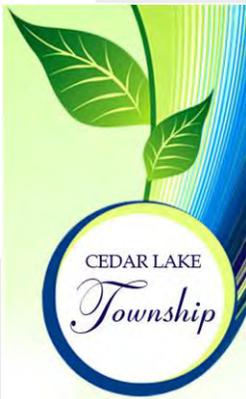




THE MCKNIGHT FOUNDATION



New Market Township



## STUDY

### Transportation Detailed Area Plan

Scott County  
Cedar Lake Township  
New Market Township  
Spring Lake Township

November 2009

Project Numbers  
000569-08003-0  
002750-08001-0  
002271-08002-0  
001862-08114-0

November 19, 2009



Brad Davis  
Scott County Community Development  
Planning Department  
200 Fourth Avenue West  
Shakopee, MN 55379-1220

Re: Transportation DAP  
Bonestroo File No.: 569-08003-0, 2750-08001-0, 2271-08002-0, 1862-08114-0

Dear Brad:

Thank you for the opportunity to assist the County and affected townships with the development of Transportation Detailed Area Plans (DAPs) as part of the larger planning effort to meet the goals of the 2030 Comprehensive Plan.

This report provides a brief history and background of the process leading to the study as well as a review of the methods and information used to produce the Detailed Area Plans. Additionally, the report outlines suggested policies for the future construction of Township Collector and Connector roads as well as improvements to county roads such as turn lanes and by-pass lanes.

Again, thank you for the opportunity to assist you and the townships with this project. We look forward to discussing the contents of this report with township officials and you at our meeting on October 13.

Sincerely,

BONESTROO

A handwritten signature in black ink that reads "Mark R. Statz".

Mark Statz, PE  
Project Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

A handwritten signature in black ink that reads "Mark R. Statz".

Mark R. Statz, PE

Date: November 18, 2009 Reg. No.: 42717

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# INTRODUCTION

This report is one element of a more broadly scoped Detailed Area Plan (DAP). The DAP is being conducted by the Scott County community development staff in an effort to support a proposed Rural Residential zoning district in certain areas of eastern Scott County following adoption of the County's 2030 Comprehensive Plan Update. Those areas would be allowed an overall density of 1 unit per 2.5 acres with possible clustering and density bonuses under a proposed public value PUD program. With this type of density, there arises a need to properly plan many elements of infrastructure and to ensure preservation of natural resources. Again, this report addresses only the element of properly planned transportation infrastructure at the Township level within the DAP area. The Study area is shown on Figure 1.

The DAP includes a plan for the future local roadway system, including maps of future Township Collectors, Township Connectors and Intersection Controls/Treatments. The report also provides cost information for those elements so that the responsible parties can plan funding mechanisms for these future improvements as development occurs.

The design process for the layout of the future township roads was as follows.

1. Review Existing Township Future Road Maps.
2. Review pertinent County and State road authority policies including spacing guidelines.
3. Review current corridor studies and adopted 2030 Comprehensive Plan Update.
4. Layout future collector and connector roads on a map with overlays of:
  - a. NWI Wetlands
  - b. Hydric Soils
  - c. Natural Area Corridors
  - d. Aerial Photos
  - e. Contours
  - f. Regional Storm Water Plan
  - g. Parcel Map
5. Present draft maps to each Township at their Board Meeting and incorporate their comments.
6. Conduct a driving tour of the DAP area in each Township with Township and County officials/staff and incorporate changes noted from this tour.
7. Review maps with County planning staff and incorporate final changes.

Steps beyond those listed above will be to hold a public open house and possible public hearings and incorporate the comments from members of the public.

## FINDINGS

The findings of this report consist of:

1. A DAP map of the future Township Collector and Connector Roads and future intersection improvements (Figure 2).
2. A typical section for future Township Collector and Connector roads.
3. Suggested policies for the implementation of future intersection improvements and other elements of the Transportation Detailed Area Plan.
4. Cost estimates for future intersection improvements (2009 dollars).

## FUTURE TOWNSHIP COLLECTOR & CONNECTOR ROADS

Township roads may be broken down into three categories: **Collectors**, **Connectors**, and **Local Roads**. Figure 2 shows existing local roads and depicts the location of potential Township Collector and Connector roads as identified through the DAP process. Together with current and planned major arterials, the Township Collectors and Connectors provide a “system” approach to transportation planning for the DAP study area and provide important connections to other parts of the County and Metropolitan Region.

**Collector** roads support and help funnel local traffic along the corridors of current and planned major arterials (usually state highways and major county state aid highways) to the limited access points along those roads. Township Collector roads should provide connection between neighborhoods and from neighborhoods to business concentrations, with each other and with the minor and principal arterial systems. Areas between arterial roadways should be served with collectors to provide the function of collecting and distributing traffic (*Scott County 2030 Comprehensive Plan Update*).

**Connector** roadways will help distribute traffic through the study area, providing accessibility to the adjoining Collectors and minor arterials from local roads. Additionally, these roads will improve connectivity throughout each township for the purposes of better traffic flow, emergency vehicle access and flexibility during construction which requires detours.

**Local** roads were not studied as part of this report. The function of local roads is primarily to provide access to property. Each local road should be designed as part of the development process.

The roadway alignments shown on the maps (See Figure 2) are schematic in nature. Despite the detailed design effort, outlined above, involving the study of maps of natural barriers, existing plat lines and other elements affecting alignment; without detailed survey information and a considerable expense, the exact locations of these roads could not be determined. In fact, this practice would only serve to hinder practical development of each site as a unique piece of property. Therefore, specific and detailed alignments for these proposed roads should be determined as part of the platting process as the area is developed.

Arterials serve long trips with emphasis on mobility and restricted land access; Collectors provide the interconnection between local roads and arterials, capturing traffic from an area and focusing it on a limited number of access points on the arterial system.

## INTERSECTION IMPROVEMENTS

Where future collector or connector roads intersect existing roadways, intersection improvements such as the addition of turn and/or by-pass lanes may be warranted. Figure 2 shows the planned location of those future improvements.

Studies have demonstrated the accident-reducing potential when right-turn and left-turn lanes, particularly for left-turns are provided. They provide an area for deceleration and storage which reduces the conflict with through traffic. They also increase the capacity and improve the level of service of the intersection. Figure 2 illustrates potential intersections where turn and by-pass lanes should be considered. Figure 3 depicts the geometrics of potential turn lanes.

## SUGGESTED DESIGN & IMPLEMENTATION POLICIES

The following are suggested policies for the County and Townships to consider as they implement the findings of this report and develop a “system” approach to transportation needs in the DAP study area. The County, in conjunction with the Townships may review these policies and determine if any of them will be mandatory or whether each township will be allowed to adopt their own unique polices using this report as a guideline for the development of those rules.

## **TOWNSHIP COLLECTOR ROADS**

A typical section for Township Collector Roads is shown on Figure 4.

Suggested Policies:

1. Township Collectors identified on the DAP map shall be constructed as development occurs, with each developer responsible for building any portion of a collector which falls in or adjacent to their proposed development.
2. At the discretion of the Township or County, any particular development may be required to build portions of Township Collectors outside their boundaries in order to make its connection to a roadway of equal or greater classification. A development may be considered "premature" if the developer does not agree to complete this work since the development may, then, create traffic or safety issues due to an incomplete network of supporting roadways.
3. Township Collectors shall be constructed to the minimum, geometric, structural and cross sectional dimensions noted on the Typical Section drawing (Figure 4).

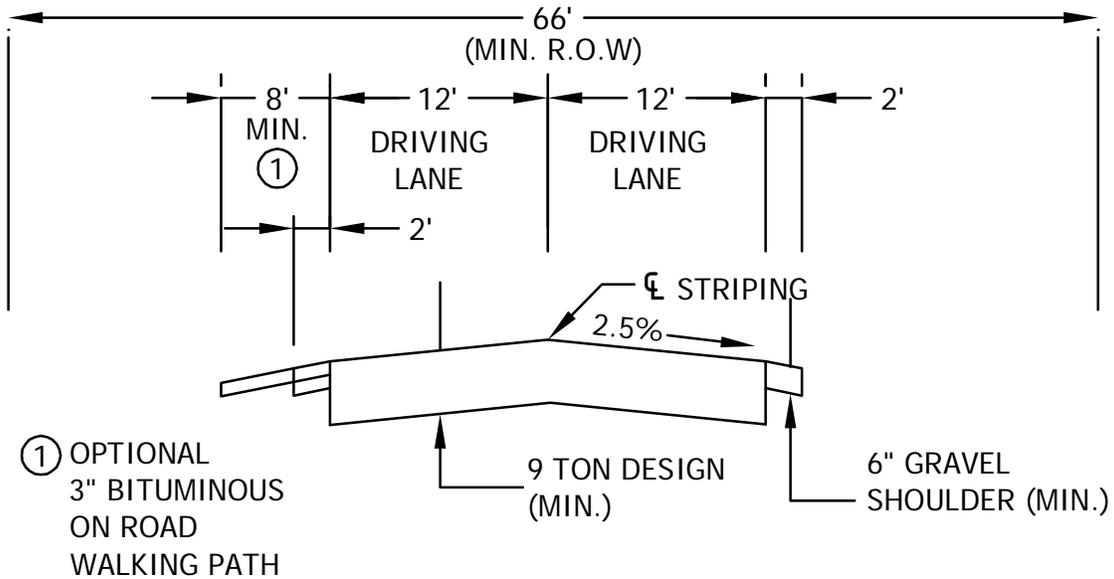
## **TOWNSHIP CONNECTOR ROADS**

A typical section for Township Connector Roads is shown on Figure 4.

Suggested Policies:

1. Township Connectors identified on the DAP map shall be constructed as development occurs, with each developer responsible for building any portion of a connector which falls in or adjacent to their proposed development.
2. At the discretion of the Township or County, any particular development may be required to build portions of Township Connectors outside their boundaries in order to make its connection to a roadway of equal or greater classification. A development may be considered "premature" if the developer does not agree to complete this work since the development may, then, create traffic or safety issues due to an incomplete network of supporting roadways.
3. Township Connectors shall be constructed to the minimum, geometric, structural and cross sectional dimensions noted on the Typical Section drawing (Figure 4).

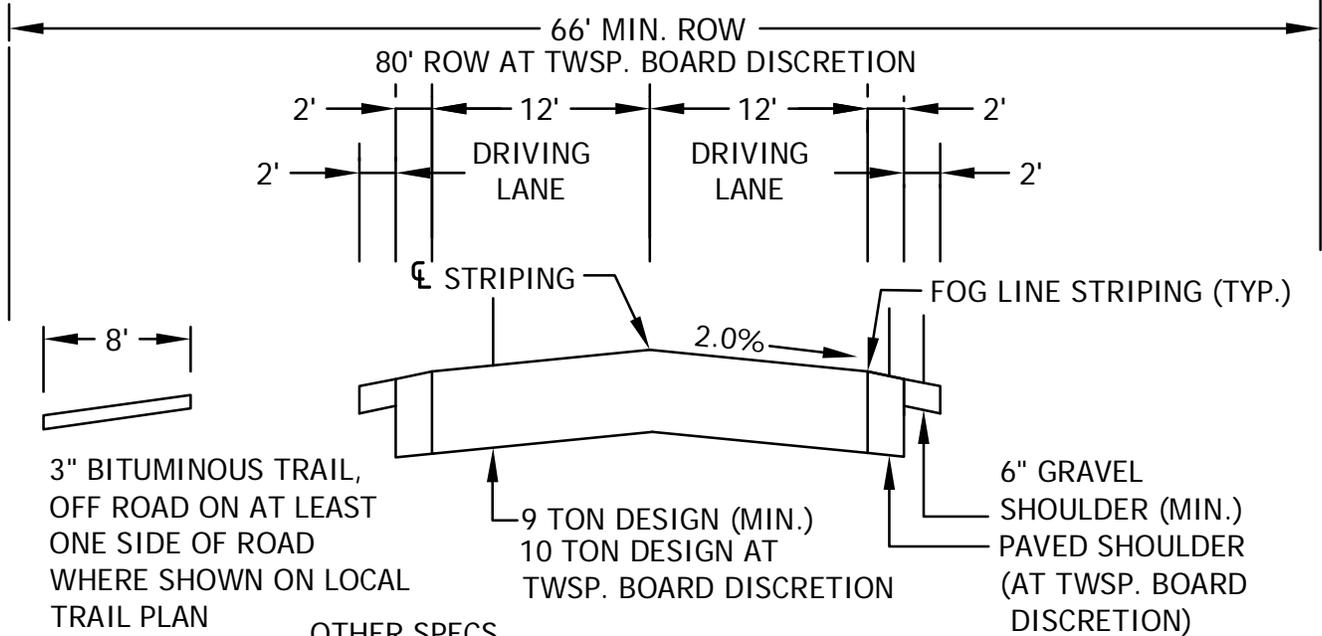
## TOWNSHIP CONNECTOR



OTHER SPECS.

- 30 MPH DESIGN SPEED WHERE POSSIBLE
- LIMIT DRIVEWAY ACCESS WHERE POSSIBLE
- ADDITIONAL R.O.W. FOR CULVERTS, TURN/BYPASS LANES, TRAILS, AND OTHER TOPOGRAPHICAL NEEDS

## TOWNSHIP COLLECTOR



OTHER SPECS.

- 45 MPH DESIGN SPEED ENCOURAGED (30 MPH MIN.)
- NO DIRECT DRIVEWAY ACCESS FOR NEW SUBDIVISIONS UNLESS 660' FROM NEAREST DRIVEWAY
- ADDITIONAL R.O.W. FOR CULVERTS, TURN/BYPASS LANES, TRAILS, AND OTHER TOPOGRAPHICAL NEEDS

### TYPICAL SECTION



## **INTERSECTION IMPROVEMENTS**

Intersections requiring turn and/or bypass lanes are identified on Figure 2.

Suggested Policies:

1. Turn Lanes and Bypass lanes identified on the DAP maps shall be constructed as development occurs, with each developer responsible for building any portion of such improvements which fall in or adjacent to their proposed development.
2. At the discretion of the Township or County, any particular development may be required to build turn or bypass lanes outside their boundaries in order to provide safe access to the development from an nearby roadway. A development may be considered "premature" if the developer does not agree to complete this work since the development may, then, create traffic or safety issues due to the inadequacy of nearby intersections.
3. Turn Lanes constructed on County Roads shall be constructed to the minimum standards identified by the County.
4. Turn Lanes constructed on Township Collector or Connector Roads shall be constructed to the minimum standards shown on Figure 3.

## **ALTERNATIVE POLICIES**

If the County or Townships find the policies listed above regarding the responsibility for construction of the road and intersection improvements to be too arbitrary or perceive that the policies are unfair, they could explore a Transportation Area Fee which would be charged to all developments on a per acre or per parcel basis. The charge would cover the development's share of the costs of these improvements. Credits against the charge could be given for improvements the developer builds on their own. This policy should be developed with careful advice from the County or Township attorneys, respectively.

The County and Townships should also discuss other policies regarding the construction of intersection improvements such as:

1. Cost sharing – while some turn/bypass lanes may clearly be needed as the result of development, others may be required due to the general growth of traffic on a County Road. It may not be fair to burden Township Development with all of the cost of these improvements.
2. Right-of-Way Acquisition Cooperation – Oftentimes, the addition of turn/bypass lanes results in the need for additional right-of-way. This may necessitate condemnation. The County and the Township should discuss who will conduct the condemnation and who will pay for the proceedings.

# COST ANALYSIS

The proposed improvement costs for the turn-lane improvements including indirect cost are presented in Table 2. Detailed cost estimates are presented in Appendix A.

<b>Table 2 – Intersection Improvements (Entire DAP Area)</b>				
	Units	Est. Qty.	Est. Unit Cost	Total Est. Turn Lane Cost
Left and Right Turn Lanes at Cross Roads	EA	35	\$365,000	\$12,775,000
Bypass / Right Turn Lane at Tee Intersection	EA	42	\$175,000	\$7,350,000
<b>Total Cost of Intersection Improvements</b>				<b>\$20,125,000</b>

<b>Table 2A – Intersection Improvements – Cedar Lake</b>				
	Units	Est. Qty.	Est. Unit Cost	Total Est. Turn Lane Cost
Left and Right Turn Lanes at Cross Roads	EA	15	\$364,817	\$5,472,261
Bypass / Right Turn Lane at Tee Intersection	EA	19	\$176,230	\$3,348,374
<b>Total Cost – Cedar Lake</b>				<b>\$8,820,635</b>

<b>Table 2B – Intersection Improvements – New Market</b>				
	Units	Est. Qty.	Est. Unit Cost	Total Est. Turn Lane Cost
Left and Right Turn Lanes (Cross Roads)	EA	11	\$364,817	\$4,012,992
Bypass / Right Turn Lane (Tee Intersection)	EA	9	\$176,230	\$1,586,072
<b>Total Cost – New Market</b>				<b>\$5,599,064</b>

<b>Table 2C – Intersection Improvements – Spring Lake</b>				
	Units	Est. Qty.	Est. Unit Cost	Total Est. Turn Lane Cost
Left and Right Turn Lanes at Cross Roads	EA	9	\$364,817	\$3,283,357
Bypass / Right Turn Lane at Tee Intersection	EA	14	\$176,230	\$2,467,223
<b>Total Cost – Spring Lake</b>				<b>\$5,750,580</b>



A summary of development potential to share in the costs shown above is presented below.

Currently there are 3165\* existing homes in the DAP study area.

Model:

Two development scenarios assumed:

- Based density at 1 dwelling unit per 2.5 acres
- Public value incentives with 100% density bonus for development on 40 acres or greater

Non-residential parcel excluded (e.g. regional parks, commercial sites, etc.)

Staff verified development eligibility for each parcel in DAP Study Area (excluding Credit River Township) using 2007 air photographs, wetland and hydric soil coverage.

<b>TOWNSHIP</b>	<b>BASE DENSITY NEW LOTS</b>	<b>PUBLIC VALUE DENSITY NEW LOTS</b>
Cedar Lake	3,427	5,027
New Market	2,513	3,652
Spring Lake	2,694	3,846
Credit River	800**	1,592
DAP Study Area	9,434	14,117

\*Existing home units based on 2008 Scott County septic records

\*\*2003 AUAR for Credit River Township Growth Area

## SUMMARY & RECOMMENDATIONS

The following is a list of recommended steps to finalize the DAP process and begin the implementation of this plan.

1. Hold a Public Hearing in each of the townships along with a Public Open House for the entire DAP study to solicit public input on the DAP maps and suggested policies.
2. The County and Townships should adopt the suggested or alternative policies outlined in this report which effectively develop a safe and efficient transportation system in the DAP area and provide decision makers with information needed to plan for the future.
3. Develop processes to efficiently implement the improvements outlined in this report as development occurs.
4. Develop a formal process to make changes to the DAP maps as the need for revisions arise.
5. Conduct a review of the findings of this report at least once every 5 years.

# APPENDIX A

**DETAILED COST ESTIMATE**

<b>No.</b>	<b>Item</b>	<b>Units</b>	<b>Est. Qty</b>	<b>Est. Unit Price</b>	<b>Est. Total Price</b>
<b>BYPASS / RIGHT TURN LANE (TEE INTERSECTION)</b>					
1	ADDITIONAL RIGHT OF WAY	SF	9,541	\$2.00	\$19,082.00
2	COMMON EXCAVATION (EV)	CY	1,899	\$9.00	\$17,092.80
3	TYPE MV 4 WEARING COURSE MIXTURE (B)	TN	196	\$38.00	\$7,466.22
4	TYPE MV NON-WEARING COURSE MIXTURE	TN	589	\$36.00	\$21,219.78
5	AGGREGATE BASE, CLASS 5, 100% CRUSHED	TN	1,164	\$23.00	\$26,781.95
6	SELECT GRANULAR BORROW	TN	1,602	\$15.50	\$24,825.71
7	MILL BITUMINOUS PAVEMENT (1 1/2" DEEP)	SY	297	\$16.50	\$4,908.20
8	AGGREGATE SHOULDERING, CLASS 2	TN	49	\$32.00	\$1,570.62
9	PAVEMENT MARKINGS	LF	3,170	\$2.00	\$6,340.00
10	PAVEMENT MESSAGE, LEFT TURN ARROW - EPOXY	EA	2	\$100.00	\$200.00
11	SIGN PANELS, TYPE C, HIGH INTENSITY	SF	5	\$40.00	\$200.00
12	SEEDING, INCL SEED, FERTILIZER, MULCH AND DISK ANCHOR	AC	0.17	\$5,000.00	\$853.61
<b>CONSTRUCTION COSTS</b>					<b>\$130,540.89</b>
<b>INDRECT COSTS 35%</b>					<b>\$45,689.31</b>
<b>TOTAL COSTS</b>					<b>\$176,230.20</b>

**LEFT AND RIGHT TURN LANES (CROSS ROAD INTERSECTION)**

1	ADDITIONAL RIGHT OF WAY	SF	24,252	\$2.00	\$48,504.00
2	COMMON EXCAVATION (EV)	CY	3,890	\$9.00	\$35,010.90
3	TYPE MV 4 WEARING COURSE MIXTURE (B)	TN	383	\$38.00	\$14,562.41
4	TYPE MV NON-WEARING COURSE MIXTURE	TN	1150	\$36.00	\$41,387.89
5	AGGREGATE BASE, CLASS 5, 100% CRUSHED	TN	2,380	\$23.00	\$54,737.88
6	SELECT GRANULAR BORROW	TN	3,281	\$15.50	\$50,850.09
7	MILL BITUMINOUS PAVEMENT (1 1/2" DEEP)	SY	283	\$16.50	\$4,671.33
8	AGGREGATE SHOULDERING, CLASS 2	TN	107	\$32.00	\$3,438.10
9	PAVEMENT MARKINGS	LF	5,375	\$2.00	\$10,750.00
10	PAVEMENT MESSAGE, LEFT TURN ARROW - EPOXY	EA	8	\$100.00	\$800.00
11	SIGN PANELS, TYPE C, HIGH INTENSITY	SF	24	\$40.00	\$960.00
12	SEEDING, INCL SEED, FERTILIZER, MULCH AND DISK ANCHOR	AC	1.75	\$2,600.00	\$4,562.53

**CONSTRUCTION COSTS** \$270,235.13

**INDRECT COSTS 35%** \$94,582.30

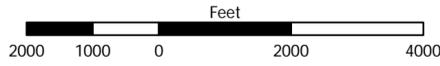
**TOTAL COSTS** \$364,817.43

# FIGURES

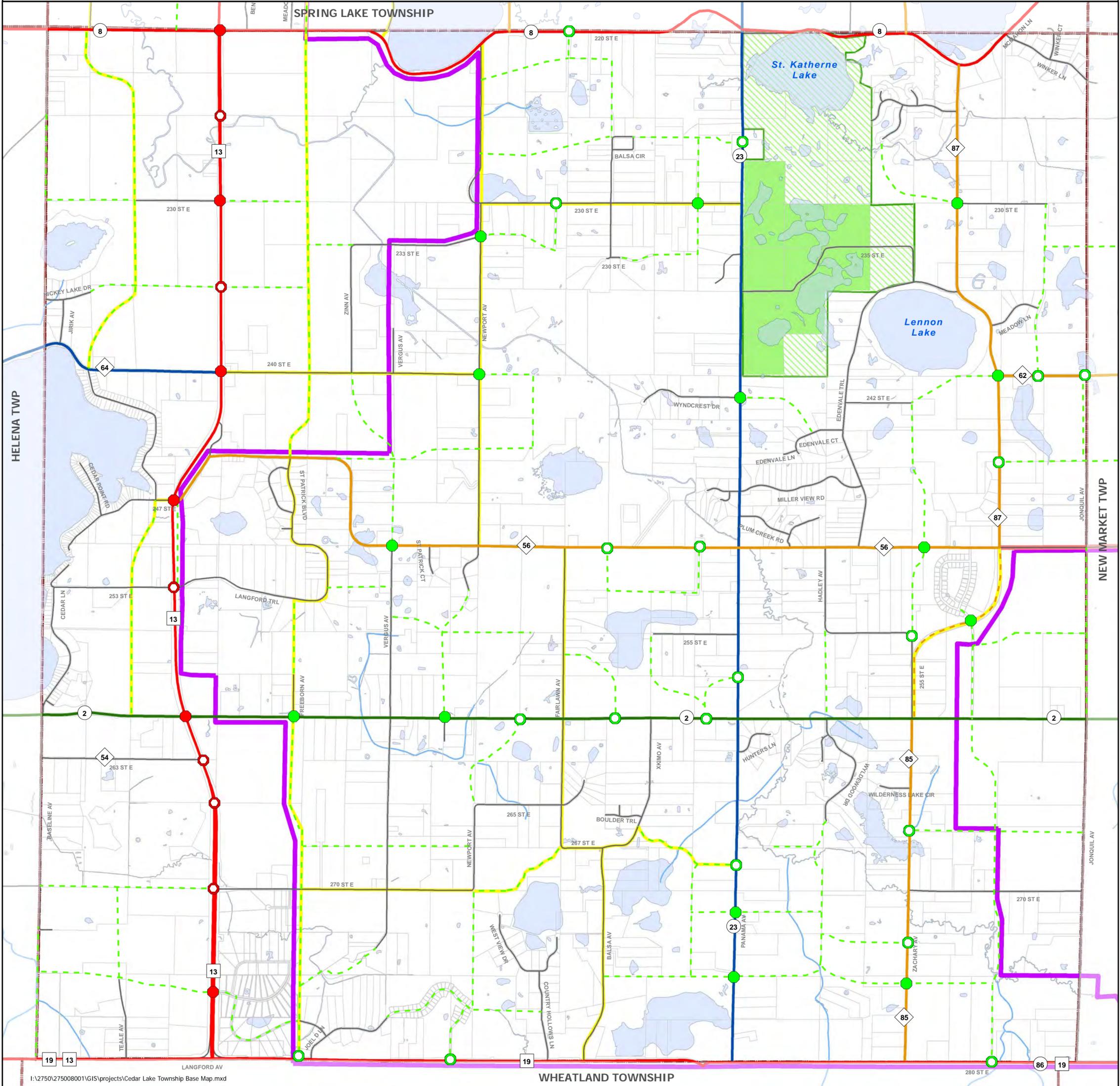
# Transportation Detailed Area Plan Cedar Lake Township

OCTOBER 2009

Figure 2



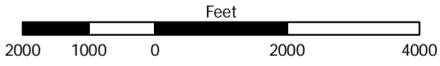
	Proposed Left and Right Turn Lanes		Collector Road		Proposed Township Connector
	Proposed By Pass Right Turn Lane		B Minor Arterial Road		Proposed Township Collector
	Proposed Full Access Intersection		A Minor Arterial Road		Future CSAH
	Proposed Limited Access Intersection		Principal Arterial Road		Streams
	DAP Study Area		Local Roads		Lakes
					Lakes
					Existing Park
					Township / Municipalities



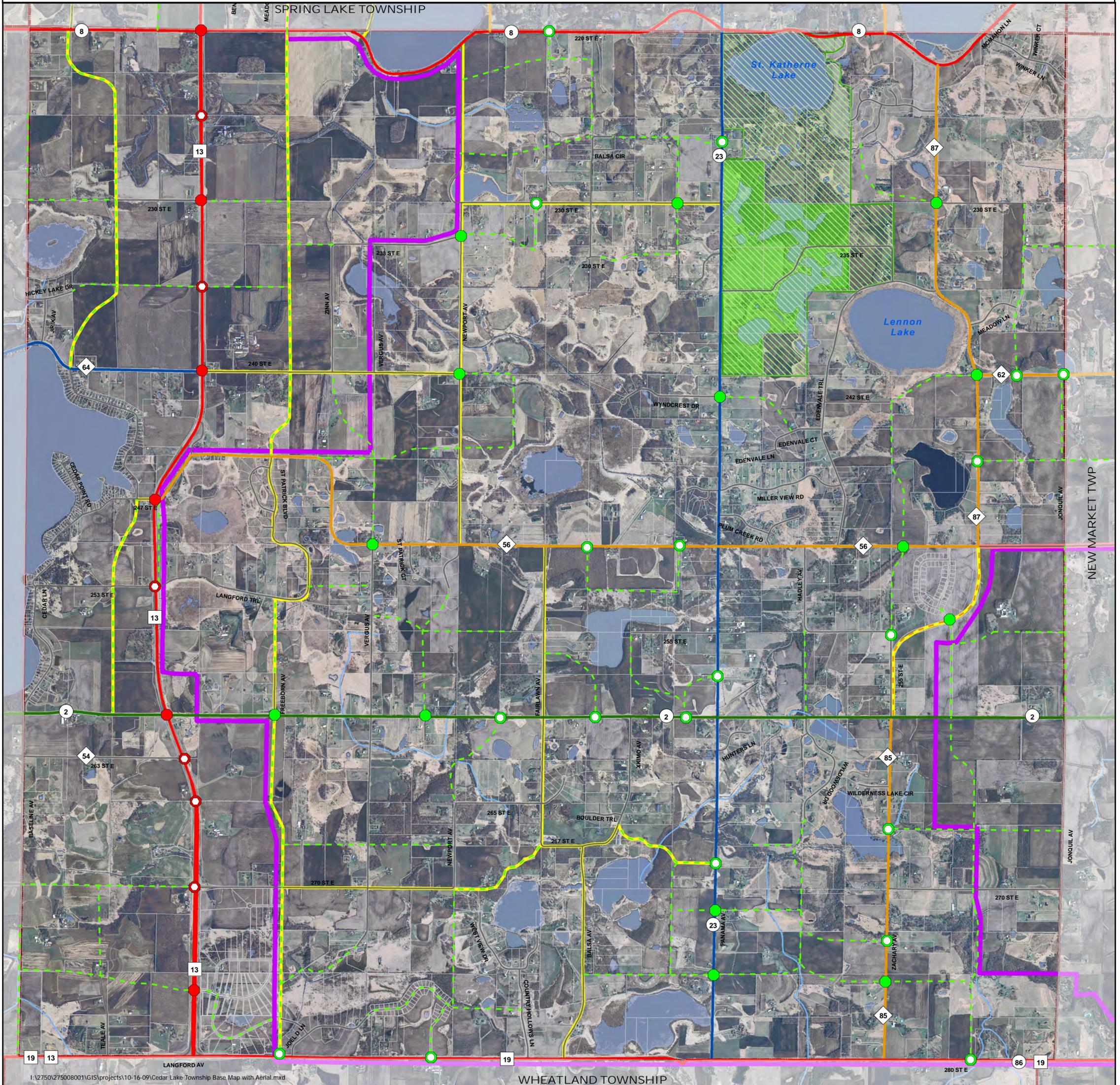
# Transportation Detailed Area Plan With Aerial Photo Cedar Lake Township

OCTOBER 2009

Figure 2



- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Proposed Left and Right Turn Lanes</li> <li><span style="color: green;">○</span> Proposed By Pass Right Turn Lane</li> <li><span style="color: red;">●</span> Proposed Full Access Intersection</li> <li><span style="color: red;">○</span> Proposed Limited Access Intersection</li> <li><span style="color: purple;">~</span> DAP Study Area</li> </ul> | <p>Functional Classification</p> <ul style="list-style-type: none"> <li><span style="color: orange;">~</span> Collector Road</li> <li><span style="color: blue;">~</span> B Minor Arterial Road</li> <li><span style="color: green;">~</span> A Minor Arterial Road</li> <li><span style="color: red;">~</span> Principal Arterial Road</li> <li><span style="color: black;">~</span> Local Roads</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: green;">- - -</span> Proposed Township Connector</li> <li><span style="color: yellow;">- - -</span> Proposed Township Collector</li> <li><span style="color: red;">- - -</span> Future CSAH</li> <li><span style="color: blue;">~</span> Streams</li> <li><span style="color: lightblue;">~</span> Lakes</li> <li><span style="color: lightgreen;">▨</span> Proposed Park</li> <li><span style="color: green;">▨</span> Existing Park</li> <li><span style="border: 1px solid black; padding: 2px;"> </span> Township / Municipalities</li> </ul> |
|---|--|--|



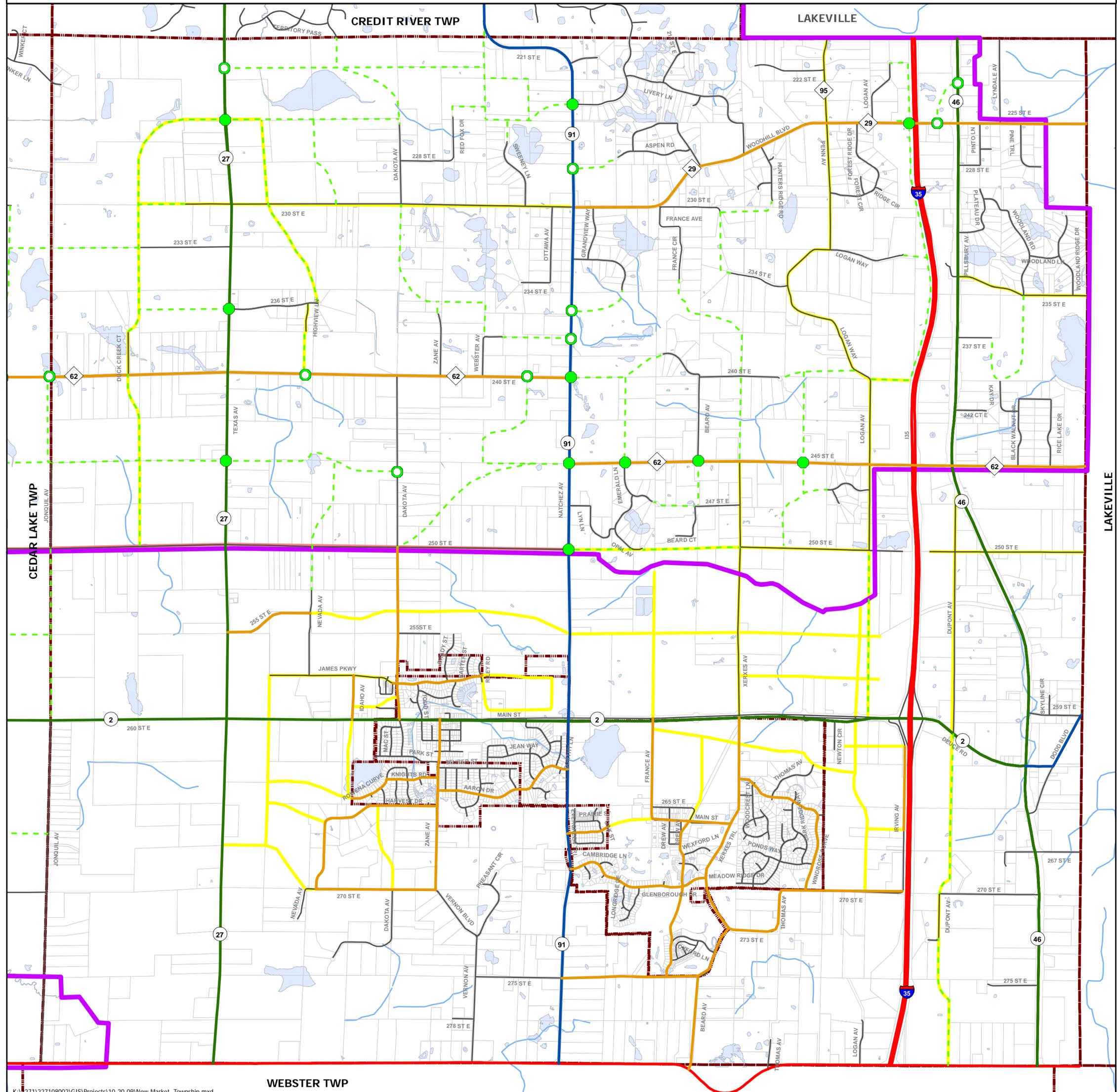
# Transportation Detailed Area Plan New Market Township

OCTOBER 2009

Figure 2



- Proposed Left and Right Turn Lanes
- Proposed By Pass Right Turn Lane
- DAP Study Area
- Functional Classification**
- Collector Road
- B Minor Arterial Road
- A Minor Arterial Road
- Principal Arterial Road
- Local Roads
- Proposed Township Connector
- Proposed Township Collector
- Future CSAH
- Proposed City Collector
- Township / Municipalities
- Streams
- Lakes



WEBSTER TWP

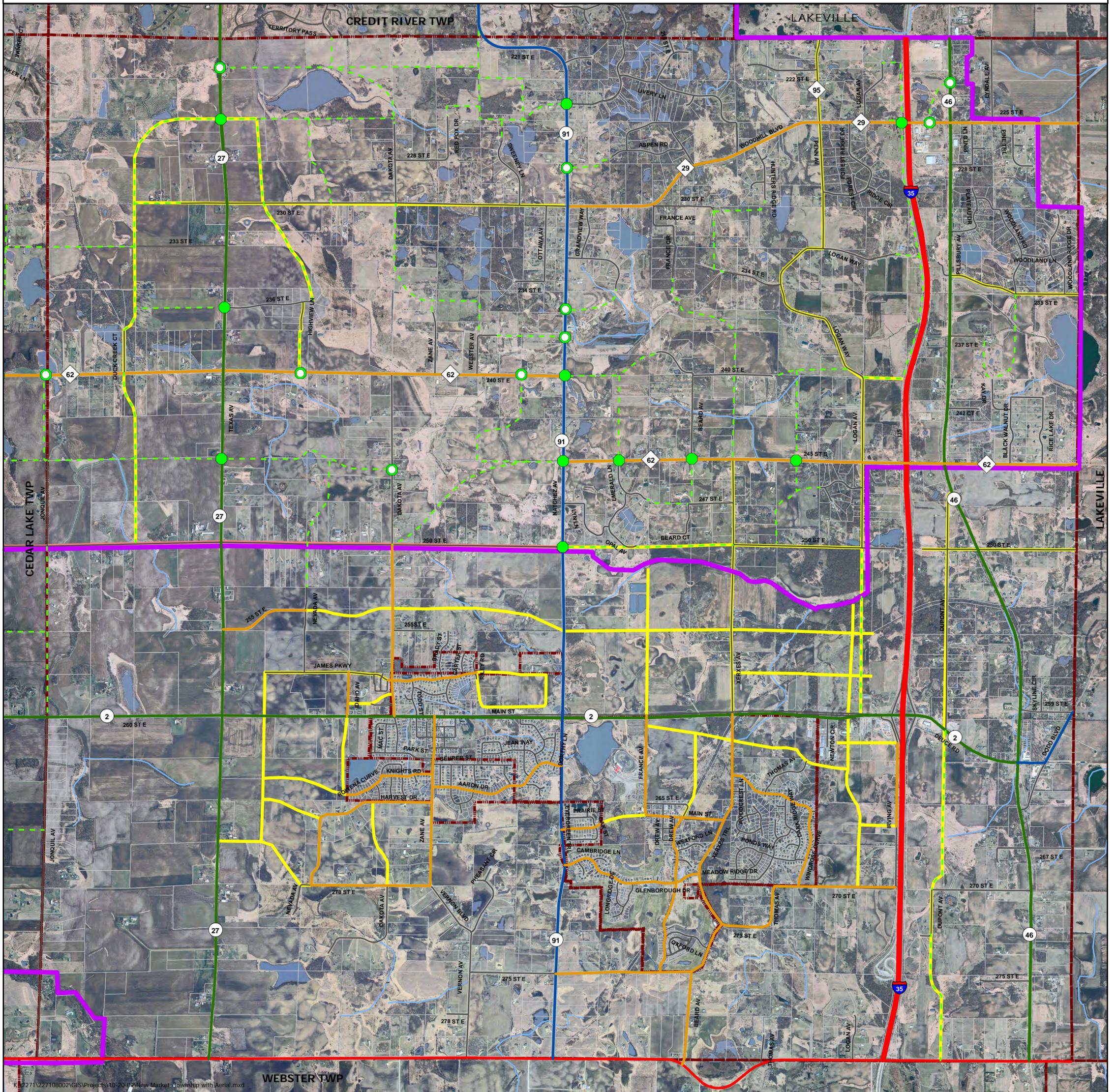
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OCTOBER 2009

Figure 2



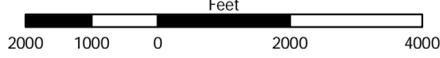
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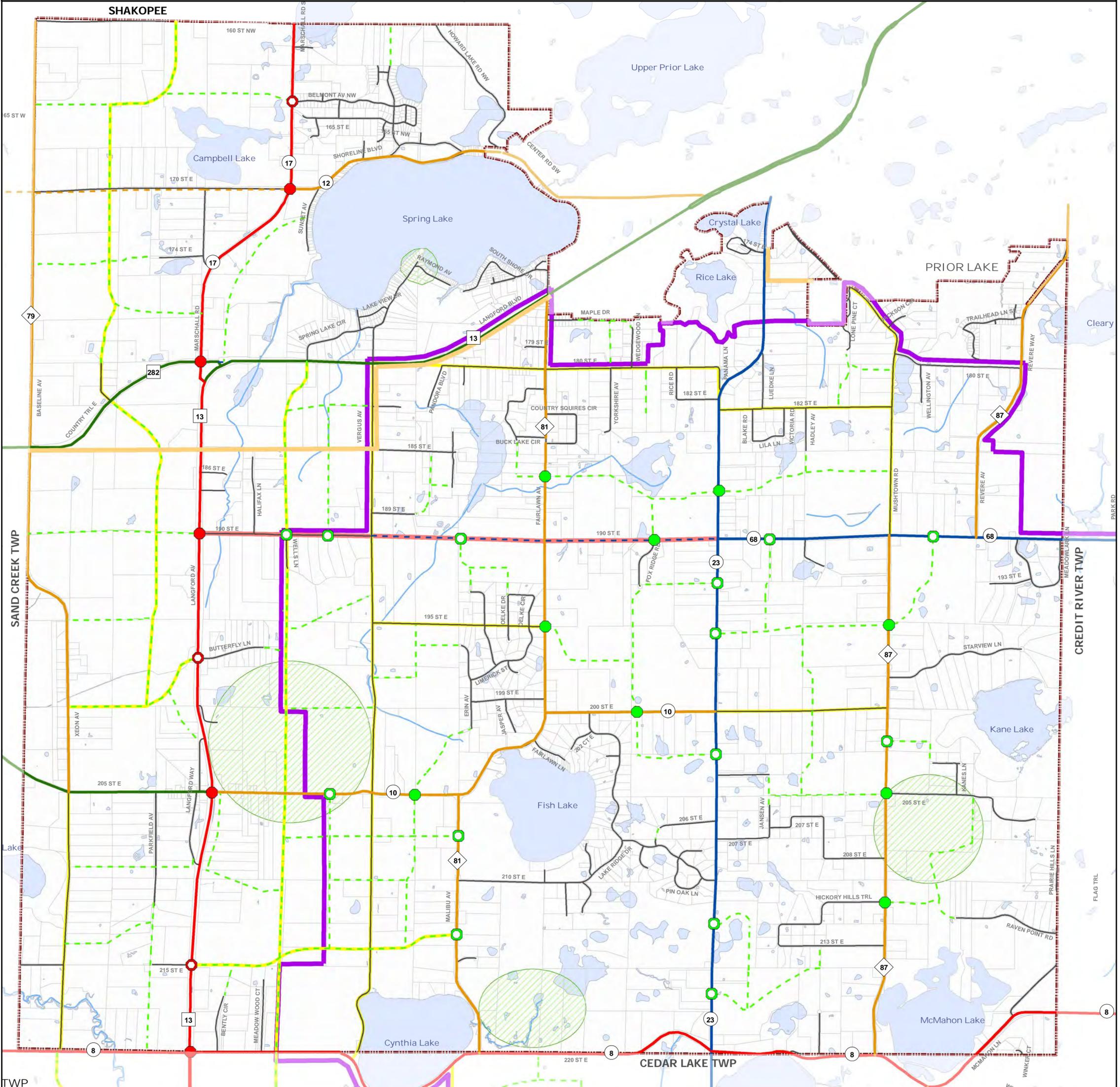
# Transportation Detailed Area Plan Spring Lake Township

OCTOBER 2009

Figure 2



- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Proposed Left and Right Turn Lanes</li> <li><span style="color: green;">○</span> Proposed By Pass Right Turn Lane</li> <li><span style="color: red;">●</span> Proposed Full Access Intersection</li> <li><span style="color: red;">○</span> Proposed Limited Access Intersection</li> <li><span style="color: orange;">—</span> Proposed Annexation</li> <li><span style="color: purple;">—</span> DAP Study Area</li> </ul> | <p>Functional Classification</p> <ul style="list-style-type: none"> <li><span style="color: orange;">—</span> Collector Road</li> <li><span style="color: blue;">—</span> B Minor Arterial Road</li> <li><span style="color: green;">—</span> A Minor Arterial Road</li> <li><span style="color: red;">—</span> Principal Arterial Road</li> <li><span style="color: black;">—</span> Local Roads</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: green; border-bottom: 1px dashed green;">—</span> Proposed Township Connector</li> <li><span style="color: yellow; border-bottom: 1px dashed yellow;">—</span> Proposed Township Collector</li> <li><span style="color: red; border-bottom: 1px dashed red;">—</span> Future CSAH</li> <li><span style="border: 1px dashed red;">—</span> Township / Municipalities</li> <li><span style="border: 1px dashed green;">—</span> Park Search Area</li> <li><span style="color: blue;">—</span> Streams</li> <li><span style="color: blue;">—</span> Lakes</li> </ul> |
|--|--|--|



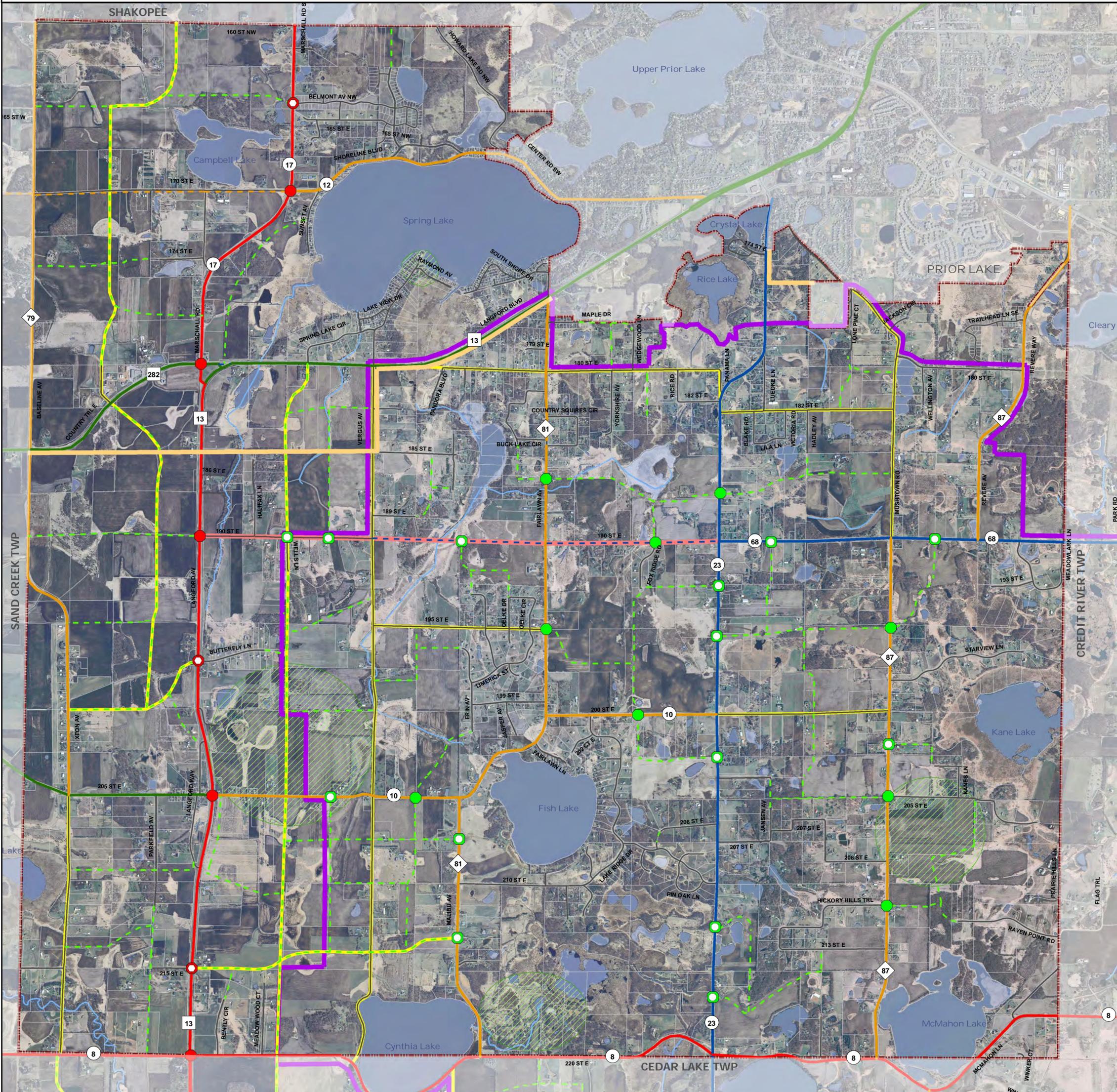
# Transportation Detailed Area Plan With Aerial Photo Spring Lake Township

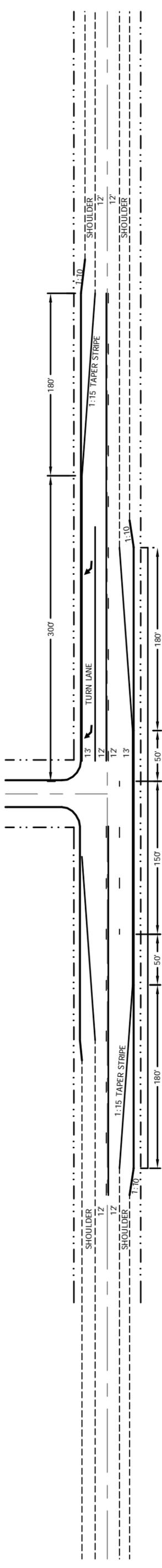
OCTOBER 2009

Figure 2

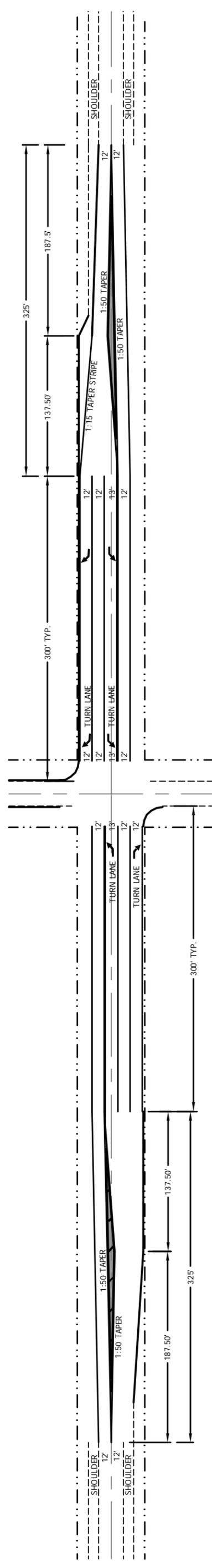


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	Proposed Annexation		Local Roads		Park Search Area
	DAP Study Area				Streams
					Lakes





BYPASS / RIGHT TURN LANE  
AT TEE INTERSECTION



LEFT AND RIGHT TURN LANES AT  
CROSS ROAD INTERSECTION

TURN LANES

TOWNSHIP TRANSPORTATION DAP

FIGURE 3

