop a plan for Paint Creek and update the Stony Creek plan. *This plan creates a vision for the long-term protection of Stony/Paint Creeks as unique natural, recreational, and cultural resources for the communities through which they flow.* (CRWC, Stony/Paint Creek Subwatershed Management Plan, p. 8). The plan does not place any special conditions or constraints on the project.

A comprehensive assessment of the Paint Creek indicated water quality impacts resulting from erosion, sedimentation, and increased inputs of storm water pollution, as well as water quantity impacts resulting from loss of wetlands, woodlands, and riparian vegetation and increased impervious surfaces. (CRWC, Stony/Paint Creek Subwatershed Management Plan, p. 9) These concerns will be addressed in the design, construction and maintenance of the project through the use of Best Management Practices to reduce soil erosion and sedimentation and minimize inputs of storm water pollutants and salt applications. A preliminary examination of the existing Paint Creek bridge plans indicates that a path on the north side of Tienken Road can be accommodated on the bridge adjacent to the travel lanes so there would not be a need to construct a separate bridge structure. Therefore, impacts to the Paint Creek are expected to be minimum.

3.11.2 Groundwater

Potential impacts to the groundwater resources (quantity and quality) are expected to be minimal. Soil borings have not been performed but Soil Conservation Service Soil Surveys indicate a mixture of urban land and loamy sand with some localized areas of muck and clay. The runoff from the reconstructed roadway and right of way will be directed into new and existing collection systems. These systems will include BMP measures where practical.

3.11.3 Floodplains

Floodplains are defined by the National Flood Insurance Program Executive Order 11988, Floodplain Management, as "the lowland and relatively flat areas adjoining inland and coastal waters including

flood-prone areas of off-shore islands, including at a minimum, that area subject to a one percent of greater chance of flooding in any given year”.

The current Flood Insurance Rate Maps were reviewed to determine if any mapped floodplains lay within the project limits. The Preferred Alternative intercepts the Paint Creek floodplain, which is mapped and regulated. Any fill in the floodplain is subject to the provision of the State’s Floodplain Regulatory Authority found in Part 31 of the Natural Resources & Environmental Protection Act (NREPA), PA 451 of 1994, as amended. However, the section of Tienken Road which crosses Paint Creek and the floodplains was widened and replaced in 2007. The Preferred Alternative will tie into this new structure, therefore, minimal impact on the existing creek or floodplain is expected.

3.12 WETLANDS

3.12.1 Existing Conditions

Michigan’s wetlands are currently regulated under the jurisdiction of Part 303 of Michigan’s NREPA (PA 451 of 1994, as amended). Unavoidable impacts to wetlands within the project area are subject to the requirements of PA 451, Section 404 of the Clean Water Act, and Executive Order 11990, Protection of Wetlands. The Executive Order requires avoidance of direct and indirect impacts to wetlands caused by construction activities that are federally undertaken, financed, assisted or approved. Where unavoidable impacts are present, an evaluation and mitigation for the impacts must be performed, regardless of size or regulatory status.

The Michigan Department of Environmental Quality (MDEQ) regulates wetlands that are five acres or greater, and/or wetlands that are connected to or within 500 feet of an inland lake, pond, river, drain or stream (i.e. watercourses). In addition, under the Code of Ordinances, *Chapter 126, Natural Resources, Article IV. Wetland and Watercourse Protection*, the city of Rochester Hills regulates wetlands greater than two acres in size or those that are deemed “indispensable” to the community.

Wetlands within and adjacent to the project area were delineated by Niswander Environmental in May 2009. Their investigation revealed the presence of six wetlands and one watercourse (Paint Creek) within the project corridor. (Bridgland & Niswander, Niswander Environmental, Letter dated 05/2009). Based on this delineation and the Preferred Alternative, no fill within a wetland is anticipated.

3.12.2 MDEQ Issues

Any proposed work in regulated wetlands will require a wetland construction permit from the MDEQ including the drainage outlet improvements. During the design phase the proposed storm water collection system will require MDEQ permitting including mitigation measures for the proposed outlets and for construction in the wetlands.

3.12.3 Minimization

Efforts will be made to minimize wetland impacts caused by the proposed storm water collection system. After a preliminary meeting with the MDEQ representatives, the primary concern will be the direct outlet of water into the wetlands adjacent to the Paint Creek. This direct outlet condition is not desirable as it typically includes a shorter time of concentration and larger peak flow. Efforts will be made to promote overland flow as opposed to a point discharge. Also, adding new outlets and continuing to use old ones is often preferred to merely increasing the size of a single existing outlet.

Other BMP measures will be considered during the design phase that will help attenuate flows by increasing the time of concentration (slowing it down) and by dispersing it via overland flow or by using multiple outlets. This longer time of concentration and overland flow will reduce the peak flow rates and also promote settling of solids and other pollutants. Additional measures that will be considered are storm water treatment units (below ground) and storage options.

3.12.4 Mitigation Plans

Mitigation plans will be developed during the design phase in concert with the storm water collection system and through pre-permit application meetings with the MDEQ. In addition, other measures required as part of the formal approved permit will be included wherever practical.

3.13 THREATENED AND ENDANGERED SPECIES

Threatened and endangered species include those that have special designations under state or Federal regulations, including threatened, endangered and special concern or candidate species proposed for listing under these categories. Early coordination was requested from the Michigan Department of Natural Resources (MDNR) and an environmental review requested. The MDNR's records do not indicate the presence of any species listed as endangered or threatened (Sargent, MDNR, letter dated 09/2008).

Based on information from the U.S. Fish & Wildlife Service (USFWS), Oakland County is within the breeding range of the endangered Indiana bat, (*Myotis sodalis*). Therefore, RCOC environmental staff conducted a review of the preliminary design plans and a field review of the project area to look for suitable habitat. Tienken Road is a heavily traveled corridor and the land use is predominately residential development. Overall, the majority of the land along this corridor has been disturbed as a result of utility work, driveways, landscaping, lawns and ditches. The RCOC has determined that the trees proposed for removal are not suitable habitat for the Indiana bat. It is RCOC's conclusion that this project will have "no effect" on the Indiana bat or its critical habitat, or on any other threatened and endangered species. Therefore, further coordination with the USFWS is not required.

3.14 VEGETATION AND WILDLIFE

Potential impacts to the existing vegetation are expected to be minimal and temporary. All vegetated areas disturbed during construction will be restored with planting and seeding with Michigan Genotype Species. The restoration contract will include maintenance and guarantee provisions for plants and seeding based on standard MDOT specifications.

3.15 SECTION 4(F) RESOURCES

Section 4(f) of the 1966 Department of Transportation Act specifies that publicly owned land, such as a park, recreation area or wildlife refuge, and historic sites of national or state significance, may not be used for transportation projects unless there is no prudent or feasible alternative to using that land. If there are no prudent or feasible alternatives, the proposed project must include all possible planning to minimize harm to Section 4(f) properties from the use.

3.15.1 Wildlife and Wildfowl Refuges

There are no wildlife or wildfowl refuges located within the project area. Implementation of the Preferred Alternative will have no impact on wildlife or wildfowl refuges.

3.15.2 Public Parks and Recreation Areas

The Tienken Road corridor is crossed by the Paint Creek Trail which is owned and operated by the Paint Creek Trailways Commission. The recreation trail runs on an abandoned railroad right-of-way and is very popular with pedestrians and other non-motorized users. A 120 ft. road ROW has already been dedicated to the RCOC and the Preferred Alternative will not require any additional easements or grading permits. The noise impact and construction impact were reviewed for this Section 4(f) resource. The Noise Analysis, see subsection 3.10.1, found that the noise level will be slightly above the acceptable MDOT Noise Abatement Criteria for recreation sites for the Future No-Build and the Preferred Alternative. This increase in noise will not diminish the features of, attributes of or activities that occur on this trail. Where the trail crosses Tienken Road, quietness is not an attribute of the trail. The construction impact is also not expected to diminish the features of, attributes of or activities that occur on this trail. Trail users will be still be able to cross Tienken Road at a signalized intersection and during construction, there will be less through traffic.

3.15.3 Historic Sites

As part of the Section 106 Review Process, no resources were identified which met the criteria for listing in the National Register of Historic Places. See subsection 3.16 below for additional information.

3.16 HISTORIC, ARCHEOLOGICAL AND ARCHITECTURAL RESOURCES

Cultural resources include structures, sites and archeological sites that are eligible for listing or are listed on the National Register of Historic Places. In order to be eligible, a property has to have integrity of location, design, setting, materials, workmanship, feeling and association. In addition, the property must be at least 50 years or older and meet one of the following criteria: a) be associated with a significant event; b) be associated with the life of a significant person; c) embody the distinctive characteristics of a type, period or method of construction or represent the work of a master; or d) have yielded or may be likely to yield information important in history or prehistory.

In accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended, the RCOC has coordinated with the State Historic Preservation Office (SHPO) to determine the presence of and potential impacts to historic, archeological and cultural resource sites within the Area of Potential Effects (APE). A Section 106 submittal was prepared and submitted to the SHPO for an environmental review.

The SHPO has determined that no historic properties within the APE are affected by the Preferred Alternative (MacFarlane, SHPO, letter dated January 2009).

3.17 CONTAMINATED SITES

A review of federal and state on-line databases was completed to identify known sites of contamination. The following websites were reviewed.

- Environmental Protection Agency Superfund List (CERCLIS) – No sites
- Michigan Hazardous Waste Treatment, Storage and Disposal Facilities Directory (Part 211) – No sites
- Michigan Leaking Underground Storage Tanks (Part 213) – No sites

- Open Contaminated Sites (Part 201) – One site

3.17.1 Part 201 – Environmental Remediation

Part 201 of the Natural Resources and Environmental Protection Act (1994 PA 451, as amended) regulates most sites of environmental contamination in Michigan. A Part 201 site adjacent to the project area was listed in the MDEQ database.

The Part 201 site is located in the northeast corner of Tienken Road and Rochester Road. The site summary (MDEQ, Environmental Response Division) indicates that a release of cyanide, nickel and Polychlorinated biphenyls (PCB) from an unknown source was detected in the soil. MDEQ scored the site 23 out of 48 on 03/08/2004. The site's status is "inactive – no actions taken to address contamination".

The RCOC consulted with the MDEQ Southeast Michigan District Office (586/753-3700) to determine the potential extent of the release. This information was not provided by the Baseline Environmental Assessment submitted to the MDEQ. The construction of the Preferred Alternative may encounter soils contaminated with Benzo(a) Pyrene. If necessary, the RCOC will coordinate remediation with the MDEQ.

CHAPTER 4 – COORDINATION & CONSULTATION

4.1 EARLY COORDINATION

A scoping meeting was held on September 8, 2008 in RCOC's offices in Beverly Hills for all agencies. The agencies who attended included the city of Rochester Hills engineering staff, the Federal Highway Administration (FHWA), Michigan Department of Transportation (MDOT) Local Agency Programs, RCOC Permit & Environmental Concerns, RCOC Traffic & Safety and HRC staff. Minutes of the scoping meeting were sent to all participants and invitees.

A second meeting with the city of Rochester Hills, FHWA, and MDOT was held on November 21, 2008 to discuss progress on traffic analysis, alternatives development, stakeholder engagements and public participation. It was determined to hold a meeting with individual stakeholders in the corridor in December 2008 and an information meeting for the general public in January 2009.

The RCOC met with FHWA and MDOT in August 2009 to discuss this project and others and policy issues.

4.2 STAKEHOLDER COORDINATION

RCOC scheduled a meeting with a number of stakeholders to present the project and solicit concerns and input on the alternatives. The stakeholders and the date of the interviews are shown in the list below. Summaries of these stakeholder meetings/interviews are available.

- City of Rochester 12/18/08
- Rochester Community Schools 12/18/08
- Paint Creek Trailways Commission 12/18/08
- Great Oaks Country Club 12/18/08
- Bedford Square Apartments 12/18/08
- Rochester Regional Chamber of Commerce 12/18/08
- Van Hoosen Jones-Stony Creek Cemetery 01/21/09
- Kings Cove Homeowners Association 01/21/09
- Friends of Tienken Road 06/03/09 and 06/30/09

4.3 AGENCY COORDINATION

Coordination and limited consultation with the appropriate local, county, regional, state and federal agencies have taken place during the preparation of this Environmental Assessment. The following agencies were contacted and some provided input into this EA.

- City of Rochester Hills, Michigan
- Southeast Michigan Council of Governments (SEMCOG)
- Michigan Department of Natural Resources (MDNR)
- Michigan Department of Environmental Quality (MDEQ)
- Michigan Department of Transportation (MDOT)
- Michigan State Historical Preservation Office (SHPO)
- Tribal Historic Preservation Offices
 - Bay Mills Indian Community
 - Burt Lake Band of Ottawa and Chippewa Indians

- Grand River Band of Ottawa Indians
- Grand Traverse Band of Ottawa and Chippewa Indians
- Hannahville Potawatomi Indian Community
- Keeweennaw Bay Indian Community
- Lac Vieux Desert Band of Lake Superior Chippewa Indians
- Little River Band of Odawa Indians
- Little River Band of Ottawa Indians
- Little Traverse Bay Band of Odawa Indians
- Match-e-be-nash-shee-wish Band of Potawatomi Indians
- Nottawaseppi Band of Huron Potawatomi
- Pokagon Band of Potawatomi
- Saginaw Chippewa Indian Tribe of Michigan
- Sault Ste. Marie Tribe of Chippewa
- U.S. Federal Highway Administration (FHWA)

Copies of the correspondence letters received from local, regional, state and federal agencies are included in **Appendix B**.

CHAPTER 5 - REFERENCES

- Board of County Road Commissioners. 1994 Revision to Master Right-of-Way Plan, Oakland County.
- Clinton River Watershed Council. Stony/Paint Creek Subwatershed Management Plan. November 2005.
- Corradino Group of Michigan, Inc. Rochester Hills Master Thoroughfare Plan Update. March 2008.
- Hubbell, Roth & Clark, Inc. Tienken Road Corridor Study. March 2000.
- Hubbell, Roth & Clark, Inc. Tienken Road Traffic Analysis Report. August 2009.
- Hubbell, Roth & Clark, Inc. Tienken Road Air Quality Analysis. December 2009.
- Hubbell, Roth & Clark, Inc. Tienken Road Traffic Noise Analysis. December 2009.
- MacFarlane, Martha Faes. SHPO. Letter dated January 22, 2009 to Dave Williams, FHWA, regarding ER-09-62.
- McKenna Associates, Inc. City of Rochester Hills Master Land Use Plan 2007. February 2007.
- Niswander Environmental, LLC. Letter dated May 19, 2009 to Charles Hart, HRC, regarding Wetland Delineation and Jurisdictional Determination.
- Oakland County Federal Aid Committee. Pavement Condition. Via: www.oaklandfac.org.
- Sargent, Lori G. MDNR. Letter dated September 5, 2008 to Beata Lamparski, HRC, regarding Tienken Road Improvement Project.
- Southeast Michigan Council of Governments. Via: www.semco.org.
- Traffic Improvement Association of Oakland County. Crash Reporting System. Via: www.tiami.org/tcat.
- U.S. Census Bureau. Census 2000 Data Sets. Via: www.factfinder.census.gov.
- U.S. Department of Agriculture. Natural Resources Conservation Service. Soil Surveys of Oakland County, Michigan. Via: <http://websoilsurvey.nrcs.usda.gov>.
- U.S. Department of Homeland Security. Federal Emergency Management Agency. Flood Insurance Rate Maps. Via: <http://www.fema.gov/hazard/map/firm.shtm>
- U.S. Environmental Protection Agency, Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas. March 2006.

CHAPTER 6 - FIGURES

The following figures are attached.

Figure 1	Project Location Map	Sheet 1
Figure 2	Preferred Alternative Alignment	Sheets 2 - 6
Figure 3	Typical Sections	Sheet 7
Figure 4	Right of Way Needs	Sheets 8 & 9

LOCATION MAP

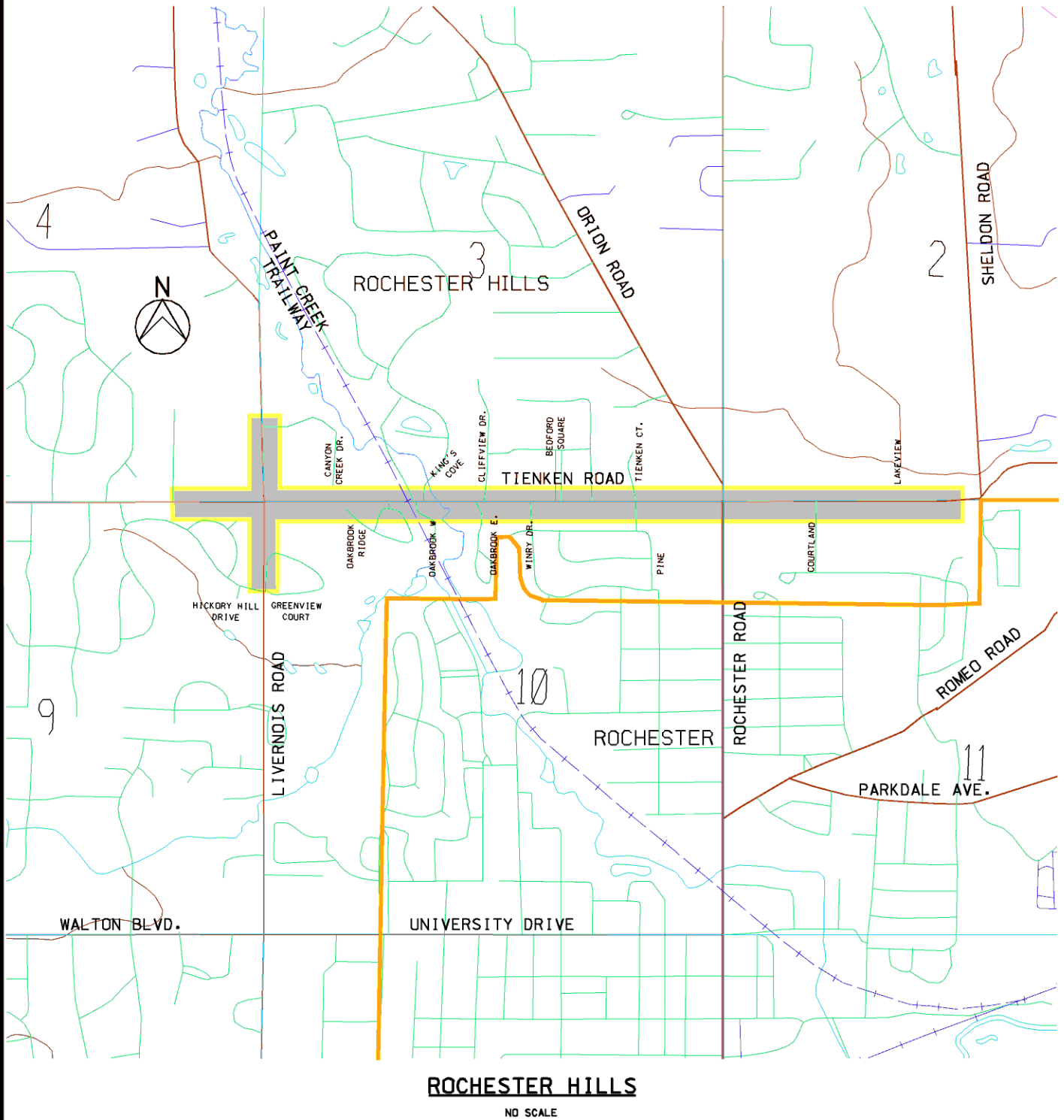


FIGURE 1

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC.	SHEET NO.
DATE 11-20-2009	CONSULTING ENGINEERS	1
		OF

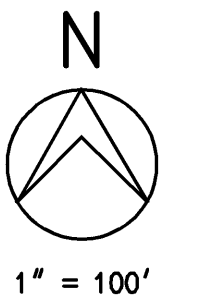
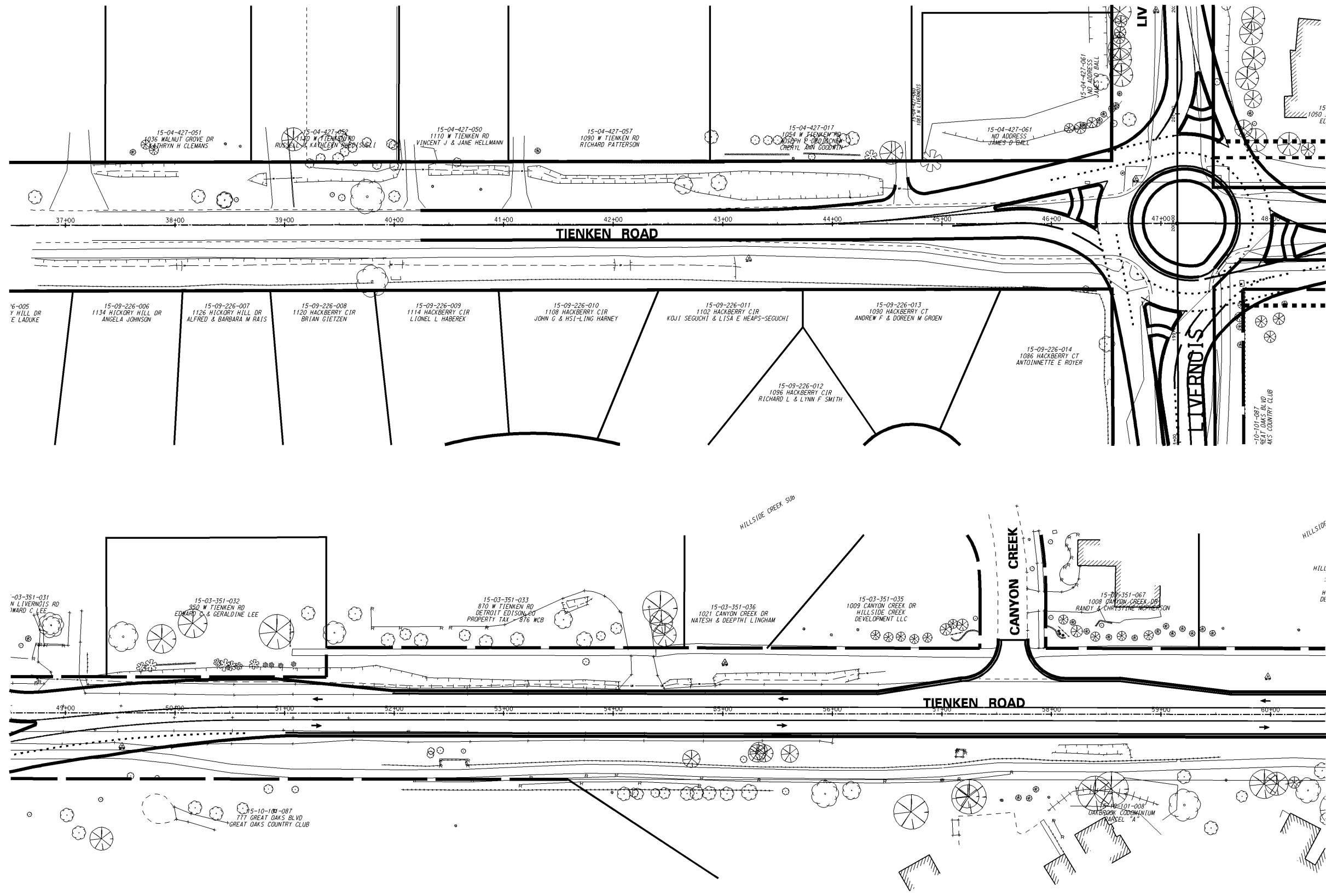
CUR. TBL - I:\standards\ms\std\brccor2\brccor2.tbl - I:\standards\ms\std\brccor2.tbl - TIME - 19-MAY-2009 15:43

00EUE - \b\p\m\Tiff

DESIGN FILE - \v\2008000\20080031\C\EA_Figure_1.dgn

USER NAME - jgrllo

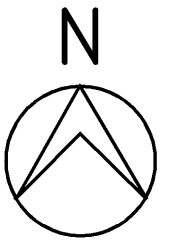
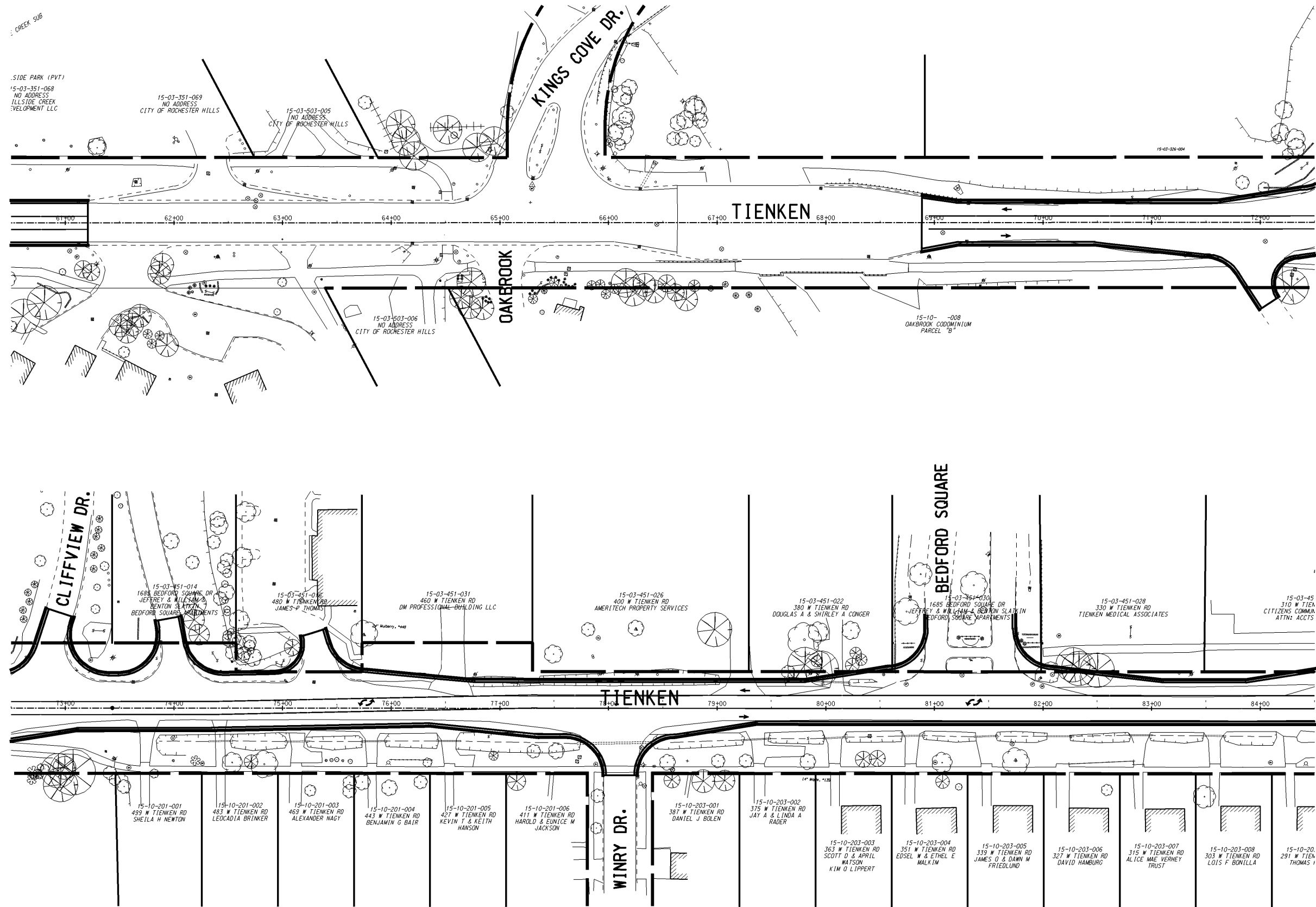
DESIGN FILE - v:\2008000\20080031\NEW\figure_2a.dgn USER NAME - jgr/ilo
 QUEUE - \BHP\LOT\T\T\F\BW CLR - TBL - f:\standards\Map\8\data\hrcolor\2\BPFEN TBL - f:\standards\Map\8\planning\yblblack.plt TIME - 20-Nov-2009 13:50



PREFERRED ALTERNATIVE

FIGURE 2

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO. <div style="text-align: center; font-size: 2em; font-weight: bold;">2</div> OF
DATE 11-20-2009	P.O. BOX 824 48303-0824	



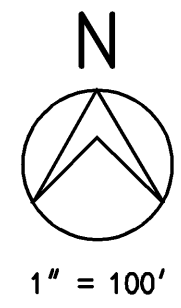
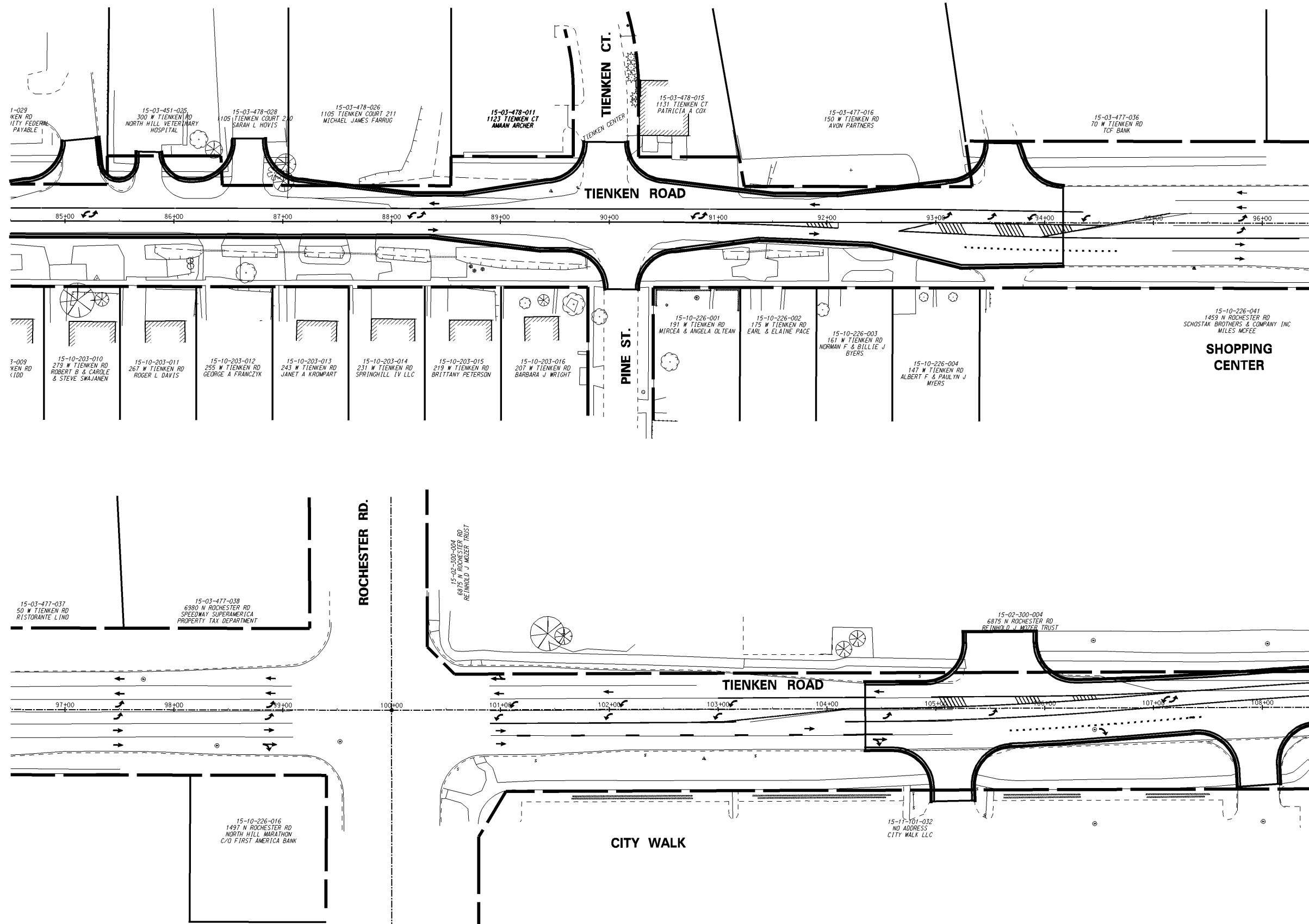
1" = 100'

PREFERRED ALTERNATIVE

FIGURE 2

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO. 3 OF
DATE 11-20-2009		P.O. BOX 824 48303-0824

USER NAME • lgr/ilo DESIGN FILE • v:\200800\20080031\NCEA\Figure_2b.dgn Q:\EUE -\V\HP\LOT\T\F\FW CLR_TBL - F:\standards\Msh\data\trcolor2tblPEN_TBL - F:\standards\Msh\planning\tblack.zbb TIME • 20-NOV-2009 13:52

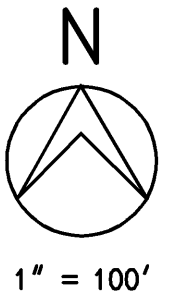
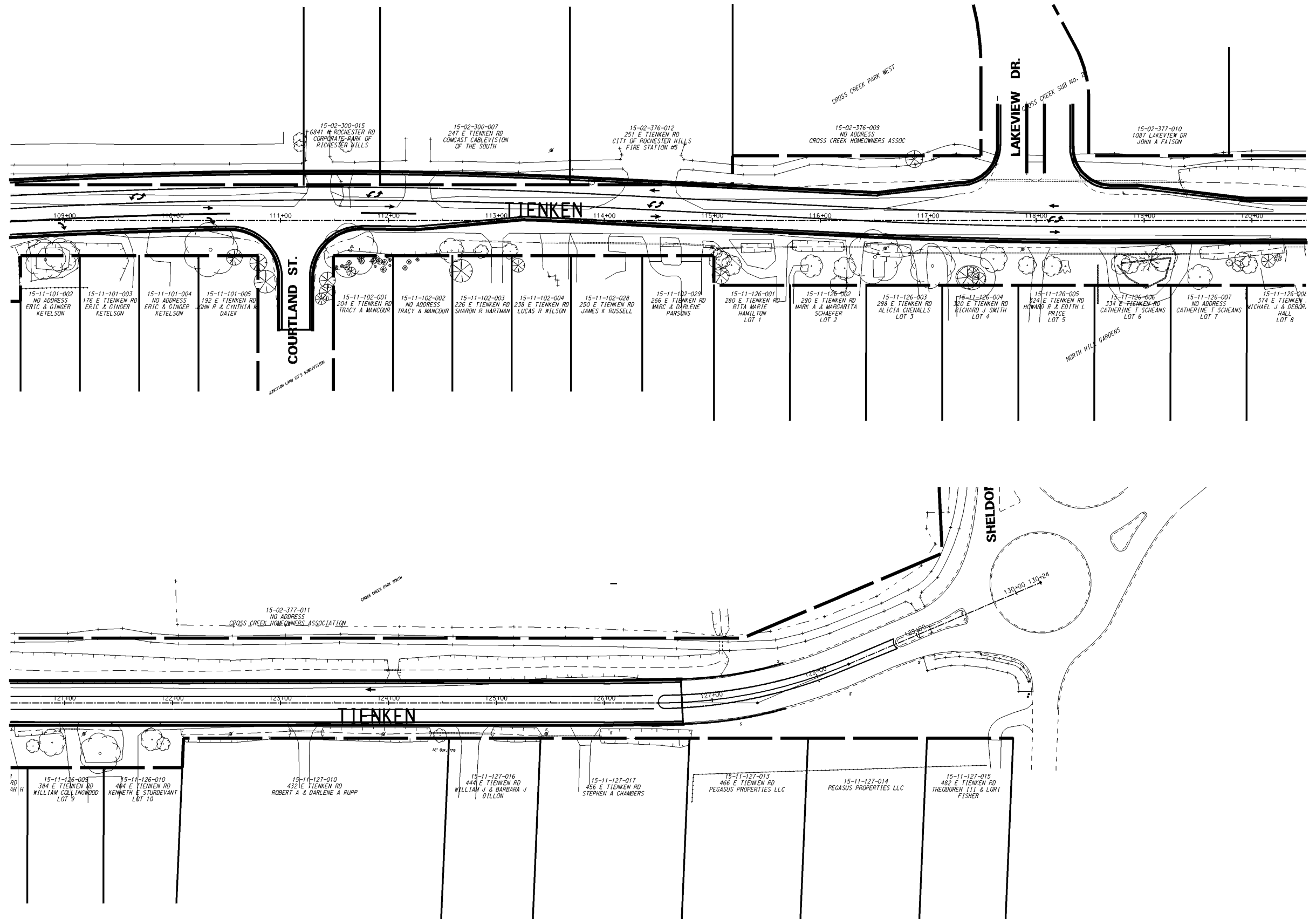


PREFERRED ALTERNATIVE

FIGURE 2

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO.
DATE 11-20-2009		4 OF

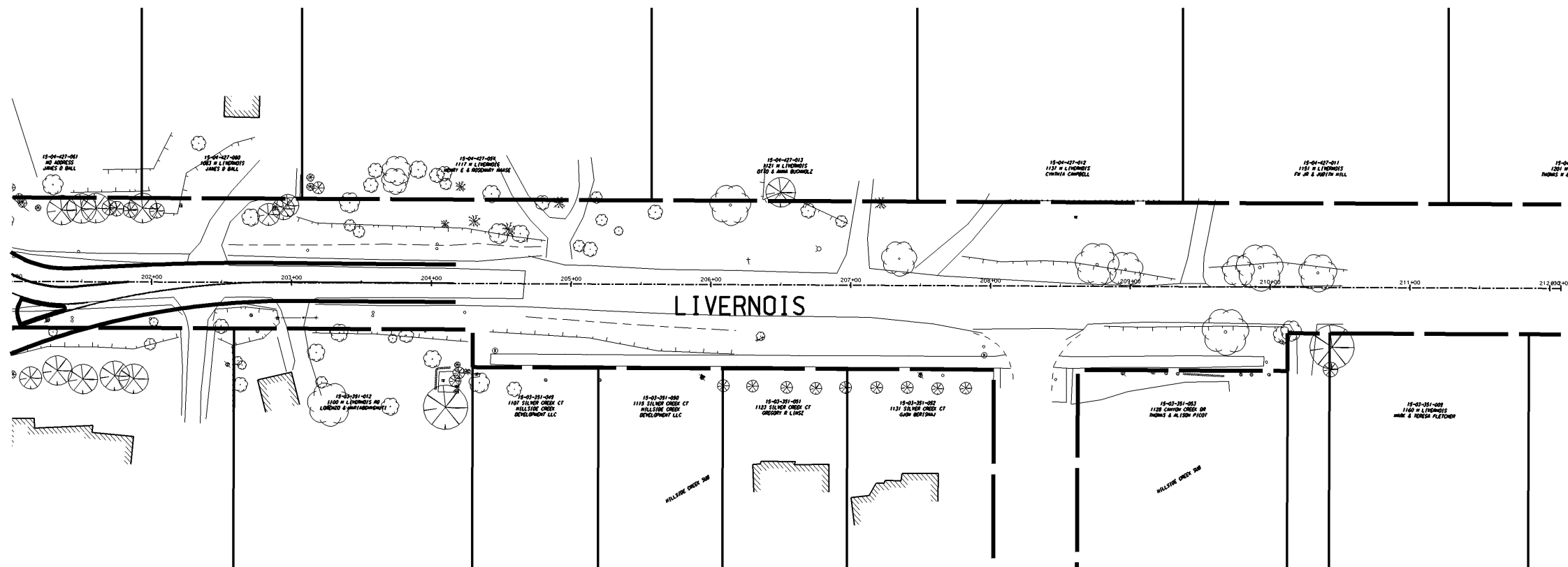
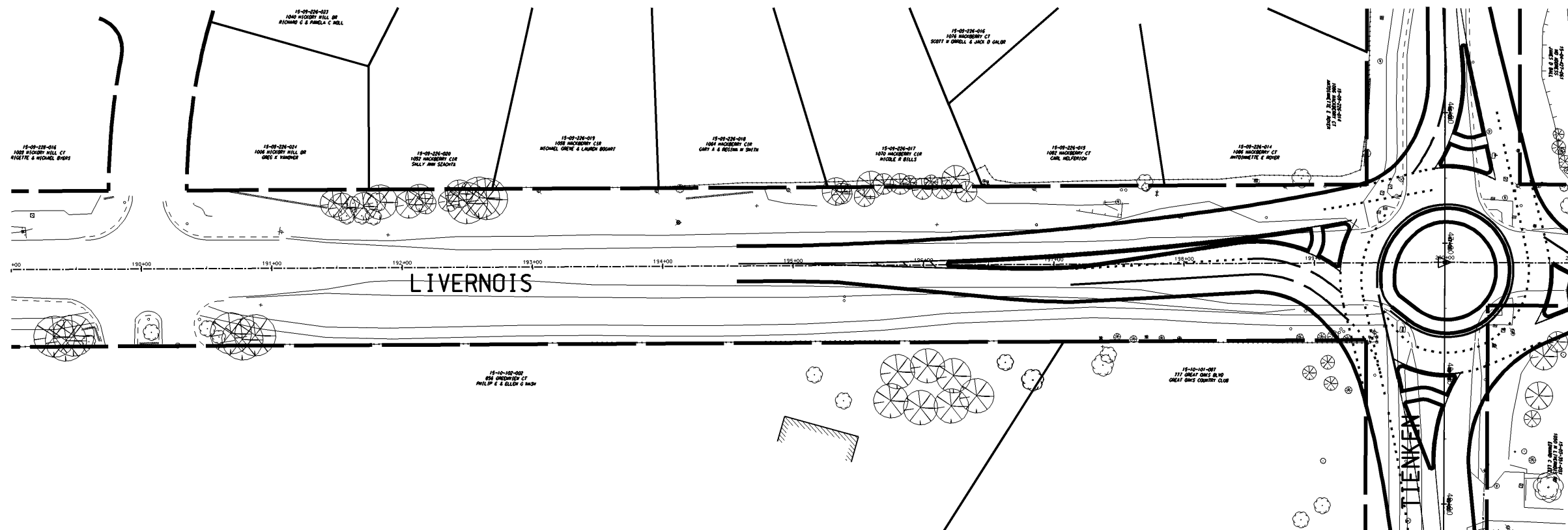
USER NAME: lgr/llo
 DESIGN FILE: v:\200800\20080031\CEA\Figure_2.dwg
 QUEUE: \BHP\LOT\TIFFBW
 CLR: TBL - f:\standards\Map\8\data\hrcolor2\BPFEN TBL - f:\standards\Map\8\planning\ylblack.zw
 TIME: 20-Nov-2009 13:53



PREFERRED ALTERNATIVE

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO.
DATE 11-20-2009		5 OF

FIGURE 2



PREFERRED ALTERNATIVE

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO.
DATE 11-20-2009		6 OF

FIGURE 2

TIME - 16FEB2010 12:29
 PEN_TBL - H:\msw\dwg\color2.tbl
 CUR_TBL - F:\MSW\dwg\color2.tbl
 USER NAME - D:\...
 DESIGN FILE - \a2008000\20080031\010_...
 USER NAME - D:\...

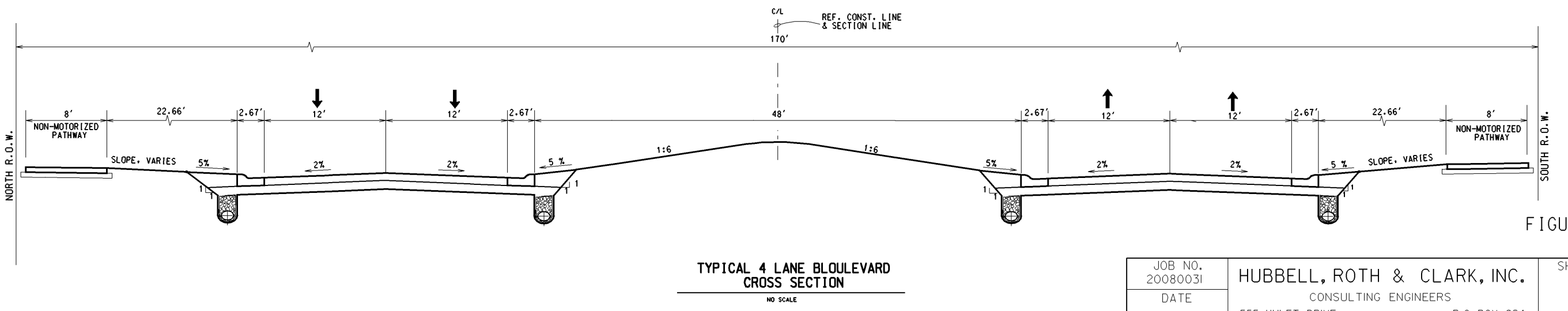
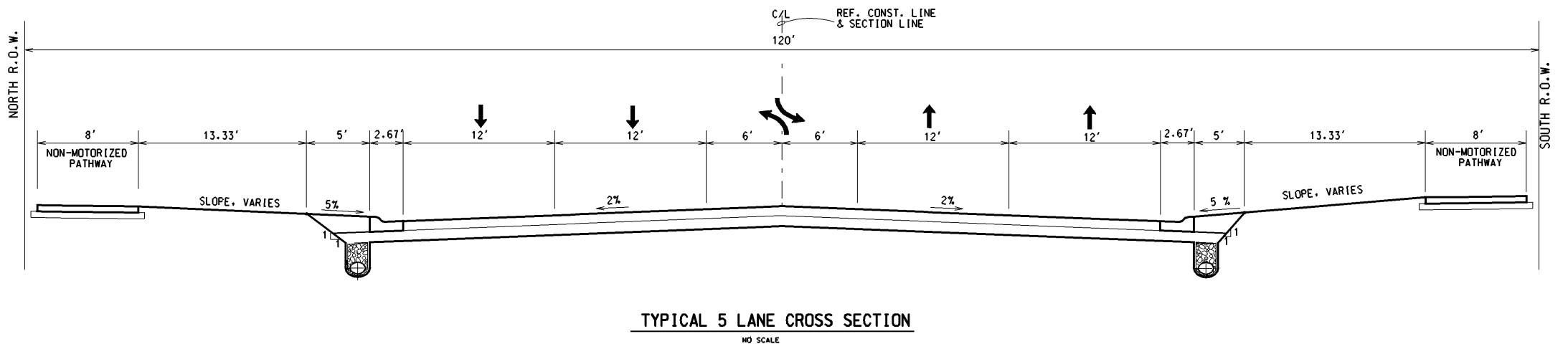
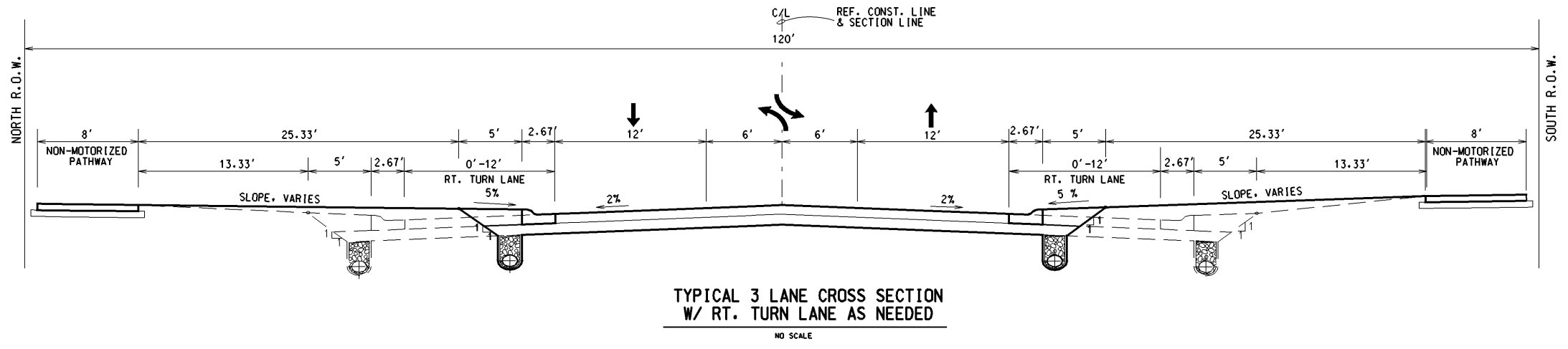
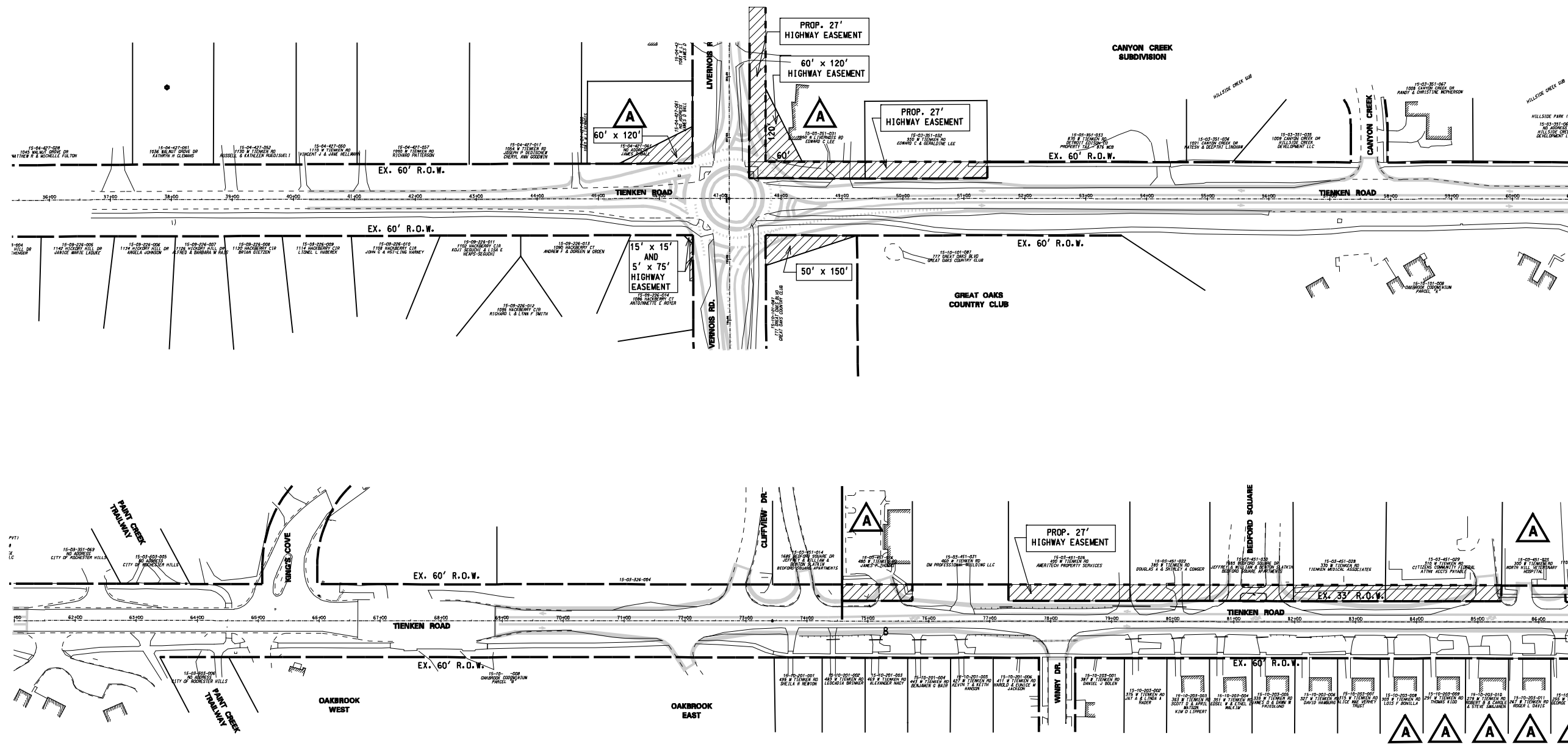
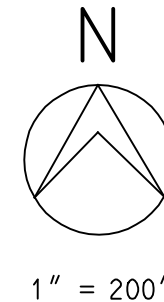




FIGURE 3

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO. 7
DATE 1-26-2010		P.O. BOX 824 48303-0824
		OF



LEGEND

 PROPOSED HIGHWAY EASEMENT

 TOTAL PARCEL ACQUISITION DUE TO HIGHWAY NEEDS

R.O.W. NEEDS

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC. CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	SHEET NO.
DATE 1-26-2010		8 OF

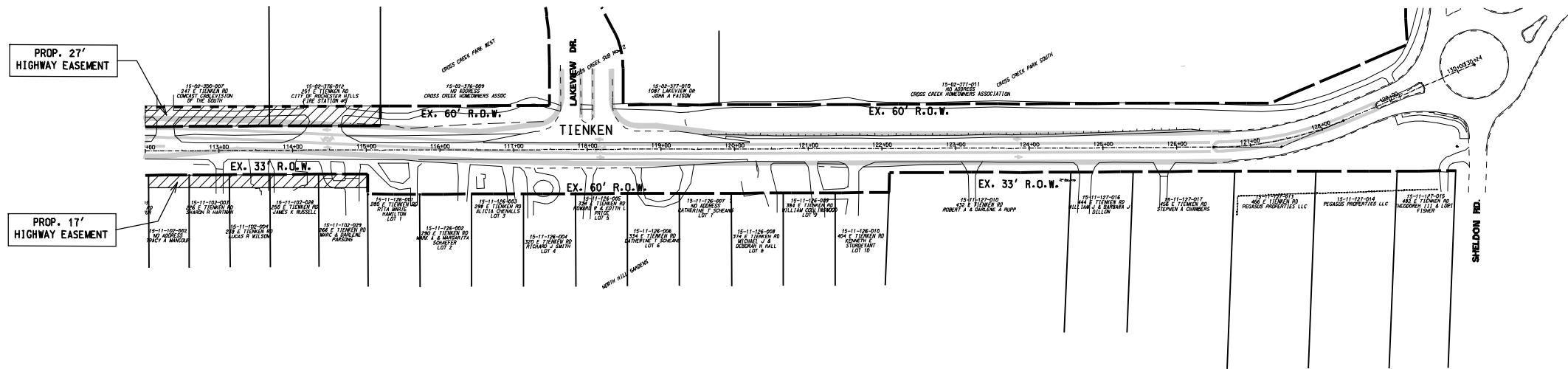
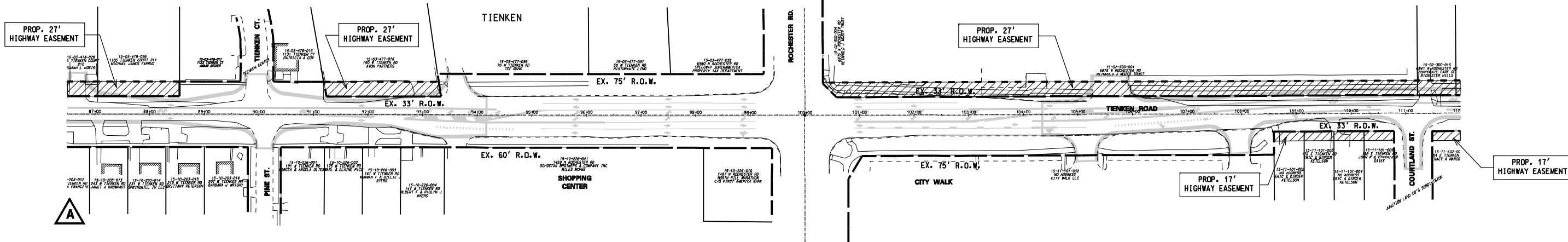
FIGURE 4

CLF, TBL - I:\standards\Map\B\data\thrcolor2\HFEV TBL - I:\standards\Map\B\platt\plblack\reduced\BME - 02-FEB-2010 10:47


01610 - \hpl\h\h\B\B

DESIGN FILE - \A\200800\2008003\CAJ\figure_4\fig4.dgn

USER NAME - caustnfa



LEGEND

 PROPOSED HIGHWAY EASEMENT


 TOTAL PARCEL ACQUISITION DUE TO HIGHWAY NEEDS

FIGURE 4

R.O.W. NEEDS

JOB NO. 20080031	HUBBELL, ROTH & CLARK, INC.	SHEET NO.
DATE 1-26-2010	CONSULTING ENGINEERS 555 HULET DRIVE BLOOMFIELD HILLS, MICH.	9 OF
	P.O. BOX 824 48303-0824	

APPENDIX A – SUMMARY OF PUBLIC INVOLVEMENT

A public information meeting was held on January 21, 2009 between 4 and 7 PM in the Rochester Hills auditorium. The open-house format meeting was well publicized in the local paper. A project fact sheet was prepared and handed out along with a form for written comments. One hundred eighteen people attended and written comments were received from 30 persons.

A second public information meeting was held on July 7, 2009 between 4 and 7 PM in the Rochester Hills auditorium. The open house format meeting was well publicized in the local paper. A two page handout was prepared stating the goals of the meeting and a comparison of purpose and need by alternatives and a PowerPoint presentation ran continuously through the meeting with the same content as the handout. One hundred eighty-seven people attended and written comments were received from about 100 persons.

Following Federal approval of this EA, a public hearing will be conducted at a place and time generally convenient for persons affected by or interested in the proposed undertaking. The hearing is to discuss the Preferred Alternative and to gather public input. The public hearing will be advertised in a paper of general circulation in the city of Rochester Hills and a mailing will be sent to adjacent property owners. The legal notice will indicate where copies of the EA can be obtained for review. The EA will be available for public review a minimum of 15 days prior to the hearing. Those attending the public hearing will be given an opportunity to comment on the social, economic and environmental impacts of the project and the alternatives considered. Provision will be made for submission of written statements in addition to oral statements made at the public hearing. Written comments will be received for a minimum of 10 days following the public hearing. All comments/issues received will be addressed and made a part of this EA process.

APPENDIX B – EARLY COORDINATION CORRESPONDENCE

Coordination and limited consultation with the appropriate local, county, regional, state and federal agencies have taken place during the preparation of this Environmental Assessment. The following agencies provided written correspondence:

- Michigan State Historical Preservation Office (SHPO)
- Michigan Department of Natural Resources
- The Saginaw Chippewa Indian Tribe - Ziibiwing Center of Anishinabe Culture & Lifeways
- Little Traverse Bay Band of Odawa Indians – Archives/Records and Cultural Preservation

Copies of the correspondence letters received are attached.



JENNIFER GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF HISTORY, ARTS AND LIBRARIES
LANSING

DR. WILLIAM ANDERSON
DIRECTOR

January 22, 2009

DAVE WILLIAMS
FEDERAL HIGHWAY ADMINISTRATION
315 W ALLEGAN STREET
LANSING MI 48933

RE: ER-09-62 Tienken Road Reconstruction, Sections 2, 3, 4, 9, 10 & 11, T3N, R11E, Rochester Hills, Oakland County (FHWA)

Dear Mr. Williams:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

This letter evidences the FHWA's compliance with 36 CFR § 800.4 "Identification of historic properties", and the fulfillment of the FHWA's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected".

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Environmental Review Specialist, at (517) 335-2721 or by email at ER@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Martha MacFarlane Faes
Environmental Review Coordinator

for Brian D. Conway
State Historic Preservation Officer

MMF: BGG: kam

Copy: Sue Malone, Road Commission for Oakland County



STATE OF MICHIGAN

DEPARTMENT OF NATURAL RESOURCES

LANSING

September 5, 2008



JENNIFER M. GRANHOLM
GOVERNOR

REBECCA A. HUMPHRIES
DIRECTOR

Ms. Beata Lamparski
Hubbell, Roth & Clark, Inc.
PO Box 824
Bloomfield Hills, MI 48303

RE: Proposed Tienken Road Improvement Project

Dear Ms Lamparski:

The location of the proposed project was checked against known localities for rare species and unique natural features, which are recorded in a statewide database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features at a site. The absence of records in the database for a particular site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, ... fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Department of Natural Resources, Wildlife Division. The presence of threatened or endangered species does not preclude activities or development, but may require alterations in the project plan. *Species may be present that have not been recorded in the database.*

The following is a summary of the results of the review in Oakland County, Sections 2, 3, 4, 9, 10, T3N R11E:

The project should have no impact on rare or unique natural features at the locations specified above if it proceeds according to the plans provided. Please contact me for an evaluation if the project plans are changed.

Thank you in for your coordination in addressing the protection of Michigan's natural resource heritage. Responses and correspondence can be sent to: Michigan Department of Natural Resources, Wildlife Division – Natural Heritage Program, PO Box 30180, Lansing, MI 48909. If you have further questions, please call me at 517-373-1263 or e-mail at SargenL2@michigan.gov.

Sincerely,

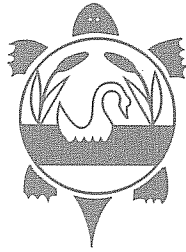
Lori G. Sargent
Endangered Species Specialist
Wildlife Division

NATURAL RESOURCES COMMISSION

Keith J. Charters, Chair • Mary Brown • Hurley J. Coleman, Jr. • Darnell Earley • John Madigan • J. R. Richardson • Frank Wheatlake

STEVENS T. MASON BUILDING • P.O. BOX 30028 • LANSING, MICHIGAN 48909-7528
www.michigan.gov/dnr • (517) 373-2329

Great Lakes, Great Times, Great Outdoors!



ZIIBIWING CENTER

of Anishinabe Culture & Lifeways

THE SAGINAW CHIPPEWA INDIAN TRIBE
6650 E. Broadway • Mt. Pleasant, Michigan 48858

August 20, 2008

Ms. Beata Lamparski
Transportation Planning Specialist
HRC Consulting Engineers

RE: Tienken Road Improvement Project Sections 2,3,10 & 11 City of Rochester Hills, Oakland County, MI

Dear Ms. Lamparski;

This letter is in response to the above referenced project.

At this time we do not have any information concerning the presence of any Indian Traditional Cultural Properties, Sacred Sites, or other Significant Properties to the projected project area. This is not to say that such a site may not exist, just that this office does not have any available information of the area at this time.

This office would be willing to assist if in the future or during the construction there is an inadvertent discovery of Native American human remains or burial objects. Feel free to call my office if you have any questions or requests at 989-775-4730.

We thank you for including this Tribe in your plans.

Sincerely,

William Johnson /elh

Curator

Ziibiwing Center of Anishinabe Culture & Lifeways
Saginaw Chippewa Indian Tribe of Michigan

*Little Traverse Bay Bands of Odawa Indians
Archives, Records and Cultural Preservation Department
7500 Odawa Circle, Harbor Springs, Michigan 49740
(231) 242-1450 phone (231) 242-1455 fax*

August 20, 2008

Beata Lamparski
Transportation Planning Specialist
HRC Consulting Engineers
555 Hulbert Drive
P.O. Box 824
Bloomfield Hills, Mi 48303-0824

Re: Tienken Road Improvement Project Historical Coordination

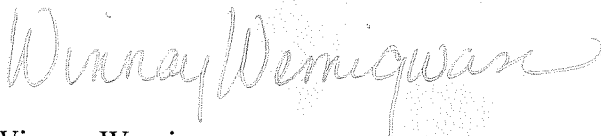
Dear Ms. Beata:

At this time, we do not have any information concerning the presence of any Indian Traditional Cultural Properties, Sacred Sites, or Other Significant Properties in the designated area of the proposed construction site in Rochester Hills, Mi. This is not to say that such site does not exist, just this office does not have any available information indicating that a site is present using our current documentation of the area. If contact could be made with the closest tribe, that being the Huron Band of Potawatomi Indians, they could possibly provide more information.

However, this office would be more than willing to assist, if in the future or during construction, there is an inadvertent discovery of Native American human remains or burial objects. I have enclosed a Site Reference Form that our office uses in the event of a discovery in order to speed the process. Please contact me if you have any further question or requests. I can be reached at (231)242-1453.

We thank you for including our tribe in your plans.

Miigwetch (thank you)



Winnay Wemigwase
Director
Archives/Records and Cultural Preservation
Little Traverse Bay Band of Odawa Indians

APPENDIX C - CONCEPTUAL RELOCATION PLAN

Road Commission for Oakland County Conceptual Stage Relocation Plan Tienken Road Improvement Project

December 2009

GENERAL AREA AND PROJECT INFORMATION

The Tienken Road Improvement Project is sponsored by the Road Commission for Oakland County (RCOC). The project termini are Livernois Road on the west to Sheldon Road on the east. The scope of work includes improvements to the road segment between the project termini and intersection improvements at Tienken and Livernois.

The Tienken Road corridor is located in the Detroit urbanized area and is classified as an urban minor arterial. It serves east-west travel in the northern part of the city of Rochester Hills from Squirrel Road in Auburn Hills to both 25 and 26 Mile Roads in Macomb County. Five alternatives were evaluated before selecting the Preferred Alternative that best met the purpose and need for the project. The alternatives included:

- No Build
- Three Lane Road
- Five Lane Road
- Four Lane Boulevard
- Mass Transit

DISPLACEMENTS BY ALTERNATIVE

All the build alternatives have the potential to displace businesses and residences. Displacements were assumed when the proposed right of way was within 10 feet of the structure or when the driveway slope exceeded 12%. The estimated number of displacements by alternative is shown in the following table. The Preferred Alternative requires the fewest displacements.

Preferred Alternative	5 Lane Alternative	4 Lane Boulevard Alternative
2 Businesses	4 Businesses	5 Businesses
6 Residences	9 Residences	34 Residences

DISPLACEMENT EFFECTS AND ANALYSIS

Acquisition of property for this project will allow for an orderly and timely relocation of all eligible displaced residents, businesses, farms and nonprofit organizations. The acquiring agency will ensure the availability of a sufficient number of replacement properties in the local area for all eligible displacees.

Residential: The project may cause the displacement of approximately six residential units. A study of the housing market in the project area indicates a sufficient number of replacement homes and

rentals will be available throughout the relocation process. It is anticipated that the local residential real estate market will have the capacity to absorb the residential displacements impacted by this project.

Business: The project may cause the displacement of approximately two businesses. A review of the local commercial real estate market indicates that there are a sufficient number of replacement sites available to relocate eligible displaced businesses. Displacement of these businesses is not expected to have a major economic or otherwise generally disruptive effect on the community impacted by this project.

ASSURANCES

The acquiring agency will offer assistance to all eligible residents, businesses, farms and non-profit organizations impacted by the project, including persons requiring special services and assistance. The agency’s relocation program will provide such services in accordance with Act 31, Michigan P.A. 1970; Act 227, Michigan P.A. 1972; Act 149, Michigan P.A. 1911, as amended; Act 87, Michigan P.A. 1980, as amended, and the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended. The acquiring agency’s relocation program is realistic and will provide for the orderly, timely and efficient relocation of all eligible displaced persons in compliance with state and federal guidelines.

Prepared by:

Thomas Blust, Director of Engineering

Date: _____

Approved by:

Teresa R. Vanis, Local Agency Coordinator

Date: _____